

Geo-Environmental Risk Assessment

Reliance Street, Manchester

Presented to: **Be.EV**

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Delta-Simons Contact	Sabine Sargeant (sabine.sargeant@deltasimons.com)

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				Jessica Muckle Senior	Sabine Sargeant Associate Pete Skinner Associate Director	Richard Lawless Regional Director

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Executive Summary

Brief	Delta-Simons Limited ('Delta-Simons') was instructed by Be.EV (the 'Client') to undertake a Geo-Environmental Assessment for land at Reliance Street, Manchester, M40 1EZ (hereafter referred to as the 'Site'). The Site is proposed to be redeveloped as an electric vehicle charging station. It is not known if a planning proposal has yet been submitted. The purpose of this assessment is to identify the potential for land contamination issues to be present at the Site in the context of the proposed development, to support the planning application and to provide a geotechnical assessment.
Site Setting	The Site currently comprises a roughly rectangular parcel of land which is currently vacant and undeveloped following the demolition of the former on-Site petrol filling station. The underground fuel tanks are known to remain on-Site. The Site is within a mixed residential and commercial / industrial area. The Site is underlain by a sequence of Made Ground underlain by Devensian Till (Secondary Undifferentiated Aquifer). Bedrock (Collyhurst Sandstone) was not encountered during the Investigation. The Site is not located within a source protection area (SPZ). There are no licensed abstractions from groundwater recorded within 1 km of the Site. The nearest major surface water feature is the Rochdale Canal, located approximately 140 m to the south of the Site.
Ground Conditions	The current ground investigation recorded a variable thickness of Made Ground, which is in turn underlain by Devensian Till, which has been reworked in south-western corner. The base of the Devensian Till was not recorded during the investigation. Monitoring of standpipes indicates that groundwater is perched at the top of the Devensian Till, with a general fall in levels towards the south-west of the Site.
Land Contamination Assessment	Testing of soils did not indicate elevated concentrations of common contaminants when compared to screening criteria for a commercial end use scenario. However, these locations were not able to target the soils directly below the underground fuel tanks, and so it is possible that impacted soil is present locally. Asbestos has not been identified within soils on-Site to date. Testing of groundwater samples indicated localised elevated concentrations of Sulphate as SO₄, Arsenic and PAH compounds, although a sensitive controlled water receptor has not been identified, so this is not considered further. Gas monitoring results indicate a Characteristic Situation 2, meaning that gas protection measures are likely to be required. Further monitoring can be undertaken following removal of the tanks and any impacted material, to determine if a CS1 can be achieved, if required. Aggressive ground conditions for concrete have not been identified. A design class of DS-1 and an ACEC class of AC-1 have been recommended for both Made Ground and Devensian Till. Barrier pipework is likely to be required for the installation of any new water supply.

Geotechnical Assessment	This assessment has assumed that shallow spread foundations may be used for the development, although no information on loadings has been provided. • A bearing capacity of 125kPa has been recommended for the shallow foundations (limited to less than 25mm settlement). Allowance should be made for over-excavation and deep trench/concrete fill back to formation level in locations where Made Ground/reworked soils/very soft superficial deposits are encountered up to depths of 2.5 m bgl. This would include the area in the north of the proposed kiosk, which is anticipated to overlap with of the area the underground fuel tanks will be removed from; • Should a greater bearing capacity be required, consideration should be given to advancing foundations to a greater depth, to more competent Devensian Till, or recourse to a piled foundation solution. Any lateral/wind loading on the canopy should be carefully considered during detailed foundation selection and design; • An initial CBR value of 2% has been recommended for the roads. Further In-situ CBR tests are recommended at foundation level to confirm this; • Groundwater is recorded between 0.9 m bgl and 2.98 m bgl. Excavations are likely to require shoring and groundwater control/exclusion methods; • Consideration of the effect of deciduous trees on shrink/swell potential of soils should be made, given that the proposed development plan includes numerous trees as part of the canopy design; • A nominal classification for earthworks has been assigned to the Made Ground and the Devensian Till, of Class 2A/2B. Major earthworks are not anticipated to be required, although the excavation following removal of underground fuel tanks will need to be backfilled. If a particular bearing capacity is required for this area, filling and compaction of this void will need to meet the relevant criteria.
Data Gaps and Uncertainty	• The locations were placed to provide general Site coverage where possible, although the investigation locations were largely dictated by the presence of below ground petroleum tanks and associated pipework, and the required easement; • The presence of a gas main in the west of Site, and undocumented pipework in the east of the Site, limited the potential for investigation in these areas; • The presence of obstructions within the Made Ground resulted in two exploratory hole locations in the south of the Site being terminated at shallow depths; • The investigation scoped and geotechnical assessments provided are specific to the development anticipated, and may not be relevant for other development schemes should these be considered in the future.
Recommendations	Based on the findings of this Report, the following recommendations are made; • Remediation Strategy, including supplementary assessment comprising inspection and sampling of the soil which is exposed on removal of the underground fuel tanks; • Plate CBR tests at founding level along proposed vehicle routes; • Further deeper site investigation is required should piled foundations be adopted; • Sorting, classification and reprocessing of material for reuse including removal of obstructions.
This is intended as a summary only. Further detail and the limitations of the assessment are provided within the main body of the Report.	

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Drawing 2 - Pipe and Tank Layout

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Figure 2 - Exploratory Hole Location Plan

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APPENDICES

Appendix A - Limitations

Appendix B - Borehole Logs, SPT Calibrations Certificate

Appendix C - Geotechnical Analysis Results

Appendix D - Soil Chemical Analysis Results

Appendix E - Groundwater Chemical Analysis Results

Appendix F - Field Monitoring Data

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1.0 Introduction

1.1 Appointment

Delta-Simons Limited ("Delta-Simons") was instructed by Be.EV (the "Client") to prepare a Geo-Environmental Risk Assessment for Reliance Street, Manchester (the "Site").

1.2 Context & Purpose

The aim of the study was to complete a geo-environmental assessment of the proposed development area. The investigation has obtained information regarding ground conditions, from which risks to end-users, the environment and structures have been assessed, with mitigation measures suggested where necessary. The investigation has also gathered geotechnical information to inform comment on the preliminary design of foundations and infrastructure. The Report provides recommendations for further work (where appropriate) based on the findings of the investigation.

1.3 Scope of Works

The scope of the investigation and layout of this Report has been designed with consideration of guidance on Land Contamination: Risk Management pages of the [GOV.UK](https://www.gov.uk) web pages, the relevant requirements of the National Planning Policy Framework (NPPF) (as revised 2021) (paragraphs 174 & 183-184)¹ and the Planning Practice Guidance (Land Affected by Contamination)²

The project was undertaken to an agreed brief as set out in Delta-Simons' proposal (reference 22-1496.04, dated 13th September 2022).

The detailed scope of works is outlined in Section 3.

Specific sections of this Report may generally follow guidance set out in Eurocode 7 for a Ground Investigation Report (GIR), as defined in BS EN 1997-1:2004 and BS EN 1997-2:2007. Eurocode 7 includes specific guidance on the number and spacing of investigation positions, methods of investigation and sample quality to be achieved which may not have been met by this investigation. The Report also includes information which may support a Geotechnical Design Report (GDR) as defined in BS EN 1997-1:2004; however, unless otherwise explicitly stated, the investigation has not been undertaken in accordance with Eurocode 7 and the preliminary geotechnical interpretation, assessments, risk register (if included) and recommendations presented within this Report may not meet the full requirements of a GDR.

1.4 Proposed Development

The Site is currently a vacant plot. It is understood that the Site is to be developed for an electrical vehicle charging station.

The current Proposed Development Plan (PDP) has been included as Figure 1. The recommendations made in this Report are based on the included PDP.

A planning application has not yet been submitted for the proposed redevelopment to the knowledge of Delta-Simons.

This Report may be used in support of the discharge of any relevant contaminated land planning conditions.

1.5 Existing Information

A previous report has been issued for the Site by Delta-Simons.

- Preliminary Geo-Environmental Risk Assessment for Land off Reliance Street, Manchester. Issued September 2022 by Delta-Simons (Ref: 22-1496.01).

¹

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004408/NPPF_JULY_2021.pdf

² <https://www.gov.uk/guidance/land-affected-by-contamination>

1.6 Limitations

The assessment is limited to the issues agreed within the proposal for the works. General notes on limitations associated with this assessment are provided in Appendix A.

1.7 Data Gaps and Uncertainty

In addition, the following specific data gaps and uncertainty apply to this assessment:

- The locations were placed to provide general Site coverage where possible, although the investigation locations were largely dictated by the presence of below ground petroleum tanks, associated pipework and other below ground services;
- The presence of concrete obstructions within the Made Ground resulted in two exploratory hole locations being terminated at shallow depths;
- The investigation scoped and geotechnical assessments provided are specific to the development anticipated, and may not be relevant for other development schemes should these be considered in the future.

2.0 Site Details

2.1 Site Setting

A summary of the current Site status, environmental setting and key historical features is presented below.

Co-ordinates	Centred at National Grid Reference 388070, 400730.	Elevation	86 – 87 m AOD
		Area	0.13 Ha
Site Address and Location	Land off Reliance Street, Manchester, M40 1EZ. The Site is located on the corner of Reliance Street and the A62 (Oldham Road), approximately 4.8 km north-west of Manchester City Centre. Google Maps Link [Google, Imagery©2022 Infoterra Ltd & Bluesky, Maxar Technologies, The GeoInformation Group, Map data ©2022]		
Current Site Description	The Site comprises a roughly rectangular parcel of land which is currently vacant and undeveloped following the demolition of the former on-Site petrol filling station. The majority of the Site is covered in hardstanding with minor areas of soft landscaping limited to the northern perimeter. The above ground infrastructure relating to the former Site use has been demolished, although the below ground fuel tanks and associated pipework are anticipated to remain on-Site.		
Physical Setting	The Site is mapped by the BGS as being underlain by Devensian Till (gravelly boulder clay) and then Collyhurst Sandstone Formation, a poorly cemented medium to coarse grained sandstone. The Devensian Till is classified as a Secondary Undifferentiated Aquifer. The Collyhurst Sandstone is classified as a Principal Aquifer. The Site is not within a designated groundwater Source Protection Zone, and there are no licensed abstractions recorded within 1km of the Site. The nearest surface water feature is the Rochdale Canal located approximately 140 m to the south of the Site.		
Key Historical Features	Based on a review of the compilation of historical sources dating back to 1848, it appears that the Site was in residential use until around 1992, after which the Site was redeveloped into its former use as a petrol filling station. From historical maps and aerial imagery, it is thought that the on-Site petrol filling station was demolished between 2009 and 2013. The Site has been in its current layout since then. The surrounding area has been intensely developed since 1848, when the developments comprised residential dwellings and mills. Various sawmills, works and warehouses have been prominent within the surrounding area throughout the mapping history. Surrounding present day land uses comprise warehouses, a trading estate and residential dwellings.		
Summary of Previous /Third Party Reports	The Preliminary Risk Assessment undertaken by Delta-Simons compiled desk-based information to assemble a Preliminary Conceptual Site Model (CSM) (detailed below). The below CSM informed the programme of Site investigation.		

Summary of Preliminary Conceptual Site Model	Sources • The former use of the Site as a petrol filling station, including USTs. The USTs are known to have been remediated with R22 hard foam and disconnected from the pipework, but all remain in-situ. Should there have been a historical leak from the USTs, vapours may be present associated with the degradation of any leaked hydrocarbons. Potential contaminants include petroleum hydrocarbons, metals, PAHs and Asbestos Containing Materials (ACMs) (in former buildings / infrastructure); • Made Ground beneath the Site. In the absence of intrusive investigation at the Site, the composition of any Made Ground beneath the Site is unknown. It is considered unlikely that the Made Ground will have a significant proportion of putrescible material present, however, the Made Ground may still present a source of ground gases; • The current use of the surrounding area including the MOT garage, trading estate and car wash – potential contaminants include petroleum hydrocarbons, metals, PAHs, organic and inorganic solvents; and • The industrial use of the surrounding area including various mills (saw and textiles), electrical engineering works, dye works and timber yards – potential contaminants include metals, TPH, PAHs, organic and inorganic solvents and asbestos. Pathways • Direct contact, ingestion or inhalation of soil bound contaminants / dust during or following redevelopment; • Inhalation of organic vapours associated with contamination; • Migration of ground gas into on-Site buildings causing asphyxiation or risk of explosion; • Leaching of contamination into groundwater followed by migration of groundwater to the wider groundwater environment or discharge to surface waters; • Direct contact between aggressive ground conditions and new infrastructure. Receptors • Construction workers; • Third parties during construction (adjacent Site users and adjacent residents); • Future Site users and maintenance workers; • The underlying aquifers (superficial Secondary Undifferentiated and bedrock Principal Aquifer); and, • The Built Environment (new buildings and infrastructure / utilities). The surface watercourse of the Rochdale Canal located approximately 140 m to the south is not considered to be a plausible receptor given its distance from the Site. The highest risk potential pollutant linkages identified in the PRA were related to possible contaminated soil and groundwater related to the former Site use as a PFS, and the generation of ground gases and vapours.
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3.0 Ground Investigation

3.1 Intrusive Investigation

Delta-Simons carried out intrusive investigation work from 21st to 22nd November 2022 to assess the potential linkages identified in the outline conceptual model (see Section 2.2 above) and to provide geotechnical information.

3.2 Ground Investigation and Rationale

3.2.1 Intrusive Works

The ground investigation comprised the following items:

- Service avoidance exercise and topographic survey of exploratory holes to x,y,z co-ordinates;
- Supervision of all works by a Delta-Simons Geo-Environmental engineer. All intrusive locations were logged to BS 5930:2015+A1:2020 Code of Practice for Ground Investigations; and
- Drilling of eight dynamic sampler boreholes (DS101 to DS108) to a maximum depth of 5.0 m bgl.

An intrusive exploratory hole location plan is presented as Figure 2.

Specific limitations affecting the proposed scope of works are summarised in Section 1.7.

Delta-Simons exploratory hole logs are presented as Appendix B together with the SPT Calibration Certificates, in accordance with BS EN ISO 22476-3:2005+A1:2011 (incorporating corrigendum No. 1 2007), Geotechnical investigation and testing - Field testing - Part 3: Standard Penetration Test for SPT trip hammers.

3.2.2 Rationale

Location	Rationale	Key Contaminants of Concern
DS101-DS108	For general coverage of the Site, and to determine if the Underground Storage Tanks (UST) have impacted soil or groundwater through leakages.	Hydrocarbons, PAH, Metals, asbestos.

3.3 Geotechnical Sampling and In-Situ Testing

3.3.1 Sampling

Sampling comprised disturbed jar/tub and bulk samples as detailed on the borehole logs.

3.3.2 In-Situ Tests

SPT tests were undertaken in all boreholes at 1.00 m intervals from 1.2 m bgl until 5.00 m bgl except where boreholes terminated early on obstructions. The results of these tests are presented on the borehole logs included as Appendix B. A plot of Corrected SPT N values versus Depth is included as Figure 3.

3.4 Geotechnical Laboratory Testing

A selection of soil samples were submitted to the UKAS accredited laboratory for a range of geotechnical testing, the results of which are included in Appendix C. The rationale for the laboratory tests undertaken is provided in the table below.

Laboratory Test	Test Standard	Number of Samples Tested	Rationale
Made Ground			
Particle Size Analysis	BS1377-2:9.2	5	To assess the suitability of the natural soils for re-use as an acceptable earthworks material in accordance with the Specification for Highways Works (SHW) (Series 600).
Geo-Chemical - Soil Samples			
pH	BRE Special Digest 1 or other	11	To assess the soil and groundwater conditions of the Site in accordance with BRE Special Digest 1 Concrete in aggressive ground and specify an appropriate concrete class to resist chemical attack.
Water-Soluble Sulphate (2:1 water/soil extract)	BRE Special Digest 1 or other	11	
Total Sulphur	BRE Special Digest 1 or other	3	
Reworked Devensian Till			
Water Content	BS1377-2:3	1	For soils classification and to assess the potential for cohesive soils to shrink and swell due to changes in the water content of a soil associated with the presence, removal or addition of trees and shrubs.
Liquid and Plastic Limits	BS1377-2:4 - 5	1	
Geo-Chemical - Soil Samples			
pH	BRE Special Digest 1 or other	1	To assess the soil and groundwater conditions of the Site in accordance with BRE Special Digest 1 Concrete in aggressive ground and specify an appropriate concrete class to resist chemical attack.
Water-Soluble Sulphate (2:1 water/soil extract)	BRE Special Digest 1 or other	1	
Total Sulphur	BRE Special Digest 1 or other	1	
Devensian Till			
Water Content	BS1377-2:3	9	For soils classification and to assess the potential for cohesive soils to shrink and swell due to changes in the water content of a soil associated with the presence, removal or addition of trees and shrubs.
Liquid and Plastic Limits	BS1377-2:4 - 5	9	
Particle Size Analysis	BS1377-2:9.2	6	For soils classification and to assess the suitability of the natural soils for re-use as an acceptable earthworks material in accordance with the Specification for Highways Works (SHW) (Series 600).

Laboratory Test	Test Standard	Number of Samples Tested	Rationale
Geo-Chemical - Soil Samples			
pH	BRE Special Digest 1	6	To assess the soil and groundwater conditions of the Site in accordance with BRE Special Digest 1 Concrete in aggressive ground and specify an appropriate concrete class to resist chemical attack.
Water-Soluble Sulphate (2:1 water/soil extract)	BRE Special Digest 1	6	
Total Sulphur	BRE Special Digest 1	6	

3.5 Environmental Sampling and Laboratory Analysis

Soils collected for laboratory analysis were placed in a variety of containers appropriate to the anticipated testing suite. Records of the samples taken as part of the Site investigation works, including their depths and location, are included within the exploratory hole records in Appendix B.

One groundwater sample was collected from each of the boreholes on 30 November 2022. The groundwater samples were collected using a dedicated disposable bailer. Samples were stored in accordance with Delta-Simons' quality procedures to maintain sample integrity and preservation and to minimise the chance of cross contamination. Samples analysed for environmental purposes were placed in chilled cool boxes on site and transported to the laboratory for analysis on completion of the Site investigation works/groundwater sampling visit.

The rationale for chemical analysis is presented in the table below and the results of the chemical laboratory testing are included in Appendix D and E.

Analytes	No. of Samples Tested		Rationale
	Soil	Ground-water	
Asbestos	12	-	Common potential contaminants - Analysed in all samples of Made Ground.
pH, As, Cd, Cu, Cr, Hg, Pb, Ni, Zn, speciated Polycyclic Aromatic Hydrocarbons (PAH)	12	6	
Total Petroleum Hydrocarbons, Criteria Working Group Method (TPHCWG), Benzene, Toluene, Ethylbenzene and Xylene (BTEX)	12	6	Included due to the Site's former use as a petrol filling station.
Volatile and Semi-Volatile Organic Compounds (VOC and SVOC)	5	6	
Soil Organic Matter	5	-	To allow comparison of potentially elevated contaminants against their relevant assessment criteria.

3.6 Monitoring Programme

Four rounds of groundwater level and ground gas monitoring were undertaken on all newly installed wells (DS101, DS102, DS103, DS104, DS105, DS108) between 30th November 2022 and 20th December 2022.

Measurements of the depth to groundwater within the monitoring wells were taken using an interface probe.

To characterise the ground gas regime at the Site, an infrared gas meter was used to measure gas flow, concentrations of carbon dioxide (CO₂), methane (CH₄) and oxygen (O₂) in percentage by volume. Initial and steady state concentrations were recorded. The atmospheric pressure before and during monitoring, together with the weather conditions, was recorded.

All monitoring results obtained to date are contained within Appendix F.

4.0 Ground Summary

4.1 Introduction

The sections below summarise the ground and groundwater conditions encountered during the Site investigation.

4.2 Ground Summary

A summary of the observed ground conditions at the Site is provided below.

Strata	Typical Strata Description	Depth Range of Strata Top (m)	Depth Range of Strata Base (m)	Thickness Range (m)	Comments
Made Ground	Concrete	0.0	0.2-0.5	0.2-0.5	Not present at DS105, DS106, DS107
Made Ground	Red and brown gravelly clayey SAND, very sandy CLAY or sandy GRAVEL, with frequent cobbles. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick, sandstone, slate and concrete. Cobbles generally of brick.	0.0-0.5	0.8-2.0 Where proven	0.8-1.7 where proven	Present at all locations. Faint hydrocarbon odour identified in DS101 and DS102. Concrete slab identified in DS105 at 0.9 m bgl which forms base of Made Ground. DS106 and DS107 terminated on concrete slab at 0.65 m bgl and 0.6 m bgl respectively.
Made Ground	Reworked Devensian Till with inclusions of brick and concrete.	1.2	2.4	1.2	Identified in DS108 only.
Devensian Till	Very soft to stiff brown slightly gravelly sandy CLAY, occasionally gravelly SAND. Gravel is angular to rounded fine to coarse of sandstone and mudstone.	0.8-2.5	Not proven	Not proven	Arisings in DS101 had an oily sheen. Encountered in all locations apart from DS106 and DS107.

Made Ground was identified immediately below the surfacing in all locations, and generally comprised very sandy clay or clayey sand with a high gravel content. Faint hydrocarbon odours were identified in DS101 and DS102, located in the north-western corner. Arisings from DS101 had an oily sheen below 3.0 m bgl within the Devensian Till. Made Ground becomes more cobbly to the south of the Site.

Where the base of the Made Ground was encountered, this was underlain in all locations by Devensian Till. In DS108a, this had been reworked to a depth of 2.4 m bgl. Devensian Till typically comprised gravelly, sandy clay. The base of the Devensian Till was not identified. The till was found to be softer at the top of the stratum in DS103 and DS105, although in both instances, SPTs were comparable with the rest of the Site from 2.0 – 3.0 m bgl onwards.

4.3 Groundwater

4.3.1 Strikes During Investigations

The groundwater strikes during the ground investigation are summarised below.

Exploratory Hole	Water strike during drilling (m bgl)	Water strike during drilling (m AOD)	Stratum	Comment
DS101	3.0	84.72	Devensian Till	Oily sheen on arisings. Moderate inflow of water.
DS103	1.2	86.74	Made Ground	Moderate inflow of water.
DS104	2.0	84.47	Devensian Till	Moderate inflow of water.

4.3.2 Levels During Monitoring Programme

Groundwater levels were monitored on a total of four occasions between 30th November 2022 and 20th December 2022. Monitoring data and LNAPL measurements are provided in Appendix F and summarised in the table below.

Exploratory Hole	Water level during monitoring Max to Min Range		LNAPL Y/N	Stratum
	m bgl	m AOD		
DS101	1.25-1.40	86.33-86.47	N	Made Ground/ Devensian Till
DS102	0.94-1.39	86.33-86.78	N	Made Ground/ Devensian Till
DS103	0.9-1.20	86.74-87.04	N	Made Ground/ Devensian Till
DS104	1.0-2.98	84.49-86.48	N	Made Ground/ Devensian Till
DS105	1.5-2.14	85.61-86.25	N	Devensian Till
DS108a	1.7-1.80	85.31-85.41	N	Reworked Devensian/ Devensian Till

Groundwater levels were generally found between 0.9 m bgl and 2.98 m bgl (84.49 m AOD and 87.04 m AOD). It is likely that groundwater is perched in the Made Ground at the top of the Devensian Till.

LNAPL was not recorded during any of the monitoring rounds, despite visual evidence of contamination identified in arisings from DS101 during the Site investigation.

Water flow direction is assumed to be to the south and west, although a strong flow direction cannot be discerned from the groundwater levels recorded.

4.4 Visual and Olfactory Evidence of Contamination

Minor visual or olfactory evidence of potential contamination was observed during the investigation.

- Faint hydrocarbon odour within Made Ground (DS101- 0.2-0.3 m bgl; DS102 - 0.5-1.3 m bgl; DS103 - 0.5-1.5 m bgl);
- Slight oily sheen on arisings (DS101- 3.0 m bgl);
- Slightly oily sheen and hydrocarbon odour on water (DS102 and DS103 monitoring round 1 only);

4.5 Material Properties

The table below summarises the factual material properties based upon the results of in-situ and laboratory test data and where appropriate provides derived geotechnical parameters.

Parameter	Unit	Value or Range (adopted characteristic design parameters)	Justification
Made Ground			
Uncorrected SPT 'N'	Blows	0-8	In Situ Testing
Corrected SPT 'N60'	-	0-5	SPT N values corrected for energy ratio (Er) after BS EN ISO 22476-3:2005. Er stated on borehole logs.
Reworked Devensian Till			
w (Water Content)	%	35	Laboratory Testing
IP (Plasticity Index)	-	18	Laboratory Testing
PL (Plastic Limit)	%	23	Laboratory Testing
LL (Liquid Limit)	%	41	Laboratory Testing
Volume Change Potential	-	LOW	NHBC
Uncorrected SPT 'N'	Blows	2-24	In Situ Testing
Corrected SPT 'N60'	-	1-16	SPT N values corrected for energy ratio (Er) after BS EN ISO 22476-3:2005. Er stated on borehole logs.
Devensian Till			
w (Water Content)	%	19-39	Laboratory Testing
IP (Plasticity Index)	-	18-24	Laboratory Testing
PL (Plastic Limit)	%	18-26	Laboratory Testing
LL (Liquid Limit)	%	37-43	Laboratory Testing
Volume Change Potential	-	LOW-MED	NHBC
Uncorrected SPT 'N'	Blows	5-42	In Situ Testing
Corrected SPT 'N60'	-	3-28	SPT N values corrected for energy ratio (Er) after BS EN ISO 22476-3:2005. Er stated on borehole logs.

A plot of corrected/ uncorrected SPT N value versus depth per strata is presented as Figure 3. A plasticity chart is presented withing geotechnical test results in Appendix C.

4.6 Geochemical Testing

Geochemical analysis was undertaken on eight samples of Devensian Till and four samples of Made Ground, which were tested for selective contaminants (BRE Special Digest 1:2005 (3rd Edition), Concrete in Aggressive Ground, the results of which are summarised in the table below.

Tests	No. of Tests	Minimum	Maximum
Made Ground			
Soil - pH	11	6.9	8.9
Soil - Total Sulphur (%)	11	0.012	0.189
Soil - Water Soluble Sulphate (mg/L)	3	12.5	70.2
Water-pH	4	7.1	7.6
Water- Sulphate (mg/L)	4	26.8	252
Reworked Devensian Till			
Soil - pH	1	8	8
Soil - Total Sulphur (%)	1	0.021	0.021
Soil - Water Soluble Sulphate (mg/L)	1	11.8	11.8
Devensian Till			
Soil - pH	6	7.3	8.4
Soil - Total Sulphur (%)	6	0.009	0.072
Soil - Water Soluble Sulphate (mg/L)	6	14.1	72.3
Water - pH	2	7.6	7.8
Water - Sulphate (mg/L)	2	32.5	118

5.0 Geotechnical Assessment

5.1 Introduction

5.1.1 Summary of Development Proposals

We understand the client will be applying for planning permission for an electric vehicle recharging point, with 16 vehicle bays, at the site as shown on Drawing 1. All former buildings have been demolished, although the underground fuel storage tanks remain on-Site (Drawing 2). These will require removal prior to construction works.

At the time of writing, structural and floor loadings and final levels were unknown. Consequently, the information provided below should be treated as preliminary and will be subject to review once a scheme and levels have been finalised. Further detailed assessment may be required.

Investigation has been limited to those areas which do not breach required easements around the underground tanks and pipework, and on-Site utilities. On this basis, there are no investigation locations in the centre of the Site in the area of the former structures.

5.2 Earthworks

At the time of writing, finished levels were unclear although, it is understood that, to some degree, earthworks will be required as part of the proposed development, to create a level development platform once underground tanks are removed. A significant cut and fill operation is not anticipated.

The table below summarises material grading results and the corresponding earthworks class, in accordance with the 'Specification for Highways Works, Series 600', Table 6/2:

Exploratory Location	Depth (m bgl)	Strata	Cobble Content (%)	Gravel Content (%)	Sand Content (%)	Fines <0.063 mm (%)	Series 600 Earthworks Class (Table 6/2)
DS101	0.4-0.7	Made Ground	0	27	42	31	Class 2A/2B
DS102	0.8-1.3		0	8	34	58	
DS103	0.5-1.2		0	17	39	43	
DS104	0.8-1.2		0	34	36	30	
DS108	0.45-1.2		0	22	38	40	
DS101	2.0-4.0	Devensian Till	0	2	13	85	
DS102	1.5-5.0		0	1	10	88	
DS103	2.0-5.0		0	1	11	88	
DS104	2.0-3.6		0	2	11	87	
DS105	2.1-5.0		0	4	14	82	
DS108	2.0-5.0		0	4	16	80	

Shallow earthworks on the Site will likely predominantly encounter Made Ground. The results of initial classification testing suggest that the Made Ground will likely fall within class 2A/2B (General Cohesive Fill).

Initial classification testing of Devensian Till suggests that it will also likely fall within class 2A/2B.

Materials used as fill will need to be placed to a suitable engineering specification with the degree of compaction required dependent on end usage and serviceability criteria. For example, a lesser degree of compaction may be suitable for paved areas than for building platforms supporting foundations and ground bearing slabs.

The suitability of earthworks materials has been assessed on the basis of the testing carried out as part of this investigation. The materials encountered on-site may vary from those analysed; furthermore, inclement weather or winter working may result in materials being unsuitable for incorporation within the works without modification. In particular, cohesive soils (e.g. the Devensian Till) are very susceptible to 'wet weathering working' and we recommend activities are not undertaken during inclement weather or the winter period.

Unprotected stockpiled materials often deteriorate due to water infiltration and they may become unsuitable for incorporation in the works.

If Made Ground material is to be reused on-Site, cobbles, concrete slabs, other anthropogenic material and reinforcement bar (where present) should be removed prior to placement and compaction.

Further earthworks testing will be required prior to completion of a suitably detailed earthworks specification for the works.

It is assumed that some soil import may be required for infilling of the underground tank excavation, as sufficient arisings are unlikely to be generated on-Site. It is recommended that well compacted granular engineered fill should be used for this in accordance with the agreed earthworks specification.

5.3 Foundations

5.3.1 Spread Foundations

Made Ground soils in their current form are considered to be heterogeneous, of variable geotechnical performance and likely to yield poor bearing capacity and high total / differential settlement. Such deposits are therefore considered to be unsuitable as a founding stratum.

A shallow foundation solution utilising strip or pad foundations may be suitable for the proposed kiosk and canopy, founded within firm to stiff clay of the Devensian Till at a minimum depth of 2 m bgl assuming a strip foundation of 0.6 m width placed at 2m bgl, and a minimum undrained shear strength of 65 kPa (as determined from SPT results), a serviceability limit state (SLS) bearing capacity of 125 kPa may be achieved (limited to less than 25 mm of settlement).

Assuming the above material parameters, where required, pad foundations up to 2m x 2m placed at 2m depth will likely support the anticipated column loadings based on a bearing pressure of 125kPa and will limit settlement to less than 25 mm.

Alternatively, should shallower formation depths for proposed foundations be required consideration should be given to excavation to the base of the Made Ground (and any soft Devensian Till identified) and replacement with deep trench fill (either engineered granular material or mass concrete). It should be noted that in the areas surrounding DS103, DS105 and DS108 a deeper reworked natural ground (2.4 m deep in BH108a) or very soft superficial deposits were encountered. In addition, obstructions were encountered in parts of the site and hence the depth of the Made Ground could not be fully determined. In the northern area the kiosk is also likely to coincide with the area where an underground fuel tank will be removed. Localised over excavation/backfill may therefore be required in these areas.

Consideration should be given to ensuring that foundations are cast in uniform strata across the footprint.

All foundation excavations should be inspected by a suitably qualified engineer prior to casting to ensure the appropriate depth, founding medium and strength characteristics have been achieved.

5.3.2 Volume Change Potential

The Site currently has some low-level vegetation including bushes on-Site. It is understood that the proposed development will include deciduous trees within the structure of the canopy.

The Devensian Till was generally found to have a plasticity index of 18-24, and was not found to be highly variable. Based on the modified plasticity index, the Devensian Till Formation is considered to have a low to medium volume change potential.

The volume change potential should be considered in any foundation schedule for structures and services located within the influence zone of trees or bushes (proposed, existing or to be removed) and appropriate precautions and/or founding depths should be designed accordingly. In cohesive soils, it is recommended that foundations should be designed in accordance with NHBC Standard Chapter 4.2 "Building Near Trees".

The liquid limit and plasticity index results / A-Line Plot are presented within the geotechnical results in Appendix C.

5.3.3 Desiccation

As described in BRE Digest 412 "Desiccation in Clay Soils", one method of determination of the likely desiccation status of soils is using an empirical criterion for the onset of desiccation, which can be considered where the soil moisture content is at 40% of the Liquid Limit, and where this is less than 40%, soils may be considered to be in a significantly desiccated condition. Likewise, assessment of Liquidity Index; where a value of zero or greater indicates the soil's water content to be at or above the plastic limit, while negative values indicate the soil to be drier than the plastic limit can be used to assess whether the soils are artificially deficient in natural moisture content.

The Devensian Till is not anticipated to be in a significantly desiccated condition as all moisture contents are greater than 40% of their respective Liquid Limit.

