



Contaminated Land Phase Two Intrusive Investigation for proposed commercial development at 48 Derby Street, Manchester, M8 8HN.

Prepared for

Building Design Services
6 Stock Close
Rochdale
OL12 6BB

July 2024



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Introduction

Martin Environmental Solutions has been commissioned, to carry out a phase two intrusive investigation for a proposed commercial development on land at 48 Derby Street, Manchester M8 8HN. The Phase II Intrusive investigation follows a phase I desk study report which identified the presence of a former chemical works on site in the 1930's.

The Site:

Site Address: 48 Derby Street, Manchester, M8 8HN.

Grid reference: 384033; 399581

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

Current Site use:

The site currently consists of a rectangular concreted yard area to the rear of an existing commercial building. Additional retail units are located to the north, east and on the opposite side of the road west of the site.

The phase I report identified the site as forming part of a chemical works in the 1930's later just a works in the 1950's, with a historic clay pit located 100m to the north, which became a brick works in 1908, later works in the 1960's.



Investigation

A site visit was conducted on the 31st May 2024 to undertake an intrusive investigation. Samples were taken from five locations across the site, identified in Figure 2.

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.

Three trail pits were excavated across the site and samples taken for analysis. Shallow samples were taken at approx. 300mm bgl and further samples at approx. 600mm bgl at each location.

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 a commercial scenario & the C4SL value for Lead. Soil organic matter ranged across the site ranged from 2.2-17.3%. Appropriate levels have been used within the analysis as the most conservative figure available.

Details of each trail pit, including photographs are shown in Appendix 2. No ground water was encountered in any of the trail pits.

Soil encountered in the trail pit comprised of sand with gravel in the shallow sample and sandy loamy clay in the deeper samples. Some stone, was also identified in each trail pit along with a layer of cobble stones in trail pit 1, presumably the level of the historic yard identified on the mapping.

The results of the samples identified no asbestos fibres within the site, and no elevated levels of heavy metals or Total Petroleum Hydrocarbons.

However, elevated levels of PAH's were identified within trail pit 1 and 3. A strong odour was also present near the surface of TP1 at the time of excavation. These exceedances were significantly above the identified LQM/CIEH S4UL's levels.

The individual exceedances were:

Chemical	Trail Pit		
	TP1A	TP1B	TP3A
Benzo(a)anthracene	X		
Chrysene	X		
Benzo(b)fluoranthene	X		X
Benzo(a)pyrene	X		X
Dibenz(ah)anthracene	X	X	X

The source of the PAH contamination is unknown but combined with the odour detected within the TP1 it is considered likely that either asphalt or fuel oil/diesel may be the source.

The PAH's of concern identified on site have high melting points indicating that vapours from the contamination will not be an issue, however there exists a risk from inhalation, dermal contact for construction workers ingestion through mains water supplies. It is therefore recommended to avoid any significant possibility of significant harm that this area is excavated to remove any visual or olfactory signs of contamination. In addition, any services to the new building should be laid in trenches backfilled with clean imported material and all mains water supplies by constructed from barrier pipework.

This approach will remove contamination from site and break the source-pathway-receptor pollutant linkage by preventing contact (inhalation/dermal or ingestion) with the contamination. Construction staff should be given suitable information regarding the presence and risk of contamination, supplied with appropriate PPE and suitable welfare facilities.



Potential for Ground Gas to be present on site

The development site lies within a close proximity to a historic clay pit, later a brick works. The brickworks appears on historical mapping over the former clay pit in 1892 with a refuse tip located to the northeast of the site in 1950's, no details of the fill at the tip area have been sourced. By the mid 1960's the area is redeveloped. Clay was also identified within 1m of the surface across the site.

Assuming the refuse tip area was filled with material likely to generate gas it was located over 250m from the site. Even if the rest of the former clay pit was filled with a similar material the area was redeveloped in the 1960's resulting in a 59-year gap since any material has been deposited. Gas production generally ceases after ~50 years and as such it is highly unlikely that any degradable material present within the former clay pit would still be producing gas at this stage. The clay layer identified on site and through nearby borehole records (10-15m bgl) would also help prevent migration of any gas into the building.



Conclusions

Following the phase II investigation contamination likely to pose a potential significant risk of significant harm to the identified receptors has been found on site in the form of Polycyclic Aromatic Hydrocarbons; (Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(a)pyrene, & Dibenzo(ah)anthracene).

