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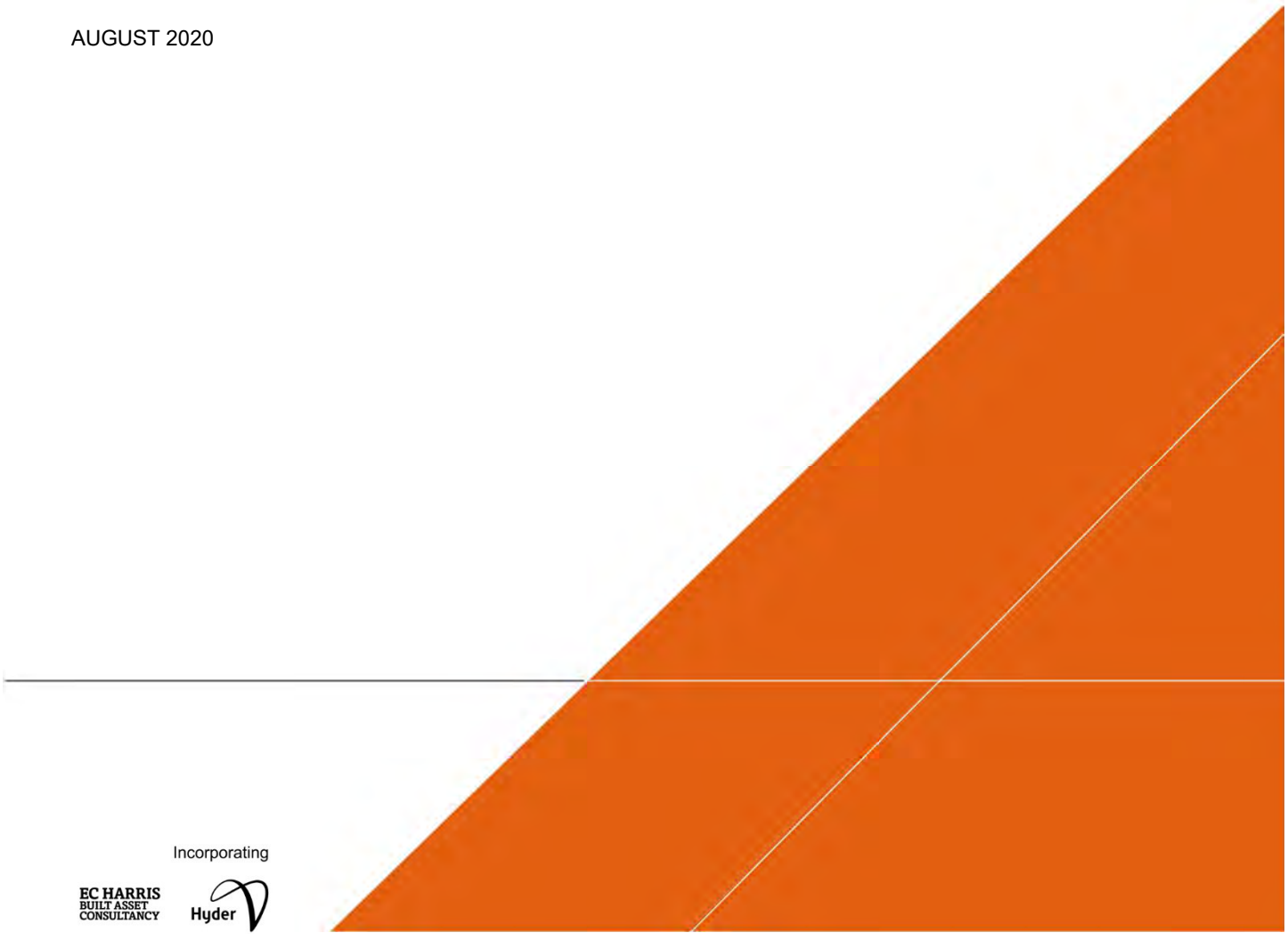
PHASE 2 INTRUSIVE GROUND INVESTIGATION & ASSESSMENT

LAND OFF HYDE ROAD

Manchester City Council

Ref: 10041634-ARC-XX-XX-RP-ZZ-0005-02-P2GIA

AUGUST 2020



Incorporating

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Hyde Road, Manchester

Phase 2 Intrusive Ground Investigation & Assessment

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01	Aug 2020	DF	Initial Issue
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This report dated 21 August 2020 has been prepared for Manchester City Council (the "Client") in accordance with the terms and conditions of appointment dated 17 April 2020 (the "Appointment") between the Client and **Arcadis Consulting (UK) Limited** ("Arcadis") for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party.

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Comparison of Contaminant Concentrations Measured in groundwater (µg/l) with Arcadis GACs for Residential Use

APPENDIX I

Ground Water and Ground Gas Monitoring Results

1 Introduction

1.1 Appointment

Arcadis Consulting (UK) Limited (Arcadis) was commissioned by Manchester City Council to undertake a Phase 2 Intrusive Ground Investigation and Assessment for redevelopment of the site located off Hyde Road, Manchester, M12 5AL (the "site").

The work was carried out in accordance with the tender documents submitted to the council dated 17th April 2020 and was conducted in line with UK regulatory guidance, Land contamination: risk management (Environment Agency, 2019); the Investigation of Potentially Contaminated Sites – Code of Practice (BS10175:2011+A2:2017), and the Code of Practice for Ground Investigations (BS5930:2015+A1:2020).

1.2 Proposed Development

Manchester City Council is in the process of negotiating the purchase of the Showcase cinema site (approximately 16.7 acres) located between Hyde Road and Kirkmanshulme Lane. This acquisition will allow the demolition of the existing cinema and redevelopment of the central part of the site with a 1200 place high school and residential use of the two parcels of land lying to the southeast and northwest of the main site, covering 2.3ac and 1.8ac respectively.

A feasibility layout plan, presented in Appendix B, illustrates the preferred layout for the central school development. It is understood that all discussions to date have led to a preference for the school to be located at the northern Hyde Road end of the site. The feasibility plan shows a three-storey main school building roughly within the footprint of the existing cinema building, with car parking to the north east and playing fields and sports pitches to the south.

No preliminary layout plans for the proposed residential development have been made available to Arcadis.

1.3 Existing Information

A Phase 1 Geo-Environmental Desk Study has been completed for the subject site; the full report reference is below:

- Phase 1 Geo-Environmental Desk Study, Hyde Road, Manchester, prepared for Manchester City Council. Arcadis, Ref: 10041634-ARC-XX-XX-RP-ZZ-0002-01-P1DS; June 2020.

1.4 Objectives

As part of the purchase due diligence, the client needs to obtain information on ground conditions to inform potential redevelopment constraints, the potential scope and cost of any remediation required for the proposed end use to assist in the determination of the Net value of the site.

Following completion of the Phase 1 Desk Study, an intrusive ground investigation and assessment has been undertaken to fulfil the following objectives:

- To investigate the extent and nature of any ground contamination and environmental conditions related to any historical or current on-site and off-site land-uses identified in the Phase I Conceptual Site Model (CSM);
- To assess the potential for hazardous ground gas emissions and provide an indication of future mitigatory measures;
- To provide an appraisal of geotechnical or hazardous ground conditions, based on data derived from site, that will have an impact on the structural design and specification of foundations, floor slabs, retaining elements and parking surfacing; and,
- To prepare an interpretive report detailing the above and provide an indication of abnormal costs associated with any required remediation measures, geotechnical concerns or further work required.

1.5 Scope of Works

The scope of works defined for the intrusive ground investigation and assessment comprised the following:

- Full site wide Ground Penetrating Radar (GPR) survey and utility clearance of proposed borehole locations, to include area clearance and hand dug excavations to a target depth of 1.2m below ground level (bgl);
- Topographical survey;
- Advancement of 7 boreholes (CP101 – CP107) by cable percussion drilling techniques;
- Advancement of 16 boreholes (WS101 – WS116) by windowless sampling drilling techniques;
- In-situ Standard Penetration Testing (SPT) of the ground at regular depth intervals in boreholes;
- Logging of soils and field headspace screening with a Photo-Ionisation Detector (PID);
- Collection of soil samples for environmental and geotechnical laboratory analysis;
- Installation of groundwater and ground gas monitoring wells in twelve boreholes and backfilling of the remainder of the boreholes, re-instating flush with the surrounding surface;
- Chemical laboratory analysis of soil and groundwater samples for potential Contaminants of Concern (CoC);
- Geotechnical laboratory testing of recovered soil samples;
- Four follow-up rounds of ground gas and groundwater monitoring, including recovery of groundwater samples by low-flow techniques on the first visit;
- Generic Quantitative Risk Assessment (GQRA) including a comparison of measured concentrations of CoC in soil and groundwater to Arcadis' Generic Assessment Criteria (GAC); and,
- Production of detailed factual and interpretative report.

1.6 Reliability of Information / Limitations

Arcadis warrants that the services performed were conducted in a competent and professional manner in accordance with sound consulting practices and procedures.

Arcadis' liability, pursuant to the terms of the appointment of Arcadis by Manchester City Council, is strictly limited to the work undertaken and the matters contained and specifically referred to in this report.

A copy of Arcadis' Study Limitations is presented in Appendix A.

1.7 Reliance

It is understood that the current report will be prepared for the use of Manchester City Council. The contents of this report may not be used or relied upon by any person other than this party without the express written consent and authorisation of Arcadis.

2 Summary of Desk Study and Previous Investigations

The following table provides a summary of the key findings of the Phase 1 Geo-Environmental Assessment.

Summary	*Current site use*	The 16.7 acre site is occupied by the Showcase Cinema and adjoining car parking.
	Historical site use	• The site was originally part of Belle Vue Gardens with ponds in the south west. • Developed as Belle Vue Zoological gardens with buildings across the north of site, a shallow boating lake in the south-eastern parcel and a pond and landscaping in the south. Railway sidings were present in the north west. • Boating lake and pond to the south potentially infilled (1968–1964) • Site cleared and by 1991 redeveloped into current layout predominantly with cinema building and car parking. • Restaurant buildings developed around this time in north-western parcel demolished relatively recently.
	Surrounding area	• Railway line adjacent northwest (1892 - 1933) • Tramlines adjacent north and south (1893 – 1933) • Brewery approximately 20m west (1892 – 1923) • Iron works roughly 200m northwest (1892-1981) • Tarpaulin works and brickworks, 300m south and 340m northeast respectively (1905) • Gas works and tanks (1908) 35m west • Sewage works 350m southeast (1905-1968) • Speedway stadium and exhibition hall 150m west and motor works 350m northeast (1934-1985) • Car auction 250m west (1991-present)
	Environmental setting	The site is indicated to be underlain by Made Ground overlying Glacial Till, a heterogenous mixture of clay, sand, gravel and boulders varying widely in size and shape designated as a Secondary undifferentiated aquifer. The underlying bedrock is the Chester Pebble Beds Formation comprising a fine to coarse grained sandstone, commonly pebbly with conglomerates and sporadic siltstones. This is classified as a principal productive aquifer. The nearest surface water body is Platt Brook located 366m south.
Flood Risk	According to the Groundsure report the site is in Flood Zone 1 and is not at risk of flooding from rivers and sea, whilst localised areas of the site are susceptible to low to significant risk of surface water flooding.	
Previous/ Historical Investigations	In 2018 a ground investigation was conducted by e3p at Belle Vue Racetrack adjacent to the south of the site. An average depth of 1m of Made Ground was found overlying Glacial Till down to weathered sandstone bedrock present at circa 15m bgl. Elevated metals and PAHs were found within the Made Ground and hydrocarbon hotspots were also present in the east in addition to elevated levels of naphthalene.	
Phase I Contaminated	The site was originally part of Belle Vue Gardens, later becoming the Belle Vue Zoological Gardens. Several ponds and boating lake features were subsequently infilled and by 1991 the site was redeveloped to the current layout principally	

Land Summary & Recent Actions	comprising a cinema building and associated car parking. The recent buildings located on the northwest parcel have since been demolished. Japanese knotweed is also present primarily around the southern end of the site in addition to the parcel in the northwest. Surrounding land has comprised a mix of industrial, commercial, leisure and residential uses. Nearby breweries, tanks, engineering and other works were present locally from the late 1800's, however heavy industry has since faded from the area. Following the phase 1 desk study, it was identified that there is a potential for pollutant linkages and pathways between on-site contamination and onsite and off-site receptors (human health and the environment). Therefore, Manchester City Council instructed Arcadis to undertake an intrusive ground investigation to interrogate the Phase I CSM, establish the status of the identified Source-Pathway-Receptor linkages and thereby reduce the uncertainties in the preliminary risk assessment.

The above summary should be read in conjunction with Arcadis' Phase I Geo-Environmental Desk Study (Ref: 10041634-ARC-XX-XX-RP-ZZ-0002-01-P1DS June 2020) and reflects an assessment of the site based on information received by Arcadis at the time of reporting.

3 Field Investigation Methodology

The rationale for the borehole locations, methodology and process of the field investigation are outlined in the sections below. A borehole location plan is presented in Appendix B.

The intrusive works were completed on-site between 6th to 24th July 2020, including a week delay from 13th to 17th July following travellers occupying the site over the weekend.

A full site wide GPR utility survey and topographical survey were also commissioned. The resulting plans are presented in full in Appendix B.

3.1 Borehole Location Rationale

The following table details the rationale behind the planned exploratory hole locations based on the information gathered in producing the conceptual site model in the Phase 1 Desk Study.

Location	Rationale
CP101 - CP107	Cable percussion boreholes were undertaken to provide information on deeper ground conditions and to enable the installation of deep groundwater monitoring wells, generally located to gather a good site-wide spread of data. CP101 and CP102 were located within the proposed residential parcels to provide information on deeper ground conditions in these areas. CP102 was also positioned within the area of the infilled boating lake to investigate depth and quality of any backfill materials here. CP103 – CP107 were located within the central site area to assess deeper ground conditions for the school development. CP104 was located within the area of an historic pond, and therefore where potential thick / organic deposits of Made Ground may be present.
WS101 – WS116	Windowless sample boreholes were generally located across the site, for widespread coverage, to obtain shallow information on soil quality and to enable ground gas monitoring wells to be installed.

During the intrusive works a number of window sample locations refused on shallow obstructions including shallow concrete slabs, or cobbles and boulders within the hand pit. Additionally, several shallow boreholes refused on the over-consolidated Glacial Till before reaching the target depth of 5m bgl.

Location	Constraint
WS103 WS105 WS105A WS106 WS106A WS112 WS114 WS115	Shallow concrete slab obstruction. WS105A and WS106A were attempted re-drills nearby to WS105 and WS106, however encountered the same obstruction.
WS107 WS109	Unable to progress past dense cobbles and boulders within the shallow Made Ground strata.
WS108 WS111 WS113 WS116	Shallow refusal within natural clay strata <3.00m bgl (refused on stiffness of clay - SPT N value <50)

3.2 Borehole Drilling and Soil Sampling

Subject	Information
Date of investigation	6th July 2020 to 24th July 2020
Utility clearance	Site wide GPR survey and full utility clearance of each location in addition to utility plans.
Drilling method	Cable percussive drilling with a Dando 2000 rig and windowless sampling with a Global rig.
Maximum drilled depth	15.00m bgl.
Soil logging	Soil samples were logged in accordance with British Standard BS5930:2015+A1:2020 *Code of practice for ground investigations* (BSI Standards Publication).
Soil Sampling	Discrete "disturbed" and "undisturbed" soil samples were collected from the borehole arisings at distinct changes in lithology and across a range of depths/strata as well as from soils exhibiting palpable visual and/or olfactory signs of contamination. Soil samples were selected for laboratory analysis by an Arcadis consultant based on a review of the in-field observations.
Field screening	Where possible, soil arisings were sampled at approximately 0.5m intervals (or more frequently in accordance with changes in geology) and placed into polythene bags which were enclosed to capture as much air as possible around the soil sample. The soil sample was gently broken up and left for approximately 15 minutes prior to the bag being pierced and a *Photo-Ionisation Detector (PID) fitted with a 10.6eV Ultraviolet (UV) lamp inserted to test for ionisable Volatile Organic Compounds (VOCs).
Other recorded parameters	Depth to NAPL, if present; and, Depth of groundwater strike.
Waste disposal	All waste soil cuttings created by the drilling works were disposed of in an Arcadis provided and managed skip. The skip contents were sampled and subsequently analysed by Arcadis approved laboratories, ALS Environmental. Waste soils were classified using the results of the chemical analysis and disposed of off-site by an Arcadis approved waste subcontractor with reference to Waste Assessment Criteria testing results.

*The PID screening is a semi-quantitative method that results in a representation of the presence of VOCs in the soil as indicated by volatilisation into the airspace of the sample. The measurement is recorded in parts per million (ppm). The numerical output cannot be directly compared to measured soil concentrations of CoC. Nevertheless, PID readings are a useful field tool for assessing potential volatile impacts in soil.

3.3 Monitoring Well Installation and Surveying

Subject	Information
Monitoring well type	Select boreholes were installed with a 50mm High Density Polyethylene (HDPE) pipe.
Monitoring well installation	Details of the monitoring well installations (including geology screened) are presented on the borehole logs included in Appendix C. The design of the well was dictated by the thickness of the overlying Made Ground and the depth to groundwater.
Well covers	Traffic-rated covers and security casings were installed flush with the ground surface.

Surveying	The monitoring wells installed during the works were levelled using GPS equipment during the utility clearance and subsurface scan.
Groundwater sampling	One round of groundwater sampling was carried out using low flow techniques on 23rd July 2020. An oil-water interface probe was also used to detect non-aqueous phase liquids in each monitoring well, along with the depth to water/base at each location. A multiprobe was used during monitoring to record groundwater parameters.

3.4 Storage, Preservation and Transport of Samples

Measures taken to ensure the quality and integrity of the collected samples, from collection to receipt of the samples by the laboratory is summarised below:

Subject	Chemical Sampling	
	Soil	**Groundwater**
Storage	Glass jars supplied by the laboratory were used for the collection of soil samples to be analysed for VOCs. Plastic tubs were used to collect soil samples for metals analysis and asbestos screening.	Glass vials supplied by the laboratory were used for the collection of samples to be analysed for VOCs. Samples to be analysed for lower volatility compounds were stored in laboratory prepared glass jars.
Preservation	Soil and groundwater sample containers were filled to minimize headspace prior to sealing and stored at a low temperature within cool boxes with cooling aids to minimise the loss of volatile contaminants and reduce microbial activity during collection of the samples.	
Sample Integrity	Dedicated disposable gloves were worn and changed between sample collections to prevent cross-contamination.	Groundwater samples were collected using dedicated plastic tubing, which was changed between monitoring well locations to prevent cross-contamination.
Transport	Samples were stored and shipped in dedicated sample boxes provided by the laboratory. Sample details and analytical requests were recorded on the laboratory chain of custody form enclosed with the samples, prior to dispatching to the laboratory for analysis.	

Geotechnical sampling was carried out during the intrusive works by Danbar Drilling Ltd and JB Site Investigations. Samples obtained during drilling included bulk bags, tubs and U100 tubes. Samples were collected as required per location immediately after excavation, labelled and sealed to minimise loss of moisture. The geotechnical samples were collected shortly after sampling and couriered to Geo Site and Testing Services Ltd.

3.5 Environmental Analytical Strategy

Subject	Information
Chemical laboratory	ALS Environmental
Accreditation	ALS Environmental is United Kingdom Accreditation Service (UKAS) & Monitoring Certification Scheme (MCertS) accredited (for selected chemical analysis). ALS Environmental is also an Arcadis approved supplier and is subject to Arcadis' programme of laboratory audits and quality assurance and quality control (QA/QC) checks.

Chemical Analysis (soils)	Soil samples were selected for laboratory analysis by an Arcadis consultant based on a review of the in-field observations, and depending on the observations were tested in the laboratory for one or more of the following CoC: Total Petroleum Hydrocarbons Criteria Working Group (TPH CWG) by Gas Chromatography-Flame Ionisation Detection (GC-FID); Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX) and Methyl *Tertiary*-Butyl Ether (MTBE) by Gas Chromatography – Mass Spectroscopy (GC-MS); Polycyclic Aromatic Hydrocarbon compounds (PAH) by GC-MS; pH by GL pH meter*/**; Sulphate as SO_4 by Kone Spectrophotometric Analysers; Metals by Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES); Hexavalent Chromium (Cr VI); Semi-Volatile Organic Compounds (SVOCs) by GC-MS; Volatile Organic Compounds (VOCs) by GC-MS; Polychlorinated Biphenyls by GC-MS; Asbestos Identification (and quantification where positive); and Waste Acceptance Criteria (WAC)
Chemical Analysis (Groundwater)	Groundwater samples were tested in the laboratory for the following CoC: TPH CWG by GC-FID; BTEX and MTBE by GC-MS; PAH by GC-MS; Sulphate; pH by GL pH meter; Dissolved metals; and Hexavalent Chromium (Cr VI).

3.6 Geotechnical Analytical Strategy

Subject	Information
Geotechnical Laboratory	Geo Site & Testing Services Ltd (GSTL)
Accreditation	GSTL are UKAS accredited and an Arcadis approved supplier. They are subject to Arcadis' programme of laboratory audits and quality assurance and quality control (QA/QC) checks. Soil samples were selected for laboratory analysis by an Arcadis consultant based on a review of the in-field observations and depending on the observations were tested in the laboratory for the following geotechnical parameters.
Geotechnical analysis	Moisture content testing; Atterberg Limits (plasticity testing); Particle sized distribution (PSD); Quick undrained triaxial tests (single stage); and One dimensional consolidation.

Field Testing - Standard Penetration Tests (SPTs)	SPTs were conducted in all cable percussive and windowless sample borehole locations, at regular intervals and the base of each borehole. The test results are given on the borehole records in Appendix C.

3.7 Quality Assurance and Quality Control (QA/QC)

The following measures were taken in order to ensure the quality of the data received from the laboratory:

Subject	Information
Transportation	A copy of the full chain of custody documentation was included with the soil and groundwater samples submitted to track departure and arrival dates, and the condition of the samples.
Laboratory QA/QC	Details of the Arcadis laboratory QA/QC policy are given in Appendix D.

3.8 Ground Gas Monitoring

Subject	Information
Programme	Four monitoring visits have been completed between 22/07/20 and 20/08/20.
Procedure	A landfill gas analyser (GA5000) was used to record gas flow, atmospheric pressure, difference pressure, oxygen, methane, lower explosion limit, hydrogen sulphide, carbon monoxide and carbon dioxide at each monitoring location. Flow rate and concentration of ground gases was recorded at regular intervals, including the peak flow and concentration, and the steady-state conditions.

4 Ground Conditions

The key findings of the ground investigation are summarised below and include descriptions of the interpreted geological and hydrogeological conditions, as well as in-field observations of any contamination observed.

4.1 General Stratigraphy

A detailed description of the ground conditions encountered at the site during the intrusive investigation is included on the borehole logs, presented as Appendix C and summarised below. All geotechnical and chemical laboratory reports are presented in Appendix E and F respectively.

Interpreted soil type / geological unit	Minimum depth (m bgl)	Maximum depth (m bgl)	Description
Made Ground	0.0 (All)	3.3 (WS110)	Generally bituminous hardstanding underlain by sandy gravel of type 1 material, over predominantly granular Made Ground comprising slightly clayey slightly sandy fine to coarse gravel with fragments of brick, sandstone, limestone, concrete and occasional wood and clinker. Made Ground is occasionally recorded as slightly clayey slightly gravelly fine to coarse sand. Granular Made Ground is frequently underlain by cohesive strata comprising sandy gravelly clay with many cobbles of brick and concrete and occasionally soft to firm dark grey sandy gravelly clay with an organic odour.
Glacial Till	0.6 (CP107)	15.0 (All cable percussion boreholes except CP102)	Firm to very stiff brown and grey sandy gravelly clay, with a layer of fine to medium sand generally recorded at depths between 6 to 11m bgl in boreholes located to the east of the site.
Sandstone (Chester Pebble Beds Formation) – CP102 only	12.9 (CP102)	13.2 (CP102) Base not proven	Orangish brown fine to medium SANDSTONE recovered as angular coarse gravel.

4.2 Made Ground

Category	Data	Information
General	Distribution	Encountered in all of the exploratory holes formed at the site from ground level to depths of between 0.60 and 3.30m bgl. Made Ground appears to be thicker across the north-western and south-eastern parcels where it was generally recorded to a depth of between 2.2 to 2.5m bgl. Across the central site area, Made Ground was generally recorded to a depth of between 0.6 and 1.4m bgl.
	In-situ - SPTs	SPT N-values between 3 and 23 were recorded indicating variable material.

Category	Data	Information			
Geotechnical Testing	Natural Moisture Content (4 samples, 0.50 – 1.65m bgl)	Natural Moisture Content: 18 - 52%.			
	Atterberg Limits (4 samples, 0.5 – 1.65m bgl)	Liquid Limit: 42 - 69% Plastic Limit: 17 - 49% Plasticity Index: 20 - 29% Fraction <0.425mm: 39 - 100% Modified Plasticity Index: 11 - 29% - Cohesive Made Ground is of intermediate to high plasticity / low to medium shrink/swell potential.			
	Particle Size Distribution (7 samples, 0.1 – 1.0m bgl)	Total percentage of soil fractions: Cobbles: 0 - 52% Gravel 20 - 82% Sand: 12 - 33% Silt/Clay: 4 - 20% - Generally, slightly clayey/silty sandy fine to coarse GRAVEL (with cobbles)			
	One Dimensional Consolidation Test	Location	Depth (m)	M_v (MPa^{-1} or m^2/MN)	Description
		CP104	1.2-1.65	0.401	High Compressibility
		M_v calculated for pressure range equivalent to sample overburden pressure plus 100kPa.			
Soil Quality Observations	Obstructions	WS103, WS105, WS105A, WS106, WS106A, WS112, WS114 and WS115 all encountered buried concrete slabs within the hand-pits. WS107 and WS109 refused at 1.3m bgl on cobbles and boulders within Made Ground.			
	Visual / Olfactory Evidence of Contamination	Organic odours were frequently noted within the Made Ground between depths of 0.60 m bgl to 2.30m bgl. Clinker, slag and ashy material was recorded within shallow Made Ground at various locations across the site. Hydrocarbon odours were recorded as below: • CP103, 0.8 – 1.3m bgl: Slight hydrocarbon odour • CP106, 0.5 – 1.0m bgl: Slight hydrocarbon odour • WS106, 0.4 – 0.8m bgl: Hydrocarbon odour			
	NAPL	None.			
	PID Screening	Max 7.2ppm (WS106A at 0.5m bgl).			

Category	Data	Information
	Asbestos	No Asbestos containing materials observed.

4.3 Glacial Till

Category	Data	Information			
General	Distribution	Glacial Till was encountered in all exploratory holes, beneath Made Ground deposits and overlying the bedrock.			
Geotechnical Testing	In-situ - SPTs	SPT N-values between 6 and >50 (refusal) were recorded, however were generally greater than 15. The N-value of 6 was recorded in soils described as stiff clay and coincided with a shallow water strike indicating a degree of softening. N-values were generally found to increase with depth and indicate firm to very stiff soils.			
	Natural Moisture Content (17 samples, 1.20 – 13.95m bgl)	Natural Moisture Content: 9 – 32%			
	Atterberg Limits (17 samples, 1.2 – 13.95m bgl)	Liquid Limit: 36 – 49% Plastic Limit: 12 – 30% Plasticity Index: 12 – 31% Fraction <0.425mm: 54 – 100% Modified Plasticity Index: 12 – 29% - Intermediate to high plasticity / low to medium shrink/swell potential.		
	Particle Size Distribution (3 samples, 5.6 – 8.5m bgl)	Total percentage of soil fractions: Cobbles: 0% Gravel 0 - 1% Sand: 73 - 97% Silt/Clay: 3 - 26% Generally, slightly clayey/silty fine to coarse SAND or slightly gravelly clayey/silty fine to coarse SAND.		
	Undrained Shear Strength in Triaxial Compression	Depth (m)	Cell Pressure (kPa)	Cohesion (kPa)	Mode of Failure
		2.00 – 2.45	40	101	Compound
		3.00 – 3.45	60	266	Plastic
		4.00 – 4.45	80	277	Compound
		5.00 – 5.45	100	81	Plastic
		7.50 – 7.95	100	55	Plastic

Category	Data	Information			
		7.50 – 7.95	150	101	Plastic
		9.00 – 9.45	180	42	Compound
		13.50 – 13.95	270	49	Plastic
Soil Quality Observations	Obstructions	Refusals during drilling (refused on stiffness of clay N >50): WS108, WS111, WS113, WS116 all refused at depths below 3.00m bgl			
	Visual / Olfactory Evidence of Contamination	None.			
	NAPL	None.			
	PID Screening	Max 5.5ppm (CP106 at 1.2m bgl).			
	Asbestos	No Asbestos containing materials observed.			

4.4 Bedrock

Category	Data	Information
General	Distribution	Bedrock was only observed in CP102 at 12.90m bgl, where it was taken down to 13.20m bgl following 1 hour of chiselling. The bedrock was recorded as orangish brown fine to medium sandstone of the Chester Pebble Bed Formation and was recovered as angular coarse gravel.
Geotechnical Testing	In-situ - SPTs	SPT N-values >50 (refusal) were recorded.
Soil Quality Observations	Obstructions	Borehole CP102 terminated upon 1 hour of chiselling in the bedrock.
	Visual / Olfactory Evidence of Contamination	None.

4.5 Hydrogeology

Subject	Information
Groundwater Levels	During drilling, groundwater strikes were encountered as below: CP101: 1.70m bgl (rising to 1.50m bgl) – within shallow Made Ground CP102: 8.50 bgl - within dense sand strata CP103: 7.50m bgl – within dense sand strata CP103: 13.30m bgl – slight seepage within stiff clay strata CP104: 0.50m bgl (rising to 0.30m bgl) – within shallow Made Ground CP104: 8.00m bgl (rising to 7.60m bgl) – within dense sand strata

	CP106: 3.00m bgl (rising to 2.00m bgl) – within stiff clay above a layer of sand WS107: 0.30 m bgl – within shallow Made Ground WS108: 0.5m bgl (rising to 0.2m bgl) – within shallow Made Ground WS111: 1.00m – within stiff clay, just below granular Made Ground
	During subsequent monitoring, resting groundwater levels were recorded within the newly installed groundwater monitoring well infrastructure as follows: CP101 11.39 – 11.48m bgl CP102 7.38 - 7.40m bgl CP104 5.72 – 5.75m bgl CP107 8.50 - 8.55m bgl WS102 1.77 - 1.83m bgl WS104 1.48 – 1.50m bgl WS107 0.45 – 0.49m bgl WS108 0.55 – 0.62m bgl WS110 1.20 – 1.26m bgl WS111 0.70 – 0.81m bgl WS113 0.88 - 0.95m bgl WS116 Dry Shallow groundwater recorded within the windowless sample boreholes is considered to represent a perched waterbody within the Made Ground deposits. Within the deeper cable percussion boreholes groundwater was encountered in a saturated layer of sand within the Glacial Till deposits recorded in boreholes to the east of the site. Elsewhere, the true groundwater table was not intercepted during drilling, but resting levels were recorded within CP101 at a depth of roughly 11.5m bgl.
Groundwater Flow Direction	Based on the measured depth to groundwater from surface level a groundwater flow direction broadly towards the north west can be inferred.
Visual / Olfactory Evidence of Contamination	No visual/olfactory evidence of contamination was noted during groundwater monitoring or sampling.
NAPL	No NAPL was recorded during groundwater monitoring or sampling.

5 Geotechnical Appraisal

5.1 Proposed Development

A feasibility layout plan, presented in Appendix B, illustrates the preferred layout for the central school development. It is understood that all discussions to date have led to a preference for the school to be located at the northern Hyde Road end of the site. The feasibility plan shows a three-storey main school building roughly within the footprint of the existing cinema building, with car parking to the north east and playing fields and sports pitches to the south. The appraisal below and recommendations provided are based on this feasibility plan and the current proposed location for the main school building.

It is understood that the north-west and south-east parcels of land are being considered for residential redevelopment, however, preliminary layout plans have not been made available to Arcadis for these areas.

We have assumed that the development levels will mimic existing levels and therefore significant re-profiling of the site will not be undertaken.

5.2 Ground Conditions

Ground conditions across the site were found to comprise a sequence of Made Ground, underlain by predominantly cohesive Glacial Till deposits, in turn underlain by sandstone bedrock of the Chester Pebble Bed Formation, however this was only exposed in CP102 at 12.90m bgl.

Made Ground was encountered in all of the exploratory holes to a maximum depth of 3.30m bgl. Bituminous hardstanding was generally recorded over sandy gravel of type 1 material to depths of between 0.1 and 1.4m bgl. In the majority of exploratory locations this was underlain by predominantly granular Made Ground comprising slightly clayey slightly sandy fine to coarse gravel. Granular Made Ground was frequently underlain by cohesive strata comprising sandy gravelly clay with many cobbles of brick and concrete.

Made Ground appears to be thicker across the north-western and south-eastern parcels where it was generally recorded to a depth of between 2.2 to 2.5m bgl. Across the central site area, Made Ground was generally recorded to a depth of between 0.6 and 1.4m bgl.

The underlying Glacial Till deposits were generally found to comprise firm to very stiff sandy gravelly clay. SPT N-values were recorded between 6 and >50 (refusal), however were generally recorded greater than 15, with values increasing with depth. Several cobbles were also noted within the Glacial Till.

Bedrock geology was observed only in CP102 at 12.90m bgl, indicating the bedrock is shallower in the east of the site. The bedrock comprised orangish brown fine to medium sandstone recovered as angular coarse gravel and was taken to 13.20m bgl after 1 hour of chiselling.

5.3 Site Preparation

At present the majority of the site comprises car parking with the main cinema building in the north. The intrusive ground investigation encountered numerous obstructions at shallow depth, including buried concrete slabs in multiple locations.

General turnover of the uppermost Made Ground will therefore be required locally (i.e. beneath the footprints of new buildings and along service routes) to allow the breaking out and removal of former sub-structures including brick and concrete foundations. Concrete and masonry should be crushed to a suitable grading (e.g. 6F2) for re-use in the development (e.g. working platforms, road capping, temporary haulage roads etc.).

Where structures are particularly deep (e.g. old piles), total removal will not be practical or economical and therefore the positions of such obstructions should be accurately recorded to allow new foundations to be designed around them accordingly.

Furthermore, the remaining structures located across the site will require full above and below ground demolition prior to re-development.

Excavations formed as a result of the demolition activities will require adequate backfilling to a specification suitable to the proposed use of the area in question. Sorting and screening to remove deleterious materials and crushing of oversized items (concrete blocks, blocks of masonry, etc.) should be undertaken where necessary in order to facilitate and improve the compaction of site-won fill materials during placement. This

process may generate a fraction which will not be suitable for re-use (including potentially deleterious materials such as timber) and as such these are likely to require offsite disposal.

Granular materials should be used preferentially in areas beneath proposed structures. The use of cohesive materials should therefore be considered more appropriate as general fill (in landscape areas for example) where settlements are less critical.

5.4 Foundations and Floor Slabs

In their untreated state, the Made Ground deposits are considered unsuitable for the direct support of conventional shallow-spread strip foundations as their potentially variable relative density could give rise to unacceptable magnitudes of total and differential settlements on loading.

In the area currently proposed for the main school structure (north of the central site area) ground conditions comprise Made Ground to depths of between 0.6 and 1.4m bgl, underlain by firm to stiff glacial clay. Preliminary calculations indicate that an allowable net bearing capacity of around 130kN/m^2 is likely to be feasible for pad foundations up to 1m^2 at a depth of around 1.5m. For greater loads, a piled foundation solution would be required to transfer loads through to the competent Glacial Till at depth. These options are considered typical foundation solutions for a new school building. At present, however, the existing cinema building is located roughly within the footprint of the proposed school building. Therefore, supplementary investigation will be required post demolition to obtain development-specific geotechnical design parameters for the school building.

Based on the ground conditions encountered and the plasticity of the predominantly cohesive Made Ground, suspended floor slabs would be required for the school building if shallow foundations are adopted and for piled foundation solutions to eliminate differential settlement between the piled super structure and the floor slab.

Within the north-western and south-eastern parcels, Made Ground was recorded to greater depths, generally between 2.2 and 2.5m bgl. Therefore, traditional shallow spread foundations are unlikely to be feasible/economical for the residential development proposed in these areas. Deep, trench fill foundations are also not likely to be feasible as the sides of excavations through the Made Ground may become unstable resulting in oversize foundations and excessive volumes of concrete. The most economical foundation solution will likely comprise ground improvement by vibro-treatment methods (such as vibro stone columns) to improve and unify the shallow soils. Treatment would be required to extend the full thickness of the Made Ground and within the underlying Glacial Till, to depths of around 3m bgl. Following vibro-treatment, suitably reinforced spread foundations based upon a net allowable bearing pressure of about 125kPa could be formed on the treated ground at depths of around 1m bgl.

If ground improvement by vibro treatment is to be considered further, consultation with a reputable ground-improvement specialist is recommended. Ideally the specialist will have local knowledge and have experience of working on similar developments with similar ground conditions.

Due consideration should also be given to the following limitations:

- NHBC standards require that vibro-treatment beneath structures extends through the full thickness of Made Ground to the underlying (competent) Glacial deposits.
- Consideration should be given to the impact during construction, in terms of noise/vibration etc. upon nearby structures, services and developments.
- There are distance limitations of vibro-treatment adjacent to existing structures/services; these are understood to be in the order of 2-6m and therefore consideration should be given to buildings on the adjacent land.

A mini pile foundation solution may be an appropriate alternative solution for low-rise residential structures, with piles extending through the Made Ground to the stiff Glacial Till at depths of around 3 to 4m bgl. However, whether or not this would be more cost effective than the ground improvement solution will depend upon a number of factors including the design costs, mobilisation costs, length of the piles, etc.

Detailed pile designs (in terms of pile type, depths, and method of installation) would be dependent upon the required working loads and should be undertaken in conjunction with a reputable, specialist, piling contractor; ideally with local experience.

For the residential parcels, floor slabs will be subjected to relatively light loads and therefore ground-bearing floor slabs may be feasible if ground improvement is undertaken (subject to appropriate preparation and treatment of the subgrade formation and where necessary the allowance for capping in addition to Type 1 sub-base). However, the type of floor slab construction is also dependent on the foundation design, the combination of which will also need to take into consideration any requirement for ground gas mitigation and therefore suspended floor slabs are likely to be more appropriate.

5.5 Pavement Design

In consideration of the ground conditions encountered, it is likely that the pavement subgrade exposed at formation levels will comprise predominantly granular Made Ground deposits.

For preliminary design purposes, based upon the available soil descriptions, it is recommended that new road pavement and road construction design be based upon (an estimated) CBR value of about 5%. However, the design value will need to be reviewed and confirmed by suitable in-situ testing at formation levels following any earthwork operations and prior to pavement construction.

The formation at all levels will require proof-rolling prior to pavement construction, and any soft zones thus revealed excavated out, with the resulting excavation in-filled with appropriately graded engineered granular fill.

5.6 Concrete Classification

Design/mix of buried concrete should be undertaken in accordance with BRE Special Digest 1 (2005).

A summary of the soil and groundwater chemical results pertinent to concrete classification is presented in the following table.

Matrix	Test	Range of Values
Soil	pH	6.7 – 11.6
	Water Soluble Sulphate 2:1 Extract (mg/l)	16.9 – 235
Groundwater	pH	7.13 – 7.46
	Sulphate (mg/l)	35.3 – 60.3

A review of the available soil and groundwater chemical results indicates that sulphate and pH results fall within “Design Sulphate Class” DS-1, and the “Aggressive Chemical Environment for Concrete” (ACEC) class for the site is considered to be AC-1. Design/mix of buried concrete should be undertaken in accordance with these classifications.

5.7 Excavations & Groundwater

Excavations at the site should be feasible using an appropriate scale of hydraulic plant. All excavations at the site will require adequate lateral support, or battering back to a safe angle, to ensure their stability.

Based on the available data, it is considered likely that perched groundwater will be encountered in shallow excavations (i.e. <2.0mbgl) at the site, especially during periods of wet weather and in this scenario appropriate groundwater control/dewatering provisions should be employed to keep such excavations dry.

5.8 Infiltration Drainage

Given the presence of site wide cohesive Glacial Till deposits underlying the Made Ground, infiltration drainage via soakaways are unlikely to be feasible due to the anticipated low infiltration rate of the underlying soils.

6 Contamination Assessment

6.1 Generic Quantitative Risk Assessment

In order to assess the potential significance of the CoC in relation to the potentially active source-pathway-receptor linkages identified, the measured concentrations of CoC in soil and groundwater have been compared to applicable Arcadis GAC derived based on a residential end-use of the site. This is a conservative scenario when considering the school development.

Concentrations of CoC have been compared to GAC protective of potential future onsite residents and site users, and GAC derived for the protection of neighbouring residents.

Desk study information and the results of the intrusive investigation indicates that the Site is underlain by Glacial Till deposits, which are classified as a secondary undifferentiated aquifer with local or limited potential. The superficial deposits are underlain by the Chester Pebble Beds Formation which is classified as a principal aquifer. Based on this, concentrations of CoC measured in soil and groundwater have been compared to GAC protective of the underlying aquifers.

Surface water features are not considered a potential receptor as the nearest is Platt Brook, located approximately 365m away from the site.

The GAC have been derived by Arcadis, in line with guidance provided by the Environment Agency (EA). The derivation of the Arcadis GAC, to which the concentrations of potential contaminants have been compared, is presented as Appendix G and the results of the soil and groundwater generic quantitative risk assessment are presented in the tables in Appendix H. These are summarised in the following sections.

6.2 Summary of Laboratory Results

6.2.1 Soil

A total of 36 soil samples were scheduled for chemical laboratory analysis.

Concentrations of various TPH fractions were measured above the laboratory Method Detection Limit (MDL) in the majority of soil samples analysed. Sum TPH was measured at concentrations greater than 1,000mg/kg in the soil samples from CP103 at 1.0m bgl (2,820mg/kg), CP106 at 0.6m bgl (3,670mg/kg) and WS106 at 0.4 – 0.5m bgl (2,430mg/kg).

Concentrations of Benzene, Toluene, Ethylbenzene and Xylene were all found to be below the laboratory MDL. The sum of BTEX for all soil samples was below the laboratory MDL. The measured concentrations of MTBE were below the laboratory MDL for all soil samples.

Various PAH fractions were measured above the MDL in the majority of soil samples analysed. The highest detected Total PAH concentration was recorded as 67.1mg/kg in the soil sample from WS101 at 2.2 – 2.3m bgl.

Concentrations of various metals were measured above the MDL in all of the soil samples analysed.

Several soil samples were analysed for SVOCs and VOCs, with the majority of compounds analysed measuring below the laboratory MDL or at very low levels.

The soil samples analysed for polychlorinated biphenyls (PCBs) were found to be below the laboratory MDL

A total of 25 soil samples were scheduled for asbestos screening and 6 positive identifications were made in the laboratory. Amosite asbestos fibres were found to be present within the soil sample from WS103 0.7 – 0.8m bgl and CP107 0.3m bgl, and amosite containing debris was found within CP101 0.5 – 0.6m bgl. Chrysotile fibres were also identified within the soil sample from WS109 0.5 – 0.6m bgl and WS116 0.2 – 0.3m bgl. Subsequent quantification analysis found these to be at concentrations <0.001%.

The soil sample obtained from WS107 1.1 – 1.2m bgl was found to contain chrysotile and crocidolite containing debris and fibre bundles. Quantification analysis on this sample found the asbestos concentration to be 0.0442%.

6.2.2 Groundwater

A total of 3 groundwater samples were scheduled for chemical laboratory analysis. These were obtained from the deeper monitoring wells installed within CP101, CP102 and CP104. CP107 was found to be dry during the groundwater sampling visit.

Concentrations of TPH were recorded below the laboratory MDL in the groundwater samples obtained in CP102 and CP104. Sum TPH was measured at a concentration of 1200 µg/L in CP101, comprising principally heavy-end aliphatic fractions >C21.

Concentrations of BTEX and MTBE were measured below the laboratory MDL in all groundwater samples.

Concentrations of PAHs were generally measured at low levels. The highest total detected PAH was recorded from the groundwater sample from CP101 (23.6µg/l).

Metals were recorded at generally low levels above the laboratory MDL in all three samples.

6.3 Risk Estimation

The results of the soil and groundwater generic quantitative risk assessment are presented in the tables in Appendix H, and are summarised below:

6.3.1 Soil

Receptor	Soil samples with measured contaminant concentrations in excess of the GAC	GAC (mg/kg)	No. exceeding	Exceedance concentration range (mg/kg)
Human Health (neighbouring residents)	None	-	-	-
Human Health (future site users and residents)	**Chromium:** CP102 (MG), WS102 (Natural), WS104 (MG), WS108 (Natural)	21	4	29.8 – 91.9
	Lead: CP101, CP102, CP104, WS101, WS102, WS104, WS109, WS110, WS112, WS116 (All MG)	200	10	225 - 2070
	Mercury: CP101, WS101, WS104, WS109, WS110, WS112, WS116 (All MG)	0.0302	7	0.188 - 0.865
	Chrysene: CP103 (MG)	22.5	1	34.3
	Benzo(a)anthracene: CP103 (MG)	6.59	1	37
	Benzo(b)fluoranthene: CP103, CP107, WS115 (All MG)	3.48	3	3.61 – 16.9
	Benzo(a)pyrene: CP103 (MG)	5	1	28.9
	Dibenz(a,h)anthracene: CP101, CP103, CP106, CP107, WS115 (All MG)	0.274	5	0.283 – 1.68
	>C10-C12 Aliphatics: WS102, WS106 (All MG)	8.97	2	13.5 – 49.2
	>C12-C16 Aliphatics: WS106 (MG)	40.7	1	383

	>EC12-EC16 Aromatics: CP103, WS102 (All MG)	78	2	95.4 - 272
	>EC21-EC35 Aromatics: CP103 (MG)	1720	1	1810
Water Resources – Aquifers	**Naphthalene:** CP101 (MG), CP102 (MG), CP103 (Natural), CP107 (MG), WS101 (Natural), WS102 (MG), WS103 (MG), WS104 (MG), WS107 (MG), WS108 (Natural), WS109 (MG), WS110 (Natural), WS112 (MG), WS113 (MG), WS115 (MG), WS116 (MG)	0.015	21	0.0159 – 2.24
	Benzo(b)fluoranthene: CP101 (MG), CP102 (MG), CP103 (Natural), CP104 (MG), CP106 (MG), CP107 (MG), WS101 (Natural), WS102 (MG), WS103 (MG), WS104 (MG), WS107 (MG), WS108 (Natural), WS109 (MG), WS110 (Natural), WS112 (MG), WS113 (MG), WS115 (MG), WS116 (MG)	0.26	24	0.0742 – 16.9
	Benzo(k)fluoranthene: CP101 (MG), CP102 (MG), CP103 (Natural), CP104 (MG), CP106 (MG), CP107 (MG), WS101 (Natural), WS102 (MG), WS103 (MG), WS104 (MG), WS107 (MG), WS109 (MG), WS110 (Natural), WS112 (MG), WS113 (MG), WS115 (MG), WS116 (MG)	0.037	22	0.0633 – 21.8
	Benzo(a)pyrene: CP101 (MG), CP102 (MG), CP103 (Natural), CP104 (MG), CP106 (MG), CP107 (MG), WS101 (Natural), WS102 (MG), WS103 (MG), WS104 (MG), WS107 (MG), WS108 (Natural), WS109 (MG), WS110 (Natural), WS112 (MG), WS113 (MG), WS115 (MG), WS116 (MG)	0.013	24	0.0776 – 28.9
	Benzo(g,h,i)perylene: CP101 (MG), CP102 (MG), CP103 (MG), CP106 (MG), CP107 (MG), WS101 (Natural), WS102 (MG), WS103 (MG), WS104 (MG), WS107 (MG), WS109 (MG), WS110 (Natural), WS112 (MG), WS115 (MG), WS116 (MG)	0.105	19	0.331 – 12.4
	Indeno(1,2,3-cd)pyrene: CP101 (MG), CP102 (MG), CP103 (Natural), CP104 (MG), CP106 (MG), CP107 (MG), WS101 (Natural), WS102 (MG), WS103 (MG), WS104 (MG), WS107 (MG), WS108 (Natural), WS109 (MG), WS110 (Natural), WS112 (MG), WS113 (MG), WS115 (MG), WS116 (MG)	0.022	24	0.0395 – 15

** MG / Natural – Soil samples obtained from shallow Made Ground or underlying natural strata*

6.3.2 Groundwater

Receptor	Groundwater samples with measured contaminant concentrations in excess of the GAC	GAC (µg/l)	No. exceeding	Exceedance concentration range (µg/l)
Human Health (future site users and residents, and neighbouring residents)	None	-	-	-
Water Resources - Aquifers	**Benzo(b)fluoranthene:** CP101	0.025	1	3.35
	Benzo(k)fluoranthene: CP101	0.025	1	1.22
	Benzo(a)pyrene: CP101	0.01	1	2.69
	Benzo(g,h,i)perylene: CP101	0.025	1	2.36
	Indeno(1,2,3-cd)pyrene: CP101	0.025	1	1.96
	TPH C5-C35 Aliphatics/Aromatics: CP101	10	1	1200

6.4 Risk Evaluation

6.4.1 Human Health

Several of the CoC concentrations in the soil samples analysed exceed the GAC derived for the protection of onsite human health receptors. Elevated contaminants within site soils include metals, several PAH compounds and TPH. Asbestos was also identified in the shallow Made Ground, however for most of the positive identifications these were quantified to trace levels <0.001%. A single soil sample from WS107 1.1 – 1.2m bgl was found to contain chrysotile and crocidolite containing debris and fibre bundles above the quantification MDL with a concentration of 0.0442%.

The driving exposure pathway for the majority of these contaminants (with the exception of volatile hydrocarbons) comprise direct exposure pathways including soil ingestion/inhalation and dermal contact, or in the case of asbestos, the inhalation of airborne fibres. Therefore, in areas with buildings/external hardstanding or similar, no such potential pollution would exist, and hence no specific remedial measures would be required. However, in the areas of soft landscaping and private gardens the potential contamination linkage will need to be broken by capping with a suitable thickness of uncontaminated cover soils. For private gardens within the proposed residential development this should comprise a 600mm cover system of clean soils with an intervening no dig layer. A reduced thickness of capping soils (~300mm) may be acceptable for the landscaped areas within the proposed school development. We are not aware of any specific design at this stage for the construction of the playing fields, or whether the Sports England specification will be adopted, however a suitable breakage layer will be required to remove the direct contact pathway between the Made Ground soils and the site users.

Within the central site area, CP103 at 1m bgl recorded hydrocarbon fractions C12-16 (95.4mg/kg) and C21-35 (1,810mg/kg) marginally above their respective GACs of 78 and 1720mg/kg. The GACs for these hydrocarbon bands are driven by the theoretical saturation limits of the compounds in soil as they partition into water. The concentrations recorded within the shallow soil sample from CP103 appear to be above the soil saturation limit which should be indicative of free product. However, free product was not encountered and a maximum PID reading of 3.8ppm was recorded at 1m bgl. In this instance the heavy end hydrocarbons recorded are likely to be a result of ashy Made Ground rather than free product, and this is supported by the

relatively high level of PAHs measured within this sample. Therefore, these concentrations only exceed the GACs since they are limited by the soil saturation limit and are not considered to represent a significant risk to human health.

However, within the residential parcels, lighter potentially volatile hydrocarbons were measured in the soil samples from WS101 at 2.2 to 2.3m bgl, WS102 at 2.2 to 2.3m bgl and WS106 at 0.4 to 0.5m bgl. The samples from WS102 and WS106 in particular exceed the GAC for the hydrocarbon fraction C10-12 (8.97mg/kg) with concentrations of 13.5 and 49.2mg/kg respectively. Light-end hydrocarbons could potentially present a risk through the inhalation of volatile vapour.

An early allowance could be made for the inclusion of hydrocarbon resistant membranes for plots across the proposed residential development. These would also meet the specification for the ground gas protection measures required within these areas of the site as detailed in Section 7.

Alternatively, an allowance could be made for further investigation across the two residential parcels to provide a better understanding of the distribution and extent of lighter end hydrocarbons within site soils in these areas. Vapour monitoring/sampling and risk assessment could then be undertaken to determine whether residual contamination in the shallow soils poses a significant risk to human health via inhalation pathways.

6.4.2 Water Environment

Contaminant concentrations in exceedance of GACs protective of groundwater were measured in several soil and groundwater samples.

Within the soil samples, several PAHs were measured at concentrations exceeding their respective GACs. However, given that PAHs are generally of limited solubility and therefore do not readily dissolve in water, it is unlikely that PAH compounds will be mobilised by leaching into the underlying aquifer. This is generally supported by the results of the groundwater samples, where PAHs were only measured above the GACs in CP101 where a grab sample had to be taken due to the depth to water which exceeded the capability of the peristaltic pump. The groundwater samples obtained by micro-purging techniques from CP102 and CP104 recorded PAHs either below the laboratory method limit of detection (MDL) or at very low levels below the GACs.

Elevated TPH, comprising predominantly heavy end fraction >C21 and likely to include the low-level PAH compounds detected, was also recorded in the groundwater sample obtained from CP101. No visual or olfactory evidence of hydrocarbon contamination was noted within this borehole in the field, and significant hydrocarbon concentrations were not recorded in the shallow soil sample obtained from this location. The groundwater sample was noted to be highly sedimented and hence the detected hydrocarbon concentrations are likely due to entrained sediment and solid particle interference skewing the results, and not associated with elevated dissolved phase hydrocarbons in this area.

Given the distance to the nearest surface watercourse (Platt Brook located 366m to the south), the presence of a significant thickness of cohesive clays underlying the entirety of the site, the depth to the true groundwater table (indicated to be >11.5m bgl) and the generally low contaminant concentrations recorded within the groundwater samples, the risk to controlled waters is considered to be low and unlikely to warrant further consideration.

6.5 Conclusion

General site-wide, low level contamination was identified in Made Ground soils comprising elevated metals and PAHs. Asbestos was also identified in the shallow Made Ground, however for most of the positive identifications these were quantified to trace levels <0.001%.

In the northwest and south-eastern parcels, where residential development is proposed, the potential contamination linkage will need to be broken in private gardens by capping with a suitable thickness (600mm) of uncontaminated cover soils with an intervening demarcation layer. A reduced thickness of capping soils (~300mm) may be acceptable for the landscaped areas within the proposed school development.

Asbestos was quantified above 0.001% in one soil sample within the south-eastern parcel and as such there is a possibility for small quantities of asbestos containing material to be present within the site soils. It is therefore recommended that all site enabling and construction works are undertaken according to an asbestos management plan to ensure safe working.

Within the two proposed residential parcels, lighter potentially volatile hydrocarbons were also measured in several shallow soil samples, which could potentially present a risk through the inhalation of volatile vapour.

An early allowance could be made for the inclusion of hydrocarbon resistant membranes for plots across the proposed residential development. These would also meet the specification for the ground gas protection measures required across the site as detailed in Section 7.

Alternatively, further investigation could be undertaken across these parcels to provide a better understanding of the distribution and extent of lighter end hydrocarbons. Vapour monitoring/sampling and risk assessment could then be undertaken to determine whether residual contamination in the shallow soils poses a significant risk to human health via inhalation pathways.

The risk to controlled waters is not indicated to be significant based on the measured soil and groundwater concentrations and the sensitivity of the site with regards to controlled water resources, and therefore no further work is likely to be warranted in this respect.

Planning Permission conditions for the site will likely include a requirement for an agreed Remediation Strategy, outlining the above required remedial measures.

7 GROUND GAS ASSESSMENT

7.1 Methodology

Current guidance for the assessment of risk associated with the presence of hazardous ground gases (principally methane and carbon dioxide within ground gas) is provided in two key documents:

- Code of practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings. British Standard Institution (BS 8485:2015+A1:2019); and
- Assessing Risks posed by Hazardous Ground Gases to Buildings CIRIA (C665, 2007).

A semi-quantitative estimate of risk from hazardous ground gases can be provided, based upon the qualitative risk model and gas monitoring results.

Based on the measured flow rates and measured hazardous gas concentrations, individual "hazardous gas flow rates" (Q_{hg}) (or Gas Screening Values GSVs) can be derived for each monitoring point, from which the "site characteristic hazardous gas flow rate" (Q_{hgs}), and then the "Characteristic Situation" can be determined.

BS8485 provides guidance on the level of required gas protection based upon the characteristic situation and the type of development.

7.2 Ground Gas Conceptual Model

Proposed future development at the site includes a school within the central site area and residential development within the north-western and south-eastern parcels. For residential development, the sensitivity can be deemed to be "High" and would comprise Type A buildings according to BS8485. The school would likely fall into the Type B category.

On-site potential sources of ground gas generation have been identified on the basis of the desk study information and the intrusive site investigation. These comprise general Made Ground and fill deposits found to underlie the site. The gas generation potential of the Made Ground is considered to be Low.

On the basis of the above, the overall risk is considered "Medium". Further monitoring will be required prior to redevelopment, however, in order allow a preliminary risk assessment to be completed, four visits over weekly intervals have been undertaken.

7.3 Gas Monitoring Results

To establish the ground gas regime for the site, the installations have been monitored on six occasions between 22nd July and 20th August 2020.

The ground gas monitoring was undertaken using an infra-red gas analyser and flow pod. Concentrations of methane (CH_4), carbon dioxide (CO_2) and oxygen (O_2) in %, Hydrogen Sulphide (H_2S) and Carbon Monoxide in ppm and ground gas flow in litres per hour (l/h) were recorded during each visit. After the monitoring was undertaken, each well was dipped to record the groundwater level in each location.

Below is a summary of the maximum ground gas concentrations (CH_4 and CO_2) recorded at the subject site, and the maximum borehole hazardous gas flow rates (Q_{hg}) calculated for each monitoring location and each monitoring event. The full gas monitoring data is included in Appendix I.

Monitoring Well	Max +ve Flow (l/hr)	Max CH_4 (%v/v)	Max CO_2 (%v/v)	Max CH_4 Q_{hg} (l/hr)	Max CO_2 Q_{hg} (l/hr)	Characteristic Situation
WS102	<0.1	5.1	8.8	0.0051	0.0088	2
WS104	0.1	0.3	1.6	0.0003	0.0016	1
WS107	0.3	0.1	0.1	0.0003	0.0003	1
WS108	2.6	<0.1	0.6	0.0026	0.0156	1
WS110	8.0	0.6	1.0	0.048	0.08	2

Monitoring Well	Max +ve Flow (l/hr)	Max CH_4 (%v/v)	Max CO_2 (%v/v)	Max CH_4 Q_{hg} (l/hr)	Max CO_2 Q_{hg} (l/hr)	Characteristic Situation
WS111	8.5	0.1	0.1	0.0085	0.0085	1
WS113	10.0	0.2	0.5	0.02	0.05	1
WS116	0.2	0.1	3.5	0.0002	0.007	1
CP101	<0.1	<0.1	0.2	0.0001	0.0002	1
CP102	3.2	0.2	4.5	0.0064	0.144	2
CP104	0.2	0.3	0.4	0.0003	0.0008	1
CP107	0.3	<0.1	2.0	0.0003	0.006	1

7.4 Preliminary Hazardous Ground Gas Assessment

The table below is derived from BS8485 and CIRIA C665 and presents the relationship between thresholds in the monitoring data and “Characteristic Situations”.

Characteristic Situation	Risk Classification	Q_{hgs} (l/hr) / GSV	Additional Factors
1	Very Low	<0.07	Typically, ≤1% CH_4 and ≤5%CO_2
2	Low	≥0.07 <0.7	Typical measured flow rate <70l/hr
3	Moderate	≥0.7 <3.5	
4	Moderate to High	≥3.5 <15	
5	High	≥15 <70	
6	Very High	≥70	

The following maximum results from the data summary table have been compared with the criteria outlined above:

- Maximum flow = 10.0 l/hr
- Maximum Methane = 5.1 % v/v
- Maximum Carbon Dioxide = 8.8 % v/v
- Maximum Q_{hg} = 0.144 l/hr

CH_4 concentrations were recorded to exceed 1%v/v in WS102 in the north-western parcel, and a combination of a maximum flow rate of 3.2l/hr and carbon dioxide of 4.5% v/v contribute to the maximum calculated Q_{hg} value of 0.144l/hr recorded in CP102 in the south-eastern parcel.

Therefore, the preliminary monitoring dataset indicates the site to fall into Characteristic Situation 2 (CS2).

These results indicate a low gas risk on site and this finding is consistent with the conceptual site model i.e. the potential source of ground gas is the Made Ground / fill deposits onsite; which generally have low gas volume generation potential.

Under CS2 ('low' gas risk), basic gas protection measures would be required for new buildings on the site where ground gas could potentially accumulate in enclosed spaces.

Within the central site area, the CS2 classification is driven by an elevated flow rate of 8.0l/hr, recorded on a single monitoring occasion in one location. Further monitoring may find the CS2 classification for the proposed school site to be overly conservative. However, at this stage, an allowance should be made for the inclusion of basic gas protection measures within new buildings across the site.

8 Other Development Considerations

8.1 Soils Management

Careful planning and management of soils prior to and during any excavation works will ensure optimum disposal / re-use of the resource.

The production of aggregates from inert/uncontaminated waste (such as crushed concrete and brick) usually falls under the WRAP Quality Protocol “Aggregates from inert waste” and therefore these are generally excluded from the following advice.

If Made Ground arisings, or impacted natural soil arisings, are deemed chemically and geotechnically suitable for re-use on site and there is a genuine requirement for fill materials within the development, it will be necessary to demonstrate this and declare the material as non-waste through a Materials Management Plan (MMP) under the CL:AIRE Code of Practice; supported by a development-specific, regulator approved Remediation Strategy (through the Planning process).

8.2 Waste Characterisation and Disposal

The principal contractor will be responsible for the appropriate management of waste generated through the construction process, to include appropriate waste characterisation and where necessary Waste Acceptance Criteria (WAC) testing prior to disposal.

Appropriate waste characterisation can only be undertaken on the material due to be disposed of via further chemical testing; which should be completed immediately prior to disposal. For Inert waste disposal and in the event of Hazardous waste disposal, allowance will need to be made for adequate Waste Acceptance Criteria (WAC) testing with appropriate consideration of the additional time and cost associated with this process.

In all cases where soils require off-site disposal, the materials need to be managed under the appropriate legislation and consideration given to any remedial techniques that could be used to improve the soil condition and enhance the sustainability of the operation – as a last resort only, should soils be classified as waste and disposed of at a licensed landfill.

It is the responsibility of the waste producer to ensure that the waste carrier and destination facility operates under appropriate/legal licenses and permits.

Based on current information, it is likely that the majority of Made Ground would be classed as Non-hazardous for offsite disposal. However localised areas of shallow Made Ground may produce soils which could be classifiable as Hazardous Waste based on the concentration of Total Petroleum Hydrocarbons or where asbestos fragments are present in soils.

Note however, the boreholes completed to date only provide narrow windows into bulk ground conditions and therefore there remains the potential for other hotspots of contamination to exist which may constitute Hazardous Waste when segregated and at the point of disposal (if required).

Natural uncontaminated soils (e.g. pile arisings where the Made Ground or any impacted soils have been segregated) would likely be classed as Inert for offsite disposal.

8.3 Health, Safety & Environment

Consideration should be given to the level of PPE that should be provided to future site operatives. All work on site should be conducted in accordance with appropriate Health and Safety guidance.

Care should be taken to minimise the risk of potentially contaminative incidents occurring during redevelopment. Good working practices should be adopted during construction works in order to minimise the risk of contamination occurring as a result of spillage or leakage of fuels, oils or chemicals stored or used at the site during re-development. All such materials should be sited on an impervious base within a bund and should be adequately secured. In particular, care should be taken to prevent fuel, oils or other mobile contamination sources from entering any surface water drains at the site.

Throughout any redevelopment works, due regard should be given to potential detrimental effects on the surroundings including noise, vibration, odour and dust.

8.4 Potable Water Supply Protection

There are currently no (fully adopted) national standards for the protection of potable water supply pipes in contaminated ground. However, the UK Water Industry Research (UKWIR) has published "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" and assessment should be undertaken in line with this.

On the basis of the ground conditions encountered, specific protection measures (e.g. Protecta-Line barrier pipe) may be required for the subject site; it is recommended that consultation is undertaken with United Utilities to confirm this and a Water Pipeline Risk Assessment will be required for any new connection application.

9 Conclusions

9.1 Background, Scope & Objectives

Arcadis Consulting (UK) Limited (Arcadis) was commissioned by Manchester City Council to undertake a Phase 2 Intrusive Ground Investigation and Assessment for redevelopment of the site located off Hyde Road, Manchester, M12 5AL.

Manchester City Council is in the process of negotiating the purchase of the Showcase cinema site located between Hyde Road and Kirkmanshulme Lane. This acquisition will allow the demolition of the existing cinema and redevelopment of the central part of the site with a 1200 place high school and residential use of the two parcels of land lying to the southeast and northwest of the main site.

As part of the purchase due diligence, the client needs to obtain information on ground conditions to inform potential redevelopment constraints, the potential scope and cost of any remediation required for the proposed end use to assist in the determination of the Net value of the site.

Following on from completion of the Phase 1 Desk Study, an intrusive ground investigation was undertaken comprising 7no cable percussion boreholes and 16no windowless sampling boreholes with associated in-situ testing, laboratory testing and post-SI monitoring to better understand the soil, groundwater and ground gas conditions at the site and where possible investigate any areas of potential concern.

9.2 Ground Conditions

Ground conditions across the site were found to comprise a sequence of Made Ground, underlain by predominantly cohesive Glacial Till deposits, in turn underlain by sandstone bedrock of the Chester Pebble Bed Formation.

Made Ground was encountered in all of the exploratory holes to a maximum depth of 3.30m bgl. Bituminous hardstanding was generally recorded over sandy gravel of type 1 material to depths of between 0.1 and 1.4m bgl. In the majority of exploratory locations this was underlain by predominantly granular Made Ground comprising slightly clayey slightly sandy fine to coarse gravel. Granular Made Ground was frequently underlain by cohesive strata comprising sandy gravelly clay with many cobbles of brick and concrete.

Made Ground appears to be thicker across the north-western and south-eastern parcels where it was generally recorded to a depth of between 2.2 to 2.5m bgl. Across the central site area, Made Ground was generally recorded to a depth of between 0.6 and 1.4m bgl.

The underlying Glacial Till deposits were generally found to comprise firm to very stiff sandy gravelly clay. SPT N-values were recorded between 6 and >50 (refusal), however were generally recorded greater than 15, with values increasing with depth. Several cobbles were also noted within the Glacial Till.

Bedrock geology was observed only in CP102 at 12.90m bgl, indicating the bedrock is shallower in the east of the site. The bedrock comprised orangish brown fine to medium sandstone recovered as angular coarse gravel.

Shallow groundwater was recorded within the windowless sample boreholes and is considered to represent a perched waterbody within the Made Ground deposits. Within the deeper cable percussion boreholes groundwater was encountered in a saturated layer of sand within the Glacial Till deposits recorded in boreholes to the east of the site. Elsewhere, the true groundwater table was not intercepted during drilling, but resting levels were recorded within CP101 at a depth of roughly 11.5m bgl.

9.3 Geotechnical Appraisal

In the area currently proposed for the main school structure (north of the central site area, ground conditions comprise Made Ground to depths of between 0.6 and 1.4m bgl, underlain by firm to stiff glacial clay. Preliminary calculations indicate an allowable net bearing capacity of around 130kN/m^2 may be feasible for pad foundations up to 1m^2 at a depth of around 1.5m. For greater loads, a piled foundation solution would be required. These options are considered typical foundation solutions for a new school building.

Made Ground was found to greater depths across the north-western and south-eastern parcels. The most economical foundation solution for low-rise structures across the two residential parcels will likely comprise ground improvement by vibro-treatment methods (such as vibro stone columns) to improve and unify the shallow soils. Treatment would be required to extend the full thickness of the Made Ground and within the underlying Glacial Till, to depths of around 3m bgl. Following vibro-treatment, suitably reinforced spread foundations based upon a net allowable bearing pressure of about 125kPa could be formed on the treated ground at depths of around 1m bgl. A mini pile foundation solution with a suspended floor slab may be an appropriate alternative solution for low-rise residential structures.

For preliminary design purposes, it is recommended that new road pavement and road construction design be based upon (an estimated) CBR value of about 5%.

Sulphate and pH results fall within “Design Sulphate Class” DS-1, and the “Aggressive Chemical Environment for Concrete” (ACEC) class for the site is considered to be AC-1.

9.4 Land Contamination

9.4.1 Soil

The shallow soils may be considered chemically unsuitable for use in areas of soft standing (private gardens, communal gardens and areas of soft landscaping) due to exceedances of GAC protective of human health for PAHs and low/trace concentrations of asbestos containing materials, and as such a simple cover system (capping layer) is required to sever potential exposure pathways.

In the northwest and south-eastern parcels, where residential development is proposed, a “full” 600mm cover system will be required in private garden areas in order to provide an adequate barrier between future residents and the Made Ground soils and provide a ‘clean’ growing medium for plants. A reduced thickness of capping soils (~300mm) may be acceptable for the landscaped areas within the proposed school development.

Asbestos was quantified above 0.001% in one soil sample within the south-eastern parcel and as such there is a possibility for small quantities of asbestos containing material to be present within the site soils. It is therefore recommended that all site enabling and construction works are undertaken according to an asbestos management plan to ensure safe working.

Within the two proposed residential parcels, lighter potentially volatile hydrocarbons were also measured in several shallow soil samples, which could potentially present a risk through the inhalation of volatile vapour. An early allowance could be made for the inclusion of hydrocarbon resistant membranes for plots across the proposed residential development. These would also meet the specification for the ground gas protection measures required across the site as detailed below.

Alternatively, further investigation could be undertaken across these parcels to provide a better understanding of the distribution and extent of lighter end hydrocarbons. Vapour monitoring/sampling and risk assessment could then be undertaken to determine whether residual contamination in the shallow soils poses a significant risk to human health via inhalation pathways.

9.4.2 Groundwater

The risk to controlled waters is not indicated to be significant based on the measured soil and groundwater concentrations and the sensitivity of the site with regards to controlled water resources, and therefore no further work is likely to be warranted in this respect.

9.4.3 Ground Gas

The preliminary gas risk assessment indicates the site to fall into Characteristic Situation 2 (CS2). Under CS2 (‘low’ gas risk), basic gas protection measures would be required for the proposed new structures.

Within the central site area, the CS2 classification is driven by an elevated flow rate of 8.0l/hr, recorded on a single monitoring occasion. Further monitoring may find the CS2 classification for the proposed school site to be overly conservative. However, at this stage, an allowance should be made for the inclusion of basic gas protection measures within new buildings across the site.

9.4.4 New Potable Water Supplies

On the basis of the ground conditions encountered, specific protection measures (e.g. Protecta-Line barrier pipe) may be required for new potable water supplies at the subject site; it is recommended that consultation is undertaken with United Utilities to confirm this and a Water Pipeline Risk Assessment will be required for any new connection application.

9.4.5 Preliminary Waste Soil Characterisation

On the basis of the current information, it is likely that the majority of Made Ground would be classed as "Non-hazardous" for offsite disposal. However localised areas of shallow Made Ground may produce soils which could be classifiable as "Hazardous" waste based on the concentration of Total Petroleum Hydrocarbons or where asbestos fragments are present in soils.

Natural uncontaminated soils (for example pile arisings where the Made Ground or any impacted soils have been segregated) would likely be classed as "Inert" for offsite disposal.

An appropriate waste characterisation can only be undertaken on the material due to be disposed of via further chemical testing which should be completed prior to making disposal arrangements. In all cases where excess soils require off-site disposal, the materials need to be managed under the appropriate legislation and consideration given to any remedial techniques that could be used to improve the soil.

For Inert Waste disposal (and in the event of Hazardous Waste disposal), allowance will need to be made for adequate Waste Acceptance Criteria (WAC) testing with appropriate consideration of the additional time and cost associated with this.

9.5 Indicative Abnormal Development Costs

Estimated costs for the identified development abnormals are summarised in the table below.

These indicative abnormal development cost rates have been compiled using professional judgement and experience on similar schemes, and are based on a number of assumptions which have been made in the absence of a confirmed development plan for the school site, and the absence of any masterplans for the proposed residential developments. Where reasonable, assumptions have been made (e.g. potential housing density and therefore number of likely residential properties) and a rough cost has been provided. Where there are too many unknowns an indicative cost rate has been provided.

Furthermore, there are numerous factors/variables which should be considered, and which can have a significant bearing on the unit costs provided. These may include for example, the type of building foundations, where the material (topsoil / subsoil) is to be sourced, the specification of subsoil/topsoil etc.

Other items to consider are the natural site topography compared to required finished levels and whether or not a reduced dig (which would generate waste soils, potentially comprising a hazardous waste fraction) would be required to accommodate the capping soils.

Development Abnormal	Item	School Development	NW Residential Development	SE Residential Development
Ground Improvement for Foundations	Vibro stone columns & nominally reinforced foundations	NA	£100,000 [1]	£79,000 [1]
Hazardous Ground Gas Mitigation [2]	Standard gas barrier	*£11 - 13/m²* £44,000 - £52,000 [3]	*£11 - 13/m²* £25,000 - £30,000 [4]	*£11 - 13/m²* £20,000 - £24,000 [4]
Simple Cover System	Topsoil (150mm thick)	*£30 - 35/m³* £76,000 - £89,000 [5]	*£30 - 35/m³* £17,000 - £19.000 [6]	*£30 - 35/m³* £13,000 - £15,000 [6]

Development Abnormal	Item	School Development	NW Residential Development	SE Residential Development
	Subsoil (150mm thick – school) (450mm thick – residential)	*£20 - 25/m³* £51,000 - £64,000 [5]	*£20 - 25/m³* £33,000 - £42,000 [6]	*£20 - 25/m³* £26,000 – £33,000 [6]
Volatile Contaminant Mitigation	Hydrocarbon resistant membrane [7]	NA	*£15 - 17/m²* £35,000 - £39,000 [8]	*£15 - 17/m²* £27,000 - £31,000 [8]
	Additional SI, vapour sampling and risk assessment	NA	£10,000 - £15,000 [9]	£10,000 - £15,000 [9]
Barrier Water Pipelines	Contaminant resistant water supply pipes (such as Protecta-Line)	*£10 - 15/m* [10] £4,000 - £5,000 [11]	*£10 - 15/m* [10] £6,000 - £9,000 [12]	*£10 - 15/m* [10] £5,000 - £7,000 [12]
Hazardous Waste Disposal [13]	Landfill costs for hazardous waste and higher rate active landfill tax	*£200 - £250/tonne*	*£200 - £250/tonne*	*£200 - £250/tonne*

[1] *Cost over and above the construction of traditional, un-reinforced, shallow strip foundations bearing on untreated, competent ground. Assuming 46no units for the north-western parcel and 36no units for the south-eastern parcel (50 units per hectare) and based on average treatment depth of 3.0m across these parcels, estimated 26 columns per semi (example 9.50 x 9.75 building footprint) and including a reasonable amount of validation testing to demonstrate individual column integrity. Area of treatment limited to building footprints/beneath foundations.*

[2] *Assuming CS2 ground gas regime and foundation/floor slabs which can accommodate good performance, sub-floor passive ventilation.*

[3] *Assuming estimated building area of ~4,000m² based on indicative site plan within Faithful+Gould Feasibility report r1.1. Figures rounded up or down to nearest £1,000.*

[4] *Assuming 46 / 36no units for north-western and south-eastern parcels respectively (50 units per hectare) with ground floor area of 50m² per unit. Figures rounded up or down to nearest £1,000.*

[5] *Assuming estimated new soft-standing area of ~17,000m² based on indicative site plan within Faithful+Gould Feasibility report r1.1. Figures rounded up or down to nearest £1,000.*

[6] *Assuming 40% of developable area (north-western parcel 0.37ha, south-eastern parcel 0.29ha) will be soft-standing (gardens & public open space). Figures rounded up or down to nearest £1,000.*

[7] *Perimeter and infill installation of hydrocarbon resistant membrane where construction comprises beam and block / precast concrete plank design with clear void. Costs would vary depending on the chosen floor construction method and slab type.*

[8] *Assuming 46 / 36no units for north-western and south-eastern parcels respectively (50 units per hectare) with ground floor area of 50m² per unit. Figures rounded up or down to nearest £1,000.*

[9] *Cost for additional SI would be dependent on numerous factors such as full scope of works, single or multiple mobilisations, location of resource etc. An indicative budget is presented here.*

[10] *Cost over and above rates for standard potable water pipe.*

[11] *Calculated for approximate length of access road and connection to school building based on indicative site plan within Faithful+Gould Feasibility report r1.1. Figures rounded up or down to nearest £1,000.*

[12] *Assuming crude estimate of 13m water pipeline per property based on estimated driveway water service connection distance and shared main. Figures rounded up or down to nearest £1,000.*

[13] *A general site wide strip will be required, and additional material will need to be excavated for foundation trenches and utility trenches. A portion of this may need to be disposed of offsite as "hazardous" waste, however without confirmed layout plans and proposed levels it is difficult to approximate a volume. Rates are provided to give an indication of disposal costs per tonne of hazardous waste material.*

9.6 Future Work

The location for the main school building is currently proposed roughly within the footprint of the existing cinema building. Therefore, prior to redevelopment, following demolition of the existing structures, supplementary intrusive investigation will be required to confirm the anticipated ground conditions and to obtain development-specific geotechnical design parameters for the school building. A trial pitting exercise is also recommended to uncover any obstructions beneath the site. This was not advised during pre-acquisition due to the active nature of the site and the intrusive nature of such activities.

Within the residential parcels, further investigation is recommended as suggested in Section 6 to provide a better understanding of the distribution and extent of lighter end hydrocarbons identified. Additionally, several boreholes refused at shallow depth on oversize components within the Made Ground in these areas, and therefore supplementary investigation is advised to confirm the feasibility of ground improvement versus mini piles.

The findings of this Phase 2 intrusive investigation and any subsequent assessments will establish/confirm the mitigation measures required for the development, and these will need to be set out in a Remediation Strategy. In this respect reference should be made to CLR11 (DEFRA & Environment Agency, 2004), Land Contamination: risk management (Environment Agency, 2020) and supporting guidance.

10 References

- British Standards Institution (BSI), 2011/2017. Investigation of Potentially Contaminated Sites – Code of Practice. BS 10175:2011+A2:2017 edition.
- British Standards Institution (BSI), 2015/2019. Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings – BS 8485:2015+A1:2019.
- British Standards Institution (BSI), 2015. Code of Practice for Site Investigations – BS 5930:2015.
- Building Research Establishment (BRE), 2005. Concrete in Aggressive Ground. BRE Special Digest 1:2005 (third edition).
- CIRIA, 2007. Assessing risks posed by hazardous ground gases to buildings. C665.
- Environment Agency (EA), 2020. Land contamination: risk management.
- Environment Agency, 2008. CLEA Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values. Science Report – SC050021/SR7.
- Environment Agency, 2009a. Human health toxicological assessment of contaminants in soil. Science Report SC050021/SR2.
- Environment Agency, 2009b. Updated technical background to the CLEA model. Science Report SC050021/SR3.
- Environment Agency, 2009d. Contaminated Land Exposure Assessment Model (CLEA): Publication of Toxicological Reports (TOX) and Soil Guideline Values (SGV). CLEA Bulletin March 2009.

APPENDIX A

Study Limitations

IMPORTANT. This appendix should be read before reliance is placed on any of the information, opinions, advice, recommendations or conclusions contained in this report.

1. This report has been prepared by Arcadis (Arcadis Consulting (UK) Limited), with all reasonable skill, care and diligence within the terms of the Appointment and with the resources and manpower agreed with Manchester City Council (the 'Client'). Arcadis does not accept responsibility for any matters outside the agreed scope.

2. This report has been prepared for the sole benefit of the Client unless agreed otherwise in writing.

3. Unless stated otherwise, no consultations with authorities or funders or other interested third parties have been carried out. Arcadis are unable to give categorical assurance that the findings will be accepted by these third parties as such bodies may have unpublished, more stringent objectives. Further work may be required by these parties.

4. All work carried out in preparing this report has used, and is based on, Arcadis' professional knowledge and understanding of current relevant legislation. Changes in legislation or regulatory guidance may cause the opinion or advice contained in this report to become inappropriate or incorrect. In giving opinions and advice, pending changes in legislation, of which Arcadis is aware, have been considered. Following delivery of the report, Arcadis have no obligation to advise the Client or any other party of such changes or their repercussions.

5. This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report.

6. Whilst this report and the opinions made are correct to the best of Arcadis' belief, Arcadis cannot guarantee the accuracy or completeness of any information provided by third parties.

7. This report has been prepared based on the information reasonably available during the project programme. All information relevant to the scope may not have been received.

8. This report refers, within the limitations stated, to the condition of The Site at the time of the inspections. No warranty is given as to the possibility of changes in the condition of The Site since the time of the investigation.

9. The content of this report represents the professional opinion of experienced environmental consultants. Arcadis does not provide specialist legal or other professional advice. The advice of other professionals may be required.

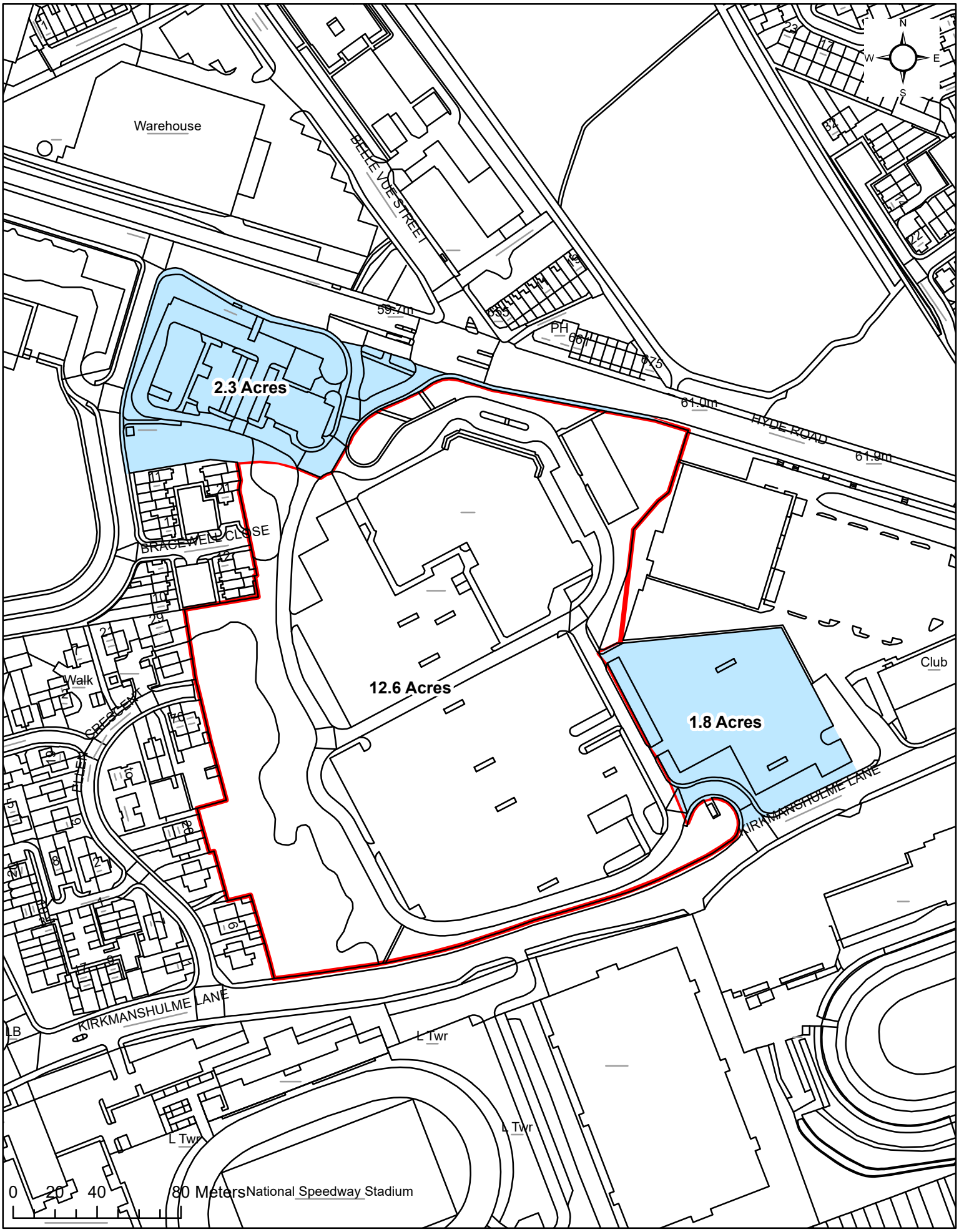
10. Where intrusive investigation techniques have been employed they have been designed to provide a reasonable level of assurance on the conditions. Given the discrete nature of sampling, no investigation technique is capable of identifying all conditions present in all areas. In some cases the investigation is further limited by site operations, underground obstructions and above ground structures. Unless otherwise stated, areas beyond the boundary of The Site have not been investigated.

11. If below ground intrusive investigations have been conducted as part of the scope, safe location of exploratory holes has been carried out with reference to the Arcadis ground disturbances procedure. No guarantee can be given that all services have been identified. Additional services, structures or other below ground obstructions, not indicated on the drawing, may be present on Site.

12. Unless otherwise stated the report provides no comment on the nature of building materials, operational integrity of the facility or on any regulatory compliance.

APPENDIX B

Figures and Plans



1:2,250

PLAN FOR IDENTIFICATION PURPOSES ONLY

Corporate Estates Records Team
Strategic Development Directorate
P.O. Box 532
Manchester M60 2LA

MANCHESTER CITY COUNCIL

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Figure 3-3 - Site plan for super block



Legend

Key

- Site Boundary
- Cable Percussion Borehole
- Window Sample Borehole

NOTES / DISCLAIMER:

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All entities shown on this drawing are to be regarded as approximate and are indicative only. No measurements taken from this drawing should be used for the location of intrusive investigation works on site. Symbols for boreholes, trial pits and other specific features are representations of location only and unless otherwise specified, do not represent the true size of the feature. - contact Arcadis UK in case of any query.

Title:
Exploratory Hole Location Plan

Site:
Hyde Road, Manchester

Client:
Manchester City Council

Project: 10041634

Date: 24/07/2020
Drawn By: EY
DRG No: 10041634-ARC-XX-XX-DR-0004-Z1-BHPlan
Scale at A3 Page Size: 1:2,50

ARCADIS Design & Consultancy for natural and built assets

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Note:
The survey is plotted on a plane local Grid. Orientation to National Grid.
All levels relate to Ordnance Datum, achieved using the
OS National GPS Network.

Survey Control Markers established for Mapping purposes only and should not be used for Construction without the written approval of Survey Operations Ltd.

SURVEY STATIONS

Name	Easting	Northing	Height
S01	387519.02	396235.05	59.79
S02	387540.70	396329.86	60.19
S03	387563.03	396382.16	59.77
S04	387666.37	396349.16	60.41
S05	387667.90	396295.88	60.59
S06	387675.24	396213.16	61.30
S07	387674.24	396163.16	61.30
S08	387716.65	396139.09	61.72
S09	387738.94	396110.19	61.37
S010	387663.31	396077.31	60.79
S011	387572.21	396047.25	60.08
S012	387573.70	396087.07	60.99
S013	387539.40	396150.76	60.38

STANDARD REFERENCE & ABBREVIATIONS

(AB).....Assumed Route
AB.....Air Brick
AV.....Air Valve
B/W.....Barbed Wire
BAR.....Barrier
BB.....Belisha Beacon
BH.....Borehole
BL.....Bed Level
BOL.....Bollard
BS.....Bus Stop
BT Box.....British Telecom Box
BT.....British Telecom IC
BRTW.....Brick Retaining Wall
BW.....Brick Wall
C/B.....Close Boarded
C/I.....Corrugated Iron
C/P.....Chestnut Paling
CB.....Control Box
CBM.....Concrete Block Wall
CCTV.....Closed Circuit TV
CD.....Cable Duct
CEL.....Cellar Light
CHL.....Chain Link
CHY.....Chimney
CL.....Cover Level
CM.....Cable Marker
COL.....Column
CONC.....Concrete
CP.....Catch Pit
CRTW.....Concrete Retaining Wall
CTV.....Cable Television
CUL.....Culvert
CW.....Concrete Block Wall
DC.....Drainage Channel
DPC.....Damp Proof Course
DR.....Drain
DSW.....Dry Stone Wall
ECP.....Electricity Cable Pit
EIC.....Electricity Inspection Cover
Ex.....Expansion Joint
EXC.....Excavation
EL.....Electricity Box
EP.....Electricity Pole
ER.....Earth Rod
ET.....Electricity Transmission Line
FB.....Flower Bed
FH.....Fire Hydrant
FL.....Floor Level
FP.....Flagpole
G^.....Girth (of tree)
G.....Gulley
GAB.....Gabion
GIP.....Gas Inlet Pipe
GMR.....Gas Marker
GST.....Gas Stop Tap (Domestic)
GSV.....Gas Stop Valve (Mains)
HSE.....Housing
HT.....Height
HV.....High Voltage
I/R.....Iron Railing
IC.....Inspection Cover
IL.....Invert Level
IP.....Inlet Pipe
KO.....Kerb Outlet
LB.....Letter Box
LP.....Lamp Post
MB.....Multi-Ducts
MH.....Manhole
MKR.....Marker
MP.....Mooring Point
NP.....Street Name Plate
O/H.....Overhead
O/P.....Open Paling
OE.....Overhead Electric Wire
OP.....Outfall Pipe
OSBM.....Ordnance Survey Bench Mark
OT.....Overhead Telecom Wire
P/C.....Post & Chain
P/R.....Post & Rail
P/W.....Post & Wire
PAV.....Paving
PB.....Pillar Box
PC.....Pedestrian Crossing
PP.....Petrol Pump
PT.....Post or Pillar
RE.....Rodding Eye
RS.....Road Sign
RTW.....Retaining Wall
RWP.....Rain Water Pipe
SAP.....Sapling
SL.....Sump Level
Sol.....Soffit Level
SP.....Sign Post
SPL.....Springing Level
SRTW.....Stone Retaining Wall
SV.....Stop Valve (unspecified)
SVP.....Soil Vent Pipe
TBM.....Temporary Bench Mark
TC.....Traffic Light
TLS.....Traffic Light Control Box
TM.....Ticket Machine
TRC.....Terrac
TP.....Telecommunications Pole
TPIT.....Trial Pit
TS.....Trash Screen
U/C.....Under Construction
U/G.....Underground
UTL.....Unable to Lift (MH,IC etc)
UTS.....Unable to Survey
VDP.....Vehicle Detector Pad
VP.....Vent Pipe
W/W.....Wire Mesh
WL.....Water Level
WM.....Water Meter
WO.....Wash Out
WP.....Waste Pipe
WSP.....Water Stop Tap (domestic)
WSV.....Water Stop Valve (mains)

1	2
3	4

Sheet Layout

Survey OPERATIONS
Smith Street, Skelmersdale, Lancs. WN8 8LN
Tel: 01695 725662 Fax: 01695 51816
Email: mail@survops.co.uk — www.survops.co.uk

Client
Arcadis

Drawing Title
Topographical Survey of Land at:
Site off Hyde Road
Manchester
Sheet 1 of 4

Scale(s)	1:200	Surveyor	RG
Date	Jul 20	Drawn	AC
Job Number	20D051	Checked	TP

Sheet Size & Drg Number & Revision
A0 20D051/001



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SURVEY STATIONS

Name	Easting	Northing	Height
501	387519.02	396235.05	59.79
502	387540.70	396309.86	60.19
503	387563.03	396382.16	59.77
504	387666.37	396349.16	60.41
505	387667.90	396295.88	60.59
506	387676.24	396243.16	61.00
507	387674.24	396183.14	61.30
508	387716.65	396139.09	61.72
509	387738.94	396110.19	61.37
5010	387663.31	396077.31	60.79
5011	387572.21	396047.25	60.08
5012	387573.70	396087.07	60.99
5013	387539.40	396150.76	60.38

STANDARD REFERENCE & ABBREVIATIONS

(AR).....Assumed Route
AB.....Air Brick
AV.....Air Valve
B/W.....Barbed Wire
BAR.....Barrier
BB.....Bellaha Beacon
BH.....Borehole
BL.....Bed Level
BOL.....Bollard
BS.....Bus Stop
BT BOX.....British Telecom Box
BT.....British Telecom IC
BRTW.....Brick Retaining Wall
BW.....Brick Wall
C/B.....Close Boarded
C/I.....Corrugated Iron
C/P.....Chestnut Paling
CB.....Control Box
CBW.....Concrete Block Wall
CCTV.....Closed Circuit TV
CD.....Cable Duct
CEL.....Cellar Light
CHL.....Chain Link
CHY.....Chimney
CL.....Cover Level
CM.....Cable Marker
COL.....Column
CONC.....Concrete
CP.....Catch Pit
CRTW.....Concrete Retaining Wall
CTV.....Cable Television
CUL.....Culvert
CW.....Concrete Block Wall
DC.....Drainage Channel
DPC.....Damp Proof Course
DR.....Drain
DSW.....Dry Stone Wall
ECP.....Electricity Cable Pit
EIC.....Electricity Inspection Cover
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ETL.....Electricity Transmission Line
FB.....Flower Bed
FH.....Fire Hydrant
FL.....Floor Level
FP.....Flagpole
G*.....Girth (of tree)
G.....Gulley
GAB.....Gabion
GIP.....Gas Inlet Pipe
GMKR.....Gas Marker
GRT.....Gas Stop Tap (Domestic)
GSV.....Gas Stop Valve (Mains)
HSE.....Housing
HT.....Height
HV.....High Voltage
I/R.....Iron Railing
IC.....Inspection Cover
IL.....Invert Level
IP.....Inlet Pipe
KO.....Kerb Outlet
LB.....Letter Box
LP.....Lamp Post
MB.....Multi-Girth
MH.....Manhole
MKR.....Marker
MP.....Mooring Point
NP.....Street Name Plate
O/H.....Overhead
O/P.....Open Paling
OD.....Overhead Electric Wire
OP.....Outfall Pipe
OSBM.....Ordnance Survey Bench Mark
OT.....Overhead Telecom Wire
P/C.....Post & Chain
P/R.....Post & Rail
P/W.....Post & Wire
PAV.....Paving
PB.....Pillar Box
PC.....Pedestrian Crossing
PP.....Petrol Pump
PT.....Post or Pillar
RE.....Reading Eye
RS.....Road Sign
RTW.....Retaining Wall
RWP.....Rain Water Pipe
SAP.....Sapling
SL.....Susp Level
SOL.....Soffit Level
SP.....Sign Post
SPL.....Spotlighting Level
SRTW.....Stone Retaining Wall
SV.....Stop Valve (unspecified)
SVP.....Soil Vent Pipe
SW.....Stone Wall
TAR.....Tarmac Paving
TB.....Traffic Bollard
TBM.....Temporary Bench Mark
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UTS.....Unable to Survey
VDF.....Vehicle Detector Pad
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1	2
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Drawing Title: Topographical Survey of Land at:

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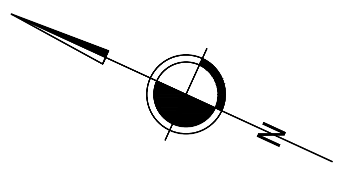
Sheet 2 of 4

Scale(s)	1:200	Surveyor	RG
Date	Jul 20	Drawn	AC
Job Number	20D051	Checked	TP

Sheet Size & Drg Number & Revision: A0 20D051/002



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Ht..........Height
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PC..........Pedestrian Crossing
PP..........Petrol Pump
PT..........Post or Pillar
RE..........Rodding Eye
RS..........Road Sign
RTW.........Retaining Wall
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Client
Arcadis

Drawing Title
Topographical Survey of Land at:
Site off Hyde Road
Manchester
Sheet 3 of 4

Scale(s)	1:200	Surveyor	RG
Date	Jul 20	Drawn	AC
Job Number	20D051	Checked	TP

Sheet Size & Drg Number & Revision
A0 20D051/003



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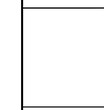
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Date	Jul 20	Drawn	AC
Job Number	20D051	Checked	TP

Sheet Size & Drg Number & Revision
A0 20D051/004

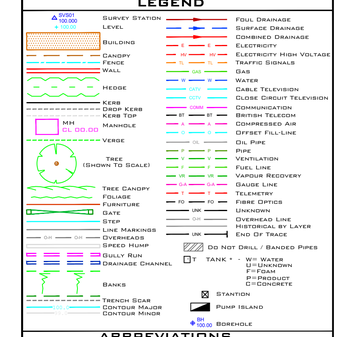


THE NAME IN SURVEYS

SHEET LAYOUT



LEGEND



ABBREVIATIONS

A/C	AIR CONDITIONER	OH	OVERHEAD
A/R	ASSUMED ROUTE	OSA	OFF SURVEY AREA
AV	AIR VALVE	OSBM	ORDNANCE SURVEY BENCH MARK
BOLL	BOLLARD	PL	PIT LEVEL
ILLU BOLL	ILLUMINOUS BOLLARD	PR	PIPE RISER
BB	BELISHA BEACON	P&R FENCE	POST & RAIL FENCE
BH	BOREHOLE	RET WALL	RETAINING WALL
BS	BUS STOP	RE	RODDING EYE
BTIC	BRITISH TELECOM COVER	RS	ROAD SIGN
C/BOX	CONTROL BOX	RWP	RAIN WATER PIPE
CR	CABLE RISER	S/A	SOAK AWAY
CTV	CABLE TV	SAP	SAPLING
CP	CATCHPIT	S/C	SOUND CONNECTED
CONC	CONCRETE	SEC FENCE	SECURITY FENCE
CL	COVER LEVEL	SL	SPOT LIGHT
D	DEPTH / DEEP	SP	SOIL PIPE
D/CHAN	DRAINAGE CHANNEL	ST	STOP TAP
DP	DOWN PIPE	STN	STATION (DATUM POINT)
EIC	ELECTRICITY COVER	SV	STOP VALVE
ER	EARTH ROD	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	TBM	TEMPORARY BENCH MARK
EOT	END OF TRACE	TCL	TREE CANOPY LEVEL
FFL	FINISHED FLOOR LEVEL	TOW	TOP OF WALL LEVEL
F/BED	FLOWER BED	TFR	TAKEN FROM RECORDS
FH	FIRE HYDRANT	THL	THRESHOLD LEVEL
FS	FIRE SWITCH	TL	TRAFFIC LIGHT
GV	GAS VALVE	TP	TELEGRAPH POLE
G	GULLY	TP&R	TIMBER POST & RAIL
G-RUN	GULLY RUN	UTL	UNABLE TO LOCATE
HT	HEIGHT	UTR	UNABLE TO RAISE
IC	INSPECTION COVER	UTS	UNABLE TO SURVEY
IL	INVERT LEVEL	UTT	UNABLE TO TRACE
KO	KERB OUTLET	VR	VAPOUR RECOVERY
LB	LETTER BOX	VP	VENT PIPE
LP	LAMP POST	WM	WATER METER
MB	MULTI-BOLE	WO	WASH OUT
MH	MANHOLE	WFD	WATER FILLED CHAMBER
MKR	MARKER	WP	WASTE PIPE
MTR	METER	U/S	UNDERSIDE
MW	MONITORING WELL	Ø	DIAMETER

UTILITY NOTES

ELECTRIC - NO ACCESS INTO SUBSTATION OR THE CINEMA. ALL LOCATED WHERE POSSIBLE.

GAS - NO ACCESS INTO GAS HOUSE, LOCATED GAS PIPE FROM AN IC OUTSIDE THE CINEMA TO THE GAS BUILDING THEN ASSUMED ROUTE TO OFF SITE SURVEY AREA. UNABLE TO OFF FURTHER AS ALL OVERGROWN.

WATER - UNABLE TO LOCATE WATER MAIN, PRESUMING PE MATERIAL.

BT - LOCATED MAINS INTO THE CINEMA FROM THE IC SITUATED ON THE FOOTPATH OUTSIDE THE SURVEY AREA. DECOMMISSIONED FEEDS FOR THE OLD BUILDINGS LOCATED TO THE NW WERE ALSO LOCATED.

SW & FW - ALL MANHOLES ON SITE WERE LIFTED, DATA RECORDED AND PIPES SONDED IF NEEDED. ONLY INFORMATION I COULDN'T RELAY INTO THE PLAN IS THE THREE STAGE INTERCEPTORS IN THE WOODED AREA TO THE SW, I HAVE THE PHOTOS AVAILABLE, BUT THE TOPO SURVEYOR DESIED TO HAVE MISSED THEM!

CATV - LOCATED VIA IC CHAMBERS WHERE POSSIBLE, ONE ROUTE TAKEN FROM RECORDS.

UNKNOWNS / OPE - NUMEROUS TARGETS AROUND SITE WHICH WERE UNIDENTIFIABLE.

BOREHOLES - ALL CLEARED ACROSS SITE AND FREE OF SERVICES.

TOPOGRAPHICAL NOTES

TOPOGRAPHICAL BASEPLAN HAS BEEN PROVIDED BY ARCADIS.

ALL UTILITIES AND FEATURES SHOWN BY SVS HAVE BEEN ADDED TO BASEPLAN BY CREATING A SCALE HAND DRAWING ON SITE THEN TRANSFERRING TO CAD.

DUE TO POTENTIAL INACCURACIES THAT MAY ARISE FROM SUCH TECHNIQUES THE LOCATION OF ALL SVS DRAWN FEATURES MUST BE TREATED AS INDICATIVE AND ANY CRITICAL DIMENSIONS CONFIRMED ON SITE.

REV	DATE	DESCRIPTION

SURVEYS

SITE VISION SURVEYS LIMITED
UTILITY | TOPOGRAPHICAL | MAPPING
T: 01788 575036 W: SVSLTD.NET

chartered ices · EUROPEAN GPR ASSOCIATION · THE SURVEY ASSOCIATION · RICS

CLIENT: ARCADIS Design & Consultancy for natural and built assets

SITE LOCATION:
Hyde Road
Manchester
M12 5AL

DRAWING TITLE: Full Utility Survey

SURVEYED BY:	DRAWN BY:	APPROVED BY:
JC OF	JC FL	FL

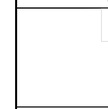
DRAWING NO:	SURVEY DATE:
0620-ARC-13319	06-07-2020

SCALE:	SHEET NO:	REV:
1:200 @A1	1 OF 6	

DISCLAIMER: THE LOCATION OF UNDER GROUND SERVICES SHOWN ON THIS DRAWING HAS BEEN DETERMINED USING ELECTRO-MAGNETIC (AND/OR GROUND PROBING RADAR, WHERE REQUESTED) TECHNIQUES AND VISUAL OBSERVATIONS. THE LIMITATIONS OF THIS DRAWING SHOULD BE REALISED AND NO GUARANTEE CAN BE GIVEN THAT ALL SERVICES HAVE BEEN IDENTIFIED. THIS DRAWING MAY NOT INCLUDE THE LOCATION OF ALL PUBLIC SERVICES THAT MAY CROSS THE SITE AND THEREFORE THE RELEVANT SERVICE DRAWINGS SHOULD BE OBTAINED FROM THE APPROPRIATE UTILITY COMPANY AND USED IN CONJUNCTION WITH THIS DRAWING. ADDITIONAL SERVICES, STRUCTURES OR OTHER BELOW GROUND OBSTRUCTIONS NOT INDICATED ON THIS DRAWING MAY BE PRESENT ON SITE. REFERENCE SHOULD BE MADE TO HISTORICAL PLANS AND AS BUILT DRAWINGS. EXCAVATIONS IN THE VICINITY OF SERVICES SHOULD BE CARRIED OUT WITH DUE DILIGENCE REF: HSG47 DOCUMENT "AVOIDING DANGERS FROM UNDERGROUND SERVICES". LOCATION ACCURACY IS DETERMINED BY REFERING TO MANUFACTURERS GUIDELINES FOR THE SYSTEMS DEPLOYED. REFERENCE SHOULD BE MADE TO THE LATEST VERSION OF SVS LTD SITE PROCEDURES DOCUMENT FOR UTILITY LOCATION SURVEYS.

THE NAME IN SURVEYS

SHEET LAYOUT



LEGEND

Survey Station
Level
Building
Canopy
Fence
Wall
Hedge
Kerb
Drop Kerb
Kerb Top
Manhole
Verge
Tree (Shown To Scale)
Tree Canopy
Foliage
Furniture
Gate
Step
Line Markings
Overheads
Speed Hump
Banks
Trench Scar
Contour Major
Contour Minor

Foul Drainage
Surface Drainage
Combined Drainage
Electricity
Electricity High Voltage
Traffic Signals
Gas
Water
Cable Television
Close Circuit Television
Communication
British Telecom
Compressed Air
Offset Fill-Line
Oil Pipe
Pipe
Ventilation
Fuel Line
Vapour Recovery
Gauge Line
Telemetry
Fibre Optics
Unknown
Overhead Line
Historical by Layer
End Of Trace
Do Not Drill / Banded Pipes
Tank - W= Water U=Unknown F=Foam P=Product C=Concrete
Stantion
Pump Island
Borehole

ABBREVIATIONS

A/C	AIR CONDITIONER	OH	OVERHEAD
A/R	ASSUMED ROUTE	OSA	OFF SURVEY AREA
AV	AIR VALVE	OSBM	ORDNANCE SURVEY BENCH MARK
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BS	BUS STOP	RE	RODDING EYE
BTIC	BRITISH TELECOM COVER	RS	ROAD SIGN
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CTV	CABLE TV	SAP	SAPLING
CP	CATCHPIT	S/C	SOUND CONNECTED
CONC	CONCRETE	SEC FENCE	SECURITY FENCE
CL	COVER LEVEL	SL	SPOT LIGHT
D	DEPTH / DEEP	SP	SOIL PIPE
D/CHAN	DRAINAGE CHANNEL	ST	STOP TAP
DP	DOWN PIPE	STN	STATION (DATUM POINT)
EIC	ELECTRICITY COVER	SV	STOP VALVE
ER	EARTH ROD	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	TBM	TEMPORARY BENCH MARK
EOT	END OF TRACE	TCL	TREE CANOPY LEVEL
FFL	FINISHED FLOOR LEVEL	TOW	TOP OF WALL LEVEL
F/BED	FLOWER BED	TPB	TAKEN FROM RECORDS
FH	FIRE HYDRANT	THL	THRESHOLD LEVEL
FS	FIRE SWITCH	TL	TRAFFIC LIGHT
GV	GAS VALVE	TP	TELEGRAPH POLE
G	GULLY	TP&R	TIMBER POST & RAIL
G-RUN	GULLY RUN	UTL	UNABLE TO LOCATE
HT	HEIGHT	UTR	UNABLE TO RAISE
IC	INSPECTION COVER	UTS	UNABLE TO SURVEY
IL	INVERT LEVEL	UTT	UNABLE TO TRACE
KO	KERB OUTLET	VR	VAPOUR RECOVERY
LB	LETTER BOX	VP	VENT PIPE
LP	LAMP POST	WM	WATER METER
MB	MULTI-BOLE	WO	WASH OUT
MH	MANHOLE	WFD	WATER FILLED CHAMBER
MKR	MARKER	WP	WASTE PIPE
MTR	METER	U/S	UNDERSIDE
MW	MONITORING WELL	Ø	DIAMETER

UTILITY NOTES

ELECTRIC - NO ACCESS INTO SUBSTATION OR THE CINEMA. ALL LOCATED WHERE POSSIBLE.

GAS - NO ACCESS INTO GAS HOUSE, LOCATED GAS PIPE FROM AN IC OUTSIDE THE CINEMA TO THE GAS BUILDING THEN ASSUMED ROUTE TO OFF SITE SURVEY AREA. UNABLE TO OPI FURTHER AT ALL OVERGROWN.

WATER - UNABLE TO LOCATE WATER MAIN, PRESUMING PE MATERIAL.

BT - LOCATED MAINS INTO THE CINEMA FROM THE 'C' SITUATED ON THE FOOTPATH OUTSIDE THE SURVEY AREA. DECOMMISSIONED FEEDS FOR THE OLD BUILDINGS LOCATED TO THE RW WERE ALSO LOCATED.

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UNKNOWNS / GPR - NUMEROUS TARGETS AROUND SITE WHICH WERE UNIDENTIFIABLE.

BOREHOLES - ALL CLEARED ACROSS SITE AND FREE OF SERVICES.

TOPOGRAPHICAL NOTES

TOPOGRAPHICAL BASEPLAN HAS BEEN PROVIDED BY ARCADIS.

