



Contaminated Land Phase Two Intrusive Investigation for proposed residential development on land at 13&15 Exeter Street, Rochdale, OL11 1JN.

Prepared for:

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Introduction

Martin Environmental Solutions has been commissioned, to carry out a phase two intrusive investigation for a proposed a residential development on land at 13 & 15 Exeter Street, Rochdale, OL11 1JN.

The Phase II Intrusive investigation follows a phase I desk study report completed by Earth Environmental & Geotechnical in November 2023, report no. A5655/23/FDS.

The desk study identified the potential for contamination to exist on site from the former use of the property as domestic garages and recommended an intrusive investigation.

The Site:

Site Address: Land at 13 & 15 Exeter Street, Rochdale, OL11 1JN.

An aerial photograph of the site is included in Figure 1, with proposed plan in Figure 2.

Current Site use:

The development site currently consists of an enclosed plot of approx. 0.4ha and is square in shape. Located between Exeter Street and Durham Street. The proposed development covering half of the site on the Exeter Street side. Existing residential properties lie to either side of the site and to the south. To the north on the far side of Durham Street is an industrial unit.

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 remained undeveloped until the 1950's when domestic garage units were erected on either side of the site. These were later demolished between 2005-2013. Since then the site has remained vacant.
	Beyond Site Boundary	The earliest mapping identifies the surrounding area as undeveloped with a sand pit 100m southwest, the railway line 80m north and residential development 75m west. . By 1891 the sand pit is replaced by industrial units and further residential development has occurred within 15m of the site. By 1908 further residential development has occurred to the west. Over the next few decades more residential development occurs in the wider area, with no other significant changes identified.
Geological Appraisal	Made Ground	No Made Ground recorded. However, a concrete base is evidence under the site of the former garages.
	Geology	Bedrock - Pennine Lower Coal Measures Formation comprising of coal seams, siltstone, sandstone, and mudstone overlaid with Devensian Glaciofluvial Sheet Deposits comprising of sand and gravel
	Subsidence hazard	The hazard rating for compressible deposits, running sands shrink swell and landslides is very low/negligible.
	Mining	None record, the area is identified as a coal mining area.
	Radon	No radon protection measures required
Environmental Appraisal	Industrial Land Uses	'Works' 30m to the north of the wider site., railway sidings and station 80m north. 29 current potentially contaminative sites, most retail but the nearest is 30m north at the 'Works' site. ,22 historic tank records the nearest being 185m northeast of the site, with the nearest electricity substation 88m west. The nearest of 75 garage records is 142m southwest in 1984. Three Part A2/Part B sites are identified the nearest a car resprayer 45m northeast. A COMAHH site is identified 466m east.



	Landfill Sites	No current landfill sites, historic site 398m north 1987-89. 26 waste treatment/exemption sites the nearest 113m southwest for the treatment of WEEE.
	Hydrogeology	Secondary A Aquifer in the Bedrock and Superficial geology. Groundwater vulnerability is high. Eight groundwater and 12 surface water abstractions licences are identified the nearest are 1.5Km and 402m respectfully.
	Hydrology	N/A.
	Flood Risk	Site lies within Flood Zone 2&3, but no historic flooding and risk from groundwater flooding is moderate.
	Other relevant details	N/A



Initial Conceptual Model

A copy of the initial conceptual model is provided below, amended for the ground gas following additional information provided in report ref: 2800-1

Potential Source	Pathway	Receptor	Probability	Consequence	Preliminary Risk Rating	Comment
Potential Soil Contamination	Dermal contact, ingestion, and inhalation of soils dust	Current Site Users	Unlikely	Moderate	Low	There are no current site users. Therefore, the risk is LOW .
		Adjacent land users	Unlikely	Moderate	Low	There are residential properties within the immediate vicinity of the site. Usual dust control measures should be implemented as part of good site working practices during any construction to reduce dust generation. Therefore, the risk is considered LOW .
		Future land users	Low likelihood	Moderate	Moderate to low	The proposed development is to construct 4 residential properties with associated private gardens. There is potential for contamination on site associated with small scale historical development, therefore the risk to future site users via direct exposure is considered MODERATE to LOW .
		Construction Workers	Low likelihood	Moderate	Moderate to low	Construction workers may be exposed to potentially contaminated soils during construction works, however, exposure duration will be short-term only. The risk to construction workers is considered MODERATE to LOW . Appropriate health and safety measures (in line with CDM and other relevant health and safety guidance) will reduce the risk to LOW .
	Downward vertical	Groundwater within the	Low likelihood	Moderate	Moderate to low	The underlying superficial soils are of Devensian Glaciofluvial Sheet Deposits comprising of sand



	migration of leachate to shallow groundwater	Underlying Aquifer				and gravel. The solid geology beneath the site is shown to be Pennine Lower Coal Measures Formation comprising of siltstone, sandstone, and mudstone. There are no potable water abstraction licence records within 2km of the site. The groundwater vulnerability and leaching potential is high. Potential sources of contamination have been identified on-site. Therefore, the risk to groundwater is considered MODERATE to LOW .
	Lateral migration in surface waters	Surface water	Unlikely	Moderate	Low	There are no surface water features located within 250m of the site. There is no active surface abstraction water license within 2km. Therefore, the perceived risk to surface waters is LOW .
	Vertical or lateral migration of ground gas	Current Site Users	Unlikely	Moderate	Low	There are no current site users. Therefore, the risk is LOW .
		Adjacent land users	Unlikely	Moderate	Low	The site is not located in a Radon Affected Area with less than 1% of properties above the Action Level. It is unlikely for deep made ground to be present on the site. Therefore, the risk to adjacent site users from ground gas is considered LOW .
		Future land users	Unlikely	Moderate	Low	The proposed development is to construct 4 residential properties with associated private gardens. The site is not located in a Radon Affected Area with less than 1% of properties above the Action Level. Radon protection measures will not be required for the proposed development. It is unlikely for deep



