

CONSULTING ENGINEERS

**CIVIL • STRUCTURAL
GEOTECHNICAL • ENVIRONMENTAL**

SB/VAL/23049/01

19th April 2023

KMM Homes Ltd
31 Sackville Street
Manchester,
M1 3LZ,

Att: Mr Mark McClarty

Dear Mr McClarty

**RE: VALIDATION REPORT FOR RESIDENTIAL DEVELOPMENT AT OLDHAM ROAD,
MIDDLETON, FOR PLOTS 1 TO 5 AND 8 TO 16.**

Further to your recent instructions, we have now revisited this site to inspect and validate the topsoil and subsoil material within the rear garden areas of plots 1 to 5 and 8 to 16 as identified upon the appended proposed development plan.

1.0 Introduction

The site has initially been subjected to a Phase I Desk Study ref. 7355 dated November 2021 and carried out by Sub Surface North West Limited. The desk study initially identified the site to comprise fields with large ponds denoted as Morton Pits from 1848. The site remained largely unchanged until 1967 when the pits were infilled and the site was developed with domestic garages and a fuel station was also added adjacent to the site at this time and was extended into site from 1984. All on site buildings were demolished by 1991. Following this report a Phase II Ground investigation Report, report ref. 7355A and dated April 2022 was carried out by Sub Surface North West Limited. The investigation comprised of five (5 No.) trial pits, nine (9 No.) cable percussive boreholes with five (5 No.) boreholes being followed on with rotary methods. Made ground was encountered on the site and depths ranging between 0.80m and 9.00m below existing ground level. Within the areas of the historic infilled ponds, made ground was recorded to a maximum depth of 6.50m. Lead contamination, asbestos and PAH contamination was encountered across the site and as such a formal Remediation Strategy was required to address the contamination found on site.

Sub Surface North West Limited then produced a Remediation Strategy ref. 7355B dated April 2022. The report recommended that either a minimum 600mm blanket of clean topsoil or topsoil and subsoil will be placed in the rear and side gardens of the proposed residential development and 450mm capping within any proposed front garden or any other soft landscaping areas. In addition, a geotextile membrane was to be placed at the base of the cover system to inhibit the mixing of asbestos fibres.

Representative samples of the capping materials installed within the garden areas have been collected to allow a programme of chemical analyses to determine the suitability of the capping materials. The remediation strategy proposed a minimum of six samples to be taken or 1 sample/100m³, whichever was greater for a brownfield source or a minimum of three samples to be taken or 1 sample/250m³, whichever was greater of greenfield material.

ROBERT E FRY & ASSOCIATES LTD.
45, Bridgeman Terrace
Wigan, WN1 1TT

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Company Registration No. 2436911



A total of six (6 No.) soil samples have been taken at this time split between three (3 No.) topsoil samples and three (3 No.) subsoil material. All samples were submitted to the laboratories of Element, who are a UKAS and MCERTS accredited laboratory facility. Each sample has been subject to a wide ranging program of analyses which includes metals, inorganics, organics, PAH (USEPA 16) compounds and hydrocarbons, TPH (CWG), BTEX and MTBE. The range of determinands considered is in accordance with the specification detailed within the remediation strategy document. The full results of the laboratory chemical analyses are attached to this correspondence for reference.

Assessment of the Element laboratory test results as shown in tables 1 to 4 has confirmed that the topsoil and subsoil material does not contain any determinants at concentrations above the adopted assessment criteria.

Table 1: Summary of Contamination Analysis: Metals & Inorganics					
	No. of Samples	Range of Values (mg/kg)	Assessment Criteria (mg/kg)	No. of Samples Failing	Locations
Arsenic	6	2.4 – 27.8	37 ³	0	-
Cadmium	6	< 0.1	11.0 ³	0	-
Chromium (total)	6	39.1 – 47.5	910 ³	0	-
Copper	6	7 - 76	2400 ³	0	-
Lead	6	10 - 100	200 ¹	0	-
Mercury	6	< 0.1 – 0.3	40 ³	0	-
Nickel	6	8.9 – 22.9	180 ³	0	-
Selenium	6	<1 – 2	250 ³	0	-
Zinc	6	30 - 147	3700 ³	0	-
Total Cyanide	6	<0.5 – 1.1	34.0 ²	0	-
Phenol	6	<0.15	200 ³	0	-
pH	6	6.46 – 11.00	-	0	-
SOM	6	0.31 – 15.96			
TOC %	6	0.18 – 9.26	-	0	-
SO ₄ (2:1)	6	0.0988 – 0.2685	0.5 ⁴	0	-
Asbestos	6	NAD	Present/Absent	0	-
¹ DEFRA : SP1010 : Category 4 Screening Levels ² Atkins Atrisk SSV residential with home grown produce (2.5% SOM) ³ LQM and CIEH S4UL's for Human Health Risk Assessment (Registration No. S4UL 3265) residential with home grown produce (2.5% SOM) ⁴ BRE Special Digest 1:2005 DS-1 (units in g/l) ND – None Detected					