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REV	DATE	DESCRIPTION

SURVEYS
SITE VISION SURVEYS LIMITED
UTILITY | TOPOGRAPHICAL | MAPPING
T: 01788 575036 W: SVSLTD.NET

CLIENT: ARCADIS Design & Consultancy for natural and built assets

SITE LOCATION:
HYDE ROAD
MANCHESTER
M12 5AL

DRAWING TITLE: FULL UTILITY SURVEY

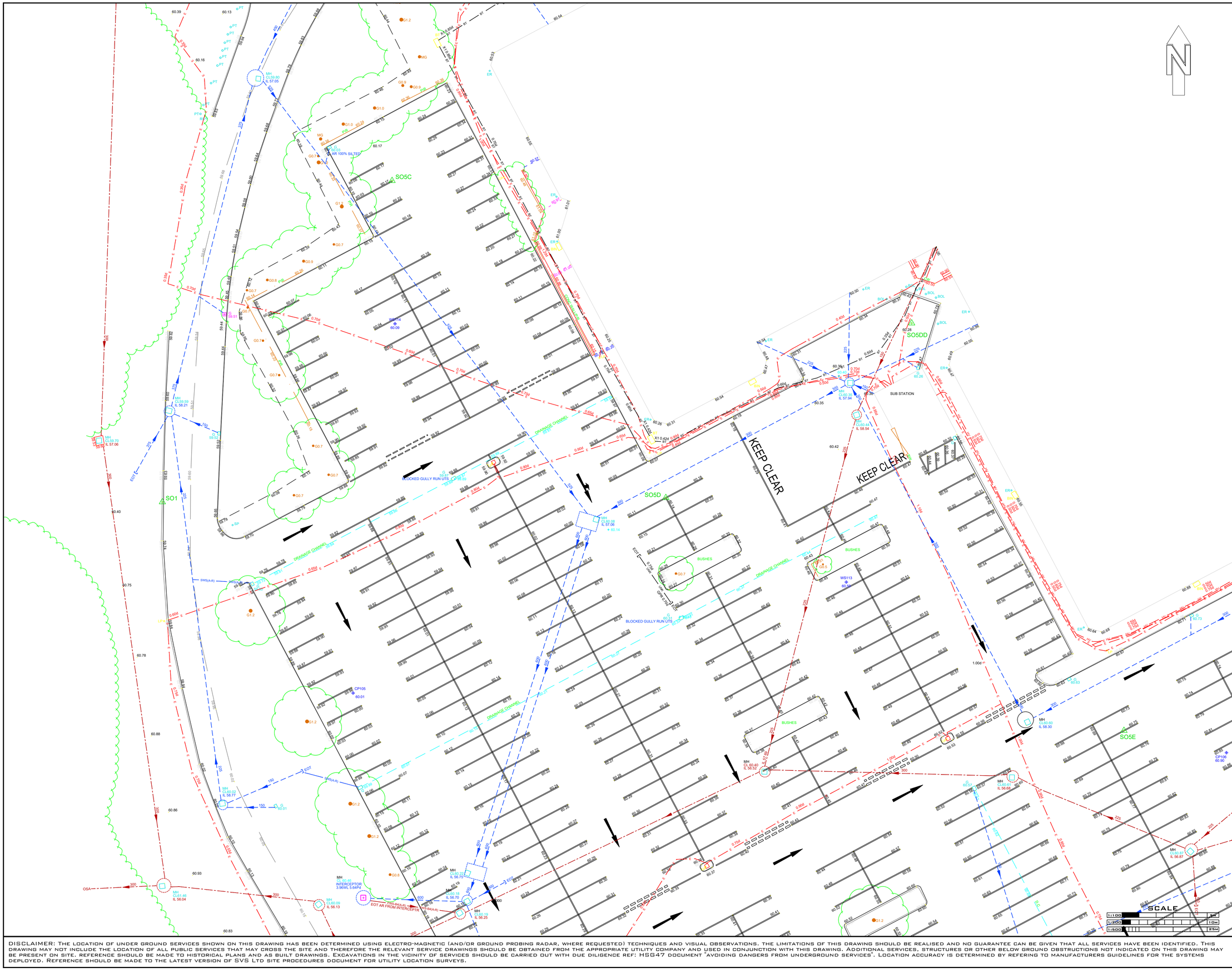
SURVEYED BY:	DRAWN BY:	APPROVED BY:
JC OF	JC FL	FL

DRAWING NO:	SURVEY DATE:
0620-ARC-13319	06-07-2020

SCALE:	SHEET NO:	REV:
1:200 @A1	2 OF 6	

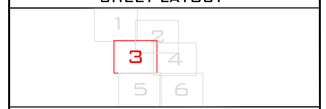
SCALE
1:100 5M
1:200 10M
1:500 25M

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THE NAME IN SURVEYS

SHEET LAYOUT



LEGEND

Survey Station
Level
Building
Canopy
Fence
Wall
Hedge
Kerb
Drop Kerb
Kerb Top
Manhole
Verge
Tree (Shown To Scale)
Tree Canopy
Foliage
Furniture
Gate
Step
Line Markings
Overheads
Speed Hump
Gully Run
Drainage Channel
Banks
Trench Scar
Contour Major
Contour Minor

Foul Drainage
Surface Drainage
Combined Drainage
Electricity
Electricity High Voltage
Traffic Signals
Gas
Water
Cable Television
Close Circuit Television
Communication
British Telecom
Compressed Air
Offset Fill-Line
Oil Pipe
Pipe
Ventilation
Fuel Line
Vapour Recovery
Gauge Line
Telemetry
Fibre Optics
Unknown
Overhead Line
Historical By Layer
End Of Trace
Do Not Drill / Banded Pipes
T TANK * - W= Water U=Unknown F=Foam P=Product C=Concrete
Stantion
Pump Island
Borehole

ABBREVIATIONS

A/C	AIR CONDITIONER	OH	OVERHEAD
A/R	ASSUMED ROUTE	OSA	OFF SURVEY AREA
AV	AIR VALVE	OSBM	ORDNANCE SURVEY BENCH MARK
BOLL	BOLLARD	PL	PIT LEVEL
ILLU BOLL	ILLUMINOUS BOLLARD	PR	PIPE RISER
BB	BELISHA BEACON	P&R FENCE	POST & RAIL FENCE
BH	BOREHOLE	RET WALL	RETAINING WALL
BS	BUS STOP	RE	RODDING EYE
BTIC	BRITISH TELECOM COVER	RS	ROAD SIGN
C/BOX	CONTROL BOX	RWP	RAIN WATER PIPE
CR	CABLE RISER	S/A	SOAK AWAY
CTV	CABLE TV	SAP	SAPLING
CP	CATCHPIT	S/C	SOUND CONNECTED
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REV	DATE	DESCRIPTION

SURVEYS
SITE VISION SURVEYS LIMITED
UTILITY | TOPOGRAPHICAL | MAPPING
T: 01788 575036 W: SVSLTD.NET

CLIENT: ARCADIS | Design & Consultancy for natural and built assets

SITE LOCATION:
Hyde Road
Manchester
M12 5AL

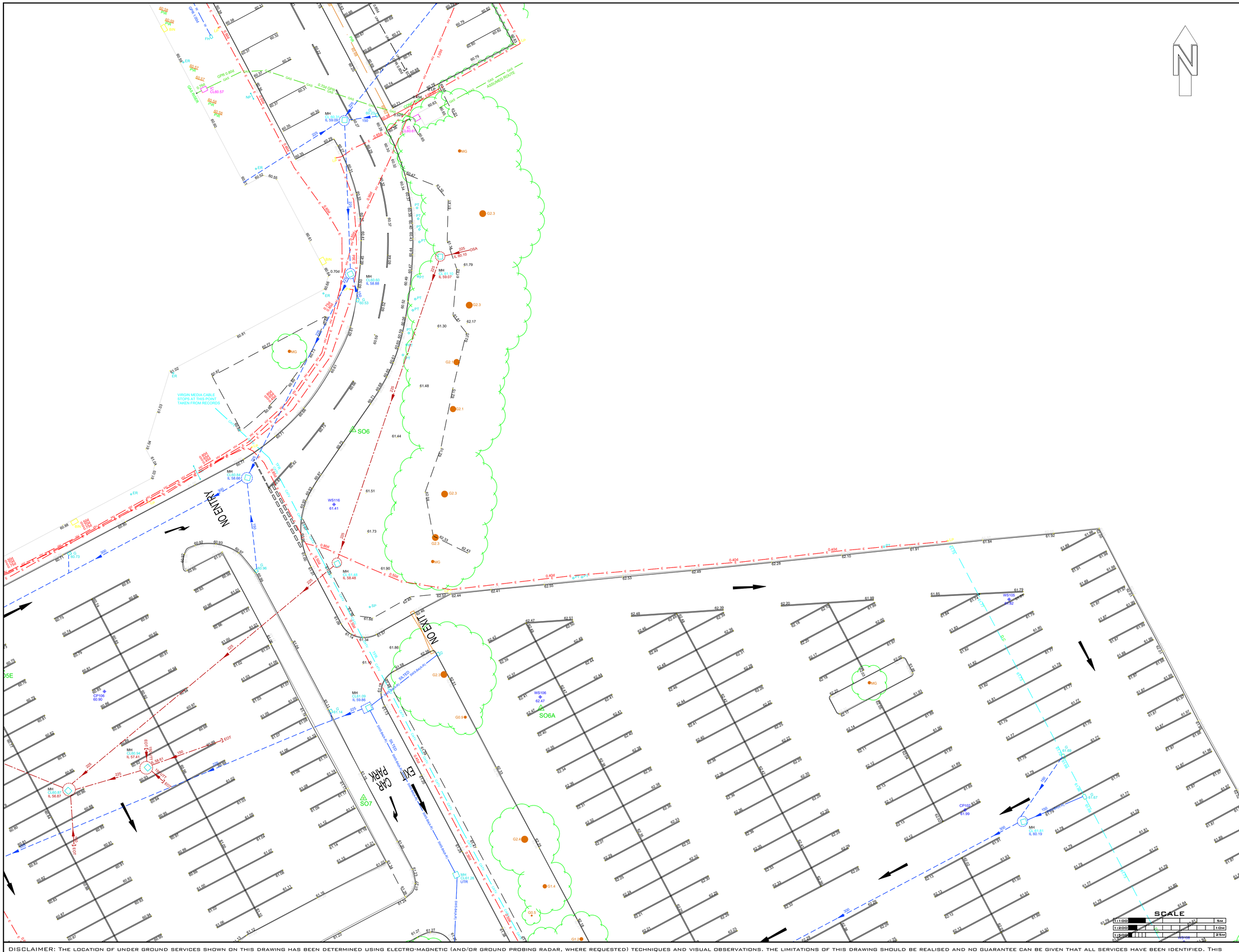
DRAWING TITLE: Full Utility Survey

SURVEYED BY:	DRAWN BY:	APPROVED BY:
JC OF	JC FL	FL

DRAWING NO:	SURVEY DATE:
0620-ARC-13319	06-07-2020

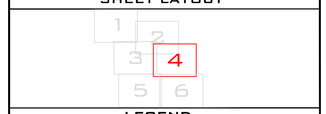
SCALE:	SHEET NO:	REV:
1:200 @A1	3 OF 6	

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THE NAME IN SURVEYS

SHEET LAYOUT



LEGEND

- Survey Station
- Level
- Building
- Canopy
- Fence
- Wall
- Hedge
- Kerb
- Drop Kerb
- Kerb Top
- Manhole
- Verge
- Tree (Shown To Scale)
- Tree Canopy
- Foliage
- Furniture
- Gate
- Step
- Line Markings
- Overheads
- Speed Hump
- Gully Run
- Drainage Channel
- Banks
- Trench Scar
- Contour Major
- Contour Minor
- Foul Drainage
- Surface Drainage
- Combined Drainage
- Electricity
- Electricity High Voltage
- Traffic Signals
- Gas
- Water
- Cable Television
- Close Circuit Television
- Communication
- British Telecom
- Compressed Air
- Offset Fill-Line
- Oil Pipe
- Pipe
- Ventilation
- Fuel Line
- Vapour Recovery
- Gauge Line
- Telemetry
- Fibre Optics
- Unknown
- Overhead Line
- Historical by Layer
- End Of Trace
- Do Not Drill / Banded Pipes
- Tank * - W= Water U=Unknown F=Foam P=Product C=Concrete
- Stantion
- Pump Island
- Borehole

ABBREVIATIONS

A/C	AIR CONDITIONER	OH	OVERHEAD
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REV	DATE	DESCRIPTION

SURVEYS

SITE VISION SURVEYS LIMITED
UTILITY | TOPOGRAPHICAL | MAPPING
T: 01788 575036 W: SVSLTD.NET

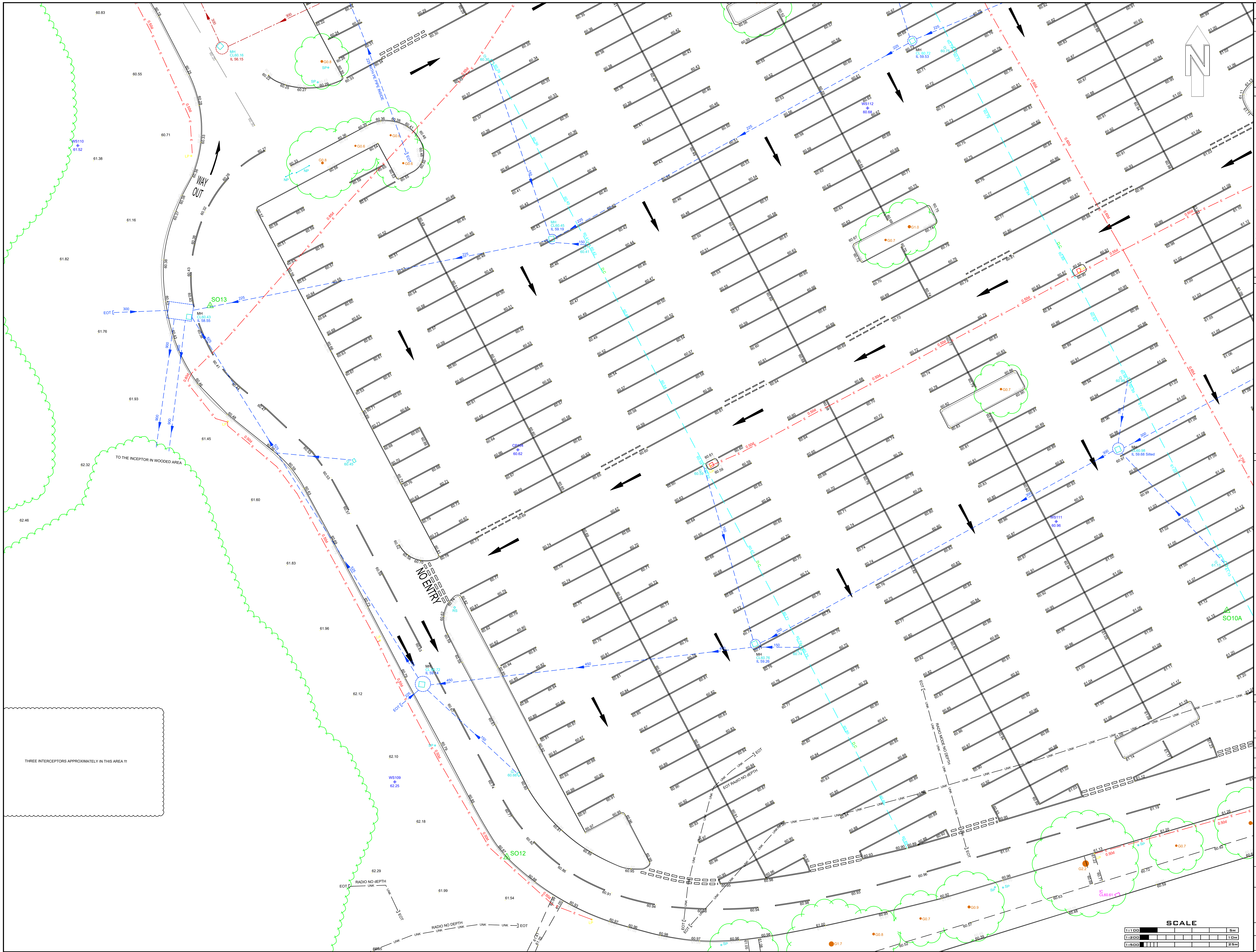
CLIENT: ARCADIS Design & Consultancy for natural and built assets

SITE LOCATION:
HYDE ROAD
MANCHESTER
M12 5AL

SCALE
1:100 — 5M
1:200 — 10M
1:500 — 25M

DRAWING TITLE: FULL UTILITY SURVEY		
SURVEYED BY: JC OF	DRAWN BY: JC FL	APPROVED BY: FL
DRAWING NO: 0620-ARC-13319	SURVEY DATE: 06-07-2020	
SCALE: 1:200 @A1	SHEET NO: 4 OF 6	REV:

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THE NAME IN SURVEYS

SHEET LAYOUT

LEGEND

- SVS01 100.000 Survey Station
- 100.00 Level
- Building
- Canopy
- Fence
- Wall
- Hedge
- Kerb
- Drop Kerb
- Kerb Top
- MH CL 00.00 Manhole
- Verge
- Tree (Shown To Scale)
- Tree Canopy
- Foliage
- Furniture
- Gate
- Step
- Line Markings
- O-H Overheads
- Speed Hump
- Gully Run
- Drainage Channel
- Banks
- Trench Scar
- 100.0 Contour Major
- 99.0 Contour Minor
- Foul Drainage
- Surface Drainage
- Combined Drainage
- E Electricity
- HV Electricity High Voltage
- TL Traffic Signals
- GAS Gas
- W Water
- CATV Cable Television
- CCTV Close Circuit Television
- COMM Communication
- BT British Telecom
- A Compressed Air
- O Offset Fill-Line
- OIL Oil Pipe
- P Pipe
- V Ventilation
- F Fuel Line
- VR Vapour Recovery
- G-A Gauge Line
- T Telemetry
- FO Fibre Optics
- UNK Unknown
- O-H Overhead Line
- Historical by Layer
- UNK End of Trace
- ▨ Do Not Drill / Banded Pipes
- ☐T Tank * - W= Water U=Unknown F=Foam P=Product C=Concrete
- ☒ Stantion
- Pump Island
- BH 100.00 Borehole

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DUE TO POTENTIAL INACCURACIES THAT MAY ARISE FROM SUCH TECHNIQUES THE LOCATION OF ALL SVS DRAWN FEATURES MUST BE TREATED AS INDICATIVE AND ANY CRITICAL DIMENSIONS CONFIRMED ON SITE.

REV	DATE	DESCRIPTION

SURVEYS

Site Vision Surveys Limited
UTILITY | TOPOGRAPHICAL | MAPPING
T: 01788 575036 W: SVSLTD.NET

chartered ices · EUROPEAN GPR ASSOCIATION · THE SURVEY ASSOCIATION · ISO 9001:2015 REGISTERED FIRM

CLIENT: ARCADIS Design & Consultancy for natural and built assets

SITE LOCATION:
Hyde Road
Manchester
M12 5AL

DRAWING TITLE: Full Utility Survey

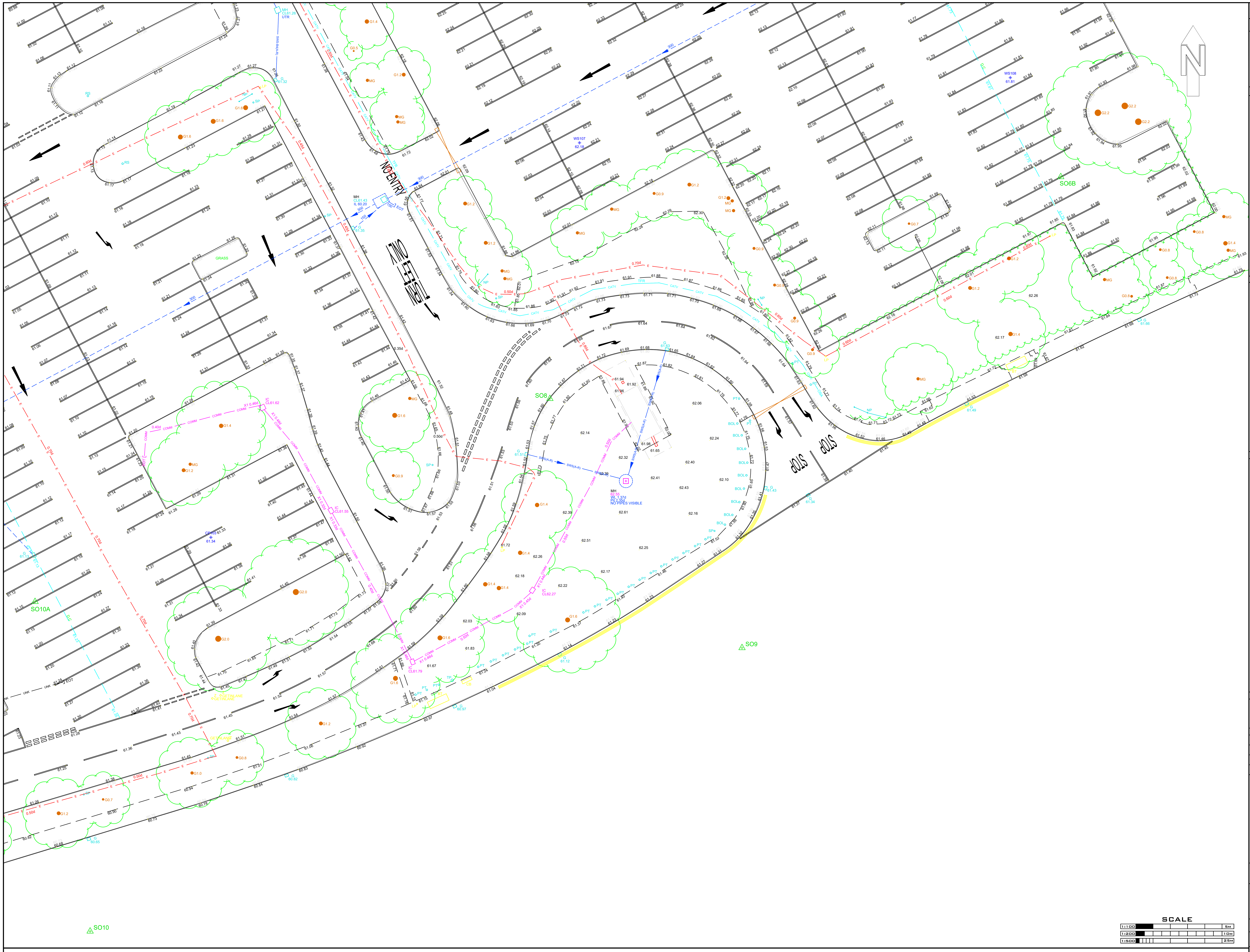
SCALE

1:100	5M
1:200	10M
1:500	25M

SURVEYED BY:	DRAWN BY:	APPROVED BY:
JC OF	JC FL	FL

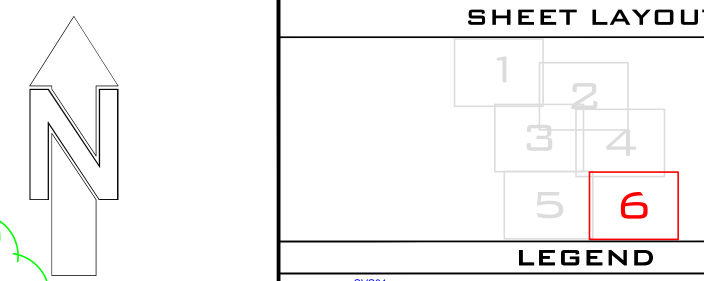
DRAWING NO:	SURVEY DATE:	
0620-ARC-13319	06-07-2020	
SCALE:	SHEET NO:	REV:
1:200 @A1	5 OF 6	

DISCLAIMER: The location of under ground services shown on this drawing has been determined using electro-magnetic (and/or ground probing radar, where requested) techniques and visual observations. The limitations of this drawing should be realised and no guarantee can be given that all services have been identified. This drawing may not include the location of all public services that may cross the site and therefore the relevant service drawings should be obtained from the appropriate utility company and used in conjunction with this drawing. Additional services, structures or other below ground obstructions not indicated on this drawing may be present on site. Reference should be made to historical plans and as built drawings. Excavations in the vicinity of services should be carried out with due diligence ref: HSG47 document "avoiding dangers from underground services". Location accuracy is determined by refering to manufacturers guidelines for the systems deployed. Reference should be made to the latest version of SVS Ltd site procedures document for utility location surveys.



THE NAME IN SURVEYS

SHEET LAYOUT



LEGEND

- SVS01 100.000 SURVEY STATION
- + 100.00 LEVEL
- BUILDING
- CANOPY
- FENCE
- WALL
- HEDGE
- KERB
- DROP KERB
- KERB TOP
- MH CL 00.00 MANHOLE
- VERGE
- TREE (SHOWN TO SCALE)
- TREE CANOPY
- FOLIAGE
- FURNITURE
- GATE
- STEP
- LINE MARKINGS
- O-H OVERHEADS
- SPEED HUMP
- GULLY RUN
- DRAINAGE CHANNEL
- BANKS
- TRENCH SCAR
- 100.0 CONTOUR MAJOR
- 99.0 CONTOUR MINOR
- FOUL DRAINAGE
- SURFACE DRAINAGE
- COMBINED DRAINAGE
- E ELECTRICITY
- HV ELECTRICITY HIGH VOLTAGE
- TL TRAFFIC SIGNALS
- GAS GAS
- W WATER
- CATV CABLE TELEVISION
- CCTV CLOSE CIRCUIT TELEVISION
- COMM COMMUNICATION
- BT BRITISH TELECOM
- A COMPRESSED AIR
- O OFFSET FILL-LINE
- OIL OIL PIPE
- P PIPE
- V VENTILATION
- F FUEL LINE
- VR VAPOUR RECOVERY
- G-A GAUGE LINE
- T TELEMETRY
- FO FIBRE OPTICS
- UNK UNKNOWN
- O-H OVERHEAD LINE
- HISTORICAL BY LAYER
- UNK END OF TRACE
- ▨ DO NOT DRILL / BANDED PIPES
- ☐T TANK * - W= WATER
  - U=UNKNOWN
  - F=FOAM
  - P=PRODUCT
  - C=CONCRETE
- ☒ STANTION
- PUMP ISLAND
- BH 100.00 BOREHOLE

ABBREVIATIONS

A/C	AIR CONDITIONER	OH	OVERHEAD
A/R	ASSUMED ROUTE	OSA	OFF SURVEY AREA
AV	AIR VALVE	OSBM	ORDNANCE SURVEY BENCH MARK
BOLL	BOLLARD	PL	PIT LEVEL
ILLU BOLL	ILLUMINOUS BOLLARD	PR	PIPE RISER
BB	BELISHA BEACON	P&R FENCE	POST & RAIL FENCE
BH	BOREHOLE	RET WALL	RETAINING WALL
BS	BUS STOP	RE	RODDING EYE
BTIC	BRITISH TELECOM COVER	RS	ROAD SIGN
C/BOX	CONTROL BOX	RWP	RAIN WATER PIPE
CR	CABLE RISER	S/A	SOAK AWAY
CTV	CABLE TV	SAP	SAPLING
CP	CATCHPIT	S/C	SOUND CONNECTED
CONC	CONCRETE	SEC FENCE	SECURITY FENCE
CL	COVER LEVEL	SL	SPOT LIGHT
D	DEPTH / DEEP	SP	SOIL PIPE
D/CHAN	DRAINAGE CHANNEL	ST	STOP TAP
DP	DOWN PIPE	STN	STATION (DATUM POINT)
EIC	ELECTRICITY COVER	SV	STOP VALVE
ER	EARTH ROD	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	TBM	TEMPORARY BENCH MARK
EOT	END OF TRACE	TCL	TREE CANOPY LEVEL
FFL	FINISHED FLOOR LEVEL	TOW	TOP OF WALL LEVEL
F/BED	FLOWER BED	TFR	TAKEN FROM RECORDS
FH	FIRE HYDRANT	THL	THRESHOLD LEVEL
FS	FIRE SWITCH	TL	TRAFFIC LIGHT
GV	GAS VALVE	TP	TELEGRAPH POLE
G	GULLY	TP&R	TIMBER POST & RAIL
G-RUN	GULLY RUN	UTL	UNABLE TO LOCATE
HT	HEIGHT	UTR	UNABLE TO RAISE
IC	INSPECTION COVER	UTS	UNABLE TO SURVEY
IL	INVERT LEVEL	UTT	UNABLE TO TRACE
KO	KERB OUTLET	VR	VAPOUR RECOVERY
LB	LETTER BOX	VP	VENT PIPE
LP	LAMP POST	WM	WATER METER
MB	MULTI-BOLE	WO	WASH OUT
MH	MANHOLE	WFC	WATER FILLED CHAMBER
MKR	MARKER	WP	WASTE PIPE
MTR	METER	U/S	UNDERSIDE
MW	MONITORING WELL	Ø	DIAMETER

UTILITY NOTES

ELECTRIC - NO ACCESS INTO SUBSTATION OR THE CINEMA. ALL LOCATED WHERE POSSIBLE.

GAS - NO ACCESS INTO GAS HOUSE, LOCATED GAS PIPE FROM AN IC OUTSIDE THE CINEMA TO THE GAS BUILDING THEN ASSUMED ROUTE TO OFF SITE SURVEY AREA. UNABLE TO GPR FURTHER AS ALL OVERGROWN.

WATER - UNABLE TO LOCATE WATER MAIN. PRESUMING PE MATERIAL.

BT - LOCATED MAINS INTO THE CINEMA FROM THE IC SITUATED ON THE FOOTPATH OUTSIDE THE SURVEY AREA. DECOMMISSIONED FEEDS FOR THE OLD BUILDINGS LOCATED TO THE NW WERE ALSO LOCATED.

SW & FW - ALL MANHOLES ON SITE WERE LIFTED, DATA RECORDED AND PIPES SONDED IF NEEDED. ONLY INFORMATION I COULDN'T RELAY INTO THE PLAN IS THE THREE STAGE INTERCEPTORS IN THE WOODED AREA TO THE SW. I HAVE THE PHOTOS AVAILABLE, BUT THE TOPO SURVEYOR SEEMS TO HAVE MISSED THEM!

CATV - LOCATED VIA IC CHAMBERS WHERE POSSIBLE, ONE ROUTE TAKEN FROM RECORDS.

UNKNOWNS / GPR - NUMEROUS TARGETS AROUND SITE WHICH WERE UNIDENTIFIABLE.

BOREHOLES - ALL CLEARED ACROSS SITE AND FREE OF SERVICES.

TOPOGRAPHICAL NOTES

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REV	DATE	DESCRIPTION

SURVEYS

SITE VISION SURVEYS LIMITED
UTILITY | TOPOGRAPHICAL | MAPPING
T: 01788 575036 W: SVSLTD.NET

CLIENT: ARCADIS Design & Consultancy for natural and built assets

SITE LOCATION:
HYDE ROAD
MANCHESTER
M12 5AL

DRAWING TITLE: FULL UTILITY SURVEY

SURVEYED BY: JC OF
DRAWN BY: JC FL
APPROVED BY: FL

DRAWING NO: 0620-ARC-13319
SURVEY DATE: 06-07-2020
SCALE: 1:200 @A1
SHEET NO: 6 OF 6
REV:

SCALE

1:100	5M
1:200	10M
1:500	25M

DISCLAIMER: THE LOCATION OF UNDER GROUND SERVICES SHOWN ON THIS DRAWING HAS BEEN DETERMINED USING ELECTRO-MAGNETIC (AND/OR GROUND PROBING RADAR, WHERE REQUESTED) TECHNIQUES AND VISUAL OBSERVATIONS. THE LIMITATIONS OF THIS DRAWING SHOULD BE REALISED AND NO GUARANTEE CAN BE GIVEN THAT ALL SERVICES HAVE BEEN IDENTIFIED. THIS DRAWING MAY NOT INCLUDE THE LOCATION OF ALL PUBLIC SERVICES THAT MAY CROSS THE SITE AND THEREFORE THE RELEVANT SERVICE DRAWINGS SHOULD BE OBTAINED FROM THE APPROPRIATE UTILITY COMPANY AND USED IN CONJUNCTION WITH THIS DRAWING. ADDITIONAL SERVICES, STRUCTURES OR OTHER BELOW GROUND OBSTRUCTIONS NOT INDICATED ON THIS DRAWING MAY BE PRESENT ON SITE. REFERENCE SHOULD BE MADE TO HISTORICAL PLANS AND AS BUILT DRAWINGS. EXCAVATIONS IN THE VICINITY OF SERVICES SHOULD BE CARRIED OUT WITH DUE DILIGENCE REF: HSG47 DOCUMENT "AVOIDING DANGERS FROM UNDERGROUND SERVICES". LOCATION ACCURACY IS DETERMINED BY REFERING TO MANUFACTURERS GUIDELINES FOR THE SYSTEMS DEPLOYED. REFERENCE SHOULD BE MADE TO THE LATEST VERSION OF SVS LTD SITE PROCEDURES DOCUMENT FOR UTILITY LOCATION SURVEYS.

APPENDIX C

Borehole Logs

Cable Percussive Borehole Log

CP101

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.52**	**07/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387505.41**	**396342.53**	**08/07/2020**	**Sheet 1 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(B1) 0.10-0.50						Bituminous Material.		0.10	60.42	
						MADE GROUND: Light brownish grey sandy subangular to angular fine to coarse GRAVEL of limestone. Sand is fine to coarse.		(0.50)		
(B2) 0.50-1.00 (ES1) 0.50-0.60								0.60	59.92	
						MADE GROUND: Dark greyish brown slightly sandy gravelly CLAY with occasional tree roots and occasional wood. Sand is fine to medium. Gravel is subangular fine to coarse brick, sandstone, limestone and concrete. Medium cobble content of subangular brick. Organic odour noted.				
(S3) 1.20-1.65	SPT(S) 1.20	N=10 (1,2/2,2,3,3)						(1.70)		
(S4) 2.00-2.45	SPT(S) 2.00	N=5 (1,1/0,1,2,2)								
(B5) 2.30-2.50						Firm brown mottled grey slightly sandy silty CLAY. Sand is fine to medium. (Glacial Till)		2.30	58.22	
								(0.60)		
(U6) 3.00-3.45		U6 103 blows 80%rec.				Firm becoming stiff brown mottled grey slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is fine to medium sandstone and mudstone. (Glacial Till)		2.90	57.62	
(D7) 3.50										
(S8) 4.00-4.45	SPT(S) 4.00	N=25 (3,4/5,6,7,7)								
(U9) 5.00-5.45		U9 94 blows 100%rec.								
(D10) 5.50										
(S11) 6.00-6.45	SPT(S) 6.00	N=20 (2,3/4,5,5,6)						(8.30)		
(D12) 7.50 (U13) 7.50-7.95		U13 89 blows 100% rec.								
(D14) 8.00										
(D15) 9.00 (S16) 9.00-9.45	SPT(S) 9.00	N=20 (2,3/4,5,5,6)								

DRILLING TECHNIQUE		
From	To	Type
0.00	1.20	Inspection Pit
1.20	15.00	Cable Percussion

CHISELLING		
Hard Strata From	To	Duration
11.40	11.70	00:45
13.80	14.10	01:00

WATER OBSERVATIONS					
Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed
	1.70	20	1.5		

HOLE/CASING DIAMETER			
Hole Dia.	Depth	Casing Dia.	Depth
		150	15.00

WATER ADDED		
From	To	Volume (ltr)

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**Danbar Drilling**	**DF**	**EY**

Cable Percussive Borehole Log

CP101

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.52**	**07/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387505.41**	**396342.53**	**08/07/2020**	**Sheet 2 of 2**

SAMPLES		TESTS		PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(D17) 10.50 (U18) 10.50-10.95		U18 85 blows 90%rec.				Firm becoming stiff brown mottled grey slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is fine to medium sandstone and mudstone. (Glacial Till)				
(D19) 11.00										
(B21) 11.20-11.70 (D20) 11.20								11.20	49.32	
						Very stiff brown mottled grey slightly sandy slightly gravelly silty CLAY. Gravel is subrounded to subangular fine to coarse sandstone and mudstone with occasional sandstone cobble. (Glacial Till)				
(S22) 12.00-12.45	SPT(S) 12.00	N>50 (6,8/9,10,15,16 for 20mm)								
(D23) 13.00								(3.80)		
(S24) 13.50-13.95	SPT(S) 13.50	N>50 (7,8/10,10,16,14 for 65mm)								
(D25) 14.50										
(S26) 15.00-15.45	SPT(S) 15.00	N>50 (10,11/13,13,15,9 for 35mm)						15.00	45.52	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit	11.40	11.70	00:45		1.70	20	1.5					150	15.00			
1.20	15.00	Cable Percussion	13.80	14.10	01:00													

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**Danbar Drilling**	**DF**	**EY**

Cable Percussive Borehole Log

CP102

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**61.73**	**10/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387744.05**	**396193.29**	**21/07/2020**	**Sheet 1 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
						Bituminous Material.		0.05 (0.15)	61.68	
(B1) 0.20-0.50						MADE GROUND: Yellowish grey sandy fine to coarse GRAVEL of sandstone and limestone. Sand is fine to coarse.		0.20	61.53	
						MADE GROUND: Brown slightly clayey slightly sandy subangular fine to coarse GRAVEL of brick, sandstone, limestone and concrete. Sand is fine to coarse. Low cobble content of subangular brick.		(0.60)		
(B2) 0.80-1.20 (ES1) 0.80-9.00								0.80	60.93	
(B3) 1.20-1.65	SPT(S) 1.20	N=5 (1,0/1,1,2,1)				MADE GROUND: Dark grey slightly sandy silty gravelly CLAY. Sand is fine to medium. Gravel is subangular to angular fine to coarse brick, sandstone, limestone and concrete. Organic odour noted.		(1.20)		
(B2) 2.00-2.50 (ES2) 2.00-2.50 (S1) 2.00-2.45	SPT(S) 2.00 PID () 2.00	N=24 (10,13/11,4,5,4) 3.3ppm				MADE GROUND: Stiff greyish brown sandy gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to coarse sandstone and brick. Low cobble content of subangular brick.		2.00	59.73	
								(0.50)		
(D3) 2.50						Stiff brown mottled grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse sandstone, mudstone and coal. (Glacial Till)		2.50	59.23	
(U4) 3.00-3.45		U4 150 blows 100% rec.								
(D5) 3.50										
(S6) 4.00-4.45	SPT(S) 4.00	N=17 (2,2/4,4,5,4)						(3.00)		
(D7) 4.50										
(U8) 5.00-5.45		U8 40 blows 100%rec.								
(B10) 5.50-6.00 (D9) 5.50 (ES3) 5.50-6.00	PID () 5.50	2.7ppm				Stiff light brown slightly gravelly very sandy CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium sandstone and coal. (Glacial Till)		5.50	56.23	
								(0.50)		
(B12) 6.00-6.50 (S11) 6.00-6.45	SPT(S) 6.00	N>50 (12,13 for 47mm/34,16 for 38mm)				Dense orangish brown fine to medium SAND. (Glacial Till)		6.00	55.73	
(D13) 7.00										
(S14) 7.50-7.95	SPT(S) 7.50	N>50 (8,11/11,13,14,12 for 72mm)						(3.40)		
(D15) 8.50			▼							
(S16) 9.00-9.45	SPT(S) 9.00	N>50 (13,12 for 73mm/33,17 for 35mm)								
(B17) 9.50-10.00 (ES4) 9.50-10.00						Very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium sandstone and mudstone. (Glacial Till)		9.40	52.33	
(D18) 10.00										

DRILLING TECHNIQUE

From	To	Type
0.00	1.20	Inspection Pit
1.20	2.00	Cable Percussion
2.00	13.20	Cable Percussion

CHISELLING

Hard Strata From	Hard Strata To	Duration
12.90	13.20	01:00

WATER OBSERVATIONS

Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed
	8.50				9.50

HOLE/CASING DIAMETER

Hole Dia.	Depth	Casing Dia.	Depth
		150	13.20

WATER ADDED

From	To	Volume (ltr)
6.00	8.50	

Remarks

Refused on bedrock at 13.2m bgl. No water present on completion of borehole.

Termination Depth: 13.20m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**Danbar Drilling**	**DF**	**EY**

Cable Percussive Borehole Log

CP102

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**61.73**	**10/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387744.05**	**396193.29**	**21/07/2020**	**Sheet 2 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(U19) 10.50-10.95		U19 150 blows 89% rec.				Very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium sandstone and mudstone. (Glacial Till)		(3.50)		
(D20) 11.00										
(S21) 12.00-12.45	SPT(S) 12.00	N>50 (4,6/9,11,13,17 for 70mm)								
(D22) 13.00						Orangish brown fine to medium SANDSTONE recovered as angular coarse gravel. (Chester Pebble Beds Formation)		12.90 (0.30)	48.83	
(S23) 13.20-13.65	SPT(S) 13.20	N>50 (25 for 18mm/50 for 8mm)						13.20	48.53	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit	12.90	13.20	01:00		8.50				9.50			150	13.20	6.00	8.50	
1.20	2.00	Cable Percussion																
2.00	13.20	Cable Percussion																

Remarks

Refused on bedrock at 13.2m bgl. No water present on completion of borehole.

Termination Depth: 13.20m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**Danbar Drilling**	**DF**	**EY**

Cable Percussive Borehole Log

CP103

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**61.34**	**21/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387678.43**	**396124.94**	**22/07/2020**	**Sheet 1 of 2**

SAMPLES	TESTS		Water Depth	PROGRESS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Type + Depth	Type + Depth	Results		Date & Time	Casing & Water Depth	Description	Legend			
(B2) 0.10-0.20 (D1) 0.10 (B4) 0.20-0.80 (D3) 0.20						BITUMINOUS MATERIAL.		0.10 0.20	61.24 61.14	
						MADE GROUND: Yellowish brown slightly silty sandy subrounded to subangular fine to coarse GRAVEL of limestone and brick. Sand is medium to coarse.		(0.60)		
(B6) 0.80-1.20 (D5) 0.80 (ES1) 1.00	PID () 1.00	3.8ppm				MADE GROUND: Greyish brown slightly clayey very gravelly SAND. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse brick, concrete, slag and rare timber. Medium cobble content of subrounded to subangular concrete and brick.		0.80	60.54	
(B8) 1.20-1.70 (S7) 1.20-1.65	SPT(S) 1.20	N=7 (1,1/1,2,2,2)						(0.50)		
(ES2) 1.50 (D9) 1.70	PID () 1.50	3.2ppm				MADE GROUND: Soft dark grey very sandy very gravelly CLAY. Sand is medium to coarse. Gravel is subrounded to subangular fine to coarse brick and wood. Slight hydrocarbon odour noted.		1.30	60.04	
(U10) 2.00-2.45		U10 150 blows 100% rec.				Firm to stiff brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium sandstone, mudstone and coal. (Glacial Till) Stiff				
(D11) 2.50										
(S12) 3.00-3.45	SPT(S) 3.00	N=26 (3,3/4,6,8,8)								
(D13) 3.50								(4.30)		
(U14) 4.00-4.45		U14 120 blows 100% rec.								
(D15) 4.50										
(S16) 5.00-5.45	SPT(S) 5.00	N=23 (3,4/4,5,6,8)								
(D17) 5.50 (B18) 5.60-6.00 (ES3) 5.60						Dense brown slightly silty SAND. Sand is fine to medium. (Glacial Till)		5.60	55.74	
(S19) 6.00-6.45	SPT(S) 6.00	N>50 (11,14 for 46mm/36,14 for 28mm)								
(D20) 7.00										
(S21) 7.50-7.95	SPT(S) 7.50	N>50 (12,13 for 39mm/41,9 for 11mm)	▼					(5.50)		
(D22) 8.50										
(S23) 9.00-9.45	SPT(S) 9.00	N>50 (7,12/18,22,10 for 38mm)								
(D24) 10.00										

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS					HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00 1.20	1.20 15.00	Inspection Pit Cable Percussion					13.50 7.50			12.00 7.50	11.50			150	12.00	5.60	7.50	

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**JB Site Investigations**	**EY**	**EY**

Cable Percussive Borehole Log

CP103

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**61.34**	**21/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387678.43**	**396124.94**	**22/07/2020**	**Sheet 2 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
						Dense brown slightly silty SAND. Sand is fine to medium. (Glacial Till)				
(S25) 10.50-10.95	SPT(S) 10.50	N>50 (10,14/18,21,11 for 41mm)								
								11.10	50.24	
						Very stiff brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to coarse sandstone, mudstone and coal. (Glacial Till)				
(B26) 11.50										
(U27) 12.00-12.45		U27 150 blows 77% rec.								
(D28) 13.00								(3.90)		
(S29) 13.50-13.95	SPT(S) 13.50	N=37 (4,6/7,8,10,12)	▼							
(D30) 14.50										
(S31) 15.00-15.45	SPT(S) 15.00	N=42 (4,5/8,9,11,14)						15.00	46.34	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit					13.50			12.00				150	12.00	5.60	7.50	
1.20	15.00	Cable Percussion					7.50			7.50	11.50							

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**JB Site Investigations**	**EY**	**EY**

Cable Percussive Borehole Log

CP104

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.65**	**09/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387575.22**	**396136.17**	**10/07/2020**	**Sheet 1 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(B1) 0.20-0.60						Bituminous Material.		(0.12) 0.12	60.53	
	PID () 0.50	<1ppm				MADE GROUND: Light brown sandy subrounded to subangular fine to coarse GRAVEL of brick, sandstone, limestone and concrete. Sand is fine to coarse. Low cobble content of subangular to angular brick.		(0.78)		
(ES1) 0.80-0.90										
(B2) 0.90-1.20	PID () 1.00	<1ppm				MADE GROUND: Firm dark brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to medium sandstone and mudstone. Organic odour noted.		0.90	59.75	
(U3) 1.20-1.65		U3 47 blows 100%rec.						(0.50)		
	PID () 1.50	<1ppm				Stiff light brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to medium sandstone and mudstone. (Glacial Till)		1.40	59.25	
(B5) 1.70-2.00										
(D4) 1.70										
(ES2) 1.70-1.80										
(S6) 2.00-2.45	SPT(S) 2.00	N=16 (2,3/3,4,4,5)								
(U7) 3.00-3.45		U7 103 blows 90%rec.								
(D8) 3.50										
(S9) 4.00-4.45	SPT(S) 4.00	N=21 (3,4/4,5,5,7)						(6.40)		
(U10) 5.00-5.45		U10 88 blows 100% rec.								
(D11) 5.50										
(S12) 6.00-6.45	SPT(S) 6.00	N=15 (1,3/3,3,4,5)								
(D13) 7.00										
(U14) 7.50-7.95		U14 115 blows 90%rec.								
(B16) 8.00-8.50						Dense light yellowish brown silty fine to medium SAND. (Glacial Till)		7.80	52.85	
(D15) 8.00										
(D17) 8.50										
(S18) 9.00-9.45	SPT(S) 9.00	N>50 (5,8/11,11,18,10 for 40mm)						(3.20)		
(D19) 10.00										

DRILLING TECHNIQUE		
From	To	Type
0.00	1.20	Inspection Pit
1.20	15.00	Cable Percussion

CHISELLING		
Hard Strata From	To	Duration
12.50	12.60	01:00
13.80	14.10	01:00
14.70	14.90	00:30

WATER OBSERVATIONS					
Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed
	0.50	20	7.6		
	8.00	20	0.3		

HOLE/CASING DIAMETER			
Hole Dia.	Depth	Casing Dia.	Depth
		150	15.00

WATER ADDED		
From	To	Volume (ltr)

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**Danbar Drilling**	**DF**	**EY**

Cable Percussive Borehole Log

CP104

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.65**	**09/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387575.22**	**396136.17**	**10/07/2020**	**Sheet 2 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(S20) 10.50-10.95	SPT(S) 10.50	N>50 (7,9/12,14,17,7 for 30mm)				Dense light yellowish brown silty fine to medium SAND. (Glacial Till)				
(B21) 11.00-11.40						Very stiff dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded sandstone. (Glacial Till)		11.00	49.65	
(D22) 11.50										
(S23) 12.00-12.44	SPT(S) 12.00	N>50 (9,11/14,15,18,3 for 10mm)								
(D24) 13.00								(4.00)		
(S25) 13.50-13.95	SPT(S) 13.50	N>50 (10,13/16,17,15 for 55mm)								
(D26) 14.50										
(S27) 15.00-15.45	SPT(S) 15.00	N>50 (9,10/14,14,18,8 for 10mm)						15.00	45.65	

DRILLING TECHNIQUE

From	To	Type
0.00	1.20	Inspection Pit
1.20	15.00	Cable Percussion

CHISELLING

Hard Strata From	Hard Strata To	Duration
12.50	12.60	01:00
13.80	14.10	01:00
14.70	14.90	00:30

WATER OBSERVATIONS

Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed
	0.50	20	7.6		
	8.00	20	0.3		

HOLE/CASING DIAMETER

Hole Dia.	Depth	Casing Dia.	Depth
		150	15.00

WATER ADDED

From	To	Volume (ltr)

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**Danbar Drilling**	**DF**	**EY**

Cable Percussive Borehole Log

CP105

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.00**	**22/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387539.87**	**396214.34**	**23/07/2020**	**Sheet 1 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(B2) 0.20-1.00 (D1) 0.20						BITUMINOUS MATERIAL.		(0.20) 0.20	59.80	
(ES1) 0.50						MADE GROUND: Medium dense yellowish brown very gravelly SAND. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse dolomite, sandstone, brick and coal. Low cobble content of subrounded to subangular sandstone.		(1.20)		
(S3) 1.20-1.65	SPT(S) 1.20	N=15 (4,5/4,4,3,4)						1.40	58.60	
(B4) 1.50-2.00						Stiff brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium sandstone, mudstone and coal. (Glacial Till)				
(U5) 2.00-2.45		U5 95 blows 100%rec.						(2.00)		
(D6) 2.50										
(S7) 3.00-3.45	SPT(S) 3.00	N=20 (1,3/4,5,5,6)						3.40	56.60	
(B9) 3.50-4.00 (D8) 3.50						Stiff to very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded fine to medium sandstone, mudstone and coal. (Glacial Till)				
(U10) 4.00-4.45		U10 55 blows 100% rec.								
(D11) 4.50										
(S12) 5.00-5.45	SPT(S) 5.00	N=16 (2,3/4,3,4,5)								
(D13) 5.50										
(U14) 6.00-6.45		U14 70 blows 100% rec.						(5.50)		
(D15) 7.00										
(S16) 7.50-7.95	SPT(S) 7.50	N=23 (3,4/5,5,6,7)								
(D17) 8.50										
(U18) 9.00-9.45		U18 150 blows 77% rec.				Very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded fine to medium sandstone, mudstone and coal. Slightly fissured. (Glacial Till)		8.90	51.10	
(B19) 9.50-10.00 (ES2) 9.50										

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00 1.20	1.20 15.00	Inspection Pit Cable Percussion												150	12.00			

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**JB Site Investigations**	**EY**	**EY**

Cable Percussive Borehole Log

CP105

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.00**	**22/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387539.87**	**396214.34**	**23/07/2020**	**Sheet 2 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(S20) 10.50-10.95	SPT(S) 10.50	N=47 (4,6/8,11,12,16)				Very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded fine to medium sandstone, mudstone and coal. Slightly fissured. (Glacial Till)		(3.40)		
(D21) 11.50										
(U22) 12.00-12.45		U22 150 blows 89% rec.								
(B23) 12.50-13.00						Very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded fine to medium sandstone, mudstone and coal. (Glacial Till)		12.30	47.70	
(S24) 13.50-13.95	SPT(S) 13.50	N=49 (5,8/10,12,13,14)						(2.70)		
(D25) 14.50										
(S26) 15.00-15.45	SPT(S) 15.00	N=50 (4,7/9,12,14,15)						15.00	45.00	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit												150	12.00			
1.20	15.00	Cable Percussion																

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**JB Site Investigations**	**EY**	**EY**

Cable Percussive Borehole Log

CP106

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.90**	**21/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387648.19**	**396206.76**	**22/07/2020**	**Sheet 1 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(B1) 0.20-0.50						BITUMINOUS MATERIAL.		0.10	60.80	
(D2) 0.40						MADE GROUND: Yellowish brown very gravelly SAND. Sand is medium to coarse. Gravel is subrounded to subangular fine to coarse dolomite.		(0.40)		
(B3) 0.50-1.00 (ES1) 0.60	PID () 0.60	6ppm				MADE GROUND: Brown very sandy very gravelly CLAY. Sand is medium to coarse. Gravel is subangular to angular fine to coarse brick, concrete and limestone. Low cobble content of subangular to angular concrete and brick. Slight hydrocarbon odour noted.		0.50	60.40	
(D4) 1.10 (U5) 1.20-1.65	PID () 1.20	5.5ppm U5 87 blows 100%rec.				Stiff brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to coarse sandstone, mudstone and coal. (Glacial Till)		(0.50) 1.00	59.90	
(D6) 1.70										
(B8) 2.00-2.45 (S7) 2.00-2.45	SPT(S) 2.00	N=6 (1,2/1,1,2,2)						(2.20)		
(D9) 2.80										
(U10) 3.00-3.45		U10 77 blows 100% rec.								
						Brown slightly silty SAND. Sand is fine to medium. (Glacial Till)		3.20 (0.30)	57.70	
(D11) 3.50						Stiff to very stiff greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to coarse sandstone, mudstone and coal. (Glacial Till)		3.50	57.40	
(B13) 4.00-4.45 (ES2) 4.00 (S12) 4.00-4.45	SPT(S) 4.00	N=33 (1,4/5,7,10,11)								
(D15) 5.00-5.45 (U14) 5.00-5.45		U14 69 blows 100% rec.								
(B17) 6.00-6.45 (S16) 6.00-6.45	SPT(S) 6.00	N=26 (1,3/4,6,7,9)								
(D18) 7.00								(11.50)		
(U19) 7.50-7.95		U19 105 blows 100% rec.								
(D20) 8.50										
(B22) 9.00-9.45 (S21) 9.00-9.45	SPT(S) 9.00	N=46 (6,7/8,12,12,14)								
(D23) 10.00										

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit					3.00	20	2					150	9.00			
1.20	15.00	Cable Percussion																

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**JB Site Investigations**	**EY**	**EY**

Cable Percussive Borehole Log

CP106

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.90**	**21/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387648.19**	**396206.76**	**22/07/2020**	**Sheet 2 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(U24) 10.50-10.95		U24 115 blows 78%rec.				Stiff to very stiff greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to coarse sandstone, mudstone and coal. (Glacial Till)				
(D25) 11.50										
(S26) 12.00-12.45	SPT(S) 12.00	N>50 (6,11/14,16,20 for 35mm)								
(D27) 13.00										
(U28) 13.50-13.95		U28 120 blows 100% rec.								
(D29) 14.00										
(S30) 15.00-15.45	SPT(S) 15.00	N>50 (3,12/13,20,17 for 40mm)						15.00	45.90	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit					3.00	20	2					150	9.00			
1.20	15.00	Cable Percussion																

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**JB Site Investigations**	**EY**	**EY**

Cable Percussive Borehole Log

CP107

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.63**	**20/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387666.41**	**396304.00**	**21/07/2020**	**Sheet 1 of 2**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(B1) 0.10-0.50						BITUMINOUS MATERIAL.		0.10	60.53	
(ES1) 0.30 (D2) 0.40	PID () 0.30	5.4ppm				MADE GROUND: Brown clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is subangular to angular fine to coarse clinker, brick and concrete. Medium cobble content of subrounded to subangular concrete and brick.		(0.50)		
(B3) 0.50-1.00	PID () 0.70	8.7ppm				Firm yellowish brown slightly sandy gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to coarse sandstone, mudstone and coal. (Glacial Till)		0.60	60.03	
(D4) 1.10 (U5) 1.20-1.65		U5 95 blows 100%rec.						(1.60)		
(D6) 1.70										
(B8) 2.00-2.45 (S7) 2.00-2.45	SPT(S) 2.00 PID () 2.20	N=26 (2,4/4,6,7,9) <1ppm						2.20	58.43	
(D9) 2.80						Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium sandstone, mudstone and coal. (Glacial Till)				
(U10) 3.00-3.45		U10 99 blows 100% rec.								
(D11) 3.50										
(S12) 4.00-4.45	SPT(S) 4.00	N=35 (5,4/8,7,10,10)								
(D13) 4.50										
(U14) 5.00-5.45		U14 96 blows 100% rec.								
(D15) 5.50										
(D16) 5.80										
(S17) 6.00-6.45	SPT(S) 6.00	N=24 (2,2/3,5,7,9)						(12.80)		
(D18) 7.00										
(U19) 7.50-7.95		U19 66 blows 100% rec.								
(D20) 8.00 (ES2) 8.00										
(D22) 8.50										
(B24) 9.00-9.45 (S23) 9.00-9.45	SPT(S) 9.00	N=42 (3,4/9,10,11,12)								
(D25) 10.00										

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00 1.20	1.20 15.00	Inspection Pit Cable Percussion												150	10.50			

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**JB Site Investigations**	**EY**	**EY**

Cable Percussive Borehole Log

CP107

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.63**	**20/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387666.41**	**396304.00**	**21/07/2020**	**Sheet 2 of 2**

SAMPLES		TESTS		PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(U26) 10.50-10.95		U26 115 blows 100% rec.				Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium sandstone, mudstone and coal. (Glacial Till)				
(D27) 11.50										
(S28) 12.00-12.45	SPT(S) 12.00	N>50 (4,9/13,20,17 for 40mm)								
(D29) 13.00										
(U30) 13.50-13.95		U30 125 blows 100% rec.								
(D31) 14.50										
(S32) 15.00-15.45	SPT(S) 15.00	N>50 (5,6/13,13,14,10 for 60mm)						15.00	45.63	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit												150	10.50			
1.20	15.00	Cable Percussion																

Remarks

Terminated at target depth.

Termination Depth: 15.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 2000	**JB Site Investigations**	**EY**	**EY**

Dynamic Sample Borehole Log

WS101

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.65**	**07/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387476.33**	**396340.93**	**07/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(ES1) 0.20-0.30						TOPSOIL: Grass over brown clayey slightly sandy SILT with frequent rootlets.		(0.15) 0.15	60.50	
						MADE GROUND: Brown slightly clayey slightly sandy subangular to angular fine to coarse GRAVEL of brick, concrete, bituminous macadam and sandstone. Sand is medium to coarse.		(0.45) 0.60	60.05	
(ES2) 0.90-1.00						MADE GROUND: Dark greyish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular fine to coarse brick, concrete, bituminous macadam and sandstone. Low cobble content of subangular brick and wood. Organic odour noted.		(1.00) 1.60	59.05	
	SPT(S) 1.20	N=4 (2,2/1,1,1,1)				MADE GROUND: Orange subangular to angular COBBLES of sandstone and brick.		1.70	58.95	
	SPT(S) 2.00	N=20 (2,3/4,4,6,6)				MADE GROUND: Firm dark greyish brown slightly sandy gravelly CLAY with occasional wood. Gravel is subangular to angular clinker, brick and concrete. Medium cobble content of subangular brick. Organic odour noted.		(0.50) 2.20	58.45	
(ES3) 2.20-2.30						Soft dark grey silty CLAY. Organic odour noted. (Glacial Till)		(0.20) 2.40	58.25	
	SPT(S) 3.00	N=40 (5,7/8,10,10,12)				Brown mottled grey slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is subrounded fine to medium sandstone. Organic odour noted. (Glacial Till)		(1.60) 4.00	56.65	
	SPT(S) 4.00	N>50 (8,13/14,14,20,2 for 2mm)								

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit																
1.20	4.00	Window Sample																

Remarks

Refusal at 4m bgl.

Termination Depth: 4.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS102

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.56**	**07/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387472.73**	**396369.21**	**07/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
						TOPSOIL: Brown sandy SILT.		(0.15) 0.15	60.41	
						MADE GROUND: Brown slightly clayey sandy subangular to angular fine to coarse GRAVEL of brick, sandstone, limestone and concrete. Sand is fine to coarse. Low cobble content of subangular brick.		(0.60) 0.75	59.81	
	SPT(S) 1.20	N=9 (0,2/2,2,2,3)				MADE GROUND; Dark greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse clinker, brick and concrete. Organic odour noted.		(0.85) 1.60	58.96	
						MADE GROUND: Orange subangular COBBLES of brick.		(0.20) 1.80	58.76	
(ES1) 2.20-2.30	SPT(S) 2.00	N=3 (1,0/1,1,1,0,1)				MADE GROUND: Black sandy angular medium to coarse GRAVEL of clinker with frequent compacted ash. Sand is fine to coarse.		(0.70) 2.50	58.06	
(ES2) 2.80-2.90						Soft to firm greyish brown silty CLAY. Organic odour noted. (Glacial Till)		(0.25) 2.75	57.81	
	SPT(S) 3.00	N=36 (4,5/6,8,10,12)				Firm to stiff brown mottled grey slightly gravelly CLAY. Gravel is subangular fine to medium sandstone, mudstone and coal. (Glacial Till)		(1.25)		
	SPT(S) 4.00	N=25 (5,6/6,7,6,6)						4.00	56.56	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit																
1.20	4.00	Window Sample																

Remarks

Terminated at 4m bgl due to partial collapse and desire to install monitoring well.

Termination Depth: 4.00m

AGS

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS103

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.43**	**07/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387532.08**	**396354.27**	**07/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(ES1) 0.70-0.80						Bituminous Material.		0.10	60.33	
						MADE GROUND: Light orangish brown sandy subangular fine to coarse GRAVEL of sandstone and limestone. Sand is fine to coarse.		(0.40)		
						MADE GROUND: Light brown clayey slightly sandy subrounded to subangular fine to coarse GRAVEL of brick, sandstone, limestone and concrete with occasional wood. Low cobble content of angular concrete.		0.50	59.93	
								(0.50)		
								1.00	59.43	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.00	Inspection Pit																

Remarks

Hit concrete slab in hand pit at 1m bgl.

Termination Depth: 1.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS104

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.62**	**07/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387538.76**	**396323.19**	**07/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
						MADE GROUND: Grass over brown clayey silty fine SAND with frequent rootlets.		(0.30) 0.30	60.32	
						MADE GROUND: Light brown and grey sandy subangular to angular fine to coarse GRAVEL of concrete and brick. Sand is fine to coarse. Low cobble content of cubic angular concrete and brick.		(0.30) 0.60	60.02	
	SPT(S) 1.20	N=14 (2,3/3,4,4,3)				MADE GROUND: Light brown clayey sandy subangular to angular fine to coarse GRAVEL of brick, sandstone, limestone and concrete. Sand is fine to coarse. Low cobble content of 10cm subangular to angular concrete and brick. Plastic blue sheet.		(0.80) 1.40	59.22	
(ES1) 1.50-1.60						MADE GROUND: Dark grey and black slightly sandy subangular to angular fine to coarse ashy GRAVEL of clinker, brick and concrete. Sand is fine to coarse.		(0.25) 1.65	58.97	
	SPT(S) 2.00	N=12 (2,2/3,3,3,3)				Firm dark grey organic silty CLAY. Organic odour noted. (Glacial Till)		(0.35) 2.00	58.62	
	SPT(S) 3.00	N=40 (5,6/8,10,12,10)				Stiff brown mottled grey slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is subangular fine to medium sandstone, mudstone and coal. (Glacial Till)		(1.70)		
	SPT(S) 3.70	N>50 (10,11/15,15,15,5 for 10mm)						3.70	56.92	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit																
1.20	3.70	Window Sample																

Remarks

Refusal at 3.7m bgl.

Termination Depth: 3.70m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS105

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**61.80**	**10/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387749.09**	**396219.03**	**10/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(ES1) 0.20-0.30	PID () 0.20	<1ppm				Bituminous Material.		(0.12) 0.12	61.68	
						MADE GROUND: Light yellowish brown sandy subrounded to subangular fine to medium GRAVEL of sandstone and limestone. Sand is medium to coarse.		0.18 (0.32)	61.62	
						MADE GROUND: Dark grey and brown sandy subrounded to subangular fine to coarse GRAVEL of brick, concrete, bituminous macadam and sandstone. Sand is fine to coarse. High cobble content of angular concrete and brick.		0.50	61.30	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	0.50	Inspection Pit																

Remarks

Concrete obstruction in hand pit at 0.5m bgl.

Termination Depth: 0.50m

AGS

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS105A

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**61.80**	**10/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387751.68**	**396217.31**	**10/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
	PID () 0.20	<1ppm				Bituminous Material.		0.10	61.70	
						MADE GROUND: Yellowish brown sandy subrounded to subangular fine to coarse GRAVEL of brick, sandstone, limestone and concrete with rare metal rods. Sand is fine to coarse. Low cobble content of subangular brick.		(0.30)		
								0.40	61.40	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	0.40	Inspection Pit																

Remarks

Concrete obstruction in hand pit at 0.4m bgl.

Termination Depth: 0.40m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS106

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**62.45**	**09/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387696.12**	**396210.33**	**09/07/2020**	**Sheet 1 of 1**

SAMPLES		TESTS		PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
	PID () 0.20	<1ppm				Bituminous Material.		(0.18) 0.18	62.27	
(ES1) 0.40-0.50	PID () 0.50	5.2ppm				MADE GROUND: Yellowish brown and orange sandy angular to subangular fine to coarse GRAVEL of brick, sandstone, limestone and concrete. Sand is fine to coarse. Medium cobble content of angular brick.		(0.22) 0.40	62.05	
						MADE GROUND: Dark brown and orange sandy angular to subangular fine to coarse GRAVEL of brick, sandstone, limestone and concrete with rare wood and glass. Sand is fine to coarse. high cobble content of subangular to angular brick. Hydrocarbon odour noted.		(0.40) 0.80	61.65	
						Geotextile.				

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	0.80	Inspection Pit																

Remarks

Concrete obstruction in hand pit at 0.8m bgl.

Termination Depth: 0.80m

AGS

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS106A

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**62.46**	**10/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387697.07**	**396207.73**	**10/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(ES1) 0.20-0.30	PID () 0.20	3.2ppm				Bituminous Material.		0.10	62.36	
	PID () 0.50	7.2ppm				MADE GROUND: Yellowish brown and orange sandy angular to subangular fine to coarse GRAVEL of brick, sandstone, limestone and concrete. Sand is fine to coarse. High cobble content of subrounded to subangular brick.		(0.30) 0.40	62.06	
						MADE GROUND: Yellowish brown and orange sandy subrounded to subangular fine to coarse GRAVEL of brick, sandstone, limestone and concrete. Horizon is moist. Sand is fine to coarse. High cobble content of subangular to angular concrete and brick.		(0.40) 0.80	61.66	
						Geotextile.				

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	0.80	Inspection Pit																

Remarks

Concrete obstruction in hand pit at 0.8m bgl.

Termination Depth: 0.80m

AGS

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS107

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**62.19**	**10/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387721.13**	**396172.00**	**10/07/2020**	**Sheet 1 of 1**

SAMPLES		TESTS		PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
	PID () 0.20	<1ppm				Bituminous Material.		(0.12) 0.12	62.07	
(ES1) 0.40-0.50	PID () 0.50	<1ppm				MADE GROUND: Yellowish brown sandy subangular fine to coarse GRAVEL of brick, sandstone, limestone and concrete. Horizon is wet. Sand is fine to coarse. Low cobble content of subangular brick.		(0.28) 0.40	61.79	
(ES2) 1.10-1.20	PID () 1.00 PID () 1.20	<1ppm <1ppm				MADE GROUND: Brown slightly sandy silty gravelly CLAY. Sand is fine to medium. Gravel is subangular fine to coarse clinker, brick and concrete. Low cobble content of subangular brick.		(0.70) 1.10	61.09	
						MADE GROUND: Firm dark grey mottled brown slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is subangular fine to medium sandstone, mudstone and brick. Low cobble content of subangular brick. Organic odour noted.		(0.20) 1.30	60.89	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00 1.20	1.20 1.30	Inspection Pit Window Sample					0.30											

Remarks

Refusal at 1.3m bgl.

Termination Depth: 1.30m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS108

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**61.82**	**10/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387770.65**	**396178.35**	**10/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
	PID () 0.20	<1ppm				Bituminous Material.		0.10	61.72	
						MADE GROUND: Yellowish brown sandy subrounded to subangular fine to coarse GRAVEL of sandstone and limestone.. Sand is fine to coarse.		0.20 (0.30)	61.62	
(ES1) 0.60-0.70	PID () 0.60	<1ppm				MADE GROUND: Light brown sandy subrounded to subangular fine to coarse GRAVEL of brick, concrete, bituminous macadam and sandstone. Sand is fine to coarse. High cobble content of subrounded to subangular concrete and brick.		0.50 (0.50)	61.32	
	PID () 1.00	<1ppm				MADE GROUND: Grey and dark brown silty gravelly fine SAND. Gravel is subrounded to subangular fine to coarse clinker, brick and concrete.		1.00	60.82	
	SPT(S) 1.20	N=16 (3,3/3,3,4,6)								
(ES2) 1.60-1.70	PID () 1.50	<1ppm				Brown mottled grey slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is subangular fine sandstone, mudstone and coal. (Glacial Till)		(1.00)		
	SPT(S) 2.00	N>50 (8,10/13,13,14,10 for 30mm)						2.00	59.82	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit					0.50	20	0.2									
1.20	2.00	Window Sample																

Remarks

Refusal at 2m bgl.

Termination Depth: 2.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS109

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**61.75**	**08/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387564.44**	**396097.90**	**08/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(ES1) 0.50-0.60	PID () 0.50	1.7ppm				MADE GROUND: Brown very sandy very gravelly CLAY. Sand is medium to coarse. Gravel is subangular to angular fine to coarse brick, concrete, slag, ceramic and wood. Low cobble content of subrounded to subangular concrete.				
						Metal fragments and nails.		(1.30)		
	PID () 1.00	2.2ppm				Layer of red brick.				
(ES2) 1.40-1.50	PID () 1.50	2ppm						1.30	60.45	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit																
1.20	1.30	Window Sample																

Remarks

Refusal at 1.3m bgl.

Termination Depth: 1.30m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS110

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**61.48**	**08/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387524.55**	**396171.75**	**08/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
						MADE GROUND: Grass over brown gravelly very sandy CLAY. Gravel is subangular to angular fine to coarse concrete, brick, ceramic. Low cobble content of subrounded concrete.		(1.00)		
(ES1) 1.10-1.20	SPT(S) 1.20	N=5 (0,1/1,1,1,2)				MADE GROUND: Soft greyish brown slightly sandy gravelly CLAY. Gravel is subrounded to subangular fine to coarse brick, concrete, coal.		1.00 (0.80)	60.48	
	SPT(S) 2.00	N=10 (3,3/2,2,3,3)				MADE GROUND: Firm brownish grey slightly sandy gravelly CLAY. Gravel is subangular to angular fine to coarse coal, brick.		1.80 (0.20) 2.00	59.68 59.48	
	SPT(S) 3.00	N=23 (4,4/4,5,6,8)				MADE GROUND: Soft to firm greyish brown slightly sandy gravelly CLAY. Gravel is subangular to angular fine to coarse brick, sandstone, shale, concrete, coal.		(1.30)		
(ES2) 3.50-3.60						Stiff light brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subrounded to subangular medium to coarse sandstone. (Glacial Till)		3.30 (0.70)	58.18	
	SPT(S) 4.00	N>50 (8,12/15,15,15,5 for 5mm)						4.00	57.48	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00 1.20	1.20 4.00	Inspection Pit Window Sample																

Remarks

Refusal at 4m bgl.

Termination Depth: 4.00m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS111

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.94**	**08/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387637.58**	**396128.29**	**08/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
						Bituminous Material.		0.10	60.84	
	PID () 0.50	<1ppm				MADE GROUND: Orange and yellowish brown sandy subangular to angular fine to coarse GRAVEL of concrete and brick. Sand is fine to coarse. Low cobble content of angular brick.		(0.70)		
								0.80	60.14	
(ES1) 1.00-1.10	PID () 1.00	<1ppm	▼			Soft to firm brownish grey slightly sandy slightly gravelly silty CLAY. Sand is medium to coarse. Gravel is subrounded to subangular medium to coarse sandstone, mudstone and coal. Cobbles are rounded sandstone. Organic odour noted. (Glacial Till)		(0.30)		
	SPT(S) 1.20	N=11 (1,1/2,3,3,3)						1.10	59.84	
	PID () 1.50	<1ppm				Firm to stiff light brown mottled grey slightly sandy slightly gravelly silty CLAY. Sand is medium to coarse. Gravel is rounded fine to medium sandstone and mudstone. Low cobble content of rounded sandstone. (Glacial Till)		(1.60)		
(ES2) 2.00-2.10	SPT(S) 2.00 PID () 2.00	N=32 (5,6/8,8,8,8) <1ppm				Rootlets.				
	PID () 2.50	<1ppm								
	SPT(S) 2.70	N>50 (15,10 for 60mm/20,20,10 for 30mm)						2.70	58.24	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Window Sample					1.00	20	1									
1.20	2.70	Window Sample																

Remarks

Refusal at 2.7m bgl.

Termination Depth: 2.70m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS112

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.64**	**09/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387615.66**	**396176.11**	**09/07/2020**	**Sheet 1 of 1**

SAMPLES		TESTS		PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(ES1) 0.30-0.40	PID () 0.20	<1ppm				Bituminous Material.		0.10	60.54	
						MADE GROUND: Light yellowish brown sandy subangular medium to coarse GRAVEL of sandstone and limestone. Sand is fine to coarse.		0.20 (0.30)	60.44	
						MADE GROUND: Yellowish brown and orangish brown sandy subrounded to subangular fine to coarse GRAVEL of clinker, brick and concrete. Sand is fine to coarse. Medium cobble content of subangular concrete and brick.		0.50 (0.30)	60.14	
						Geotextile.		0.80	59.84	
						MADE GROUND: Firm dark greyish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to coarse sandstone and limestone.				

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	0.80	Inspection Pit																

Remarks

Hit concrete slab in hand pit at 0.8m bgl.

Termination Depth: 0.80m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS113

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.46**	**09/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387598.59**	**396228.49**	**09/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
	PID () 0.20	<1ppm				Bituminous Material.		(0.12) 0.12	60.34	
	PID () 0.50	<1ppm				MADE GROUND: Yellowish brown gravelly fine to coarse SAND. Gravel is subangular fine to coarse sandstone and limestone. Medium cobble content of subangular concrete and brick.		(0.58) 0.70	59.76	
(ES1) 0.80-0.90										
	PID () 1.00	<1ppm				Firm dark greyish brown mottled light brown slightly sandy slightly gravelly silty CLAY. Sand is fine to medium. Gravel is subangular to angular fine to medium sandstone and mudstone. Organic odour noted. (Glacial Till)		(0.50) 1.20	59.26	
	SPT(S) 1.20	N=16 (2,2/2,4,4,6)								
(ES2) 1.40-1.50										
	PID () 1.50	<1ppm				Firm to stiff light brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium sandstone and mudstone. (Glacial Till)				
						stiff		(1.30) 2.50	57.96	
	SPT(S) 2.00 PID () 2.00	N=34 (5,6/8,8,10,8) <1ppm								
	SPT(S) 2.50 PID () 2.50	N>50 (14,11 for 60mm/20,21,9 for 10mm) <1ppm								

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00 1.20	1.20 2.50	Inspection Pit Window Sample																

Remarks

Refusal at 2.5m bgl.

Termination Depth: 2.50m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS114

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.05**	**08/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387546.22**	**396258.14**	**08/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(ES1) 0.20-0.30						Bituminous Material.		0.10	59.95	
						MADE GROUND: Light brown sandy subangular to angular fine to coarse GRAVEL of brick, sandstone, limestone and concrete. Sand is fine to coarse.		(0.30)		
								0.40	59.65	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	0.40	Inspection Pit																

Remarks

Hit concrete slab in hand pit at 0.4m bgl.

Termination Depth: 0.40m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS115

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**60.68**	**08/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387583.32**	**396332.12**	**08/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(ES1) 0.50-0.60						MADE GROUND: Dark brown clayey sandy SILT. Sand is fine.		(0.25) 0.25	60.43	
						MADE GROUND: Brown slightly sandy very gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular fine to coarse brick, sandstone, limestone and concrete. Low cobble content of angular brick.		(0.65) 0.90	59.78	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	0.50	Inspection Pit																

Remarks

Hit concrete slab in hand pit at 0.9m bgl.

Termination Depth: 0.90m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

Dynamic Sample Borehole Log

WS116

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Hyde Road, Manchester	**10041634**	**61.27**	**09/07/2020**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Manchester City Council	**387673.04**	**396235.41**	**09/07/2020**	**Sheet 1 of 1**

SAMPLES	TESTS			PROGRESS		STRATA				
Type + Depth	Type + Depth	Results	Water Depth	Date & Time	Casing & Water Depth	Description	Legend	Depth (Thickness)	Level	Install/ Backfill
(ES1) 0.20-0.30	PID () 0.20	<1ppm				MADE GROUND: Dark brown slightly clayey slightly sandy SILT.		(0.15) 0.15	61.12	
	PID () 0.50	<1ppm				MADE GROUND: Firm dark brown slightly sandy silty gravelly CLAY. Gravel is subangular to angular fine to coarse clinker, brick and concrete. Low cobble content of angular brick.		(0.85)		
	PID () 1.00	<1ppm						1.00	60.27	
(ES2) 1.20-1.30	SPT(S) 1.20	N=12 (2,3/3,3,3,3)				Firm to stiff dark greyish brown mottled grey slightly gravelly silty sandy CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to coarse sandstone and mudstone. With occasional lenses of sand. (Glacial Till)		(0.40)		
	PID () 1.50	<1ppm						1.40	59.87	
	SPT(S) 2.00 PID () 2.00	N=38 (8,8/8,8,10,12) <1ppm				Stiff to very stiff brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subrounded to subangular fine to medium sandstone and mudstone. (Glacial Till)		(1.10)		
	SPT(S) 2.50 PID () 2.50	N>50 (10,11/16,14,17,3 for 5mm) <1ppm						2.50	58.77	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time (mins)	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00 1.20	1.20 2.50	Inspection Pit Window Sample																

Remarks

Refusal at 2.5m bgl.

Termination Depth: 2.50m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used

Contractor: **RP Drilling**

Logged By: **DF**

Checked By: **EY**

APPENDIX D

Laboratory Data Quality Assurance / Quality Control Policy

Arcadis is committed to providing our clients and regulators with investigative or monitoring results that are of the highest standard within the confines of the project. We recognise that a report is only as good as the data that is used to draw conclusions and thus it is important that the consultant and the client be able to have full confidence in data provided by laboratories that we use for analysis.

The first step in assuring said confidence is to ensure that our consultants on site are using appropriate sampling methodologies and are storing collected samples in the appropriate sample containers under correct conditions.

All samples are shipped to the laboratory on day of collection in sealed cold boxes with a Chain of Custody attached. The Chain of Custody identifies Arcadis as the client, the Arcadis Project Number, the Consultant/ Project Manager, the type of sample *i.e.* water or soil and the parameters to be tested. Samples boxes are either hand delivered to the laboratory, picked up directly by the laboratory or picked up by a courier sent by the laboratory.

Quality Assurance/ Quality Control of Laboratories

Arcadis has a preferred suppliers program, all services sub-contracted out, including laboratory services undergo an initial Health & Safety (H&S) and Financial Audit followed by a service specific audit. All contract laboratories are expected to have United Kingdom Accreditation Service (UKAS) accreditation and use the Monitoring Certification Scheme (MCertS) standard.

The MCertS accreditation was developed for the analysis of soils and is required by the Environment Agency for all sites that are within the regulatory process i.e. Part IIA designated contaminated land sites. For sites in which work is being undertaken voluntarily or through Planning it is recommended that the analysis be conducted following the MCertS standard. The MCertS standard is an application of International Organisation for Standarisation (ISO) 17025:2000 specifically for the chemical testing of soil and covers:

- The selection and validation of methods;
- Sampling pre-treatment and preparation;
- The estimation of measurement uncertainty;
- Participation in proficiency testing schemes; and
- The reporting of results and information.

It is expected by Arcadis that any laboratory used by Arcadis for the analysis of samples should be working to the ISO17025:2000 standard, regardless of MCertS accreditation.

Once accepted as a potential supplier, a laboratory is subjected to an audit and a Quality Assurance/ Quality Control (QA/QC) review by the Arcadis Analytical Assessment Team. The audit is a detailed inspection of the laboratory, including review of staff and staff training, analytical methodologies used, QA/QC procedures and QA data and manuals, sample log in, sample storage and prep areas, instrument rooms and instrument maintenance logs, instrument run logs, laboratory management and laboratory hygiene. Additionally, the laboratory is blind sample tested, and the audit team follow the blind sample through the analysis process during an inspection visit. Once finally accepted as a supplier the laboratory is subjected to an annual audit.

Data quality control is extremely important to Arcadis because we must be able to rely on the data in order to make our interpretations and recommendations. The data submitted by the laboratory are reviewed by an analytical chemist in order to check the laboratory QA results. However, we have also instituted our own quality control testing program using blind samples to monitor laboratory performance. This includes the submission of blind duplicates, trip blanks and or spiked samples to laboratories as part of routine project work and the submission of either certified reference materials or prepared QC samples to all of the laboratories for inter-laboratory comparison. This internal program helps us to increase the confidence of the data received from the laboratories.

APPENDIX E

Geotechnical Laboratory Certificates

Laboratory Report

GEO Site & Testing Services Ltd

Contract Number: 49479

Client Ref: **10041634**
Client PO: **14040769**

Report Date: **20-08-2020**

Client **Arcadis**
Three Piccadilly Place
Manchester
M1 3BN

Contract Title: **Hyde Road, Manchester**
For the attention of: **Elizabeth Yeatman**

Date Received: **27-07-2020**
Date Completed: **20-08-2020**

Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	12
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	21
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	10
Quick Undrained Triaxial Compression test - single specimen at one confining pressure (100mm or 38mm diameter) BS 1377:1990 - Part 7 : 8 - * UKAS	8
One-dimensional Consolidation 75mm or 50mm diameter specimens (5 days) BS 1377:1990 - Part 5 : 3 - * UKAS	1
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:
Emma Sharp (Office Manager) - Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager)
Sean Penn (Administrative/Accounts Assistant) - Shaun Jones (Laboratory manager) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	49479	
Site Name	Hyde Road, Manchester	
Date Tested	14/08/2020	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
CP101	5	B	2.30	-	2.70	Brown silty CLAY
CP101	9	U	5.00	-	5.45	Brown gravelly silty CLAY
CP102	3	B	1.20	-	1.65	Grey clayey SILT
CP102	4	U	3.00	-	3.45	Brown gravelly silty CLAY
CP102	9	D	5.50	-		Brown sandy silty CLAY
CP103	6	B	0.80	-	1.20	Brown gravelly silty CLAY
CP103	10	U	2.00	-	2.45	Brown gravelly silty CLAY
CP103	14	U	4.00	-	4.45	Brown gravelly silty CLAY
CP103	27	U	12.00	-	12.45	Brown gravelly silty CLAY
CP104	3	U	1.20	-	1.65	Brown silty CLAY
CP104	21	B	11.00	-	11.40	Brown sandy silty CLAY
CP105	5	U	2.00	-	2.45	Brown gravelly silty CLAY
CP105	10	U	4.00	-	4.45	Brown gravelly silty CLAY
CP105	18	U	9.00	-	9.45	Brown clayey SILT
CP106	3	B	0.50	-	1.00	Brown gravelly sandy silty CLAY
CP106	10	U	3.00	-	3.45	Brown sandy gravelly CLAY
CP106	18	D	7.00	-		Grey silty CLAY
CP106	28	U	13.50	-	13.95	Brown gravelly silty CLAY
CP107	5	U	1.20	-	1.65	Brown gravelly silty CLAY
CP107	19	U	7.50	-	7.95	Brown gravelly silty CLAY
CP107	30	U	13.50	-	13.95	Brown silty CLAY
				-		
				-		
				-		

Operators	Checked	20/08/2020	Wayne Honey (Administrative/Quality Assistant)
Clayton Jenkins	Approved	20/08/2020	Paul Evans (Quality/Technical Manager)

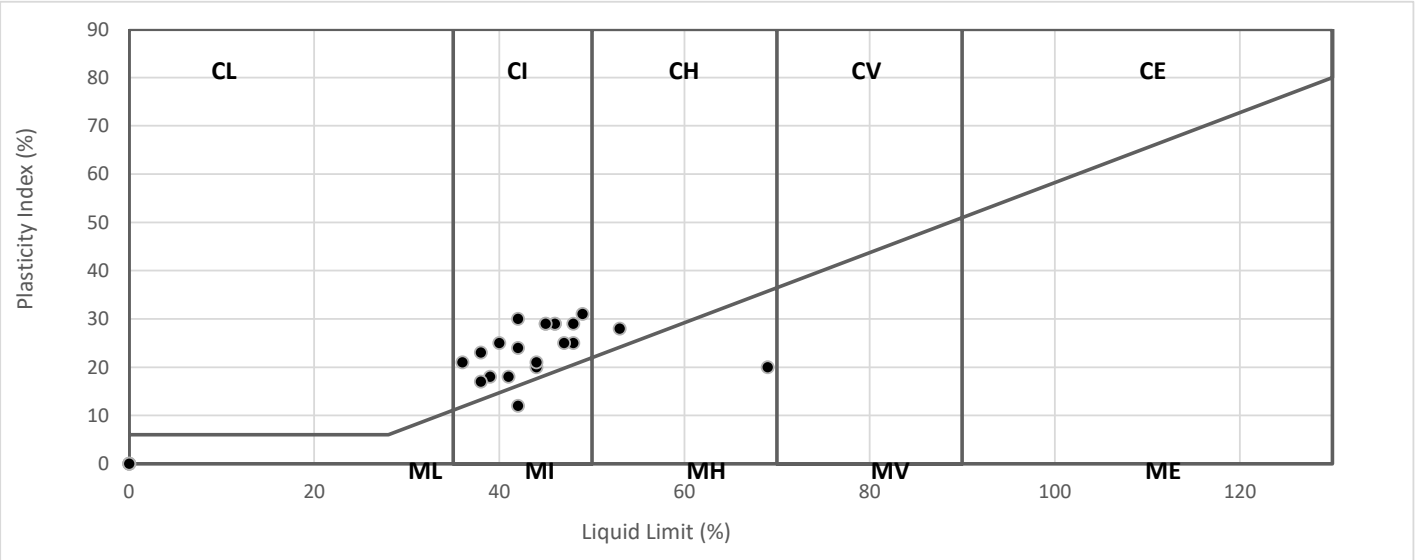
UKAS TESTING
2788

GSTL	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	49479	
Project Location	Hyde Road, Manchester	
Date Tested	14/08/2020	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
CP101	5	B	2.30	-	2.70	32	44	24	20	100	CI Intermediate Plasticity
CP101	9	U	5.00	-	5.45	16	44	23	21	89	CI Intermediate Plasticity
CP102	3	B	1.20	-	1.65	52	69	49	20	100	MH High Plasticity
CP102	4	U	3.00	-	3.45	14	49	18	31	70	CI Intermediate Plasticity
CP102	9	D	5.50	-		12	41	23	18	100	CI Intermediate Plasticity
CP103	6	B	0.80	-	1.20	20	42	18	24	100	CI Intermediate Plasticity
CP103	10	U	2.00	-	2.45	14	48	23	25	60	CI Intermediate Plasticity
CP103	14	U	4.00	-	4.45	9.0	45	16	29	68	CI Intermediate Plasticity
CP103	27	U	12.00	-	12.45	9.0	42	12	30	74	CI Intermediate Plasticity
CP104	3	U	1.20	-	1.65	33	46	17	29	100	CI Intermediate Plasticity
CP104	21	B	11.00	-	11.40	13	46	17	29	100	CI Intermediate Plasticity
CP105	5	U	2.00	-	2.45	15	39	21	18	64	CI Intermediate Plasticity
CP105	10	U	4.00	-	4.45	14	48	19	29	64	CI Intermediate Plasticity
CP105	18	U	9.00	-	9.45	20	42	30	12	100	MI Intermediate Plasticity
CP106	3	B	0.50	-	1.00	18	53	25	28	39	CH High Plasticity
CP106	10	U	3.00	-	3.45	14	40	15	25	79	CI Intermediate Plasticity
CP106	18	D	7.00	-		21	38	21	17	100	CI Intermediate Plasticity
CP106	28	U	13.50	-	13.95	9.0	45	16	29	54	CI Intermediate Plasticity
CP107	5	U	1.20	-	1.65	20	47	22	25	79	CI Intermediate Plasticity
CP107	19	U	7.50	-	7.95	16	36	15	21	100	CI Intermediate Plasticity
CP107	30	U	13.50	-	13.95	15	38	15	23	100	CI Intermediate Plasticity
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

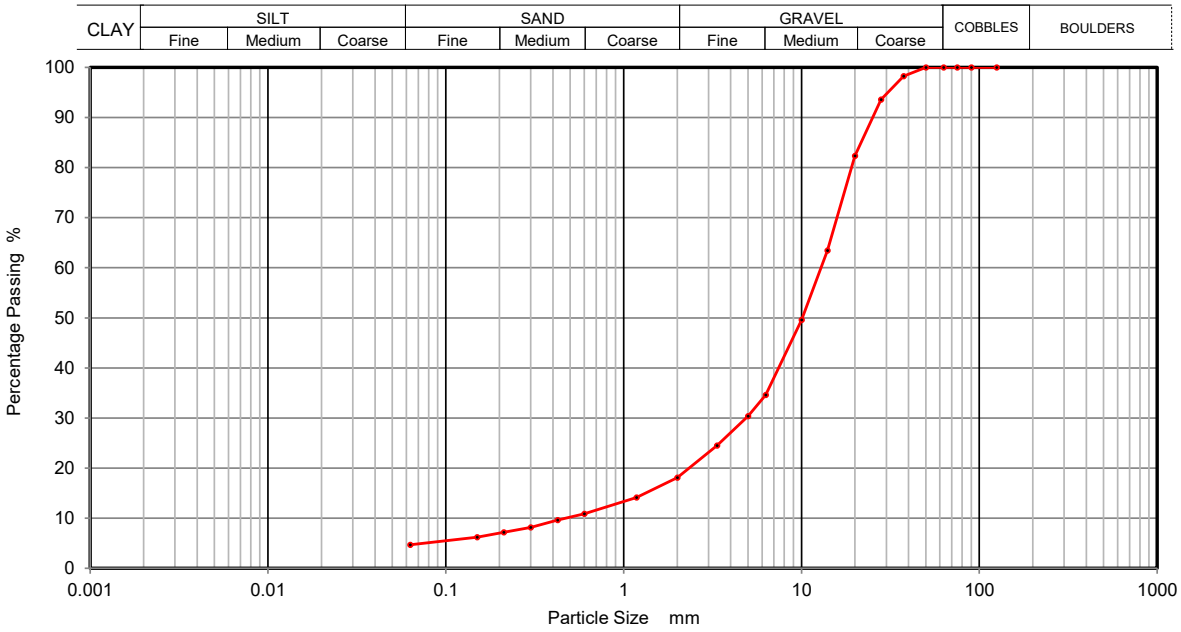
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	20/08/2020	Wayne Honey (Administrative/Quality Assistant)
Clayton Jenkins	Approved	20/08/2020	Paul Evans (Quality/Technical Manager)

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	49479
		Borehole/Pit No.	CP101
Site Name	Hyde Road, Manchester	Sample No.	1
Soil Description	Grey slightly clayey/silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	0.10
		Depth Base	0.50
Date Tested	17/08/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	98		
28	94		
20	82		
14	63		
10	50		
6.3	35		
5	30		
3.35	25		
2	18		
1.18	14		
0.6	11		
0.425	10		
0.3	8		
0.212	7		
0.15	6		
0.063	5		

Sample Proportions	% dry mass
Cobbles	0
Gravel	82
Sand	13
Silt and Clay	5

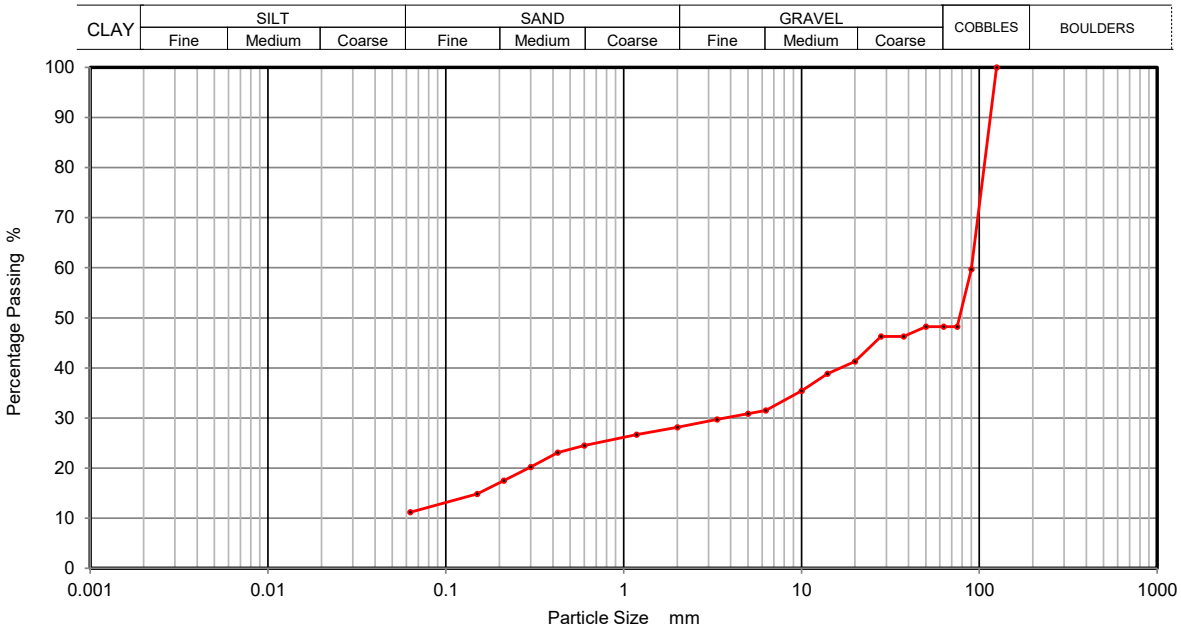
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/08/2020	Wayne Honey	W. Honey
RO/MH	Approved	20/08/2020	Paul Evans	P Evans

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	49479
		Borehole/Pit No.	CP102
Site Name	Hyde Road, Manchester	Sample No.	1
Soil Description	Brown clayey/silty fine to coarse sandy fine to coarse GRAVEL (with cobbles)	Depth Top	0.20
		Depth Base	0.50
Date Tested	17/08/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	60		
75	48		
63	48		
50	48		
37.5	46		
28	46		
20	41		
14	39		
10	35		
6.3	32		
5	31		
3.35	30		
2	28		
1.18	27		
0.6	25		
0.425	23		
0.3	20		
0.212	17		
0.15	15		
0.063	11		

Sample Proportions	% dry mass
Cobbles	52
Gravel	20
Sand	17
Silt and Clay	11

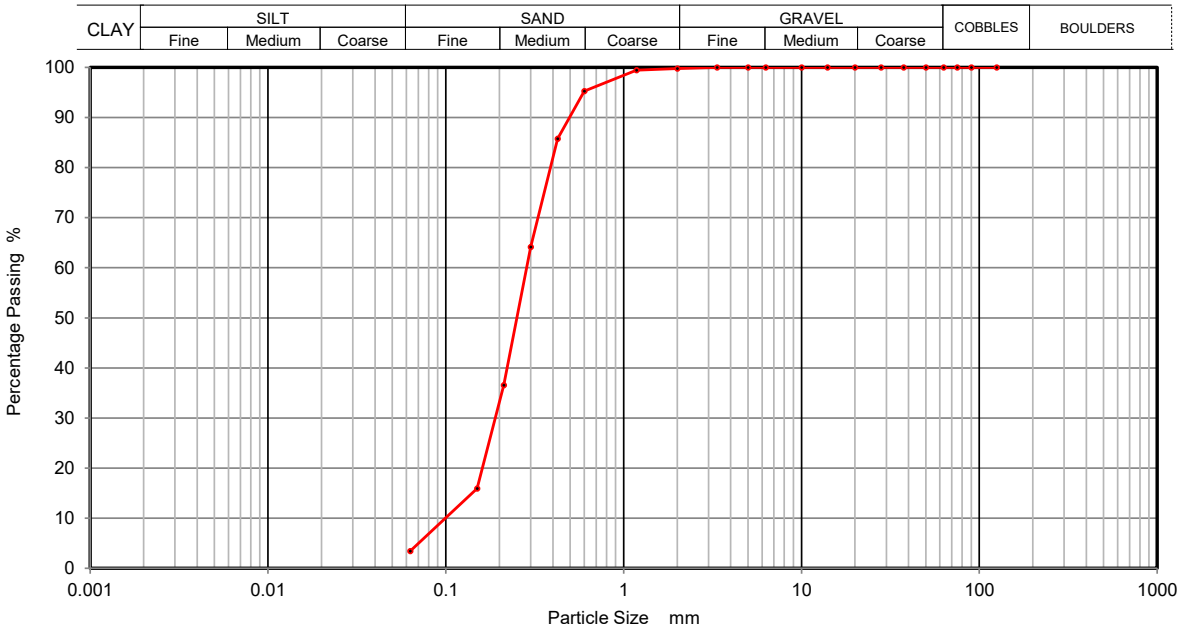
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/08/2020	Wayne Honey	W. Honey
RO/MH	Approved	20/08/2020	Paul Evans	P Evans

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	49479
		Borehole/Pit No.	CP102
Site Name	Hyde Road, Manchester	Sample No.	12
Soil Description	Reddish brown slightly clayey/silty fine to coarse SAND	Depth Top	6.00
		Depth Base	6.50
Date Tested	17/08/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
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	100		
2	100		
1.18	99		
0.6	95		
0.425	86		
0.3	64		
0.212	37		
0.15	16		
0.063	3		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	97
Silt and Clay	3

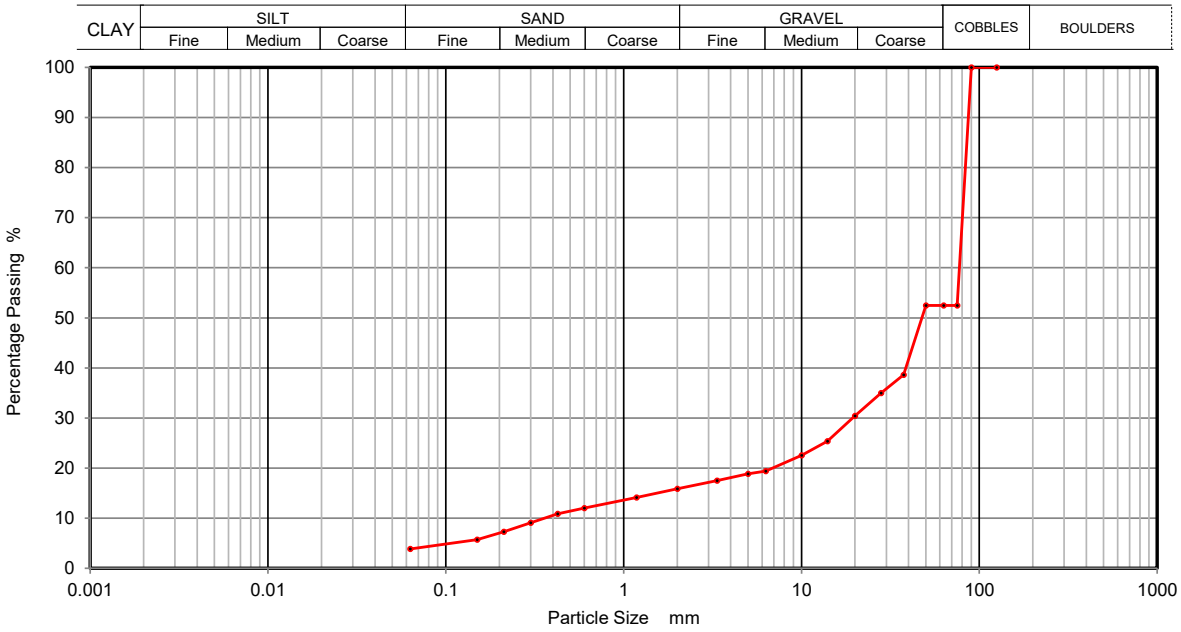
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/08/2020	Wayne Honey	W. Honey
RO/MH	Approved	20/08/2020	Paul Evans	P Evans

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	49479
		Borehole/Pit No.	CP103
Site Name	Hyde Road, Manchester	Sample No.	4
Soil Description	Brown slightly clayey/silty fine to coarse sandy fine to coarse GRAVEL (with cobbles)	Depth Top	0.20
		Depth Base	0.80
Date Tested	17/08/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	52		
63	52		
50	52		
37.5	39		
28	35		
20	30		
14	25		
10	23		
6.3	19		
5	19		
3.35	18		
2	16		
1.18	14		
0.6	12		
0.425	11		
0.3	9		
0.212	7		
0.15	6		
0.063	4		

Sample Proportions	% dry mass
Cobbles	48
Gravel	36
Sand	12
Silt and Clay	4

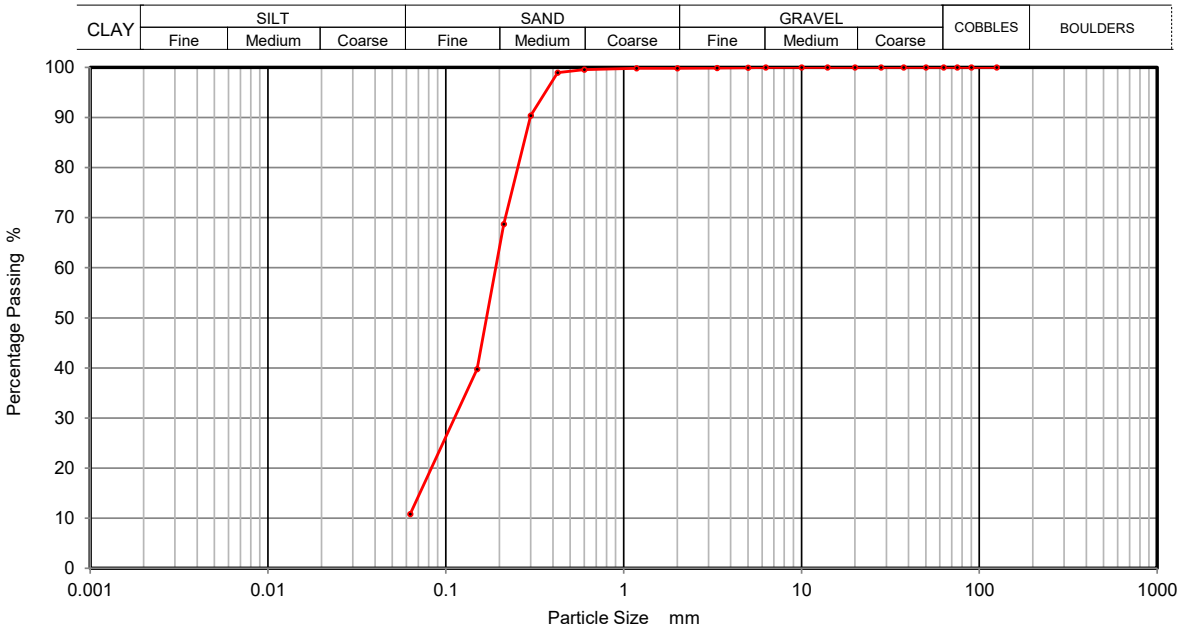
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/08/2020	Wayne Honey	W. Honey
RO/MH	Approved	20/08/2020	Paul Evans	P Evans

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	49479
		Borehole/Pit No.	CP103
Site Name	Hyde Road, Manchester	Sample No.	18
Soil Description	Reddish brown clayey/silty fine to coarse SAND	Depth Top	5.60
		Depth Base	6.00
Date Tested	17/08/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
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	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	90		
0.212	69		
0.15	40		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	89
Silt and Clay	11

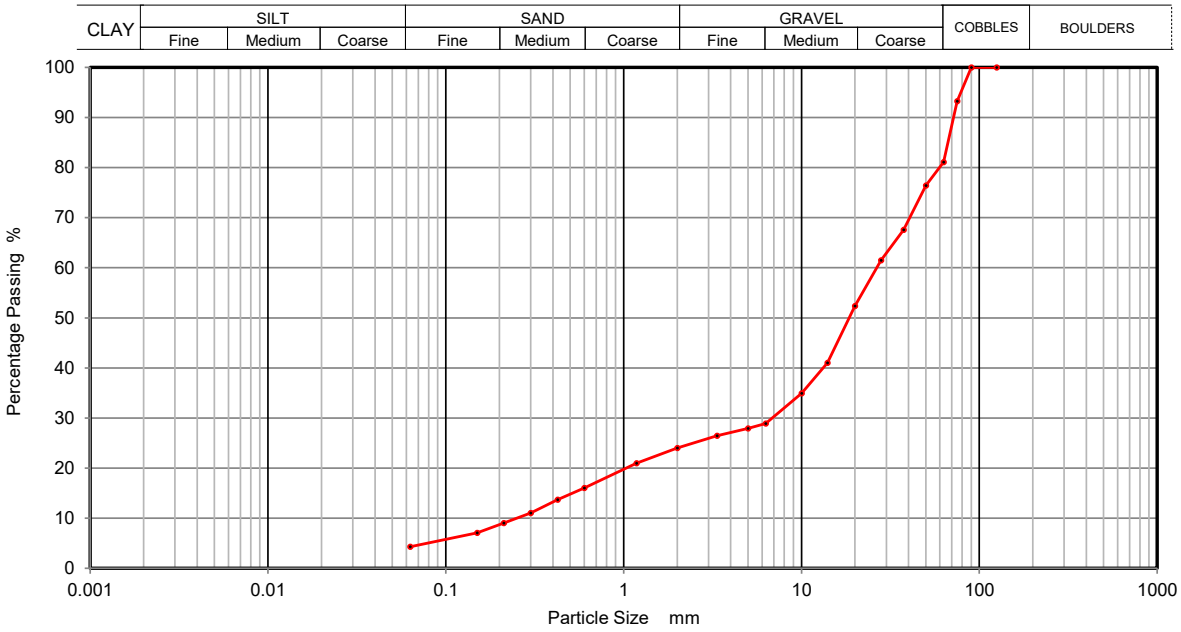
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/08/2020	Wayne Honey	W. Honey
RO/MH	Approved	20/08/2020	Paul Evans	P Evans

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	49479
		Borehole/Pit No.	CP104
Site Name	Hyde Road, Manchester	Sample No.	1
Soil Description	Brown slightly clayey/silty fine to coarse sandy fine to coarse GRAVEL (with cobbles)	Depth Top	0.20
		Depth Base	0.60
Date Tested	17/08/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	93		
63	81		
50	76		
37.5	68		
28	62		
20	52		
14	41		
10	35		
6.3	29		
5	28		
3.35	26		
2	24		
1.18	21		
0.6	16		
0.425	14		
0.3	11		
0.212	9		
0.15	7		
0.063	4		

Sample Proportions	% dry mass
Cobbles	19
Gravel	57
Sand	20
Silt and Clay	4

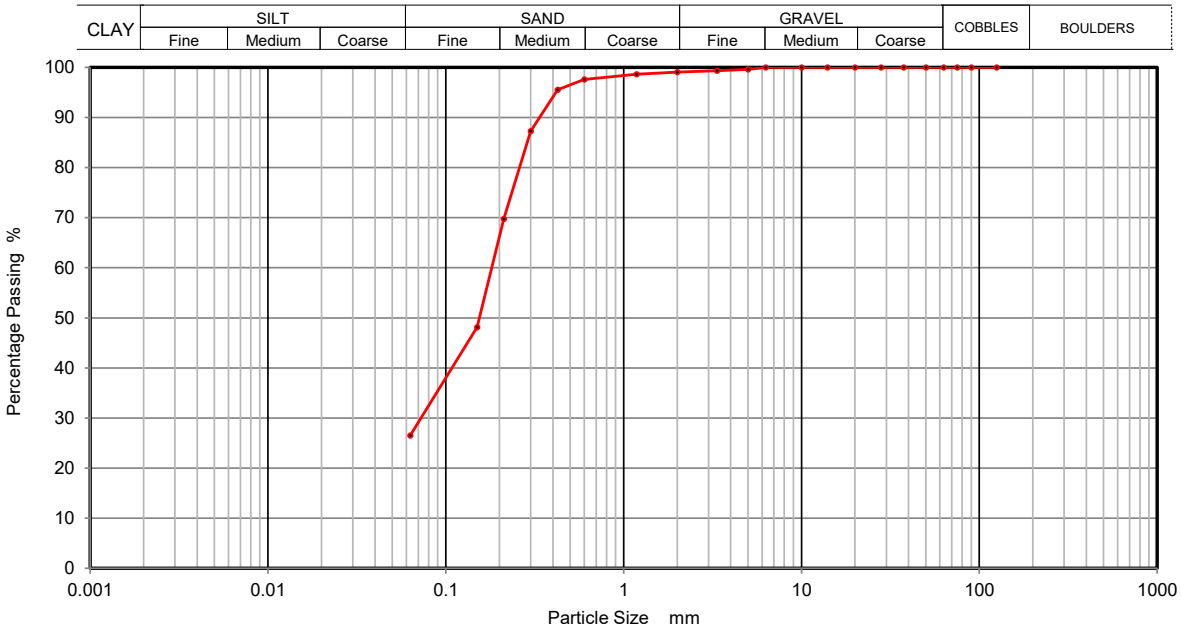
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/08/2020	Wayne Honey	W. Honey
RO/MH	Approved	20/08/2020	Paul Evans	P Evans

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	49479
		Borehole/Pit No.	CP104
Site Name	Hyde Road, Manchester	Sample No.	16
Soil Description	Brown slightly fine gravelly clayey/silty fine to coarse SAND	Depth Top	8.00
		Depth Base	8.50
Date Tested	17/08/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
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	96		
0.3	87		
0.212	70		
0.15	48		
0.063	26		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	73
Silt and Clay	26

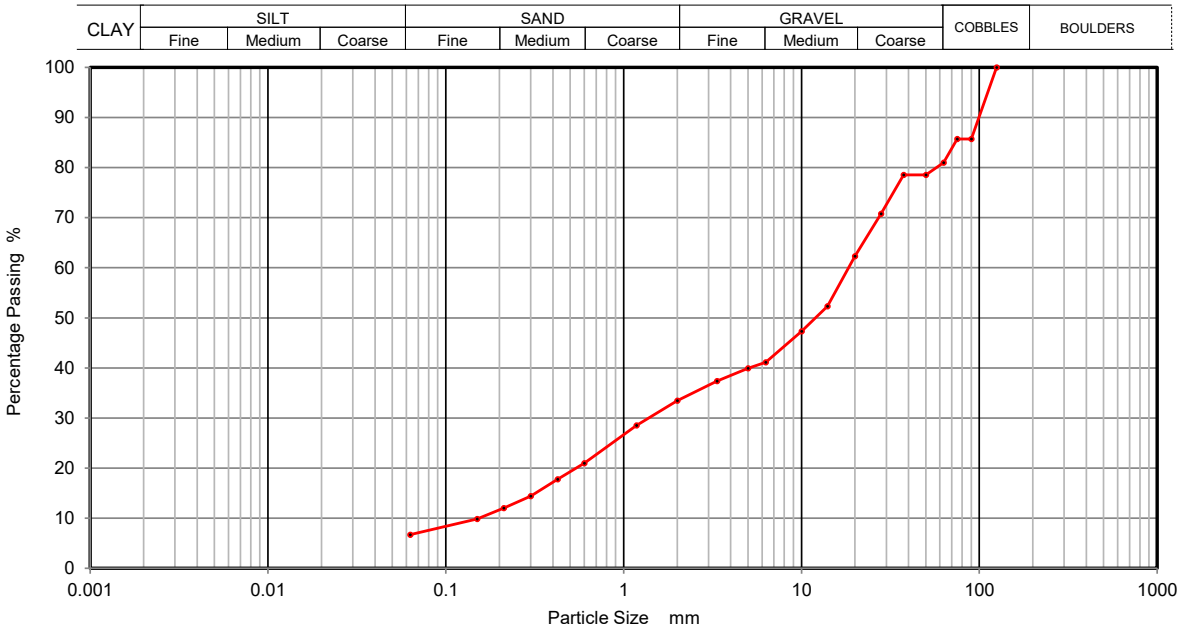
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/08/2020	Wayne Honey	W. Honey
RO/MH	Approved	20/08/2020	Paul Evans	P Evans

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	49479
		Borehole/Pit No.	CP105
Site Name	Hyde Road, Manchester	Sample No.	2
Soil Description	Brown slightly clayey/silty fine to coarse sandy fine to coarse GRAVEL (with cobbles)	Depth Top	0.20
		Depth Base	1.00
Date Tested	17/08/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	86		
75	86		
63	81		
50	79		
37.5	79		
28	71		
20	62		
14	52		
10	47		
6.3	41		
5	40		
3.35	37		
2	33		
1.18	29		
0.6	21		
0.425	18		
0.3	14		
0.212	12		
0.15	10		
0.063	7		

Sample Proportions	% dry mass
Cobbles	19
Gravel	48
Sand	26
Silt and Clay	7

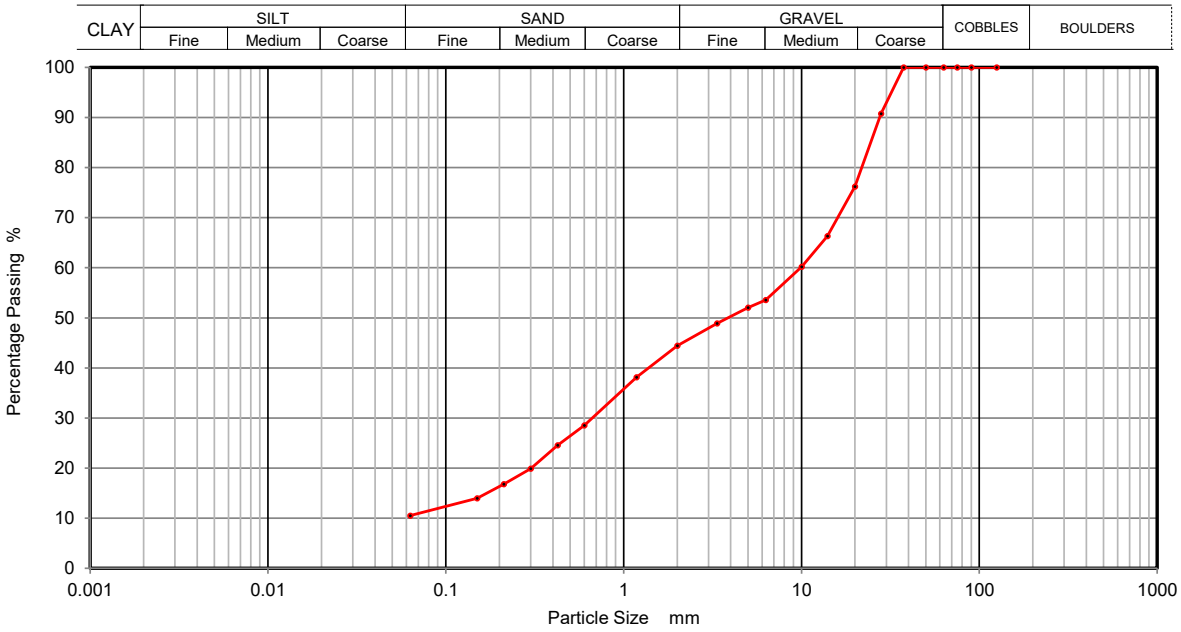
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/08/2020	Wayne Honey	W. Honey
RO/MH	Approved	20/08/2020	Paul Evans	P Evans

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	49479
		Borehole/Pit No.	CP106
Site Name	Hyde Road, Manchester	Sample No.	1
Soil Description	Brown clayey/silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	0.20
		Depth Base	0.50
Date Tested	17/08/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	91		
20	76		
14	66		
10	60		
6.3	54		
5	52		
3.35	49		
2	44		
1.18	38		
0.6	29		
0.425	25		
0.3	20		
0.212	17		
0.15	14		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	56
Sand	33
Silt and Clay	11