						made ground to be present on the site The risk to future site users from ground gas is considered LOW .
		Construction Workers	Unlikely	Moderate	Low	Construction workers may be exposed to ground gas/depleted oxygen conditions in confined spaces and excavations; however, the duration will be short-term. The risk to construction workers from ground gas is considered LOW .
Asbestos Containing Material (ACM)	Inhalation of fibres	Current Site Users	Unlikely	Moderate	Low	There are no current land users. Asbestos is likely to be present on site associated with previous garages. Asbestos is only harmful when disturbed. The risk to current site users is considered to be LOW .
		Adjacent Lane Users	Unlikely	Moderate	Low	There are residential properties within the immediate surround area. Asbestos is likely to be present on the site associated with the demolished garages. Disturbance of soil during the construction phase may allow fibres to become airborne. Dust control measures (dampening down) should be implemented as part of good site working practices. Therefore, the risk is considered LOW .
		Future Lane Users	Likely	Moderate	Moderate	The proposed development is to construct 4 residential properties with gardens. Asbestos containing materials are likely to be present on site associated with the previously demolished garages. Therefore, the risk is considered MODERATE . A contamination assessment of the existing on-site soils and structures would be



						required to determine the level of risk and necessary mitigation measures.
		Constructure Workers	Low Likelihood	Moderate	Moderate to Low	Construction workers may be exposed to potential asbestos in Made Ground soils. The risk is considered MODERATE to LOW . A contamination assessment of the existing on-site soils would be required to determine the level of risk and necessary mitigation measures.

The phase I report concluded that

*“The overall risk from soil contamination to end users is concluded to be **LOW** based on the current proposed development. However, a **MODERATE to LOW** classification has been attributed due to the potential for contamination associated with demolished garages.*

*The risk to controlled waters is concluded to be **LOW** as there are no nearby surface water bodies and no significant sources of mobile contamination identified on site.*

The risk from ground gas to end users and construction workers is LOW.

An intrusive investigation should be undertaken and soil samples should be taken from across the site for chemical analysis.”



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 domestic garage units. 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 9th January 2025 to investigate the potential presence of contaminants. Potential contamination has been identified from the previous historic domestic garage units present along the eastern and western boundaries of the site. These were erected in the early 1950's and demolished between 2005 and 2013.

As a result, the intrusive investigation has concentrated on the potential for contamination from;

- Made Ground primarily linked to the historic garages, Heavy metals, Asbestos, TPH, PAHs
- Presence of Total Petroleum Hydrocarbons (TPH) linked to vehicles using the garages.



The Investigation

A site visit was conducted on the 9th January 2025 to undertake an intrusive investigation. Five trail pits were dug across the site with two samples taken from each location, identified in Figure 2.

Sampling locations were spread across the site including under the former garage footprints, the central corridor of the site and the rear gardens of the four proposed dwellings.

Two samples were taken from each trail hole, the first 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.



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 residential with home grown produce scenario & the C4SL value for Lead. Soil organic matter ranged across the site ranged from 0.72-12.8%. The results of the sampling have been compared to the appropriate organic matter values for each sample .

The results for each sample are presented in Appendix 1, a summary is shown in the table below.

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 a layer of concrete over the former garage plots with brown sandy loam and gravel below, some clayey loam was identified to the east and sand to the west. No obvious contamination was encountered in any of the trail holes.

The results of the samples identified no asbestos fibres present in any sample. No elevated levels of heavy metals or Petroleum Hydrocarbons were identified. Elevated levels of Polyaromatic Hydrocarbons were identified in samples TP1A, TP2A and TP4A, these being shallow samples located under the concrete bases of the former garages.

The specific PAH's identified were Benzo(b)fluoranthene, Benzo(a)pyrene, Dibenzo(a,h)anthracene in each with Benzo(a)anthracene in TP4A.

TP2 and TP4 are located within the proposed rear gardens of the development, while TP1 is located to the southeast corner, under one of the proposed dwellings.

Contaminant	Assessment Criteria (residential with home grown) (mg/Kg)	Range identified on site (mg/Kg)	Pass/Fail
Arsenic	37	5.7-19.5	Pass
Cadmium	11	<1.6	Pass
Chromium	910	12.1-26.8	Pass
Copper	2400	12.5-69.0	Pass
Lead	200	13.4-176.0	Pass
Mercury	40	<0.7	Pass
Nickel	180	11.5-25.7	Pass
Selenium	250	<3.0	Pass
Zinc	3700	31.0-86.4	Pass
Asbestos	N/A	N/A	Pass
Petroleum Hydrocarbons			
>C5-C6 Aliphatic (HS_1D_AL)	42	<0.1	Pass
>C6-C8 Aliphatic (HS_1D_AL)	100	<0.1	Pass
>C8-C10 Aliphatic (HS_1D_AL)	27	<0.1	Pass
>C8-C10 Aromatic (HS_1D_AR)	70	<0.01	Pass
>C6-C7 Aromatic (HS_1D_AR)	130	<0.01	Pass
>C7-C8 Aromatic (HS_1D_AR)	34	<0.01	Pass
>C10-C12 Aliphatic (EH_2D_AL)	130	<1.0-2.4	Pass
>C10-C12 Aromatic (EH_2D_AR)	74	1.2-50.6	Pass
>C12-C16 Aliphatic (EH_2D_AL)	1100	<0.5-7.4	Pass
>C12-C16 Aromatic (EH_2D_AR)	140	2.3-128.0	Pass
>C16-C21 Aliphatic (EH_2D_AL)	65000	<0.7-9.7	Pass
>C16-C21 Aromatic (EH_2D_AR)	260-930	2.5-309.0	Pass
>C21-C35 Aliphatic (EH_2D_AL)	65000	<0.4-27.6	Pass
>C21-C35 Aromatic (EH_2D_AR)	1100	12.1-620.0	Pass
>C35-C44 Aliphatic (EH_2D_AL)	65000	<0.5-6.0	Pass
>C35-C44 Aromatic (EH_2D_AR)	1100	4.4-112.0	Pass

