



OUR REF: A4755/23/LR4
YOUR REF:

31st October 2024

Paul Sinclair
Westchurch Homes Ltd
31 Stamford Street
Altrincham
Cheshire
WA14 1ES

By Email (paul.sinclair@westchurchhomes.co.uk)

Dear Paul,

Louisa Street, Openshaw
Additional Site Investigation Letter Report

Background and Terms of Reference

An Environmental Site Investigation has been commissioned by Westchurch Homes Ltd (the Client) to further examine ground conditions with particular reference to the risk posed to controlled waters.

The scope of work was agreed with the Environment Agency as part of a process of planning regulatory liaison.

Previous Reporting

This report should be read in conjunction with the following reports previously prepared by Earth Environmental & Geotechnical Ltd:

- Phase 1 GeoEnvironmental Desk Study (Ref: A4755/22/FDS, June 2022).
- Phase II GeoEnvironmental Site Investigation Report (Ref: A4755/22/SI, June 2022).
- Chemical Testing Letter Report (Ref: A4755/23, 3rd October 2023).
- Tank Removal Letter Report (Ref: A4755/23, 5th October 2023).
- Soil & Groundwater Assessment (Ref: A4755/23/LR3/V5, April 2024).
- Remediation Report (Ref: A4755/23/RMS/V5, April 2024).

Reference

Earth Environmental and Geotechnical Ltd were commissioned to undertake an additional geo-environmental investigation of the site to retrieve further soil and groundwater samples for chemical analysis. The objectives of the investigation were as follows:

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ENGINEERS**

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- To present the factual information on the work undertaken including sampling location plan, borehole logs and chemical testing.
- Tier 1 (semi-quantitative) risk assessment will be undertaken. This will compare the concentrations of soil leachate and groundwater contaminants identified against current and appropriate published guidelines, in relation to identified receptors, e.g., existing/ future end users and site neighbours.

Proposed Development

It is understood that the client intends to construct a development of 71no. 1, 2 & 3 storey residential dwellings.

Figure 1: Proposed Development Layout Plan



Site Location and Site Elevations

The site is located in Openshaw, Manchester, approximately 4.6km from Manchester City Centre.

The approximate National Grid Reference for the centre of the site is SJ 88592 97635 (X:388592, Y: 397635), with the closest postcode being M11 1AD.

The site is a near rectangular shaped parcel of land with current access via two gates off Louisa Street to the east of the site. The maximum dimensions of the proposed site are 82m north to south and 120m east to west.

The site occupies an area of approximately 0.93 hectares.

The surrounding area comprises predominantly of residential properties. Industrial land uses are located immediately north of the site and to the south and southeast of the site. An open green space is located immediately south of the site along the boundary.

The site is generally flat lying (at 79mAOD) with a fall from east to west (to 77mAOD).

Fieldwork

An additional site investigation was conducted between the 4th and 10th of September 2024 by Earth Environmental & Geotechnical Ltd. This comprised of the following:

- Three 150mm diameter boreholes (designated CP401 to CP404) were sunk to depths of between 9.50m and 10.50m below existing ground level, using a cable percussion boring rig. All boreholes were drilled with the intention of reaching the deeper clay horizon, but without penetrating the underlying principal bedrock aquifer. With this type of rig boreholes are advanced by the percussive action of drill tools suspended on a winch-driven steel cable. The tools generally include a clay-cutter for penetrating fine-grained soils, and a shell for use in coarse-grained, or “granular”, soils. Representative disturbed samples were recovered as boring proceeded. Chiselling techniques, using a chisel or shell, were employed where necessary, to advance the boreholes through obstructions or into hard strata. The boreholes were first drilled through the made ground using 200mm diameter casing, and then continued with 150mm casing to seal off the made ground from the underlying materials. Details of groundwater conditions were noted and are indicated on the attached borehole logs. These observations relate only to the time of boring, and do not necessarily reflect possible seasonal fluctuations. They may have been affected by the installation of casing, or the addition of water to aid boring.
- Five window sample boreholes (designated WS410 to WS413B) were sunk to a maximum depth of 4.40m below ground level. Window sampler boring is carried out with a small, track-mounted rig, which uses a chain-driven trip hammer to drive sampling tubes or penetrometers into the ground. These tools are coupled to the anvil of the hammer by solid drill rods. Sampling tubes comprise “windowless samplers”, which are plain sampler tubes in which a continuous disturbed sample is recovered within a semi-rigid plastic liner. In order to reduce friction within the borehole, sampling tubes of progressively smaller diameter are used as the borehole depth increases. Sampler diameters generally range from between approximately 90mm to 50mm. Groundwater observations were noted where possible. These observations relate to the time of the investigation only, and do not necessarily reflect seasonal fluctuations. Exploratory hole logs are included in Appendix A.
- 50mm diameter standpipes were installed in all boreholes, with exception of WS414B, to a maximum depth of 8.50m below ground level. Installation and backfill details are shown with the appropriate borehole log sheet. The installations were backfilled with bentonite above and below the superficial sand horizon to seal of the sand and any underlying lithologies from contamination.

An exploratory hole location plan for the additional and original sampling is provided as Figure 2, overleaf.

Figure 2: Location of EEG Boreholes

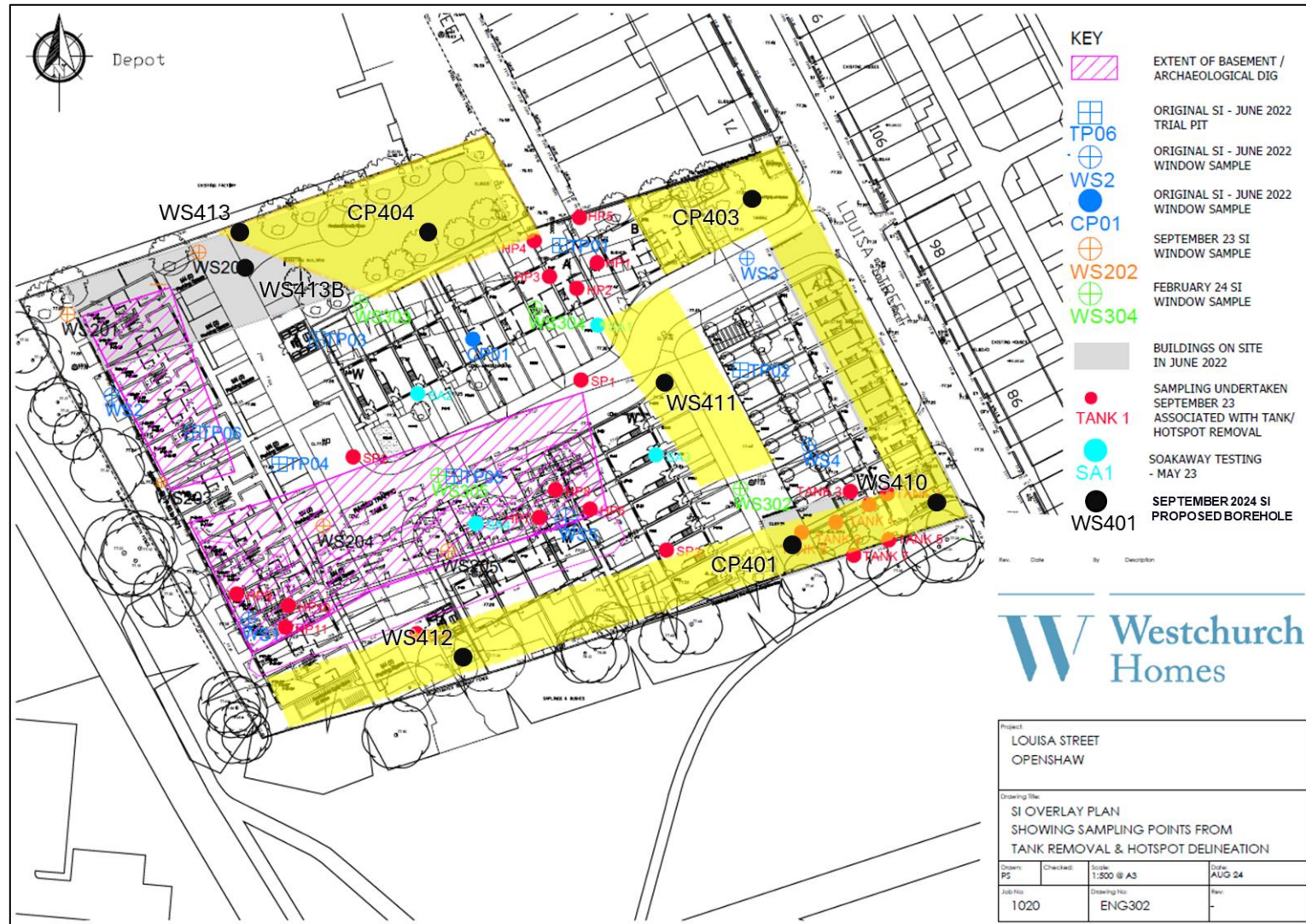


Table 1: Summary of Ground Conditions Encountered

Hole	Depth to Stratum (m bgl)				GROUNDWATER STRIKE (m bgl)
	MADE GROUND		SUPERFICIAL DEPOSITS		
	Granular	Cohesive	SAND	CLAY	
CP401	GL – 2.50	-	2.50 – 8.50	8.50 – 10.50	NONE
CP403	GL – 2.50	-	2.50 – 8.30	8.30 – 9.50	7.00
CP404	GL – 2.50	-	2.40 – 8.60	8.60 – 10.50	6.20
WS410	0.20 – 2.10	GL – 0.20	2.10 – 3.00+	-	NONE
WS411	GL – 2.60	-	2.60 – 4.40+	-	NONE
WS412	GL – 3.60	-	3.60+	-	NONE
WS413	GL – 1.10	1.10 – 2.50	3.50+	2.50 – 3.50	NONE
WS413B	GL – 1.00	1.00 – 2.60	3.30+	2.60 – 3.30	NONE
Depths in red indicate termination within the Made Ground.					

Observable Indications of Contamination

Gravel/cobbles of red brick, concrete, plastic was observed in the Made Ground encountered on site, but these materials are generally considered inert.

However, gravel of clinker, metal, and wood were also encountered in the Made Ground.

No visual or olfactory indications of contamination were observed.

Obstructions and Voids

No man-made obstructions were encountered in any of the exploratory hole locations.

Early Termination of Window Sampling Boreholes

The window sampling boreholes were proposed to be conducted to a provisional depth of 7.00m below the existing ground level. However, the underlying superficial sand deposits were found to be of too high density for the window sampling rig to penetrate. This meant that these boreholes had to be terminated early with only a maximum depth of 4.40m bgl achieved before refusal on the dense sand material.

Groundwater

Groundwater was only encountered in CP403 at 7.00m bgl and CP404 at 6.20m bgl during the fieldwork. It should be noted that groundwater was not encountered in CP401 or CP01 (the cable percussive borehole from the original investigation) despite the entirety of the superficial sand material being sampled. The groundwater level is therefore likely to be of a variable depth beneath the site.

Subsequent monitoring in the standpipes encountered groundwater at depths between 3.20m bgl and 4.75m bgl within the installed cable percussive boreholes.

The installed window sample boreholes were recorded to be dry upon monitoring. This is attributed to the boreholes not reaching the groundwater level, identified in CP403 and CP404 to be between 6.20m and 7.00m bgl, due to refusal on the dense sand material

During two monitoring visits, samples of water were recovered for chemical testing from CP401, CP403 and CP404.

Attempts were made to recover water samples from the remaining boreholes on site. However, due to the lack of water in the other standpipes, no samples could be obtained for testing.

Human Health Risk Assessment

Tier I Human Health Soil Risk Assessment – Future Site Users

The following section provides a Human Health Soil Assessment for future site users. Based on the proposed development type, the following section compares the results of contamination analyses to residential types of end development as specified by Defra/LQM/CIEH. As part of the contamination assessment, the chemical results obtained by EEG have been screened against accepted compliance criteria for **residential with home grown produce end user** using the following:

- Defra C4SL Health Criteria Values (March 2014), where available; and
- Tier 1 assessment values – based on LQM/CIEH Sutable 4 Use Levels ⁽²⁰¹⁵⁾ (S4UIs).

The soil chemical testing results are summarised in Tables 3 and 4, overleaf.

The chemical testing results have been divided based on the origin of the material sampled. The Made Ground material has an average soil organic matter (SOM) content of 3.18% and the results have therefore been compared to assessment criteria applicable for soils with 2.5% SOM. The samples recovered from the superficial deposits have been compared to assessment criteria applicable for soils with 1% SOM due to their lower organic matter content.

Five soil samples collected from the boreholes were found to contain concentrations of contaminants in exceedance of assessment criteria values relevant to a residential end use with plant uptake.

A summary of the soil contamination encountered is shown in Table 2, below.

Table 2: Summary of EEG Soil Contamination

Location	Contaminants
CP401 (0.20m)	Dibenz(a,h)anthracene
CP401 (1.00m)	Benzo(b)fluoranthene, Dibenz(a,h)anthracene
CP403 (0.10m)	Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene
WS412 (2.00m)	TPH Aromatic C16-C21, Benzo(a)anthracene, Benzo(a)pyrene, Chrysene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene
WS412 (3.50m)	Lead

