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Contaminated Land Phase Two Intrusive Investigation for proposed residential development on Land between St Marks Lane and Robin Hood Street, Cheetham Hill, Manchester, M8 9JG.

Prepared for

Perfect Property 4 U Limited,
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Introduction

Martin Environmental Solutions has been commissioned, to carry out a phase two intrusive investigation for a proposed residential development on land between St Marks Lane and Robin Hood Street, Cheetham Manchester M8 9GH.

The Phase II Intrusive investigation follows a phase I report ref: 2531--1 by Martin Environmental Solutions produced in July 2023, which identified a potential for contamination to exist on site.

The Site:

Site Address*:* Land between St Marks Lane and Robin Hood Street, Cheetham Manchester M8 9GH.

Grid reference: 383798, 401703

An aerial photograph of the site is included in Figure 1.

Current Site use:

The site currently consists of an open overgrown piece of land situated between Robin Hood Street to the south and St Mark's Lane to the north. To the east the site backs onto a number of commercial units along Cheetham Hill Road. To the west the grounds of a former church, now overgrown.

History of the Site & Summary of the Phase I report

A summary of the history of the site and surrounding area and the findings of the Phase I report are presented below.

Site History	On-Site	The site is shown as formal gardens in the earliest 1840's mapping. It is later developed into a smithy in the northwest corner with terrace hosing to the south. By 1981 the housing has been demolished and in 1986 the site is cleared with the exception of the former smithy building, aerial photographs show the site used for commercial purposes until it was finally cleared in 2018.
	Beyond Site Boundary	The earliest mapping properties surrounding the site to the north and east, with a public house to the southeast of the site. to the west is St Marks Church, the grave yard identified as disused from 1890. Various activities occur in the wider area including a timber yard, smith and corporation yard, later turned into a skating ring and picture house in the 1920's. Additional housing is developed in the area, with the estate to the south being rebuilt in the 1980's. the church is demolished by 2000 and the site left to overgrow.
Geological Appraisal	Made Ground	No Made Ground is recorded.
	Geology	Manchester Marls Formation – Mudstone overlaid with Glaciofluvial Deposits of Devensian, Sand and gravel. No mine entries or shallow mining are identified in the area.
	Subsidence hazard	The hazard rating for compressible deposits, running sands shrink swell and landslides is very low/negligible.
	Mining	No Coal mining activities have been identified.
	Radon	1% of properties above the action level of 200 Becquerel's per cubic metre. Basic Radon protection are not required
Environmental Appraisal	Industrial Land Uses	Potentially contaminative sites identified include electrical substations located 127m SE & 137m 198m NE and 148m N, two vehicle repair garages 229m & 242m north and a bakery and a shop. Four permitted installations are recorded These include three dry cleaners, all historical located 70m &

		266m north, and 92m southeast, the fourth site a historic petrol station is located 497m northwest.
	Landfill Sites	No current or historic landfill sites exist within 250m of the site.
	Hydrogeology	Secondary B Aquifer in the Bedrock and a Secondary A Aquifer Superficial geology. Groundwater vulnerability is high in the surface geology and medium in the superficial and low in the bedrock layer. The ground and surface water abstractions licences are located 1.5Km away.
	Hydrology	There are no nearby watercourses
	Flood Risk	Site lies is not located within a flood zone and the risk of flooding is negligible.
	Other relevant details	

Pathway	Description	Identified sources	Receptor at risk	Likelihood
1	Run off and seepage into groundwater from any spillages	Rubble,	Watercourse/ Environment	Low
2	Migration of gases into the building.	Rubble, made ground, former smithy	Future users	Low,
3	Inhalation of gases/ vapours outside	Rubble, made ground, former smithy	Construction workers/future users	Low
4	Inhalation of fine particles	Rubble, made ground, former smithy	Construction workers/future users	Medium
5	Direct ingestion of contaminated soil	Rubble, made ground, former smithy	Construction workers	Medium
6	In-direct ingestion of contaminated soil	Rubble, made ground, former smithy	Future users	Medium
7	Absorption via direct dermal contact with contaminated soil	Rubble, made ground, former smithy	Construction workers/future users	Medium

Investigation Context

As a result of the Phase I report a potential for contamination was identified due to the former use of the site as a smithy and the rubble identified on the site. This Phase II Intrusive investigation has therefore been undertaken to identify whether any contamination is present on site and whether it presents any significant risk to the identified receptors.

The Phase II investigation was undertaken on the 25th June 2025 to investigate the potential presence of contaminants.