Polyaromatic hydrocarbons					
	SOM				
	1%	2.5%	6%		
Naphthalene	2.3	5.6	13	0.016-2.8	Pass
Acenaphthylene	170	420	920	<0.015-0.120	Pass
Acenaphthene	210	510	1100	<0.013-3.820	Pass
Fluorene	170	400	860	<0.013-2.430	Pass
Phenanthrene	95	220	440	<0.014-29.3	Pass
Anthracene	2400	5400	11000	<0.017-6.530	Pass
Fluoranthene	280	560	890	<0.017-37.4	Pass
Pyrene	620	1200	2000	<0.016-31.0	Pass
Benzo(a)anthracene	702	11	13	<0.012-14.9	Fail
Chrysene	15	22	27	<0.028-16.0	Pass
Benzo(b)fluoranthene	2.6	3.3	3.7	<0.020-13.7	Fail
Benzo(k)fluoranthene	77	93	100	<0.025-5.71	Pass
Benzo(a)pyrene	2.2	2.7	3.0	<0.019-13.8	Fail
Indeno(1,2,3-cd)pyrene	27	36	41	<0.019-7.850	Pass
Dibenzo(a,h)anthracene	0.24	0.28	0.3	<0.017-2.070	Fail
Benzo(g,h,i)perylene	320	340	350	<0.019-7.020	Pass



Conclusions & Recommendations

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

As a result, further remediation of the site is required to ensure it is safe for the intended use.

It is proposed that material is removed from across the rear of the site (proposed garden areas) to enable a **600mm clean cover system** to be placed over the gardens. Typically, 450mm subsoil and 150mm topsoil for landscaping areas. A suitable no dig barrier should be installed below the 600mm clean imported cover system.

Waste transfer notes for removed material must be obtained and suitable testing of the imported material carried out to ensure it is contamination free. Sampling frequency will depend on the source of the new material and should follow a sampling rate of 1 sample per 100m³ if the source of green field and 1 sample per 50m³ if the source is brownfield, a minimum of three samples should be obtained.

In addition, localised **removal of material to the southeast corner** down to 600mm should be undertaken to remove any PAH contamination under the former garage footprint.

It is also recommended that **barrier pipework is used for new mains water connections** to prevent any infiltration of residual contamination.

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.



Potential Source	Pathway	Receptor	Probability	Consequence	Preliminary Risk Rating	Comment
Potential Soil Contamination	Dermal contact, ingestion, and inhalation of soils dust	Current Site Users	Unlikely	Moderate	Low	There are no current site users. Therefore, the risk is LOW .
		Adjacent land users	Unlikely	Moderate	Low	There are residential properties within the immediate vicinity of the site. Usual dust control measures should be implemented as part of good site working practices during any construction to reduce dust generation. Therefore, the risk is considered LOW .
		Future land users	Low likelihood	Moderate	Moderate to low	Elevated PAH contamination has been identified in shallow samples on site. Therefore, the risk to future site users via direct exposure is considered MODERATE to LOW .
		Construction Workers	Low likelihood	Moderate	Moderate to low	Construction workers may be exposed to potentially contaminated soils during construction works, however, exposure duration will be short-term only. Appropriate health and safety measures (in line with CDM and other relevant health and safety guidance) will reduce the risk to LOW .
	Downward vertical migration of leachate to shallow groundwater	Groundwater within the Underlying Aquifer	Low likelihood	Moderate	Moderate to low	No groundwater was encountered during the intrusive investigation. The underlying superficial soils are of Devensian Glaciofluvial Sheet Deposits comprising of sand and gravel. The solid geology beneath the site is shown to be Pennine Lower Coal Measures Formation comprising of siltstone, sandstone, and mudstone. There are no potable water



						abstraction licence records within 2km of the site. The groundwater vulnerability and leaching potential is high. Elevated PAH contamination has been identified on-site. Therefore, the risk to groundwater is considered MODERATE to LOW .
	Lateral migration in surface waters	Surface water	Unlikely	Moderate	Low	There are no surface water features located within 250m of the site. There is no active surface abstraction water license within 2km. Therefore, the perceived risk to surface waters is LOW .
	Vertical or lateral migration of ground gas	Current Site Users	Unlikely	Moderate	Low	There are no current site users. Therefore, the risk is LOW .
		Adjacent land users	Unlikely	Moderate	Low	The site is not located in a Radon Affected Area with less than 1% of properties above the Action Level. It is unlikely for deep made ground to be present on the site. Therefore, the risk to adjacent site users from ground gas is considered LOW .
		Future land users	Unlikely	Moderate	Low	The proposed development is to construct 4 residential properties with associated private gardens. The site is not located in a Radon Affected Area with less than 1% of properties above the Action Level. The risk to future site users from ground gas is considered LOW .
		Construction Workers	Unlikely	Moderate	Low	The risk to construction workers from ground gas is considered LOW .