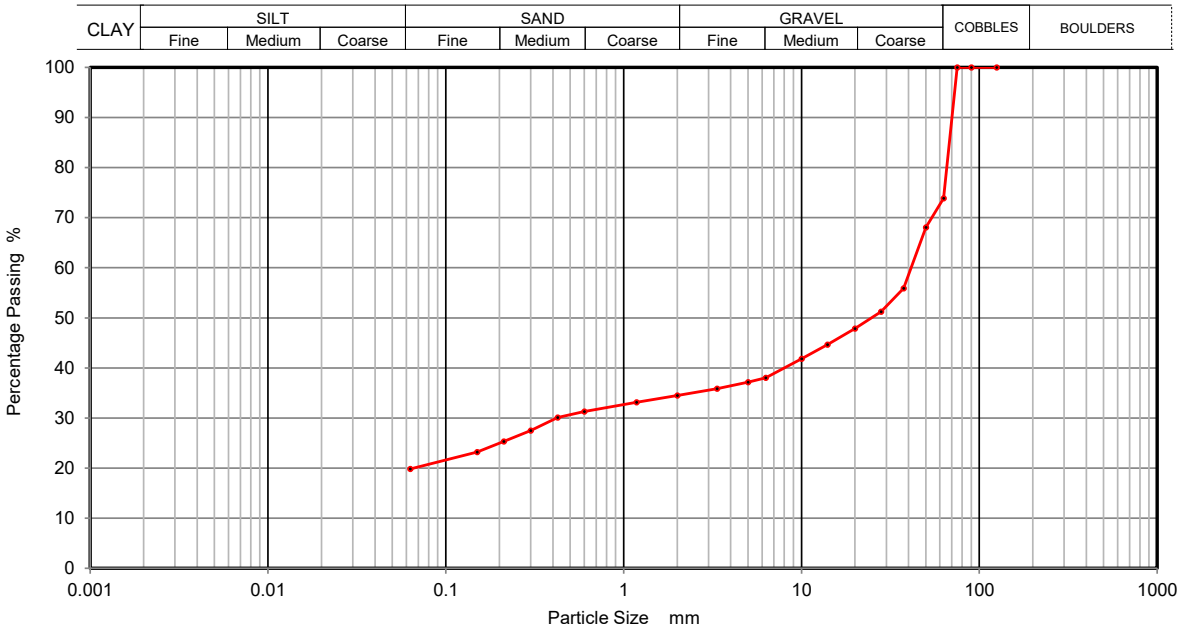
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/08/2020	Wayne Honey	W. Honey
RO/MH	Approved	20/08/2020	Paul Evans	P Evans

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	49479
		Borehole/Pit No.	CP107
Site Name	Hyde Road, Manchester	Sample No.	1
Soil Description	Brown fine to coarse sandy clayey/silty fine to coarse GRAVEL (with cobbles)	Depth Top	0.10
		Depth Base	0.50
Date Tested	17/08/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	74		
50	68		
37.5	56		
28	51		
20	48		
14	45		
10	42		
6.3	38		
5	37		
3.35	36		
2	34		
1.18	33		
0.6	31		
0.425	30		
0.3	27		
0.212	25		
0.15	23		
0.063	20		

Sample Proportions	% dry mass
Cobbles	26
Gravel	40
Sand	14
Silt and Clay	20

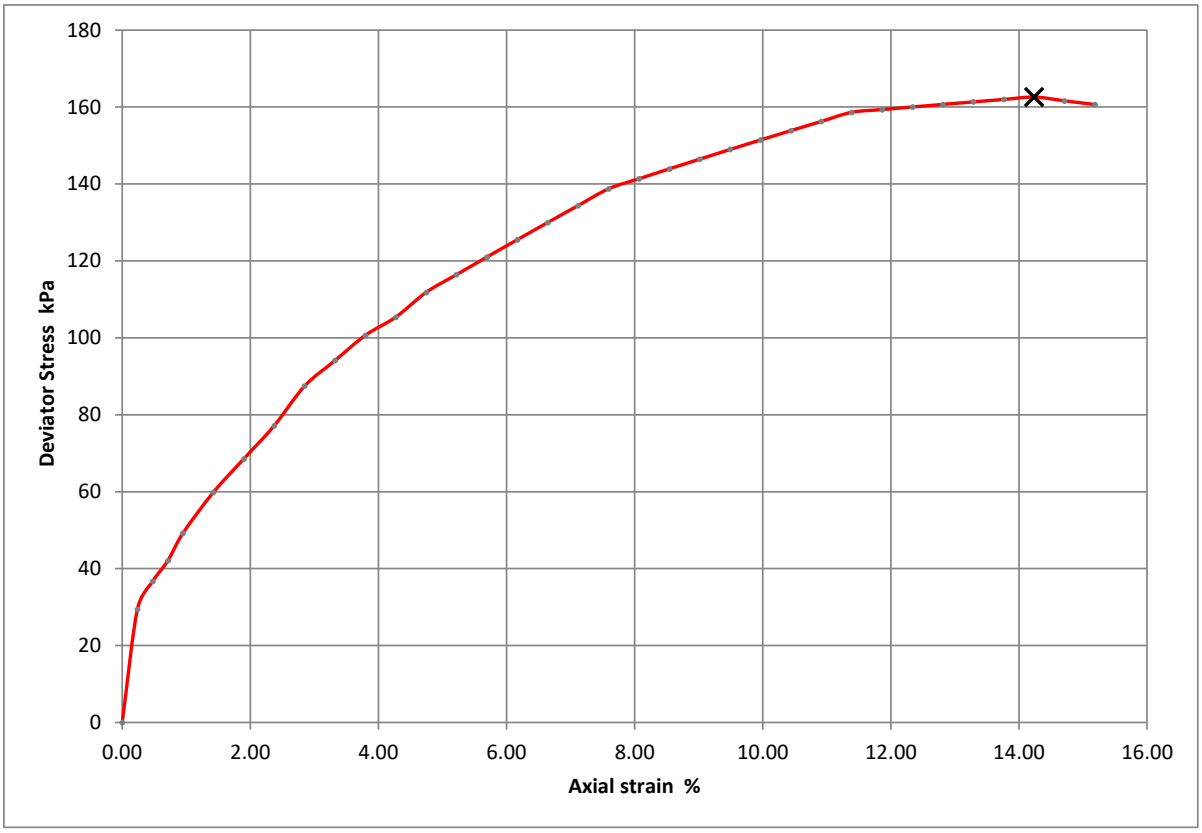
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	19/08/2020	Wayne Honey	W. Honey
RO/MH	Approved	20/08/2020	Paul Evans	P Evans

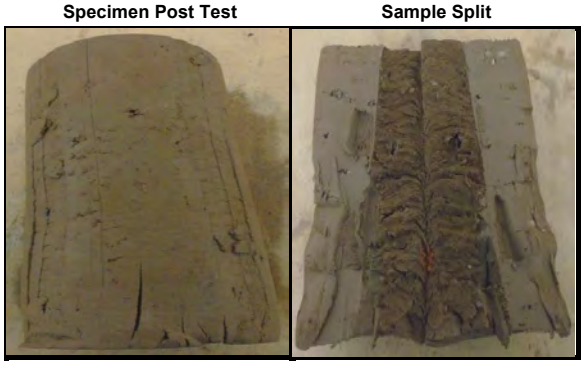
UKAS TESTING
2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	49479
		Borehole/Pit No.	CP101
Site Name	Hyde Road, Manchester	Sample No.	9
Soil Description	Brown fine to medium gravelly sandy silty CLAY	Depth Top (m)	5.00
		Depth Base (m)	5.45
Date Tested	17/08/2020	Sample Type	U



Moisture Content (%)	18
Bulk Density (Mg/m^3)	1.98
Dry Density (Mg/m^3)	1.68
Specimen Length (mm)	210.7
Specimen Diamteter (mm)	105.7
Cell Pressure (kPa)	100
Deviator Stress (kPa)	163
Undrained Shear Strength (kPa)	81
Failure Strain (%)	14
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.42

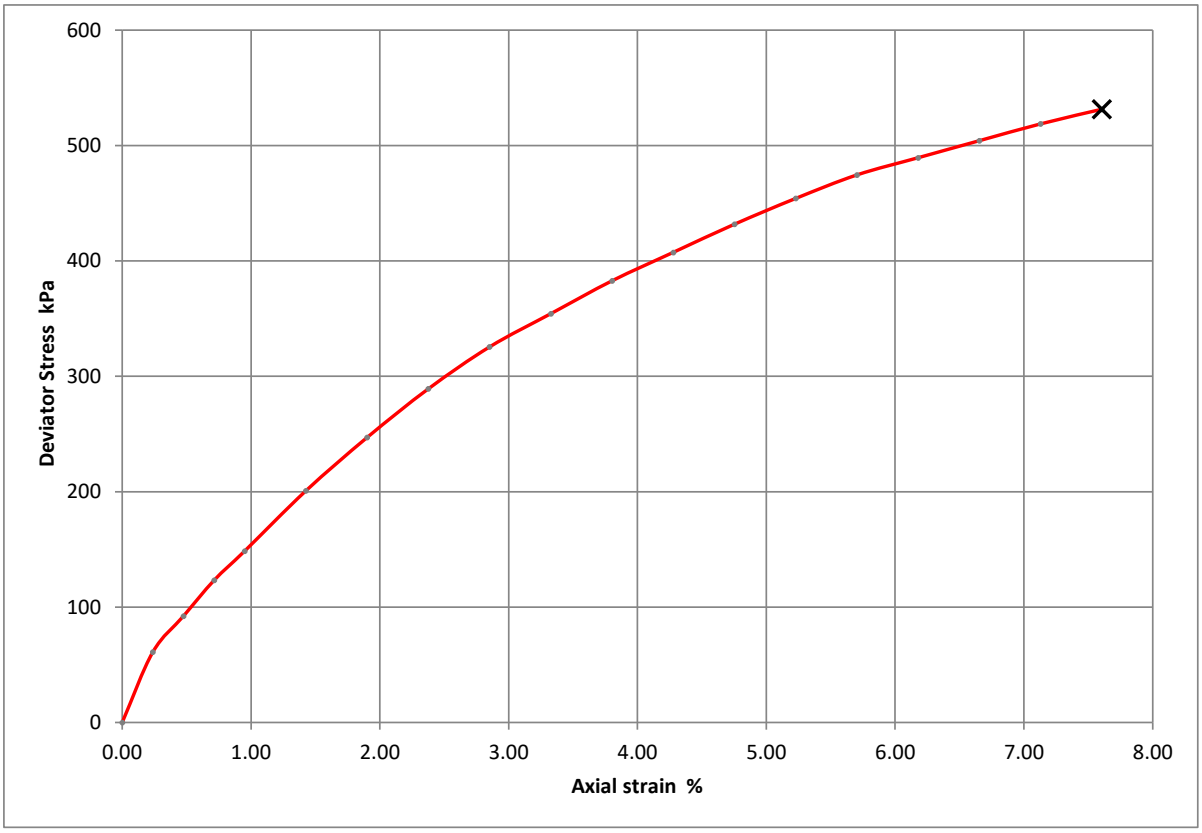
Specimen Post Test **Sample Split**



Checked	19/08/2020	Emma Sharp	
Approved	20/08/2020	Paul Evans	

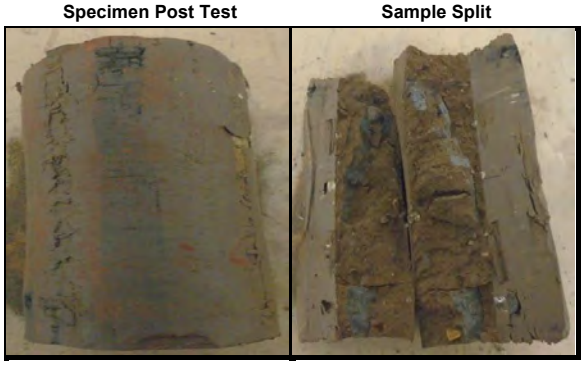
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	49479
		Borehole/Pit No.	CP102
Site Name	Hyde Road, Manchester	Sample No.	4
Soil Description	Brownish grey fine to medium gravelly sandy silty CLAY	Depth Top (m)	3.00
		Depth Base (m)	3.45
Date Tested	17/08/2020	Sample Type	U



Moisture Content (%)	13
Bulk Density (Mg/m^3)	2.08
Dry Density (Mg/m^3)	1.84
Specimen Length (mm)	210.4
Specimen Diamteter (mm)	105.5
Cell Pressure (kPa)	60
Deviator Stress (kPa)	531
Undrained Shear Strength (kPa)	266
Failure Strain (%)	8
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.43

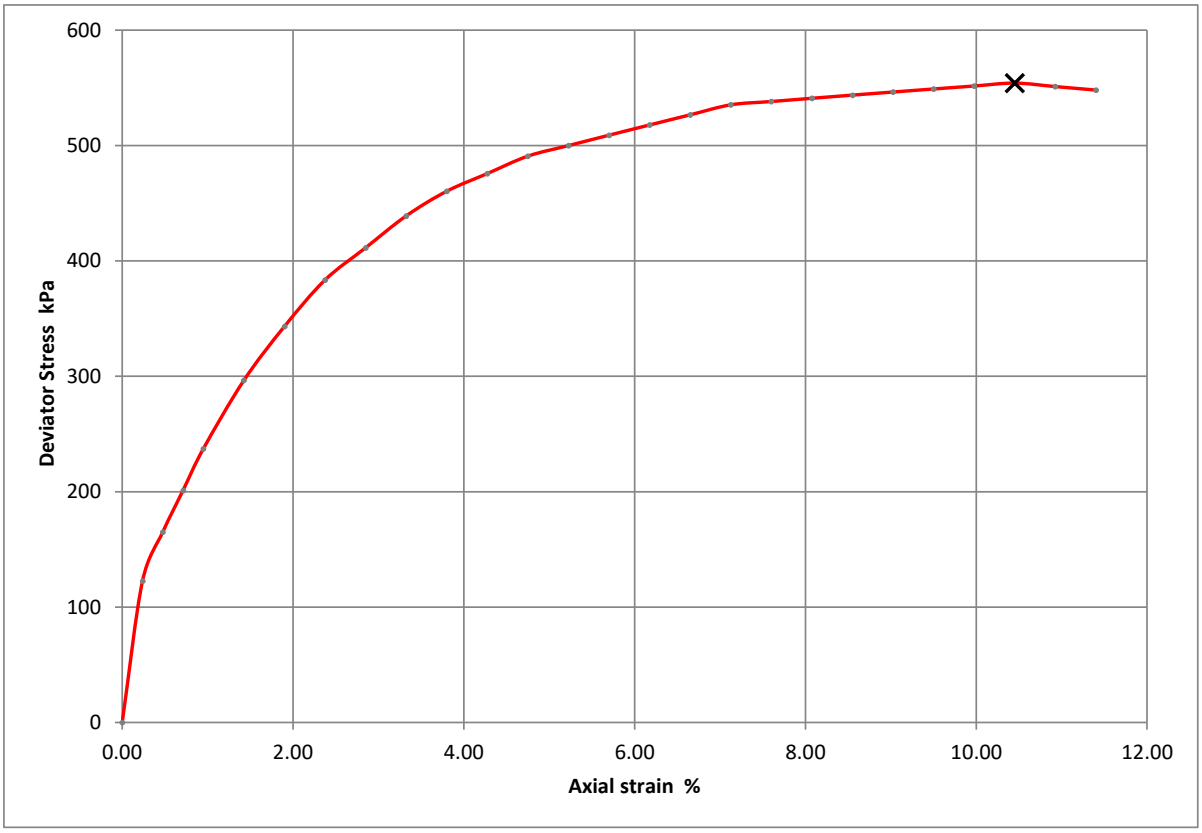
Specimen Post Test **Sample Split**



Checked	19/08/2020	Emma Sharp	
Approved	20/08/2020	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	49479
		Borehole/Pit No.	CP103
Site Name	Hyde Road, Manchester	Sample No.	14
Soil Description	Brown fine to medium gravelly sandy silty CLAY	Depth Top (m)	4.00
		Depth Base (m)	4.45
Date Tested	17/08/2020	Sample Type	U



Moisture Content (%)	13
Bulk Density (Mg/m^3)	2.03
Dry Density (Mg/m^3)	1.79
Specimen Length (mm)	210.5
Specimen Diamteter (mm)	105.5
Cell Pressure (kPa)	80
Deviator Stress (kPa)	554
Undrained Shear Strength (kPa)	277
Failure Strain (%)	10
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.43

Specimen Post Test



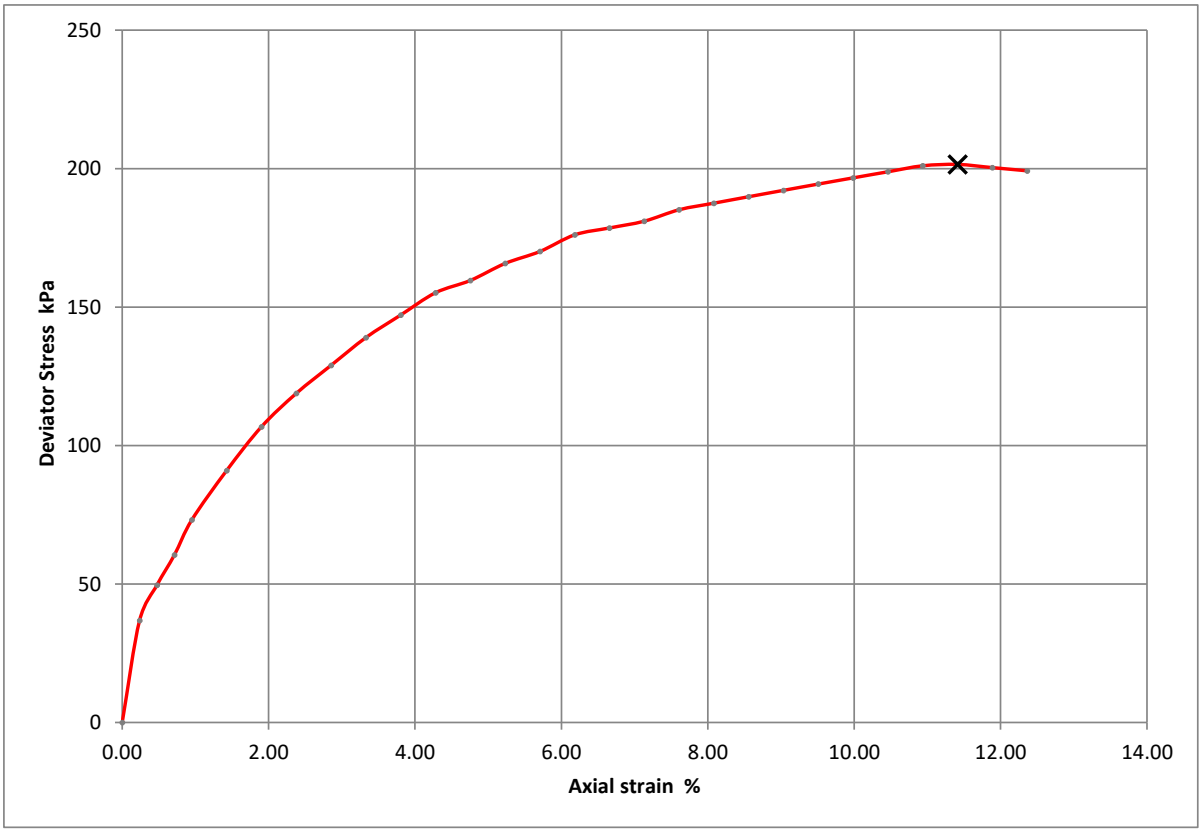
Sample Split



Checked	19/08/2020	Emma Sharp	
Approved	20/08/2020	Paul Evans	

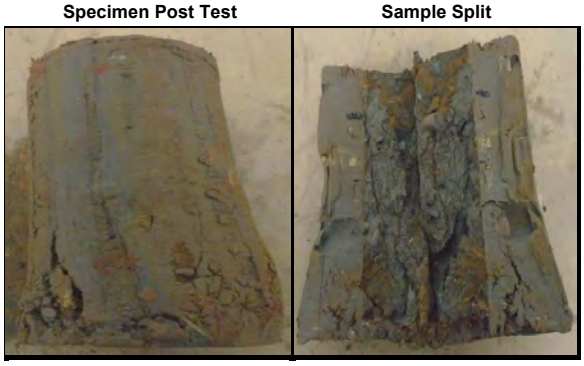
UKAS TESTING
2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	49479
		Borehole/Pit No.	CP105
Site Name	Hyde Road, Manchester	Sample No.	5
Soil Description	Brownish grey fine to coarse gravelly sandy silty CLAY	Depth Top (m)	2.00
		Depth Base (m)	2.45
Date Tested	17/08/2020	Sample Type	U



Moisture Content (%)	16
Bulk Density (Mg/m^3)	1.99
Dry Density (Mg/m^3)	1.72
Specimen Length (mm)	210.3
Specimen Diamteter (mm)	105.6
Cell Pressure (kPa)	40
Deviator Stress (kPa)	202
Undrained Shear Strength (kPa)	101
Failure Strain (%)	11
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.43

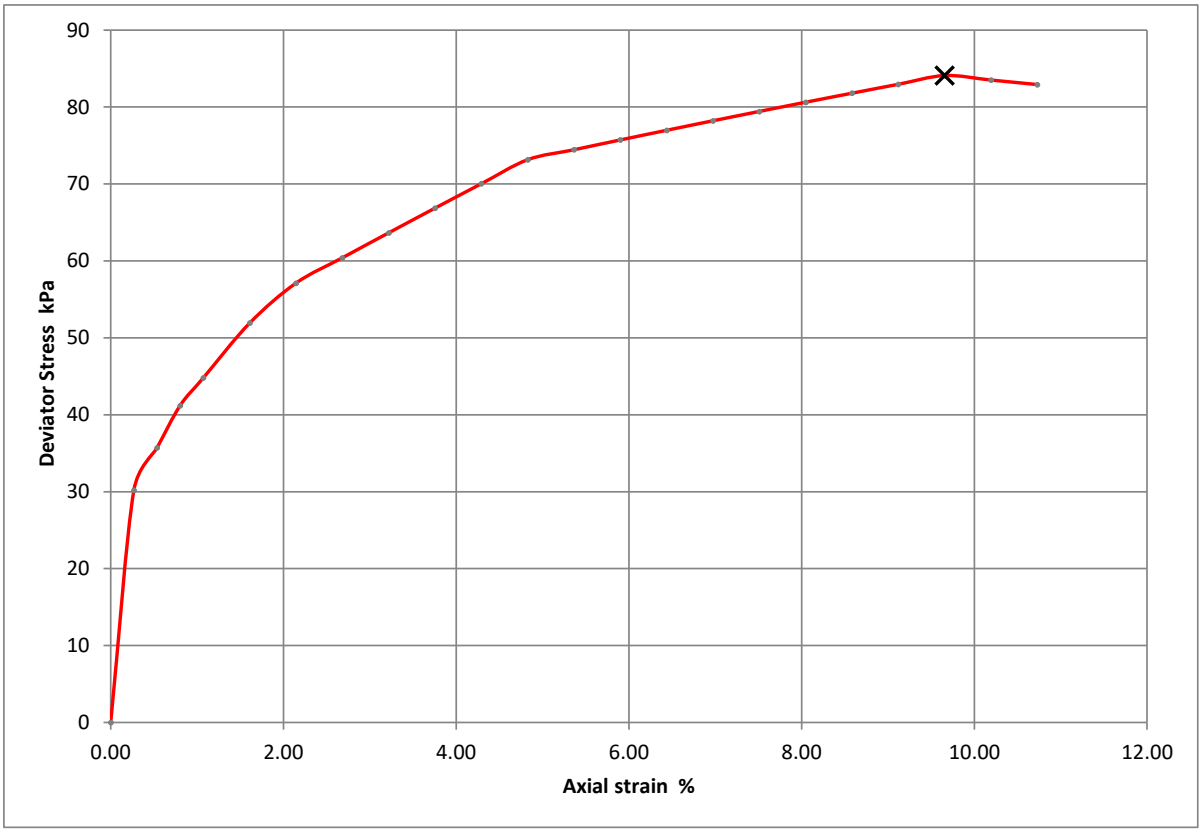
Specimen Post Test **Sample Split**



Checked	19/08/2020	Emma Sharp	
Approved	20/08/2020	Paul Evans	

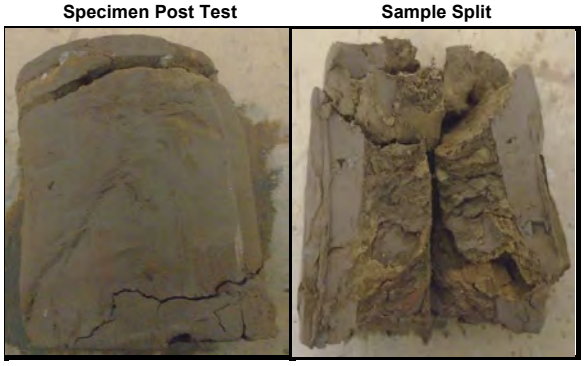
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	49479
		Borehole/Pit No.	CP105
Site Name	Hyde Road, Manchester	Sample No.	18
Soil Description	Brown fine to medium gravelly sandy silty CLAY	Depth Top (m)	9.00
		Depth Base (m)	9.45
Date Tested	17/08/2020	Sample Type	U



Moisture Content (%)	16
Bulk Density (Mg/m^3)	1.97
Dry Density (Mg/m^3)	1.69
Specimen Length (mm)	186.4
Specimen Diamteter (mm)	105.6
Cell Pressure (kPa)	180
Deviator Stress (kPa)	84
Undrained Shear Strength (kPa)	42
Failure Strain (%)	10
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.61

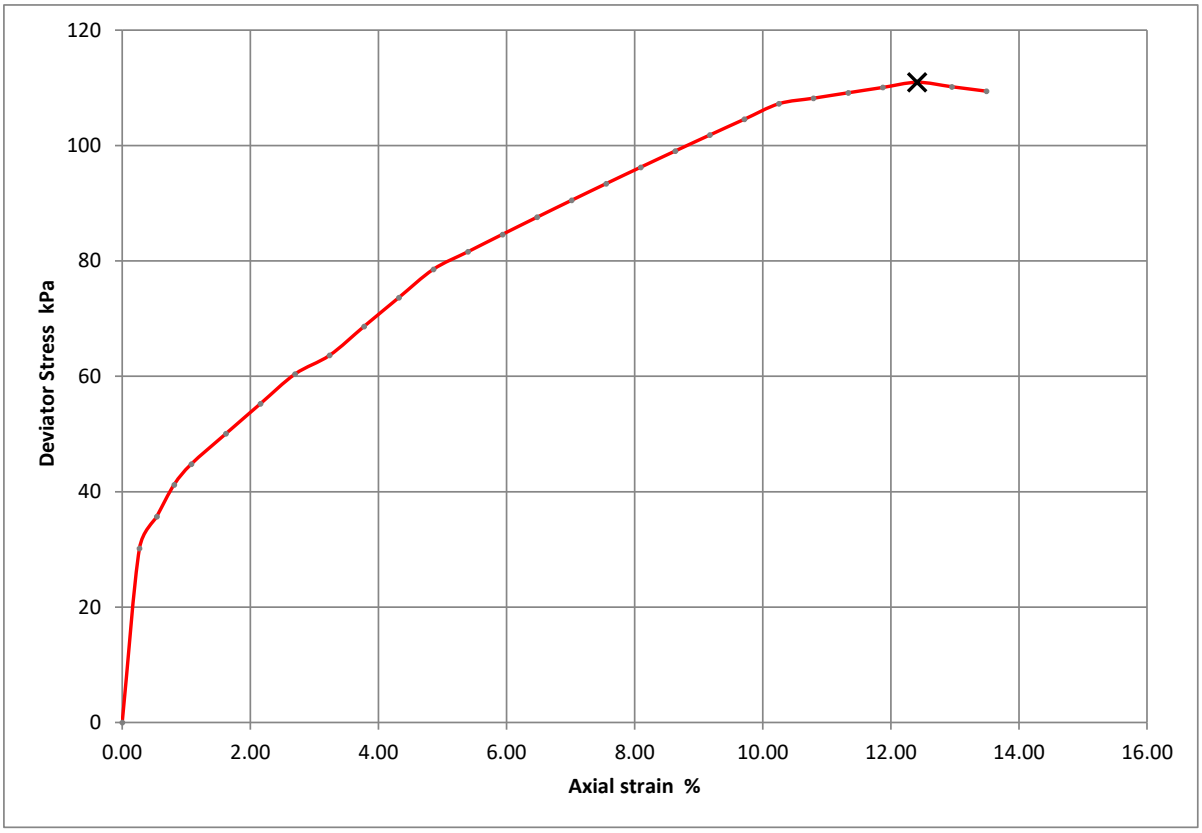
Specimen Post Test **Sample Split**



Checked	19/08/2020	Emma Sharp	
Approved	20/08/2020	Paul Evans	

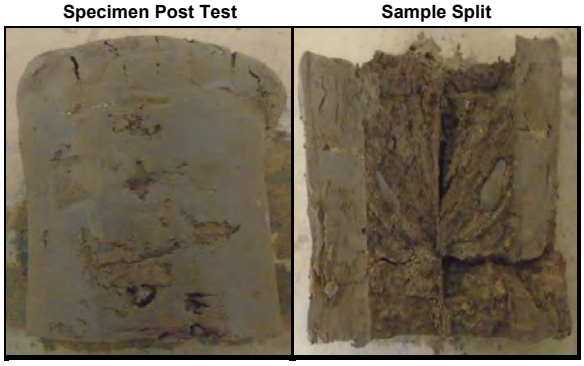
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	49479
		Borehole/Pit No.	CP106
Site Name	Hyde Road, Manchester	Sample No.	19
Soil Description	Brown fine to coarse gravelly sandy silty CLAY	Depth Top (m)	7.50
		Depth Base (m)	7.95
Date Tested	18/08/2020	Sample Type	U



Moisture Content (%)	16
Bulk Density (Mg/m^3)	2.04
Dry Density (Mg/m^3)	1.77
Specimen Length (mm)	185.3
Specimen Diamteter (mm)	105.6
Cell Pressure (kPa)	100
Deviator Stress (kPa)	111
Undrained Shear Strength (kPa)	55
Failure Strain (%)	12
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.62

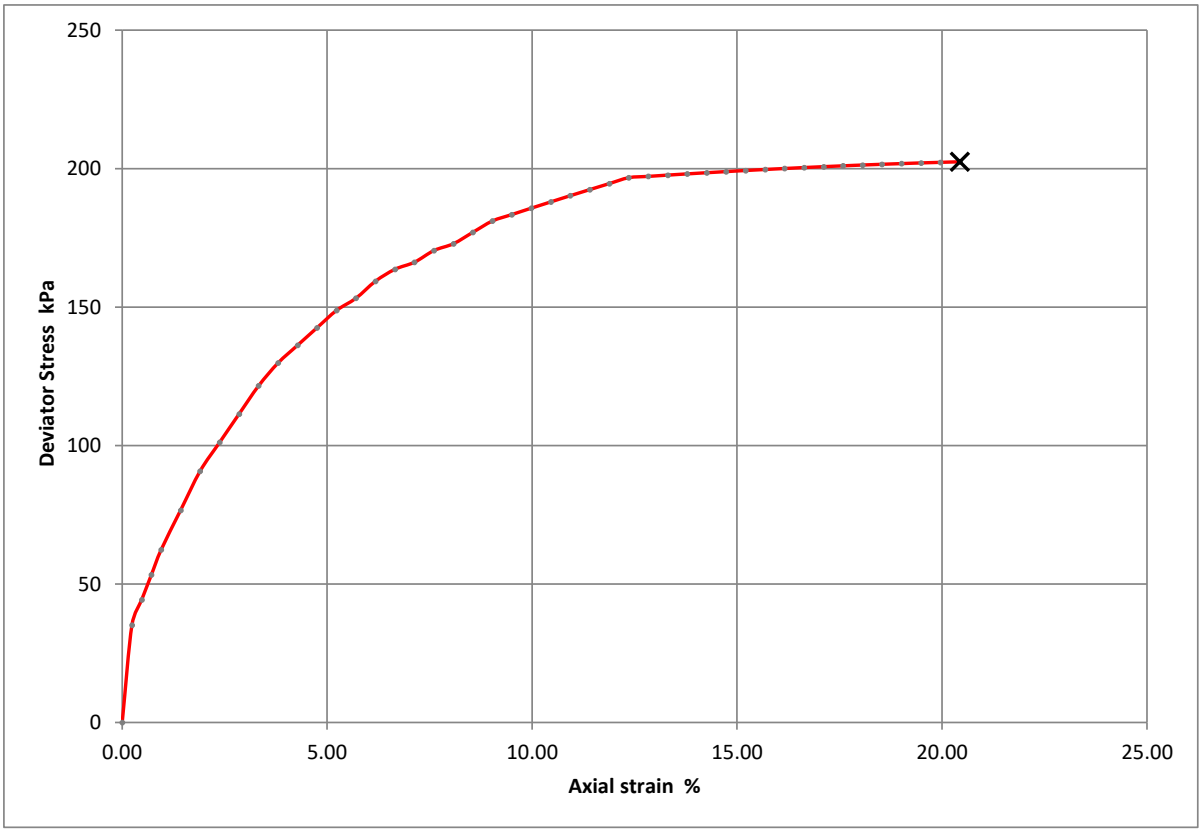
Specimen Post Test **Sample Split**



Checked	19/08/2020	Emma Sharp	
Approved	20/08/2020	Paul Evans	

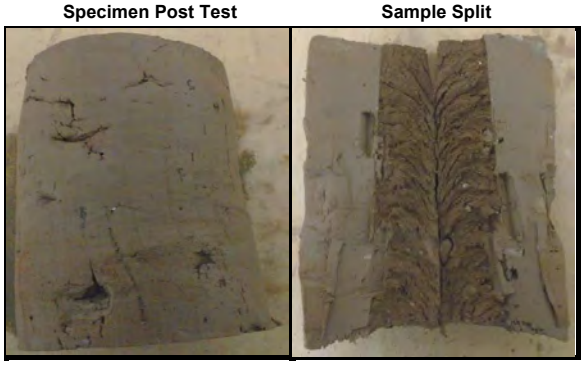
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	49479
		Borehole/Pit No.	CP107
Site Name	Hyde Road, Manchester	Sample No.	19
Soil Description	Brown fine to medium gravelly sandy silty CLAY	Depth Top (m)	7.50
		Depth Base (m)	7.95
Date Tested	17/08/2020	Sample Type	U



Moisture Content (%)	15
Bulk Density (Mg/m^3)	2.02
Dry Density (Mg/m^3)	1.75
Specimen Length (mm)	210.4
Specimen Diamteter (mm)	105.4
Cell Pressure (kPa)	150
Deviator Stress (kPa)	202
Undrained Shear Strength (kPa)	101
Failure Strain (%)	20
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.43

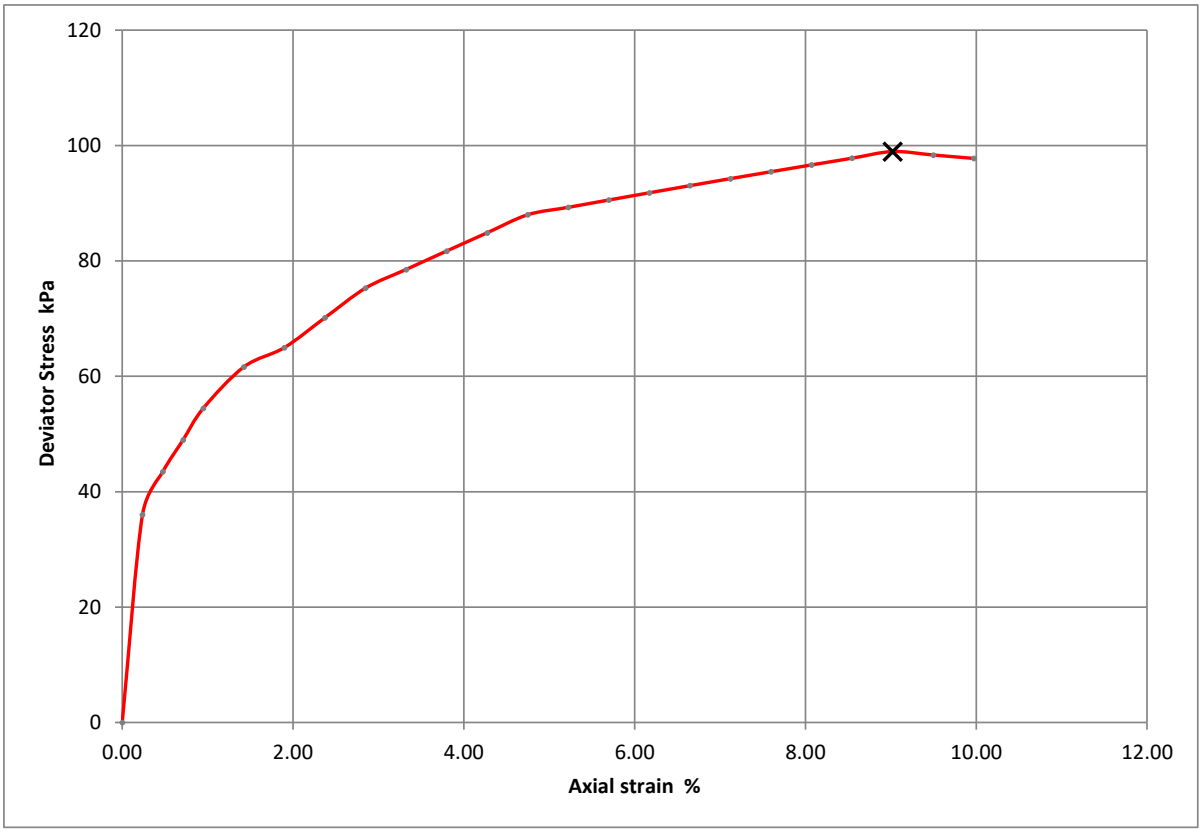
Specimen Post Test **Sample Split**



Checked	19/08/2020	Emma Sharp	
Approved	20/08/2020	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	49479
		Borehole/Pit No.	CP107
Site Name	Hyde Road, Manchester	Sample No.	30
Soil Description	Brown fine to medium gravelly sandy silty CLAY	Depth Top (m)	13.50
		Depth Base (m)	13.95
Date Tested	18/08/2020	Sample Type	U



Moisture Content (%)	14
Bulk Density (Mg/m^3)	2.01
Dry Density (Mg/m^3)	1.75
Specimen Length (mm)	210.6
Specimen Diamteter (mm)	105.4
Cell Pressure (kPa)	270
Deviator Stress (kPa)	99
Undrained Shear Strength (kPa)	49
Failure Strain (%)	9
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.42

Specimen Post Test



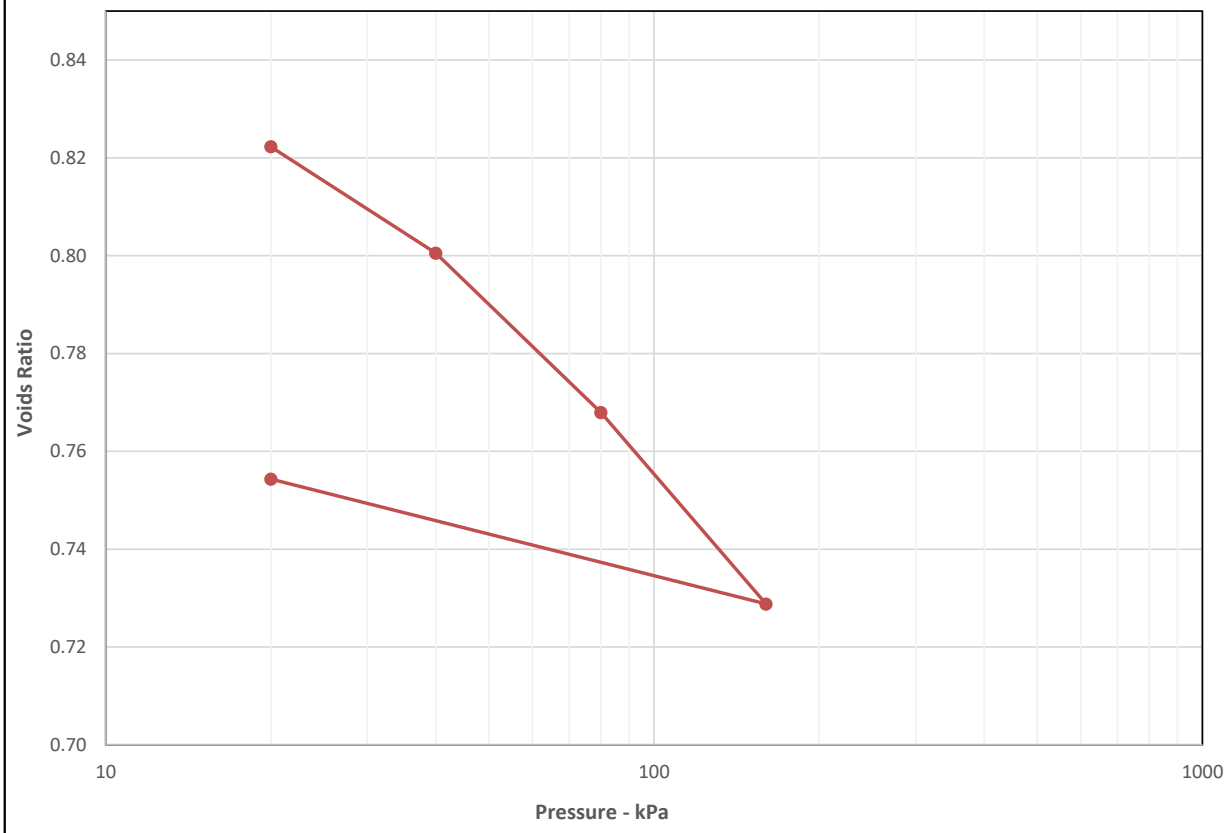
Sample Split



Checked	19/08/2020	Emma Sharp	
Approved	20/08/2020	Paul Evans	

UKAS TESTING
2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	49479
		Borehole/Trialpit No.	CP104
Site Name	Hyde Road, Manchester	Sample No.	3
Soil Description	Grey sandy silty CLAY	Depth Top (m)	1.20
		Depth Base (m)	1.65
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	UT
Date Tested	29/07/2020		



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	31	0	-	20	0.3	0.54		-			
Bulk Density (Mg/m3)	1.90	20	-	40	0.6	0.68		-			
Dry Density (Mg/m3)	1.45	40	-	80	0.45	0.62		-			
Voids Ratio	0.8312	80	-	160	0.28	0.8		-			
Degree of saturation	99.0	160	-	20	0.11	1.6		-			
Height (mm)	19.79		-					-			
Diameter (mm)	75		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	19/08/2020	Emma Sharp	
LG	Approved	20/08/2020	Paul Evans	

UKAS TESTING
2788

APPENDIX F

Chemical Laboratory Certificates

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

ARCADIS UK Ltd
10th Floor
3 Piccadilly Place
Manchester
M1 2BN

Attention: Dale Fisher

CERTIFICATE OF ANALYSIS

Date of report Generation:	27 July 2020
Customer:	ARCADIS UK Ltd
Sample Delivery Group (SDG):	200709-112
Your Reference:	10041634
Location:	Hyde Road, Manchester M12 5AL
Report No:	560643

This report has been revised and directly supersedes 559714 in its entirety.

We received 9 samples on Thursday July 09, 2020 and 9 of these samples were scheduled for analysis which was completed on Monday July 27, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22447537	CP101-ES1		0.50 - 0.60	07/07/2020
22447543	WS101-ES1		0.20 - 0.30	07/07/2020
22447544	WS101-ES2		0.90 - 1.00	07/07/2020
22447546	WS101-ES3		2.20 - 2.30	07/07/2020
22447539	WS102-ES1		2.20 - 2.30	07/07/2020
22447540	WS102-ES2		2.80 - 2.90	07/07/2020
22447536	WS103-ES1		0.70 - 0.80	07/07/2020
22447535	WS104-ES1		1.50 - 1.60	07/07/2020
22447548	WS115-ES1		0.50 - 0.60	08/07/2020

Maximum Sample/Coolbox Temperature (°C) : **14.0**

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	2447537	2447543	2447546	2447539	2447540	2447536	2447535	2447548
			Customer Sample Reference	CP101-ES1	WS101-ES1	WS101-ES3	WS102-ES1	WS102-ES2	WS103-ES1	WS104-ES1	WS115-ES1
			AGS Reference								
			Depth (m)	0.50 - 0.60	0.20 - 0.30	2.20 - 2.30	2.20 - 2.30	2.80 - 2.90	0.70 - 0.80	1.50 - 1.60	0.50 - 0.60
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 1														X					
Anions by Kone (soil)	All	NDPs: 0 Tests: 8			X			X		X		X		X		X			X		
Anions by Kone (w)	All	NDPs: 0 Tests: 1													X						
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 6	X			X					X				X			X			X
Asbestos Quantification - Full	All	NDPs: 0 Tests: 2	X												X						
Boron Water Soluble	All	NDPs: 0 Tests: 8		X			X		X			X		X		X			X		
CEN Readings	All	NDPs: 0 Tests: 1													X						
Coronene	All	NDPs: 0 Tests: 1														X					
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1													X						
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1													X						
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1														X					
EPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X		X			X		X		X			X		
Fluoride	All	NDPs: 0 Tests: 1													X						
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8			X			X		X			X		X		X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 8		X			X		X			X		X		X			X		

22447548	WS115-ES1		0.50 - 0.60	60g VOC (ALE215)	250g Amber Jar (ALE210)
				S	S
					X
					X
					X
				X	
					X

CERTIFICATE OF ANALYSIS

Validated

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	22447537	22447543	22447546	22447539	22447540	22447536	22447535	22447548
			Customer Sample Reference	CP101-ES1	WS101-ES1	WS101-ES3	WS102-ES1	WS102-ES2	WS103-ES1	WS104-ES1	WS115-ES1
			AGS Reference								
			Depth (m)	0.50 - 0.60	0.20 - 0.30	2.20 - 2.30	2.20 - 2.30	2.80 - 2.90	0.70 - 0.80	1.50 - 1.60	0.50 - 0.60
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Loss on Ignition in soils	All	NDPs: 0 Tests: 1											X								
Mercury Dissolved	All	NDPs: 0 Tests: 1												X							
Metals in solid samples by OES	All	NDPs: 0 Tests: 8		X		X		X			X		X			X			X		
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1											X								
PAH by GCMS	All	NDPs: 0 Tests: 7		X		X		X					X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 2				X							X								
pH	All	NDPs: 0 Tests: 8		X		X		X			X		X			X			X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1												X							
Sample description	All	NDPs: 0 Tests: 8		X		X		X			X		X			X			X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1									X										
Total Dissolved Solids	All	NDPs: 0 Tests: 1												X							
Total Organic Carbon	All	NDPs: 0 Tests: 1											X								
TPH CWG GC (S)	All	NDPs: 0 Tests: 8		X		X		X			X		X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 8			X		X		X			X			X		X			X		

22447548		
WS115-ES1		
0.50 - 0.60		
250g Amber Jar (ALE210)	60g VOC (ALE215)	
S	S	
X		
X		
X		
X		
X		
	X	

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22447537	CP101-ES1	0.50 - 0.60	Dark Brown	Sandy Silt Loam	Stones	Vegetation
22447543	WS101-ES1	0.20 - 0.30	Dark Brown	Clay Loam	Stones	Brick
22447546	WS101-ES3	2.20 - 2.30	Dark Brown	Clay Loam	Stones	Vegetation
22447539	WS102-ES1	2.20 - 2.30	Dark Brown	Sandy Loam	Stones	Vegetation
22447540	WS102-ES2	2.80 - 2.90	Dark Brown	Clay	Stones	Vegetation
22447536	WS103-ES1	0.70 - 0.80	Light Brown	Silty Clay Loam	Stones	Brick
22447535	WS104-ES1	1.50 - 1.60	Dark Brown	Sandy Silt Loam	Stones	Brick
22447548	WS115-ES1	0.50 - 0.60	Dark Brown	Clay Loam	Stones	Brick

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP101-ES1	WS101-ES1	WS101-ES3	WS102-ES1	WS102-ES2	WS103-ES1
			Depth (m)	0.50 - 0.60	0.20 - 0.30	2.20 - 2.30	2.20 - 2.30	2.80 - 2.90	0.70 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020
			SDG Ref	200709-112	200709-112	200709-112	200709-112	200709-112	200709-112
			Lab Sample No.(s)	22447537	22447543	22447546	22447539	22447540	22447536
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		39	16	26	17	16	3.6
Loss on ignition	<0.7 % TM018							0.998 M
Organic Carbon, Total	<0.2 % TM132							0.39 M
pH	1 pH Units TM133		8.16 M	8.36 M	7.24 M	7.98 M	8.13 M	8.9 M
Chromium, Hexavalent	<0.6 mg/kg TM151		<0.6 #	<0.6 #	<60 #	<0.6 #	<0.6 #	<0.6 #
PCB congener 28	<0.003 mg/kg TM168			<0.003 M				<0.03 M
PCB congener 52	<0.003 mg/kg TM168			<0.003 M				<0.03 M
PCB congener 101	<0.003 mg/kg TM168			<0.003 M				<0.03 M
PCB congener 118	<0.003 mg/kg TM168			<0.003 M				<0.03 M
PCB congener 138	<0.003 mg/kg TM168			<0.003 M				<0.03 M
PCB congener 153	<0.003 mg/kg TM168			<0.003 M				<0.03 M
PCB congener 180	<0.003 mg/kg TM168			<0.003 M				<0.03 M
Sum of detected PCB 7 Congeners	<0.021 mg/kg TM168			<0.021				<0.21
Arsenic	<0.6 mg/kg TM181		17.5 M	17.8 M	9.96 M	25.3 M	8.02 M	2.1 M
Barium	<0.6 mg/kg TM181		358 #	310 #	136 #	322 #	144 #	71.9 #
Beryllium	<0.01 mg/kg TM181		1.11 M	1.06 M	0.949 M	3.11 M	1.51 M	0.156 M
Cadmium	<0.02 mg/kg TM181		0.537 M	0.425 M	0.192 M	1.83 M	0.167 M	0.196 M
Chromium	<0.9 mg/kg TM181		10.9 M	14.6 M	17.7 M	11.2 M	25.1 M	4.64 M
Copper	<1.4 mg/kg TM181		73.5 M	63.9 M	25.9 M	215 M	22.2 M	5.95 M
Lead	<0.7 mg/kg TM181		509 M	366 M	76.5 M	717 M	13.6 M	27.5 M
Mercury	<0.14 mg/kg TM181		0.325 M	0.267 M	<0.14 M	<1.4 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg TM181		29 M	28 M	20.2 M	63.5 M	38.3 M	3.35 M
Selenium	<1 mg/kg TM181		<1 #	<1 #	<1 #	<10 #	<1 #	<1 #
Vanadium	<0.2 mg/kg TM181		25.4 #	25.4 #	26.4 #	69.5 #	31.3 #	4.11 #
Zinc	<1.9 mg/kg TM181		294 M	180 M	66.8 M	641 M	59.1 M	25.6 M
ANC @ pH 4	<0.03 mol/kg TM182							2.03
ANC @ pH 6	<0.03 mol/kg TM182							0.407
Boron, water soluble	<1 mg/kg TM222		1.04 M	<1 M	<1 M	<1 M	<1 M	<1 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l TM243		0.0766 M	0.0954 M	0.0283 M	0.047 M	0.021 M	0.0169 M
Asbestos Quantification - Gravimetric - %	<0.001 % TM304		<0.001 #					<0.001 #
Asbestos Quantification - PCOM Evaluation - %	<0.001 % TM304		<0.001 #					<0.001 #
Additional Asbestos Components (Using TM048)	TM304		None #					None #

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP101-ES1	WS101-ES1	WS101-ES3	WS102-ES1	WS102-ES2	WS103-ES1
			Depth (m)	0.50 - 0.60	0.20 - 0.30	2.20 - 2.30	2.20 - 2.30	2.80 - 2.90	0.70 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020
			SDG Ref	200709-112	200709-112	200709-112	200709-112	200709-112	200709-112
			Lab Sample No.(s)	22447537	22447543	22447546	22447539	22447540	22447536
			AGS Reference						
Analysts Comments		TM304		N/C					N/C
Asbestos Quantification - Total - %	<0.001 %	TM304		<0.001 #					<0.001 #
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410							29.6
Coronene	<0.2 mg/kg	TM410							0.245
EPH Surrogate % recovery**	%	TM415							230
Mineral Oil >C10-C40	<5 mg/kg	TM415							<10

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS104-ES1	WS115-ES1				
			Depth (m)	1.50 - 1.60	0.50 - 0.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	07/07/2020	08/07/2020				
			Sampled Time	.	.				
			Date Received	09/07/2020	09/07/2020				
			SDG Ref	200709-112	200709-112				
			Lab Sample No.(s)	22447535	22447548				
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		21	13				
pH	1 pH Units	TM133		8.22 M	8.77 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #				
Arsenic	<0.6 mg/kg	TM181		31.7 M	8.47 M				
Barium	<0.6 mg/kg	TM181		217 #	164 #				
Beryllium	<0.01 mg/kg	TM181		4.8 M	0.779 M				
Cadmium	<0.02 mg/kg	TM181		0.429 M	0.294 M				
Chromium	<0.9 mg/kg	TM181		25.6 M	11.2 M				
Copper	<1.4 mg/kg	TM181		97.1 M	31.3 M				
Lead	<0.7 mg/kg	TM181		350 M	134 M				
Mercury	<0.14 mg/kg	TM181		0.865 M	<0.14 M				
Nickel	<0.2 mg/kg	TM181		48.7 M	18.6 M				
Selenium	<1 mg/kg	TM181		<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181		42.7 #	18 #				
Zinc	<1.9 mg/kg	TM181		181 M	79.7 M				
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0542 M	0.0191 M				

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP101-ES1	WS101-ES1	WS101-ES3	WS102-ES2	WS103-ES1	WS104-ES1
			Depth (m)	0.50 - 0.60	0.20 - 0.30	2.20 - 2.30	2.80 - 2.90	0.70 - 0.80	1.50 - 1.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020
			SDG Ref	200709-112	200709-112	200709-112	200709-112	200709-112	200709-112
			Lab Sample No.(s)	22447537	22447543	22447546	22447540	22447536	22447535
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		87.2	91.1	90.4	94.3	88.4	87.9
Acenaphthene-d10 % recovery**	%	TM218		89.3	90	95.1	91.7	86.9	88.9
Phenanthrene-d10 % recovery**	%	TM218		90.2	90	95	90.8	89.1	90.7
Chrysene-d12 % recovery**	%	TM218		84.8	80.9	89.4	88.6	92.7	80.2
Perylene-d12 % recovery**	%	TM218		81.2	77	87.7	83.1	89.9	75.2
Naphthalene	<0.009 mg/kg	TM218		0.183 M	0.0264 M	2.24 M	<0.009 M	0.0818 M	0.0465 M
Acenaphthylene	<0.012 mg/kg	TM218		0.211 M	0.0664 M	0.106 M	<0.012 M	0.144 M	0.158 M
Acenaphthene	<0.008 mg/kg	TM218		0.828 M	0.11 M	19 M	<0.008 M	0.581 M	0.112 M
Fluorene	<0.01 mg/kg	TM218		0.809 M	0.128 M	10.9 M	<0.01 M	0.691 M	0.153 M
Phenanthrene	<0.015 mg/kg	TM218		5.34 M	0.987 M	11.2 M	<0.015 M	3.8 M	1.38 M
Anthracene	<0.016 mg/kg	TM218		1.52 M	0.299 M	2.24 M	<0.016 M	1.48 M	0.574 M
Fluoranthene	<0.017 mg/kg	TM218		8.29 M	1.75 M	6.79 M	<0.017 M	4.6 M	3.26 M
Pyrene	<0.015 mg/kg	TM218		7.92 M	1.65 M	5.11 M	<0.015 M	5.08 M	3.06 M
Benz(a)anthracene	<0.014 mg/kg	TM218		3.46 M	0.974 M	2.02 M	<0.014 M	2.7 M	1.62 M
Chrysene	<0.01 mg/kg	TM218		3.61 M	0.88 M	1.82 M	<0.01 M	2.53 M	1.5 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		3.41 M	1.12 M	1.97 M	<0.015 M	2.5 M	1.77 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		1 M	0.416 M	0.702 M	<0.014 M	0.929 M	0.659 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		3.33 M	0.833 M	1.43 M	<0.015 M	2.02 M	1.32 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		1.95 M	0.498 M	0.793 M	<0.018 M	0.958 M	0.726 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.44 M	0.107 M	0.149 M	<0.023 M	0.206 M	0.153 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		2 M	0.501 M	0.705 M	<0.024 M	0.999 M	0.667 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		44.3	10.3	67.1	<0.118	29.3	17.2

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Customer Sample Ref.	WS115-ES1							
Depth (m)	0.50 - 0.60							
Sample Type	Soil/Solid (S)							
Date Sampled	08/07/2020							
Sampled Time	.							
Date Received	09/07/2020							
SDG Ref	200709-112							
Lab Sample No.(s)	22447548							
AGS Reference								
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	91.7					
Acenaphthene-d10 % recovery**	%	TM218	92					
Phenanthrene-d10 % recovery**	%	TM218	89.8					
Chrysene-d12 % recovery**	%	TM218	90.3					
Perylene-d12 % recovery**	%	TM218	86.3					
Naphthalene	<0.009 mg/kg	TM218	0.182 M					
Acenaphthylene	<0.012 mg/kg	TM218	0.119 M					
Acenaphthene	<0.008 mg/kg	TM218	0.327 M					
Fluorene	<0.01 mg/kg	TM218	0.275 M					
Phenanthrene	<0.015 mg/kg	TM218	2.76 M					
Anthracene	<0.016 mg/kg	TM218	0.91 M					
Fluoranthene	<0.017 mg/kg	TM218	6.15 M					
Pyrene	<0.015 mg/kg	TM218	5.72 M					
Benz(a)anthracene	<0.014 mg/kg	TM218	3.07 M					
Chrysene	<0.01 mg/kg	TM218	2.87 M					
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	3.61 M					
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	1.25 M					
Benzo(a)pyrene	<0.015 mg/kg	TM218	2.77 M					
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	1.51 M					
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	0.338 M					
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	1.6 M					
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	33.5					

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Customer Sample Ref.	WS102-ES1
Depth (m)	2.20 - 2.30
Sample Type	Soil/Solid (S)
Date Sampled	07/07/2020
Sampled Time	.
Date Received	09/07/2020
SDG Ref	200709-112
Lab Sample No.(s)	22447539
AGS Reference	

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.2
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	0.278
Carbazole	<0.1 mg/kg	TM157	0.169
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Customer Sample Ref.			WS102-ES1
Depth (m)			2.20 - 2.30
Sample Type			Soil/Solid (S)
Date Sampled			07/07/2020
Sampled Time			.
Date Received			09/07/2020
SDG Ref			200709-112
Lab Sample No.(s)			22447539
AGS Reference			
Component	**LOD/Units**	**Method**	
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157	0.557
Acenaphthylene	<0.1 mg/kg	TM157	<0.1
Acenaphthene	<0.1 mg/kg	TM157	0.29
Anthracene	<0.1 mg/kg	TM157	0.605
Benzo(a)anthracene	<0.1 mg/kg	TM157	1.96
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	1.52
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	1.4
Benzo(a)pyrene	<0.1 mg/kg	TM157	1.78
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	1.05
Chrysene	<0.1 mg/kg	TM157	1.91
Fluoranthene	<0.1 mg/kg	TM157	3.71
Fluorene	<0.1 mg/kg	TM157	0.23
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	2.2
Phenanthrene	<0.1 mg/kg	TM157	2.26
Pyrene	<0.1 mg/kg	TM157	3.53
Naphthalene	<0.1 mg/kg	TM157	0.351
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	0.218
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP101-ES1	WS101-ES1	WS101-ES3	WS102-ES1	WS102-ES2	WS103-ES1
			Depth (m)	0.50 - 0.60	0.20 - 0.30	2.20 - 2.30	2.20 - 2.30	2.80 - 2.90	0.70 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020
			SDG Ref	200709-112	200709-112	200709-112	200709-112	200709-112	200709-112
			Lab Sample No.(s)	22447537	22447543	22447546	22447539	22447540	22447536
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		94.3	97.4	70.4	41.1 3	105	95.4
Aliphatics >C5-C6	<0.01 mg/kg	TM089		0.0114	<0.01	0.0189	0.0182 3	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.0554	<0.01	0.0513	0.0629 3	<0.01	0.0156
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0962	<0.01	0.397	0.052 3	<0.01	0.0166
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1	<1	13.5	<1	<1
Aliphatics >C12-C16	<1 mg/kg	TM414		1.67	<1	5.71	27.4	<1	<1
Aliphatics >C16-C21	<1 mg/kg	TM414		3.18	1.99	9.44	20.1	<1	<1
Aliphatics >C21-C35	<1 mg/kg	TM414		29.2	3.98	1.88	30.4	<1	<1
Aliphatics >C35-C44	<1 mg/kg	TM414		6.79	<1	<1	7.97	<1	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414		41.1	7.15	17.5	99.4	<5	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		319	137	464	266	<10	64.2
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01 3	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01 3	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.0636	<0.01	0.265	0.0351 3	<0.01	0.0114
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1	9.13	3.34	<1	<1
Aromatics > EC12-EC16	<1 mg/kg	TM414		10.6	4.04	272	20.6	<1	4.72
Aromatics > EC16-EC21	<1 mg/kg	TM414		69.8	34.8	84.4	42	<1	21.1
Aromatics > EC21-EC35	<1 mg/kg	TM414		171	88.3	78.5	95.6	<1	35.6
Aromatics >EC35-EC44	<1 mg/kg	TM414		25.7	2.9	3.21	5.4	<1	1.38
Aromatics > EC40-EC44	<1 mg/kg	TM414		3.68	<1	<1	<1	<1	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		277	130	447	167	<5	62.8
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		319	137	465	266	<10	62.8
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		0.163	<0.05	0.467	0.133 3	<0.05	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		0.0636	<0.05	0.265	<0.05 3	<0.05	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089		0.227	<0.02	0.732	0.133 3	<0.02	<0.02

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS104-ES1	WS115-ES1				
			Depth (m)	1.50 - 1.60	0.50 - 0.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	07/07/2020	08/07/2020				
			Sampled Time	.	.				
			Date Received	09/07/2020	09/07/2020				
			SDG Ref	200709-112	200709-112				
			Lab Sample No.(s)	22447535	22447548				
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		73.6	105				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.034	0.0467				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0265	0.0456				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1				
Aliphatics >C16-C21	<1 mg/kg	TM414		1.07	2.89				
Aliphatics >C21-C35	<1 mg/kg	TM414		1.83	7.83				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	11.6				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		38.5	247				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.0176	0.0308				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414		2.65	9.5				
Aromatics > EC16-EC21	<1 mg/kg	TM414		11.2	59.5				
Aromatics > EC21-EC35	<1 mg/kg	TM414		19.7	155				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	11.1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		34.6	236				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		34.6	247				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		0.0605	0.0923				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		0.0605	0.0923				

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP101-ES1	WS101-ES1	WS101-ES1	WS102-ES1	WS102-ES2	WS103-ES1
			Depth (m)	0.50 - 0.60	0.20 - 0.30	2.20 - 2.30	2.20 - 2.30	2.80 - 2.90	0.70 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020
			SDG Ref	200709-112	200709-112	200709-112	200709-112	200709-112	200709-112
			Lab Sample No.(s)	22447537	22447543	22447546	22447539	22447540	22447536
			AGS Reference						
Dibromofluoromethane**	%	TM116		111	115	111	108	115	116
Toluene-d8**	%	TM116		95.7	92.6	93.5	90.2	93.4	98
4-Bromofluorobenzene**	%	TM116		92.9	70.6	71.2	76.3	72.3	84.6
Dichlorodifluoromethane	<0.006 mg/kg	TM116					<0.12 M		
Chloromethane	<0.007 mg/kg	TM116					<0.14 #		
Vinyl Chloride	<0.006 mg/kg	TM116					<0.12 M		
Bromomethane	<0.01 mg/kg	TM116					<0.2 M		
Chloroethane	<0.01 mg/kg	TM116					<0.2 M		
Trichlorofluorormethane	<0.006 mg/kg	TM116					<0.12 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116					<0.2 #		
Carbon Disulphide	<0.007 mg/kg	TM116					<0.14 M		
Dichloromethane	<0.01 mg/kg	TM116					<0.2 #		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.01 M	<0.01 M	<0.2 M	<0.01 M	<0.01 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116					<0.2 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116					<0.16 M		
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116					<0.12 M		
2,2-Dichloropropane	<0.01 mg/kg	TM116					<0.2		
Bromochloromethane	<0.01 mg/kg	TM116					<0.2 M		
Chloroform	<0.008 mg/kg	TM116					<0.16 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116					<0.14 M		
1,1-Dichloropropene	<0.01 mg/kg	TM116					<0.2 M		
Carbontetrachloride	<0.01 mg/kg	TM116					<0.2 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116					<0.1 M		
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.009 M	<0.009 M	<0.18 M	<0.009 M	<0.009 M
Trichloroethene	<0.009 mg/kg	TM116					<0.18 #		
1,2-Dichloropropane	<0.01 mg/kg	TM116					<0.2 M		
Dibromomethane	<0.009 mg/kg	TM116					<0.18 M		
Bromodichloromethane	<0.007 mg/kg	TM116					<0.14 M		
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116					<0.2 M		
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.007 M	<0.007 M	<0.14 M	<0.007 M	<0.007 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116					<0.2		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116					<0.2 M		

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP101-ES1	WS101-ES1	WS101-ES3	WS102-ES1	WS102-ES2	WS103-ES1
			Depth (m)	0.50 - 0.60	0.20 - 0.30	2.20 - 2.30	2.20 - 2.30	2.80 - 2.90	0.70 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020	09/07/2020
			SDG Ref	200709-112	200709-112	200709-112	200709-112	200709-112	200709-112
			Lab Sample No.(s)	22447537	22447543	22447546	22447539	22447540	22447536
			AGS Reference						
1,3-Dichloropropane	<0.007 mg/kg	TM116					<0.14 M		
Tetrachloroethene	<0.005 mg/kg	TM116					<0.1 M		
Dibromochloromethane	<0.01 mg/kg	TM116					<0.2 M		
1,2-Dibromoethane	<0.01 mg/kg	TM116					<0.2 M		
Chlorobenzene	<0.005 mg/kg	TM116					<0.1 M		
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116					<0.2 M		
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M	<0.004 M	<0.004 M	<0.08 M	<0.004 M	<0.004 M	
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #	<0.01 #	<0.01 #	<0.2 #	<0.01 #	<0.01 #	
o-Xylene	<0.01 mg/kg	TM116	<0.2 M	<0.01 M	<0.01 M	<0.2 M	<0.01 M	<0.01 M	
Styrene	<0.01 mg/kg	TM116				<0.2 #			
Bromoform	<0.01 mg/kg	TM116				<0.2 M			
Isopropylbenzene	<0.005 mg/kg	TM116				<0.1 #			
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.2 #			
1,2,3-Trichloropropane	<0.016 mg/kg	TM116				<0.32 M			
Bromobenzene	<0.01 mg/kg	TM116				<0.2 M			
Propylbenzene	<0.01 mg/kg	TM116				<0.2 M			
2-Chlorotoluene	<0.009 mg/kg	TM116				<0.18 M			
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116				<0.16 M			
4-Chlorotoluene	<0.01 mg/kg	TM116				<0.2 M			
tert-Butylbenzene	<0.014 mg/kg	TM116				<0.28 M			
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116				<0.18 #			
sec-Butylbenzene	<0.01 mg/kg	TM116				<0.2			
4-Isopropyltoluene	<0.01 mg/kg	TM116				<0.2 M			
1,3-Dichlorobenzene	<0.008 mg/kg	TM116				<0.16 M			
1,4-Dichlorobenzene	<0.005 mg/kg	TM116				<0.1 M			
n-Butylbenzene	<0.011 mg/kg	TM116				<0.22			
1,2-Dichlorobenzene	<0.01 mg/kg	TM116				<0.2 M			
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116				<0.28 M			
Tert-amyl methyl ether	<0.01 mg/kg	TM116				<0.2 #			
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116				<0.4			
Hexachlorobutadiene	<0.02 mg/kg	TM116				<0.4			
Naphthalene	<0.013 mg/kg	TM116				<0.26 M			

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			CP101-ES1	0.50 - 0.60	Soil/Solid (S)	07/07/2020	.	09/07/2020	200709-112	22447537	
			WS101-ES1	0.20 - 0.30	Soil/Solid (S)	07/07/2020	.	09/07/2020	200709-112	22447543	
			WS101-ES3	2.20 - 2.30	Soil/Solid (S)	07/07/2020	.	09/07/2020	200709-112	22447546	
			WS102-ES1	2.20 - 2.30	Soil/Solid (S)	07/07/2020	.	09/07/2020	200709-112	22447539	
			WS102-ES2	2.80 - 2.90	Soil/Solid (S)	07/07/2020	.	09/07/2020	200709-112	22447540	
			WS103-ES1	0.70 - 0.80	Soil/Solid (S)	07/07/2020	.	09/07/2020	200709-112	22447536	
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116									
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116									
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4	<0.02	<0.02	<0.4	<0.02	<0.02			
Sum of BTEX	<0.04 mg/kg	TM116	<0.8	<0.04	<0.04	<0.8	<0.04	<0.04			

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Customer Sample Ref.	WS104-ES1	WS115-ES1
Depth (m)	1.50 - 1.60	0.50 - 0.60
Sample Type	Soil/Solid (S)	Soil/Solid (S)
Date Sampled	07/07/2020	08/07/2020
Sampled Time	.	.
Date Received	09/07/2020	09/07/2020
SDG Ref	200709-112	200709-112
Lab Sample No.(s)	22447535	22447548
AGS Reference		

Component	LOD/Units	Method		
Dibromofluoromethane**	%	TM116	111	121
Toluene-d8**	%	TM116	97.8	93.6
4-Bromofluorobenzene**	%	TM116	98.3	72.7
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M	<0.01 M
Benzene	<0.009 mg/kg	TM116	<0.18 M	<0.009 M
Toluene	<0.007 mg/kg	TM116	<0.14 M	<0.007 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M	<0.004 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #	<0.01 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M	<0.01 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4	<0.02
Sum of BTEX	<0.04 mg/kg	TM116	<0.8	<0.04

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	CP101-ES1 0.50 - 0.60 SOLID 07/07/2020 00:00:00 09/07/2020 05:00:00 200709-112 22447537 TM048	17/07/2020	Marcin Magdziarek	Soil containing ACM debris	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS101-ES1 0.20 - 0.30 SOLID 07/07/2020 00:00:00 09/07/2020 05:00:00 200709-112 22447543 TM048	17/07/2020	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS102-ES1 2.20 - 2.30 SOLID 07/07/2020 00:00:00 09/07/2020 05:00:00 200709-112 22447539 TM048	17/07/2020	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS103-ES1 0.70 - 0.80 SOLID 07/07/2020 00:00:00 09/07/2020 05:00:00 200709-112 22447536 TM048	17/07/2020	James Richards	Fibre bundle in soil	Trace (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS104-ES1 1.50 - 1.60 SOLID 07/07/2020 00:00:00 09/07/2020 05:00:00 200709-112 22447535 TM048	17/07/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS115-ES1 0.50 - 0.60 SOLID 08/07/2020 00:00:00 09/07/2020 05:00:00 200709-112 22447548 TM048	17/07/2020	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Asbestos Quantification - Full

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	CP101-ES1 0.50 - 0.60 SOLID 07/07/2020 00:00:00 09/07/2020 05:00:00 200709-112 22447537 TM304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS103-ES1 0.70 - 0.80 SOLID 07/07/2020 00:00:00 09/07/2020 05:00:00 200709-112 22447536 TM304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Hyde Road, Manchester M12 5AL
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	20.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.9
Particle Size <4mm	>95%		

Case	
SDG	200709-112
Lab Sample Number(s)	22447536
Sampled Date	07-Jul-2020
Customer Sample Ref.	WS103-ES1
Depth (m)	0.70 - 0.80

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.39	3	5	6
Loss on Ignition (%)	0.998	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.21	1	-	-
Mineral Oil (mg/kg)	<10	500	-	-
PAH Sum of 17 (mg/kg)	29.6	100	-	-
pH (pH Units)	8.9	-	>6	-
ANC to pH 6 (mol/kg)	0.407	-	-	-
ANC to pH 4 (mol/kg)	2.03	-	-	-

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00467	<0.0005	0.0467	<0.005	0.5	2	25
Barium	0.443	<0.0002	4.43	<0.002	20	100	300
Cadmium	0.000139	<0.00008	0.00139	<0.0008	0.04	1	5
Chromium	0.0125	<0.001	0.125	<0.01	0.5	10	70
Copper	0.00835	<0.0003	0.0835	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000382	<0.00001	0.000382	<0.0001	0.01	0.2	2
Molybdenum	0.0303	<0.003	0.303	<0.03	0.5	10	30
Nickel	0.00445	<0.0004	0.0445	<0.004	0.4	10	40
Lead	0.0306	<0.0002	0.306	<0.002	0.5	10	50
Antimony	0.00261	<0.001	0.0261	<0.01	0.06	0.7	5
Selenium	0.00131	<0.001	0.0131	<0.01	0.1	0.5	7
Zinc	0.107	<0.001	1.07	<0.01	4	50	200
Chloride	4.3	<2	43	<20	800	15000	25000
Fluoride	1.31	<0.5	13.1	<5	10	150	500
Sulphate (soluble)	14.6	<2	146	<20	1000	20000	50000
Total Dissolved Solids	112	<5	1120	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.05	<3	50.5	<30	500	800	1000

Leach Test Information

Date Prepared	13-Jul-2020
pH (pH Units)	8.65
Conductivity (µS/cm)	133.00
Temperature (°C)	18.70
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

27/07/2020 11:08:28

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM304	HSE Contract research Report no 83/1996	Asbestos Quantification in Soil: Fibres identified by morphology only
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Test Completion Dates

Lab Sample No(s)	22447537	22447543	22447546	22447539	22447540	22447536	22447535	22447548
Customer Sample Ref.	CP101-ES1	WS101-ES1	WS101-ES3	WS102-ES1	WS102-ES2	WS103-ES1	WS104-ES1	WS115-ES1
AGS Ref.								
Depth	0.50 - 0.60	0.20 - 0.30	2.20 - 2.30	2.20 - 2.30	2.80 - 2.90	0.70 - 0.80	1.50 - 1.60	0.50 - 0.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6						16-Jul-2020		
Anions by Kone (soil)	16-Jul-2020	16-Jul-2020	16-Jul-2020	15-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020
Anions by Kone (w)						16-Jul-2020		
Asbestos ID in Solid Samples	17-Jul-2020	17-Jul-2020		17-Jul-2020		17-Jul-2020	17-Jul-2020	17-Jul-2020
Asbestos Quantification - Full	27-Jul-2020					27-Jul-2020		
Boron Water Soluble	16-Jul-2020	16-Jul-2020	16-Jul-2020	15-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020
CEN 10:1 Leachate (1 Stage)						14-Jul-2020		
CEN Readings						17-Jul-2020		
Coronene						16-Jul-2020		
Dissolved Metals by ICP-MS						17-Jul-2020		
Dissolved Organic/Inorganic Carbon						17-Jul-2020		
EPH by GCxGC-FID						18-Jul-2020		
EPH CWG GC (S)	20-Jul-2020	17-Jul-2020	17-Jul-2020	20-Jul-2020	17-Jul-2020	17-Jul-2020	20-Jul-2020	17-Jul-2020
Fluoride						17-Jul-2020		
GRO by GC-FID (S)	16-Jul-2020	15-Jul-2020	16-Jul-2020	16-Jul-2020	15-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020
Hexavalent Chromium (s)	16-Jul-2020	16-Jul-2020	16-Jul-2020	15-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020
Loss on Ignition in soils						16-Jul-2020		
Mercury Dissolved						17-Jul-2020		
Metals in solid samples by OES	17-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020
Moisture at 105C						13-Jul-2020		
PAH 16 & 17 Calc						16-Jul-2020		
PAH by GCMS	18-Jul-2020	17-Jul-2020	17-Jul-2020		18-Jul-2020	16-Jul-2020	17-Jul-2020	18-Jul-2020
PCBs by GCMS		20-Jul-2020				17-Jul-2020		
pH	13-Jul-2020	15-Jul-2020	15-Jul-2020	14-Jul-2020	15-Jul-2020	13-Jul-2020	13-Jul-2020	15-Jul-2020
Phenols by HPLC (W)						20-Jul-2020		
Sample description	11-Jul-2020	14-Jul-2020	14-Jul-2020	13-Jul-2020	14-Jul-2020	11-Jul-2020	11-Jul-2020	14-Jul-2020
Semi Volatile Organic Compounds				17-Jul-2020				
Total Dissolved Solids						16-Jul-2020		
Total Organic Carbon						16-Jul-2020		
TPH CWG GC (S)	20-Jul-2020	17-Jul-2020	17-Jul-2020	20-Jul-2020	17-Jul-2020	17-Jul-2020	20-Jul-2020	17-Jul-2020
VOC MS (S)	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020

ASSOCIATED AQC DATA

ANC at pH4 and ANC at pH 6

Component	Method Code	QC 2212
ANC pH_4 dry soil	TM182	**93.84** 91.79 : 114.66

Anions by Kone (soil)

Component	Method Code	QC 2273
Chloride (soluble)	TM243	**159.07** 92.11 : 107.89
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**175.7** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2246
Chloride	TM184	**106.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**100.4** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2298	QC 2277	QC 2283
Water Soluble Boron	TM222	**101.5** 85.80 : 112.50	**100.5** 85.80 : 112.50	**100.0** 85.80 : 112.50

Coronene

Component	Method Code	QC 2265
Coronene RAW	TM410	**108.0** 79.43 : 137.78

Dissolved Metals by ICP-MS

Component	Method Code	QC 2290
Aluminium	TM152	**106.33** 94.21 : 111.52
Antimony	TM152	**101.67** 88.37 : 130.57
Arsenic	TM152	**103.5** 92.62 : 113.52

Dissolved Metals by ICP-MS

		QC 2290
Barium	TM152	**100.17** 88.62 : 113.14
Beryllium	TM152	**104.0** 89.98 : 116.88
Bismuth	TM152	**103.33** 92.62 : 115.02
Boron	TM152	**116.33** 86.31 : 120.88
Cadmium	TM152	**103.0** 93.85 : 111.65
Calcium	TM152	**102.67** 89.20 : 126.91
Chromium	TM152	**103.0** 92.22 : 109.85
Cobalt	TM152	**103.33** 85.01 : 114.87
Copper	TM152	**103.0** 89.87 : 119.73
Iron	TM152	**104.0** 93.02 : 113.86
Lead	TM152	**103.17** 91.11 : 116.98
Lithium	TM152	**103.17** 91.30 : 123.00
Magnesium	TM152	**103.33** 89.60 : 116.61
Manganese	TM152	**106.33** 93.97 : 112.46
Molybdenum	TM152	**102.0** 89.07 : 110.96
Nickel	TM152	**104.17** 93.70 : 112.15
Phosphorus	TM152	**97.67** 89.24 : 114.18
Potassium	TM152	**102.67** 93.20 : 115.55
Selenium	TM152	**102.67** 91.69 : 117.12
Silver	TM152	**110.17** 90.93 : 121.73
Sodium	TM152	**103.33** 92.42 : 113.24
Strontium	TM152	**100.33** 92.14 : 116.24
Tellurium	TM152	**98.83** 89.88 : 111.78
Thallium	TM152	**100.17** 82.43 : 113.83
Tin	TM152	**102.0** 94.62 : 107.79
Titanium	TM152	**105.67** 90.29 : 115.23
Tungsten	TM152	**101.17** 77.61 : 132.31

Dissolved Metals by ICP-MS

		QC 2290
Uranium	TM152	**102.83** 86.97 : 115.76
Vanadium	TM152	**107.67** 89.61 : 115.48
Zinc	TM152	**104.33** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2299
Dissolved Inorganic Carbon	TM090	**101.33** 91.27 : 109.87
Dissolved Organic Carbon	TM090	**100.0** 96.58 : 107.98

EPH CWG GC (S)

Component	Method Code	QC 2291
EPH >C8-C40 Raw	TM414	**90.89** 77.66 : 104.66
Total Aliphatics Raw	TM414	**96.2** 84.39 : 115.61
Total Aromatics Raw	TM414	**104.12** 57.00 : 150.27

Fluoride

Component	Method Code	QC 2295
Fluoride	TM104	**102.0** 95.51 : 107.24

GRO by GC-FID (S)

Component	Method Code	QC 2226	QC 2222	QC 2242
QC	TM089	**89.24** 70.34 : 111.95	**91.65** 70.75 : 114.19	**87.92** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2202	QC 2233	QC 2281	QC 2218
Hexavalent Chromium	TM151	**104.0** 95.60 : 107.60	**102.0** 95.60 : 107.60	**102.0** 95.60 : 107.60	**104.0** 95.60 : 107.60

CERTIFICATE OF ANALYSIS

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Loss on Ignition in soils

Component	Method Code	QC 2210
Loss on Ignition	TM018	**93.6** 87.56 : 104.24

Mercury Dissolved

Component	Method Code	QC 2255
Mercury Dissolved (CVAF)	TM183	**98.3** 76.80 : 117.12

Metals in solid samples by OES

Component	Method Code	QC 2286	QC 2235	QC 2203	QC 2259	QC 2226
Aluminium	TM181	**93.81** 73.56 : 108.85	**105.31** 73.56 : 108.85	**99.12** 73.56 : 108.85	**93.81** 73.56 : 108.85	**92.04** 73.56 : 108.85
Antimony	TM181	**89.84** 76.89 : 111.24	**94.31** 76.89 : 111.24	**95.53** 76.89 : 111.24	**95.93** 76.89 : 111.24	**100.0** 76.89 : 111.24
Arsenic	TM181	**99.71** 88.53 : 111.01	**99.42** 88.53 : 111.01	**98.55** 88.53 : 111.01	**99.71** 88.53 : 111.01	**97.67** 88.53 : 111.01
Barium	TM181	**91.74** 77.67 : 105.35	**97.25** 77.67 : 105.35	**93.58** 77.67 : 105.35	**96.33** 77.67 : 105.35	**93.58** 77.67 : 105.35
Beryllium	TM181	**97.01** 85.44 : 109.61	**99.25** 85.44 : 109.61	**99.25** 85.44 : 109.61	**98.88** 85.44 : 109.61	**103.36** 85.44 : 109.61
Boron	TM181	**87.39** 73.51 : 104.66	**96.85** 73.51 : 104.66	**93.98** 73.51 : 104.66	**88.25** 73.51 : 104.66	**88.54** 73.51 : 104.66
Cadmium	TM181	**88.48** 77.67 : 104.12	**90.12** 77.67 : 104.12	**91.36** 77.67 : 104.12	**90.53** 77.67 : 104.12	**86.83** 77.67 : 104.12
Chromium	TM181	**95.13** 86.11 : 106.21	**97.57** 86.11 : 106.21	**93.91** 86.11 : 106.21	**93.51** 86.11 : 106.21	**94.52** 86.11 : 106.21
Cobalt	TM181	**90.57** 84.60 : 104.13	**92.14** 84.60 : 104.13	**91.19** 84.60 : 104.13	**90.57** 84.60 : 104.13	**89.31** 84.60 : 104.13
Copper	TM181	**91.02** 82.40 : 105.45	**92.78** 82.40 : 105.45	**91.9** 82.40 : 105.45	**90.85** 82.40 : 105.45	**91.9** 82.40 : 105.45
Iron	TM181	**92.06** 82.95 : 110.58	**98.41** 82.95 : 110.58	**98.41** 82.95 : 110.58	**94.44** 82.95 : 110.58	**95.24** 82.95 : 110.58
Lead	TM181	**96.4** 78.24 : 104.05	**90.77** 78.24 : 104.05	**92.34** 78.24 : 104.05	**92.12** 78.24 : 104.05	**95.95** 78.24 : 104.05
Manganese	TM181	**108.61** 94.29 : 119.51	**115.0** 94.29 : 119.51	**115.28** 94.29 : 119.51	**113.33** 94.29 : 119.51	**113.61** 94.29 : 119.51
Mercury	TM181	**91.3** 83.16 : 107.81	**91.79** 83.16 : 107.81	**88.89** 83.16 : 107.81	**90.58** 83.16 : 107.81	**89.86** 83.16 : 107.81
Molybdenum	TM181	**94.65** 87.11 : 106.87	**96.71** 87.11 : 106.87	**101.23** 87.11 : 106.87	**97.12** 87.11 : 106.87	**97.53** 87.11 : 106.87
Nickel	TM181	**91.2** 80.26 : 102.28	**93.64** 80.26 : 102.28	**97.8** 80.26 : 102.28	**92.91** 80.26 : 102.28	**95.11** 80.26 : 102.28
Phosphorus	TM181	**106.46** 94.56 : 124.28	**111.52** 94.56 : 124.28	**106.87** 94.56 : 124.28	**110.3** 94.56 : 124.28	**111.72** 94.56 : 124.28

Metals in solid samples by OES

		QC 2286	QC 2235	QC 2203	QC 2259	QC 2226
Selenium	TM181	**96.08** 82.28 : 110.48	**98.04** 82.28 : 110.48	**98.43** 82.28 : 110.48	**97.65** 82.28 : 110.48	**99.61** 82.28 : 110.48
Strontium	TM181	**89.31** 79.13 : 102.79	**92.65** 79.13 : 102.79	**89.09** 79.13 : 102.79	**88.64** 79.13 : 102.79	**86.64** 79.13 : 102.79
Thallium	TM181	**96.46** 82.94 : 111.86	**100.0** 82.94 : 111.86	**98.23** 82.94 : 111.86	**100.88** 82.94 : 111.86	**96.46** 82.94 : 111.86
Tin	TM181	**96.96** 86.72 : 110.03	**99.62** 86.72 : 110.03	**98.48** 86.72 : 110.03	**96.58** 86.72 : 110.03	**96.96** 86.72 : 110.03
Titanium	TM181	**83.21** 66.23 : 102.06	**96.95** 66.23 : 102.06	**91.6** 66.23 : 102.06	**84.73** 66.23 : 102.06	**77.1** 66.23 : 102.06
Vanadium	TM181	**94.14** 86.19 : 109.45	**99.63** 86.19 : 109.45	**96.34** 86.19 : 109.45	**94.14** 86.19 : 109.45	**91.58** 86.19 : 109.45
Zinc	TM181	**94.05** 84.68 : 113.99	**97.54** 84.68 : 113.99	**100.62** 84.68 : 113.99	**96.1** 84.68 : 113.99	**98.56** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2262	QC 2224	QC 2282	QC 2211	QC 2288
Acenaphthene	TM218	**97.0** 76.79 : 103.90	**93.0** 80.97 : 105.99	**92.5** 80.97 : 105.99	**95.5** 76.79 : 103.90	**96.0** 76.79 : 103.90
Acenaphthylene	TM218	**97.0** 78.40 : 108.66	**96.0** 80.24 : 105.29	**95.0** 80.24 : 105.29	**95.0** 78.40 : 108.66	**99.0** 78.40 : 108.66
Anthracene	TM218	**93.0** 71.94 : 101.94	**92.0** 73.72 : 109.23	**91.0** 73.72 : 109.23	**88.5** 71.94 : 101.94	**88.5** 71.94 : 101.94
Benz(a)anthracene	TM218	**97.0** 73.77 : 119.26	**92.5** 79.72 : 116.84	**90.0** 79.72 : 116.84	**86.0** 73.77 : 119.26	**85.5** 73.77 : 119.26
Benzo(a)pyrene	TM218	**98.5** 73.20 : 114.18	**90.5** 68.42 : 118.29	**87.5** 68.42 : 118.29	**81.5** 73.20 : 114.18	**81.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**93.5** 75.36 : 117.58	**89.0** 77.35 : 112.97	**94.5** 77.35 : 112.97	**80.0** 75.36 : 117.58	**82.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**92.0** 70.73 : 116.12	**90.0** 77.68 : 107.38	**88.0** 77.68 : 107.38	**81.0** 70.73 : 116.12	**82.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**102.0** 75.98 : 116.59	**90.0** 82.61 : 111.93	**88.0** 82.61 : 111.93	**85.5** 75.98 : 116.59	**86.5** 75.98 : 116.59
Chrysene	TM218	**95.0** 74.82 : 114.18	**92.5** 80.28 : 111.42	**87.5** 80.28 : 111.42	**84.5** 74.82 : 114.18	**81.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**93.0** 69.17 : 115.30	**88.0** 79.17 : 106.41	**87.5** 79.17 : 106.41	**81.5** 69.17 : 115.30	**85.5** 69.17 : 115.30
Fluoranthene	TM218	**100.5** 75.88 : 112.84	**97.0** 79.07 : 112.75	**92.0** 79.07 : 112.75	**86.5** 75.88 : 112.84	**80.5** 75.88 : 112.84
Fluorene	TM218	**92.5** 78.29 : 103.91	**92.0** 80.52 : 110.90	**90.0** 80.52 : 110.90	**93.5** 78.29 : 103.91	**91.5** 78.29 : 103.91
Indeno(123cd)pyrene	TM218	**87.5** 70.26 : 117.95	**86.5** 76.97 : 113.36	**88.5** 76.97 : 113.36	**82.5** 70.26 : 117.95	**80.5** 70.26 : 117.95
Naphthalene	TM218	**90.5** 74.70 : 101.83	**91.5** 78.94 : 110.91	**85.5** 78.94 : 110.91	**88.5** 74.70 : 101.83	**92.0** 74.70 : 101.83
Phenanthrene	TM218	**91.5** 72.24 : 102.15	**97.0** 79.34 : 111.91	**91.5** 79.34 : 111.91	**87.5** 72.24 : 102.15	**88.0** 72.24 : 102.15
Pyrene	TM218	**97.5** 71.98 : 105.95	**95.5** 74.43 : 114.36	**92.0** 74.43 : 114.36	**92.5** 71.98 : 105.95	**79.5** 71.98 : 105.95

PCBs by GCMS

PCBs by GCMS

Component	Method Code	QC 2269	QC 2255
PCB congener 101	TM168	**91.4** 79.46 : 109.70	**86.2** 79.46 : 109.70
PCB congener 105	TM168	**80.2** 66.33 : 105.75	**78.9** 66.33 : 105.75
PCB congener 114	TM168	**79.9** 66.41 : 106.49	**80.7** 66.41 : 106.49
PCB congener 118	TM168	**86.4** 70.33 : 110.29	**81.5** 70.33 : 110.29
PCB congener 123	TM168	**74.6** 65.01 : 99.81	**85.3** 65.01 : 99.81
PCB congener 126	TM168	**76.8** 59.31 : 109.23	**75.0** 59.31 : 109.23
PCB congener 138	TM168	**78.4** 63.95 : 107.63	**72.9** 63.95 : 107.63
PCB congener 153	TM168	**80.6** 62.65 : 108.85	**78.5** 62.65 : 108.85
PCB congener 156	TM168	**78.2** 61.69 : 112.27	**76.2** 61.69 : 112.27
PCB congener 157	TM168	**77.2** 67.15 : 109.93	**74.6** 67.15 : 109.93
PCB congener 167	TM168	**82.3** 65.58 : 109.14	**76.4** 65.58 : 109.14
PCB congener 169	TM168	**75.1** 56.84 : 112.10	**75.7** 56.84 : 112.10
PCB congener 180	TM168	**81.6** 66.99 : 111.63	**79.0** 66.99 : 111.63
PCB congener 189	TM168	**76.2** 57.75 : 112.59	**72.2** 57.75 : 112.59
PCB congener 28	TM168	**85.5** 73.68 : 105.96	**82.6** 73.68 : 105.96
PCB congener 52	TM168	**83.7** 67.24 : 107.62	**81.2** 67.24 : 107.62
PCB congener 77	TM168	**78.1** 64.87 : 108.49	**76.7** 64.87 : 108.49
PCB congener 81	TM168	**84.6** 70.78 : 110.80	**81.4** 70.78 : 110.80

pH

Component	Method Code	QC 2290	QC 2221	QC 2230	QC 2260	QC 2238	QC 2245
pH	TM133	**101.06** 98.47 : 102.33	**100.79** 98.47 : 102.33	**101.59** 98.47 : 102.33	**100.93** 98.47 : 102.33	**101.06** 98.81 : 101.99	**101.59** 98.81 : 101.99

Phenols by HPLC (W)

Phenols by HPLC (W)

Component	Method Code	QC 2244
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**97.0** 84.50 : 111.50
2-Isopropyl Phenol by HPLC (W)	TM259	**93.0** 84.55 : 110.90
Cresols by HPLC (W)	TM259	**99.67** 90.00 : 112.00
Napthol by HPLC (W)	TM259	**102.0** 82.00 : 124.00
Phenol by HPLC (W)	TM259	**96.0** 86.80 : 112.60
Xylenols by HPLC (W)	TM259	**99.0** 94.74 : 115.71

Semi Volatile Organic Compounds

Component	Method Code	QC 2284
4-Bromophenylphenylether (Soil)	TM157	**74.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**84.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**80.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**79.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**80.0** 66.50 : 123.50
Phenol (Soil)	TM157	**82.5** 69.92 : 114.02

Total Dissolved Solids

Component	Method Code	QC 2263
Total Dissolved Solids	TM123	**98.6** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2217
Total Organic Carbon	TM132	**79.69** 71.01 : 103.80

VOC MS (S)

CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

VOC MS (S)

Component	Method Code	QC 2280	QC 2216
1,1,1,2-tetrachloroethane	TM116	**99.0** 84.84 : 116.25	**104.6** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**96.6** 73.73 : 118.05	**100.4** 87.51 : 115.37
1,1,2-Trichloroethane	TM116	**97.6** 77.12 : 116.04	**94.6** 75.16 : 112.70
1,1-Dichloroethane	TM116	**104.2** 74.46 : 129.15	**106.4** 86.77 : 122.11
1,2-Dichloroethane	TM116	**111.6** 92.38 : 131.65	**110.2** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**105.4** 83.64 : 126.18	**99.2** 84.04 : 124.40
2-Chlorotoluene	TM116	**97.0** 75.26 : 110.11	**94.4** 73.76 : 115.43
4-Chlorotoluene	TM116	**96.6** 66.90 : 112.46	**93.6** 72.48 : 112.82
Benzene	TM116	**100.8** 88.60 : 113.80	**99.4** 84.29 : 112.22
Carbon Disulphide	TM116	**105.0** 74.91 : 122.14	**102.4** 75.11 : 124.81
Carbontetrachloride	TM116	**103.4** 80.31 : 124.50	**108.4** 82.35 : 126.46
Chlorobenzene	TM116	**102.2** 83.81 : 114.18	**100.8** 82.88 : 122.42
Chloroform	TM116	**105.6** 87.40 : 122.49	**107.4** 90.35 : 120.38
Chloromethane	TM116	**108.8** 65.89 : 136.93	**102.2** 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	**99.2** 80.67 : 126.72	**102.8** 78.27 : 128.90
Dibromomethane	TM116	**99.6** 76.06 : 125.74	**97.2** 76.00 : 120.73
Dichloromethane	TM116	**108.4** 81.11 : 133.25	**104.8** 93.91 : 130.46
Ethylbenzene	TM116	**94.4** 75.92 : 110.41	**94.2** 70.95 : 113.07
Hexachlorobutadiene	TM116	**81.4** 12.82 : 152.73	**76.4** 14.55 : 147.92
Isopropylbenzene	TM116	**81.2** 55.79 : 97.59	**83.6** 52.00 : 108.19
Naphthalene	TM116	**115.4** 80.86 : 128.81	**101.0** 80.29 : 135.77
o-Xylene	TM116	**87.0** 69.99 : 108.74	**86.6** 64.92 : 98.85
p/m-Xylene	TM116	**91.2** 68.32 : 108.91	**85.9** 72.04 : 104.04
Sec-Butylbenzene	TM116	**74.8** 38.50 : 101.50	**80.8** 27.03 : 135.73
Tetrachloroethene	TM116	**104.2** 76.95 : 121.02	**106.0** 81.43 : 126.65
Toluene	TM116	**95.6** 74.24 : 107.42	**91.2** 82.44 : 103.50
Trichloroethene	TM116	**99.0** 77.61 : 111.54	**97.0** 79.80 : 112.33

VOC MS (S)

		QC 2280	QC 2216
Trichlorofluoromethane	TM116	**113.2** 84.55 : 133.27	**110.0** 86.68 : 126.82
Vinyl Chloride	TM116	**113.6** 68.02 : 143.37	**103.6** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

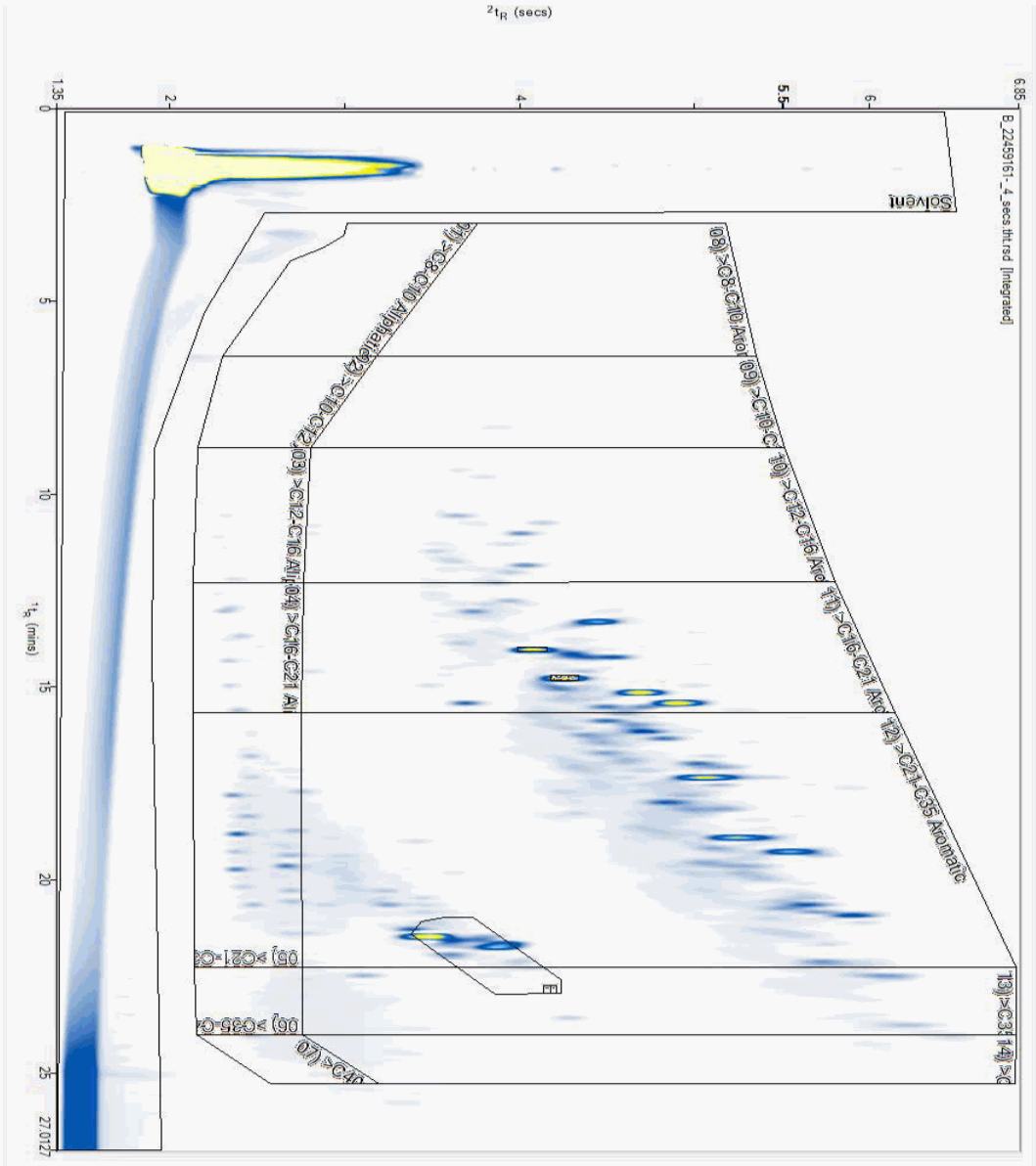
CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22459161 **Depth :** 0.50 - 0.60
Sample ID : CP101-ES1

```
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 Current batch
Sample Identity:  B_22459161-_4_secs.tht
Date Acquired   :  18/07/20 03:55:01
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



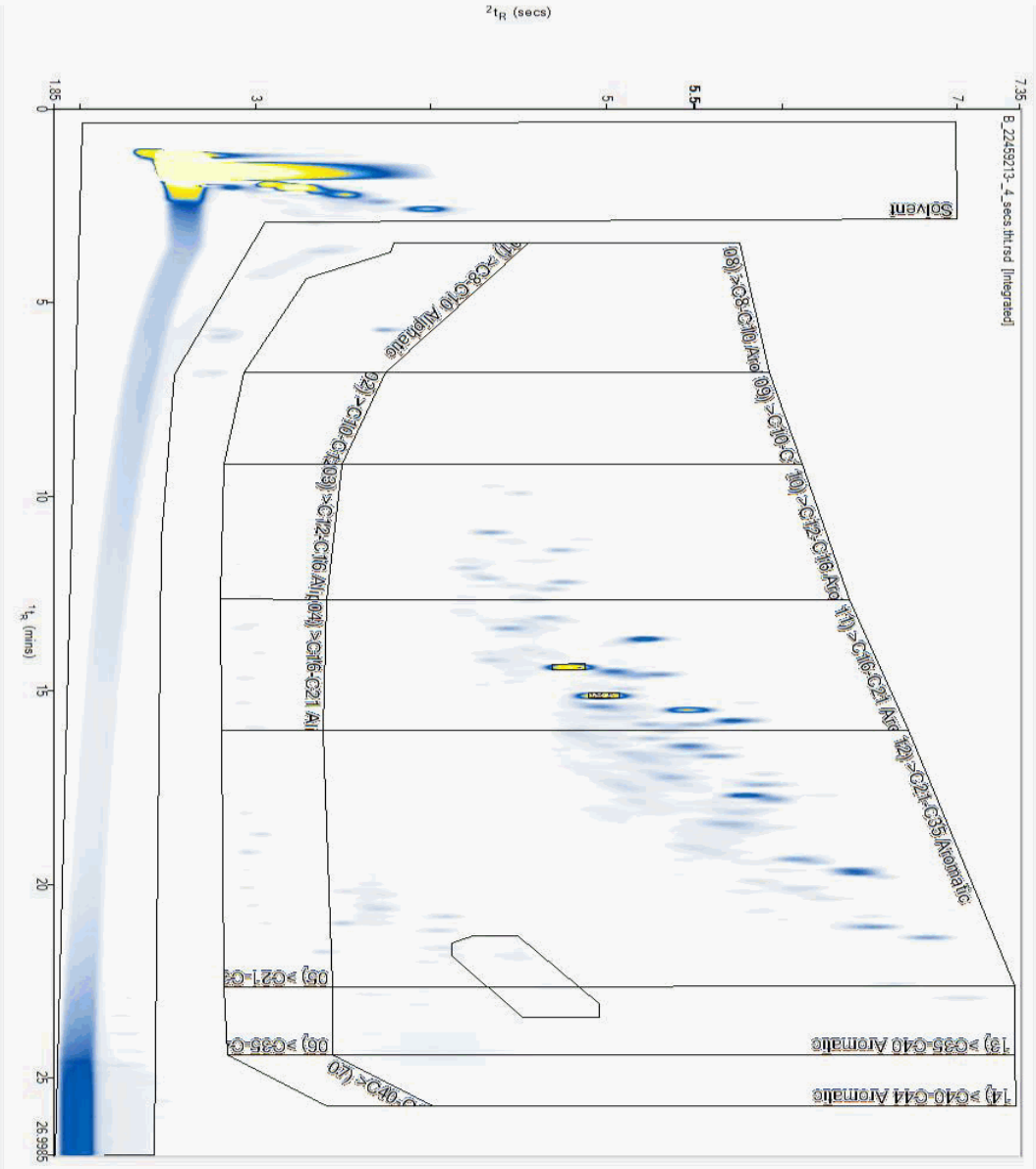
CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22459213 **Depth :** 0.70 - 0.80
Sample ID : WS103-ES1

```
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  Current batch
Sample Identity:  B_22459213-_4_secs.tht
Date Acquired   :  17/07/20 04:17:15
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



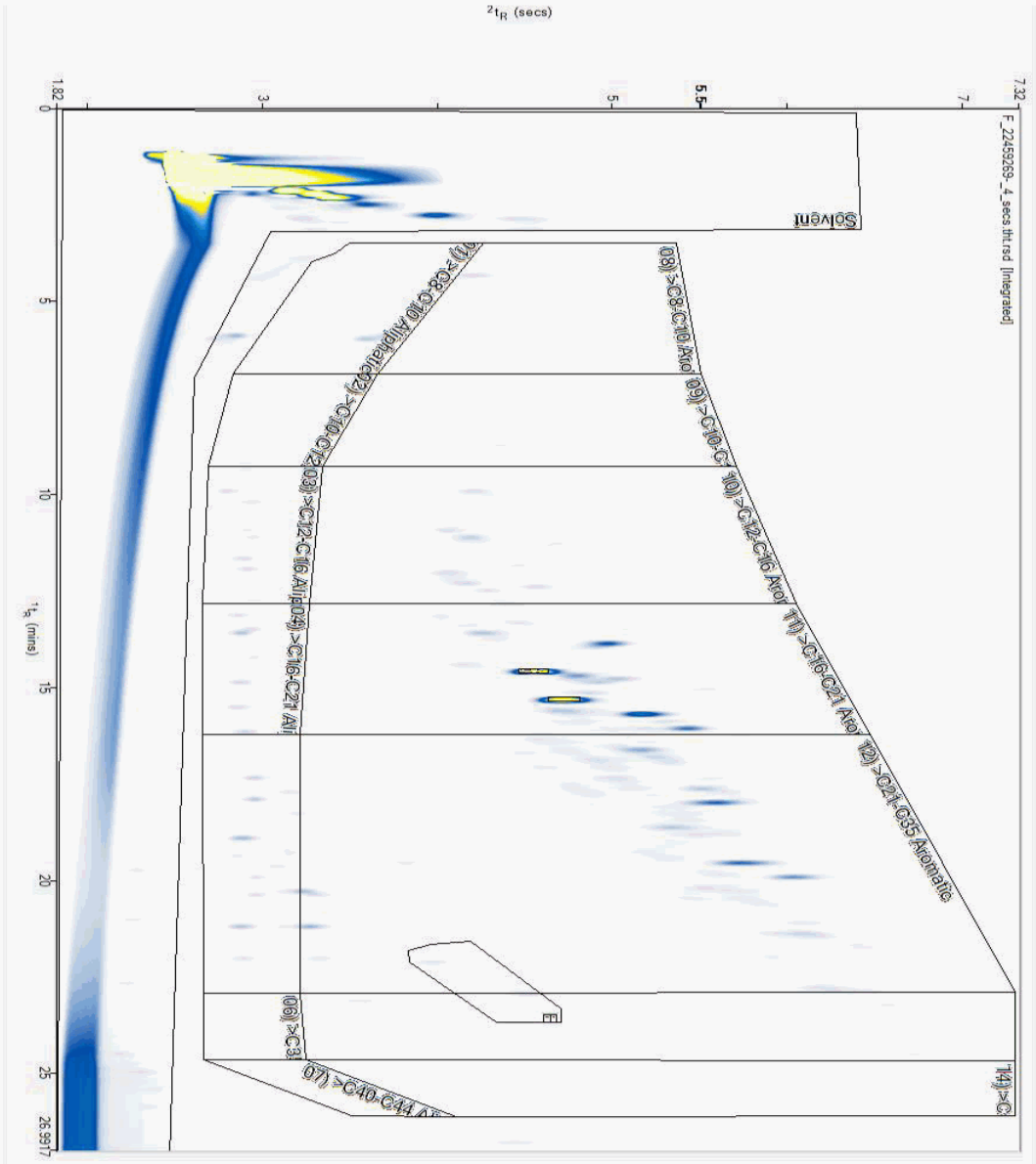
CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22459269 **Depth :** 1.50 - 1.60
Sample ID : WS104-ES1

```
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  Current batch
Sample Identity:  F_22459269-_4_secs.tht
Date Acquired   :  18/07/20 01:28:49
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



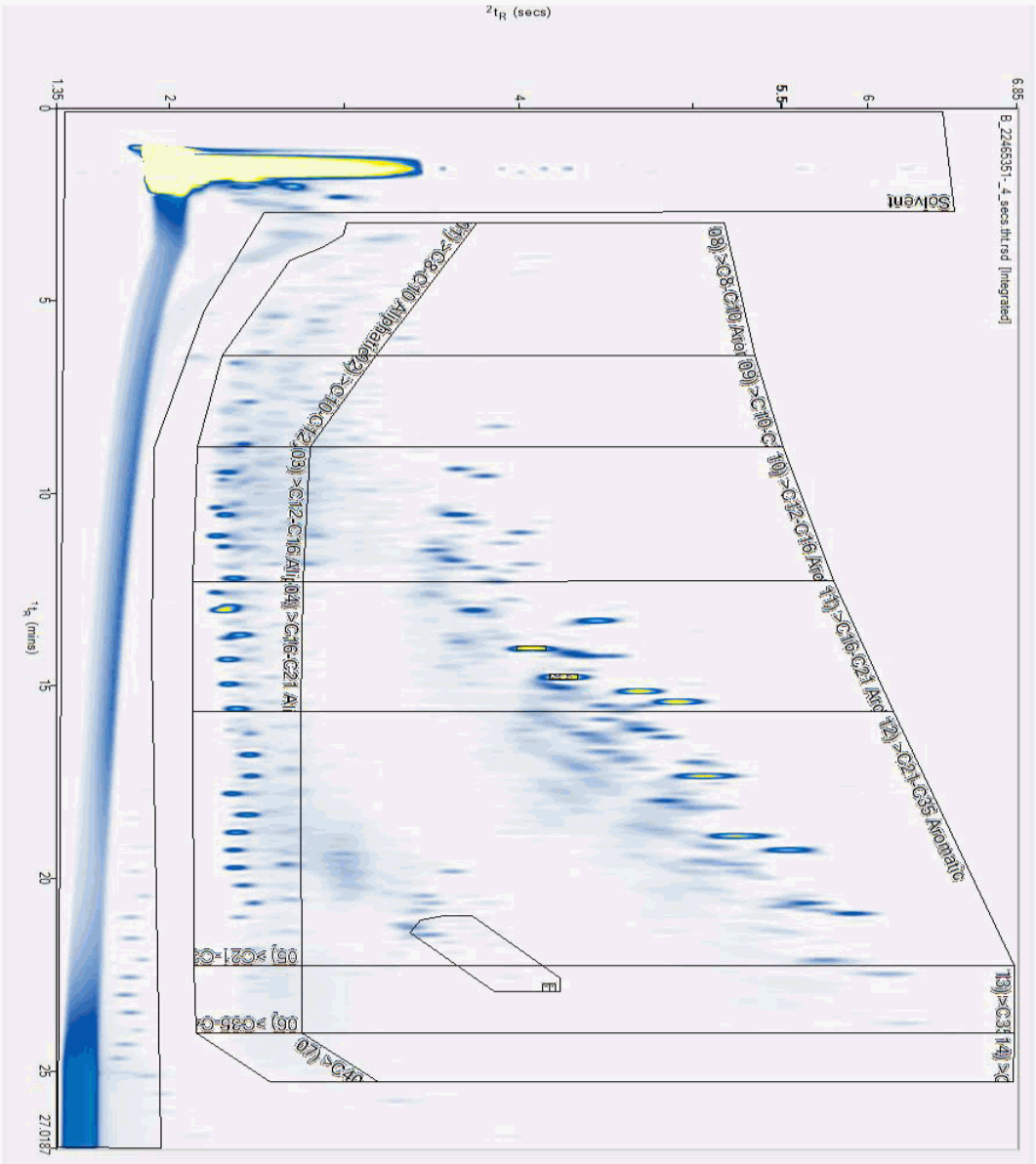
CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22465351 **Depth :** 2.20 - 2.30
Sample ID : WS102-ES1

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  B_22465351-_4_secs.tht
Date Acquired   :  18/07/20 03:14:14
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



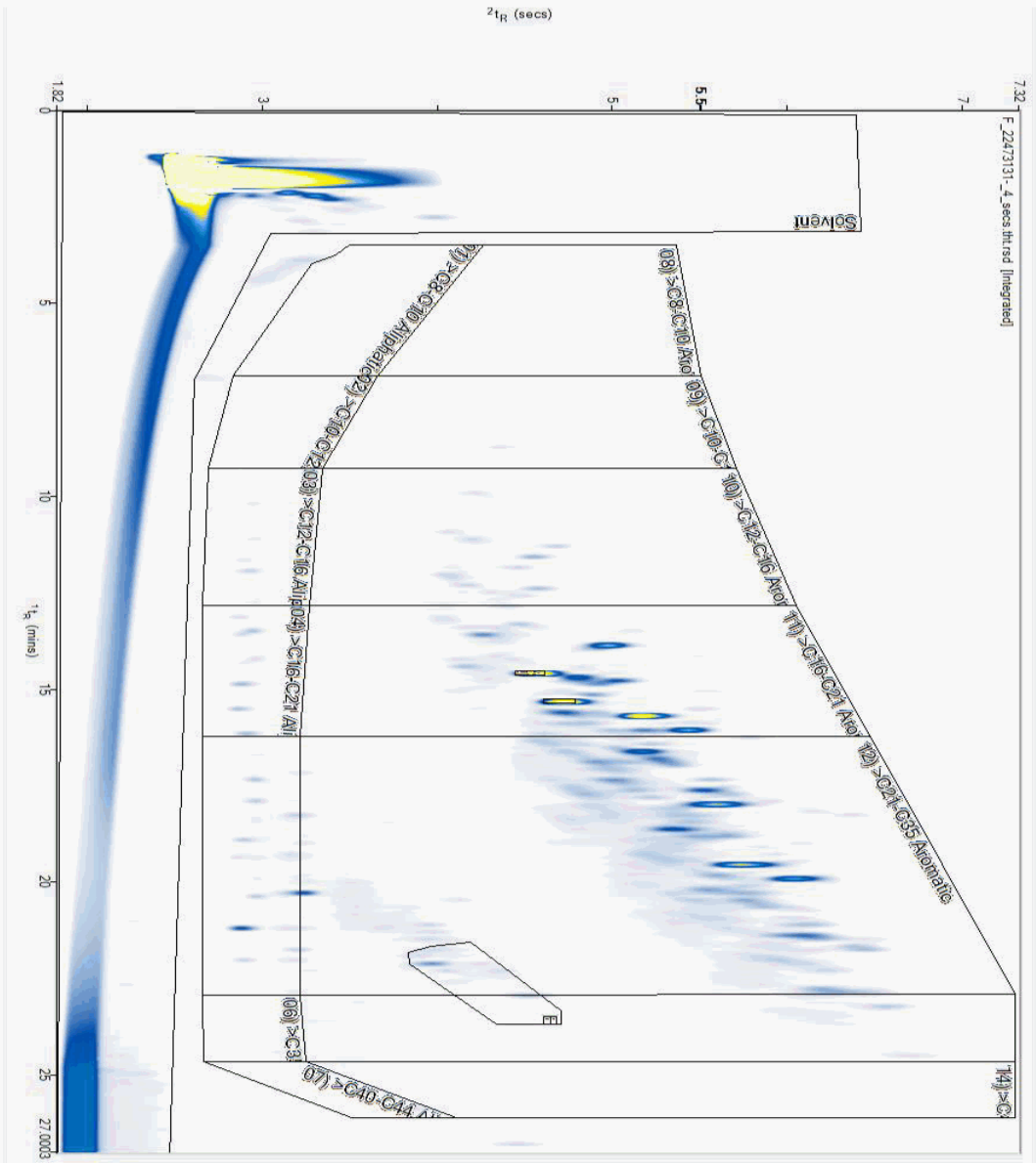
CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22473131 **Depth :** 0.20 - 0.30
Sample ID : WS101-ES1

ChromSpace LIMS export
Current batch
Sample Identity: F_22473131-_4_secs.tht
Date Acquired : 17/07/20 12:40:14
Units : ppm
Dilution : 0
CF :
Multiplier :



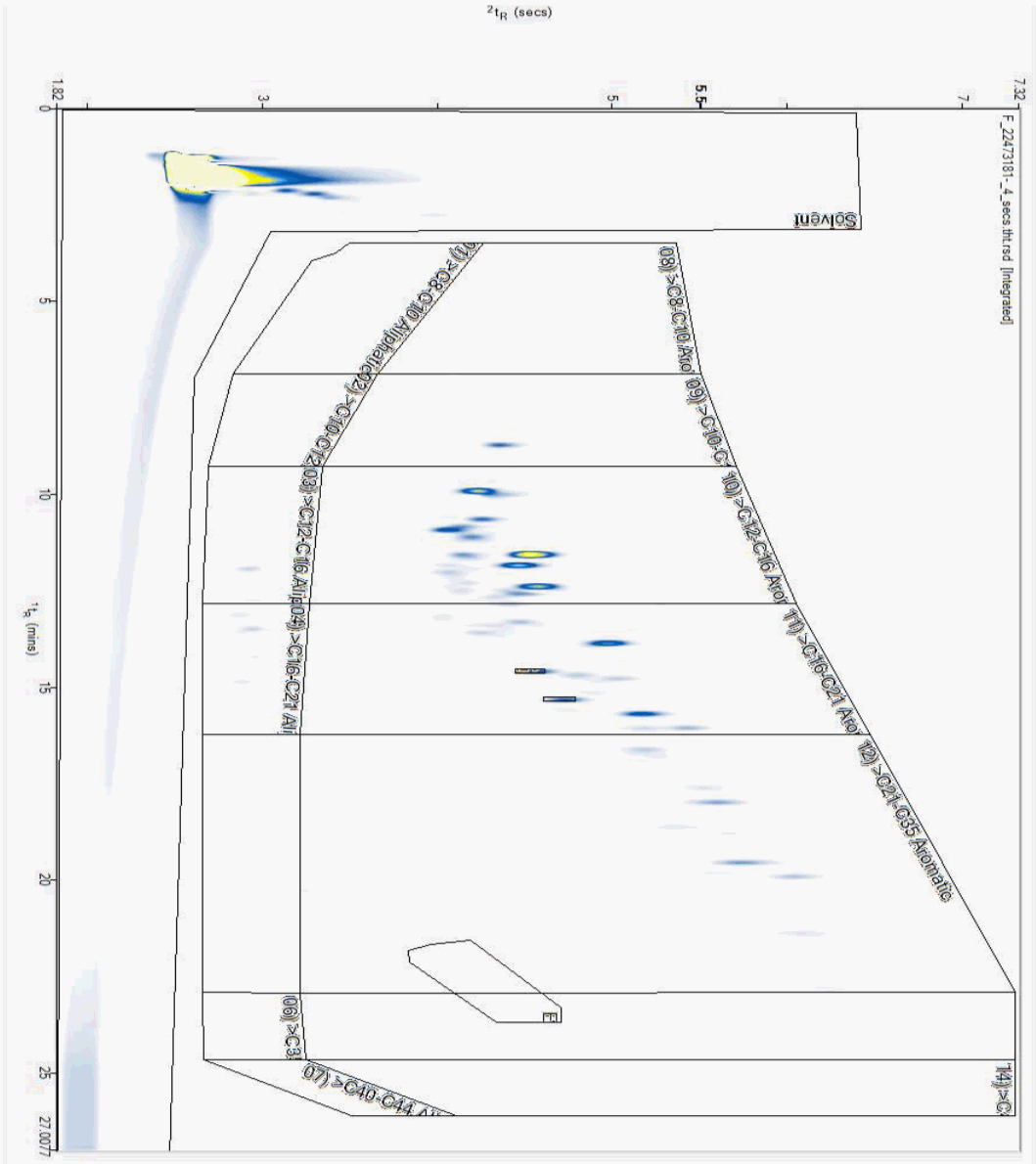
CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22473181 **Depth :** 2.20 - 2.30
Sample ID : WS101-ES3