Table 3: Soil Results Comparison with C4SL/S4UL Values – Made Ground Material

Determinand	C4SL/S4UL Levels Resi w/ HP SOM 2.5% (mg/kg)	CP401 0.20 MG	CP401 1.00 MG	CP404 0.10 MG	CP404 1.20 MG	CP404 2.00 MG	CP403 0.10 MG	CP403 1.20 MG	CP403 2.40 MG	WS412 0.10 MG	WS412 1.20 MG	No of Exceedances
Metals												
Arsenic	37	12	9	7	6	4	6	4	3	8	12	0
Beryllium	1.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0
Boron	290	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.1	< 1	0
Cadmium	22	0.4	0.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.3	< 0.2	0
Chromium	910	14	12	17	12	11	12	6	6	12	20	0
Chromium VI	21	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0
Copper	2400	39	36	19	12	11	23	9	9	20	33	0
Lead	200	94	101	30	25	25	25	7	8	61	72	0
Inorganic Mercury	40	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0
Nickel	130	13	11	14	7	7	11	5	5	9	26	0
Selenium	250	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0
Vanadium	410	24	20	25	19	13	17	8	9	17	32	0
Zinc	3700	71	69	48	15	20	40	24	24	93	53	0
Petroleum Hydrocarbons												
Benzene	0.17	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
Toluene	290	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0
Ethylbenzene	110	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
m-xylenes	140	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
p-xylenes	130	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
o-xylenes	140	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
Aliphatic EC >5-6	78	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0
Aliphatic EC >6-8	230	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0
Aliphatic EC >8-10	65	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0
Aliphatic EC >10-12	330	3	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0
Aliphatic EC >12-16	2400	38	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	0
Aliphatic EC >16-21	92000	37	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	0
Aliphatic EC >21-35	92000	22	22	18	< 10	< 10	< 10	< 10	< 10	71	< 10	0
Aromatic EC >5-7	140	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0
Aromatic EC >7-8	290	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0
Aromatic EC >8-10	83	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0
Aromatic EC >10-12	180	3	4	< 2	< 2	< 2	5	< 2	< 2	< 2	< 2	0
Aromatic EC >12-16	330	16	27	2	3	< 2	31	< 2	< 2	6	5	0
Aromatic EC >16-21	540	39	74	12	8	< 3	124	< 3	< 3	26	24	0
Aromatic EC >21-35	1500	39	71	15	< 10	< 10	117	< 10	< 10	128	25	0
Polycyclic Aromatic Hydrocarbons												
Naphthalene	36	1.95	2.22	0.26	< 0.1	< 0.1	2.99	< 0.1	< 0.1	0.45	0.47	0
Acenaphthylene	420	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Acenaphthene	510	1.15	2.54	0.15	0.27	< 0.1	3.95	< 0.1	< 0.1	0.47	0.18	0
Fluorene	400	0.68	1.51	0.11	< 0.1	< 0.1	3.02	< 0.1	< 0.1	0.4	0.13	0
Phenanthrene	220	4.38	10.7	1.63	1.36	< 0.1	25.4	0.17	0.14	2.79	1.36	0
Anthracene	5400	0.82	2.08	0.39	0.27	< 0.1	5.4	< 0.1	< 0.1	0.78	0.33	0
Fluoranthene	560	4.53	10.1	2.06	1.12	< 0.1	23.6	0.2	0.16	3.34	2.36	0
Pyrene	1200	4.17	9.13	2.21	1.08	< 0.1	23.6	0.2	0.14	3	2.29	0
Benzo(a)anthracene	11	2.28	3.76	1.2	0.53	< 0.1	9.02	0.12	< 0.1	1.44	1.24	0
Chrysene	22	2.28	3.85	1.1	0.5	< 0.1	7.31	< 0.1	< 0.1	1.5	1.18	0
Benzo(b)fluoranthene	3.3	2.19	3.42	1.05	0.41	< 0.1	6.93	< 0.1	< 0.1	1.53	1.21	2
Benzo(k)fluoranthene	93	0.97	1.47	0.42	0.16	< 0.1	2.76	< 0.1	< 0.1	0.47	0.48	0
Benzo(a)pyrene	5.0	2.16	3.08	1.18	0.38	< 0.1	7.42	< 0.1	< 0.1	1.52	1.13	1
Indeno(1,2,3-cd)pyrene	36	1.23	1.38	0.66	0.19	< 0.1	2.68	< 0.1	< 0.1	0.82	0.6	0
Dibenz(a,h)anthracene	0.28	0.3	0.37	0.15	< 0.1	< 0.1	0.82	< 0.1	< 0.1	0.18	0.13	3
Benzo(ghi)perylene	340	1.3	1.35	0.74	0.19	< 0.1	2.38	< 0.1	< 0.1	0.85	0.55	0
Phenols												
Phenol	200	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0

Determinand	C4SL/S4UL Levels Resi w/ HP SOM 2.5% (mg/kg)	WS412 2.00 MG	WS412 3.50 MG	WS413 0.20 MG	WS413 0.60 MG	WS413 2.40 MG	WS411 0.20 MG	WS411 2.00 MG	WS410 0.60 MG	WS410 1.20 MG	WS410 2.00 MG	No of Exceedances
Metals												
Arsenic	37	14	16	9	6	10	10	4	31	11	< 2	0
Beryllium	1.7	< 0.5	< 0.5	0.5	< 0.5	1.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0
Boron	290	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.6	< 1	< 1	0
Cadmium	22	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.5	< 0.2	0.4	0.8	< 0.2	0
Chromium	910	16	20	11	7	24	16	8	45	25	5	0
Chromium VI	21	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0
Copper	2400	38	19	34	21	25	28	11	46	36	4	0
Lead	200	76	462	55	22	12	66	14	117	108	< 3	1
Inorganic Mercury	40	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0
Nickel	130	20	19	9	7	22	13	9	35	13	5	0
Selenium	250	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0
Vanadium	410	34	53	23	14	26	30	11	114	41	5	0
Zinc	3700	56	13	46	17	44	67	29	94	138	13	0
Petroleum Hydrocarbons												
Benzene	0.17	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0
Toluene	290	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0
Ethylbenzene	110	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0
m-xylenes	140	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0
p-xylenes	130	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0
o-xylenes	140	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0
Aliphatic EC >5-6	78	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0
Aliphatic EC >6-8	230	< 0.05	< 0.05	0.11	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0
Aliphatic EC >8-10	65	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	45	< 2	0
Aliphatic EC >10-12	330	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	246	< 2	0
Aliphatic EC >12-16	2400	< 3	< 3	< 3	< 3	< 3	6	< 3	< 3	1078	< 3	0
Aliphatic EC >16-21	92000	< 3	< 3	< 3	< 3	< 3	8	< 3	< 3	858	< 3	0
Aliphatic EC >21-35	92000	< 10	< 10	< 10	< 10	< 10	44	< 10	< 10	195	< 10	0
Aromatic EC >5-7	140	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0
Aromatic EC >7-8	290	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0
Aromatic EC >8-10	83	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0
Aromatic EC >10-12	180	5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	34	< 2	0
Aromatic EC >12-16	330	80	< 2	< 2	< 2	< 2	8	< 2	4	303	< 2	0
Aromatic EC >16-21	540	664	< 3	< 3	< 3	< 3	27	< 3	17	334	< 3	1
Aromatic EC >21-35	1500	547	< 10	< 10	< 10	< 10	45	< 10	15	91	< 10	0
Polycyclic Aromatic Hydrocarbons												
Naphthalene	36	2.28	< 0.1	0.13	< 0.1	< 0.1	0.67	< 0.1	0.3	0.46	< 0.1	0
Acenaphthylene	420	0.26	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.22	< 0.1	0
Acenaphthene	510	7.54	< 0.1	< 0.1	< 0.1	< 0.1	0.71	< 0.1	0.46	0.8	< 0.1	0
Fluorene	400	5.33	< 0.1	< 0.1	< 0.1	< 0.1	0.42	< 0.1	0.32	0.7	< 0.1	0
Phenanthrene	220	67.9	< 0.1	0.29	0.31	< 0.1	4.52	0.16	2.78	3.84	< 0.1	0
Anthracene	5400	17.2	< 0.1	< 0.1	< 0.1	< 0.1	0.78	< 0.1	0.6	0.52	< 0.1	0
Fluoranthene	560	94	< 0.1	0.35	0.37	< 0.1	4.04	0.17	3	3.21	< 0.1	0
Pyrene	1200	96.2	< 0.1	0.45	0.42	< 0.1	3.69	0.19	2.88	3.17	< 0.1	0
Benzo(a)anthracene	11	38.9	< 0.1	0.21	0.2	< 0.1	1.76	< 0.1	1.43	1.65	< 0.1	1
Chrysene	22	39.1	< 0.1	0.25	0.19	< 0.1	1.94	0.12	1.44	1.93	< 0.1	1
Benzo(b)fluoranthene	3.3	28.8	< 0.1	0.16	0.16	< 0.1	1.8	0.12	1.4	1.94	< 0.1	1
Benzo(k)fluoranthene	93	12.9	< 0.1	< 0.1	< 0.1	< 0.1	0.83	< 0.1	0.54	0.53	< 0.1	0
Benzo(a)pyrene	5.0	31.3	< 0.1	0.21	0.14	< 0.1	1.76	< 0.1	1.29	1.75	< 0.1	1
Indeno(1,2,3-cd)pyrene	36	13	< 0.1	< 0.1	< 0.1	< 0.1	1.24	< 0.1	0.77	0.95	< 0.1	0
Dibenz(a,h)anthracene	0.28	2.91	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.17	0.22	< 0.1	1
Benzo(ghi)perylene	340	11.4	< 0.1	< 0.1	< 0.1	< 0.1	1.07	< 0.1	0.73	0.97	< 0.1	0
Phenols												
Phenol	200	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	0

Notes for Table 3

All units in mg/kg.

Concentrations in red above assessment criteria.

Table 4: Soil Results Comparison with C4SL/S4UL Values – Superficial Deposits

Determinand	C4SL/S4UL Levels Resi w/ HP SOM 1.0% (mg/kg)	CP401 3.00 SAND	CP401 6.00 SAND	CP401 10.00 CLAY	CP404 4.00 SAND	CP404 7.00 SAND	CP403 5.00 SAND	No of Exceedances
Metals								
Arsenic	37	2	<2	5	<2	<2	<2	0
Beryllium	1.7	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	0
Boron	290	<1	<1	<1	<1	<1	<1	0
Cadmium	22	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0
Chromium	910	4	4	16	4	4	3	0
Chromium VI	21	<2	<2	<2	<2	<2	<2	0
Copper	2400	5	6	15	4	<4	<4	0
Lead	200	6	5	8	<3	<3	<3	0
Inorganic Mercury	40	<1	<1	<1	<1	<1	<1	0
Nickel	130	4	4	20	3	3	<3	0
Selenium	250	<2	<2	<2	<2	<2	<2	0
Vanadium	410	6	6	18	5	4	5	0
Zinc	3700	13	17	40	13	12	12	0
Petroleum Hydrocarbons								
Benzene	0.087	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
Toluene	130	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0
Ethylbenzene	47	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
m-xylenes	59	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
p-xylenes	56	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
o-xylenes	60	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
Aliphatic EC >5-6	42	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0
Aliphatic EC >6-8	100	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0
Aliphatic EC >8-10	27	<2	<2	<2	<2	<2	<2	0
Aliphatic EC >10-12	130	<2	<2	<2	<2	<2	<2	0
Aliphatic EC >12-16	1100	<3	<3	<3	<3	<3	<3	0
Aliphatic EC >16-21	65000	<3	<3	<3	<3	<3	<3	0
Aliphatic EC >21-35	65000	<10	<10	<10	<10	<10	<10	0
Aromatic EC >5-7	70	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0
Aromatic EC >7-8	130	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0
Aromatic EC >8-10	34	<2	<2	<2	<2	<2	<2	0
Aromatic EC >10-12	74	<2	<2	<2	<2	<2	<2	0
Aromatic EC >12-16	140	<2	<2	<2	<2	<2	<2	0
Aromatic EC >16-21	260	<3	<3	<3	<3	<3	<3	0
Aromatic EC >21-35	1100	<10	<10	<10	<10	<10	<10	0
Polycyclic Aromatic Hydrocarbons								
Naphthalene	15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Acenaphthylene	170	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Acenaphthene	210	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Fluorene	170	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Phenanthrene	95	<0.1	<0.1	0.15	<0.1	<0.1	<0.1	0
Anthracene	2400	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Fluoranthene	280	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Pyrene	620	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Benzo(a)anthracene	7.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Chrysene	15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Benzo(b)fluoranthene	2.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Benzo(k)fluoranthene	77	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Benzo(a)pyrene	5.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Indeno(1,2,3-cd)pyrene	27	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Dibenz(a,h)anthracene	0.24	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Benzo(ghi)perylene	320	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
Phenols								
Phenol	120	<2	<2	<2	<2	<2	<2	0

Determinand	C4SL/S4UL Levels Resi w/ HP SOM 1.0% (mg/kg)	CP403 8.00 SAND	CP403 9.50 CLAY	WS413 3.00 CLAY	WS411 3.00 SAND	WS411 4.00 SAND	WS410 3.00 SAND	No of Exceedances
Metals								
Arsenic	37	< 2	6	11	< 2	< 2	< 2	0
Beryllium	1.7	< 0.5	0.8	1.3	< 0.5	< 0.5	< 0.5	0
Boron	290	< 1	< 1	< 1	< 1	< 1	< 1	0
Cadmium	22	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0
Chromium	910	3	21	24	3	3	4	0
Chromium VI	21	< 2	< 2	< 2	< 2	< 2	< 2	0
Copper	2400	< 4	22	26	< 4	< 4	< 4	0
Lead	200	< 3	10	12	< 3	< 3	< 3	0
Inorganic Mercury	40	< 1	< 1	< 1	< 1	< 1	< 1	0
Nickel	130	3	28	34	< 3	< 3	5	0
Selenium	250	< 2	< 2	< 2	< 2	< 2	< 2	0
Vanadium	410	5	23	27	4	4	4	0
Zinc	3700	12	53	58	8	11	13	0
Petroleum Hydrocarbons								
Benzene	0.087	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
Toluene	130	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0
Ethylbenzene	47	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
m-xylenes	59	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
p-xylenes	56	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
o-xylenes	60	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0
Aliphatic EC >5-6	42	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0
Aliphatic EC >6-8	100	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0
Aliphatic EC >8-10	27	< 2	< 2	< 2	< 2	< 2	< 2	0
Aliphatic EC >10-12	130	< 2	< 2	< 2	< 2	< 2	< 2	0
Aliphatic EC >12-16	1100	< 3	< 3	< 3	< 3	< 3	< 3	0
Aliphatic EC >16-21	65000	< 3	< 3	< 3	< 3	< 3	< 3	0
Aliphatic EC >21-35	65000	< 10	< 10	< 10	< 10	< 10	< 10	0
Aromatic EC >5-7	70	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0
Aromatic EC >7-8	130	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0
Aromatic EC >8-10	34	< 2	< 2	< 2	< 2	< 2	< 2	0
Aromatic EC >10-12	74	< 2	< 2	< 2	< 2	< 2	< 2	0
Aromatic EC >12-16	140	< 2	< 2	< 2	< 2	< 2	< 2	0
Aromatic EC >16-21	260	< 3	< 3	< 3	< 3	< 3	< 3	0
Aromatic EC >21-35	1100	< 10	< 10	< 10	< 10	< 10	< 10	0
Polycyclic Aromatic Hydrocarbons								
Naphthalene	15	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Acenaphthylene	170	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Acenaphthene	210	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Fluorene	170	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Phenanthrene	95	< 0.1	0.15	< 0.1	< 0.1	< 0.1	< 0.1	0
Anthracene	2400	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Fluoranthene	280	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Pyrene	620	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Benzo(a)anthracene	7.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Chrysene	15	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Benzo(b)fluoranthene	2.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Benzo(k)fluoranthene	77	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Benzo(a)pyrene	5.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Indeno(1,2,3-cd)pyrene	27	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Dibenz(a,h)anthracene	0.24	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Benzo(ghi)perylene	320	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0
Phenols								
Phenol	120	< 2	< 2	< 2	< 2	< 2	< 2	0

Notes for Table 4

All units in mg/kg.

Concentrations in **red** above assessment criteria.

Asbestos fibres were not identified in any of the 32no. soil samples analysed.

Contamination was encountered within the Made Ground material only and comprised primarily of polycyclic aromatic hydrocarbons (PAH). One exceedance of a speciated total petroleum hydrocarbon (TPH) and one exceedance of lead were also encountered.