Asbestos Containing Material (ACM)	Inhalation of fibres	Current Site Users	Unlikely	Moderate	Low	No asbestos fibres have been identified as part of the intrusive investigation
		Adjacent Lane Users	Unlikely	Moderate	Low	
		Future Lane Users	Unlikely	Moderate	Low	
		Constructure Workers	Unlikely	Moderate	Low	

Figure 1 – Aerial Photograph



Figure 2 – Sampling Locations





Appendix 1 – Soil Sample Results



ANALYTICAL TEST REPORT

Report Number: 25-00230, issue number 1

Contract name: Standard Soil Suite

Client reference: Durham St

Clients name: Martin Environmental Solutions Ltd

Clients address: Martin Environmental Solutions Ltd
14 Hermitage Way
Lytham St Annes
Lancashire FY8 4FX

Samples received: 13/01/2025

Analysis started: 13/01/2025

Analysis completed: 22/01/2025

Report issued: 22/01/2025

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
U/S	Sample not suitable for testing
NAD	No Asbestos Detected

Approved by: Abbie Neasham-Bourn
Senior Reporting Administrator

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
29911	TP1A	0.35	Brown Sand with Gravel and Vegetation.	-	-	15.6
29912	TP1B	0.60	Brown Sandy Loam with Gravel.	-	-	13.1
29913	TP2A	0.30	Brown Sand with Gravel.	-	-	8.0
29914	TP2B	0.60	Brown Clayey Loam with Gravel.	-	-	14.5
29915	TP3A	0.30	Brown Sandy Loam with Gravel.	-	-	9.3
29916	TP3B	0.60	Brown Sandy Loam with Gravel and Vegetation.	-	-	13.0
29917	TP4A	0.30	Brown Sandy Loam with Gravel and Vegetation.	-	-	12.6
29918	TP4B	0.60	Brown Sand with Gravel.	-	-	2.2
29919	TP5A	0.30	Brown Sandy Loam with Gravel and Vegetation.	-	-	11.6
29920	TP5B	0.60	Brown Sand with Gravel.	-	-	3.4



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)
29911	TP1A	0.35	N	
29912	TP1B	0.60	N	
29913	TP2A	0.30	N	
29914	TP2B	0.60	N	
29915	TP3A	0.30	N	
29916	TP3B	0.60	N	
29917	TP4A	0.30	N	
29918	TP4B	0.60	N	
29919	TP5A	0.30	N	
29920	TP5B	0.60	N	

SOILS

Lab Number					29911	29912	29913	29914	29915
Client Reference					1	2	3	4	5
Sample ID					TP1A	TP1B	TP2A	TP2B	TP3A
Depth (m)					0.35	0.60	0.30	0.60	0.30
Sampling Date					09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
Test	Method	Accred	LoD	Units					
Asbestos									
Asbestos Identification	SUBCON	SU	0	-	NAD	NAD	NAD	NAD	NAD
Metals									
Arsenic	CE264	U	1.8	mg/kg	16.9	11.8	11.9	10.3	12.6
Cadmium	CE264	M	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Chromium	CE264	U	2	mg/kg	17.3	17.7	12.7	12.1	14.1
Copper	CE264	M	1.6	mg/kg	50.5	31.7	41.4	29.8	35.9
Lead	CE264	U	2.3	mg/kg	176	129	116	68.0	136
Mercury	CE264	U	0.7	mg/kg	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Nickel	CE264	M	2.1	mg/kg	19.9	17.5	17.2	11.5	13.4
Selenium	CE264	U	3	mg/kg	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Zinc	CE264	M	4	mg/kg	86.4	46.5	48.3	31.0	35.7
Volatile 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
>C6-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
Combustion									
Moisture Content	CE001	N	0.1	%	15.6	13.1	8.0	14.5	9.3
Soil Organic Matter	CE072	N	0.1	%	11.0	12.6	7.48	9.41	8.17
TPH Ali/Aro									
>C10-C12 Aliphatic (EH_2D_AL)	CE250	N	1	mg/kg	2.4	< 1.0	1.4	2.2	< 1.0
>C12-C16 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	5.1	< 0.5	2.2	7.4	1.9
>C16-C21 Aliphatic (EH_2D_AL)	CE250	N	0.7	mg/kg	4.9	< 0.7	3.0	9.7	1.2
>C21-C35 Aliphatic (EH_2D_AL)	CE250	N	4	mg/kg	8.4	< 4.0	5.7	27.6	5.0
>C35-C44 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	4.5	< 0.5	2.1	6.0	< 0.5
>C10-C12 Aromatic (EH_2D_AR)	CE250	N	0.6	mg/kg	20.5	2.3	8.0	50.6	3.3
>C12-C16 Aromatic (EH_2D_AR)	CE250	N	1	mg/kg	89.1	4.7	29.3	128	6.3
>C16-C21 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	232	5.0	95.3	228	6.2