```
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  Current batch
Sample Identity:  F_22473181-_4_secs.tht
Date Acquired   :  17/07/20 02:02:00
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



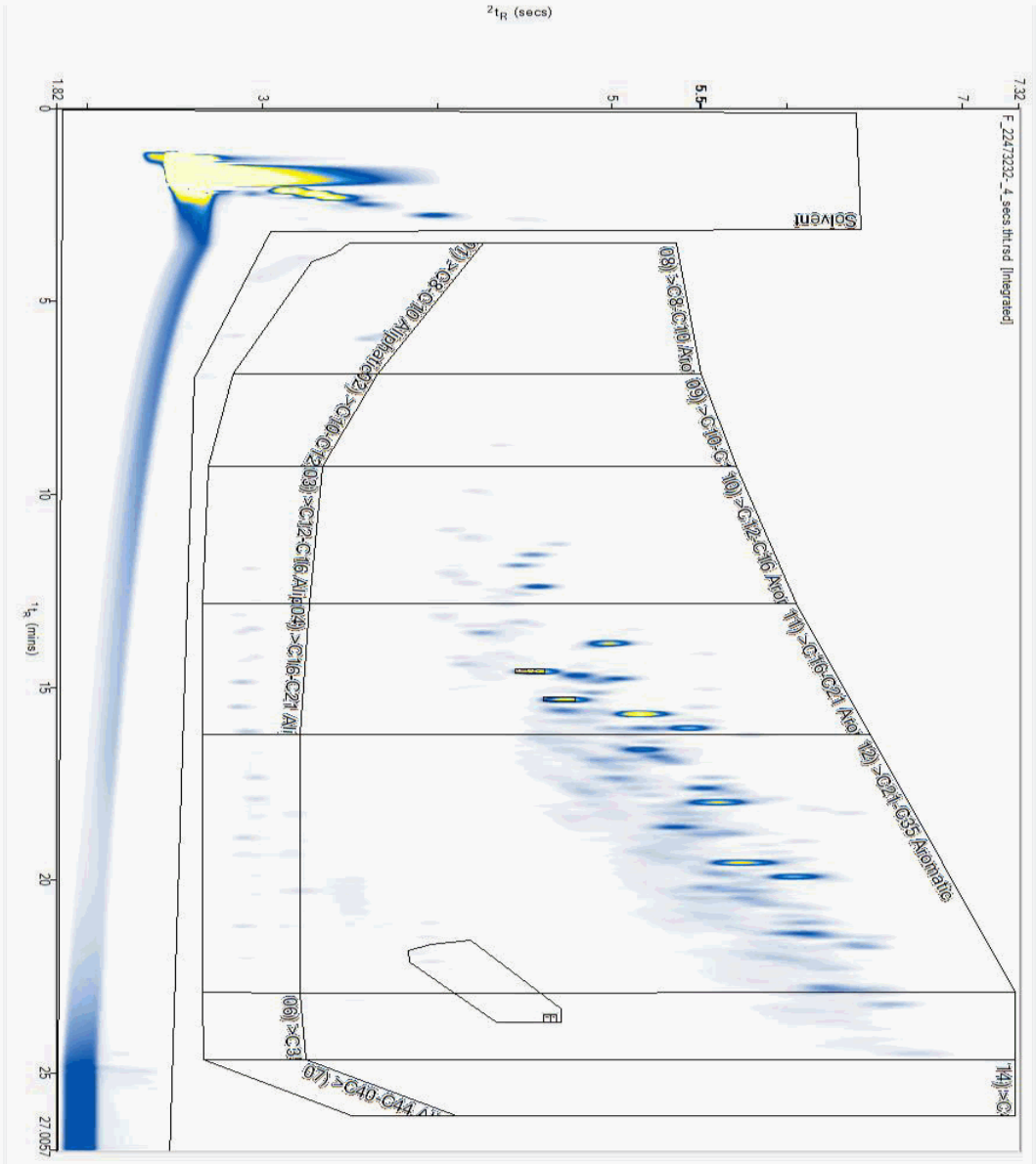
CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22473232 **Depth :** 0.50 - 0.60
Sample ID : WS115-ES1

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22473232-_4_secs.tht
Date Acquired   :  17/07/20 01:21:07
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



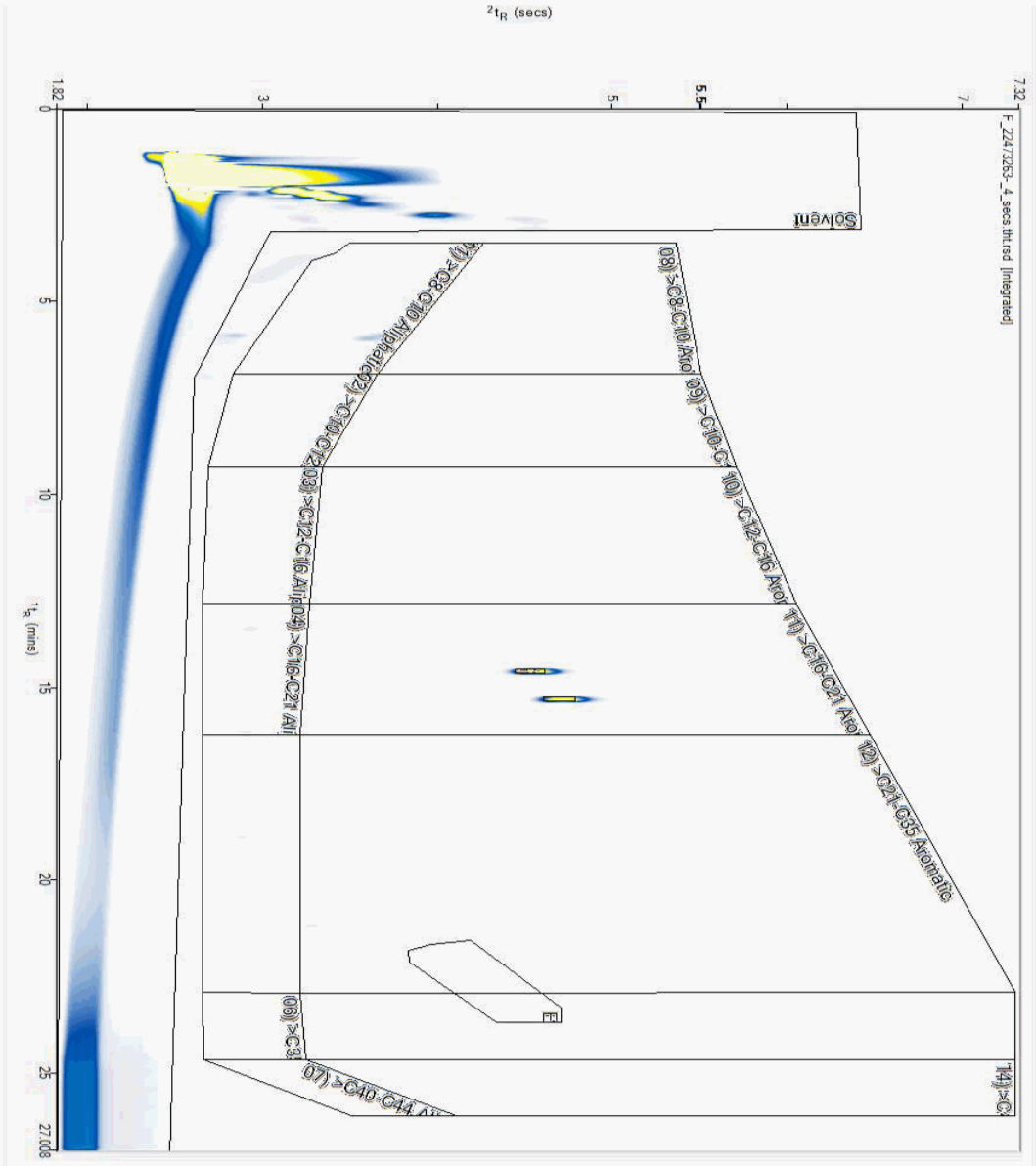
CERTIFICATE OF ANALYSIS

SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22473263 **Depth :** 2.80 - 2.90
Sample ID : WS102-ES2

```
   ChromSpace LIMS export
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Sample Identity:  F_22473263-_4_secs.tht
Date Acquired   :  16/07/20 05:58:40
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
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CERTIFICATE OF ANALYSIS

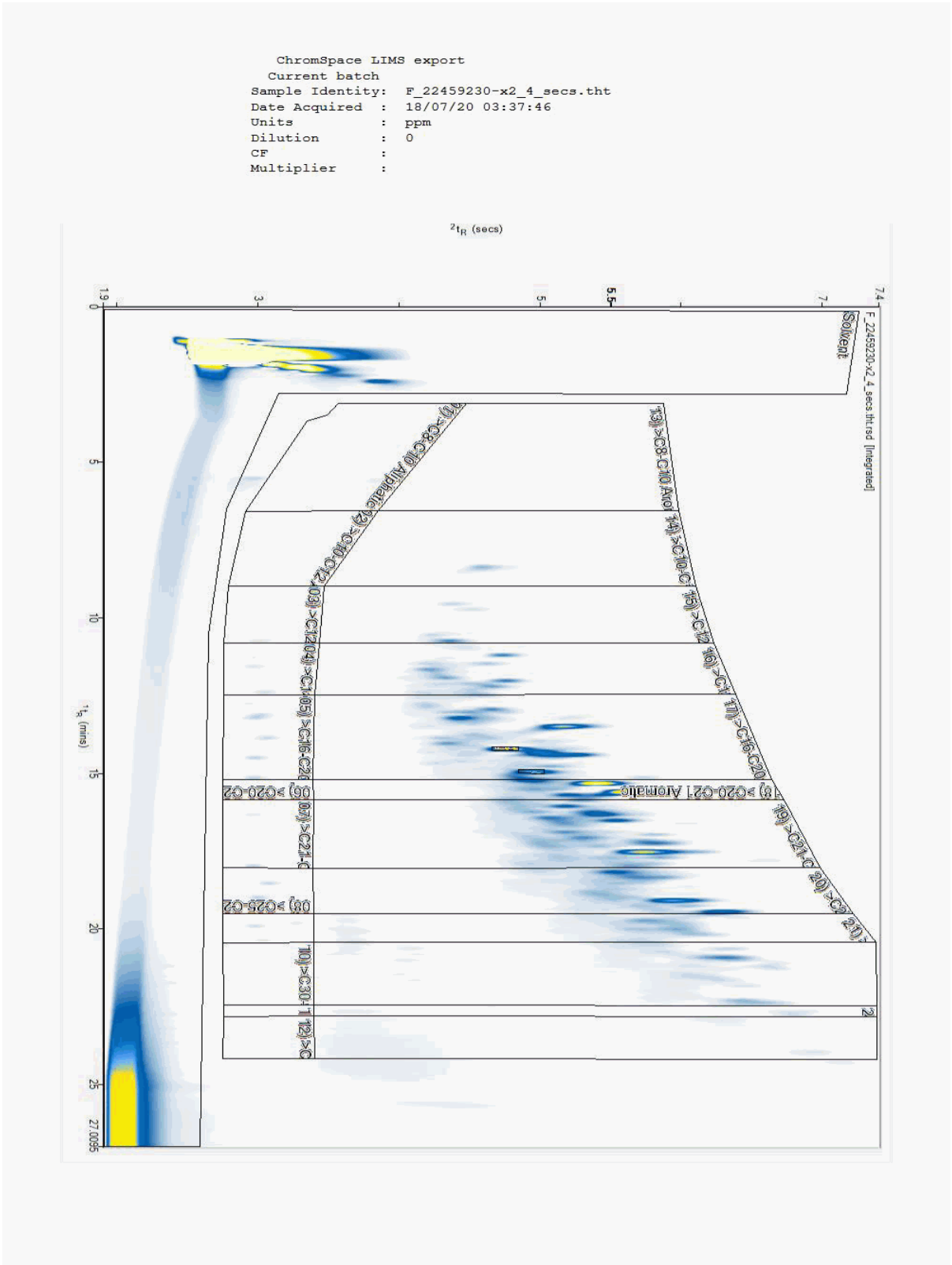
SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 22459230
Sample ID : WS103-ES1

Depth : 0.70 - 0.80



CERTIFICATE OF ANALYSIS

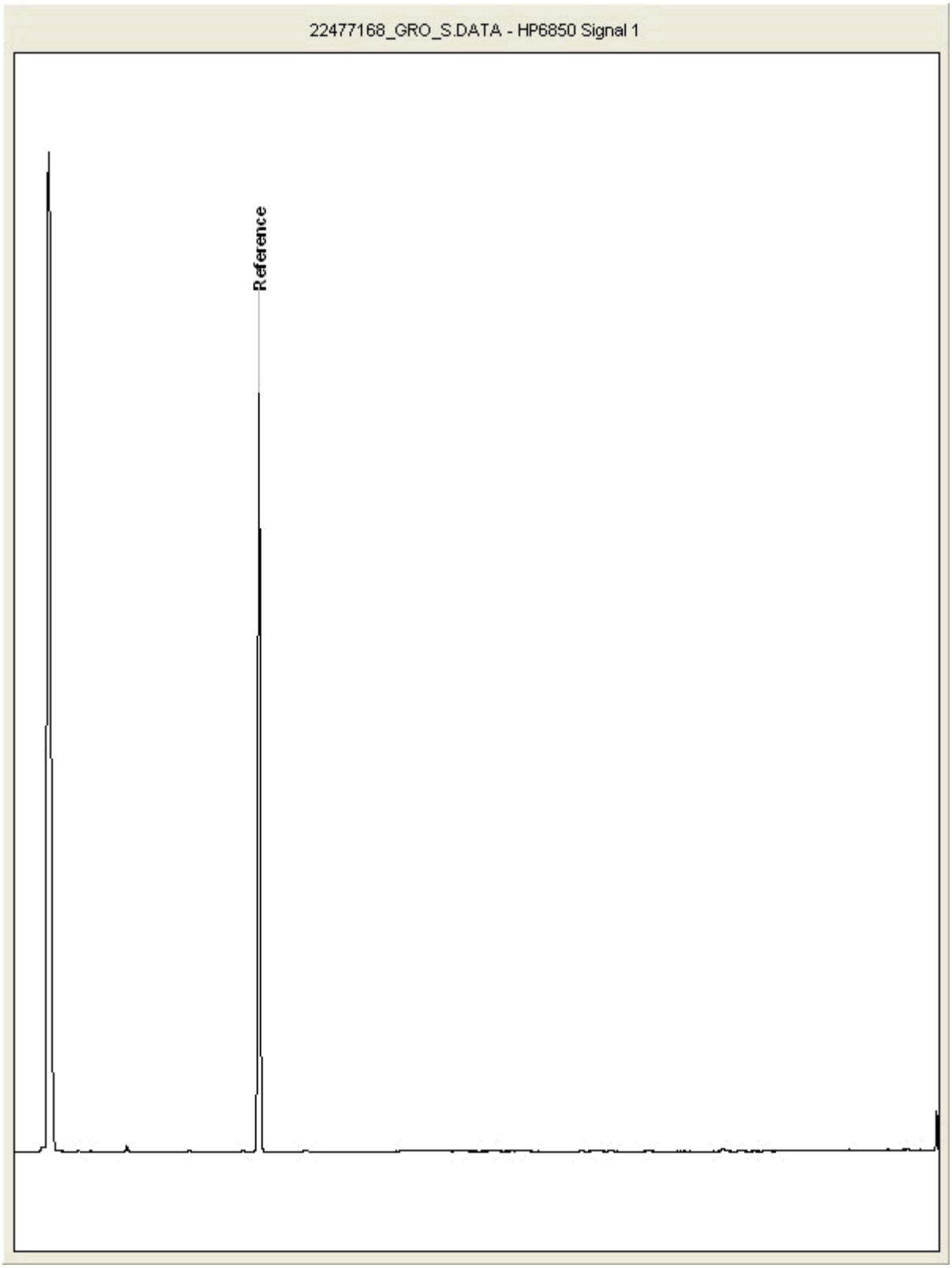
SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22477168
Sample ID : WS102-ES2

Depth : 2.80 - 2.90



CERTIFICATE OF ANALYSIS

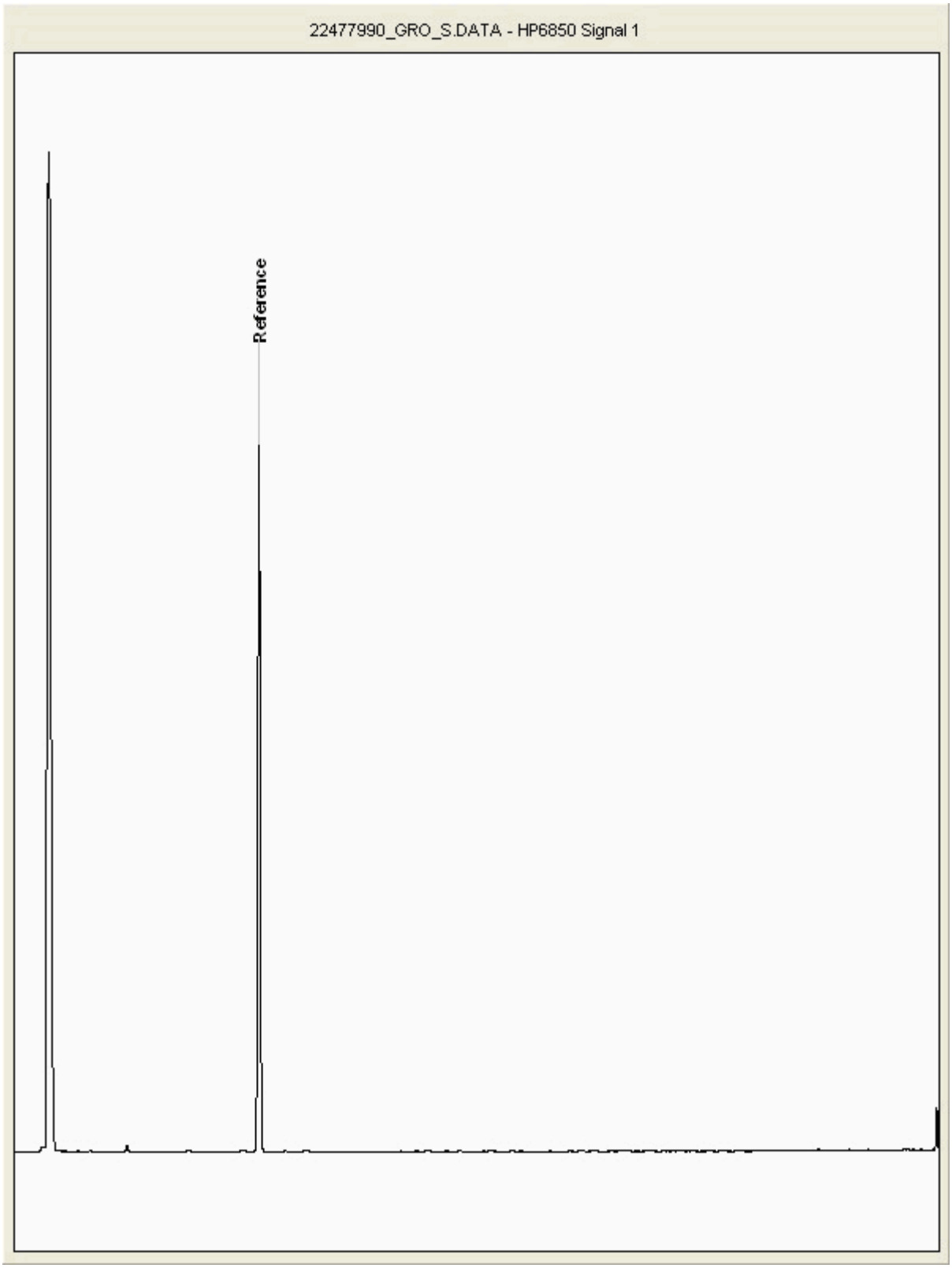
SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22477990
Sample ID : WS101-ES1

Depth : 0.20 - 0.30



CERTIFICATE OF ANALYSIS

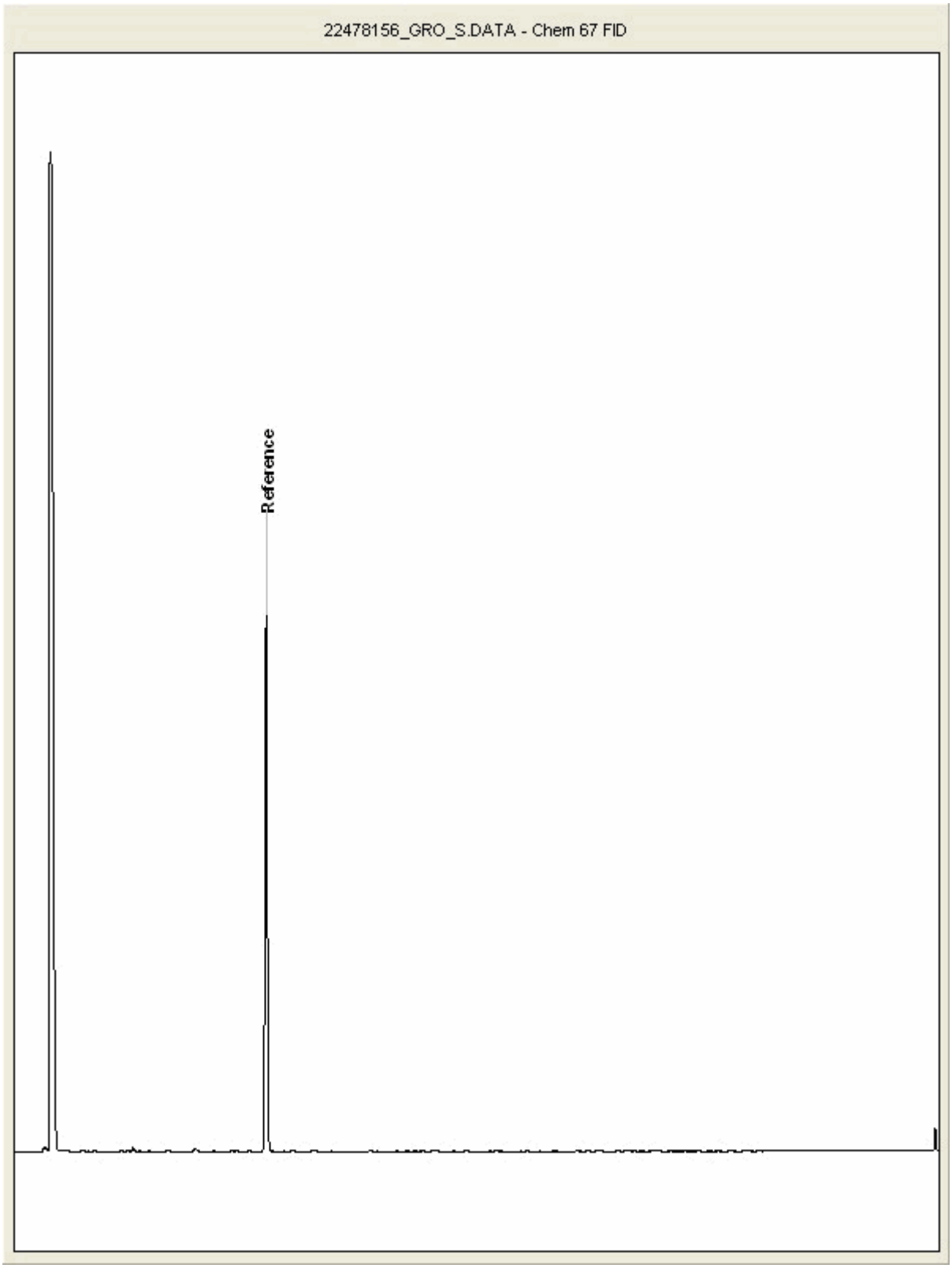
SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22478156
Sample ID : WS104-ES1

Depth : 1.50 - 1.60



CERTIFICATE OF ANALYSIS

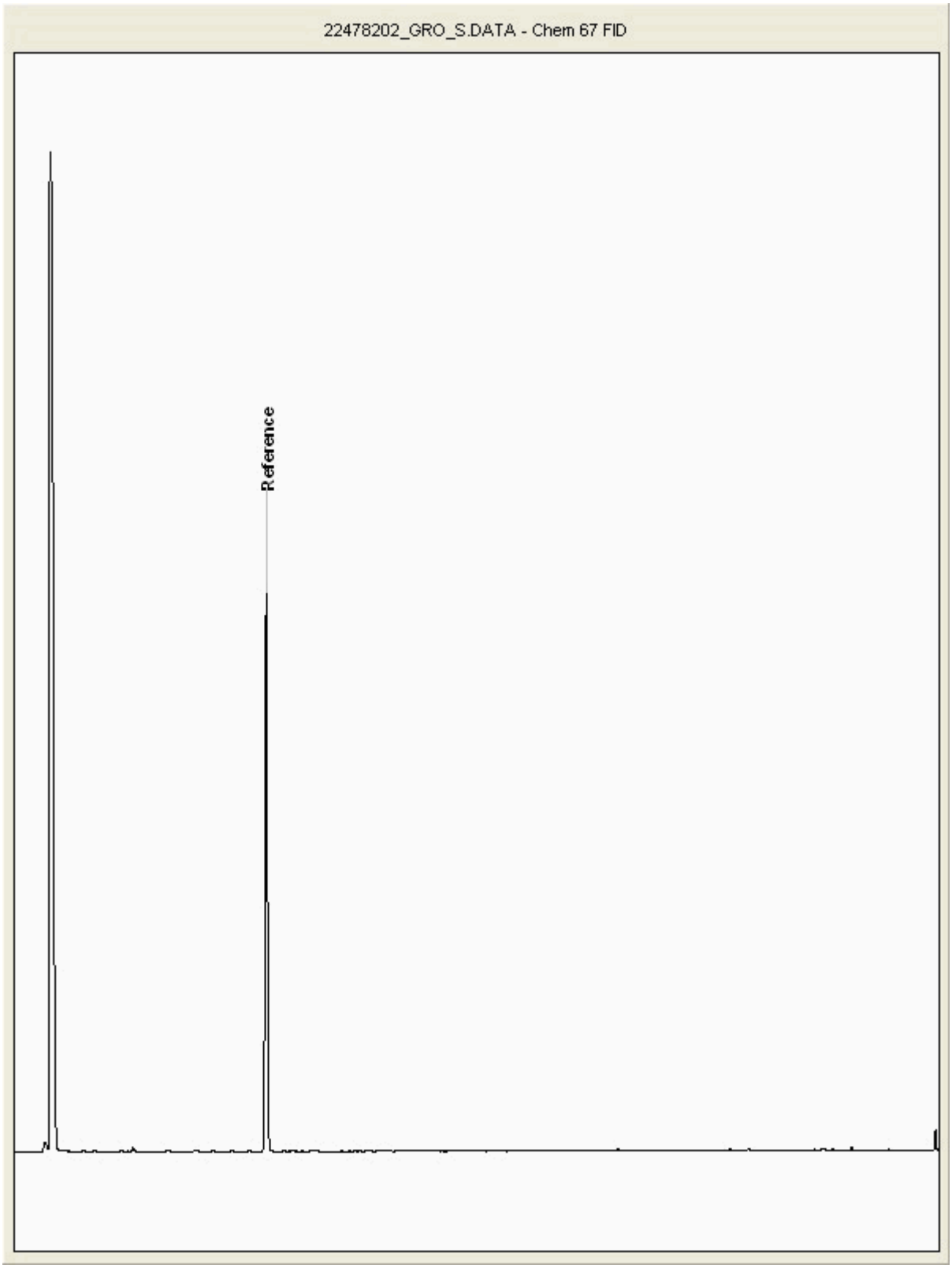
SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22478202
Sample ID : CP101-ES1

Depth : 0.50 - 0.60



CERTIFICATE OF ANALYSIS

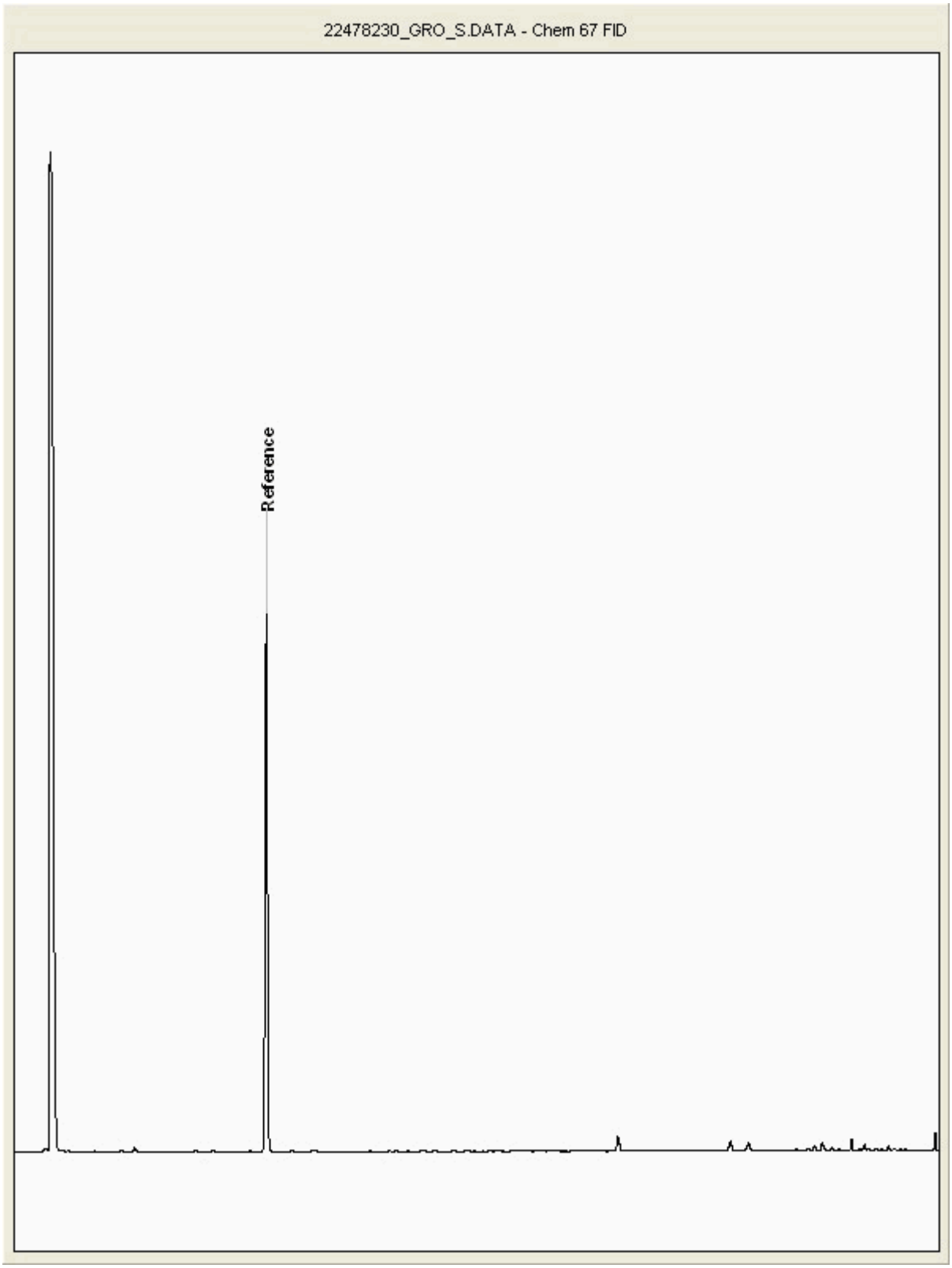
SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22478230
Sample ID : WS115-ES1

Depth : 0.50 - 0.60



CERTIFICATE OF ANALYSIS

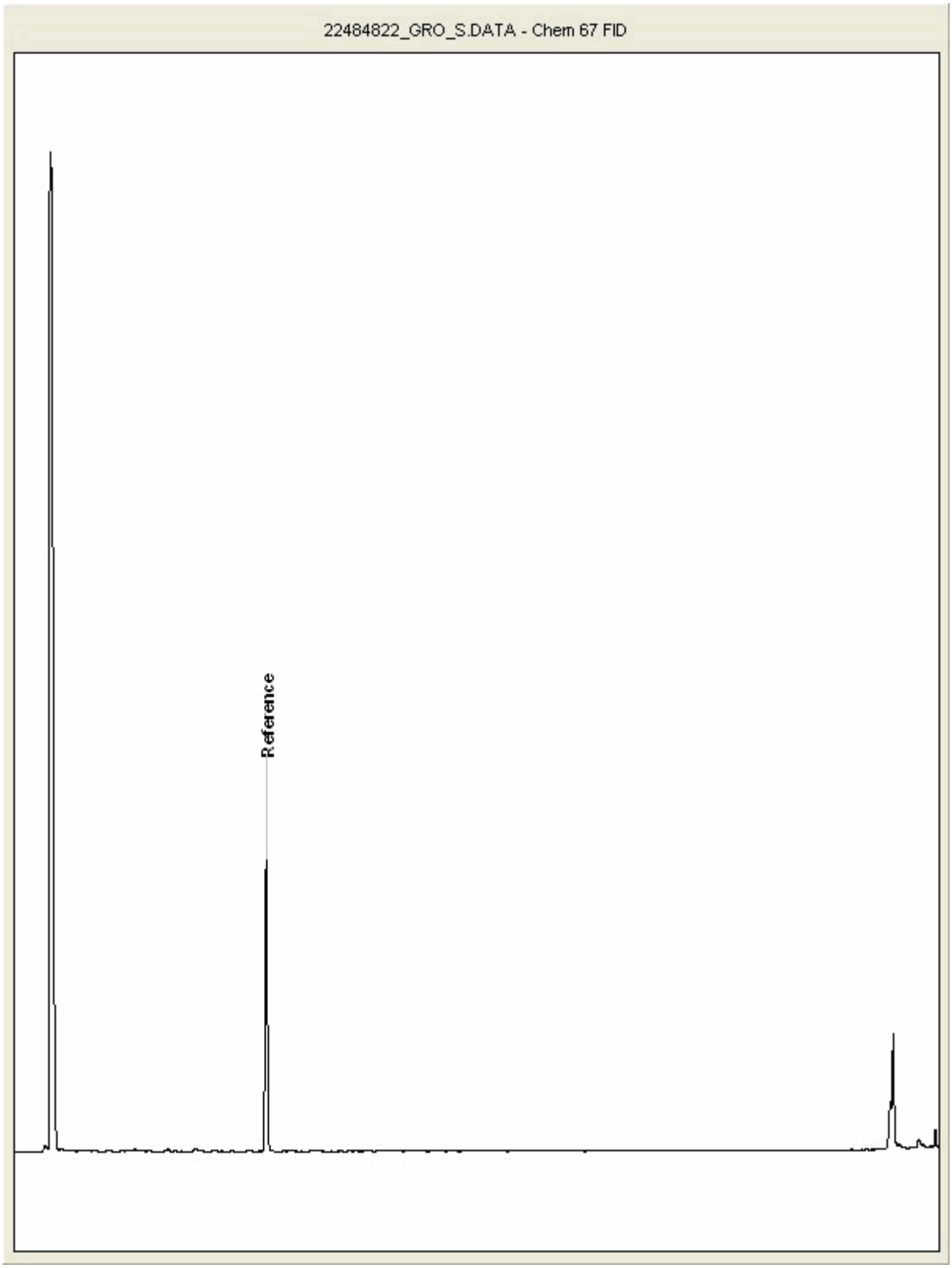
SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22484822
Sample ID : WS102-ES1

Depth : 2.20 - 2.30



CERTIFICATE OF ANALYSIS

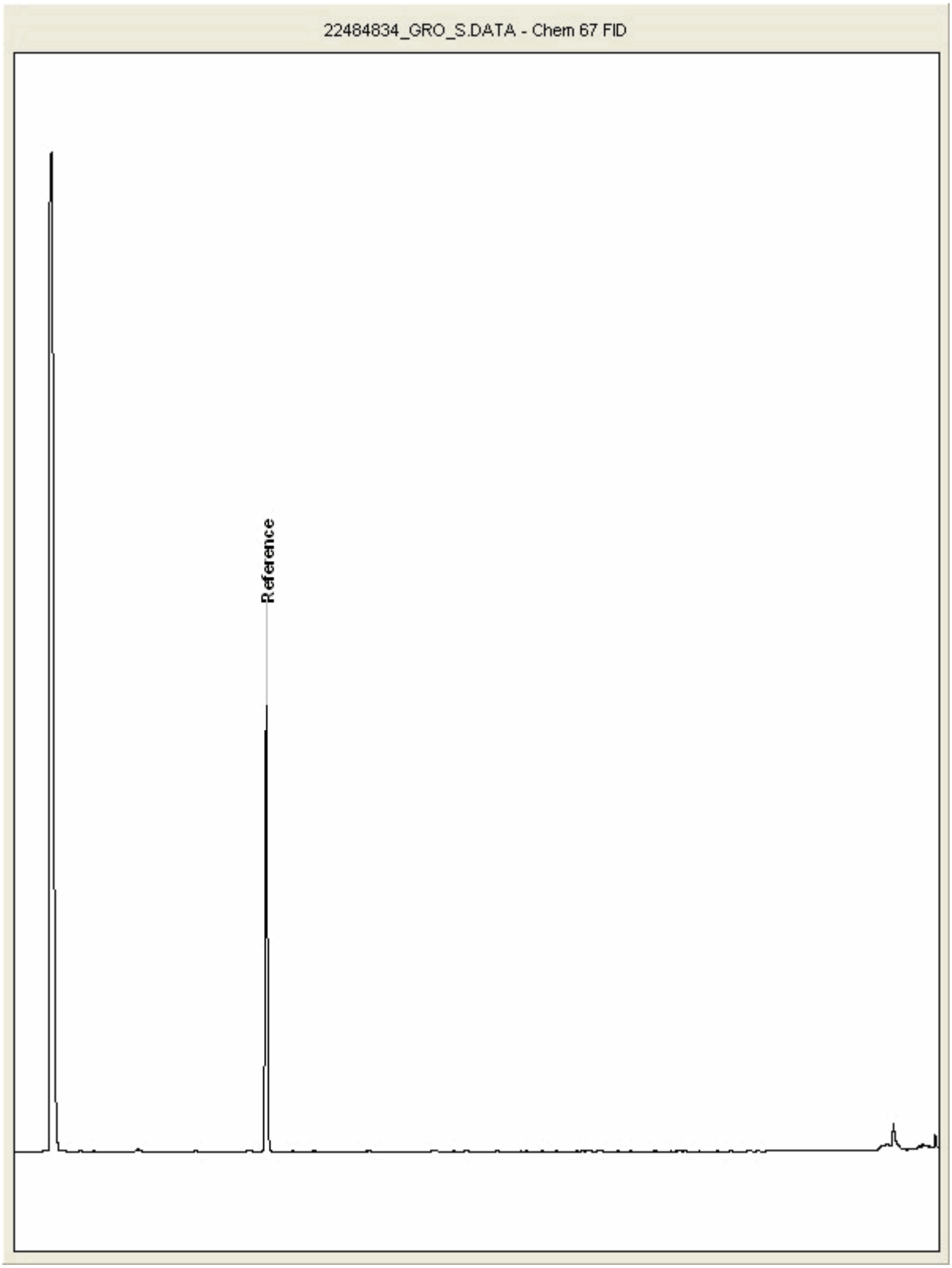
SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22484834
Sample ID : WS103-ES1

Depth : 0.70 - 0.80



CERTIFICATE OF ANALYSIS

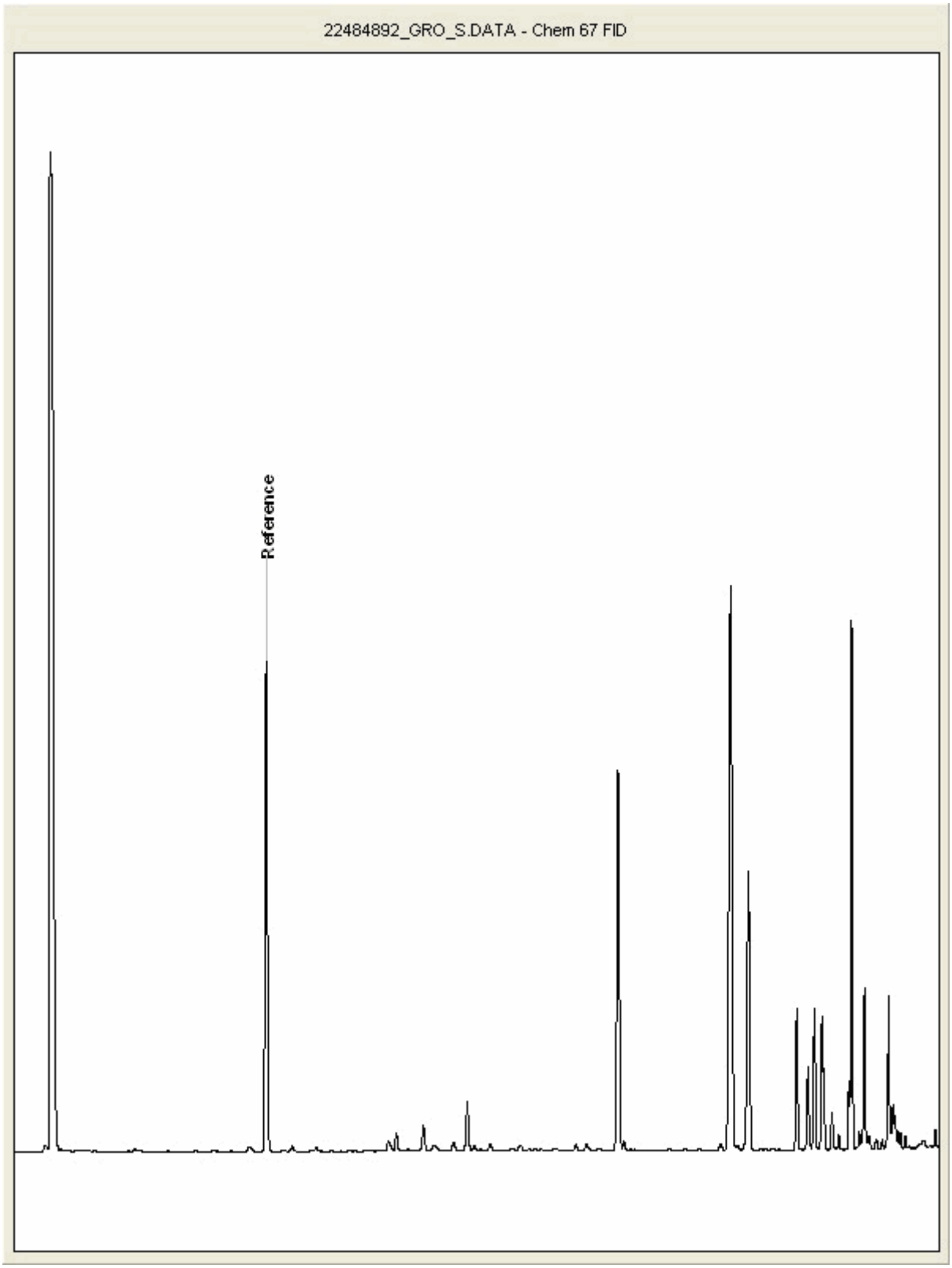
SDG:	200709-112	**Client Reference:**	10041634	**Report Number:**	560643
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559714

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22484892
Sample ID : WS101-ES3

Depth : 2.20 - 2.30



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

ARCADIS UK Ltd
10th Floor
3 Piccadilly Place
Manchester
M1 2BN

Attention: Dale Fisher

CERTIFICATE OF ANALYSIS

Date of report Generation:	27 July 2020
Customer:	ARCADIS UK Ltd
Sample Delivery Group (SDG):	200710-138
Your Reference:	10041634
Location:	Hyde Road, Manchester M12 5AL
Report No:	560629

This report has been revised and directly supersedes 560626 in its entirety.

We received 7 samples on Friday July 10, 2020 and 7 of these samples were scheduled for analysis which was completed on Monday July 27, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22454358	WS109		0.50 - 0.60	08/07/2020
22454359	WS109		1.40 - 1.50	08/07/2020
22454356	WS110		1.10 - 1.20	08/07/2020
22454357	WS110		3.50 - 3.60	08/07/2020
22454354	WS111		1.00 - 1.10	08/07/2020
22454355	WS111		2.00 - 2.10	08/07/2020
22454353	WS114		0.20 - 0.30	08/07/2020

Maximum Sample/Coolbox Temperature (°C) : **13.2**

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	2245358	2245356	2245357	2245354	2245355	2245353
			Customer Sample Reference	WS109	WS110	WS110	WS111	WS111	WS114
			AGS Reference						
			Depth (m)	0.50 - 0.60	1.10 - 1.20	3.50 - 3.60	1.00 - 1.10	2.00 - 2.10	0.20 - 0.30
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 6			X			X		X			X		X		X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4		X			X					X					X		
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1		X															
Boron Water Soluble	All	NDPs: 0 Tests: 6			X			X		X			X		X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 6			X			X		X			X		X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6				X			X		X			X		X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 6			X			X		X			X		X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 6			X			X		X			X		X			X	
PAH by GCMS	All	NDPs: 0 Tests: 6			X			X		X			X		X			X	
pH	All	NDPs: 0 Tests: 6			X			X		X			X		X			X	
Sample description	All	NDPs: 0 Tests: 6			X			X		X			X		X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 6			X			X		X			X		X			X	
VOC MS (S)	All	NDPs: 0 Tests: 6				X			X		X			X		X			X

CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22454358	WS109	0.50 - 0.60	Green	Sandy Clay Loam	Stones	Brick
22454356	WS110	1.10 - 1.20	Dark Brown	Sandy Loam	Vegetation	Stones
22454357	WS110	3.50 - 3.60	Dark Brown	Sandy Loam	Vegetation	Stones
22454354	WS111	1.00 - 1.10	Dark Brown	Loamy Sand	Vegetation	Stones
22454355	WS111	2.00 - 2.10	Dark Brown	Sandy Loam	Vegetation	Stones
22454353	WS114	0.20 - 0.30	Dark Brown	Sandy Loam	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS109	WS110	WS110	WS111	WS111	WS114
			Depth (m)	0.50 - 0.60	1.10 - 1.20	3.50 - 3.60	1.00 - 1.10	2.00 - 2.10	0.20 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	10/07/2020	10/07/2020	10/07/2020	10/07/2020	10/07/2020	10/07/2020
			SDG Ref	200710-138	200710-138	200710-138	200710-138	200710-138	200710-138
			Lab Sample No.(s)	22454358	22454356	22454357	22454354	22454355	22454353
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		15	20	20	15	24	4.4
pH	1 pH Units	TM133		8.6 M	7.82 M	8.03 M	8.14 M	7.56 M	9.38 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<60 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		25.6 M	21.8 M	14.9 M	6.93 M	6.94 M	1.11 M
Barium	<0.6 mg/kg	TM181		436 #	478 #	224 #	130 #	97.3 #	27.9 #
Beryllium	<0.01 mg/kg	TM181		1.37 M	1.42 M	2.07 M	1.07 M	0.911 M	0.191 M
Cadmium	<0.02 mg/kg	TM181		0.609 M	0.473 M	0.161 M	0.222 M	0.167 M	0.132 M
Chromium	<0.9 mg/kg	TM181		13.7 M	14.7 M	16.5 M	18.1 M	18.2 M	3.61 M
Copper	<1.4 mg/kg	TM181		86.1 M	83.4 M	42.6 M	23.2 M	17.6 M	2.05 M
Lead	<0.7 mg/kg	TM181		2070 M	408 M	138 M	18.9 M	46.2 M	6.77 M
Mercury	<0.14 mg/kg	TM181		0.338 M	0.474 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		31.2 M	31.2 M	36.6 M	36 M	17.6 M	6.27 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181		26.5 #	31.4 #	34.7 #	24.9 #	29.4 #	4.45 #
Zinc	<1.9 mg/kg	TM181		370 M	193 M	68.8 M	62.3 M	41.4 M	16.4 M
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0481 M	0.0912 M	0.0298 M	0.0327 M	0.0318 M	0.0861 M
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304		<0.001 #					
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304		<0.001 #					
Additional Asbestos Components (Using TM048)		TM304		None #					
Analysts Comments		TM304		N/C					
Asbestos Quantification - Total - %	<0.001 %	TM304		<0.001 #					

CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS109	WS110	WS110	WS111	WS111	WS114
			Depth (m)	0.50 - 0.60	1.10 - 1.20	3.50 - 3.60	1.00 - 1.10	2.00 - 2.10	0.20 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	10/07/2020	10/07/2020	10/07/2020	10/07/2020	10/07/2020	10/07/2020
			SDG Ref	200710-138	200710-138	200710-138	200710-138	200710-138	200710-138
			Lab Sample No.(s)	22454358	22454356	22454357	22454354	22454355	22454353
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		86.7	91.4	85.8	91.3	87	102
Acenaphthene-d10 % recovery**	%	TM218		86.2	91.6	88.6	92.7	87.4	98.1
Phenanthrene-d10 % recovery**	%	TM218		83.2	92.7	90.5	91.4	88.9	95.8
Chrysene-d12 % recovery**	%	TM218		77.5	82.5	83	83.1	81.4	90.8
Perylene-d12 % recovery**	%	TM218		75.5	82.9	83.4	83.6	83.1	87.7
Naphthalene	<0.009 mg/kg	TM218		0.101 M	0.0927 M	0.0311 M	<0.009 M	<0.009 M	<0.09 M
Acenaphthylene	<0.012 mg/kg	TM218		0.0829 M	0.112 M	0.0508 M	<0.012 M	<0.012 M	<0.12 M
Acenaphthene	<0.008 mg/kg	TM218		0.466 M	0.254 M	0.183 M	<0.008 M	<0.008 M	<0.08 M
Fluorene	<0.01 mg/kg	TM218		0.346 M	0.252 M	0.155 M	<0.01 M	<0.01 M	<0.1 M
Phenanthrene	<0.015 mg/kg	TM218		3.55 M	2.37 M	1.12 M	0.0182 M	0.0237 M	0.188 M
Anthracene	<0.016 mg/kg	TM218		0.894 M	0.739 M	0.406 M	<0.016 M	<0.016 M	<0.16 M
Fluoranthene	<0.017 mg/kg	TM218		5.64 M	4.27 M	2.24 M	<0.017 M	0.033 M	0.33 M
Pyrene	<0.015 mg/kg	TM218		5.18 M	4.08 M	2.2 M	<0.015 M	0.0326 M	0.318 M
Benz(a)anthracene	<0.014 mg/kg	TM218		2.38 M	2.03 M	1.05 M	<0.014 M	<0.014 M	0.149 M
Chrysene	<0.01 mg/kg	TM218		2.5 M	2.03 M	1.02 M	<0.01 M	0.0169 M	0.15 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		3.16 M	2.02 M	1.22 M	<0.015 M	<0.015 M	<0.15 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		1.03 M	0.781 M	0.35 M	<0.014 M	<0.014 M	<0.14 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		2.35 M	1.77 M	0.928 M	<0.015 M	<0.015 M	<0.15 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		1.39 M	0.984 M	0.453 M	<0.018 M	<0.018 M	<0.18 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.254 M	0.245 M	0.0979 M	<0.023 M	<0.023 M	<0.23 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		1.4 M	1.04 M	0.448 M	<0.024 M	<0.024 M	<0.24 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		30.7	23.1	11.9	<0.118	<0.118	<1.18

CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS109	WS110	WS110	WS111	WS111	WS114
			Depth (m)	0.50 - 0.60	1.10 - 1.20	3.50 - 3.60	1.00 - 1.10	2.00 - 2.10	0.20 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	10/07/2020	10/07/2020	10/07/2020	10/07/2020	10/07/2020	10/07/2020
			SDG Ref	200710-138	200710-138	200710-138	200710-138	200710-138	200710-138
			Lab Sample No.(s)	22454358	22454356	22454357	22454354	22454355	22454353
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		75.4	82.7	85.9	86.4	96.5	110
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	0.01	0.0101	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.026	0.04	0.0391	0.0165	0.0157	0.0178
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0283	0.045	0.0542	0.0578	0.0118	0.0167
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1	<1	<1	<1	<1
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	1.23	<1	<1	<1	<1
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	2.9	2.34	<1	<1	<1
Aliphatics >C21-C35	<1 mg/kg	TM414		3.88	12.5	1.37	<1	3.35	8.65
Aliphatics >C35-C44	<1 mg/kg	TM414		2.95	1.19	<1	<1	<1	14.6
Total Aliphatics >C10-C44	<5 mg/kg	TM414		8.33	17.9	<5	<5	<5	24.2
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		49.8	215	132	<10	<10	51.8
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.0189	0.03	0.0353	0.0389	<0.01	0.0115
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1	<1	<1	<1	<1
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	6.41	4.54	<1	<1	<1
Aromatics > EC16-EC21	<1 mg/kg	TM414		8.57	55.6	30.9	<1	<1	<1
Aromatics > EC21-EC35	<1 mg/kg	TM414		28.1	128	88.5	<1	4.64	12.6
Aromatics >EC35-EC44	<1 mg/kg	TM414		4.19	7.17	3.42	<1	<1	14
Aromatics > EC40-EC44	<1 mg/kg	TM414		1.17	<1	<1	<1	<1	1.61
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		41.5	198	128	<5	5.77	27.6
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		49.9	216	128	<10	<10	51.8
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		0.0543	0.095	0.103	0.0743	<0.05	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089		0.0543	0.095	0.103	0.0743	<0.02	<0.02

CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS109	WS110	WS110	WS111	WS111	WS114
			Depth (m)	0.50 - 0.60	1.10 - 1.20	3.50 - 3.60	1.00 - 1.10	2.00 - 2.10	0.20 - 0.30
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	10/07/2020	10/07/2020	10/07/2020	10/07/2020	10/07/2020	10/07/2020
			SDG Ref	200710-138	200710-138	200710-138	200710-138	200710-138	200710-138
			Lab Sample No.(s)	22454358	22454356	22454357	22454354	22454355	22454353
			AGS Reference						
Dibromofluoromethane**	%	TM116		113	105	106	107	104	113
Toluene-d8**	%	TM116		99.3	97.2	99.7	97.7	94.2	83.1
4-Bromofluorobenzene**	%	TM116		105	96.5	99.1	101	79.1	84.8
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M	<0.01 M	<0.01 M
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M	<0.009 M	<0.009 M
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.007 M	<0.007 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.004 M	<0.004 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.01 #	<0.01 #
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M	<0.01 M	<0.01 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4	<0.4	<0.02	<0.02
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8	<0.8	<0.04	<0.04

CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS109 0.50 - 0.60 SOLID 08/07/2020 00:00:00 10/07/2020 05:00:00 200710-138 22454358 TM048	17/07/2020	Marcin Magdziarek	Loose fibres in soil	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS110 1.10 - 1.20 SOLID 08/07/2020 00:00:00 10/07/2020 05:00:00 200710-138 22454356 TM048	17/07/2020	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS111 1.00 - 1.10 SOLID 08/07/2020 00:00:00 10/07/2020 05:00:00 200710-138 22454354 TM048	16/07/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS114 0.20 - 0.30 SOLID 08/07/2020 00:00:00 10/07/2020 05:00:00 200710-138 22454353 TM048	17/07/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
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Asbestos Quantification - Full

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation	Asbestos Quantification - Total - %
Cust. Sample Ref.	WS109	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)
Depth (m)	0.50 - 0.60					
Sample Type	SOLID					
Date Sampled	08/07/2020 00:00:00					
Date Receieved	10/07/2020 05:00:00					
SDG	200710-138					
Original Sample	22454358					
Method Number	TM304					

CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM304	HSE Contract research Report no 83/1996	Asbestos Quantification in Soil: Fibres identified by morphology only
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

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SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
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Test Completion Dates

Lab Sample No(s)	22454358	22454356	22454357	22454354	22454355	22454353
Customer Sample Ref.	WS109	WS110	WS110	WS111	WS111	WS114
AGS Ref.						
Depth	0.50 - 0.60	1.10 - 1.20	3.50 - 3.60	1.00 - 1.10	2.00 - 2.10	0.20 - 0.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020
Asbestos ID in Solid Samples	17-Jul-2020	17-Jul-2020		16-Jul-2020		17-Jul-2020
Asbestos Quantification - Full	27-Jul-2020					
Boron Water Soluble	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020
EPH CWG GC (S)	20-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020
GRO by GC-FID (S)	16-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020	16-Jul-2020	16-Jul-2020
Hexavalent Chromium (s)	17-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020
Metals in solid samples by OES	17-Jul-2020	17-Jul-2020	17-Jul-2020	16-Jul-2020	17-Jul-2020	17-Jul-2020
PAH by GCMS	17-Jul-2020	18-Jul-2020	17-Jul-2020	18-Jul-2020	18-Jul-2020	18-Jul-2020
pH	13-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020
Sample description	11-Jul-2020	14-Jul-2020	14-Jul-2020	14-Jul-2020	14-Jul-2020	14-Jul-2020
TPH CWG GC (S)	20-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020
VOC MS (S)	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020

ASSOCIATED AQC DATA

Anions by Kone (soil)

Component	Method Code	QC 2273
Chloride (soluble)	TM243	**159.07** 92.11 : 107.89
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**175.7** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2277	QC 2283
Water Soluble Boron	TM222	**100.5** 85.80 : 112.50	**100.0** 85.80 : 112.50

GRO by GC-FID (S)

Component	Method Code	QC 2229	QC 2222
QC	TM089	**90.52** 70.75 : 114.19	**91.65** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2255	QC 2247
Hexavalent Chromium	TM151	**102.0** 95.60 : 107.60	**100.0** 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2235	QC 2203	QC 2259
Aluminium	TM181	**105.31** 73.56 : 108.85	**99.12** 73.56 : 108.85	**93.81** 73.56 : 108.85
Antimony	TM181	**94.31** 76.89 : 111.24	**95.53** 76.89 : 111.24	**95.93** 76.89 : 111.24
Arsenic	TM181	**99.42** 88.53 : 111.01	**98.55** 88.53 : 111.01	**99.71** 88.53 : 111.01
Barium	TM181	**97.25** 77.67 : 105.35	**93.58** 77.67 : 105.35	**96.33** 77.67 : 105.35
Beryllium	TM181	**99.25** 85.44 : 109.61	**99.25** 85.44 : 109.61	**98.88** 85.44 : 109.61
Boron	TM181	**96.85** 73.51 : 104.66	**93.98** 73.51 : 104.66	**88.25** 73.51 : 104.66
Cadmium	TM181	**90.12** 77.67 : 104.12	**91.36** 77.67 : 104.12	**90.53** 77.67 : 104.12

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Metals in solid samples by OES

		QC 2235	QC 2203	QC 2259
Chromium	TM181	**97.57** 86.11 : 106.21	**93.91** 86.11 : 106.21	**93.51** 86.11 : 106.21
Cobalt	TM181	**92.14** 84.60 : 104.13	**91.19** 84.60 : 104.13	**90.57** 84.60 : 104.13
Copper	TM181	**92.78** 82.40 : 105.45	**91.9** 82.40 : 105.45	**90.85** 82.40 : 105.45
Iron	TM181	**98.41** 82.95 : 110.58	**98.41** 82.95 : 110.58	**94.44** 82.95 : 110.58
Lead	TM181	**90.77** 78.24 : 104.05	**92.34** 78.24 : 104.05	**92.12** 78.24 : 104.05
Manganese	TM181	**115.0** 94.29 : 119.51	**115.28** 94.29 : 119.51	**113.33** 94.29 : 119.51
Mercury	TM181	**91.79** 83.16 : 107.81	**88.89** 83.16 : 107.81	**90.58** 83.16 : 107.81
Molybdenum	TM181	**96.71** 87.11 : 106.87	**101.23** 87.11 : 106.87	**97.12** 87.11 : 106.87
Nickel	TM181	**93.64** 80.26 : 102.28	**97.8** 80.26 : 102.28	**92.91** 80.26 : 102.28
Phosphorus	TM181	**111.52** 94.56 : 124.28	**106.87** 94.56 : 124.28	**110.3** 94.56 : 124.28
Selenium	TM181	**98.04** 82.28 : 110.48	**98.43** 82.28 : 110.48	**97.65** 82.28 : 110.48
Strontium	TM181	**92.65** 79.13 : 102.79	**89.09** 79.13 : 102.79	**88.64** 79.13 : 102.79
Thallium	TM181	**100.0** 82.94 : 111.86	**98.23** 82.94 : 111.86	**100.88** 82.94 : 111.86
Tin	TM181	**99.62** 86.72 : 110.03	**98.48** 86.72 : 110.03	**96.58** 86.72 : 110.03
Titanium	TM181	**96.95** 66.23 : 102.06	**91.6** 66.23 : 102.06	**84.73** 66.23 : 102.06
Vanadium	TM181	**99.63** 86.19 : 109.45	**96.34** 86.19 : 109.45	**94.14** 86.19 : 109.45
Zinc	TM181	**97.54** 84.68 : 113.99	**100.62** 84.68 : 113.99	**96.1** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2224	QC 2282	QC 2211
Acenaphthene	TM218	**93.0** 80.97 : 105.99	**92.5** 80.97 : 105.99	**95.5** 76.79 : 103.90
Acenaphthylene	TM218	**96.0** 80.24 : 105.29	**95.0** 80.24 : 105.29	**95.0** 78.40 : 108.66
Anthracene	TM218	**92.0** 73.72 : 109.23	**91.0** 73.72 : 109.23	**88.5** 71.94 : 101.94
Benz(a)anthracene	TM218	**92.5** 79.72 : 116.84	**90.0** 79.72 : 116.84	**86.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**90.5** 68.42 : 118.29	**87.5** 68.42 : 118.29	**81.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**89.0** 77.35 : 112.97	**94.5** 77.35 : 112.97	**80.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**90.0** 77.68 : 107.38	**88.0** 77.68 : 107.38	**81.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**90.0** 82.61 : 111.93	**88.0** 82.61 : 111.93	**85.5** 75.98 : 116.59

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PAH by GCMS

		QC 2224	QC 2282	QC 2211
Chrysene	TM218	**92.5** 80.28 : 111.42	**87.5** 80.28 : 111.42	**84.5** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**88.0** 79.17 : 106.41	**87.5** 79.17 : 106.41	**81.5** 69.17 : 115.30
Fluoranthene	TM218	**97.0** 79.07 : 112.75	**92.0** 79.07 : 112.75	**86.5** 75.88 : 112.84
Fluorene	TM218	**92.0** 80.52 : 110.90	**90.0** 80.52 : 110.90	**93.5** 78.29 : 103.91
Indeno(123cd)pyrene	TM218	**86.5** 76.97 : 113.36	**88.5** 76.97 : 113.36	**82.5** 70.26 : 117.95
Naphthalene	TM218	**91.5** 78.94 : 110.91	**85.5** 78.94 : 110.91	**88.5** 74.70 : 101.83
Phenanthrene	TM218	**97.0** 79.34 : 111.91	**91.5** 79.34 : 111.91	**87.5** 72.24 : 102.15
Pyrene	TM218	**95.5** 74.43 : 114.36	**92.0** 74.43 : 114.36	**92.5** 71.98 : 105.95

pH

Component	Method Code	QC 2230	QC 2282	QC 2238
pH	TM133	**101.59** 98.47 : 102.33	**101.06** 98.47 : 102.33	**101.06** 98.81 : 101.99

VOC MS (S)

Component	Method Code	QC 2265	QC 2225
1,1,1,2-tetrachloroethane	TM116	**100.4** 79.10 : 119.66	**107.6** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**101.2** 87.51 : 115.37	**106.0** 87.51 : 115.37
1,1,2-Trichloroethane	TM116	**101.2** 75.16 : 112.70	**95.2** 75.16 : 112.70
1,1-Dichloroethane	TM116	**106.8** 86.77 : 122.11	**109.2** 86.77 : 122.11
1,2-Dichloroethane	TM116	**114.4** 90.04 : 132.28	**113.4** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**92.0** 84.04 : 124.40	**98.6** 84.04 : 124.40
2-Chlorotoluene	TM116	**87.8** 73.76 : 115.43	**92.0** 73.76 : 115.43
4-Chlorotoluene	TM116	**81.4** 72.48 : 112.82	**86.4** 72.48 : 112.82
Benzene	TM116	**100.6** 84.29 : 112.22	**103.0** 84.29 : 112.22
Carbon Disulphide	TM116	**103.0** 75.11 : 124.81	**103.6** 75.11 : 124.81
Carbontetrachloride	TM116	**105.0** 82.35 : 126.46	**111.4** 82.35 : 126.46
Chlorobenzene	TM116	**99.4** 82.88 : 122.42	**101.6** 82.88 : 122.42

VOC MS (S)

		QC 2265	QC 2225
Chloroform	TM116	**106.0** 90.35 : 120.38	**110.6** 90.35 : 120.38
Chloromethane	TM116	**107.4** 65.80 : 138.88	**107.4** 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	**104.0** 78.27 : 128.90	**104.2** 78.27 : 128.90
Dibromomethane	TM116	**100.4** 76.00 : 120.73	**99.4** 76.00 : 120.73
Dichloromethane	TM116	**112.4** 93.91 : 130.46	**118.2** 93.91 : 130.46
Ethylbenzene	TM116	**86.4** 70.95 : 113.07	**90.6** 70.95 : 113.07
Hexachlorobutadiene	TM116	**45.0** 14.55 : 147.92	**75.4** 14.55 : 147.92
Isopropylbenzene	TM116	**72.0** 52.00 : 108.19	**79.0** 52.00 : 108.19
Naphthalene	TM116	**98.4** 80.29 : 135.77	**103.4** 80.29 : 135.77
o-Xylene	TM116	**83.4** 64.92 : 98.85	**84.4** 64.92 : 98.85
p/m-Xylene	TM116	**82.5** 72.04 : 104.04	**85.8** 72.04 : 104.04
Sec-Butylbenzene	TM116	**58.2** 27.03 : 135.73	**74.4** 27.03 : 135.73
Tetrachloroethene	TM116	**97.4** 81.43 : 126.65	**106.2** 81.43 : 126.65
Toluene	TM116	**93.2** 82.44 : 103.50	**92.0** 82.44 : 103.50
Trichloroethene	TM116	**98.2** 79.80 : 112.33	**100.0** 79.80 : 112.33
Trichlorofluoromethane	TM116	**106.4** 86.68 : 126.82	**114.2** 86.68 : 126.82
Vinyl Chloride	TM116	**107.0** 69.66 : 136.55	**104.4** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

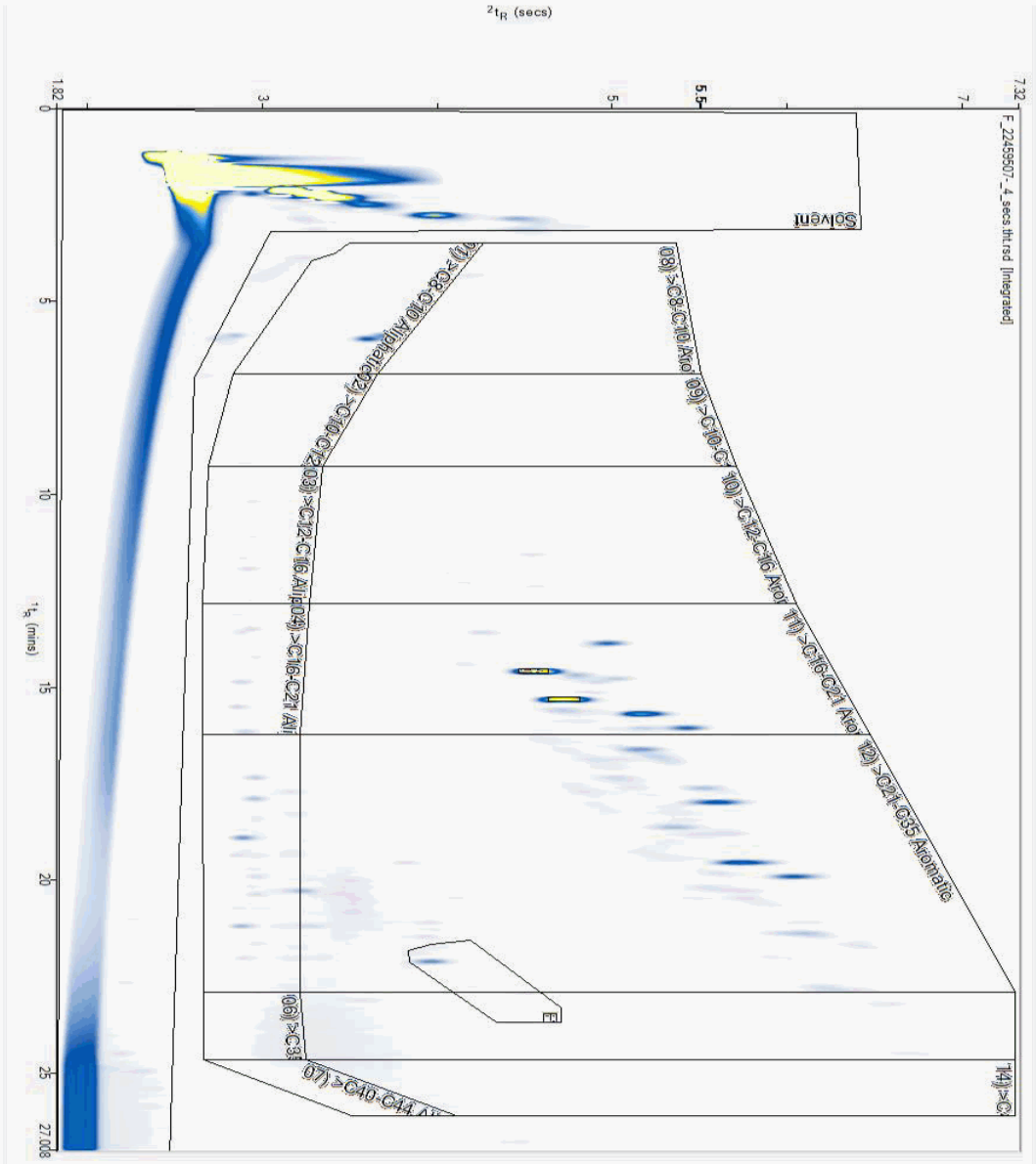
CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
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Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22459507 **Depth :** 0.50 - 0.60
Sample ID : WS109

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22459507-_4_secs.tht
Date Acquired   :  18/07/20 07:18:08
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



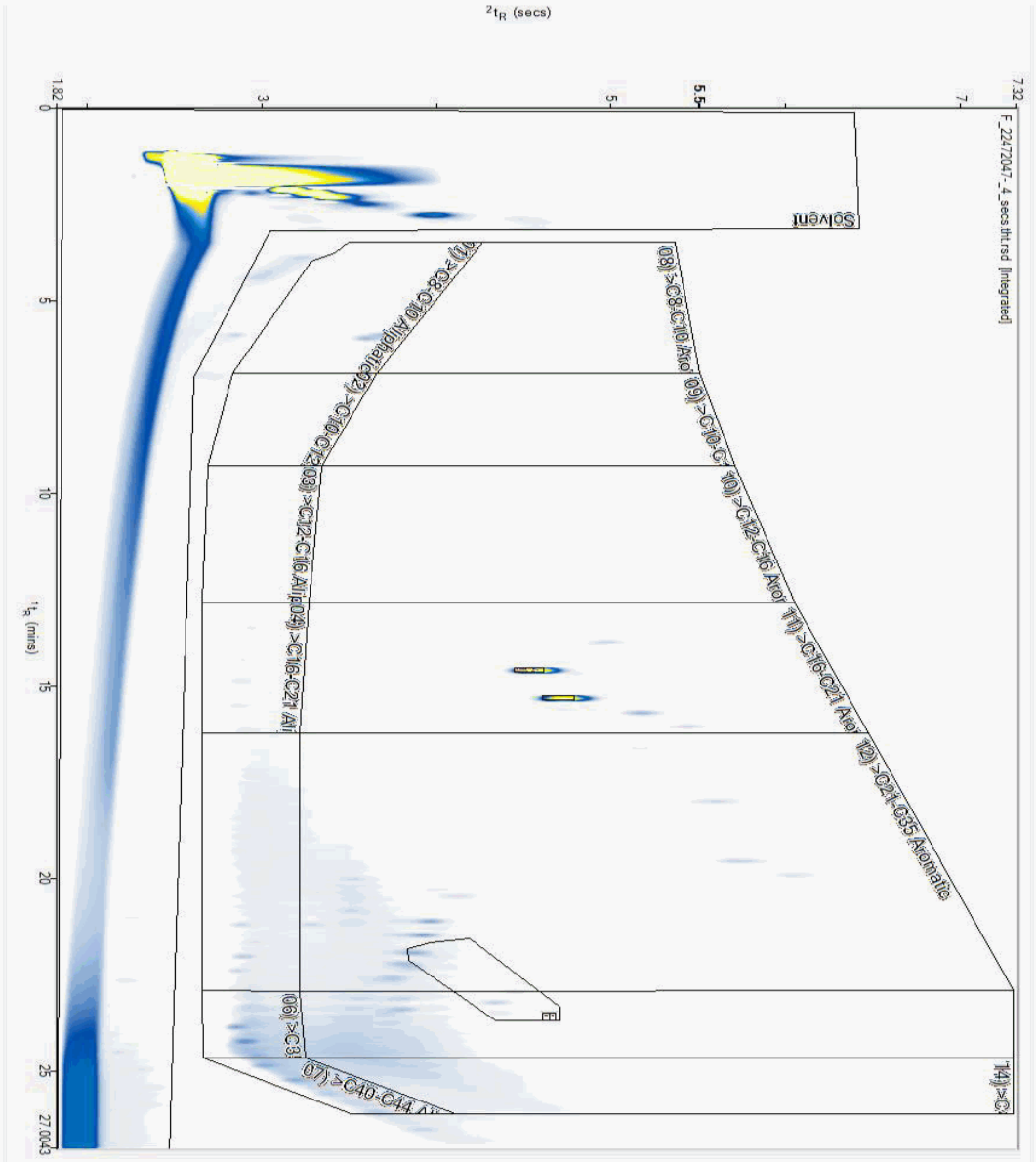
CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
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Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22472047 **Depth :** 0.20 - 0.30
Sample ID : WS114

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22472047-_4_secs.tht
Date Acquired   :  16/07/20 10:37:38
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
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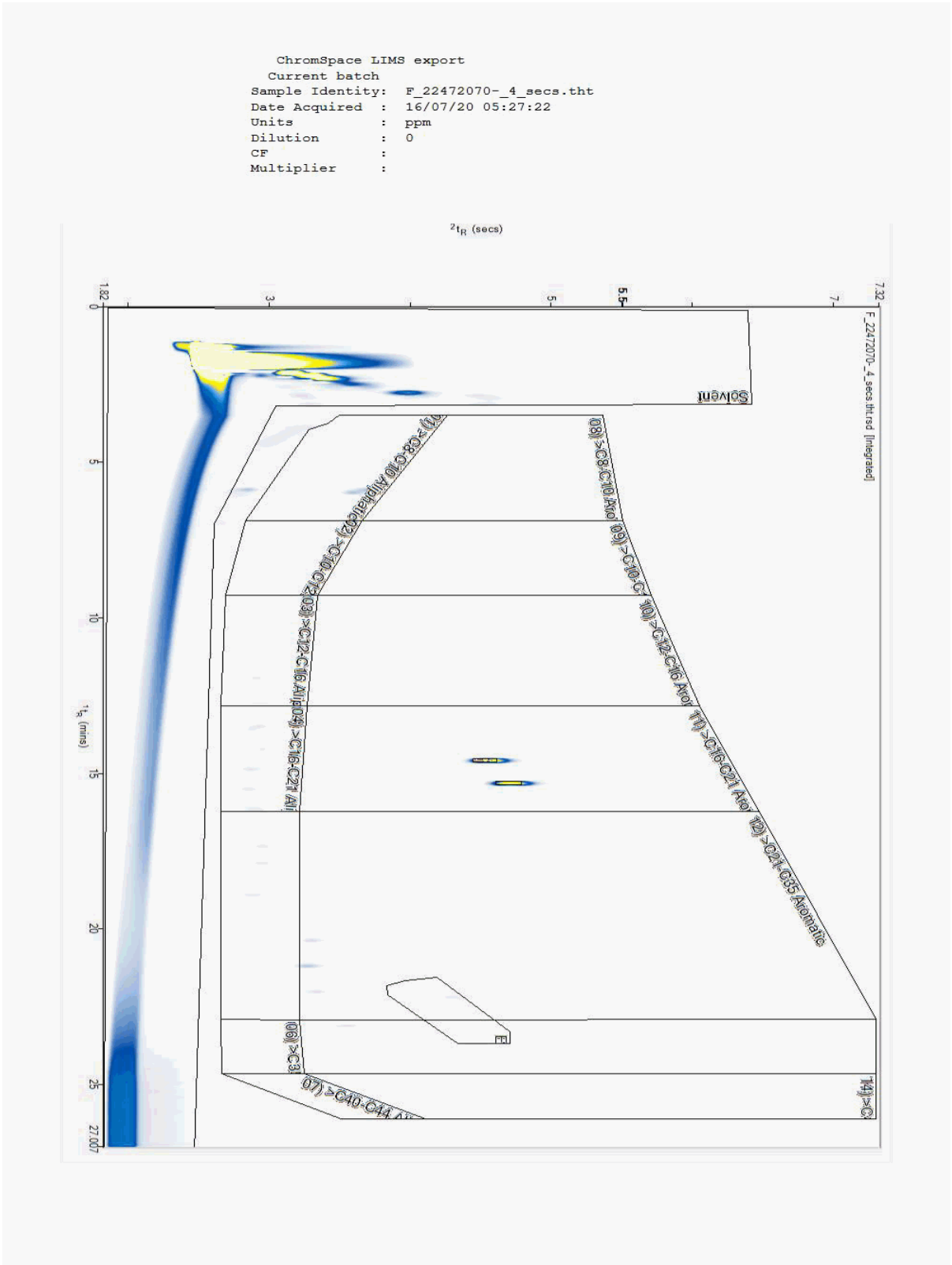


CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22472070 **Depth :** 1.00 - 1.10
Sample ID : WS111



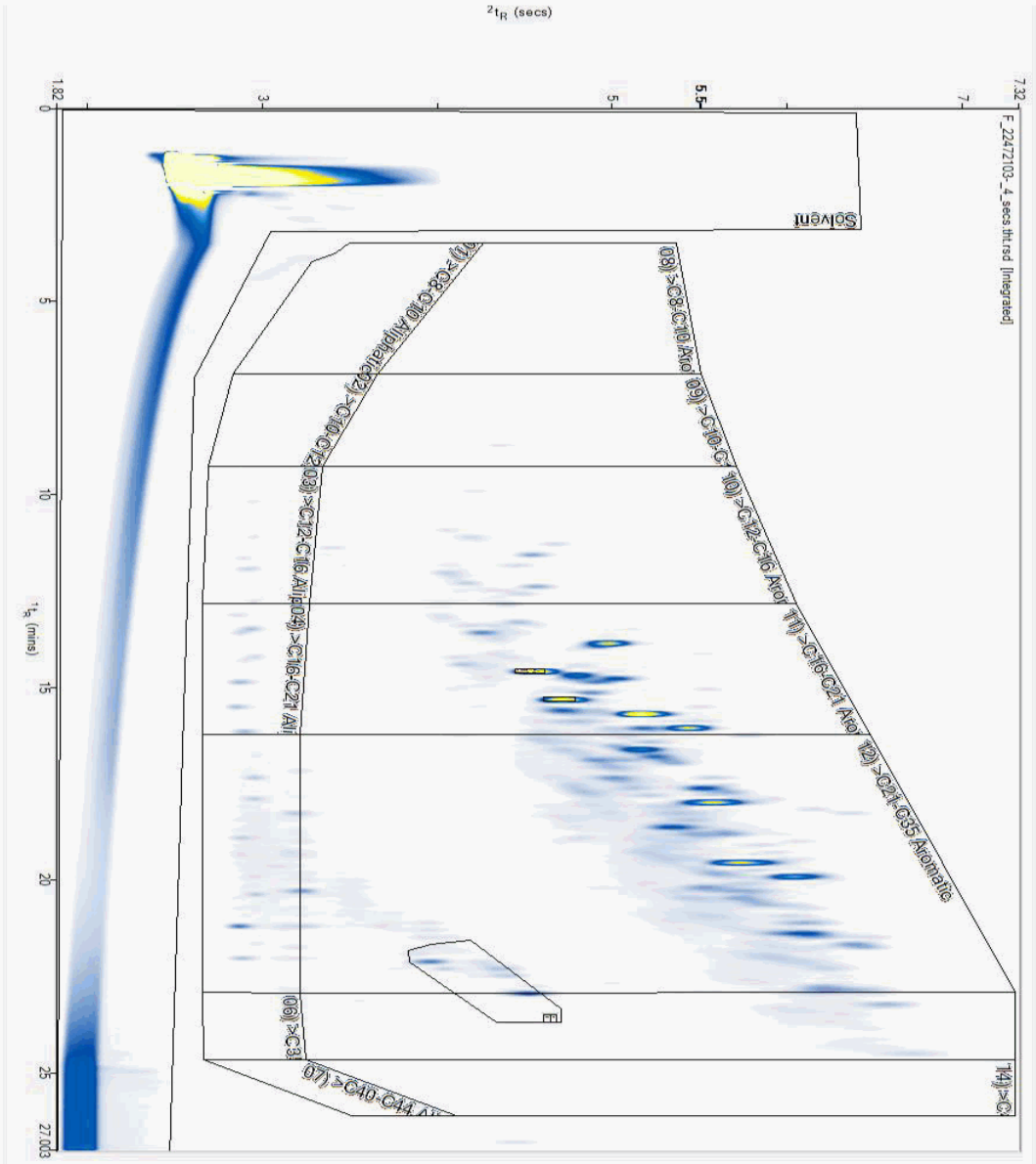
CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22472103 **Depth :** 1.10 - 1.20
Sample ID : WS110

```
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  Current batch
Sample Identity:  F_22472103-_4_secs.tht
Date Acquired   :  16/07/20 09:56:47
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



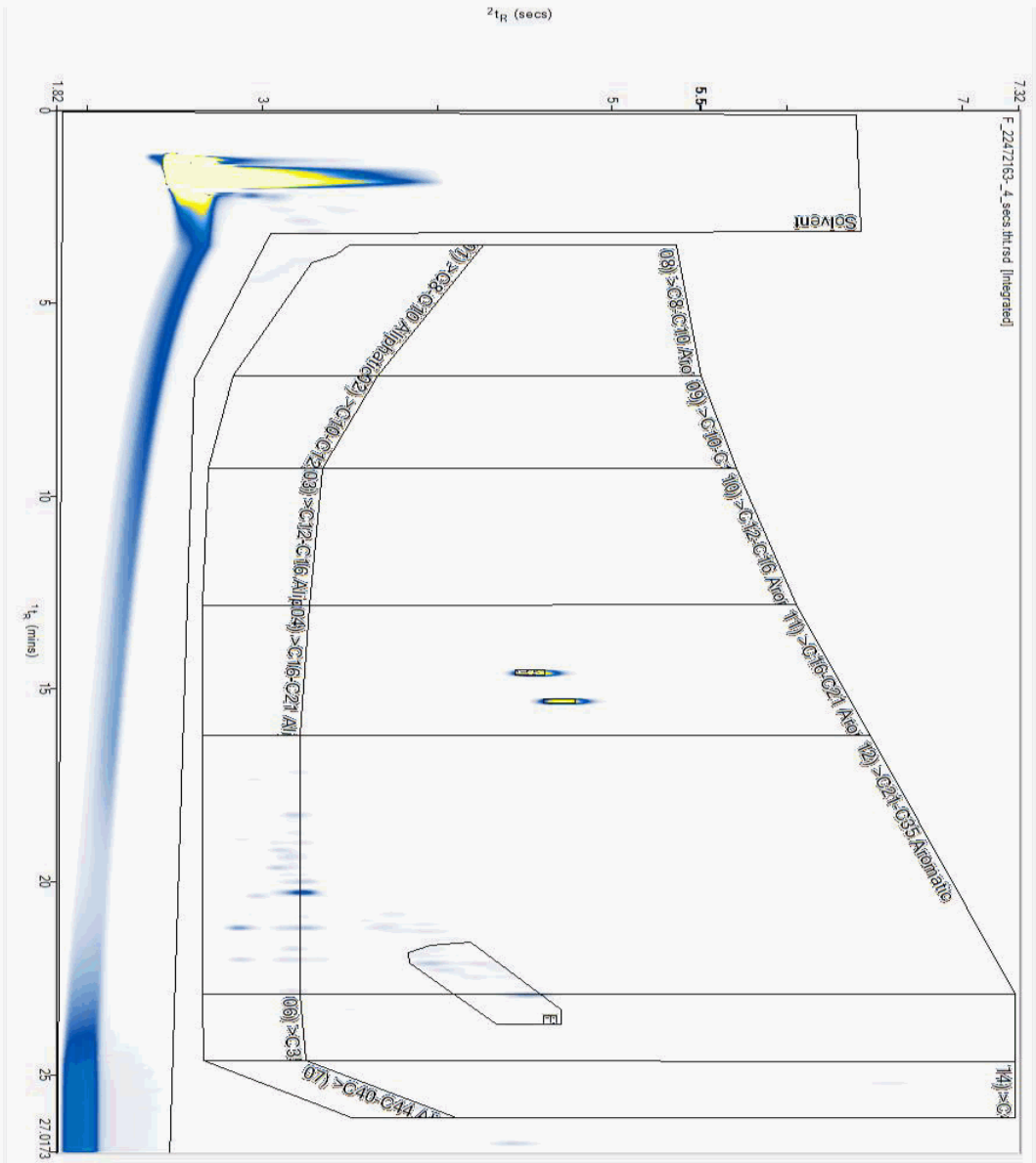
CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22472163 **Depth :** 2.00 - 2.10
Sample ID : WS111

ChromSpace LIMS export
Current batch
Sample Identity: F_22472163-_4_secs.tht
Date Acquired : 16/07/20 04:56:03
Units : ppm
Dilution : 0
CF :
Multiplier :

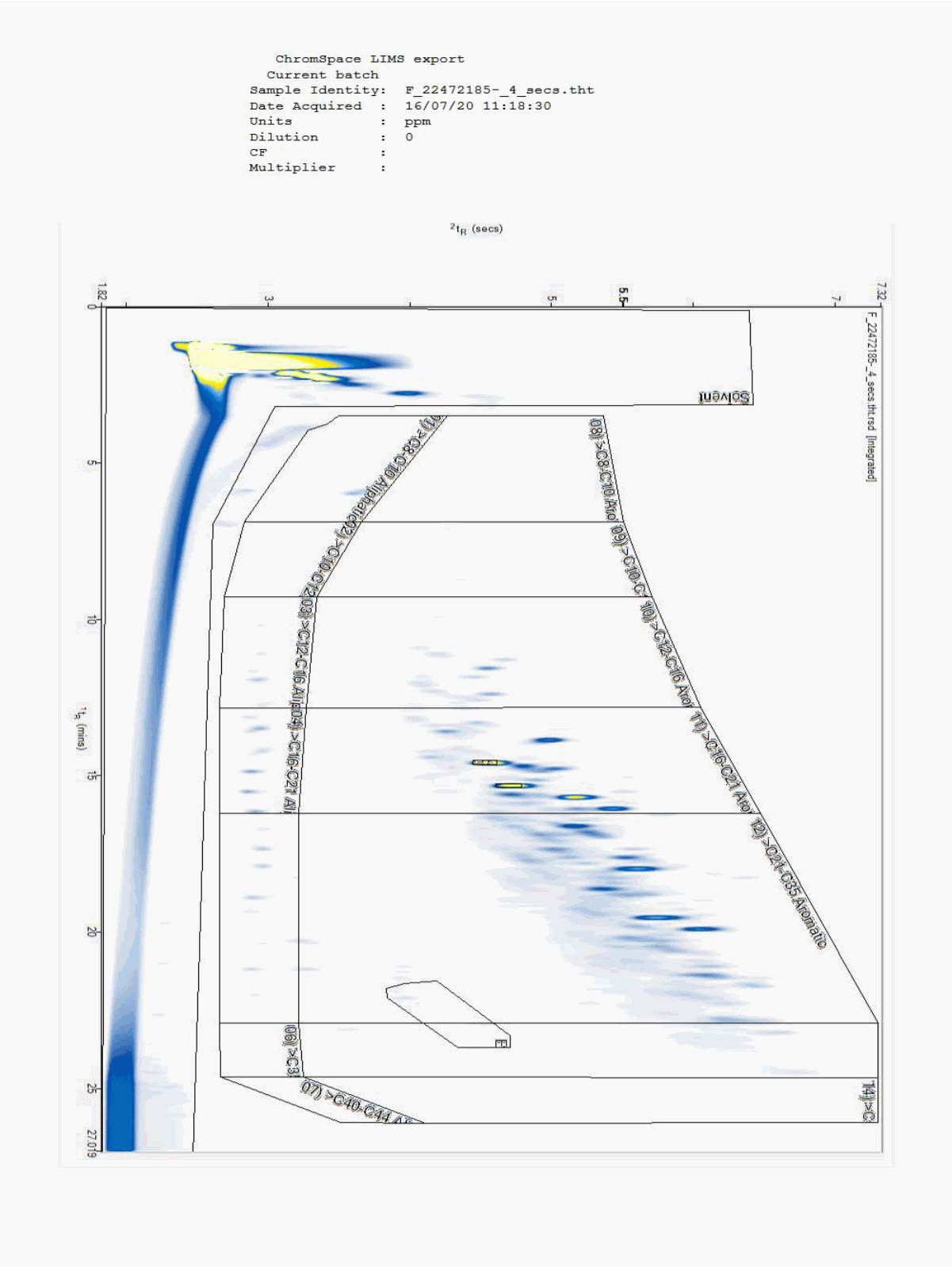


CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22472185 **Depth :** 3.50 - 3.60
Sample ID : WS110



CERTIFICATE OF ANALYSIS

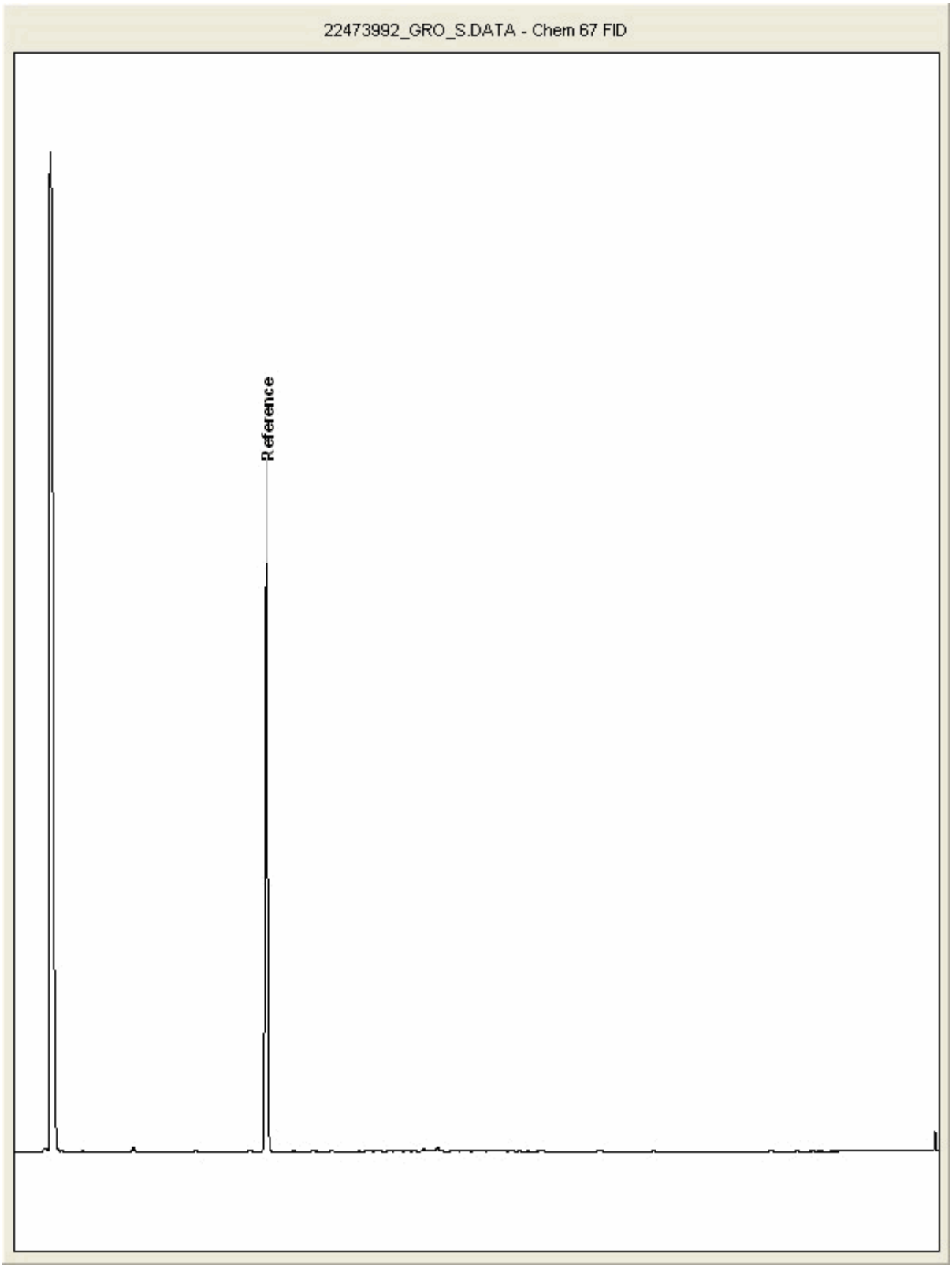
SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22473992
Sample ID : WS111

Depth : 1.00 - 1.10

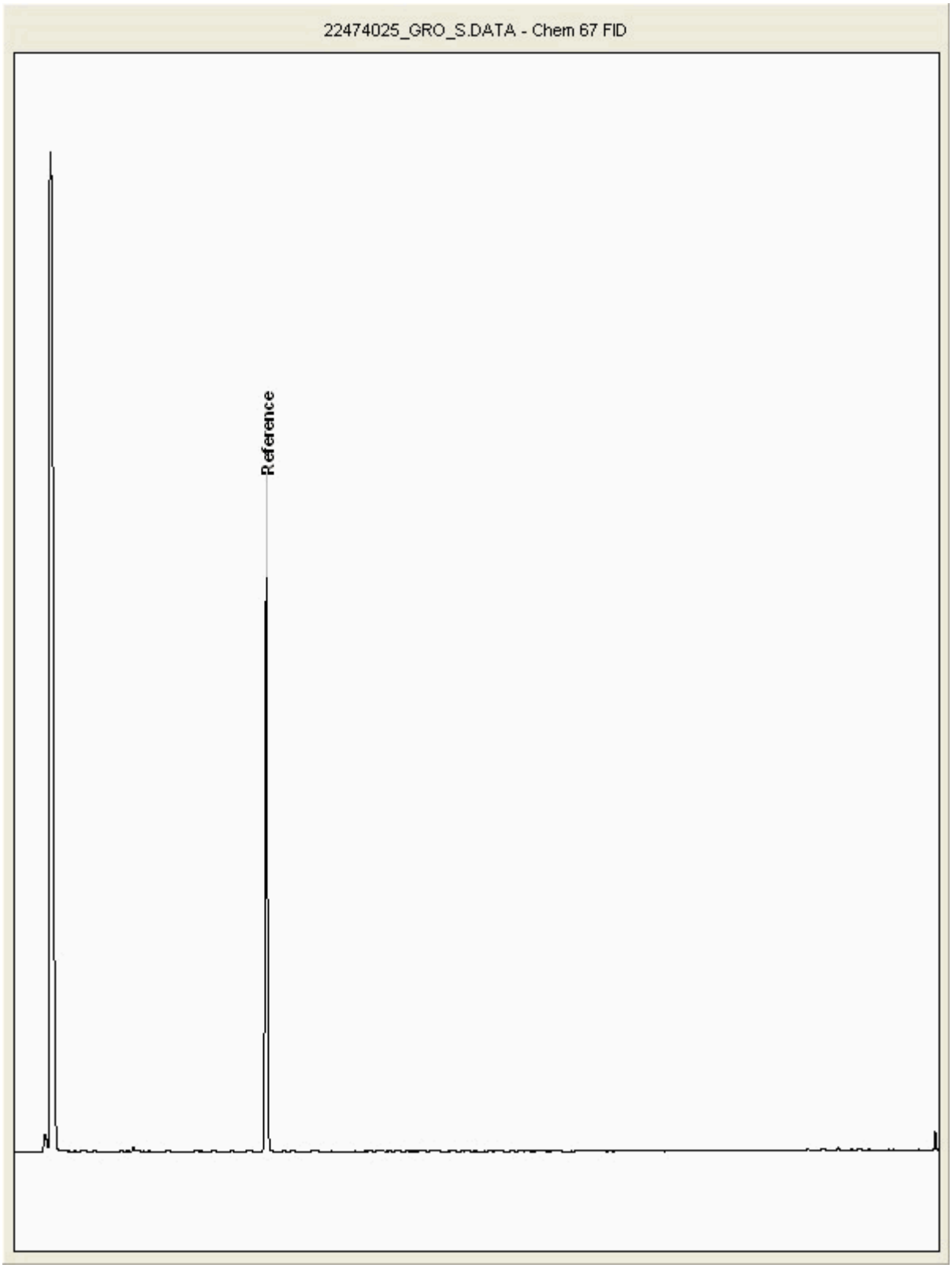


CERTIFICATE OF ANALYSIS

SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 22474025 **Sample ID :** WS110 **Depth :** 1.10 - 1.20



CERTIFICATE OF ANALYSIS

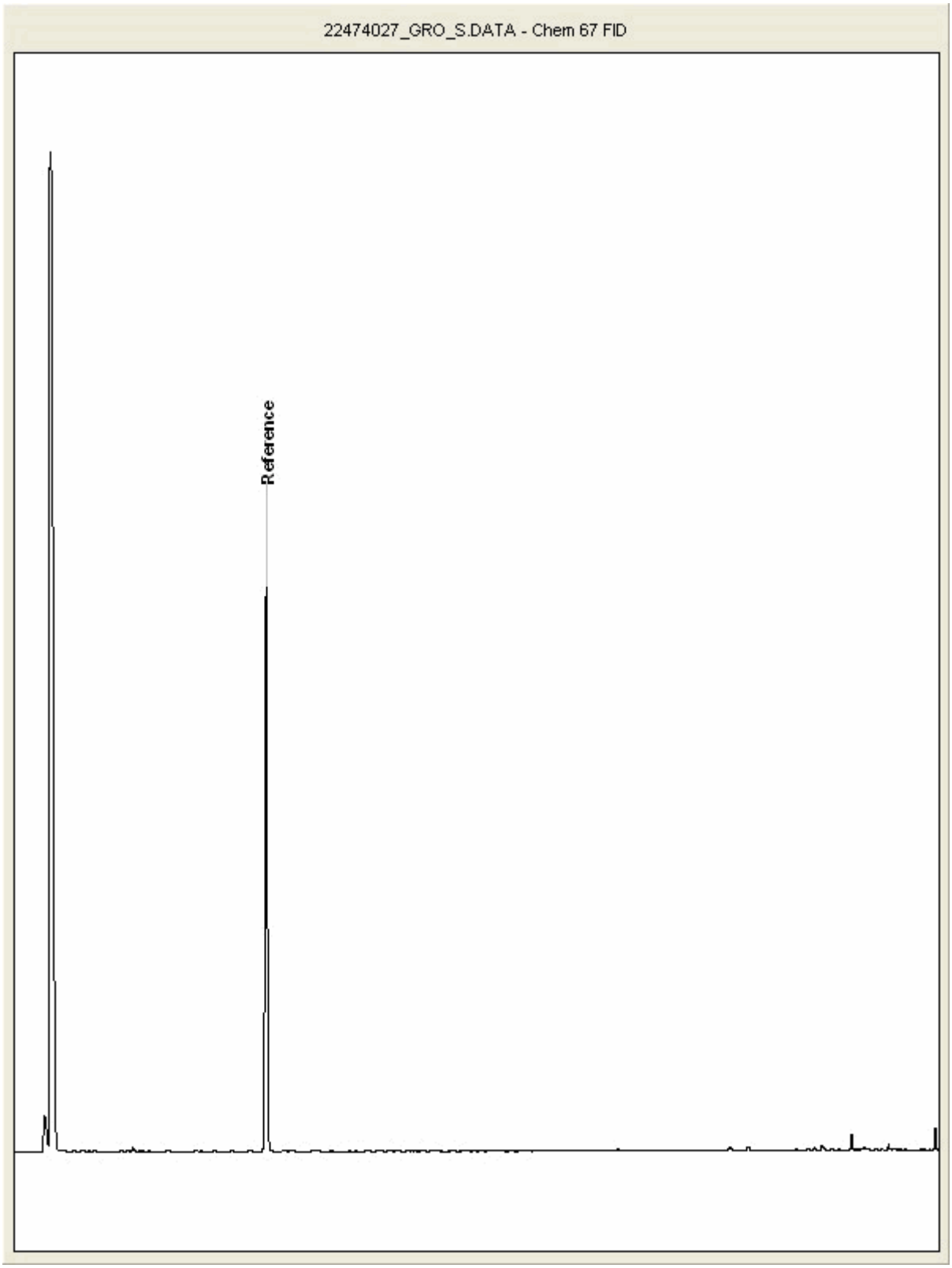
SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22474027
Sample ID : WS110

Depth : 3.50 - 3.60



CERTIFICATE OF ANALYSIS

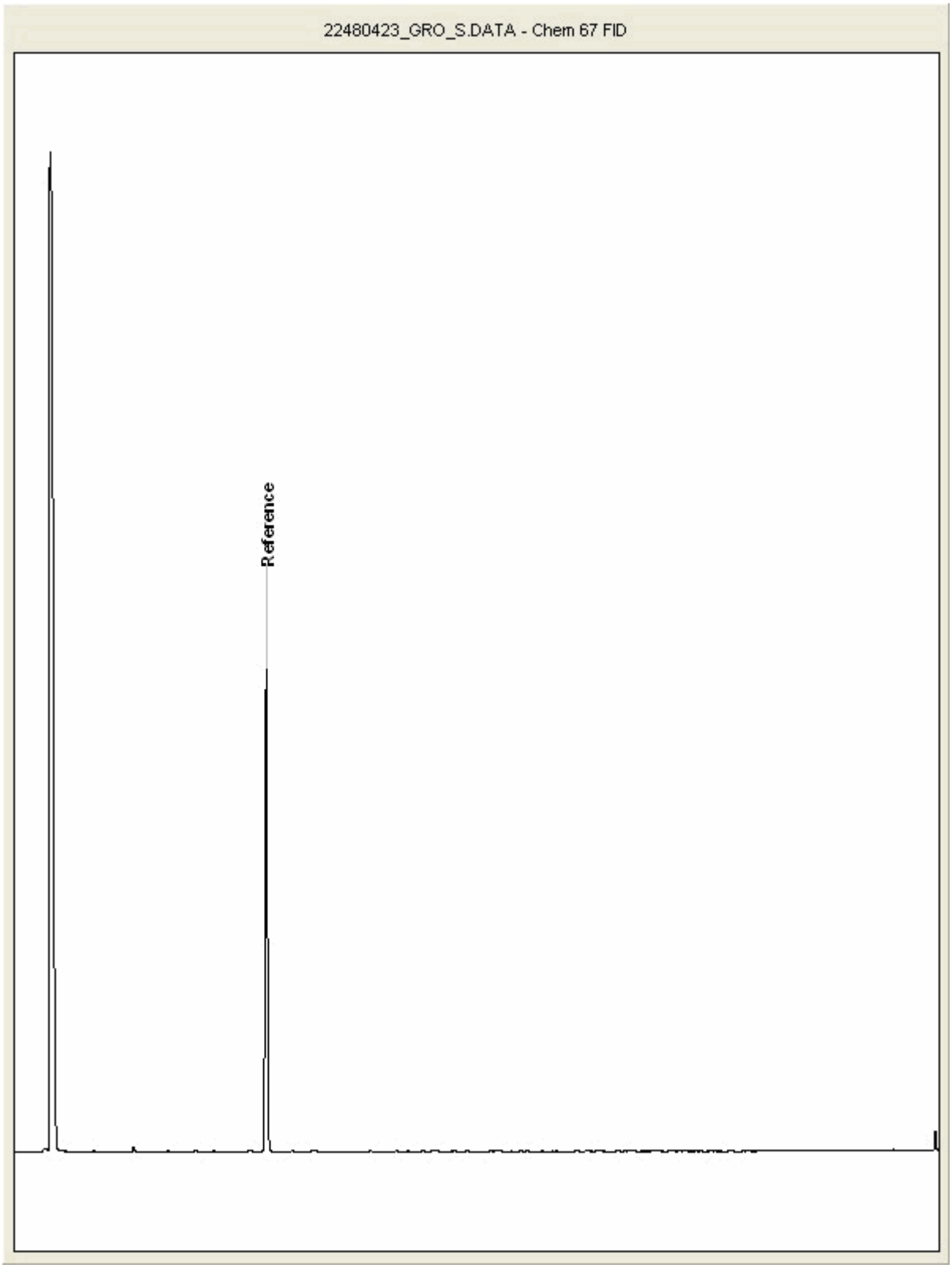
SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22480423
Sample ID : WS109

Depth : 0.50 - 0.60



CERTIFICATE OF ANALYSIS

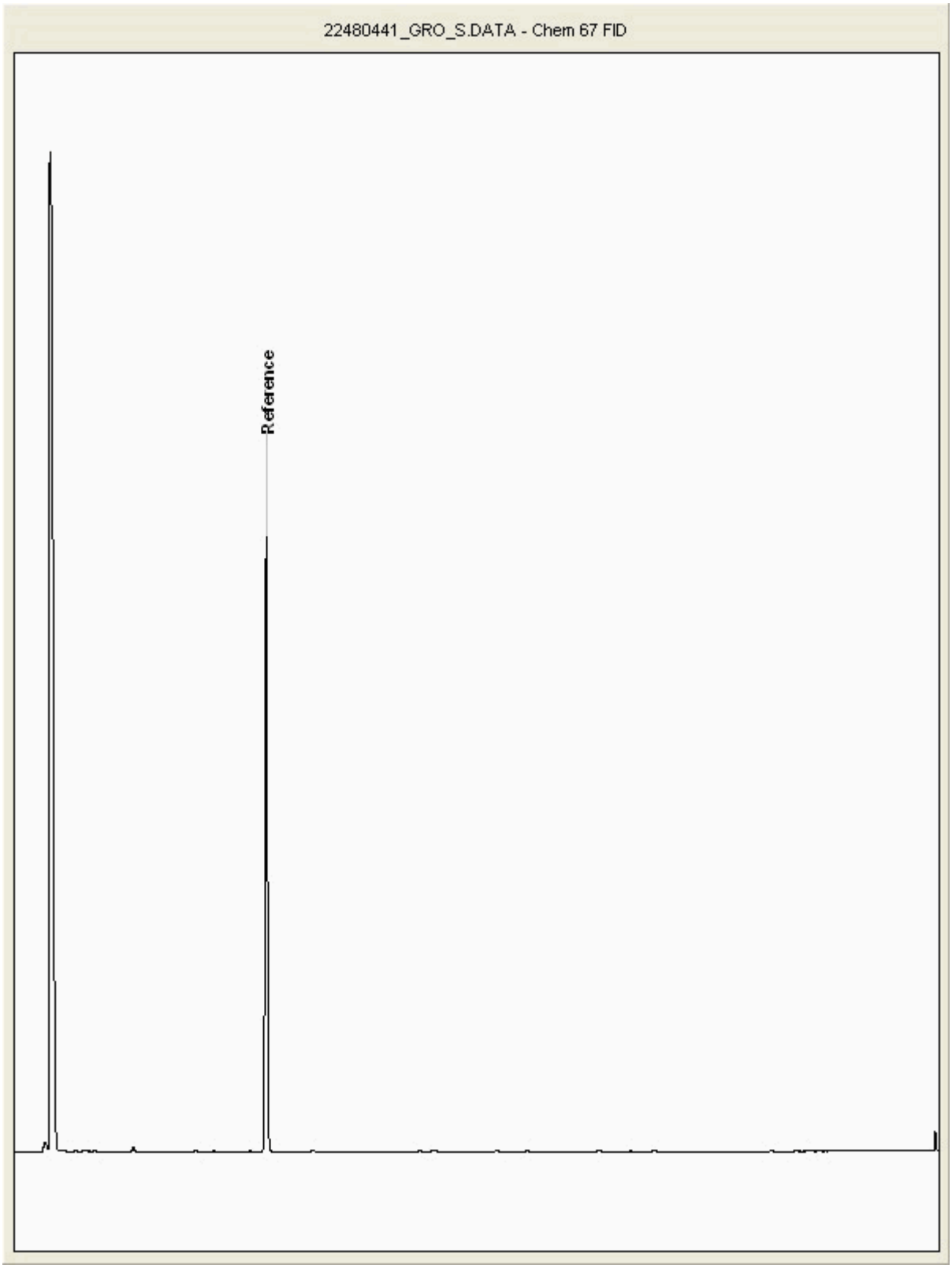
SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22480441
Sample ID : WS111

Depth : 2.00 - 2.10



CERTIFICATE OF ANALYSIS

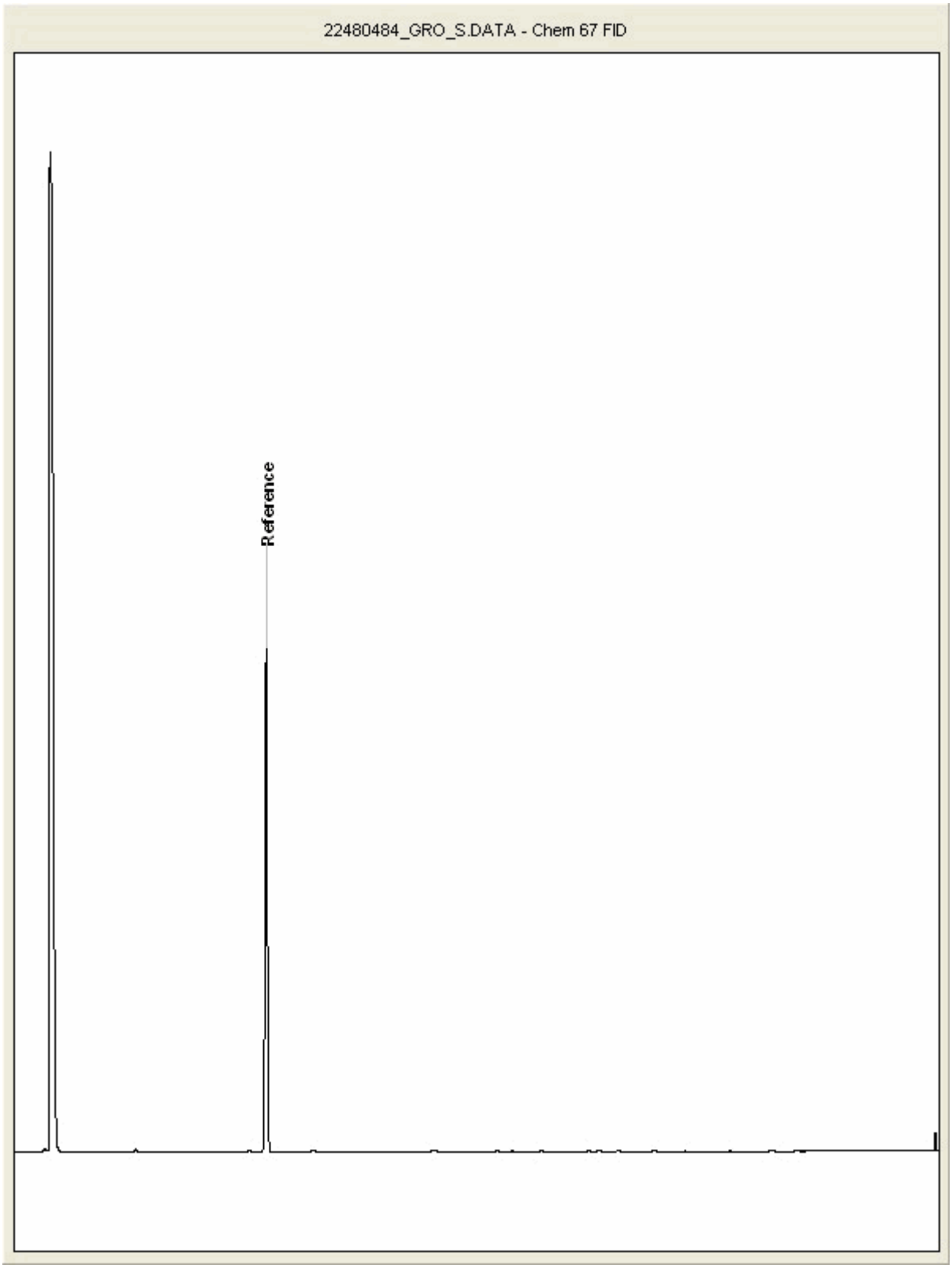
SDG:	200710-138	**Client Reference:**	10041634	**Report Number:**	560629
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	560626

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22480484
Sample ID : WS114

Depth : 0.20 - 0.30



Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

ARCADIS UK Ltd
10th Floor
3 Piccadilly Place
Manchester
M1 2BN

Attention: Dale Fisher

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 July 2020
Customer:	ARCADIS UK Ltd
Sample Delivery Group (SDG):	200711-130
Your Reference:	10041634
Location:	Hyde Road, Manchester M12 5AL
Report No:	560821

This report has been revised and directly supersedes 559880 in its entirety.