It is understood that the current site levels approximately represent the finished site level.

As a result, the intrusive investigation has concentrated on the potential for contamination from the following contaminants within across the site;

- Total Petroleum Hydrocarbons, e.g. oils and fuel
- Polyaromatic Hydrocarbons e.g. Made Ground, burning,
- Heavy metals,
- Asbestos, e.g. garage structures, brakes.

The Investigation

A site visit was conducted on the 25th June 2025 to undertake an intrusive investigation. The initial plan was unt carry out five trail holes across the site. This was however reduced to four while on site. Further information is provided below.

To soil samples were to be taken from each location, as identified in Figure 2.

Sampling locations were spread across the site including under the proposed building, garden areas and access road.

The samples were taken at approximately 250-300mm bgl and the second at 600mm bgl.

The samples were sent to Chemtech environmental a UKAS and MCERTs laboratory and each analysed for heavy metals, Total Petroleum Hydrocarbons (TPH) and Polyaromatic Hydrocarbons (PAH), and Asbestos.

The site runs from Robin Hood Street northwards toward St Marks Lane, with the northern section of the site dipping down to meet St Marks approx. 1m lower than Robin Hood Street. This northern section is covered in rubble.

The first trail hole was located to the southeast corner of the site, below a surface layer of vegetation and sand a layer of asphalt and clean hardcore was found. Below this clean sand. Two samples were recovered.

The second trail hole to the southwest of the site consisted of a layer of concrete, below which hardcore was found and then sand. Two samples were recovered.

The third trail hole was located in the centre of the site, with vegetation, sand and concrete found above hardcore and at ~400mm bgl a void was encountered. Later confirmed as not particularly deep ~450mm not further excavation of this area was undertaken at the time and only one sample was recovered.

The fourth trail hole to the northeast of the site vegetation covered the surface below which brick, concrete and made ground to 800mm bgl. Two samples were recovered.

The fifth trail hole was to be located towards the northwest corner however significant rubble; concrete n brick was found which could not at the time be excavated. No samples were recovered.

Results

The full sampling results are presented in Appendix 1, the sampling locations in Figure 2. The results have been compared against the LQM/CIEH S4UL's & for lead the C4SL value. In each case the residential with homegrown produce end use scenario has been used. Soil organic matter ranged across the site ranged from 2.33-6.33%. The results of the sampling have been compared to the 1% organic matter values for each sample.

The below table provides the range of monitoring results for the site along with the relevant criterion for each contaminant. Details of each trail pits, including photographs are shown in Appendix 2. No ground water was encountered in any of the trail pits.

Soil encountered in the trail pits comprised mainly of brown sand with gravel and stone and brick. No obvious contamination was encountered in any of the trail holes.

The results of the samples identified no asbestos fibres present, in any of the samples.

However, elevated level of lead and cadmium were identified in shallow samples of TP1, TP3 and TP4 and the deeper sample of TP4, along with elevated cadmium levels in TP1 & TP3.

In addition, elevated levels of Polyaromatic Hydrocarbons were found in the shallow samples of TP3 & TP4. The specific PAH's exceedances were Benzo(b)fluoranthene, Benzo(a)pyrene, Dibenzo(a,h)anthracene.

No elevated Total Petroleum Hydrocarbons were identified.

Contaminant	Assessment Criteria (residential with home grown) (mg/Kg)	Range identified on site (mg/Kg)	Pass/Fail
Arsenic	37	5.9-22.1	Pass
Cadmium	11	<1.6-**30.1**	**Fail**
Chromium	910	11.0-137.0	Pass
Copper	2400	17.0-364.0	Pass