Table 2: Summary of Contamination Analysis: Organics: PAH USEPA 16 Suite

	No. of Samples	Range of Values (mg/kg)	Assessment Criteria ¹ (mg/kg)	No. of Samples Failing	Locations
Naphthalene	6	<0.04 – 0.09	5.6	0	-
Acenaphthylene	6	<0.03	420	0	-
Acenaphthene	6	<0.05 – 0.14	510	0	-
Fluorene	6	<0.04 – 0.10	400	0	-
Phenanthrene	6	0.16 – 1.01	220	0	-
Anthracene	6	<0.04 – 0.26	5400	0	-
Fluoranthene	6	0.13 – 1.59	560	0	-
Pyrene	6	0.10 – 1.37	1200	0	-
Benzo[a]anthracene	6	0.13 – 0.79	11.0	0	-
Chrysene	6	0.05 – 0.84	22.0	0	-
Benzo[a]pyrene	6	0.06 – 0.82	5.0 ²	0	-
Indeno[123-cd]pyrene	6	<0.04 – 0.50	36.0	0	-
Dibenz[ah]anthracene	6	<0.04 – 0.11	0.28	0	-
Benzo[ghi]perylene	6	0.05 – 0.47	340	0	-
Benzo[b]fluoranthene	6	<0.05 – 0.98	3.3	0	-
Benzo[k]fluoranthene	6	<0.02 – 0.38	93	0	-

¹ LQM & CIEH S4UL's for human health risk assessment (Registration No. S4UL 3265) – Residential with home grown produce (2.5% SOM)

² DEFRA : SP1010 : Category 4 Screening Levels

Table 3: Summary of Contamination Analysis: Organics: TPH (CWG) Suite

	No. of Samples	Range of Values mg/kg	Assessment* Criteria mg/kg	No. of Samples Failing	Notes
Aliphatic EC> 5 - 6	6	<0.1	78.0	0	-
Aliphatic EC> 6 - 8	6	0.1 – 0.3	230	0	-
Aliphatic EC> 8 - 10	6	<0.1 – 0.1	65.0	0	-
Aliphatic EC> 10 - 12	6	<0.2	330	0	-
Aliphatic EC> 12 - 16	6	<4	2400	0	-
Aliphatic EC> 16 - 21	6	<7	65000	0	-
Aliphatic EC> 21 - 35	6	<7 - 178	65000	0	-
Aromatic EC> 5 - 7	6	<0.1	140	0	-
Aromatic EC> 7 - 8	6	<0.1 – 0.3	290	0	-
Aromatic EC> 8 - 10	6	<0.1	83.0	0	-
Aromatic EC> 10 - 12	6	<0.2	180	0	-
Aromatic EC> 12 - 16	6	<4	330	0	-
Aromatic EC> 16 - 21	6	<7 - 30	540	0	-
Aromatic EC> 21 - 35	6	<7 - 315	1500	0	-
Aromatic EC> 35 - 44	6	<19 - 315	1500	0	-

*Criteria values based upon LQM & CIEH S4UL's for human health risk assessment (Registration No. S4UL 3265) – Residential with home grown produce (2.5% SOM)

Table 4: Summary of Contamination Analysis: Organics: BTEX Suite

	No. of Samples	Range of Values (mg/kg)	Assessment* Criteria (mg/kg)	No. of Samples Failing	Notes
Benzene	6	<0.005	0.17	0	
Toluene	6	<0.005 – 0.264	290	0	
EthylBenzene	6	<0.005	110	0	
M/PXylenes	6	<0.005 – 0.007	140	0	
O - Xylene	6	<0.005	140	0	
Methyl tert-Butyl Ether	6	<0.005	20 ¹	0	

Criteria values based upon LQM & CIEH S4UL's for human health risk assessment (Registration No. S4UL 3265) – Residential with home grown produce (2.5% SOM)

¹ Atkins Atrisk SSV residential with home grown produce (1% SOM)

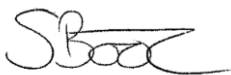
To verify the thickness of the clean cover system trial holes have been excavated through the capping materials to a maximum depth of 0.95m below existing ground level within the rear gardens of plots 1 to 5 and plots 8 to 16. Each of the trial holes encountered a topsoil material comprising of a dark brown slightly gravelly slightly sandy silty clay with frequent rootlets. Gravel comprised of sandstone, siltstone and mudstone. The topsoil extended to depths ranging between 0.15m to 0.25m. Beneath the topsoil a light orangish brown slightly gravelly sand was recorded to completion. At the base of each of the trial holes a silver geotextile membrane was observed within each of the positions.