As a result, further remedial works are required to break the source-pathway-receptor pollutant linkage and ensure the site is safe and suitable for the intended use.

This work includes removal of the contamination identified and provision of clean backfill for all services along with a barrier watermain for the mains water system.

An updated conceptual model has been provided below and remediation of the site is recommended to ensure any source-pathway-receptor pollutant linkages are removed.



Updated Conceptual Model

The table represents a basic conceptual model. It highlights the potential sources of pollutants identified from the gathered information, and potential pathways in which any contaminants could reach the identified receptors.

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



Recommendations

As a result of the desk study and intrusive investigations undertaken which confirms the presence of some elevated levels of contaminants present on site and the need for site remediation. Considering the size and restraints of the development site the following recommendations are proposed.

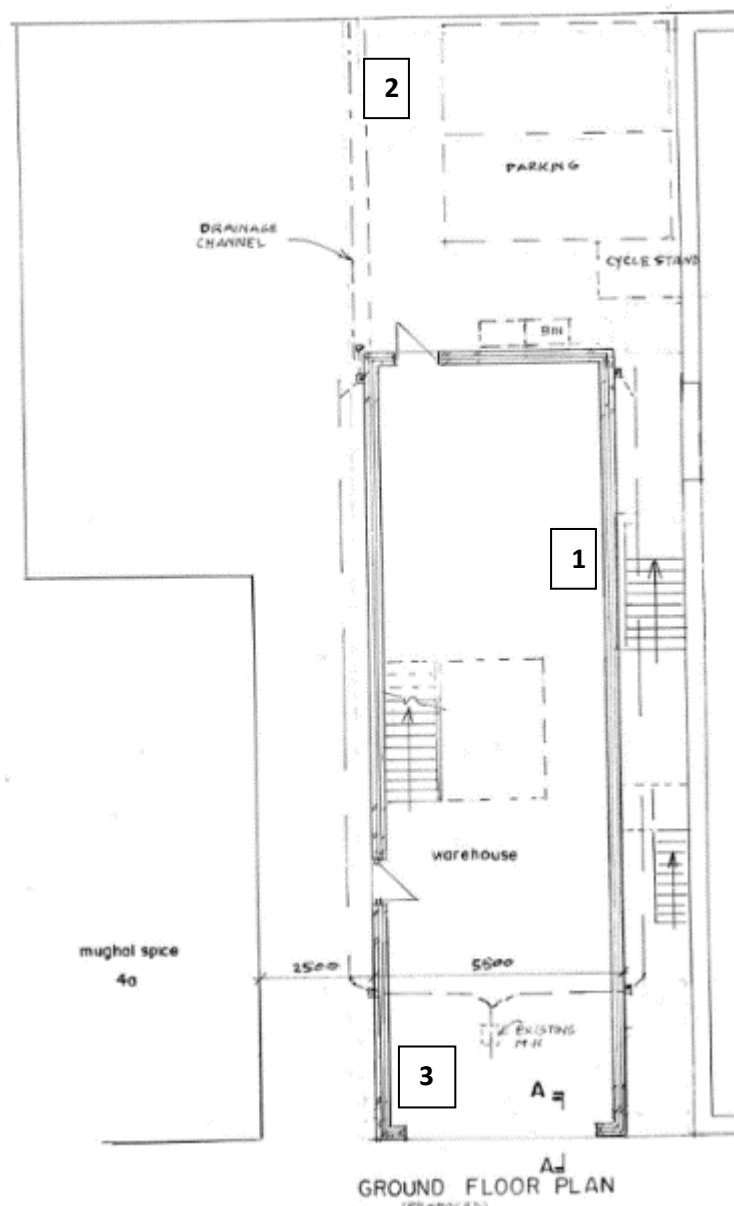
1. Excavate the contaminated material on site. Excavated material will need to be appropriately disposed of with waste transfer notes kept for evidence.
2. New services installed shall be installed in trenches which are backfilled with clean imported material.
3. All drinking water supply pipes and connections shall be of a MDPE barrier pipe design.
4. All construction workers to be given suitable advice and training on the risks from contamination with adequate welfare facilities provided for handwashing etc.

The above measures will remove any contamination presence and break the source-pathway-receptor pollutant linkages. Ensuring that the site when complete will not preset any significant possibility of significant harm to the future site users and will be safe for the intended use.