Lead	200		25.3-**489.0**	**Fail**
Mercury	40		<0.7-24.6	Pass
Nickel	180		9.1-77.5	Pass
Selenium	250		<3.0-43.5	Pass
Zinc	3700		23.4-1180.0	Pass
Asbestos	N/A		N/A	Pass
Petroleum Hydrocarbons				
>C5-C6 Aliphatic (HS_1D_AL)	42-160		<0.1	Pass
>C6-C8 Aliphatic (HS_1D_AL)	100-230		<0.1	Pass
>C8-C10 Aliphatic (HS_1D_AL)	27-65		<0.1	Pass
>C10-C12 Aliphatic (EH_2D_AL)	130-760		<1.0-3.5	Pass
>C12-C16 Aliphatic (EH_2D_AL)	1100-4300		<0.5-18.3	Pass
>C16-C21 Aliphatic (EH_2D_AL)	65000-110000		<0.7-80.7	Pass
>C21-C35 Aliphatic (EH_2D_AL)	65000-110000		<0.4-279.0	Pass
>C35-C44 Aliphatic (EH_2D_AL)	65000-110000		<0.5-42.2	Pass
>C5-C7 Aromatic (HS_1D_AR)	70-300		<0.01	Pass
>C7-C8 Aromatic (HS_1D_AR)	130-660		<0.01	Pass
>C8-C10 Aromatic (HS_1D_AR)	34-190		<0.01	Pass
>C10-C12 Aromatic (EH_2D_AR)	74-380		<0.6-15.7	Pass
>C12-C16 Aromatic (EH_2D_AR)	140-660		1.1-57.9	Pass
>C16-C21 Aromatic (EH_2D_AR)	260-930		<2.0-159.0	Pass
>C21-C35 Aromatic (EH_2D_AR)	1100-1700		<4.5-560.0	Pass
>C35-C44 Aromatic (EH_2D_AR)	1100-1700		<2.0-282.0	Pass
Polyaromatic hydrocarbons				
	SOM			
	1%	2.5%	6%	
Naphthalene	2.3	5.6	13	<0.016-0.076	Pass
Acenaphthylene	170	420	920	<0.015	Pass
Acenaphthene	210	510	1100	<0.013-1.760	Pass
Fluorene	170	400	860	<0.013-1.370	Pass
Phenanthrene	95	220	440	<0.014-13.800	Pass
Anthracene	2400	5400	11000	<0.017-4.560	Pass

Fluoranthene	280	560	890	<0.017-16.400	Pass
Pyrene	620	1200	2000	<0.016-13.4	Pass
Benzo(a)anthracene	7.2	11	13	<0.012-6.070	Pass
Chrysene	15	22	27	<0.028-6.550	Pass
Benzo(b)fluoranthene	2.6	3.3	3.7	<0.020-8.050	**Fail**
Benzo(k)fluoranthene	77	93	100	<0.025-2.950	Pass
Benzo(a)pyrene	2.2	2.7	3.0	<0.019-6.310	**Fail**
Indeno(1,2,3-cd)pyrene	27	36	41	<0.019-4.950	Pass
Dibenzo(a,h)anthracene	0.24	0.28	0.3	<0.017-1.070	**Fail**
Benzo(g,h,i)perylene	320	340	350	<0.019-4.080	Pass

Conclusions & Recommendations

Following the phase II investigation elevated levels of heavy metals and Polyaromatic Hydrocarbons, were identified in some samples which would result in a Significant Possibility of Significant Harm to the identified receptors.

The presence of a void under trail hole 3 suggest unknown substructures which will require further investigation as part of the development for structural reasons. In addition, one area of the site, which is to form part of the car parking area for the site has not been assessed.

However, the work undertaken so far to investigate the site has identified contamination likely to result Significant Possibility of Significant Harm and as such work is required to break the source-pathway-receptor pollutant linkage. This work must extend to the full site area as appropriate.

It is therefore proposed that the following remediation work is undertaken in order to break the Source-pathway-receptor pollutant linkage.

A minimum of **600mm clean imported cover system** to be placed over the gardens areas. Typically, 450mm subsoil and 150mm topsoil for landscaping areas. A suitable no dig barrier should be installed below the 600mm clean imported cover system. 400mm within hardstanding areas.

Suitable **testing of the imported material** shall be carried out to ensure it is contamination free. Sampling frequency will depend on the source of the new material and should following a sampling rate of 1 sample per 100m^3 if the source of green field and 1 sample per 50m^3 if the source if brownfield, a minimum of three samples should be obtained

It is also recommended that **Barrier pipe is used for new mains water connections** this and any other services should be laid in clean trenches and backfilled with clean imported stone. Excavated material shall be removed from site to a suitable disposal facility.

Waste transfer notes for all exported material shall be retained, along with photographic evidence of the removal of material and the placing of the no-dig battier.

An updated conceptual model is provided below based on the original within the Phase I report.

A watching brief is recommended throughout the construction works. Any signs of any contamination should be fully investigated and appropriate measures taken to remove the source-pathway-receptor pollutant linkages.

