By Email

Our ref: 23-666.01L

Sam Buswell
Countryside Partnerships
1 Redhall Avenue,
Paragon Business Village
Wakefield
WF1 2UL

Arc Environmental Ltd
Solum House
Unit 1 Elliott Court
St Johns Road
Meadowfield
Durham
DH7 8PN

21/08/2023

Dear Sam,

Re: Topsoil Testing - Land at Blue Hills Farm, Birkenshaw, BD11 2DU

Following completion of the recent investigation works at the above location, we have pleasure in providing you with our brief ground investigation report. The following documents are attached with this report:

- Trial Pit Location Plan
- Laboratory Results (Ref. 125287)

1.0 Introduction

Arc Environmental Limited were commissioned by Countryside Partnerships Yorkshire, to carry out additional testing of the existing topsoil from the site at Blue Hills Farm, Birkenshaw, to confirm if this material was suitable for re-use within a residential end use setting.

The site has been subject to previous investigation / reports as detailed below:

- Ian Farmer Associates, 'Report on Preliminary Risk Assessment & Coal Mining Risk Assessment carried out at Blue Hills Farm, Birkenshaw, BD11 2DU' (Ref. 42251); prepared for Mr Carlton Ives, dated September 2018.
- Ian Farmer Associates, 'Ground Investigation Report carried out at Blue Hills Farm, Birkenshaw, BD11 2DU' (Ref. 4230244 Rev 01); prepared for Mr Carlton Ives, dated March 2021.

The intrusive investigation works undertaken by Arc Environmental Ltd comprised 15 no. shallow mechanically excavated trial pits (TP01-TP15) the positions of which can be seen on the Trial Pit Location Plan attached. This plan should be used for orientating purposes only, as the positions shown are approximate and the plan is not to a standard scale.

The information contained in this report is limited to the area of the site as indicated on the Trial Pit Location Plan attached, and to those areas accessible during the investigation.

2.0 Ground Conditions

The thickness of topsoil recorded at each trial pit location along with a brief description is summarised in Table 1 below.

Table 1

Trial Pit No.	Topsoil thickness (m)	Brief Description
01	0.0-0.30	Grass overlying dark brown silty clayey topsoil with occasional shale fragments and rootlets.
02	0.0-0.40	Grass overlying dark brown silty clayey topsoil with occasional shale, brick fragments and rootlets.
03	0.0-0.30	Grass overlying dark brown silty clayey topsoil with occasional shale, brick, tile fragments & rootlets.
04	0.0-0.40	Grass overlying dark brown clayey topsoil with occasional shale, brick, fragments & rootlets.
05	0.0-0.30	Grass overlying dark brown silty clayey topsoil with occasional brick, fragments & rootlets.
06	0.0-0.40	Grass overlying dark brown sandy clayey topsoil with occasional shale, fragments & rootlets.
07	0.0-0.30	Grass overlying dark brown sandy clayey topsoil with occasional shale, tile fragments & rootlets.
08	0.0-0.40	Grass overlying dark brown silty sandy clayey topsoil with occasional shale fragments & rootlets.
09	0.0-0.30	Grass overlying dark brown sandy clayey topsoil with occasional brick fragments & rootlets.
10	0.0-0.40	Grass overlying dark brown sandy silty clayey topsoil with shale, tile fragments & rootlets.
11	0.0-0.40	Grass overlying dark brown silty clayey topsoil with occasional shale fragments & rootlets.
12	0.0-0.40	Grass overlying dark brown sandy clayey topsoil with occasional shale, tile and brick fragments & rootlets.
13	0.0-0.30	Grass overlying dark brown silty sandy clayey topsoil with occasional shale, tile fragments & rootlets.
14	0.0-0.40	Grass overlying dark brown silty clayey topsoil with occasional shale, fragments & rootlets.
15	0.0-0.30	Grass overlying dark brown silty slightly sandy clayey topsoil with occasional tile fragments & rootlets.

