



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

Prepared for

Building Design Services
6 Stock Close
Rochdale
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September 2024



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Introduction

Martin Environmental Solutions has been commissioned, to carry out further investigations for a proposed commercial development on land at 48 Derby Street, Manchester M8 8HN.

A Phase I desk study report and Phase II Intrusive investigation have been undertaken on site. The phase II investigation identified some elevated levels of PAH contamination within the sampled material, along with olfactory evidence of hydrocarbon contamination within the first sampling point TP1.

The following recommendations were made and subsequent comments from the Councils contaminated land officer received.

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.



Ground gas

The report also included a recommendation to install ground gas protection measures. These were initially recommended as a precaution due to the presence of a former brick works and quarry located +50m to the north. The clay pit was built over in 1922 and it is considered highly unlikely that even if perishable waste had been deposited it would not still be producing ground gas over 100 years later.

Further investigations have identified recently submitted information in connection to planning application CDN/24/0545. This site is located over the former clay pit. Report gas monitoring results for this site identified a gas Characteristic Situation of 1 i.e. very low risk and no gas protection measures were required.

As this site is located over the previously identified potential source of the ground gas and recent investigations in June 2024 identified no significant gas emissions on site it is concluded that the former clay pit does not present a potential risk of ground gas to the proposed development.

The new information confirms that ground gas protection measures are no longer required for the site.



Further on-site investigation

Following the identification of elevated levels of PAH contamination in TP 1 & TP 3 during the first investigation it was proposed to excavate the impacted areas, taking verification samples of the sides and base of the excavations to confirm removal of contaminants.

The decision was subsequently made to excavate across the entire impacted area as indicated in Figure 2, this resulted in 750mm of material, primarily made ground, being removed resulting a clay layer being left. Foundations were also dug at the time revealing clay to the base and sides, see photographs in Appendix 1.

Additional samples were taken from the base of the excavation. Two around the original TP 1 and one at TP3. The positions are shown in Figure 3. 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). No olfactory evidence was present during the sampling.

The full sampling results are shown in Appendix 2, with photographs of the sample points in Appendix 3.

The results of the sampling have been compared to the LQM/CIEH S4ULs for Human Risk Assessment for both residential with home grown and commercial land-use values. The results indicate no elevated levels of contaminants for either scenario.



Conclusions

Following the phase II investigation contamination likely to pose a potential significant risk of significant harm to the identified receptors was identified on site in the form of elevated Polycyclic Aromatic Hydrocarbons, and a potential, small risk of ground gas was identified from a 100year old potential infilled clay pit.

Further information has been identified relating to an investigation on the source of the potential ground gas which has confirmed no risk to that site, as such no as the potential source of gas has been confirmed in June 2024 as not producing any ground gas the risk to the site is negligible.

As a result of the intrusive on-site investigation further remedial works have been undertaken to remove the made ground on site. Verification samples have been taken which have confirmed no further elevated levels of contaminants are present on site. As such there is no significant possibility of significant harm to the identified receptors and the site is safe and suitable for the intended use.

An updated conceptual model has been provided below.



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	Probability	Consequence	Risk
1	Run off and seepage into groundwater from any spillages	-	Watercourse/ Environment	Unlikely	Minor	Very Low
2	Migration of gases into the building.	-	Future users	Unlikely	Mild	Low
3	Inhalation of gases/ vapours outside	-	Construction workers/future users	Unlikely	Minor	Very Low
4	Inhalation of fine particles	-	Construction workers/future users	Unlikely	Minor	Very Low
5	Direct ingestion of contaminated soil	-	Construction workers	Unlikely	Minor	Very Low
6	In-direct ingestion of contaminated soil	-	Future users	Unlikely	Minor	Very Low
7	Absorption via direct dermal contact with contaminated soil	-	Construction workers/future users	Unlikely	Minor	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

Recommendations

As a result of the desk study and intrusive investigations undertaken and further information obtained no elevated levels of contaminants remain which present a significant possibility of significant harm to the identified receptors.

It is however, purely as a precaution the following measures are still recommended within the construction:

- New services installed shall be installed in trenches which are backfilled with clean imported material.
- All drinking water supply pipes and connections shall be of a MDPE barrier pipe design.
- All construction workers to be given suitable advice and training on the risks from contamination with adequate welfare facilities provided for handwashing etc.