Pre-remediation

Pathway	Description	Identified sources	Receptor at risk	Probability	Consequence	Risk
1	Run off and seepage into groundwater	PAH, heavy metal	Watercourse/ Environment	Likely	Medium	**Moderate**
2	Migration of gases into the building.	-	Future users	Unlikely	Medium	Low
3	Inhalation of gases/ vapours outside	-	Construction workers/future users	Unlikely	Mild	Very Low
4	Inhalation of fine particles	Arsenic, PAHs	Construction workers/future users	Likely	Medium	**Moderate**
5	Direct ingestion of contaminated soil	Arsenic, PAHs	Construction workers Future users	Likely Likely	Minor Medium	**Moderate/ Low** **Moderate**
6	In-direct ingestion of contaminated soil	Arsenic, PAHs	Future users	Likely	Medium	**Moderate**
7	Absorption via direct dermal contact with contaminated soil	Arsenic, PAHs	Construction workers/future users	Likely	Mild	**Moderate/ low**

Post Remediation

Pathway	Description	Identified sources	Receptor at risk	Probability	Consequence	Risk
1	Run off and seepage into groundwater	PAH, heavy metals	Watercourse/ Environment	Low Likelihood	Medium	Moderate/ Low
2	Migration of gases into the building.	-	Future users	Unlikely	Medium	Low
3	Inhalation of gases/ vapours outside	-	Construction workers/future users	Unlikely	Mild	Very Low
4	Inhalation of fine particles	Heavy Metals, PAHs	Construction workers/future users	Unlikely	Medium	Low
5	Direct ingestion of contaminated soil	Heavy Metals, PAHs	Future users	Unlikely	Medium	Low
6	In-direct ingestion of contaminated soil	Heavy Metals, PAHs	Future users	Unlikely	Medium	Low
7	Absorption via direct dermal contact with contaminated soil	Heavy Metals, PAHs	Future users	Unlikely	Mild	Very low

		CONSEQUENCE			
		Severe	Medium	Mild	Minor
PROBABILITY	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very low Risk	Very low Risk

Figure 1 – Aerial Photograph



Figure 2 – Proposed Plan and Sampling Locations



Appendix 1 – Soil Sample Results

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ANALYTICAL TEST REPORT

Report Number	25-06367, issue number 1
Contract name:	Standard Soil Suite
Client reference:	Not Supplied
Clients name:	Martin Environmental Solutions Ltd
Clients address:	Martin Environmental Solutions Ltd 14 Hermitage Way Lytham St Annes Lancashire FY8 4FX
Samples received:	27/06/2025
Analysis started:	27/06/2025
Analysis completed:	08/07/2025
Report issued:	08/07/2025

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
I/S	Insufficient sample to carry out test
U/S	Sample not suitable for testing
NAD	No Asbestos Detected

Approved by: Sam Rogerson
Receipt and Reporting Manager

Unit 6 Parkhead, Greencroft Industrial Park, Stanley, County Durham, DH9 7YB

Telephone: (01207) 528578, Email supportsquad@chemtech-env.co.uk

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SAMPLE INFORMATION

MCERTS (Soils):
Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample ID	Depth (m)	Sample description	Material removed	% Removed	% Moisture
56043	TP1A	0.30	Brown Sand with Gravel and Vegetation.	-	-	11.7
56044	TP1B	0.65	Brown Sand with Gravel.	-	-	14.1
56045	TP2A	0.40	Brown Sand with Gravel and Vegetation.	-	-	14.0
56046	TP2B	0.60	Brown Sand with Gravel and Vegetation.	-	-	13.8
56047	TP3A	0.45	Brown Sand with Gravel and Vegetation.	-	-	16.5
56048	TP4A	0.40	Brown Sand with Gravel and Vegetation.	-	-	13.3
56049	TP4B	0.70	Brown Sand with Gravel and Vegetation.	-	-	14.0

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

a	Sampling date not provided
b	Sampling time not provided (waters only)
c	Sample not received in appropriate containers
d	Storage Temperature
e	Headspace present in sample container
f	Sample exceeded sampling to receipt
g	Sample exceeded holding time(s)

Lab ref	Sample ID	Depth (m)	Deviating	Tests (Reason for deviation)
56043	TP1A	0.30	N	
56044	TP1B	0.65	N	
56045	TP2A	0.40	N	
56046	TP2B	0.60	N	
56047	TP3A	0.45	N	
56048	TP4A	0.40	N	
56049	TP4B	0.70	N	