3.0 Contamination Screening

15 no. samples of the topsoil recovered from the trial pits were passed onto Chemtech Environmental of Stanley, Co. Durham (UKAS and MCERTS accredited), so that soil contamination screening could be carried out. The samples were screened using a standard generic contamination suite (based on the historical CLEA SGV listed analytes with additions) which is used to assess typical made ground (disturbed natural strata mixed with anthropogenic debris) of an unknown source. Although no visual and / or olfactory evidence of any 'fuel /oil' type contamination, ash, etc., was noted within the exploratory positions carried out, for completeness, representative samples were tested for Speciated PAH (Polycyclic Aromatic Hydrocarbons), Speciated TPH (Total Petroleum Hydrocarbons) and BTEX (Benzene, Toluene, Ethybenzene and Xylenes). In addition, the samples were also screened for asbestos.

3.0 Contamination Screening (Cont'd)

The samples retrieved from site were stored at approximately 2°C - 8°C using cool boxes and ice packs prior to delivery to a UKAS / MCERTS accredited laboratory. Sampling was carried out in accordance with 'Technical Policy Statement 63: UKAS Policy on Deviating Samples'. A summary of the complete programme of chemical screening undertaken is detailed on the following page and the results can be seen in the attached Analytical Test Report (Ref. 125287).

- 15 no. soil samples screened for a generic (metals and non-organics) soil suite which includes the following determinants: Arsenic, Cadmium, Chromium (III & VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide, pH, and Total Organic Carbon (TOC).
- 15 no. soil samples screened for Speciated Polycyclic Aromatic Hydrocarbons (PAH's) – based on the current USEPA 16 PAH's + Benzo(j)fluoranthene.
- 15 no. soil samples screened for speciated Total Petroleum Hydrocarbons (TPH's) – Full Aliphatic / Aromatic Split.
- 15 no. soil samples screened for Benzene, Toluene, Ethylbenzene m & p-Xylene & o-Xylene (BTEX).
- 15 no. soil samples screened for asbestos.

The results have been assessed against the most up to date and appropriate guidelines for the proposed end-use (residential with home grown produce) and are summarised in Table 2 below and on the following page.

Table 2

Analyte	Critical Conc. (C_C)	No. of Samples Screened	Max. Conc. (C_M) Recorded	No. of Samples >C_C
Generic Metals				
Arsenic	37(1)	15	30.4	0
Cadmium	11(1)	15	0.2	0
Chromium III	910(1)	15	31.1	0
Chromium VI	6(1)	15	<0.04	0
Copper	2400(1)	15	56.2	0
Lead	200(2)	15	97.7	0
Mercury	40(1)	15	0.2	0
Nickel	180(1)	15	37.4	0
Selenium	250(1)	15	<1.0	0
Zinc	3700(1)	15	145	0
Cyanide	34(3)	15	<1	0
Speciated PAH's				
Acenaphthene	510(1)	15	0.31	0
Acenaphthylene	420(1)	15	0.02	0
Anthracene	5400(1)	15	0.56	0
Benzo(a)anthracene	11(1)	15	0.97	0
Benzo(a)pyrene	2.7(1)	15	0.95	0
Benzo(b)fluoranthene	3.3(1)	15	1.09	0
Benzo(ghi)perylene	340(1)	15	0.54	0
Benzo(k)fluoranthene	93(1)	15	0.45	0
Chrysene	22(1)	15	1.02	0
Dibenz(ah)anthracene	0.28(1)	15	0.14	0
Fluoranthene	560(1)	15	2.36	0
Fluorene	400(1)	15	0.18	0
Indeno(123cd)pyrene	36(1)	15	0.62	0
Naphthalene	5.6(1)	15	0.18	0
Phenanthrene	220(1)	15	2.00	0
Pyrene	1200(1)	15	1.97	0

3.0 Contamination Screening (Cont'd)

Table 2 (Cont'd)

