

By Email

Our Ref: 21-763.01L(CC)

Adam Pitman
Vistry West Yorkshire
1 Redhall Avenue
Paragon Business Village
Wakefield
WF1 2UL

28th November 2024

Dear Adam,

Re: Clean Cover Verification - Plots 13 & 24 to 31 inclusive, at Hollin Bank, Hollingworth Road, Littleborough

Please find attached the following documents:

- Photographic Record Sheets
- Pre-importation Soil Test Results (Arc Environmental Report Ref.23-666.01L August 2023)
- Insitu Soil Test Results (Eurofins Chemtest Analytical Report Ref. 24-38134)

As requested by Vistry West Yorkshire, a site visit was undertaken on 15th November 2024, by a representative from Arc Environmental Ltd, to confirm the suitability and thickness of imported topsoil placed within the gardens of Plots 13 and 24 to 31 inclusive, at the above referenced site.

In order to negate any potential risk to future site users (i.e., human health), it was recommended that a minimum of 600mm cover soils with basal high-visibility marker / separator layer, be emplaced within garden / soft landscaping areas, where made ground was present, in accordance with the Remediation Statement & Validation Proposal Sheets produced for this site by Arc Environmental Ltd (Report No. 21-763).

During the site visit, trial pits (9 no.) were excavated within the gardens of Plots 13 and 24 to 31 inclusive, which confirmed the placement of a minimum 600mm of imported topsoil (recorded as a dark brown clayey slightly sandy silty soil with some rootlets and fine gravel of sandstone, mudstone and occasional coal).

In addition, an orange geotextile was also present below the placed soils. The location of the trial pits and the confirmation of the thickness of emplaced soils is included on the attached Photographic Record Sheets.

Pre-importation testing of the topsoil (Chemtech Analytical Report Ref. 125287) is attached to this letter report which confirmed that these materials would be suitable for re-use within a residential end use setting.

In addition to the above, additional samples of the emplaced topsoil were also recovered from Plots 24, 27 and 31 (c.1 in 3 frequency) during the visit in order to undertake confirmatory laboratory testing. The samples recovered during the site visit were stored at approximately c.2°C to c.8°C using cool boxes and ice packs prior to delivery to a UKAS / MCERTS accredited laboratory.



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

Re: Clean Cover Verification - Plots 13 & 24 to 31 inclusive, at Hollin Bank, Hollingworth Road, Littleborough
(Cont'd)

The catalogue of testing results can be found in the Eurofins Chemtest Analytical Report (Ref. 24-38134) attached to this letter report, with the total analysis carried out summarised below.

Soil Samples

- 3 no. soil samples screened for a generic (metals and non-organics) soil suite including Arsenic, Cadmium, Chromium (III & VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide and Total Organic Carbon (TOC).
- 3 no. soil samples screened for Speciated Polycyclic Aromatic Hydrocarbons (PAH's) & Speciated Total Petroleum Hydrocarbons (based on full Aliphatic / Aromatic Split & BTEX).
- 3 no. samples screened for the presence of asbestos.

The soil screening results from have been assessed by comparing the maximum values (C_M) recorded for each analyte to the critical concentration values (C_C) adopted for this site i.e., based on a the most sensitive proposed end use of 'residential with home grown produce' at 2.5% SOM and are summarised in Table 1 below and on the following page.

Table 1

Bold = result exceeds critical concentration

Analyte	Critical Conc. (C_C)	No. of Samples Screened	Max. Conc. (C_M) Recorded	No. of Samples > C_C
Arsenic	37 ⁽¹⁾	3	24	0
Cadmium	11 ⁽¹⁾	3	0.42	0
Chromium III	910 ⁽¹⁾	3	29	0
Chromium VI	6 ⁽¹⁾	3	<0.50*	0
Copper	2400 ⁽¹⁾	3	51	0
Lead	200 ⁽²⁾	3	80	0
Mercury	40 ⁽¹⁾	3	0.19	0
Nickel	130 ⁽¹⁾	3	34	0
Selenium	250 ⁽¹⁾	3	1.5	0
Zinc	3700 ⁽¹⁾	3	150	0
Cyanide	34 ⁽³⁾	3	<0.50*	0
Speciated PAH's				
Acenaphthene	510 ⁽¹⁾	3	0.46	0
Acenaphthylene	420 ⁽¹⁾	3	<0.10*	0
Anthracene	5400 ⁽¹⁾	3	0.86	0
Benzo(a)anthracene	11 ⁽¹⁾	3	1.8	0
Benzo(a)pyrene	2.7 ⁽¹⁾	3	1.6	0
Benzo(b)fluoranthene	3.3 ⁽¹⁾	3	2.1	0
Benzo(ghi)perylene	340 ⁽¹⁾	3	0.93	0
Benzo(k)fluoranthene	930 ⁽¹⁾	3	0.70	0
Chrysene	22 ⁽¹⁾	3	2.0	0
Dibenz(ah)anthracene	0.28 ⁽¹⁾	3	0.27	0
Fluoranthene	560 ⁽¹⁾	3	4.6	0
Fluorene	400 ⁽¹⁾	3	0.55	0
Indeno(123cd)pyrene	36 ⁽¹⁾	3	0.99	0
Naphthalene	5.6 ⁽¹⁾	3	0.66	0
Phenanthrene	220 ⁽¹⁾	3	3.9	0
Pyrene	1200 ⁽¹⁾	3	3.7	0