SOILS

Lab Number					56043	56044	56045	56046	56047
Client Reference					SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID					TP1A	TP1B	TP2A	TP2B	TP3A
Depth (m)					0.30	0.65	0.40	0.60	0.45
Sampling Date					25/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025
Test	Method	Accred	LoD	Units					
Asbestos									
Asbestos Identification	SUBCON	SU	0	-	NAD	NAD	NAD	NAD	NAD
Metals									
Arsenic	CE264	U	1.8	mg/kg	22.1	5.9	8.6	9.3	11.1
Cadmium	CE264	M	1.6	mg/kg	11.7	< 1.6	< 1.6	< 1.6	30.1
Chromium	CE264	U	2	mg/kg	137	11.0	11.9	11.3	26.7
Copper	CE264	M	1.6	mg/kg	279	17.0	22.6	21.7	364
Lead	CE264	U	2.3	mg/kg	489	25.3	94.3	57.2	327
Mercury	CE264	U	0.7	mg/kg	24.6	< 0.7	< 0.7	< 0.7	0.8
Nickel	CE264	M	2.1	mg/kg	77.5	9.6	10.4	9.1	21.8
Selenium	CE264	U	3	mg/kg	43.5	< 3.0	< 3.0	< 3.0	< 3.0
Zinc	CE264	M	4	mg/kg	370	19.2	30.3	23.4	1180
Combustion									
Moisture Content	CE001	N	0.1	%	11.7	14.1	14.0	13.8	16.5
Soil Organic Matter	CE192	N	0.1	%	3.36	2.33	3.33	2.57	6.33
Polyaromatic hydrocarbons									
Naphthalene	CE087	M	0.016	mg/kg	< 0.016	< 0.016	< 0.016	< 0.016	0.313
Acenaphthylene	CE087	M	0.015	mg/kg	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Acenaphthene	CE087	M	0.013	mg/kg	< 0.013	< 0.013	< 0.013	< 0.013	1.76
Fluorene	CE087	U	0.013	mg/kg	< 0.013	< 0.013	< 0.013	< 0.013	1.37
Phenanthrene	CE087	M	0.014	mg/kg	< 0.014	< 0.014	< 0.014	< 0.014	13.8
Anthracene	CE087	U	0.017	mg/kg	< 0.017	< 0.017	< 0.017	< 0.017	4.56
Fluoranthene	CE087	M	0.017	mg/kg	0.021	< 0.017	< 0.017	< 0.017	16.4
Pyrene	CE087	M	0.016	mg/kg	0.018	< 0.016	< 0.016	< 0.016	13.4
Benzo(a)anthracene	CE087	U	0.012	mg/kg	0.017	< 0.012	< 0.012	< 0.012	6.07
Chrysene	CE087	M	0.028	mg/kg	< 0.028	< 0.028	< 0.028	< 0.028	6.55
Benzo(b)fluoranthene	CE087	M	0.02	mg/kg	< 0.020	< 0.020	< 0.020	< 0.020	8.05
Benzo(k)fluoranthene	CE087	M	0.025	mg/kg	< 0.025	< 0.025	< 0.025	< 0.025	2.95
Benzo(a)pyrene	CE087	U	0.019	mg/kg	< 0.019	< 0.019	< 0.019	< 0.019	6.31
Indeno(1,2,3-cd)pyrene	CE087	M	0.019	mg/kg	< 0.019	< 0.019	< 0.019	< 0.019	4.95
Dibenzo(a,h)anthracene	CE087	M	0.017	mg/kg	< 0.017	< 0.017	< 0.017	< 0.017	1.07

SOILS

Lab Number					56043	56044	56045	56046	56047
Client Reference					SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID					TP1A	TP1B	TP2A	TP2B	TP3A
Depth (m)					0.30	0.65	0.40	0.60	0.45
Sampling Date					25/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025
Test	Method	Accred	LoD	Units					
Benzo(g,h,i)perylene	CE087	M	0.019	mg/kg	< 0.019	< 0.019	< 0.019	< 0.019	4.08
Total PAH(16)	CE087	N	0.28	mg/kg	< 0.280	< 0.280	< 0.280	< 0.280	91.7
Total Petroleum Hydrocarbons									
>C5-C6 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C6-C8 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C8-C10 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C10-C12 Aliphatic (EH_2D_AL)	CE250	N	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	2.1
>C12-C16 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	3.2
>C16-C21 Aliphatic (EH_2D_AL)	CE250	N	0.7	mg/kg	< 0.7	< 0.7	< 0.7	< 0.7	13.2
>C21-C35 Aliphatic (EH_2D_AL)	CE250	N	4	mg/kg	8.8	< 4.0	< 4.0	< 4.0	142
>C35-C44 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	10.9
>C5-C7 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
>C7-C8 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
>C8-C10 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
>C10-C12 Aromatic (EH_2D_AR)	CE250	N	0.6	mg/kg	1.6	1.1	< 0.6	< 0.6	13.0
>C12-C16 Aromatic (EH_2D_AR)	CE250	N	1	mg/kg	3.9	2.8	1.1	1.1	39.6
>C16-C21 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	2.5	< 2.0	< 2.0	< 2.0	38.0
>C21-C35 Aromatic (EH_2D_AR)	CE250	N	4.5	mg/kg	10.7	< 4.5	< 4.5	< 4.5	194
>C35-C44 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	2.3	4.8	< 2.0	< 2.0	40.6