Analyte	Critical Conc. (C_C)	No. of Samples Screened	Max. Conc. (C_M) Recorded	No. of Samples >C_C
Speciated TPH's				
VPH Aliphatic (C5-C6)	78(1)	15	<0.1	0
VPH Aliphatic (C6-C8)	230(1)	15	<0.1	0
VPH Aliphatic (C8-C10)	65(1)	15	<0.1	0
EPH Aliphatic (C10-C12)	330(1)	15	7	0
EPH Aliphatic (C12-C16)	2400(1)	15	<6	0
EPH Aliphatic (C16-C35)	92000(1)	15	<15	0
EPH Aliphatic (C35-C44)	92000 (1)	15	<10	0
VPH Aromatic (EC5-EC7)	140(1)	15	<0.01	0
VPH Aromatic (EC7-EC8)	290(1)	15	<0.01	0
VPH Aromatic (EC8-EC10)	83(1)	15	<0.01	0
EPH Aromatic (EC10-EC12)	180(1)	15	<10	0
EPH Aromatic (EC12-EC16)	330(1)	15	<10	0
EPH Aromatic (EC16-EC21)	540(1)	15	<1	0
EPH Aromatic (EC21-EC35)	1500(1)	15	18	0
EPH Aromatic (EC35-EC44)	1500(1)	15	30	0
BTEX				
Benzene	0.17(1)	15	<0.01	0
Toluene	290(1)	15	<0.01	0
Ethylbenzene	110(1)	15	<0.01	0
m & p-Xylene	130(1)	15	<0.02	0
o-Xylene	140(1)	15	<0.01	0
Asbestos	Presence	15	NAD	0

(1) = LQM CIEH Suitable 4 Use Levels (S4UL Nov 2014 (Revised August 2015)) – *Residential with home grown produce* – 2.5% SOM, (2) = C4SL Values (*Residential with home grown produce*), (3) = ATRISK^{SOIL} SSV. NAD = No Asbestos Detected, **Bold** = result exceeds critical concentration, Note = All units are mg/kg.

The results have identified the following:

- None of the maximum concentration (C_M) values for any of the analytes screened for exceed the critical concentration (C_C) values for this site.
- None of the samples screened identified any asbestos fibres / fragments.

The contamination screening has identified that the maximum concentration (C_M) values for all the individual analytes listed in Table 2 do not exceed the critical concentration (C_C) values associated with the proposed end-use. Furthermore, no asbestos was identified. The results from laboratory chemical screening, undertaken on the topsoil deposits, indicate that the materials tested are suitable for use within a residential end use setting.

We trust the contents of this report is to your satisfaction and if you require any further information or clarification, please do not hesitate to contact us.

Yours sincerely,
REDACTED

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For and on behalf of Arc Environmental Ltd
Sai Turlapati, AMIEnvSc
GeoEnvironmental Engineer

Trial Pit Location Plan

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LEGEND	
	APPROXIMATE SITE BOUNDARY
	MECHANICALLY EXCAVATED TRIAL PIT POSITION

rev.	date	amendments	drawn	chckd

Client: **COUNTRYSIDE PARTNERSHIPS**

Project Title:
Proposed Residential Development
Blue Hills Estate Farm
Birkenshaw

Drawing Title:
Trial Pit Location Plan

Scale at A3:	Date:	Drawn by:	Approved by:
NTS @ A3	18.08.23	P.D	P.B

Job Ref:	Drg no:	Rev:
23-666	–	–

Laboratory Results

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ANALYTICAL TEST REPORT

Contract no: 125287

Contract name: Blue Hills Farm, Birkenshaw

Client reference: 23-666

Clients name: ARC Environmental

Clients address: Solum House, Unit 1 Elliott Court
St Johns Road
Meadowfield
DH7 8PN

Samples received: 31 July 2023

Analysis started: 31 July 2023

Analysis completed: 14 August 2023

Report issued: 14 August 2023

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

REDACTED

Approved by:

Ellis McCulloch
Senior Reporting Administrator

Chemtech Environmental Limited

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
125287-1	TP01	0.10-0.30	Loam with Gravel & Roots	-	-	27.4
125287-2	TP02	0.00-0.20	Loam with Gravel & Roots	-	-	23.2
125287-3	TP03	0.10-0.30	Sandy Loam with Gravel	-	-	27.7
125287-4	TP04	0.20-0.30	Loamy Clay with Roots	-	-	23.4
125287-5	TP05	0.10-0.20	Loamy Clay with Gravel & Roots	-	-	23.4
125287-6	TP06	0.30	Sandy Loam with Gravel & Roots	-	-	21.1
125287-7	TP07	0.10-0.30	Sandy Loam with Roots	-	-	21.5
125287-8	TP08	0.10-0.30	Sandy Loam with Gravel & Roots	-	-	15.8
125287-9	TP09	0.00-0.20	Loamy Sandy Clay with Gravel & Roots	-	-	19.1
125287-10	TP10	0.00-0.30	Clayey Loam with Gravel & Roots	-	-	21.4
125287-11	TP11	0.20-0.30	Sandy Loam with Gravel & Roots	-	-	25.5
125287-12	TP12	0.20-0.30	Sandy Loam with Roots	-	-	31.7
125287-13	TP13	0.00-0.20	Sandy Loam with Gravel & Roots	-	-	30.2
125287-14	TP14	0.00-0.30	Clayey Loam with Gravel & Roots	-	-	26.6
125287-15	TP15	0.10-0.30	Clayey Loam with Gravel & Roots	-	-	17.5

Chemtech Environmental Limited

SOILS

Lab number			125287-1	125287-2	125287-3	125287-4	125287-5	125287-6
Sample id			TP01	TP02	TP03	TP04	TP05	TP06
Depth (m)			0.10-0.30	0.00-0.20	0.10-0.30	0.20-0.30	0.10-0.20	0.30
Date sampled			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Test	**Method**	**Units**						
Moisture Content	CE001	% w/w	27.4	23.2	27.7	23.4	23.4	21.1
Arsenic (total)	$	mg/kg As	23.5	23.5	11.7	16.3	26.7	11.1
Cadmium (total)	$	mg/kg Cd	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (total)	$	mg/kg Cr	27.9	22.6	27.7	20.1	25.2	16.8
Chromium (III)	CE208	mg/kg CrIII	27.9	22.6	27.7	20.1	25.2	16.8
Chromium (VI)	CE263	mg/kg CrVI	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Copper (total)	$	mg/kg Cu	48.4	53.5	46.6	38.8	44.5	30.3
Lead (total)	$	mg/kg Pb	68.7	76.0	68.6	72.4	97.7	55.6
Mercury (total)	$	mg/kg Hg	0.1	0.1	< 0.1	0.1	0.1	< 0.1
Nickel (total)	$	mg/kg Ni	21.7	27.2	33.2	30.4	37.4	27.9
Selenium (total)	$	mg/kg Se	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (total)	$	mg/kg Zn	132	120	140	129	137	107
pH	CE004 M	units	6.9	6.8	6.5	6.8	6.9	7.0
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	64	31	24	16	23	14
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1	<1	<1	<1
Total Organic Carbon (TOC)	CE197	% w/w C	7.4	8.5	8.0	5.3	4.9	5.1
PAH								
Naphthalene	CE087 M	mg/kg	0.18	0.11	0.04	0.04	<0.02	<0.02
Acenaphthylene	CE087 M	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthene	CE087 M	mg/kg	0.31	0.12	0.02	0.10	<0.02	<0.02
Fluorene	CE087 U	mg/kg	0.18	0.09	<0.02	0.06	<0.02	<0.02
Phenanthrene	CE087 M	mg/kg	2.00	0.78	0.23	0.86	0.10	0.08
Anthracene	CE087 U	mg/kg	0.56	0.14	0.06	0.16	0.02	0.02
Fluoranthene	CE087 M	mg/kg	2.36	1.18	0.56	1.46	0.21	0.13
Pyrene	CE087 M	mg/kg	1.97	1.01	0.51	1.30	0.18	0.12
Benzo(a)anthracene	CE087 U	mg/kg	0.97	0.53	0.30	0.67	0.11	0.07
Chrysene	CE087 M	mg/kg	1.02	0.63	0.28	0.67	0.11	0.06
Benzo(b)fluoranthene	CE087 M	mg/kg	1.05	0.63	0.42	0.78	0.14	0.08
Benzo(k)fluoranthene	CE087 M	mg/kg	0.45	0.25	0.15	0.30	0.06	<0.03
Benzo(a)pyrene	CE087 U	mg/kg	0.84	0.51	0.31	0.61	0.10	0.06
Indeno(123cd)pyrene	CE087 M	mg/kg	0.62	0.37	0.26	0.46	0.08	0.05
Dibenz(ah)anthracene	CE087 M	mg/kg	0.12	0.08	0.05	0.10	<0.02	<0.02
Benzo(ghi)perylene	CE087 M	mg/kg	0.51	0.32	0.22	0.37	0.07	0.04
PAH (total of USEPA 16)	CE087	mg/kg	13.1	6.76	3.42	7.96	1.18	0.71
BTEX & TPH								
Benzene	CE192 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	CE192 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	CE192 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
m & p-Xylene	CE192 U	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
o-Xylene	CE192 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Chemtech Environmental Limited