5.3.4 Floor Slabs

Based upon the current ground model, ground bearing floor slabs are not likely to be feasible for the kiosk due to the presence of significant thickness of near surface Made Ground. It is therefore recommended that, unless ground improvement is undertaken to improve the shallow soils, a suspended floor slab is adopted transferring loads from the structure to the foundations.

5.3.5 Piling

It is possible that piling of structures will be required in the event that Made Ground or soft Devensian Till is identified to depths where deep trench fill for foundations becomes unsuitable or uneconomic. In addition if lateral/wind loadings on the canopy are found to exceed the sliding/overturning capacity for shallow foundations, recourse to a piled foundation may be required.

Should piled foundations be required, further ground investigation including deeper boreholes will need to be undertaken to inform their design. Recommendations for concrete design are outlined in Section 5.7.

5.4 Roads and Pavements

As final road levels are currently unknown, no CBR tests were undertaken as part of this investigation. It is recommended that a conservative CBR value of 1% should be adopted for Made Ground for preliminary pavement design for external areas, based on the recorded plasticity indices. This may be improved by engineering and proof rolling the formation level however, it is recommended that plate CBR tests are undertaken at formation level after demolition, prior to finalising pavement design. Proposed roads should not be founded on unimproved Made Ground soils or areas of Till which have been identified as very soft.

5.5 Excavations & Obstructions

It is expected that conventional mechanical excavators will readily remove the Made Ground likely to be encountered in shallow excavations, although a breaker will be required to remove any existing concrete hardstanding and below ground concrete slabs.

Concrete slabs are known to be present in the south of the Site, at approximately 0.6 m bgl. It is understood that the underground tanks and associated infrastructure will be removed prior to construction.

All shallow foundation or services excavations at the Site should be considered unstable, therefore, temporary support of all excavations should be considered when excavating on-Site.

This Report has assumed that the underground fuel tanks and associated pipework will be removed prior to construction and that this is the deepest excavation to be required on-Site.

5.6 Groundwater

Groundwater was encountered between 0.9 m bgl and 2.98 m bgl during monitoring and is assumed to be perched in the Made Ground on top of the Devensian Till. Groundwater may therefore be encountered in excavations for foundation installation and removal of underground fuel tanks.

Shallow excavations are likely to be quickly inundated where perched water is encountered, as such groundwater control/exclusion measures, such as temporary sheet piling, dewatering or sump and pumping will be required.

Recorded groundwater levels do not indicate artesian or sub artesian conditions.

5.7 Chemical Attack on Buried Concrete

BRE: Special Digest 1 informed chemical testing of Made Ground and Devensian Till has been undertaken to design of concrete for foundations. Results from the BRE suite were approximately comparable between Made Ground and Devensian Till.

In accordance with the recommendations of BRE Special Digest 1, 'Concrete in Aggressive Ground' 2005, the conditions of the Made Ground soils at the Site would therefore be classified as Design Sulphate Class DS-1 and ACEC Class AC-1 for soils and groundwater, when considering the most appropriate type of concrete to be used at the Site for foundations in order to resist chemical attack from sulphate present in the soils (assuming mobile groundwater in non-pyritic soils).

The conditions of the Devensian Till at the Site would be classified as Sulphate Class DS-1 and ACEC Class AC-1 for soils and groundwater, this should be taken into consideration when choosing the most appropriate type of concrete to be used at the Site in order to resist chemical attack from sulphate present in the soils (assuming mobile groundwater in non-pyritic soils).

5.8 Geotechnical Risk Register

The geohazards listed below have been identified to follow guidance presented in the HE document CD622 'Managing Geotechnical Risk' (2020) which aims to identify and manage the geotechnical risks associated with a scheme throughout its lifespan, from planning to construction to maintenance.

A Geotechnical Risk Register has been compiled to show the degree of risk attached to various ground related aspects of the proposed development. The purpose of the register is to provide an assessment of the risk to the project posed by common ground related problems and identify suitable mitigation measures that control the risk to an acceptable level. The risk register should be developed and refined as the geotechnical design and assessment progresses such that the register will allow the management of the geotechnical risks.

An updated risk register for the scheme is presented in Appendix H and identifies geotechnical hazards/risks associated with the construction phase.

The following geohazards were considered to be substantial ground related risks associated with the proposed development, based on the items discussed above. A substantial risk is defined by Delta-Simons in Appendix G.

- Deep Made Ground: An approximate 2.0 m depth of Made Ground can be expected on-Site, with reworked natural soils reaching 2.4 m bgl. The depth of Made Ground in the vicinity of the tanks is still unknown, due to required easements around remaining infrastructure in this area. Buried obstructions encountered during the investigation have prevented the depth of Made Ground being determined in certain areas;
- Soft ground: The site investigation has found softer areas within the Devensian Till in DS103 and DS105 to depths of approximately 2.0 – 3.0 mbgl;
- The former on-Site buildings and infrastructure have only been demolished to slab level, therefore the underground structures are still present on-Site. This has been confirmed with the Petroleum Licencing Officer, and removal of these structures is already anticipated by the Client;
- Shallow perched water at the boundary between the Made Ground and Glacial Till should be anticipated;
- Consideration should be made to the volume change potential of the near surface soils when placing trees within the canopy structure due to shrink/swell potential of cohesive soils;
- Ground gas is a potential issue which would need consideration when designing the floor slabs of any buildings.

6.0 Generic Quantitative Risk Assessment

6.1 Introduction

The presence of hazardous substances in or on a Site is generally only of concern if an actual or potential unacceptable risk exists. Legislation and guidance on the assessment of contaminated sites, consistent with UK best practice, acknowledges the need for a tiered risk-based approach. This section represents a Generic Quantitative Risk Assessment (GQRA) being a comparison of Site contaminant levels against Generic Assessment Criteria.

6.2 Human Health GQRA

The assessment of risks in relation to human health has been undertaken using Generic Assessment Criteria (GAC) as detailed within the appropriate tables. Risks from soil, groundwater and Non-Aqueous Phase Liquids (NAPL) have been considered. The GAC are predominantly based on long term (chronic) risk to health. However, in the limited circumstances where short-term (acute) risks are more pronounced, these GAC have been utilised to ensure a thorough and conservative initial assessment is undertaken.

Based on the proposed light industrial use, the soil and groundwater chemical data has been compared against a commercial end use GAC for 1% soil organic matter (SOM) content.

6.2.1 Risks from Soil Sources

None of the contaminant concentrations reported in soil exceeded the relevant Generic Assessment Criteria (GAC) for a commercial end use scenario. Therefore, the soil contaminant concentrations are not considered likely to represent a risk to human health where the soils have been sampled.

6.2.2 Soil Analysis Summary

Concentrations of common contaminants were not identified above screening criteria for a commercial end use scenario. Asbestos was not detected in any of the samples screened. The investigation indicates that widespread gross contamination is not present across the Site area. However, it is possible that localised hydrocarbon contamination in the vicinity of the underground fuel tanks / pipework is present. Assessment of these soils was not possible during the course of the current investigation; therefore, it is recommended that further assessment of soils directly beneath the tanks is undertaken following their removal during the site enabling works

6.2.3 Risks from Groundwater Sources

Based on the proposed use of the Site for light industrial/commercial use, the groundwater chemical data has been compared against a commercial end use GAC to assess risks from groundwater sources to indoor air and subsequent vapour inhalation indoors.

None of the site-specific contaminants of concern were recorded at concentrations in excess of their detection limits/respective GAC.

6.2.4 Risks from Non-Aqueous Phase Liquids (NAPL)

Soil and groundwater exposure models used in generating Generic Assessment Criteria do not account for the potential for NAPL to represent a source of risk to human health, principally due to the production of vapours. Whilst it is possible to calculate theoretical soil saturation limits, in reality, due to co-solubility effects, these are not an appropriate indicator of the presence of NAPL. In order to assess the presence of NAPL, for petroleum hydrocarbons, an assessment criterion of 5,000 mg/kg for Total Petroleum Hydrocarbons has been applied based on professional experience.

The following has been identified in relation to NAPL at the Site:

- No observations of NAPL were made within the soils observed during drilling, although an oily sheen was identified at 3.0 mbgl in DS101;
- No concentrations of Total Petroleum Hydrocarbons in excess of 5,000 mg/kg were recorded;

- No NAPL was measured during groundwater monitoring works, although a hydrocarbon odour and oily sheen were noted in the groundwater samples collected from DS102 and DS103.

On this basis, it is unlikely that NAPL is present on Site, although it may exist locally in the immediate vicinity of the USTs.

6.3 Controlled Waters/Water Environment GQRA

The approach adopted to assessing risks to Controlled Waters/Water Environment is based principally on considering the concentrations of contaminants identified within the groundwater samples obtained in comparison to relevant GAC.

Given the 'prevent and limit' approach of the Water Framework Directive (2000/60/EC) and the identified receptors, a range of Water Quality Standards (WQS) have been applied as Generic Assessment Criteria (GAC), these include Water Framework Directive standards and thresholds (WFD), the UK Drinking Water Quality Standards (DWQS) or WHO Guidelines for Drinking Water Quality which have been used as initial conservative GAC to assess whether groundwater contamination requires further assessment or discussion in terms of the risks to controlled waters. Where specific water quality standards are not available, Delta-Simons has adopted surrogate values based on professional judgement (DS GAC).

6.3.1 Groundwater Results

The identified controlled water receptor is the underlying Principal Aquifer, and as such, the results of groundwater analysis have been compared to the GAC for the protection of potable water. It should be noted, however, that there are no recorded potable abstraction boreholes within 1 km of the Site and that the Principal Aquifer is overlain by Devensian Till, which would reduce the migration of mobile contaminants into the underlying aquifer.

Laboratory results above relevant the applied GAC are summarised in the table below.

Contaminant	Max Conc. (µg/l)	GAC (µg/l)	GAC Source	No. Exceed GAC / No. of samples	Location of Exceedances = Concentration (µg/l)
Metals					
Arsenic	19.6	10	DWQS 2016	2/6	DS101, DS103
Polycyclic Aromatic Hydrocarbons					
Benzo[b]fluoranthene	8.8	0.1	DWQS 2016	1/6	DS101
Benzo[k]fluoranthene	2.2	0.1	DWQS 2016	1/6	DS101
Benzo[a]pyrene	6.5	0.01	DWQS 2016	1/6	DS101
Indeno(1,2,3-c,d)pyrene	3.2	0.1	DWQS 2016	1/6	DS101
Benzo[g,h,i]perylene	4	0.1	DWQS 2016	1/6	DS101
Other Contamination					
Sulphate as SO ₄	252,000	250,000	DWQS 2016	1/6	DS104
Notes: DWQS 2016 = The Water Supply (Water Quality) Regulations 2016 [UK Drinking Water Standards]					

6.3.2 Groundwater Results Summary

Concentrations of common contaminants which exceed GACs are not widespread. It is possible that exceedances reflect minor leaching from localised areas of soil contamination which have not been targeted in soil testing. Contaminants identified within groundwater are frequently observed in Made Ground soils, resulting from redevelopment of industrial land.

Concentrations of sulphate as SO₄ are considered in more detail in Section 5.7.

It should be noted that concentrations of petroleum hydrocarbon compounds were not recorded as elevated within groundwater, and so leaks from the underground storage tanks are anticipated to have been limited.

Exceedances recorded are not likely to pose a significant risk to controlled waters on the basis that the Glacial Till deposits are likely to be low-permeability, thereby protecting the underlying Principal Aquifer and limiting lateral migration of on-site groundwater. In addition to this, the Site is not located within a groundwater SPZ and there are no groundwater abstraction points reported within 1 km. It is also considered that the drinking water standards are a conservative assessment for the site setting and the elevated contaminants are not particularly mobile in the water environment; therefore, it is considered that no specific remedial works are required for the Site.

6.4 Built Environment

6.4.1 Potable Water Supply Pipes

The investigation requirements for the selection of potable water pipe material are set out in UKWIR Report 10/WM/03/21. Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites (UKWIR, 2010). This Report has very specific and onerous investigation requirements and as such the detailed investigation of each utility route was not within the scope of this investigation. The relevant water supply company needs to be contacted at an early stage to confirm its requirements for assessment, which may not necessarily be the same as those recommended by UKWIR.

A preliminary review of the results indicates that a relevant linkage may exist associated with organic contaminants and therefore contaminant polyethylene (PE) and/or polyvinyl chloride (PVC) water supply pipes may not be suitable for use on the development subject to discussions with the relevant Local Water Authority. However, this should be reviewed following removal of the tanks, should any impact on the surrounding soils be identified.

6.4.2 Building Materials

Risks to building materials associated with aggressive ground conditions is addressed in Section 5.9.

6.5 Waste Management

In recent years a number of mechanisms have aimed to change the way in which waste materials have traditionally been managed (*i.e.* a move away from less sustainable options such as landfill disposal). These include:

- Legislation and guidance (e.g. the Waste Framework Directive [2008, as amended]; the Waste [England and Wales] Regulations, 2011; the Definition of Waste: Development Industry Code of Practice, Version 2 [DoWCoP; CL:AIRE, 2011]);
- Fiscal drivers (e.g. the landfill tax escalator);
- Corporate responsibility campaigns (e.g. WRAP: Halving waste to landfill & Quality Protocol projects; Ellen Macarthur Foundation).

There is now a greater focus on waste re-use, treatment and recovery as organisations try and move their waste materials up the Waste Hierarchy and move to more circular models of material supply and re-use

.In accordance with current industry best practice, guidance and legislation Delta-Simons would always recommend options including managing materials on site through the DoWCoP, waste treatment and waste recovery be considered ahead of landfill disposal. Landfill disposal should be seen as an option of last resort given that in terms of cost, environment and social outcomes it is less sustainable. However, the availability of alternatives to landfill disposal depends on the timescales of the project, proactive involvement of qualified advisors and the nature and status of the materials being considered.

6.6 Waste Classification

In general, the predominant waste material encountered during the construction phase of development schemes will likely be construction and demolition waste, predominantly waste soils and crushed demolition arisings. These may be found *in situ* in the ground or stockpiled on sites and they may be contaminated which may have implications for their classification and subsequent management.

This investigation was not undertaken to advise on the classification or potential management routes for such waste materials. Classification and management of these types of wastes either on to site, off site or within the development are likely to require further investigation and assessment. The extent of such work will depend on the particular management option that is being considered and could, for example, involve the use of waste acceptance criteria analyses.

7.0 Bulk Ground Gas Risk Assessment

7.1 Ground Gas Conceptual Site Model

7.1.1 Sources

The following potential sources of ground gas have been identified:

- Made Ground (generally found to be 2.0 m thick or less, and of low organic and putrescible material content);
- The former Site use as a Petrol Filling Station is a potential source of volatile contamination.

7.1.2 Pathways

- Potential for gases/vapours to enter current and future buildings through voids in the floor including service entry points and cracks and accumulate in confined spaces;
- Future maintenance/construction workers may come into contact with hazardous ground gases/vapours via entry into below ground confined spaces such as excavations or service entries/inspection points.

7.1.3 Receptors

The principal receptors under consideration are future Site users.

7.2 Duration & Extent of Monitoring

Tables 5.5a and 5.5b within CIRIA C665 detail current recommended monitoring duration and frequency for sites in the UK. Based on the identification of potential sources, the gas generation potential is considered to be very low whilst the sensitivity of the proposed development is low. On this basis, CIRIA C665 recommends between four visits over a minimum period of 1 month.

In accordance with the above guidance, gas monitoring has been carried out on four occasions over one month to assess the ground gas regime.

The locations of the monitoring wells are highlighted on Figure 3 and indicate representative coverage across the whole study area.

Barometric pressures during the gas monitoring period ranged from 1003 mBar to 1037 mBar, of which two visits were completed during a period of falling pressure.

7.3 Ground Gas Risk Assessment

7.3.1 Background

Based on the proposed commercial end use, the following documents have been consulted when assessing the gas regime at the Site:

- CIRIA C665 (2007), Assessing risks posed by hazardous ground gases to buildings;
- British Standards Institute (BSI, 2019): Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings, BS:8485:2015+A1:2019.

The presence of a source of hazardous gas within the ground does not necessarily indicate a risk will be present. Consideration of recorded gas flows together with source concentrations can allow an initial assessment to be made of the potential both for generation and subsequent migration of gas. A Characteristic Situation (CS) is derived from an assessment of the ground gas data and forms the basis of determining mitigation measures.

7.3.2 Gas Screening Value (GSV)

The Gas Screening Value (gas concentration as a fraction x maximum recorded flow) is used to provide an initial assessment of risks to future Site users. The GSVs calculated for the monitoring wells are presented in the following table.

Location	Maximum Steady Methane (%v/v)	Maximum Steady Carbon Dioxide (%v/v)	Maximum Steady Flow Rate (l/hr)	GSV/Classification				Flooded?
				Methane		Carbon Dioxide		
				GSV	Classification	GSV	Classification	
DS101	<0.1	7.7	<0.1	0.000	CS1	0.008	CS1+	N (0 of 4)
DS102	1.7	1.1	<0.1	0.002	CS1+	0.001	CS1	Y (2 of 4)
DS103	16.3	8.1	-0.3	0.016	CS2	0.008	CS1+	N (0 of 4)
DS104	<0.1	1.0	<0.1	0.000	CS1	0.001	CS1	Y (1 of 4)
DS105	<0.1	2.1	<0.1	0.000	CS1	0.002	CS1	N (0 of 4)
DS108a	<0.1	0.6	<0.1	0.000	CS1	0.001	CS1	N (0 of 4)

Elevated methane concentrations were recorded in DS102 and DS103. It is considered possible that these readings can be partially attributed to hydrocarbon interference rather than actual methane concentrations. The rationale is based on the following;

- No significant gas generation sources were identified in the PRA;
- Slight hydrocarbon odours were recorded in Made Ground in both DS102 and DS103;
- The hexane readings in both locations (max 0.153 in DS103) can give an indication to the presence of volatile contamination. VOC readings were also recorded during the monitoring round with the highest recorded methane concentration, although this was not recorded in DS103.

However, given the high readings, this cannot be discounted without further assessment.

- Slightly elevated carbon dioxide concentrations were recorded in two locations DS101 and DS103, on multiple visits; however, this is considered likely to be from microbial respiration and concentrations are typically low for the Site. Flow rates were generally below detection limits.

The preliminary data indicates that the Site can be provisionally classified as CS2 in accordance with BS 8485:2015 Table 2. The GSV for the site-wide worst-case flow rate and ground gas concentration (either CO₂ or CO₄) has also been assessed, which also indicates that the Site may be classified as CS2.

7.4 Ground Gas Risk Mitigation

The ground gas regime at the Site has been classified as CS2 in accordance with the CIRIA guidance and it is recommended that a CS2 situation is assumed for design purposes.

BS:8485 provides a scoring system to determine the appropriate protection measures for a proposed development in accordance with the identified ground gas regime. Table 3 of BS:8485 summarises typical UK building types, which for this development will comprise Type A (private). Table 4 details the points required for the Characteristic Situation, which for CS2 is 3.5. This can be achieved by a combination of the following:

- Structural pipes (Table 5);
- Ventilation (Table 6);
- Gas Membrane (Table 7).

The above should be considered in conjunction with the proposed foundation/floorslab design to achieve the minimum score required within BS:8485.

It is possible that some of the recorded data can be attributed to volatile organic compounds detected, as discussed in section 7.3.2. On this basis, it is recommended that any soils with visual or olfactory evidence of hydrocarbon contamination are removed from Site when the fuel tanks and associated pipework are removed. A further three rounds of gas monitoring can be undertaken following this work, to determine the extent of interference (if any) of volatile organic compounds, if a CS1 is required.

The above assessment relates solely to future Site users. Given the nature of the ground gas regime at the Site, no further works are considered necessary to protect 3rd parties/surrounding occupiers. Entry to excavations/confined spaces should be restricted to personnel with relevant Confined Spaces training and with prior confirmation of atmospheric conditions.

7.5 Radon

The Site is located within an area where radon protective measures are not required.

A detailed radon assessment falls outside of the scope of this Report, and the requirement for radon mitigation measures in the proposed development should be identified separately to the satisfaction of the Local Authority.

7.6 Organic Vapours

No sources of volatile vapours have been identified as part of the ground investigation detailed in this Report. It is possible that hydrocarbon impacted soils are present below the underground storage tanks as discussed in relation to gas monitoring readings, and so this is assumed to remain a source until the soils beneath the fuel tanks can be assessed. Users of the kiosk may be at risk, given the proximity of the underground fuel tanks to the proposed location of the kiosk.

Soils with visual or olfactory evidence of hydrocarbon contamination, which is identified on excavation of the fuel tanks, should be removed.

8.0 Revised Conceptual Site Model

A revised CSM is presented in the table below and has been formulated taking into account all of the available data from the Delta-Simons intrusive investigation, suitable for a commercial Site with minor soft landscaping.

Revised Conceptual Site Model				
Source	Pathways	Receptors	Pollutant Linkage?	Discussion and Mitigation
Potential for localised hydrocarbon contamination in vicinity of former USTs and associated pipework	Direct contact, ingestion and/or inhalation of soil/dust/vapour	Human health – site users	Possible	Whilst the investigation has not indicated the presence of widespread hydrocarbon contamination beneath the Site; there is still potential for localised contamination in the vicinity of the former USTs. It is recommended that a watching brief is undertaken by an Environmental Consultant during the removal of the USTs as part of the site enabling works and if any contamination is encountered a hotspot protocol implemented. Details of the hotspot protocol and verification work following removal of the USTs should be captured in a Remediation Strategy for the Site. The USTs should be decommissioned and removed by an experienced contractor.
		Human health – construction workers	Possible	Short term risk would be mitigated by use of PPE and provision of suitable welfare facilities.
Organic contamination in soils and groundwater	Direct infiltration in water supply pipes	Drinking water supply pipes	Possible	Hydrocarbons, especially aromatics, are known to permeate plastic pipes. Assessment of the risk to water pipes for any new supply will have to be undertaken as a requirement of the statutory undertakers, who should be provided with a copy of this Assessment and provide recommendations for upgrading of potable water supply pipes. It is considered that the use of upgraded water supply pipes should be anticipated given the potential for organic contamination at the Site.
Ground gas	Accumulation within buildings	Future kiosk users, buildings	Possible	GSVs calculated for Methane and Carbon Dioxide give a classification of CS2, and a requirement for gas protection measures. However, the Site does not have a discernible ground gas source and so further works can be undertaken following removal of fuel tanks and hydrocarbon impacted soils. This could help to determine the extent to which the readings have volatile interference, and whether the classification can be revisited.

9.0 Conclusions & Recommendations

9.1 Ground Model Summary

Ground conditions underlying the Site were found to comprise Made Ground overlying Devensian Till in all locations. The base of the Devensian Till was not identified during the investigation.

Groundwater was recorded during the Ground Investigation between 0.9 m bgl and 2.98 m bgl. It is assumed based on this data that there is one continuous water body on-Site, and that the Made Ground and superficial deposits are in hydraulic continuity.

9.2 Geotechnical Summary

A preliminary assessment of the geotechnical properties of the soils beneath Site has been included in this investigation. The following recommendations have been made to inform design of structures;

- The proposed development is assumed to require strip/pad foundations. Where deep Made Ground, reworked or very soft superficial deposits are encountered, particularly in the vicinity of where the underground fuel tanks will be removed from, allowance should be made for over excavation to stiff Devensian till and backfill fill. A preliminary bearing capacity of 125kPa has been given, although no information on loadings has been provided by the Designer, and this should be reassessed at detailed design stage;
- A preliminary CBR value of 1% has been recommended for the Made Ground in its current condition. This should be confirmed with plate CBR testing at formation level;
- Ground conditions have been classified as concrete design class DS-1 and ACEC class AC-1 for buried concrete ;
- Consideration of volume change should be made in foundation design when placing trees around the canopy as part of the proposed development, as this may have an effect on the cohesive soils surrounding the foundations. In general, the Devensian Till soils were found to be of low to medium volume change potential and are not thought to be desiccated;
- Provisions should be made for ground water control/exclusion and shoring of excavations;
- It is likely that some earthworks will be required to infill the excavation left by removing the underground fuel tank. Preliminary classifications of the Made Ground and Devensian Till for the purposes of placement and compaction have been given, although it is not considered likely that significant material will be generated on-Site;and
- Roads and buildings should not be founded on highly variable Made Ground soils.

9.3 Contamination Summary

The investigation has been carried out in order to provide information on the quality of the soil and groundwater beneath the Site in the context of land contamination and provide information on the ground gas regime beneath the Site for a commercial end use. The assessment is being completed prior to the proposed redevelopment of the Site.

Data gaps and uncertainties remain as outlined within Section 1.7.

9.3.1 Human Health

Minor impact on soils was observed on-Site, including faint odours and oily sheen on arisings recovered from DS101, and on groundwater samples recovered from DS102 and DS103.

Elevated concentrations of common contaminants were not recorded within the soils found on Site when compared to relevant screening criteria. Asbestos was not observed on-Site, nor was it recorded in soil samples collected from across the Site.

It is possible that impacted soils are present on-Site below the underground fuel tank. It was not possible to assess these soils during the outlined investigation. Further assessment of the soils in the vicinity of the fuel tanks are required when they are removed.

9.3.2 Controlled Waters

No widespread contamination of groundwater was encountered during this investigation, although localised exceedances of GACs were noted for concentrations of Sulphate, Arsenic and PAH compounds. Due to the presence of Devensian Till, it is considered that migration of contaminants to the underlying bedrock (Principal Aquifer) will be limited. Therefore, it is considered that no further action is required.

9.3.3 Ground Gas

Preliminary ground gas monitoring indicates the Site can be provisionally classified as CS2. If a CS1 is required, further works can be undertaken to determine if volatile organic compounds from hydrocarbon impacted soil may have been recorded. Until further monitoring can be undertaken following removal of the fuel tanks, pipework and any impacted soils, gas protection measures will be recommended.

9.3.4 Volatile Vapours

No potential sources of volatile contaminants have been identified in the extent of the investigation undertaken thus far. It is possible that some soils impacted with volatile contaminants are present below the underground storage tank which remains on-Site, and the possibility of volatile contaminants being detected has been raised in the consideration of ground gas risk. Further assessment of this area is recommended following removal of the tanks, due to the proposed kiosk being in close proximity to the location of the underground fuel tanks.

9.3.5 Built Environment

The ground investigation was not designed to assess ground conditions in full accordance with the UKWIR guidance for water supply pipes. However, based on the recorded soil concentrations of TPH-CWG, VOCs and BTEX, the use of barrier pipework is likely to be required in the event that new water supply pipes are installed. This should be confirmed following removal of the underground storage tanks to ensure that this remains an accurate assessment.

9.4 Recommendations

Based on the findings of this Report, the following recommendations are made:

- Should recourse to a pile foundation solution be required, further ground investigation comprising deeper boreholes will need to be undertaken. Further plate bearing CBR tests should be undertaken at proposed formation level (when this is known) to inform the design of roads and pavements;
- A Remediation Strategy should be prepared to detail verification works following the removal of the USTs and a hotspot protocol. Further gas monitoring may be undertaken if significantly hydrocarbon impacted soil is identified and removed;
- A provisional classification of CS2, and recommendations for gas protection measures to be installed in the kiosk building, have been made;
- Waste classification has not been undertaken as part of the scope of works, should it be proposed to dispose of materials from the Site then specific additional investigations may be needed to classify the materials in accordance with current regulatory requirements;
- Groundworkers and sub-surface maintenance workers should be made aware of the possibility of encountering contaminated soils through toolbox talks and in particular the potential presence of asbestos and an appropriate protocol and risk assessments to mitigate exposure of the workforce and general public should be in place. Good standards of personal hygiene should be observed, and appropriate levels of PPE / RPE utilised where necessary;

- Unidentified localised areas of contamination may exist at the Site and an appropriate 'hotspot' protocol should be in place for groundworkers to act upon should such contamination be identified during the construction process;
- Suitable dust suppression techniques and prevention of nuisance/environmental impacts will need to be implemented by the groundworkers during construction works; and
- Confirmation should be sought from the Local Water Authority as to whether they will require upgraded pipework to be installed for new service installations, which is considered to be likely based on the information currently available;
- The re-use of materials on-site may be possible if required and where the material is chemically and geotechnically suitable for its proposed end location e.g. to fill in the void left by removal of the underground fuel tanks. Material re-use would need to be undertaken under a Materials Management Plan. Any imported material, including topsoil would also be chemically and geotechnical suitable for its proposed end-use.

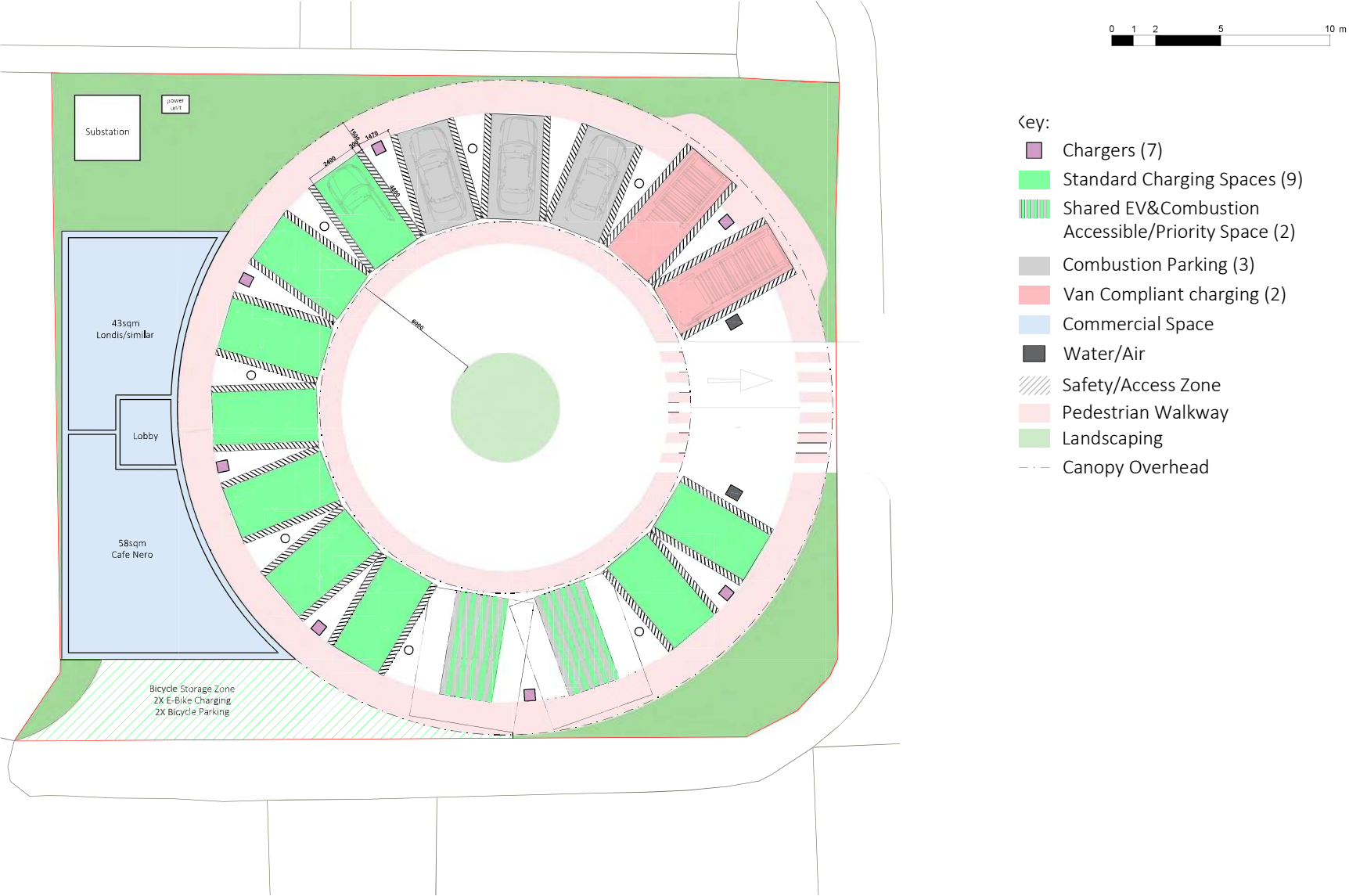
Drawings

Drawing 1 - Proposed Development Plan

WE MAKE Be.EV Reliance Street

2.0 SITE PLAN

Proposed Site Layout



Drawing 2 - Pipe and Tank Layout

PIPEWORK INSTALLATION.

1. All pipework is to be medium weight galvanized mild steel pipe to comply with BS 1387 Table 2 with screwed and socketed joints. Fittings to comply with BS 143 and BS 21:1973.

2. All suction and vent lines hadded and surrounded in 150mm sulphate resisting concrete by the general contractor.

3. Pipe sizes to be:
Suctions: 38mm (under 21m run and static lift below 3600mm)
or: 50mm (over 21m)
Vents: 50mm
Fills: 100mm

4. The pipefitter is to note that the layout is diagrammatic only and is to ensure that the most economic layout is to be made. The pipefitter is to ensure that the correct side of the pumps are fed from the correct tanks.

5. All storage tanks are to be manufactured to BS 2594:1975, and are to be installed strictly in accordance with BS:1974 and to the local petroleum officers approval. All tanks including derv are to be lowered onto a 150mm thick rc. base and surrounded in min. 150 sulphate resisting concrete all to the approval of the local petroleum officer.