CHEMTECH environmental part of Cawood

SOILS

Lab Number					56048	56049
Client Reference					SOIL	SOIL
Sample ID					TP4A	TP4B
Depth (m)					0.40	0.70
Sampling Date					25/06/2025	25/06/2025
Test	**Method**	**Accred**	**LoD**	**Units**		
Asbestos						
Asbestos Identification	SUBCON	SU	0	-	NAD	NAD
Metals						
Arsenic	CE264	U	1.8	mg/kg	6.6	10.2
Cadmium	CE264	M	1.6	mg/kg	4.6	4.9
Chromium	CE264	U	2	mg/kg	25.9	18.2
Copper	CE264	M	1.6	mg/kg	98.0	51.7
Lead	CE264	U	2.3	mg/kg	212	199
Mercury	CE264	U	0.7	mg/kg	< 0.7	0.8
Nickel	CE264	M	2.1	mg/kg	16.9	16.1
Selenium	CE264	U	3	mg/kg	< 3.0	< 3.0
Zinc	CE264	M	4	mg/kg	380	290
Combustion						
Moisture Content	CE001	N	0.1	%	13.3	14.0
Soil Organic Matter	CE192	N	0.1	%	6.19	4.22
Polyaromatic hydrocarbons						
Naphthalene	CE087	M	0.016	mg/kg	0.076	0.069
Acenaphthylene	CE087	M	0.015	mg/kg	< 0.015	< 0.015
Acenaphthene	CE087	M	0.013	mg/kg	0.330	0.149
Fluorene	CE087	U	0.013	mg/kg	0.239	0.112
Phenanthrene	CE087	M	0.014	mg/kg	2.80	1.10
Anthracene	CE087	U	0.017	mg/kg	0.928	0.264
Fluoranthene	CE087	M	0.017	mg/kg	4.27	1.74
Pyrene	CE087	M	0.016	mg/kg	3.40	1.62
Benzo(a)anthracene	CE087	U	0.012	mg/kg	1.72	0.708
Chrysene	CE087	M	0.028	mg/kg	1.68	0.748
Benzo(b)fluoranthene	CE087	M	0.02	mg/kg	2.68	0.977
Benzo(k)fluoranthene	CE087	M	0.025	mg/kg	0.833	0.376
Benzo(a)pyrene	CE087	U	0.019	mg/kg	2.41	0.829
Indeno(1,2,3-cd)pyrene	CE087	M	0.019	mg/kg	2.26	0.595
Dibenzo(a,h)anthracene	CE087	M	0.017	mg/kg	0.398	0.121

SOILS

Lab Number					56048	56049
Client Reference					SOIL	SOIL
Sample ID					TP4A	TP4B
Depth (m)					0.40	0.70
Sampling Date					25/06/2025	25/06/2025
Test	**Method**	**Accred**	**LoD**	**Units**		
Benzo(g,h,i)perylene	CE087	M	0.019	mg/kg	1.96	0.548
Total PAH(16)	CE087	N	0.28	mg/kg	26.0	9.95
Total Petroleum Hydrocarbons						
>C5-C6 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10
>C6-C8 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10
>C8-C10 Aliphatic (HS_1D_AL)	CE267	N	0.1	mg/kg	< 0.10	< 0.10
>C10-C12 Aliphatic (EH_2D_AL)	CE250	N	1	mg/kg	3.5	< 1.0
>C12-C16 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	18.3	3.3
>C16-C21 Aliphatic (EH_2D_AL)	CE250	N	0.7	mg/kg	80.7	12.5
>C21-C35 Aliphatic (EH_2D_AL)	CE250	N	4	mg/kg	279	113
>C35-C44 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	42.2	8.3
>C5-C7 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010
>C7-C8 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010
>C8-C10 Aromatic (HS_1D_AR)	CE267	N	0.01	mg/kg	< 0.010	< 0.010
>C10-C12 Aromatic (EH_2D_AR)	CE250	N	0.6	mg/kg	15.7	8.3
>C12-C16 Aromatic (EH_2D_AR)	CE250	N	1	mg/kg	57.9	49.5
>C16-C21 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	159	79.6
>C21-C35 Aromatic (EH_2D_AR)	CE250	N	4.5	mg/kg	560	293
>C35-C44 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	282	52.0