Further Analysis of PAH Contamination

The main risk drivers for PAHs are benzo(a)pyrene (B(a)P) and naphthalene. This is due to B(a)P possibly being a carcinogen and most toxic of the PAHs and naphthalene the most volatile and soluble. The C4SLs indicate B(a)P as a surrogate marker for carcinogenic PAHs, if it falls within appropriate limits, since the risk from other non-carcinogenic PAHs are considered negligible. For B(a)P to be used as a surrogate marker it should follow the profile described by the HPA (2010) and CL:AIRE (2013). Naphthalene will be treated separately using the LQM S4ULs.

An assessment of the PAH data has been undertaken for the site, with regards to using B(a)P as a surrogate marker for carcinogenic PAHs as per HPA and CL:AIRE guidelines. The primary toxicological study related to Culp et.al, which was based on coal tar mixtures (>80,000mg/kg of total PAHs) fed in food to mice over a two-year carcinogenicity study.

The PAH ratios of the of the samples tested during this investigation indicate that the PAH mixtures are sufficiently similar to that of the coal tar mixtures tested by Culp et al.

Figure 3 summarises the study site data with respect to how the ratios of carcinogenic PAHs relate to B(a)P, within the confidence limits provided in the HPA document. The chart shows that the majority of the data is within 2.5x the mean of the Culp data, therefore it is recommended that benzo(a)pyrene be used as a surrogate marker approach in the assessment of carcinogenic risks posed by PAHs in the soil.

If benzo(a)pyrene is used, the exceedances of PAH's are limited to CP403 (0.10m) and WS412 (2.00m).

Figure 4 analyses the inferred origin of the material within the Made Ground using the PAH ratios calculated above and comparing them to the data reported by Costa & Sauer (2005) and Costa (2005). The chart shows the majority of the data plots within the area for combustion of coal, coal tar and creosote with data split across highlighted sections for carbonisation & coke oven tar as well as combustion soot. It should be noted that none of the data plots within the areas for oil or petroleum products.

Further Analysis of TPH Contamination

Hydrocarbons tend to be a mixture of various organic compounds and are characterised by the length of their carbon chain, the 'C' value. For the purposes of this report, a speciated TPH analysis has been carried out using the GC-FID method. This method allows the characterisation of different 'C' values within each soil sample. Typical 'C' values are summarised as follows:

<u>Analytical Request</u>	<u>Carbon Range</u>	<u>Products</u>
Petroleum/gasoline range organics	C ₅ - C ₁₀	Petrol
Diesel range organics	C ₁₀ - ca. C ₂₀	Diesel, paraffin, and heating oils
Mineral range organics	ca. C ₂₀ - C ₄₀	Lubricating oil, higher boiling fuel oils

Based on the laboratory results, the elevated TPH encountered would appear to be in the C10-C20 range suggesting the elevated hydrocarbon value in WS412 (2.00m) is likely to be due to the presence of diesel, paraffin, and heating oils (C10-C20), or lubricating oils and fuel oils (C20-C40).

Figure 3: Risk Assessment of Polycyclic Aromatic Hydrocarbons (PAH)

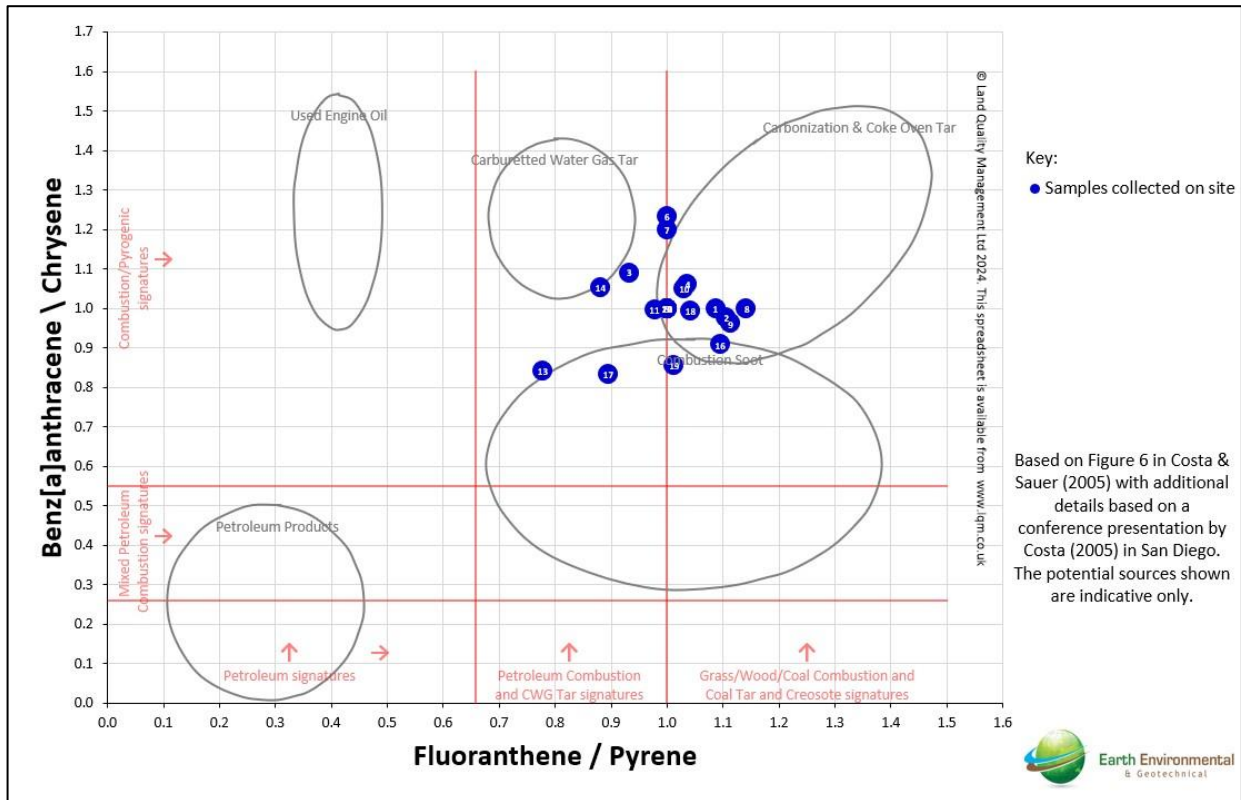
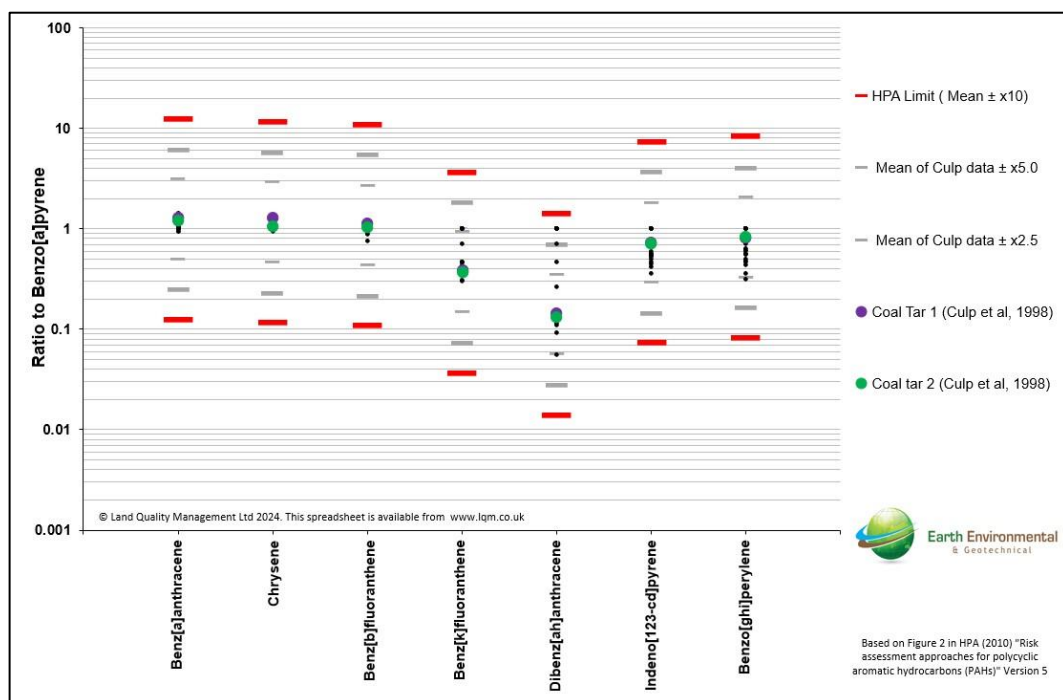


Figure 4: PAH Double Ratio Plot



Summary of Chemical Analysis

After further analysis of the contamination present within the samples taken during this investigation, material from CP403 (0.10m), WS412 (2.00m) and WS412 (3.50m) contained elevations of contaminants deemed potentially harmful to future site users with regard to a residential end use (with homegrown produce).

Using benzo(a)pyrene as a surrogate marker for carcinogenic PAHs has shown that the contaminants found in the samples from CP401 (0.20m & 1.00m) are unlikely to pose a carcinogenic risk to residential end users.

It should also be noted that the contamination located within CP403 and WS412 will be located underneath hardstanding in the proposed development, with CP403 being located under an asphalt area related to the adjacent substation and WS412 being located under a road. The contamination within WS412 was only detected within the Made Ground at depths of between 2.00m and 3.50m below ground level with the above samples at 0.10m and 1.20m being clear from any elevated concentrations of contaminants.

Due to the further analysis of the chemical data and the location/depth of the contamination in relation to the proposed development, as well as previous chemical testing, the risk to future site users with regards to the proposed residential end use is considered to be low.

Due to the inferred origin of the contamination, it is unlikely to be mobile enough to have a significant effect on underlying groundwater. The risk of soil contamination to controlled waters is therefore considered to be low.

Controlled Water Risk Assessment

Chemical analysis has been carried out on 6no. groundwater samples and submitted for the following suite of determinants:

Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Vanadium, Zinc, Cyanide, Phenol, Sulphate (SO₄), Sulphide, pH, Total Organic Carbon (TOC), Speciated Polycyclic Aromatic Hydrocarbons (PAH) and Speciated Total Petroleum Hydrocarbons.

In the absence of specific UK guidelines regarding groundwater quality in the UK, chemical results obtained by EEG have been compared with the following statutory and non-statutory standards:

- UK Drinking Water standards (DWQ) ⁽²⁰⁰⁰⁾.

Drinking Water Standards have been used for comparison of results. Again, these standards are highly conservative, especially in this site context.

A total of six groundwater samples were retrieved across two visits from the monitoring wells installed across the site.

The first visit was conducted on 20th September 2024 and the second on 1st October 2024. Details of the groundwater conditions encountered during the visits can be found in Appendix C.

No samples were able to be retrieved from the window sampling locations due to an absence of groundwater.

A direct comparison was made between the groundwater analysis results and Drinking Water Standards, and the results are summarised in Tables 6 and 7 overleaf.

In general, the laboratory analyses encountered low concentrations of contaminants which were below the Drinking Water Standards. However, exceedances of 2no. contaminants were encountered within the samples, as summarised below.

Table 5: Summary of Exceedances

Location	Contaminant of Concern
CP403	Lead, Fluoranthene
CP404	Lead

The only exceedance of DWQ is for lead and fluoranthene. In the case of fluoranthene it is a slight exceedance (trivial).

The lead exceedance is probably not due to any contamination source but merely a background concentration in a sand aquifer. It should be noted that the measured concentration of lead in made ground varies from <3 to 462mg/kg, i.e. very low concentrations.

In superficial deposits the lead concentration has varied from <3mg/kg to 12mg/kg.

Baseline ranges in all UK aquifers range from 1ug/litre to 10ug/litre (The Natural baseline quality of groundwater in England and Wales. BGS Research reports RR/07/06 and Technical Report NC/99/74/24,2007).

Given the DWQ guidelines are particularly stringent and based on the type of proposed development and end use, the identified exceedances within the groundwater samples does not pose a risk to controlled waters.

As there are no surface water features identified within 250m of the site, the potential for sub-surface migration of the contaminants into a local water course is considered to be very low.

A thick layer of impermeable clay material is present between the superficial aquifer and the underlying principal bedrock aquifer.

Therefore, the risk to the underlying principal aquifer from any contamination is considered to be low.

It should also be noted that the principal aquifer is recorded to be part of the Manchester and East Cheshire Permo-Triassic Sandstone Aquifers, which were given a poor chemical and overall rating in 2019.

Table 6: Groundwater Results Comparison with EQS/Drinking Water Quality Values – Visit 1 (20th September 2024)

Determinand	Drinking Water Quality (DWQ) Value (b)	CP401	CP403	CP404	No. of Exceedances
Arsenic	10	1.5	4.9	9.5	0
Barium	700 (WHO)	53.4	215	399	0
Beryllium	-	< 0.2	1	2.3	0
Boron	1000	127	222	188	0
Cadmium	5	< 0.2	0.7	1.4	0
Chromium	50	0.6	2.1	5.5	0
Chromium VI	-	< 20	< 20	< 20	0
Copper	2000	2.5	30.8	60.8	0
Lead	10	2.2	41.6	82.4	2
Mercury	1	0.27	0.58	0.19	0
Selenium	10	1	5	8.8	0
Vanadium	-	0.8	6.1	8.9	0
Nickel	20	2.6	7	15.3	0
Zinc	5000	50	360	389	0
Cyanide	50	< 5	< 5	< 5	0
Phenol	5	< 10	< 10	< 10	0
Sulphate	250000	46	30	152	0
pH	-	7.4	7	7.4	0
Naphthalene	0.1	< 0.01	< 0.01	< 0.01	0
Anthracene	0.1	< 0.01	< 0.01	< 0.01	0
Benzo(a)pyrene	0.01	< 0.01	< 0.01	< 0.01	0
Benzo(b)fluoranthene	0.1	< 0.01	< 0.01	< 0.01	0
Benzo(k)fluoranthene	0.1	< 0.01	< 0.01	< 0.01	0
Indeno(123cd) pyrene	0.1	< 0.01	< 0.01	< 0.01	0
Fluoranthene	-	< 0.01	< 0.01	< 0.01	0
Benzene	1	< 1	< 1	< 1	0
Toluene	700 (WHO)	< 5	< 5	< 5	0
Ethylbenzene	300 (WHO)	< 5	< 5	< 5	0
Xylenes	500 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C5-C7	10 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C7-C8	700 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C8-C10	30 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C10-C12	90 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C12-C16	90 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C16-C21	90 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C21-C35	90 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C5-C6	15000 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C6-C8	15000 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C8-C10	300 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C10-C12	300 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C12-C16	300 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C16-C21	300 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C21-C35	300 (WHO)	< 10	< 10	< 10	0

Notes for Table 6

All units in ug/l.

DWS for PAH's is based on total PAH

Concentrations in **red** above assessment criteria.