6. All tanks are to have new 600 x 600 Fibrelite FL1 covers and frames, colour:red, complete with Fibresec mild steel safety platforms size: 600 x 600 suspended on 4 no. m.s. galv. hangers and fitted 300mm below forecourt level. Where necessary Fibrelite FL3, 750 x 600 covers are to be fitted to offset fill m.h.s. (colour:red).

7. Size of new tanks are to be confirmed by tank manufacturer prior to commencement of the works.

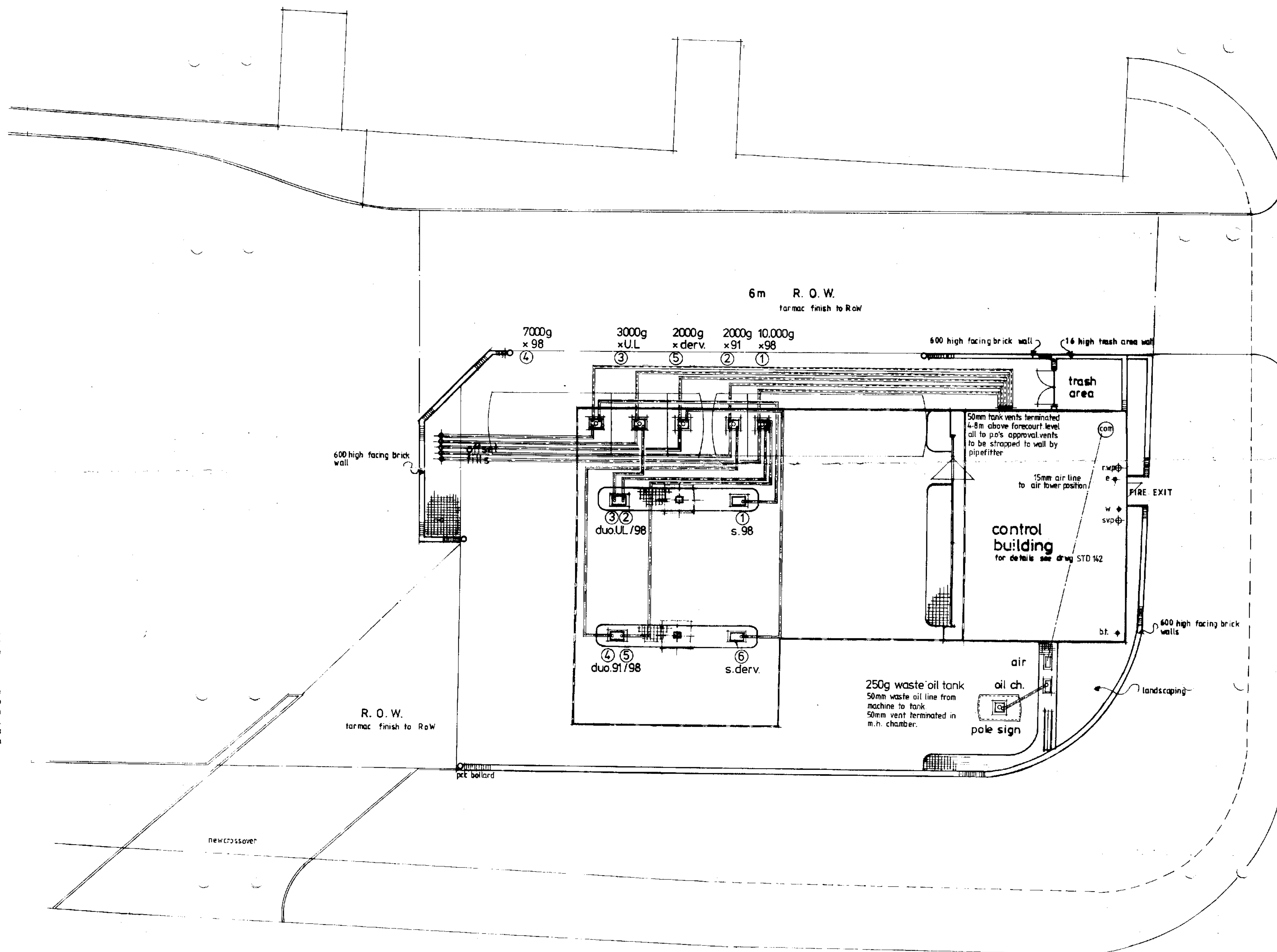
8. Pumps and self service equipment are to be supplied by the client and will be Tokheim Series 362 complete with 802 B/G control unit etc.

9. All tanks are to be tested by the pipefitters when positioned and again prior to pipefitting. All to the approval of the local petroleum officer.

10. Where existing tanks are to be made safe they are to be dealt with strictly in accordance with the local petroleum officers requirements and the Health and Safety regulations.

KEY TO LINES.

- Derv line.
- 99 or 98 Octane.
- 91 Octane line.
- Unleaded line.
- Tank vent line.
- Offsetfill line.
- Waste oil line.
- Air line



DO NOT SCALE

AMENDMENTS

NO	DATE	AMENDMENT	BY

NOTES

PROJECT
Proposed Development
Oldham Road
Manchester

TITLE
pipework + tank layout

SCALE 1:100

DATE April 88

DRAWN M.C.

CLIENT

JOB NO.
1282

DWG. NO.
9

CONQUEST DESIGNS LTD
CONQUEST HOUSE, ARTERIAL ROAD,
LANCASHIRE, MANCHESTER M20 2BQ
TELEPHONE (0756) 640000

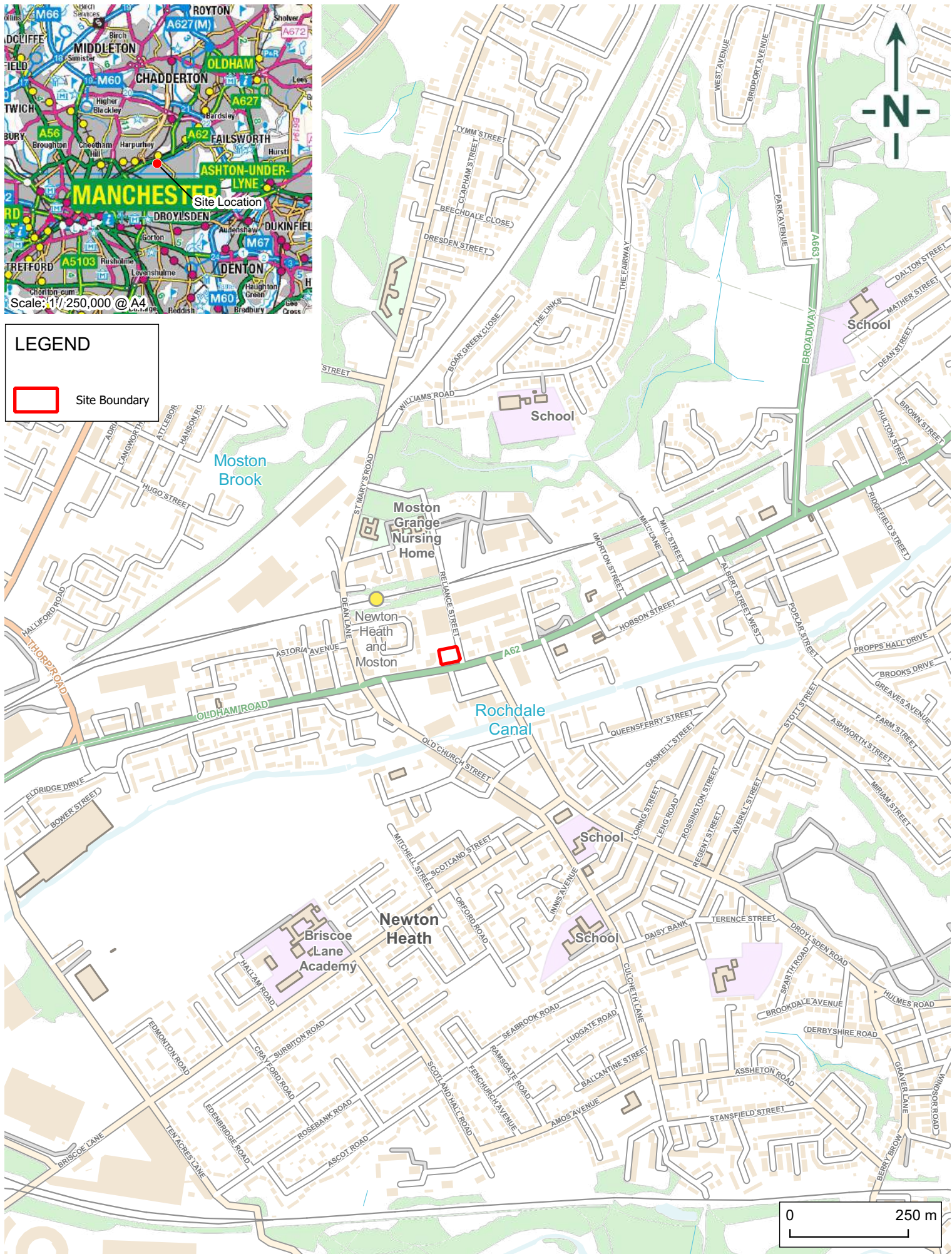
Figures

Figure 1 - Site Location Plan



LEGEND

 Site Boundary



Scale: 1:10,000 @ A4

Service Layer Credits: Contains OS data @ Crown Copyright and Database Right 2019

Figure 2 - Exploratory Hole Location Plan



Bing

LEGEND

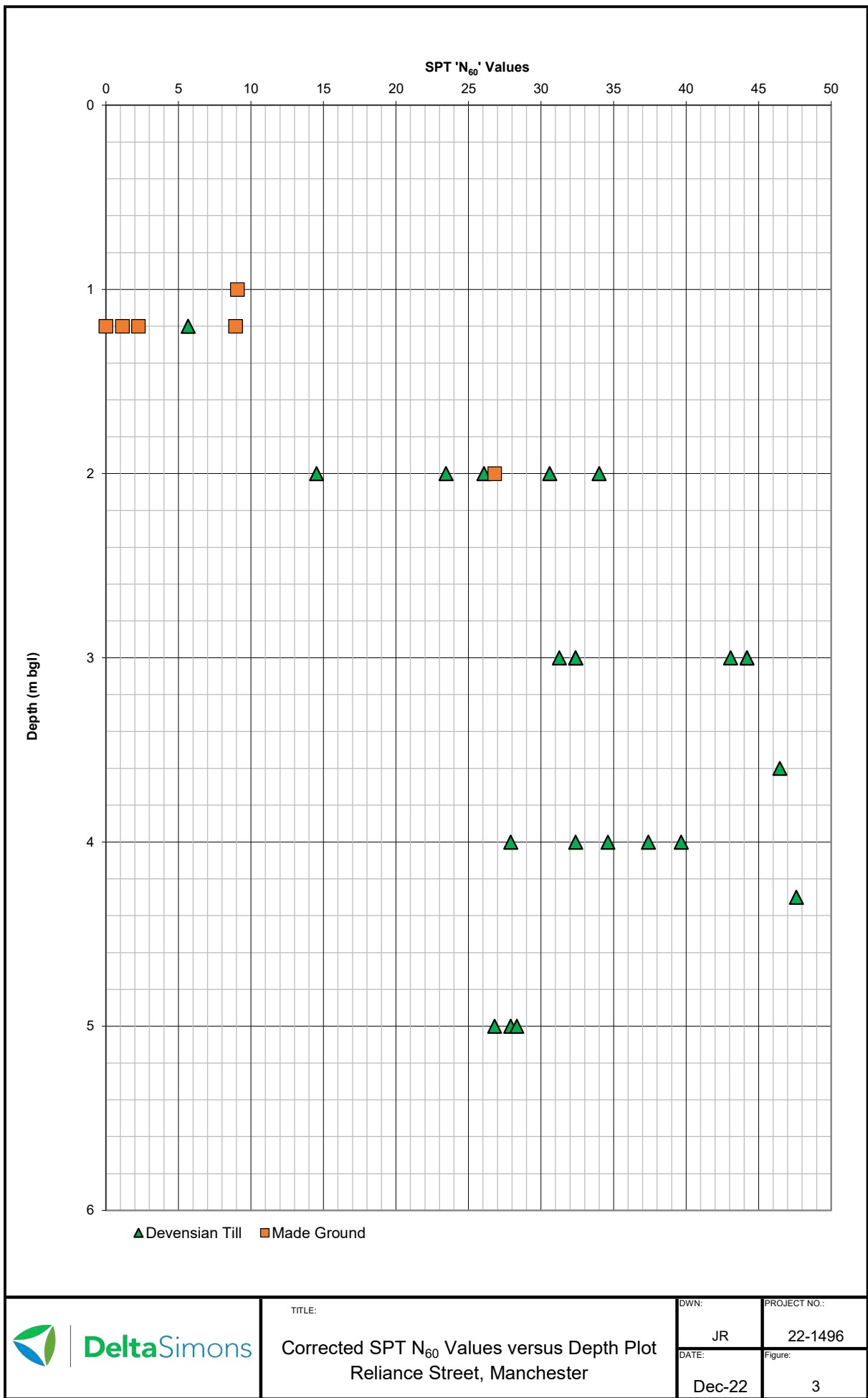
Site Boundary



Dynamic Sampler Locations
(Mw) = Monitoring Well



Figure 3- SPT vs Depth Plot



Appendices

Appendix A - Limitations

Limitations

This Report was prepared by Delta-Simons Ltd (Delta-Simons) for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. Delta-Simons does not intend, without its written consent through a formal letter of reliance or warranty, for this Report to be disseminated to any party other than the named Client or to be used or relied upon by any party other than the named Client. Use of the Report by any other party is unauthorised and such use is at the sole risk of the user. Any party using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by Delta-Simons. Unless explicitly agreed otherwise, in writing, this Report has been prepared under Delta-Simons' Standard Terms and Conditions as included within our proposal to the Client.

The recommendations contained within this Report represent Delta-Simons professional opinions, based upon the information detailed within the Report, exercising the reasonable skill and care to be expected of a professional consultant holding itself out as having the competence, experience and resources necessary for the purpose of carrying out similar work in scope and character to the services performed. The Report needs to be considered in the light of the proposal and associated limitations of scope. The Report needs to be read and considered in full and isolated sections cannot be used without full reference to other elements of the Report and any previous works referenced within the Report.

Where Delta-Simons has obtained, reviewed and evaluated information in preparing this Report from the Client and others and Delta-Simons conclusions, opinions and recommendations has been reasonably determined using this information, Delta-Simons does not warrant the accuracy of the third-party information provided to it and cannot be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

Site surveys document the conditions encountered at the time of survey only and conditions may change due to natural processes or human intervention. As such, surveys represent an assessment at a specific point in time and Delta-Simons cannot be responsible for adverse conditions which arise or become apparent after the time of the survey or for conditions which sit outside the scope for which the survey or Report was commissioned.

Where intrusive investigations have been completed, information, comments and opinions given in this Report are based on the ground conditions encountered during the site work period and on the results of laboratory and field tests performed during the investigation. Ground conditions are inherently variable such that no investigation can be exhaustive to the extent that all adverse conditions are revealed. Conditions may therefore be present beneath the site that were not apparent in the data reviewed or obtained as part of this assessment. It should be noted that groundwater levels vary due to seasonal and other effects and may at times differ to those measured during the investigation. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions. Where risk assessment is undertaken, this is based upon the standards, guidance and common practice at the time of the assessment and Delta-Simons cannot be responsible for conditions which become apparent following changes in guidance or practice or advancements in scientific knowledge which change the position in relation to assessment of risk.

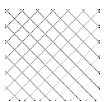
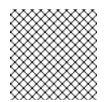
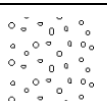
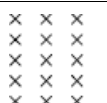
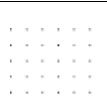
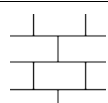
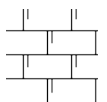
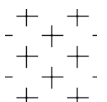
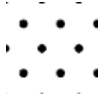
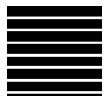
No aspect of this Report constitutes a design. Where this information is used in design, the designer should verify the information has been used appropriately.

Where budgets are prepared and presented within the Report, these are for information only to indicate the likely magnitude of a cost and do not represent an invitation to treat for the works. All budgets and programmes presented should be reviewed and verified by appropriately qualified and experienced independent Project Managers and Cost Consultants.

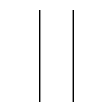
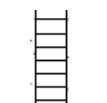
Appendix B - Borehole Logs, SPT Calibrations Certificate

KEY TO BOREHOLE AND TRIAL PIT LOGS

MATERIAL LEGENDS

	Topsoil		Made Ground		Bituminous Material
	Concrete		Clay		Silt
	Sand		Gravel		Peat
	Cobbles		Boulders		Mudstone
	Siltstone		Sandstone		Limestone
	Chalk		Coal		Breccia
	Conglomerate		Igneous		Metamorphic
	Pyroclastic (volcanic ash)		Gypsum		Shale
	Ironstone		Bedrock (Unidentified)		Void

INSTALLATION/BACKFILL LEGENDS

	Sand		Gravel		Bentonite/Grout
	Arisings		Concrete		Plain Pipe
	Slotted Pipe				

Legend symbols in general accordance with BS 5930:2015+A1:2020 and standard industry practice.

SAMPLE TYPES

ACM	Asbestos Containing Material Sample
B	Bulk Disturbed Sample
BLK	Block Sample
C	Core Sample
CBR	Undisturbed Sample for California Bearing Ratio Test - 154mm diameter
D	Disturbed Sample - Tub
ES	Soil Sample for Environmental Testing
EW	Water Sample for Environmental Testing
G	Gas Sample
U	Undisturbed Driven Tube Sample - 70/102mm diameter, 450mm long
W	Water Sample

TEST TYPES

CPT	Cone Penetrometer Test (kN/m ²)
FID	Flame Ionisation Detector Test (ppm)
HV	In-Situ Hand Shear Vane Test (kN/m ²)
PID	Photoionisation Detector Test (ppm)
SPT (S)	Standard Penetration Test - Split Spoon Sampler
SPT (C)	Standard Penetration Test - Solid 60 Degree Cone

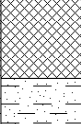
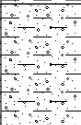
CORE DETAILS

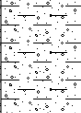
If	Fracture Spacing (mm) - Minimum, Average, Maximum
NI	Non-Intact where >25 fracture spacings per metre
TCR	Total Core Recovery (%)
SCR	Solid Core Recovery (%)
RQD	Rock Quality Designation (%)
AF	Air Flush Return (%)
WF	Water Flush Return (%)
NIDD	Non-Intact - Drilling Disturbed
AZCL	Assessed Zone of Core Loss

WATER COLUMN DETAILS

	Water Strike
	Water Level

 DeltaSimons Protecting people and planet Head Office 3 Henley Way, Doddington Road Lincoln, LN6 3QR Tel: +44 (0) 1522 882555 Email: info@deltasimons.com					Project No: 22-1496.04		Hole ID: DS101		Page: 1 of 1			
					Project: Reliance Street							
Dynamic Sampler Log					Date: 21/11/2022		Client: Be.EV					
Description of Strata	Legend	Strata Depth (m bgl)	Strata Thickness (m)	Reduced Level (mAOD)	Casing Diameter (mm)	Water	Sample Details		Test Details		Backfill	
							Depth (m)	Type & Ref	Depth (m)	Results		
MADE GROUND: Concrete.		0.20	(0.20)	87.52								
MADE GROUND: Light brown gravelly fine to coarse SAND with a faint hydrocarbon odour and a medium cobble content of sandstone and brick. Gravel is angular to subrounded fine to coarse of concrete, brick, slate and sandstone.		0.35	(0.15)	87.37			0.40 - 0.70 0.50 - 0.60	B1 ES1	0.50	PID=0.0ppmv		
MADE GROUND: Dark brown with black staining very gravelly very clayey fine to coarse SAND with a slight hydrocarbon odour, medium cobble content of brick, fragments of glass, occasional pockets of dark grey black stained clay. Gravel is angular to subrounded fine to coarse of brick and concrete.			(1.35)				1.00 - 1.10	ES2	1.00	PID=0.0ppmv		
From 1.0 m bgl: Becomes slightly clayey. No recovery.									1.20	SPT(S) N=1 (0,0/1,0,0,0)		
From 1.3 m bgl: Becomes clayey.		1.70		86.02								
Firm brown slightly gravelly sandy CLAY. Gravel is subangular to rounded fine to medium of sandstone and mudstone. Sand is fine to medium. (DEVENSIAN TILL)							1.80 - 2.00 2.00 - 4.00	D2 B3	2.00	SPT(S) N=27 (3,3/5,7,6,9)		
No recovery.												
At 1.2 m bgl: Reinforcement bar encountered in the NW end of the hand pit.												
							2.80 - 3.00	D4				
From 3.0 m bgl: Arisings have a slight oily sheen. No recovery.			(2.60)			3.00			3.00	SPT(S) N=38 (7,7/8,9,8,13)		
							3.60 - 3.80	D5				
									4.00	SPT(S) N=33 (5,6/7,7,8,11)		
At 4.2 m bgl: Possible obstruction present. Borehole complete at 4.30 m bgl.		4.30		83.42					4.30	SPT(S) N=42 (8,7/9,10,11,12)		
Remarks: 1. Logged in general accordance with BS 5930:2015+A1:2020. 2. Area spot cleared for services by a specialist contractor prior to excavation. 3. Consistency is based on finger test as defined by BS EN ISO 14688-1:2002. 4. SPT Energy Ratio: 68%.					Water Strike			Water Level		Borehole Diameter		
					Date	Depth (m)	Remarks	Duration (min)	Depth	Depth Base	Diameter	
					21/11/2022	3.00						
Coordinates: E388057.22 N400739.77		Elevation (mAOD): 87.72		Drilled By: PM Sampling		Plant Used: Archway Dart		Logged: SB	Checked: JM	Approved: SWS	Scale: 1:32	

 DeltaSimons Protecting people and planet Head Office 3 Henley Way, Doddington Road Lincoln, LN6 3QR Tel: +44 (0) 1522 882555 Email: info@deltasimons.com					Project No: 22-1496.04		Hole ID: DS102		Page: 1 of 1			
					Project: Reliance Street							
Dynamic Sampler Log					Date: 22/11/2022		Client: Be.EV					
Description of Strata	Legend	Strata Depth (m bgl)	Strata Thickness (m)	Reduced Level (mAOD)	Casing Diameter (mm)	Water	Sample Details		Test Details		Backfill	
							Depth (m)	Type & Ref	Depth (m)	Results		
MADE GROUND: Concrete.			(0.50)									
		0.50		87.22								
MADE GROUND: Dark brown and red sandy gravelly COBBLES of brick with a slight odour. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick, concrete, sandstone and slate.		0.80	(0.30)	86.92			0.60 - 0.80	ES1	0.60	PID=0.0ppmv		
MADE GROUND: Dark grey very sandy CLAY with a slight odour, pieces of ceramic and rare glass fragments. Sand is fine to coarse. Gravel is angular to subrounded fine to medium of brick, sandstone and slate.			(0.50)				0.80 - 1.30 0.90 - 1.10	B1 ES2	0.90	PID=0.0ppmv		
		1.30		86.42					1.20	SPT(S) N=8 (0,0/1,2,2,3)		
Soft grey with light brown mottling sandy CLAY. Sand is fine to medium. (DEVENSIAN TILL)		1.50	(0.20)	86.22			1.50 - 5.00	B2				
Firm brown with grey mottling slightly gravelly slightly sandy CLAY with occasional plant matter. Sand is fine to coarse. Gravel is subangular to rounded fine to medium of natural lithologies. (DEVENSIAN TILL)							1.80 - 2.00	D3	2.00	SPT(S) N=21 (3,4/4,5,5,7)		
From 2.2 m bgl: No plant matter present.												
From 2.4 m bgl: Clay becomes stiff.												
							2.80 - 3.00	D4	3.00	SPT(S) N=28 (3,4/6,6,7,9)		
			(3.50)						4.00	SPT(S) N=25 (3,5/5,5,6,9)		
							4.70 - 4.90	D5				
									5.00	SPT(S) N=25 (3,5/5,6,6,8)		
Borehole complete at 5.00 m bgl.		5.00		82.72								
Remarks: 1. Logged in general accordance with BS 5930:2015+A1:2020. 2. Area spot cleared for services by a specialist contractor prior to excavation. 3. Consistency is based on finger test as defined by BS EN ISO 14688-1:2002. 4. SPT energy ratio: 67%.					Water Strike			Water Level		Borehole Diameter		
					Date	Depth (m)	Remarks	Duration (min)	Depth	Depth Base	Diameter	
Coordinates: E388068.02 N400742.60		Elevation (mAOD): 87.72		Drilled By: PM Sampling		Plant Used: Archway Dart		Logged: SB	Checked: JM	Approved: SWS	Scale: 1:32	

 DeltaSimons Protecting people and planet Head Office 3 Henley Way, Doddington Road Lincoln, LN6 3QR Tel: +44 (0) 1522 882555 Email: info@deltasimons.com					Project No: 22-1496.04		Hole ID: DS103		Page: 1 of 1				
					Project: Reliance Street								
Dynamic Sampler Log					Date: 22/11/2022		Client: Be.EV						
Description of Strata	Legend	Strata Depth (m bgl)	Strata Thickness (m)	Reduced Level (mAOD)	Casing Diameter (mm)	Water	Sample Details		Test Details		Backfill		
							Depth (m)	Type & Ref	Depth (m)	Results			
MADE GROUND: Concrete.			(0.50)			1.20							
		0.50	87.44	0.50 - 1.20			B1	0.60	PID=0.0ppmv				
MADE GROUND: Dark brown and black gravelly very sandy CLAY with odour and pieces of ceramic. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick, concrete and slate.				0.60 - 0.70			ES1						
From 1.0 m bgl: Becomes clayey.				1.00 - 1.20			ES2	1.00	PID=0.0ppmv				
No recovery.				1.20				1.20	SPT(S) N=0 (0,0/0,0,0,0)				
		1.50		86.44			1.50 - 1.70	ES3	1.50	PID=0.0ppmv			
Very soft grey slightly gravelly sandy CLAY with occasional plant matter. Gravel is subangular to rounded fine of natural lithologies. (DEVENSIAN TILL)			(0.50)				1.80 - 2.00	D2					
		2.00	85.94	2.00 - 5.00	B3	2.00	SPT(S) N=13 (1,2/3,2,3,5)						
Soft, becoming stiff brown with grey mottling slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to medium of natural lithologies. (DEVENSIAN TILL)													
From 2.4 m bgl: Becomes stiff.													
								2.80 - 3.00	D4		3.00	SPT(S) N=29 (5,6/6,6,7,10)	
			(3.00)							4.00	SPT(S) N=29 (4,5/6,7,7,9)		
							4.80 - 5.00	D5		5.00	SPT(S) N=24 (4,4/6,5,5,8)		
Borehole complete at 5.00 m bgl.		5.00		82.94									
Remarks: 1. Logged in general accordance with BS 5930:2015+A1:2020. 2. Area spot cleared for services by a specialist contractor prior to excavation. 3. Consistency is based on finger test as defined by BS EN ISO 14688-1:2002. 4. SPT energy ratio: 67%.					Water Strike			Water Level		Borehole Diameter			
					Date	Depth (m)	Remarks	Duration (min)	Depth	Depth Base	Diameter		
					22/11/2022	1.20							
Coordinates: E388077.89 N400745.79		Elevation (mAOD): 87.94		Drilled By: PM Sampling		Plant Used: Archway Dart		Logged: SB	Checked: JM	Approved: SWS	Scale: 1:32		

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					Project: Reliance Street							
Dynamic Sampler Log					Date: 21/11/2022		Client: Be.EV					
Description of Strata	Legend	Strata Depth (m bgl)	Strata Thickness (m)	Reduced Level (mAOD)	Casing Diameter (mm)	Water	Sample Details		Test Details		Backfill	
							Depth (m)	Type & Ref	Depth (m)	Results		
MADE GROUND: Concrete.		0.30	(0.30)	87.17			0.40 - 0.50	ES1	0.40	PID=0.0ppmv		
MADE GROUND: Light brown sandy angular to subangular fine to coarse GRAVEL of concrete and sandstone, occasional brick and a medium cobble content of concrete and sandstone.		0.60	(0.30)	86.87								
MADE GROUND: Brown and red sandy gravelly COBBLES of brick. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick.		0.80	(0.20)	86.67								
MADE GROUND: Dark brown very clayey very gravelly fine to coarse SAND with occasional pockets of orange clay. Gravel is angular to rounded fine to coarse of brick and slate.		(1.20)										
No recovery.												
Soft dark grey and orange slightly gravelly sandy CLAY. Sand is fine to coarse. (DEVENSIAN TILL)	2.00		85.47		2.00 - 3.60 2.10 - 2.30	B2 D3	2.00	SPT(S) N=30 (3,4/6,7,6,11)				
	2.50	(0.50)	84.97									
Firm orangish brown with grey mottling slightly gravelly sandy CLAY. (DEVENSIAN TILL)	(1.10)											
				3.60		83.87	2.80 - 3.00	D4	3.00	SPT(S) N=39 (6,8/8,10,10,11)		
Borehole complete at 3.60 m bgl.												
Remarks: 1. Logged in general accordance with BS 5930:2015+A1:2020. 2. Area spot cleared for services by a specialist contractor prior to excavation. 3. Consistency is based on finger test as defined by BS EN ISO 14688-1:2002. 4. Location terminated due to refusal of rig on hard to dig ground. 5. SPT energy ratio: 68%.					Water Strike			Water Level		Borehole Diameter		
					Date	Depth (m)	Remarks	Duration (min)	Depth	Depth Base	Diameter	
					21/11/2022	2.00						
Coordinates: E388056.02 N400723.64		Elevation (mAOD): 87.47		Drilled By: PM Sampling		Plant Used: Archway Dart		Logged: SB	Checked: JM	Approved: SWS	Scale: 1:32	

 DeltaSimons Protecting people and planet					Head Office 3 Henley Way, Doddington Road Lincoln, LN6 3QR Tel: +44 (0) 1522 882555 Email: info@deltasimons.com			Project No: 22-1496.04		Hole ID: DS105		Page: 1 of 1				
					Project: Reliance Street											
Dynamic Sampler Log					Date: 21/11/2022 - 22/11/2022			Client: Be.EV								
Description of Strata	Legend	Strata Depth (m bgl)	Strata Thickness (m)	Reduced Level (mAOD)	Casing Diameter (mm)	Water	Sample Details		Test Details		Backfill					
							Depth (m)	Type & Ref	Depth (m)	Results						
MADE GROUND: Dark brown gravelly fine to coarse SAND with frequent rootlets. Gravel is angular to subangular fine to medium of brick and sandstone.		0.10	(0.10)	87.65			0.20 - 0.60	B1	0.40	PID=0.0ppmv						
MADE GROUND: Light brown gravelly clayey fine to coarse SAND with a medium cobble content of brick. Gravel is angular to rounded fine to coarse of brick, concrete and slate.		0.65	(0.55)	87.10			0.40 - 0.50	ES1								
MADE GROUND: Brown and red sandy gravelly COBBLES of brick. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick.		0.90	(0.25)	86.85			1.20 - 1.50	ES2	1.20 1.20	SPT(S) N=5 (0,0/0,1,1,3) PID=0.0ppmv						
MADE GROUND: Concrete.		1.00	(0.10)	86.75												
Soft light brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium of brick. (DEVENSIA TILL)		1.70	(0.70)	86.05									1.70 - 1.80	D2		
Soft grey with brown mottling sandy CLAY. Sand is fine to coarse. (DEVENSIA TILL)		2.10	(0.40)	85.65					2.10 - 5.00	B3			2.00	SPT(S) N=23 (3,4/4,6,6,7)		
Firm to stiff reddish brown with grey mottling sandy gravelly CLAY with occasional plant matter. Sand is fine to coarse. Gravel is angular to rounded fine to medium of natural lithologies including coal. (DEVENSIA TILL)		(2.90)							2.70 - 2.90	D4			3.00	SPT(S) N=39 (7,8/7,9,11,12)		
Between 4.0 and 4.5 m bgl: Very sandy.									3.80 - 4.00	D5			4.00	SPT(S) N=35 (10,10/9,9,8,9)		
									4.00 - 4.40	D6						
									Borehole complete at 5.00 m bgl.	5.00						
Remarks: 1. Logged in general accordance with BS 5930:2015+A1:2020. 2. Area spot cleared for services by a specialist contractor prior to excavation. 3. Consistency is based on finger test as defined by BS EN ISO 14688-1:2002. 4. SPT energy ratio: 68%.					Water Strike			Water Level		Borehole Diameter						
					Date	Depth (m)	Remarks	Duration (min)	Depth	Depth Base	Diameter					
Coordinates: E388077.06 N400721.52		Elevation (mAOD): 87.75		Drilled By: PM Sampling		Plant Used: Archway Dart		Logged: SB	Checked: JM	Approved: SWS	Scale: 1:32					