Figure 1 – Aerial Photograph



Figure 2 – Excavated Area

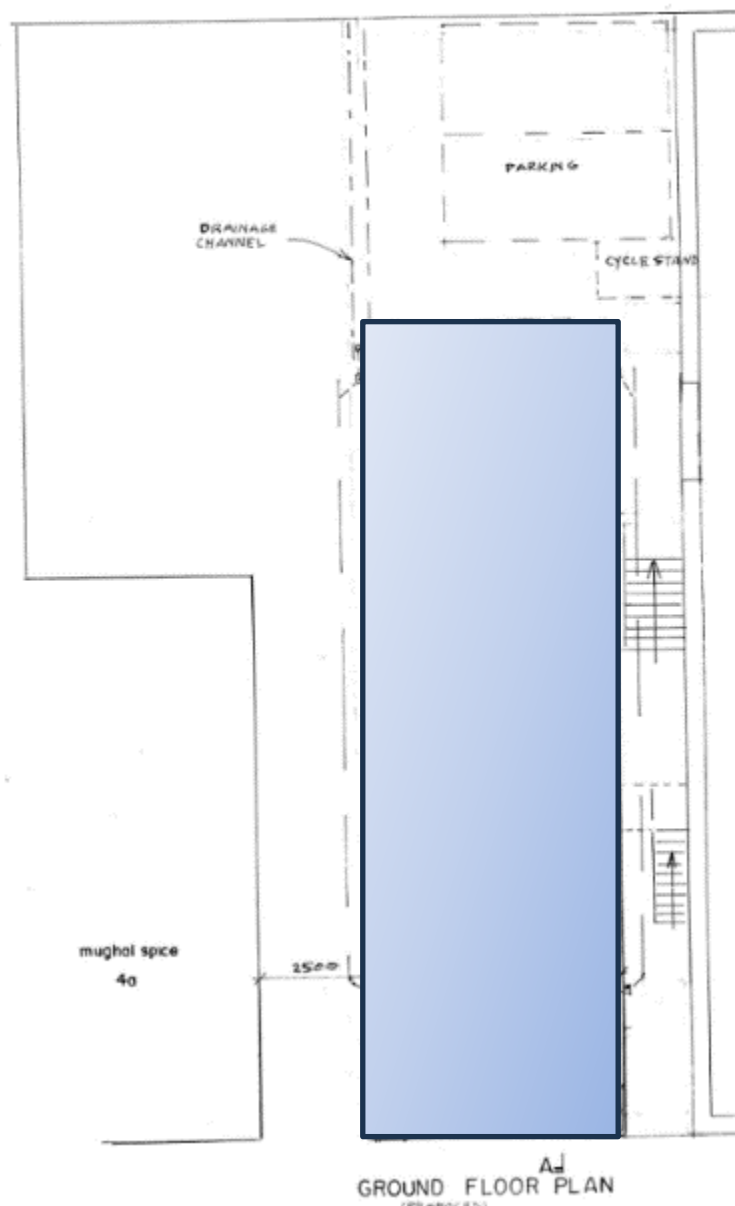
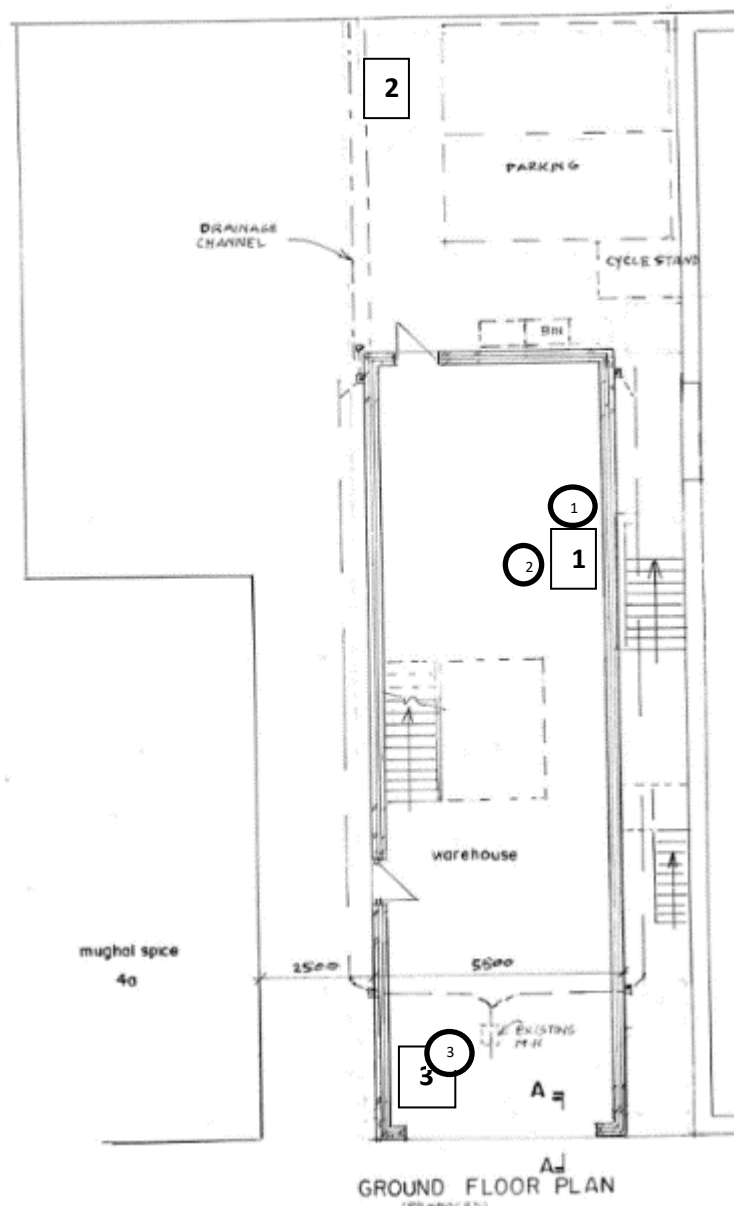