⁽¹⁾ = LQM/CIEH S4UL's –Residential with Homegrown Produce (2.5% SOM), ⁽²⁾ = CL:AIRE C4SLs –residential with homegrown produce, ⁽³⁾ = Atkins ATRISK SSV (Mar 2011). * = Site Value (C_M) less than analytical detection limit, NAD = No Asbestos Detected.

Re: Clean Cover Verification - Plots 13 & 24 to 31 inclusive, at Hollin Bank, Hollingworth Road, Littleborough
(Cont'd)

Table 1 (Cont'd)

Bold = result exceeds critical concentration

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⁾	3	<0.05*	0
VPH Aliphatic (>C6-C8)	230 ⁽¹⁾	3	<0.10*	0
VPH Aliphatic (>C8-C10)	65 ⁽¹⁾	3	<0.05*	0
EPH Aliphatic (>C10-C12)	330 ⁽¹⁾	3	51	0
EPH Aliphatic (>C12-C16)	2400 ⁽¹⁾	3	52	0
EPH Aliphatic (>C16-C35)	92000 ⁽¹⁾	3	106	0
EPH Aliphatic (>C35-C44)	92000 ⁽¹⁾	3	<10*	0
VPH Aromatic (>EC5-EC7)	140 ⁽¹⁾	3	<0.05*	0
VPH Aromatic (>EC7-EC8)	290 ⁽¹⁾	3	<0.05*	0
VPH Aromatic (>EC8-EC10)	83 ⁽¹⁾	3	<0.05*	0
EPH Aromatic (>EC10-EC12)	180 ⁽¹⁾	3	15	0
EPH Aromatic (>EC12-EC16)	330 ⁽¹⁾	3	54	0
EPH Aromatic (>EC16-EC21)	540 ⁽¹⁾	3	100	0
EPH Aromatic (>EC21-EC35)	1500 ⁽¹⁾	3	93	0
EPH Aromatic (>EC35-EC44)	1500 ⁽¹⁾	3	21	0
BTEX				
Benzene	0.17 ⁽¹⁾	3	<0.001*	0
Toluene	290 ⁽¹⁾	3	0.0032	0
Ethylbenzene	110 ⁽¹⁾	3	<0.001*	0
m & p-Xylene	130 ⁽¹⁾	3	<0.001*	0
o-Xylene	140 ⁽¹⁾	3	<0.001*	0
Asbestos	Presence	3	NAD	0

⁽¹⁾ = LQM/CIEH S4UL's – residential with homegrown produce (2.5% SOM), ⁽²⁾ = CL:AIRE C4SLs – residential with homegrown produce, ⁽³⁾ = Atkins ATRISK SSV (Mar 2011). * = Site Value (C_M) less than analytical detection limit, NAD = No Asbestos Detected.

The results have identified the following:

- None of the Maximum Concentration (C_M) values exceed the Critical Concentration (C_c) values taken for the site.
- No asbestos was detected within any of the soil samples tested.

From the results of the site visit, it has been confirmed that a minimum of 600mm of imported topsoil has been placed above a high visibility geotextile within garden areas of Plots 13 and 24 to 31 inclusive. Pre-importation testing and subsequent analysis of samples recovered during the site visit has also confirmed that the emplaced topsoil is suitable for re-use within a residential end use setting

We trust this correspondence and attachments are of benefit and if you require any further information or clarification, please do not hesitate to contact us.