Table 7: Groundwater Results Comparison with Drinking Water Quality Values – Visit 2 (1st October 2024)

Determinand	Drinking Water Quality (DWQ) Value (b)	CP401	CP403	CP404	No. of Exceedances
Arsenic	10	1.1	5.2	2.2	0
Barium	700 (WHO)	45.2	257	111	0
Beryllium	-	< 0.2	0.6	< 0.2	0
Boron	1000	136	43	121	0
Cadmium	5	< 0.2	0.8	< 0.2	0
Chromium	50	< 0.2	7.3	1.3	0
Chromium VI	-	< 20	< 20	< 20	0
Copper	2000	3.8	58.9	31.7	0
Lead	10	< 0.2	66.6	13.3	1
Mercury	1	< 0.04	< 0.04	< 0.04	0
Selenium	10	1.2	1.8	2.2	0
Vanadium	-	0.4	12.1	1.5	0
Nickel	20	3.6	8.4	4.6	0
Zinc	5000	10	162	58	0
Cyanide	50	< 5	< 5	< 5	0
Phenol	5	< 10	< 10	< 10	0
Sulphate	250000	54	20	138	0
pH	-	7.3	8.7	7.1	0
Naphthalene	0.1	0.02	0.13	< 0.01	0
Anthracene	0.1	< 0.01	0.04	< 0.01	0
Benzo(a)pyrene	0.01	< 0.01	< 0.01	< 0.01	0
Benzo(b)fluoranthene	0.1	< 0.01	< 0.01	< 0.01	0
Benzo(k)fluoranthene	0.1	< 0.01	< 0.01	< 0.01	0
Indeno(123cd) pyrene	0.1	< 0.01	< 0.01	< 0.01	0
Fluoranthene	0.1	0.03	0.17	0.01	1
Benzene	1	< 1	< 1	< 1	0
Toluene	700 (WHO)	< 5	< 5	< 5	0
Ethylbenzene	300 (WHO)	< 5	< 5	< 5	0
Xylenes	500 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C5-C7	10 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C7-C8	700 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C8-C10	30 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C10-C12	90 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C12-C16	90 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C16-C21	90 (WHO)	< 10	< 10	< 10	0
TPH Aromatic C21-C35	90 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C5-C6	15000 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C6-C8	15000 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C8-C10	300 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C10-C12	300 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C12-C16	300 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C16-C21	300 (WHO)	< 10	< 10	< 10	0
TPH Aliphatic C21-C35	300 (WHO)	< 10	< 10	< 10	0

Notes for Table 7

All units in ug/l.

DWS for PAH's is based on total PAH

Concentrations in **red** above assessment criteria.

Conclusions & Recommendations

EEG has undertaken an additional site investigation to further characterise the environmental conditions present on site within the soil and groundwater.

Exceedances were encountered within the soil during this investigation when compared to assessment criteria relevant to a residential end use with homegrown produce. However, further analysis of the contamination present, including the use of benzo(a)pyrene as a PAH surrogate marker, shows only two locations (CP403 and WS412) contain significant elevations of contamination for the proposed end use. Due to the position of the contamination beneath hardstanding in the proposed development and the depth at which it was encountered, the risk to future site users is considered to be low.

Groundwater sampling was carried out across two monitoring visits. Exceedances of contaminants (lead and fluoranthene) were encountered when compared to DWQ standards.

Given the proposed site use and the lack of surface water features within 250m of the site, these criteria are considered to be overly stringent. The risk to future site users is therefore considered to be low.

The potential for sub-surface migration of the contaminants into a local water course is considered to be low.

A thick layer of impermeable clay material is present between the superficial aquifer and the underlying principal bedrock aquifer. Therefore, the risk to the underlying principal aquifer from any contamination is considered to be low.

There is little in the way of a significant contamination source within on-site soils that would be a risk to controlled waters. The inferred origin of the contamination identified during this investigation is unlikely to be mobile enough to impact underlying groundwater.

While a potential downwards migration pathway may be present between the Made Ground and the superficial aquifer, in areas of the site where shallow clay is not present, there is little evidence that this pathway is influencing controlled waters. The large deeper clay horizon will block all downwards migration to the principal bedrock aquifer and as such no credible pollutant pathway exists that could impact this.

As stated previously, an absence of nearby surface waters or groundwater abstraction are present. The only credible receiver of pollutants from potential on-site contamination are the underlying aquifers. Based on the ground conditions and environmental testing, there is considered to be no potential impact to controlled waters beneath the site and the site is suitable for use with no remedial measures necessary.

Should you have any queries regarding the contents of this report, please feel free to contact me at any time.

Yours Sincerely,

Adam Czarnecki

Adam Czarnecki BSc(Hons) FGS CGeol

Director

For and on behalf of Earth Environmental & Geotechnical Ltd

Appendix A Borehole Logs
Appendix B Chemical Testing Results
Appendix C Groundwater Monitoring Results

APPENDIX A

EXPLORATORY HOLE LOGS

APPENDIX B

CHEMICAL TESTING RESULTS

APPENDIX C

GROUNDWATER MONITORING RESULTS



Borehole Log

CP401

Sheet 1 of 2

Project No.
A4755

Hole Type
CP

Level:

Scale
1:30

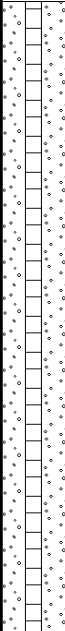
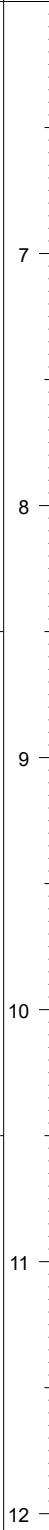
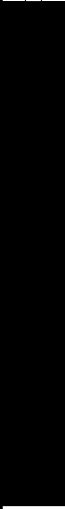
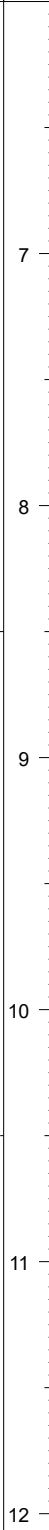
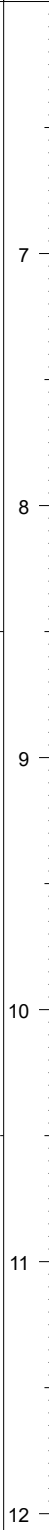
Dates: 04/09/2024 - 04/09/2024

Logged By
AH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES		2.50			MADE GROUND: Dark brown gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick, wood, sandstone and metal. <i>Frequent cobbles of brick.</i> <i>PID at 0.50m = 1.60ppm.</i>
		1.00	ES					<i>PID at 1.00m = 1.70ppm.</i>
								<i>PID at 2.00m = 1.90ppm.</i>
		3.00	ES					Reddish brown SAND. Sand is fine to coarse. <i>PID at 3.00m = 1.80ppm.</i>
								<i>PID at 4.00m = 0.80ppm.</i>
								<i>PID at 5.00m = 0.90ppm.</i>
		6.00	ES					Continued on next sheet

1) Location scanned with CAT prior to excavation.
2) Borehole drilled using 200mm casing to 3.00m bgl, then reduced to 150mm casing for the remainder to mitigate the potential risk of contamination from Made Ground materials.
3) Hole terminated at 10.50m bgl in clay without advancing into underlying lithologies or principal aquifer.
4) Monitoring installation: 5.00m plain pipe, 3.50m slotted pipe. Borehole grouted above and below the response zone to isolate superficial aquifer deposits.



 Earth Environmental & Geotechnical Ltd Houldsworth Mill Business & Arts Centre Houldsworth Street Stockport SK5 6DA					Borehole Log			Borehole No. CP401 Sheet 2 of 2	
Project Name: Louisa Street, Openshaw				Project No. A4755		Co-ords: 388633.00 - 397601.00		Hole Type CP	
Location: Openshaw, Greater Manchester				Level:		Scale 1:30		Logged By AH	
Client: Westchurch Homes				Dates: 04/09/2024 - 04/09/2024					
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					8.50			PID at 6.00m = 0.70ppm. Sand becomes brown.	
								PID at 7.00m = 1.00ppm.	
					10.50			PID at 8.00m = 0.80ppm.	
								Firm to stiff brown sandy CLAY.	
		10.00	ES					PID at 9.00m = 1.00ppm.	
								PID at 10.00m = 0.80ppm.	
								End of borehole at 10.50 m	
Remarks 1) Location scanned with CAT prior to excavation. 2) Borehole drilled using 200mm casing to 3.00m bgl, then reduced to 150mm casing for the remainder to mitigate the potential risk of contamination from Made Ground materials. 3) Hole terminated at 10.50m bgl in clay without advancing into underlying lithologies or principal aquifer. 4) Monitoring installation; 5.00m plain pipe, 3.50m slotted pipe. Borehole grouted above and below the response zone to isolate superficial aquifer deposits.									

Borehole Log

Borehole No.

CP403

Sheet 1 of 2

Project Name: Louisa Street, Openshaw

Project No.
A4755

Co-ords: 388631.00 - 397660.00

Hole Type
CP

Location: Openshaw, Greater Manchester

Level:

Scale
1:30

Client: Westchurch Homes

Dates: 06/09/2024 - 06/09/2024

Logged By
AH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES		2.50		 MADE GROUND: Dark brown gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick, wood, sandstone and metal. <i>PID at 0.50m = 3.50ppm.</i> <i>PID at 1.00m = 3.10ppm.</i> <i>PID at 2.00m = 3.10ppm.</i>	1
		1.20	ES					2
		2.40	ES					3
		3.00	ES					4
		5.00	ES					5
							 Brown SAND. Sand is fine to coarse. <i>PID at 3.00m = 3.20ppm.</i> <i>PID at 4.00m = 2.80PPM.</i> Sand becomes slightly gravelly. Gravel subrounded to rounded and fine of mudstone. <i>PID at 5.00m = 2.60ppm.</i>	6

Remarks

- 1) Location scanned with CAT prior to excavation.
2) Borehole drilled using 200mm casing to 3.00m bgl, then reduced to 150mm casing for the remainder to mitigate the potential risk of contamination from Made Ground materials.
3) Hole terminated at 9.50m bgl in clay without advancing into underlying lithologies or principal aquifer.
4) Monitoring installation: 5.00m plain pipe, 3.50m slotted pipe. Borehole grouted above and below the response zone to isolate superficial aquifer deposits.

Borehole Log

Borehole No.

CP403

Sheet 2 of 2

Project Name: Louisa Street, Openshaw

Project No.
A4755

Co-ords: 388631.00 - 397660.00

Hole Type	CP
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Location: Openshaw, Greater Manchester

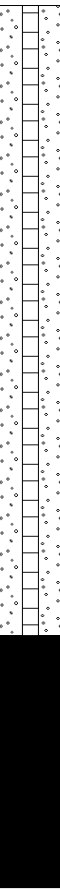
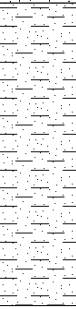
Level:

Scale
1:30

Client: Westchurch Homes

Dates: 06/09/2024 - 06/09/2024

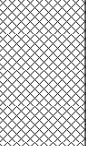
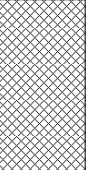
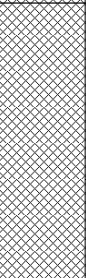
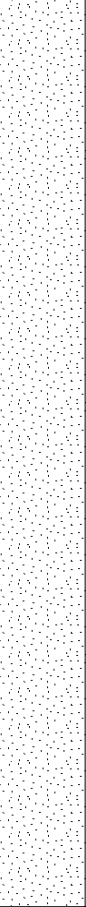
Logged By
AH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		8.00	ES		8.30			PID at 6.00m = 2.00ppm. PID at 7.00m = 1.80ppm. PID at 8.00m = 2.00ppm.	7 8
		9.50	ES		9.50			Firm to stiff brown sandy CLAY. PID at 9.00m = 2.10ppm. End of borehole at 9.50 m	9 10 11 12

Remarks

- 1) Location scanned with CAT prior to excavation.
2) Borehole drilled using 200mm casing to 3.00m bgl, then reduced to 150mm casing for the remainder to mitigate the potential risk of contamination from Made Ground materials.
3) Hole terminated at 9.50m bgl in clay without advancing into underlying lithologies or principal aquifer.
4) Monitoring installation: 5.00m plain pipe, 3.50m slotted pipe. Borehole grouted above and below the response zone to isolate superficial aquifer deposits.

 Earth Environmental & Geotechnical Ltd Houldsworth Mill Business & Arts Centre Houldsworth Street Stockport SK5 6DA					Borehole Log				Borehole No. CP404 Sheet 1 of 2	
Project Name: Louisa Street, Openshaw					Project No. A4755		Co-ords: 388577.00 - 397652.00		Hole Type CP	
Location: Openshaw, Greater Manchester					Level:		Scale 1:30			
Client: Westchurch Homes					Dates: 05/09/2024 - 05/09/2024		Logged By AH			

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.60			MADE GROUND: Dark brown gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick, wood, sandstone and concrete.	1 2 3 4 5 6
								PID at 0.50m = 4.50ppm.	
		1.20	ES		1.30			MADE GROUND: Reddish brown very clayey slightly gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to medium of brick.	
								PID at 1.00m = 3.80ppm.	
		2.00	ES		2.40			MADE GROUND: Brown gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick and concrete.	
			PID at 2.00m = 3.00ppm.						
		4.00	ES				Brown SAND. Sand is fine to coarse.		
							PID at 3.00m = 3.00ppm.	3	
							PID at 4.00m = 3.00ppm.	4	
							PID at 5.00m = 2.60ppm.	5	
							Continued on next sheet	6	

Remarks

1) Location scanned with CAT prior to excavation.
2) Borehole drilled using 200mm casing to 3.00m bgl, then reduced to 150mm casing for the remainder to mitigate the potential risk of contamination from Made Ground materials.
3) Hole terminated at 10.50m bgl in clay without advancing into underlying lithologies or principal aquifer.
4) Monitoring installation; 5.00m plain pipe, 3.50m slotted pipe. Borehole grouted above and below the response zone to isolate superficial aquifer deposits.



Borehole Log

Borehole No.