Figure 3 – Sampling Locations



1 Sample location

Appendix 1 – Overview photographs following excavation of contaminated ground













Appendix 2 - Soil Sample Results



ANALYTICAL TEST REPORT

Contract no: 136175

Contract name: Standard Soil Suite

Client reference: -

Clients name: Martin Environmental Solutions

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

Samples received: 21 August 2024

Analysis started: 21 August 2024

Analysis completed: 02 September 2024

Report issued: 02 September 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
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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
136175-1	SP1	0.10	Sandy Clay	-	-	18
136175-2	SP2	0.10	Loamy Sandy Clay with Gravel	-	-	19
136175-3	SP3	0.10	Sandy Loamy Clay with Gravel	-	-	25.7

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SOILS

Lab number			136175-1	136175-2	136175-3
Sample id			SP1	SP2	SP3
Depth (m)			0.10	0.10	0.10
Date sampled			17/08/2024	17/08/2024	17/08/2024
Test	Method	Units			
Arsenic (total)	CE264 ^U	mg/kg As	6.7	13.8	14.3
Cadmium (total)	CE264 ^M	mg/kg Cd	1.7	2.5	3.7
Chromium (total)	CE264 ^U	mg/kg Cr	77.1	60.5	63.4
Copper (total)	CE264 ^M	mg/kg Cu	13.2	49.6	194.6
Lead (total)	CE264 ^U	mg/kg Pb	18.7	105.9	50.9
Mercury (total)	CE264 ^U	mg/kg Hg	<0.7	<0.7	<0.7
Nickel (total)	CE264 ^M	mg/kg Ni	16.5	30.6	31.2
Selenium (total)	CE264	mg/kg Se	<3	<3	<3
Zinc (total)	CE264 ^M	mg/kg Zn	40.3	73.2	84.4
PAH					
Naphthalene	CE087 ^M	mg/kg	<0.02	0.39	<0.02
Acenaphthylene	CE087 ^M	mg/kg	<0.02	0.13	<0.02
Acenaphthene	CE087 ^M	mg/kg	<0.02	0.32	<0.02
Fluorene	CE087 ^U	mg/kg	<0.02	0.43	<0.02
Phenanthrene	CE087 ^M	mg/kg	0.06	2.58	0.06
Anthracene	CE087 ^U	mg/kg	<0.02	0.63	<0.02
Fluoranthene	CE087 ^M	mg/kg	0.07	2.51	0.06
Pyrene	CE087 ^M	mg/kg	0.07	2.54	0.06
Benzo(a)anthracene	CE087 ^U	mg/kg	0.04	1.10	0.04
Chrysene	CE087 ^M	mg/kg	0.04	1.25	0.04
Benzo(b)fluoranthene	CE087 ^M	mg/kg	<0.02	0.98	0.04
Benzo(k)fluoranthene	CE087 ^M	mg/kg	<0.03	0.40	<0.03
Benzo(a)pyrene	CE087 ^U	mg/kg	<0.02	1.11	0.03
Indeno(123cd)pyrene	CE087 ^M	mg/kg	<0.02	0.56	0.03
Dibenz(ah)anthracene	CE087 ^M	mg/kg	<0.02	0.12	<0.02
Benzo(ghi)perylene	CE087 ^M	mg/kg	<0.02	0.64	0.03
PAH (total of USEPA 16)	CE087	mg/kg	<0.34	15.7	0.38
TPH					
VPH Aromatic (> EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (> EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (> EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01
EPH Aromatic (> EC10-EC12)	CE250	mg/kg	<0.6	1	<0.6
EPH Aromatic (> EC12-EC16)	CE250	mg/kg	<1	7	<1
EPH Aromatic (> EC16-EC21)	CE250	mg/kg	<1.5	38	3
EPH Aromatic (> EC21-EC35)	CE250	mg/kg	<4.5	74	9
EPH Aromatic (> EC35-EC44)	CE250	mg/kg	<2	17	<2
VPH Aliphatic (> C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (> C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (> C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1
EPH Aliphatic (> C10-C12)	CE250	mg/kg	<1	<1	<1
EPH Aliphatic (> C12-C16)	CE250	mg/kg	<0.5	<0.5	<0.5
EPH Aliphatic (> C16-C35)	CE250	mg/kg	<3	<3	<3
EPH Aliphatic (> C35-C44)	CE250	mg/kg	<0.5	1	<0.5