Yours sincerely,



For and on behalf of Arc Environmental Limited
 Phillip Brown
 Technical Director

Photographic Record Sheets



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The contractor shall check all dimensions on site before commencement of any works. No dimensions to be scaled off this drawing.
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LEGEND	
	PLOT RANGE COVERED BY VALIDATION WORKS
	CLEAN COVER VALIDATION TRIAL PIT WITHIN REAR GARDEN

rev.	date	amendments		drawn	chckd

Client:
VISTRY PARTNERSHIPS YORKSHIRE

Project Title:
Proposed Residential Development
Hollingworth Gate
Littleborough

Drawing Title:
Clean Cover Photographic Record Sheet 1
Plot 13 and Plots 24 to 31 Inclusive

Scale at A3: As Shown	Date: 28.11.24	Drawn by: P.D	Approved by: P.B
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Job Ref: 21-763	Drg no: -	Rev: -
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	PLOT RANGE COVERED BY VALIDATION WORKS
	CLEAN COVER VALIDATION TRIAL PIT WITHIN REAR GARDEN

rev.	date	amendments		drawn	chckd

Client:
VISTRY PARTNERSHIPS YORKSHIRE

Project Title:
Proposed Residential Development
Hollingworth Gate
Littleborough

Drawing Title:
Clean Cover Photographic Record Sheet 2
– Plot 13 and Plots 24 to 31 Inclusive

Scale at A3: As Shown	Date: 28.11.24	Drawn by: P.D	Approved by: P.B
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Job Ref: 21-763	Drg no: —	Rev: —
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LEGEND	
	PLOT RANGE COVERED BY VALIDATION WORKS
	CLEAN COVER VALIDATION TRIAL PIT WITHIN REAR GARDEN

rev.	date	amendments		drawn	chckd

Client:
VISTRY PARTNERSHIPS YORKSHIRE

Project Title:
Proposed Residential Development
Hollingworth Gate
Littleborough

Drawing Title:
Clean Cover Photographic Record Sheet 3
– Plot 13 and Plots 24 to 31 Inclusive

Scale at A3: As Shown	Date: 28.11.24	Drawn by: P.D	Approved by: P.B
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Job Ref:	Drg no:	Rev:
21-763	—	—

Pre-importation Soil Testing Results

By Email

Our ref: 23-666.01L

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

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.



Arc Environmental Ltd
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Unit 1 Elliott Court
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Meadowfield
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DH7 8PN

Re: Topsoil Testing - Land at Blue Hills Farm, Birkenshaw, BD11 2DU (Cont'd)

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

<u>Trial Pit No.</u>	<u>Topsoil thickness (m)</u>	<u>Brief Description</u>
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, Ethylbenzene and Xylenes). In addition, the samples were also screened for asbestos.

Re: Topsoil Testing - Land at Blue Hills Farm, Birkenshaw, BD11 2DU (Cont'd)

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

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Re: Topsoil Testing - Land at Blue Hills Farm, Birkenshaw, BD11 2DU (Cont'd)

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,



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

Trial Pit Location Plan



ARC ENVIRONMENTAL LTD

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LEGEND	
	APPROXIMATE SITE BOUNDARY
	MECHANICALLY EXCAVATED TRIAL PIT POSITION

rev.	date	amendments	drawn	chckd
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Client:	COUNTRYSIDE PARTNERSHIPS
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Project Title:	Proposed Residential Development
	Blue Hills Estate Farm
	Birkenshaw

Drawing Title:	Trial Pit Location Plan
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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



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

Approved by:

E. McCulloch

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

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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

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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						
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	

Chemtech Environmental Limited

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.

Insitu Soil Testing Results



Final Report

Report No.: 24-38134-1

Initial Date of Issue: 28-Nov-2024

Re-Issue Details:

Client Arc Environmental Ltd

Client Address: Solum House
Unit 1 Elliott Court
St Johns Road
Meadowfield
Durham
DH7 8PN

Contact(s): Results

Project 21-763 Littleborough

Quotation No.: Q24-36354

Date Received: 21-Nov-2024

Order No.:

Date Instructed: 21-Nov-2024

No. of Samples: 3

Turnaround (Wkdays): 3

Results Due: 25-Nov-2024

Date Approved: 28-Nov-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: 21-763 Littleborough