We received 15 samples on Saturday July 11, 2020 and 10 of these samples were scheduled for analysis which was completed on Tuesday July 28, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22462003	CP102-ES1		0.80 - 0.90	10/07/2020
22462001	CP104-ES1		0.80 - 0.90	09/07/2020
22462002	CP104-ES2		1.70 - 1.80	09/07/2020
22462004	WS106A-ES1		0.20 - 0.30	10/07/2020
22462005	WS105-ES1		0.20 - 0.30	10/07/2020
22462000	WS-106-ES1		0.40 - 0.50	09/07/2020
22462006	WS107-ES1		0.40 - 0.50	10/07/2020
22462007	WS107-ES2		1.10 - 1.20	10/07/2020
22462008	WS108-ES1		0.60 - 0.70	10/07/2020
22462009	WS108-ES2		1.60 - 1.70	10/07/2020
22461999	WS-112-ES1		0.30 - 0.40	09/07/2020
22461997	WS-113-ES1		0.80 - 0.90	09/07/2020
22461998	WS-113-ES2		1.40 - 1.50	09/07/2020
22461995	WS-116-ES1		0.20 - 0.30	09/07/2020
22461996	WS-116-ES1		1.20 - 1.30	09/07/2020

Maximum Sample/Coolbox Temperature (°C) : **12.8**

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

Validated

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	22462003	22462001	22462005	22462000	22462007	22462008	22462009	22461999	22461997
			Customer Sample Reference	CP102-ES1	CP104-ES1	WS105-ES1	WS-106-ES1	WS107-ES2	WS108-ES1	WS108-ES2	WS-112-ES1	WS-113-ES1
			AGS Reference									
			Depth (m)	0.80 - 0.90	0.80 - 0.90	0.20 - 0.30	0.40 - 0.50	1.10 - 1.20	0.60 - 0.70	1.60 - 1.70	0.30 - 0.40	0.80 - 0.90
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 10			X			X			X		X		X		X	X		X	X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 9		X			X			X		X		X		X			X		X	
Asbestos Quantification - Full	All	NDPs: 0 Tests: 2											X									
Boron Water Soluble	All	NDPs: 0 Tests: 10			X			X			X		X		X		X	X		X		X
EPH CWG GC (S)	All	NDPs: 0 Tests: 10			X			X			X		X		X		X	X		X		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 10				X			X		X		X		X		X	X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 10			X			X			X		X		X		X	X		X		X
Metals in solid samples by OES	All	NDPs: 0 Tests: 10			X			X			X		X		X		X	X		X		X
PAH by GCMS	All	NDPs: 0 Tests: 9			X			X			X				X		X	X		X		X
PCBs by GCMS	All	NDPs: 0 Tests: 2																				X
pH	All	NDPs: 0 Tests: 10			X			X			X		X		X		X	X		X		X
Sample description	All	NDPs: 0 Tests: 10			X			X			X		X		X		X	X		X		X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1									X											
TPH CWG GC (S)	All	NDPs: 0 Tests: 10			X			X			X		X		X		X	X		X		X
VOC MS (S)	All	NDPs: 0 Tests: 10				X			X		X		X		X		X	X			X	

22461995				
WS-116-ES1				
0.20 - 0.30				
60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)	
S	S	S	S	
	X			
		X		
		X		
	X			
	X			
X			X	
	X			
	X			
	X			
	X			
	X			
	X			
	X			
	X			
X			X	

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22462003	CP102-ES1	0.80 - 0.90	Dark Brown	Sandy Loam	Vegetation	Stones
22462001	CP104-ES1	0.80 - 0.90	Dark Brown	Loamy Sand	Vegetation	Stones
22462005	WS105-ES1	0.20 - 0.30	Dark Brown	Sandy Loam	Vegetation	Brick
22462007	WS107-ES2	1.10 - 1.20	Dark Brown	Loamy Sand	Vegetation	Stones
22462008	WS108-ES1	0.60 - 0.70	Dark Brown	Sandy Loam	Vegetation	Brick
22462009	WS108-ES2	1.60 - 1.70	Dark Brown	Sandy Loam	Vegetation	Stones
22462000	WS-106-ES1	0.40 - 0.50	Dark Brown	Sandy Loam	Vegetation	Brick
22461999	WS-112-ES1	0.30 - 0.40	Dark Brown	Loamy Sand	Vegetation	Brick
22461997	WS-113-ES1	0.80 - 0.90	Dark Brown	Loamy Sand	Vegetation	Stones
22461995	WS-116-ES1	0.20 - 0.30	Dark Brown	Sandy Loam	Vegetation	Brick

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP102-ES1	CP104-ES1	WS105-ES1	WS-106-ES1	WS107-ES2	WS108-ES1
			Depth (m)	0.80 - 0.90	0.80 - 0.90	0.20 - 0.30	0.40 - 0.50	1.10 - 1.20	0.60 - 0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/07/2020	09/07/2020	10/07/2020	09/07/2020	10/07/2020	10/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020
			SDG Ref	200711-130	200711-130	200711-130	200711-130	200711-130	200711-130
			Lab Sample No.(s)	22462003	22462001	22462005	22462000	22462007	22462008
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		27	27	6.7	13	18	17
pH	1 pH Units	TM133		10.8 M	8.29 M	10 M	8.61 M	8.77 M	8.55 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		32 M	21.3 M	1.81 M	6.36 M	8.61 M	8.52 M
Barium	<0.6 mg/kg	TM181		255 #	173 #	34.9 #	167 #	352 #	244 #
Beryllium	<0.01 mg/kg	TM181		1.55 M	1.06 M	0.117 M	0.511 M	1.01 M	0.437 M
Cadmium	<0.02 mg/kg	TM181		1.26 M	0.164 M	0.374 M	0.279 M	0.234 M	0.238 M
Chromium	<0.9 mg/kg	TM181		91.9 M	13.4 M	3.69 M	7.13 M	16.6 M	6.18 M
Copper	<1.4 mg/kg	TM181		254 M	31.4 M	4.76 M	20.1 M	42.7 M	21.7 M
Lead	<0.7 mg/kg	TM181		374 M	488 M	10.7 M	62.8 M	165 M	172 M
Mercury	<0.14 mg/kg	TM181		<1.4 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181		125 M	26.1 M	5.08 M	10.5 M	25.3 M	8.93 M
Selenium	<1 mg/kg	TM181		<10 #	<1 #	1.22 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181		106 #	25.4 #	7.34 #	14.4 #	29.1 #	14.8 #
Zinc	<1.9 mg/kg	TM181		193 M	70.1 M	21.3 M	80.8 M	131 M	114 M
Boron, water soluble	<1 mg/kg	TM222		<1 M	1.77 M	<1 M	<1 M	1.09 M	1.23 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.101 M	0.121 M	0.018 M	0.145 M	0.0455 M	0.0761 M
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304						0.0442 #	
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304						<0.001 #	
Additional Asbestos Components (Using TM048)		TM304						None #	
Analysts Comments		TM304						N/C	
Asbestos Quantification - Total - %	<0.001 %	TM304						0.0442 #	

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS108-ES2	WS-112-ES1	WS-113-ES1	WS-116-ES1		
			Depth (m)	1.60 - 1.70	0.30 - 0.40	0.80 - 0.90	0.20 - 0.30		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	10/07/2020	09/07/2020	09/07/2020	09/07/2020		
			Sampled Time	.	.	.	.		
			Date Received	11/07/2020	11/07/2020	11/07/2020	11/07/2020		
			SDG Ref	200711-130	200711-130	200711-130	200711-130		
			Lab Sample No.(s)	22462009	22461999	22461997	22461995		
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		13	16	17	19		
pH	1 pH Units	TM133		8.29 M	8 M	7.79 M	7.81 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #		
PCB congener 28	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 52	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 101	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 118	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 138	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 153	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
PCB congener 180	<0.003 mg/kg	TM168				<0.003 M	<0.003 M		
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168				<0.021	<0.021		
Arsenic	<0.6 mg/kg	TM181		6.69 M	26.8 M	5.41 M	17.9 M		
Barium	<0.6 mg/kg	TM181		113 #	821 #	95.8 #	260 #		
Beryllium	<0.01 mg/kg	TM181		0.88 M	1.3 M	0.689 M	0.717 M		
Cadmium	<0.02 mg/kg	TM181		0.132 M	1.63 M	0.152 M	0.847 M		
Chromium	<0.9 mg/kg	TM181		21.8 M	16.6 M	15.4 M	8.26 M		
Copper	<1.4 mg/kg	TM181		17.7 M	76.5 M	14 M	58.7 M		
Lead	<0.7 mg/kg	TM181		12.2 M	494 M	25.3 M	225 M		
Mercury	<0.14 mg/kg	TM181		<0.14 M	0.188 M	<0.14 M	0.77 M		
Nickel	<0.2 mg/kg	TM181		31.9 M	27.3 M	17.4 M	19.6 M		
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #		
Vanadium	<0.2 mg/kg	TM181		24.9 #	29.4 #	24.5 #	22.3 #		
Zinc	<1.9 mg/kg	TM181		53.3 M	482 M	35 M	129 M		
Boron, water soluble	<1 mg/kg	TM222		<1 M	1.07 M	1.4 M	<1 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0587 M	0.144 M	0.0248 M	0.025 M		
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304					<0.001 #		
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304					<0.001 #		
Additional Asbestos Components (Using TM048)		TM304					None #		
Analysts Comments		TM304					N/C		
Asbestos Quantification - Total - %	<0.001 %	TM304					<0.001 #		

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP102-ES1	CP104-ES1	WS105-ES1	WS107-ES2	WS108-ES1	WS108-ES2
			Depth (m)	0.80 - 0.90	0.80 - 0.90	0.20 - 0.30	1.10 - 1.20	0.60 - 0.70	1.60 - 1.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/07/2020	09/07/2020	10/07/2020	10/07/2020	10/07/2020	10/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020
			SDG Ref	200711-130	200711-130	200711-130	200711-130	200711-130	200711-130
			Lab Sample No.(s)	22462003	22462001	22462005	22462007	22462008	22462009
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		84	85.6	88.4	83.7	85.6	80.4
Acenaphthene-d10 % recovery**	%	TM218		88.9	88.4	94.2	90.3	90.3	84.9
Phenanthrene-d10 % recovery**	%	TM218		92.7	89.5	91.6	90.6	88.8	84.9
Chrysene-d12 % recovery**	%	TM218		81.4	81.7	89	88	81.1	78.8
Perylene-d12 % recovery**	%	TM218		73.4	87.5	80.4	76.8	70.8	70.4
Naphthalene	<0.009 mg/kg	TM218		0.024 M	0.0145 M	<0.18 M	0.417 M	0.122 M	0.0388 M
Acenaphthylene	<0.012 mg/kg	TM218		0.0221 M	<0.012 M	<0.24 M	0.127 M	<0.06 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		0.119 M	0.0132 M	<0.16 M	1.28 M	0.228 M	0.0624 M
Fluorene	<0.01 mg/kg	TM218		0.103 M	0.0227 M	<0.2 M	0.933 M	0.116 M	0.0485 M
Phenanthrene	<0.015 mg/kg	TM218		0.687 M	0.122 M	<0.3 M	4.38 M	0.477 M	0.19 M
Anthracene	<0.016 mg/kg	TM218		0.225 M	0.038 M	<0.32 M	1.41 M	0.231 M	0.0453 M
Fluoranthene	<0.017 mg/kg	TM218		1.34 M	0.161 M	0.784 M	7.05 M	1.9 M	0.213 M
Pyrene	<0.015 mg/kg	TM218		1.27 M	0.159 M	1.17 M	6.01 M	2.06 M	0.195 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.606 M	0.0877 M	0.309 M	2.82 M	0.808 M	0.0935 M
Chrysene	<0.01 mg/kg	TM218		0.641 M	0.0866 M	0.294 M	2.54 M	0.823 M	0.0938 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.597 M	0.112 M	<0.3 M	1.91 M	0.662 M	0.0742 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.239 M	0.0315 M	<0.28 M	0.714 M	0.296 M	0.0318 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.609 M	0.0788 M	<0.3 M	2.17 M	0.756 M	0.0776 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.379 M	0.058 M	<0.36 M	1.28 M	0.438 M	0.0588 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0818 M	<0.023 M	<0.46 M	0.238 M	<0.115 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.397 M	0.0491 M	<0.48 M	1.21 M	0.42 M	0.0565 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		7.34	1.03	2.56	34.5	9.33	1.28

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS-112-ES1	WS-113-ES1	WS-116-ES1			
			Depth (m)	0.30 - 0.40	0.80 - 0.90	0.20 - 0.30			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	09/07/2020	09/07/2020	09/07/2020			
			Sampled Time	.	.	.			
			Date Received	11/07/2020	11/07/2020	11/07/2020			
			SDG Ref	200711-130	200711-130	200711-130			
			Lab Sample No.(s)	22461999	22461997	22461995			
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		84.8	92.7	86			
Acenaphthene-d10 % recovery**	%	TM218		82.8	90.2	85.4			
Phenanthrene-d10 % recovery**	%	TM218		85.4	88.6	85			
Chrysene-d12 % recovery**	%	TM218		75.7	78.5	73			
Perylene-d12 % recovery**	%	TM218		70.7	75.8	67.3			
Naphthalene	<0.009 mg/kg	TM218		0.0589 M	0.158 M	0.273 M			
Acenaphthylene	<0.012 mg/kg	TM218		<0.06 M	<0.012 M	0.06 M			
Acenaphthene	<0.008 mg/kg	TM218		0.157 M	0.0375 M	0.484 M			
Fluorene	<0.01 mg/kg	TM218		0.128 M	0.0344 M	0.325 M			
Phenanthrene	<0.015 mg/kg	TM218		1.22 M	0.207 M	3.44 M			
Anthracene	<0.016 mg/kg	TM218		0.322 M	0.0715 M	1.1 M			
Fluoranthene	<0.017 mg/kg	TM218		2.8 M	0.305 M	4.49 M			
Pyrene	<0.015 mg/kg	TM218		2.58 M	0.27 M	4.11 M			
Benz(a)anthracene	<0.014 mg/kg	TM218		1.27 M	0.154 M	2.02 M			
Chrysene	<0.01 mg/kg	TM218		1.31 M	0.145 M	1.94 M			
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		1.56 M	0.179 M	2.47 M			
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.566 M	0.0663 M	0.76 M			
Benzo(a)pyrene	<0.015 mg/kg	TM218		1.13 M	0.131 M	1.74 M			
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.682 M	0.0785 M	1.1 M			
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.115 M	<0.023 M	0.213 M			
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.713 M	0.0738 M	1.16 M			
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		14.5	1.91	25.7			

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Customer Sample Ref.	CP104-ES1
Depth (m)	0.80 - 0.90
Sample Type	Soil/Solid (S)
Date Sampled	09/07/2020
Sampled Time	.
Date Received	11/07/2020
SDG Ref	200711-130
Lab Sample No.(s)	22462001
AGS Reference	

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.2
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Customer Sample Ref.	CP104-ES1							
Depth (m)	0.80 - 0.90							
Sample Type	Soil/Solid (S)							
Date Sampled	09/07/2020							
Sampled Time	.							
Date Received	11/07/2020							
SDG Ref	200711-130							
Lab Sample No.(s)	22462001							
AGS Reference								
Component	**LOD/Units**	**Method**						
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1					
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1					
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1					
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1					
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1					
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1					
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1					
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1					
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1					
Acenaphthylene	<0.1 mg/kg	TM157	<0.1					
Acenaphthene	<0.1 mg/kg	TM157	<0.1					
Anthracene	<0.1 mg/kg	TM157	<0.1					
Benzo(a)anthracene	<0.1 mg/kg	TM157	0.164					
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1					
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	0.137					
Benzo(a)pyrene	<0.1 mg/kg	TM157	0.178					
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1					
Chrysene	<0.1 mg/kg	TM157	0.206					
Fluoranthene	<0.1 mg/kg	TM157	0.247					
Fluorene	<0.1 mg/kg	TM157	<0.1					
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1					
Phenanthrene	<0.1 mg/kg	TM157	0.233					
Pyrene	<0.1 mg/kg	TM157	0.301					
Naphthalene	<0.1 mg/kg	TM157	<0.1					
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1					
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1					

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP102-ES1	CP104-ES1	WS105-ES1	WS-106-ES1	WS107-ES2	WS108-ES1
			Depth (m)	0.80 - 0.90	0.80 - 0.90	0.20 - 0.30	0.40 - 0.50	1.10 - 1.20	0.60 - 0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/07/2020	09/07/2020	10/07/2020	09/07/2020	10/07/2020	10/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020
			SDG Ref	200711-130	200711-130	200711-130	200711-130	200711-130	200711-130
			Lab Sample No.(s)	22462003	22462001	22462005	22462000	22462007	22462008
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		102	77.4	88.1 2	83.8 2	91.4 2	91.8 2
Aliphatics >C5-C6	<0.01 mg/kg	TM089		0.0123	0.0151	<0.01 2	<0.01 2	0.011 2	<0.01 2
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.0356	0.037	<0.01 2	0.0173 2	0.0317 2	0.0303 2
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0534	0.0384	<0.01 2	0.541 2	0.132 2	0.0545 2
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1	<1	49.2	<1	<1
Aliphatics >C12-C16	<1 mg/kg	TM414		9.86	<1	2.93	383	1.99	<1
Aliphatics >C16-C21	<1 mg/kg	TM414		22.7	<1	2.65	746	1.6	2.22
Aliphatics >C21-C35	<1 mg/kg	TM414		72.5	2.66	<1	980	7.26	6.18
Aliphatics >C35-C44	<1 mg/kg	TM414		21.1	<1	27.3	15.8	2.94	5.55
Total Aliphatics >C10-C44	<5 mg/kg	TM414		126	<5	33.7	2170	14	14.5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		254	<10	275	2430	145	66.4
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 2	<0.01 2	<0.01 2	<0.01 2
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 2	<0.01 2	<0.01 2	<0.01 2
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.0356	0.026	<0.01 2	0.36 2	0.0878 2	0.0363 2
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1	<1	<1	<1	<1
Aromatics > EC12-EC16	<1 mg/kg	TM414		4.51	<1	3.4	64.6	8.44	2.82
Aromatics > EC16-EC21	<1 mg/kg	TM414		25.4	<1	24.7	51	43.1	16.5
Aromatics > EC21-EC35	<1 mg/kg	TM414		90	1.55	104	130	73.8	29.9
Aromatics >EC35-EC44	<1 mg/kg	TM414		7.83	<1	108	6.5	5.48	2.57
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1	59.5	1.83	<1	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		128	<5	241	253	131	51.9
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		254	<10	275	2430	146	66.5
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		0.101	0.0904	<0.05 2	0.558 2	0.174 2	0.0847 2
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05 2	0.36 2	0.0878 2	<0.05 2
GRO >C5-C10	<0.02 mg/kg	TM089		0.101	0.0904	<0.02 2	0.918 2	0.262 2	0.0847 2

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS108-ES2	WS-112-ES1	WS-113-ES1	WS-116-ES1		
			Depth (m)	1.60 - 1.70	0.30 - 0.40	0.80 - 0.90	0.20 - 0.30		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	10/07/2020	09/07/2020	09/07/2020	09/07/2020		
			Sampled Time	.	.	.	.		
			Date Received	11/07/2020	11/07/2020	11/07/2020	11/07/2020		
			SDG Ref	200711-130	200711-130	200711-130	200711-130		
			Lab Sample No.(s)	22462009	22461999	22461997	22461995		
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		96.3 2	73.7	91.7	92.2		
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01 2	<0.01	<0.01	<0.01		
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01 2	0.0248	0.0133	<0.01		
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01 2	0.0319	0.0254	0.0135		
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	3.83	<1	1.87		
Aliphatics >C21-C35	<1 mg/kg	TM414		<1	47.5	1.72	14.6		
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	26	<1	1.4		
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	78.7	<5	18.1		
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	218	108	129		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01 2	<0.01	<0.01	<0.01		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01 2	<0.01	<0.01	<0.01		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01 2	0.0212	0.0169	<0.01		
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	4.49	7.28	4.37		
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	35.3	39.9	25.1		
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1	92.6	54.1	71.8		
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	6.43	3.89	9.36		
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1	<1	<1		
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	139	106	111		
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	218	106	129		
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05 2	0.0566	<0.05	<0.05		
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05 2	<0.05	<0.05	<0.05		
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02 2	0.0566	<0.02	<0.02		

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP102-ES1	CP104-ES1	WS105-ES1	WS-106-ES1	WS107-ES2	WS108-ES1
			Depth (m)	0.80 - 0.90	0.80 - 0.90	0.20 - 0.30	0.40 - 0.50	1.10 - 1.20	0.60 - 0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/07/2020	09/07/2020	10/07/2020	09/07/2020	10/07/2020	10/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020
			SDG Ref	200711-130	200711-130	200711-130	200711-130	200711-130	200711-130
			Lab Sample No.(s)	22462003	22462001	22462005	22462000	22462007	22462008
			AGS Reference						
Dibromofluoromethane**	%	TM116		120	114	111 2	113 2	110 2	116 2
Toluene-d8**	%	TM116		89.6	96.1	98.2 2	97.8 2	97.7 2	98.8 2
4-Bromofluorobenzene**	%	TM116		74	86.7	93.5 2	90.7 2	92 2	92.7 2
Dichlorodifluoromethane	<0.006 mg/kg	TM116			<0.006 M				
Chloromethane	<0.007 mg/kg	TM116			<0.007 #				
Vinyl Chloride	<0.006 mg/kg	TM116			<0.006 M				
Bromomethane	<0.01 mg/kg	TM116			<0.01 M				
Chloroethane	<0.01 mg/kg	TM116			<0.01 M				
Trichlorofluorormethane	<0.006 mg/kg	TM116			<0.006 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116			<0.01 #				
Carbon Disulphide	<0.007 mg/kg	TM116			<0.007 M				
Dichloromethane	<0.01 mg/kg	TM116			0.03 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.01 M	<0.01 M	<0.2 2 M	<0.2 2 M	<0.2 2 M	<0.2 2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116			<0.01 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116			<0.008 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116			<0.006 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116			<0.01				
Bromochloromethane	<0.01 mg/kg	TM116			<0.01 M				
Chloroform	<0.008 mg/kg	TM116			<0.008 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116			<0.007 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116			<0.01 M				
Carbontetrachloride	<0.01 mg/kg	TM116			<0.01 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116			<0.005 3 M				
Benzene	<0.009 mg/kg	TM116		<0.009 M	<0.009 M	<0.18 2 M	<0.18 2 M	<0.18 2 M	<0.18 2 M
Trichloroethene	<0.009 mg/kg	TM116			<0.009 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116			<0.01 M				
Dibromomethane	<0.009 mg/kg	TM116			<0.009 M				
Bromodichloromethane	<0.007 mg/kg	TM116			<0.007 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.01 M				
Toluene	<0.007 mg/kg	TM116		<0.007 M	<0.007 M	<0.14 2 M	<0.14 2 M	<0.14 2 M	<0.14 2 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.01				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116			<0.01 M				

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP102-ES1	CP104-ES1	WS105-ES1	WS-106-ES1	WS107-ES2	WS108-ES1
			Depth (m)	0.80 - 0.90	0.80 - 0.90	0.20 - 0.30	0.40 - 0.50	1.10 - 1.20	0.60 - 0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/07/2020	09/07/2020	10/07/2020	09/07/2020	10/07/2020	10/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020
			SDG Ref	200711-130	200711-130	200711-130	200711-130	200711-130	200711-130
			Lab Sample No.(s)	22462003	22462001	22462005	22462000	22462007	22462008
			AGS Reference						
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.007 M					
Tetrachloroethene	<0.005 mg/kg	TM116		<0.005 M					
Dibromochloromethane	<0.01 mg/kg	TM116		<0.01 M					
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.01 M					
Chlorobenzene	<0.005 mg/kg	TM116		<0.005 M					
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.01 M					
Ethylbenzene	<0.004 mg/kg	TM116	<0.004 M	<0.004 M	<0.08 2 M	<0.08 2 M	<0.08 2 M	<0.08 2 M	
p/m-Xylene	<0.01 mg/kg	TM116	<0.01 #	<0.01 #	<0.2 2 #	<0.2 2 #	<0.2 2 #	<0.2 2 #	
o-Xylene	<0.01 mg/kg	TM116	<0.01 M	<0.01 M	<0.2 2 M	<0.2 2 M	<0.2 2 M	<0.2 2 M	
Styrene	<0.01 mg/kg	TM116		<0.01 #					
Bromoform	<0.01 mg/kg	TM116		<0.01 M					
Isopropylbenzene	<0.005 mg/kg	TM116		<0.005 #					
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.01 #					
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.016 M					
Bromobenzene	<0.01 mg/kg	TM116		<0.01 M					
Propylbenzene	<0.01 mg/kg	TM116		<0.01 M					
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.009 M					
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.008 M					
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.01 M					
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.014 M					
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.009 #					
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.01					
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.01 M					
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.008 M					
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.005 M					
n-Butylbenzene	<0.011 mg/kg	TM116		<0.011					
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.01 M					
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.014 M					
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.01 #					
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.02					
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.02					
Naphthalene	<0.013 mg/kg	TM116		<0.013 M					

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP102-ES1	CP104-ES1	WS105-ES1	WS-106-ES1	WS107-ES2	WS108-ES1
			Depth (m)	0.80 - 0.90	0.80 - 0.90	0.20 - 0.30	0.40 - 0.50	1.10 - 1.20	0.60 - 0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	10/07/2020	09/07/2020	10/07/2020	09/07/2020	10/07/2020	10/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020	11/07/2020
			SDG Ref	200711-130	200711-130	200711-130	200711-130	200711-130	200711-130
			Lab Sample No.(s)	22462003	22462001	22462005	22462000	22462007	22462008
			AGS Reference						
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116			<0.02 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116			<0.02				
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.02	<0.02	<0.4 2	<0.4 2	<0.4 2	<0.4 2
Sum of BTEX	<0.04 mg/kg	TM116		<0.04	<0.04	<0.8 2	<0.8 2	<0.8 2	<0.8 2

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS108-ES2	WS-112-ES1	WS-113-ES1	WS-116-ES1		
			Depth (m)	1.60 - 1.70	0.30 - 0.40	0.80 - 0.90	0.20 - 0.30		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	10/07/2020	09/07/2020	09/07/2020	09/07/2020		
			Sampled Time	.	.	.	.		
			Date Received	11/07/2020	11/07/2020	11/07/2020	11/07/2020		
			SDG Ref	200711-130	200711-130	200711-130	200711-130		
			Lab Sample No.(s)	22462009	22461999	22461997	22461995		
			AGS Reference						
Dibromofluoromethane**	%	TM116		112 2	123	114	107		
Toluene-d8**	%	TM116		98.4 2	88.2	96.7	94.5		
4-Bromofluorobenzene**	%	TM116		92.1 2	76.4	87.8	80.8		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 2 M	<0.01 M	<0.01 M	<0.01 M		
Benzene	<0.009 mg/kg	TM116		<0.18 2 M	<0.009 M	<0.009 M	<0.009 M		
Toluene	<0.007 mg/kg	TM116		<0.14 2 M	<0.007 M	<0.007 M	<0.007 M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 2 M	<0.004 M	<0.004 M	<0.004 M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 2 #	<0.01 #	<0.01 #	<0.01 #		
o-Xylene	<0.01 mg/kg	TM116		<0.2 2 M	<0.01 M	<0.01 M	<0.01 M		
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4 2	<0.02	<0.02	<0.02		
Sum of BTEX	<0.04 mg/kg	TM116		<0.8 2	<0.04	<0.04	<0.04		

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	CP102-ES1 0.80 - 0.90 SOLID 10/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22462003 TM048	18/07/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	CP104-ES1 0.80 - 0.90 SOLID 09/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22462001 TM048	17/07/2020	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS105-ES1 0.20 - 0.30 SOLID 10/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22462005 TM048	17/07/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS-106-ES1 0.40 - 0.50 SOLID 09/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22462000 TM048	17/07/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS107-ES2 1.10 - 1.20 SOLID 10/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22462007 TM048	17/07/2020	James Richards	Soil containing ACM debris and fibre bundles	Not Detected (#)	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS108-ES1 0.60 - 0.70 SOLID 10/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22462008 TM048	17/07/2020	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS-112-ES1 0.30 - 0.40 SOLID 09/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22461999 TM048	18/07/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS-113-ES1 0.80 - 0.90 SOLID 09/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22461997 TM048	17/07/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS-116-ES1 0.20 - 0.30 SOLID 09/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22461995 TM048	18/07/2020	James Richards	Fibre bundles in soil	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Asbestos Quantification - Full

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS107-ES2 1.10 - 1.20 SOLID 10/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22462007 TM304	None (#)	N/C	0.0442 (#)	<0.001 (#)	0.0442 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS-116-ES1 0.20 - 0.30 SOLID 09/07/2020 00:00:00 11/07/2020 05:00:00 200711-130 22461995 TM304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM304	HSE Contract research Report no 83/1996	Asbestos Quantification in Soil: Fibres identified by morphology only
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Test Completion Dates

Lab Sample No(s)	22462003	22462001	22462005	22462007	22462008	22462009	22462000	22461999	22461997	22461995
Customer Sample Ref.	CP102-ES1	CP104-ES1	WS105-ES1	WS107-ES2	WS108-ES1	WS108-ES2	WS-106-ES1	WS-112-ES1	WS-113-ES1	WS-116-ES1
AGS Ref.										
Depth	0.80 - 0.90	0.80 - 0.90	0.20 - 0.30	1.10 - 1.20	0.60 - 0.70	1.60 - 1.70	0.40 - 0.50	0.30 - 0.40	0.80 - 0.90	0.20 - 0.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	17-Jul-2020	17-Jul-2020	20-Jul-2020	17-Jul-2020	20-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020
Asbestos ID in Solid Samples	18-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020		17-Jul-2020	18-Jul-2020	17-Jul-2020	18-Jul-2020
Asbestos Quantification - Full				28-Jul-2020						28-Jul-2020
Boron Water Soluble	17-Jul-2020	17-Jul-2020	20-Jul-2020	17-Jul-2020	20-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020
EPH CWG GC (S)	20-Jul-2020	20-Jul-2020	17-Jul-2020	20-Jul-2020	20-Jul-2020	17-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020
GRO by GC-FID (S)	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020
Hexavalent Chromium (s)	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020
Metals in solid samples by OES	20-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	17-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020
PAH by GCMS	18-Jul-2020	21-Jul-2020	18-Jul-2020	18-Jul-2020	18-Jul-2020	18-Jul-2020		21-Jul-2020	17-Jul-2020	17-Jul-2020
PCBs by GCMS									20-Jul-2020	20-Jul-2020
pH	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020
Sample description	15-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020	15-Jul-2020
Semi Volatile Organic Compounds		19-Jul-2020								
TPH CWG GC (S)	20-Jul-2020	20-Jul-2020	17-Jul-2020	20-Jul-2020	20-Jul-2020	17-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020
VOC MS (S)	16-Jul-2020	16-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	17-Jul-2020	16-Jul-2020	16-Jul-2020	16-Jul-2020

ASSOCIATED AQC DATA

Anions by Kone (soil)

Component	Method Code	QC 2222
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**164.95** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2270	QC 2214
Water Soluble Boron	TM222	**93.0** 78.05 : 113.75	**101.0** 85.80 : 112.50

EPH CWG GC (S)

Component	Method Code	QC 2239	QC 2234
EPH >C8-C40 Raw	TM414	**78.89** 56.39 : 129.94	**90.77** 58.92 : 124.32
Total Aliphatics Raw	TM414	**83.58** 62.55 : 133.12	**96.0** 64.95 : 136.26
Total Aromatics Raw	TM414	**89.78** 57.00 : 150.27	**104.57** 58.15 : 147.12

GRO by GC-FID (S)

Component	Method Code	QC 2298	QC 2238	QC 2291
QC	TM089	**76.63** 70.75 : 114.19	**89.69** 70.34 : 111.95	**90.95** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2221	QC 2237
Hexavalent Chromium	TM151	**102.0** 95.60 : 107.60	**102.0** 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2227	QC 2294	QC 2260
Aluminium	TM181	**106.19** 73.56 : 108.85	**102.65** 73.56 : 108.85	**96.46** 73.56 : 108.85
Antimony	TM181	**99.59** 76.89 : 111.24	**93.9** 76.89 : 111.24	**92.68** 76.89 : 111.24
Arsenic	TM181	**99.71** 88.53 : 111.01	**98.84** 88.53 : 111.01	**93.6** 88.53 : 111.01

Metals in solid samples by OES

		QC 2227	QC 2294	QC 2260
Barium	TM181	**96.33** 77.67 : 105.35	**99.08** 77.67 : 105.35	**91.74** 77.67 : 105.35
Beryllium	TM181	**104.85** 85.44 : 109.61	**97.76** 85.44 : 109.61	**93.28** 85.44 : 109.61
Boron	TM181	**100.86** 73.51 : 104.66	**93.41** 73.51 : 104.66	**89.11** 73.51 : 104.66
Cadmium	TM181	**88.48** 77.67 : 104.12	**88.89** 77.67 : 104.12	**85.19** 77.67 : 104.12
Chromium	TM181	**95.94** 86.11 : 106.21	**95.13** 86.11 : 106.21	**89.05** 86.11 : 106.21
Cobalt	TM181	**90.57** 84.60 : 104.13	**90.88** 84.60 : 104.13	**85.85** 84.60 : 104.13
Copper	TM181	**92.43** 82.40 : 105.45	**91.55** 82.40 : 105.45	**86.44** 82.40 : 105.45
Iron	TM181	**101.59** 82.95 : 110.58	**100.79** 82.95 : 110.58	**96.03** 82.95 : 110.58
Lead	TM181	**102.03** 78.24 : 104.05	**89.86** 78.24 : 104.05	**85.81** 78.24 : 104.05
Manganese	TM181	**115.83** 94.29 : 119.51	**117.5** 94.29 : 119.51	**112.5** 94.29 : 119.51
Mercury	TM181	**90.1** 83.16 : 107.81	**90.82** 83.16 : 107.81	**84.3** 83.16 : 107.81
Molybdenum	TM181	**99.59** 87.11 : 106.87	**97.94** 87.11 : 106.87	**96.71** 87.11 : 106.87
Nickel	TM181	**97.07** 80.26 : 102.28	**93.15** 80.26 : 102.28	**91.69** 80.26 : 102.28
Phosphorus	TM181	**113.94** 94.56 : 124.28	**118.38** 94.56 : 124.28	**112.12** 94.56 : 124.28
Selenium	TM181	**100.78** 82.28 : 110.48	**95.69** 82.28 : 110.48	**92.94** 82.28 : 110.48
Strontium	TM181	**91.31** 79.13 : 102.79	**90.87** 79.13 : 102.79	**85.3** 79.13 : 102.79
Thallium	TM181	**96.9** 82.94 : 111.86	**96.9** 82.94 : 111.86	**91.59** 82.94 : 111.86
Tin	TM181	**97.34** 86.72 : 110.03	**98.86** 86.72 : 110.03	**95.06** 86.72 : 110.03
Titanium	TM181	**96.95** 66.23 : 102.06	**89.31** 66.23 : 102.06	**89.31** 66.23 : 102.06
Vanadium	TM181	**98.53** 86.19 : 109.45	**97.07** 86.19 : 109.45	**94.14** 86.19 : 109.45
Zinc	TM181	**101.64** 84.68 : 113.99	**99.59** 84.68 : 113.99	**96.1** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2288	QC 2270	QC 2217	QC 2244	QC 2238
Acenaphthene	TM218	**96.0** 76.79 : 103.90	**93.5** 80.97 : 105.99	**103.5** 76.79 : 103.90	**85.5** 76.79 : 103.90	**90.0** 76.79 : 103.90
Acenaphthylene	TM218	**99.0** 78.40 : 108.66	**96.0** 80.24 : 105.29	**106.0** 78.40 : 108.66	**84.5** 78.40 : 108.66	**88.5** 78.40 : 108.66
Anthracene	TM218	**88.5** 71.94 : 101.94	**93.5** 73.72 : 109.23	**98.5** 71.94 : 101.94	**85.0** 71.94 : 101.94	**87.0** 71.94 : 101.94
Benz(a)anthracene	TM218	**85.5** 73.77 : 119.26	**88.0** 79.72 : 116.84	**100.5** 73.77 : 119.26	**85.0** 73.77 : 119.26	**86.0** 73.77 : 119.26

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

PAH by GCMS

		QC 2288	QC 2270	QC 2217	QC 2244	QC 2238
Benzo(a)pyrene	TM218	**81.0** 73.20 : 114.18	**84.0** 68.42 : 118.29	**91.5** 73.20 : 114.18	**82.5** 73.20 : 114.18	**88.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**82.5** 75.36 : 117.58	**89.5** 77.35 : 112.97	**94.5** 75.36 : 117.58	**83.0** 75.36 : 117.58	**83.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**82.5** 70.73 : 116.12	**79.5** 77.68 : 107.38	**87.5** 70.73 : 116.12	**81.0** 70.73 : 116.12	**83.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**86.5** 75.98 : 116.59	**86.0** 82.61 : 111.93	**92.5** 75.98 : 116.59	**83.5** 75.98 : 116.59	**85.0** 75.98 : 116.59
Chrysene	TM218	**81.0** 74.82 : 114.18	**89.0** 80.28 : 111.42	**94.0** 74.82 : 114.18	**81.5** 74.82 : 114.18	**83.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**85.5** 69.17 : 115.30	**80.0** 79.17 : 106.41	**90.5** 69.17 : 115.30	**83.5** 69.17 : 115.30	**86.0** 69.17 : 115.30
Fluoranthene	TM218	**80.5** 75.88 : 112.84	**102.0** 79.07 : 112.75	**94.0** 75.88 : 112.84	**85.5** 75.88 : 112.84	**85.5** 75.88 : 112.84
Fluorene	TM218	**91.5** 78.29 : 103.91	**92.0** 80.52 : 110.90	**102.5** 78.29 : 103.91	**86.0** 78.29 : 103.91	**88.5** 78.29 : 103.91
Indeno(123cd)pyrene	TM218	**80.5** 70.26 : 117.95	**80.0** 76.97 : 113.36	**90.0** 70.26 : 117.95	**89.5** 70.26 : 117.95	**80.0** 70.26 : 117.95
Naphthalene	TM218	**92.0** 74.70 : 101.83	**84.5** 78.94 : 110.91	**91.0** 74.70 : 101.83	**83.0** 74.70 : 101.83	**87.5** 74.70 : 101.83
Phenanthrene	TM218	**88.0** 72.24 : 102.15	**101.0** 79.34 : 111.91	**96.5** 72.24 : 102.15	**87.0** 72.24 : 102.15	**86.5** 72.24 : 102.15
Pyrene	TM218	**79.5** 71.98 : 105.95	**98.5** 74.43 : 114.36	**99.5** 71.98 : 105.95	**83.5** 71.98 : 105.95	**86.0** 71.98 : 105.95

PCBs by GCMS

Component	Method Code	QC 2255
PCB congener 101	TM168	**86.2** 79.46 : 109.70
PCB congener 105	TM168	**78.9** 66.33 : 105.75
PCB congener 114	TM168	**80.7** 66.41 : 106.49
PCB congener 118	TM168	**81.5** 70.33 : 110.29
PCB congener 123	TM168	**85.3** 65.01 : 99.81
PCB congener 126	TM168	**75.0** 59.31 : 109.23
PCB congener 138	TM168	**72.9** 63.95 : 107.63
PCB congener 153	TM168	**78.5** 62.65 : 108.85
PCB congener 156	TM168	**76.2** 61.69 : 112.27
PCB congener 157	TM168	**74.6** 67.15 : 109.93
PCB congener 167	TM168	**76.4** 65.58 : 109.14
PCB congener 169	TM168	**75.7** 56.84 : 112.10
PCB congener 180	TM168	**79.0** 66.99 : 111.63

PCBs by GCMS

		QC 2255
PCB congener 189	TM168	**72.2** 57.75 : 112.59
PCB congener 28	TM168	**82.6** 73.68 : 105.96
PCB congener 52	TM168	**81.2** 67.24 : 107.62
PCB congener 77	TM168	**76.7** 64.87 : 108.49
PCB congener 81	TM168	**81.4** 70.78 : 110.80

pH

Component	Method Code	QC 2243	QC 2243
pH	TM133	**100.66** 98.81 : 101.99	**100.26** 98.47 : 102.33

Semi Volatile Organic Compounds

Component	Method Code	QC 2262
4-Bromophenylphenylether (Soil)	TM157	**84.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**97.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**88.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**87.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**89.5** 66.50 : 123.50
Phenol (Soil)	TM157	**92.5** 69.92 : 114.02

VOC MS (S)

Component	Method Code	QC 2225	QC 2296	QC 2213
1,1,1,2-tetrachloroethane	TM116	**107.6** 79.10 : 119.66	**102.4** 84.84 : 116.25	**105.6** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**106.0** 87.51 : 115.37	**99.0** 73.73 : 118.05	**99.0** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**95.2** 75.16 : 112.70	**98.4** 77.12 : 116.04	**106.8** 77.12 : 116.04
1,1-Dichloroethane	TM116	**109.2** 86.77 : 122.11	**106.0** 74.46 : 129.15	**105.8** 74.46 : 129.15
1,2-Dichloroethane	TM116	**113.4** 90.04 : 132.28	**115.8** 92.38 : 131.65	**127.2** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**98.6** 84.04 : 124.40	**99.8** 83.64 : 126.18	**101.4** 83.64 : 126.18
2-Chlorotoluene	TM116	**92.0** 73.76 : 115.43	**94.8** 75.26 : 110.11	**92.2** 75.26 : 110.11
4-Chlorotoluene	TM116	**86.4** 72.48 : 112.82	**88.6** 66.90 : 112.46	**92.6** 66.90 : 112.46

VOC MS (S)

		QC 2225	QC 2296	QC 2213
Benzene	TM116	**103.0** 84.29 : 112.22	**104.2** 88.60 : 113.80	**106.0** 88.60 : 113.80
Carbon Disulphide	TM116	**103.6** 75.11 : 124.81	**103.6** 74.91 : 122.14	**101.2** 74.91 : 122.14
Carbontetrachloride	TM116	**111.4** 82.35 : 126.46	**104.0** 80.31 : 124.50	**104.6** 80.31 : 124.50
Chlorobenzene	TM116	**101.6** 82.88 : 122.42	**102.8** 83.81 : 114.18	**103.6** 83.81 : 114.18
Chloroform	TM116	**110.6** 90.35 : 120.38	**109.4** 87.40 : 122.49	**109.4** 87.40 : 122.49
Chloromethane	TM116	**107.4** 65.80 : 138.88	**104.2** 65.89 : 136.93	**98.6** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**104.2** 78.27 : 128.90	**103.8** 80.67 : 126.72	**104.0** 80.67 : 126.72
Dibromomethane	TM116	**99.4** 76.00 : 120.73	**104.8** 76.06 : 125.74	**117.0** 76.06 : 125.74
Dichloromethane	TM116	**118.2** 93.91 : 130.46	**113.4** 81.11 : 133.25	**120.2** 81.11 : 133.25
Ethylbenzene	TM116	**90.6** 70.95 : 113.07	**95.6** 75.92 : 110.41	**96.2** 75.92 : 110.41
Hexachlorobutadiene	TM116	**75.4** 14.55 : 147.92	**118.6** 12.82 : 152.73	**79.0** 12.82 : 152.73
Isopropylbenzene	TM116	**79.0** 52.00 : 108.19	**77.6** 55.79 : 97.59	**80.2** 55.79 : 97.59
Naphthalene	TM116	**103.4** 80.29 : 135.77	**112.6** 80.86 : 128.81	**112.4** 80.86 : 128.81
o-Xylene	TM116	**84.4** 64.92 : 98.85	**87.4** 69.99 : 108.74	**87.6** 69.99 : 108.74
p/m-Xylene	TM116	**85.8** 72.04 : 104.04	**91.9** 68.32 : 108.91	**92.2** 68.32 : 108.91
Sec-Butylbenzene	TM116	**74.4** 27.03 : 135.73	**72.2** 38.50 : 101.50	**71.2** 38.50 : 101.50
Tetrachloroethene	TM116	**106.2** 81.43 : 126.65	**106.0** 76.95 : 121.02	**107.0** 76.95 : 121.02
Toluene	TM116	**92.0** 82.44 : 103.50	**97.8** 74.24 : 107.42	**97.2** 74.24 : 107.42
Trichloroethene	TM116	**100.0** 79.80 : 112.33	**100.4** 77.61 : 111.54	**100.4** 77.61 : 111.54
Trichlorofluoromethane	TM116	**114.2** 86.68 : 126.82	**112.2** 84.55 : 133.27	**107.4** 84.55 : 133.27
Vinyl Chloride	TM116	**104.4** 69.66 : 136.55	**107.4** 68.02 : 143.37	**103.4** 68.02 : 143.37

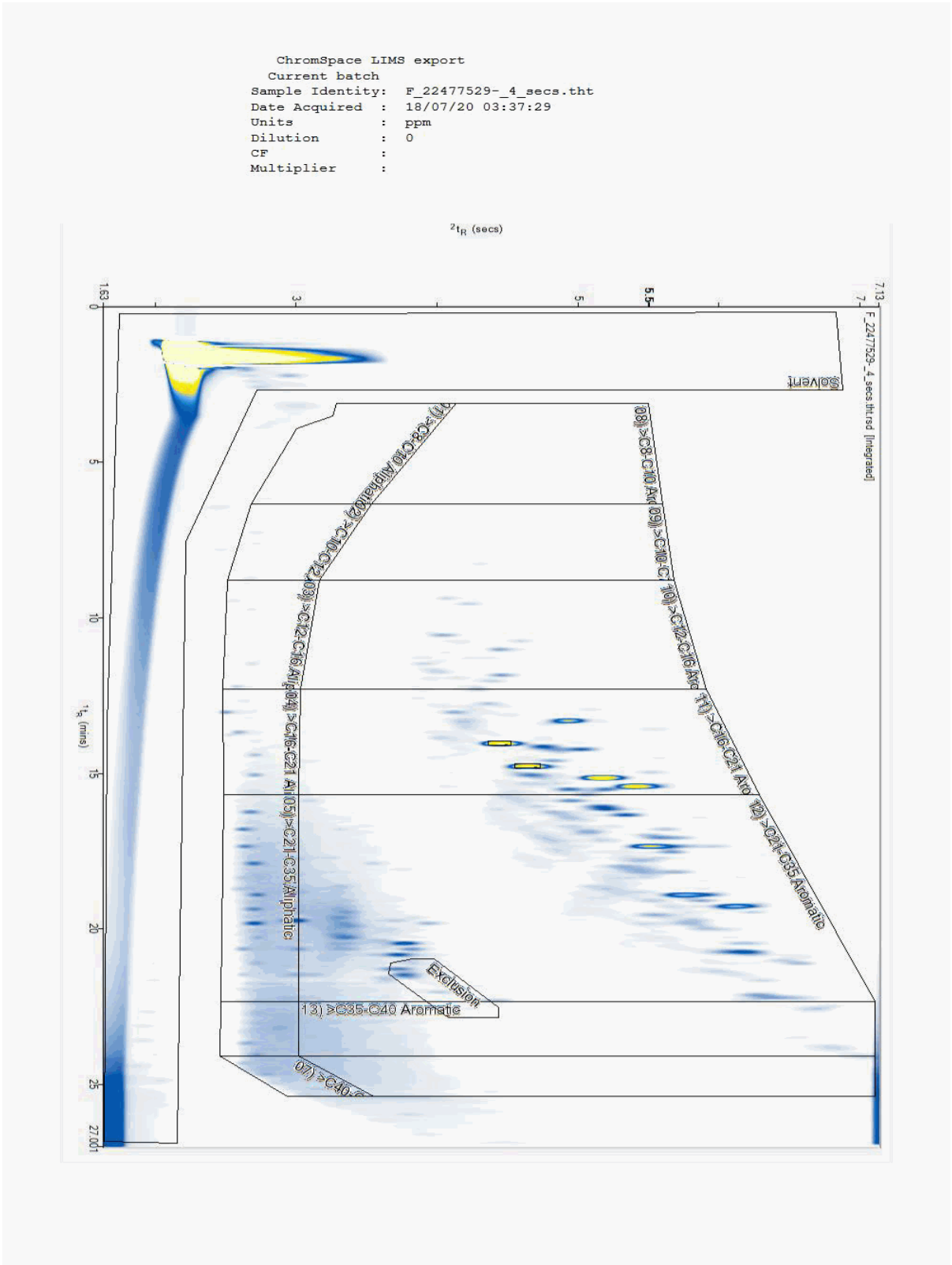
The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22477529 **Depth :** 0.30 - 0.40
Sample ID : WS-112-ES1



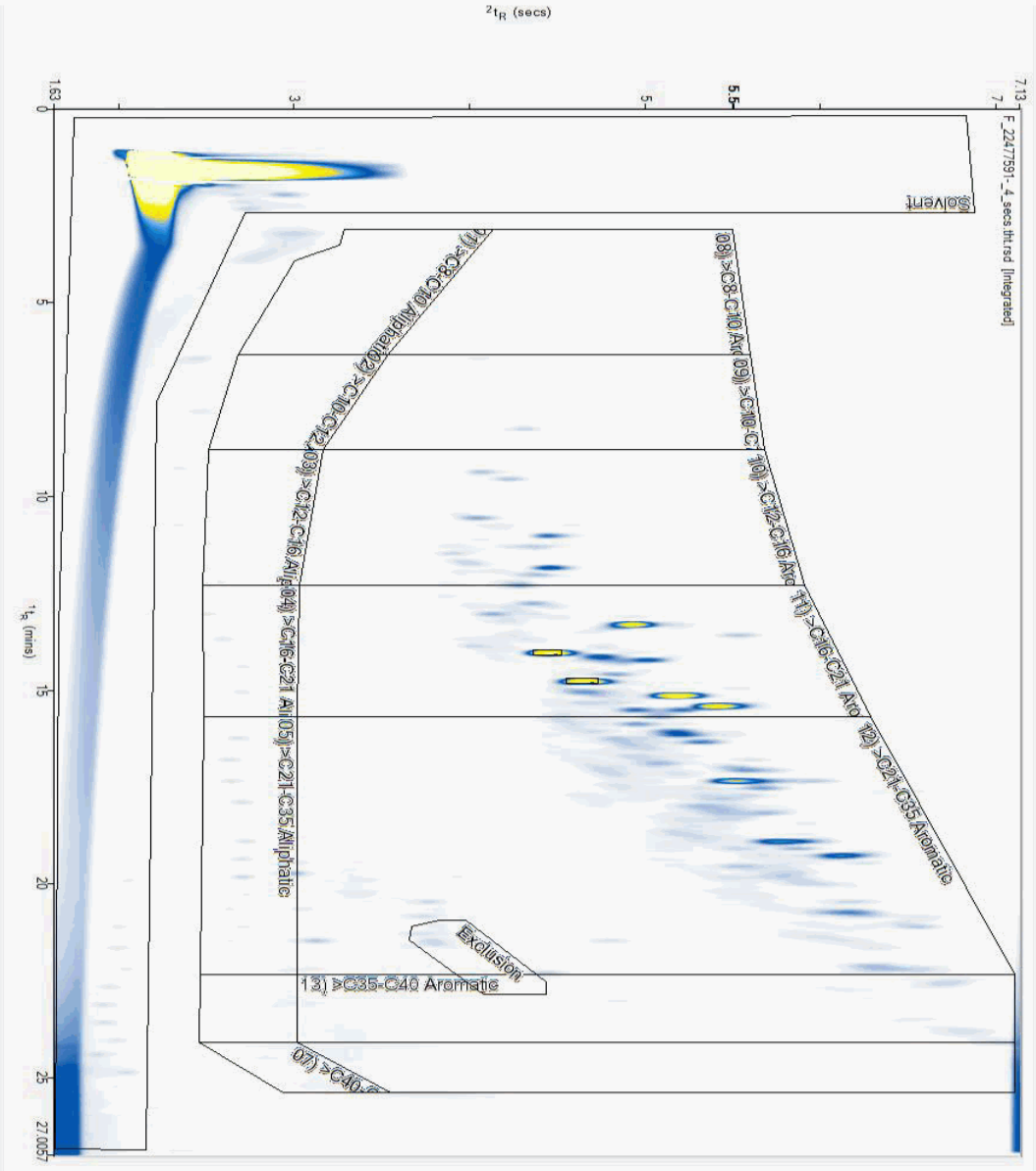
CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22477591 **Depth :** 0.80 - 0.90
Sample ID : WS-113-ES1

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22477591-_4_secs.tht
Date Acquired   :  18/07/20 02:18:39
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



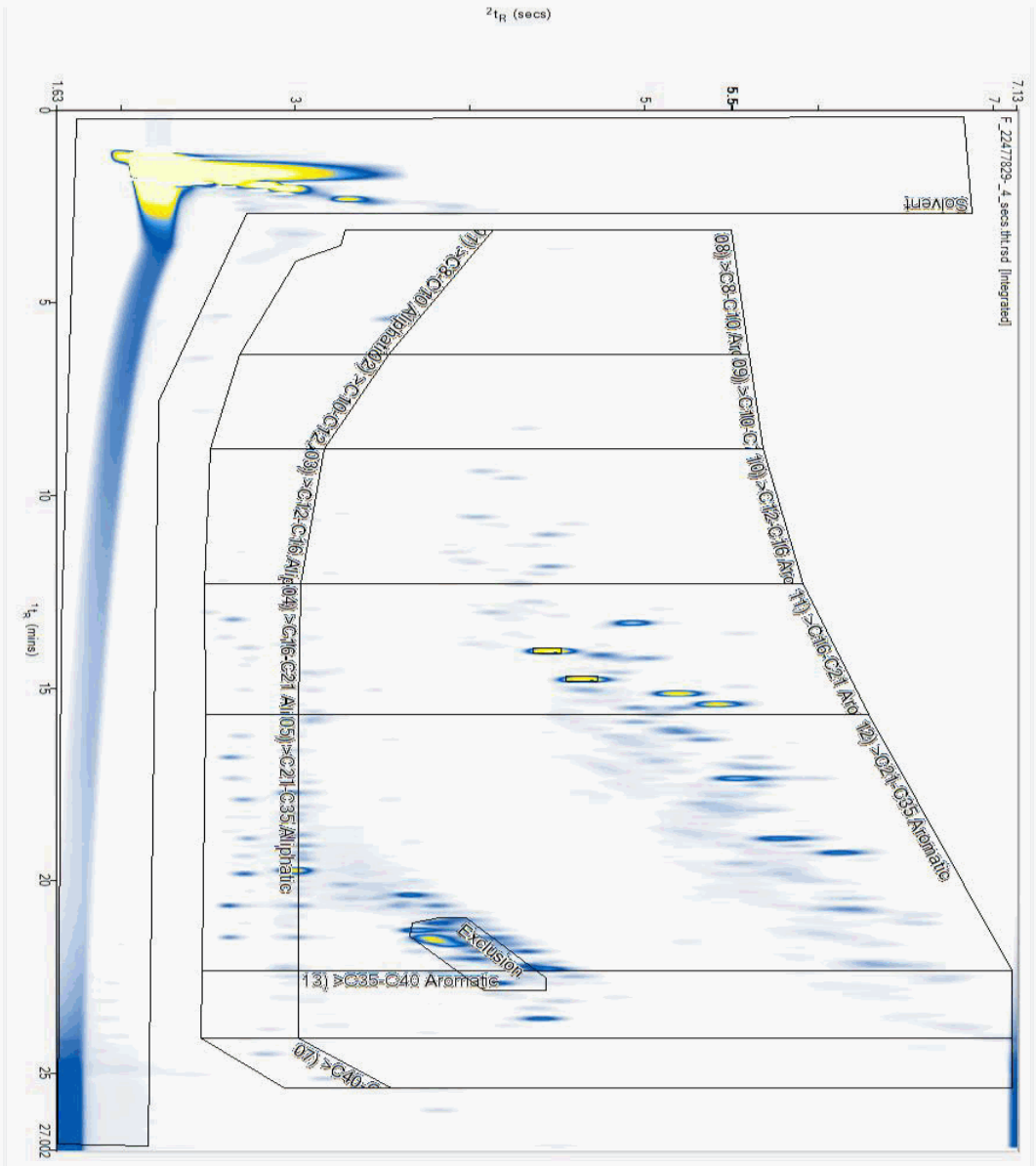
CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22477829 **Depth :** 0.20 - 0.30
Sample ID : WS-116-ES1

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22477829-_4_secs.tht
Date Acquired   :  18/07/20 05:36:04
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



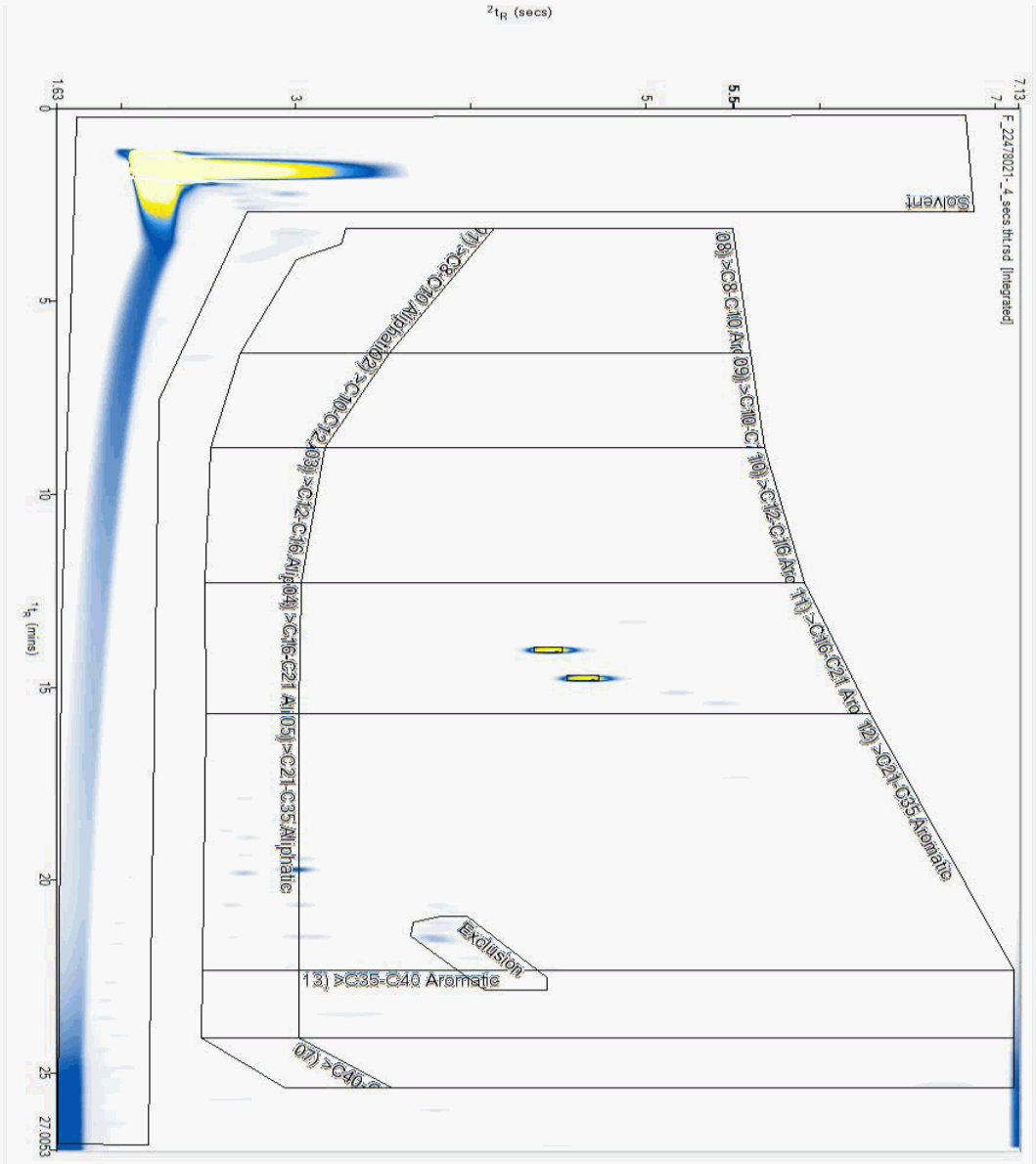
CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22478021 **Depth :** 0.80 - 0.90
Sample ID : CP104-ES1

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22478021-_4_secs.tht
Date Acquired   :  18/07/20 12:16:54
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



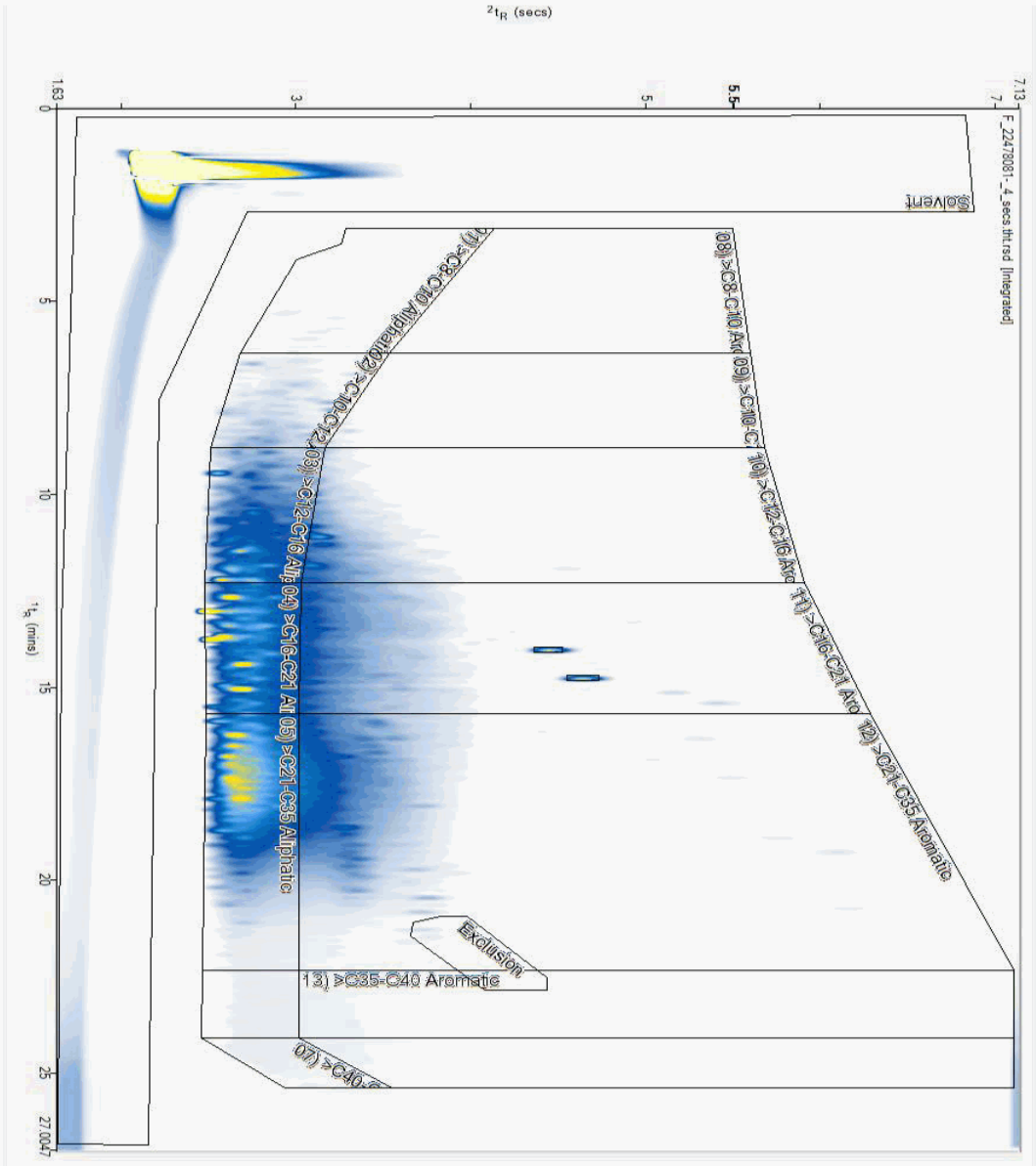
CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22478081 **Depth :** 0.40 - 0.50
Sample ID : WS-106-ES1

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22478081-_4_secs.tht
Date Acquired   :  18/07/20 04:56:34
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



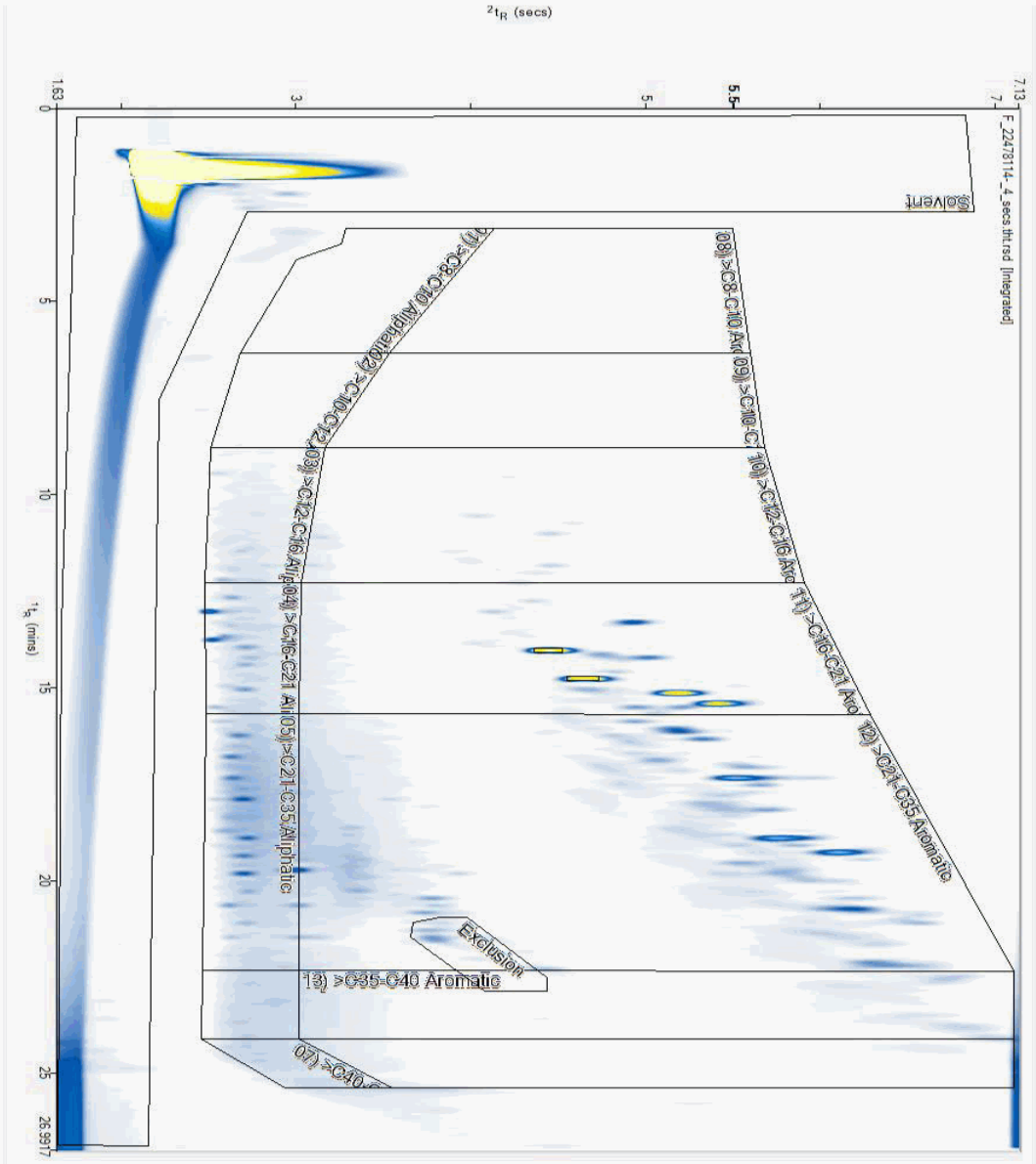
CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22478114 **Depth :** 0.80 - 0.90
Sample ID : CP102-ES1

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22478114-_4_secs.tht
Date Acquired   :  18/07/20 06:15:23
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



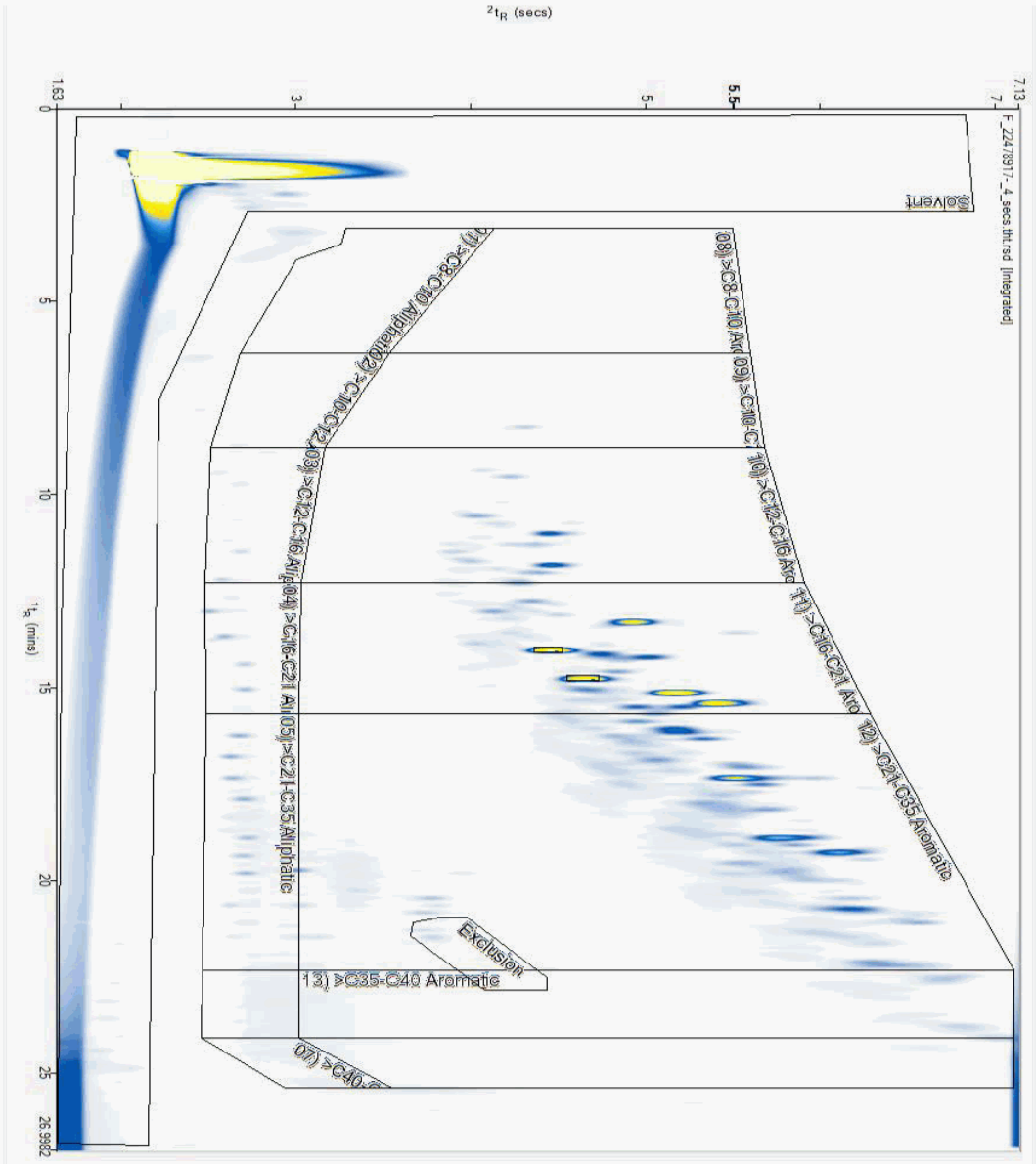
CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22478917 **Depth :** 1.10 - 1.20
Sample ID : WS107-ES2

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22478917-_4_secs.tht
Date Acquired   :  18/07/20 02:58:08
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



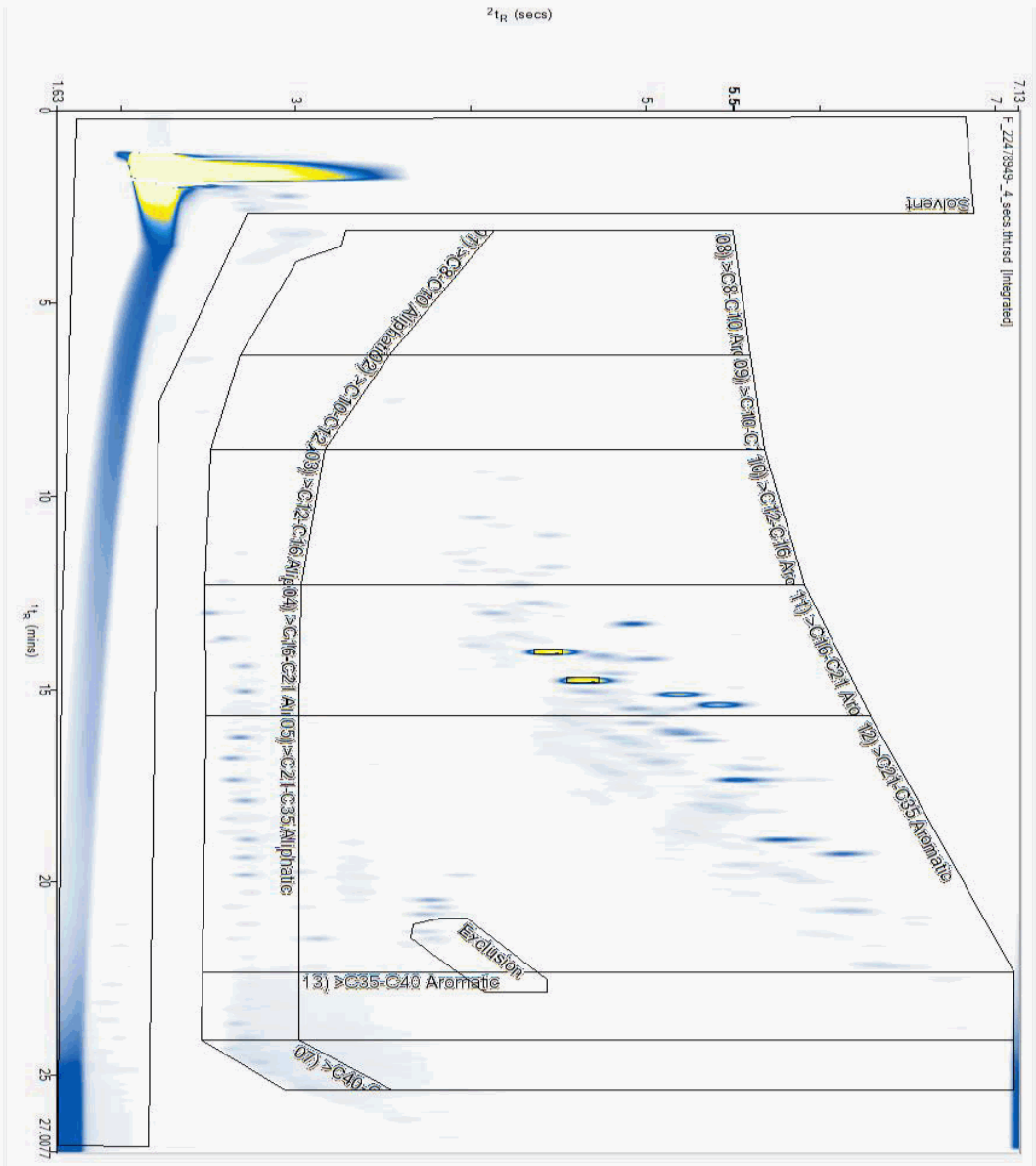
CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22478949 **Depth :** 0.60 - 0.70
Sample ID : WS108-ES1

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22478949-_4_secs.tht
Date Acquired   :  18/07/20 04:17:13
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