SOILS

Lab number			125287-1	125287-2	125287-3	125287-4	125287-5	125287-6
Sample id			TP01	TP02	TP03	TP04	TP05	TP06
Depth (m)			0.10-0.30	0.00-0.20	0.10-0.30	0.20-0.30	0.10-0.20	0.30
Date sampled			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Test	**Method**	**Units**						
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	<6	<6	7	<6	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6	<6	<6	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15	<15	<15	<15	<15	<15
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10	<10	<10	<10	<10
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	<10	<10	<10	<10	<10	<10
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<10	<10	<10	<10	<10	<10
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	15	14	<1	<1	18	<1
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	<1	14	30	16	<1	<1
Subcontracted analysis								
Asbestos (qualitative)	$	-	NAD	NAD	NAD	NAD	NAD	NAD

Chemtech Environmental Limited

SOILS

Lab number			125287-7	125287-8	125287-9	125287-10	125287-11	125287-12
Sample id			TP07	TP08	TP09	TP10	TP11	TP12
Depth (m)			0.10-0.30	0.10-0.30	0.00-0.20	0.00-0.30	0.20-0.30	0.20-0.30
Date sampled			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Test	**Method**	**Units**						
Moisture Content	CE001	% w/w	21.5	15.8	19.1	21.4	25.5	31.7
Arsenic (total)	$	mg/kg As	14.2	8.6	13.9	29.4	29.0	30.4
Cadmium (total)	$	mg/kg Cd	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (total)	$	mg/kg Cr	19.2	16.8	21.2	21.4	27.8	27.6
Chromium (III)	CE208	mg/kg CrIII	19.2	16.8	21.2	21.4	27.8	27.6
Chromium (VI)	CE263	mg/kg CrVI	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Copper (total)	$	mg/kg Cu	44.6	38.0	41.4	50.0	54.9	52.6
Lead (total)	$	mg/kg Pb	61.2	53.7	51.6	81.3	71.8	94.3
Mercury (total)	$	mg/kg Hg	0.2	0.2	< 0.1	0.2	0.1	0.2
Nickel (total)	$	mg/kg Ni	36.2	33.4	31.6	22.0	35.2	23.1
Selenium (total)	$	mg/kg Se	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (total)	$	mg/kg Zn	145	96.9	124	130	125	122
pH	CE004 M	units	7.0	6.7	6.4	6.3	6.3	6.4
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	20	21	21	15	18	26
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1	<1	<1	<1
Total Organic Carbon (TOC)	CE197	% w/w C	4.6	12.3	3.9	3.5	7.9	8.8
PAH								
Naphthalene	CE087 M	mg/kg	0.07	0.13	0.07	0.02	0.07	0.08
Acenaphthylene	CE087 M	mg/kg	<0.02	0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthene	CE087 M	mg/kg	0.06	0.27	0.08	0.02	0.09	0.12
Fluorene	CE087 U	mg/kg	0.04	0.17	0.06	0.02	0.06	0.08
Phenanthrene	CE087 M	mg/kg	0.51	1.59	0.58	0.27	0.59	0.80
Anthracene	CE087 U	mg/kg	0.12	0.27	0.12	0.05	0.12	0.16
Fluoranthene	CE087 M	mg/kg	1.26	1.80	0.92	0.50	0.90	1.23
Pyrene	CE087 M	mg/kg	1.14	1.50	0.80	0.44	0.78	1.06
Benzo(a)anthracene	CE087 U	mg/kg	0.79	0.81	0.43	0.28	0.44	0.57
Chrysene	CE087 M	mg/kg	0.75	0.77	0.42	0.25	0.42	0.69
Benzo(b)fluoranthene	CE087 M	mg/kg	1.09	0.84	0.48	0.28	0.53	0.68
Benzo(k)fluoranthene	CE087 M	mg/kg	0.43	0.31	0.20	0.11	0.20	0.25
Benzo(a)pyrene	CE087 U	mg/kg	0.95	0.63	0.38	0.23	0.46	0.53
Indeno(123cd)pyrene	CE087 M	mg/kg	0.62	0.43	0.26	0.17	0.30	0.40
Dibenz(ah)anthracene	CE087 M	mg/kg	0.14	0.11	0.06	0.04	0.07	0.09
Benzo(ghi)perylene	CE087 M	mg/kg	0.54	0.36	0.24	0.13	0.26	0.35
PAH (total of USEPA 16)	CE087	mg/kg	8.52	10.0	5.10	2.82	5.29	7.09
BTEX & TPH								
Benzene	CE192 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	CE192 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	CE192 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
m & p-Xylene	CE192 U	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
o-Xylene	CE192 U	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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SOILS