CP404

Sheet 2 of 2

Project Name: Louisa Street, Openshaw

Project No.	A4755
-------------	-------

Co-ords: 388577.00 - 397652.00

Hole Type
CP

Location: Openshaw, Greater Manchester

Level:

Scale
1:30

Client: Westchurch Homes

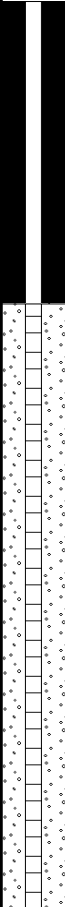
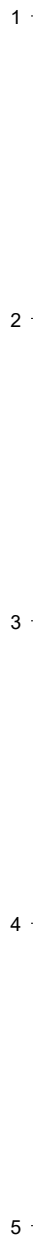
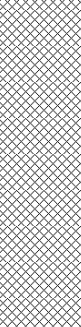
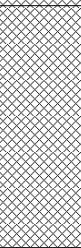
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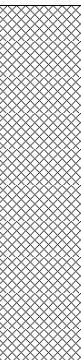
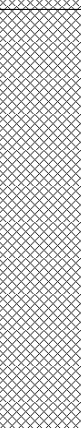
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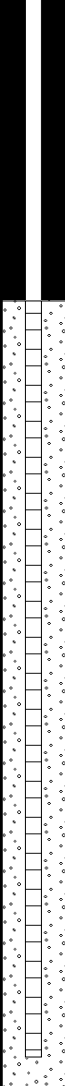
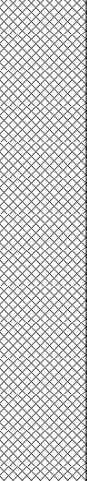
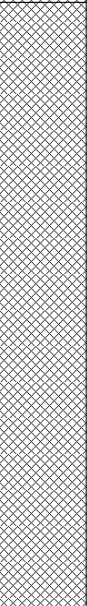
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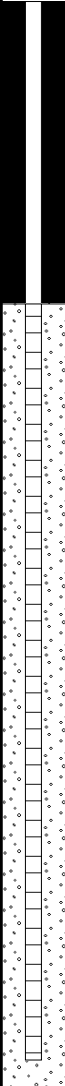
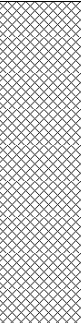
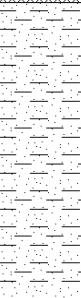
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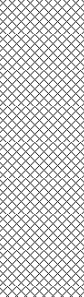
- 1) Location scanned with CAT prior to excavation.
2) Borehole drilled using 200mm casing to 3.00m bgl, then reduced to 150mm casing for the remainder to mitigate the potential risk of contamination from Made Ground materials.
3) Hole terminated at 10.50m bgl in clay without advancing into underlying lithologies or principal aquifer.
4) Monitoring installation: 5.00m plain pipe, 3.50m slotted pipe. Borehole grouted above and below the response zone to isolate superficial aquifer deposits.

 Earth Environmental & Geotechnical Ltd Houldsworth Mill Business & Arts Centre Houldsworth Street Stockport SK5 6DA					Borehole Log			Borehole No. WS410 Sheet 1 of 1		
Project Name: Louisa Street, Openshaw					Project No. A4755		Co-ords: 388659.00 - 397612.00		Hole Type WS	
Location: Openshaw, Greater Manchester					Level:		Scale 1:25			
Client: Westchurch Homes					Dates: 10/09/2024 - 10/09/2024		Logged By AH			
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.20		 TOPSOIL: Dark brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of wood and sandstone.			
		0.60	ES			 MADE GROUND: Dark brown gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick, concrete and sandstone. PID at 0.50m = 4.50ppm.				
		1.20	ES		1.30	 MADE GROUND: Brown gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick. PID at 1.00m = 3.80ppm.				
		2.00	ES		2.10	 Brown SAND. Sand is fine to coarse. PID at 2.00m = 3.60ppm.				
		3.00	ES		3.00		End of borehole at 3.00 m		3	
										4
										5
Remarks 1) Location scanned with CAT prior to excavation. 2) Hole terminated at 3.00m due to refusal on dense sand. 3) Monitoring standpipe installed with a response zone from 1.00m bgl to 3.10m bgl.										 Earth Environmental & Geotechnical Ltd Houldsworth Mill Business & Arts Centre Houldsworth Street Stockport SK5 6DA

 Earth Environmental & Geotechnical Ltd Houldsworth Mill Business & Arts Centre Houldsworth Street Stockport SK5 6DA					Borehole Log			Borehole No. WS411 Sheet 1 of 1	
Project Name: Louisa Street, Openshaw				Project No. A4755		Co-ords: 388619.00 - 397637.00		Hole Type WS	
Location: Openshaw, Greater Manchester				Level:		Scale 1:25			
Client: Westchurch Homes				Dates: 10/09/2024 - 10/09/2024		Logged By AH			
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		1.20		 MADE GROUND: Dark brown very gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick and concrete. PID at 0.50m = 3.90ppm. PID at 1.00m = 3.20ppm.	1	
		2.00	ES		2.60		 MADE GROUND: Brown silty gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick. PID at 2.00m = 2.00ppm.	2	
		3.00	ES				 Brown SAND. Sand is fine to coarse. PID at 3.00m = 2.30ppm.	3	
		4.00	ES		4.40		 PID at 4.00m = 2.40ppm. End of borehole at 4.40 m	4	
								5	
Remarks 1) Location scanned with CAT prior to excavation. 2) Hole terminated at 4.40m due to refusal on dense sand. 3) Monitoring standpipe installed with a response zone from 2.60m bgl to 4.40m bgl.									 Earth Environmental & Geotechnical Ltd

 Earth Environmental & Geotechnical Ltd Houldsworth Mill Business & Arts Centre Houldsworth Street Stockport SK5 6DA					Borehole Log			Borehole No. WS412 Sheet 1 of 1	
Project Name: Louisa Street, Openshaw				Project No. A4755		Co-ords: 388579.00 - 397587.00		Hole Type WS	
Location: Openshaw, Greater Manchester				Level:		Scale 1:25		Logged By AH	
Client: Westchurch Homes				Dates: 10/09/2024 - 10/09/2024					
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		1.60			MADE GROUND: Greyish brown very gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of brick, concrete, sandstone and wood. PID at 0.50m = 5.80ppm.	1
	1.20	ES		MADE GROUND: Dark brown gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of clinker and brick. PID at 1.00m = 4.40ppm.					
	2.00	ES		3.60			MADE GROUND: Dark brown gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of clinker and brick. PID at 2.00m = 3.90ppm.	2	
	3.50	ES					End of borehole at 3.60 m		3
								4	
									5
Remarks 1) Location scanned with CAT prior to excavation. 2) Hole terminated at 3.60m due to refusal on dense sand. 3) Monitoring standpipe installed with a response zone from 1.00m bgl to 3.50m bgl.									 Earth Environmental & Geotechnical Ltd

 Earth Environmental & Geotechnical Ltd Houldsworth Mill Business & Arts Centre Houldsworth Street Stockport SK5 6DA					Borehole Log			Borehole No. WS413 Sheet 1 of 1			
Project Name: Louisa Street, Openshaw					Project No. A4755		Co-ords: 388553.00 - 397652.00		Hole Type WS		
Location: Openshaw, Greater Manchester					Level:		Scale 1:25				
Client: Westchurch Homes					Dates: 10/09/2024 - 10/09/2024		Logged By AH				
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.20	ES		1.10			MADE GROUND: Dark brown slightly silty gravelly SAND. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick.	1		
		0.60	ES					PID at 0.50m = 4.20ppm.			
								PID at 1.00m = 4.00ppm.			
								MADE GROUND: Grey slightly sandy slightly gravelly CLAY. Gravel subangular to subrounded fine to coarse of brick.			
		2.40	ES		2.50			Firm brown slightly sandy CLAY.	2		
		3.00	ES		3.50			PID at 3.00m = 2.50ppm.			
								End of borehole at 3.50 m	3		
									4		
									5		
Remarks 1) Location scanned with CAT prior to excavation. 2) Hole terminated at 3.50m due to refusal on dense sand. 3) Monitoring standpipe installed from with a response zone from 1.00m bgl to 3.50m bgl.										 Earth Environmental & Geotechnical Ltd	

 Earth Environmental & Geotechnical Ltd Houldsworth Mill Business & Arts Centre Houldsworth Street Stockport SK5 6DA					Borehole Log			Borehole No. WS413B Sheet 1 of 1				
Project Name: Louisa Street, Openshaw					Project No. A4755		Co-ords: 388553.00 - 397652.00		Hole Type WS			
Location: Openshaw, Greater Manchester					Level:			Scale 1:25				
Client: Westchurch Homes					Dates: 10/09/2024 - 10/09/2024			Logged By AH				
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		1.50	ES		1.00			MADE GROUND: Dark brown slightly silty gravelly SAND. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick.		1		
								PID at 0.50m = 5.10ppm.				
								MADE GROUND: Grey slightly sandy slightly gravelly CLAY. Gravel subangular to subrounded fine to coarse of brick.				
								PID at 1.00m = 4.90ppm.				
					2.60			Firm brown slightly sandy CLAY.		3		
								PID at 3.00m = 3.00ppm.				
								End of borehole at 3.30 m				
					3.30					4		
										5		
Remarks 1) Location scanned with CAT prior to excavation. 2) Hole terminated at 3.30m due to refusal on dense sand. 3) No monitoring installation; backfilled with bentonite and arisings.											 Earth Environmental & Geotechnical Ltd	



Alex Horne
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Houldsworth Mill Business Centre
Houldsworth Street
Reddish
Stockport
Cheshire
SK5 6DA

Normec DETS Limited
Unit 1
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Rose Lane
Lenham Heath
Kent
ME17 2JN
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DETS Report No: 24-10736

Site Reference: Louisa Street. Openshaw

Project / Job Ref: A4755

Order No: A4755/AH/01

Sample Receipt Date: 13/09/2024

Sample Scheduled Date: 13/09/2024

Report Issue Number: 1

Reporting Date: 20/09/2024

Authorised by:

Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate					
DETS Report No: 24-10736	~Date Sampled	04/09/24	04/09/24	04/09/24	04/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP401	CP401	CP401
~Project / Job Ref: A4755	~Additional Refs	MG	MG	SAND	SAND
~Order No: A4755/AH/01	~Depth (m)	0.20	1.00	3.00	6.00
Reporting Date: 20/09/2024	DETS Sample No	737954	737955	737956	737957

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	9.3	9.7	8.1	7.8	7.8
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Complex Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	2786	3039	223	< 200	280
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.28	0.30	0.02	< 0.02	0.03
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	870	765	58	29	63
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.87	0.76	0.06	0.03	0.06
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter (SOM)	%	< 0.1	MCERTS	4.8	4.1	0.9	0.7	1.6
Arsenic (As)	mg/kg	< 2	MCERTS	12	9	2	< 2	5
Barium (Ba)	mg/kg	< 2.5	MCERTS	105	104	17	11	89
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	0.6
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.4	0.5	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	14	12	4	4	16
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	39	36	5	6	15
Lead (Pb)	mg/kg	< 3	MCERTS	94	101	6	5	8
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	13	11	4	4	20
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	MCERTS	24	20	6	6	18
Zinc (Zn)	mg/kg	< 3	MCERTS	71	69	13	17	40
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

~Sample details provided by customer and can affect the validity of results

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Soil Analysis Certificate					
DETS Report No: 24-10736	~Date Sampled	05/09/24	05/09/24	05/09/24	05/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP404	CP404	CP404	CP404
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	SAND
~Order No: A4755/AH/01	~Depth (m)	0.10	1.20	2.00	4.00
Reporting Date: 20/09/2024	DETS Sample No	737959	737960	737961	737962

Determinand	Unit	RL	Accreditation	(n)				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.3	8.8	9.3	7.7	7.7
Total Cyanide	mg/kg	< 1	NONE	1	< 1	< 1	< 1	< 1
Complex Cyanide	mg/kg	< 1	NONE	1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	1484	936	1957	< 200	< 200
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.15	0.09	0.20	< 0.02	< 0.02
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	330	136	365	17	13
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.33	0.14	0.36	0.02	0.01
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter (SOM)	%	< 0.1	MCERTS	2.1	1.8	1	1.2	0.6
Arsenic (As)	mg/kg	< 2	MCERTS	7	6	4	< 2	< 2
Barium (Ba)	mg/kg	< 2.5	MCERTS	106	102	47	9	8
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	17	12	11	4	4
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	19	12	11	4	< 4
Lead (Pb)	mg/kg	< 3	MCERTS	30	25	25	< 3	< 3
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	14	7	7	3	3
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	MCERTS	25	19	13	5	4
Zinc (Zn)	mg/kg	< 3	MCERTS	48	15	20	13	12
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

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Soil Analysis Certificate					
DETS Report No: 24-10736	~Date Sampled	06/09/24	06/09/24	06/09/24	06/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP403	CP403	CP403	CP403
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	SAND
~Order No: A4755/AH/01	~Depth (m)	0.10	1.20	2.40	5.00
Reporting Date: 20/09/2024	DETS Sample No	737964	737965	737966	737967

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.5	8.3	8.2	8.1	8.1
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Complex Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	1091	< 200	< 200	< 200	< 200
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.11	< 0.02	< 0.02	< 0.02	< 0.02
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	305	33	41	11	< 10
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.30	0.03	0.04	0.01	< 0.01
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter (SOM)	%	< 0.1	MCERTS	2.6	0.7	0.9	0.5	0.6
Arsenic (As)	mg/kg	< 2	MCERTS	6	4	3	< 2	< 2
Barium (Ba)	mg/kg	< 2.5	MCERTS	54	17	18	6	6
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	12	6	6	3	3
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	23	9	9	< 4	< 4
Lead (Pb)	mg/kg	< 3	MCERTS	25	7	8	< 3	< 3
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	11	5	5	< 3	3
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	MCERTS	17	8	9	5	5
Zinc (Zn)	mg/kg	< 3	MCERTS	40	24	24	12	12
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

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Soil Analysis Certificate						
DETS Report No: 24-10736	~Date Sampled	06/09/24				
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied				
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP403				
~Project / Job Ref: A4755	~Additional Refs	CLAY				
~Order No: A4755/AH/01	~Depth (m)	9.50				
Reporting Date: 20/09/2024	DETS Sample No	737969				

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected			
pH	pH Units	N/a	MCERTS	8.1			
Total Cyanide	mg/kg	< 1	NONE	< 1			
Complex Cyanide	mg/kg	< 1	NONE	< 1			
Free Cyanide	mg/kg	< 1	NONE	< 1			
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	311			
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.03			
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	61			
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.06			
Sulphide	mg/kg	< 5	NONE	< 5			
Organic Matter (SOM)	%	< 0.1	MCERTS	2.2			
Arsenic (As)	mg/kg	< 2	MCERTS	6			
Barium (Ba)	mg/kg	< 2.5	MCERTS	102			
Beryllium (Be)	mg/kg	< 0.5	MCERTS	0.8			
W/S Boron	mg/kg	< 1	NONE	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2			
Chromium (Cr)	mg/kg	< 2	MCERTS	21			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	22			
Lead (Pb)	mg/kg	< 3	MCERTS	10			
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	28			
Selenium (Se)	mg/kg	< 2	MCERTS	< 2			
Vanadium (V)	mg/kg	< 1	MCERTS	23			
Zinc (Zn)	mg/kg	< 3	MCERTS	53			
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2			

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Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-10736	~Date Sampled	04/09/24	04/09/24	04/09/24	04/09/24	04/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP401	CP401	CP401	CP401
~Project / Job Ref: A4755	~Additional Refs	MG	MG	SAND	SAND	CLAY
~Order No: A4755/AH/01	~Depth (m)	0.20	1.00	3.00	6.00	10.00
Reporting Date: 20/09/2024	DETS Sample No	737954	737955	737956	737957	737958

Determinand	Unit	RL	Accreditation	(n)	(n)			
Naphthalene	mg/kg	< 0.1	MCERTS	1.95	2.22	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	1.15	2.54	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	0.68	1.51	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	4.38	10.70	< 0.1	< 0.1	0.15
Anthracene	mg/kg	< 0.1	MCERTS	0.82	2.08	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	4.53	10.10	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	4.17	9.13	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	2.28	3.76	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	2.28	3.85	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	2.19	3.42	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.97	1.47	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	2.16	3.08	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	1.23	1.38	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.30	0.37	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	1.30	1.35	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	30.4	57	< 1.6	< 1.6	< 1.6