 DeltaSimons Protecting people and planet Head Office 3 Henley Way, Doddington Road Lincoln, LN6 3QR Tel: +44 (0) 1522 882555 Email: info@deltasimons.com					Project No: 22-1496.04		Hole ID: DS106		Page: 1 of 1			
					Project: Reliance Street							
Dynamic Sampler Log					Date: 21/11/2022		Client: Be.EV					
Description of Strata	Legend	Strata Depth (m bgl)	Strata Thickness (m)	Reduced Level (mAOD)	Casing Diameter (mm)	Water	Sample Details		Test Details		Backfill	
							Depth (m)	Type & Ref	Depth (m)	Results		
MADE GROUND: Grass over dark brown gravelly slightly clayey fine to coarse SAND with a low cobble content of brick. Gravel is angular to subrounded fine to coarse of brick.		0.45	(0.45)	87.38								
Between 0.0 and 0.05 m bgl: Abundant rootlets present.		0.65	(0.20)	87.18								
MADE GROUND: Brown and red sandy gravelly COBBLES of brick. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick. Borehole complete at 0.65 m bgl.												
Remarks: 1. Logged in general accordance with BS 5930:2015+A1:2020. 2. Area spot cleared for services by a specialist contractor prior to excavation. 3. Consistency is based on finger test as defined by BS EN ISO 14688-1:2002. 4. Location terminated on concrete slab identified at 0.65 m bgl.						Water Strike		Water Level		Borehole Diameter		
						Date	Depth (m)	Remarks	Duration (min)	Depth	Depth Base	Diameter
Coordinates: E388087.09 N400725.99		Elevation (mAOD): 87.83		Drilled By: PM Sampling		Plant Used: Archway Dart		Logged: SB	Checked: JM	Approved: SWS	Scale: 1:32	

Coordinates: E388071.68 N400718.77	Elevation (mAOD): 87.62	Drilled By: PM Sampling	Plant Used: Archway Dart	Logged: SB	Checked: JM	Approved: SWS	Scale: 1:32
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 DeltaSimons Protecting people and planet Head Office 3 Henley Way, Doddington Road Lincoln, LN6 3QR Tel: +44 (0) 1522 882555 Email: info@deltasimons.com					Project No: 22-1496.04		Hole ID: DS108a		Page: 1 of 1			
					Project: Reliance Street							
Dynamic Sampler Log					Date: 22/11/2022		Client: Be.EV					
Description of Strata	Legend	Strata Depth (m bgl)	Strata Thickness (m)	Reduced Level (mAOD)	Casing Diameter (mm)	Water	Sample Details		Test Details		Backfill	
							Depth (m)	Type & Ref	Depth (m)	Results		
MADE GROUND: Concrete.		0.30	(0.30)	86.81			0.30 - 0.40	ES1	0.30	PID=0.0ppmv		
MADE GROUND: Whitish grey slightly sandy angular to subangular fine to coarse GRAVEL. Sand is medium to coarse.		0.45	(0.15)	86.66			0.45 - 1.20	B1				
MADE GROUND: Dark brown and black very gravelly sandy CLAY. Sand is fine to coarse.			(0.75)				0.80 - 1.00	ES2	0.80	PID=0.0ppmv		
MADE GROUND: Very soft orange with grey mottling sandy CLAY. Sand is fine to coarse. (REWORKED NATURAL)			(0.50)				1.40 - 1.60	D2	1.20	SPT(S) N=2 (0,0/0,1,0,1)		
No recovery.		1.70		85.91								
MADE GROUND: Firm orangish brown with grey mottling slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to medium of natural lithologies. (REWORKED NATURAL)			(0.70)				2.00 - 5.00	B3	2.00	SPT(S) N=24 (3,3/5,5,6,8)		
Between 1.7 and 1.75 m bgl: Crushed/ broken brick present.		2.40		84.71								
No recovery.												
Between 2.3 and 2.4 m bgl: Crushed/ broken brick present.			(2.60)				2.80 - 3.00	D4	3.00	SPT(S) N=29 (3,4/6,7,7,9)		
Firm orangish brown with grey mottling slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to medium of natural lithologies. (DEVENSIAN TILL)							3.80 - 4.00	D5	4.00	SPT(S) N=23 (3,4/5,5,6,7)		
Borehole complete at 5.00 m bgl.		5.00		82.11					5.00	SPT(S) N=31 (4,5/6,7,8,10)		
Remarks: 1. Logged in general accordance with BS 5930:2015+A1:2020. 2. Area spot cleared for services by a specialist contractor prior to excavation. 3. Consistency is based on finger test as defined by BS EN ISO 14688-1:2002. 4. SPT energy ratio: 67%.					Water Strike			Water Level		Borehole Diameter		
					Date	Depth (m)	Remarks	Duration (min)	Depth	Depth Base	Diameter	
Coordinates: E388054.21 N400717.03		Elevation (mAOD): 87.11		Drilled By: PM Sampling		Plant Used: Archway Dart		Logged: SB	Checked: JM	Approved: SWS	Scale: 1:32	

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: DART 428
Test Date: 08/09/2022
Report Date: 08/09/2022
File Name: Dart 428.spt
Test Operator: CM

Instrumented Rod Data

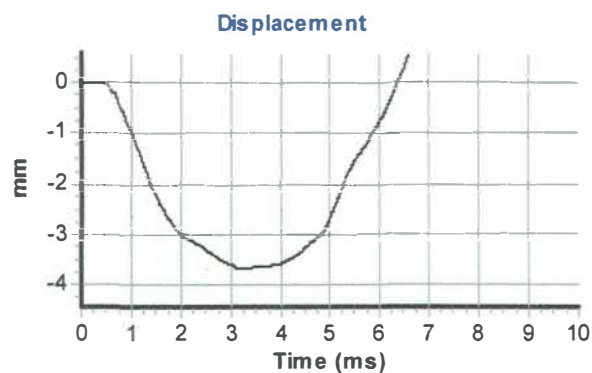
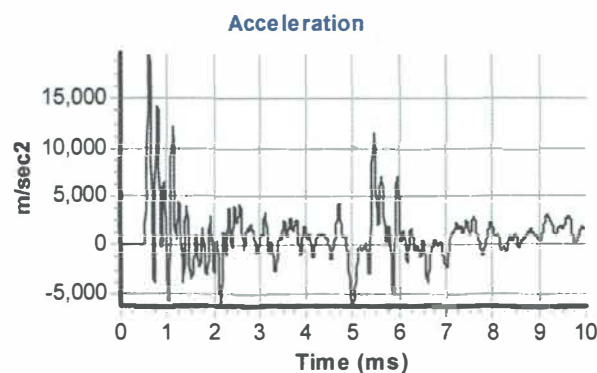
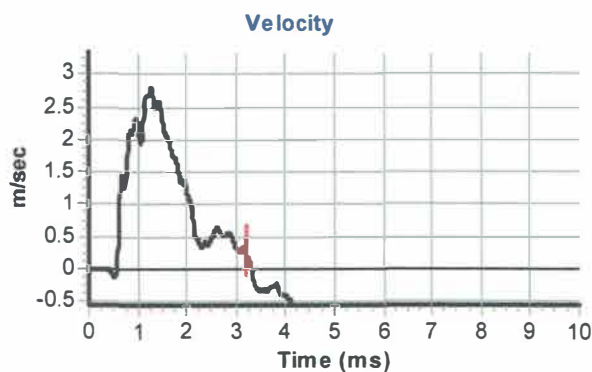
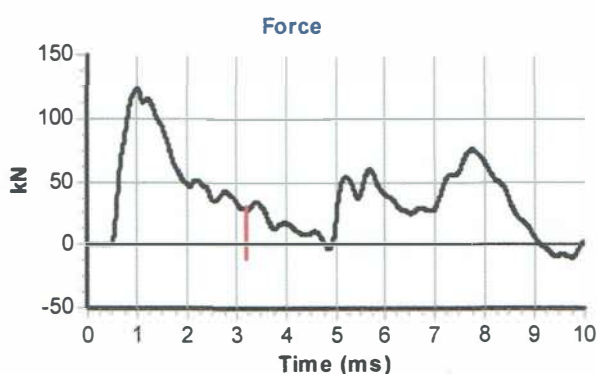
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.3
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

PM SAMPLING/74532



Calculations

Area of Rod A (mm^2): 944
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 319

Energy Ratio E_r (%): **67**

Signed: C.McCLUSKEY
Title: FITTER

The recommended calibration interval is 12 months

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING UK LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: DART504
Test Date: 28/01/2022
Report Date: 28/01/2022
File Name: DART504.spt
Test Operator: MT

Instrumented Rod Data

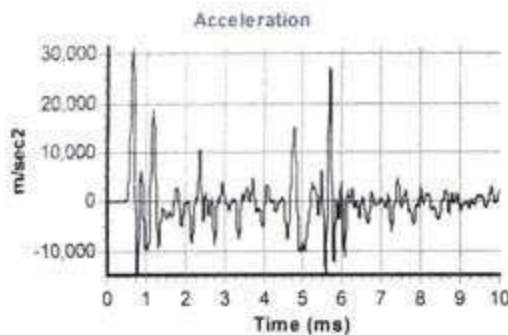
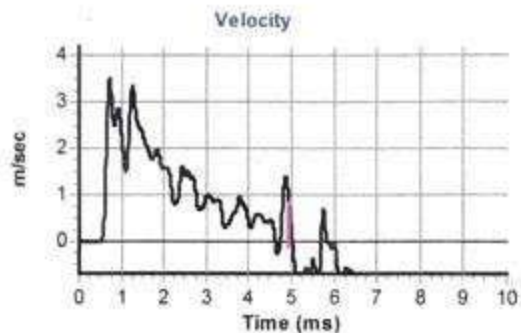
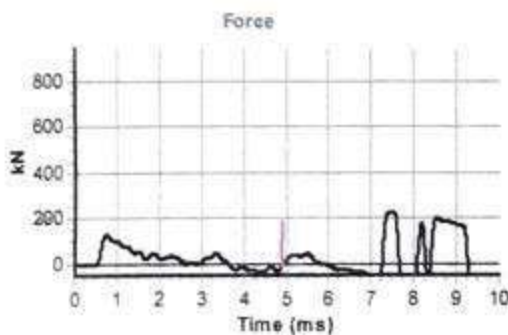
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

P.M SAMPLING LTD - 78955



Calculations

Area of Rod A (mm^2): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 320

Energy Ratio E_r (%):

68

Signed: M.TONER

Title: TRAINEE FITTER

The recommended calibration interval is 12 months

Appendix C - Geotechnical Analysis Results

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

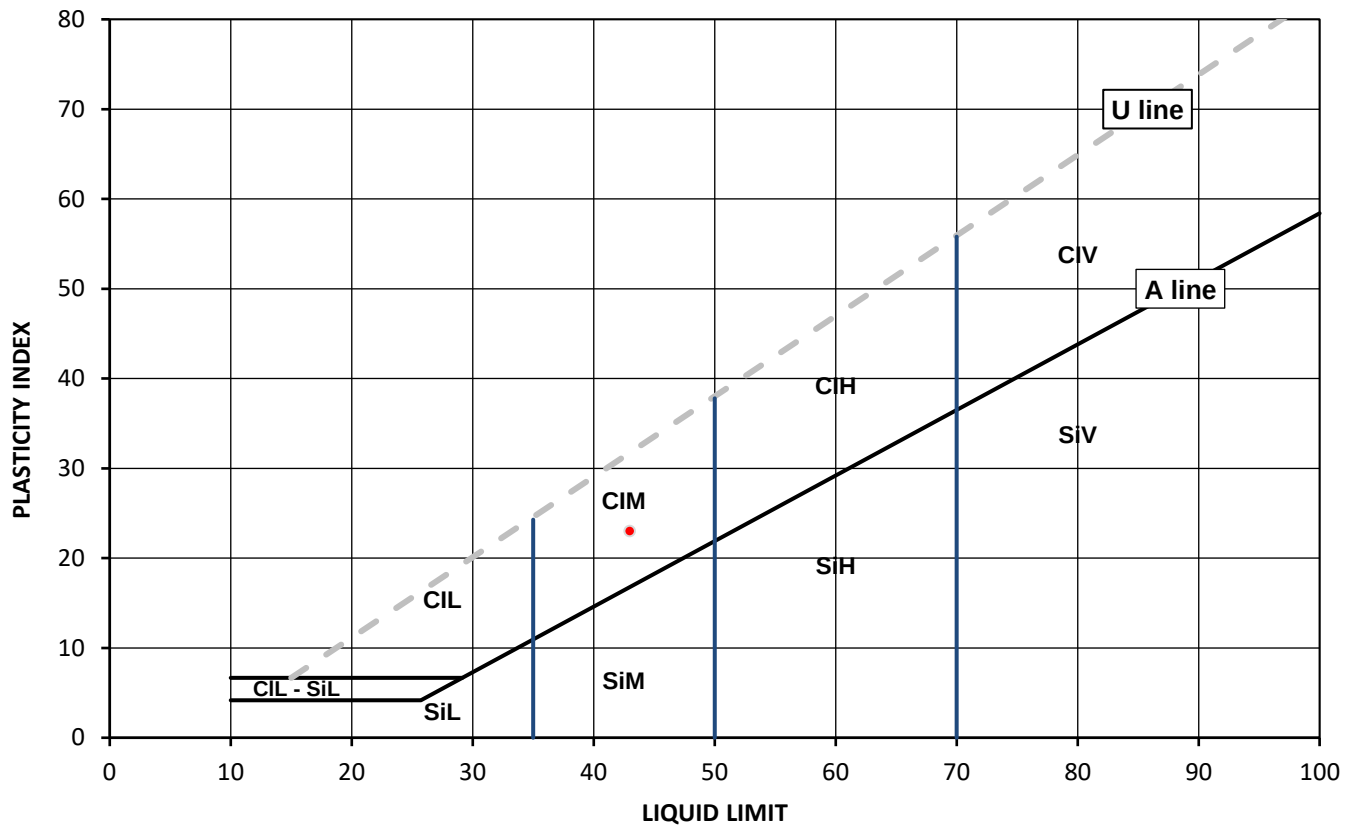
Test Results:

Laboratory Reference: 2514161
Hole No.: DS101
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 2.80
Depth Base [m]: 3.00
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	43	20	23	97



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

Cl	Clay	Plasticity	Liquid Limit
Si	Silt	L Low	below 35
		M Medium	35 to 50
		H High	50 to 70
		V Very high	exceeding 70
		O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

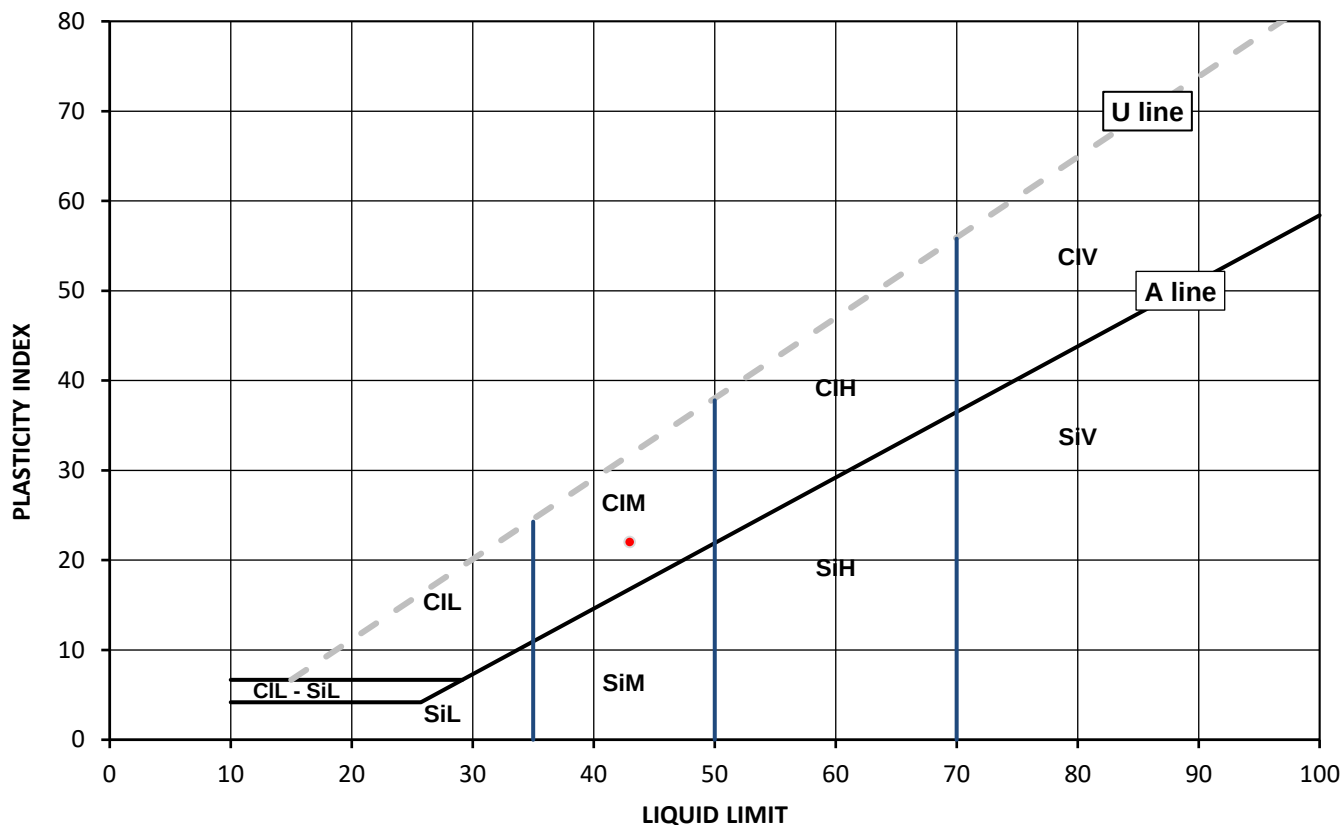
Test Results:

Laboratory Reference: 2514164
Hole No.: DS102
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 1.80
Depth Base [m]: 2.00
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
21	43	21	22	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

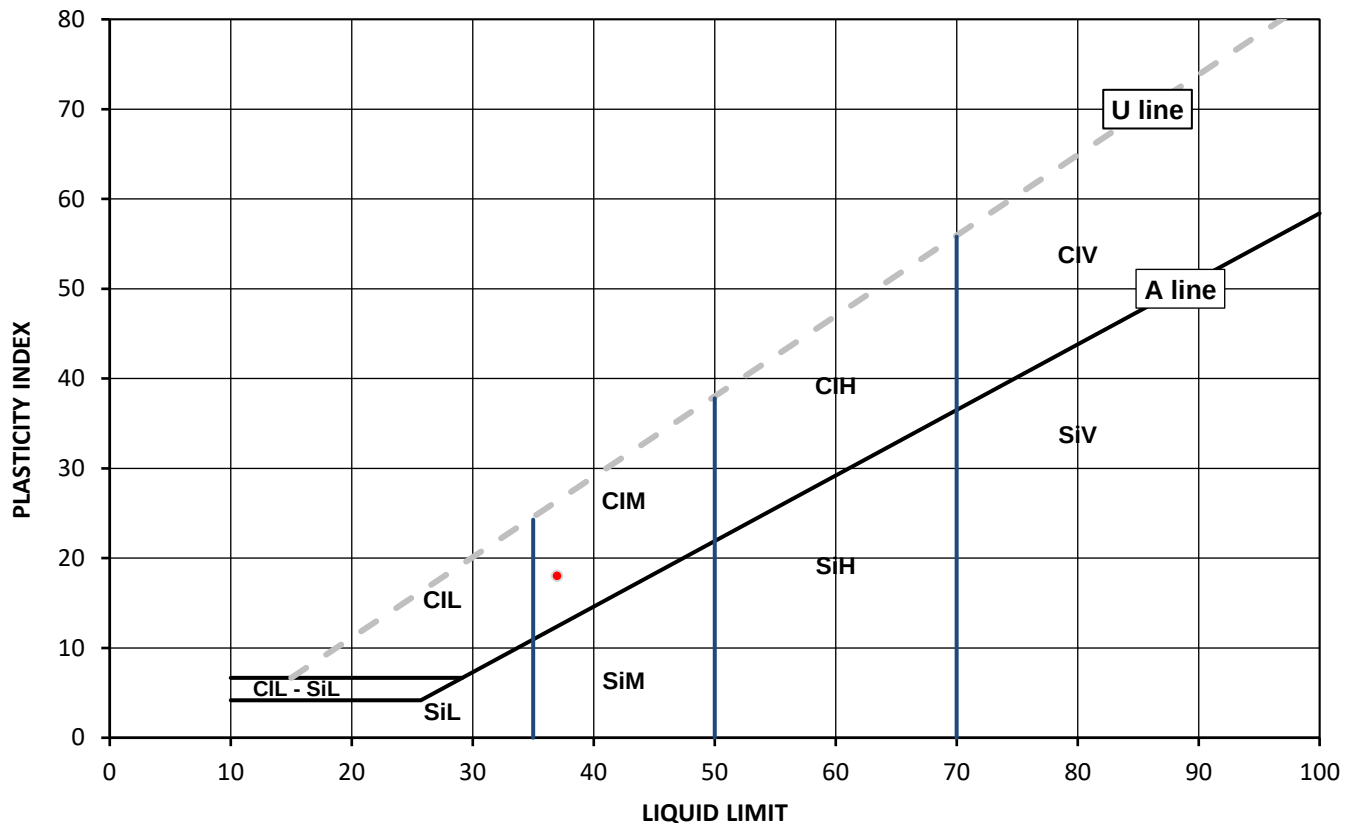
Test Results:

Laboratory Reference: 2514165
Hole No.: DS102
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 4.70
Depth Base [m]: 4.90
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	37	19	18	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

Cl	Clay	Plasticity	Liquid Limit
Si	Silt	L Low	below 35
		M Medium	35 to 50
		H High	50 to 70
		V Very high	exceeding 70
		O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

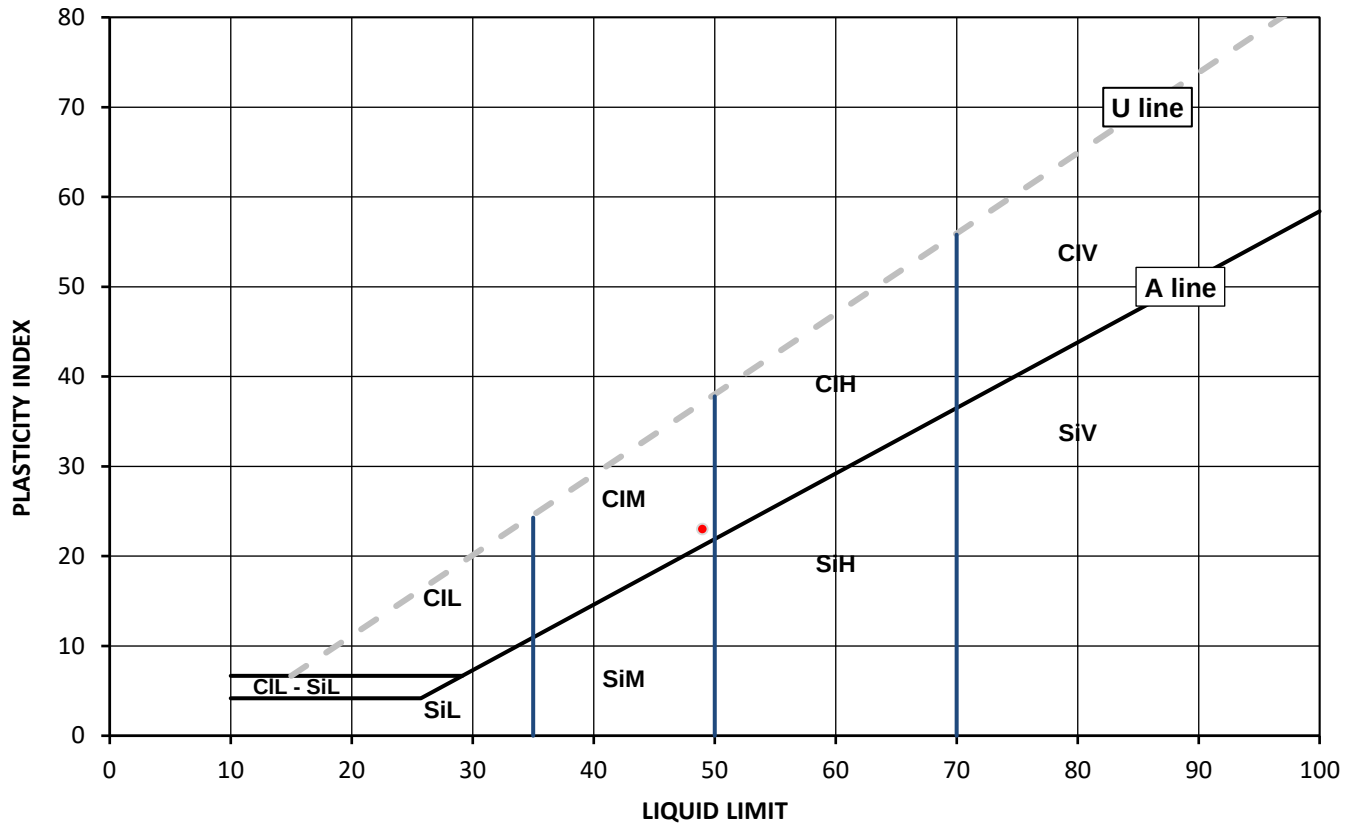
Test Results:

Laboratory Reference: 2514167
Hole No.: DS103
Sample Reference: Not Given
Sample Description: Brown slightly sandy CLAY

Depth Top [m]: 1.80
Depth Base [m]: 2.00
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
39	49	26	23	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

Cl	Clay	Plasticity	Liquid Limit
Si	Silt	L Low	below 35
		M Medium	35 to 50
		H High	50 to 70
		V Very high	exceeding 70
		O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

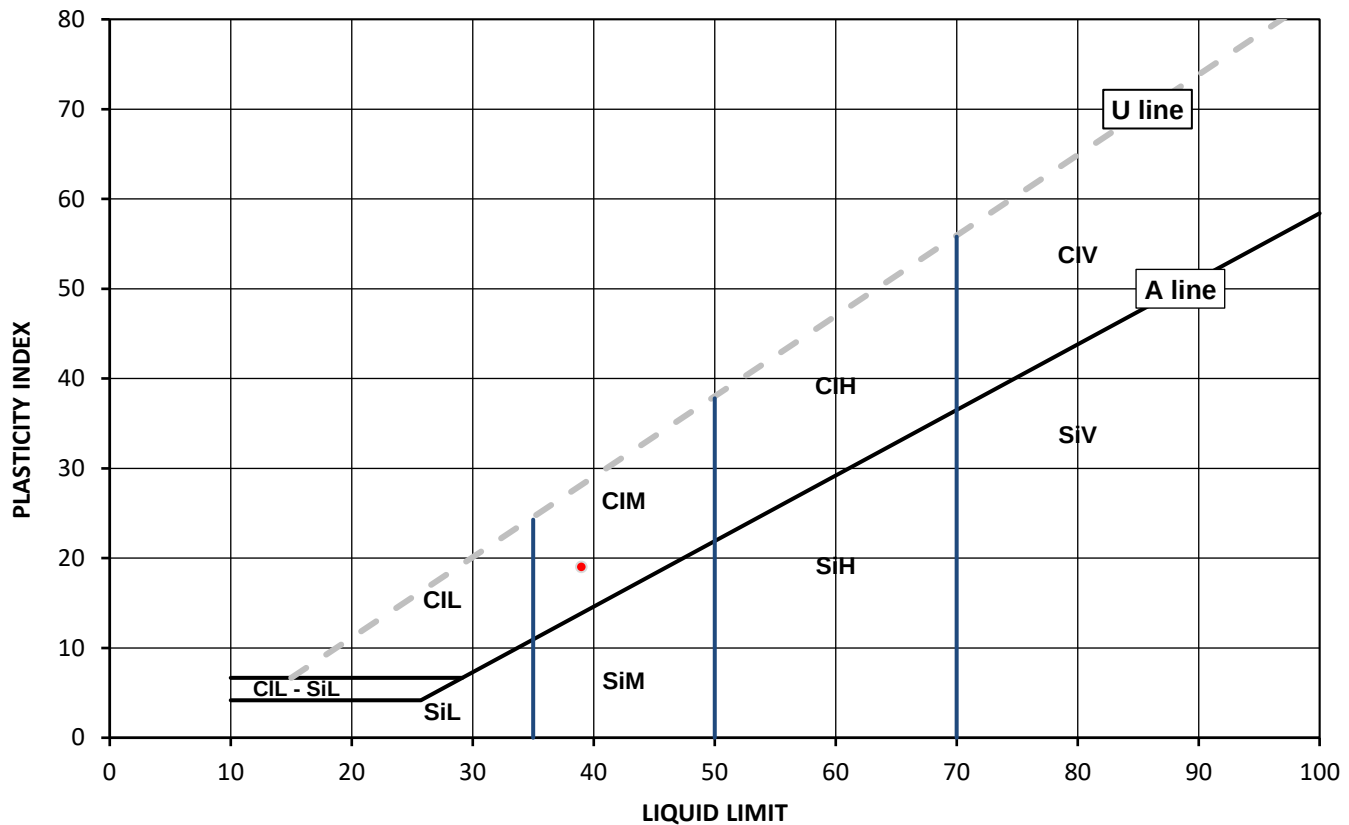
Test Results:

Laboratory Reference: 2514169
Hole No.: DS103
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 4.80
Depth Base [m]: 5.00
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
21	39	20	19	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

Cl	Clay	Plasticity	Liquid Limit
Si	Silt	L	below 35
		M	35 to 50
		H	50 to 70
		V	exceeding 70
		O	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
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Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

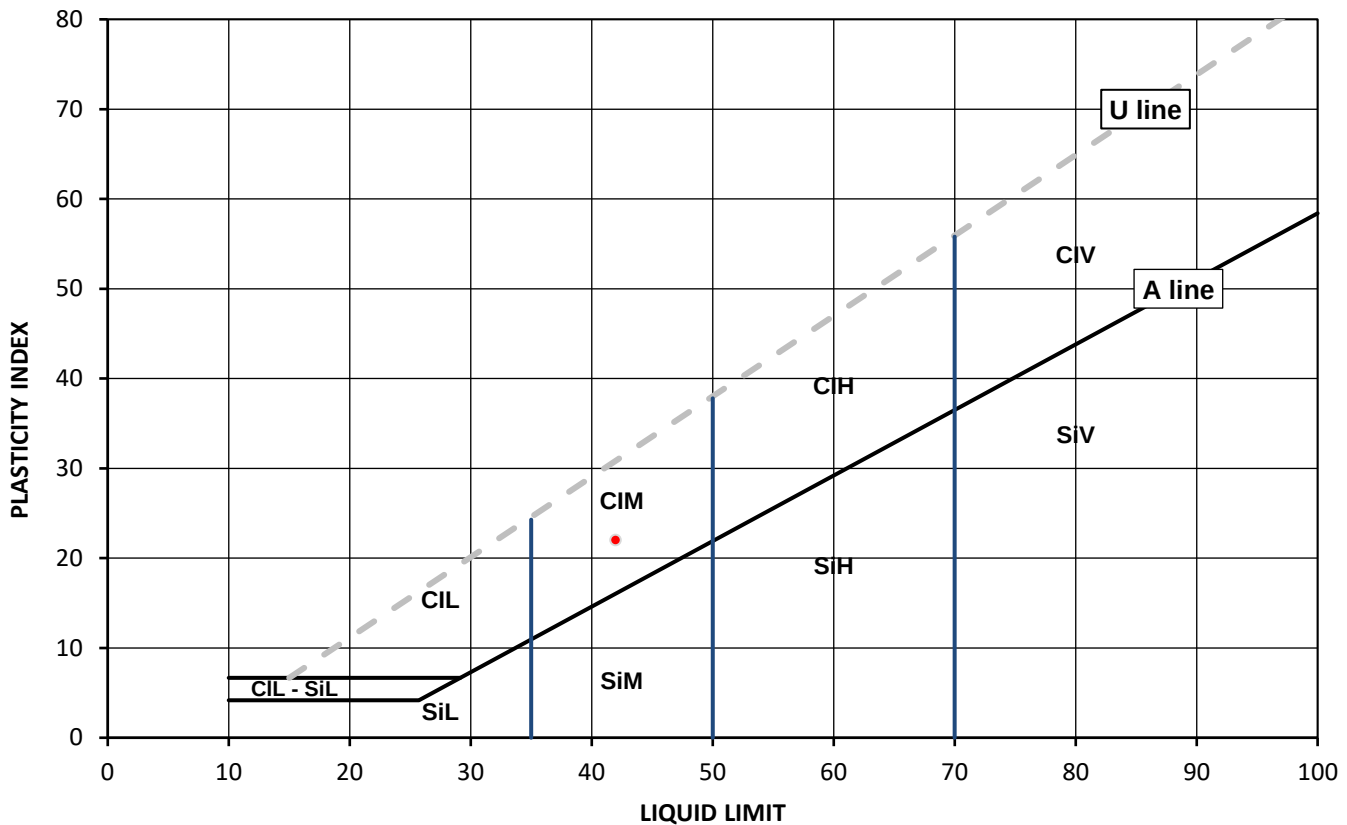
Test Results:

Laboratory Reference: 2514172
Hole No.: DS104
Sample Reference: Not Given
Sample Description: Brownish grey slightly gravelly sandy CLAY

Depth Top [m]: 2.10
Depth Base [m]: 2.30
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
26	42	20	22	95



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

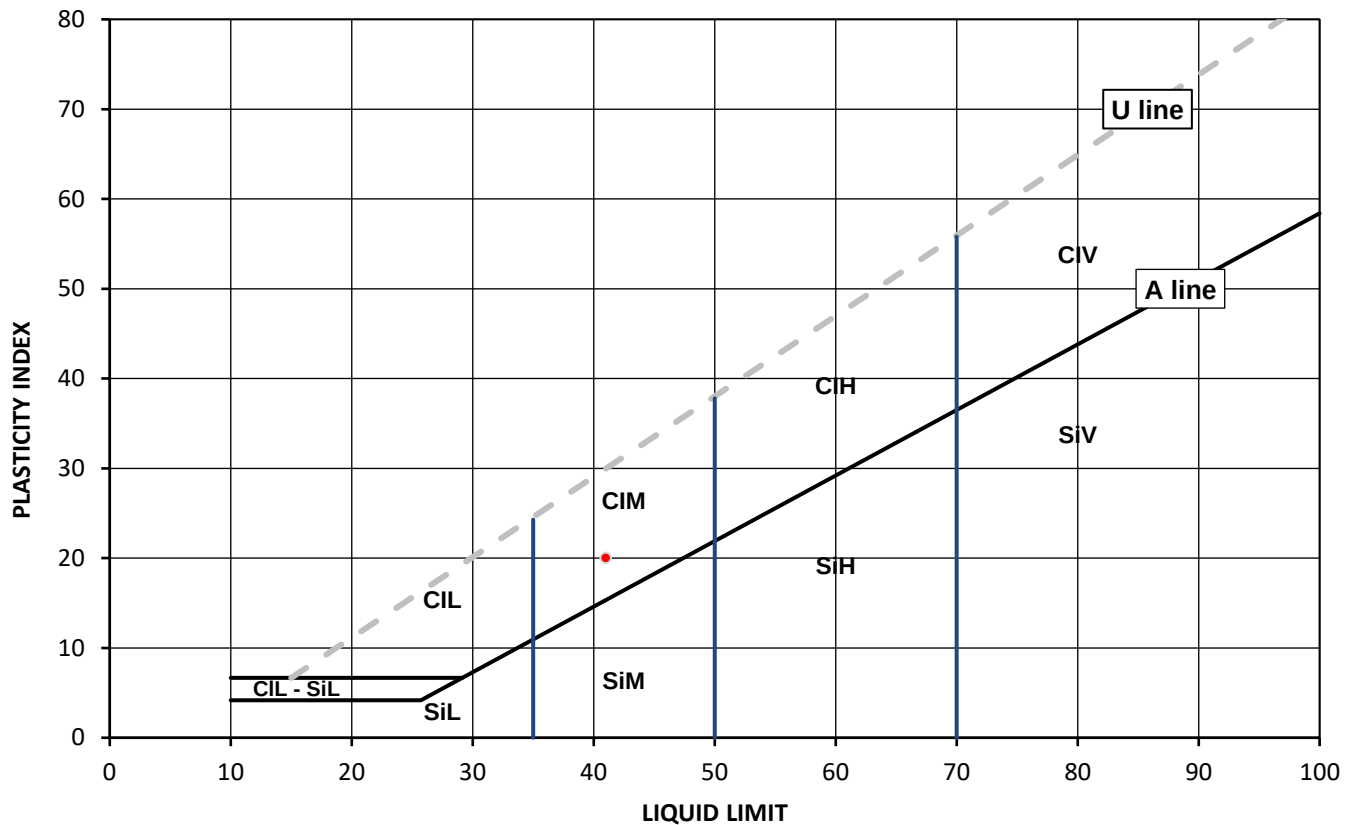
Test Results:

Laboratory Reference: 2514173
Hole No.: DS105
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 1.70
Depth Base [m]: 1.80
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
33	41	21	20	96



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
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i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
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Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

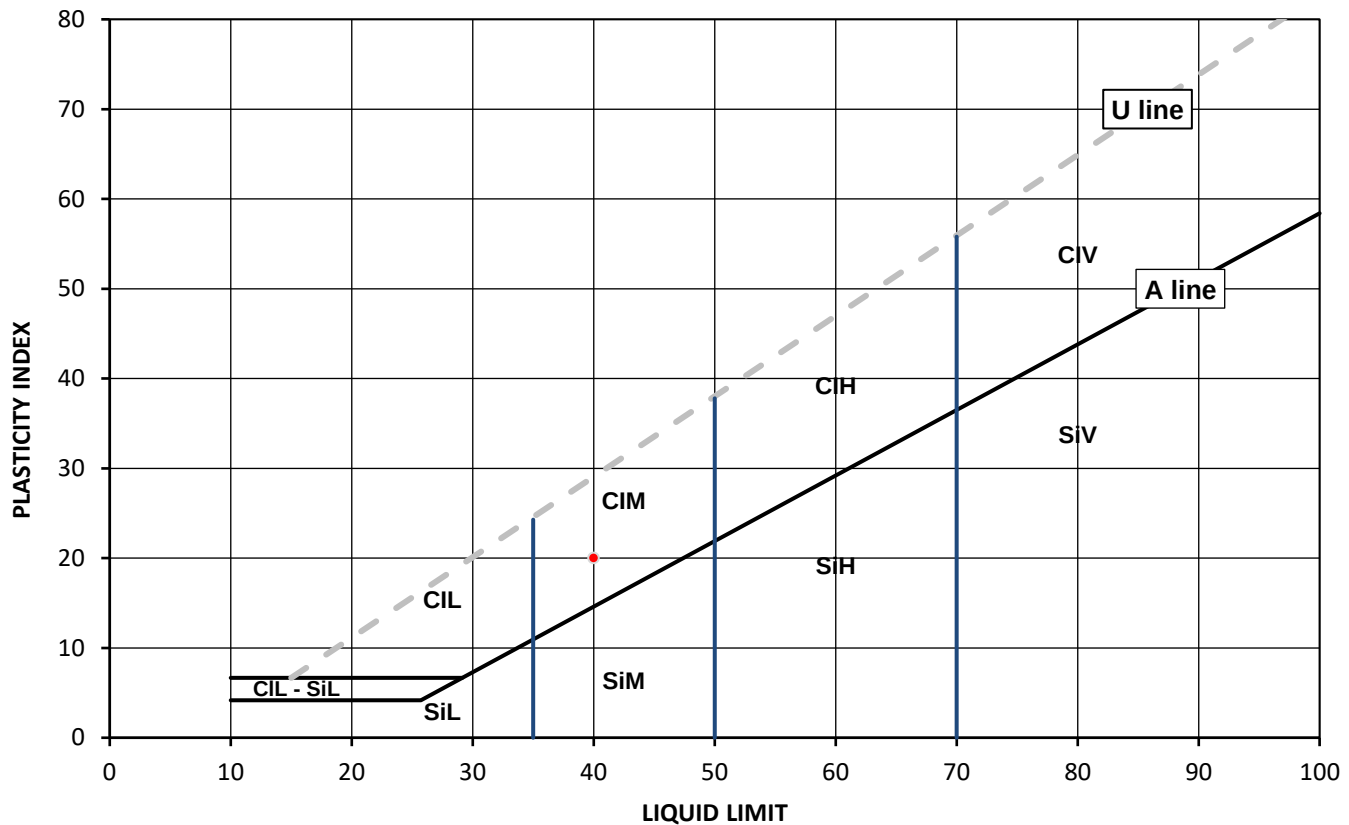
Test Results:

Laboratory Reference: 2514174
Hole No.: DS105
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 3.80
Depth Base [m]: 4.00
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	40	20	20	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

Cl	Clay	Plasticity	L	Low	Liquid Limit	below 35
Si	Silt		M	Medium		35 to 50
			H	High		50 to 70
			V	Very high		exceeding 70
			O	Organic		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
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Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

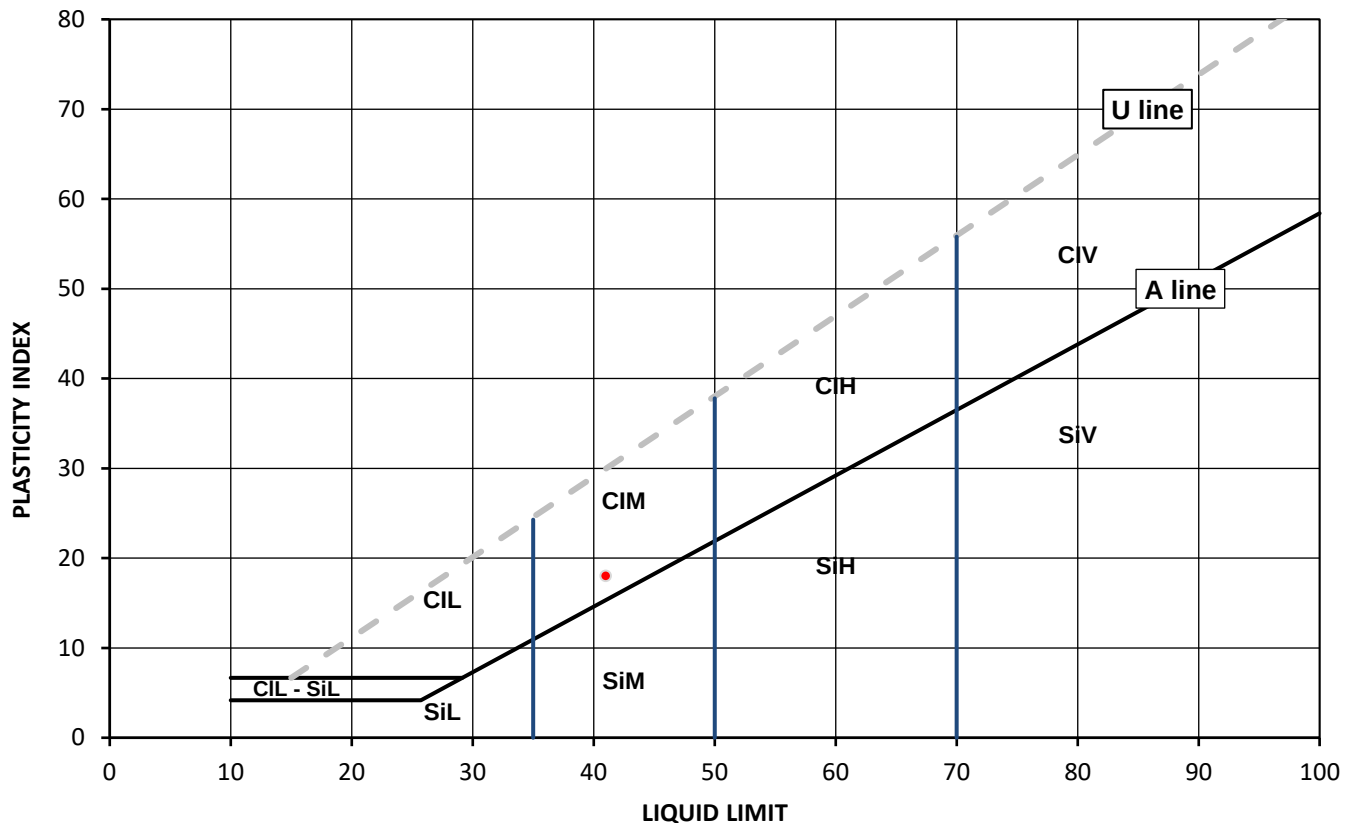
Test Results:

Laboratory Reference: 2514176
Hole No.: DS108
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 1.40
Depth Base [m]: 1.60
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
35	41	23	18	96



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

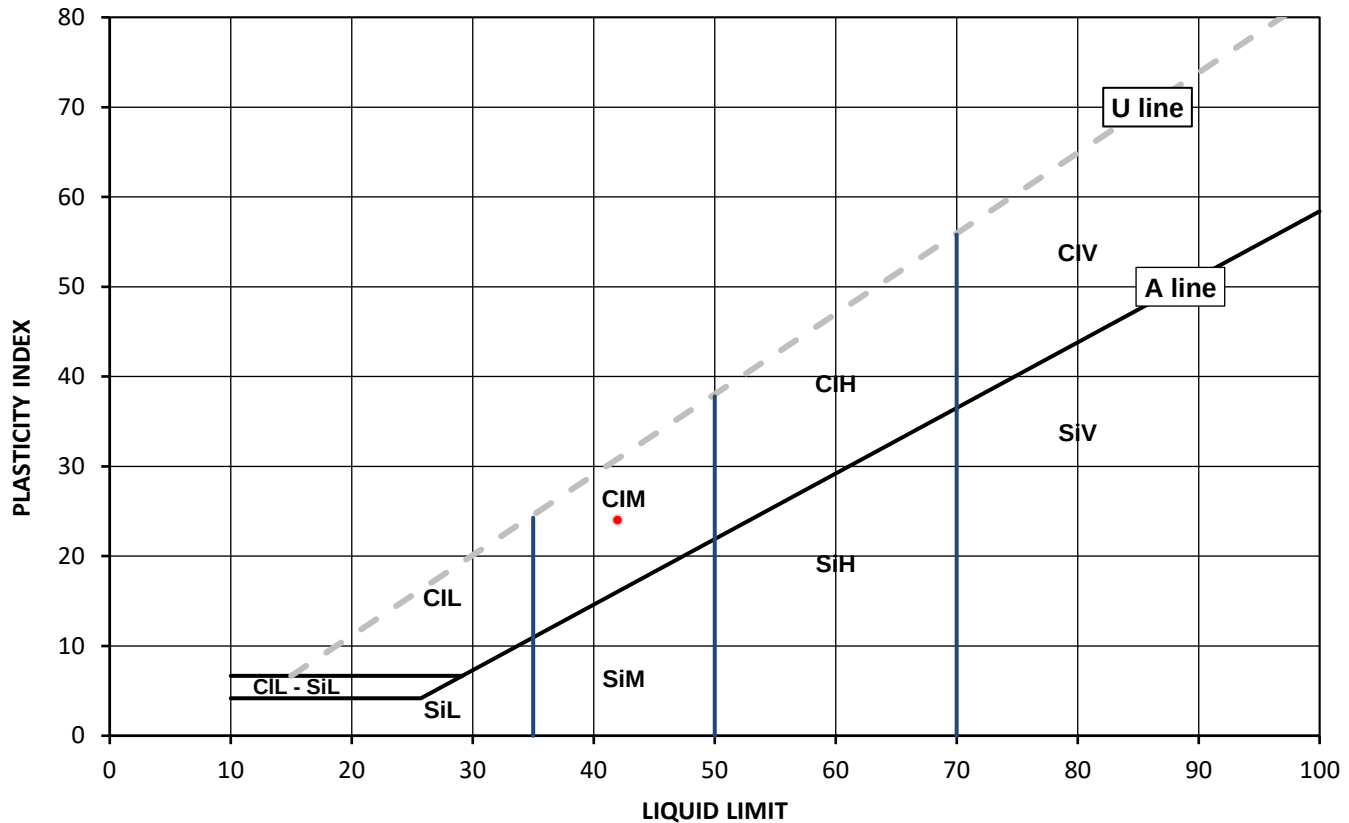
Test Results:

Laboratory Reference: 2514178
Hole No.: DS108
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 2.80
Depth Base [m]: 3.00
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
23	42	18	24	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Water Content by BS 1377-2:1990: Clause 3.2; Atterberg by BS 1377-2: 1990:
Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2:
1990: Clause 8.2

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 02/12/2022
Sampled By: Not Given

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W] %	Water Content BS EN ISO 17892-2 [W] %	Atterberg				Density			Total Porosity# %		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m															
2514161	DS101	Not Given	2.80	3.00	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	19		97	43	20	23						
2514164	DS102	Not Given	1.80	2.00	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	21		99	43	21	22						
2514165	DS102	Not Given	4.70	4.90	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	20		98	37	19	18						
2514167	DS103	Not Given	1.80	2.00	D	Brown slightly sandy CLAY	Atterberg 4 Point	39		100	49	26	23						
2514169	DS103	Not Given	4.80	5.00	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	21		98	39	20	19						
2514172	DS104	Not Given	2.10	2.30	D	Brownish grey slightly gravelly sandy CLAY	Atterberg 4 Point	26		95	42	20	22						
2514173	DS105	Not Given	1.70	1.80	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	33		96	41	21	20						
2514174	DS105	Not Given	3.80	4.00	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	20		99	40	20	20						
2514176	DS108	Not Given	1.40	1.60	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	35		96	41	23	18						
2514178	DS108	Not Given	2.80	3.00	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	23		98	42	18	24						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

Client: Delta-Simons
 Client Address: Suite 4a, One Portland Street,
 Manchester, M1 3BE

Contact: Jessica Muckle
 Site Address: Reliance Street, Manchester

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
 Unit 8 Harrowden Road
 Brackmills Industrial Estate
 Northampton NN4 7EB



Environmental Science

Client Reference: 22-1496.04
 Job Number: 22-10003
 Date Sampled: 22/11/2022
 Date Received: 23/11/2022
 Date Tested: 02/12/2022
 Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type							
2514161	DS101	Not Given	2.80	3.00	D	Brown slightly gravelly sandy CLAY		19	Sample was quartered, oven dried at 109.0 °C			
2514164	DS102	Not Given	1.80	2.00	D	Brown slightly gravelly sandy CLAY		21	Sample was quartered, oven dried at 109.0 °C			
2514165	DS102	Not Given	4.70	4.90	D	Brown slightly gravelly sandy CLAY		20	Sample was quartered, oven dried at 109.0 °C			
2514167	DS103	Not Given	1.80	2.00	D	Brown slightly sandy CLAY		39	Sample was quartered, oven dried at 109.0 °C			
2514169	DS103	Not Given	4.80	5.00	D	Brown slightly gravelly sandy CLAY		21	Sample was quartered, oven dried at 109.0 °C			
2514172	DS104	Not Given	2.10	2.30	D	Brownish grey slightly gravelly sandy CLAY		26	Sample was quartered, oven dried at 109.0 °C			
2514173	DS105	Not Given	1.70	1.80	D	Brown slightly gravelly sandy CLAY		33	Sample was quartered, oven dried at 109.0 °C			
2514174	DS105	Not Given	3.80	4.00	D	Brown slightly gravelly sandy CLAY		20	Sample was quartered, oven dried at 109.0 °C			
2514176	DS108	Not Given	1.40	1.60	D	Brown slightly gravelly sandy CLAY		35	Sample was quartered, oven dried at 109.0 °C			
2514178	DS108	Not Given	2.80	3.00	D	Brown slightly gravelly sandy CLAY		23	Sample was quartered, oven dried at 109.0 °C			

Comments:

Signed:

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TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

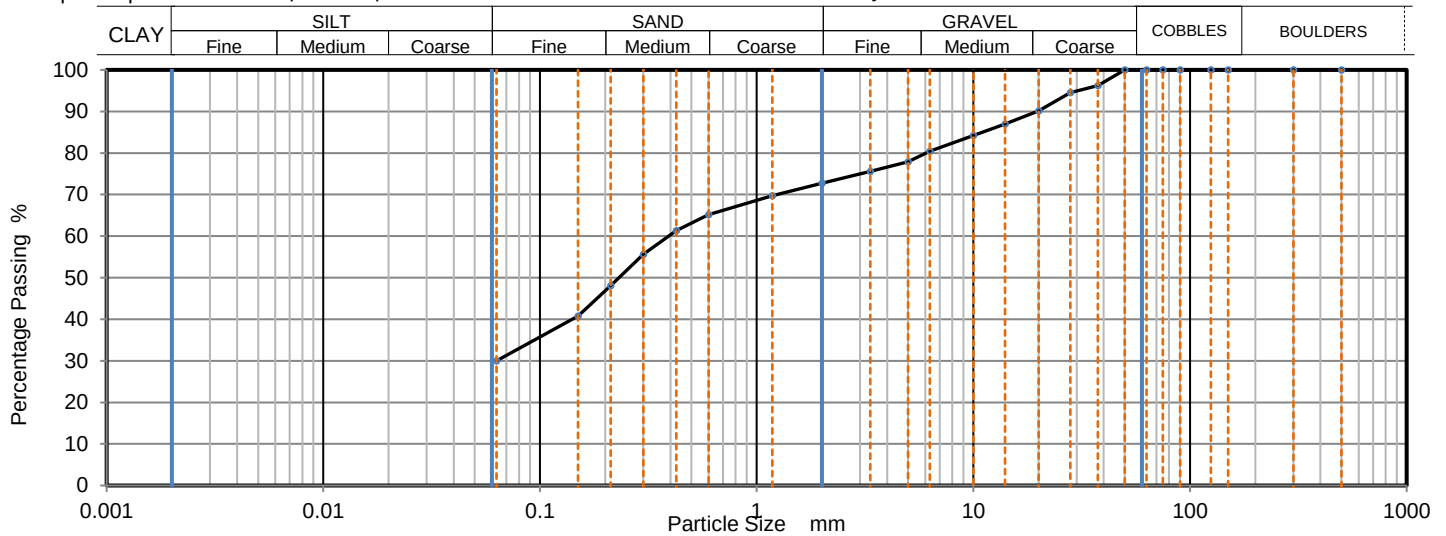
Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2514159
Hole No.: DS101
Sample Reference: Not Given
Sample Description: Dark grey very gravelly very clayey SAND
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 0.40
Depth Base [m]: 0.70
Sample Type: B


Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	96		
28	95		
20	90		
14	87		
10	84		
6.3	80		
5	78		
3.35	76		
2	73		
1.18	70		
0.6	65		
0.425	61		
0.3	56		
0.212	48		
0.15	41		
0.063	31		

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	42
Fines <0.063mm	31

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 6.2
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

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TEST CERTIFICATE

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Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
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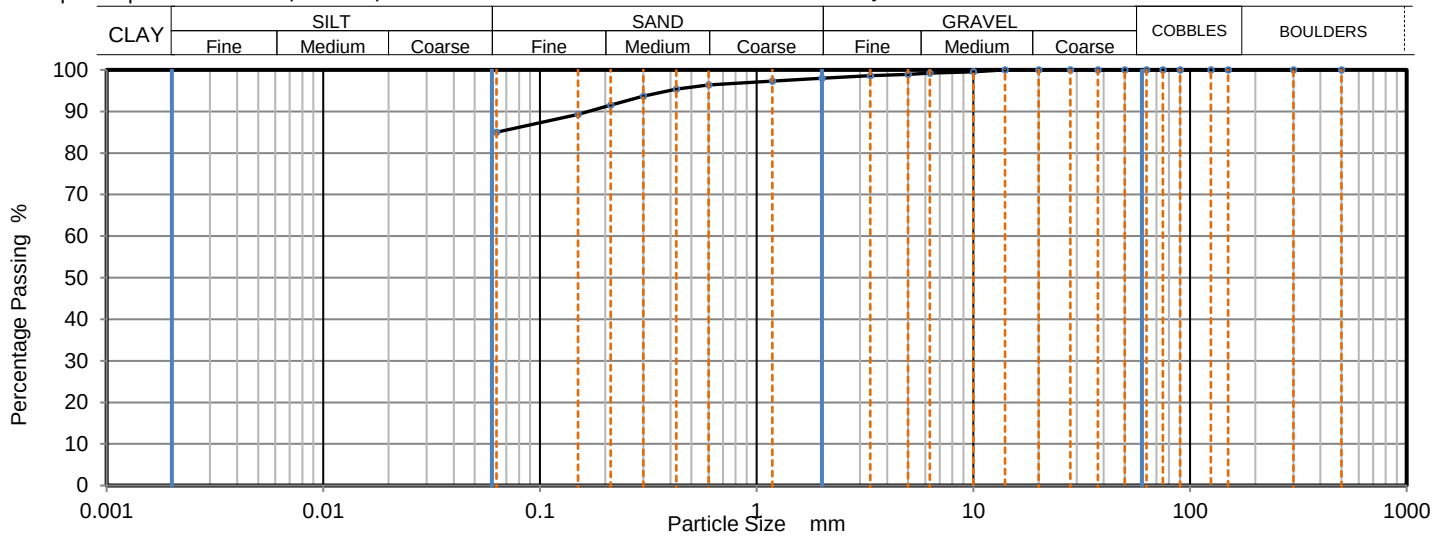
Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Test Results:

Laboratory Reference: 2514160
Hole No.: DS101
Sample Reference: Not Given
Sample Description: Orangish brown slightly gravelly sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 2.00
Depth Base [m]: 4.00
Sample Type: B


Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	96		
0.425	95		
0.3	94		
0.212	92		
0.15	89		
0.063	85		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	13
Fines <0.063mm	85

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

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Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

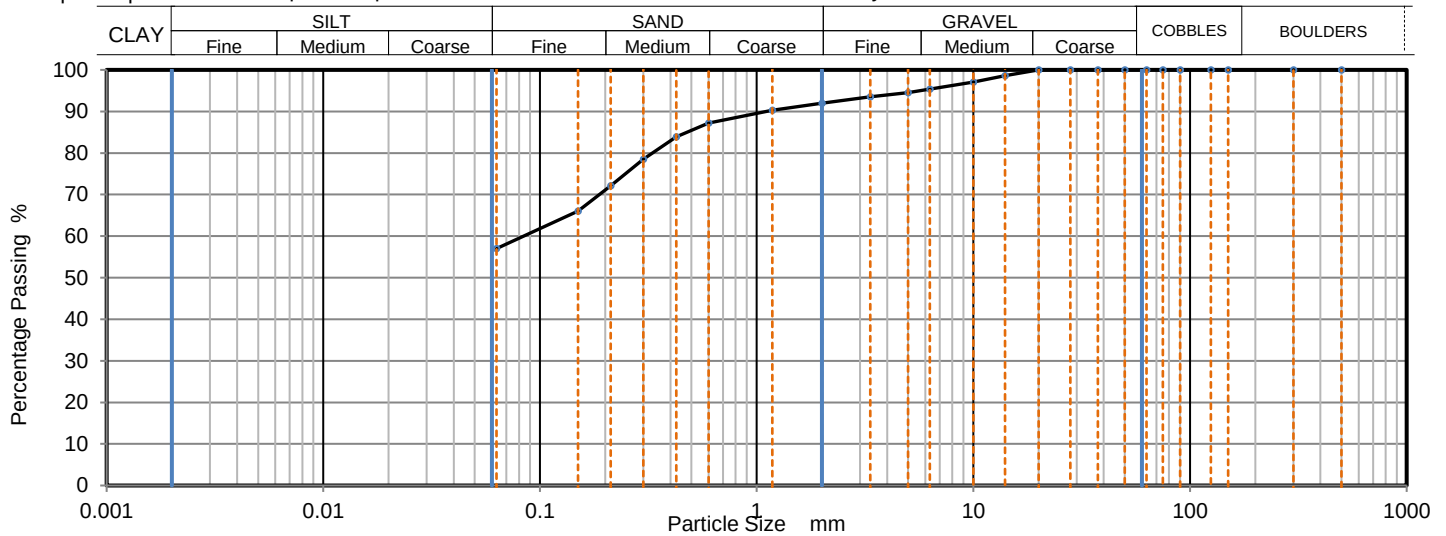
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Test Results:

Laboratory Reference: 2514162
Hole No.: DS102
Sample Reference: Not Given
Sample Description: Dark grey gravelly very sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 0.80
Depth Base [m]: 1.30
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	97		
6.3	95		
5	95		
3.35	94		
2	92		
1.18	90		
0.6	87		
0.425	84		
0.3	79		
0.212	72		
0.15	66		
0.063	58		

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	34
Fines <0.063mm	58

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 1.3
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

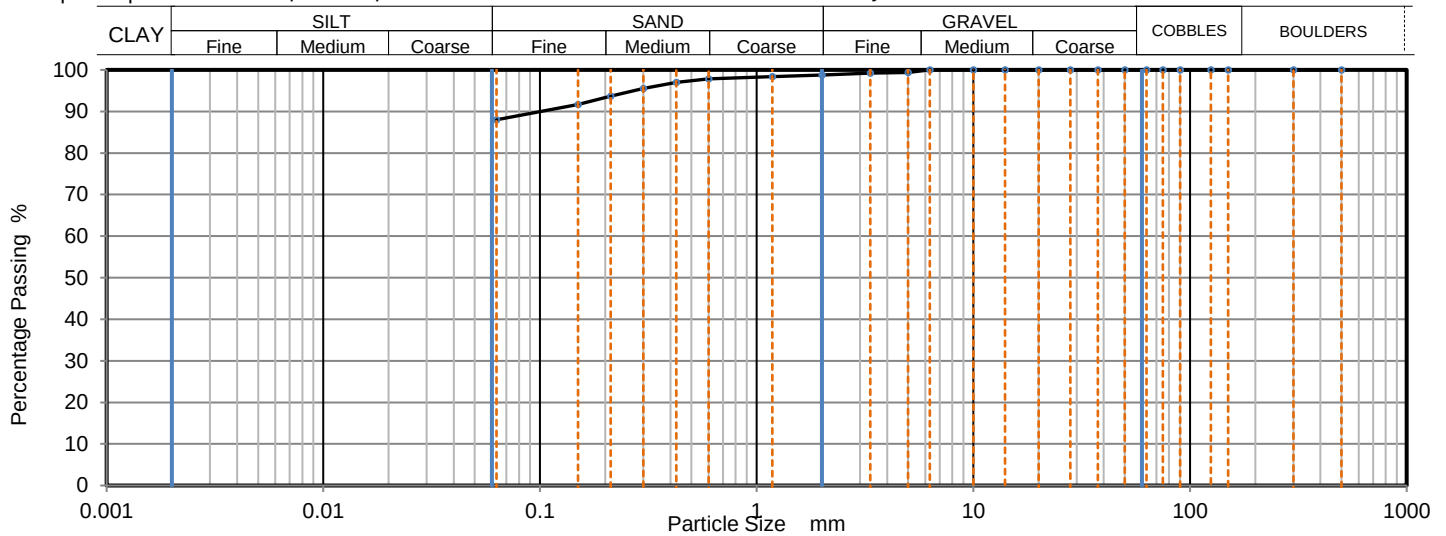
Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Test Results:

Laboratory Reference: 2514163
Hole No.: DS102
Sample Reference: Not Given
Sample Description: Brown sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 1.50
Depth Base [m]: 5.00
Sample Type: B


Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	99		
1.18	98		
0.6	98		
0.425	97		
0.3	96		
0.212	94		
0.15	92		
0.063	88		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	10
Fines <0.063mm	88

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel

Katarzyna Koziel
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Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

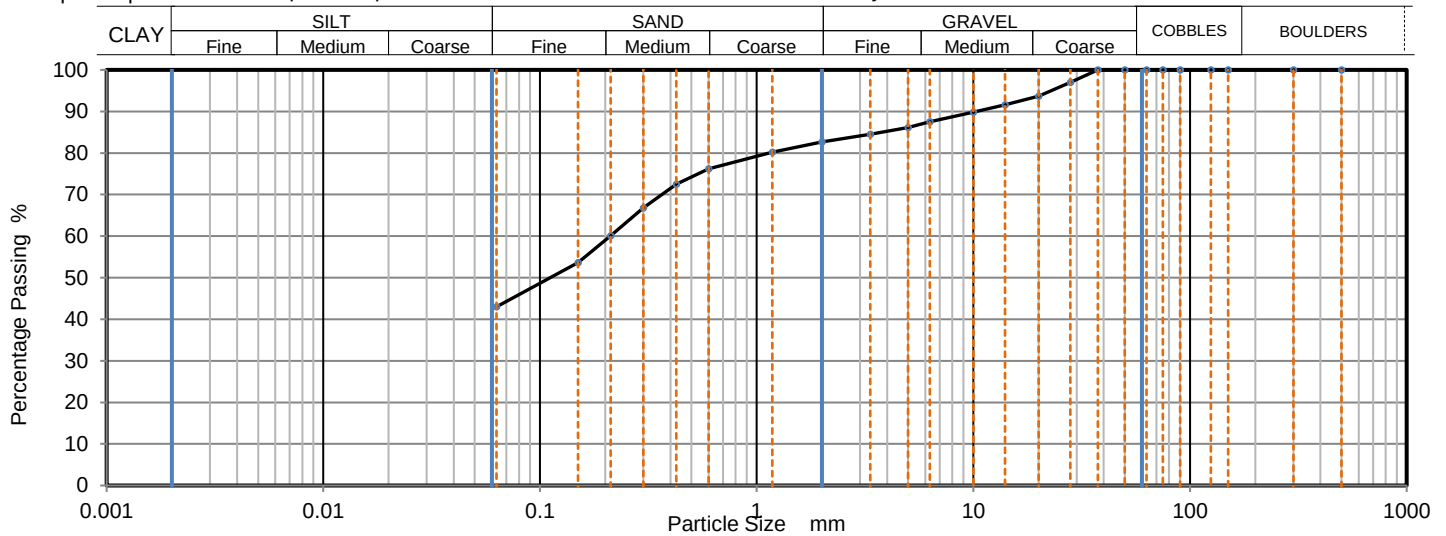
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Test Results:

Laboratory Reference: 2514166
Hole No.: DS103
Sample Reference: Not Given
Sample Description: Dark grey gravelly very sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 0.50
Depth Base [m]: 1.20
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	97		
20	94		
14	92		
10	90		
6.3	88		
5	86		
3.35	85		
2	83		
1.18	80		
0.6	76		
0.425	73		
0.3	67		
0.212	60		
0.15	54		
0.063	43		

Sample Proportions	% dry mass
Very coarse	0
Gravel	17
Sand	39
Fines <0.063mm	43

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 3.3
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