SOILS

Lab Number					29911	29912	29913	29914	29915
Client Reference					1	2	3	4	5
Sample ID					TP1A	TP1B	TP2A	TP2B	TP3A
Depth (m)					0.35	0.60	0.30	0.60	0.30
Sampling Date					09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
>C21-C35 Aromatic (EH_2D_AR)	CE250	N	4.5	mg/kg	534	17.0	262	527	23.5
>C35-C44 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	86.7	4.4	45.0	84.2	6.4
Polyaromatic hydrocarbons									
Naphthalene	CE087	M	0.016	mg/kg	2.80	0.047	0.237	0.665	0.035
Acenaphthylene	CE087	M	0.015	mg/kg	< 0.015	< 0.015	0.077	< 0.015	< 0.015
Acenaphthene	CE087	M	0.013	mg/kg	3.82	0.053	0.589	0.379	0.045
Fluorene	CE087	U	0.013	mg/kg	2.43	0.034	0.404	0.276	0.034
Phenanthrene	CE087	M	0.014	mg/kg	19.5	0.286	4.62	2.73	0.310
Anthracene	CE087	U	0.017	mg/kg	4.11	0.069	1.14	0.556	0.064
Fluoranthene	CE087	M	0.017	mg/kg	23.2	0.356	8.18	4.01	0.394
Pyrene	CE087	M	0.016	mg/kg	18.7	0.302	7.00	3.32	0.366
Benzo(a)anthracene	CE087	U	0.012	mg/kg	9.09	0.174	3.92	1.94	0.228
Chrysene	CE087	M	0.028	mg/kg	10.1	0.195	4.22	2.14	0.265
Benzo(b)fluoranthene	CE087	M	0.02	mg/kg	8.87	0.177	3.74	1.83	0.239
Benzo(k)fluoranthene	CE087	M	0.025	mg/kg	3.59	0.082	1.52	0.777	0.083
Benzo(a)pyrene	CE087	U	0.019	mg/kg	8.57	0.155	3.85	1.67	0.188
Indeno(1,2,3-cd)pyrene	CE087	M	0.019	mg/kg	5.33	0.110	2.31	1.02	0.134
Dibenzo(a,h)anthracene	CE087	M	0.017	mg/kg	1.07	0.024	0.476	0.215	0.022
Benzo(g,h,i)perylene	CE087	M	0.019	mg/kg	4.57	0.094	2.00	0.887	0.122
Total PAH(16)	CE087	N	0.28	mg/kg	126	2.16	44.3	22.4	2.53



SOILS

Lab Number					29916	29917	29918	29919	29920
Client Reference					6	7	8	9	10
Sample ID					TP3B	TP4A	TP4B	TP5A	TP5B
Depth (m)					0.60	0.30	0.60	0.30	0.60
Sampling Date					09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
Test	Method	Accred	LoD	Units					
Asbestos									
Asbestos Identification	SUBCON	SU	0	-	NAD	NAD	NAD	NAD	NAD
Metals									
Arsenic	CE264	U	1.8	mg/kg	12.3	19.5	11.0	11.2	5.7
Cadmium	CE264	M	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Chromium	CE264	U	2	mg/kg	13.9	20.7	26.8	25.0	20.7
Copper	CE264	M	1.6	mg/kg	31.8	69.0	20.8	28.4	12.5
Lead	CE264	U	2.3	mg/kg	90.5	125	24.3	138	13.4
Mercury	CE264	U	0.7	mg/kg	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Nickel	CE264	M	2.1	mg/kg	13.4	25.7	20.8	23.9	18.6
Selenium	CE264	U	3	mg/kg	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Zinc	CE264	M	4	mg/kg	33.9	71.5	49.4	55.4	43.0
Volatile 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
>C6-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
Combustion									
Moisture Content	CE001	N	0.1	%	13.0	12.6	2.2	11.6	3.4
Soil Organic Matter	CE072	N	0.1	%	8.57	12.0	0.78	9.29	0.72
TPH Ali/Aro									
>C10-C12 Aliphatic (EH_2D_AL)	CE250	N	1	mg/kg	< 1.0	1.7	< 1.0	1.1	< 1.0
>C12-C16 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	0.5	3.3	< 0.5	0.6	< 0.5
>C16-C21 Aliphatic (EH_2D_AL)	CE250	N	0.7	mg/kg	< 0.7	6.0	< 0.7	< 0.7	< 0.7
>C21-C35 Aliphatic (EH_2D_AL)	CE250	N	4	mg/kg	< 4.0	12.9	< 4.0	< 4.0	< 4.0
>C35-C44 Aliphatic (EH_2D_AL)	CE250	N	0.5	mg/kg	0.6	4.0	< 0.5	< 0.5	< 0.5
>C10-C12 Aromatic (EH_2D_AR)	CE250	N	0.6	mg/kg	3.3	7.6	1.5	2.3	1.2
>C12-C16 Aromatic (EH_2D_AR)	CE250	N	1	mg/kg	5.4	88.8	3.0	5.3	2.3
>C16-C21 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	3.5	309	3.6	9.4	2.5

SOILS

Lab Number					29916	29917	29918	29919	29920
Client Reference					6	7	8	9	10
Sample ID					TP3B	TP4A	TP4B	TP5A	TP5B
Depth (m)					0.60	0.30	0.60	0.30	0.60
Sampling Date					09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
>C21-C35 Aromatic (EH_2D_AR)	CE250	N	4.5	mg/kg	18.6	620	16.5	32.0	12.1
>C35-C44 Aromatic (EH_2D_AR)	CE250	N	2	mg/kg	13.0	112	6.7	20.8	6.7
Polyaromatic hydrocarbons									
Naphthalene	CE087	M	0.016	mg/kg	< 0.016	0.415	< 0.016	0.044	< 0.016
Acenaphthylene	CE087	M	0.015	mg/kg	< 0.015	0.120	< 0.015	< 0.015	< 0.015
Acenaphthene	CE087	M	0.013	mg/kg	< 0.013	3.04	< 0.013	0.098	< 0.013
Fluorene	CE087	U	0.013	mg/kg	< 0.013	2.13	< 0.013	0.068	< 0.013
Phenanthrene	CE087	M	0.014	mg/kg	0.020	29.3	0.045	0.797	< 0.014
Anthracene	CE087	U	0.017	mg/kg	< 0.017	6.53	< 0.017	0.182	< 0.017
Fluoranthene	CE087	M	0.017	mg/kg	0.022	37.4	0.057	1.19	< 0.017
Pyrene	CE087	M	0.016	mg/kg	0.020	31.0	0.047	0.985	< 0.016
Benzo(a)anthracene	CE087	U	0.012	mg/kg	0.028	14.9	0.036	0.575	< 0.012
Chrysene	CE087	M	0.028	mg/kg	< 0.028	16.0	0.034	0.581	< 0.028
Benzo(b)fluoranthene	CE087	M	0.02	mg/kg	< 0.020	13.7	0.030	0.652	< 0.020
Benzo(k)fluoranthene	CE087	M	0.025	mg/kg	< 0.025	5.71	< 0.025	0.253	< 0.025
Benzo(a)pyrene	CE087	U	0.019	mg/kg	< 0.019	13.8	0.024	0.557	< 0.019
Indeno(1,2,3-cd)pyrene	CE087	M	0.019	mg/kg	< 0.019	7.85	< 0.019	0.396	< 0.019
Dibenzo(a,h)anthracene	CE087	M	0.017	mg/kg	< 0.017	2.07	< 0.017	0.075	< 0.017
Benzo(g,h,i)perylene	CE087	M	0.019	mg/kg	< 0.019	7.02	< 0.019	0.340	< 0.019
Total PAH(16)	CE087	N	0.28	mg/kg	< 0.280	191	< 0.280	6.79	< 0.280