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE264	Arsenic (total)	Aqua Regia Extraction, ICPOES	Dry	U	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
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



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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)
136175-1	SP1	0.10	N	
136175-2	SP2	0.10	N	
136175-3	SP3	0.10	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			136175-	136175-	136175-
Sample id			SP1	SP2	SP3
Depth (m)			0.10	0.10	0.10
Date sampled			17/08/2024	17/08/2024	17/08/2024
Test	Method	Units			
Arsenic (total)	CE264U	mg/kg As	6.7	13.8	14.3
Cadmium (total)	CE264M	mg/kg Cd	1.7	2.5	3.7
Chromium (total)	CE264U	mg/kg Cr	77.1	60.5	63.4
Copper (total)	CE264M	mg/kg Cu	13.2	49.6	194.6
Lead (total)	CE264U	mg/kg Pb	18.7	105.9	50.9
Mercury (total)	CE264U	mg/kg Hg	<0.7	<0.7	<0.7
Nickel (total)	CE264M	mg/kg Ni	16.5	30.6	31.2
Selenium (total)	CE264	mg/kg Se	<3	<3	<3
Zinc (total)	CE264M	mg/kg Zn	40.3	73.2	84.4
PAH					
Naphthalene	CE087 M	mg/kg	<0.02	0.39	<0.02
Acenaphthylene	CE087 M	mg/kg	<0.02	0.13	<0.02
Acenaphthene	CE087 M	mg/kg	<0.02	0.32	<0.02
Fluorene	CE087 U	mg/kg	<0.02	0.43	<0.02
Phenanthrene	CE087 M	mg/kg	0.06	2.58	0.06
Anthracene	CE087 U	mg/kg	<0.02	0.63	<0.02
Fluoranthene	CE087 M	mg/kg	0.07	2.51	0.06
Pyrene	CE087 M	mg/kg	0.07	2.54	0.06
Benzo(a)anthracene	CE087 U	mg/kg	0.04	1.10	0.04
Chrysene	CE087 M	mg/kg	0.04	1.25	0.04
Benzo(b)fluoranthene	CE087 M	mg/kg	<0.02	0.98	0.04
Benzo(k)fluoranthene	CE087 M	mg/kg	<0.03	0.40	<0.03
Benzo(a)pyrene	CE087 U	mg/kg	<0.02	1.11	0.03
Indeno(123cd)pyrene	CE087 M	mg/kg	<0.02	0.56	0.03
Dibenz(ah)anthracene	CE087 M	mg/kg	<0.02	0.12	<0.02
Benzo(ghi)perylene	CE087 M	mg/kg	<0.02	0.64	0.03
PAH (total of USEPA 16)	CE087	mg/kg	<0.34	15.7	0.38



TPH					
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<0.6	1	<0.6
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<1	7	<1
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<1.5	38	3
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	<4.5	74	9
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	<2	17	<2
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<1	<1	<1
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<0.5	<0.5	<0.5
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<3	<3	<3
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<0.5	1	<0.5

Appendix 3 – Trail pit logs

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



TP2 – Rear left side of site



TP3 – Front left side of site