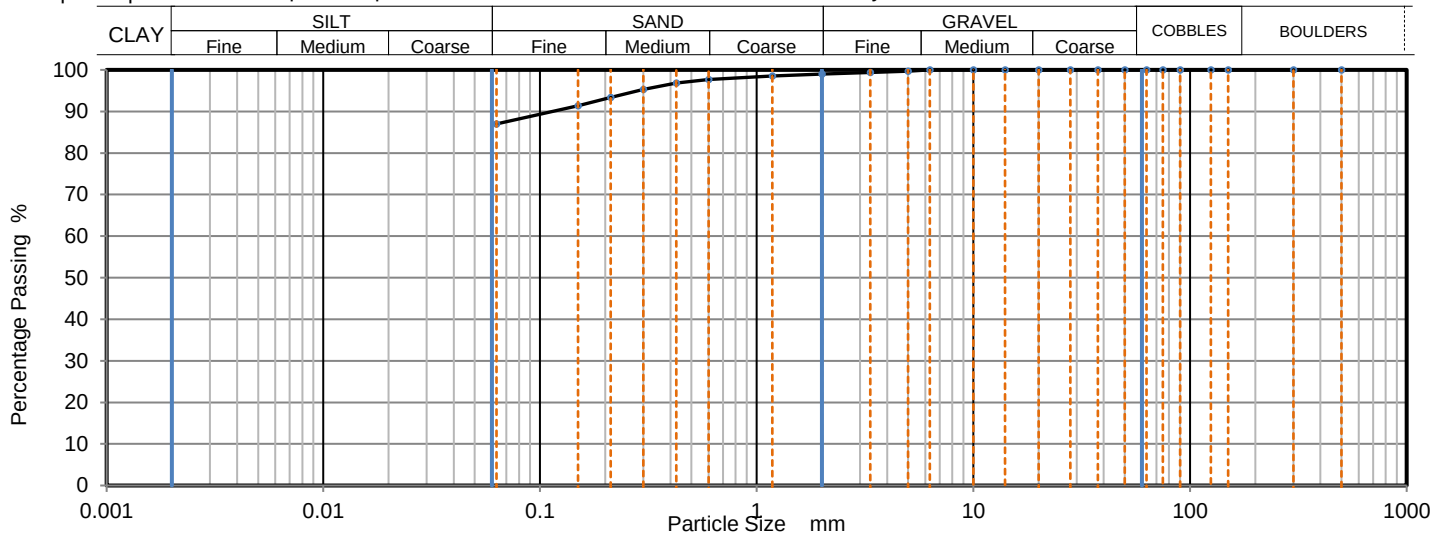
Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Test Results:

Laboratory Reference: 2514168
Hole No.: DS103
Sample Reference: Not Given
Sample Description: Brown sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 2.00
Depth Base [m]: 5.00
Sample Type: B


Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	99		
0.6	98		
0.425	97		
0.3	95		
0.212	93		
0.15	91		
0.063	88		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	11
Fines <0.063mm	88

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

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Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

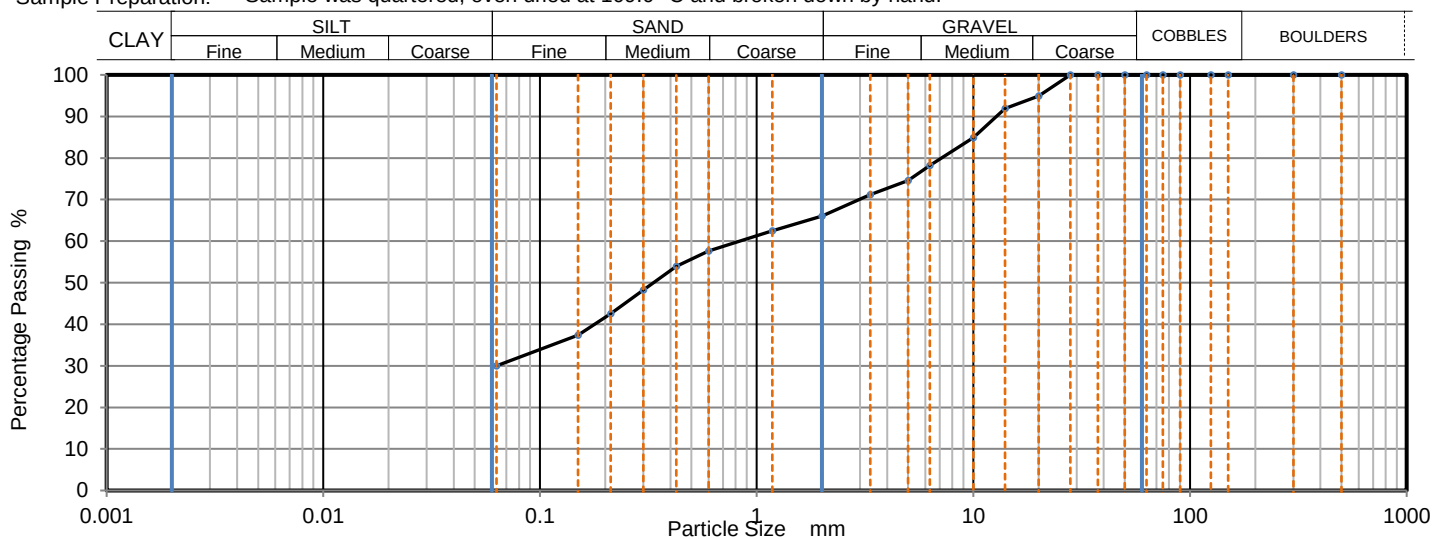
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Test Results:

Laboratory Reference: 2514170
Hole No.: DS104
Sample Reference: Not Given
Sample Description: Dark brown very clayey very gravelly SAND
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 0.80
Depth Base [m]: 1.20
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	95		
14	92		
10	85		
6.3	78		
5	75		
3.35	71		
2	66		
1.18	63		
0.6	58		
0.425	54		
0.3	48		
0.212	43		
0.15	37		
0.063	30		

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	36
Fines <0.063mm	30

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 13
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

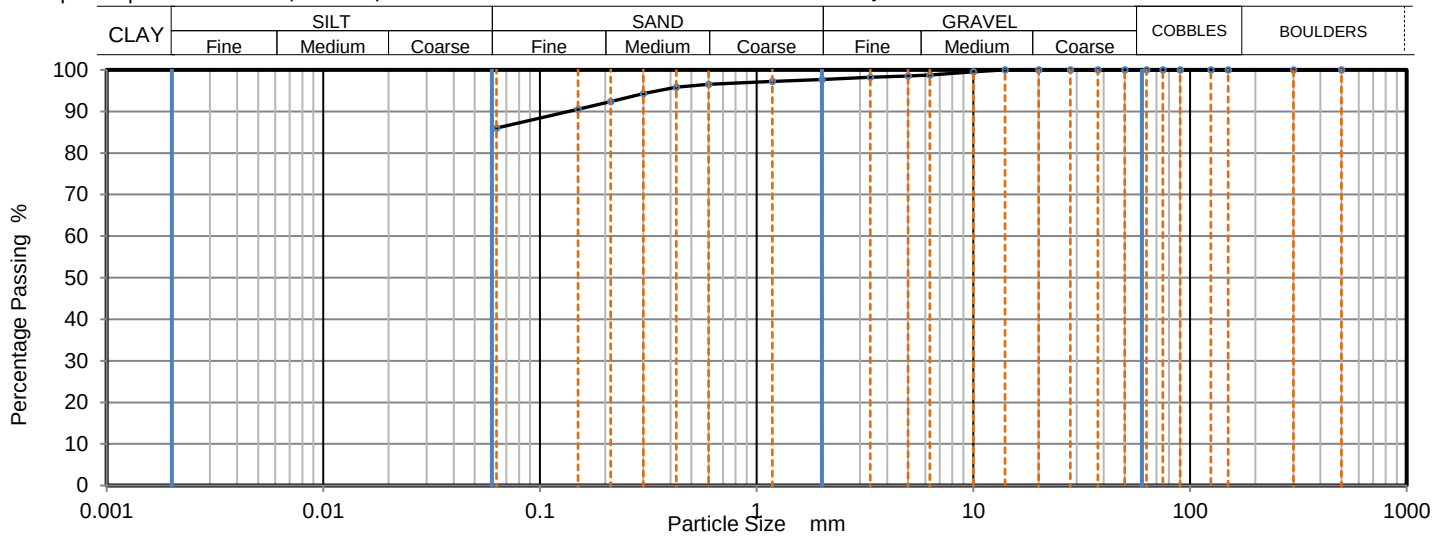
Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Test Results:

Laboratory Reference: 2514171
Hole No.: DS104
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 2.00
Depth Base [m]: 3.60
Sample Type: B


Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	98		
2	98		
1.18	97		
0.6	97		
0.425	96		
0.3	94		
0.212	92		
0.15	91		
0.063	87		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	11
Fines <0.063mm	87

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

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Northampton NN4 7EB

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Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

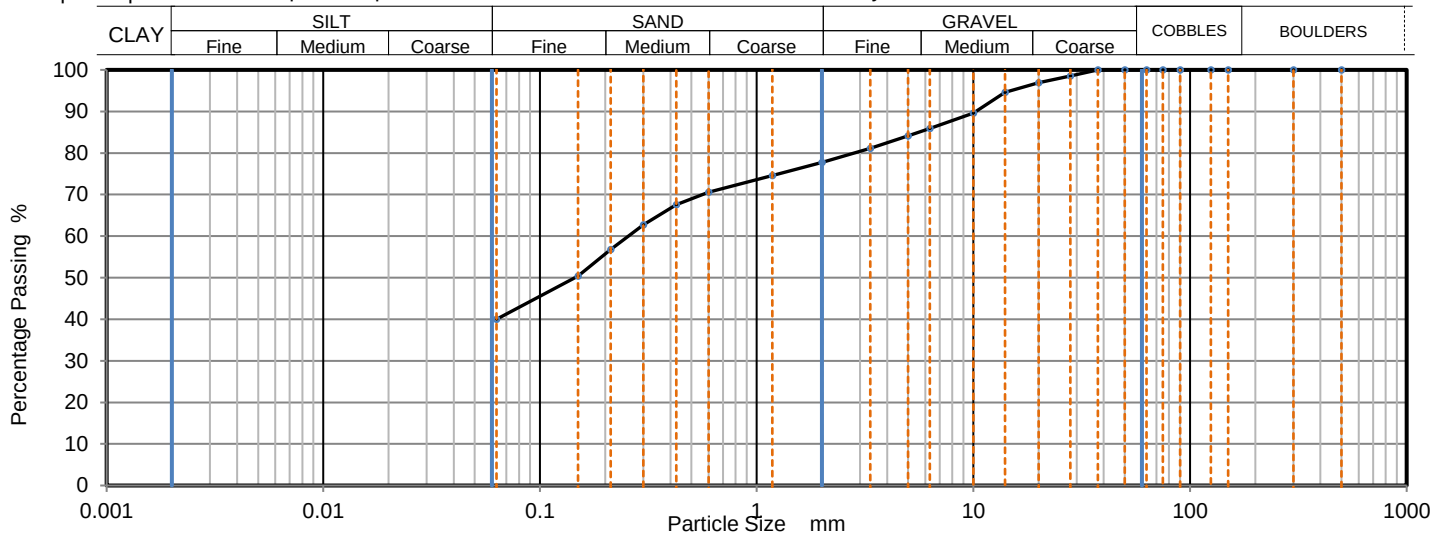
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Test Results:

Laboratory Reference: 2514175
Hole No.: DS108
Sample Reference: Not Given
Sample Description: Brown to dark grey very gravelly very sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 0.45
Depth Base [m]: 1.20
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	99		
20	97		
14	95		
10	90		
6.3	86		
5	84		
3.35	81		
2	78		
1.18	75		
0.6	71		
0.425	68		
0.3	63		
0.212	57		
0.15	50		
0.063	40		

Sample Proportions	% dry mass
Very coarse	0
Gravel	22
Sand	38
Fines <0.063mm	40

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 4.1
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

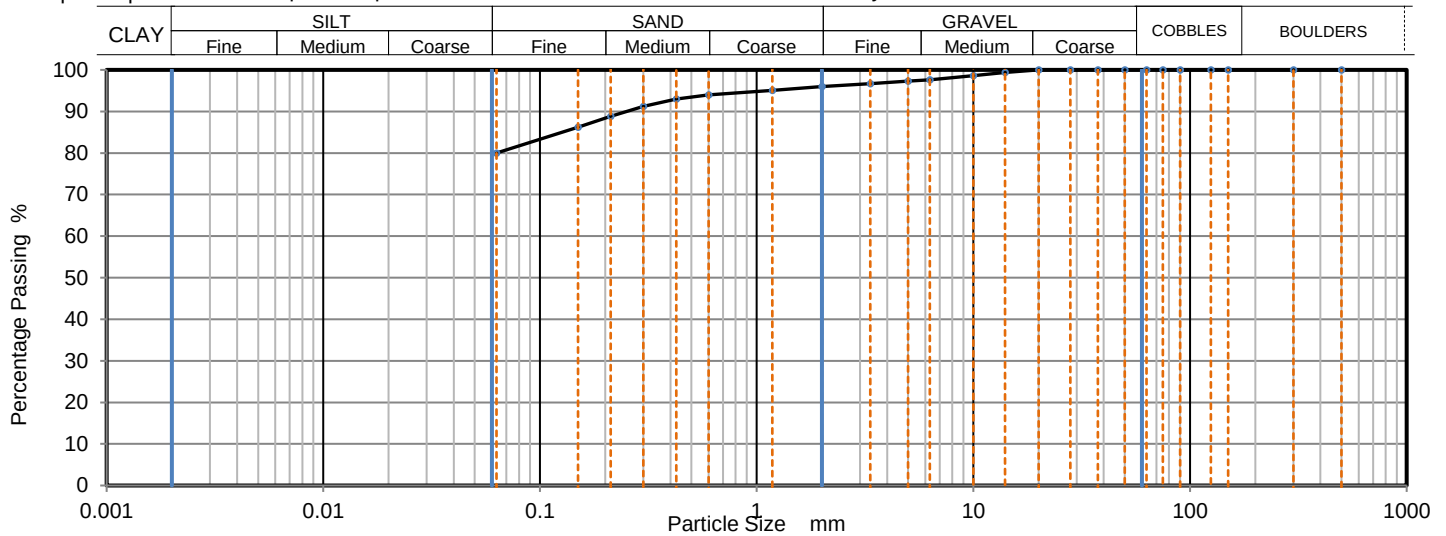
Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2514177
Hole No.: DS108
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 2.00
Depth Base [m]: 5.00
Sample Type: B


Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	98		
5	97		
3.35	97		
2	96		
1.18	95		
0.6	94		
0.425	93		
0.3	91		
0.212	89		
0.15	86		
0.063	80		

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	16
Fines <0.063mm	80

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Brackmills Industrial Estate
Northampton NN4 7EB

Client: Delta-Simons
Client Address: Suite 4a, One Portland Street,
Manchester, M1 3BE

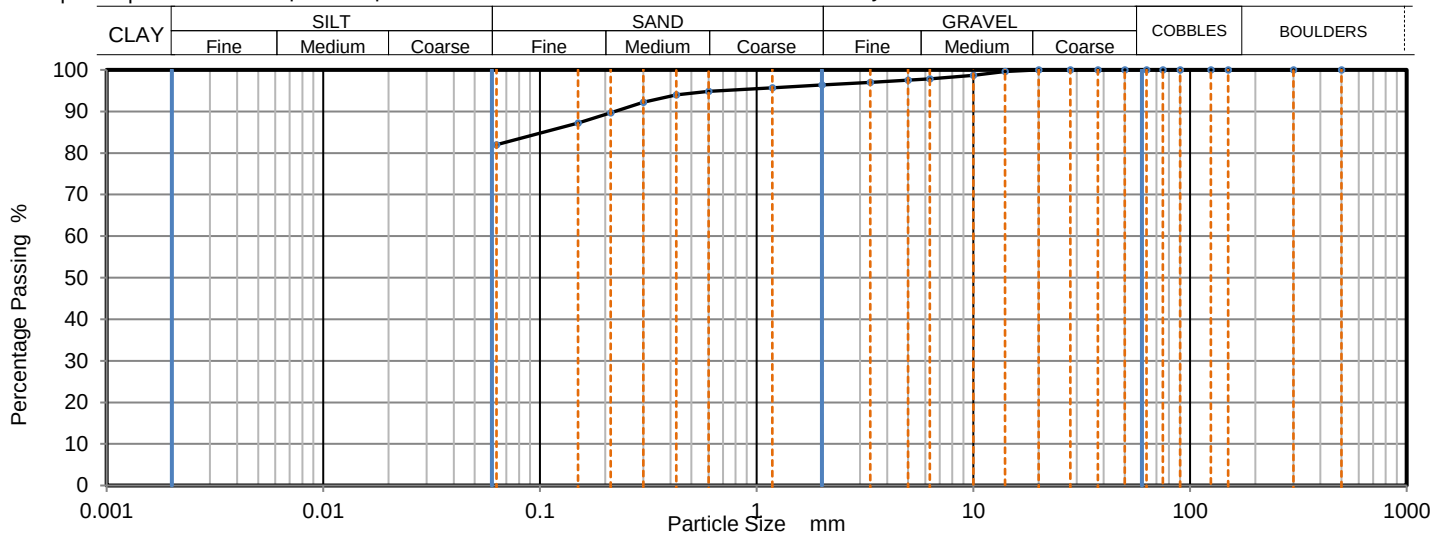
Contact: Jessica Muckle
Site Address: Reliance Street, Manchester

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 22-1496.04
Job Number: 22-10003
Date Sampled: 22/11/2022
Date Received: 23/11/2022
Date Tested: 06/12/2022
Sampled By: Not Given

Test Results:

Laboratory Reference: 2514903
Hole No.: DS105
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 2.10
Depth Base [m]: 5.00
Sample Type: B


Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	98		
5	98		
3.35	97		
2	96		
1.18	96		
0.6	95		
0.425	94		
0.3	92		
0.212	90		
0.15	87		
0.063	82		

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	14
Fines <0.063mm	82

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Appendix D - Soil Chemical Analysis Results



Jessica Muckle
Delta-Simons
Suite 4a
One Portland Street
Manchester
M1 3BE

e: jessica.muckle@deltasimons.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 22-10005

Project / Site name:	Reliance Street, Manchester	Samples received on:	23/11/2022
Your job number:	22-1496.04	Samples instructed on/ Analysis started on:	28/11/2022
Your order number:	DS71279	Analysis completed by:	08/12/2022
Report Issue Number:	1	Report issued on:	09/12/2022
Samples Analysed:	7 soil samples		

Signed:

Elzbieta Suchy
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-10005

Project / Site name: Reliance Street, Manchester

Your Order No: DS71279

Lab Sample Number				2514184	2514185	2514186	2514187	2514188
Sample Reference				DS101	DS102	DS103	DS104	DS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.80-2.00	2.80-3.00	4.80-5.00	2.80-3.00	3.80-4.00
Date Sampled				22/11/2022	22/11/2022	22/11/2022	22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	13	14	16	14
Total mass of sample received	kg	0.001	NONE	0.6	0.7	0.5	0.6	0.5

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	8.4	8.2	8.2	8
Total Sulphate as SO ₄	%	0.005	MCERTS	0.015	0.02	0.017	0.021	0.023
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	28	46	45	98	59
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.023	0.023	0.049	0.029
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	14.1	23.1	22.7	48.9	29.3
Total Sulphur	%	0.005	MCERTS	0.009	0.013	0.016	0.012	0.015
Organic Matter (automated)	%	0.1	MCERTS	1.5	1.3	1.3	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-10005

Project / Site name: Reliance Street, Manchester

Your Order No: DS71279

Lab Sample Number				2514189	2514459
Sample Reference				DS108	DS105
Sample Number				None Supplied	None Supplied
Depth (m)				1.40-1.60	2.70-2.90
Date Sampled				22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	13
Total mass of sample received	kg	0.001	NONE	0.4	0.6

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8	-
Total Sulphate as SO ₄	%	0.005	MCERTS	0.018	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	24	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.012	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	11.8	-
Total Sulphur	%	0.005	MCERTS	0.021	-
Organic Matter (automated)	%	0.1	MCERTS	2.6	1.3

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-10005

Project / Site name: Reliance Street, Manchester

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2514184	DS101	None Supplied	1.80-2.00	Brown clay.
2514185	DS102	None Supplied	2.80-3.00	Brown clay.
2514186	DS103	None Supplied	4.80-5.00	Brown clay.
2514187	DS104	None Supplied	2.80-3.00	Brown clay.
2514188	DS105	None Supplied	3.80-4.00	Brown clay.
2514189	DS108	None Supplied	1.40-1.60	Brown clay.
2514459	DS105	None Supplied	2.70-2.90	Brown clay.

Analytical Report Number : 22-10005

Project / Site name: Reliance Street, Manchester

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.



Jessica Muckle
Delta-Simons
Suite 4a
One Portland Street
Manchester
M1 3BE

e: jessica.muckle@deltasimons.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 22-98937

Project / Site name:	Reliance Street, Manchester	Samples received on:	23/11/2022
Your job number:	22-1496.04	Samples instructed on/ Analysis started on:	25/11/2022
Your order number:	DS71277	Analysis completed by:	07/12/2022
Report Issue Number:	1	Report issued on:	08/12/2022
Samples Analysed:	12 soil samples		


Signed:

Dominika Warjan
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-98937
Project / Site name: Reliance Street, Manchester
Your Order No: DS71277

Lab Sample Number				2511912	2511913	2511914	2511915	2511916
Sample Reference				DS101	DS101	DS102	DS102	DS103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50-0.60	1.00-1.10	0.60-0.80	0.90-1.10	0.60-0.70
Date Sampled				21/11/2022	21/11/2022	22/11/2022	22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	20	9.7	19	17
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.8	0.8	0.4

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SFS	SFS	SFS	SFS	SFS

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3	8.2	7.9	7.5	7.6
Total Sulphate as SO ₄	%	0.005	MCERTS	0.114	-	-	0.047	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	74	47	61	38	140
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.037	0.024	0.03	0.019	0.07
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	37.2	23.5	30.3	19	69.8
Total Sulphur	%	0.005	MCERTS	0.078	-	-	0.043	-
Organic Matter (automated)	%	0.1	MCERTS	6.8	-	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	1.9	1.3	2.5	2.4	6.7
Acenaphthylene	mg/kg	0.05	NONE	0.73	0.47	0.43	0.44	1.5
Acenaphthene	mg/kg	0.05	NONE	2.8	1.6	1.1	1.4	6.8
Fluorene	mg/kg	0.05	NONE	2.6	1.3	1.9	2.4	9.4
Phenanthrene	mg/kg	0.05	NONE	18	11	6.2	8.9	48
Anthracene	mg/kg	0.05	NONE	5	2.7	2.1	2.7	13
Fluoranthene	mg/kg	0.05	NONE	29	20	6.3	6.9	43
Pyrene	mg/kg	0.05	NONE	27	18	5.6	5.9	37
Benzo(a)anthracene	mg/kg	0.05	NONE	16	9.8	3.3	3.2	19
Chrysene	mg/kg	0.05	NONE	12	8.8	2.4	2.4	17
Benzo(b)fluoranthene	mg/kg	0.05	NONE	15	9.7	2.9	2.5	17
Benzo(k)fluoranthene	mg/kg	0.05	NONE	6.6	4.4	1.5	0.97	7.7
Benzo(a)pyrene	mg/kg	0.05	NONE	14	7.8	2.6	2.3	15
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	7	3.9	1.4	1.1	6.5
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	1.6	0.98	0.35	0.3	1.9
Benzo(ghi)perylene	mg/kg	0.05	NONE	7.3	4.8	1.6	1.2	7.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	166	107	42.1	45	257
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	51	54	17	35	46
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.8	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	25	24	20	21	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	25	20	22	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	170	190	110	160	130
Lead (aqua regia extractable)	mg/kg	1	MCERTS	610	600	150	140	520
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.5	1.1	0.4	< 0.3	1.1
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	39	37	22	33	36
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	860	940	130	89	180

Analytical Report Number: 22-98937
Project / Site name: Reliance Street, Manchester
Your Order No: DS71277

Lab Sample Number	2511912	2511913	2511914	2511915	2511916
Sample Reference	DS101	DS101	DS102	DS102	DS103
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.50-0.60	1.00-1.10	0.60-0.80	0.90-1.10	0.60-0.70
Date Sampled	21/11/2022	21/11/2022	22/11/2022	22/11/2022	22/11/2022
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics & Oxygenates

Benzene	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
p & m-xylene	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
o-xylene	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS 1D AL	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS 1D AL	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS 1D AL	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH CU 1D AL	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH CU 1D AL	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	2.3
TPH-CWG - Aliphatic >EC16 - EC21 EH CU 1D AL	mg/kg	8	NONE	< 8.0	< 8.0	8.6	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 EH CU 1D AL	mg/kg	8	NONE	12	< 8.0	170	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC35 - EC40 EH CU 1D AL	mg/kg	10	NONE	< 10	< 10	120	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC35) EH CU+HS 1D AL	mg/kg	10	NONE	13	< 10	180	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7 HS 1D AR	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS 1D AR	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS 1D AR	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH CU 1D AR	mg/kg	1	NONE	< 1.0	< 1.0	17	1.4	7.8
TPH-CWG - Aromatic >EC12 - EC16 EH CU 1D AR	mg/kg	2	NONE	5.8	4.4	15	4.1	19
TPH-CWG - Aromatic >EC16 - EC21 EH CU 1D AR	mg/kg	10	NONE	66	51	61	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 EH CU 1D AR	mg/kg	10	NONE	140	100	230	< 10	< 10
TPH-CWG - Aromatic >EC35 - EC40 EH CU 1D AR	mg/kg	10	NONE	18	< 10	160	< 10	26
TPH-CWG - Aromatic (EC5 - EC35) EH CU+HS 1D AR	mg/kg	10	NONE	220	160	320	< 10	27

TPH (C35 - C40) EH CU 1D TOTAL	mg/kg	10	NONE	18	< 10	280	< 10	29
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VOCs

Chloromethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Chloroethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Bromomethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Vinyl Chloride	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Trichlorofluoromethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,1-Dichloroethene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,1,2-Trichloro 1,2,2-Trifluoroethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Cis-1,2-dichloroethene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,1-Dichloroethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
2,2-Dichloropropane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Trichloromethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,1,1-Trichloroethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,2-Dichloroethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,1-Dichloropropene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Trans-1,2-dichloroethene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Benzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Tetrachloromethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,2-Dichloropropane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Trichloroethene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Dibromomethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Bromodichloromethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Cis-1,3-dichloropropene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Trans-1,3-dichloropropene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010

Analytical Report Number: 22-98937
Project / Site name: Reliance Street, Manchester
Your Order No: DS71277

Lab Sample Number				2511912	2511913	2511914	2511915	2511916
Sample Reference				DS101	DS101	DS102	DS102	DS103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50-0.60	1.00-1.10	0.60-0.80	0.90-1.10	0.60-0.70
Date Sampled				21/11/2022	21/11/2022	22/11/2022	22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Toluene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,1,2-Trichloroethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,3-Dichloropropane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Dibromochloromethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Tetrachloroethene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,2-Dibromoethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Chlorobenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,1,1,2-Tetrachloroethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Ethylbenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
p & m-Xylene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Styrene	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
Tribromomethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
o-Xylene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,1,2,2-Tetrachloroethane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Isopropylbenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Bromobenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
n-Propylbenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
2-Chlorotoluene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
4-Chlorotoluene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,3,5-Trimethylbenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
tert-Butylbenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,2,4-Trimethylbenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
sec-Butylbenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,3-Dichlorobenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
p-Isopropyltoluene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,2-Dichlorobenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,4-Dichlorobenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Butylbenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,2-Dibromo-3-chloropropane	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,2,4-Trichlorobenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
Hexachlorobutadiene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010
1,2,3-Trichlorobenzene	mg/kg	0.001	NONE	< 0.0010	-	-	< 0.0010	< 0.0010

VOCs TICs

VOCs TICs Compound Name		N/A	NONE	ND	-	-	ND	ND
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SVOCs

Aniline	mg/kg	0.1	NONE	0.4	-	-	0.3	0.5
Phenol	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	NONE	< 0.1	-	-	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	NONE	0.2	-	-	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	NONE	< 0.1	-	-	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	NONE	< 0.1	-	-	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
Isophorone	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	0.6
Bis(2-chloroethoxy)methane	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	NONE	1.9	-	-	2.4	6.7
2,4-Dichlorophenol	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	< 0.3

Analytical Report Number: 22-98937
Project / Site name: Reliance Street, Manchester
Your Order No: DS71277

Lab Sample Number				2511912	2511913	2511914	2511915	2511916
Sample Reference				DS101	DS101	DS102	DS102	DS103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50-0.60	1.00-1.10	0.60-0.80	0.90-1.10	0.60-0.70
Date Sampled				21/11/2022	21/11/2022	22/11/2022	22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	-	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	NONE	< 0.1	-	-	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	-	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	-	-	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	1.9	-	-	2.4	8.1
2-Chloronaphthalene	mg/kg	0.1	NONE	< 0.1	-	-	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	NONE	< 0.1	-	-	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	< 0.1	-	-	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.05	NONE	0.73	-	-	0.44	1.5
Acenaphthene	mg/kg	0.05	NONE	2.8	-	-	1.4	6.8
2,4-Dinitrotoluene	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	NONE	1.5	-	-	1.5	6.1
4-Chlorophenyl phenyl ether	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
Fluorene	mg/kg	0.05	NONE	2.6	-	-	2.4	9.4
Azobenzene	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	< 0.3
Phenanthrene	mg/kg	0.05	NONE	18	-	-	8.9	48
Anthracene	mg/kg	0.05	NONE	5	-	-	2.7	13
Carbazole	mg/kg	0.3	NONE	1.3	-	-	0.6	3.9
Dibutyl phthalate	mg/kg	0.2	NONE	< 0.2	-	-	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	NONE	1.8	-	-	< 0.3	2.5
Fluoranthene	mg/kg	0.05	NONE	29	-	-	6.9	43
Pyrene	mg/kg	0.05	NONE	27	-	-	5.9	37
Butyl benzyl phthalate	mg/kg	0.3	NONE	< 0.3	-	-	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.05	NONE	16	-	-	3.2	19
Chrysene	mg/kg	0.05	NONE	12	-	-	2.4	17
Benzo(b)fluoranthene	mg/kg	0.05	NONE	15	-	-	2.5	17
Benzo(k)fluoranthene	mg/kg	0.05	NONE	6.6	-	-	0.97	7.7
Benzo(a)pyrene	mg/kg	0.05	NONE	14	-	-	2.3	15
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	7	-	-	1.1	6.5
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	1.6	-	-	0.3	1.9
Benzo(ghi)perylene	mg/kg	0.05	NONE	7.3	-	-	1.2	7.2

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-98937
Project / Site name: Reliance Street, Manchester
Your Order No: DS71277

Lab Sample Number				2511917	2511918	2511919	2511920	2511921
Sample Reference				DS103	DS103	DS104	DS104	DS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	1.50-1.70	0.40-0.50	0.90-1.00	0.40-0.50
Date Sampled				22/11/2022	22/11/2022	22/11/2022	22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	27	28	3	23	15
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.8	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SFS	SFS	SFS	SFS	SFS

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.9	7.3	8.9	8.2	8.7
Total Sulphate as SO ₄	%	0.005	MCERTS	0.037	-	-	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	140	140	34	25	85
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.07	0.072	0.017	0.013	0.042
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	70.2	72.3	16.8	12.5	42.4
Total Sulphur	%	0.005	MCERTS	0.189	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	5.7	3.7	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	0.41	0.31	0.28	0.77	0.77
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	0.41
Acenaphthene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.08	0.6
Fluorene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	0.07	0.42
Phenanthrene	mg/kg	0.05	NONE	0.37	0.07	0.22	0.82	3.6
Anthracene	mg/kg	0.05	NONE	0.06	< 0.05	< 0.05	0.14	0.87
Fluoranthene	mg/kg	0.05	NONE	0.31	0.05	0.22	1.2	6.2
Pyrene	mg/kg	0.05	NONE	0.32	0.06	0.19	0.98	6.2
Benzo(a)anthracene	mg/kg	0.05	NONE	0.2	< 0.05	0.1	0.48	3.2
Chrysene	mg/kg	0.05	NONE	0.24	< 0.05	0.08	0.47	3.3
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.31	< 0.05	0.12	0.55	3.6
Benzo(k)fluoranthene	mg/kg	0.05	NONE	0.09	< 0.05	< 0.05	0.16	2.2
Benzo(a)pyrene	mg/kg	0.05	NONE	0.19	< 0.05	0.11	0.34	3.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	0.16	< 0.05	< 0.05	0.19	1.9
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	0.48
Benzo(ghi)perylene	mg/kg	0.05	NONE	0.18	< 0.05	< 0.05	0.23	2.3

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	2.84	< 0.80	1.32	6.52	39.8
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	39	14	2.8	45	17
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.7	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	1.9	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	20	22	4.1	20	27
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	24	4.3	20	27
Copper (aqua regia extractable)	mg/kg	1	MCERTS	85	37	8.7	110	66
Lead (aqua regia extractable)	mg/kg	1	MCERTS	310	67	38	110	230
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	35	27	7.9	30	31
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	400	240	36	90	120