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-10736	~Date Sampled	05/09/24	05/09/24	05/09/24	05/09/24	05/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP404	CP404	CP404	CP404	CP404
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	SAND	SAND
~Order No: A4755/AH/01	~Depth (m)	0.10	1.20	2.00	4.00	7.00
Reporting Date: 20/09/2024	DETS Sample No	737959	737960	737961	737962	737963

Determinand	Unit	RL	Accreditation	(n)				
Naphthalene	mg/kg	< 0.1	MCERTS	0.26	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	0.15	0.27	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	0.11	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	1.63	1.36	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	0.39	0.27	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	2.06	1.12	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	2.21	1.08	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.20	0.53	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	1.10	0.50	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.05	0.41	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.42	0.16	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	1.18	0.38	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.66	0.19	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.15	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.74	0.19	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	13.3	6.5	< 1.6	< 1.6	< 1.6

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-10736	~Date Sampled	06/09/24	06/09/24	06/09/24	06/09/24	06/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP403	CP403	CP403	CP403	CP403
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	SAND	SAND
~Order No: A4755/AH/01	~Depth (m)	0.10	1.20	2.40	5.00	8.00
Reporting Date: 20/09/2024	DETS Sample No	737964	737965	737966	737967	737968

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)
Naphthalene	mg/kg	< 0.1	MCERTS	2.99	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	3.95	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	3.02	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	25.40	0.17	0.14	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	5.40	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	23.60	0.20	0.16	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	23.60	0.20	0.14	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	9.02	0.12	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	7.31	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	6.93	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	2.76	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	7.42	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	2.68	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.82	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	2.38	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	127	< 1.6	< 1.6	< 1.6

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Soil Analysis Certificate - Speciated PAHs

DETS Report No: 24-10736	~Date Sampled	06/09/24				
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied				
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP403				
~Project / Job Ref: A4755	~Additional Refs	CLAY				
~Order No: A4755/AH/01	~Depth (m)	9.50				
Reporting Date: 20/09/2024	DETS Sample No	737969				

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	0.15			
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6			

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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 24-10736	~Date Sampled	04/09/24	04/09/24	04/09/24	04/09/24	04/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP401	CP401	CP401	CP401
~Project / Job Ref: A4755	~Additional Refs	MG	MG	SAND	SAND	CLAY
~Order No: A4755/AH/01	~Depth (m)	0.20	1.00	3.00	6.00	10.00
Reporting Date: 20/09/2024	DETS Sample No	737954	737955	737956	737957	737958

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
Aliphatic >C5 - C6 : HS 1D MS AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS 1D MS AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH CU 1D AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH CU 1D AL	mg/kg	< 2	MCERTS	3	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH CU 1D AL	mg/kg	< 3	MCERTS	38	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21 : EH CU 1D AL	mg/kg	< 3	MCERTS	37	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34 : EH CU 1D AL	mg/kg	< 10	MCERTS	22	22	< 10	< 10	< 10
Aliphatic (C5 - C34) : HS 1D MS+EH CU 1D AL	mg/kg	< 21	NONE	100	22	< 21	< 21	< 21
Aromatic >C5 - C7 : HS 1D MS AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS 1D MS AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH CU 1D AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH CU 1D AR	mg/kg	< 2	MCERTS	3	4	< 2	< 2	< 2
Aromatic >C12 - C16 : EH CU 1D AR	mg/kg	< 2	MCERTS	16	27	< 2	< 2	< 2
Aromatic >C16 - C21 : EH CU 1D AR	mg/kg	< 3	MCERTS	39	74	< 3	< 3	< 3
Aromatic >C21 - C35 : EH CU 1D AR	mg/kg	< 10	MCERTS	39	71	< 10	< 10	< 10
Aromatic (C5 - C35) : HS 1D MS+EH CU 1D AR	mg/kg	< 21	NONE	97	176	< 21	< 21	< 21
Total >C5 - C35 : HS 1D MS+EH CU 1D Total	mg/kg	< 42	NONE	197	199	< 42	< 42	< 42

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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 24-10736	~Date Sampled	05/09/24	05/09/24	05/09/24	05/09/24	05/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP404	CP404	CP404	CP404	CP404
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	SAND	SAND
~Order No: A4755/AH/01	~Depth (m)	0.10	1.20	2.00	4.00	7.00
Reporting Date: 20/09/2024	DETS Sample No	737959	737960	737961	737962	737963

Determinand	Unit	RL	Accreditation	(n)				
Aliphatic >C5 - C6 : HS 1D MS AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS 1D MS AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH CU 1D AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH CU 1D AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH CU 1D AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21 : EH CU 1D AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34 : EH CU 1D AL	mg/kg	< 10	MCERTS	18	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34) : HS 1D MS+EH CU 1D AL	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7 : HS 1D MS AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS 1D MS AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH CU 1D AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH CU 1D AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16 : EH CU 1D AR	mg/kg	< 2	MCERTS	2	3	< 2	< 2	< 2
Aromatic >C16 - C21 : EH CU 1D AR	mg/kg	< 3	MCERTS	12	8	< 3	< 3	< 3
Aromatic >C21 - C35 : EH CU 1D AR	mg/kg	< 10	MCERTS	15	< 10	< 10	< 10	< 10
Aromatic (C5 - C35) : HS 1D MS+EH CU 1D AR	mg/kg	< 21	NONE	30	< 21	< 21	< 21	< 21
Total >C5 - C35 : HS 1D MS+EH CU 1D Total	mg/kg	< 42	NONE	47	< 42	< 42	< 42	< 42

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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 24-10736	~Date Sampled	06/09/24	06/09/24	06/09/24	06/09/24	06/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP403	CP403	CP403	CP403	CP403
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	SAND	SAND
~Order No: A4755/AH/01	~Depth (m)	0.10	1.20	2.40	5.00	8.00
Reporting Date: 20/09/2024	DETS Sample No	737964	737965	737966	737967	737968

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
Aliphatic >C5 - C6 : HS 1D MS AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS 1D MS AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH CU 1D AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH CU 1D AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH CU 1D AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21 : EH CU 1D AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34 : EH CU 1D AL	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34) : HS 1D MS+EH CU 1D AL	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7 : HS 1D MS AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS 1D MS AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH CU 1D AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH CU 1D AR	mg/kg	< 2	MCERTS	5	< 2	< 2	< 2	< 2
Aromatic >C12 - C16 : EH CU 1D AR	mg/kg	< 2	MCERTS	31	< 2	< 2	< 2	< 2
Aromatic >C16 - C21 : EH CU 1D AR	mg/kg	< 3	MCERTS	124	< 3	< 3	< 3	< 3
Aromatic >C21 - C35 : EH CU 1D AR	mg/kg	< 10	MCERTS	117	< 10	< 10	< 10	< 10
Aromatic (C5 - C35) : HS 1D MS+EH CU 1D AR	mg/kg	< 21	NONE	277	< 21	< 21	< 21	< 21
Total >C5 - C35 : HS 1D MS+EH CU 1D Total	mg/kg	< 42	NONE	277	< 42	< 42	< 42	< 42

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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 24-10736	~Date Sampled	06/09/24				
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied				
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP403				
~Project / Job Ref: A4755	~Additional Refs	CLAY				
~Order No: A4755/AH/01	~Depth (m)	9.50				
Reporting Date: 20/09/2024	DETS Sample No	737969				

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01			
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05			
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2			
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2			
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3			
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3			
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10			
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21			
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01			
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05			
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2			
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2			
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2			
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3			
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10			
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21			
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42			

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-10736	~Date Sampled	04/09/24	04/09/24	04/09/24	04/09/24	04/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP401	CP401	CP401	CP401
~Project / Job Ref: A4755	~Additional Refs	MG	MG	SAND	SAND	CLAY
~Order No: A4755/AH/01	~Depth (m)	0.20	1.00	3.00	6.00	10.00
Reporting Date: 20/09/2024	DETS Sample No	737954	737955	737956	737957	737958

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)	(n)
Benzene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
Toluene : HS 1D MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
p & m-xylene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
o-xylene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
MTBE : HS 1D MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-10736	~Date Sampled	05/09/24	05/09/24	05/09/24	05/09/24	05/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP404	CP404	CP404	CP404	CP404
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	SAND	SAND
~Order No: A4755/AH/01	~Depth (m)	0.10	1.20	2.00	4.00	7.00
Reporting Date: 20/09/2024	DETS Sample No	737959	737960	737961	737962	737963

Determinand	Unit	RL	Accreditation	(n)					
Benzene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
Toluene : HS 1D MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
p & m-xylene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
o-xylene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
MTBE : HS 1D MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-10736	~Date Sampled	06/09/24	06/09/24	06/09/24	06/09/24	06/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP403	CP403	CP403	CP403	CP403
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	SAND	SAND
~Order No: A4755/AH/01	~Depth (m)	0.10	1.20	2.40	5.00	8.00
Reporting Date: 20/09/2024	DETS Sample No	737964	737965	737966	737967	737968

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)
Benzene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2
Toluene : HS 1D MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5
Ethylbenzene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2
p & m-xylene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2
o-xylene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2
MTBE : HS 1D MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-10736	~Date Sampled	06/09/24				
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied				
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP403				
~Project / Job Ref: A4755	~Additional Refs	CLAY				
~Order No: A4755/AH/01	~Depth (m)	9.50				
Reporting Date: 20/09/2024	DETS Sample No	737969				

Determinand	Unit	RL	Accreditation				
Benzene : HS 1D MS	ug/kg	< 2	MCERTS	< 2			
Toluene : HS 1D MS	ug/kg	< 5	MCERTS	< 5			
Ethylbenzene : HS 1D MS	ug/kg	< 2	MCERTS	< 2			
p & m-xylene : HS 1D MS	ug/kg	< 2	MCERTS	< 2			
o-xylene : HS 1D MS	ug/kg	< 2	MCERTS	< 2			
MTBE : HS 1D MS	ug/kg	< 5	MCERTS	< 5			

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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 24-10736	
Earth Environmental & Geotechnical Ltd	
~Site Reference: Louisa Street, Openshaw	
~Project / Job Ref: A4755	
~Order No: A4755/AH/01	
Reporting Date: 20/09/2024	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
737954	CP401	MG	0.20	12.4	Brown sandy gravel with stones and concrete
737955	CP401	MG	1.00	11.7	Brown sandy gravel with stones and concrete
737956	CP401	SAND	3.00	15.7	Light brown sand
737957	CP401	SAND	6.00	19.8	Light brown sand
737958	CP401	CLAY	10.00	15	Light brown clay
737959	CP404	MG	0.10	6.9	Brown sandy gravel with stones and concrete
737960	CP404	MG	1.20	19.4	Light brown sandy clay with stones
737961	CP404	MG	2.00	14.1	Light brown sandy clay with stones
737962	CP404	SAND	4.00	22.3	Light brown sand
737963	CP404	SAND	7.00	20.3	Light brown sand
737964	CP403	MG	0.10	13.2	Brown sandy clay with stones
737965	CP403	MG	1.20	13.2	Brown sand with stones
737966	CP403	MG	2.40	17.1	Light brown sandy gravel with stones
737967	CP403	SAND	5.00	24.6	Light brown sand
737968	CP403	SAND	8.00	19.2	Light brown sand with stones
737969	CP403	CLAY	9.50	20.2	Light brown clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{I/S}

Unsuitable Sample ^{U/S}

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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-10736

Earth Environmental & Geotechnical Ltd

~Site Reference: Louisa Street, Openshaw

~Project / Job Ref: A4755

~Order No: A4755/AH/01

Reporting Date: 20/09/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphénylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (all: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (all: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried

AR As Received

~Sample details provided by customer and can affect the validity of results



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List of HWOL Acronyms and Operators	
DETS Report No: 24-10736	
Earth Environmental & Geotechnical Ltd	
~Site Reference: Louisa Street, Openshaw	
~Project / Job Ref: A4755	
~Order No: A4755/AH/01	
Reporting Date: 20/09/2024	

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total
~	Sample details provided by customer and can affect the validity of results

Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aliphatic C5 - C34 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C35 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS



Alex Horne
Earth Environmental & Geotechnical Ltd
Houldsworth Mill Business Centre
Houldsworth Street
Reddish
Stockport
Cheshire
SK5 6DA

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ME17 2JN
t: 01622 850410

DETS Report No: 24-10735

Site Reference: Louisa Street, Openshaw

Project / Job Ref: A4755

Order No: A4755/AH/02

Sample Receipt Date: 13/09/2024

Sample Scheduled Date: 13/09/2024

Report Issue Number: 1

Reporting Date: 19/09/2024

Authorised by:

Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate						
DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS412	WS412	WS412	WS412	WS413
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	MG	MG
~Order No: A4755/AH/02	~Depth (m)	0.10	1.20	2.00	3.50	0.20
Reporting Date: 19/09/2024	DETS Sample No	737938	737939	737940	737941	737942

Determinand	Unit	RL	Accreditation	(n)				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	10.0	7.9	8.0	7.6	8.3
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Complex Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	10660	1294	1115	2123	1643
Total Sulphate as SO ₄	%	< 0.02	MCERTS	1.07	0.13	0.11	0.21	0.16
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	1640	247	187	435	417
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	1.64	0.25	0.19	0.44	0.42
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter (SOM)	%	< 0.1	MCERTS	3.1	6.2	7	4.4	5.1
Arsenic (As)	mg/kg	< 2	MCERTS	8	12	14	16	9
Barium (Ba)	mg/kg	< 2.5	MCERTS	121	98	109	37	83
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	0.5
W/S Boron	mg/kg	< 1	NONE	1.1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	12	20	16	20	11
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	20	33	38	19	34
Lead (Pb)	mg/kg	< 3	MCERTS	61	72	76	462	55
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	9	26	20	19	9
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	MCERTS	17	32	34	53	23
Zinc (Zn)	mg/kg	< 3	MCERTS	93	53	56	13	46
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS413	WS413	WS413	WS411	WS411
~Project / Job Ref: A4755	~Additional Refs	MG	MG	CLAY	MG	MG
~Order No: A4755/AH/02	~Depth (m)	0.60	2.40	3.00	0.20	2.00
Reporting Date: 19/09/2024	DETS Sample No	737943	737944	737945	737946	737947

Determinand	Unit	RL	Accreditation	(n)				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.0	7.4	7.2	10.7	9.0
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Complex Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	1040	< 200	< 200	4365	815
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.10	< 0.02	< 0.02	0.44	0.08
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	115	14	15	728	223
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.12	0.01	0.01	0.73	0.22
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter (SOM)	%	< 0.1	MCERTS	3.1	1.9	2.2	2.8	3.1
Arsenic (As)	mg/kg	< 2	MCERTS	6	10	11	10	4
Barium (Ba)	mg/kg	< 2.5	MCERTS	53	99	127	123	35
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5	1.3	1.3	< 0.5	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.5	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	7	24	24	16	8
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	21	25	26	28	11
Lead (Pb)	mg/kg	< 3	MCERTS	22	12	12	66	14
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	7	22	34	13	9
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	MCERTS	14	26	27	30	11
Zinc (Zn)	mg/kg	< 3	MCERTS	17	44	58	67	29
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