Figure 1 – Aerial Photograph



Figure 2 – Sampling Locations



1 Sample location



Appendix 1 – Soil Sample Results



ANALYTICAL TEST REPORT

Contract no: 133930

Contract name: Derby Street

Client reference: -

Clients name: Martin Environmental Solutions

Clients address: 14 Hermitage Way
Lytham
St Annes
FY8 4FX

Samples received: 04 June 2024

Analysis started: 04 June 2024

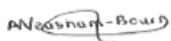
Analysis completed: 13 June 2024

Report issued: 13 June 2024

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
\$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing
NAD	No Asbestos Detected

Approved by:


Abbie Neasham-Bourn
Senior Reporting Administrator

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CE709 Test Report Issue 35, issued 22 January 2024



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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
133930-1	TP1a	0.30	Sand with Gravel	-	-	14.1
133930-2	TP1b	0.60	Sandy Loamy Clay with Gravel	-	-	18.9
133930-3	TP2a	0.30	Sand with Gravel	-	-	14.8
133930-4	TP2b	0.60	Sandy Loamy Clay with Gravel & Roots	-	-	20.4
133930-5	TP3a	0.30	Sand with Gravel	-	-	13.1
133930-6	TP3b	0.60	Sandy Clay	-	-	20.4

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SOILS

Lab number			133930-1	133930-2	133930-3	133930-4	133930-5	133930-6
Sample id			TP1a	TP1b	TP2a	TP2b	TP3a	TP3b
Depth (m)			0.30	0.60	0.30	0.60	0.30	0.60
Date sampled			31/05/2024	31/05/2024	31/05/2024	31/05/2024	31/05/2024	31/05/2024
Test	Method	Units						
Arsenic (total)	CE264 ^M	mg/kg As	20.2	16.8	17.4	13.1	19.9	19.2
Cadmium (total)	CE264 ^M	mg/kg Cd	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Chromium (total)	CE264 ^U	mg/kg Cr	32.8	38.8	37.6	34.0	34.4	46.7
Copper (total)	CE264 ^M	mg/kg Cu	112.0	88.9	164.0	71.2	110.5	214.4
Lead (total)	CE264 ^U	mg/kg Pb	171.6	117.2	129.9	86.1	110.6	86.8
Mercury (total)	CE264 ^U	mg/kg Hg	2.0	1.4	<0.7	<0.7	<0.7	<0.7
Nickel (total)	CE264 ^M	mg/kg Ni	30.1	39.8	25.9	26.6	73.9	51.2
Selenium (total)	CE264	mg/kg Se	<3	<3	<3	<3	<3	<3
Zinc (total)	CE264 ^M	mg/kg Zn	372.9	168.8	210.1	117.7	246.0	163.6
Total Organic Carbon (TOC)	CE197	% w/w C	17.3	7.4	2.2	3.3	5.7	2.2
Estimate of OMC (calculated from TOC)	CE197	% w/w	29.8	12.8	3.7	5.7	9.8	3.8
PAH								
Naphthalene	CE087 ^M	mg/kg	593.01	63.96	0.06	0.20	53.46	0.13
Acenaphthylene	CE087 ^M	mg/kg	27.46	<0.02	<0.02	<0.02	6.09	0.08
Acenaphthene	CE087 ^M	mg/kg	719.31	37.43	0.13	0.14	37.39	0.13
Fluorene	CE087 ^U	mg/kg	551.59	29.46	0.07	0.11	41.01	0.17
Phenanthrene	CE087 ^M	mg/kg	2859.44	154.18	0.70	0.60	232.64	1.25
Anthracene	CE087 ^U	mg/kg	800.29	40.57	0.19	0.16	57.00	0.39
Fluoranthene	CE087 ^M	mg/kg	2155.83	107.08	0.76	0.62	178.24	1.94
Pyrene	CE087 ^M	mg/kg	1909.14	95.13	0.76	0.66	165.88	2.06
Benzo(a)anthracene	CE087 ^U	mg/kg	772.39	34.56	0.39	0.34	69.81	0.98
Chrysene	CE087 ^M	mg/kg	754.27	37.72	0.37	0.37	72.79	0.99
Benzo(b)fluoranthene	CE087 ^M	mg/kg	681.70	34.79	0.37	0.36	61.89	1.09
Benzo(k)fluoranthene	CE087 ^M	mg/kg	278.62	13.98	0.14	0.13	24.45	0.43
Benzo(a)pyrene	CE087 ^U	mg/kg	680.26	32.32	0.34	0.37	51.86	1.06
Indeno(123cd)pyrene	CE087 ^M	mg/kg	397.08	22.50	0.31	0.29	37.58	0.85
Dibenz(ah)anthracene	CE087 ^M	mg/kg	90.67	5.36	0.05	0.05	7.66	0.16
Benzo(ghi)perylene	CE087 ^M	mg/kg	369.72	21.07	0.24	0.21	26.64	0.72
PAH (total of USEPA 16)	CE087	mg/kg	13641	730	4.87	4.60	1124	12.4
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	1611	281	4	4	93	3
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	5562	800	8	8	291	7
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	13385	1630	10	11	846	8
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	24203	2728	51	50	1982	37
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	4207	567	15	12	397	11
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