Client: Arc Environmental Ltd		Chemtest Job No.:				24-38134	24-38134	24-38134
Quotation No.: Q24-36354		Chemtest Sample ID.:				1898570	1898571	1898572
		Client Sample ID.:				Plot 24	Plot 27	Plot 31
		Sample Type:				SOIL	SOIL	SOIL
		Top Depth (m):				0.15	0.10	0.25
		Bottom Depth (m):				0.25	0.25	0.35
		Date Sampled:				15-Nov-2024	15-Nov-2024	15-Nov-2024
		Asbestos Lab:				NEW-ASB	NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
Moisture		N	2030	%	0.020	26	27	21
Arsenic		M	2455	mg/kg	0.5	21	24	23
Cadmium		M	2455	mg/kg	0.10	0.32	0.38	0.42
Chromium		M	2455	mg/kg	0.5	24	29	26
Chromium (Trivalent)		N	2490	mg/kg	1.0	24	29	26
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Copper		M	2455	mg/kg	0.50	51	44	46
Mercury		M	2455	mg/kg	0.05	0.14	0.16	0.19
Nickel		M	2455	mg/kg	0.50	32	34	31
Lead		M	2455	mg/kg	0.50	69	65	80
Selenium		M	2455	mg/kg	0.25	1.2	1.5	1.4
Zinc		M	2455	mg/kg	0.50	150	130	120
pH at 20C		M	2010		4.0	7.2	7.2	9.0
Sulphate (2:1 Water Soluble) as SO4 mg/l		M	2120	mg/l	10.000	20	16	200
Cyanide (Free)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon		M	2625	%	0.20	3.6	5.1	3.8
Acenaphthene		M	2800	mg/kg	0.10	0.14	0.46	0.28
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene		M	2800	mg/kg	0.10	0.23	0.86	0.48
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	0.31	0.93	0.57
Benzo[a]anthracene		M	2800	mg/kg	0.10	0.56	1.8	1.4
Benzo[a]pyrene		M	2800	mg/kg	0.10	0.46	1.6	1.3
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	0.75	2.1	1.4
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	0.26	0.70	0.45
Chrysene		M	2800	mg/kg	0.10	0.57	2.0	1.2
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	0.27	0.17
Fluoranthene		M	2800	mg/kg	0.10	1.3	4.6	2.7
Fluorene		M	2800	mg/kg	0.10	0.12	0.55	0.20
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	0.36	0.99	0.53
Naphthalene		M	2800	mg/kg	0.10	0.39	0.66	0.19
Phenanthrene		M	2800	mg/kg	0.10	1.1	3.9	2.3
Pyrene		M	2800	mg/kg	0.10	1.1	3.7	2.2
Total Of 16 PAH's		N	2800	mg/kg	2.0	7.7	25	15
Benzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene		M	2760	µg/kg	1.0	10	3.2	10
Ethylbenzene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene		M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: 21-763 Littleborough

Client: Arc Environmental Ltd		Chemtest Job No.:				24-38134	24-38134	24-38134
Quotation No.: Q24-36354		Chemtest Sample ID.:				1898570	1898571	1898572
		Client Sample ID.:				Plot 24	Plot 27	Plot 31
		Sample Type:				SOIL	SOIL	SOIL
		Top Depth (m):				0.15	0.10	0.25
		Bottom Depth (m):				0.25	0.25	0.35
		Date Sampled:				15-Nov-2024	15-Nov-2024	15-Nov-2024
		Asbestos Lab:				NEW-ASB	NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
ACM Type		U	2192		N/A	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Soil Colour		N	2040		N/A	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones and Roots	Stones and Roots	Stones and Roots
Soil Texture		N	2040		N/A	Clay	Clay	Clay
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	HS_2D_AL	N	2780	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	29	36	51
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00	9.5	30	52
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	21	31	45
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00	30	52	61
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	< 10	< 10	< 10
Aliphatic EPH >C40-C44 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00	91	150	210
Total Aliphatic EPH >C10-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	91	150	210
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	< 1.0	15	3.3
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	1.9	54	24
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	20	100	57
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	16	93	50
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	8.1	21	19
Aromatic EPH >C40-C44 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	39	260	130
Total Aromatic EPH >C10-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00	47	290	150
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	130	410	340
Total EPH >C10-C40 MC	EH_2D_Total_#1	N	2690	mg/kg	10.00	140	430	360
Total EPH >C10-C44 MC	EH_2D_Total_#1	N	2690	mg/kg	10.00	140	430	360

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	pH Meter	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Water Sample Category Key for Accreditation

- DW - Drinking Water
- GW - Ground Water
- LE - Land Leachate
- NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

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 - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com