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Soil Analysis Certificate						
DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS411	WS411	WS410	WS410	WS410
~Project / Job Ref: A4755	~Additional Refs	SAND	SAND	MG	MG	MG
~Order No: A4755/AH/02	~Depth (m)	3.00	4.00	0.60	1.20	2.00
Reporting Date: 19/09/2024	DETS Sample No	737948	737949	737950	737951	737952

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.9	7.3	9.3	8.7	7.4
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Complex Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	< 200	< 200	5020	3717	300
Total Sulphate as SO ₄	%	< 0.02	MCERTS	< 0.02	< 0.02	0.50	0.37	0.03
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	52	77	1560	1120	83
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.05	0.08	1.56	1.12	0.08
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter (SOM)	%	< 0.1	MCERTS	0.6	0.6	4.4	3.9	0.6
Arsenic (As)	mg/kg	< 2	MCERTS	< 2	< 2	31	11	< 2
Barium (Ba)	mg/kg	< 2.5	MCERTS	8	12	125	119	6
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	1.6	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	0.4	0.8	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	3	3	45	25	5
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	< 4	< 4	46	36	4
Lead (Pb)	mg/kg	< 3	MCERTS	< 3	< 3	117	108	< 3
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	< 3	< 3	35	13	5
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	MCERTS	4	4	114	41	5
Zinc (Zn)	mg/kg	< 3	MCERTS	8	11	94	138	13
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Soil Analysis Certificate

DETS Report No: 24-10735	~Date Sampled	10/09/24				
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied				
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS410				
~Project / Job Ref: A4755	~Additional Refs	SAND				
~Order No: A4755/AH/02	~Depth (m)	3.00				
Reporting Date: 19/09/2024	DETS Sample No	737953				

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected			
pH	pH Units	N/a	MCERTS	7.6			
Total Cyanide	mg/kg	< 1	NONE	< 1			
Complex Cyanide	mg/kg	< 1	NONE	< 1			
Free Cyanide	mg/kg	< 1	NONE	< 1			
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	243			
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.02			
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	42			
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.04			
Sulphide	mg/kg	< 5	NONE	< 5			
Organic Matter (SOM)	%	< 0.1	MCERTS	0.5			
Arsenic (As)	mg/kg	< 2	MCERTS	< 2			
Barium (Ba)	mg/kg	< 2.5	MCERTS	6			
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5			
W/S Boron	mg/kg	< 1	NONE	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2			
Chromium (Cr)	mg/kg	< 2	MCERTS	4			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	< 4			
Lead (Pb)	mg/kg	< 3	MCERTS	< 3			
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	5			
Selenium (Se)	mg/kg	< 2	MCERTS	< 2			
Vanadium (V)	mg/kg	< 1	MCERTS	4			
Zinc (Zn)	mg/kg	< 3	MCERTS	13			
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

~Sample details provided by customer and can affect the validity of results



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS412	WS412	WS412	WS412	WS413
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	MG	MG
~Order No: A4755/AH/02	~Depth (m)	0.10	1.20	2.00	3.50	0.20
Reporting Date: 19/09/2024	DETS Sample No	737938	737939	737940	737941	737942

Determinand	Unit	RL	Accreditation	(n)		(n)	
Naphthalene	mg/kg	< 0.1	MCERTS	0.45	0.47	2.28	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.26	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	0.47	0.18	7.54	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	0.40	0.13	5.33	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	2.79	1.36	67.90	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	0.78	0.33	17.20	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	3.34	2.36	94	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	3	2.29	96.20	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.44	1.24	38.90	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	1.50	1.18	39.10	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.53	1.21	28.80	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.47	0.48	12.90	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	1.52	1.13	31.30	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.82	0.60	13	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.18	0.13	2.91	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.85	0.55	11.40	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	19.5	13.6	469	< 1.6

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Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS413	WS413	WS413	WS411	WS411
~Project / Job Ref: A4755	~Additional Refs	MG	MG	CLAY	MG	MG
~Order No: A4755/AH/02	~Depth (m)	0.60	2.40	3.00	0.20	2.00
Reporting Date: 19/09/2024	DETS Sample No	737943	737944	737945	737946	737947

Determinand	Unit	RL	Accreditation	(n)			
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.67
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.71
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.42
Phenanthrene	mg/kg	< 0.1	MCERTS	0.31	< 0.1	< 0.1	4.52
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.78
Fluoranthene	mg/kg	< 0.1	MCERTS	0.37	< 0.1	< 0.1	4.04
Pyrene	mg/kg	< 0.1	MCERTS	0.42	< 0.1	< 0.1	3.69
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.20	< 0.1	< 0.1	1.76
Chrysene	mg/kg	< 0.1	MCERTS	0.19	< 0.1	< 0.1	1.94
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.16	< 0.1	< 0.1	1.80
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.83
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.14	< 0.1	< 0.1	1.76
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	1.24
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	1.07
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	1.8	< 1.6	< 1.6	25.2

~Sample details provided by customer and can affect the validity of results



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS411	WS411	WS410	WS410	WS410
~Project / Job Ref: A4755	~Additional Refs	SAND	SAND	MG	MG	MG
~Order No: A4755/AH/02	~Depth (m)	3.00	4.00	0.60	1.20	2.00
Reporting Date: 19/09/2024	DETS Sample No	737948	737949	737950	737951	737952

Determinand	Unit	RL	Accreditation	(n)		(n)	
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.30	0.46
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.22
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.46	0.80
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.32	0.70
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	2.78	3.84
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.60	0.52
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	3	3.21
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	2.88	3.17
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.43	1.65
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.44	1.93
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.40	1.94
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.54	0.53
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.29	1.75
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.77	0.95
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.17	0.22
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.73	0.97
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	18.1	22.9

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-10735	~Date Sampled	10/09/24				
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied				
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS410				
~Project / Job Ref: A4755	~Additional Refs	SAND				
~Order No: A4755/AH/02	~Depth (m)	3.00				
Reporting Date: 19/09/2024	DETS Sample No	737953				

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1			
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6			

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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS412	WS412	WS412	WS412	WS413
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	MG	MG
~Order No: A4755/AH/02	~Depth (m)	0.10	1.20	2.00	3.50	0.20
Reporting Date: 19/09/2024	DETS Sample No	737938	737939	737940	737941	737942

Determinand	Unit	RL	Accreditation	(n)				
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	0.11
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	71	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	71	< 21	< 21	< 21	< 21
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	5	< 2	< 2
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	6	5	80	< 2	< 2
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	26	24	664	< 3	< 3
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	128	25	547	< 10	< 10
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	160	55	1295	< 21	< 21
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot al	mg/kg	< 42	NONE	231	55	1295	< 42	< 42

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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS413	WS413	WS413	WS411	WS411
~Project / Job Ref: A4755	~Additional Refs	MG	MG	CLAY	MG	MG
~Order No: A4755/AH/02	~Depth (m)	0.60	2.40	3.00	0.20	2.00
Reporting Date: 19/09/2024	DETS Sample No	737943	737944	737945	737946	737947

Determinand	Unit	RL	Accreditation	(n)				
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	0.10	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	6	< 3
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	8	< 3
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10	< 10	44	< 10
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21	< 21	< 21	58	< 21
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	8	< 2
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3	< 3	< 3	27	< 3
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10	< 10	< 10	45	< 10
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21	< 21	< 21	80	< 21
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot al	mg/kg	< 42	NONE	< 42	< 42	< 42	138	< 42

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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS411	WS411	WS410	WS410	WS410
~Project / Job Ref: A4755	~Additional Refs	SAND	SAND	MG	MG	MG
~Order No: A4755/AH/02	~Depth (m)	3.00	4.00	0.60	1.20	2.00
Reporting Date: 19/09/2024	DETS Sample No	737948	737949	737950	737951	737952

Determinand	Unit	RL	Accreditation	(n)		(n)	
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	45	< 2
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	246	< 2
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	1078	< 3
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	858	< 3
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10	195	< 10
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21	< 21	2422	< 21
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	34	< 2
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	4	303
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3	< 3	17	334
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10	< 10	15	91
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21	< 21	37	763
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot al	mg/kg	< 42	NONE	< 42	< 42	< 42	3184

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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 24-10735	~Date Sampled	10/09/24				
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied				
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS410				
~Project / Job Ref: A4755	~Additional Refs	SAND				
~Order No: A4755/AH/02	~Depth (m)	3.00				
Reporting Date: 19/09/2024	DETS Sample No	737953				

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01			
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05			
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2			
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2			
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3			
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3			
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10			
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21			
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01			
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05			
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2			
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2			
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2			
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3			
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10			
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21			
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot al	mg/kg	< 42	NONE	< 42			

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS412	WS412	WS412	WS412	WS413
~Project / Job Ref: A4755	~Additional Refs	MG	MG	MG	MG	MG
~Order No: A4755/AH/02	~Depth (m)	0.10	1.20	2.00	3.50	0.20
Reporting Date: 19/09/2024	DETS Sample No	737938	737939	737940	737941	737942

Determinand	Unit	RL	Accreditation	(n)			(n)		
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS413	WS413	WS413	WS411	WS411
~Project / Job Ref: A4755	~Additional Refs	MG	MG	CLAY	MG	MG
~Order No: A4755/AH/02	~Depth (m)	0.60	2.40	3.00	0.20	2.00
Reporting Date: 19/09/2024	DETS Sample No	737943	737944	737945	737946	737947

Determinand	Unit	RL	Accreditation	(n)			
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-10735	~Date Sampled	10/09/24	10/09/24	10/09/24	10/09/24	10/09/24
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS411	WS411	WS410	WS410	WS410
~Project / Job Ref: A4755	~Additional Refs	SAND	SAND	MG	MG	MG
~Order No: A4755/AH/02	~Depth (m)	3.00	4.00	0.60	1.20	2.00
Reporting Date: 19/09/2024	DETS Sample No	737948	737949	737950	737951	737952

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

~Sample details provided by customer and can affect the validity of results



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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-10735	~Date Sampled	10/09/24				
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied				
~Site Reference: Louisa Street, Openshaw	~TP / BH No	WS410				
~Project / Job Ref: A4755	~Additional Refs	SAND				
~Order No: A4755/AH/02	~Depth (m)	3.00				
Reporting Date: 19/09/2024	DETS Sample No	737953				

Determinand	Unit	RL	Accreditation				
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2			
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5			
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2			
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2			
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2			
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5			

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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 24-10735	
Earth Environmental & Geotechnical Ltd	
~Site Reference: Louisa Street, Openshaw	
~Project / Job Ref: A4755	
~Order No: A4755/AH/02	
Reporting Date: 19/09/2024	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
737938	WS412	MG	0.10	15.1	Brown sandy gravel with stones and concrete
737939	WS412	MG	1.20	11	Black loamy sand with stones and concrete
737940	WS412	MG	2.00	12.7	Black loamy sand with stones and concrete
737941	WS412	MG	3.50	20.1	Black sludge with stones and concrete
737942	WS413	MG	0.20	12.4	Black loamy sand with stones and concrete
737943	WS413	MG	0.60	13.9	Black loamy sand with stones and concrete
737944	WS413	MG	2.40	17.8	Light brown clay
737945	WS413	CLAY	3.00	15.9	Light brown clay
737946	WS411	MG	0.20	9.3	Brown sandy gravel with stones and concrete
737947	WS411	MG	2.00	10.5	Brown loamy sand with stones
737948	WS411	SAND	3.00	9.6	Light brown sand
737949	WS411	SAND	4.00	10.6	Light brown sand
737950	WS410	MG	0.60	12.6	Brown sandy gravel with stones and concrete
737951	WS410	MG	1.20	13.3	Brown sandy gravel with stones and concrete
737952	WS410	MG	2.00	5.9	Light brown sandy clay with stones
737953	WS410	SAND	3.00	6.6	Light brown sand

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/5}

Unsuitable Sample ^{u/s}

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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-10735

Earth Environmental & Geotechnical Ltd

~Site Reference: Louisa Street, Openshaw

~Project / Job Ref: A4755

~Order No: A4755/AH/02

Reporting Date: 19/09/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

~Sample details provided by customer and can affect the validity of results



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List of HWOL Acronyms and Operators	
DETS Report No: 24-10735	
Earth Environmental & Geotechnical Ltd	
~Site Reference: Louisa Street, Openshaw	
~Project / Job Ref: A4755	
~Order No: A4755/AH/02	
Reporting Date: 19/09/2024	

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total
~	Sample details provided by customer and can affect the validity of results

Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aliphatic C5 - C34 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C35 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS



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DETS Report No: 24-11280

Site Reference: Louisa Street, Openshaw

Project / Job Ref: A4755

Order No: A4755/AH/03

Sample Receipt Date: 24/09/2024

Sample Scheduled Date: 24/09/2024

Report Issue Number: 1

Reporting Date: 30/09/2024

Authorised by:

Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Water Analysis Certificate						
DETS Report No: 24-11280	~Date Sampled	20/09/24	20/09/24	20/09/24		
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP403	CP404		
~Project / Job Ref: A4755	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: A4755/AH/03	~Depth (m)	5.00	6.50	6.00		
Reporting Date: 30/09/2024	DETS Sample No	739867	739868	739869		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	ISO17025	7.4	7.0	7.4		
Total Cyanide	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Complex Cyanide	ug/l	< 5	ISO17025	< 5	< 5	< 5		
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5		
Sulphate as SO ₄	mg/l	< 1	ISO17025	46	30	152		
Sulphide	mg/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Total Organic Carbon (TOC)	mg/l	< 1.0	ISO17025	11.8	11	23.3		
Arsenic (dissolved)	ug/l	< 0.2	ISO17025	1.5	4.9	9.5		
Barium (dissolved)	ug/l	< 0.2	ISO17025	53.4	215.0	399.0		
Beryllium (dissolved)	ug/l	< 0.2	ISO17025	< 0.2	1.0	2.3		
Boron (dissolved)	ug/l	< 1	ISO17025	127	222	188		
Cadmium (dissolved)	ug/l	< 0.2	ISO17025	< 0.2	0.7	1.4		
Chromium (dissolved)	ug/l	< 0.2	ISO17025	0.6	2.1	5.5		
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20		
Copper (dissolved)	ug/l	< 0.2	ISO17025	2.5	30.8	60.8		
Lead (dissolved)	ug/l	< 0.2	ISO17025	2.2	41.6	82.4		
Mercury (dissolved)	ug/l	< 0.04	ISO17025	0.27	0.58	0.19		
Nickel (dissolved)	ug/l	< 0.2	ISO17025	2.6	7.0	15.3		
Selenium (dissolved)	ug/l	< 0.2	ISO17025	1.0	5.0	8.8		
Vanadium (dissolved)	ug/l	< 0.2	ISO17025	0.8	6.1	8.9		
Zinc (dissolved)	ug/l	< 1	ISO17025	50	360	389		
Total Phenols (monohydric)	ug/l	< 10	ISO17025	< 10	< 10	< 10		