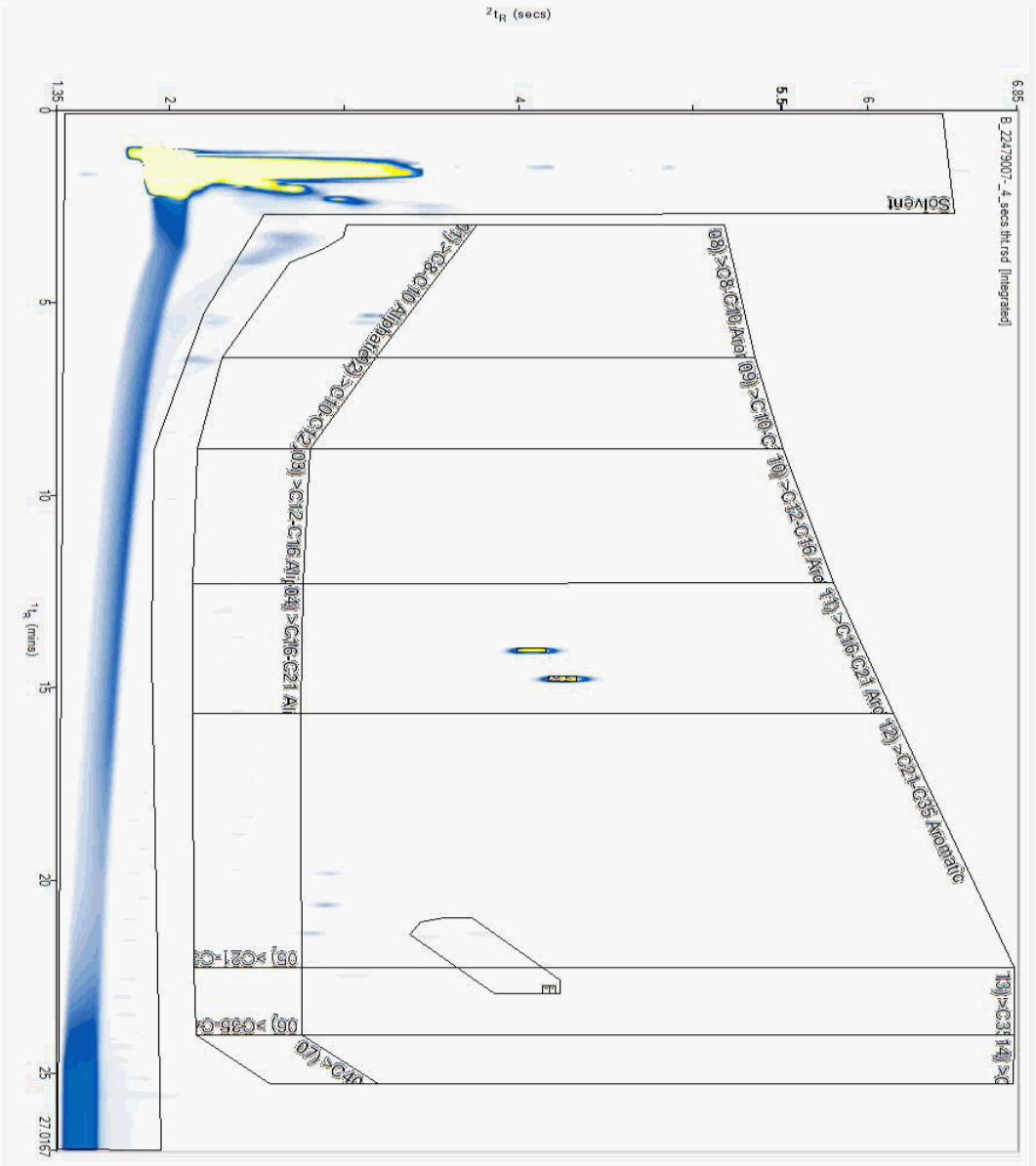
CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22479007 **Depth :** 1.60 - 1.70
Sample ID : WS108-ES2

```
  ChromSpace LIMS export
 Current batch
Sample Identity:  B_22479007-_4_secs.tht
Date Acquired   :  16/07/20 04:24:45
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



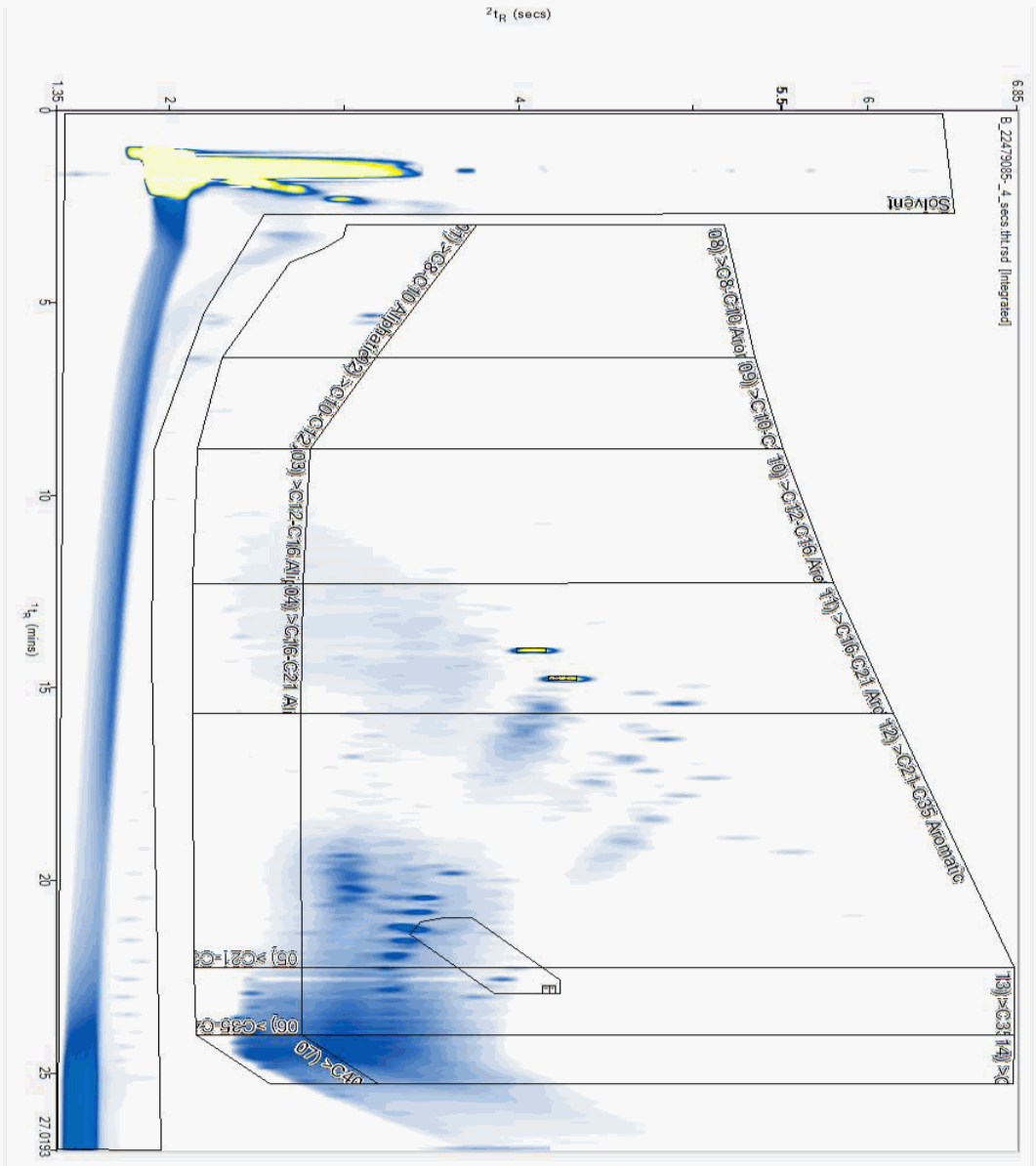
CERTIFICATE OF ANALYSIS

SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22479085 **Depth :** 0.20 - 0.30
Sample ID : WS105-ES1

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  B_22479085-_4_secs.tht
Date Acquired   :  16/07/20 11:18:30
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



CERTIFICATE OF ANALYSIS

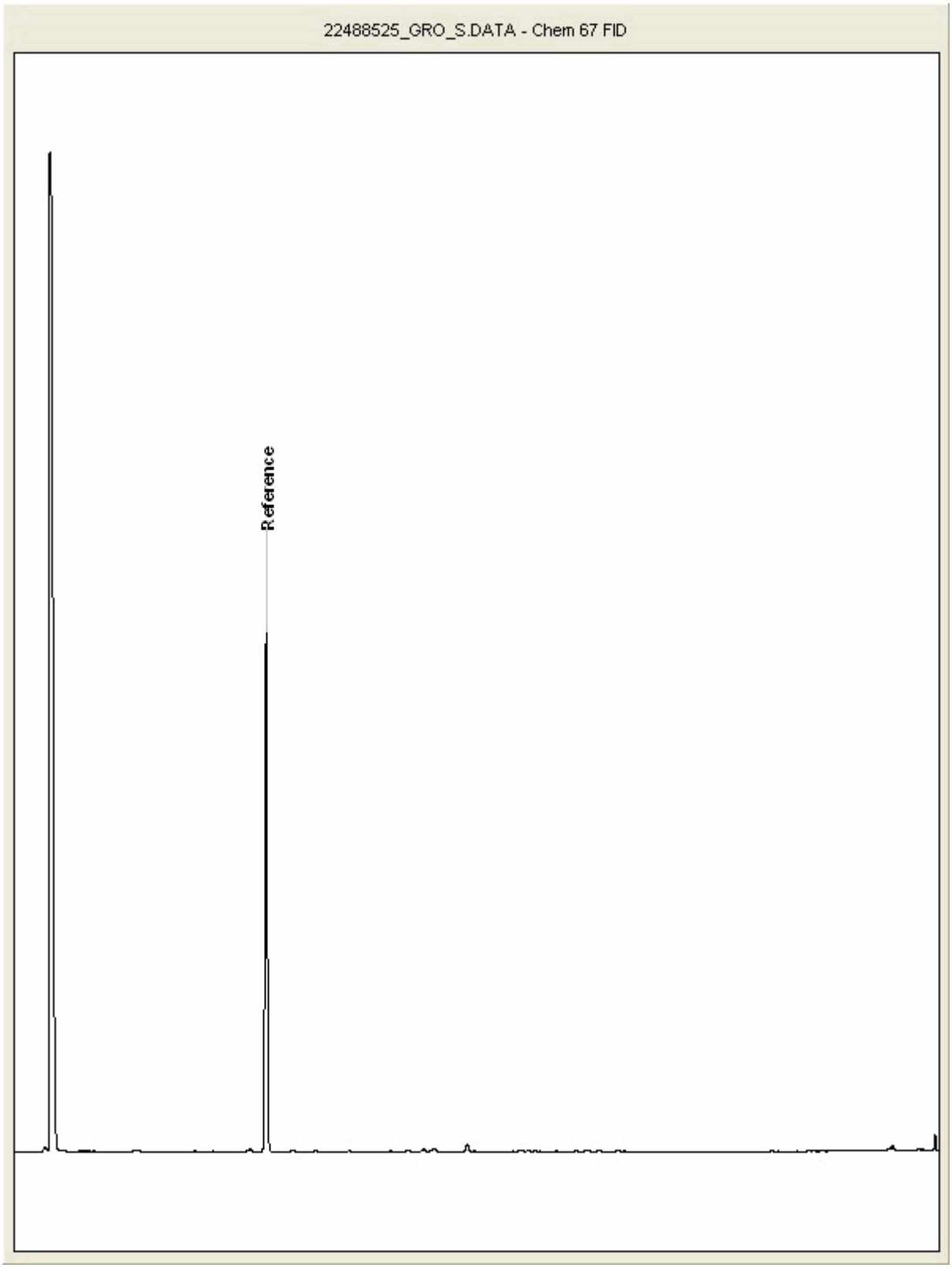
SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22488525
Sample ID : WS-113-ES1

Depth : 0.80 - 0.90



CERTIFICATE OF ANALYSIS

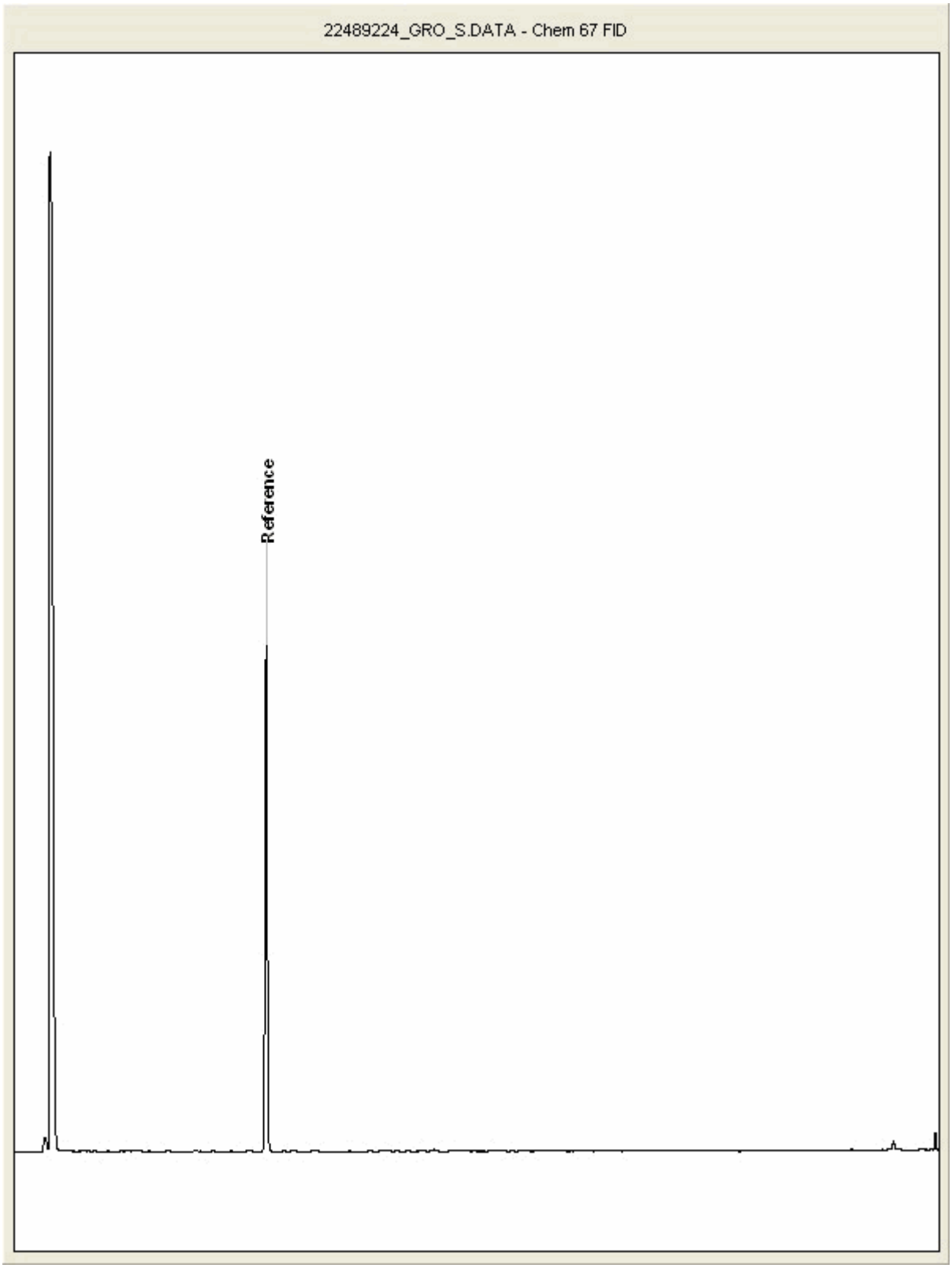
SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22489224
Sample ID : WS-112-ES1

Depth : 0.30 - 0.40



CERTIFICATE OF ANALYSIS

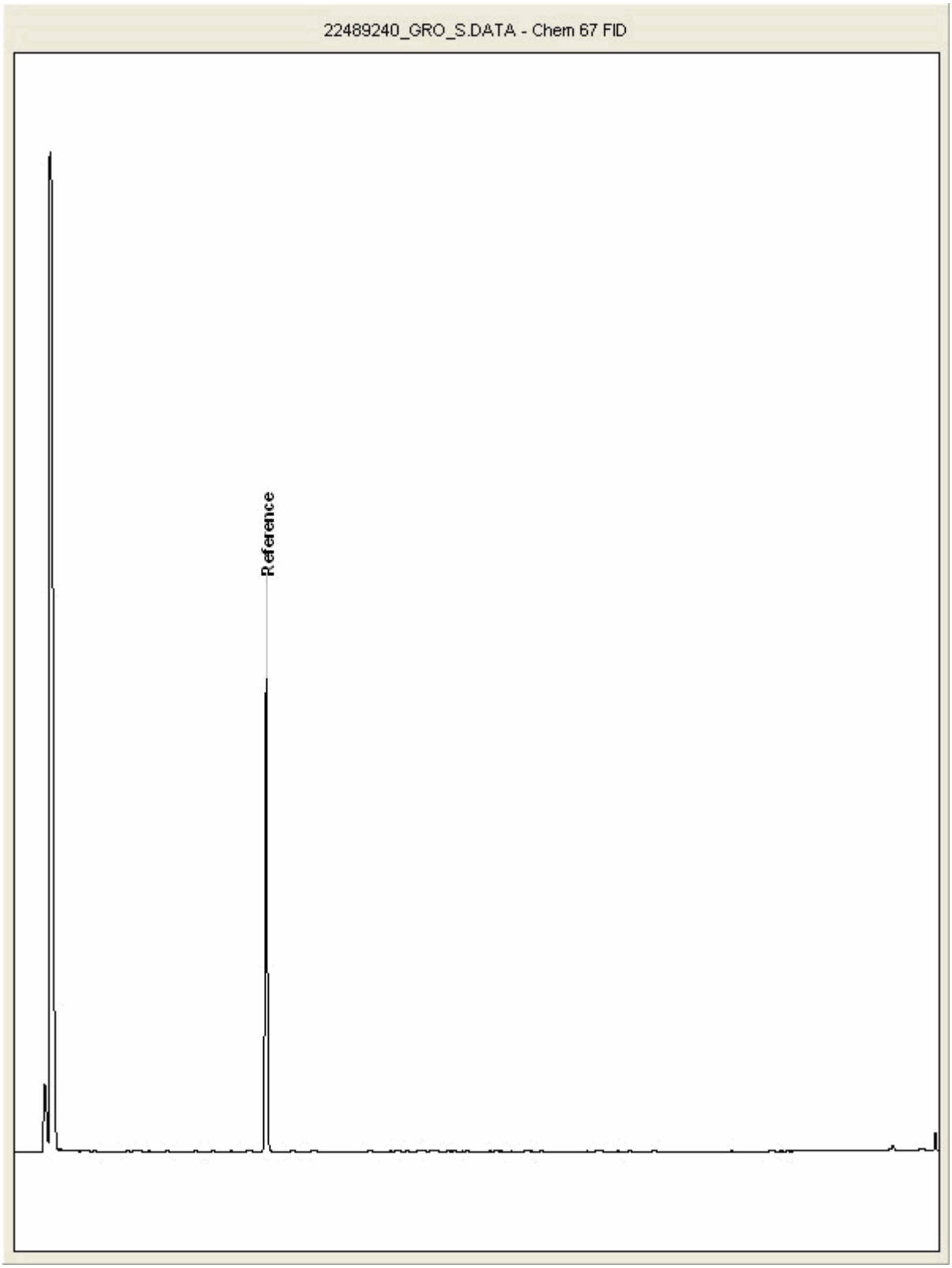
SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22489240
Sample ID : CP104-ES1

Depth : 0.80 - 0.90



CERTIFICATE OF ANALYSIS

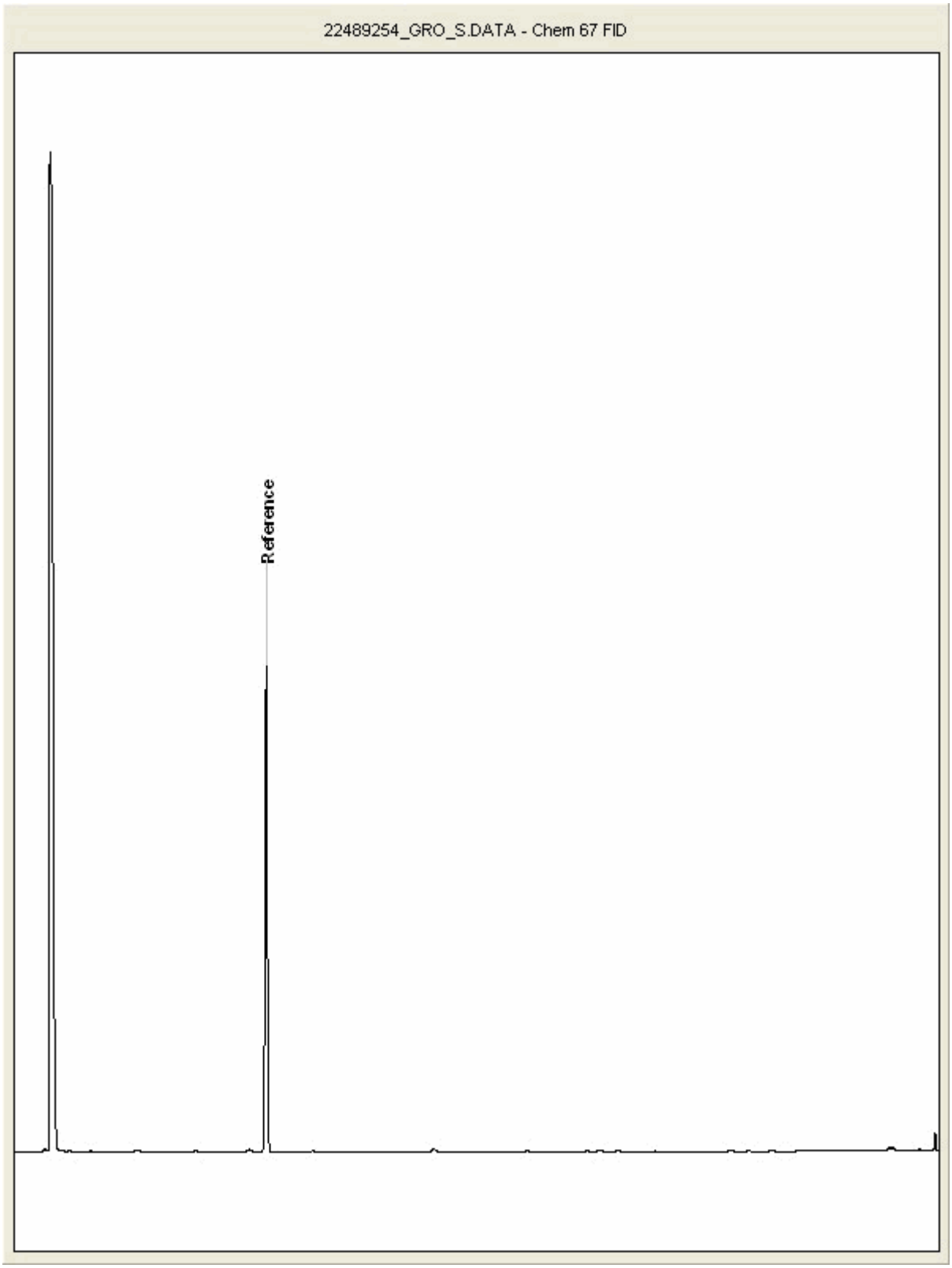
SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22489254
Sample ID : WS-116-ES1

Depth : 0.20 - 0.30



CERTIFICATE OF ANALYSIS

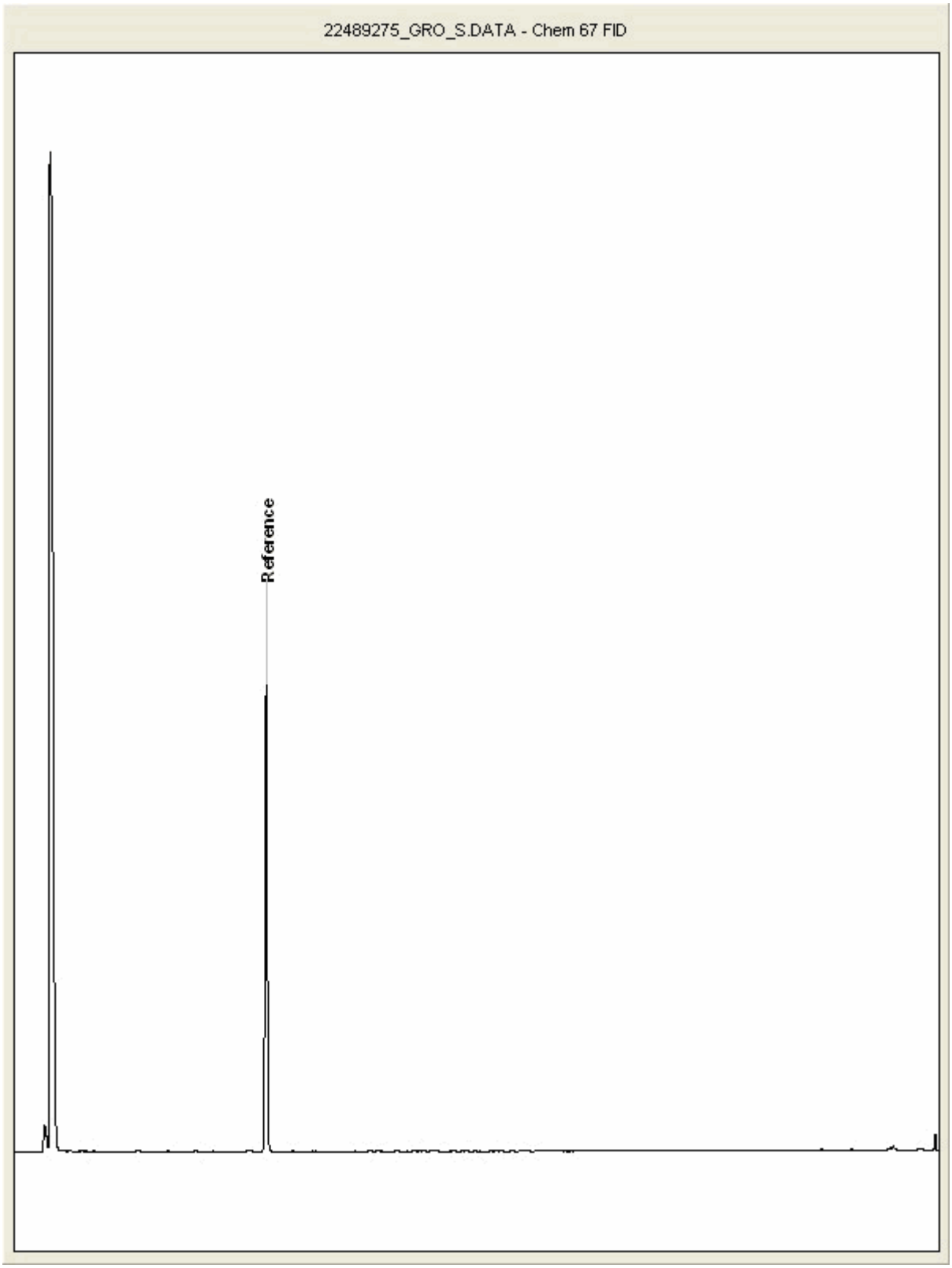
SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22489275
Sample ID : CP102-ES1

Depth : 0.80 - 0.90



CERTIFICATE OF ANALYSIS

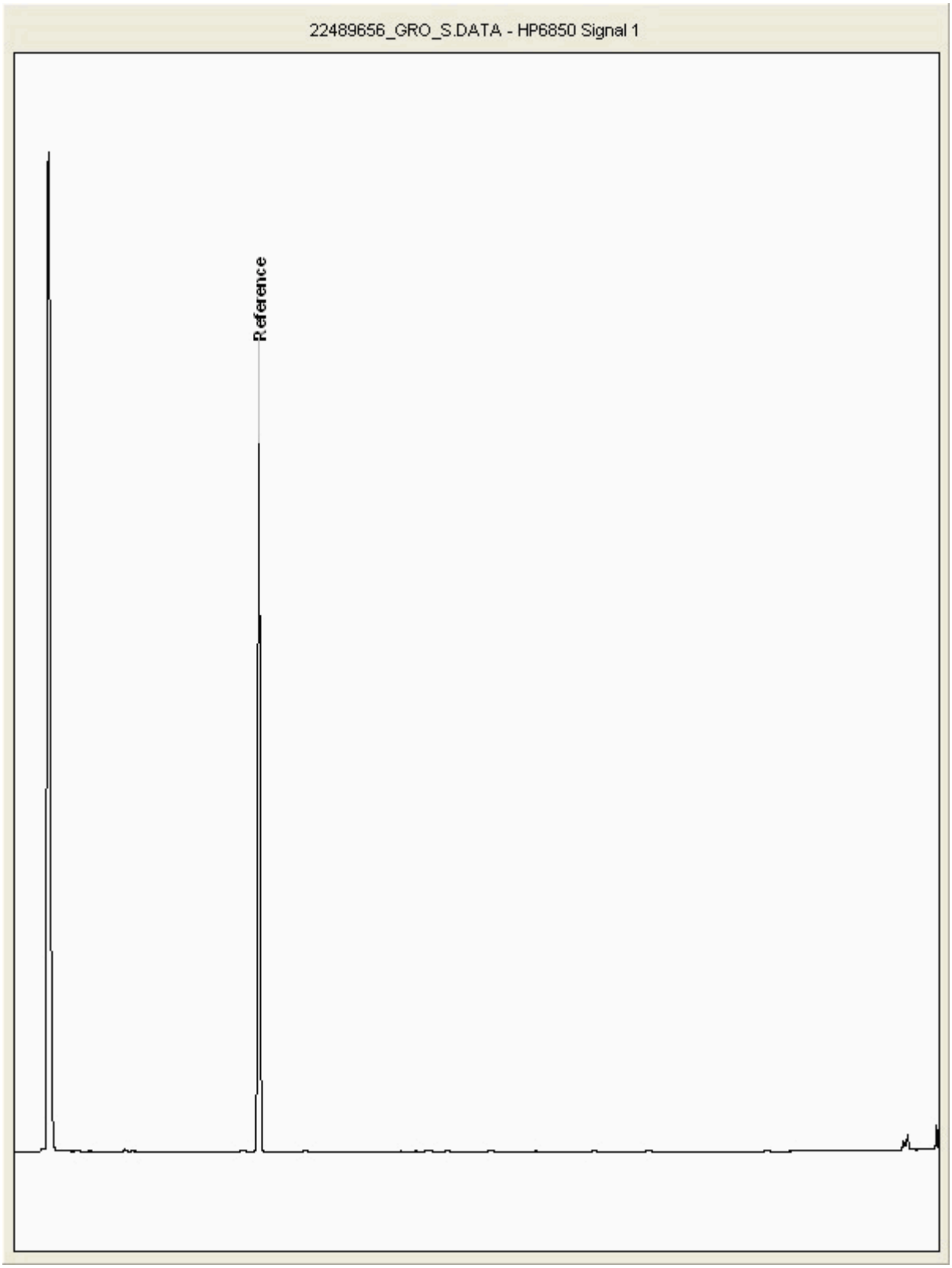
SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22489656
Sample ID : WS108-ES2

Depth : 1.60 - 1.70



CERTIFICATE OF ANALYSIS

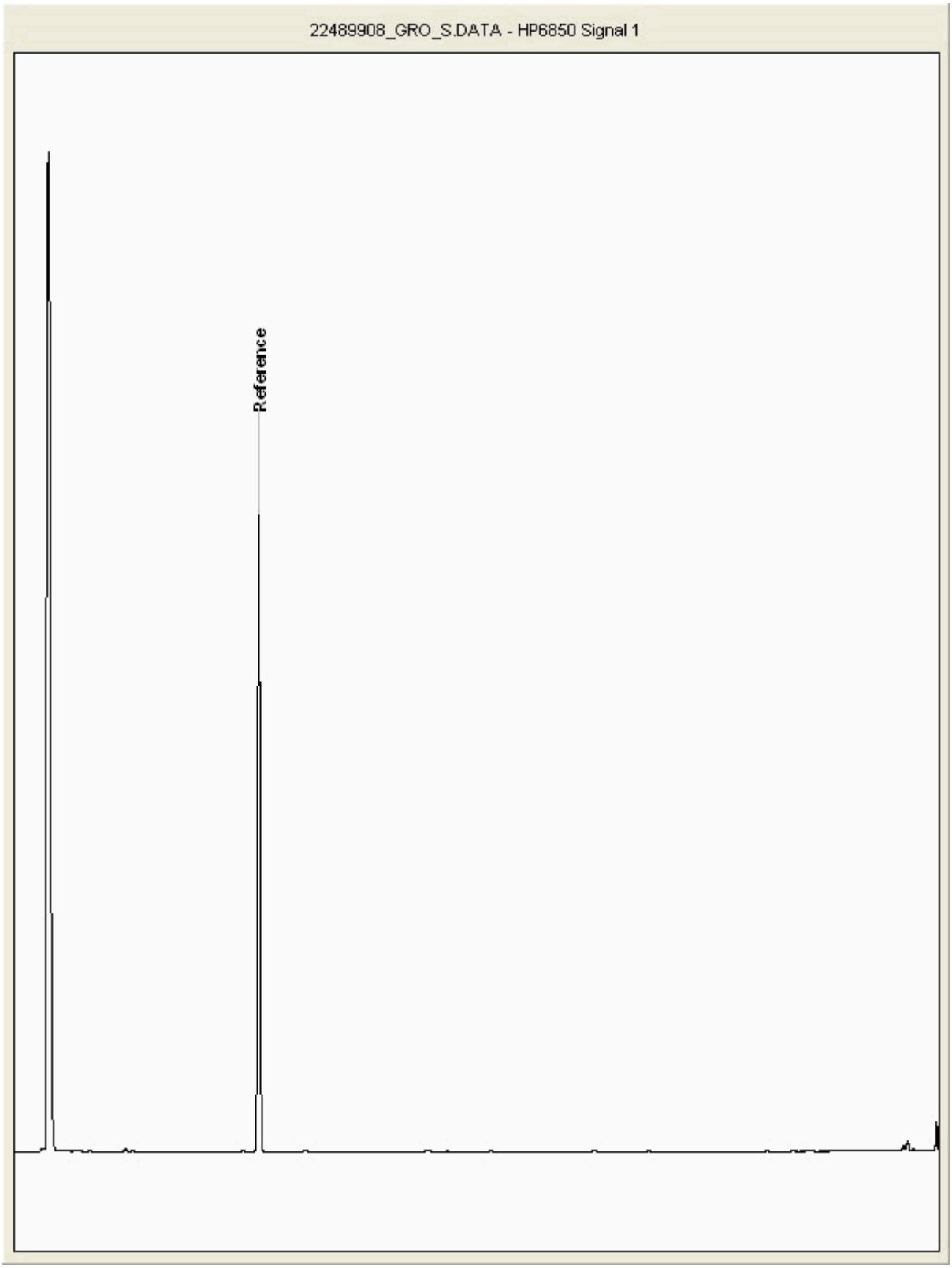
SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22489908
Sample ID : WS105-ES1

Depth : 0.20 - 0.30



CERTIFICATE OF ANALYSIS

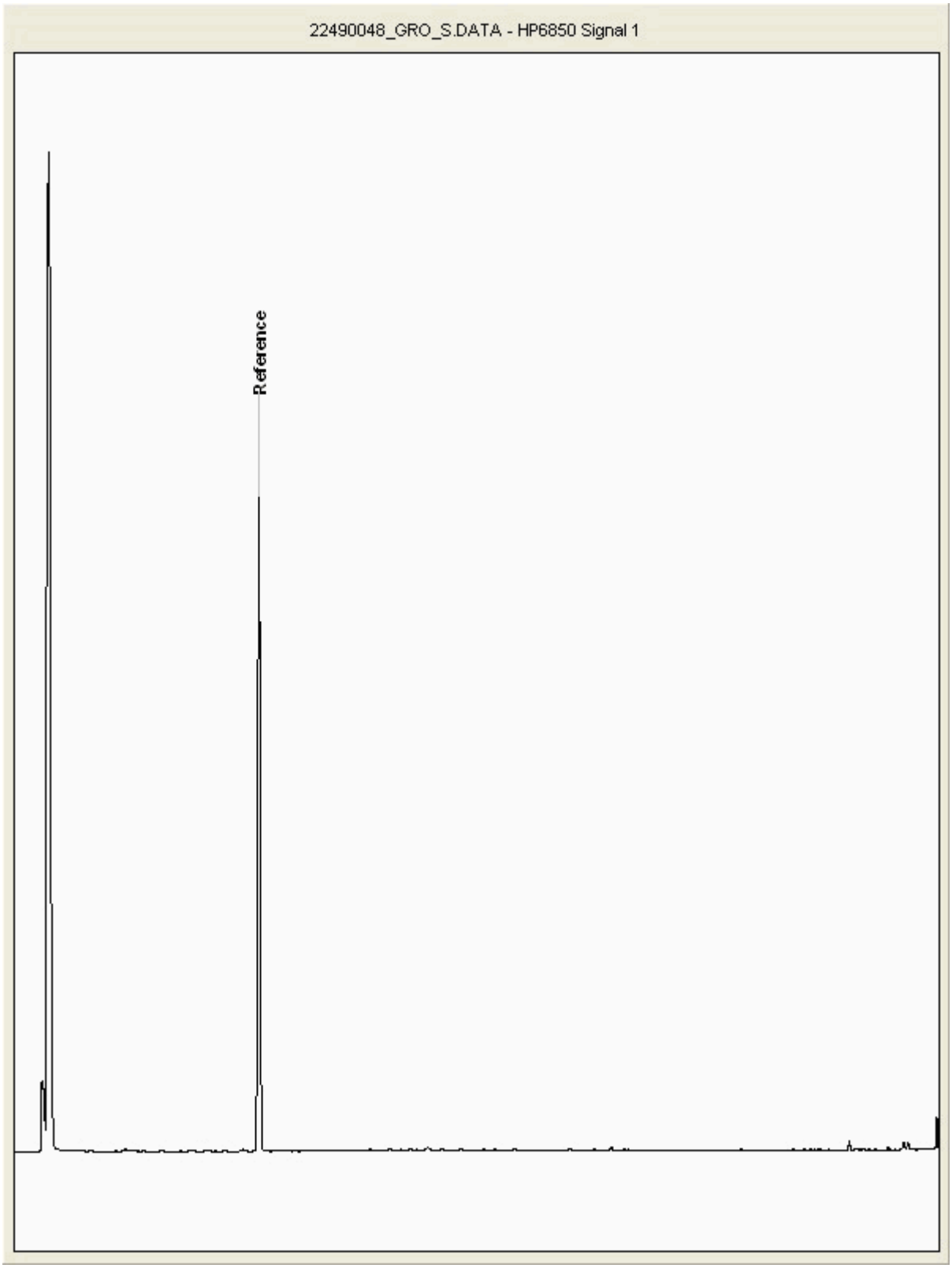
SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22490048
Sample ID : WS107-ES2

Depth : 1.10 - 1.20



CERTIFICATE OF ANALYSIS

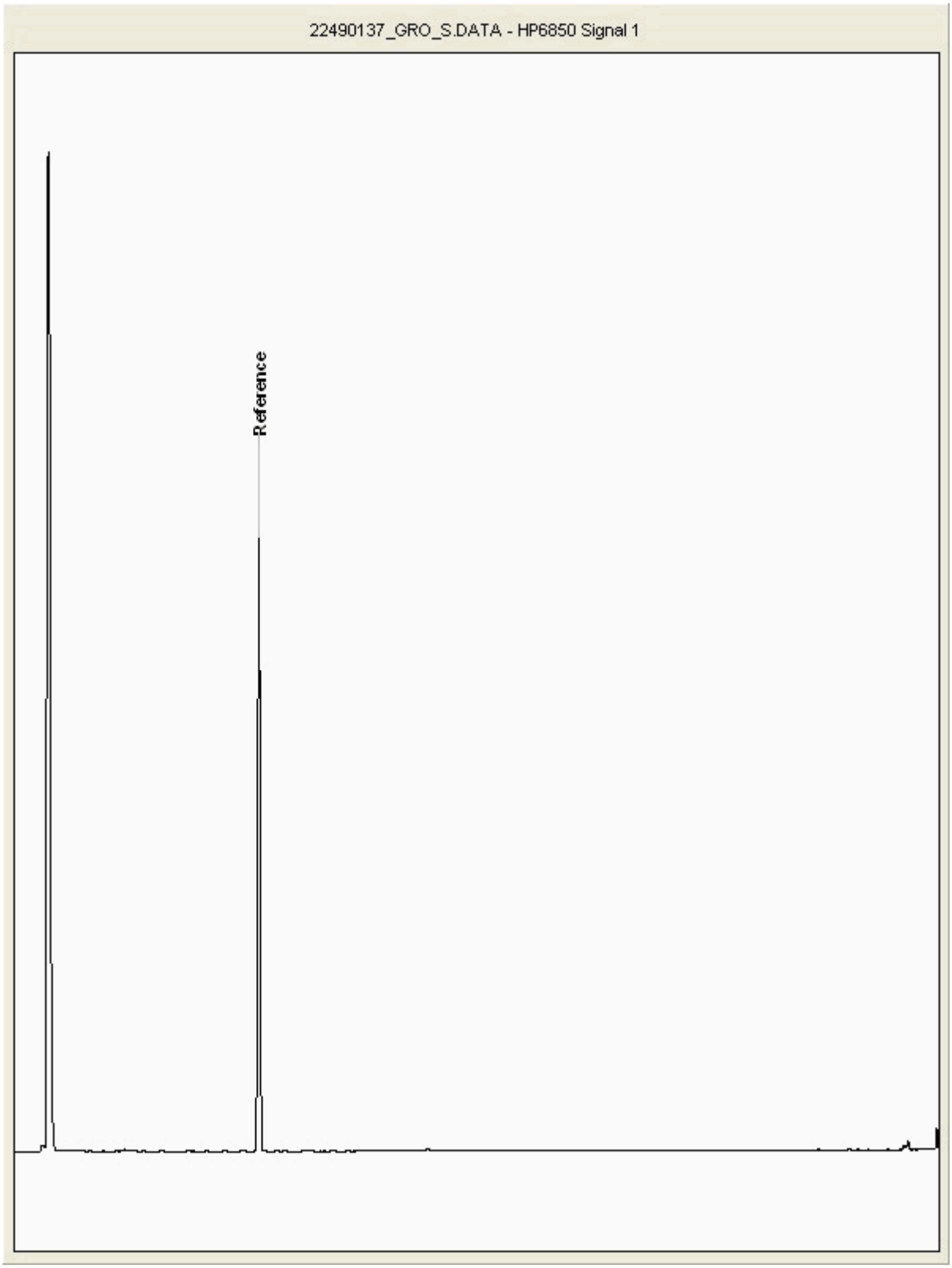
SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22490137
Sample ID : WS108-ES1

Depth : 0.60 - 0.70



CERTIFICATE OF ANALYSIS

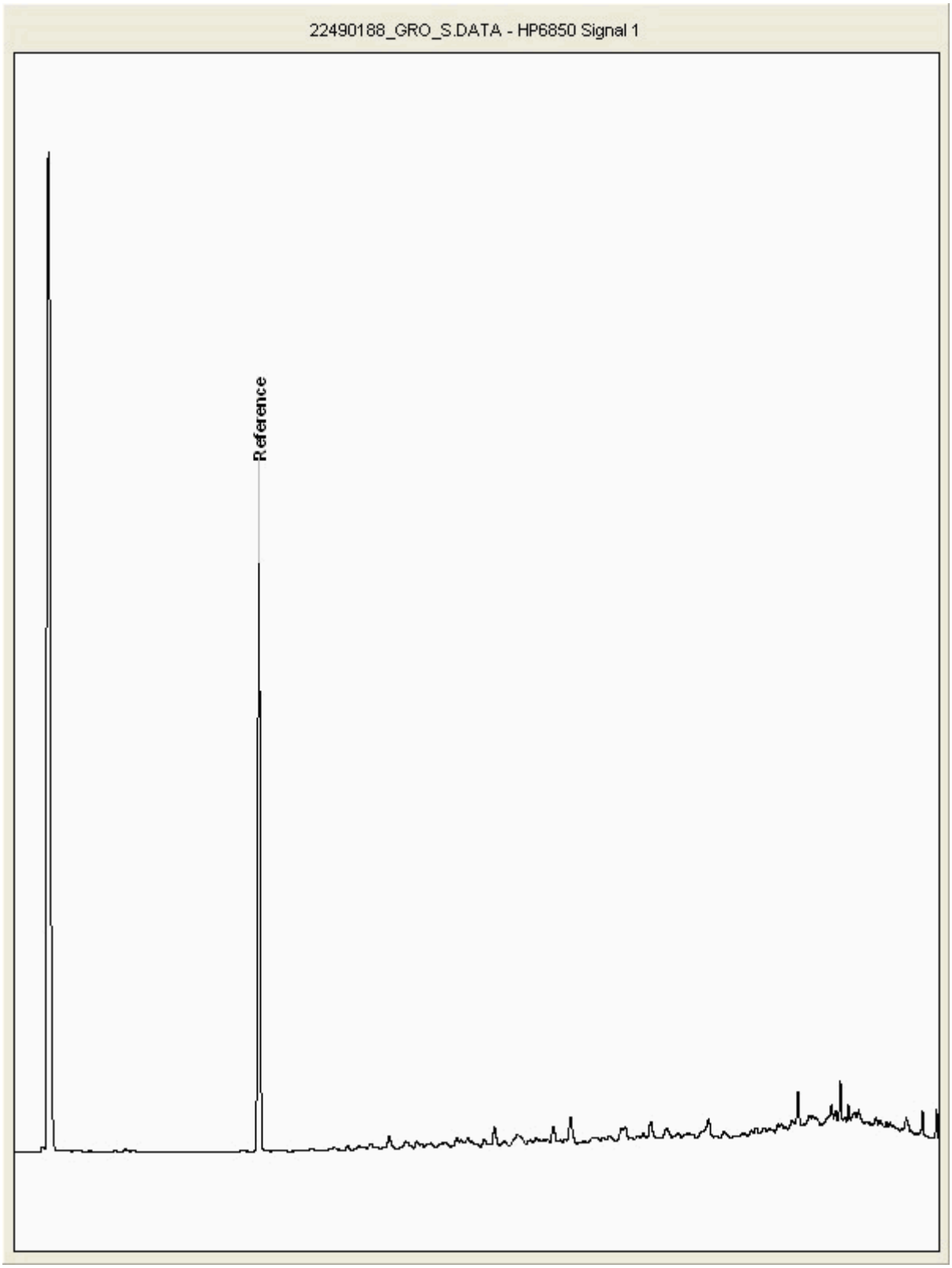
SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M	**Order Number:**	10041634	**Superseded Report:**	559880

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22490188
Sample ID : WS-106-ES1

Depth : 0.40 - 0.50



SDG:	200711-130	**Client Reference:**	10041634	**Report Number:**	560821
Location:	Hyde Road, Manchester M12 5AI	**Order Number:**	10041634	**Superseded Report:**	559880

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

ARCADIS UK Ltd
10th Floor
3 Piccadilly Place
Manchester
M1 2BN

Attention: Elizabeth Yeatman

CERTIFICATE OF ANALYSIS

Date of report Generation:	29 July 2020
Customer:	ARCADIS UK Ltd
Sample Delivery Group (SDG):	200722-107
Your Reference:	10041634
Location:	Hyde Road, Manchester
Report No:	561074

We received 5 samples on Wednesday July 22, 2020 and 5 of these samples were scheduled for analysis which was completed on Wednesday July 29, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22527043	CP102		2.00 - 2.50	20/07/2020
22527044	CP102		5.50 - 6.00	20/07/2020
22527046	CP102		9.50 - 10.00	21/07/2020
22527047	CP107		0.30	21/07/2020
22527048	CP107		8.00	21/07/2020

Maximum Sample/Coolbox Temperature (°C) : 13.6

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			22527043	22527044	22527046	22527047	22527048		
Customer Sample Reference			CP102	CP102	CP102	CP107	CP107		
AGS Reference									
Depth (m)			2.00 - 2.50	5.50 - 6.00	9.50 - 10.00	0.30	8.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 5		X		X	X	X		X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X							
Boron Water Soluble	All	NDPs: 0 Tests: 2		X				X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X				X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X				X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X				X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X				X		
PAH by GCMS	All	NDPs: 0 Tests: 2		X				X		
pH	All	NDPs: 0 Tests: 5		X		X	X	X		X
Sample description	All	NDPs: 0 Tests: 5		X		X	X	X		X
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X				X		
VOC MS (S)	All	NDPs: 0 Tests: 2			X				X	

CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22527043	CP102	2.00 - 2.50	Dark Brown	Sandy Loam	Vegetation	Stones
22527044	CP102	5.50 - 6.00	Dark Brown	Sandy Loam	Vegetation	Stones
22527046	CP102	9.50 - 10.00	Dark Brown	Sandy Loam	Vegetation	Stones
22527047	CP107	0.30	Dark Brown	Sandy Loam	Vegetation	Stones
22527048	CP107	8.00	Dark Brown	Sandy Loam	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP102	CP102	CP102	CP107	CP107
			Depth (m)	2.00 - 2.50	5.50 - 6.00	9.50 - 10.00	0.30	8.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	20/07/2020	20/07/2020	21/07/2020	21/07/2020	21/07/2020
			Sampled Time	.	.	.	.	.
			Date Received	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
			SDG Ref	200722-107	200722-107	200722-107	200722-107	200722-107
			Lab Sample No.(s)	22527043	22527044	22527046	22527047	22527048
			AGS Reference					
Moisture Content Ratio (% of as received sample)	%	PM024		15	12	13	15	14
pH	1 pH Units	TM133		8.59 M	8.53 M	8.64 M	9.03 M	8.66 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #			<0.6 #	
Arsenic	<0.6 mg/kg	TM181		7.3 M			7.56 M	
Barium	<0.6 mg/kg	TM181		146 #			143 #	
Beryllium	<0.01 mg/kg	TM181		1.08 M			0.39 M	
Cadmium	<0.02 mg/kg	TM181		0.202 M			0.245 M	
Chromium	<0.9 mg/kg	TM181		17.2 M			10.8 M	
Copper	<1.4 mg/kg	TM181		25.5 M			16.9 M	
Lead	<0.7 mg/kg	TM181		24.5 M			99.8 M	
Mercury	<0.14 mg/kg	TM181		<0.14 M			<0.14 M	
Nickel	<0.2 mg/kg	TM181		32.6 M			11 M	
Selenium	<1 mg/kg	TM181		<1 #			<1 #	
Vanadium	<0.2 mg/kg	TM181		22.8 #			20.4 #	
Zinc	<1.9 mg/kg	TM181		61.6 M			88.4 M	
Boron, water soluble	<1 mg/kg	TM222		<1 M			<1 M	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0378 M	0.0271 M	0.0178 M	0.153 M	0.0465 M

CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP102	CP107				
			Depth (m)	2.00 - 2.50	0.30				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	20/07/2020	21/07/2020				
			Sampled Time	.	.				
			Date Received	22/07/2020	22/07/2020				
			SDG Ref	200722-107	200722-107				
			Lab Sample No.(s)	22527043	22527047				
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		89	83.4				
Acenaphthene-d10 % recovery**	%	TM218		87.5	83.6				
Phenanthrene-d10 % recovery**	%	TM218		90.5	83.9				
Chrysene-d12 % recovery**	%	TM218		80.8	74.5				
Perylene-d12 % recovery**	%	TM218		76.5	73.4				
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	0.139 M				
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	0.258 M				
Acenaphthene	<0.008 mg/kg	TM218		0.0129 M	0.915 M				
Fluorene	<0.01 mg/kg	TM218		<0.01 M	0.954 M				
Phenanthrene	<0.015 mg/kg	TM218		0.0611 M	4.87 M				
Anthracene	<0.016 mg/kg	TM218		<0.016 M	1.21 M				
Fluoranthene	<0.017 mg/kg	TM218		0.127 M	7.79 M				
Pyrene	<0.015 mg/kg	TM218		0.123 M	7.22 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0576 M	3.03 M				
Chrysene	<0.01 mg/kg	TM218		0.0601 M	2.96 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.0866 M	3.73 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0258 M	1.39 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0591 M	3.18 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0395 M	2.09 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	0.283 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.0463 M	2.05 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.699	42.1				

CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP102	CP107				
			Depth (m)	2.00 - 2.50	0.30				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	20/07/2020	21/07/2020				
			Sampled Time	.	.				
			Date Received	22/07/2020	22/07/2020				
			SDG Ref	200722-107	200722-107				
			Lab Sample No.(s)	22527043	22527047				
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		90.5	110				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	1.79				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	6.92				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	1.17				
Aliphatics >C21-C35	<1 mg/kg	TM414		18.9	4.68				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	2.4				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		19.9	17				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		27.5	817				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	1.03				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	16.2				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	162				
Aromatics > EC21-EC35	<1 mg/kg	TM414		5.38	538				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	82.4				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	18.7				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		7.52	800				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		27.5	817				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP102	CP107				
			Depth (m)	2.00 - 2.50	0.30				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	20/07/2020	21/07/2020				
			Sampled Time	.	.				
			Date Received	22/07/2020	22/07/2020				
			SDG Ref	200722-107	200722-107				
			Lab Sample No.(s)	22527043	22527047				
			AGS Reference						
Dibromofluoromethane**	%	TM116		108	121				
Toluene-d8**	%	TM116		96.4	99.7				
4-Bromofluorobenzene**	%	TM116		96	98.1				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.01 M				
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.009 M				
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.007 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.004 M				
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.01 #				
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.01 M				
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.02				
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.04				

CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	CP102 2.00 - 2.50 SOLID 20/07/2020 00:00:00 22/07/2020 06:00:00 200722-107 22527043 TM048	29/07/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	CP107 0.30 SOLID 21/07/2020 00:00:00 22/07/2020 06:00:00 200722-107 22527047 TM048	29/07/2020	Barbara Urbanek-Walsh	Loose fibres in soil.	Trace (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	22527043	22527044	22527046	22527047	22527048
Customer Sample Ref.	CP102	CP102	CP102	CP107	CP107
AGS Ref.					
Depth	2.00 - 2.50	5.50 - 6.00	9.50 - 10.00	0.30	8.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	28-Jul-2020	27-Jul-2020	27-Jul-2020	28-Jul-2020	27-Jul-2020
Asbestos ID in Solid Samples	29-Jul-2020			29-Jul-2020	
Boron Water Soluble	29-Jul-2020			29-Jul-2020	
EPH CWG GC (S)	27-Jul-2020			27-Jul-2020	
GRO by GC-FID (S)	28-Jul-2020			28-Jul-2020	
Hexavalent Chromium (s)	29-Jul-2020			27-Jul-2020	
Metals in solid samples by OES	29-Jul-2020			29-Jul-2020	
PAH by GCMS	28-Jul-2020			29-Jul-2020	
pH	27-Jul-2020	27-Jul-2020	27-Jul-2020	27-Jul-2020	27-Jul-2020
Sample description	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020
TPH CWG GC (S)	28-Jul-2020			28-Jul-2020	
VOC MS (S)	29-Jul-2020			28-Jul-2020	

ASSOCIATED AQC DATA

Boron Water Soluble

Component	Method Code	QC 2298	QC 2230
Water Soluble Boron	TM222	**81.0** 77.30 : 106.22	**83.0** 77.30 : 106.22

GRO by GC-FID (S)

Component	Method Code	QC 2243
QC	TM089	**86.94** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2271	QC 2214
Hexavalent Chromium	TM151	**102.0** 95.60 : 107.60	**100.0** 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2280	QC 2216
Aluminium	TM181	**78.32** 73.56 : 108.85	**89.38** 73.56 : 108.85
Antimony	TM181	**88.21** 76.89 : 111.24	**92.28** 76.89 : 111.24
Arsenic	TM181	**94.48** 88.53 : 111.01	**100.58** 88.53 : 111.01
Barium	TM181	**93.58** 77.67 : 105.35	**94.5** 77.67 : 105.35
Beryllium	TM181	**93.66** 85.44 : 109.61	**103.36** 85.44 : 109.61
Boron	TM181	**80.23** 73.51 : 104.66	**93.98** 73.51 : 104.66
Cadmium	TM181	**84.77** 77.67 : 104.12	**90.53** 77.67 : 104.12
Chromium	TM181	**90.87** 86.11 : 106.21	**95.13** 86.11 : 106.21
Cobalt	TM181	**87.74** 84.60 : 104.13	**92.45** 84.60 : 104.13
Copper	TM181	**87.15** 82.40 : 105.45	**91.9** 82.40 : 105.45
Iron	TM181	**88.1** 82.95 : 110.58	**91.27** 82.95 : 110.58
Lead	TM181	**87.84** 78.24 : 104.05	**92.34** 78.24 : 104.05

CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Metals in solid samples by OES

		QC 2280	QC 2216
Manganese	TM181	**103.33** 94.29 : 119.51	**115.28** 94.29 : 119.51
Mercury	TM181	**87.44** 83.16 : 107.81	**91.55** 83.16 : 107.81
Molybdenum	TM181	**93.42** 87.11 : 106.87	**98.77** 87.11 : 106.87
Nickel	TM181	**88.51** 80.26 : 102.28	**96.33** 80.26 : 102.28
Phosphorus	TM181	**101.62** 94.56 : 124.28	**111.52** 94.56 : 124.28
Selenium	TM181	**91.76** 82.28 : 110.48	**100.0** 82.28 : 110.48
Strontium	TM181	**85.08** 79.13 : 102.79	**88.86** 79.13 : 102.79
Thallium	TM181	**92.48** 82.94 : 111.86	**98.67** 82.94 : 111.86
Tin	TM181	**95.06** 86.72 : 110.03	**100.38** 86.72 : 110.03
Titanium	TM181	**79.39** 66.23 : 102.06	**88.55** 66.23 : 102.06
Vanadium	TM181	**90.11** 86.19 : 109.45	**95.6** 86.19 : 109.45
Zinc	TM181	**90.97** 84.68 : 113.99	**98.36** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2291	QC 2227
Acenaphthene	TM218	**98.5** 73.47 : 109.80	**94.5** 76.79 : 103.90
Acenaphthylene	TM218	**98.5** 70.00 : 130.00	**94.0** 78.40 : 108.66
Anthracene	TM218	**98.0** 68.68 : 111.89	**91.5** 71.94 : 101.94
Benz(a)anthracene	TM218	**91.5** 68.12 : 118.39	**83.5** 73.77 : 119.26
Benzo(a)pyrene	TM218	**86.5** 71.72 : 115.31	**87.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**84.0** 66.89 : 120.40	**83.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**85.5** 67.82 : 118.49	**85.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**88.5** 73.10 : 117.03	**86.0** 75.98 : 116.59
Chrysene	TM218	**89.5** 69.58 : 115.47	**82.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**84.5** 67.32 : 121.35	**84.5** 69.17 : 115.30
Fluoranthene	TM218	**96.5** 75.16 : 117.28	**83.0** 75.88 : 112.84
Fluorene	TM218	**100.0** 73.81 : 108.66	**95.0** 78.29 : 103.91
Indeno(123cd)pyrene	TM218	**79.5** 68.91 : 117.62	**93.5** 70.26 : 117.95

PAH by GCMS

		QC 2291	QC 2227
Naphthalene	TM218	**90.0** 72.12 : 106.18	**89.5** 74.70 : 101.83
Phenanthrene	TM218	**96.0** 69.01 : 113.72	**92.5** 72.24 : 102.15
Pyrene	TM218	**97.0** 75.68 : 119.23	**84.0** 71.98 : 105.95

pH

Component	Method Code	QC 2203	QC 2292	QC 2225	QC 2274
pH	TM133	**100.4** 98.47 : 102.33	**100.13** 98.47 : 102.33	**100.4** 98.81 : 101.99	**101.72** 98.81 : 101.99

VOC MS (S)

Component	Method Code	QC 2264	QC 2256
1,1,1,2-tetrachloroethane	TM116	**100.2** 79.10 : 119.66	**99.8** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**97.6** 87.51 : 115.37	**99.6** 87.51 : 115.37
1,1,2-Trichloroethane	TM116	**96.4** 75.16 : 112.70	**95.4** 75.16 : 112.70
1,1-Dichloroethane	TM116	**101.8** 86.77 : 122.11	**98.2** 86.77 : 122.11
1,2-Dichloroethane	TM116	**107.6** 90.04 : 132.28	**110.6** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**98.0** 84.04 : 124.40	**101.4** 84.04 : 124.40
2-Chlorotoluene	TM116	**97.0** 73.76 : 115.43	**93.8** 73.76 : 115.43
4-Chlorotoluene	TM116	**92.0** 72.48 : 112.82	**89.4** 72.48 : 112.82
Benzene	TM116	**96.0** 84.29 : 112.22	**98.8** 84.29 : 112.22
Carbon Disulphide	TM116	**89.4** 75.11 : 124.81	**96.2** 75.11 : 124.81
Carbontetrachloride	TM116	**99.8** 82.35 : 126.46	**108.0** 82.35 : 126.46
Chlorobenzene	TM116	**98.8** 82.88 : 122.42	**99.4** 82.88 : 122.42
Chloroform	TM116	**100.0** 90.35 : 120.38	**101.0** 90.35 : 120.38
Chloromethane	TM116	**87.0** 65.80 : 138.88	**153.4** 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	**97.4** 78.27 : 128.90	**94.4** 78.27 : 128.90
Dibromomethane	TM116	**96.8** 76.00 : 120.73	**99.2** 76.00 : 120.73
Dichloromethane	TM116	**109.8** 93.91 : 130.46	**101.6** 93.91 : 130.46

VOC MS (S)

		QC 2264	QC 2256
Ethylbenzene	TM116	**90.2** 70.95 : 113.07	**90.8** 70.95 : 113.07
Hexachlorobutadiene	TM116	**52.4** 14.55 : 147.92	**58.8** 14.55 : 147.92
Isopropylbenzene	TM116	**82.0** 52.00 : 108.19	**79.8** 52.00 : 108.19
Naphthalene	TM116	**101.2** 80.29 : 135.77	**97.6** 80.29 : 135.77
o-Xylene	TM116	**89.4** 64.92 : 98.85	**87.0** 64.92 : 98.85
p/m-Xylene	TM116	**87.6** 72.04 : 104.04	**87.0** 72.04 : 104.04
Sec-Butylbenzene	TM116	**77.4** 27.03 : 135.73	**72.4** 27.03 : 135.73
Tetrachloroethene	TM116	**99.2** 81.43 : 126.65	**103.6** 81.43 : 126.65
Toluene	TM116	**89.4** 82.44 : 103.50	**91.6** 82.44 : 103.50
Trichloroethene	TM116	**96.6** 79.80 : 112.33	**95.4** 79.80 : 112.33
Trichlorofluoromethane	TM116	**93.8** 86.68 : 126.82	**106.6** 86.68 : 126.82
Vinyl Chloride	TM116	**87.2** 69.66 : 136.55	**151.8** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

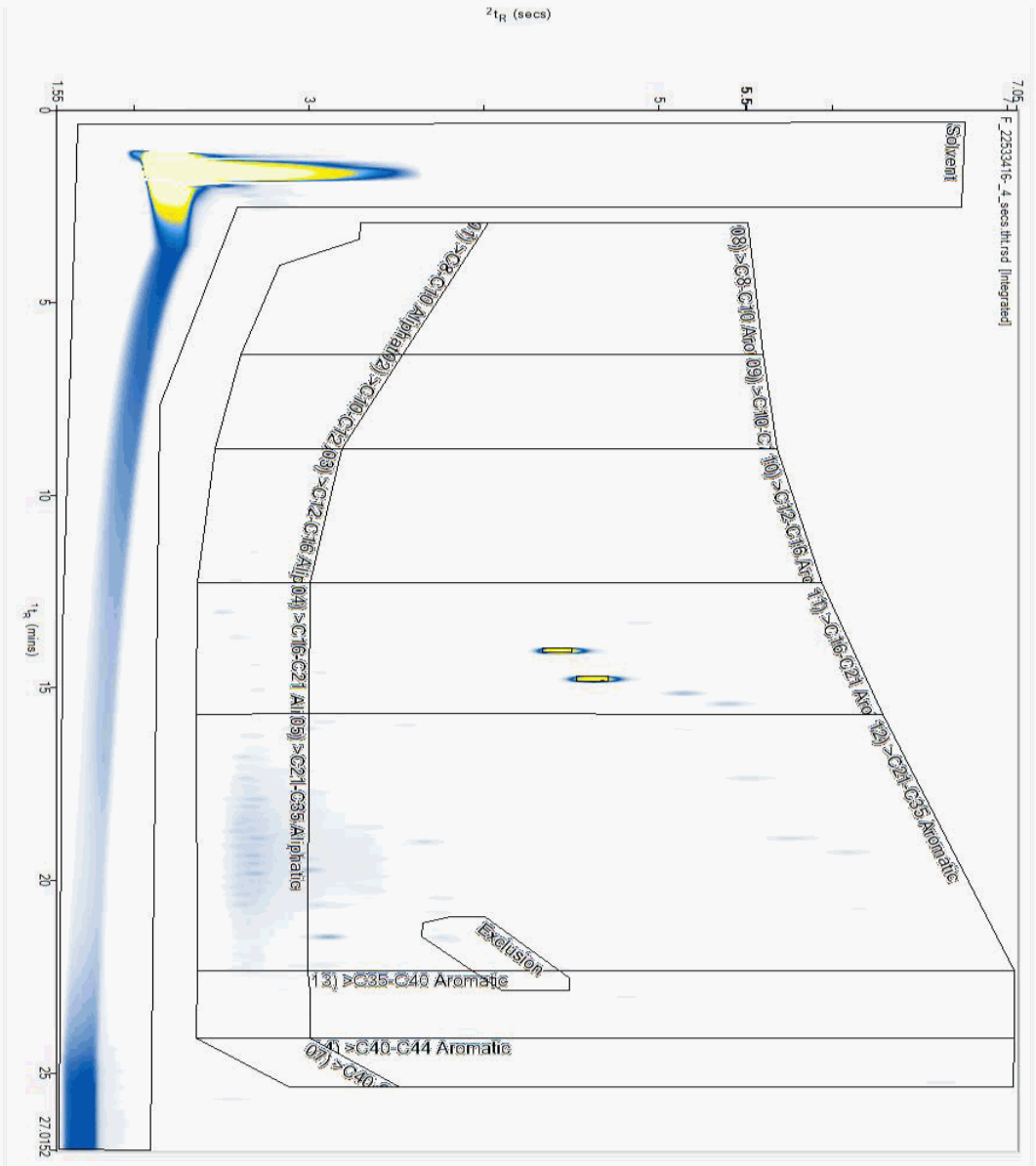
CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22533416 **Depth :** 2.00 - 2.50
Sample ID : CP102

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22533416-_4_secs.tht
Date Acquired   :  26/07/20 07:09:32
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



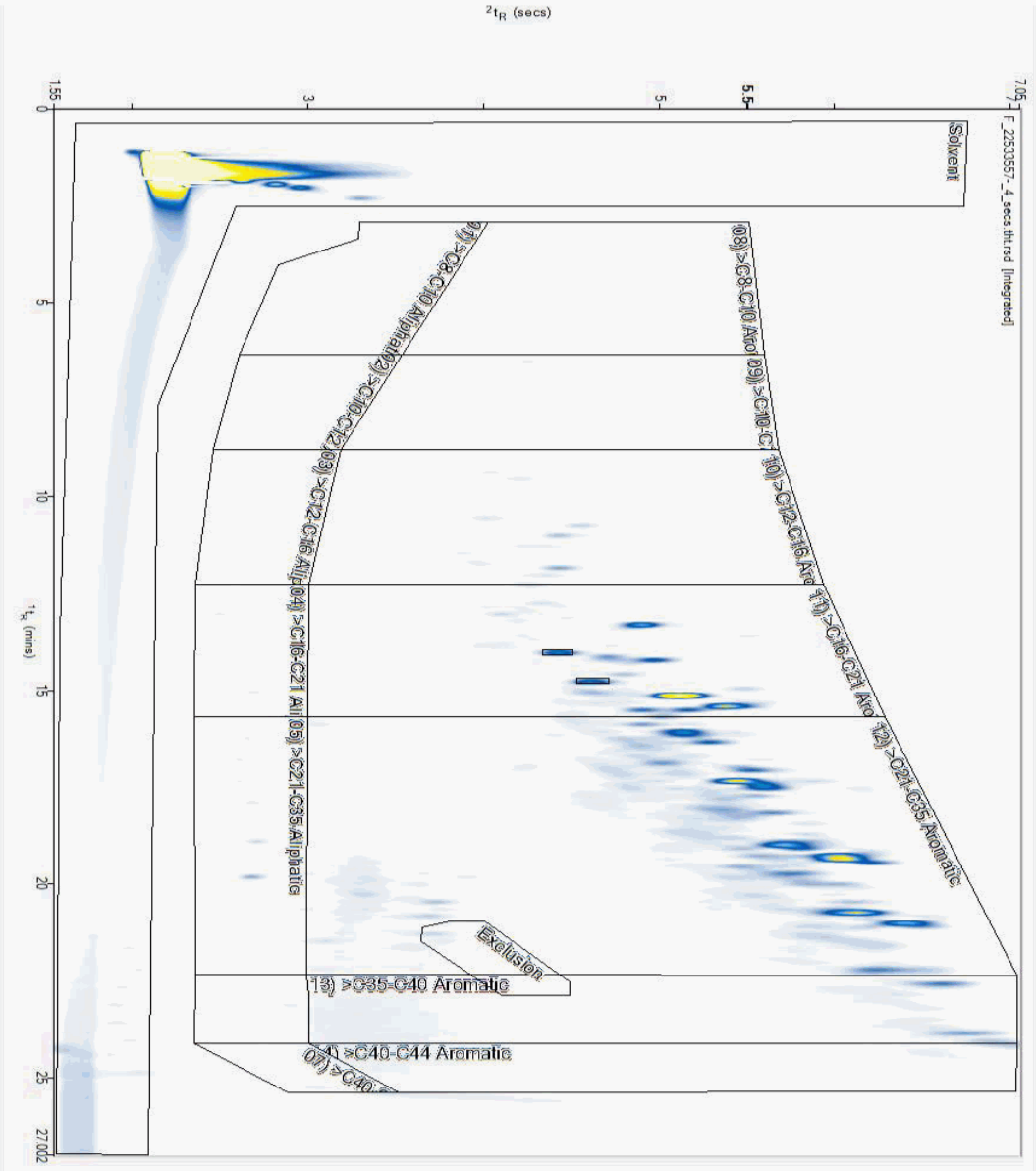
CERTIFICATE OF ANALYSIS

SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22533557 **Depth :** 0.30
Sample ID : CP107

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22533557-_4_secs.tht
Date Acquired   :  27/07/20 12:45:51
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



CERTIFICATE OF ANALYSIS

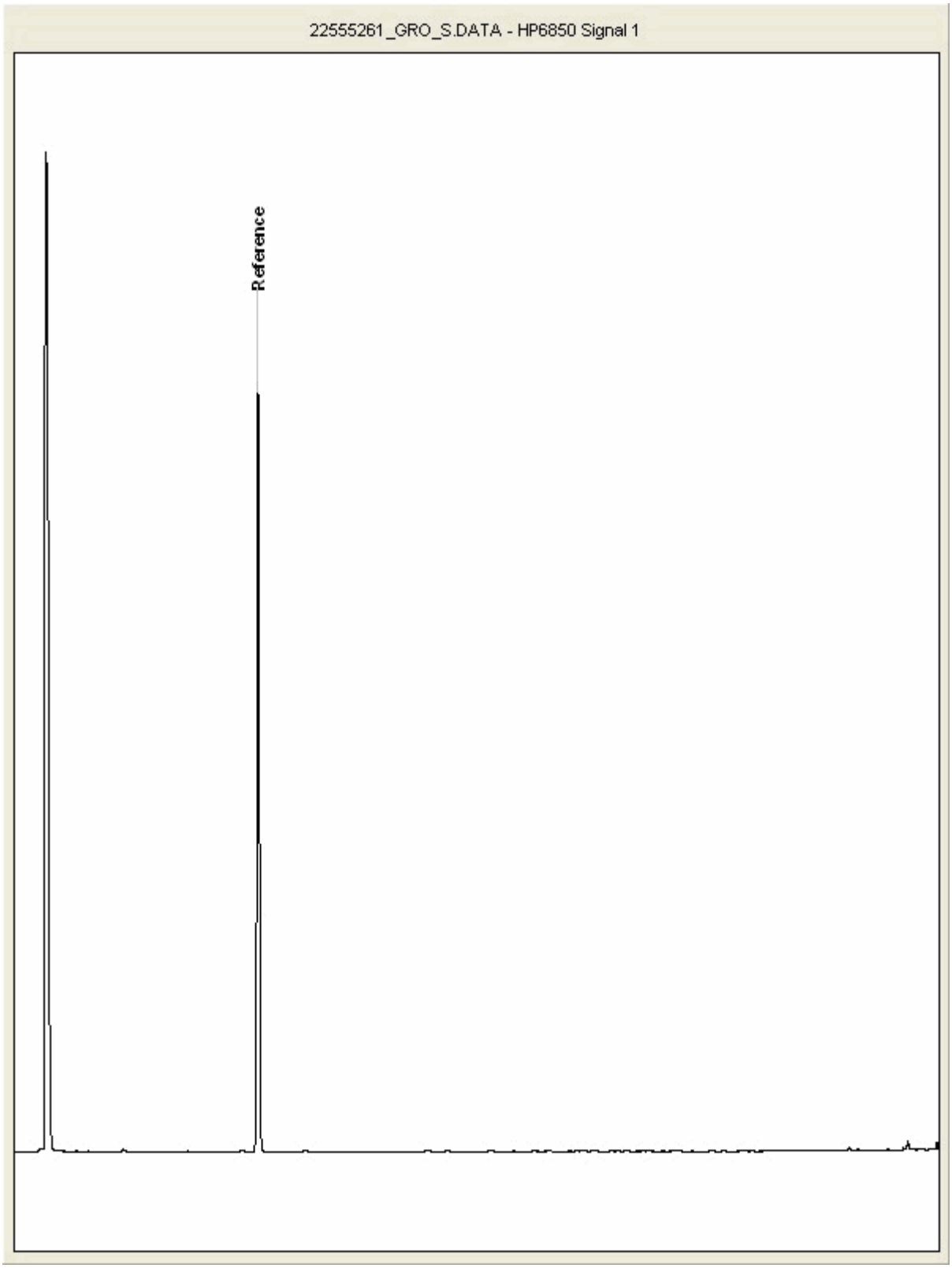
SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22555261
Sample ID : CP107

Depth : 0.30



CERTIFICATE OF ANALYSIS

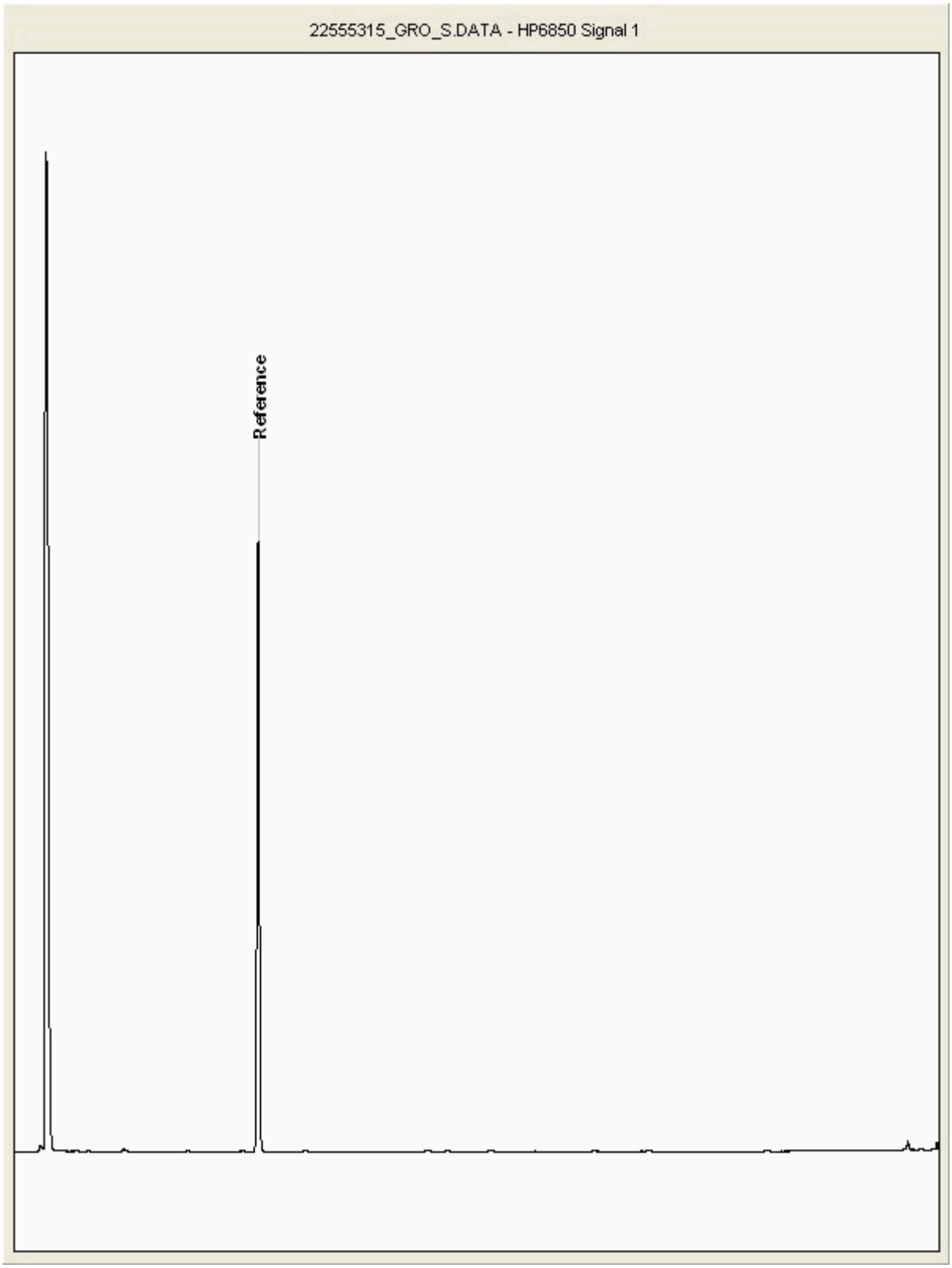
SDG:	200722-107	**Client Reference:**	10041634	**Report Number:**	561074
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22555315
Sample ID : CP102

Depth : 2.00 - 2.50



Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

ARCADIS UK Ltd
10th Floor
3 Piccadilly Place
Manchester
M1 2BN

Attention: Elizabeth Yeatman

CERTIFICATE OF ANALYSIS

Date of report Generation:	31 July 2020
Customer:	ARCADIS UK Ltd
Sample Delivery Group (SDG):	200723-58
Your Reference:	10041634
Location:	Hyde Road, Manchester
Report No:	561391

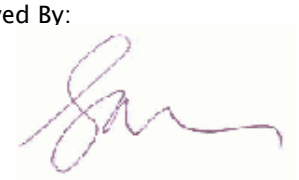
We received 1 sample on Wednesday July 22, 2020 and 1 of these samples were scheduled for analysis which was completed on Thursday July 30, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan
Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22527045	SKIP			20/07/2020

Maximum Sample/Coolbox Temperature (°C) : 13.6

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	22527045		
			Customer Sample Reference	SKIP		
			AGS Reference			
			Depth (m)			
			Container	1kg TUB with Handle (ALE250)	250g Amber Jar (ALE210)	60g VOC (ALE215)
			Sample Type	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 1			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1		X		
Boron Water Soluble	All	NDPs: 0 Tests: 1			X	
CEN Readings	All	NDPs: 0 Tests: 1		X		
Coronene	All	NDPs: 0 Tests: 1			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1		X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1			X	
Fluoride	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1				X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 1			X	
Mercury Dissolved	All	NDPs: 0 Tests: 1		X		

CERTIFICATE OF ANALYSIS

Validated

SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	22527045		
			Customer Sample Reference	SKIP		
			AGS Reference			
			Depth (m)			
			Container	1kg TUB with Handle (ALE250)	250g Amber Jar (ALE210)	60g VOC (ALE215)
			Sample Type	S	S	S
Metals in solid samples by OES	All	NDPs: 0 Tests: 1			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1			X	
PAH by GCMS	All	NDPs: 0 Tests: 1			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1			X	
pH	All	NDPs: 0 Tests: 1			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 1			X	
Total Dissolved Solids	All	NDPs: 0 Tests: 1		X		
Total Organic Carbon	All	NDPs: 0 Tests: 1			X	
Total Sulphate	All	NDPs: 0 Tests: 1			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 1			X	
VOC MS (S)	All	NDPs: 0 Tests: 1				X

CERTIFICATE OF ANALYSIS

SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22527045	SKIP		Dark Brown	Sandy Loam	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG: 200723-58 **Client Reference:** 10041634 **Report Number:** 561391
Location: Hyde Road, Manchest **Order Number:** 10041634 **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			SKIP	.	Soil/Solid (S)	20/07/2020	.	22/07/2020	200723-58	22527045	
Moisture Content Ratio (% of as received sample)	%	PM024	13								
Loss on ignition	<0.7 %	TM018	2.75 M								
Organic Carbon, Total	<0.2 %	TM132	1.06 M								
pH	1 pH Units	TM133	8.58 M								
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #								
PCB congener 28	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 52	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 101	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 118	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 138	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 153	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 180	<0.003 mg/kg	TM168	<0.003 M								
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021								
Arsenic	<0.6 mg/kg	TM181	6.12 M								
Barium	<0.6 mg/kg	TM181	147 #								
Beryllium	<0.01 mg/kg	TM181	0.982 M								
Cadmium	<0.02 mg/kg	TM181	0.0612 M								
Chromium	<0.9 mg/kg	TM181	17.1 M								
Copper	<1.4 mg/kg	TM181	21.2 M								
Lead	<0.7 mg/kg	TM181	42.7 M								
Mercury	<0.14 mg/kg	TM181	<0.14 M								
Nickel	<0.2 mg/kg	TM181	29.7 M								
Selenium	<1 mg/kg	TM181	<1 #								
Vanadium	<0.2 mg/kg	TM181	21.3 #								
Zinc	<1.9 mg/kg	TM181	58 M								
ANC @ pH 4	<0.03 mol/kg	TM182	0.195								
ANC @ pH 6	<0.03 mol/kg	TM182	0.0996								
Sulphate, Total	<48 mg/kg	TM221	573 M								
Boron, water soluble	<1 mg/kg	TM222	<1 M								
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10								
Coronene	<0.2 mg/kg	TM410	<0.2								
EPH Surrogate % recovery**	%	TM415	90.2								

CERTIFICATE OF ANALYSIS

SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+§@	Sample deviation (see appendix)

Customer Sample Ref.	SKIP
Depth (m)	.
Sample Type	Soil/Solid (S)
Date Sampled	20/07/2020
Sampled Time	.
Date Received	22/07/2020
SDG Ref	200723-58
Lab Sample No.(s)	22527045
AGS Reference	

Component	LOD/Units	Method	
Mineral Oil >C10-C40	<5 mg/kg	TM415	10.2

CERTIFICATE OF ANALYSIS

SDG: 200723-58 **Client Reference:** 10041634 **Report Number:** 561391
Location: Hyde Road, Manchest **Order Number:** 10041634 **Superseded Report:**

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+§@	Sample deviation (see appendix)

Customer Sample Ref.			SKIP					
Depth (m)			.					
Sample Type			Soil/Solid (S)					
Date Sampled			20/07/2020					
Sampled Time			.					
Date Received			22/07/2020					
SDG Ref			200723-58					
Lab Sample No.(s)			22527045					
AGS Reference								
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	90.5					
Acenaphthene-d10 % recovery**	%	TM218	90.9					
Phenanthrene-d10 % recovery**	%	TM218	98					
Chrysene-d12 % recovery**	%	TM218	98.9					
Perylene-d12 % recovery**	%	TM218	97.2					
Naphthalene	<0.009 mg/kg	TM218	0.0234 M					
Acenaphthylene	<0.012 mg/kg	TM218	0.0244 M					
Acenaphthene	<0.008 mg/kg	TM218	0.0547 M					
Fluorene	<0.01 mg/kg	TM218	0.0554 M					
Phenanthrene	<0.015 mg/kg	TM218	0.408 M					
Anthracene	<0.016 mg/kg	TM218	0.104 M					
Fluoranthene	<0.017 mg/kg	TM218	0.817 M					
Pyrene	<0.015 mg/kg	TM218	0.743 M					
Benz(a)anthracene	<0.014 mg/kg	TM218	0.427 M					
Chrysene	<0.01 mg/kg	TM218	0.427 M					
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.444 M					
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	0.128 M					
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.482 M					
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	0.304 M					
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	0.0621 M					
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	0.331 M					
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	4.84					

CERTIFICATE OF ANALYSIS

SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			SKIP	.	Soil/Solid (S)	20/07/2020	.	22/07/2020	200723-58	22527045	
GRO Surrogate % recovery**	%	TM089	88								
Aliphatics >C5-C6	<0.01 mg/kg	TM089	0.0115								
Aliphatics >C6-C8	<0.01 mg/kg	TM089	0.0495								
Aliphatics >C8-C10	<0.01 mg/kg	TM089	0.0414								
Aliphatics >C10-C12	<1 mg/kg	TM414	<1								
Aliphatics >C12-C16	<1 mg/kg	TM414	<1								
Aliphatics >C16-C21	<1 mg/kg	TM414	<1								
Aliphatics >C21-C35	<1 mg/kg	TM414	7.14								
Aliphatics >C35-C44	<1 mg/kg	TM414	<1								
Total Aliphatics >C10-C44	<5 mg/kg	TM414	7.67								
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	12.4								
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01								
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01								
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.0276								
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1								
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1								
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1								
Aromatics > EC21-EC35	<1 mg/kg	TM414	2.4								
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1								
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1								
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5								
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10								
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	0.102								
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05								
GRO >C5-C10	<0.02 mg/kg	TM089	0.102								

CERTIFICATE OF ANALYSIS

SDG: 200723-58 **Client Reference:** 10041634 **Report Number:** 561391
Location: Hyde Road, Manchest **Order Number:** 10041634 **Superseded Report:**

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			SKIP	.	Soil/Solid (S)	20/07/2020	.	22/07/2020	200723-58	22527045	
Dibromofluoromethane**	%	TM116	110								
Toluene-d8**	%	TM116	96.6								
4-Bromofluorobenzene**	%	TM116	96.4								
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M								
Benzene	<0.009 mg/kg	TM116	<0.18 M								
Toluene	<0.007 mg/kg	TM116	<0.14 M								
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M								
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #								
o-Xylene	<0.01 mg/kg	TM116	<0.2 M								
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4								
Sum of BTEX	<0.04 mg/kg	TM116	<0.8								

SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M *m*CERTS accredited.
***** Subcontracted test.
(F) Trigger breach confirmed
1-5&♦$@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	SKIP SOLID 20/07/2020 00:00:00 22/07/2020 06:00:00 200723-58 22527045 TM048	29/07/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Hyde Road, Manchester
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	13
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88.5
Particle Size <4mm	>95%		

Case	
SDG	200723-58
Lab Sample Number(s)	22527045
Sampled Date	20-Jul-2020
Customer Sample Ref.	SKIP
Depth (m)	

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.06	3	5	6
Loss on Ignition (%)	2.75	-	-	10
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	10.2	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.58	-	>6	-
ANC to pH 6 (mol/kg)	0.0996	-	-	-
ANC to pH 4 (mol/kg)	0.195	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00185	<0.0005	0.0185	<0.005	0.5	2	25
Barium	0.0503	<0.0002	0.503	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00153	<0.0003	0.0153	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00787	<0.003	0.0787	<0.03	0.5	10	30
Nickel	0.000581	<0.0004	0.00581	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00892	<0.001	0.0892	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	4	<2	40	<20	800	15000	25000
Fluoride	0.523	<0.5	5.23	<5	10	150	500
Sulphate (soluble)	29.2	<2	292	<20	1000	20000	50000
Total Dissolved Solids	129	<5	1290	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.51	<3	45.1	<30	500	800	1000

Leach Test Information

Date Prepared	24-Jul-2020
pH (pH Units)	8.25
Conductivity (µS/cm)	162.00
Temperature (°C)	17.90
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

31/07/2020 15:49:32

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Test Completion Dates

Lab Sample No(s)	22527045
Customer Sample Ref.	SKIP
AGS Ref.	
Depth	
Type	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	28-Jul-2020
Anions by Kone (w)	29-Jul-2020
Asbestos ID in Solid Samples	29-Jul-2020
Boron Water Soluble	29-Jul-2020
CEN 10:1 Leachate (1 Stage)	24-Jul-2020
CEN Readings	29-Jul-2020
Coronene	28-Jul-2020
Dissolved Metals by ICP-MS	29-Jul-2020
Dissolved Organic/Inorganic Carbon	30-Jul-2020
EPH by GCxGC-FID	27-Jul-2020
EPH CWG GC (S)	27-Jul-2020
Fluoride	29-Jul-2020
GRO by GC-FID (S)	28-Jul-2020
Hexavalent Chromium (s)	27-Jul-2020
Loss on Ignition in soils	28-Jul-2020
Mercury Dissolved	29-Jul-2020
Metals in solid samples by OES	29-Jul-2020
Moisture at 105C	24-Jul-2020
PAH 16 & 17 Calc	28-Jul-2020
PAH by GCMS	29-Jul-2020
PCBs by GCMS	28-Jul-2020
pH	27-Jul-2020
Phenols by HPLC (W)	30-Jul-2020
Sample description	23-Jul-2020
Total Dissolved Solids	29-Jul-2020
Total Organic Carbon	28-Jul-2020
Total Sulphate	29-Jul-2020
TPH CWG GC (S)	28-Jul-2020
VOC MS (S)	29-Jul-2020

ASSOCIATED AQC DATA

ANC at pH4 and ANC at pH 6

Component	Method Code	QC 2255
ANC pH_4 dry soil	TM182	**96.48** 91.79 : 114.66

Anions by Kone (w)

Component	Method Code	QC 2211
Chloride	TM184	**106.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**101.6** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2298
Water Soluble Boron	TM222	**81.0** 77.30 : 106.22

Coronene

Component	Method Code	QC 2226
Coronene RAW	TM410	**131.5** 79.43 : 137.78

Dissolved Metals by ICP-MS

Component	Method Code	QC 2259
Aluminium	TM152	**103.67** 94.21 : 111.52
Antimony	TM152	**104.17** 88.37 : 130.57
Arsenic	TM152	**102.67** 92.62 : 113.52
Barium	TM152	**100.17** 88.62 : 113.14
Beryllium	TM152	**104.5** 89.98 : 116.88
Bismuth	TM152	**104.83** 92.62 : 115.02
Boron	TM152	**111.33** 86.31 : 120.88

Dissolved Metals by ICP-MS

		QC 2259
Cadmium	TM152	**103.33** 93.85 : 111.65
Calcium	TM152	**104.0** 89.20 : 126.91
Chromium	TM152	**102.33** 92.22 : 109.85
Cobalt	TM152	**102.0** 85.01 : 114.87
Copper	TM152	**100.5** 89.87 : 119.73
Iron	TM152	**104.0** 93.02 : 113.86
Lead	TM152	**103.67** 91.11 : 116.98
Lithium	TM152	**101.5** 91.30 : 123.00
Magnesium	TM152	**102.67** 89.60 : 116.61
Manganese	TM152	**107.17** 93.97 : 112.46
Molybdenum	TM152	**100.67** 89.07 : 110.96
Nickel	TM152	**103.17** 93.70 : 112.15
Phosphorus	TM152	**99.67** 89.24 : 114.18
Potassium	TM152	**104.67** 93.20 : 115.55
Selenium	TM152	**103.33** 91.69 : 117.12
Silver	TM152	**112.5** 90.93 : 121.73
Sodium	TM152	**102.67** 92.42 : 113.24
Strontium	TM152	**102.0** 92.14 : 116.24
Tellurium	TM152	**101.5** 89.88 : 111.78
Thallium	TM152	**101.5** 82.43 : 113.83
Tin	TM152	**104.33** 94.62 : 107.79
Titanium	TM152	**103.67** 90.29 : 115.23
Tungsten	TM152	**101.0** 77.61 : 132.31
Uranium	TM152	**105.17** 86.97 : 115.76
Vanadium	TM152	**104.5** 89.61 : 115.48
Zinc	TM152	**105.33** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2231
Dissolved Inorganic Carbon	TM090	**102.33** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**104.67** 96.28 : 110.58

EPH by GCxGC-FID

Component	Method Code	QC 2230
EPH >C10-C40 Raw	TM415	**88.55** 56.36 : 129.92

Fluoride

Component	Method Code	QC 2244
Fluoride	TM104	**106.0** 95.51 : 107.24

GRO by GC-FID (S)

Component	Method Code	QC 2243
QC	TM089	**86.94** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2214
Hexavalent Chromium	TM151	**100.0** 95.60 : 107.60

Loss on Ignition in soils

Component	Method Code	QC 2254
Loss on Ignition	TM018	**96.68** 87.56 : 104.24

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2202
Mercury Dissolved (CVAF)	TM183	**112.0** 76.80 : 117.12

Metals in solid samples by OES

Component	Method Code	QC 2280
Aluminium	TM181	**78.32** 73.56 : 108.85
Antimony	TM181	**88.21** 76.89 : 111.24
Arsenic	TM181	**94.48** 88.53 : 111.01
Barium	TM181	**93.58** 77.67 : 105.35
Beryllium	TM181	**93.66** 85.44 : 109.61
Boron	TM181	**80.23** 73.51 : 104.66
Cadmium	TM181	**84.77** 77.67 : 104.12
Chromium	TM181	**90.87** 86.11 : 106.21
Cobalt	TM181	**87.74** 84.60 : 104.13
Copper	TM181	**87.15** 82.40 : 105.45
Iron	TM181	**88.1** 82.95 : 110.58
Lead	TM181	**87.84** 78.24 : 104.05
Manganese	TM181	**103.33** 94.29 : 119.51
Mercury	TM181	**87.44** 83.16 : 107.81
Molybdenum	TM181	**93.42** 87.11 : 106.87
Nickel	TM181	**88.51** 80.26 : 102.28
Phosphorus	TM181	**101.62** 94.56 : 124.28
Selenium	TM181	**91.76** 82.28 : 110.48
Strontium	TM181	**85.08** 79.13 : 102.79
Thallium	TM181	**92.48** 82.94 : 111.86
Tin	TM181	**95.06** 86.72 : 110.03
Titanium	TM181	**79.39** 66.23 : 102.06

Metals in solid samples by OES

		QC 2280
Vanadium	TM181	**90.11** 86.19 : 109.45
Zinc	TM181	**90.97** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2224
Acenaphthene	TM218	**99.5** 80.97 : 105.99
Acenaphthylene	TM218	**98.0** 74.76 : 107.36
Anthracene	TM218	**101.5** 73.04 : 106.97
Benz(a)anthracene	TM218	**109.5** 68.79 : 119.64
Benzo(a)pyrene	TM218	**101.0** 66.17 : 117.52
Benzo(b)fluoranthene	TM218	**101.0** 66.40 : 118.34
Benzo(ghi)perylene	TM218	**100.0** 67.68 : 112.07
Benzo(k)fluoranthene	TM218	**101.5** 72.84 : 114.66
Chrysene	TM218	**99.0** 68.39 : 115.56
Dibenzo(ah)anthracene	TM218	**99.5** 69.03 : 110.45
Fluoranthene	TM218	**102.5** 69.37 : 117.19
Fluorene	TM218	**100.0** 75.38 : 105.98
Indeno(123cd)pyrene	TM218	**98.5** 65.91 : 113.61
Naphthalene	TM218	**94.5** 71.40 : 105.87
Phenanthrene	TM218	**101.5** 74.04 : 109.30
Pyrene	TM218	**105.5** 69.68 : 115.27

PCBs by GCMS

Component	Method Code	QC 2238
PCB congener 101	TM168	**96.7** 79.46 : 109.70
PCB congener 105	TM168	**82.1** 66.33 : 105.75
PCB congener 114	TM168	**81.8** 66.41 : 106.49
PCB congener 118	TM168	**90.1** 70.33 : 110.29
PCB congener 123	TM168	**74.4** 65.01 : 99.81

PCBs by GCMS

		QC 2238
PCB congener 126	TM168	**78.2** 59.31 : 109.23
PCB congener 138	TM168	**78.0** 63.95 : 107.63
PCB congener 153	TM168	**85.1** 62.65 : 108.85
PCB congener 156	TM168	**77.6** 61.69 : 112.27
PCB congener 157	TM168	**74.3** 67.15 : 109.93
PCB congener 167	TM168	**79.1** 65.58 : 109.14
PCB congener 169	TM168	**74.4** 56.84 : 112.10
PCB congener 180	TM168	**85.6** 66.99 : 111.63
PCB congener 189	TM168	**71.9** 57.75 : 112.59
PCB congener 28	TM168	**89.6** 73.68 : 105.96
PCB congener 52	TM168	**87.5** 67.24 : 107.62
PCB congener 77	TM168	**83.4** 64.87 : 108.49
PCB congener 81	TM168	**87.5** 70.78 : 110.80

pH

Component	Method Code	QC 2225
pH	TM133	**100.4** 98.81 : 101.99

Phenols by HPLC (W)

Component	Method Code	QC 2298
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**97.0** 84.50 : 111.50
2-Isopropyl Phenol by HPLC (W)	TM259	**98.0** 84.55 : 110.90
Cresols by HPLC (W)	TM259	**98.67** 90.00 : 112.00
Napthol by HPLC (W)	TM259	**106.0** 82.00 : 124.00
Phenol by HPLC (W)	TM259	**99.0** 86.80 : 112.60
Xylenols by HPLC (W)	TM259	**101.83** 94.74 : 115.71

Total Dissolved Solids

Total Dissolved Solids

Component	Method Code	QC 2263
Total Dissolved Solids	TM123	**100.0** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2247
Total Organic Carbon	TM132	**100.0** 87.02 : 113.45

Total Sulphate

Component	Method Code	QC 2270
Total Sulphate	TM221	**107.58** 70.57 : 128.43

VOC MS (S)

Component	Method Code	QC 2256
1,1,1,2-tetrachloroethane	TM116	**99.8** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**99.6** 87.51 : 115.37
1,1,2-Trichloroethane	TM116	**95.4** 75.16 : 112.70
1,1-Dichloroethane	TM116	**98.2** 86.77 : 122.11
1,2-Dichloroethane	TM116	**110.6** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**101.4** 84.04 : 124.40
2-Chlorotoluene	TM116	**93.8** 73.76 : 115.43
4-Chlorotoluene	TM116	**89.4** 72.48 : 112.82
Benzene	TM116	**98.8** 84.29 : 112.22
Carbon Disulphide	TM116	**96.2** 75.11 : 124.81
Carbontetrachloride	TM116	**108.0** 82.35 : 126.46
Chlorobenzene	TM116	**99.4** 82.88 : 122.42
Chloroform	TM116	**101.0** 90.35 : 120.38

VOC MS (S)

		QC 2256
Chloromethane	TM116	**153.4** 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	**94.4** 78.27 : 128.90
Dibromomethane	TM116	**99.2** 76.00 : 120.73
Dichloromethane	TM116	**101.6** 93.91 : 130.46
Ethylbenzene	TM116	**90.8** 70.95 : 113.07
Hexachlorobutadiene	TM116	**58.8** 14.55 : 147.92
Isopropylbenzene	TM116	**79.8** 52.00 : 108.19
Naphthalene	TM116	**97.6** 80.29 : 135.77
o-Xylene	TM116	**87.0** 64.92 : 98.85
p/m-Xylene	TM116	**87.0** 72.04 : 104.04
Sec-Butylbenzene	TM116	**72.4** 27.03 : 135.73
Tetrachloroethene	TM116	**103.6** 81.43 : 126.65
Toluene	TM116	**91.6** 82.44 : 103.50
Trichloroethene	TM116	**95.4** 79.80 : 112.33
Trichlorofluoromethane	TM116	**106.6** 86.68 : 126.82
Vinyl Chloride	TM116	**151.8** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

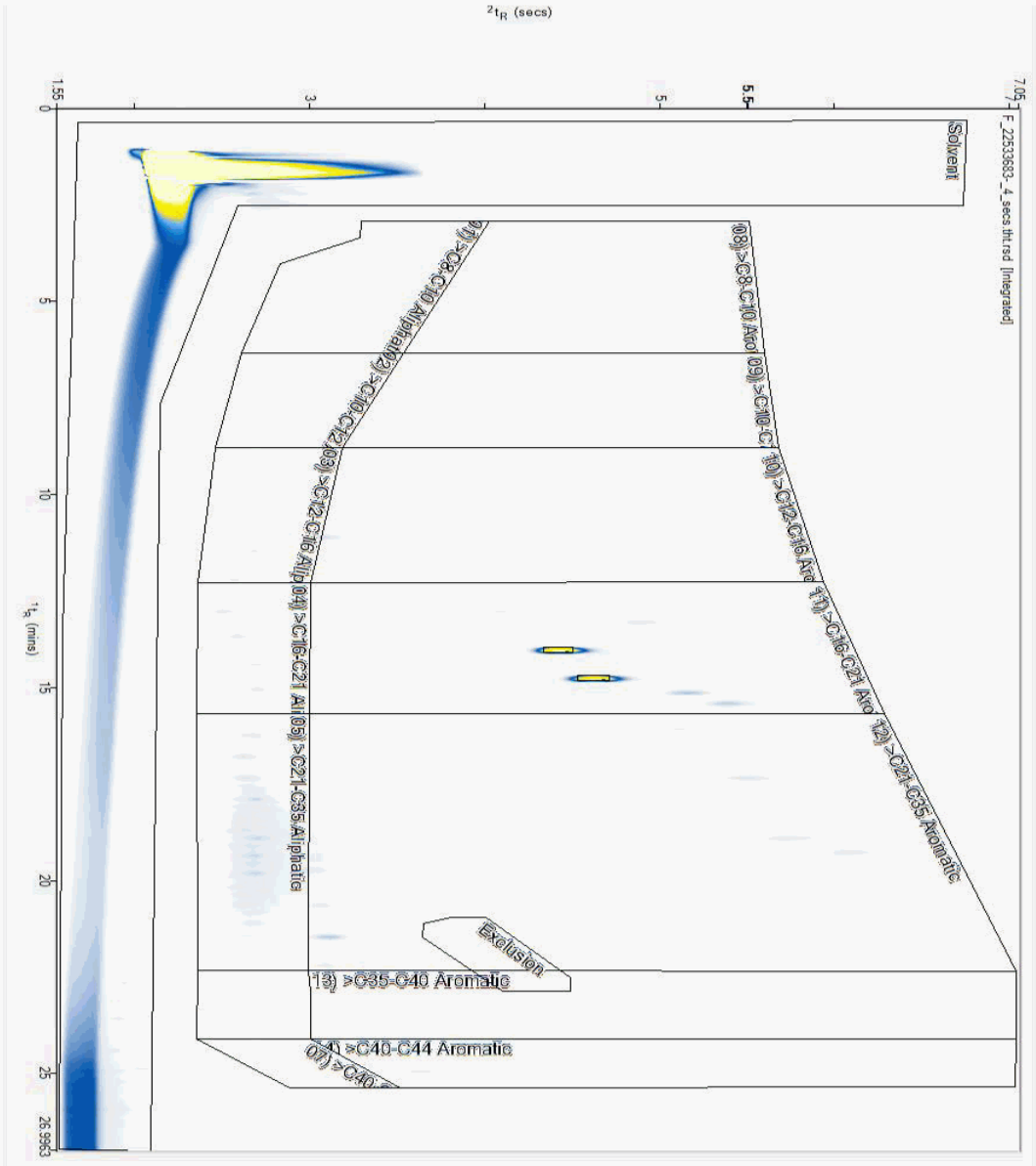
CERTIFICATE OF ANALYSIS

SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22533683 **Depth :**
Sample ID : SKIP

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   ChromSpace LIMS export
  Current batch
Sample Identity:  F_22533683-_4_secs.tht
Date Acquired   :  26/07/20 07:40:06
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



CERTIFICATE OF ANALYSIS

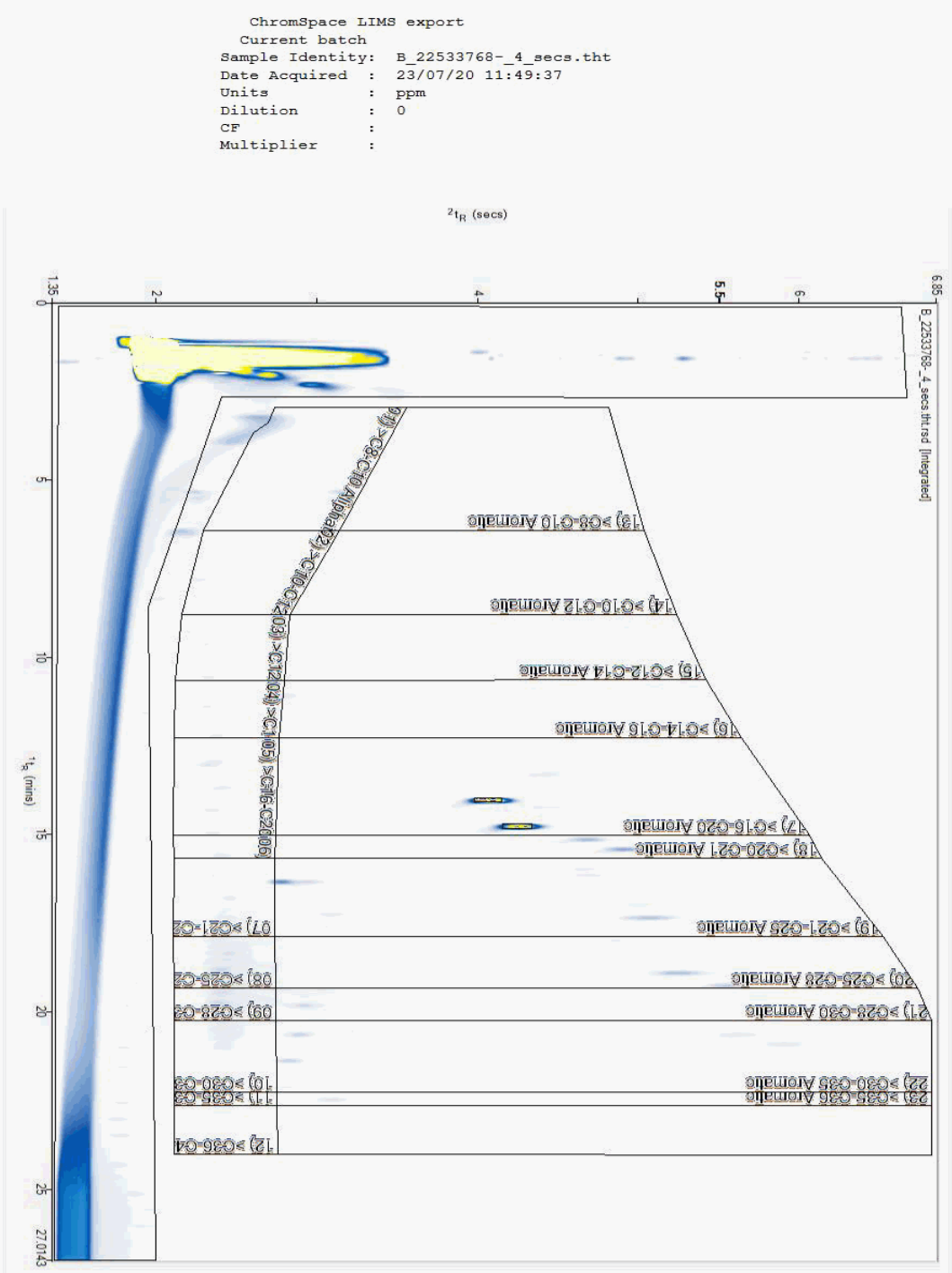
SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 22533768
Sample ID : SKIP

Depth :



CERTIFICATE OF ANALYSIS

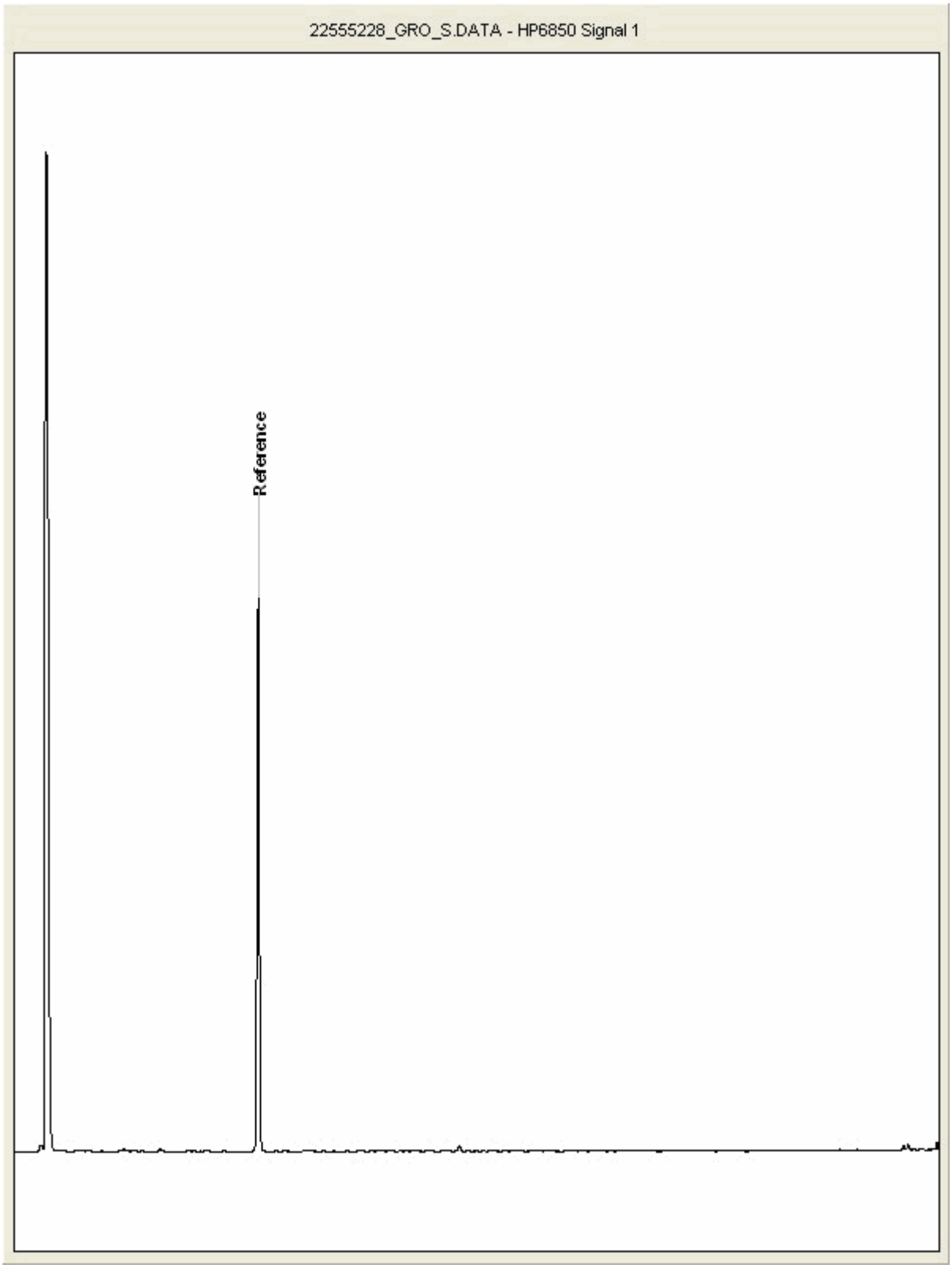
SDG:	200723-58	**Client Reference:**	10041634	**Report Number:**	561391
Location:	Hyde Road, Manchest	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22555228
Sample ID : SKIP

Depth :



Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

ARCADIS UK Ltd
10th Floor
3 Piccadilly Place
Manchester
M1 2BN

Attention: Elizabeth Yeatman

CERTIFICATE OF ANALYSIS

Date of report Generation:	04 August 2020
Customer:	ARCADIS UK Ltd
Sample Delivery Group (SDG):	200725-53
Your Reference:	10041634
Location:	Hyde Road, Manchester
Report No:	561682

We received 3 samples on Saturday July 25, 2020 and 3 of these samples were scheduled for analysis which was completed on Monday August 03, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22548186	CP014		8.50 - 8.50	23/07/2020
22548189	CP101		16.70 - 16.70	23/07/2020
22548187	CP102		9.00 - 9.00	23/07/2020

Maximum Sample/Coolbox Temperature (°C) : 17.4

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			22548186				22548189				22548187			
Customer Sample Reference			CP014				CP101				CP102			
AGS Reference														
Depth (m)			8.50 - 8.50				16.70 - 16.70				9.00 - 9.00			
Container			0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	HNO3 Filtered (ALE204)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	HNO3 Filtered (ALE204)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	HNO3 Filtered (ALE204)	Vial (ALE297)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Anions by Kone (w)	All	NDPs: 0 Tests: 3		X				X				X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3			X				X				X	
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 3	X				X				X			
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 3	X				X				X			
GRO by GC-FID (W)	All	NDPs: 0 Tests: 3				X				X				X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 3		X				X				X		
Mercury Dissolved	All	NDPs: 0 Tests: 3			X				X				X	
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 3	X				X				X			
pH Value	All	NDPs: 0 Tests: 3		X				X				X		
TPH CWG (W)	All	NDPs: 0 Tests: 3	X				X				X			

CERTIFICATE OF ANALYSIS

SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP014	CP101	CP102			
			Depth (m)	8.50 - 8.50	16.70 - 16.70	9.00 - 9.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	23/07/2020	23/07/2020	23/07/2020			
			Sampled Time	15:00:00	16:45:00	16:15:00			
			Date Received	25/07/2020	25/07/2020	25/07/2020			
			SDG Ref	200725-53	200725-53	200725-53			
			Lab Sample No.(s)	22548186	22548189	22548187			
			AGS Reference						
Arsenic (diss.filt)	<0.5 µg/l	TM152		4.78	0.976	6.27			
Barium (diss.filt)	<0.2 µg/l	TM152		536	84.7	308			
Beryllium (diss.filt)	<0.1 µg/l	TM152		<0.1	<0.1	<0.1			
Boron (diss.filt)	<10 µg/l	TM152		171	119	52.1			
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08	<0.08	<0.08			
Chromium (diss.filt)	<1 µg/l	TM152		6.64	<1	7.11			
Copper (diss.filt)	<0.3 µg/l	TM152		<0.3	0.442	1.5			
Lead (diss.filt)	<0.2 µg/l	TM152		0.228	0.251	<0.2			
Nickel (diss.filt)	<0.4 µg/l	TM152		1.75	4.64	4.03			
Selenium (diss.filt)	<1 µg/l	TM152		<1	<1	<1			
Vanadium (diss.filt)	<1 µg/l	TM152		<1	<1	<1			
Zinc (diss.filt)	<1 µg/l	TM152		23.7	2.84	6.79			
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01	<0.01	<0.01			
Sulphate	<2000 µg/l	TM184		44700	60300	35400			
Chromium, Hexavalent	<30 µg/l	TM241		<30	<30	<30			
pH	<1 pH Units	TM256		7.25	7.46	7.13			

CERTIFICATE OF ANALYSIS

SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP014	CP101	CP102			
			Depth (m)	8.50 - 8.50	16.70 - 16.70	9.00 - 9.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	23/07/2020	23/07/2020	23/07/2020			
			Sampled Time	15:00:00	16:45:00	16:15:00			
			Date Received	25/07/2020	25/07/2020	25/07/2020			
			SDG Ref	200725-53	200725-53	200725-53			
			Lab Sample No.(s)	22548186	22548189	22548187			
			AGS Reference						
Naphthalene (aq)	<0.01 µg/l	TM178		<0.01	0.0445	<0.01			
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005	0.14	<0.005			
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005	0.0811	<0.005			
Fluoranthene (aq)	<0.005 µg/l	TM178		0.0177	3.01	<0.005			
Anthracene (aq)	<0.005 µg/l	TM178		0.00527	0.331	<0.005			
Phenanthrene (aq)	<0.005 µg/l	TM178		0.0136	1.07	0.00748			
Fluorene (aq)	<0.005 µg/l	TM178		<0.005	0.132	<0.005			
Chrysene (aq)	<0.005 µg/l	TM178		0.00996	1.76	<0.005			
Pyrene (aq)	<0.005 µg/l	TM178		0.0217	3.28	<0.005			
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		0.00562	1.68	<0.005			
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		0.0121	3.35	<0.005			
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		0.00547	1.22	<0.005			
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		0.00987	2.69	<0.002			
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005	0.439	<0.005			
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		0.0111	2.36	<0.005			
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005	1.96	<0.005			
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		0.112	23.6	<0.082			

CERTIFICATE OF ANALYSIS

SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP014	CP101	CP102			
			Depth (m)	8.50 - 8.50	16.70 - 16.70	9.00 - 9.00			
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	23/07/2020	23/07/2020	23/07/2020			
			Sampled Time	15:00:00	16:45:00	16:15:00			
			Date Received	25/07/2020	25/07/2020	25/07/2020			
			SDG Ref	200725-53	200725-53	200725-53			
			Lab Sample No.(s)	22548186	22548189	22548187			
			AGS Reference						
GRO Surrogate % recovery**	%	TM245		94	119	106			
GRO >C5-C12	<50 µg/l	TM245		<50	<50	<50			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3	<3	<3			
Benzene	<7 µg/l	TM245		<7	<7	<7			
Toluene	<4 µg/l	TM245		<4	<4	<4			
Ethylbenzene	<5 µg/l	TM245		<5	<5	<5			
m,p-Xylene	<8 µg/l	TM245		<8	<8	<8			
o-Xylene	<3 µg/l	TM245		<3	<3	<3			
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11			
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28			
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	11	<10			
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	968	<10			
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	979	<10			
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	24	<10			
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	197	<10			
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	221	<10			
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	1200	<10			
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	979	<10			

CERTIFICATE OF ANALYSIS

SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	22548186	22548189	22548187
Customer Sample Ref.	CP014	CP101	CP102
AGS Ref.			
Depth	8.50 - 8.50	16.70 - 16.70	9.00 - 9.00
Type	Ground Water	Ground Water	Ground Water
Anions by Kone (w)	27-Jul-2020	28-Jul-2020	28-Jul-2020
Dissolved Metals by ICP-MS	03-Aug-2020	03-Aug-2020	03-Aug-2020
EPH CWG (Aliphatic) Aqueous GC (W)	03-Aug-2020	03-Aug-2020	03-Aug-2020
EPH CWG (Aromatic) Aqueous GC (W)	03-Aug-2020	03-Aug-2020	03-Aug-2020
GRO by GC-FID (W)	31-Jul-2020	28-Jul-2020	28-Jul-2020
Hexavalent Chromium (w)	28-Jul-2020	28-Jul-2020	28-Jul-2020
Mercury Dissolved	03-Aug-2020	03-Aug-2020	29-Jul-2020
PAH Spec MS - Aqueous (W)	03-Aug-2020	03-Aug-2020	03-Aug-2020
pH Value	28-Jul-2020	28-Jul-2020	28-Jul-2020
TPH CWG (W)	03-Aug-2020	03-Aug-2020	03-Aug-2020

ASSOCIATED AQC DATA

Anions by Kone (w)

Component	Method Code	QC 2203	QC 2203	QC 2237
Chloride	TM184	**103.0** 92.93 : 115.43	**102.0** 92.93 : 115.43	**103.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**96.4** 90.53 : 113.03	**98.0** 90.53 : 113.03	**99.6** 90.53 : 113.03

Dissolved Metals by ICP-MS

Component	Method Code	QC 2292
Aluminium	TM152	**101.0** 94.21 : 111.52
Antimony	TM152	**99.17** 88.37 : 130.57
Arsenic	TM152	**96.33** 92.62 : 113.52
Barium	TM152	**95.17** 88.62 : 113.14
Beryllium	TM152	**105.17** 89.98 : 116.88
Bismuth	TM152	**100.83** 92.62 : 115.02
Boron	TM152	**96.67** 86.31 : 120.88
Cadmium	TM152	**99.17** 93.85 : 111.65
Calcium	TM152	**102.0** 89.20 : 126.91
Chromium	TM152	**98.67** 92.22 : 109.85
Cobalt	TM152	**98.0** 85.01 : 114.87
Copper	TM152	**97.83** 89.87 : 119.73
Iron	TM152	**100.0** 93.02 : 113.86
Lead	TM152	**100.67** 91.11 : 116.98
Lithium	TM152	**105.33** 91.30 : 123.00
Magnesium	TM152	**106.0** 89.60 : 116.61
Manganese	TM152	**100.33** 93.97 : 112.46
Molybdenum	TM152	**96.5** 89.07 : 110.96
Nickel	TM152	**98.5** 93.70 : 112.15
Phosphorus	TM152	**96.67** 89.24 : 114.18
Potassium	TM152	**101.33** 93.20 : 115.55

Dissolved Metals by ICP-MS

		QC 2292
Selenium	TM152	**104.0** 91.69 : 117.12
Silver	TM152	**109.5** 90.93 : 121.73
Sodium	TM152	**106.0** 92.42 : 113.24
Strontium	TM152	**96.33** 92.14 : 116.24
Tellurium	TM152	**93.33** 89.88 : 111.78
Thallium	TM152	**95.67** 82.43 : 113.83
Tin	TM152	**100.5** 94.62 : 107.79
Titanium	TM152	**102.33** 90.29 : 115.23
Tungsten	TM152	**96.83** 77.61 : 132.31
Uranium	TM152	**99.83** 86.97 : 115.76
Vanadium	TM152	**98.17** 89.61 : 115.48
Zinc	TM152	**102.0** 87.51 : 116.26

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2211
Total Aliphatics >C10-C40	TM174	**120.63** 69.79 : 134.39

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2227
Total Aromatics >EC10-EC40	TM174	**97.56** 59.92 : 128.54

GRO by GC-FID (W)

Component	Method Code	QC 2223	QC 2211
Benzene by GC	TM245	**97.0** 79.13 : 118.84	**101.0** 81.54 : 119.70
Ethylbenzene by GC	TM245	**99.0** 79.54 : 115.99	**107.5** 80.99 : 121.09
m & p Xylene by GC	TM245	**96.0** 78.44 : 116.32	**105.25** 82.77 : 123.19
MTBE GC-FID	TM245	**99.0** 81.43 : 120.09	**99.5** 80.06 : 123.27

GRO by GC-FID (W)

		QC 2223	QC 2211
o Xylene by GC	TM245	**98.5** 76.85 : 120.29	**106.5** 84.26 : 121.50
QC	TM245	**110.85** 71.58 : 131.01	**117.59** 76.13 : 145.89
Toluene by GC	TM245	**96.5** 79.00 : 121.96	**103.0** 82.78 : 121.99

Hexavalent Chromium (w)

Component	Method Code	QC 2256
Hexavalent Chromium	TM241	**99.6** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2253	QC 2274
Mercury Dissolved (CVAF)	TM183	**106.0** 76.80 : 117.12	**95.7** 76.80 : 117.12

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2258
Acenaphthene by GCMS	TM178	**108.0** 97.60 : 116.80
Acenaphthylene by GCMS	TM178	**100.8** 89.20 : 113.20
Anthracene by GCMS	TM178	**102.0** 92.40 : 116.40
Benz(a)anthracene by GCMS	TM178	**95.2** 84.40 : 110.80
Benzo(a)pyrene by GCMS	TM178	**98.0** 87.20 : 106.40
Benzo(b)fluoranthene by GCMS	TM178	**94.0** 84.80 : 111.20
Benzo(ghi)perylene by GCMS	TM178	**107.6** 93.60 : 112.80
Benzo(k)fluoranthene by GCMS	TM178	**104.0** 90.40 : 119.20
Chrysene by GCMS	TM178	**107.6** 96.80 : 113.60
Dibenzo(ah)anthracene by GCMS	TM178	**99.6** 88.00 : 112.00
Fluoranthene by GCMS	TM178	**110.8** 93.49 : 118.20
Fluorene by GCMS	TM178	**108.0** 94.39 : 118.66
Indeno(123cd)pyrene by GCMS	TM178	**95.2** 90.40 : 114.40

CERTIFICATE OF ANALYSIS

SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

		QC 2258
Naphthalene by GCMS	TM178	**108.8** 94.00 : 115.60
Phenanthrene by GCMS	TM178	**105.2** 94.80 : 114.00
Pyrene by GCMS	TM178	**112.4** 96.40 : 115.60

pH Value

Component	Method Code	QC 2275
pH	TM256	**101.89** 100.13 : 103.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

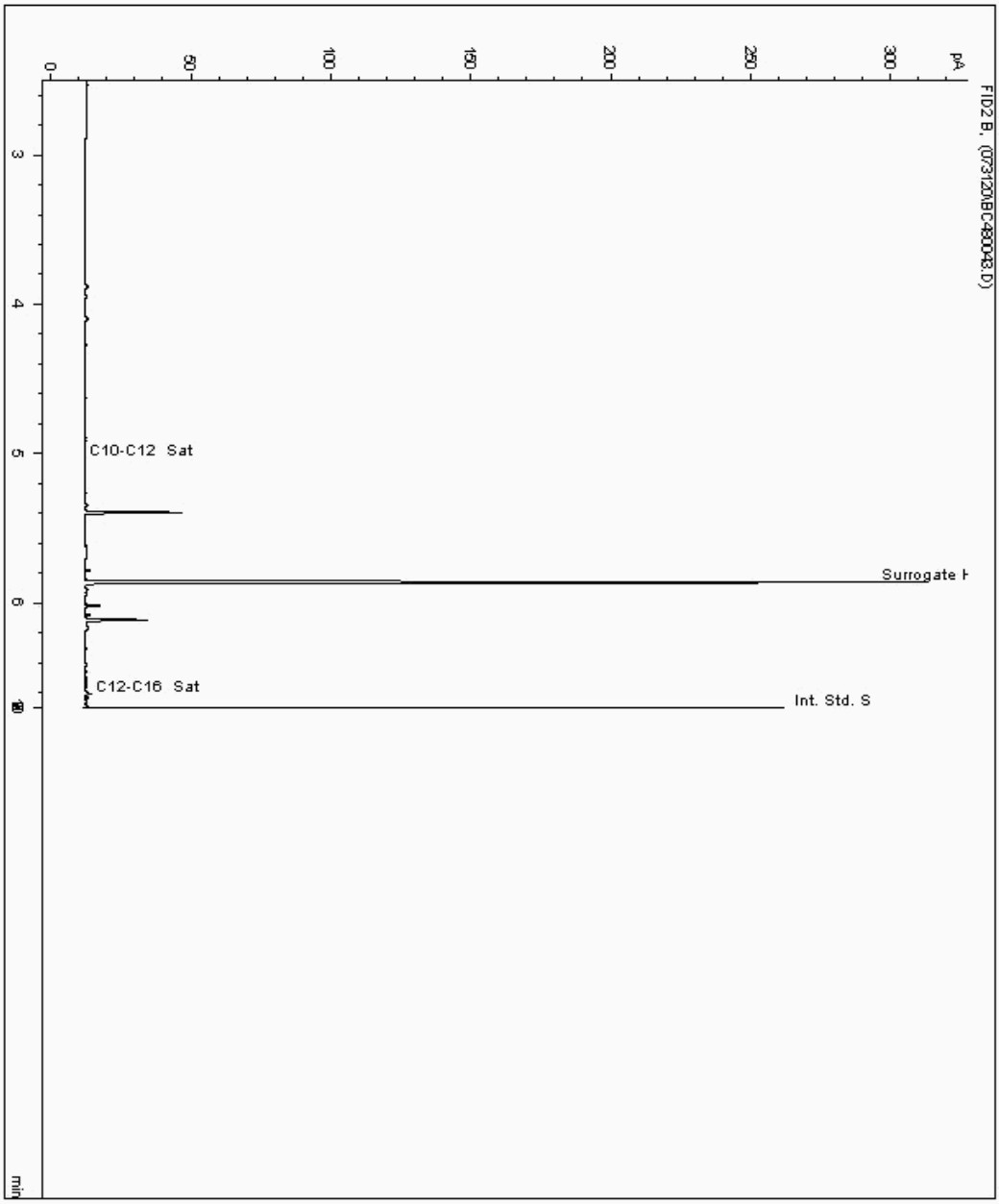
SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 22551478 **Sample ID :** CP102 **Depth :** 9.00 - 9.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21175026-
Date Acquired : 03/08/2020 02:24:01 PM
Units : ppb
Dilution : SE CP102[9.00 - 9.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

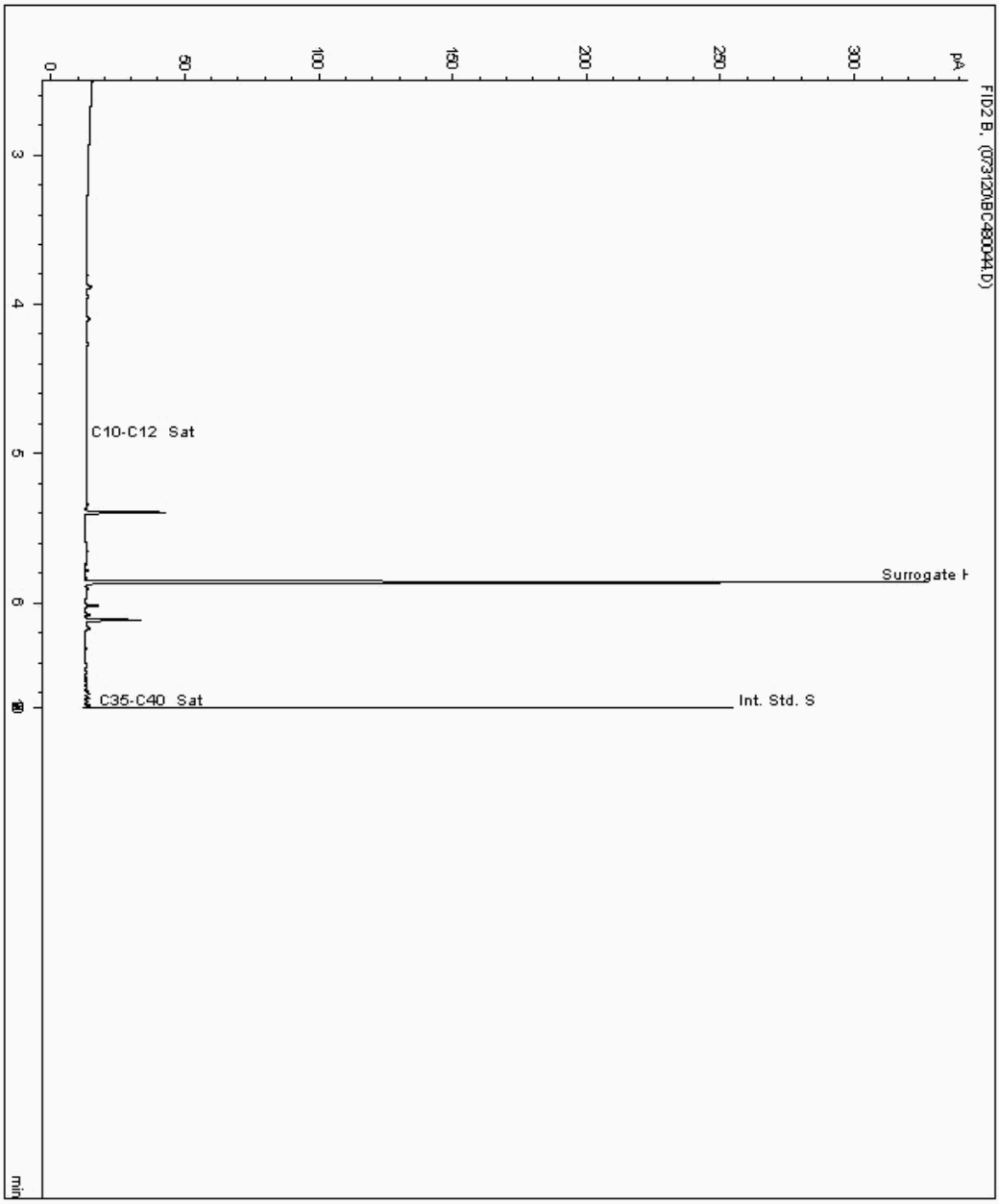
SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 22551481 **Sample ID :** CP014 **Depth :** 8.50 - 8.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21175015-
Date Acquired : 03/08/2020 02:47:01 PM
Units : ppb
Dilution : SE CP014[8.50 - 8.50] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

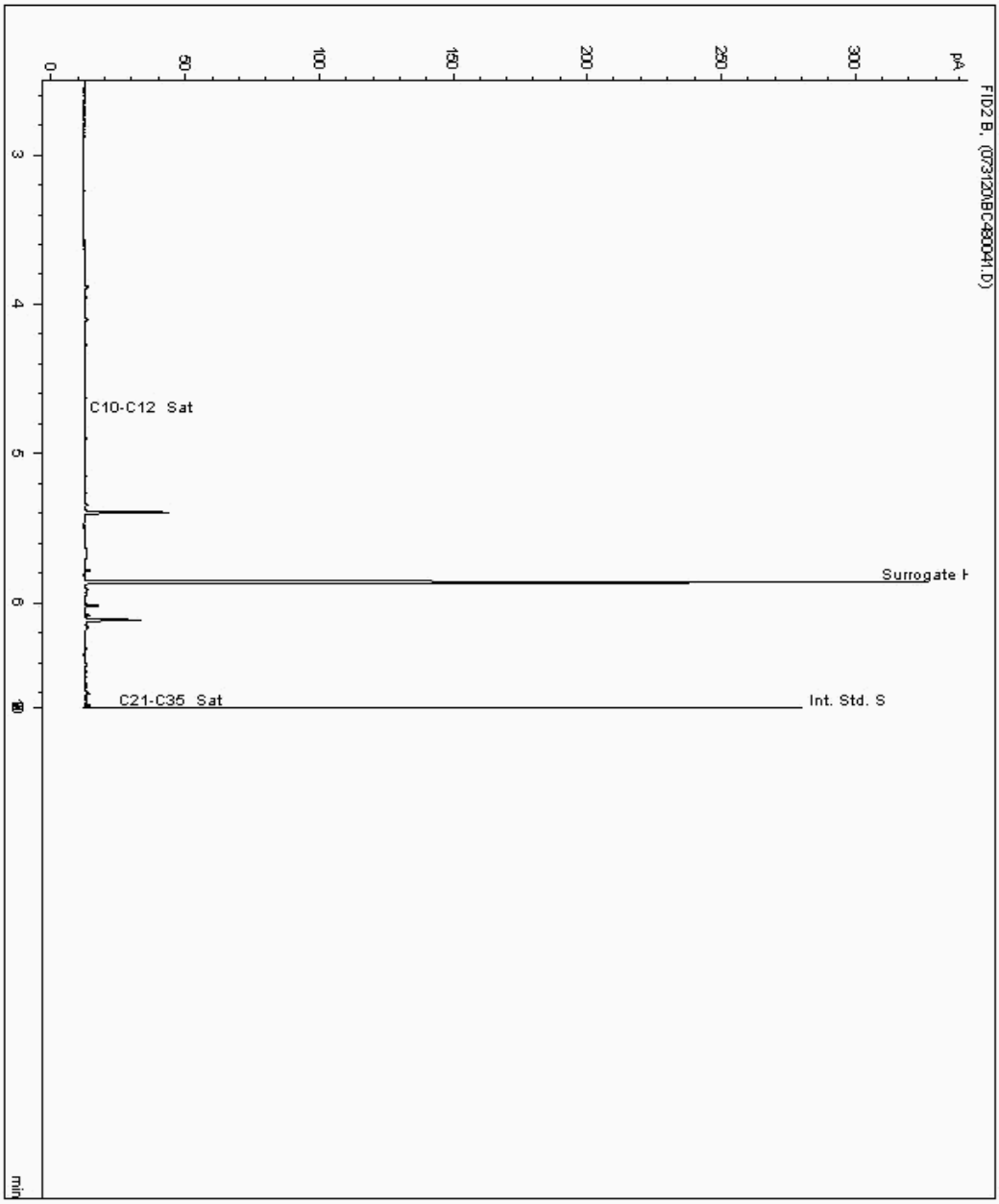
SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 22551482 **Sample ID :** CP101 **Depth :** 16.70 - 16.70

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21175037-
Date Acquired : 03/08/2020 01:37:46 PM
Units : ppb
Dilution : SE CP101[16.70 - 16.70] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

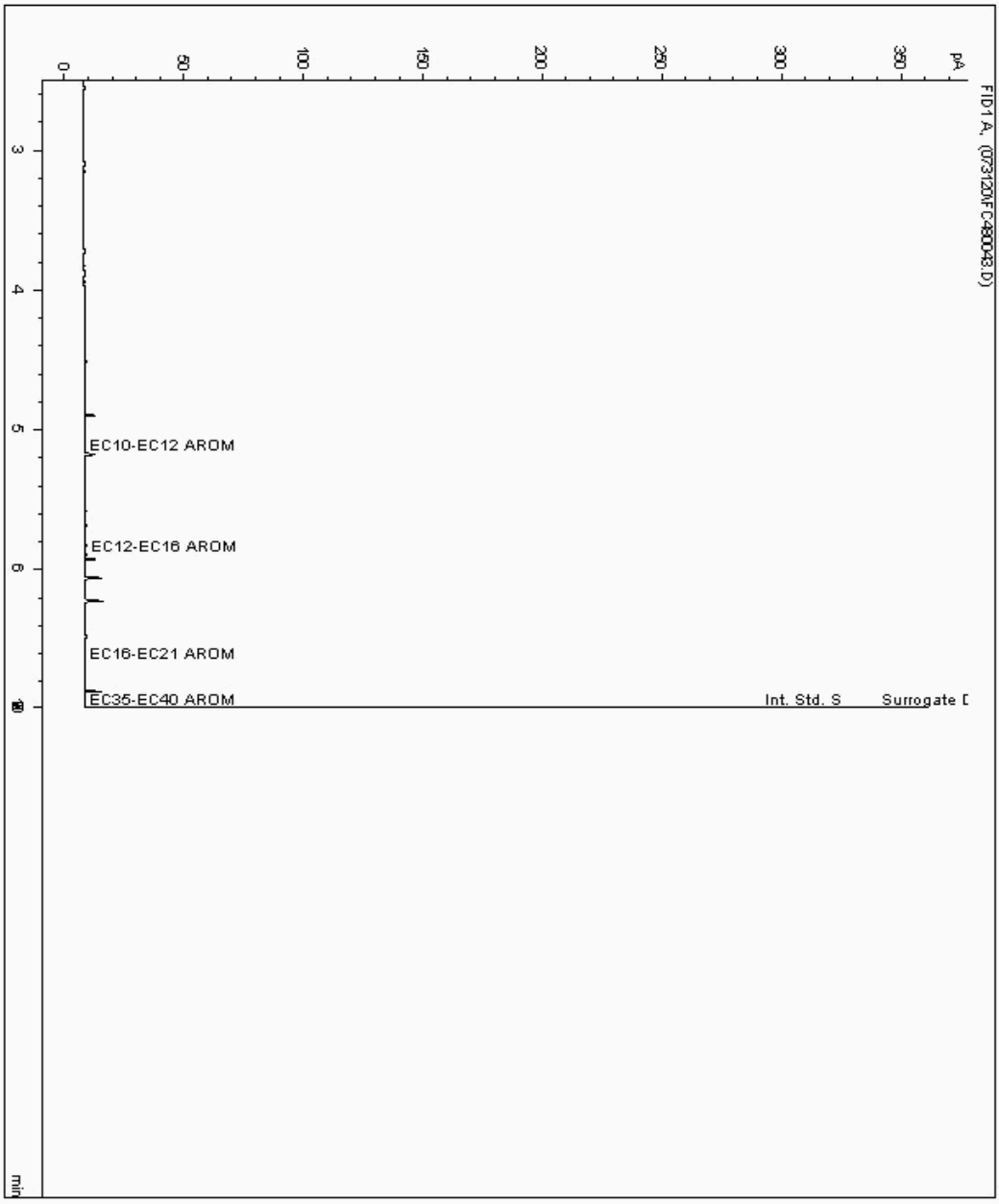
SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 22551478 **Sample ID :** CP102 **Depth :** 9.00 - 9.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 21175027-
Date Acquired : 03/08/2020 02:24:01 PM
Units : ppb
Dilution : SE CP102[9.00 - 9.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

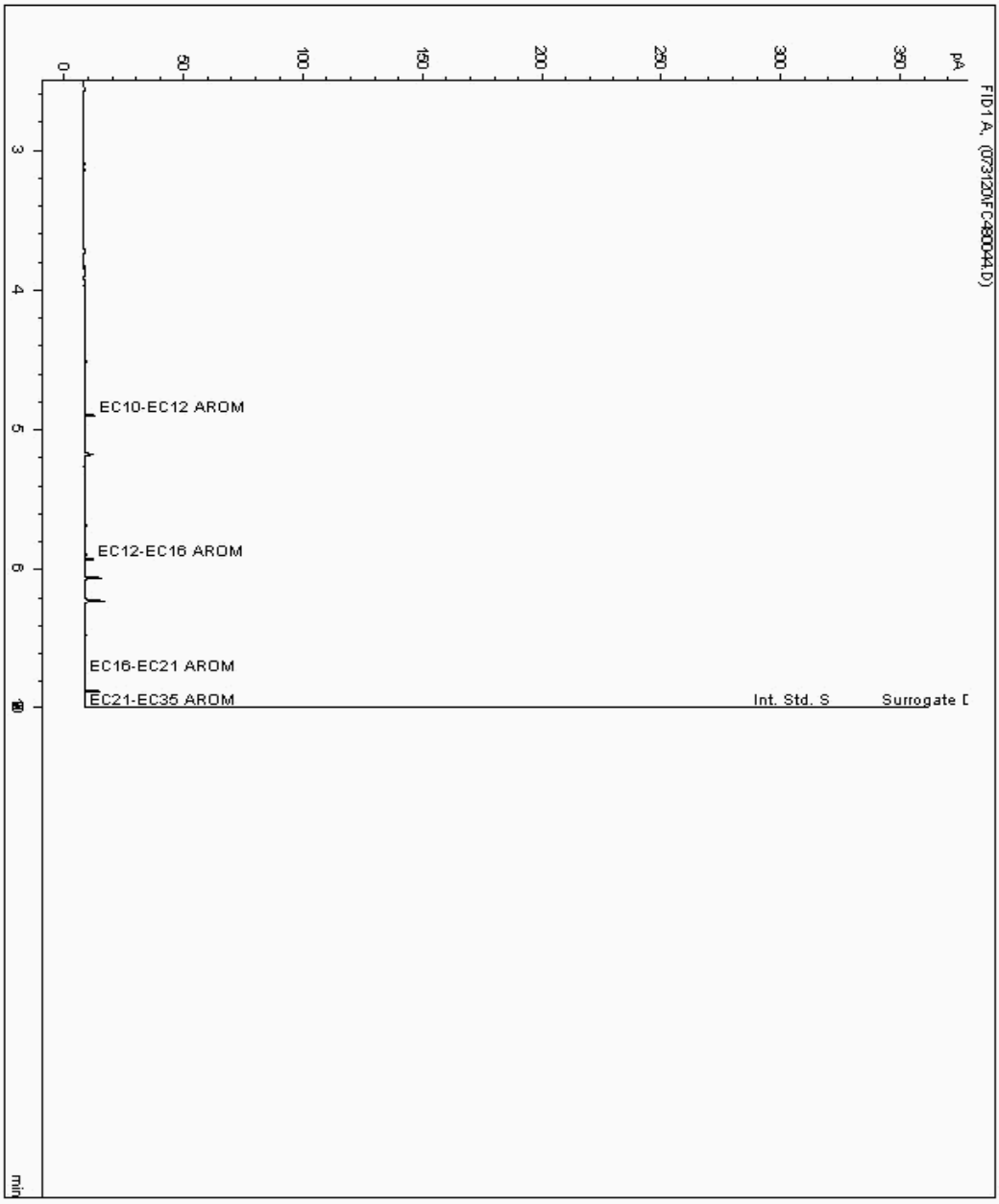
SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 22551481 **Sample ID :** CP014 **Depth :** 8.50 - 8.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 21175016-
Date Acquired : 03/08/2020 02:47:01 PM
Units : ppb
Dilution : SE CP014[8.50 - 8.50] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

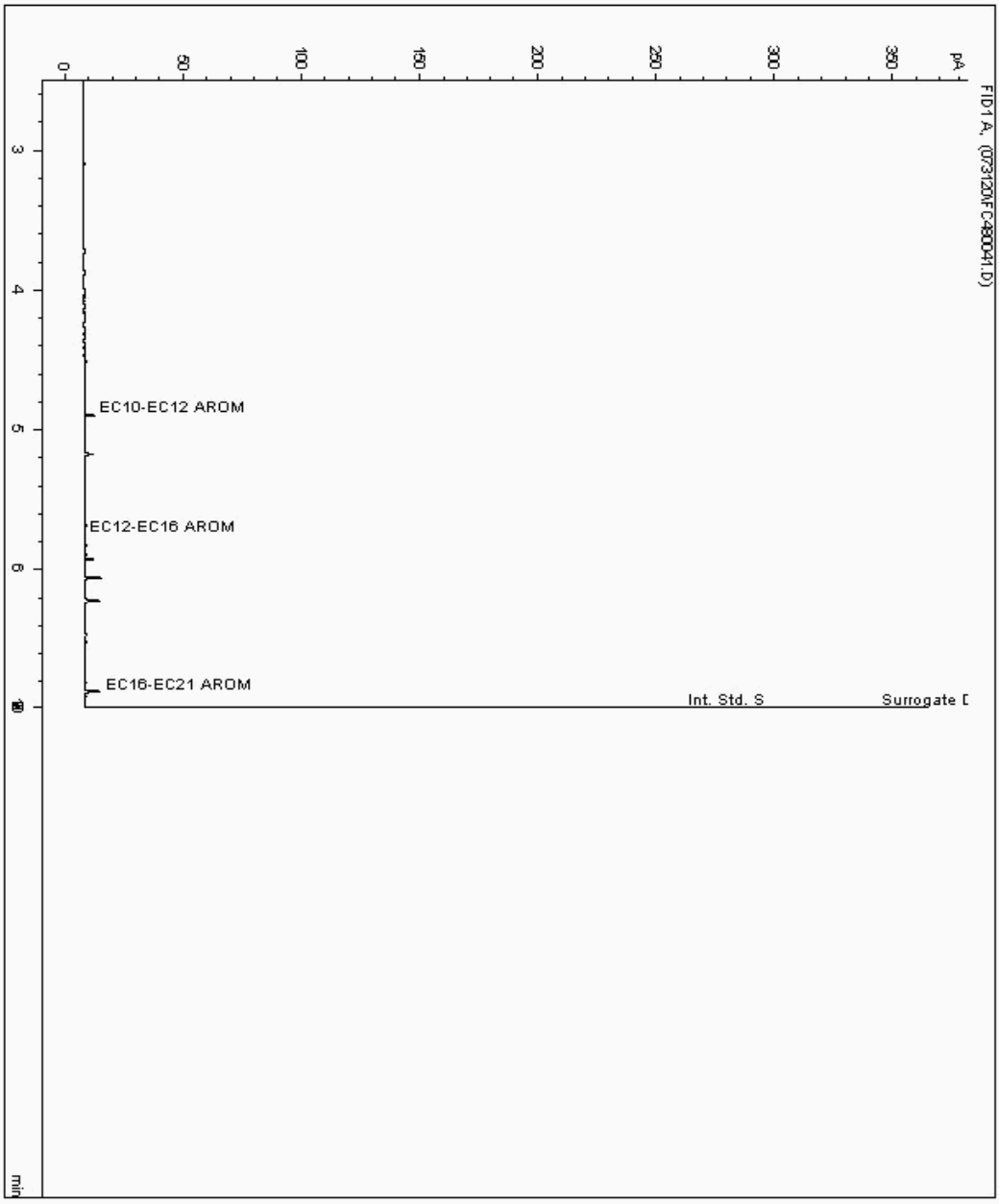
SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 22551482 **Sample ID :** CP101 **Depth :** 16.70 - 16.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 21175038-
Date Acquired : 03/08/2020 01:37:46 PM
Units : ppb
Dilution : SE CP101[16.70 - 16.70] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

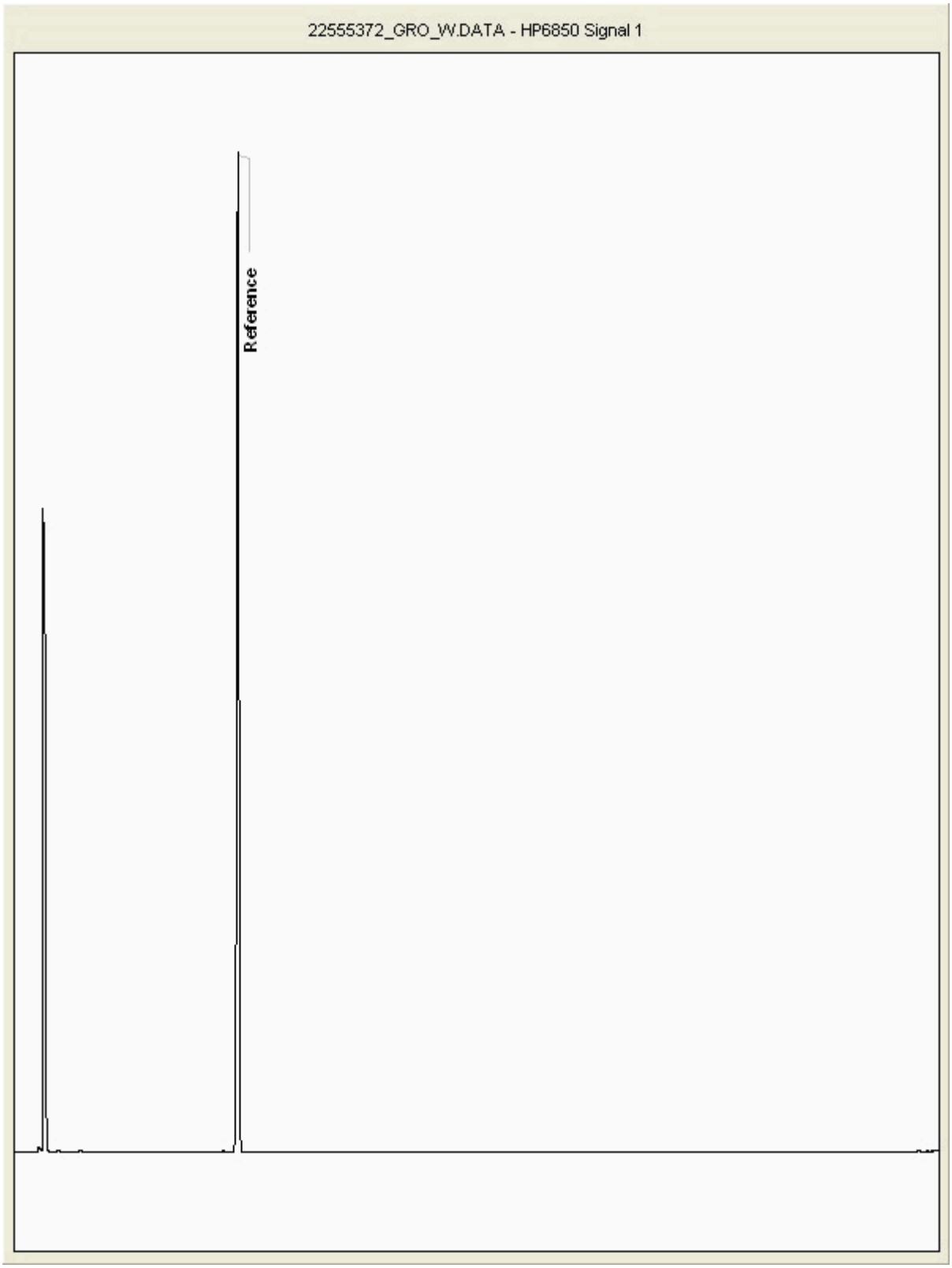
SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 22555372
Sample ID : CP101

Depth : 16.70 - 16.70



CERTIFICATE OF ANALYSIS

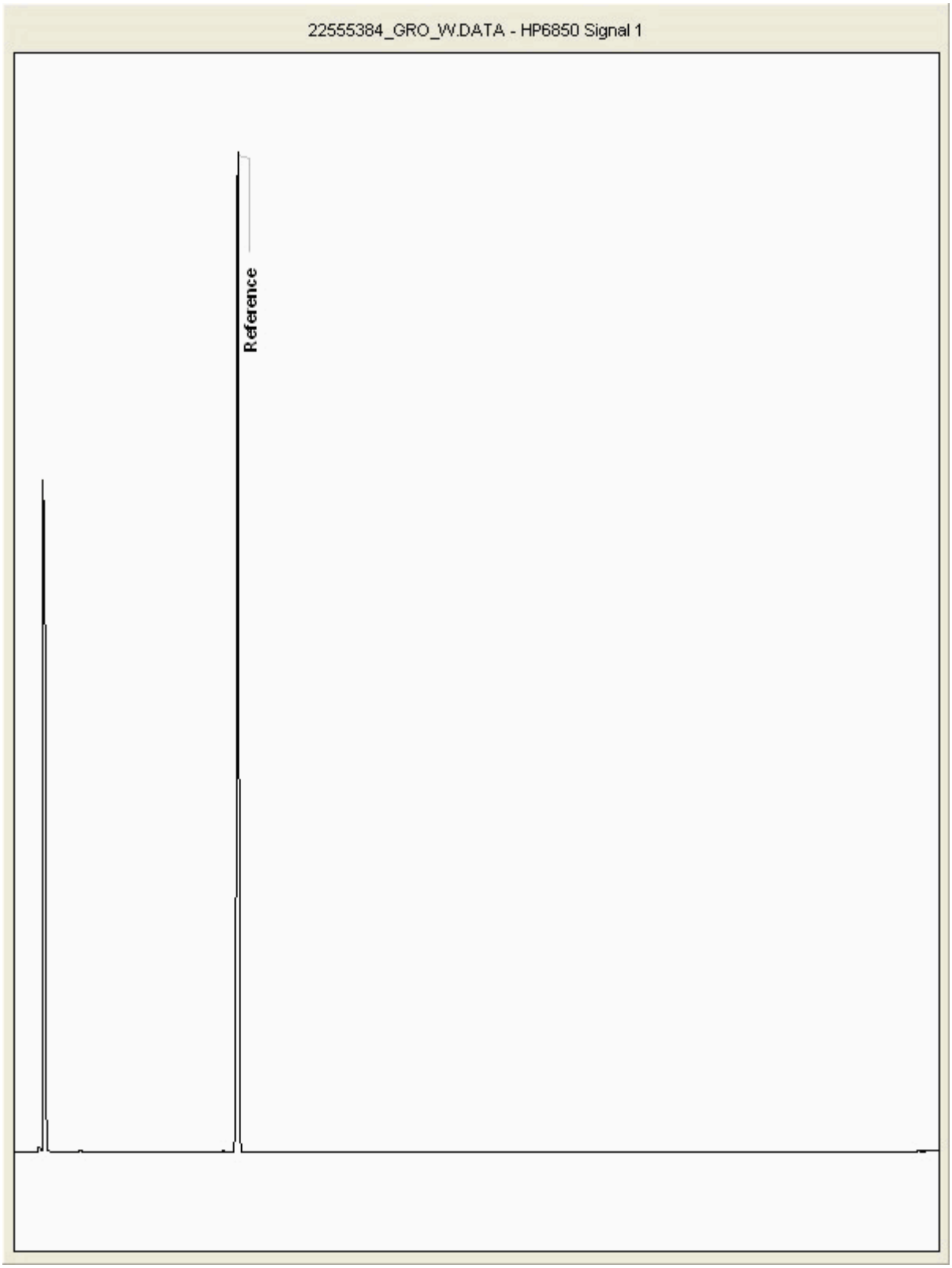
SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 22555384
Sample ID : CP102

Depth : 9.00 - 9.00



CERTIFICATE OF ANALYSIS

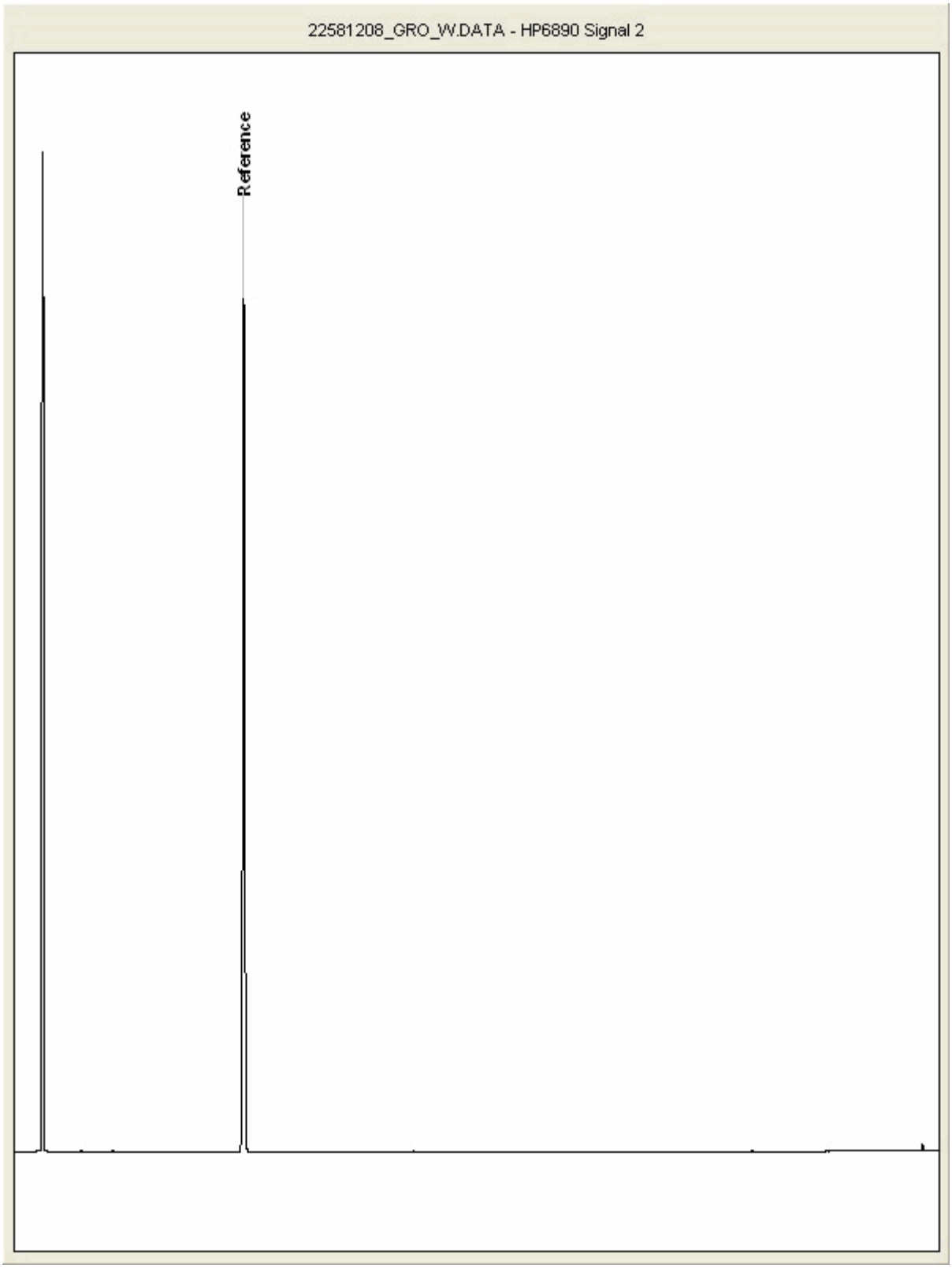
SDG:	200725-53	**Client Reference:**	10041634	**Report Number:**	561682
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 22581208
Sample ID : CP014

Depth : 8.50 - 8.50



Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

ARCADIS UK Ltd
10th Floor
3 Piccadilly Place
Manchester
M1 2BN

Attention: Elizabeth Yeatman

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 August 2020
Customer:	ARCADIS UK Ltd
Sample Delivery Group (SDG):	200725-55
Your Reference:	10041634
Location:	Hyde Road, Manchester
Report No:	561889

We received 7 samples on Saturday July 25, 2020 and 7 of these samples were scheduled for analysis which was completed on Wednesday August 05, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22548234	CP103		1.00	22/07/2020
22548236	CP103		1.50	22/07/2020
22548240	CP103		5.60	23/07/2020
22548241	CP105		0.50	24/07/2020
22548243	CP105		9.50	24/07/2020
22548237	CP106		0.60	22/07/2020
22548239	CP106		4.00	22/07/2020

Maximum Sample/Coolbox Temperature (°C) : **16.2**

ISO5667-3 Water quality - Sampling - Part3 -
During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			22548234		22548236	22548240		22548241		22548243		22548237		22548239		
Customer Sample Reference			CP103		CP103	CP103		CP105		CP105		CP106		CP106		
AGS Reference																
Depth (m)			1.00		1.50	5.60		0.50		9.50		0.60		4.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 7		X		X		X		X		X		X		X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X						X				X			
Boron Water Soluble	All	NDPs: 0 Tests: 4		X		X				X				X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 4		X		X				X				X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X		X				X				X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X		X				X				X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 4		X		X				X				X		
PAH by GCMS	All	NDPs: 0 Tests: 2				X				X						
pH	All	NDPs: 0 Tests: 7		X		X		X		X		X		X		X
Sample description	All	NDPs: 0 Tests: 7		X		X		X		X		X		X		X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X										X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 4		X		X				X				X		
VOC MS (S)	All	NDPs: 0 Tests: 4			X		X				X				X	

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
22548234	CP103	1.00	Grey	Sandy Clay Loam	Stones	N/A
22548236	CP103	1.50	Dark Brown	Clay	Stones	None
22548240	CP103	5.60	Dark Brown	Sand	None	None
22548241	CP105	0.50	Dark Brown	Loamy Sand	Stones	Crushed Brick
22548243	CP105	9.50	Dark Brown	Clay	Stones	None
22548237	CP106	0.60	Dark Brown	Loamy Sand	Stones	Crushed Brick
22548239	CP106	4.00	Dark Brown	Sandy Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP103	CP103	CP103	CP105	CP105	CP106
			Depth (m)	1.00	1.50	5.60	0.50	9.50	0.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	22/07/2020	22/07/2020	23/07/2020	24/07/2020	24/07/2020	22/07/2020
			Sampled Time	.	.	.	.	.	.
			Date Received	25/07/2020	25/07/2020	25/07/2020	25/07/2020	25/07/2020	25/07/2020
			SDG Ref	200725-55	200725-55	200725-55	200725-55	200725-55	200725-55
			Lab Sample No.(s)	22548234	22548236	22548240	22548241	22548243	22548237
			AGS Reference						
Moisture Content Ratio (% of as received sample)	1 %	PM024		17	14	16	4.8	14	12
pH	1 pH Units	TM133		8.13 M	8.48 M	8.7 M	8.78 M	8.68 M	11.6 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #		<0.6 #		<0.6 #
Arsenic	<0.6 mg/kg	TM181		11 M	7.62 M		4.03 M		3.47 M
Barium	<0.6 mg/kg	TM181		239 #	134 #		60.4 #		181 #
Beryllium	<0.01 mg/kg	TM181		1.33 M	1.17 M		0.0721 M		0.24 M
Cadmium	<0.02 mg/kg	TM181		0.387 M	0.232 M		0.0265 M		0.196 M
Chromium	<0.9 mg/kg	TM181		7.72 M	17.9 M		2.43 M		6.6 M
Copper	<1.4 mg/kg	TM181		62.5 M	21.6 M		2.88 M		6.1 M
Lead	<0.7 mg/kg	TM181		99.5 M	15.4 M		3.98 M		18.1 M
Mercury	<0.14 mg/kg	TM181		<0.14 M	<0.14 M		<0.14 M		<0.14 M
Nickel	<0.2 mg/kg	TM181		17.2 M	32.7 M		4.33 M		6.61 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #		<1 #		<1 #
Vanadium	<0.2 mg/kg	TM181		21.3 #	24.7 #		3.3 #		9.92 #
Zinc	<1.9 mg/kg	TM181		105 M	60.4 M		8.43 M		28.7 M
Boron, water soluble	<1 mg/kg	TM222		1.45 M	<1 M		<1 M		1.17 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.108 M	0.0268 M	0.0178 M	0.0104 M	0.0498 M	0.235 M

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Customer Sample Ref.	CP106
Depth (m)	4.00
Sample Type	Soil/Solid (S)
Date Sampled	22/07/2020
Sampled Time	.
Date Received	25/07/2020
SDG Ref	200725-55
Lab Sample No.(s)	22548239
AGS Reference	

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	13
pH	1 pH Units	TM133	8.85 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0389 M

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP103	CP105				
			Depth (m)	1.50	0.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	22/07/2020	24/07/2020				
			Sampled Time	.	.				
			Date Received	25/07/2020	25/07/2020				
			SDG Ref	200725-55	200725-55				
			Lab Sample No.(s)	22548236	22548241				
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		81.5	82.4				
Acenaphthene-d10 % recovery**	%	TM218		83.5	87.8				
Phenanthrene-d10 % recovery**	%	TM218		83.2	85.8				
Chrysene-d12 % recovery**	%	TM218		74.8	71.6				
Perylene-d12 % recovery**	%	TM218		71.8	67.6				
Naphthalene	<0.009 mg/kg	TM218		0.0159 M	<0.18 M				
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.24 M				
Acenaphthene	<0.008 mg/kg	TM218		0.0212 M	<0.16 M				
Fluorene	<0.01 mg/kg	TM218		0.028 M	<0.2 M				
Phenanthrene	<0.015 mg/kg	TM218		0.223 M	<0.3 M				
Anthracene	<0.016 mg/kg	TM218		0.0712 M	<0.32 M				
Fluoranthene	<0.017 mg/kg	TM218		0.498 M	<0.34 M				
Pyrene	<0.015 mg/kg	TM218		0.579 M	<0.3 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		0.293 M	<0.28 M				
Chrysene	<0.01 mg/kg	TM218		0.26 M	<0.2 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.214 M	<0.3 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0932 M	<0.28 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.204 M	<0.3 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.123 M	<0.36 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.46 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.103 M	<0.48 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		2.73	<2.36				

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP103	CP106				
			Depth (m)	1.00	0.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	22/07/2020	22/07/2020				
			Sampled Time	.	.				
			Date Received	25/07/2020	25/07/2020				
			SDG Ref	200725-55	200725-55				
			Lab Sample No.(s)	22548234	22548237				
			AGS Reference						
Phenol	<0.1 mg/kg	TM157		<1	<0.5				
Pentachlorophenol	<0.1 mg/kg	TM157		<1	<0.5				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<1	<0.5				
Nitrobenzene	<0.1 mg/kg	TM157		<1	<0.5				
Isophorone	<0.1 mg/kg	TM157		<1	<0.5				
Hexachloroethane	<0.1 mg/kg	TM157		<1	<0.5				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<1	<0.5				
Hexachlorobutadiene	<0.1 mg/kg	TM157		<1	<0.5				
Hexachlorobenzene	<0.1 mg/kg	TM157		<1	<0.5				
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<1	<0.5				
Dimethyl phthalate	<0.1 mg/kg	TM157		<1	<0.5				
Diethyl phthalate	<0.1 mg/kg	TM157		<1	<0.5				
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<1	<0.5				
Dibenzofuran	<0.1 mg/kg	TM157		1.21	<0.5				
Carbazole	<0.1 mg/kg	TM157		<1	<0.5				
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<1	<0.5				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<1	0.576				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<1	<0.5				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<1	<0.5				
Azobenzene	<0.1 mg/kg	TM157		<1	<0.5				
4-Nitrophenol	<0.1 mg/kg	TM157		<1	<0.5				
4-Nitroaniline	<0.1 mg/kg	TM157		<1	<0.5				
4-Methylphenol	<0.1 mg/kg	TM157		<1	<0.5				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<1	<0.5				
4-Chloroaniline	<0.1 mg/kg	TM157		<1	<0.5				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<1	<0.5				
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<1	<0.5				
3-Nitroaniline	<0.1 mg/kg	TM157		<1	<0.5				
2-Nitrophenol	<0.1 mg/kg	TM157		<1	<0.5				
2-Nitroaniline	<0.1 mg/kg	TM157		<1	<0.5				
2-Methylphenol	<0.1 mg/kg	TM157		<1	<0.5				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<1	<0.5				

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP103	CP106				
			Depth (m)	1.00	0.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	22/07/2020	22/07/2020				
			Sampled Time	.	.				
			Date Received	25/07/2020	25/07/2020				
			SDG Ref	200725-55	200725-55				
			Lab Sample No.(s)	22548234	22548237				
			AGS Reference						
2-Chlorophenol	<0.1 mg/kg	TM157		<1	<0.5				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<1	<0.5				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<1	<0.5				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<1	<0.5				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<1	<0.5				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<1	<0.5				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<1	<0.5				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<1	<0.5				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<1	<0.5				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<1	<0.5				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<1	<0.5				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<1	<0.5				
Acenaphthylene	<0.1 mg/kg	TM157		<1	<0.5				
Acenaphthene	<0.1 mg/kg	TM157		2.28	<0.5				
Anthracene	<0.1 mg/kg	TM157		9.35	<0.5				
Benzo(a)anthracene	<0.1 mg/kg	TM157		37	1.12				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		16.9	0.565				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		21.8	0.735				
Benzo(a)pyrene	<0.1 mg/kg	TM157		28.9	0.678				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		12.4	1.02				
Chrysene	<0.1 mg/kg	TM157		34.3	1.19				
Fluoranthene	<0.1 mg/kg	TM157		59.3	2.42				
Fluorene	<0.1 mg/kg	TM157		2.44	<0.5				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		15	0.746				
Phenanthrene	<0.1 mg/kg	TM157		34.1	2.21				
Pyrene	<0.1 mg/kg	TM157		71.4	2.31				
Naphthalene	<0.1 mg/kg	TM157		1.46	<0.5				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		1.68	0.859				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<1	<0.5				

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP103	CP103	CP105	CP106		
			Depth (m)	1.00	1.50	0.50	0.60		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	22/07/2020	22/07/2020	24/07/2020	22/07/2020		
			Sampled Time	.	.	.	.		
			Date Received	25/07/2020	25/07/2020	25/07/2020	25/07/2020		
			SDG Ref	200725-55	200725-55	200725-55	200725-55		
			Lab Sample No.(s)	22548234	22548236	22548241	22548237		
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		93.5	92.5	82.6	91.6		
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.0168	<0.01	<0.01	0.0136		
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0204	<0.01	<0.01	0.0203		
Aliphatics >C10-C12	<1 mg/kg	TM414		<5	<1	<2	<1		
Aliphatics >C12-C16	<1 mg/kg	TM414		13.3	<1	<2	2.83		
Aliphatics >C16-C21	<1 mg/kg	TM414		25.6	<1	7.68	85.9		
Aliphatics >C21-C35	<1 mg/kg	TM414		26	<1	13.1	3020		
Aliphatics >C35-C44	<1 mg/kg	TM414		<5	<1	48.7	132		
Total Aliphatics >C10-C44	<5 mg/kg	TM414		66.4	<5	70.9	3250		
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		2820	38.2	205	3670		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.0132	<0.01	<0.01	0.0136		
Aromatics > EC10-EC12	<1 mg/kg	TM414		5.22	<1	<2	<1		
Aromatics > EC12-EC16	<1 mg/kg	TM414		95.4	<1	<2	4.73		
Aromatics > EC16-EC21	<1 mg/kg	TM414		694	8.99	<2	19.9		
Aromatics > EC21-EC35	<1 mg/kg	TM414		1810	26.5	43.8	391		
Aromatics >EC35-EC44	<1 mg/kg	TM414		153	<1	90	4.26		
Aromatics > EC40-EC44	<1 mg/kg	TM414		14.8	<1	5.72	<1		
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		2760	37.1	134	420		
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		2820	37.1	205	3670		
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05	<0.05		
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05	<0.05		
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02	<0.02	<0.02		

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP103	CP103	CP105	CP106		
			Depth (m)	1.00	1.50	0.50	0.60		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	22/07/2020	22/07/2020	24/07/2020	22/07/2020		
			Sampled Time	.	.	.	.		
			Date Received	25/07/2020	25/07/2020	25/07/2020	25/07/2020		
			SDG Ref	200725-55	200725-55	200725-55	200725-55		
			Lab Sample No.(s)	22548234	22548236	22548241	22548237		
			AGS Reference						
Dibromofluoromethane**	%	TM116		103	109	113	111		
Toluene-d8**	%	TM116		99.4	95.7	97.5	103		
4-Bromofluorobenzene**	%	TM116		96.7	96.4	93.7	71.2		
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M			<0.12 M		
Chloromethane	<0.007 mg/kg	TM116		<0.14 #			<0.14 #		
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 M			<0.12 M		
Bromomethane	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
Chloroethane	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M			<0.12 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #			<0.2 #		
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M			<0.14 M		
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #			<0.2 #		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M			<0.16 M		
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M			<0.12 M		
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2			<0.2		
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
Chloroform	<0.008 mg/kg	TM116		<0.16 M			<0.16 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M			<0.14 M		
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 3 M			<0.1 3 M		
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M		
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #			<0.18 #		
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M			<0.18 M		
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M			<0.14 M		
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M		
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2			<0.2		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP103	CP103	CP105	CP106		
			Depth (m)	1.00	1.50	0.50	0.60		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	22/07/2020	22/07/2020	24/07/2020	22/07/2020		
			Sampled Time	.	.	.	.		
			Date Received	25/07/2020	25/07/2020	25/07/2020	25/07/2020		
			SDG Ref	200725-55	200725-55	200725-55	200725-55		
			Lab Sample No.(s)	22548234	22548236	22548241	22548237		
			AGS Reference						
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M			<0.14 M		
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M			<0.1 M		
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M			<0.1 M		
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #		
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
Styrene	<0.01 mg/kg	TM116		<0.2 #			<0.2 #		
Bromoform	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #			<0.1 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #			<0.2 #		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M			<0.32 M		
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M			<0.18 M		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M			<0.16 M		
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M			<0.28 M		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #			<0.18 #		
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2			<0.2		
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M			<0.16 M		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M			<0.1 M		
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22			<0.22		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M			<0.2 M		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M			<0.28 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #			<0.2 #		
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4			<0.4		
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4			<0.4		
Naphthalene	<0.013 mg/kg	TM116		<0.26 M			<0.26 M		

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-3+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	CP103	CP103	CP105	CP106		
			Depth (m)	1.00	1.50	0.50	0.60		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	22/07/2020	22/07/2020	24/07/2020	22/07/2020		
			Sampled Time	.	.	.	.		
			Date Received	25/07/2020	25/07/2020	25/07/2020	25/07/2020		
			SDG Ref	200725-55	200725-55	200725-55	200725-55		
			Lab Sample No.(s)	22548234	22548236	22548241	22548237		
			AGS Reference						
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #			<0.4 #		
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4			<0.4		
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4	<0.4		
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8	<0.8		

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	CP103 1.00 SOLID 22/07/2020 00:00:00 25/07/2020 05:00:00 200725-55 22548234 TM048	03/08/2020	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	CP105 0.50 SOLID 24/07/2020 00:00:00 25/07/2020 05:00:00 200725-55 22548241 TM048	03/08/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	CP106 0.60 SOLID 22/07/2020 00:00:00 25/07/2020 05:00:00 200725-55 22548237 TM048	03/08/2020	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
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Test Completion Dates

Lab Sample No(s)	22548234	22548236	22548240	22548241	22548243	22548237	22548239
Customer Sample Ref.	CP103	CP103	CP103	CP105	CP105	CP106	CP106
AGS Ref.							
Depth	1.00	1.50	5.60	0.50	9.50	0.60	4.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	31-Jul-2020	31-Jul-2020	03-Aug-2020	31-Jul-2020	31-Jul-2020	31-Jul-2020	31-Jul-2020
Asbestos ID in Solid Samples	03-Aug-2020			03-Aug-2020		03-Aug-2020	
Boron Water Soluble	01-Aug-2020	01-Aug-2020		01-Aug-2020		01-Aug-2020	
EPH CWG GC (S)	30-Jul-2020	31-Jul-2020		30-Jul-2020		30-Jul-2020	
GRO by GC-FID (S)	31-Jul-2020	31-Jul-2020		31-Jul-2020		31-Jul-2020	
Hexavalent Chromium (s)	30-Jul-2020	03-Aug-2020		30-Jul-2020		30-Jul-2020	
Metals in solid samples by OES	03-Aug-2020	04-Aug-2020		03-Aug-2020		03-Aug-2020	
PAH by GCMS		01-Aug-2020		01-Aug-2020			
pH	29-Jul-2020	29-Jul-2020	29-Jul-2020	29-Jul-2020	29-Jul-2020	29-Jul-2020	29-Jul-2020
Sample description	29-Jul-2020	29-Jul-2020	29-Jul-2020	29-Jul-2020	29-Jul-2020	29-Jul-2020	29-Jul-2020
Semi Volatile Organic Compounds	02-Aug-2020					05-Aug-2020	
TPH CWG GC (S)	31-Jul-2020	31-Jul-2020		31-Jul-2020		31-Jul-2020	
VOC MS (S)	03-Aug-2020	03-Aug-2020		03-Aug-2020		03-Aug-2020	

ASSOCIATED AQC DATA

Boron Water Soluble

Component	Method Code	QC 2261
Water Soluble Boron	TM222	**99.5** 77.30 : 106.22

EPH CWG GC (S)

Component	Method Code	QC 2299
EPH >C8-C40 Raw	TM414	**90.98** 64.56 : 120.16
Total Aliphatics Raw	TM414	**95.85** 63.39 : 134.72
Total Aromatics Raw	TM414	**107.48** 57.00 : 150.27

GRO by GC-FID (S)

Component	Method Code	QC 2231
QC	TM089	**72.82** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2269
Hexavalent Chromium	TM151	**104.0** 95.60 : 107.60

Metals in solid samples by OES

Component	Method Code	QC 2205	QC 2225	QC 2230
Aluminium	TM181	**92.92** 73.56 : 108.85	**95.58** 73.56 : 108.85	**92.92** 73.56 : 108.85
Antimony	TM181	**91.87** 76.89 : 111.24	**93.9** 76.89 : 111.24	**97.15** 76.89 : 111.24
Arsenic	TM181	**96.51** 88.53 : 111.01	**97.38** 88.53 : 111.01	**101.45** 88.53 : 111.01
Barium	TM181	**92.66** 77.67 : 105.35	**93.58** 77.67 : 105.35	**98.17** 77.67 : 105.35
Beryllium	TM181	**97.39** 85.44 : 109.61	**95.52** 85.44 : 109.61	**104.48** 85.44 : 109.61
Boron	TM181	**91.98** 73.51 : 104.66	**91.98** 73.51 : 104.66	**90.26** 73.51 : 104.66
Cadmium	TM181	**83.54** 77.67 : 104.12	**86.42** 77.67 : 104.12	**88.89** 77.67 : 104.12

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Metals in solid samples by OES

		QC 2205	QC 2225	QC 2230
Chromium	TM181	**94.52** 86.11 : 106.21	**93.71** 86.11 : 106.21	**96.96** 86.11 : 106.21
Cobalt	TM181	**89.31** 84.60 : 104.13	**89.62** 84.60 : 104.13	**92.14** 84.60 : 104.13
Copper	TM181	**91.37** 82.40 : 105.45	**89.26** 82.40 : 105.45	**96.3** 82.40 : 105.45
Iron	TM181	**92.06** 82.95 : 110.58	**93.65** 82.95 : 110.58	**96.03** 82.95 : 110.58
Lead	TM181	**88.74** 78.24 : 104.05	**88.51** 78.24 : 104.05	**91.67** 78.24 : 104.05
Manganese	TM181	**110.0** 94.29 : 119.51	**108.89** 94.29 : 119.51	**111.94** 94.29 : 119.51
Mercury	TM181	**90.34** 83.16 : 107.81	**90.1** 83.16 : 107.81	**93.72** 83.16 : 107.81
Molybdenum	TM181	**95.47** 87.11 : 106.87	**94.65** 87.11 : 106.87	**102.47** 87.11 : 106.87
Nickel	TM181	**90.71** 80.26 : 102.28	**89.98** 80.26 : 102.28	**97.07** 80.26 : 102.28
Phosphorus	TM181	**110.3** 94.56 : 124.28	**110.1** 94.56 : 124.28	**112.32** 94.56 : 124.28
Selenium	TM181	**96.86** 82.28 : 110.48	**96.86** 82.28 : 110.48	**103.14** 82.28 : 110.48
Strontium	TM181	**90.65** 79.13 : 102.79	**90.87** 79.13 : 102.79	**92.87** 79.13 : 102.79
Thallium	TM181	**95.13** 82.94 : 111.86	**96.02** 82.94 : 111.86	**98.23** 82.94 : 111.86
Tin	TM181	**95.82** 86.72 : 110.03	**95.06** 86.72 : 110.03	**100.0** 86.72 : 110.03
Titanium	TM181	**88.55** 66.23 : 102.06	**87.02** 66.23 : 102.06	**90.08** 66.23 : 102.06
Vanadium	TM181	**93.41** 86.19 : 109.45	**86.45** 86.19 : 109.45	**97.07** 86.19 : 109.45
Zinc	TM181	**94.66** 84.68 : 113.99	**93.84** 84.68 : 113.99	**100.62** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2243
Acenaphthene	TM218	**99.0** 76.79 : 103.90
Acenaphthylene	TM218	**98.0** 78.40 : 108.66
Anthracene	TM218	**94.5** 71.94 : 101.94
Benz(a)anthracene	TM218	**90.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**80.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**83.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**78.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**85.5** 75.98 : 116.59

PAH by GCMS

		QC 2243
Chrysene	TM218	**84.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**80.5** 69.17 : 115.30
Fluoranthene	TM218	**89.5** 75.88 : 112.84
Fluorene	TM218	**99.5** 78.29 : 103.91
Indeno(123cd)pyrene	TM218	**94.5** 70.26 : 117.95
Naphthalene	TM218	**88.0** 74.70 : 101.83
Phenanthrene	TM218	**91.5** 72.24 : 102.15
Pyrene	TM218	**90.5** 71.98 : 105.95

pH

Component	Method Code	QC 2203	QC 2289
pH	TM133	**101.32** 98.81 : 101.99	**100.26** 98.47 : 102.33

Semi Volatile Organic Compounds

Component	Method Code	QC 2210	QC 2267
4-Bromophenylphenylether (Soil)	TM157	**72.5** 66.75 : 125.25	**84.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**81.0** 67.40 : 120.50	**88.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**78.0** 68.25 : 126.75	**92.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**77.5** 67.55 : 125.45	**93.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**79.5** 66.50 : 123.50	**91.5** 66.50 : 123.50
Phenol (Soil)	TM157	**84.0** 69.92 : 114.02	**100.0** 69.92 : 114.02

VOC MS (S)

Component	Method Code	QC 2213
1,1,1,2-tetrachloroethane	TM116	**95.6** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**95.4** 87.51 : 115.37
1,1,2-Trichloroethane	TM116	**90.6** 75.16 : 112.70
1,1-Dichloroethane	TM116	**94.8** 86.77 : 122.11
1,2-Dichloroethane	TM116	**106.0** 90.04 : 132.28

VOC MS (S)

		QC 2213
1,4-Dichlorobenzene	TM116	**96.4** 84.04 : 124.40
2-Chlorotoluene	TM116	**88.8** 73.76 : 115.43
4-Chlorotoluene	TM116	**81.2** 72.48 : 112.82
Benzene	TM116	**93.2** 84.29 : 112.22
Carbon Disulphide	TM116	**93.6** 75.11 : 124.81
Carbontetrachloride	TM116	**104.6** 82.35 : 126.46
Chlorobenzene	TM116	**90.2** 82.88 : 122.42
Chloroform	TM116	**95.8** 90.35 : 120.38
Chloromethane	TM116	**127.2** 65.80 : 138.88
Cis-1,2-Dichloroethene	TM116	**89.4** 78.27 : 128.90
Dibromomethane	TM116	**89.2** 76.00 : 120.73
Dichloromethane	TM116	**98.2** 93.91 : 130.46
Ethylbenzene	TM116	**84.4** 70.95 : 113.07
Hexachlorobutadiene	TM116	**54.4** 14.55 : 147.92
Isopropylbenzene	TM116	**74.2** 52.00 : 108.19
Naphthalene	TM116	**86.6** 80.29 : 135.77
o-Xylene	TM116	**80.8** 64.92 : 98.85
p/m-Xylene	TM116	**82.4** 72.04 : 104.04
Sec-Butylbenzene	TM116	**71.6** 27.03 : 135.73
Tetrachloroethene	TM116	**94.8** 81.43 : 126.65
Toluene	TM116	**86.0** 82.44 : 103.50
Trichloroethene	TM116	**92.4** 79.80 : 112.33
Trichlorofluoromethane	TM116	**103.8** 86.68 : 126.82
Vinyl Chloride	TM116	**100.4** 69.66 : 136.55

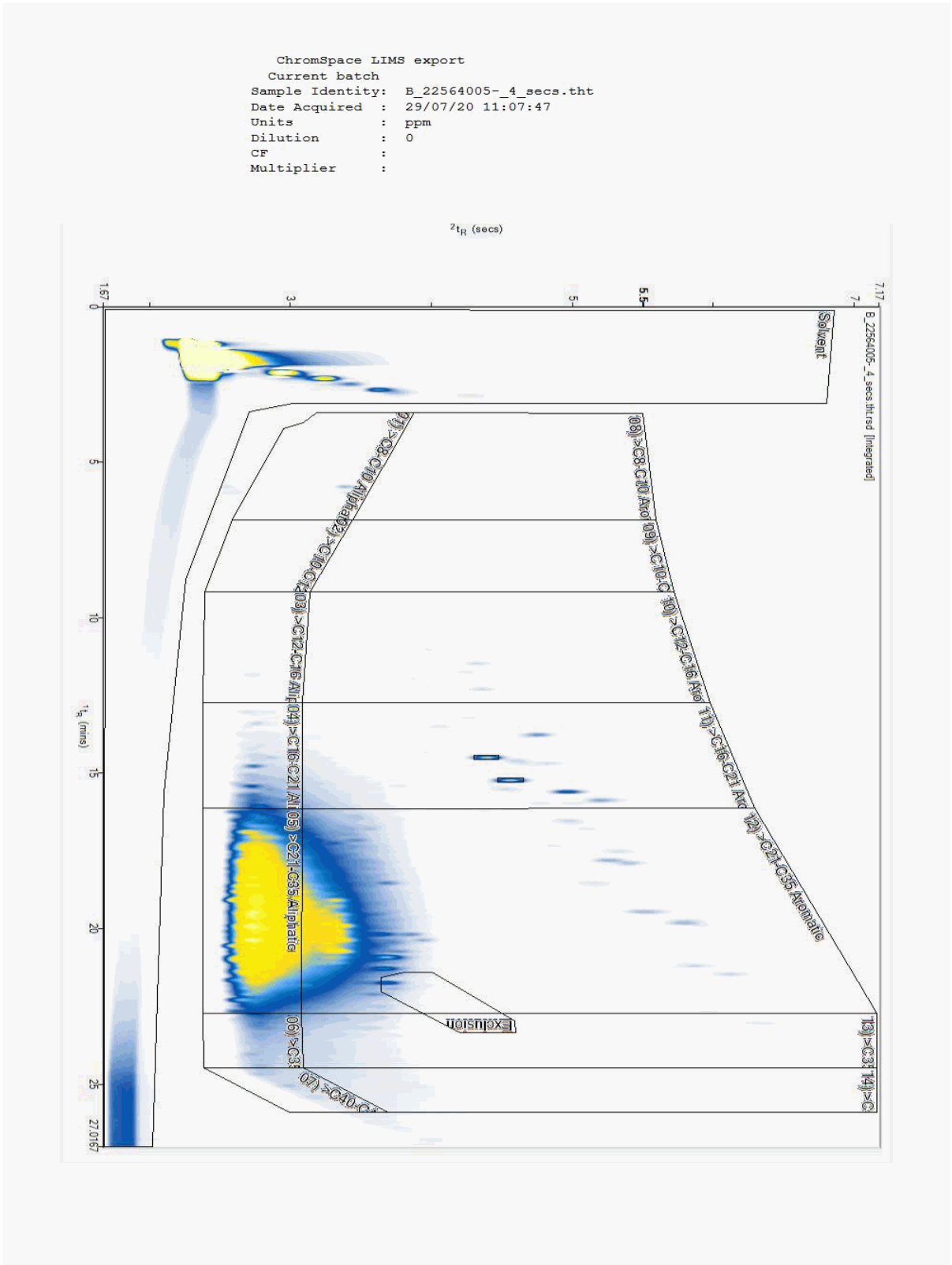
The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22564005 **Depth :** 0.60
Sample ID : CP106



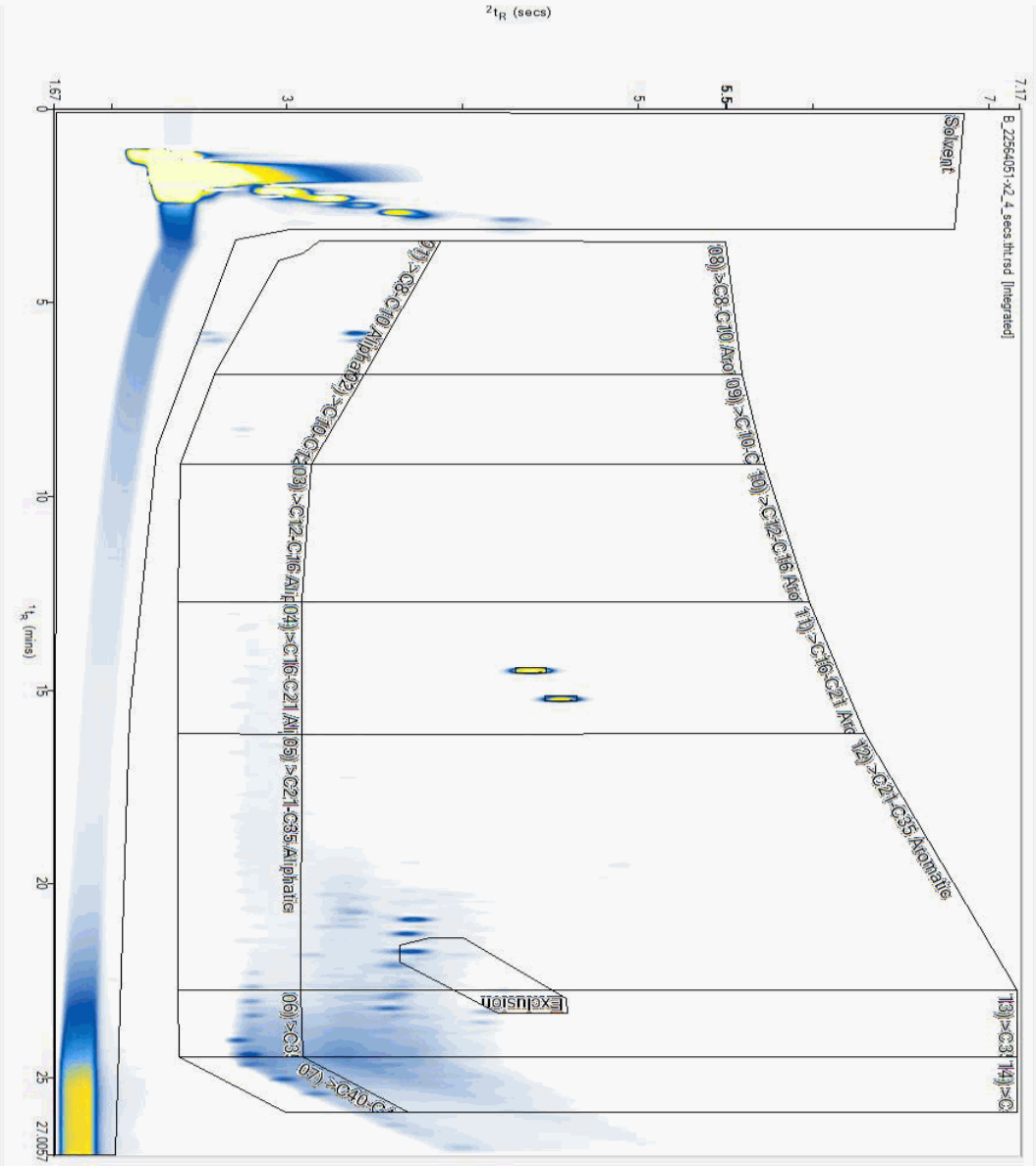
CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22564051 **Depth :** 0.50
Sample ID : CP105

ChromSpace LIMS export
Current batch
Sample Identity: B_22564051-x2_4_secs.tht
Date Acquired : 30/07/20 12:19:41
Units : ppm
Dilution : 0
CF :
Multiplier :



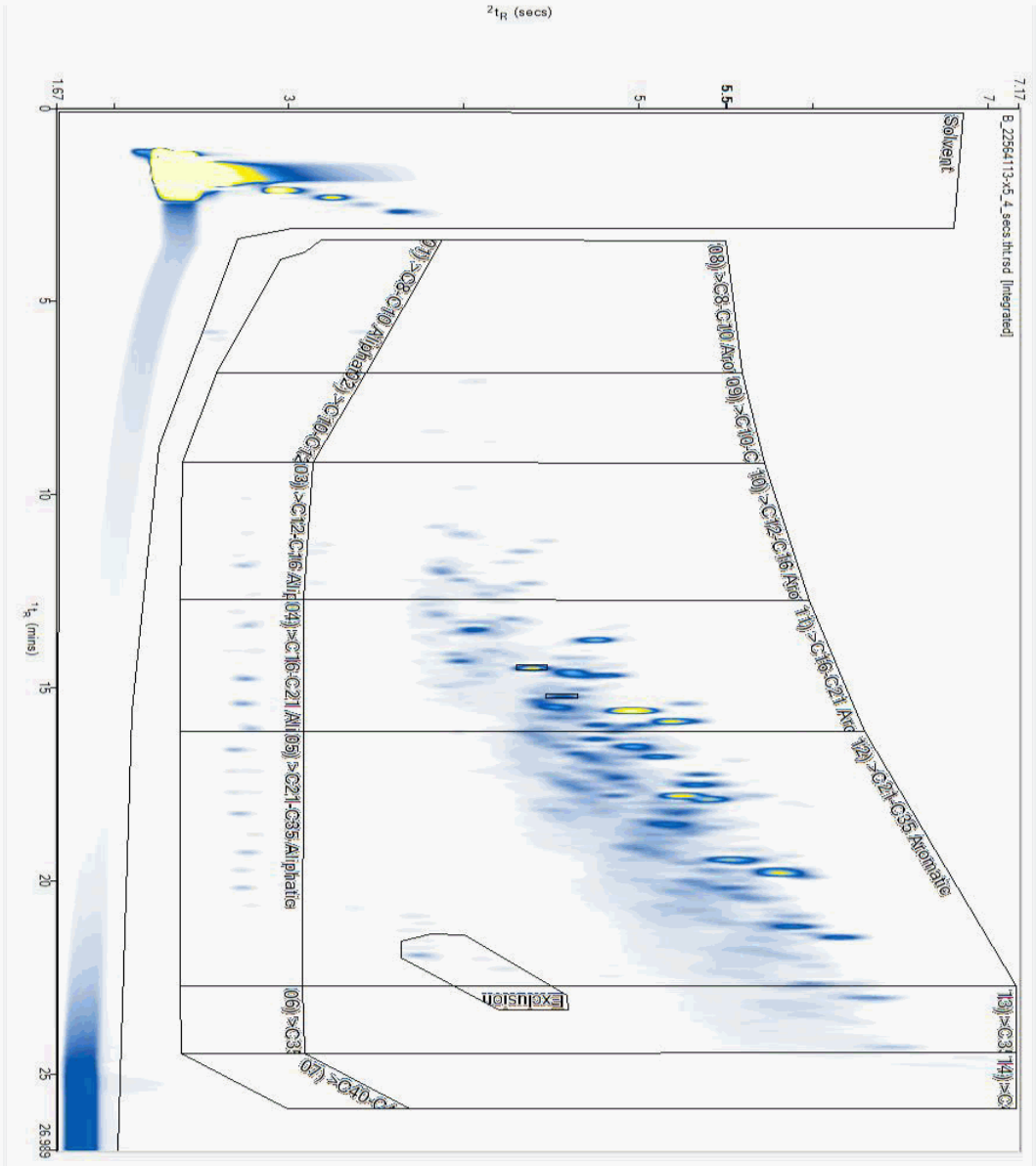
CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22564113 **Depth :** 1.00
Sample ID : CP103

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  B_22564113-x5_4_secs.tht
Date Acquired   :  30/07/20 09:49:34
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



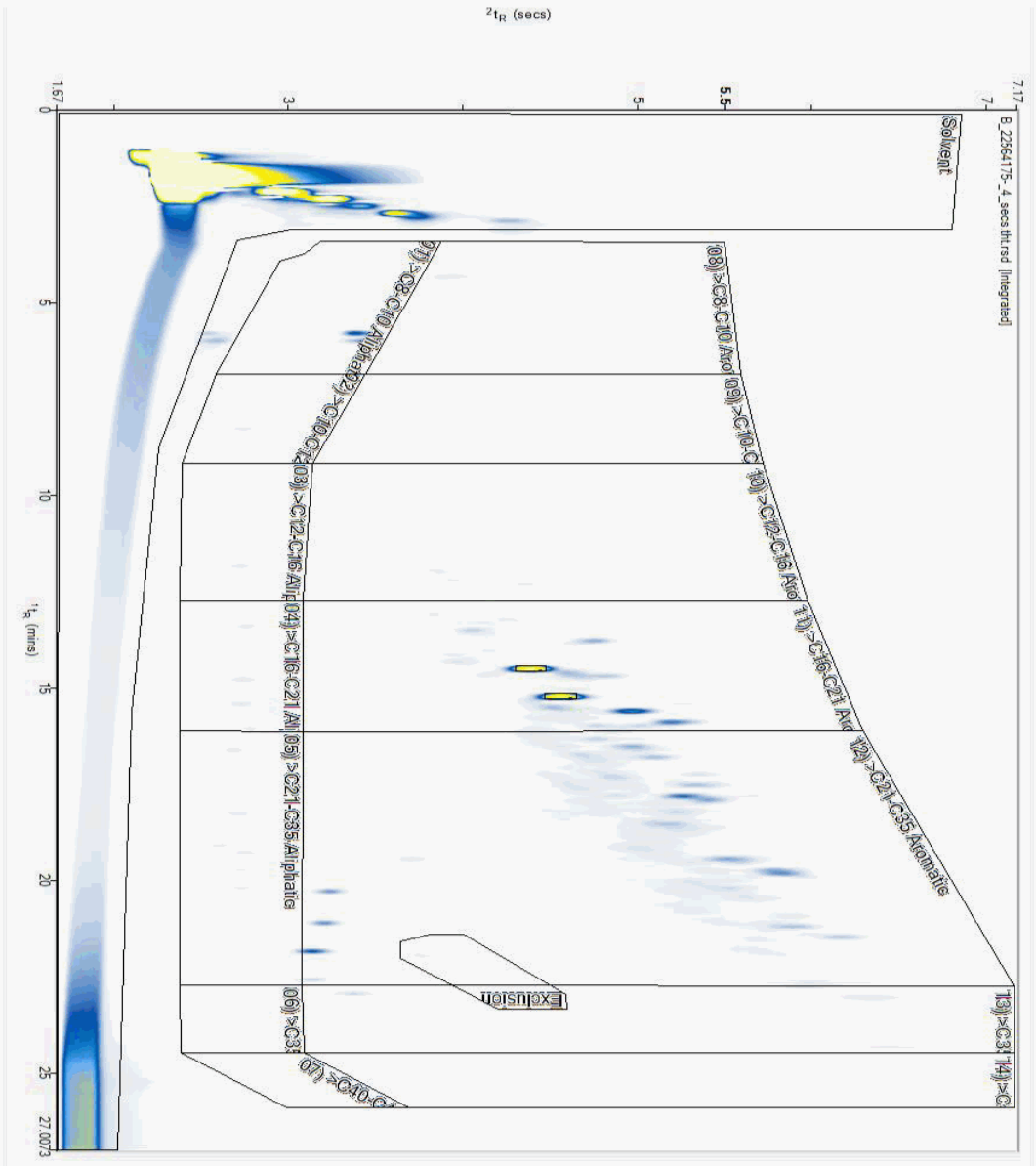
CERTIFICATE OF ANALYSIS

SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 22564175 **Depth :** 1.50
Sample ID : CP103