METHOD DETAILS

METHOD	TESTNAME	METHOD SUMMARY	ANALYSIS BASIS
CE267	VPH in Soil	HS-GCFID	As submitted sample
CE250	GCXGC in Soil	DCM Extraction and GCxGC-FID	As submitted sample
SUBCON	Asbestos Soil	HSG248	Air Dried Sample
CE264	Metals by ICP in Soil	ICPOES	Air dried sample
CE087	PAH in Soil	DCM Extraction and GCMS	As submitted sample

REPORT INFORMATION

Report No.:25-06367, issue number 1

Key

U	ISO17025 Accredited Result
M	ISO17025 and MCERTS Accredited Result
N	Do not currently hold accreditation
^	MCERTS accreditation not applicable for sample matrix. Result is unaccredited.
*	ISO17025 accreditation not applicable for sample matrix. Result is unaccredited.
S	Subcontracted
I/S	Insufficient Sample
U/S	Unsuitable sample
N/T	Not tested
<	Means "less than"
>	Means "greater than"

LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination.

This report shall not be reproduced except in full, without prior written approval.

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

The results relate only to the sample received.

Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Moisture Content Calculated on a Wet Weight basis

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

Sampling was undertaken by Chemtech Environmental Limited and is outside the UKAS accreditation scope.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

BTEX compounds are identified by retention time only and may include interference from co-eluting compounds.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying

For soils and solids, analytical results are inclusive of stones, where applicable.

Sample Retention and Disposal

All soil samples will be retained for a period of 4 weeks from the point of receipt

All water samples will be retained for a period of 2 weeks from the point of Reporting

Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

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
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

Lab Number			56043	56044	56045	56046	56047	56048	56049
Client Reference			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample ID			TP1A	TP1B	TP2A	TP2B	TP3A	TP4A	TP4B
Depth (m)			0.30	0.65	0.40	0.60	0.45	0.40	0.70
Sampling Date			25/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025	25/06/2025
Test	Method	Units							
Asbestos									
Asbestos Identification	SUBCON	-	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Metals									
Arsenic	CE264	mg/kg	22.1	5.9	8.6	9.3	11.1	6.6	10.2
Cadmium	CE264	mg/kg	11.7	< 1.6	< 1.6	< 1.6	30.1	4.6	4.9
Chromium	CE264	mg/kg	137.0	11.0	11.9	11.3	26.7	25.9	18.2
Copper	CE264	mg/kg	279.0	17.0	22.6	21.7	364.0	98.0	51.7
Lead	CE264	mg/kg	489.0	25.3	94.3	57.2	327.0	212.0	199.0
Mercury	CE264	mg/kg	24.6	< 0.7	< 0.7	< 0.7	0.8	< 0.7	0.8
Nickel	CE264	mg/kg	77.5	9.6	10.4	9.1	21.8	16.9	16.1
Selenium	CE264	mg/kg	43.5	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Zinc	CE264	mg/kg	370.0	19.2	30.3	23.4	1180.0	380.0	290.0

Polyaromatic hydrocarbons									
Naphthalene	CE087	mg/kg	< 0.016	< 0.016	< 0.016	< 0.016	0.313	0.076	0.069
Acenaphthylene	CE087	mg/kg	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Acenaphthene	CE087	mg/kg	< 0.013	< 0.013	< 0.013	< 0.013	1.760	0.330	0.149
Fluorene	CE087	mg/kg	< 0.013	< 0.013	< 0.013	< 0.013	1.370	0.239	0.112
Phenanthrene	CE087	mg/kg	< 0.014	< 0.014	< 0.014	< 0.014	13.800	2.800	1.100
Anthracene	CE087	mg/kg	< 0.017	< 0.017	< 0.017	< 0.017	4.560	0.928	0.264
Fluoranthene	CE087	mg/kg	0.021	< 0.017	< 0.017	< 0.017	16.400	4.270	1.740
Pyrene	CE087	mg/kg	0.018	< 0.016	< 0.016	< 0.016	13.400	3.400	1.620
Benzo(a)anthracene	CE087	mg/kg	0.017	< 0.012	< 0.012	< 0.012	6.070	1.720	0.708
Chrysene	CE087	mg/kg	< 0.028	< 0.028	< 0.028	< 0.028	6.550	1.680	0.748
Benzo(b)fluoranthene	CE087	mg/kg	< 0.020	< 0.020	< 0.020	< 0.020	8.050	2.680	0.977
Benzo(k)fluoranthene	CE087	mg/kg	< 0.025	< 0.025	< 0.025	< 0.025	2.950	0.833	0.376
Benzo(a)pyrene	CE087	mg/kg	< 0.019	< 0.019	< 0.019	< 0.019	6.310	2.410	0.829
Indeno(1,2,3-cd)pyrene	CE087	mg/kg	< 0.019	< 0.019	< 0.019	< 0.019	4.950	2.260	0.595
Dibenzo(a,h)anthracene	CE087	mg/kg	< 0.017	< 0.017	< 0.017	< 0.017	1.070	0.398	0.121
Benzo(g,h,i)perylene	CE087	mg/kg	< 0.019	< 0.019	< 0.019	< 0.019	4.080	1.960	0.548
Total PAH(16)	CE087	mg/kg	< 0.280	< 0.280	< 0.280	< 0.280	91.700	26.000	9.950