METHOD DETAILS

METHOD	TESTNAME	METHOD SUMMARY	ANALYSIS BASIS
CE267	VPH in Soil	HS-GCFID	As submitted sample
CE250	GCXGC in Solids	DCM Extraction and GCxGC-FID	As submitted sample
SUBCON	Asbestos Solid	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.:25-00230, 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
*	ISO17025 accreditation not applicable for sample matrix
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

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Lab Number			29911	29912	29913	29914	29915	29916	29917	29918	29919	29920
Client Reference			1	2	3	4	5	6	7	8	9	10
Sample ID			TP1A	TP1B	TP2A	TP2B	TP3A	TP3B	TP4A	TP4B	TP5A	TP5B
Depth (m)			0.35	0.60	0.30	0.60	0.30	0.60	0.30	0.60	0.30	0.60
Sampling Date			09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
Test	Method	Units										
Asbestos												
Asbestos Identification	SUBCON	-	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Metals												
Arsenic	CE264	mg/kg	16.9	11.8	11.9	10.3	12.6	12.3	19.5	11.0	11.2	5.7
Cadmium	CE264	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Chromium	CE264	mg/kg	17.3	17.7	12.7	12.1	14.1	13.9	20.7	26.8	25.0	20.7
Copper	CE264	mg/kg	50.5	31.7	41.4	29.8	35.9	31.8	69.0	20.8	28.4	12.5
Lead	CE264	mg/kg	176.0	129.0	116.0	68.0	136.0	90.5	125.0	24.3	138.0	13.4
Mercury	CE264	mg/kg	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Nickel	CE264	mg/kg	19.9	17.5	17.2	11.5	13.4	13.4	25.7	20.8	23.9	18.6
Selenium	CE264	mg/kg	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Zinc	CE264	mg/kg	86.4	46.5	48.3	31.0	35.7	33.9	71.5	49.4	55.4	43.0
Combustion												
Moisture Content	CE001	%	15.6	13.1	8.0	14.5	9.3	13.0	12.6	2.2	11.6	3.4
Soil Organic Matter	CE072	%	11.00	12.60	7.48	9.41	8.17	8.57	12.00	0.78	9.29	0.72



Volatile 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	< 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	< 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	< 0.10	< 0.10	< 0.10
>C6-C7 Aromatic (HS_1D_AR)	CE267	mg/kg	< 0.010	< 0.010	< 0.010	< 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	< 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	< 0.010	< 0.010	< 0.010



TPH Ali/Aro												
>C10-C12 Aliphatic (EH_2D_AL)	CE250	mg/kg	2.4	< 1.0	1.4	2.2	< 1.0	< 1.0	1.7	< 1.0	1.1	< 1.0
>C12-C16 Aliphatic (EH_2D_AL)	CE250	mg/kg	5.1	< 0.5	2.2	7.4	1.9	0.5	3.3	< 0.5	0.6	< 0.5
>C16-C21 Aliphatic (EH_2D_AL)	CE250	mg/kg	4.9	< 0.7	3.0	9.7	1.2	< 0.7	6.0	< 0.7	< 0.7	< 0.7
>C21-C35 Aliphatic (EH_2D_AL)	CE250	mg/kg	8.4	< 4.0	5.7	27.6	5.0	< 4.0	12.9	< 4.0	< 4.0	< 4.0
>C35-C44 Aliphatic (EH_2D_AL)	CE250	mg/kg	4.5	< 0.5	2.1	6.0	< 0.5	0.6	4.0	< 0.5	< 0.5	< 0.5
>C10-C12 Aromatic (EH_2D_AR)	CE250	mg/kg	20.5	2.3	8.0	50.6	3.3	3.3	7.6	1.5	2.3	1.2
>C12-C16 Aromatic (EH_2D_AR)	CE250	mg/kg	89.1	4.7	29.3	128.0	6.3	5.4	88.8	3.0	5.3	2.3
>C16-C21 Aromatic (EH_2D_AR)	CE250	mg/kg	232.0	5.0	95.3	228.0	6.2	3.5	309.0	3.6	9.4	2.5
>C21-C35 Aromatic (EH_2D_AR)	CE250	mg/kg	534.0	17.0	262.0	527.0	23.5	18.6	620.0	16.5	32.0	12.1
>C35-C44 Aromatic (EH_2D_AR)	CE250	mg/kg	86.7	4.4	45.0	84.2	6.4	13.0	112.0	6.7	20.8	6.7



Polyaromatic hydrocarbons												
Naphthalene	CE087	mg/kg	2.800	0.047	0.237	0.665	0.035	< 0.016	0.415	< 0.016	0.044	< 0.016
Acenaphthylene	CE087	mg/kg	< 0.015	< 0.015	0.077	< 0.015	< 0.015	< 0.015	0.120	< 0.015	< 0.015	< 0.015
Acenaphthene	CE087	mg/kg	3.820	0.053	0.589	0.379	0.045	< 0.013	3.040	< 0.013	0.098	< 0.013
Fluorene	CE087	mg/kg	2.430	0.034	0.404	0.276	0.034	< 0.013	2.130	< 0.013	0.068	< 0.013
Phenanthrene	CE087	mg/kg	19.500	0.286	4.620	2.730	0.310	0.020	29.300	0.045	0.797	< 0.014
Anthracene	CE087	mg/kg	4.110	0.069	1.140	0.556	0.064	< 0.017	6.530	< 0.017	0.182	< 0.017
Fluoranthene	CE087	mg/kg	23.200	0.356	8.180	4.010	0.394	0.022	37.400	0.057	1.190	< 0.017
Pyrene	CE087	mg/kg	18.700	0.302	7.000	3.320	0.366	0.020	31.000	0.047	0.985	< 0.016
Benzo(a)anthracene	CE087	mg/kg	9.090	0.174	3.920	1.940	0.228	0.028	14.900	0.036	0.575	< 0.012
Chrysene	CE087	mg/kg	10.100	0.195	4.220	2.140	0.265	< 0.028	16.000	0.034	0.581	< 0.028
Benzo(b)fluoranthene	CE087	mg/kg	8.870	0.177	3.740	1.830	0.239	< 0.020	13.700	0.030	0.652	< 0.020
Benzo(k)fluoranthene	CE087	mg/kg	3.590	0.082	1.520	0.777	0.083	< 0.025	5.710	< 0.025	0.253	< 0.025
Benzo(a)pyrene	CE087	mg/kg	8.570	0.155	3.850	1.670	0.188	< 0.019	13.800	0.024	0.557	< 0.019
Indeno(1,2,3-cd)pyrene	CE087	mg/kg	5.330	0.110	2.310	1.020	0.134	< 0.019	7.850	< 0.019	0.396	< 0.019
Dibenzo(a,h)anthracene	CE087	mg/kg	1.070	0.024	0.476	0.215	0.022	< 0.017	2.070	< 0.017	0.075	< 0.017
Benzo(g,h,i)perylene	CE087	mg/kg	4.570	0.094	2.000	0.887	0.122	< 0.019	7.020	< 0.019	0.340	< 0.019
Total PAH(16)	CE087	mg/kg	126.000	2.160	44.300	22.400	2.530	< 0.280	191.000	< 0.280	6.790	< 0.280

Appendix 2 – Trail pit logs

TP1 –Southeast corner





Trail Pit 1 – southeast corner

0.00-0.1m	Concrete
0.08-0.40m	Brown sand, gravel, roots
0.40-0.60m	brown sandy loam with gravel, some stone.

TP2 – Northeast corner – proposed garden







Trail Pit 2 – eastern boundary historic watercourse

0.00-0.1m	Concrete
0.1-0.45m	Brown sand, gravel and roots, some stone.
0.45-0.60m	brown Clayey loam, gravel.
0.6-0.75	Clay

TP3 – Centre of site





Trail Pit 3 – centre of site,

0.00-0.05m	vegetation, roots
0.058-0.30m	Brown sandy loam, with gravel,
0.30-0.50m	Brown sandy loam with gravel,
0.5-	Sand

TP4 – northwest corner of site

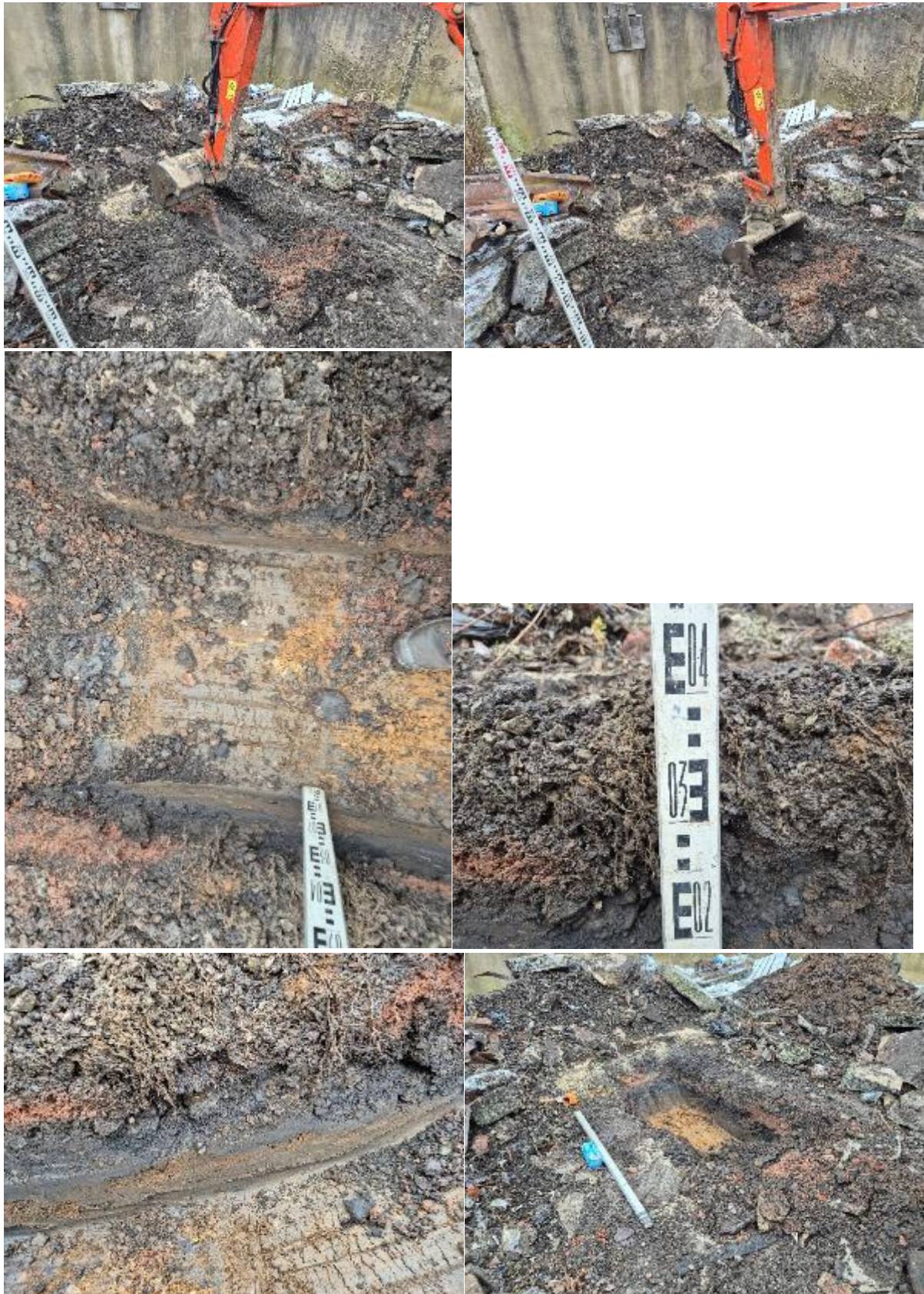


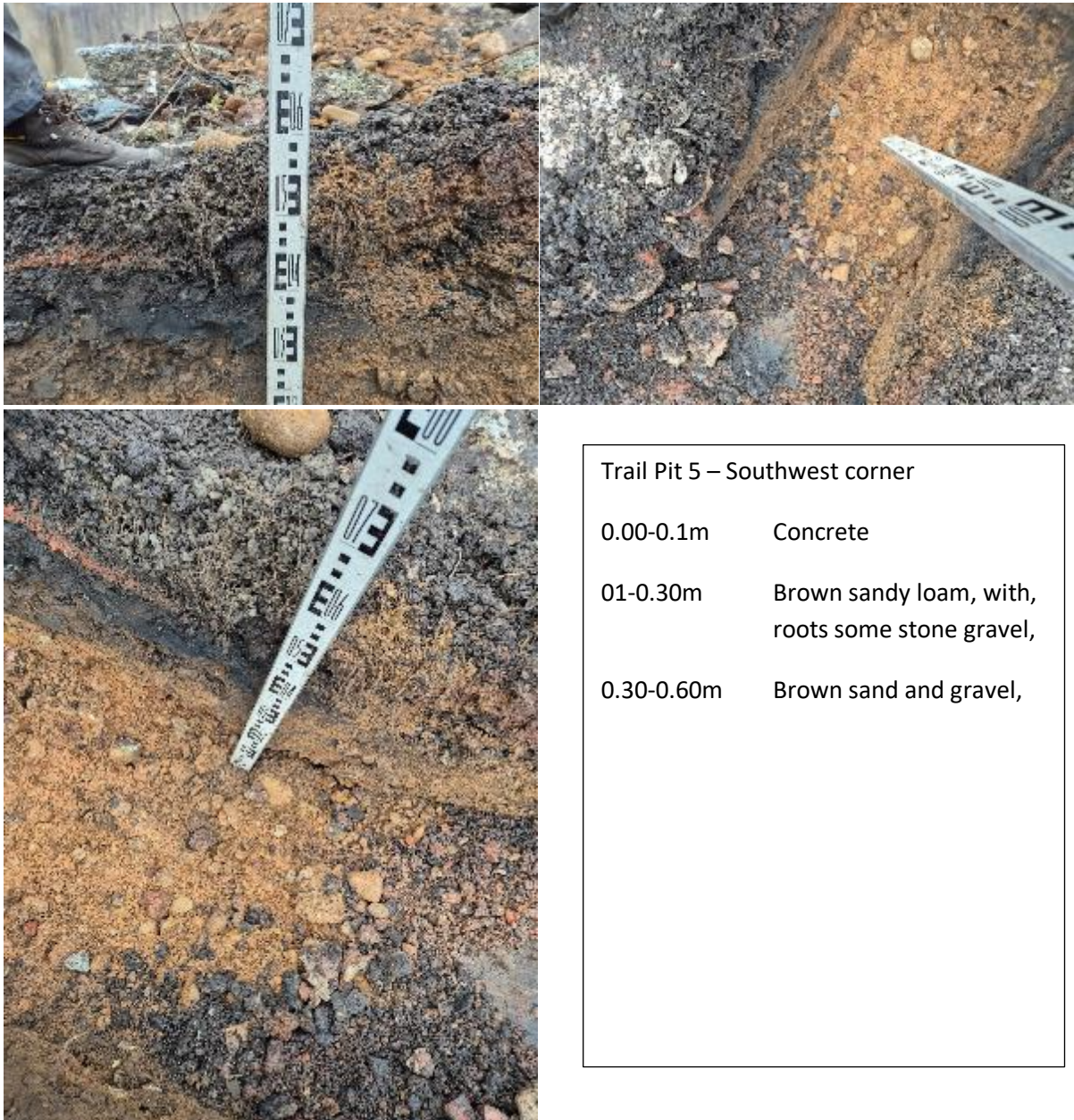


Trail Pit 4 – northwest corner

0.00-0.1m	Concrete
01-0.30m	Brown sandy loam, with, roots some stone gravel,
0.30-0.60m	Brown sand and gravel,

TP5 – Southwest corner





Trail Pit 5 – Southwest corner

0.00-0.1m	Concrete
01-0.30m	Brown sandy loam, with, roots some stone gravel,
0.30-0.60m	Brown sand and gravel,