```
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  Current batch
Sample Identity:  B_22564175-_4_secs.tht
Date Acquired   :  29/07/20 07:29:37
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



CERTIFICATE OF ANALYSIS

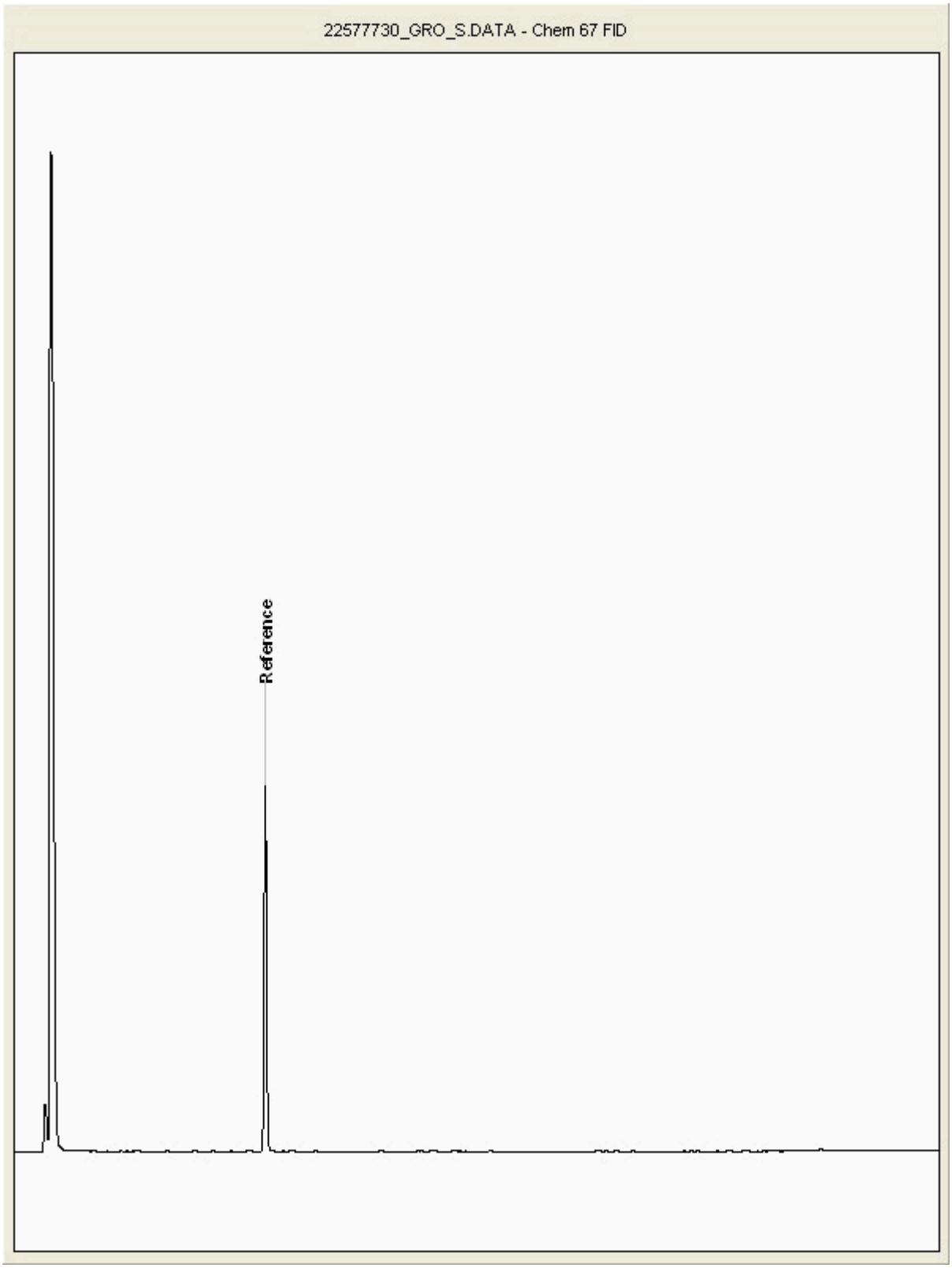
SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22577730
Sample ID : CP103

Depth : 1.00



CERTIFICATE OF ANALYSIS

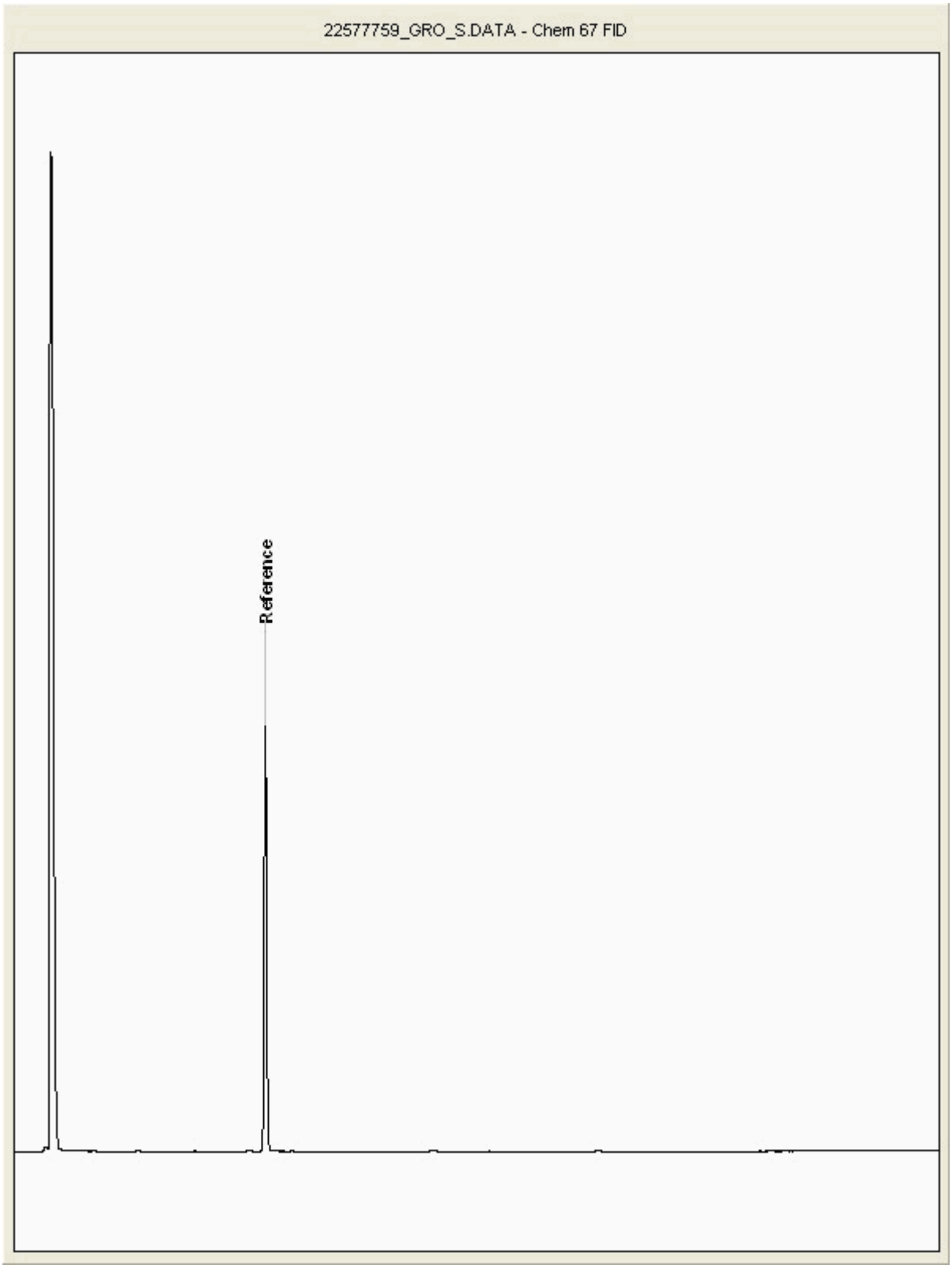
SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22577759
Sample ID : CP105

Depth : 0.50



CERTIFICATE OF ANALYSIS

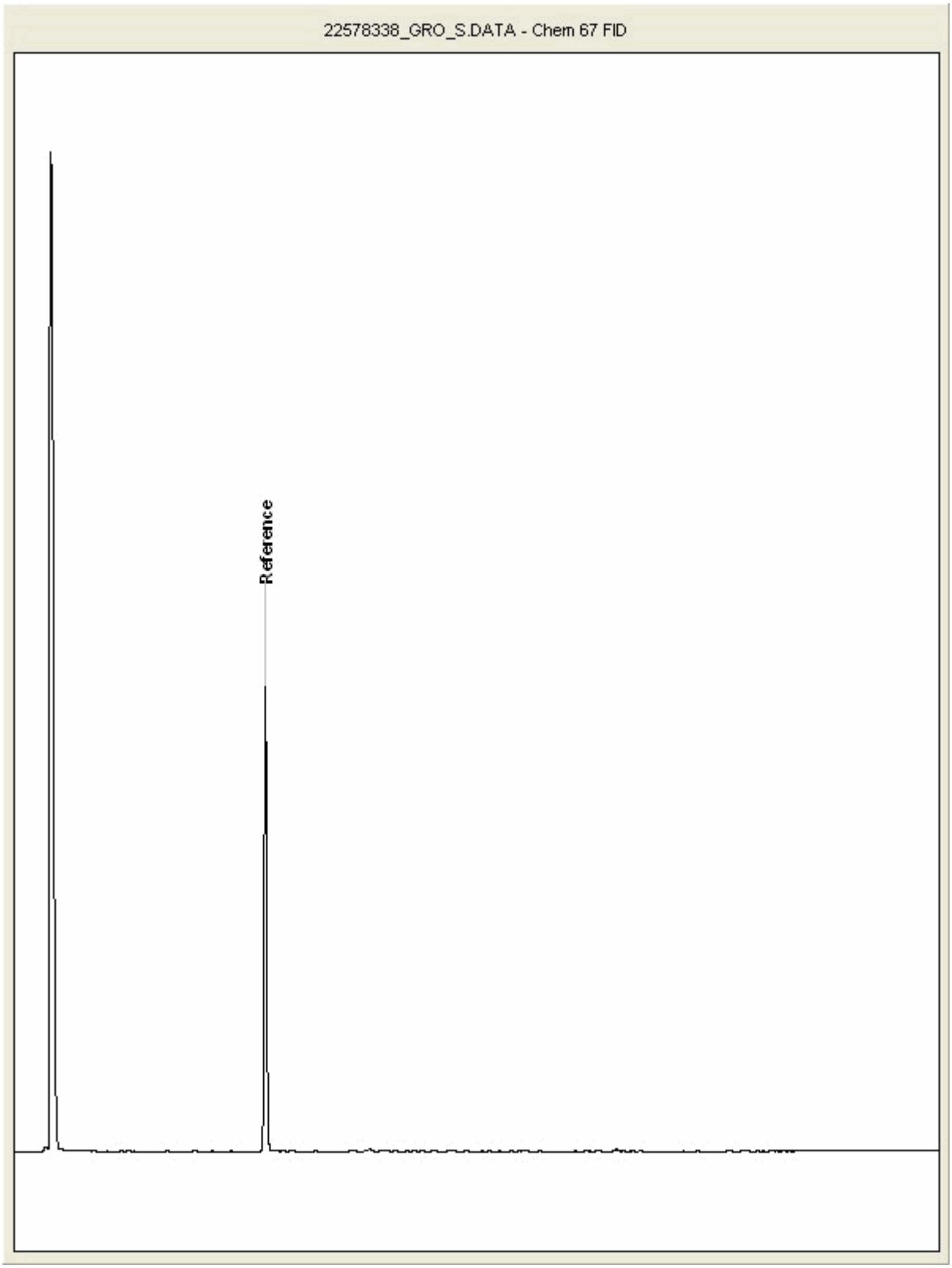
SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22578338
Sample ID : CP106

Depth : 0.60



CERTIFICATE OF ANALYSIS

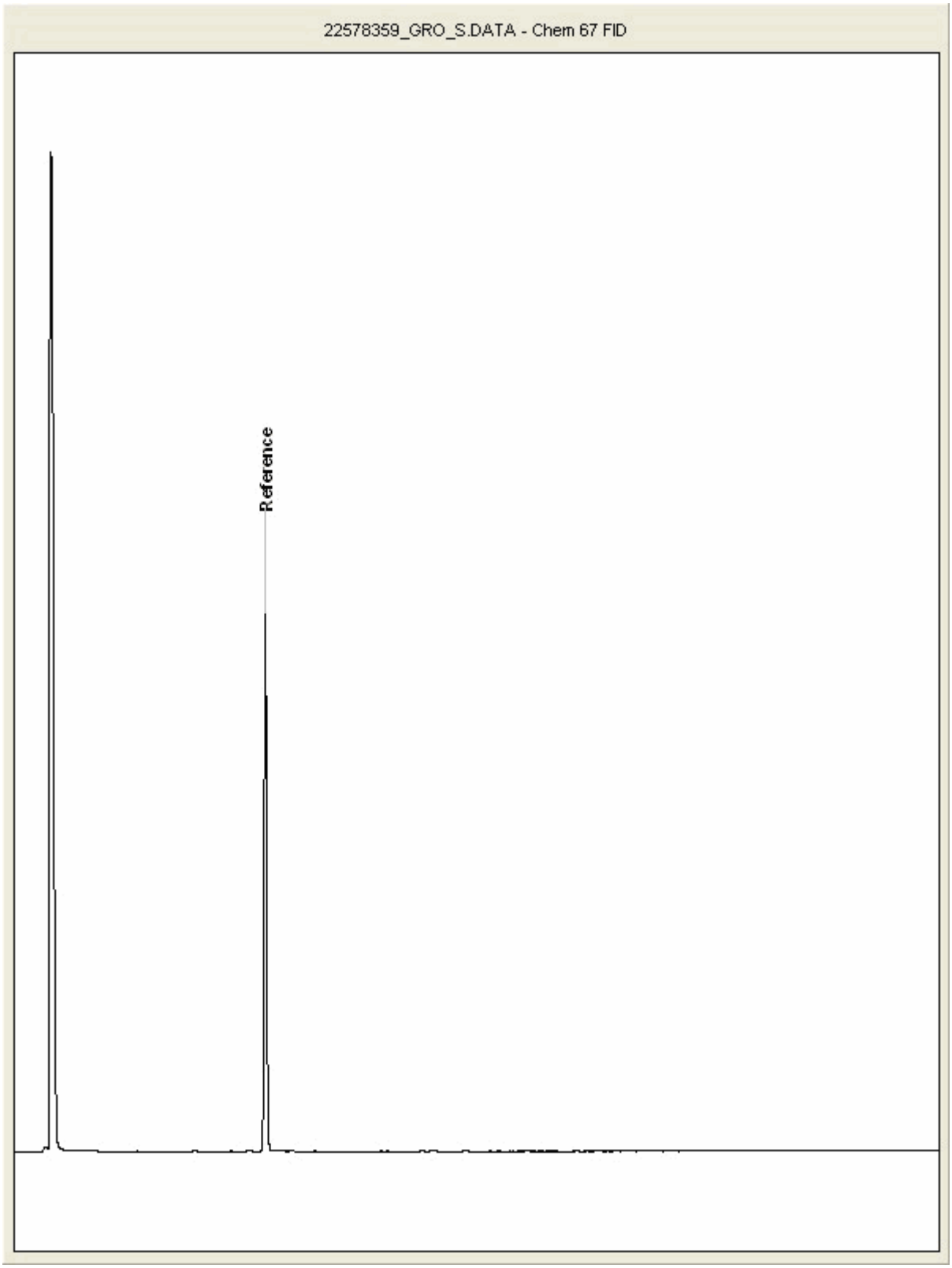
SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 22578359
Sample ID : CP103

Depth : 1.50



SDG:	200725-55	**Client Reference:**	10041634	**Report Number:**	561889
Location:	Hyde Road, Manchester	**Order Number:**	10041634	**Superseded Report:**	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

APPENDIX G

Derivation of Generic Assessment Criteria (GAC) for Residential Use

SUMMARY

The purpose of this document is to describe the general principles adopted in the derivation of the Arcadis' Generic Assessment Criteria (GAC). The document and associated GAC underpins the generic quantitative risk assessments Arcadis undertakes for its clients and is not intended for any other use or use by others. Guidance has been provided by the EA to aid development of GAC which are appropriate for a typical England or Wales site, incorporating conservatism where warranted. Arcadis has used the EA guidance to develop in-house GAC to aid assessment of land contamination sites, and in particular to assess risks to human health receptors from chronic health effects and risks to water resource receptors. The GAC do not consider potential risks to ecological receptors, which may need to be assessed on specific sites. The following non-statutory technical guidance has been referred to in deriving the GAC.

- EA Science Reports SC050021/SR2, SC050021/SR3 and SC050021/SR7.
- Related Toxicity and Soil Guideline Value reports
- EA Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination
- EA. Groundwater Protection and Water Quality, March 2017 (accessible online https://www.gov.uk/government/collections/groundwater-protection)
- SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination

The GAC used within this report have been derived for "low density residential end use". Low density residential end use assumes small terraced houses without basements, which may include gardens and/or other open areas.

Arcadis has undertaken environmental works on hundreds of potentially contaminated sites across the UK. The typical shallow geology encountered comprises granular soils or made ground, with a low organic matter content. As such, Arcadis has taken the decision to derive in-house GAC for a *sand* rather than sandy loam soil-type used by the EA to derive Soil Guideline Values, with an organic matter content of 0.34% (fraction of organic carbon content 0.002, typical of many sites). Where plants will be present at a site, for example where vegetables could be grown, it is assumed that a higher organic matter soil will be introduced onto site as a growing medium, and 6% organic matter content is modelled.

To derive Human Health GAC (HH-GAC), the following exposure pathways are considered active for potential soil or groundwater on-site exposures:

Site End-Use	On-Site Pathways
Low Density Residential (0-6 year old female child)	• Incidental ingestion of soil or dust • Ingestion of vegetables grown in contaminated soil • Incidental dermal contact with soil or dust • Inhalation of dusts inside or outside • Inhalation of vapours outside from a soil or groundwater source • Inhalation of vapours inside from a soil or groundwater source

Two levels of water quality standard have been considered to enable Water Resource GAC (WR-GAC) to be developed depending on the environmental setting of a site. The WR-GAC have been derived based on adopted Environmental Quality Standards and Drinking Water Standards. No attenuation with transport off-site is assumed.

The following modelling tools have been utilised in the derivation of the GAC:

HH-GAC: CLEA 1.07 and RBCA Toolkit v2.6
WR-GAC: Remedial Targets Worksheet v3.2

Example model inputs are presented in the following tables, alongside the CLEA modelling outputs.

	Air-water partition co-efficient		Diffusion co-efficient in air		Diffusion co-efficient in water		Relative molecular mass		Vapour pressure		Water solubility		Koc	
	cm3 cm3	Notes	m2 s-1	Notes	m2 s-1	Notes	g mol-1	Notes	Pa	Notes	mg L-1	Notes	Log (dimensior	Notes
Benzene	1.16E-01	Science Report – SC050021/SR7	8.77E-06	Science Report – SC050021/SR7	6.64E-10	Science Report – SC050021/SR7	78.11	Science Report – SC050021/SR7	6.24E+03	Science Report – SC050021/SR7	1.78E+03	Science Report – SC050021/SR7	1.83E+00	Science Report – SC050021/SR7
Toluene	1.15E-01	Science Report – SC050021/SR7	7.78E-06	Science Report – SC050021/SR7	5.88E-10	Science Report – SC050021/SR7	92.14	Science Report – SC050021/SR7	1.73E+03	Science Report – SC050021/SR7	5.90E+02	Science Report – SC050021/SR7	2.31E+00	Science Report – SC050021/SR7
Ethylbenzene	1.39E-01	Science Report – SC050021/SR7	7.04E-06	Science Report – SC050021/SR7	5.31E-10	Science Report – SC050021/SR7	106.17	Science Report – SC050021/SR7	5.53E+02	Science Report – SC050021/SR7	1.80E+02	Science Report – SC050021/SR7	2.65E+00	Science Report – SC050021/SR7
Sum xylenes	1.04E-01	Average for three xylenes	7.03E-06	Average for three xylenes	5.3E-10	Average for three xylenes	106.17	Average for three xylenes	4.52E+02	Average for three xylenes	1.91E+02	Average for three xylenes	2.66E+00	Average for three xylenes
MTBE	2.04E-02	Literature review	7.10E-06	Literature review	9.00E-10	Literature review	88.17	Literature review	3.45E+04	Literature review	4.80E+04	Literature review	1.08E+00	Literature review
Aliphatic >C5-6	3.40E+01	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	81	Literature review	3.60E+04	Literature review	3.60E+01	Literature review	2.90E+00	Literature review
Aliphatic>C6-8	5.10E+01	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	100	Literature review	6.40E+03	Literature review	5.40E+00	Literature review	3.60E+00	Literature review
Aliphatic>C8-10	8.20E+01	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	130	Literature review	6.40E+02	Literature review	4.30E-01	Literature review	4.51E+00	Literature review
Aliphatic>C10-12	1.30E+02	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	160	Literature review	6.50E+01	Literature review	3.40E-02	Literature review	5.40E+00	Literature review
Aliphatic>C12-16	5.40E+02	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	200	Literature review	4.80E+00	Literature review	7.60E-04	Literature review	6.70E+00	Literature review
Aliphatic>C16-35	6.40E+03	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	270	Literature review	7.70E-01	Literature review	1.30E-06	Literature review	9.00E+00	Literature review
Aromatic >C8-10	4.90E-01	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	120	Literature review	6.40E+02	Literature review	6.50E+01	Literature review	3.20E+00	Literature review
Aromatic >C10-12	1.40E-01	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	130	Literature review	6.40E+01	Literature review	2.50E+01	Literature review	3.40E+00	Literature review
Aromatic >C12-16	5.40E-02	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	150	Literature review	4.80E+00	Literature review	5.80E+00	Literature review	3.70E+00	Literature review
Aromatic >C16-21	1.30E-02	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	190	Literature review	7.70E-01	Literature review	5.10E-01	Literature review	4.20E+00	Literature review
Aromatic >C21-35	6.80E-04	TPHCWG	1.00E-05	Literature review	0.000000001	Literature review	240	Literature review	4.40E-04	Literature review	6.60E-03	Literature review	5.11E+00	Literature review

Chemical Name	Chemical Type	Oral HCV						Inhalation HCV						Combine oral and inhalation AC	Oral MDI for adults		Inhalation MDI for adults	
		Type	µg kg-1 BW day-1	Notes	Oral exposure	Dermal exposure	Inhalation exposure	Type	µg kg-1 BW day-1	Notes	Oral exposure	Dermal exposure	Inhalation exposure		µg kg-1 BW day-1	Notes	µg kg-1 BW day-1	Notes
Benzene	organic	ID	2.90E-01	UK TOX (March 2009)	Yes	Yes	No	ID	1.40E+00	UK TOX (March 2009)	No	No	Yes	Yes	NR	NA	NR	NA
Toluene	organic	TDI	2.23E+02	UK TOX (March 2009)	Yes	Yes	No	TDI	1.40E+03	UK TOX (March 2009)	No	No	Yes	Yes	1.00E+01	UK TOX (March 2009)	5.20E+02	UK TOX (March 2009)
Ethylbenzene	organic	TDI	1.00E+02	UK TOX (March 2009)	Yes	Yes	No	TDI	7.43E+01	Literature review	No	No	Yes	Yes	5.00E+00	UK TOX (March 2009)	1.30E+02	UK TOX (March 2009)
Sum xylenes	organic	TDI	1.80E+02	UK TOX (March 2009)	Yes	Yes	No	TDI	6.00E+01	UK TOX (March 2009)	No	No	Yes	Yes	1.10E+01	UK TOX (March 2009)	1.40E+02	UK TOX (March 2009)
MTBE	organic	TDI	8.60E+02	Literature review	Yes	Yes	No	TDI	8.60E+02	Literature review	No	No	Yes	Yes	3.00E+01	EU Risk Assessment Report	1.89E+02	EU Risk Assessment Report
Aliphatic >C5-6	organic	TDI	5.00E+03	TPHCWG	Yes	Yes	No	TDI	5.26E+03	TPHCWG	No	No	Yes	Yes	3.50E+05	TDI x 70kg (MDI unknown)	3.68E+05	TDI x 70kg (MDI unknown)
Aliphatic>C6-8	organic	TDI	5.00E+03	TPHCWG	Yes	Yes	No	TDI	5.26E+03	TPHCWG	No	No	Yes	Yes	3.50E+05	TDI x 70kg (MDI unknown)	3.68E+05	TDI x 70kg (MDI unknown)
Aliphatic>C8-10	organic	TDI	1.00E+02	TPHCWG	Yes	Yes	No	TDI	2.70E+02	TPHCWG	No	No	Yes	Yes	7.00E+03	TDI x 70kg (MDI unknown)	1.89E+04	TDI x 70kg (MDI unknown)
Aliphatic>C10-12	organic	TDI	1.00E+02	TPHCWG	Yes	Yes	No	TDI	2.70E+02	TPHCWG	No	No	Yes	Yes	7.00E+03	TDI x 70kg (MDI unknown)	1.89E+04	TDI x 70kg (MDI unknown)
Aliphatic>C12-16	organic	TDI	1.00E+02	TPHCWG	Yes	Yes	No	TDI	2.70E+02	TPHCWG	No	No	Yes	Yes	7.00E+03	TDI x 70kg (MDI unknown)	1.89E+04	TDI x 70kg (MDI unknown)
Aliphatic>C16-35	organic	TDI	2.00E+03	TPHCWG	Yes	Yes	No	NR			NR	NR	NR	NR	1.40E+05	TDI x 70kg (MDI unknown)		
Aromatic >C8-10	organic	TDI	4.00E+01	TPHCWG	Yes	Yes	No	TDI	5.50E+01	TPHCWG	No	No	Yes	Yes	2.80E+03	TDI x 70kg (MDI unknown)	3.85E+03	TDI x 70kg (MDI unknown)
Aromatic >C10-12	organic	TDI	4.00E+01	TPHCWG	Yes	Yes	No	TDI	5.50E+01	TPHCWG	No	No	Yes	Yes	2.80E+03	TDI x 70kg (MDI unknown)	3.85E+03	TDI x 70kg (MDI unknown)
Aromatic >C12-16	organic	TDI	4.00E+01	TPHCWG	Yes	Yes	No	TDI	5.50E+01	TPHCWG	No	No	Yes	Yes	2.80E+03	TDI x 70kg (MDI unknown)	3.85E+03	TDI x 70kg (MDI unknown)
Aromatic >C16-21	organic	TDI	3.00E+01	TPHCWG	Yes	Yes	No	NR			NR	NR	NR	NR	2.10E+03	TDI x 70kg (MDI unknown)		
Aromatic >C21-35	organic	TDI	3.00E+01	TPHCWG	Yes	Yes	No	NR			NR	NR	NR	NR	2.10E+03	TDI x 70kg (MDI unknown)		

ARCADIS Design & Consultancy for natural and built assets

PHYSICAL PROPERTIES

		Residential Land Use	Source
Soil type	na	Sand	Professional experience
Porosity (total)	cm3 cm-3	0.54	SC050021/SR3
Porosity (air-filled)*	cm3 cm-3	0.30	SC050021/SR3
Porosity (water-filled)*	cm3 cm-3	0.24	SC050021/SR3
Capillary fringe porosity (air-filled)	cm3 cm-3	0.01	Literature value
Capillary fringe porosity (water-filled)	cm3 cm-3	0.53	Literature value
Thickness of capillary fringe	m	0.1	Literature value
Residual soil water content	cm3 cm-3	0.07	SC050021/SR3
Saturated hydraulic conductivity	cm s-1	7.36E-03	SC050021/SR3
van Genuchten shape parameter	dimensionless	3.51E-01	SC050021/SR3
Bulk density	g cm-3	1.18	SC050021/SR3
Soil organic matter content	%	0.34	Professional experience
Threshold value of wind speed at 10m	m s-1	7.20	SC050021/SR3
Empirical function for dust model	dimensionless	1.22	SC050021/SR3
Ambient soil temperature	K	283	SC050021/SR3
Mean annual windspeed (10m)	m s-1	5.00	SC050021/SR3
Air dispersion factor at 0.8m	g m-2 s-1 per kg m-3	2400.0	SC050021/SR3
Air dispersion factor at 1.6m	g m-2 s-1 per kg m-3	0.0	SC050021/SR3
Fraction of site with hard or vegetative cover	m2 m-2	0.75	SC050021/SR3
Depth to groundwater (RBCA)	m	1	Assumption
Infiltration rate in vadose zone	m day-1	not required	Likely worst-case

Aquifer type	na	not required	Assumption
Source width	m	40	Likely worst-case
Source length	m	40	Likely worst-case
Saturated aquifer thickness	m	10	Assumption
Mixing zone depth	m	5.5	Calculated in RTW
Hydraulic conductivity	m day-1	20	Literature value
Hydraulic gradient	m m-1	0.001	Typical value for sand

Notes:
* Assumed to be present in foundation cracks when modelling in RBCA Toolkit

BUILDING PROPERTIES			
		Residential	Source
Building footprint	m2	2.80E+01	SC050021/SR3
Living space air exchange rate	hr-1	0.50	SC050021/SR3
Living space height (above ground)	m	4.8	SC050021/SR3
Living space height (below ground)	m	0.0	SC050021/SR3
Pressure difference	Pa	3.1	SC050021/SR3
Foundation thickness	m	1.50E-01	SC050021/SR3
Floor crack area	cm2	4.23E+02	SC050021/SR3
Dust loading factor	µg m-3	6.00E+01	SC050021/SR3

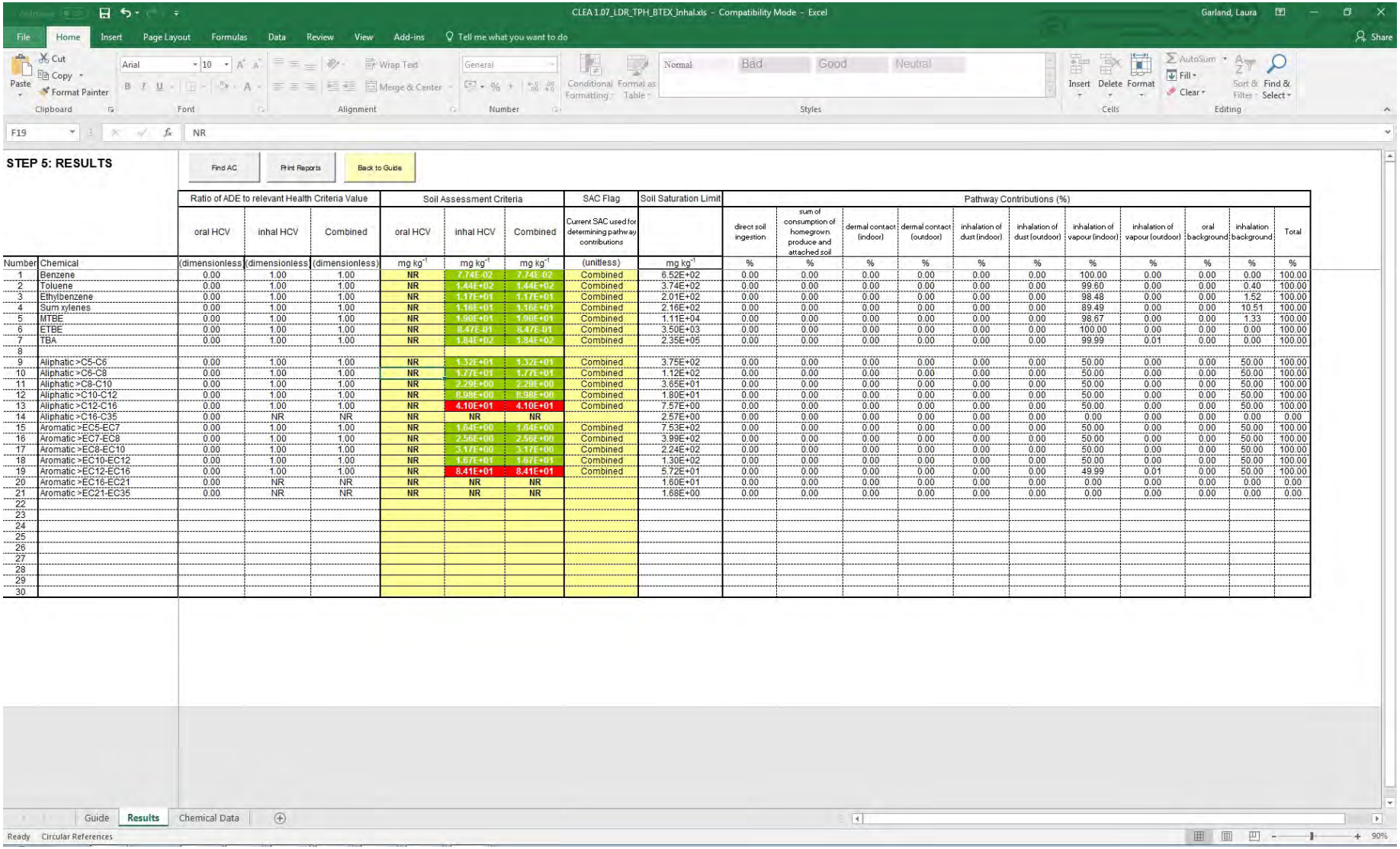
CLEA 1.07 EXPOSURE DATA		Age Class					
		Residents					
Age class	-	1	2	3	4	5	6
Frequency of soil and dust ingestion	days yr-1	180	365	365	365	365	365
Frequency of vegetable ingestion	days yr-1	180	365	365	365	365	365
Frequency of skin contact (indoors)	days yr-1	180	365	365	365	365	365
Frequency of skin contact (outdoors)*	days yr-1	170	170	170	170	170	170
Frequency of inhalation (dust and vapour indoors)	days yr-1	365	365	365	365	365	365
Frequency of inhalation (dust and vapour outdoors)	days yr-1	365	365	365	365	365	365
Occupancy period (indoors)	hr day-1	23	23	23	23	19	19
Occupancy period (outdoors)	hr day-1	1	1	1	1	1	1
Soil to skin adherence factor (indoors)	mg cm-2 day-1	0.06	0.06	0.06	0.06	0.06	0.06
Soil to skin adherence factor (outdoors)*	mg cm-2 day-1	0.1	0.1	0.1	0.1	0.1	0.1
Soil and dust ingestion rate	g day-1	0.1	0.1	0.1	0.1	0.1	0.1
Body weight	kg	5.6	9.8	12.7	15.1	16.9	19.7
Body height	m	0.7	0.8	0.9	0.9	1	1.1
Inhalation rate*	m3 day-1	5.4	8.0	8.9	10.1	10.1	10.1
Max exposed skin (indoors)	m2 m-2	0.32	0.33	0.32	0.35	0.35	0.33
Max exposed skin (outdoors)	m2 m-2	0.26	0.26	0.25	0.28	0.28	0.26

* Parameters adopted from Category 4 Screening Levels

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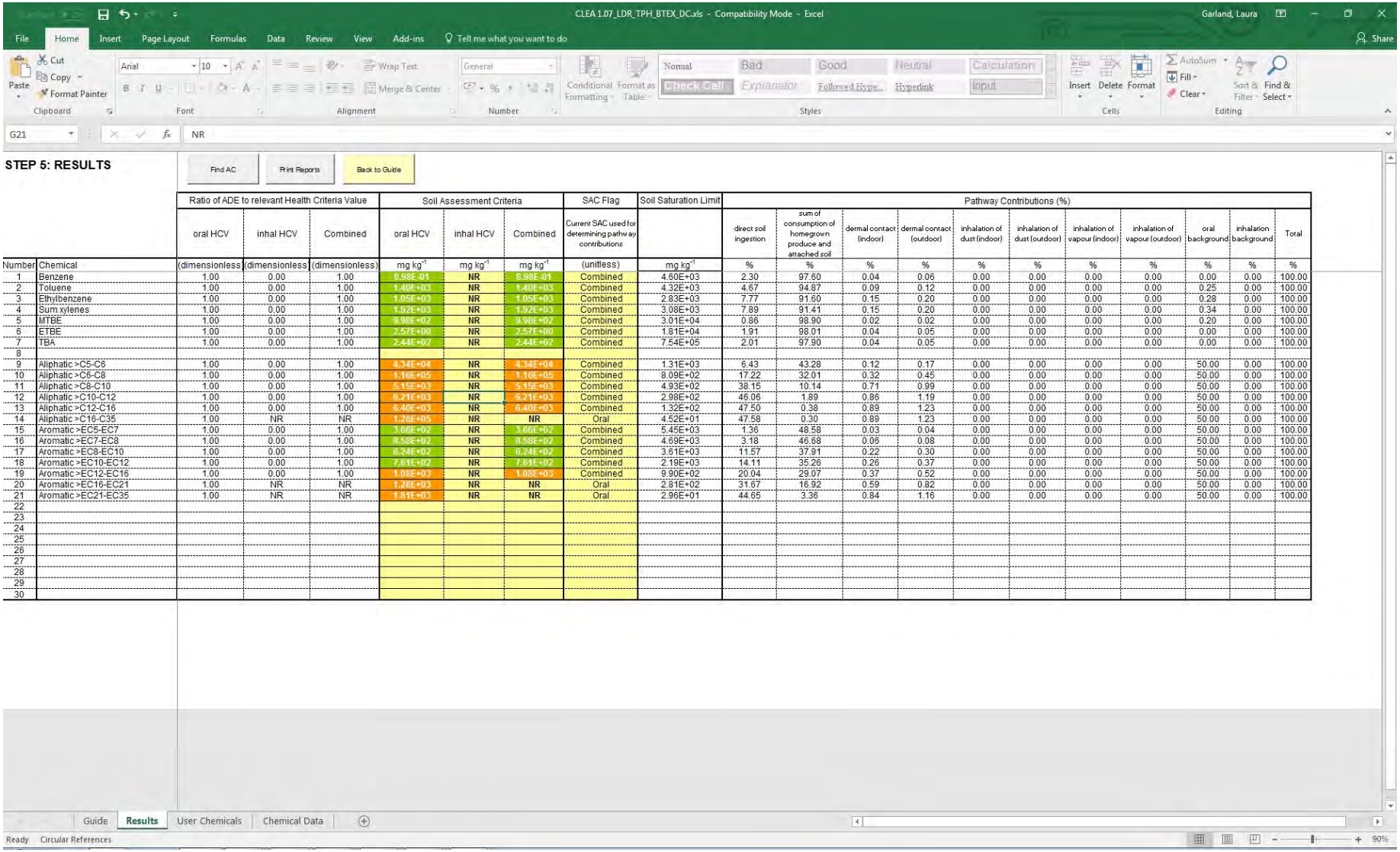
RBCA Toolkit EXPOSURE DATA		Age Class
		0-6
Averaging time	yrs	6
Body weight	kg	13.3
Exposure duration	yrs	6
Averaging time (vapour flux)	yrs	6
Exposure frequency (indoors)*	days yr-1	365
Exposure frequency (outdoors)*	days yr-1	16.8

Notes:
Time-weighted average used for 0-6 year old female child
* RBCA Toolkit compares an acceptable air concentration to a predicted air concentration. Only the exposure frequency can be modified (i.e. inhalation rate, time exposed cannot). As such, the TDSI (or ID) was converted to an acceptable indoor air concentration using the time-weighted properties for a 0-6 year old female child as defined within the Category 4 Screening Levels. The exposure frequency for other scenarios was modified to account for the differing exposure scenarios for the remaining pathways, to be equivalent to modifying the inhalation rate and time exposed.