Lab number			125287-7	125287-8	125287-9	125287-10	125287-11	125287-12
Sample id			TP07	TP08	TP09	TP10	TP11	TP12
Depth (m)			0.10-0.30	0.10-0.30	0.00-0.20	0.00-0.30	0.20-0.30	0.20-0.30
Date sampled			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
Test	**Method**	**Units**						
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	<6	<6	<6	<6	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6	<6	<6	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15	<15	<15	<15	<15	<15
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10	<10	<10	<10	<10
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	<10	<10	<10	<10	<10	<10
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<10	<10	<10	<10	<10	<10
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	<1	<1	<1	<1	<1	<1
Subcontracted analysis								
Asbestos (qualitative)	$	-	NAD	NAD	NAD	NAD	NAD	NAD

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SOILS

Lab number			125287-13	125287-14	125287-15
Sample id			TP13	TP14	TP15
Depth (m)			0.00-0.20	0.00-0.30	0.10-0.30
Date sampled			26/07/2023	26/07/2023	26/07/2023
Test	**Method**	**Units**			
Moisture Content	CE001	% w/w	30.2	26.6	17.5
Arsenic (total)	$	mg/kg As	20.1	22.3	18.9
Cadmium (total)	$	mg/kg Cd	< 0.2	< 0.2	< 0.2
Chromium (total)	$	mg/kg Cr	26.1	31.1	21.3
Chromium (III)	CE208	mg/kg CrIII	26.1	31.1	21.3
Chromium (VI)	CE263	mg/kg CrVI	<0.04	<0.04	<0.04
Copper (total)	$	mg/kg Cu	56.2	52.8	44.8
Lead (total)	$	mg/kg Pb	77.7	69.1	51.6
Mercury (total)	$	mg/kg Hg	0.2	0.1	0.1
Nickel (total)	$	mg/kg Ni	28.0	32.9	34.6
Selenium (total)	$	mg/kg Se	< 1.0	< 1.0	< 1.0
Zinc (total)	$	mg/kg Zn	134	132	123
pH	CE004 M	units	6.2	6.4	4.8
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	30	21	11
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1
Total Organic Carbon (TOC)	CE197	% w/w C	7.7	7.4	5.3
PAH					
Naphthalene	CE087 M	mg/kg	0.08	0.06	0.08
Acenaphthylene	CE087 M	mg/kg	<0.02	<0.02	<0.02
Acenaphthene	CE087 M	mg/kg	0.14	0.08	0.09
Fluorene	CE087 U	mg/kg	0.10	0.05	0.06
Phenanthrene	CE087 M	mg/kg	0.85	0.52	0.54
Anthracene	CE087 U	mg/kg	0.19	0.13	0.10
Fluoranthene	CE087 M	mg/kg	1.20	0.83	0.79
Pyrene	CE087 M	mg/kg	1.05	0.72	0.70
Benzo(a)anthracene	CE087 U	mg/kg	0.55	0.41	0.38
Chrysene	CE087 M	mg/kg	0.52	0.41	0.45
Benzo(b)fluoranthene	CE087 M	mg/kg	0.64	0.50	0.46
Benzo(k)fluoranthene	CE087 M	mg/kg	0.22	0.16	0.17
Benzo(a)pyrene	CE087 U	mg/kg	0.50	0.36	0.35
Indeno(123cd)pyrene	CE087 M	mg/kg	0.33	0.26	0.26
Dibenz(ah)anthracene	CE087 M	mg/kg	0.08	0.06	0.06
Benzo(ghi)perylene	CE087 M	mg/kg	0.31	0.23	0.22
PAH (total of USEPA 16)	CE087	mg/kg	6.75	4.77	4.70
BTEX & TPH					
Benzene	CE192 U	mg/kg	<0.01	<0.01	<0.01
Toluene	CE192 U	mg/kg	<0.01	<0.01	<0.01
Ethylbenzene	CE192 U	mg/kg	<0.01	<0.01	<0.01
m & p-Xylene	CE192 U	mg/kg	<0.02	<0.02	<0.02
o-Xylene	CE192 U	mg/kg	<0.01	<0.01	<0.01
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1

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SOILS