Total Petroleum Hydrocarbons									
>C5-C6 Aliphatic (HS_1D_AL)	CE267	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C6-C8 Aliphatic (HS_1D_AL)	CE267	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C8-C10 Aliphatic (HS_1D_AL)	CE267	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
>C10-C12 Aliphatic (EH_2D_AL)	CE250	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	2.1	3.5	< 1.0
>C12-C16 Aliphatic (EH_2D_AL)	CE250	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	3.2	18.3	3.3
>C16-C21 Aliphatic (EH_2D_AL)	CE250	mg/kg	< 0.7	< 0.7	< 0.7	< 0.7	13.2	80.7	12.5
>C21-C35 Aliphatic (EH_2D_AL)	CE250	mg/kg	8.8	< 4.0	< 4.0	< 4.0	142.0	279.0	113.0
>C35-C44 Aliphatic (EH_2D_AL)	CE250	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	10.9	42.2	8.3
>C5-C7 Aromatic (HS_1D_AR)	CE267	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
>C7-C8 Aromatic (HS_1D_AR)	CE267	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
>C8-C10 Aromatic (HS_1D_AR)	CE267	mg/kg	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
>C10-C12 Aromatic (EH_2D_AR)	CE250	mg/kg	1.6	1.1	< 0.6	< 0.6	13.0	15.7	8.3
>C12-C16 Aromatic (EH_2D_AR)	CE250	mg/kg	3.9	2.8	1.1	1.1	39.6	57.9	49.5
>C16-C21 Aromatic (EH_2D_AR)	CE250	mg/kg	2.5	< 2.0	< 2.0	< 2.0	38.0	159.0	79.6
>C21-C35 Aromatic (EH_2D_AR)	CE250	mg/kg	10.7	< 4.5	< 4.5	< 4.5	194.0	560.0	293.0
>C35-C44 Aromatic (EH_2D_AR)	CE250	mg/kg	2.3	4.8	< 2.0	< 2.0	40.6	282.0	52.0

Combustion									
Moisture Content	CE001	%	11.7	14.1	14.0	13.8	16.5	13.3	14.0
Soil Organic Matter	CE192	%	3.36	2.33	3.33	2.57	6.33	6.19	4.22

=exceedances

Appendix 2 – Trail pit logs

TP1–southeast corner













Trail Pit 1 – southeast corner	
0.00-0.05m	grass, roots, sand
0.05-0.10m	Asphalt
0.10-0.25m	clean hardcore
0.25-0.65	brown sand

TP2 – southwest corner





Trail Pit 2 –eastern boundary under former garage structure – no concrete	
0.00-0.05m	concrete screen and concrete
0.05-0.25m	hardcore
0.25-0.6m	brown sand, gravel, stones

TP3 – Central area





Trail Pit 3 – southeast boundary	
0.00-0.05m	vegetation, roots, sand
0.05-0.10m	Brown sand
0.10-0.15m	Asphalt
0.15-0.20m	Concrete
0.20-0.45m	Brown sand, gravel, stones
0.45m	Void discovered ~0.3-0.4m deep

TP4 – Northeast corner





Trail Pit 3 – southeast boundary

0.00-0.05m	grass, roots
0.05-0.25m	asphalt and concrete
0.25-0.40m	Bron sandy soil, brick, gravel, plastic
0.40-0.70m	sandy loamy soil, some gravel, bricks, tile fragments.