Analytical Report Number: 22-98937
Project / Site name: Reliance Street, Manchester
Your Order No: DS71277

Lab Sample Number				2511917	2511918	2511919	2511920	2511921
Sample Reference				DS103	DS103	DS104	DS104	DS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	1.50-1.70	0.40-0.50	0.90-1.00	0.40-0.50
Date Sampled				22/11/2022	22/11/2022	22/11/2022	22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics & Oxygenates								
Benzene	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
p & m-xylene	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
o-xylene	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH, CU, 1D, AL}	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH, CU, 1D, AL}	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH, CU, 1D, AL}	mg/kg	8	NONE	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH, CU, 1D, AL}	mg/kg	8	NONE	< 8.0	< 8.0	66	< 8.0	120
TPH-CWG - Aliphatic >EC35 - EC40 _{EH, CU, 1D, AL}	mg/kg	10	NONE	< 10	< 10	98	< 10	55
TPH-CWG - Aliphatic (EC5 - EC35) _{EH, CU+HS, 1D, AL}	mg/kg	10	NONE	< 10	< 10	66	< 10	120

TPH-CWG - Aromatic >EC5 - EC7 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH, CU, 1D, AR}	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH, CU, 1D, AR}	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	3.8
TPH-CWG - Aromatic >EC16 - EC21 _{EH, CU, 1D, AR}	mg/kg	10	NONE	< 10	< 10	< 10	< 10	40
TPH-CWG - Aromatic >EC21 - EC35 _{EH, CU, 1D, AR}	mg/kg	10	NONE	< 10	< 10	170	< 10	220
TPH-CWG - Aromatic >EC35 - EC40 _{EH, CU, 1D, AR}	mg/kg	10	NONE	< 10	< 10	200	< 10	100
TPH-CWG - Aromatic (EC5 - EC35) _{EH, CU+HS, 1D, AR}	mg/kg	10	NONE	< 10	< 10	180	< 10	260

TPH (C35 - C40) _{EH, CU, 1D, TOTAL}	mg/kg	10	NONE	< 10	< 10	300	< 10	150
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VOCs

Chloromethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Chloroethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Bromomethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Vinyl Chloride	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Trichlorofluoromethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,1-Dichloroethene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Cis-1,2-dichloroethene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,1-Dichloroethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
2,2-Dichloropropane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Trichloromethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,1,1-Trichloroethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,2-Dichloroethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,1-Dichloropropene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Trans-1,2-dichloroethene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Benzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Tetrachloromethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,2-Dichloropropane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Trichloroethene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Dibromomethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Bromodichloromethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Cis-1,3-dichloropropene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Trans-1,3-dichloropropene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-

Analytical Report Number: 22-98937
Project / Site name: Reliance Street, Manchester
Your Order No: DS71277

Lab Sample Number				2511917	2511918	2511919	2511920	2511921
Sample Reference				DS103	DS103	DS104	DS104	DS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	1.50-1.70	0.40-0.50	0.90-1.00	0.40-0.50
Date Sampled				22/11/2022	22/11/2022	22/11/2022	22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Toluene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,1,2-Trichloroethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,3-Dichloropropane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Dibromochloromethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Tetrachloroethene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,2-Dibromoethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Chlorobenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,1,1,2-Tetrachloroethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Ethylbenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
p & m-Xylene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Styrene	mg/kg	0.001	NONE	-	-	< 0.001	-	-
Tri bromomethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
o-Xylene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,1,1,2,2-Tetrachloroethane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Isopropylbenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Bromobenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
n-Propylbenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
2-Chlorotoluene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
4-Chlorotoluene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,3,5-Trimethylbenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
tert-Butylbenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,2,4-Trimethylbenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
sec-Butylbenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,3-Dichlorobenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
p-Isopropyltoluene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,2-Dichlorobenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,4-Dichlorobenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Butylbenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,2-Dibromo-3-chloropropane	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,2,4-Trichlorobenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
Hexachlorobutadiene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-
1,2,3-Trichlorobenzene	mg/kg	0.001	NONE	-	-	< 0.0010	-	-

VOCs TICs

VOCs TICs Compound Name		N/A	NONE	-	-	ND	-	-
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SVOCs

Aniline	mg/kg	0.1	NONE	-	-	0.3	-	-
Phenol	mg/kg	0.2	NONE	-	-	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	NONE	-	-	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	NONE	-	-	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	NONE	-	-	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	NONE	-	-	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	NONE	-	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	NONE	-	-	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Isophorone	mg/kg	0.2	NONE	-	-	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	NONE	-	-	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	NONE	-	-	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	NONE	-	-	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	NONE	-	-	< 0.3	-	-
Naphthalene	mg/kg	0.05	NONE	-	-	0.28	-	-
2,4-Dichlorophenol	mg/kg	0.3	NONE	-	-	< 0.3	-	-

Analytical Report Number: 22-98937
Project / Site name: Reliance Street, Manchester
Your Order No: DS71277

Lab Sample Number				2511917	2511918	2511919	2511920	2511921
Sample Reference				DS103	DS103	DS104	DS104	DS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	1.50-1.70	0.40-0.50	0.90-1.00	0.40-0.50
Date Sampled				22/11/2022	22/11/2022	22/11/2022	22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	NONE	-	-	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	-	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	0.2	-	-
2-Chloronaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Acenaphthylene	mg/kg	0.05	NONE	-	-	< 0.05	-	-
Acenaphthene	mg/kg	0.05	NONE	-	-	< 0.05	-	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	NONE	-	-	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	NONE	-	-	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	NONE	-	-	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Fluorene	mg/kg	0.05	NONE	-	-	< 0.05	-	-
Azobenzene	mg/kg	0.3	NONE	-	-	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	NONE	-	-	< 0.3	-	-
Phenanthrene	mg/kg	0.05	NONE	-	-	0.22	-	-
Anthracene	mg/kg	0.05	NONE	-	-	< 0.05	-	-
Carbazole	mg/kg	0.3	NONE	-	-	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Anthraquinone	mg/kg	0.3	NONE	-	-	< 0.3	-	-
Fluoranthene	mg/kg	0.05	NONE	-	-	0.22	-	-
Pyrene	mg/kg	0.05	NONE	-	-	0.19	-	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	-	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.05	NONE	-	-	0.1	-	-
Chrysene	mg/kg	0.05	NONE	-	-	0.08	-	-
Benzo(b)fluoranthene	mg/kg	0.05	NONE	-	-	0.12	-	-
Benzo(k)fluoranthene	mg/kg	0.05	NONE	-	-	< 0.05	-	-
Benzo(a)pyrene	mg/kg	0.05	NONE	-	-	0.11	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	-	-	< 0.05	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	-	-	< 0.05	-	-
Benzo(ghi)perylene	mg/kg	0.05	NONE	-	-	< 0.05	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-98937
 Project / Site name: Reliance Street, Manchester
 Your Order No: DS71277

Lab Sample Number				2511922	2511923
Sample Reference				DS108	DS108
Sample Number				None Supplied	None Supplied
Depth (m)				0.30-0.40	0.80-1.00
Date Sampled				22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	4.5	13
Total mass of sample received	kg	0.001	NONE	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.8	8.4
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	60	59
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.03	0.03
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	30.1	29.5
Total Sulphur	%	0.005	MCERTS	-	-
Organic Matter (automated)	%	0.1	MCERTS	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	0.22	0.68
Acenaphthylene	mg/kg	0.05	NONE	0.19	0.24
Acenaphthene	mg/kg	0.05	NONE	0.07	1.5
Fluorene	mg/kg	0.05	NONE	0.07	0.96
Phenanthrene	mg/kg	0.05	NONE	0.59	11
Anthracene	mg/kg	0.05	NONE	0.14	2.8
Fluoranthene	mg/kg	0.05	NONE	0.85	25
Pyrene	mg/kg	0.05	NONE	0.89	23
Benzo(a)anthracene	mg/kg	0.05	NONE	0.41	13
Chrysene	mg/kg	0.05	NONE	0.43	11
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.42	13
Benzo(k)fluoranthene	mg/kg	0.05	NONE	0.29	6.3
Benzo(a)pyrene	mg/kg	0.05	NONE	0.47	12
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	0.2	6.1
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	1.7
Benzo(ghi)perylene	mg/kg	0.05	NONE	0.29	7.3

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	5.53	135
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.8	37
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	4.3	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	4.4	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	10	130
Lead (aqua regia extractable)	mg/kg	1	MCERTS	20	430
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.9
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	7.8	32
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	20	230

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Your Order No: DS71277

Lab Sample Number				2511922	2511923
Sample Reference				DS108	DS108
Sample Number				None Supplied	None Supplied
Depth (m)				0.30-0.40	0.80-1.00
Date Sampled				22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Monoaromatics & Oxygenates					
Benzene	mg/kg	0.001	NONE	< 0.001	< 0.001
Toluene	mg/kg	0.001	NONE	< 0.001	< 0.001
Ethylbenzene	mg/kg	0.001	NONE	< 0.001	< 0.001
p & m-xylene	mg/kg	0.001	NONE	< 0.001	< 0.001
o-xylene	mg/kg	0.001	NONE	< 0.001	< 0.001
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.001	NONE	< 0.001	< 0.001

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS 1D AL	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS 1D AL	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS 1D AL	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH CU 1D AL	mg/kg	1	NONE	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH CU 1D AL	mg/kg	2	NONE	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 EH CU 1D AL	mg/kg	8	NONE	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 EH CU 1D AL	mg/kg	8	NONE	110	< 8.0
TPH-CWG - Aliphatic >EC35 - EC40 EH CU 1D AL	mg/kg	10	NONE	160	11
TPH-CWG - Aliphatic (EC5 - EC35) EH CU+HS 1D AL	mg/kg	10	NONE	110	< 10

TPH-CWG - Aromatic >EC5 - EC7 HS 1D AR	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS 1D AR	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS 1D AR	mg/kg	0.001	NONE	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH CU 1D AR	mg/kg	1	NONE	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH CU 1D AR	mg/kg	2	NONE	< 2.0	5.2
TPH-CWG - Aromatic >EC16 - EC21 EH CU 1D AR	mg/kg	10	NONE	16	< 10
TPH-CWG - Aromatic >EC21 - EC35 EH CU 1D AR	mg/kg	10	NONE	320	< 10
TPH-CWG - Aromatic >EC35 - EC40 EH CU 1D AR	mg/kg	10	NONE	320	23
TPH-CWG - Aromatic (EC5 - EC35) EH CU+HS 1D AR	mg/kg	10	NONE	340	< 10

TPH (C35 - C40) EH CU 1D TOTAL	mg/kg	10	NONE	480	35
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VOCs

Chloromethane	mg/kg	0.001	NONE	-	< 0.0010
Chloroethane	mg/kg	0.001	NONE	-	< 0.0010
Bromomethane	mg/kg	0.001	NONE	-	< 0.0010
Vinyl Chloride	mg/kg	0.001	NONE	-	< 0.0010
Trichlorofluoromethane	mg/kg	0.001	NONE	-	< 0.0010
1,1-Dichloroethene	mg/kg	0.001	NONE	-	< 0.0010
1,1,2-Trichloro 1,2,2-Trifluoroethane	mg/kg	0.001	NONE	-	< 0.0010
Cis-1,2-dichloroethene	mg/kg	0.001	NONE	-	< 0.0010
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.001	NONE	-	< 0.0010
1,1-Dichloroethane	mg/kg	0.001	NONE	-	< 0.0010
2,2-Dichloropropane	mg/kg	0.001	NONE	-	< 0.0010
Trichloromethane	mg/kg	0.001	NONE	-	< 0.0010
1,1,1-Trichloroethane	mg/kg	0.001	NONE	-	< 0.0010
1,2-Dichloroethane	mg/kg	0.001	NONE	-	< 0.0010
1,1-Dichloropropene	mg/kg	0.001	NONE	-	< 0.0010
Trans-1,2-dichloroethene	mg/kg	0.001	NONE	-	< 0.0010
Benzene	mg/kg	0.001	NONE	-	< 0.0010
Tetrachloromethane	mg/kg	0.001	NONE	-	< 0.0010
1,2-Dichloropropane	mg/kg	0.001	NONE	-	< 0.0010
Trichloroethene	mg/kg	0.001	NONE	-	< 0.0010
Dibromomethane	mg/kg	0.001	NONE	-	< 0.0010
Bromodichloromethane	mg/kg	0.001	NONE	-	< 0.0010
Cis-1,3-dichloropropene	mg/kg	0.001	NONE	-	< 0.0010
Trans-1,3-dichloropropene	mg/kg	0.001	NONE	-	< 0.0010

Analytical Report Number: 22-98937
 Project / Site name: Reliance Street, Manchester
 Your Order No: DS71277

Lab Sample Number				2511922	2511923
Sample Reference				DS108	DS108
Sample Number				None Supplied	None Supplied
Depth (m)				0.30-0.40	0.80-1.00
Date Sampled				22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Toluene	mg/kg	0.001	NONE	-	< 0.0010
1,1,2-Trichloroethane	mg/kg	0.001	NONE	-	< 0.0010
1,3-Dichloropropane	mg/kg	0.001	NONE	-	< 0.0010
Dibromochloromethane	mg/kg	0.001	NONE	-	< 0.0010
Tetrachloroethene	mg/kg	0.001	NONE	-	< 0.0010
1,2-Dibromoethane	mg/kg	0.001	NONE	-	< 0.0010
Chlorobenzene	mg/kg	0.001	NONE	-	< 0.0010
1,1,1,2-Tetrachloroethane	mg/kg	0.001	NONE	-	< 0.0010
Ethylbenzene	mg/kg	0.001	NONE	-	< 0.0010
p & m-Xylene	mg/kg	0.001	NONE	-	< 0.0010
Styrene	mg/kg	0.001	NONE	-	< 0.001
Tribromomethane	mg/kg	0.001	NONE	-	< 0.0010
o-Xylene	mg/kg	0.001	NONE	-	< 0.0010
1,1,2,2-Tetrachloroethane	mg/kg	0.001	NONE	-	< 0.0010
Isopropylbenzene	mg/kg	0.001	NONE	-	< 0.0010
Bromobenzene	mg/kg	0.001	NONE	-	< 0.0010
n-Propylbenzene	mg/kg	0.001	NONE	-	< 0.0010
2-Chlorotoluene	mg/kg	0.001	NONE	-	< 0.0010
4-Chlorotoluene	mg/kg	0.001	NONE	-	< 0.0010
1,3,5-Trimethylbenzene	mg/kg	0.001	NONE	-	< 0.0010
tert-Butylbenzene	mg/kg	0.001	NONE	-	< 0.0010
1,2,4-Trimethylbenzene	mg/kg	0.001	NONE	-	< 0.0010
sec-Butylbenzene	mg/kg	0.001	NONE	-	< 0.0010
1,3-Dichlorobenzene	mg/kg	0.001	NONE	-	< 0.0010
p-Isopropyltoluene	mg/kg	0.001	NONE	-	< 0.0010
1,2-Dichlorobenzene	mg/kg	0.001	NONE	-	< 0.0010
1,4-Dichlorobenzene	mg/kg	0.001	NONE	-	< 0.0010
Butylbenzene	mg/kg	0.001	NONE	-	< 0.0010
1,2-Dibromo-3-chloropropane	mg/kg	0.001	NONE	-	< 0.0010
1,2,4-Trichlorobenzene	mg/kg	0.001	NONE	-	< 0.0010
Hexachlorobutadiene	mg/kg	0.001	NONE	-	< 0.0010
1,2,3-Trichlorobenzene	mg/kg	0.001	NONE	-	< 0.0010

VOCs TICs

VOCs TICs Compound Name		N/A	NONE	-	ND
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SVOCs

Aniline	mg/kg	0.1	NONE	-	0.7
Phenol	mg/kg	0.2	NONE	-	< 0.2
2-Chlorophenol	mg/kg	0.1	NONE	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	NONE	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	NONE	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	NONE	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	NONE	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	NONE	-	< 0.1
2-Methylphenol	mg/kg	0.3	NONE	-	< 0.3
Hexachloroethane	mg/kg	0.05	NONE	-	< 0.05
Nitrobenzene	mg/kg	0.3	NONE	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2
Isophorone	mg/kg	0.2	NONE	-	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	NONE	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	NONE	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	NONE	-	< 0.3
Naphthalene	mg/kg	0.05	NONE	-	0.68
2,4-Dichlorophenol	mg/kg	0.3	NONE	-	< 0.3

Analytical Report Number: 22-98937
 Project / Site name: Reliance Street, Manchester
 Your Order No: DS71277

Lab Sample Number				2511922	2511923
Sample Reference				DS108	DS108
Sample Number				None Supplied	None Supplied
Depth (m)				0.30-0.40	0.80-1.00
Date Sampled				22/11/2022	22/11/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	NONE	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	0.8
2-Chloronaphthalene	mg/kg	0.1	NONE	-	< 0.1
Dimethylphthalate	mg/kg	0.1	NONE	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	< 0.1
Acenaphthylene	mg/kg	0.05	NONE	-	0.24
Acenaphthene	mg/kg	0.05	NONE	-	1.5
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	< 0.2
Dibenzofuran	mg/kg	0.2	NONE	-	0.5
4-Chlorophenyl phenyl ether	mg/kg	0.3	NONE	-	< 0.3
Diethyl phthalate	mg/kg	0.2	NONE	-	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	-	< 0.2
Fluorene	mg/kg	0.05	NONE	-	0.96
Azobenzene	mg/kg	0.3	NONE	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	NONE	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	NONE	-	< 0.3
Phenanthrene	mg/kg	0.05	NONE	-	11
Anthracene	mg/kg	0.05	NONE	-	2.8
Carbazole	mg/kg	0.3	NONE	-	0.7
Dibutyl phthalate	mg/kg	0.2	NONE	-	< 0.2
Anthraquinone	mg/kg	0.3	NONE	-	1.1
Fluoranthene	mg/kg	0.05	NONE	-	25
Pyrene	mg/kg	0.05	NONE	-	23
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	NONE	-	13
Chrysene	mg/kg	0.05	NONE	-	11
Benzo(b)fluoranthene	mg/kg	0.05	NONE	-	13
Benzo(k)fluoranthene	mg/kg	0.05	NONE	-	6.3
Benzo(a)pyrene	mg/kg	0.05	NONE	-	12
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	-	6.1
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	-	1.7
Benzo(ghi)perylene	mg/kg	0.05	NONE	-	7.3

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-98937

Project / Site name: Reliance Street, Manchester

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2511912	DS101	None Supplied	0.50-0.60	Brown loam and clay with gravel and vegetation.
2511913	DS101	None Supplied	1.00-1.10	Brown loam and clay with gravel and brick.
2511914	DS102	None Supplied	0.60-0.80	Brown loam and clay with gravel and rubble.
2511915	DS102	None Supplied	0.90-1.10	Brown clay and sand with gravel.
2511916	DS103	None Supplied	0.60-0.70	Brown loam and clay with gravel and brick.
2511917	DS103	None Supplied	1.00-1.20	Brown clay and sand with gravel and vegetation.
2511918	DS103	None Supplied	1.50-1.70	Brown clay and sand with gravel.
2511919	DS104	None Supplied	0.40-0.50	Light brown clay and sand with gravel.
2511920	DS104	None Supplied	0.90-1.00	Brown clay and sand with gravel and brick.
2511921	DS105	None Supplied	0.40-0.50	Brown loam and sand with gravel and brick.
2511922	DS108	None Supplied	0.30-0.40	Light brown clay and sand with gravel.
2511923	DS108	None Supplied	0.80-1.00	Brown loam and clay with gravel and brick.

Analytical Report Number : 22-98937

Project / Site name: Reliance Street, Manchester

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	NONE
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS

Analytical Report Number : 22-98937
Project / Site name: Reliance Street, Manchester

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.

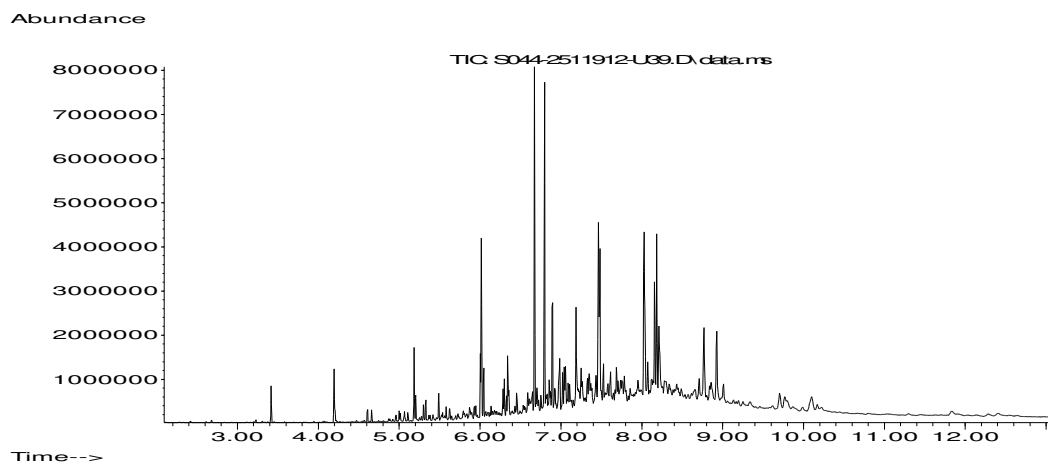
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC

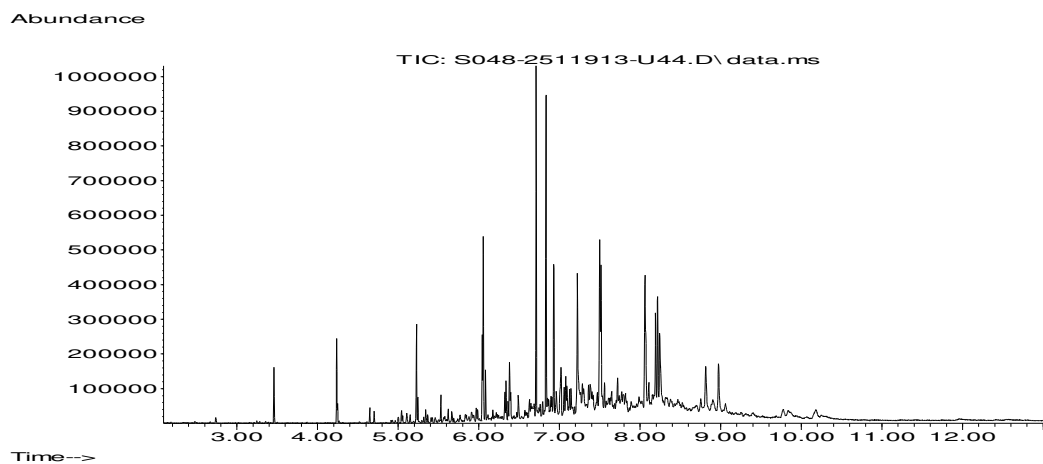
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

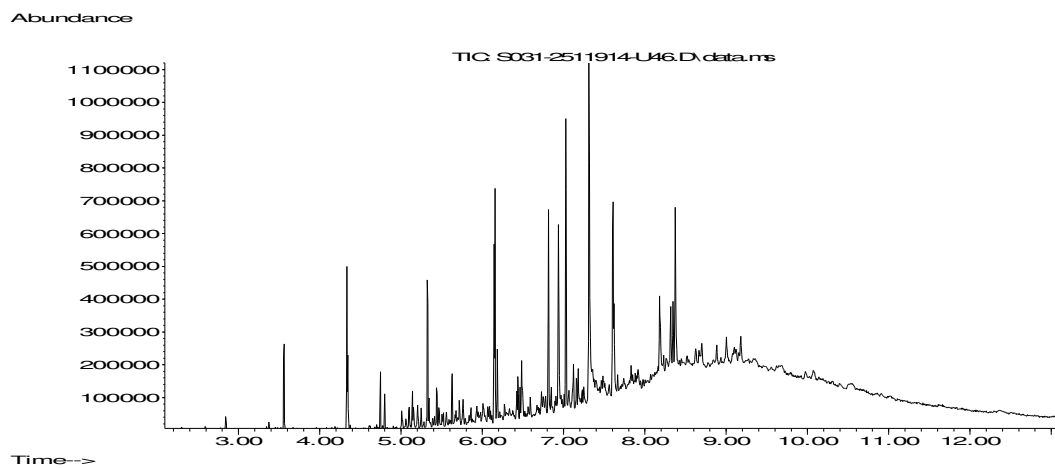
Information in Support of Analytical Results

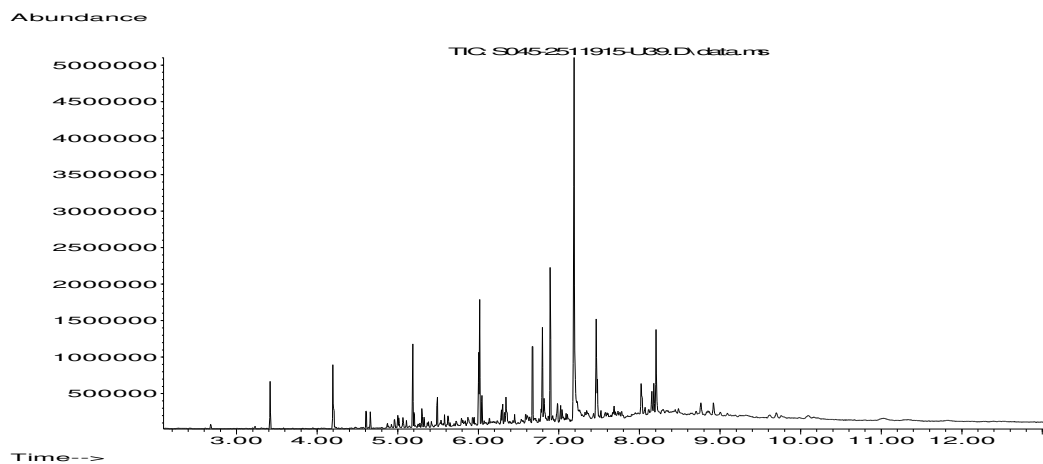
List of HWOL Acronyms and Operators

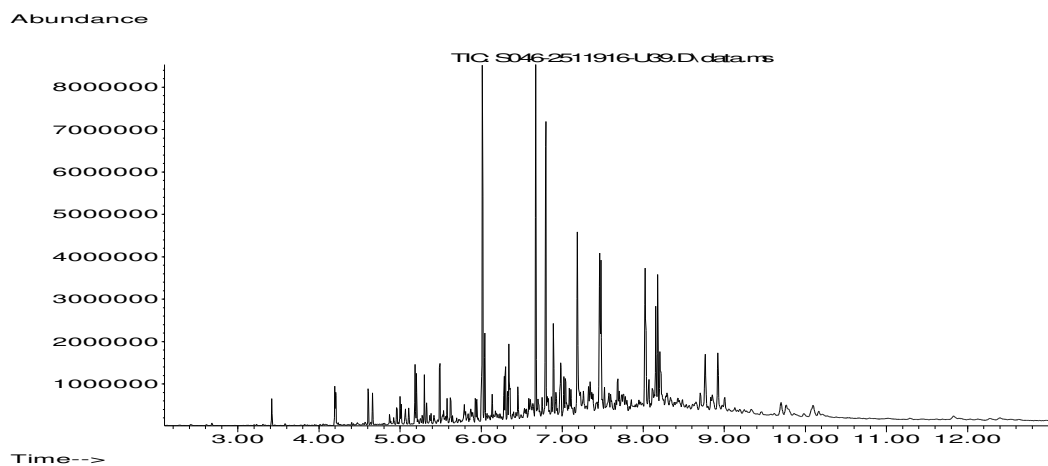
Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

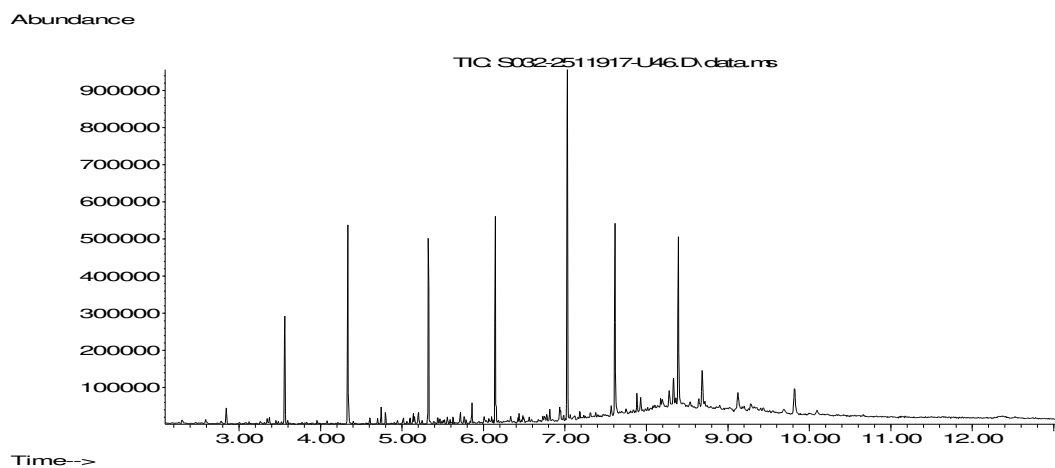


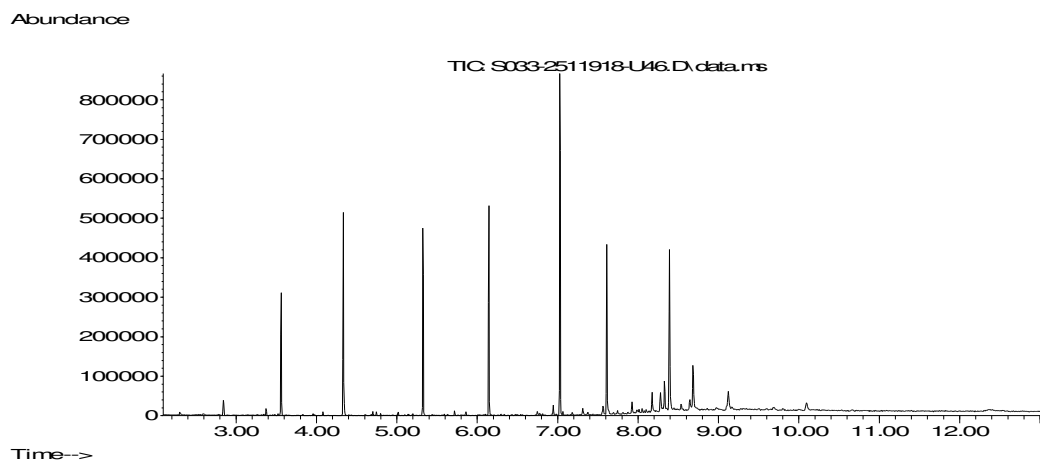


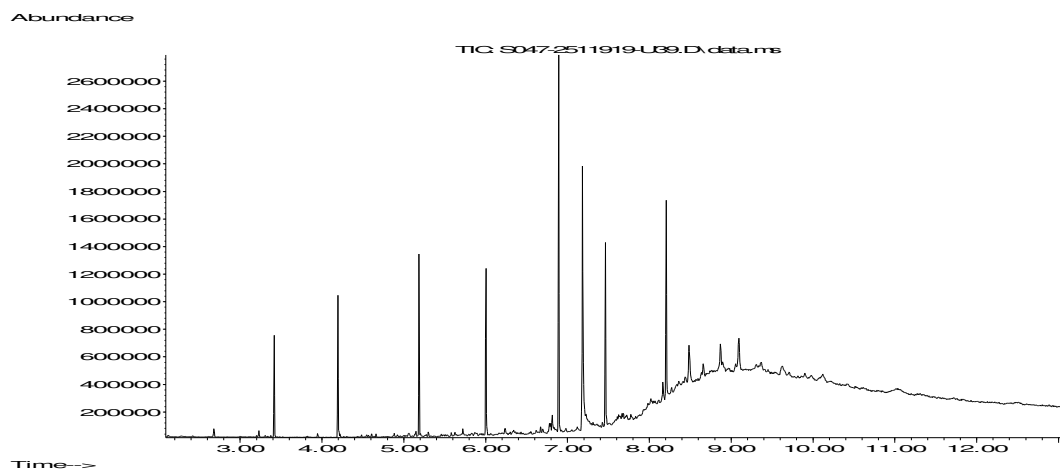


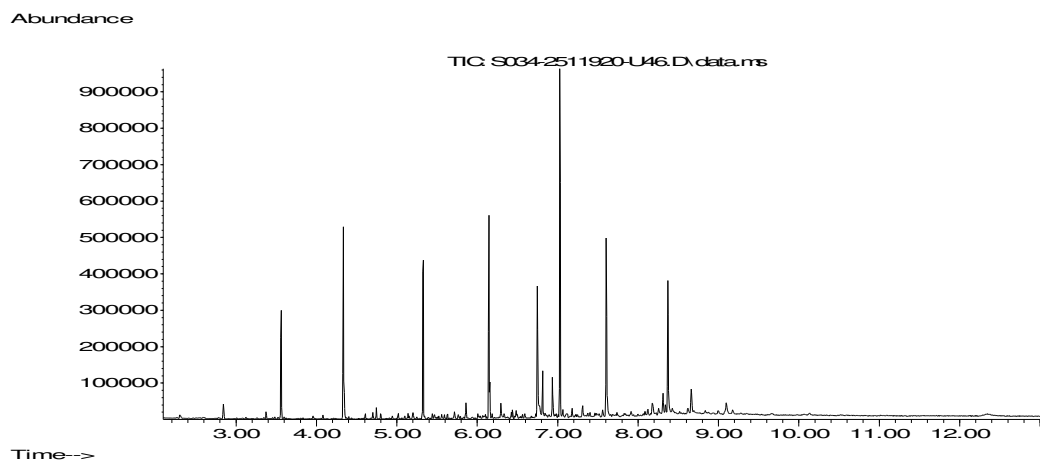


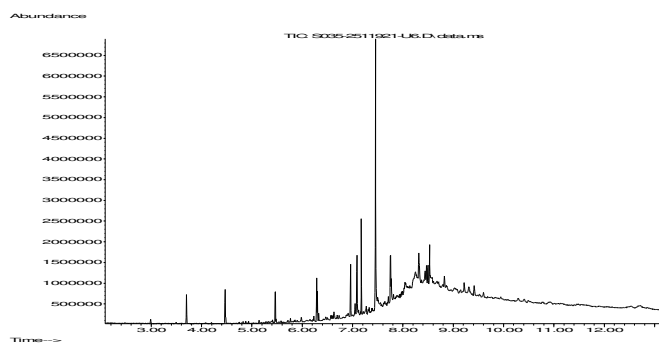


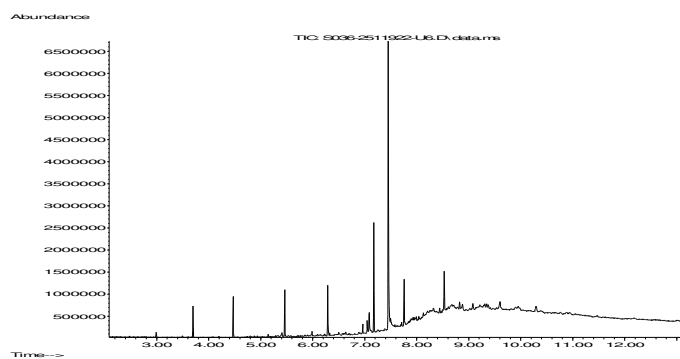


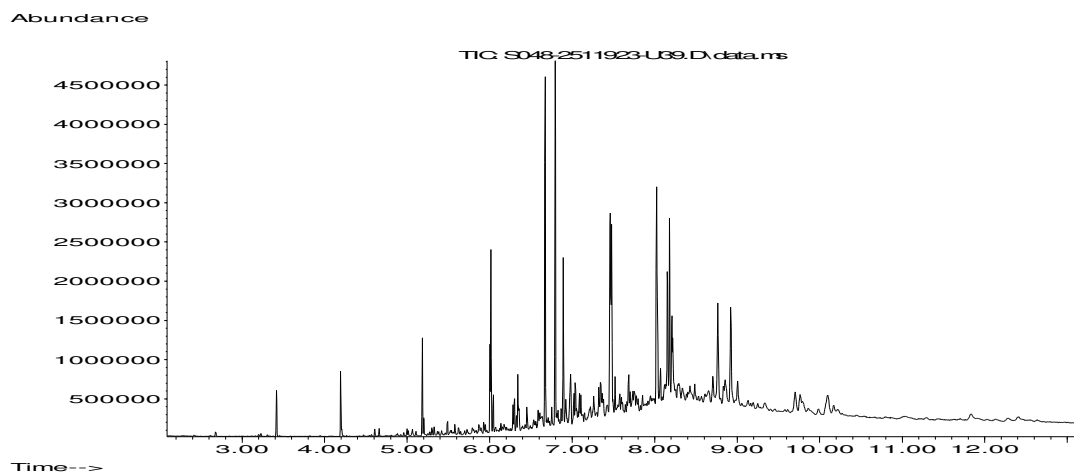












Appendix E - Groundwater Chemical Analysis Results



Jay Roche
Delta-Simons
Suite 4a
One Portland Street
Manchester
M1 3BE

e: jay.roche@deltasimons.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 22-10645

Project / Site name:	Reliance Street	Samples received on:	01/12/2022
Your job number:	22 1496 04	Samples instructed on/ Analysis started on:	01/12/2022
Your order number:	DS71368	Analysis completed by:	08/12/2022
Report Issue Number:	1	Report issued on:	08/12/2022
Samples Analysed:	6 water samples		


Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-10645
Project / Site name: Reliance Street

Your Order No: DS71368

Lab Sample Number	2517713	2517714	2517715	2517716	2517717
Sample Reference	DS101	DS102	DS103	DS104	DS105
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

pH	pH Units	N/A	ISO 17025	7.3	7.4	7.1	7.6	7.6
Sulphate as SO4	µg/l	45	ISO 17025	33700	48500	26800	252000	118000

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	2.73	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	0.4	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	2.02	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	1.71	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	8.69	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	2.19	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	13.5	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	12.2	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	6.13	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	6.24	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	8.75	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	2.16	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	6.45	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	3.19	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	0.94	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	3.95	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	81.2	< 0.16	< 0.16	< 0.16	< 0.16
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Heavy Metals / Metalloids

Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	16.4	2.69	19.6	0.87	0.36
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.04	< 0.02	0.04	0.06
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	0.3	3.1	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	< 0.5	6.1	0.9	3.4	1.5
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	< 0.2	0.8	< 0.2	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	3.2	6.4	5.6	4.2	2.8
Zinc (dissolved)	µg/l	0.5	ISO 17025	21	5.8	3.8	3.9	1.9

Monoaromatics & Oxygenates

Benzene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
Toluene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
Ethylbenzene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
p & m-xylene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6 _{HS 1D_AL}	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 _{HS 1D_AL}	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 _{HS 1D_AL}	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic >C10 - C12 _{EH 2D_AL #1 #2}	µg/l	10	ISO 17025	32	< 10	< 10	< 10	< 10
Aliphatic >C12 - C16 _{EH 2D_AL #1 #2}	µg/l	10	ISO 17025	150	< 10	< 10	< 10	< 10
Aliphatic >C16 - C21 _{EH 2D_AL #1 #2}	µg/l	10	ISO 17025	140	< 10	< 10	< 10	< 10
Aliphatic >C21 - C35 _{EH 2D_AL #1 #2}	µg/l	10	ISO 17025	440	< 10	< 10	< 10	< 10

Analytical Report Number: 22-10645
Project / Site name: Reliance Street

Your Order No: DS71368

Lab Sample Number	2517713	2517714	2517715	2517716	2517717
Sample Reference	DS101	DS102	DS103	DS104	DS105
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		
Aliphatic >C10 - C35 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	760	< 10

TPH-CWG - Aromatic >C5 - C7 HS_ID_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_ID_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_ID_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Aromatic >C10 - C12 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	95	27	< 10	< 10	< 10
Aromatic >C12 - C16 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	300	290	< 10	< 10	< 10
Aromatic >C16 - C21 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	590	180	< 10	< 10	< 10
Aromatic >C21 - C35 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	2400	390	< 10	< 10	< 10
Aromatic >C10 - C35 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	3400	890	< 10	< 10	< 10

VOCs

Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
p & m-Xylene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
Styrene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 22-10645
Project / Site name: Reliance Street

Your Order No: DS71368

Lab Sample Number				2517713	2517714	2517715	2517716	2517717
Sample Reference				DS101	DS102	DS103	DS104	DS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
1,3,5-Trimethylbenzene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	NONE	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

VOCs TICs

VOCs TICs Compound Name		N/A	NONE	None Detected	None Detected	None Detected	None Detected	None Detected
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SVOCS

Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	1.7	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	2.7	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	1.7	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Analytical Report Number: 22-10645
Project / Site name: Reliance Street

Your Order No: DS71368

Lab Sample Number				2517713	2517714	2517715	2517716	2517717
Sample Reference				DS101	DS102	DS103	DS104	DS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				30/11/2022	30/11/2022	30/11/2022	30/11/2022	30/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	0.4	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	2	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	1	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	1.7	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	8.7	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	2.2	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	0.76	0.66	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	13	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	12	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	6.1	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	6.2	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	8.8	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	2.2	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	6.5	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	3.2	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	0.94	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	4	< 0.01	< 0.01	< 0.01	< 0.01
3&4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

SVOCs TICs

SVOCs TICs Compound Name		N/A	NONE	Perylene	Benzene, hexamethyl-	None Detected	None Detected	None Detected
SVOC % Match	%	N/A	NONE	99	96			
SVOCs TICs Compound Name		N/A	NONE	Azulene, 4,6,8-trimethyl-	6-Methyl-4-indanol			
SVOC % Match	%	N/A	NONE	98	96			
SVOCs TICs Compound Name		N/A	NONE	Naphthalene, 2,3,6-trimethyl-	Phenol, 3-ethyl-5-methyl-			
SVOC % Match	%	N/A	NONE	97	94			
SVOCs TICs Compound Name		N/A	NONE	Phenanthrene, 1-methyl-	Phenol, 2-(2-penten-4-yl)-4-methyl-			
SVOC % Match	%	N/A	NONE	97	94			
SVOCs TICs Compound Name		N/A	NONE	Dibenz(a,e)aceanthrylene	9H-Fluorene-9-ol			
SVOC % Match	%	N/A	NONE	97	93			
SVOCs TICs Compound Name		N/A	NONE	Tetradecane	Oleic Acid			
SVOC % Match	%	N/A	NONE	96	93			
SVOCs TICs Compound Name		N/A	NONE	Naphthalene, 2,7-dimethyl-	Naphthalene, 1,2,3,4-tetrahydro-5,6,7,8-tetramethyl-			
SVOC % Match	%	N/A	NONE	96	92			

U/S = Unsuitable Sample I/S = Insufficient Sample

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

Analytical Report Number: 22-10645
Project / Site name: Reliance Street

Your Order No: DS71368

Lab Sample Number				2517718
Sample Reference				DS108a
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				30/11/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status	

General Inorganics

pH	pH Units	N/A	ISO 17025	7.8
Sulphate as SO ₄	µg/l	45	ISO 17025	32500

Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16
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Heavy Metals / Metalloids

Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.1
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5
Copper (dissolved)	µg/l	0.5	ISO 17025	2.7
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.3

Monoaromatics & Oxygenates

Benzene	µg/l	1	NONE	< 1.0*
Toluene	µg/l	1	NONE	< 1.0*
Ethylbenzene	µg/l	1	NONE	< 1.0*
p & m-xylene	µg/l	1	NONE	< 1.0*
o-xylene	µg/l	1	ISO 17025	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6 _{HS 1D AL}	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C6 - C8 _{HS 1D AL}	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C8 - C10 _{HS 1D AL}	µg/l	1	ISO 17025	< 1.0

Aliphatic >C10 - C12 _{EH 2D AL #1 #2}	µg/l	10	ISO 17025	< 10
Aliphatic >C12 - C16 _{EH 2D AL #1 #2}	µg/l	10	ISO 17025	< 10
Aliphatic >C16 - C21 _{EH 2D AL #1 #2}	µg/l	10	ISO 17025	< 10
Aliphatic >C21 - C35 _{EH 2D AL #1 #2}	µg/l	10	ISO 17025	< 10

Analytical Report Number: 22-10645
Project / Site name: Reliance Street

Your Order No: DS71368

Lab Sample Number				2517718
Sample Reference				D5108a
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				30/11/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status	
Aliphatic >C10 - C35 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	< 10

TPH-CWG - Aromatic >C5 - C7 HS_ID_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_ID_AR	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_ID_AR	µg/l	1	ISO 17025	< 1.0

Aromatic >C10 - C12 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	< 10
Aromatic >C12 - C16 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	< 10
Aromatic >C16 - C21 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	< 10
Aromatic >C21 - C35 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	< 10
Aromatic >C10 - C35 EH_2D_AR_#1_#2	µg/l	10	ISO 17025	< 10

VOCs

Chloromethane	µg/l	1	ISO 17025	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0
Benzene	µg/l	1	NONE	< 1.0*
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0
Toluene	µg/l	1	NONE	< 1.0*
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0
Ethylbenzene	µg/l	1	NONE	< 1.0*
p & m-Xylene	µg/l	1	NONE	< 1.0*
Styrene	µg/l	1	NONE	< 1.0*
Tribromomethane	µg/l	1	ISO 17025	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0
1,1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0

Analytical Report Number: 22-10645
Project / Site name: Reliance Street

Your Order No: DS71368

Lab Sample Number				2517718
Sample Reference				DS108a
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				30/11/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status	
1,3,5-Trimethylbenzene	µg/l	1	NONE	< 1.0*
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	NONE	< 1.0*
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0

VOCs TICs

VOCs TICs Compound Name		N/A	NONE	None Detected
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SVOCs

Aniline	µg/l	0.05	NONE	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05

Analytical Report Number: 22-10645
Project / Site name: Reliance Street

Your Order No: DS71368

Lab Sample Number				2517718
Sample Reference				DS108a
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				30/11/2022
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status	
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01

3&4-Methylphenol	µg/l	0.1	NONE	< 0.10
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SVOCs TICs

SVOCs TICs Compound Name		N/A	NONE	None Detected
SVOC % Match	%	N/A	NONE	
SVOCs TICs Compound Name		N/A	NONE	
SVOC % Match	%	N/A	NONE	
SVOCs TICs Compound Name		N/A	NONE	
SVOC % Match	%	N/A	NONE	
SVOCs TICs Compound Name		N/A	NONE	
SVOC % Match	%	N/A	NONE	
SVOCs TICs Compound Name		N/A	NONE	
SVOC % Match	%	N/A	NONE	
SVOCs TICs Compound Name		N/A	NONE	
SVOC % Match	%	N/A	NONE	

U/S = Unsuitable Sample I/S = Insufficient Sample

*Data reported unaccredited due to quality control parameter failure associated with this n applied prior to reporting the data have been accepted and the failure justified as having n impact on sample data reported.

Analytical Report Number : 22-10645

Project / Site name: Reliance Street

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 *for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	ISO 17025
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TPH C10-C35 by GCxGC-FID	Determination of total petroleum hydrocarbons in water by GC x GC FID with carbon banding aliphatic and aromatic C10-C35. Accredited Matrices SW,GW,PW.	In-house method	L101B-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
TPH Chromatogram in Water	TPH Chromatogram in Water.	In-house method	L070-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

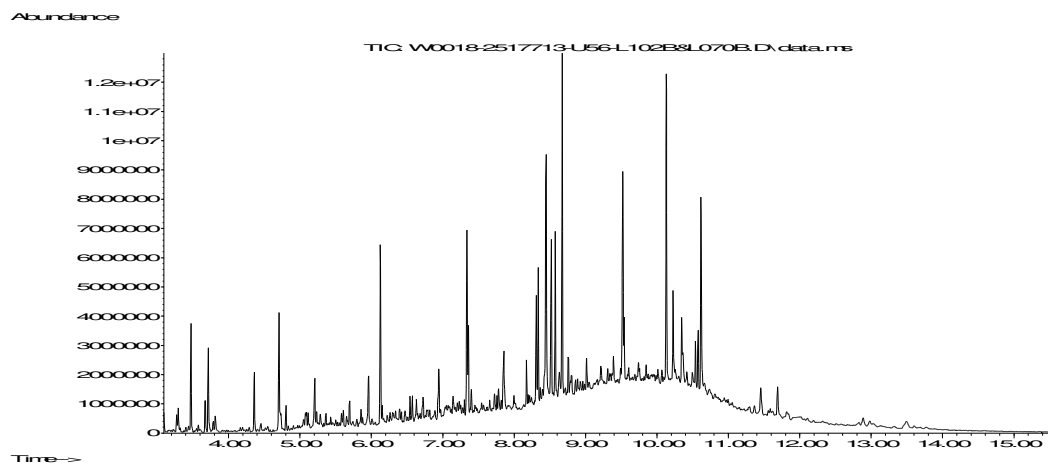
Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector

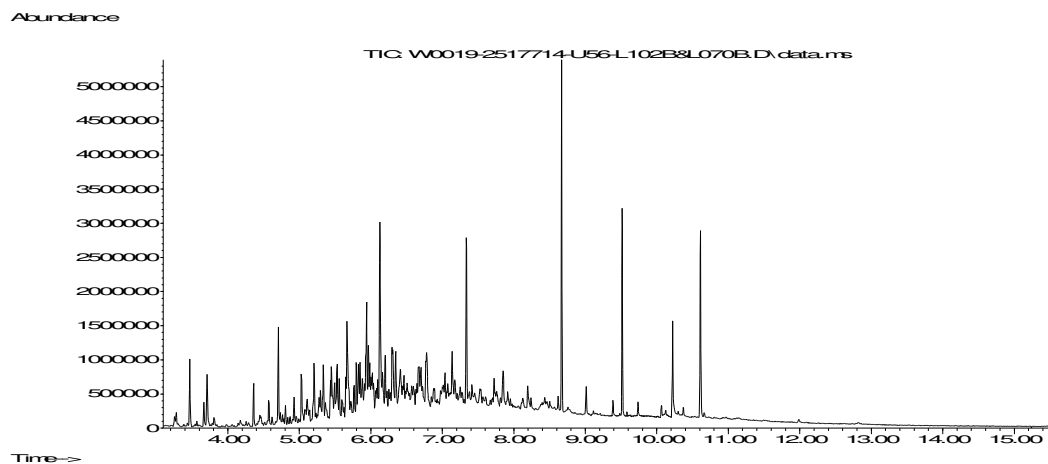
Analytical Report Number : 22-10645
Project / Site name: Reliance Street

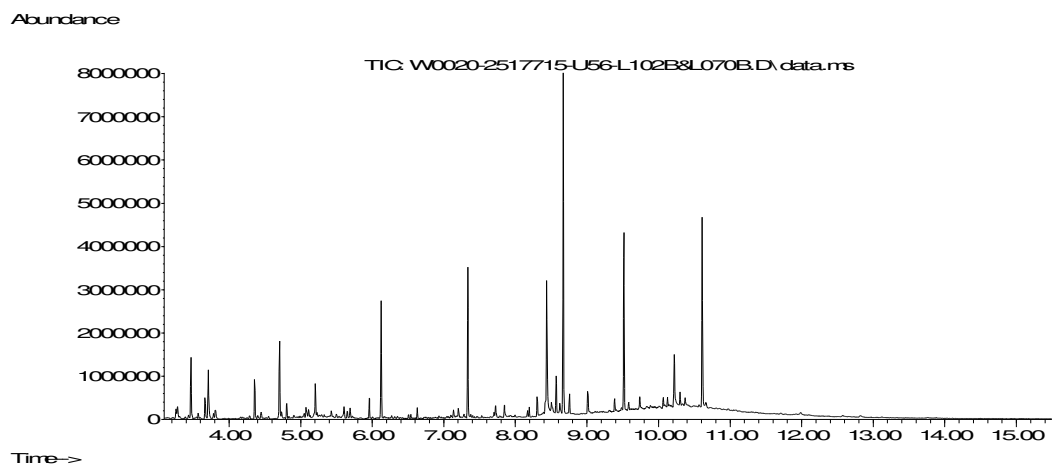
Water matrix abbreviations:

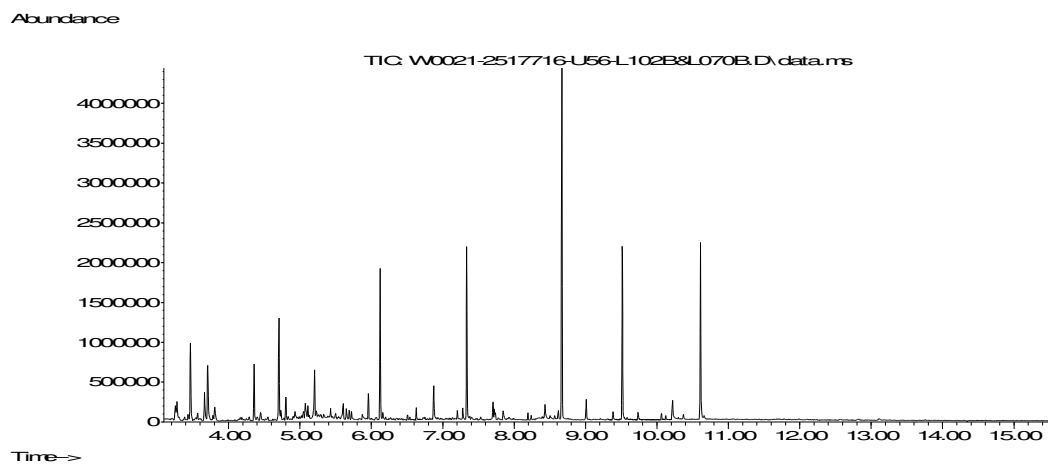
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

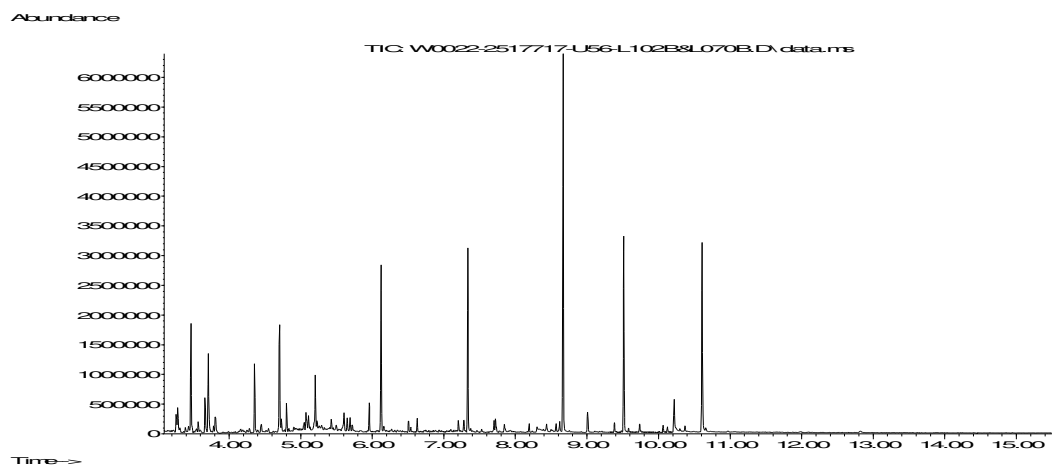
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
GC	Gas Chromatography				
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))				
CU	Clean-up - e.g. by Florisil®, silica gel				
1D	GC - Single coil/column gas chromatography				
2D	GC-GC - Double coil/column gas chromatography				
Total	Aliphatics & Aromatics				
AL	Aliphatics				
AR	Aromatics				
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
-	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

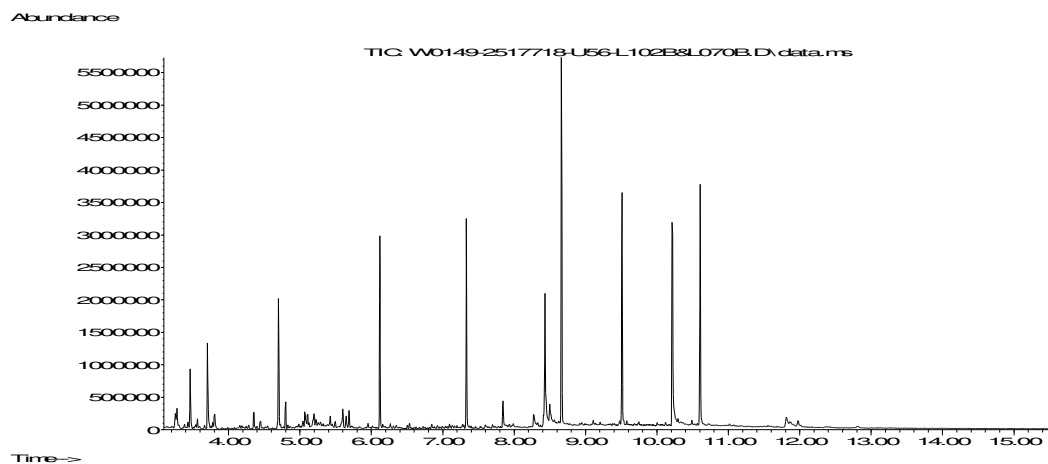












Appendix F - Field Monitoring Data

Document Number C101	Version 3.13	Authors John Rhoades / Chris Everitt / Matt Story	Authorised By Chris Everitt	
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Appendix G - Risk Definitions

Contaminated Land Risk Definitions

The following methodology is based on the methodology presented in CIRIA C552 Contaminated Land Risk Assessment: A Guide to Good Practice 2001. It requires the classification of the:

- ▲ Magnitude of the potential consequence (severity) of the Risk occurring: and
- ▲ Magnitude of the Probability (likelihood) of the Risk occurring.

The classifications are then compared to indicate the risk presented by each pollutant linkage.

Consequence to Receptor Definition Matrix

	Human Health	Controlled Waters	Buildings/Services
Severe Consequence	Acute or chronic permanent impact on human health.	Sensitive controlled water pollution ongoing, or just about to occur.	Catastrophic collapse
Medium Consequence	Chronic permanent impact on human health	Gradual pollution of sensitive controlled water	Degradation of materials
Mild Consequence	Chronic temporary impact on human health	Gradual pollution of non-sensitive controlled water	Damage to building rendering it unsafe to occupy (eg foundation damage resulting in instability).
Minor Consequence	Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc).	Slight discoloration of water	Easily repairable effects of damage to buildings, structures and services, i.e discoloration of concrete

Probability Definitions

Probability	Definition in Context
Higher	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution. Positive evidence of source, pathway and receptor.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term. Suspect source, pathway, and receptor
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term No evidence of hazard, pathway, and receptor

Standard Risk Matrix

		Consequence/Magnitude of impact			
		Severe	Medium	Mild	Minor
Probability	High	Very High	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/low	Low
	Low Likelihood	Moderate	Moderate/low	Low	Very Low
	Unlikely	Moderate/low	Low	Very Low	Very Low

Classified risks and likely action

Significance Level	Definition/Comments
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required. Demonstrable contaminated land situation, highest threat & liability level, urgent action recommended.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term. Likely contaminated land situation, risk assessment and action recommended.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, if it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term. Plausible contaminated land situation, risk assessment and possible action recommended.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild. Unlikely contaminated land situation, possible risk assessment and possible action.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe. Negligible risk, no action recommended except vigilance for changes in conditions.

Geotechnical Risk Classification

The geohazards listed in the report within Section 4 follow guidance presented in Clayton, C.R.I. (2001) *Managing Geotechnical Risk*, Thomas Telford and the Highways Agency document CD622 '*Managing Geotechnical Risk*' (2008) which aims to identify and manage the geotechnical risks associated with a scheme throughout its lifespan, from planning to construction to maintenance.

For each geohazard the probability of the hazard occurring (P) has been considered together with the impact it would have (I) if it were to happen to calculate the risk rating between 1 and 25.

Risks that fall within Moderate, Significant and Severe categories below are considered to be **substantial** and are therefore listed within the report.

Probability	(P)		Impact	(I)		(R)	Risk
Very Likely (VLk)	5	X	Very High (VH)	5	=	20 – 25	Severe
Likely (Lk)	4		High (H)	4		15 – 19	Substantial
Plausible (P)	3		Medium (M)	3		10 – 14	Moderate
Unlikely (U)	2		Low (L)	2		5 – 9	Minor
Very Unlikely (VU)	1		Very Low (VL)	1		1 – 4	Negligible

Appendix H - Geotechnical Risk Register

Preliminary Geotechnical Risk Register

The Preliminary Geotechnical Risk Register has been compiled to show the degree of risk attached to various ground related aspects of the proposed development. The purpose of the register is to provide an assessment of the risk to the project posed by common ground related problems and identify suitable mitigation measures that control the risk to an acceptable level. The risk register should be developed and refined as the geotechnical design and assessment progresses such that the register will allow the management of the geotechnical risks.

The Geotechnical Risk Register has been developed in general accordance with the guidance presented in ICE/DETR Document 'Managing Geotechnical Risk' (2001) and the HE documents CS641 and CD622. The degree of risk (R) is determined by combining an assessment of the probability (P) of the hazard occurring with an assessment of the Impact (I) the hazard and associated mitigation will cause if it occurs ($R = P \times I$). The scale against which the probability and impact are measure and the resulting degree of risk determined is presented below.

The inclusion of a risk in the register does not constitute confirmation that the problem actually exists at the Site. A probability of 'very unlikely' is indicative of a condition which the available data suggests should not be present. The calculated risk is not the risk that the impact will occur, it is the risk that the mitigation will be required to enable the project to progress. For the purposes of this risk register the magnitude of each impact and the resulting severity of risk is measured against that which would/could 'normally' be expected for each element. Before incorporation into a project risk register the impacts and risks for each element should be moderated by an assessment of the cost and time implication of individual mitigation measures.

Probability	(P)	X	Impact	(I)	=	(R)	Risk
Very Likely (VLk)	5		Very High (VH)	5		20 - 25	Severe
Likely (Lk)	4		High (H)	4		15 - 19	Substantial
Plausible (P)	3		Medium (M)	3		10 - 14	Moderate
Unlikely (U)	2		Low (L)	2		5 - 9	Minor
Very Unlikely (VU)	1		Very Low (VL)	1		1 - 4	Negligible

	Site Features / Ground Conditions	Hazard	Potential Impact	Before Control			Comments and Potential Mitigation
				Probability of Hazard	Magnitude of impact	Risk	
Mining and Underground Voids	Mine shafts (recorded and unrecorded)	Shaft collapse	Surface deformation / subsidence / collapse Structural damage Health & Safety	1	5	5	1. The Site is not within a Development High Risk Area. 2. One coal mine seam is recorded on-Site, 620 m bgl. The seam was last worked in 1903. 3. Mine entries not marked in the vicinity of the Site. 4. The presence of unrecorded mine shafts onsite cannot be discounted. Further investigations are recommended to prove the absence of shafts for example, undertaking GPR or other geophysical survey.
	Shallow mining/ surface mining.	Workings collapse / Crown holes High compaction potential of uncontrolled / un-engineered fill	Surface deformation / subsidence Structural damage Unacceptable levels of differential / total settlement resulting in damage to structures and services	1	4	4	1. The Site is not within an area affected by shallow or surface mining.
	Other voids; tunnels, basements, tanks etc.	Collapse, subsidence	Surface deformation / subsidence / collapse Structural damage Health and Safety	2	4	8	1. Underground fuel tanks and associated pipework to be removed prior to construction phase. 2. Service plans should be reviewed;
	Ground Gas	Explosion or asphyxiation	Structural damage Health and Safety	3	4	12	1. Gas protection measures recommended for kiosk building.

	Site Features / Ground Conditions	Hazard	Potential Impact	Before Control			Comments and Potential Mitigation
				Probability of Hazard	Magnitude of impact	Risk	
	Varying site levels / Side long ground	Requirement for cut / fill to accommodate proposal	Unsuitable formations and unstable earthworks	2	4	8	1. Limited earthworks likely to be required.
Foundations & Substructures	Loose or soft, compressible soils at shallow depth	Ground unsuitable for conventional shallow footings	Low bearing capacity and unacceptable settlement	2	3	6	1. Ground investigation has been undertaken to give a preliminary bearing capacity for the Devensian Till.
	Trees / hedgerows in vicinity of proposed structures	Shrinking / swelling clay	Damage to foundations and pavements	4	3	12	1. Volume change potential has been assessed through geotechnical laboratory testing. There is a low-moderate volume change potential. 2. Trees proposed in vicinity of piled foundations could be relocated.
	Aggressive ground chemistry	Attack on buried concrete	Foundation integrity jeopardised	1	3	3	1. Soil samples were BRE SD1 tested for determining the concrete classification of the site.
Floor slabs and road pavements	Soft and compressible near-surface soil	Ground unsuitable for conventional ground bearing slab	Alternative floor design required	3	3	9	1. Proposed layout only requires ground bearing slab for kiosk, which is intended to be a small building. 2. Founding on made ground is not recommended.
	Soft and compressible near-surface soil	Low CBR due to soft formation	Surface damage or alternative design	3	3	9	1. Plate CBRs recommended 2. Founding of roads on made ground soils not recommended.

	Site Features / Ground Conditions	Hazard	Potential Impact	Before Control			Comments and Potential Mitigation
				Probability of Hazard	Magnitude of impact	Risk	
Temporary Works & Construction Issues	Frost-susceptible soils	Frost heave	Surface damage or alternative design	1	3	3	1. Plasticity index testing indicates that soils are not frost susceptible.
	Low permeability strata	Ineffective soakaways	Flooding	2	3	6	1. Proposed development plan includes areas of soft landscaping for draining of surface water run off. 2. Drainage survey being undertaken to assess capacity of local storm drainage.
	Loose strata at shallow depth	Unstable excavations	Health & Safety	3	3	9	1. Temporary shoring 2. Dewatering
	Hard strata / obstructions at shallow depth	Hard digging / hard driving	Delays and additional construction costs	4	3	12	1. Concrete obstructions identified during Site investigation likely to be removed at the time of removing the underground storage tanks. This will be undertaken prior to construction.
	High groundwater table / perched groundwater	Unstable excavations	Health & Safety	4	3	12	1. Temporary shoring 2. Dewatering of excavations
	UXO	Explosions	Health & Safety	1	5	5	1. Site is recorded as at a moderate risk from UXO, although extensive development in the area makes it unlikely that hitherto undiscovered UXO remain in the area.