Lab number			125287-13	125287-14	125287-15
Sample id			TP13	TP14	TP15
Depth (m)			0.00-0.20	0.00-0.30	0.10-0.30
Date sampled			26/07/2023	26/07/2023	26/07/2023
Test	**Method**	**Units**			
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	<6	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15	<15	<15
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10	<10
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	<10	<10	<10
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<10	<10	<10
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<1	<1	<1
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	<1	<1	<1
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	17	<1	<1
Subcontracted analysis					
Asbestos (qualitative)	$	-	NAD	NAD	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE001	Moisture Content	Gravimetry	As received		0.1	% w/w
$	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg As
$	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
$	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
CE208	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE263	Chromium (VI)	Discrete Analyser	Dry		<0.04	mg/kg CrVI
$	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	4	mg/kg Cu
$	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
$	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.1	mg/kg Hg
$	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
$	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Se
$	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	4.5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE192	Benzene	Headspace GC-FID	As received	U	0.01	mg/kg
CE192	Toluene	Headspace GC-FID	As received	U	0.01	mg/kg
CE192	Ethylbenzene	Headspace GC-FID	As received	U	0.01	mg/kg
CE192	m & p-Xylene	Headspace GC-FID	As received	U	0.02	mg/kg
CE192	o-Xylene	Headspace GC-FID	As received	U	0.01	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		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	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		1	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	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	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)
125287-1	TP01	0.10-0.30	N	
125287-2	TP02	0.00-0.20	N	
125287-3	TP03	0.10-0.30	N	
125287-4	TP04	0.20-0.30	N	
125287-5	TP05	0.10-0.20	N	
125287-6	TP06	0.30	N	
125287-7	TP07	0.10-0.30	N	
125287-8	TP08	0.10-0.30	N	
125287-9	TP09	0.00-0.20	N	
125287-10	TP10	0.00-0.30	N	
125287-11	TP11	0.20-0.30	N	
125287-12	TP12	0.20-0.30	N	
125287-13	TP13	0.00-0.20	N	
125287-14	TP14	0.00-0.30	N	
125287-15	TP15	0.10-0.30	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.
Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.
BTEX compounds are identified by retention time only and may include interference from co-eluting compounds.
All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones, where applicable.