133930
Derby Street

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SOILS

Lab number			133930-1	133930-2	133930-3	133930-4	133930-5	133930-6
Sample id			TP1a	TP1b	TP2a	TP2b	TP3a	TP3b
Depth (m)			0.30	0.60	0.30	0.60	0.30	0.60
Date sampled			31/05/2024	31/05/2024	31/05/2024	31/05/2024	31/05/2024	31/05/2024
Test	Method	Units						
EPH Aliphatic (>C10-C12)	CE250	mg/kg	113	28	<1	<1	20	<1
EPH Aliphatic (>C12-C16)	CE250	mg/kg	278	62	2	2	36	2
EPH Aliphatic (>C16-C35)	CE250	mg/kg	1273	240	14	15	217	11
EPH Aliphatic (>C35-C44)	CE250	mg/kg	176	28	1	1	21	1
Subcontracted Analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE264	Arsenic (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.8	mg/kg As
CE264	Cadmium (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cd
CE264	Chromium (total)	Aqua Regia Extraction, ICPOES	Dry	U	2	mg/kg Cr
CE264	Copper (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cu
CE264	Lead (total)	Aqua Regia Extraction, ICPOES	Dry	U	2.3	mg/kg Pb
CE264	Mercury (total)	Aqua Regia Extraction, ICPOES	Dry	U	0.7	mg/kg Hg
CE264	Nickel (total)	Aqua Regia Extraction, ICPOES	Dry	M	2.1	mg/kg Ni
CE264	Selenium (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Se
CE264	Zinc (total)	Aqua Regia Extraction, ICPOES	Dry	M	4	mg/kg Zn
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.016	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.015	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.013	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.013	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.014	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.017	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.017	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.016	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.012	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.028	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.025	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.019	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.019	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.017	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.019	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.028	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		0.6	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1.5	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		4.5	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		2	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		0.5	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		3	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		0.5	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-



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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

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
133930-1	TP1a	0.30	N	
133930-2	TP1b	0.60	N	
133930-3	TP2a	0.30	N	
133930-4	TP2b	0.60	N	
133930-5	TP3a	0.30	N	
133930-6	TP3b	0.60	N	



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ADDITIONAL INFORMATION

Notes

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

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

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

Methods, procedures and performance data are available on request.

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

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

Soil/Solid samples will be disposed of 4 weeks from initial receipt unless otherwise agreed.

Waters and leachate samples will be disposed of 2 weeks from report issue unless otherwise agreed.

DEFRA Licence for the introduction and movement within England of prohibited soil for chemical and physical analysis Licence No: 132693/469907-0

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

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

Moisture Content Calculated on a Wet Weight basis



Lab number			133930-1	133930-2	133930-3	133930-4	133930-5	133930-6
Sample id			TP1a	TP1b	TP2a	TP2b	TP3a	TP3b
Depth (m)			0.30	0.60	0.30	0.60	0.30	0.60
Date sampled			31/05/2024	31/05/2024	31/05/2024	31/05/2024	31/05/2024	31/05/2024
Test	Method	Units						
Arsenic (total)	CE264M	mg/kg As	20.2	16.8	17.4	13.1	19.9	19.2
Cadmium (total)	CE264M	mg/kg Cd	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Chromium (total)	CE264U	mg/kg Cr	32.8	38.8	37.6	34.0	34.4	46.7
Copper (total)	CE264M	mg/kg Cu	112.0	88.9	164.0	71.2	110.5	214.4
Lead (total)	CE264U	mg/kg Pb	171.6	117.2	129.9	86.1	110.6	86.8
Mercury (total)	CE264U	mg/kg Hg	2.0	1.4	<0.7	<0.7	<0.7	<0.7
Nickel (total)	CE264M	mg/kg Ni	30.1	39.8	25.9	26.6	73.9	51.2
Selenium (total)	CE264	mg/kg Se	<3	<3	<3	<3	<3	<3
Zinc (total)	CE264M	mg/kg Zn	372.9	168.8	210.1	117.7	246.0	163.6
Total Organic Carbon (TOC)	CE197	% w/w C	17.3	7.4	2.2	3.3	5.7	2.2
Estimate of OMC (calculated from TOC)	CE197	% w/w	29.8	12.8	3.7	5.7	9.8	3.8



PAH								
Naphthalene	CE087 M	mg/kg	593.01	63.96	0.06	0.20	53.46	0.13
Acenaphthylene	CE087 M	mg/kg	27.46	<0.02	<0.02	<0.02	6.09	0.08
Acenaphthene	CE087 M	mg/kg	719.31	37.43	0.13	0.14	37.39	0.13
Fluorene	CE087 U	mg/kg	551.59	29.46	0.07	0.11	41.01	0.17
Phenanthrene	CE087 M	mg/kg	2859.44	154.18	0.70	0.60	232.64	1.25
Anthracene	CE087 U	mg/kg	800.29	40.57	0.19	0.16	57.00	0.39
Fluoranthene	CE087 M	mg/kg	2155.83	107.08	0.76	0.62	178.24	1.94
Pyrene	CE087 M	mg/kg	1909.14	95.13	0.76	0.66	165.88	2.06
Benzo(a)anthracene	CE087 U	mg/kg	772.39	34.56	0.39	0.34	69.81	0.98
Chrysene	CE087 M	mg/kg	754.27	37.72	0.37	0.37	72.79	0.99
Benzo(b)fluoranthene	CE087 M	mg/kg	681.70	34.79	0.37	0.36	61.89	1.09
Benzo(k)fluoranthene	CE087 M	mg/kg	278.62	13.98	0.14	0.13	24.45	0.43
Benzo(a)pyrene	CE087 U	mg/kg	680.26	32.32	0.34	0.37	51.86	1.06
Indeno(123cd)pyrene	CE087 M	mg/kg	397.08	22.50	0.31	0.29	37.58	0.85
Dibenz(ah)anthracene	CE087 M	mg/kg	90.67	5.36	0.05	0.05	7.66	0.16
Benzo(ghi)perylene	CE087 M	mg/kg	369.72	21.07	0.24	0.21	26.64	0.72
PAH (total of USEPA 16)	CE087	mg/kg	13641	730	4.87	4.60	1124	12.4



TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	1611	281	4	4	93	3
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	5562	800	8	8	291	7
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	13385	1630	10	11	846	8
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	24203	2728	51	50	1982	37
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	4207	567	15	12	397	11
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	113	28	<1	<1	20	<1
EPH Aliphatic (>C12-C16)	CE250	mg/kg	278	62	2	2	36	2
EPH Aliphatic (>C16-C35)	CE250	mg/kg	1273	240	14	15	217	11
EPH Aliphatic (>C35-C44)	CE250	mg/kg	176	28	1	1	21	1
Subcontracted Analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD	NAD
Form of Asbestos	\$	-						
Asbestos (quantitative)	\$	% w/w						

Appendix 2 – Trail pit logs

TP1 – Centre right side of site (adjacent to existing building)





TP2 – Rear left side of site





Trail Pit 2 – Rear left side of garden

0.00-0.10m	concrete
0.10-0.20m	aggregate, base for concrete
0.20-0.25m	stone slab
0.25-0.38m	sand gravel, stone y loamy clay, gravel, some stone and brick
0.38-0.65m	sandy loamy clay, gravel. Clay light orange to dark brown, no odour.

TP3 – Front left side of site





Trail Pit 3 – Front left side of site

0.00-0.05m	asphalt
0.20-0.30m	sand gravel, stoney loamy clay,
0.30-0.60m	sandy loamy clay, gravel, stone