		Ratio of ADE to relevant Health Criteria Value			Soil Assessment Criteria			SAC Flag	Soil Saturation Limit	Pathway Contributions (%)										
		oral HCV	inhal HCV	Combined	oral HCV	inhal HCV	Combined	Current SAC used for determining pathway contributions		direct soil ingestion	sum of consumption of homegrown produce and attached soil	dermal contact (indoor)	dermal contact (outdoor)	inhalation of dust (indoor)	inhalation of dust (outdoor)	inhalation of vapour (indoor)	inhalation of vapour (outdoor)	oral background	inhalation background	Total
Number	Chemical	(dimensionless)	(dimensionless)	(dimensionless)	mg kg^{-1}	mg kg^{-1}	mg kg^{-1}	(unitless)	mg kg^{-1}	%	%	%	%	%	%	%	%	%	%	%
1	Benzene	0.00	1.00	1.00	NR	7.74E-02	7.74E-02	Combined	6.52E+02	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00
2	Toluene	0.00	1.00	1.00	NR	1.44E+02	1.44E+02	Combined	3.74E+02	0.00	0.00	0.00	0.00	0.00	0.00	99.60	0.00	0.00	0.40	100.00
3	Ethylbenzene	0.00	1.00	1.00	NR	1.17E+01	1.17E+01	Combined	2.01E+02	0.00	0.00	0.00	0.00	0.00	0.00	98.48	0.00	0.00	1.52	100.00
4	Sum xylenes	0.00	1.00	1.00	NR	1.16E+01	1.16E+01	Combined	2.16E+02	0.00	0.00	0.00	0.00	0.00	0.00	89.49	0.00	0.00	10.51	100.00
5	MTBE	0.00	1.00	1.00	NR	1.90E+01	1.90E+01	Combined	1.11E+04	0.00	0.00	0.00	0.00	0.00	0.00	98.67	0.00	0.00	1.33	100.00
6	ETBE	0.00	1.00	1.00	NR	8.47E-01	8.47E-01	Combined	3.50E+03	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	100.00
7	TBA	0.00	1.00	1.00	NR	1.84E+02	1.84E+02	Combined	2.35E+05	0.00	0.00	0.00	0.00	0.00	0.00	99.99	0.01	0.00	0.00	100.00
8																				
9	Aliphatic >C5-C6	0.00	1.00	1.00	NR	1.32E+01	1.32E+01	Combined	3.75E+02	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00	100.00
10	Aliphatic >C6-C8	0.00	1.00	1.00	NR	1.77E+01	1.77E+01	Combined	1.12E+02	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00	100.00
11	Aliphatic >C8-C10	0.00	1.00	1.00	NR	2.29E+00	2.29E+00	Combined	3.65E+01	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00	100.00
12	Aliphatic >C10-C12	0.00	1.00	1.00	NR	8.98E+00	8.98E+00	Combined	1.80E+01	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00	100.00
13	Aliphatic >C12-C16	0.00	1.00	1.00	NR	4.10E+01	4.10E+01	Combined	7.57E+00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00	100.00
14	Aliphatic >C16-C35	0.00	NR	NR	NR	NR	NR		2.57E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Aromatic >EC5-EC7	0.00	1.00	1.00	NR	1.84E+00	1.84E+00	Combined	7.53E+02	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00	100.00
16	Aromatic >EC7-EC8	0.00	1.00	1.00	NR	2.56E+00	2.56E+00	Combined	3.99E+02	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00	100.00
17	Aromatic >EC8-EC10	0.00	1.00	1.00	NR	3.17E+00	3.17E+00	Combined	2.24E+02	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00	100.00
18	Aromatic >EC10-EC12	0.00	1.00	1.00	NR	1.97E+01	1.97E+01	Combined	1.30E+02	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	50.00	100.00
19	Aromatic >EC12-EC16	0.00	1.00	1.00	NR	8.41E+01	8.41E+01	Combined	5.72E+01	0.00	0.00	0.00	0.00	0.00	0.00	49.99	0.01	0.00	50.00	100.00
20	Aromatic >EC16-EC21	0.00	NR	NR	NR	NR	NR		1.60E+01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Aromatic >EC21-EC35	0.00	NR	NR	NR	NR	NR		1.68E+00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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		Ratio of ADE to relevant Health Criteria Value			Soil Assessment Criteria			SAC Flag	Soil Saturation Limit	Pathway Contributions (%)										
		oral HCV	inhal HCV	Combined	oral HCV	inhal HCV	Combined	Current SAC used for determining pathway contributions		direct soil ingestion	sum of consumption of homegrown produce and attached soil	dermal contact (indoor)	dermal contact (outdoor)	inhalation of dust (indoor)	inhalation of dust (outdoor)	inhalation of vapour (indoor)	inhalation of vapour (outdoor)	oral background	inhalation background	Total
Number	Chemical	(dimensionless)	(dimensionless)	(dimensionless)	mg kg^{-1}	mg kg^{-1}	mg kg^{-1}	(unitless)	mg kg^{-1}	%	%	%	%	%	%	%	%	%	%	%
1	Benzene	1.00	0.00	1.00	8.98E-01	NR	8.98E-01	Combined	4.60E+03	2.30	97.60	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.00	100.00
2	Toluene	1.00	0.00	1.00	1.40E+03	NR	1.40E+03	Combined	4.32E+03	4.67	94.87	0.09	0.12	0.00	0.00	0.00	0.00	0.25	0.00	100.00
3	Ethylbenzene	1.00	0.00	1.00	1.05E+03	NR	1.05E+03	Combined	2.83E+03	7.77	91.60	0.15	0.20	0.00	0.00	0.00	0.00	0.28	0.00	100.00
4	Sum xylenes	1.00	0.00	1.00	1.92E+03	NR	1.92E+03	Combined	3.08E+03	7.89	91.41	0.15	0.20	0.00	0.00	0.00	0.00	0.34	0.00	100.00
5	MTBE	1.00	0.00	1.00	9.98E+02	NR	9.98E+02	Combined	3.01E+04	0.86	98.90	0.02	0.02	0.00	0.00	0.00	0.00	0.20	0.00	100.00
6	ETBE	1.00	0.00	1.00	2.57E+00	NR	2.57E+00	Combined	1.81E+04	1.91	98.01	0.04	0.05	0.00	0.00	0.00	0.00	0.00	0.00	100.00
7	TBA	1.00	0.00	1.00	2.44E+02	NR	2.44E+02	Combined	7.54E+05	2.01	97.90	0.04	0.05	0.00	0.00	0.00	0.00	0.00	0.00	100.00
8																				
9	Aliphatic >C5-C6	1.00	0.00	1.00	4.34E+04	NR	4.34E+04	Combined	1.31E+03	6.43	43.28	0.12	0.17	0.00	0.00	0.00	0.00	50.00	0.00	100.00
10	Aliphatic >C6-C8	1.00	0.00	1.00	1.16E+05	NR	1.16E+05	Combined	8.09E+02	17.22	32.01	0.32	0.45	0.00	0.00	0.00	0.00	50.00	0.00	100.00
11	Aliphatic >C8-C10	1.00	0.00	1.00	5.15E+03	NR	5.15E+03	Combined	4.93E+02	38.15	10.14	0.71	0.99	0.00	0.00	0.00	0.00	50.00	0.00	100.00
12	Aliphatic >C10-C12	1.00	0.00	1.00	6.21E+03	NR	6.21E+03	Combined	2.98E+02	46.06	1.89	0.86	1.19	0.00	0.00	0.00	0.00	50.00	0.00	100.00
13	Aliphatic >C12-C16	1.00	0.00	1.00	6.40E+03	NR	6.40E+03	Combined	1.32E+02	47.50	0.38	0.89	1.23	0.00	0.00	0.00	0.00	50.00	0.00	100.00
14	Aliphatic >C16-C35	1.00	NR	NR	1.28E+05	NR	NR	Oral	4.52E+01	47.58	0.30	0.89	1.23	0.00	0.00	0.00	0.00	50.00	0.00	100.00
15	Aromatic >EC5-EC7	1.00	0.00	1.00	3.66E+02	NR	3.66E+02	Combined	5.45E+03	1.36	48.58	0.03	0.04	0.00	0.00	0.00	0.00	50.00	0.00	100.00
16	Aromatic >EC7-EC8	1.00	0.00	1.00	8.58E+02	NR	8.58E+02	Combined	4.69E+03	3.18	46.68	0.06	0.08	0.00	0.00	0.00	0.00	50.00	0.00	100.00
17	Aromatic >EC8-EC10	1.00	0.00	1.00	6.24E+02	NR	6.24E+02	Combined	3.61E+03	11.57	37.91	0.22	0.30	0.00	0.00	0.00	0.00	50.00	0.00	100.00
18	Aromatic >EC10-EC12	1.00	0.00	1.00	7.61E+02	NR	7.61E+02	Combined	2.19E+03	14.11	35.26	0.26	0.37	0.00	0.00	0.00	0.00	50.00	0.00	100.00
19	Aromatic >EC12-EC16	1.00	0.00	1.00	1.08E+03	NR	1.08E+03	Combined	9.90E+02	20.04	29.07	0.37	0.52	0.00	0.00	0.00	0.00	50.00	0.00	100.00
20	Aromatic >EC16-EC21	1.00	NR	NR	1.28E+03	NR	NR	Oral	2.81E+02	31.67	16.92	0.59	0.82	0.00	0.00	0.00	0.00	50.00	0.00	100.00
21	Aromatic >EC21-EC35	1.00	NR	NR	1.81E+03	NR	NR	Oral	2.96E+01	44.65	3.36	0.84	1.16	0.00	0.00	0.00	0.00	50.00	0.00	100.00
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APPENDIX H

Comparison of Contaminant Concentrations Measured in Soil (mg/kg) with Arcadis GACs for Residential Use

Comparison of Contaminant Concentrations Measured in groundwater (µg/l) with Arcadis GACs for Residential Use

							Field_ID	CP101	CP102	CP102	CP102	CP102	CP103	CP103	CP103	CP104	CP105	CP105	CP106	CP106	CP107	CP107	SKIP	WS101	WS101	WS102	WS102	WS103
							Sample_Depth_Range	0.5-0.6	0.8-0.9	2-2.5	5.5-6	9.5-10	1	1.5	5.6	0.8-0.9	0.5	9.5	0.6	4	0.3	8		0.2-0.3	2.2-2.3	2.2-2.3	2.8-2.9	0.7-0.8
							Sampled_Date_Time	07/07/2020	10/07/2020	20/07/2020	20/07/2020	21/07/2020	22/07/2020	22/07/2020	23/07/2020	09/07/2020	24/07/2020	24/07/2020	22/07/2020	22/07/2020	21/07/2020	21/07/2020	20/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020
Chem_Group	**ChemName**	**output unit**	**EQL**	Arcadis GAC - Human Health - Low Density Residential (combined pathways)	Arcadis GAC - Human Health - Neighbouring Resident	Arcadis GAC - Water Resources - Aquifers - England & Wales																						
Metals	Arsenic	mg/kg	0.6	**37**	**NVP**		17.5	32	7.3	-	-	11	7.62	-	21.3	4.03	-	3.47	-	7.56	-	6.12	17.8	9.96	25.3	8.02	2.1
	Barium	mg/kg	0.6	**938**	**NVP**		358	255	146	-	-	239	134	-	173	60.4	-	181	-	143	-	147	310	136	322	144	71.9
	Beryllium	mg/kg	0.01				1.11	1.55	1.08	-	-	1.33	1.17	-	1.06	0.0721	-	0.24	-	0.39	-	0.982	1.06	0.949	3.11	1.51	0.156
	Boron	mg/kg	1	**770**	**NVP**		1.04	<1	<1	-	-	1.45	<1	-	1.77	<1	-	1.17	-	<1	-	<1	<1	<1	<1	<1	<1
	Cadmium	mg/kg	0.02	**22**	**NVP**		0.537	1.26	0.202	-	-	0.387	0.232	-	0.164	0.0265	-	0.196	-	0.245	-	0.0612	0.425	0.192	1.83	0.167	0.196
	Chromium (hexavalent)	mg/kg	0.6	**21**	**NVP**		<0.6	<0.6	<0.6	-	-	<0.6	<0.6	-	<0.6	<0.6	-	<0.6	-	<0.6	-	<0.6	<0.6	<60	<0.6	<0.6	<0.6
	Chromium	mg/kg	0.9	**21**	**NVP**		10.9	**91.9**	17.2	-	-	7.72	17.9	-	13.4	2.43	-	6.6	-	10.8	-	17.1	14.6	17.7	11.2	**25.1**	4.64
	Copper	mg/kg	1.4	**4710**	**NVP**		73.5	254	25.5	-	-	62.5	21.6	-	31.4	2.88	-	6.1	-	16.9	-	21.2	63.9	25.9	215	22.2	5.95
	Lead	mg/kg	0.7	**200**	**NVP**		**509**	**374**	24.5	-	-	99.5	15.4	-	**488**	3.98	-	18.1	-	99.8	-	42.7	**366**	76.5	**717**	13.6	27.5
	Mercury	mg/kg	0.14	**0.0302**	**1.43**		**0.325**	<1.4	<0.14	-	-	<0.14	<0.14	-	<0.14	<0.14	-	<0.14	-	<0.14	-	<0.14	**0.267**	<0.14	<1.4	<0.14	<0.14
	Nickel	mg/kg	0.2	**149**	**NVP**		29	125	32.6	-	-	17.2	32.7	-	26.1	4.33	-	6.61	-	11	-	29.7	28	20.2	63.5	38.3	3.35
	Selenium	mg/kg	1	**350**	**NVP**		<1	<10	<1	-	-	<1	<1	-	<1	<1	-	<1	-	<1	-	<1	<1	<1	<10	<1	<1
	Vanadium	mg/kg	0.2				25.4	106	22.8	-	-	21.3	24.7	-	25.4	3.3	-	9.92	-	20.4	-	21.3	25.4	26.4	69.5	31.3	4.11
	Zinc	mg/kg	1.9	**2710**	**NVP**		294	193	61.6	-	-	105	60.4	-	70.1	8.43	-	28.7	-	88.4	-	58	180	66.8	641	59.1	25.6
Asbestos	Anthophyllite	Detect					0	0	0	-	-	0	-	-	0	0	-	0	-	0	-	0	0	-	0	-	0
	Asbestos Quantification - PCM Evaluation	%	0.001				<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001
	Additional Asbestos Components (Using TM048)	Comment					1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Crocidolite Asbestos	Detect					1	0	0	-	-	0	-	-	0	0	-	0	-	1	-	0	0	-	0	-	1
	Chrysotile Asbestos	Detect					0	0	0	-	-	0	-	-	0	0	-	0	-	0	-	0	0	-	0	-	0
	Comments	-					1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Amosite Asbestos	Detect					0	0	0	-	-	0	-	-	0	0	-	0	-	0	-	0	0	-	0	-	0
	Fibrous Actinolite	Detect					0	0	0	-	-	0	-	-	0	0	-	0	-	0	-	0	0	-	0	-	0
	Non-Asbestos Fibre	Detect					0	0	0	-	-	0	-	-	0	0	-	0	-	0	-	0	0	-	0	-	0
	Tremolite	Detect					0	0	0	-	-	0	-	-	0	0	-	0	-	0	-	0	0	-	0	-	0
Inorganics	ANC at pH 4	mol/kg	0.03				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.195	-	-	-	-	2.03
	ANC pH_6 dry soil	mol/kg	0.03				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0996	-	-	-	-	0.407
	Loss on ignition	%	0.7				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.75	-	-	-	-	0.998
	Moisture	%					39	27	15	12	13	17	14	16	27	4.8	14	12	13	15	14	13	16	26	17	16	3.6
	pH (Lab)	pH_Units	1				8.16	10.8	8.59	8.53	8.64	8.13	8.48	8.7	8.29	8.78	8.68	11.6	8.85	9.03	8.66	8.25 - 8.58	8.36	7.24	7.98	8.13	8.65 - 8.9
	Sulphate	mg/kg	48				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	573	-	-	-	-	-
	TOC	percent	0.2				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.06	-	-	-	-	0.39
PAH	Coronene	mg/kg	0.2				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	0.245
	PAH 17 Total	mg/kg	10				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	-	-	-	-	29.6
PAH 16	Naphthalene	mg/kg	0.009	**3.15**	**ND**	**0.015**	**0.183**	**0.024**	<0.009	-	-	**1.46**	**0.0159**	-	0.0145	<0.18	-	<0.26	-	**0.139**	-	**0.0234**	**0.0264**	**2.24**	**0.351**	<0.009	**0.0818**
	Acenaphthene	mg/kg	0.008	**717(SAT)**	**ND**	-	0.828	0.119	0.0129	-	-	2.28	0.0212	-	0.0132	<0.16	-	<0.5	-	0.915	-	0.0547	0.11	19	0.29	<0.008	0.581
	Acenaphthylene	mg/kg	0.012	**950(SAT)**	**ND**	-	0.211	0.0221	<0.012	-	-	<1	<0.012	-	<0.012	<0.24	-	<0.5	-	0.258	-	0.0244	0.0664	0.106	<0.1	<0.012	0.144
	Fluoranthene	mg/kg	0.017	**1030(SAT)**	**ND**	-	8.29	1.34	0.127	-	-	59.3	0.498	-	0.247	<0.34	-	2.42	-	7.79	-	0.817	1.75	6.79	3.71	<0.017	4.6
	Anthracene	mg/kg	0.016	**12800(SAT)**	**ND**	-	1.52	0.225	<0.016	-	-	9.35	0.0712	-	0.038	<0.32	-	<0.5	-	1.21	-	0.104	0.299	2.24	0.605	<0.016	1.48
	Phenanthrene	mg/kg	0.015	**232(SAT)**	**ND**	-	5.34	0.687	0.0611	-	-	34.1	0.223	-	0.233	<0.3	-	2.21	-	4.87	-	0.408	0.987	11.2	2.26	<0.015	3.8
	Fluorene	mg/kg	0.01	**952(SAT)**	**ND**	-	0.809	0.103	<0.01	-	-	2.44	0.028	-	0.0227	<0.2	-	<0.5	-	0.954	-	0.0554	0.128	10.9	0.23	<0.01	0.691
	Chrysene	mg/kg	0.01	**22.5(SAT)**	**ND**	-	3.61	0.641	0.0601	-	-	**34.3**	0.26	-	0.206	<0.2	-	1.19	-	2.96	-	0.427	0.88	1.82	1.91	<0.01	2.53
	Pyrene	mg/kg	0.015	**2390(SAT)**	**ND**	-	7.92	1.27	0.123	-	-	71.4	0.579	-	0.301	<0.3	-	2.31	-	7.22	-	0.743	1.65	5.11	3.53	<0.015	5.08
	Benzo(a)anthracene	mg/kg	0.014	**6.59(SAT)**	**ND**	-	3.46	0.606	0.0576	-	-	**37**	0.293	-	0.164	<0.28	-	1.12	-	3.03	-	0.427	0.974	2.02	1.96	<0.014	2.7
	Benzo(b)fluoranthene	mg/kg	0.015	**3.48(SAT)**	**ND**	**0.026**	**3.41**	**0.597**	**0.0866**	-	-	**16.9**	**0.214**	-	**0.112**	<0.3	-	**0.565**	-	**3.73**	-	**0.444**	**1.12**	**1.97**	**1.52**	<0.015	**2.5**
	Benzo(k)fluoranthene	mg/kg	0.014	**96.9(SAT)**	**ND**	**0.037**	**1**	**0.239**	0.0258	-	-	**21.8**	**0.0932**	-	**0.137**	<0.28	-	**0.735**	-	**1.39**	-	**0.128**	**0.416**	**0.702**	**1.4**	<0.014	**0.929**
	Benzo(a)pyrene	mg/kg	0.015	**5**	**ND**	**0.013**	**3.33**	**0.609**	**0.0591**	-	-	**28.9**	**0.204**	-	**0.178**	<0.3	-	**0.678**	-	**3.18**	-	**0.482**	**0.833**	**1.43**	**1.78**	<0.015	**2.02**
	Dibenz(a,h)anthracene	mg/kg	0.023	**0.274(SAT)**	**ND**	-	**0.44**	0.0818	<0.023	-	-	**1.68**	<0.023	-	<0.023	<0.46	-	**0.859**	-	**0.283**	-	0.0621	0.107	0.149	0.218	<0.023	0.206
	Benzo(g,h,i)perylene	mg/kg	0.024	**340(SAT)**	**ND**	**0.105**	**2**	**0.397**	0.0463	-	-	**12.4**	0.103	-	0.0491	<0.48	-	**1.02**	-	**2.05**	-	**0.331**	**0.501**	**0.705**	**1.05**	<0.024	**0.999**
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.018	**38.4(SAT)**	**ND**	**0.022**	**1.95**	**0.379**	**0.0395**	-	-	**15**	**0.123**	-	**0.058**	<0.36	-	**0.746**	-	**2.09**	-	**0.304**	**0.498**	**0.793**	**2.2**	<0.018	**0.958**
	PAH 16 Total	mg/kg	0.118				44.3	7.34	0.699	-	-	-	2.73	-	1.03	<2.36	-	-	-	42.1	-	4.84	10.3	67.1	-	<0.118	29.3
TPH CWG	>C5-C6 Aliphatics	mg/kg	0.01	**13.2**	**ND**	**See TPH**	0.0114	0.0123	<0.01	-	-	<0.01	<0.01	-	0.0151	<0.01	-	<0.01	-	<0.01	-	0.0115	<0.01	0.0189	0.0182	<0.01	<0.01
	>C6-C8 Aliphatics	mg/kg	0.01	**17.7**	**ND**	**See TPH**	0.0554	0.0356	<0.01	-	-	0.0168	<0.01	-	0.037	<0.01	-	0.0136	-	<0.01	-	0.0495	<0.01	0.0513	0.0629	<0.01	0.0156
	>C10-C44 Aliphatics	mg/kg	5				41.1	126	19.9	-	-	66.4	<5	-	<5	70.9	-	3250	-	17	-	7.67	7.15	17.5	99.4	<5	<5
	>C10-C44 Aliphatics/Aromatics	mg/kg	10				319	254	27.5	-	-	2820	38.2	-	<10	205	-	3670	-	817	-	12.4	137	464	266	<10	64.2
	>C8-C10 Aliphatics	mg/kg	0.01	**2.29**	**ND**	**See TPH**	0.0962	0.0534	<0.01	-	-	0.0204	<0.01	-	0.0384	<0.01	-	0.0203	-	<0.01	-	0.0414	<0.01	0.397	0.052	<0.01	0.0166
	>C10-C12 Aliphatics	mg/kg	1	**8.97**	**ND**	**See TPH**	<1	<1	<1	-	-	<5	<1	-	<1	<2	-	<1	-	1.79	-	<1	<1	<1	**13.5**	<1	<1
	>C12-C16 Aliphatics	mg/kg	1	**40.7(SAT)**	**ND**	**See TPH**	1.67	9.86	<1	-	-	13.3	<1	-	<1	<2	-	2.83	-	6.92	-	<1	<1	5.71	27.4	<1	<1
	>C16-C21 Aliphatics	mg/kg	1	**64000(SAT)**	**NR**	**See TPH**	3.18	22.7	<1	-	-	25.6	<1	-	<1	7.68	-	85.9	-	1.17	-	<1	1.99	9.44	20.1	<1	<1
	>C21-C35 Aliphatics	mg/kg	1	**64000(SAT)**	**NR**	**See TPH**	29.2	72.5	18.9	-	-	26	<1	-	2.66	13.1	-	3020	-	4.68	-	7.14	3.98	1.88	30.4	<1	<1
	>C35-C44 Aliphatics	mg/kg	1				6.79	21.1	<1	-	-	<5	<1	-	<1	48.7	-	132	-	2.4	-	<1	<1	<1	7.97	<1	<1
	>C5-C10 Aliphatics	mg/kg	0.05				0.163	0.101	<0.05	-	-	<0.05	<0.05	-	0.0904	<0.05	-	<0.05	-	<0.05	-	0.102	<0.05	0.467	0.133	<0.05	<0.05
	>EC6-EC7 Aromatics	mg/kg	0.01				<0.01	<0.01	<0.01	-	-	<0.01	<0.01	-	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC7-EC8 Aromatics	mg/kg	0.01	**131**	**ND**	**2.3**	<0.01	<0.01	<0.01	-	-	<0.01	<0.01	-	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>C5-C10 Aromatics	mg/kg	0.05				0.0636	<0.05	<0.05	-	-	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	<0.05	-	<0.05	<0.05	0.265	<0.05	<0.05	<0.05
	>EC8-EC10 Aromatics	mg/kg	0.01	**3.16**	**ND**	**See TPH**	0.0636	0.0356	<0.01	-	-	0.0132	<0.01	-	0.026	<0.01	-	0.0136	-	<0.01	-	0.0276	<0.01	0.265	0.0351	<0.01	0.0114
	>EC10-EC12 Aromatics	mg/kg	1	**16.3**	**ND**	**See TPH**	<1	<1	<1	-	-	5.22	<1	-	<1	<2	-	<1	-	1.03	-	<1	<1	9.13	3.34	<1	<1
	>EC10-EC44 Aromatics	mg/kg	5				277	128	7.52	-	-	2760	37.1	-	<5	134	-	420	-	800	-	<5	130	447	167	<5	62.8
	>EC12-EC16 Aromatics	mg/kg	1	**78(SAT)**	**ND**	**See TPH**	10.6	4.51	<1	-	-	**95.4**	<1	-	<1	<2	-	4.73	-	16.2	-	<1	4.04	**272**	20.6	<1	4.72
	>EC16-EC21 Aromatics	mg/kg	1	**994(SAT)**	**NR**	**See TPH**	69.8	25.4	<1	-	-	694	8.99	-	<1	<2	-	19.9	-	162	-	<1	34.8	84.4	42	<1	21.1
	>EC21-EC35 Aromatics	mg/kg	1	**1720(SAT)**	**NR**	**See TPH**	171	90	5.38	-	-	**1810**	26.5	-	1.55	43.8	-	391	-	538	-	2.4	88.3	78.5	95.6	<1	35.6

							Field_ID	CP101	CP102	CP102	CP102	CP102	CP103	CP103	CP103	CP104	CP105	CP105	CP106	CP106	CP107	CP107	SKIP	WS101	WS101	WS102	WS102	WS103
							Sample_Depth_Range	0.5-0.6	0.8-0.9	2-2.5	5.5-6	9.5-10	1	1.5	5.6	0.8-0.9	0.5	9.5	0.6	4	0.3	8		0.2-0.3	2.2-2.3	2.2-2.3	2.8-2.9	0.7-0.8
							Sampled_Date_Time	07/07/2020	10/07/2020	20/07/2020	20/07/2020	21/07/2020	22/07/2020	22/07/2020	23/07/2020	09/07/2020	24/07/2020	24/07/2020	22/07/2020	22/07/2020	21/07/2020	21/07/2020	20/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020
Chem_Group	ChemName	output unit	EQL	Arcadis GAC - Human Health - Low Density Residential (combined pathways)	Arcadis GAC - Human Health - Neighbouring Resident	Arcadis GAC - Water Resources - Aquifers - England & Wales																						
	>EC40-EC44 Aromatics	mg/kg	1				3.68	<1	<1	-	-	14.8	<1	-	<1	5.72	-	<1	-	18.7	-	<1	<1	<1	<1	<1	<1
	>EC35-EC44 Aromatics	mg/kg	1				25.7	7.83	<1	-	-	153	<1	-	<1	90	-	4.26	-	82.4	-	<1	2.9	3.21	5.4	<1	1.38
	TPH Aliphatics & Aromatics >C5-44	mg/kg	10				319	254	27.5	-	-	2820	37.1	-	<10	205	-	3670	-	817	-	<10	137	465	266	<10	62.8
TPH	TPH (C5-C10)	mg/kg	0.02				0.227	0.101	<0.02	-	-	<0.02	<0.02	-	0.0904	<0.02	-	<0.02	-	<0.02	-	0.102	<0.02	0.732	0.133	<0.02	<0.02
	Mineral Oil (C10-40)	mg/kg	5				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.2	-	-	-	-	<10
BTEX	Benzene	mg/kg	0.009	**0.0713**	**1.84**	**0.0019**	<0.18	<0.009	<0.18	-	-	<0.18	<0.18	-	<0.009	<0.18	-	<0.18	-	<0.009	-	<0.18	<0.009	<0.009	<0.18	<0.009	<0.009
	Toluene	mg/kg	0.007	**131**	**ND**	**2.3**	<0.14	<0.007	<0.14	-	-	<0.14	<0.14	-	<0.007	<0.14	-	<0.14	-	<0.007	-	<0.14	<0.007	<0.007	<0.14	<0.007	<0.007
	Ethylbenzene	mg/kg	0.004	**11.6**	**ND**	**1.7**	<0.08	<0.004	<0.08	-	-	<0.08	<0.08	-	<0.004	<0.08	-	<0.08	-	<0.004	-	<0.08	<0.004	<0.004	<0.08	<0.004	<0.004
	Xylene (m & p)	mg/kg	0.01	**5.75**	**ND0**	**1.45**	<0.2	<0.01	<0.2	-	-	<0.2	<0.2	-	<0.01	<0.2	-	<0.2	-	<0.01	-	<0.2	<0.01	<0.01	<0.2	<0.01	<0.01
	Xylene (o)	mg/kg	0.01	**5.75**	**ND0**	**1.45**	<0.2	<0.01	<0.2	-	-	<0.2	<0.2	-	<0.01	<0.2	-	<0.2	-	<0.01	-	<0.2	<0.01	<0.01	<0.2	<0.01	<0.01
	Xylene Total	mg/kg	0.02	**11.5**	**ND**	**2.9**	<0.4	<0.02	<0.4	-	-	<0.4	<0.4	-	<0.02	<0.4	-	<0.4	-	<0.02	-	<0.4	<0.02	<0.02	<0.4	<0.02	<0.02
	Total BTEX	mg/kg	0.04				<0.8	<0.04	<0.8	-	-	<0.8	<0.8	-	<0.04	<0.8	-	<0.8	-	<0.04	-	<0.8	<0.04	<0.04	<0.8	<0.04	<0.04
Fuel oxygenates	MTBE	mg/kg	0.01	**18.7**	**467**	**0.018**	<0.2	<0.01	<0.2	-	-	<0.2	<0.2	-	<0.01	<0.2	-	<0.2	-	<0.01	-	<0.2	<0.01	<0.01	<0.2	<0.01	<0.01
VOC - hydrocarbons	Styrene	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	1,2,4-trimethylbenzene	mg/kg	0.009				-	-	-	-	-	<0.18	-	-	<0.009	-	-	<0.18	-	-	-	-	-	-	<0.18	-	-
	1,3,5-trimethylbenzene	mg/kg	0.008				-	-	-	-	-	<0.16	-	-	<0.008	-	-	<0.16	-	-	-	-	-	-	<0.16	-	-
	Isopropylbenzene	mg/kg	0.005				-	-	-	-	-	<0.1	-	-	<0.005	-	-	<0.1	-	-	-	-	-	-	<0.1	-	-
	n-butylbenzene	mg/kg	0.011				-	-	-	-	-	<0.22	-	-	<0.011	-	-	<0.22	-	-	-	-	-	-	<0.22	-	-
	n-propylbenzene	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	p-isopropyltoluene	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	sec-butylbenzene	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	tert-butylbenzene	mg/kg	0.014				-	-	-	-	-	<0.28	-	-	<0.014	-	-	<0.28	-	-	-	-	-	-	<0.28	-	-
SVOC	4-bromophenyl phenyl ether	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2-chloronaphthalene	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2-methylnaphthalene	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	0.557	-	-
	4-chlorophenyl phenyl ether	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Azobenzene	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Bis(2-chloroethoxy) methane	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Bis(2-chloroethyl)ether	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Bis(2-chloroisopropyl) ether	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Carbazole	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	0.169	-	-
	Dibenzofuran	mg/kg	0.1				-	-	-	-	-	1.21	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	0.278	-	-
	Nitrobenzene	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
PCB	PCB 101	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003	-	-	-	<0.03
	PCB 118	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003	-	-	-	<0.03
	PCB 138	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003	-	-	-	<0.03
	PCB 153	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003	-	-	-	<0.03
	PCB 180	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003	-	-	-	<0.03
	PCB 28	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003	-	-	-	<0.03
	PCB 52	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003	-	-	-	<0.03
	Total PCB 7 Congeners	mg/kg	0.021				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.021	<0.021	-	-	-	<0.21
Chlorinated Hydrocarbons	cis-1,3-dichloropropene	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	trans-1,3-dichloropropene	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	1,1,1,2-tetrachloroethane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	1,1,1-trichloroethane	mg/kg	0.007	**1.68**	**ND**	**5.64**	-	-	-	-	-	<0.14	-	-	<0.007	-	-	<0.14	-	-	-	-	-	-	<0.14	-	-
	1,1,2,2-tetrachloroethane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	1,1,2-trichloroethane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	1,1-dichloroethane	mg/kg	0.008	**0.477**	**50.6**	**0.0042**	-	-	-	-	-	<0.16	-	-	<0.008	-	-	<0.16	-	-	-	-	-	-	<0.16	-	-
	1,1-dichloroethene	mg/kg	0.01	**0.0599**	**37.7**	**0.372**	-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	1,1-dichloropropene	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	1,2,3-trichloropropane	mg/kg	0.016				-	-	-	-	-	<0.32	-	-	<0.016	-	-	<0.32	-	-	-	-	-	-	<0.32	-	-
	1,2-dibromo-3-chloropropane	mg/kg	0.014				-	-	-	-	-	<0.28	-	-	<0.014	-	-	<0.28	-	-	-	-	-	-	<0.28	-	-
	1,2-dichloroethane	mg/kg	0.005	**0.00219**	**0.0861**	**0.0038**	-	-	-	-	-	<0.1	-	-	<0.005	-	-	<0.1	-	-	-	-	-	-	<0.1	-	-
	1,2-dichloropropane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	1,3-dichloropropane	mg/kg	0.007				-	-	-	-	-	<0.14	-	-	<0.007	-	-	<0.14	-	-	-	-	-	-	<0.14	-	-
	2,2-dichloropropane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Bromochloromethane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Bromodichloromethane	mg/kg	0.007				-	-	-	-	-	<0.14	-	-	<0.007	-	-	<0.14	-	-	-	-	-	-	<0.14	-	-
	Bromoform	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Carbon tetrachloride	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Chlorodibromomethane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Chloroethane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Chloroform	mg/kg	0.008	**0.25**	**25**	**0.16**	-	-	-	-	-	<0.16	-	-	<0.008	-	-	<0.16	-	-	-	-	-	-	<0.16	-	-
	Chloromethane	mg/kg	0.007				-	-	-	-	-	<0.14	-	-	<0.007	-	-	<0.14	-	-	-	-	-	-	<0.14	-	-
	cis-1,2-dichloroethene	mg/kg	0.006	**0.035**	**3.62**	**0.041**	-	-	-	-	-	<0.12	-	-	<0.006	-	-	<0.12	-	-	-	-	-	-	<0.12	-	-
	Dibromomethane	mg/kg	0.009				-	-	-	-	-	<0.18	-	-	<0.009	-	-	<0.18	-	-	-	-	-	-	<0.18	-	-
	Dichloromethane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	0.03	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Hexachlorobutadiene	mg/kg	0.02				-	-	-	-	-	<0.4	-	-	<0.02	-	-	<0.4	-	-	-	-	-	-	<0.1	-	-
	Hexachlorocyclopentadiene	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.2	-	-	<0.5	-	-	-	-	-	-	<0.2	-	-
	Hexachloroethane	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Trichloroethene	mg/kg	0.009	**0.00299**	**0.73**	**0.013**	-	-	-	-	-	<0.18	-	-	<0.009	-	-	<0.18	-	-	-	-	-	-	<0.18	-	-
	Tetrachloroethene	mg/kg	0.005	**0.028**	**11.7**	**0.021**	-	-	-	-	-	<0.1	-	-	<0.005	-	-	<0.1	-	-	-	-	-	-	<0.1	-	-

							Field_ID	CP101	CP102	CP102	CP102	CP102	CP103	CP103	CP103	CP104	CP105	CP105	CP106	CP106	CP107	CP107	SKIP	WS101	WS101	WS102	WS102	WS103
							Sample_Depth_Range	0.5-0.6	0.8-0.9	2-2.5	5.5-6	9.5-10	1	1.5	5.6	0.8-0.9	0.5	9.5	0.6	4	0.3	8		0.2-0.3	2.2-2.3	2.2-2.3	2.8-2.9	0.7-0.8
							Sampled_Date_Time	07/07/2020	10/07/2020	20/07/2020	20/07/2020	21/07/2020	22/07/2020	22/07/2020	23/07/2020	09/07/2020	24/07/2020	24/07/2020	22/07/2020	22/07/2020	21/07/2020	21/07/2020	20/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020	07/07/2020
Chem_Group	**ChemName**	**output unit**	**EQL**	Arcadis GAC - Human Health - Low Density Residential (combined pathways)	Arcadis GAC - Human Health - Neighbouring Resident	Arcadis GAC - Water Resources - Aquifers - England & Wales																							
	trans-1,2-dichloroethene	mg/kg	0.01	**0.526**	**11.9**	**0.041**	-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Vinyl chloride	mg/kg	0.006	**0.000263**	**0.227**	**0.0011**	-	-	-	-	-	<0.12	-	-	<0.006	-	-	<0.12	-	-	-	-	-	-	<0.12	-	-
Halogenated Hydrocarbons	1,2-dibromoethane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Bromomethane	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Dichlorodifluoromethane	mg/kg	0.006				-	-	-	-	-	<0.12	-	-	<0.006	-	-	<0.12	-	-	-	-	-	-	<0.12	-	-
	Trichlorofluoromethane	mg/kg	0.006				-	-	-	-	-	<0.12	-	-	<0.006	-	-	<0.12	-	-	-	-	-	-	<0.12	-	-
Halogenated Benzenes	1,2,3-trichlorobenzene	mg/kg	0.02				-	-	-	-	-	<0.4	-	-	<0.02	-	-	<0.4	-	-	-	-	-	-	<0.4	-	-
	1,2,4-trichlorobenzene	mg/kg	0.02				-	-	-	-	-	<0.4	-	-	<0.02	-	-	<0.4	-	-	-	-	-	-	<0.1	-	-
	1,2-dichlorobenzene	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.1	-	-
	1,3,5-Trichlorobenzene	mg/kg	0.02				-	-	-	-	-	<0.4	-	-	<0.02	-	-	<0.4	-	-	-	-	-	-	<0.4	-	-
	1,3-dichlorobenzene	mg/kg	0.008				-	-	-	-	-	<0.16	-	-	<0.008	-	-	<0.16	-	-	-	-	-	-	<0.1	-	-
	1,4-dichlorobenzene	mg/kg	0.005				-	-	-	-	-	<0.1	-	-	<0.005	-	-	<0.1	-	-	-	-	-	-	<0.1	-	-
	2-chlorotoluene	mg/kg	0.009				-	-	-	-	-	<0.18	-	-	<0.009	-	-	<0.18	-	-	-	-	-	-	<0.18	-	-
	4-chlorotoluene	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Bromobenzene	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
	Chlorobenzene	mg/kg	0.005	**0.0704**	**10.1**	**0.37**	-	-	-	-	-	<0.1	-	-	<0.005	-	-	<0.1	-	-	-	-	-	-	<0.1	-	-
	Hexachlorobenzene	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
Solvents	Carbon disulfide	mg/kg	0.007				-	-	-	-	-	<0.14	-	-	<0.007	-	-	<0.14	-	-	-	-	-	-	<0.14	-	-
	Isophorone	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
Amino Aliphatics	N-nitrosodi-n-propylamine	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
Phenolics	4-nitrophenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2,4,5-trichlorophenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2,4,6-trichlorophenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2,4-dichlorophenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2,4-dimethylphenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2-chlorophenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2-methylphenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2-nitrophenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	4-chloro-3-methylphenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	4-methylphenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Pentachlorophenol	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Phenol	mg/kg	0.1	**285**	**2570**	**0.014**	-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
Anilines	4-nitroaniline	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2-nitroaniline	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	3-nitroaniline	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	4-chloroaniline	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
Explosives	2,4-dinitrotoluene	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	2,6-dinitrotoluene	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
NA	Asbestos Quantification Total	%	0.001				<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001
	Asbestos Gravimetric Quantification	mass %	0.001				<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001
	tert-Amyl methyl ether	mg/kg	0.01				-	-	-	-	-	<0.2	-	-	<0.01	-	-	<0.2	-	-	-	-	-	-	<0.2	-	-
Other	Temperature	°C					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.9	-	-	-	-	18.7
	Electrical conductivity *(lab)	µS/cm					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	162	-	-	-	-	133
Phthalates	Bis(2-ethylhexyl) phthalate	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	0.576	-	-	-	-	-	-	<0.1	-	-
	Butyl benzyl phthalate	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Diethylphthalate	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Dimethyl phthalate	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Di-n-butyl phthalate	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-
	Di-n-octyl phthalate	mg/kg	0.1				-	-	-	-	-	<1	-	-	<0.1	-	-	<0.5	-	-	-	-	-	-	<0.1	-	-

						Field_ID	WS104	WS105	WS106	WS107	WS108	WS108	WS109	WS110	WS110	WS111	WS111	WS112	WS113	WS114	WS115	WS116					
						Sample_Depth_Range	1.5-1.6	0.2-0.3	0.4-0.5	1.1-1.2	0.6-0.7	1.6-1.7	0.5-0.6	1.1-1.2	3.5-3.6	1-1.1	2-2.1	0.3-0.4	0.8-0.9	0.2-0.3	0.5-0.6	0.2-0.3					
						Sampled_Date_Time	07/07/2020	10/07/2020	09/07/2020	10/07/2020	10/07/2020	10/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020	09/07/2020	09/07/2020	08/07/2020	08/07/2020	09/07/2020					
																							Statistical Summary				
Chem_Group	**ChemName**	**output unit**	**EQL**	Arcadis GAC - Human Health - Low Density Residential (combined pathways)	Arcadis GAC - Human Health - Neighbouring Resident	Arcadis GAC - Water Resources - Aquifers - England & Wales																	Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration
Metals	Arsenic	mg/kg	0.6	**37**	**NVP**		31.7	1.81	6.36	8.61	8.52	6.69	25.6	21.8	14.9	6.93	6.94	26.8	5.41	1.11	8.47	17.9	31	31	1.11	1.11	32
	Barium	mg/kg	0.6	**938**	**NVP**		217	34.9	167	352	244	113	436	478	224	130	97.3	821	95.8	27.9	164	260	31	31	27.9	27.9	821
	Beryllium	mg/kg	0.01				4.8	0.117	0.511	1.01	0.437	0.88	1.37	1.42	2.07	1.07	0.911	1.3	0.689	0.191	0.779	0.717	31	31	0.0721	0.0721	4.8
	Boron	mg/kg	1	**770**	**NVP**		<1	<1	<1	1.09	1.23	<1	<1	<1	<1	<1	<1	1.07	1.4	<1	<1	<1	31	8	<1	1.04	1.77
	Cadmium	mg/kg	0.02	**22**	**NVP**		0.429	0.374	0.279	0.234	0.238	0.132	0.609	0.473	0.161	0.222	0.167	1.63	0.152	0.132	0.294	0.847	31	31	0.0265	0.0265	1.83
	Chromium (hexavalent)	mg/kg	0.6	**21**	**NVP**		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<60	<0.6	<0.6	<0.6	<0.6	<0.6	31	0	<0.6	ND	<60
	Chromium	mg/kg	0.9	**21**	**NVP**		**25.6**	3.69	7.13	16.6	6.18	**21.8**	13.7	14.7	16.5	18.1	18.2	16.6	15.4	3.61	11.2	8.26	31	31	2.43	2.43	91.9
	Copper	mg/kg	1.4	**4710**	**NVP**		97.1	4.76	20.1	42.7	21.7	17.7	86.1	83.4	42.6	23.2	17.6	76.5	14	2.05	31.3	58.7	31	31	2.05	2.05	254
	Lead	mg/kg	0.7	**200**	**NVP**		**350**	10.7	62.8	165	172	12.2	**2070**	**408**	138	18.9	46.2	**494**	25.3	6.77	134	**225**	31	31	3.98	3.98	2070
	Mercury	mg/kg	0.14	**0.0302**	**1.43**		**0.865**	<0.14	<0.14	<0.14	<0.14	<0.14	**0.338**	**0.474**	<0.14	<0.14	<0.14	**0.188**	<0.14	<0.14	<0.14	**0.77**	31	7	<0.14	0.188	<1.4
	Nickel	mg/kg	0.2	**149**	**NVP**		48.7	5.08	10.5	25.3	8.93	31.9	31.2	31.2	36.6	36	17.6	27.3	17.4	6.27	18.6	19.6	31	31	3.35	3.35	125
	Selenium	mg/kg	1	**350**	**NVP**		<1	1.22	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	31	1	<1	1.22	<10
	Vanadium	mg/kg	0.2				42.7	7.34	14.4	29.1	14.8	24.9	26.5	31.4	34.7	24.9	29.4	29.4	24.5	4.45	18	22.3	31	31	3.3	3.3	106
	Zinc	mg/kg	1.9	**2710**	**NVP**		181	21.3	80.8	131	114	53.3	370	193	68.8	62.3	41.4	482	35	16.4	79.7	129	31	31	8.43	8.43	641
Asbestos	Anthophyllite	Detect					0	0	0	0	0	-	0	0	-	0	-	0	0	0	0	0	25	25	0	ND	0
	Asbestos Quantification - PCM Evaluation	%	0.001				-	-	-	<0.001	-	-	<0.001	-	-	-	-	-	-	-	-	<0.001	5	0	<0.001	ND	<0.001
	Additional Asbestos Components (Using TM048)	Comment					-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	1	5	5	1	1	1
	Crocidolite Asbestos	Detect					0	0	0	0	0	-	0	0	-	0	-	0	0	0	0	0	25	25	0	1	1
	Chrysotile Asbestos	Detect					0	0	0	1	0	-	1	0	-	0	-	0	0	0	0	1	25	25	0	1	1
	Comments	-					-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	1	5	5	1	1	1
	Amosite Asbestos	Detect					0	0	0	1	0	-	0	0	-	0	-	0	0	0	0	0	25	25	0	1	1
	Fibrous Actinolite	Detect					0	0	0	0	0	-	0	0	-	0	-	0	0	0	0	0	25	25	0	ND	0
	Non-Asbestos Fibre	Detect					0	0	0	0	0	-	0	0	-	0	-	1	0	0	0	0	25	25	0	1	1
	Tremolite	Detect					0	0	0	0	0	-	0	0	-	0	-	0	0	0	0	0	25	25	0	ND	0
Inorganics	ANC at pH 4	mol/kg	0.03				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	0.195	0.195	2.03
	ANC pH_6 dry soil	mol/kg	0.03				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	0.0996	0.0996	0.407
	Loss on ignition	%	0.7				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	0.998	0.998	2.75
	Moisture	%					21	6.7	13	18	17	13	15	20	20	15	24	16	17	4.4	13	19	37	37	3.6	3.6	39
	pH (Lab)	pH_Units	1				8.22	10	8.61	8.77	8.55	8.29	8.6	7.82	8.03	8.14	7.56	8	7.79	9.38	8.77	7.81	37	37	7.24	7.24	11.6
	Sulphate	mg/kg	48				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	573	573	573
	TOC	percent	0.2				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	0.39	0.39	1.06
PAH	Coronene	mg/kg	0.2				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	<0.2	0.245	0.245
	PAH 17 Total	mg/kg	10				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	<10	29.6	29.6
PAH 16	Naphthalene	mg/kg	0.009	**3.15**	**ND**	**0.015**	**0.0465**	<0.18	-	**0.417**	**0.122**	**0.0388**	**0.101**	**0.0927**	**0.0311**	<0.009	<0.009	**0.0589**	**0.158**	<0.09	**0.182**	**0.273**	30	22	<0.009	0.0145	2.24
	Acenaphthene	mg/kg	0.008	**717(SAT)**	**ND**	**-**	0.112	<0.16	-	1.28	0.228	0.0624	0.466	0.254	0.183	<0.008	<0.008	0.157	0.0375	<0.08	0.327	0.484	30	23	<0.008	0.0129	19
	Acenaphthylene	mg/kg	0.012	**950(SAT)**	**ND**	**-**	0.158	<0.24	-	0.127	<0.06	<0.012	0.0829	0.112	0.0508	<0.012	<0.012	<0.06	<0.012	<0.12	0.119	0.06	30	14	<0.012	0.0221	<1
	Fluoranthene	mg/kg	0.017	**1030(SAT)**	**ND**	**-**	3.26	0.784	-	7.05	1.9	0.213	5.64	4.27	2.24	<0.017	0.033	2.8	0.305	0.33	6.15	4.49	30	27	<0.017	0.033	59.3
	Anthracene	mg/kg	0.016	**12800(SAT)**	**ND**	**-**	0.574	<0.32	-	1.41	0.231	0.0453	0.894	0.739	0.406	<0.016	<0.016	0.322	0.0715	<0.16	0.91	1.1	30	22	<0.016	0.038	9.35
	Phenanthrene	mg/kg	0.015	**232(SAT)**	**ND**	**-**	1.38	<0.3	-	4.38	0.477	0.19	3.55	2.37	1.12	0.0182	0.0237	1.22	0.207	0.188	2.76	3.44	30	27	<0.015	0.0182	34.1
	Fluorene	mg/kg	0.01	**952(SAT)**	**ND**	**-**	0.153	<0.2	-	0.933	0.116	0.0485	0.346	0.252	0.155	<0.01	<0.01	0.128	0.0344	<0.1	0.275	0.325	30	22	<0.01	0.0227	10.9
	Chrysene	mg/kg	0.01	**22.5(SAT)**	**ND**	**-**	1.5	0.294	-	2.54	0.823	0.0938	2.5	2.03	1.02	<0.01	0.0169	1.31	0.145	0.15	2.87	1.94	30	27	<0.01	0.0169	34.3
	Pyrene	mg/kg	0.015	**2390(SAT)**	**ND**	**-**	3.06	1.17	-	6.01	2.06	0.195	5.18	4.08	2.2	<0.015	0.0326	2.58	0.27	0.318	5.72	4.11	30	27	<0.015	0.0326	71.4
	Benzo(a)anthracene	mg/kg	0.014	**6.59(SAT)**	**ND**	**-**	1.62	0.309	-	2.82	0.808	0.0935	2.38	2.03	1.05	<0.014	<0.014	1.27	0.154	0.149	3.07	2.02	30	26	<0.014	0.0576	37
	Benzo(b)fluoranthene	mg/kg	0.015	**3.48(SAT)**	**ND**	**0.026**	**1.77**	<0.3	-	**1.91**	**0.662**	**0.0742**	**3.16**	**2.02**	**1.22**	<0.015	<0.015	**1.56**	**0.179**	<0.15	**3.61**	**2.47**	30	24	<0.015	0.0742	16.9
	Benzo(k)fluoranthene	mg/kg	0.014	**96.9(SAT)**	**ND**	**0.037**	**0.659**	<0.28	-	**0.714**	**0.296**	0.0318	**1.03**	**0.781**	**0.35**	<0.014	<0.014	**0.566**	**0.0663**	<0.14	**1.25**	**0.76**	30	24	<0.014	0.0258	21.8
	Benzo(a)pyrene	mg/kg	0.015	**5**	**ND**	**0.013**	**1.32**	<0.3	-	**2.17**	**0.756**	**0.0776**	**2.35**	**1.77**	**0.928**	<0.015	<0.015	**1.13**	**0.131**	<0.15	**2.77**	**1.74**	30	24	<0.015	0.0591	28.9
	Dibenz(a,h)anthracene	mg/kg	0.023	**0.274(SAT)**	**ND**	**-**	0.153	<0.46	-	0.238	<0.115	<0.023	0.254	0.245	0.0979	<0.023	<0.023	<0.115	<0.023	<0.23	**0.338**	0.213	30	17	<0.023	0.0621	1.68
	Benzo(g,h,i)perylene	mg/kg	0.024	**340(SAT)**	**ND**	**0.105**	**0.667**	<0.48	-	**1.21**	**0.42**	0.0565	**1.4**	**1.04**	**0.448**	<0.024	<0.024	**0.713**	0.0738	<0.24	**1.6**	**1.16**	30	24	<0.024	0.0463	12.4
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.018	**38.4(SAT)**	**ND**	**0.022**	**0.726**	<0.36	-	**1.28**	**0.438**	**0.0588**	**1.39**	**0.984**	**0.453**	<0.018	<0.018	**0.682**	**0.0785**	<0.18	**1.51**	**1.1**	30	24	<0.018	0.0395	15
	PAH 16 Total	mg/kg	0.118				17.2	2.56	-	34.5	9.33	1.28	30.7	23.1	11.9	<0.118	<0.118	14.5	1.91	<1.18	33.5	25.7	27	22	<0.118	0.699	67.1
TPH CWG	>C5-C6 Aliphatics	mg/kg	0.01	**13.2**	**ND**	**See TPH**	<0.01	<0.01	<0.01	0.011	<0.01	<0.01	<0.01	0.01	0.0101	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	31	9	<0.01	0.01	0.0189
	>C6-C8 Aliphatics	mg/kg	0.01	**17.7**	**ND**	**See TPH**	0.034	<0.01	0.0173	0.0317	0.0303	<0.01	0.026	0.04	0.0391	0.0165	0.0157	0.0248	0.0133	0.0178	0.0467	<0.01	31	22	<0.01	0.0133	0.0629
	>C10-C44 Aliphatics	mg/kg	5				<5	33.7	2170	14	14.5	<5	8.33	17.9	<5	<5	<5	78.7	<5	24.2	11.6	18.1	31	21	<5	7.15	3250
	>C10-C44 Aliphatics/Aromatics	mg/kg	10				38.5	275	2430	145	66.4	<10	49.8	215	132	<10	<10	218	108	51.8	247	129	31	26	<10	12.4	3670
	>C8-C10 Aliphatics	mg/kg	0.01	**2.29**	**ND**	**See TPH**	0.0265	<0.01	0.541	0.132	0.0545	<0.01	0.0283	0.045	0.0542	0.0578	0.0118	0.0319	0.0254	0.0167	0.0456	0.0135	31	23	<0.01	0.0118	0.541
	>C10-C12 Aliphatics	mg/kg	1	**8.97**	**ND**	**See TPH**	<1	<1	**49.2**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	31	3	<1	1.79	49.2
	>C12-C16 Aliphatics	mg/kg	1	**40.7(SAT)**	**ND**	**See TPH**	<1	2.93	**383**	1.99	<1	<1	<1	1.23	<1	<1	<1	<1	<1	<1	<1	<1	31	11	<1	1.23	383
	>C16-C21 Aliphatics	mg/kg	1	**64000(SAT)**	**NR**	**See TPH**	1.07	2.65	746	1.6	2.22	<1	<1	2.9	2.34	<1	<1	3.83	<1	<1	2.89	1.87	31	19	<1	1.07	746
	>C21-C35 Aliphatics	mg/kg	1	**64000(SAT)**	**NR**	**See TPH**	1.83	<1	980	7.26	6.18	<1	3.88	12.5	1.37	<1	3.35	47.5	1.72	8.65	7.83	14.6	31	25	<1	1.37	3020
	>C35-C44 Aliphatics	mg/kg	1				<1	27.3	15.8	2.94	5.55	<1	2.95	1.19	<1	<1	<1	26	<1	14.6	<1	1.4	31	15	<1	1.19	132
	>C5-C10 Aliphatics	mg/kg	0.05				0.0605	<0.05	0.558	0.174	0.0847	<0.05	0.0543	0.095	0.103	0.0743	<0.05	0.0566	<0.05	<0.05	0.0923	<0.05	31	16	<0.05	0.0543	0.558
	>EC6-EC7 Aromatics	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	31	0	<0.01	ND	<0.01
	>EC7-EC8 Aromatics	mg/kg	0.01	**131**	**ND**	**2.3**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	31	0	<0.01	ND	<0.01
	>C5-C10 Aromatics	mg/kg	0.05				<0.05	<0.05	0.36	0.0878	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	31	4	<0.05	0.0636	0.36
	>EC8-EC10 Aromatics	mg/kg	0.01	**3.16**	**ND**	**See TPH**	0.0176	<0.01	0.36	0.0878	0.0363	<0.01	0.0189	0.03	0.0353	0.0389	<0.01	0.0212	0.0169	0.0115	0.0308	<0.01	31	21	<0.01	0.0114	0.36
	>EC10-EC12 Aromatics	mg/kg	1	**16.3**	**ND**	**See TPH**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	31	4	<1	1.03	9.13
	>EC10-EC44 Aromatics	mg/kg	5				34.6	241	253	131	51.9	<5	41.5	198	128	<5	5.77	139	106	27.6	236	111	31	26	<5	5.77	2760
	>EC12-EC16 Aromatics	mg/kg	1	**78(SAT)**	**ND**	**See TPH**	2.65	3.4	64.6	8.44	2.82	<1	<1	6.41	4.54	<1	<1	4.49	7.28	<1	9.5	4.37	31	20	<1	2.65	272
	>EC16-EC21 Aromatics	mg/kg	1	**994(SAT)**	**NR**	**See TPH**	11.2	24.7	51	43.1	16.5	<1	8.57	55.6	30.9	<1	<1	35.3	39.9	<1	59.5	25.1	31	22	<1	8.57	694
	>EC21-EC35 Aromatics	mg/kg	1	**1720(SAT)**	**NR**	**See TPH**	19.7	104	130	73.8	29.9	<1	28.1	128	88.5	<1	4.64	92.6	54.1	12.6	155	71.8	31	28	<1	1.55	1810

							Field_ID	WS104	WS105	WS106	WS107	WS108	WS108	WS109	WS110	WS110	WS111	WS111	WS112	WS113	WS114	WS115	WS116	Statistical Summary				
							Sample_Depth_Range	1.5-1.6	0.2-0.3	0.4-0.5	1.1-1.2	0.6-0.7	1.6-1.7	0.5-0.6	1.1-1.2	3.5-3.6	1-1.1	2-2.1	0.3-0.4	0.8-0.9	0.2-0.3	0.5-0.6	0.2-0.3					
							Sampled_Date_Time	07/07/2020	10/07/2020	09/07/2020	10/07/2020	10/07/2020	10/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020	09/07/2020	09/07/2020	08/07/2020	08/07/2020	09/07/2020					
Chem_Group	**ChemName**	**output unit**	**EQL**	Arcadis GAC - Human Health - Low Density Residential (combined pathways)	Arcadis GAC - Human Health - Neighbouring Resident	Arcadis GAC - Water Resources - Aquifers - England & Wales																		Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration
	>EC40-EC44 Aromatics	mg/kg	1				<1	59.5	1.83	<1	<1	<1	1.17	<1	<1	<1	<1	<1	<1	1.61	<1	<1	31	8	<1	1.17	59.5
	>EC35-EC44 Aromatics	mg/kg	1				<1	108	6.5	5.48	2.57	<1	4.19	7.17	3.42	<1	<1	6.43	3.89	14	11.1	9.36	31	22	<1	1.38	153
	TPH Aliphatics & Aromatics >C5-44	mg/kg	10				34.6	275	2430	146	66.5	<10	49.9	216	128	<10	<10	218	106	51.8	247	129	31	25	<10	27.5	3670
TPH	TPH (C5-C10)	mg/kg	0.02				0.0605	<0.02	0.918	0.262	0.0847	<0.02	0.0543	0.095	0.103	0.0743	<0.02	0.0566	<0.02	<0.02	0.0923	<0.02	31	16	<0.02	0.0543	0.918
	Mineral Oil (C10-40)	mg/kg	5				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	<10	10.2	10.2
BTEX	Benzene	mg/kg	0.009	**0.0713**	**1.84**	**0.0019**	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	31	0	<0.009	ND	<0.18
	Toluene	mg/kg	0.007	**131**	**ND**	**2.3**	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	31	0	<0.007	ND	<0.14
	Ethylbenzene	mg/kg	0.004	**11.6**	**ND**	**1.7**	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	31	0	<0.004	ND	<0.08
	Xylene (m & p)	mg/kg	0.01	**5.75**	**ND0**	**1.45**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	31	0	<0.01	ND	<0.2
	Xylene (o)	mg/kg	0.01	**5.75**	**ND0**	**1.45**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	31	0	<0.01	ND	<0.2
	Xylene Total	mg/kg	0.02	**11.5**	**ND**	**2.9**	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	31	0	<0.02	ND	<0.4
	Total BTEX	mg/kg	0.04				<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	31	0	<0.04	ND	<0.8
Fuel oxygenates	MTBE	mg/kg	0.01	**18.7**	**467**	**0.018**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	31	0	<0.01	ND	<0.2
VOC - hydrocarbons	Styrene	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	1,2,4-trimethylbenzene	mg/kg	0.009				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.009	ND	<0.18
	1,3,5-trimethylbenzene	mg/kg	0.008				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.008	ND	<0.16
	Isopropylbenzene	mg/kg	0.005				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.005	ND	<0.1
	n-butylbenzene	mg/kg	0.011				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.011	ND	<0.22
	n-propylbenzene	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	p-isopropyltoluene	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	sec-butylbenzene	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	tert-butylbenzene	mg/kg	0.014				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.014	ND	<0.28
SVOC	4-bromophenyl phenyl ether	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2-chloronaphthalene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2-methylnaphthalene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1	<0.1	0.557	<1
	4-chlorophenyl phenyl ether	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Azobenzene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Bis(2-chloroethoxy) methane	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Bis(2-chloroethyl)ether	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Bis(2-chloroisopropyl) ether	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Carbazole	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1	<0.1	0.169	<1
	Dibenzofuran	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	2	<0.1	0.278	1.21
	Nitrobenzene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
PCB	PCB 101	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	<0.003	-	-	<0.003	5	0	<0.003	ND	<0.03
	PCB 118	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	<0.003	-	-	<0.003	5	0	<0.003	ND	<0.03
	PCB 138	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	<0.003	-	-	<0.003	5	0	<0.003	ND	<0.03
	PCB 153	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	<0.003	-	-	<0.003	5	0	<0.003	ND	<0.03
	PCB 180	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	<0.003	-	-	<0.003	5	0	<0.003	ND	<0.03
	PCB 28	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	<0.003	-	-	<0.003	5	0	<0.003	ND	<0.03
	PCB 52	mg/kg	0.003				-	-	-	-	-	-	-	-	-	-	-	-	<0.003	-	-	<0.003	5	0	<0.003	ND	<0.03
	Total PCB 7 Congeners	mg/kg	0.021				-	-	-	-	-	-	-	-	-	-	-	-	<0.021	-	-	<0.021	5	0	<0.021	ND	<0.21
Chlorinated Hydrocarbons	cis-1,3-dichloropropene	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	trans-1,3-dichloropropene	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	1,1,1,2-tetrachloroethane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	1,1,1-trichloroethane	mg/kg	0.007	**1.68**	**ND**	**5.64**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.007	ND	<0.14
	1,1,2,2-tetrachloroethane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	1,1,2-trichloroethane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	1,1-dichloroethane	mg/kg	0.008	**0.477**	**50.6**	**0.0042**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.008	ND	<0.16
	1,1-dichloroethene	mg/kg	0.01	**0.0599**	**37.7**	**0.372**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	1,1-dichloropropene	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	1,2,3-trichloropropane	mg/kg	0.016				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.016	ND	<0.32
	1,2-dibromo-3-chloropropane	mg/kg	0.014				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.014	ND	<0.28
	1,2-dichloroethane	mg/kg	0.005	**0.00219**	**0.0861**	**0.0038**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.005	ND	<0.1
	1,2-dichloropropane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	1,3-dichloropropane	mg/kg	0.007				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.007	ND	<0.14
	2,2-dichloropropane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Bromochloromethane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Bromodichloromethane	mg/kg	0.007				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.007	ND	<0.14
	Bromoform	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Carbon tetrachloride	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Chlorodibromomethane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Chloroethane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Chloroform	mg/kg	0.008	**0.25**	**25**	**0.16**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.008	ND	<0.16
	Chloromethane	mg/kg	0.007				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.007	ND	<0.14
	cis-1,2-dichloroethene	mg/kg	0.006	**0.035**	**3.62**	**0.041**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.006	ND	<0.12
	Dibromomethane	mg/kg	0.009				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.009	ND	<0.18
	Dichloromethane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1	0.03	0.03	<0.2
	Hexachlorobutadiene	mg/kg	0.02				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.02	ND	<0.4
	Hexachlorocyclopentadiene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.2	ND	<1
	Hexachloroethane	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Trichloroethene	mg/kg	0.009	**0.00299**	**0.73**	**0.013**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.009	ND	<0.18
	Tetrachloroethene	mg/kg	0.005	**0.028**	**11.7**	**0.021**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.005	ND	<0.1

						Field_ID	WS104	WS105	WS106	WS107	WS108	WS108	WS109	WS110	WS110	WS111	WS111	WS112	WS113	WS114	WS115	WS116					
						Sample_Depth_Range	1.5-1.6	0.2-0.3	0.4-0.5	1.1-1.2	0.6-0.7	1.6-1.7	0.5-0.6	1.1-1.2	3.5-3.6	1-1.1	2-2.1	0.3-0.4	0.8-0.9	0.2-0.3	0.5-0.6	0.2-0.3					
						Sampled_Date_Time	07/07/2020	10/07/2020	09/07/2020	10/07/2020	10/07/2020	10/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020	08/07/2020	09/07/2020	09/07/2020	08/07/2020	08/07/2020	09/07/2020					
																							Statistical Summary				
Chem_Group	**ChemName**	**output unit**	**EQL**	Arcadis GAC - Human Health - Low Density Residential (combined pathways)	Arcadis GAC - Human Health - Neighbouring Resident	Arcadis GAC - Water Resources - Aquifers - England & Wales																	Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration
	trans-1,2-dichloroethene	mg/kg	0.01	**0.526**	**11.9**	**0.041**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Vinyl chloride	mg/kg	0.006	**0.000263**	**0.227**	**0.0011**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.006	ND	<0.12
Halogenated Hydrocarbons	1,2-dibromoethane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Bromomethane	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Dichlorodifluoromethane	mg/kg	0.006				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.006	ND	<0.12
	Trichlorofluoromethane	mg/kg	0.006				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.006	ND	<0.12
Halogenated Benzenes	1,2,3-trichlorobenzene	mg/kg	0.02				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.02	ND	<0.4
	1,2,4-trichlorobenzene	mg/kg	0.02				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.02	ND	<0.4
	1,2-dichlorobenzene	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	1,3,5-Trichlorobenzene	mg/kg	0.02				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.02	ND	<0.4
	1,3-dichlorobenzene	mg/kg	0.008				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.008	ND	<0.16
	1,4-dichlorobenzene	mg/kg	0.005				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.005	ND	<0.1
	2-chlorotoluene	mg/kg	0.009				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.009	ND	<0.18
	4-chlorotoluene	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Bromobenzene	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
	Chlorobenzene	mg/kg	0.005	**0.0704**	**10.1**	**0.37**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.005	ND	<0.1
	Hexachlorobenzene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
Solvents	Carbon disulfide	mg/kg	0.007				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.007	ND	<0.14
	Isophorone	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
Amino Aliphatics	N-nitrosodi-n-propylamine	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
Phenolics	4-nitrophenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2,4,5-trichlorophenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2,4,6-trichlorophenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2,4-dichlorophenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2,4-dimethylphenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2-chlorophenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2-methylphenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2-nitrophenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	4-chloro-3-methylphenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	4-methylphenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Pentachlorophenol	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Phenol	mg/kg	0.1	**285**	**2570**	**0.014**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
Anilines	4-nitroaniline	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2-nitroaniline	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	3-nitroaniline	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	4-chloroaniline	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
Explosives	2,4-dinitrotoluene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	2,6-dinitrotoluene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
NA	Asbestos Quantification Total	%	0.001				-	-	-	0.0442	-	-	<0.001	-	-	-	-	-	-	-	-	<0.001	5	1	<0.001	0.0442	0.0442
	Asbestos Gravimetric Quantification	mass %	0.001				-	-	-	0.0442	-	-	<0.001	-	-	-	-	-	-	-	-	<0.001	5	1	<0.001	0.0442	0.0442
	tert-Amyl methyl ether	mg/kg	0.01				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.01	ND	<0.2
Other	Temperature	°C					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	17.9	17.9	18.7
	Electrical conductivity *(lab)	µS/cm					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	133	133	162
Phthalates	Bis(2-ethylhexyl) phthalate	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1	<0.1	0.576	<1
	Butyl benzyl phthalate	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Diethylphthalate	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Dimethyl phthalate	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Di-n-butyl phthalate	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1
	Di-n-octyl phthalate	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	<0.1	ND	<1

				Field_ID								
				Sample_Depth_Range								
				Sampled_Date_Time								
				Arcadis GAC - Human Health - Low Density Residential (combined pathways)	Arcadis GAC - Human Health - Neighbouring Resident	Arcadis GAC - Water Resources - Aquifers - England & Wales	Maximum Detect	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances
Chem_Group	**ChemName**	**output unit**	**EQL**									
Metals	Arsenic	mg/kg	0.6	**37**	**NVP**		32	12	8.47	9	0	0
	Barium	mg/kg	0.6	**938**	**NVP**		821	216	167	158	0	0
	Beryllium	mg/kg	0.01				4.8	1.1	1.01	0.92	0	0
	Boron	mg/kg	1	**770**	**NVP**		1.77	1.1	1	0.17	0	0
	Cadmium	mg/kg	0.02	**22**	**NVP**		1.83	0.4	0.234	0.43	0	0
	Chromium (hexavalent)	mg/kg	0.6	**21**	**NVP**		ND	4.4	0.6	15	2	0
	Chromium	mg/kg	0.9	**21**	**NVP**		91.9	16	14.6	15	4	4
	Copper	mg/kg	1.4	**4710**	**NVP**		254	48	25.5	57	0	0
	Lead	mg/kg	0.7	**200**	**NVP**		2070	233	99.5	392	10	10
	Mercury	mg/kg	0.14	**0.0302**	**1.43**		0.865	0.29	0.14	0.34	31	7
	Nickel	mg/kg	0.2	**149**	**NVP**		125	27	26.1	23	0	0
	Selenium	mg/kg	1	**350**	**NVP**		1.22	1.6	1	2.2	0	0
	Vanadium	mg/kg	0.2				106	26	24.9	19	0	0
	Zinc	mg/kg	1.9	**2710**	**NVP**		641	129	70.1	142	0	0
Asbestos	Anthophyllite	Detect					ND	0	0	0	0	0
	Asbestos Quantification - PCM Evaluation	%	0.001				ND	0.001	0.001	0	0	0
	Additional Asbestos Components (Using TM048)	Comment					1	1	1	0	0	0
	Crocidolite Asbestos	Detect					1	0.12	0	0.33	0	0
	Chrysotile Asbestos	Detect					1	0.12	0	0.33	0	0
	Comments	-					1	1	1	0	0	0
	Amosite Asbestos	Detect					1	0.04	0	0.2	0	0
	Fibrous Actinolite	Detect					ND	0	0	0	0	0
	Non-Asbestos Fibre	Detect					1	0.04	0	0.2	0	0
	Tremolite	Detect					ND	0	0	0	0	0
Inorganics	ANC at pH 4	mol/kg	0.03				2.03		1.1125		0	0
	ANC pH_6 dry soil	mol/kg	0.03				0.407		0.2533		0	0
	Loss on ignition	%	0.7				2.75		1.874		0	0
	Moisture	%					39	16	15	6.7	0	0
	pH (Lab)	pH_Units	1				11.6	8.6	8.53	0.82	0	0
	Sulphate	mg/kg	48				573		573		0	0
	TOC	percent	0.2				1.06		0.725		0	0
PAH	Coronene	mg/kg	0.2				0.245		0.2225		0	0
	PAH 17 Total	mg/kg	10				29.6		19.8		0	0
PAH 16	Naphthalene	mg/kg	0.009	**3.15**	**ND**	**0.015**	2.24	0.23	0.09135	0.46	25	21
	Acenaphthene	mg/kg	0.008	**717(SAT)**	**ND**	**-**	19	0.96	0.16	3.4	0	0
	Acenaphthylene	mg/kg	0.012	**950(SAT)**	**ND**	**-**	0.258	0.13	0.07465	0.2	0	0
	Fluoranthene	mg/kg	0.017	**1030(SAT)**	**ND**	**-**	59.3	4.6	2.07	11	0	0
	Anthracene	mg/kg	0.016	**12800(SAT)**	**ND**	**-**	9.35	0.84	0.321	1.7	0	0
	Phenanthrene	mg/kg	0.015	**232(SAT)**	**ND**	**-**	34.1	2.9	1.0535	6.3	0	0
	Fluorene	mg/kg	0.01	**952(SAT)**	**ND**	**-**	10.9	0.67	0.154	2	0	0
	Chrysene	mg/kg	0.01	**22.5(SAT)**	**ND**	**-**	34.3	2.3	0.95	6.1	1	1
	Pyrene	mg/kg	0.015	**2390(SAT)**	**ND**	**-**	71.4	4.8	2.13	13	0	0
	Benzo(a)anthracene	mg/kg	0.014	**6.59(SAT)**	**ND**	**-**	37	2.4	1.012	6.6	1	1
	Benzo(b)fluoranthene	mg/kg	0.015	**3.48(SAT)**	**ND**	**0.026**	16.9	1.8	0.891	3.1	27	24
	Benzo(k)fluoranthene	mg/kg	0.014	**96.9(SAT)**	**ND**	**0.037**	21.8	1.2	0.383	3.9	25	22
	Benzo(a)pyrene	mg/kg	0.015	**5**	**ND**	**0.013**	28.9	2	0.7945	5.2	30	24
	Dibenz(a,h)anthracene	mg/kg	0.023	**0.274(SAT)**	**ND**	**-**	1.68	0.24	0.151	0.33	7	5
	Benzo(g,h,i)perylene	mg/kg	0.024	**340(SAT)**	**ND**	**0.105**	12.4	1.1	0.4905	2.2	22	19
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.018	**38.4(SAT)**	**ND**	**0.022**	15	1.2	0.4755	2.7	27	24
	PAH 16 Total	mg/kg	0.118				67.1	16	9.33	18	0	0
TPH CWG	>C5-C6 Aliphatics	mg/kg	0.01	**13.2**	**ND**	**See TPH**	0.0189	0.011	0.01	0.0023	0	0
	>C6-C8 Aliphatics	mg/kg	0.01	**17.7**	**ND**	**See TPH**	0.0629	0.025	0.0173	0.016	0	0
	>C10-C44 Aliphatics	mg/kg	5				3250	199	14.5	685	0	0
	>C10-C44 Aliphatics/Aromatics	mg/kg	10				3670	427	132	879	0	0
	>C8-C10 Aliphatics	mg/kg	0.01	**2.29**	**ND**	**See TPH**	0.541	0.061	0.0265	0.11	0	0
	>C10-C12 Aliphatics	mg/kg	1	**8.97**	**ND**	**See TPH**	49.2	3.1	1	8.9	2	2
	>C12-C16 Aliphatics	mg/kg	1	**40.7(SAT)**	**ND**	**See TPH**	383	15	1	68	1	1
	>C16-C21 Aliphatics	mg/kg	1	**64000(SAT)**	**NR**	**See TPH**	746	31	1.87	134	0	0
	>C21-C35 Aliphatics	mg/kg	1	**64000(SAT)**	**NR**	**See TPH**	3020	140	6.18	562	0	0
	>C35-C44 Aliphatics	mg/kg	1				132	11	1.19	25	0	0
	>C5-C10 Aliphatics	mg/kg	0.05				0.558	0.1	0.0543	0.12	0	0
	>EC6-EC7 Aromatics	mg/kg	0.01				ND	0.01	0.01	0	0	0
	>EC7-EC8 Aromatics	mg/kg	0.01	**131**	**ND**	**2.3**	ND	0.01	0.01	0	0	0
	>C5-C10 Aromatics	mg/kg	0.05				0.36	0.069	0.05	0.067	0	0
	>EC8-EC10 Aromatics	mg/kg	0.01	**3.16**	**ND**	**See TPH**	0.36	0.042	0.0176	0.075	0	0
	>EC10-EC12 Aromatics	mg/kg	1	**16.3**	**ND**	**See TPH**	9.13	1.5	1	1.7	0	0
	>EC10-EC44 Aromatics	mg/kg	5				2760	229	128	499	0	0
	>EC12-EC16 Aromatics	mg/kg	1	**78(SAT)**	**ND**	**See TPH**	272	18	4.37	51	2	2
	>EC16-EC21 Aromatics	mg/kg	1	**994(SAT)**	**NR**	**See TPH**	694	51	24.7	124	0	0
	>EC21-EC35 Aromatics	mg/kg	1	**1720(SAT)**	**NR**	**See TPH**	1810	141	71.8	330	1	1

						Field_ID						
						Sample_Depth_Range						
						Sampled_Date_Time						
				Arcadis GAC - Human Health - Low Density Residential (combined pathways)	Arcadis GAC - Human Health - Neighbouring Resident	Arcadis GAC - Water Resources - Aquifers - England & Wales						
Chem_Group	**ChemName**	**output unit**	**EQL**				Maximum Detect	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances
	>EC40-EC44 Aromatics	mg/kg	1				59.5	4.2	1	11	0	0
	>EC35-EC44 Aromatics	mg/kg	1				153	18	4.19	37	0	0
	TPH Aliphatics & Aromatics >C5-44	mg/kg	10				3670	427	129	879	0	0
TPH	TPH (C5-C10)	mg/kg	0.02				0.918	0.11	0.0543	0.2	0	0
	Mineral Oil (C10-40)	mg/kg	5				10.2		10.1		0	0
BTEX	Benzene	mg/kg	0.009	**0.0713**	**1.84**	**0.0019**	ND	0.11	0.18	0.086	31	0
	Toluene	mg/kg	0.007	**131**	**ND**	**2.3**	ND	0.084	0.14	0.067	0	0
	Ethylbenzene	mg/kg	0.004	**11.6**	**ND**	**1.7**	ND	0.048	0.08	0.038	0	0
	Xylene (m & p)	mg/kg	0.01	**5.75**	**ND0**	**1.45**	ND	0.12	0.2	0.095	31	0
	Xylene (o)	mg/kg	0.01	**5.75**	**ND0**	**1.45**	ND	0.12	0.2	0.095	31	0
	Xylene Total	mg/kg	0.02	**11.5**	**ND**	**2.9**	ND	0.24	0.4	0.19	0	0
	Total BTEX	mg/kg	0.04				ND	0.48	0.8	0.38	0	0
Fuel oxygenates	MTBE	mg/kg	0.01	**18.7**	**467**	**0.018**	ND	0.12	0.2	0.095	18	0
VOC - hydrocarbons	Styrene	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	1,2,4-trimethylbenzene	mg/kg	0.009				ND	0.14	0.18	0.086	0	0
	1,3,5-trimethylbenzene	mg/kg	0.008				ND	0.12	0.16	0.076	0	0
	Isopropylbenzene	mg/kg	0.005				ND	0.076	0.1	0.048	0	0
	n-butylbenzene	mg/kg	0.011				ND	0.17	0.22	0.1	0	0
	n-propylbenzene	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	p-isopropyltoluene	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	sec-butylbenzene	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	tert-butylbenzene	mg/kg	0.014				ND	0.21	0.28	0.13	0	0
SVOC	4-bromophenyl phenyl ether	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2-chloronaphthalene	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2-methylnaphthalene	mg/kg	0.1				0.557	0.54	0.5285	0.37	0	0
	4-chlorophenyl phenyl ether	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Azobenzene	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Bis(2-chloroethoxy) methane	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Bis(2-chloroethyl)ether	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Bis(2-chloroisopropyl) ether	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Carbazole	mg/kg	0.1				0.169	0.44	0.3345	0.41	0	0
	Dibenzofuran	mg/kg	0.1				1.21	0.52	0.389	0.49	0	0
	Nitrobenzene	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
PCB	PCB 101	mg/kg	0.003				ND	0.0084	0.003	0.012	0	0
	PCB 118	mg/kg	0.003				ND	0.0084	0.003	0.012	0	0
	PCB 138	mg/kg	0.003				ND	0.0084	0.003	0.012	0	0
	PCB 153	mg/kg	0.003				ND	0.0084	0.003	0.012	0	0
	PCB 180	mg/kg	0.003				ND	0.0084	0.003	0.012	0	0
	PCB 28	mg/kg	0.003				ND	0.0084	0.003	0.012	0	0
	PCB 52	mg/kg	0.003				ND	0.0084	0.003	0.012	0	0
	Total PCB 7 Congeners	mg/kg	0.021				ND	0.059	0.021	0.085	0	0
Chlorinated Hydrocarbons	cis-1,3-dichloropropene	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	trans-1,3-dichloropropene	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	1,1,1,2-tetrachloroethane	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	1,1,1-trichloroethane	mg/kg	0.007	**1.68**	**ND**	**5.64**	ND	0.11	0.14	0.067	0	0
	1,1,2,2-tetrachloroethane	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	1,1,2-trichloroethane	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	1,1-dichloroethane	mg/kg	0.008	**0.477**	**50.6**	**0.0042**	ND	0.12	0.16	0.076	4	0
	1,1-dichloroethene	mg/kg	0.01	**0.0599**	**37.7**	**0.372**	ND	0.15	0.2	0.095	3	0
	1,1-dichloropropene	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	1,2,3-trichloropropane	mg/kg	0.016				ND	0.24	0.32	0.15	0	0
	1,2-dibromo-3-chloropropane	mg/kg	0.014				ND	0.21	0.28	0.13	0	0
	1,2-dichloroethane	mg/kg	0.005	**0.00219**	**0.0861**	**0.0038**	ND	0.076	0.1	0.048	4	0
	1,2-dichloropropane	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	1,3-dichloropropane	mg/kg	0.007				ND	0.11	0.14	0.067	0	0
	2,2-dichloropropane	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	Bromochloromethane	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	Bromodichloromethane	mg/kg	0.007				ND	0.11	0.14	0.067	0	0
	Bromoform	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	Carbon tetrachloride	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	Chlorodibromomethane	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	Chloroethane	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	Chloroform	mg/kg	0.008	**0.25**	**25**	**0.16**	ND	0.12	0.16	0.076	0	0
	Chloromethane	mg/kg	0.007				ND	0.11	0.14	0.067	0	0
	cis-1,2-dichloroethene	mg/kg	0.006	**0.035**	**3.62**	**0.041**	ND	0.092	0.12	0.057	3	0
	Dibromomethane	mg/kg	0.009				ND	0.14	0.18	0.086	0	0
	Dichloromethane	mg/kg	0.01				0.03	0.16	0.2	0.085	0	0
	Hexachlorobutadiene	mg/kg	0.02				ND	0.23	0.25	0.2	0	0
	Hexachlorocyclopentadiene	mg/kg	0.1				ND	0.48	0.35	0.38	0	0
	Hexachloroethane	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Trichloroethene	mg/kg	0.009	**0.00299**	**0.73**	**0.013**	ND	0.14	0.18	0.086	4	0
	Tetrachloroethene	mg/kg	0.005	**0.028**	**11.7**	**0.021**	ND	0.076	0.1	0.048	3	0

						Field_ID						
						Sample_Depth_Range						
						Sampled_Date_Time						
Chem_Group	**ChemName**	**output unit**	**EQL**	Arcadis GAC - Human Health - Low Density Residential (combined pathways)	Arcadis GAC - Human Health - Neighbouring Resident	Arcadis GAC - Water Resources - Aquifers - England & Wales	Maximum Detect	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances
	trans-1,2-dichloroethene	mg/kg	0.01	**0.526**	**11.9**	**0.041**	ND	0.15	0.2	0.095	3	0
	Vinyl chloride	mg/kg	0.006	**0.000263**	**0.227**	**0.0011**	ND	0.092	0.12	0.057	4	0
Halogenated Hydrocarbons	1,2-dibromoethane	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	Bromomethane	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	Dichlorodifluoromethane	mg/kg	0.006				ND	0.092	0.12	0.057	0	0
	Trichlorofluoromethane	mg/kg	0.006				ND	0.092	0.12	0.057	0	0
Halogenated Benzenes	1,2,3-trichlorobenzene	mg/kg	0.02				ND	0.31	0.4	0.19	0	0
	1,2,4-trichlorobenzene	mg/kg	0.02				ND	0.23	0.25	0.2	0	0
	1,2-dichlorobenzene	mg/kg	0.01				ND	0.13	0.15	0.091	0	0
	1,3,5-Trichlorobenzene	mg/kg	0.02				ND	0.31	0.4	0.19	0	0
	1,3-dichlorobenzene	mg/kg	0.008				ND	0.11	0.13	0.072	0	0
	1,4-dichlorobenzene	mg/kg	0.005				ND	0.076	0.1	0.048	0	0
	2-chlorotoluene	mg/kg	0.009				ND	0.14	0.18	0.086	0	0
	4-chlorotoluene	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	Bromobenzene	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
	Chlorobenzene	mg/kg	0.005	**0.0704**	**10.1**	**0.37**	ND	0.076	0.1	0.048	3	0
	Hexachlorobenzene	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
Solvents	Carbon disulfide	mg/kg	0.007				ND	0.11	0.14	0.067	0	0
	Isophorone	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
Amino Aliphatics	N-nitrosodi-n-propylamine	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
Phenolics	4-nitrophenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2,4,5-trichlorophenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2,4,6-trichlorophenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2,4-dichlorophenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2,4-dimethylphenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2-chlorophenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2-methylphenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2-nitrophenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	4-chloro-3-methylphenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	4-methylphenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Pentachlorophenol	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Phenol	mg/kg	0.1	**285**	**2570**	**0.014**	ND	0.43	0.3	0.43	4	0
Anilines	4-nitroaniline	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2-nitroaniline	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	3-nitroaniline	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	4-chloroaniline	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
Explosives	2,4-dinitrotoluene	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	2,6-dinitrotoluene	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
NA	Asbestos Quantification Total	%	0.001				0.0442	0.0096	0.001	0.019	0	0
	Asbestos Gravimetric Quantification	mass %	0.001				0.0442	0.0096	0.001	0.019	0	0
	tert-Amyl methyl ether	mg/kg	0.01				ND	0.15	0.2	0.095	0	0
Other	Temperature	°C					18.7		18.3		0	0
	Electrical conductivity *(lab)	µS/cm					162		147.5		0	0
Phthalates	Bis(2-ethylhexyl) phthalate	mg/kg	0.1				0.576	0.44	0.338	0.43	0	0
	Butyl benzyl phthalate	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Diethylphthalate	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Dimethyl phthalate	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Di-n-butyl phthalate	mg/kg	0.1				ND	0.43	0.3	0.43	0	0
	Di-n-octyl phthalate	mg/kg	0.1				ND	0.43	0.3	0.43	0	0

							Location	CP101	CP102	CP104											
							Sampled_Date_Time	23/07/2020	23/07/2020	23/07/2020											
				Arcadis GAC - Human Health - Residential	Arcadis GAC - Human Health - Neighbouring Resident	Arcadis GAC - Water Resources - Aquifers - England & Wales					Statistical Summary										
Chem_Group	ChemName	output unit	EQL								Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances
Metals	Arsenic (Filtered)	µg/L	0.5	NVP	NVP	10	0.976	6.27	4.78		3	3	0.976	0.976	6.27	6.27	4	4.78	2.7	0	0
	Barium (Filtered)	µg/L	0.2	NVP	NVP	700	84.7	308	536		3	3	84.7	84.7	536	536	310	308	226	0	0
	Beryllium (Filtered)	µg/L	0.1				<0.1	<0.1	<0.1		3	0	<0.1	ND	<0.1	ND	0.1	0.1	0	0	0
	Boron (Filtered)	µg/L	10	NVP	NVP	1000	119	52.1	171		3	3	52.1	52.1	171	171	114	119	60	0	0
	Cadmium (Filtered)	µg/L	0.08	NVP	NVP	5	<0.08	<0.08	<0.08		3	0	<0.08	ND	<0.08	ND	0.08	0.08	0	0	0
	Chromium (hexavalent) (Filtered)	µg/L	30	NVP	NVP	50	<30	<30	<30		3	0	<30	ND	<30	ND	30	30	0	0	0
	Chromium (Filtered)	µg/L	1	NVP	NVP	50	<1	7.11	6.64		3	2	<1	6.64	7.11	7.11	4.9	6.64	3.4	0	0
	Copper (Filtered)	µg/L	0.3	NVP	NVP	2000	0.442	1.5	<0.3		3	2	<0.3	0.442	1.5	1.5	0.75	0.442	0.66	0	0
	Lead (Filtered)	µg/L	0.2	NVP	NVP	10	0.251	<0.2	0.228		3	2	<0.2	0.228	0.251	0.251	0.23	0.228	0.026	0	0
	Mercury (Filtered)	µg/L	0.01	9.7	9.7	1	<0.01	<0.01	<0.01		3	0	<0.01	ND	<0.01	ND	0.01	0.01	0	0	0
	Nickel (Filtered)	µg/L	0.4	NVP	NVP	20	4.64	4.03	1.75		3	3	1.75	1.75	4.64	4.64	3.5	4.03	1.5	0	0
	Selenium (Filtered)	µg/L	1	NVP	NVP	10	<1	<1	<1		3	0	<1	ND	<1	ND	1	1	0	0	0
	Vanadium (Filtered)	µg/L	1				<1	<1	<1		3	0	<1	ND	<1	ND	1	1	0	0	0
	Zinc (Filtered)	µg/L	1	NVP	NVP	3000	2.84	6.79	23.7		3	3	2.84	2.84	23.7	23.7	11	6.79	11	0	0
Inorganics	pH (Lab)	pH_Units	1				7.46	7.13	7.25		3	3	7.13	7.13	7.46	7.46	7.3	7.25	0.17	0	0
	Sulphate (Filtered)	mg/L	2				60.3	35.4	44.7		3	3	35.4	35.4	60.3	60.3	47	44.7	13	0	0
PAH 16	Naphthalene	µg/L	0.01	3900	4110	2	0.0445	<0.01	<0.01		3	1	<0.01	0.0445	0.0445	0.0445	0.022	0.01	0.02	0	0
	Acenaphthene	µg/L	0.005	>SOL	>SOL	-	0.14	<0.005	<0.005		3	1	<0.005	0.14	0.14	0.14	0.05	0.005	0.078	3	3
	Acenaphthylene	µg/L	0.005	>SOL	>SOL	-	0.0811	<0.005	<0.005		3	1	<0.005	0.0811	0.0811	0.0811	0.03	0.005	0.044	3	3
	Fluoranthene	µg/L	0.005	>SOL	>SOL	-	3.01	<0.005	0.0177		3	2	<0.005	0.0177	3.01	3.01	1	0.0177	1.7	3	3
	Anthracene	µg/L	0.005	>SOL	>SOL	-	0.331	<0.005	0.00527		3	2	<0.005	0.00527	0.331	0.331	0.11	0.00527	0.19	3	3
	Phenanthrene	µg/L	0.005	>SOL	>SOL	-	1.07	0.00748	0.0136		3	3	0.00748	0.00748	1.07	1.07	0.36	0.0136	0.61	3	3
	Fluorene	µg/L	0.005	>SOL	>SOL	-	0.132	<0.005	<0.005		3	1	<0.005	0.132	0.132	0.132	0.047	0.005	0.073	3	3
	Chrysene	µg/L	0.005	>SOL	>SOL	-	1.76	<0.005	0.00996		3	2	<0.005	0.00996	1.76	1.76	0.59	0.00996	1	3	3
	Pyrene	µg/L	0.005	>SOL	>SOL	-	3.28	<0.005	0.0217		3	2	<0.005	0.0217	3.28	3.28	1.1	0.0217	1.9	3	3
	Benzo(a)anthracene	µg/L	0.005	>SOL	>SOL	-	1.68	<0.005	0.00562		3	2	<0.005	0.00562	1.68	1.68	0.56	0.00562	0.97	3	3
	Benzo(b)fluoranthene	µg/L	0.005	>SOL	>SOL	0.025	3.35	<0.005	0.0121		3	2	<0.005	0.0121	3.35	3.35	1.1	0.0121	1.9	1	1
	Benzo(k)fluoranthene	µg/L	0.005	>SOL	>SOL	0.025	1.22	<0.005	0.00547		3	2	<0.005	0.00547	1.22	1.22	0.41	0.00547	0.7	1	1
	Benzo(a)pyrene	µg/L	0.002	>SOL	>SOL	0.01	2.69	<0.002	0.00987		3	2	<0.002	0.00987	2.69	2.69	0.9	0.00987	1.5	1	1
	Dibenz(a,h)anthracene	µg/L	0.005	>SOL	>SOL	-	0.439	<0.005	<0.005		3	1	<0.005	0.439	0.439	0.439	0.15	0.005	0.25	3	3
	Benzo(g,h,i)perylene	µg/L	0.005	>SOL	>SOL	0.025	2.36	<0.005	0.0111		3	2	<0.005	0.0111	2.36	2.36	0.79	0.0111	1.4	1	1
	Indeno(1,2,3-c,d)pyrene	µg/L	0.005	>SOL	>SOL	0.025	1.96	<0.005	<0.005		3	1	<0.005	1.96	1.96	1.96	0.66	0.005	1.1	1	1
	PAH 16 Total	µg/L	0.082				23.6	<0.082	0.112		3	2	<0.082	0.112	23.6	23.6	7.9	0.112	14	0	0
TPH CWG	>C5-C6 Aliphatics	µg/L	10	>SOL	>SOL	See TPH	<10	<10	<10		3	0	<10	ND	<10	ND	10	10	0	3	3
	>C6-C8 Aliphatics	µg/L	10	>SOL	>SOL	See TPH	<10	<10	<10		3	0	<10	ND	<10	ND	10	10	0	3	3
	>C8-C10 Aliphatics	µg/L	10	>SOL	>SOL	See TPH	<10	<10	<10		3	0	<10	ND	<10	ND	10	10	0	3	3
	>C10-C12 Aliphatics	µg/L	10	>SOL	>SOL	See TPH	<10	<10	<10		3	0	<10	ND	<10	ND	10	10	0	3	3
	>C12-C16 Aliphatics	µg/L	10	>SOL	>SOL	See TPH	<10	<10	<10		3	0	<10	ND	<10	ND	10	10	0	3	3
	>C16-C21 Aliphatics	µg/L	10	NR	NR	See TPH	11	<10	<10		3	1	<10	11	11	11	10	10	0.58	3	3
	>C21-C35 Aliphatics	µg/L	10	NR	NR	See TPH	968	<10	<10		3	1	<10	968	968	968	329	10	553	3	3
	>C16-C35 Aliphatics	µg/L	10	NR	NR	See TPH	979	<10	<10		3	1	<10	979	979	979	333	10	559	3	3
	Total Aliphatics >C12-C35	µg/L	10				979	<10	<10		3	1	<10	979	979	979	333	10	559	0	0
	>EC6-EC7 Aromatics	µg/L	10				<10	<10	<10		3	0	<10	ND	<10	ND	10	10	0	0	0
	>EC7-EC8 Aromatics	µg/L	10	>SOL	>SOL	700	<10	<10	<10		3	0	<10	ND	<10	ND	10	10	0	0	0
	>EC8-EC10 Aromatics	µg/L	10	8900	11500	See TPH	<10	<10	<10		3	0	<10	ND	<10	ND	10	10	0	0	0
	>EC10-EC12 Aromatics	µg/L	10	8000	9490	See TPH	<10	<10	<10		3	0	<10	ND	<10	ND	10	10	0	0	0
	>EC12-EC16 Aromatics	µg/L	10	>SOL	>SOL	See TPH	<10	<10	<10		3	0	<10	ND	<10	ND	10	10	0	3	3
	>EC16-EC21 Aromatics	µg/L	10	NR	NR	See TPH	24	<10	<10		3	1	<10	24	24	24	15	10	8.1	3	3
	>EC21-EC35 Aromatics	µg/L	10	NR	NR	See TPH	197	<10	<10		3	1	<10	197	197	197	72	10	108	3	3
	Total Aromatics >EC12-EC35	µg/L	10				221	<10	<10		3	1	<10	221	221	221	80	10	122	0	0
	TPH >C5-C35 Aliphatics/Aromatics	µg/L	10	na	na	10	1200	<10	<10		3	1	<10	1200	1200	1200	407	10	687	1	1
TPH	GRO TOT (C5-C12) Moisture Corrected	µg/L	50				<50	<50	<50		3	0	<50	ND	<50	ND	50	50	0	0	0
BTEX	Benzene	µg/L	7	910	1010	1	<7	<7	<7		3	0	<7	ND	<7	ND	7	7	0	3	0
	Toluene	µg/L	4	>SOL	>SOL	700	<4	<4	<4		3	0	<4	ND	<4	ND	4	4	0	0	0
	Ethylbenzene	µg/L	5	55000	58700	300	<5	<5	<5		3	0	<5	ND	<5	ND	5	5	0	0	0
	Xylene (m & p)	µg/L	8	22500	24950	250	<8	<8	<8		3	0	<8	ND	<8	ND	8	8	0	0	0
	Xylene (o)	µg/L	3	22500	24950	250	<3	<3	<3		3	0	<3	ND	<3	ND	3	3	0	0	0
	Xylene Total	µg/L	11	45000	49900	500	<11	<11	<11		3	0	<11	ND	<11	ND	11	11	0	0	0
	Total BTEX	µg/L	28				<28	<28	<28		3	0	<28	ND	<28	ND	28	28	0	0	0
Fuel oxygenates	MTBE	µg/L	3	390000	400000	15	<3	<3	<3		3	0	<3	ND	<3	ND	3	3	0	0	0

APPENDIX I

Ground Water and Ground Gas Monitoring Results

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	22/07/2020

Weather:	Dry & bright
Engineer:	E. Yeatman

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Differential (mbar)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.1	0.1	20.3	0.0	0.0			
						30	4.5	8.5	0.9	0.0	0.0			
				0.02	0.0	60	4.5	8.6	0.2	0.0	0.0			
						90	4.4	8.6	0.1	0.0	0.0			
				Steady:	Steady:	120	4.5	8.6	0.1	0.0	0.0			
						150	4.5	8.6	0.1	0.0	0.0			Response Zone 0.5m bgl -
WS102	17:15	1006		0.02	0.0	180	4.5	8.6	0.1	0.0	0.0	1.83	2.47	2.5m bgl: Made Ground
				Peak:	Peak:	Initial	0.1	0.1	19.9	0.0	0.0			
						30	0.0	0.9	8.5	0.0	0.0			
				0.0	0.0	60	0.0	0.9	8.0	0.0	0.0			
						90	0.0	0.9	7.7	0.0	0.0			
				Steady:	Steady:	120	0.0	0.9	7.5	0.0	0.0			
						150	0.0	0.9	7.5	0.0	0.0			Response Zone 0.5 - 1.5m bgl -
WS104	17:25	1006		0.0	0.0	180	0.0	0.9	7.5	0.0	0.0	Dry	1.55	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	20.4	0.0	0.0			
						30	0.0	0.0	20.2	0.0	1.0			
				-0.05	0.0	60	0.0	0.0	20.2	0.0	1.0			
						90	0.0	0.0	20.2	0.0	0.0			
				Steady:	Steady:	120	0.0	0.0	20.2	0.0	0.0			
						150	0.0	0.0	20.3	0.0	0.0			Response Zone 0.5 - 1.0m bgl -
WS107	15:05	1016		-0.05	0.0	180	0.0	0.0	20.3	0.0	0.0	0.49	1.07	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	20.6	0.0	0.0			
						30	0.0	0.3	19.8	0.0	0.0			
				0.03	0.0	60	0.0	0.4	19.8	0.0	0.0			
						90	0.0	0.4	19.8	0.0	0.0			
				Steady:	Steady:	120	0.0	0.4	19.8	0.0	0.0			
						150	0.0	0.4	19.8	0.0	0.0			Response Zone 0.5 - 1.0m bgl -
WS108	15:15	1016		0.03	0.0	180	0.0	0.4	19.8	0.0	0.0	0.55	1.36	Made Ground

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	22/07/2020

Weather:	Dry & bright
Engineer:	E. Yeatman

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Pressure (Pa)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.1	0.0	19.9	0.0	0.0			
						30	0.1	0.7	19.2	0.0	0.0			
				0.55	0.3	60	0.1	0.7	19.1	0.0	0.0			
						90	0.1	0.7	19.1	0.0	0.0			
				Steady:	Steady:	120	0.1	0.7	19.1	0.0	0.0			
						150	0.1	0.7	19.1	0.0	0.0			Response Zone 1.0 - 3.0m bgl
WS110	14:25	1016		0.55	0.1	180	0.1	0.7	19.1	0.0	0.0	1.21	3.28	Made Ground
				Peak:	Peak:	Initial	0.1	0.0	19.9	0.0	0.0			
						30	0.1	0.0	18.4	0.0	0.0			
				0.0	0.1	60	0.1	0.0	18.4	0.0	0.0			
						90	0.1	0.0	18.4	0.0	0.0			
				Steady:	Steady:	120	0.1	0.0	18.4	0.0	0.0			
						150	0.1	0.0	18.4	0.0	0.0			Response Zone 0.5 - 1.0m bgl
WS111	14:40	1016		0.0	0.1	180	0.1	0.0	18.4	0.0	0.0	0.73	1.15	Made Ground
				Peak:	Peak:	Initial	0.1	0.0	19.9	0.0	0.0			
						30	0.1	0.4	19.4	0.0	0.0			
				0.02	0.0	60	0.1	0.2	19.5	0.0	0.0			
						90	0.1	0.2	19.6	0.0	0.0			
				Steady:	Steady:	120	0.1	0.1	19.6	0.0	0.0			
						150	0.1	0.1	19.6	0.0	0.0			Response Zone 1.0 - 2.5m bgl
WS113	14:15	1015		0.02	0.0	180	0.1	0.1	19.6	0.0	0.0	0.88	2.6	Natural Glacial Till
				Peak:	Peak:	Initial	0.1	0.0	20.2	0.0	0.0			
						30	0.0	2.5	17.7	0.0	0.0			
				0.05	0.0	60	0.0	2.6	17.7	0.0	0.0			
						90	0.0	2.4	18.0	0.0	0.0			
				Steady:	Steady:	120	0.0	2.2	18.3	0.0	0.0			
						150	0.0	2.1	18.5	0.0	0.0			Response Zone 0.5 - 1.0m bgl
WS116	14:45	1016		0.05	0.0	180	0.0	2.0	18.6	0.0	0.0	Dry	1.22	Made Ground

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	31/07/2020

Weather:	Dry, hot, bright
Engineer:	D. Fisher

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Differential (mbar)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.1	0.7	18.7	0	0			
						30	3.9	8.8	0.2	0	1			
				0.10	0.0	60	3.9	8.8	0.2	0	1			
						90	3.9	8.8	0.1	0	0			
				Steady:	Steady:	120	3.9	8.8	0.1	0	0			
						150	3.9	8.8	0.1	0.0	0.0			Response Zone 0.5m bgl -
WS102	09:20	1005	27	0.10	0.0	180	3.9	8.8	0.1	0.0	0.0	1.83	2.48	2.5m bgl: Made Ground
				Peak:	Peak:	Initial	0.0	0.1	20.2	0.0	0.0			
						30	0.1	1.0	7.0	0.0	0.0			
				0.05	0.0	60	0.1	1.0	6.8	0.0	0.0			
						90	0.1	1.0	6.6	0.0	0.0			
				Steady:	Steady:	120	0.1	1.1	6.5	0.0	0.0			
						150	0.1	1.1	6.4	0.0	0.0			Response Zone 0.5 - 1.5m bgl -
WS104	09:00	1005	27	0.03	0.0	180	0.1	1.1	6.3	0.0	0.0	1.48	1.55	Made Ground
				Peak:	Peak:	Initial	0.1	0.1	19.4	0.0	1.0			
						30	0.1	0.0	19.4	0.0	1.0			
				0.07	0.0	60	0.0	0.0	19.5	0.0	1.0			
						90	0.0	0.0	19.5	0.0	1.0			
				Steady:	Steady:	120	0.0	0.0	19.5	0.0	1.0			
						150	0.0	0.0	19.5	0.0	1.0			Response Zone 0.5 - 1.0m bgl -
WS107	09:45	1005	27	0.05	0.00	180	0.0	0.0	19.5	0.0	1.0	0.47	1.05	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	19.7	0.0	2.0			
						30	0.0	0.6	18.7	0.0	3.0			
				0.12	2.6	60	0.0	0.5	18.9	0.0	3.0			
						90	0.0	0.4	19.0	0.0	3.0			
				Steady:	Steady:	120	0.0	0.3	19.3	0.0	2.0			
						150	0.0	0.2	19.4	0.0	2.0			Response Zone 0.5 - 1.0m bgl -
WS108	10:05	1005	27	0.03	2.3	180	0.0	0.2	19.5	0.0	2.0	0.61	1.36	Made Ground

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	31/07/2020

Weather:	Dry, hot, bright
Engineer:	D. Fisher

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Pressure (Pa)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.0	0.1	20.1	0.0	3.0			
						30	0.6	1.0	18.3	0.0	3.0			
				-0.14	8.0	60	0.5	1.0	18.4	0.0	3.0			
						90	0.5	0.9	18.5	0.0	3.0			
				Steady:	Steady:	120	0.5	0.9	18.4	0.0	3.0			
						150	0.5	1.0	18.4	0.0	3.0			Response Zone 1.0 - 3.0m bgl
WS110	10:30	1005	28	-0.15	8.0	180	0.5	1.0	18.2	0.0	3.0	1.26	3.29	Made Ground
				Peak:	Peak:	Initial	0.0	0.1	19.8	0.0	0.0			
						30	0.0	0.0	18.1	0.0	5.0			
				0.22	8.5	60	0.0	0.0	18.3	0.0	4.0			
						90	0.0	0.0	18.2	0.0	4.0			
				Steady:	Steady:	120	0.0	0.0	18.2	0.0	5.0			
						150	0.0	0.0	18.2	0.0	4.0			Response Zone 0.5 - 1.0m bgl
WS111	10:50	1005	28	0.17	8.5	180	0.0	0.1	18.2	0.0	4.0	0.7	1.15	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	19.8	0.0	0.0			
						30	0.0	0.5	19.0	0.0	6.0			
				0.05	10.0	60	0.0	0.5	18.9	0.0	6.0			
						90	0.0	0.5	18.9	0.0	6.0			
				Steady:	Steady:	120	0.0	0.5	18.9	0.0	6.0			
						150	0.0	0.5	18.9	0.0	6.0			Response Zone 1.0 - 2.5m bgl
WS113	11:05	1005	28	0.03	10.0	180	0.0	0.5	18.9	0.0	6.0	0.94	2.59	Natural Glacial Till
				Peak:	Peak:	Initial	0.0	0.1	20.1	0.0	6.0			
						30	0.0	3.0	17.4	0.0	4.0			
				-0.14	0.2	60	0.0	3.1	17.3	0.0	4.0			
						90	0.0	3.2	17.2	0.0	4.0			
				Steady:	Steady:	120	0.0	3.3	17.2	0.0	3.0			
						150	0.0	3.4	17.1	0.0	3.0			Response Zone 0.5 - 1.0m bgl
WS116	11:30	1005	28	-0.10	0.2	180	0.0	3.5	17.0	0.0	3.0	Dry	1.2	Made Ground

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	31/07/2020

Weather:	Dry, hot, bright
Engineer:	D. Fisher

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Differential (mbar)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.0	0.1	18.2	0.0	5.0			
						30	0.0	0.2	12.8	0.0	11.0			
				0.05	0.0	60	0.0	0.2	12.7	0.0	12.0			
						90	0.0	0.2	12.7	0.0	12.0			
				Steady:	Steady:	120	0.0	0.2	12.7	0.0	12.0			
						150	0.0	0.2	12.7	0.0	12.0			Response Zone 9.0 - 15.0m
CP101	13:15	1006	29	0.05	0.0	180	0.0	0.2	12.7	0.0	12.0	11.48	14.95	bgl - Natural Glacial Til
				Peak:	Peak:	Initial	0.0	0.9	5.4	0.0	22.0			
						30	0.2	4.3	0.3	0.0	31.0			
				0.1	3.2	60	0.2	4.3	0.3	0.0	31.0			
						90	0.2	4.3	0.3	0.0	31.0			
				Steady:	Steady:	120	0.2	4.4	0.3	0.0	30.0			
						150	0.2	4.4	0.3	0.0	30.0			Response Zone 6.0 - 12.0m
CP102	12:30	1006	29	0.1	3.2	180	0.2	4.5	0.3	0.0	30.0	7.4	10.75	bgl - Natural Glacial Till
				Peak:	Peak:	Initial	0.0	0.0	18.9	0.0	3.0			
						30	0.3	0.2	17.4	0.0	3.0			
				0.02	0.1	60	0.2	0.1	17.9	0.0	2.0			
						90	0.1	0.0	18.1	0.0	2.0			
				Steady:	Steady:	120	0.1	0.0	18.2	0.0	2.0			
						150	0.1	0.0	18.3	0.0	2.0			Response Zone 6.0 - 12.0m
CP104	13:00	1006	29	0.00	0.1	180	0.1	0.0	18.4	0.0	2.0	5.75	11	bgl - Natural Glacial Tillil
				Peak:	Peak:	Initial	0.0	0.0	19.7	0.0	6.0			
						30	0.0	2.0	15.1	0.0	7.0			
				0.07	0.3	60	0.0	2.0	15.1	0.0	7.0			
						90	0.0	2.0	15.1	0.0	7.0			
				Steady:	Steady:	120	0.0	2.0	15.1	0.0	7.0			
						150	0.0	2.0	15.0	0.0	7.0			Response Zone 6.0 - 12.0m
CP107	12:15	1006	28	0.07	0.3	180	0.0	2.0	15.0	0.0	7.0	8.55	11.75	bgl - Natural Glacial Till

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	05/08/2020

Weather:	Dry, overcast
Engineer:	D. Fisher

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Differential (mbar)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.0	0.1	19.2	0.0	0.0			
						30	5.1	8.4	0.4	0.0	0.0			
				0.07	0.0	60	5.1	8.4	0.4	0.0	0.0			
						90	5.1	8.4	0.4	0.0	0.0			
				Steady:	Steady:	120	5.1	8.4	0.4	0.0	0.0			
						150	5.1	8.4	0.3	0.0	0.0			Response Zone 0.5m bgl -
WS102	08:30	1002	19	0.07	0.0	180	5.1	8.4	0.3	0.0	0.0	1.8	2.48	2.5m bgl: Made Ground
				Peak:	Peak:	Initial	0.0	0.1	20.2	0.0	1.0			
						30	0.0	0.0	20.1	0.0	1.0			
				0.02	0.0	60	0.0	0.0	20.1	0.0	1.0			
						90	0.0	0.0	20.0	0.0	1.0			
				Steady:	Steady:	120	0.0	0.0	20.0	0.0	1.0			
						150	0.0	0.0	20.0	0.0	1.0			Response Zone 0.5 - 1.5m bgl -
WS104	08:40	1002	19	0.02	0.0	180	0.0	0.0	20.0	0.0	1.0	1.5	1.55	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	19.9	0.0	1.0			
						30	0.0	0.0	19.8	0.0	1.0			
				-0.02	0.0	60	0.0	0.0	19.8	0.0	1.0			
						90	0.0	0.0	19.8	0.0	1.0			
				Steady:	Steady:	120	0.0	0.0	19.8	0.0	1.0			
						150	0.0	0.0	19.8	0.0	1.0			Response Zone 0.5 - 1.0m bgl -
WS107	09:00	1002	19	-0.02	0.0	180	0.0	0.0	19.8	0.0	1.0	0.48	1.05	Made Ground
				Peak:	Peak:	Initial	0.0	0.3	20.1	0.0	2.0			
						30	0.0	0.4	19.5	0.0	2.0			
				0.12	1.9	60	0.0	0.4	19.5	0.0	2.0			
						90	0.0	0.4	19.5	0.0	2.0			
				Steady:	Steady:	120	0.0	0.4	19.5	0.0	2.0			
						150	0.0	0.3	19.5	0.0	2.0			Response Zone 0.5 - 1.0m bgl -
WS108	09:10	1002	19	0.1	1.6	180	0.0	0.3	19.5	0.0	2.0	0.61	1.38	Made Ground

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	05/08/2020

Weather:	Dry, overcast
Engineer:	D. Fisher

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Pressure (Pa)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.2	0.2	20.1	0.0	0.0			
						30	0.2	0.8	18.8	0.0	7.0			
				0.2	0.4	60	0.2	0.8	18.8	0.0	7.0			
						90	0.2	1.0	18.7	0.0	7.0			
				Steady:	Steady:	120	0.3	1.0	18.8	0.0	7.0			
						150	0.3	1.0	18.8	0.0	7.0			Response Zone 1.0 - 3.0m bgl
WS110	09:35	1002	20	0.2	0.3	180	0.3	1.0	18.8	0.0	7.0	1.2	3.29	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	19.9	0.0	3.0			
						30	0.0	0.0	19.5	0.0	5.0			
				0.05	0.1	60	0.0	0.0	19.6	0.0	5.0			
						90	0.0	0.0	19.6	0.0	5.0			
				Steady:	Steady:	120	0.0	0.0	19.6	0.0	5.0			
						150	0.0	0.0	19.6	0.0	5.0			Response Zone 0.5 - 1.0m bgl
WS111	09:35	1002	20	0.05	0.1	180	0.0	0.0	19.6	0.0	5.0	0.7	1.15	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	19.7	0.0	0.0			
						30	0.1	0.3	19.0	0.0	3.0			
				0.14	0.2	60	0.0	0.2	10.3	0.0	3.0			
						90	0.0	0.2	19.3	0.0	3.0			
				Steady:	Steady:	120	0.0	0.2	19.3	0.0	4.0			
						150	0.0	0.2	19.2	0.0	4.0			Response Zone 1.0 - 2.5m bgl
WS113	09:50	1002	20	0.14	0.2	180	0.0	0.2	19.3	0.0	4.0	0.95	2.6	Natural Glacial Till
				Peak:	Peak:	Initial	0.0	0.0	19.6	0.0	2.0			
						30	0.0	2.2	18.2	0.0	2.0			
				-0.12	0.0	60	0.0	2.3	18.2	0.0	3.0			
						90	0.0	2.3	18.2	0.0	3.0			
				Steady:	Steady:	120	0.0	2.4	18.2	0.0	3.0			
						150	0.0	2.5	18.1	0.0	3.0			Response Zone 0.5 - 1.0m bgl
WS116	10:00	1002	20	-0.12	0.0	180	0.0	2.5	18.1	0.0	3.0	Dry	1.2	Made Ground

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	05/08/2020

Weather:	Dry, overcast
Engineer:	D. Fisher

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Differential (mbar)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.0	0.1	19.2	0.0	0.0			
						30	0.0	0.1	12.1	0.0	6.0			
				0.1	0.0	60	0.0	0.1	12.1	0.0	6.0			
						90	0.0	0.1	12.1	0.0	6.0			
				Steady:	Steady:	120	0.0	0.2	12.1	0.0	6.0			
						150	0.0	0.2	12.1	0.0	6.0			Response Zone 9.0 - 15.0m
CP101	10:15	1002	20	0.1	0.0	180	0.0	0.2	12.1	0.0	6.0	11.42	14.95	bgl - Natural Glacial Til
				Peak:	Peak:	Initial	0.0	0.0	19.5	0.0	24.0			
						30	0.0	0.0	6.2	0.0	24.0			
				0.03	2.2	60	0.0	0.0	6.1	0.0	24.0			
						90	0.0	0.0	6.0	0.0	24.0			
				Steady:	Steady:	120	0.0	0.0	6.0	0.0	24.0			
						150	0.0	0.0	6.0	0.0	24.0			Response Zone 6.0 - 12.0m
CP102	10:35	1002	20	0.05	2.0	180	0.0	0.0	5.9	0.0	24.0	7.38	10.75	bgl - Natural Glacial Till
				Peak:	Peak:	Initial	0.0	0.0	19.6	0.0	2.0			
						30	0.0	0.3	18.2	0.0	2.0			
				0.2	0.1	60	0.0	0.3	18.2	0.0	2.0			
						90	0.0	0.3	18.2	0.0	2.0			
				Steady:	Steady:	120	0.0	0.4	18.2	0.0	3.0			
						150	0.0	0.4	18.2	0.0	3.0			Response Zone 6.0 - 12.0m
CP104	11:50	1002	20	0.2	0.1	180	0.0	0.4	18.2	0.0	3.0	5.72	11	bgl - Natural Glacial Tillil
				Peak:	Peak:	Initial	0.0	0.3	20.2	0.0	4.0			
						30	0.0	0.3	12.8	0.0	4.0			
				0.1	0.2	60	0.0	0.3	12.8	0.0	4.0			
						90	0.0	0.2	12.8	0.0	4.0			
				Steady:	Steady:	120	0.0	0.2	12.8	0.0	4.0			
						150	0.0	0.3	12.8	0.0	4.0			Response Zone 6.0 - 12.0m
CP107	12:10	1002	20	0.1	0.2	180	0.0	0.3	12.8	0.0	4.0	8.55	11.75	bgl - Natural Glacial Till

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	20/08/2020

Weather:	Dry, Sunny
Engineer:	D.Fisher

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Differential (mbar)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.2	0.0	20.7	0.0	0.0			
						30	3.4	7.7	0.4	0.0	0.0			
				0.07	0.00	60	3.4	7.7	0.4	0.0	0.0			
						90	3.4	7.8	0.4	0.0	0.0			
				Steady:	Steady:	120	3.4	7.8	0.4	0.0	0.0			
						150	3.4	7.8	0.4	0.0	0.0			Response Zone 0.5m bgl -
WS102	09:40	996	20	0.09	0.00	180	5.1	7.8	0.4	0.0	0.0	1.77	2.48	2.5m bgl: Made Ground
				Peak:	Peak:	Initial	0.3	0.0	20.6	0.0	3.0			
						30	0.2	1.5	6.8	0.0	3.0			
				0.09	0.01	60	0.2	1.6	6.7	0.0	3.0			
						90	0.2	1.5	6.6	0.0	3.0			
				Steady:	Steady:	120	0.2	1.5	6.6	0.0	3.0			
						150	0.2	1.5	6.5	0.0	3.0			Response Zone 0.5 - 1.5m bgl -
WS104	09:30	996	20	0.09	0.00	180	0.2	1.5	6.5	0.0	3.0	Dry	1.55	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	20.2	0.0	0.0			
						30	0.0	0.0	19.2	0.0	0.0			
				0.15	0.3	60	0.0	0.0	19.2	0.0	0.0			
						90	0.0	0.0	19.2	0.0	0.0			
				Steady:	Steady:	120	0.0	0.0	19.2	0.0	0.0			
						150	0.0	0.0	19.2	0.0	0.0			Response Zone 0.5 - 1.0m bgl -
WS107	10:10	996	21	0.10	0.3	180	0.0	0.0	19.2	0.0	0.0	0.45	1.05	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	20.5	0.0	4.0			
						30	0.0	0.0	19.0	0.0	4.0			
				0.12	0.9	60	0.0	0.0	19.0	0.0	4.0			
						90	0.0	0.0	19.0	0.0	4.0			
				Steady:	Steady:	120	0.0	0.0	19.0	0.0	4.0			
						150	0.0	0.0	19.0	0.0	4.0			Response Zone 0.5 - 1.0m bgl -
WS108	10:25	996	21	0.10	0.6	180	0.0	0.0	19.0	0.0	4.0	0.62	1.38	Made Ground

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	20/08/2020

Weather:	Dry, Sunny
Engineer:	D.Fisher

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Pressure (Pa)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.0	0.0	20.1	0.0	0.0			
						30	0.0	0.0	19.5	0.0	0.0			
				0.12	0.0	60	0.0	0.0	19.5	0.0	0.0			
						90	0.0	0.0	19.5	0.0	0.0			
				Steady:	Steady:	120	0.0	0.0	19.5	0.0	0.0			
						150	0.0	0.0	19.5	0.0	0.0			Response Zone 1.0 - 3.0m bgl
WS110	12:15	996	21	0.12	0.2	180	0.0	0.0	19.5	0.0	0.0	1.25	3.29	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	19.6	0.0	6.0			
						30	0.0	0.0	18.2	0.0	6.0			
				0.05	0.0	60	0.0	0.0	18.2	0.0	6.0			
						90	0.0	0.0	18.2	0.0	6.0			
				Steady:	Steady:	120	0.0	0.0	18.2	0.0	6.0			
						150	0.0	0.0	18.2	0.0	6.0			Response Zone 0.5 - 1.0m bgl
WS111	12:25	996	21	0.03	0.0	180	0.0	0.0	18.2	0.0	6.0	0.81	1.15	Made Ground
				Peak:	Peak:	Initial	0.0	0.0	20.0	0.0	0.0			
						30	0.2	0.3	19.0	0.0	0.0			
				0.10	0.0	60	0.2	0.2	19.0	0.0	0.0			
						90	0.2	0.2	19.0	0.0	0.0			
				Steady:	Steady:	120	0.2	0.2	19.0	0.0	0.0			
						150	0.2	0.2	19.0	0.0	0.0			Response Zone 1.0 - 2.5m bgl
WS113	13:15	996	21	0.10	0.0	180	0.2	0.2	19.0	0.0	0.0	0.95	2.6	Natural Glacial Till
				Peak:	Peak:	Initial	0.0	0.0	20.2	0.0	0.0			
						30	0.0	1.1	19.6	0.0	0.0			
				0.3	0.1	60	0.0	1.1	19.6	0.0	0.0			
						90	0.0	1.1	19.5	0.0	0.0			
				Steady:	Steady:	120	0.0	1.1	19.5	0.0	0.0			
						150	0.0	1.1	19.5	0.0	0.0			Response Zone 0.5 - 1.0m bgl
WS116	13:30	996	21	0.3	0.1	180	0.0	1.1	19.5	0.0	0.0	Dry	1.2	Made Ground

Project:	Hyde Road, Manchester		
Job Number:	10041634	Date:	20/08/2020

Weather:	Dry, Sunny
Engineer:	D.Fisher

Monitoring Point Reference	Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Differential (mbar)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)	Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
				Peak:	Peak:	Initial	0.0	0.1	20.2	0.0	0.0			
						30	0.0	0.1	15.3	0.0	4.0			
				0.07	0.0	60	0.0	0.1	15.3	0.0	4.0			
						90	0.0	0.1	15.3	0.0	4.0			
				Steady:	Steady:	120	0.0	0.1	15.3	0.0	4.0			
						150	0.0	0.1	15.3	0.0	4.0			Response Zone 9.0 - 15.0m
CP101	09:55	996	21	0.07	0.0	180	0.0	0.1	15.3	0.0	4.0	11.39	14.95	bgl - Natural Glacial Til
				Peak:	Peak:	Initial	0.0	0.0	20.0	0.0	0.0			
						30	0.0	0.0	7.4	0.0	17.0			
				0.1	1.8	60	0.0	0.0	7.3	0.0	17.0			
						90	0.0	0.0	7.3	0.0	17.0			
				Steady:	Steady:	120	0.0	0.0	7.3	0.0	17.0			
						150	0.0	0.0	7.3	0.0	17.0			Response Zone 6.0 - 12.0m
CP102	10:40	996	21	0.1	1.6	180	0.0	0.0	7.3	0.0	17.0	7.4	10.75	bgl - Natural Glacial Till
				Peak:	Peak:	Initial	0.0	0.0	19.9	0.0	2.0			
						30	0.0	0.3	19.0	0.0	2.0			
				0.03	0.2	60	0.0	0.3	19.0	0.0	2.0			
						90	0.0	0.3	18.9	0.0	2.0			
				Steady:	Steady:	120	0.0	0.4	18.9	0.0	2.0			
						150	0.0	0.3	18.9	0.0	2.0			Response Zone 6.0 - 12.0m
CP104	12:55	996	21	0.03	0.2	180	0.0	0.3	18.9	0.0	2.0	5.75	11	bgl - Natural Glacial Tillil
				Peak:	Peak:	Initial	0.0	0.1	19.9	0.0	4.0			
						30	0.0	0.1	16.3	0.0	4.0			
				0.04	0.1	60	0.0	0.1	16.3	0.0	4.0			
						90	0.0	0.1	16.3	0.0	4.0			
				Steady:	Steady:	120	0.0	0.1	16.3	0.0	4.0			
						150	0.0	0.1	16.3	0.0	4.0			Response Zone 6.0 - 12.0m
CP107	13:05	996	21	0.04	0.1	180	0.0	0.1	16.3	0.0	4.0	8.5	11.75	bgl - Natural Glacial Till

Groundwater Elevation and Hydrogeochemical Parameters													
Borehole Location	Date Sampled	Water Level (mbgl)	Measuring Point (mAOD)	Water level (mAOD)	Depth to NAPL (m bgl)	Base of Well (mbgl)	Temperature (°C)	Specific Conductivity (µS/cm^{c})	pH	Oxidation/ Reduction Potential (mV)	Dissolved Oxygen (mg/l)	Colour/Appearance	Sampling Method
CP101	23/07/2020	11.620	48.820	48.900	-	14.980	-	-	-	-	-	Sediment	Grab Sample
CP102	23/07/2020	7.430	52.690	54.260	-	10.740	9.90	486.1	6.83	-40.7	4.17	Colourless	Low Flow
CP104	23/07/2020	6.070	52.140	54.570	-	10.990	9.90	575.2	6.94	-35.6	0.89	Slightly cloudy	Low Flow
CP107	23/07/2020	Dry	-	-	-	11.710	-	-	-	-	-	-	-

Notes

mAOD	Metres Above Ordnance Datum
mbgl	Metres Below Ground Level
mg/l	Micrograms per Litre
mV	Millivolts
µS/cm	Micro Siemens per Centimetre
-	Not encountered
Grab	Sample obtained where water level too deep to abstract with peri pump

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