In conclusion we can advise that the topsoil and subsoil material has not recorded elevated concentrations that pose a hazard to the long term end users of the site and that the materials used are suitable for use within the garden area of plots 1 to 5 and plots 8 to 16. Trial pit excavations have also confirmed that a minimum 0.60m cover layer comprised of topsoil and subsoil has been applied to the rear garden of plot's 1 to 5 and 8 to 16 with a geotextile membrane at the base of the capping.

At the time of the validation works plots 6 and 7 were not ready to validate due to the location of the site compound. In addition, the front/ side garden areas of plots 1 and 5 were also not ready, see attached Validation Location Plan. These plots should be validated and tested accordingly to ensure the capping material is safe within the final development.

We trust that this information meets with your requirements at this time and would recommend that copies of this correspondence along with the relevant attachments should be provided to the various regulatory authorities for their consent and approval. Should you require any further assistance, then please do not hesitate to contact us directly.

Signed for and on behalf of
R E FRY & ASSOCIATES LIMITED



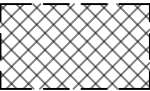
Stephen Boot B.Sc. (Hons), FGS
R E FRY & ASSOCIATES LTD

Enc: Validation Location Plan 23049/01
Site Photographs
Element Laboratory Test Results

Key



Approximate validation location



Area unable to be validated



Plan On Validation Locations



as recognised by



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www.smasltd.com

Drawing Stage		Drawing Status	
☐ Draft	Comments	☒ Tender	
☒ Issued	Information	Construction	
☐ Preliminary	Approval	As Built	

This drawing is not authorised unless signed as checked & approved

Client

KMM Homes

Job title

Oldham Road Middleton

Drawing title

Validation Location Plan



45 Bridgeman Terrace
Wigan, Lancs
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Tel: -(01942) 826020
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Chkd	Appvd	date	scale	drawn
		19.04.23	1:500	PT

DRAWING No	23049/01	rev

© This drawing is the property of REFA and should not be copied, used or its contents divulged without prior written consent

Any discrepancies to this drawing discovered on site should be reported to REFA immediately. IF IN DOUBT ASK!



View of Plot 1 rear garden excavated to a depth of 0.75m exposing geotextile membrane at base.



View of Plot 2 rear garden excavated to a depth of 0.85m.



View of Plot 3 rear garden excavated to a depth of 0.75m.



View of Plot 4 rear garden excavated to a depth of 0.60m, perched water ingress within the sand subsoil material.



View of Plot 5 rear garden excavated to a depth of 0.80m exposing geotextile membrane at base.



Overview photo of the rear garden areas of plots 1 to 5



View of Plot 8 rear garden excavated to a depth of 0.80m exposing geotextile membrane at base.



View of Plot 9 rear garden excavated to a depth of 0.80m exposing geotextile membrane at base.



View of Plot 10 rear garden excavated to a depth of 0.85m exposing geotextile membrane at base.



View of Plot 11 rear garden excavated to a depth of 0.90m exposing geotextile membrane at base.



View of Plot 12 rear garden excavated to a depth of 0.95m exposing geotextile membrane at base.



View of Plot 13 rear garden excavated to a depth of 0.80m exposing geotextile membrane at base.



View of Plot 14 rear garden excavated to a depth of 0.80m exposing geotextile membrane at base.



View of Plot 15 rear garden excavated to a depth of 0.85m exposing geotextile membrane at base.



View of Plot 16 rear garden excavated to a depth of 0.80m exposing geotextile membrane at base.

Robert E Fry & Associates Ltd
45 Bridgeman Terrace
Wigan
WN1 1TT



4225

Attention : Rob Fry
Date : 18th April, 2023
Your reference : 23049
Our reference : Test Report 23/5554 Batch 1
Location : Oldham Road
Date samples received : 11th April, 2023
Status : Final Report
Issue : 1

Six samples were received for analysis on 11th April, 2023 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Robert E Fry & Associates Ltd
Reference: 23049
Location: Oldham Road
Contact: Rob Fry
EMT Job No: 23/5554