Subcontracted analysis ^(S)

Insufficient sample ^{U/S}

Unsuitable Sample ^{U/S}

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Water Analysis Certificate - Speciated PAH						
DETS Report No: 24-11280	~Date Sampled	20/09/24	20/09/24	20/09/24		
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP403	CP404		
~Project / Job Ref: A4755	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: A4755/AH/03	~Depth (m)	5.00	6.50	6.00		
Reporting Date: 30/09/2024	DETS Sample No	739867	739868	739869		

Determinand	Unit	RL	Accreditation					
Naphthalene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Acenaphthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Fluorene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Phenanthrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008	< 0.008	< 0.008		
Total EPA-16 PAHs	ug/l	< 0.16	NONE	< 0.16	< 0.16	< 0.16		

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Water Analysis Certificate - TPH CWG Banded					
DETS Report No: 24-11280	~Date Sampled	20/09/24	20/09/24	20/09/24	
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied	
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP403	CP404	
~Project / Job Ref: A4755	~Additional Refs	None Supplied	None Supplied	None Supplied	
~Order No: A4755/AH/03	~Depth (m)	5.00	6.50	6.00	
Reporting Date: 30/09/2024	DETS Sample No	739867	739868	739869	

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS 1D MS AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C6 - C8 : HS 1D MS AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C8 - C10 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C10 - C12 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C12 - C16 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C16 - C21 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C21 - C34 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic (C5 - C34) : HS 1D MS+EH CU 1D AL	ug/l	< 70	NONE	< 70	< 70	< 70		
Aromatic >C5 - C7 : HS 1D MS AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C7 - C8 : HS 1D MS AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C8 - C10 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C10 - C12 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C12 - C16 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C16 - C21 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C21 - C35 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic (C5 - C35) : HS 1D MS+EH CU 1D AR	ug/l	< 70	NONE	< 70	< 70	< 70		
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot al	ug/l	< 140	NONE	< 140	< 140	< 140		

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Water Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-11280	~Date Sampled	20/09/24	20/09/24	20/09/24		
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP403	CP404		
~Project / Job Ref: A4755	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: A4755/AH/03	~Depth (m)	5.00	6.50	6.00		
Reporting Date: 30/09/2024	DETS Sample No	739867	739868	739869		

Determinand	Unit	RL	Accreditation				
Benzene : HS 1D MS	ug/l	< 1	ISO17025	< 1	< 1	< 1	
Toluene : HS 1D MS	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Ethylbenzene : HS 1D MS	ug/l	< 5	ISO17025	< 5	< 5	< 5	
p & m-xylene : HS 1D MS	ug/l	< 10	ISO17025	< 10	< 10	< 10	
o-xylene : HS 1D MS	ug/l	< 5	ISO17025	< 5	< 5	< 5	
MTBE : HS 1D MS	ug/l	< 10	ISO17025	< 10	< 10	< 10	

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Water Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 24-11280	
Earth Environmental & Geotechnical Ltd	
~Site Reference: Louisa Street, Openshaw	
~Project / Job Ref: A4755	
~Order No: A4755/AH/03	
Reporting Date: 30/09/2024	

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	F	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	UF	Biological Oxygen Demand (BOD)	Determination using BOD sensors measuring the change of pressure	E133
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCS	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

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List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH 2D Total but with humics mathematically subtracted
#2	EH 2D Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS Total or EH CU+HS Total
~	Sample details provided by customer and can affect the validity of results

Benzene - HS 1D_MS
Ethylbenzene - HS 1D_MS
MTBE - HS 1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C34 - HS 1D_MS+EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS 1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS 1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS 1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS 1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Aromatic C5 - C35 - HS 1D_MS+EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS 1D_MS+EH_CU_1D_Total
Toluene - HS 1D_MS
m & p-xylene - HS 1D_MS
o-Xylene - HS 1D_MS



Melissa McMonagle
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Houldsworth Mill Business Centre
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DETS Report No: 24-11712

Site Reference: Louisa Street, Openshaw

Project / Job Ref: A4755

Order No: A4755/MM/01

Sample Receipt Date: 02/10/2024

Sample Scheduled Date: 02/10/2024

Report Issue Number: 1

Reporting Date: 09/10/2024

Authorised by:

Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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.



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Water Analysis Certificate						
DETS Report No: 24-11712	~Date Sampled	01/10/24	01/10/24	01/10/24		
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP403	CP404		
~Project / Job Ref: A4755	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: A4755/MM/01	~Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 09/10/2024	DETS Sample No	741600	741601	741602		

Determinand	Unit	RL	Accreditation	(hg)			
pH	pH Units	N/a	ISO17025	7.3	8.7	7.1	
Total Cyanide	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Complex Cyanide	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Free Cyanide	ug/l	< 5	NONE	< 5	< 5	< 5	
Sulphate as SO ₄	mg/l	< 1	ISO17025	54	20	138	
Sulphide	mg/l	< 0.1	NONE	< 0.1	< 0.1	< 0.1	
Total Organic Carbon (TOC)	mg/l	< 1.0	ISO17025	24.9	19.4	30.4	
Arsenic (dissolved)	ug/l	< 0.2	ISO17025	1.1	5.2	2.2	
Barium (dissolved)	ug/l	< 0.2	ISO17025	45.2	257.0	111.0	
Beryllium (dissolved)	ug/l	< 0.2	ISO17025	< 0.2	0.6	< 0.2	
Boron (dissolved)	ug/l	< 1	ISO17025	136	43	121	
Cadmium (dissolved)	ug/l	< 0.2	ISO17025	< 0.2	0.8	< 0.2	
Chromium (dissolved)	ug/l	< 0.2	ISO17025	< 0.2	7.3	1.3	
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20	
Copper (dissolved)	ug/l	< 0.2	ISO17025	3.8	58.9	31.7	
Lead (dissolved)	ug/l	< 0.2	ISO17025	< 0.2	66.6	13.3	
Mercury (dissolved)	ug/l	< 0.04	ISO17025	< 0.04	< 0.04	< 0.04	
Nickel (dissolved)	ug/l	< 0.2	ISO17025	3.6	8.4	4.6	
Selenium (dissolved)	ug/l	< 0.2	ISO17025	1.2	1.8	2.2	
Vanadium (dissolved)	ug/l	< 0.2	ISO17025	0.4	12.1	1.5	
Zinc (dissolved)	ug/l	< 1	ISO17025	10	162	58	
Total Phenols (monohydric)	ug/l	< 10	ISO17025	< 10	< 10	< 10	

Subcontracted analysis ^(S)

Insufficient sample ^{U/S}

Unsuitable Sample ^{U/S}

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(hg) Please note deviating sample for Mercury due to inappropriate container



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Water Analysis Certificate - Speciated PAH						
DETS Report No: 24-11712	~Date Sampled	01/10/24	01/10/24	01/10/24		
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP403	CP404		
~Project / Job Ref: A4755	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: A4755/MM/01	~Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 09/10/2024	DETS Sample No	741600	741601	741602		

Determinand	Unit	RL	Accreditation					
Naphthalene	ug/l	< 0.01	NONE	0.02	0.13	< 0.01		
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Acenaphthene	ug/l	< 0.01	NONE	0.01	0.02	< 0.01		
Fluorene	ug/l	< 0.01	NONE	< 0.01	0.02	< 0.01		
Phenanthrene	ug/l	< 0.01	NONE	0.05	0.29	0.04		
Anthracene	ug/l	< 0.01	NONE	< 0.01	0.04	< 0.01		
Fluoranthene	ug/l	< 0.01	NONE	0.03	0.17	0.01		
Pyrene	ug/l	< 0.01	NONE	0.02	0.11	0.02		
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	0.02	< 0.01		
Chrysene	ug/l	< 0.01	NONE	< 0.01	0.02	< 0.01		
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	ug/l	< 0.008	NONE	< 0.008	< 0.008	< 0.008		
Total EPA-16 PAHs	ug/l	< 0.16	NONE	< 0.16	0.82	< 0.16		

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Water Analysis Certificate - TPH CWG Banded

DETS Report No: 24-11712	~Date Sampled	01/10/24	01/10/24	01/10/24		
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP403	CP404		
~Project / Job Ref: A4755	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: A4755/MM/01	~Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 09/10/2024	DETS Sample No	741600	741601	741602		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS 1D MS AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C6 - C8 : HS 1D MS AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C8 - C10 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C10 - C12 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C12 - C16 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C16 - C21 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic >C21 - C34 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10		
Aliphatic (C5 - C34) : HS 1D MS+EH CU 1D AL	ug/l	< 70	NONE	< 70	< 70	< 70		
Aromatic >C5 - C7 : HS 1D MS AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C7 - C8 : HS 1D MS AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C8 - C10 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C10 - C12 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C12 - C16 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C16 - C21 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic >C21 - C35 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10		
Aromatic (C5 - C35) : HS 1D MS+EH CU 1D AR	ug/l	< 70	NONE	< 70	< 70	< 70		
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot al	ug/l	< 140	NONE	< 140	< 140	< 140		

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Water Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-11712	~Date Sampled	01/10/24	01/10/24	01/10/24		
Earth Environmental & Geotechnical Ltd	~Time Sampled	None Supplied	None Supplied	None Supplied		
~Site Reference: Louisa Street, Openshaw	~TP / BH No	CP401	CP403	CP404		
~Project / Job Ref: A4755	~Additional Refs	None Supplied	None Supplied	None Supplied		
~Order No: A4755/MM/01	~Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 09/10/2024	DETS Sample No	741600	741601	741602		

Determinand	Unit	RL	Accreditation				
Benzene : HS 1D MS	ug/l	< 1	ISO17025	< 1	< 1	< 1	
Toluene : HS 1D MS	ug/l	< 5	ISO17025	< 5	< 5	< 5	
Ethylbenzene : HS 1D MS	ug/l	< 5	ISO17025	< 5	< 5	< 5	
p & m-xylene : HS 1D MS	ug/l	< 10	ISO17025	< 10	< 10	< 10	
o-xylene : HS 1D MS	ug/l	< 5	ISO17025	< 5	< 5	< 5	
MTBE : HS 1D MS	ug/l	< 10	ISO17025	< 10	< 10	< 10	

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Maidstone
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Water Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 24-11712	
Earth Environmental & Geotechnical Ltd	
~Site Reference: Louisa Street, Openshaw	
~Project / Job Ref: A4755	
~Order No: A4755/MM/01	
Reporting Date: 09/10/2024	

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	F	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	UF	Biological Oxygen Demand (BOD)	Determination using BOD sensors measuring the change of pressure	E133
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCS	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

~Sample details provided by customer and can affect the validity of results



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List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH 2D Total but with humics mathematically subtracted
#2	EH 2D Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS Total or EH CU+HS Total
~	Sample details provided by customer and can affect the validity of results

Benzene - HS 1D_MS
Ethylbenzene - HS 1D_MS
MTBE - HS 1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C34 - HS 1D_MS+EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS 1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS 1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS 1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS 1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Aromatic C5 - C35 - HS 1D_MS+EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS 1D_MS+EH_CU_1D_Total
Toluene - HS 1D_MS
m & p-xylene - HS 1D_MS
o-Xylene - HS 1D_MS

GROUNDWATER MONITORING RECORD SHEET

JOB DETAILS			
Site:	Louisa Street, Openshaw	Job No:	A4755
Date:	20/09/2024	Engineer:	AH
Time:	15:00	Client	Westchurch
Weather:	Wet and windy		

MONITORING & SAMPLING DETAILS							
Well / Borehole reference:	CP401	CP403	CP404	WS410	WS411	WS412	WS413
Monitoring details							
Groundwater depth (mbgl)	3.42	4.65	4.72	-	-	-	-
Depth to base of well (mbgl)	8.05	7.85	7.43	2.42	4.31	3.35	3.49
Diameter of well (mm)	50	50	50	50	50	50	50
Condition of well	Good	Good	Good	Good	Good	Good	Good
Free product thickness (m)	-	-	-	-	-	-	-
Hydrocarbon sheen noted (Y/N)	N	N	N	N	N	N	N
Purging details							
Purge method	Low flow peristaltic pump			-	-	-	-
Purged volume (litres)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Recharge (good / poor)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sampling details							
Sampling method	Low flow peristaltic pump			-	-	-	-
Volume of water sample taken (litres)	2.1	2.1	2.1	0	0	0	0
Volume of free product sample taken (litres)	-	-	-	-	-	-	-
Colour / odours noted	Dark brown silty with sediment. No odour or sheen.	Dark brown silty with sediment. No odour or sheen.	Dark brown silty with sediment. No odour or sheen.	-	-	-	-
In-situ Testing Details							
pH	6.98	7.01	7.04	-	-	-	-
Electrical Conductivity (µS)	45	53	42	-	-	-	-
Temperature (°C)	11	11.9	11.4	-	-	-	-
Total Dissolved Solids (ppm)	19	17	22	-	-	-	-
Dissolved Oxygen (mg/l)	9.56	9.45	9.23	-	-	-	-
Redox (mV)	290	310	350	-	-	-	-

NOTES	
Other Boreholes (WS410-WS413) Did not have any/enough water to sample.	

GROUNDWATER MONITORING RECORD SHEET

JOB DETAILS			
Site:	Louisa Street, Openshaw	Job No:	A4755
Date:	30/09/2024	Engineer:	MM
Time:	11:00	Client	Westchurch
Weather:	Wet and windy		

MONITORING & SAMPLING DETAILS							
Well / Borehole reference:	CP401	CP403	CP404	WS410	WS411	WS412	WS413
Monitoring details							
Groundwater depth (mbgl)	3.2	4.37	4.75	-	-	-	-
Depth to base of well (mbgl)	8.01	7.75	7.50	2.45	4.28	3.40	3.50
Diameter of well (mm)	50	50	50	50	50	50	50
Condition of well	Good	Good	Good	Good	Good	Good	Good
Free product thickness (m)	-	-	-	-	-	-	-
Hydrocarbon sheen noted (Y/N)	N	N	N	N	N	N	N
Purging details							
Purge method	Low flow peristaltic pump			-	-	-	-
Purged volume (litres)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Recharge (good / poor)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sampling details							
Sampling method	Low flow peristaltic pump			-	-	-	-
Volume of water sample taken (litres)	2.04	2.04	2.04	0	0	0	0
Volume of free product sample taken (litres)	-	-	-	-	-	-	-
Colour / odours noted	Dark brown silty with sediment. No odour or sheen.	Dark brown silty with sediment. No odour or sheen.	Dark brown silty with sediment. No odour or sheen.	-	-	-	-
In-situ Testing Details							
pH	7.01	6.91	7.11	-	-	-	-
Electrical Conductivity (µS)	43	45	50	-	-	-	-
Temperature (°C)	13.11	13.21	13.3	-	-	-	-
Total Dissolved Solids (ppm)	21	23	23	-	-	-	-
Dissolved Oxygen (mg/l)	9.43	9.29	9.36	-	-	-	-
Redox (mV)	320	290	380	-	-	-	-

NOTES	
Other Boreholes (WS410-WS413) Did not have any/enough water to sample.	