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18					Please see attached notes for all abbreviations and acronyms		
Sample ID	VAL 02	VAL 05	VAL 09	VAL 13	VAL 15	VAL 15							
Depth	0.40	0.10	0.15	0.60	0.15	0.40							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	31/03/2023	31/03/2023	31/03/2023	31/03/2023	31/03/2023	31/03/2023							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023					LOD/LOR	Units	Method No.
Arsenic #	4.0	25.7	23.2	2.4	27.8	2.4					<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM30/PM15
Chromium #	39.8	44.7	47.5	39.1	41.1	40.1					<0.5	mg/kg	TM30/PM15
Copper #	9	76	67	7	71	8					<1	mg/kg	TM30/PM15
Lead #	15	128	100	10	111	16					<5	mg/kg	TM30/PM15
Mercury #	<0.1	0.3	0.2	<0.1	0.3	<0.1					<0.1	mg/kg	TM30/PM15
Nickel #	9.5	22.9	19.9	8.9	19.6	9.8					<0.7	mg/kg	TM30/PM15
Selenium #	<1	2	2	<1	2	<1					<1	mg/kg	TM30/PM15
Zinc #	30	147	103	36	110	41					<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	0.06	0.06	0.07	<0.04	0.09	<0.04					<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.10	0.09	0.12	<0.05	0.14	<0.05					<0.05	mg/kg	TM4/PM8
Fluorene #	0.06	0.06	0.08	<0.04	0.10	<0.04					<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.46	0.76	0.95	0.06	1.01	0.16					<0.03	mg/kg	TM4/PM8
Anthracene #	0.08	0.14	0.25	<0.04	0.26	<0.04					<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.58	1.21	1.59	0.13	1.57	0.24					<0.03	mg/kg	TM4/PM8
Pyrene #	0.49	1.04	1.37	0.10	1.33	0.22					<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.29	0.62	0.79	<0.06	0.77	0.13					<0.06	mg/kg	TM4/PM8
Chrysene #	0.29	0.67	0.84	0.05	0.82	0.10					<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.41	1.07	1.36	<0.07	1.29	0.15					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.26	0.64	0.82	0.06	0.78	0.09					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.13	0.37	0.50	<0.04	0.47	0.05					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	0.09	0.11	<0.04	0.10	<0.04					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.14	0.36	0.47	<0.04	0.44	0.05					<0.04	mg/kg	TM4/PM8
PAH 16 Total	3.4	7.2	9.3	<0.6	9.2	1.2					<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.30	0.77	0.98	<0.05	0.93	0.11					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.11	0.30	0.38	<0.02	0.36	0.04					<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	97	95	96	91	93	95					<0	%	TM4/PM8
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	0.1	0.2 ^{SV}	0.1 ^{SV}	<0.1	0.3	<0.1					<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	0.1	<0.1 ^{SV}	<0.1 ^{SV}	<0.1	0.1	<0.1					<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2					<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4					<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	60	42	178	43	33					<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	<19	60	42	178	43	33					<19	mg/kg	TM5/PM8/PM16/PM12/PM15

Element Materials Technology

Client Name: Robert E Fry & Associates Ltd
Reference: 23049
Location: Oldham Road
Contact: Rob Fry
EMT Job No: 23/5554

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18					Please see attached notes for all abbreviations and acronyms		
Sample ID	VAL 02	VAL 05	VAL 09	VAL 13	VAL 15	VAL 15							
Depth	0.40	0.10	0.15	0.60	0.15	0.40							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	31/03/2023	31/03/2023	31/03/2023	31/03/2023	31/03/2023	31/03/2023							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023					LOD/LOR	Units	Method No.
TPH CWG													
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	0.2 ^{SV}	0.1 ^{SV}	<0.1	0.3	<0.1					<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2					<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4					<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	22	28	<7	30	<7					<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	<7	192	206	315	210	<7					<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR) #	<19	214	234	315	240	<19					<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	<38	274	276	493	283	<38					<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE #	<5	<5 ^{SV}	<5 ^{SV}	<5	<5	<5					<5	ug/kg	TM36/PM12
Benzene #	<5	<5 ^{SV}	<5 ^{SV}	<5	<5	<5					<5	ug/kg	TM36/PM12
Toluene #	119	175 ^{SV}	148 ^{SV}	<5	264	<5					<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5 ^{SV}	<5 ^{SV}	<5	<5	<5					<5	ug/kg	TM36/PM12
m/p-Xylene #	7	<5 ^{SV}	<5 ^{SV}	<5	<5	<5					<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5 ^{SV}	<5 ^{SV}	<5	<5	<5					<5	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15					<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	20.2	55.1	38.4	15.0	41.7	14.0					<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	16.8	35.5	27.7	13.0	29.4	12.3					<0.1	%	PM4/PM0
Sulphate as SO4 (2:1 Ext) #	0.2685	0.0988	0.2634	0.3287	0.0497	0.4701					<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	1.1	1.0	<0.5	1.0	<0.5					<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	0.71	9.26	7.87	0.18	9.03	0.18					<0.02	%	TM21/PM24
Sulphide	<10	<10	<10	<10	<10	<10					<10	mg/kg	TM107/PM45
pH #	11.00	6.68	6.58	10.64	6.46	10.53					<0.01	pH units	TM73/PM11

Note:

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

[illegible]

Client Name: Robert E Fry & Associates Ltd

Reference: 23049

Location: Oldham Road

Contact: Rob Fry

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/5554

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

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	EU_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.

EMT Job No: 23/5554

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

EMT Job No: 23/5554

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes