FIGURES



Approximate Hand Auger Location

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Licence Number: 100054115

eps	**Title:**	**Hand Auger Location Plan**	
	Project:	Hawthorn Bank, Spalding	Scale: NTS
			Drawn By: MJ / Approved By: MB
	Fig No:	1	Job No: UK19.4699b
			Dwg No: HawthornBank/0522/01
			Date: May 2022

TABLES

Table 1 – Laboratory Testing Schedule

Sample ID	Sample Depth (mbgl)	EPS Mini Suite
HA101	0.0-0.3	1
HA102	0.0-0.3	1
HA103	0.0-0.3	1
HA104	0.0-0.4	1
HA105	0.0-0.4	1
HA106	0.0-0.3	1
HA107	0.0-0.3	1
HA108	0.0-0.3	1

Notes

mbgl	meters below ground level
1	Sample Taken
-	Sample Not Analysed
EPS Mini Suite	Comprises Metals, PAH (Polycyclic Aromatic Hydrocarbons), Sulphate, Cyanide, Asbestos Screen
n/a	Not Applicable

APPENDIX A

Development Plan

VISUAL SCALE 1:1000 @ A1

VISUAL SCALE 1:200 @ A1

VISUAL SCALE 1:100 @ A1

VISUAL SCALE 1:50 @ A1

05 - Site Block Plan
1 : 200



Permeable Concrete Block Paved Drives and Parking

Existing Hedging

Grass

Permeable Paving Road

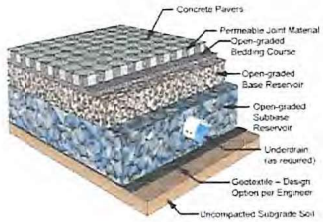
Concrete Slabs for Paths and Patio

Low Level Planting

BL Bollard Lighting

10.40000 Proposed Ground Levels

10.55000 Proposed Finished Floor Levels



Permeable Road Design

Due to areas of the structure being covered, unexposed or otherwise inaccessible the notes/specifications of existing materials are subject to confirmation of site when it is feasible to expose the relevant areas of construction.

GENERAL CONDITIONS
Contractors are responsible for checking all dimensions on site when work commences and before ordering any materials. Any discrepancies should be brought to the attention of the Client for remedial action before commencing further.
All materials not specified to be of a standard suitable for the work proposed and/or ill fit for purpose. All work is to be in accordance with good building practice and all necessary BS codes for Workmanship on Building Sites.

Client: **JP Builders**

Site: **49 Hawthorn Bank Spalding**

Dwg Title: **Proposed Block Plan**

remway

Date: Jan17

Dwg No: **2779 / 01**

"Tattersall, The Rising Ground, Spalding, PE11 3AP Tel: 07775700921

APPENDIX B

Laboratory Analysis

element

Element Materials Technology
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EPS Ltd
7B Caxton House
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Attention :	Michael Judson
Date :	3rd May, 2022
Your reference :	UK19.4699b
Our reference :	Test Report 22/5612 Batch 1
Location :	Hawthorn Bank, Spalding
Date samples received :	6th April, 2022
Status :	Final Report
Issue :	1

Eight samples were received for analysis on 6th April, 2022 of which eight 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:

Liza Klebe
Project Co-ordinator

Please include all sections of this report if it is reproduced

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Element Materials Technology

Client Name: EPS Ltd
Reference: UK19.4699b
Location: Hawthorn Bank, Spalding
Contact: Michael Judson
EMT Job No: 22/5612

Report : Solid

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

EMT Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16					
Sample ID	HA101	HA102	HA103	HA104	HA105	HA106	HA107	HA108					
Depth	0.00-0.30	0.00-0.30	0.00-0.30	0.00-0.40	0.00-0.40	0.00-0.30	0.00-0.30	0.00-0.30			Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J					
Sample Date	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022					
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022			LOD/LOR	Units	Method No.
Arsenic #M	17.1	34.1	13.5	17.5	19.3	22.0	18.4	16.2			<0.5	mg/kg	TM30/PM15
Cadmium #M	0.3	0.8	0.2	0.1	0.3	0.1	0.2	0.1			<0.1	mg/kg	TM30/PM15
Chromium #M	37.0	50.3	43.2	44.5	45.6	44.6	41.3	32.4			<0.5	mg/kg	TM30/PM15
Copper #M	35	100	22	20	38	24	25	22			<1	mg/kg	TM30/PM15
Lead #M	159	477	70	75	144	75	93	138			<5	mg/kg	TM30/PM15
Mercury #M	0.3	0.8	0.3	0.3	0.3	0.4	0.3	0.4			<0.1	mg/kg	TM30/PM15
Nickel #M	19.3	34.0	17.7	20.3	20.1	17.9	17.0	16.6			<0.7	mg/kg	TM30/PM15
Selenium #M	2	<1	1	<1	<1	<1	<1	<1			<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #M	583	1216	380	445	514	374	494	438			<50	mg/kg	TM50/PM29
Zinc #M	270	734	137	100	365	136	171	112			<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #M	<0.04	0.37	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.13	1.20	0.08	0.05	0.08	0.06	0.08	0.05			<0.03	mg/kg	TM4/PM8
Acenaphthene #M	<0.05	0.11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM4/PM8
Fluorene #M	<0.04	0.29	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Phenanthrene #M	0.88	4.19	0.41	0.29	0.29	0.36	0.36	0.20			<0.03	mg/kg	TM4/PM8
Anthracene #	0.26	1.73	0.11	0.06	0.10	0.06	0.11	<0.04			<0.04	mg/kg	TM4/PM8
Fluoranthene #M	2.32	10.88	1.19	0.69	0.78	0.81	1.08	0.47			<0.03	mg/kg	TM4/PM8
Pyrene #	2.08	9.51	1.04	0.58	0.70	0.67	0.95	0.42			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	1.08	4.66	0.59	0.31	0.40	0.34	0.64	0.22			<0.06	mg/kg	TM4/PM8
Chrysene #M	1.18	5.39	0.65	0.36	0.47	0.42	0.70	0.27			<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	2.13	10.07	1.22	0.69	0.84	0.75	1.55	0.53			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	1.22	5.42	0.65	0.31	0.43	0.35	0.76	0.29			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	0.87	3.81	0.45	0.28	0.33	0.30	0.58	0.21			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.12	0.65	0.06	<0.04	0.05	<0.04	0.10	<0.04			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.76	4.09	0.43	0.25	0.33	0.30	0.58	0.20			<0.04	mg/kg	TM4/PM8
PAH 16 Total	13.0	62.4	6.9	3.9	4.8	4.4	7.5	2.9			<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	1.53	7.25	0.88	0.50	0.60	0.54	1.12	0.38			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.60	2.82	0.34	0.19	0.24	0.21	0.43	0.15			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	78	87	77	83	88	73	86	86			<0	%	TM4/PM8
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15			<0.15	mg/kg	TM26/PM21B
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3			<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #M	<0.0015	0.0193	0.0075	0.0248	<0.0015	<0.0015	<0.0015	<0.0015			<0.0015	g/l	TM38/PM20
Chromium III	37.0	50.3	43.2	44.5	45.6	44.6	41.3	32.4			<0.5	mg/kg	NONE/NONE
Total Cyanide #M	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5	mg/kg	TM89/PM45
Organic Matter	5.3	20.3	3.4	2.5	4.5	3.3	3.7	3.2			<0.2	%	TM21/PM24
pH #M	7.67	7.70	8.12	8.08	7.90	8.00	8.26	8.15			<0.01	pH units	TM73/PM11
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay				None	PM13/PM0

Element Materials Technology

Client Name: EPS Ltd
Reference: UK19.4699b
Location: Hawthorn Bank, Spalding
Contact: Michael Judson
EMT Job No: 22/5612

Report : Solid

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

EMT Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16			Please see attached notes for all abbreviations and acronyms		
Sample ID	HA101	HA102	HA103	HA104	HA105	HA106	HA107	HA108					
Depth	0.00-0.30	0.00-0.30	0.00-0.30	0.00-0.40	0.00-0.40	0.00-0.30	0.00-0.30	0.00-0.30					
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J					
Sample Date	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022	05/04/2022					
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay					
Batch Number	1	1	1	1	1	1	1	1			LOD/LOR	Units	Method No.
Date of Receipt	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022	06/04/2022					
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown				None	PM13/PM0
Other Items	stones, vegetation	stones, vegetation	stones, vegetation	stones, vegetation	stones, vegetation	stones	stones, vegetation	stones, vegetation				None	PM13/PM0

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: EPS Ltd
Reference: UK19.4699b
Location: Hawthorn Bank, Spalding
Contact: Michael Judson

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

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

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/5612	1	HA101	0.00-0.30	2	Catherine Coles	19/04/2022	**General Description (Bulk Analysis)**	soil
					Catherine Coles	19/04/2022	**Asbestos Fibres**	NAD
					Catherine Coles	19/04/2022	**Asbestos ACM**	NAD
					Catherine Coles	19/04/2022	**Asbestos Type**	NAD
22/5612	1	HA102	0.00-0.30	4	Andrew Alker	19/04/2022	**General Description (Bulk Analysis)**	brown loose soil and stones
					Andrew Alker	19/04/2022	**Asbestos Fibres**	NAD
					Andrew Alker	19/04/2022	**Asbestos ACM**	NAD
					Andrew Alker	19/04/2022	**Asbestos Type**	NAD
22/5612	1	HA103	0.00-0.30	6	Catherine Coles	19/04/2022	**General Description (Bulk Analysis)**	soil
					Catherine Coles	19/04/2022	**Asbestos Fibres**	NAD
					Catherine Coles	19/04/2022	**Asbestos ACM**	NAD
					Catherine Coles	19/04/2022	**Asbestos Type**	NAD
22/5612	1	HA104	0.00-0.40	8	Catherine Coles	19/04/2022	**General Description (Bulk Analysis)**	brown soil/stone
					Catherine Coles	19/04/2022	**Asbestos Fibres**	Fibre Bundles
					Catherine Coles	19/04/2022	**Asbestos Fibres (2)**	Fibre Bundles
					Catherine Coles	19/04/2022	**Asbestos ACM**	NAD
					Catherine Coles	19/04/2022	**Asbestos ACM (2)**	NAD
					Catherine Coles	19/04/2022	**Asbestos Type**	Chrysotile
					Catherine Coles	19/04/2022	**Asbestos Type (2)**	Amosite
					Matthew Turner	03/05/2022	**Total ACM Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					Matthew Turner	03/05/2022	**Total Detailed Gravimetric Quantification (% Asb)**	0.002 (mass %)
					Matthew Turner	03/05/2022	**Total Gravimetric Quantification (ACM + Detailed) (% Asb)**	0.002 (mass %)
					Matthew Turner	03/05/2022	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					Matthew Turner	03/05/2022	**Asbestos Gravimetric & PCOM Total**	0.002 (mass %)
22/5612	1	HA105	0.00-0.40	10	Catherine Coles	19/04/2022	**General Description (Bulk Analysis)**	brown soil
					Catherine Coles	19/04/2022	**Asbestos Fibres**	Fibre Bundles
					Catherine Coles	19/04/2022	**Asbestos Fibres (2)**	Free Fibres
					Catherine Coles	19/04/2022	**Asbestos ACM**	NAD
					Catherine Coles	19/04/2022	**Asbestos ACM (2)**	NAD
					Catherine Coles	19/04/2022	**Asbestos Type**	Chrysotile
					Catherine Coles	19/04/2022	**Asbestos Type (2)**	Amosite
					Matthew Turner	03/05/2022	**Total ACM Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					Matthew Turner	03/05/2022	**Total Detailed Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					Matthew Turner	03/05/2022	**Total Gravimetric Quantification (ACM + Detailed) (% Asb)**	<0.001 (mass %)
					Matthew Turner	03/05/2022	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)

Client Name: EPS Ltd
Reference: UK19.4699b
Location: Hawthorn Bank, Spalding
Contact: Michael Judson

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/5612	1	HA105	0.00-0.40	10	Matthew Turner	03/05/2022	**Asbestos Gravimetric & PCOM Total**	<0.001 (mass %)
22/5612	1	HA106	0.00-0.30	12	Charlotte Taylor	19/04/2022	**General Description (Bulk Analysis)**	soil/stones
					Charlotte Taylor	19/04/2022	**Asbestos Fibres**	NAD
					Charlotte Taylor	19/04/2022	**Asbestos ACM**	NAD
					Charlotte Taylor	19/04/2022	**Asbestos Type**	NAD
22/5612	1	HA107	0.00-0.30	14	Charlotte Taylor	19/04/2022	**General Description (Bulk Analysis)**	soil/stones
					Charlotte Taylor	19/04/2022	**Asbestos Fibres**	NAD
					Charlotte Taylor	19/04/2022	**Asbestos ACM**	NAD
					Charlotte Taylor	19/04/2022	**Asbestos Type**	NAD
22/5612	1	HA108	0.00-0.30	16	Charlotte Taylor	19/04/2022	**General Description (Bulk Analysis)**	soil/stones
					Charlotte Taylor	19/04/2022	**Asbestos Fibres**	NAD
					Charlotte Taylor	19/04/2022	**Asbestos ACM**	NAD
					Charlotte Taylor	19/04/2022	**Asbestos Type**	NAD

Client Name: EPS Ltd
Reference: UK19.4699b
Location: Hawthorn Bank, Spalding
Contact: Michael Judson

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/5612						

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.: 22/5612

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 overesitimate 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 calibration range, the result should be considered the minimum value. 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: 22/5612

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
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
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	Yes	AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
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	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			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	Yes	AD	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: 2013I	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	Yes	AD	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: 2013I	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		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.	Yes	Yes	AD	Yes

EMT Job No: 22/5612

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
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	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	Yes	AR	Yes
TM131	Quantification of Asbestos Fibres and ACM based on HSG 248 Second edition:2021, HSG 264 Second edition:2012, HSE Contract Research Report No.83/1996, MDHS 87:1998, WM3 1st Edition v1.1:2018	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	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

APPENDIX C

Cover Soils Checklist

ADVISORY NOTE

SOILS FOR USE IN COVER SYSTEMS

This note applies where there is a need for a control measure in the form of a defined thickness of clean soil to be used in gardens and soft landscaped areas in order to reduce risks from underlying contamination (a 'cover system'). Where a specific thickness has been presented, it is what EPS consider sufficient provided the soil forming the cover system is good quality, as it is assumed that over time this soil will become intermixed with the underlying soils and therefore needs to have the necessary 'dilution' effect. The aim being that an acceptable reduction in exposure to contamination is achieved, rather than absolute prevention.

These simple cover systems are designed in general accordance with the BRE 2004 guidance *'Cover Systems for Land Regeneration, Thickness of Cover Systems for Contaminated Land'*. In many cases guidance from a Local Planning Authority or NHBC/Approved Inspector may also apply and need to be taken into account. In most cases, to design the cover system EPS have to assume a certain quality of cover soils in advance. In these circumstances, we utilise what we consider to represent 'good quality soil' in that the soil could never be considered 'contaminated' but is also pragmatic and does not represent an unrealistic or unsustainable objective for much of the soils in the UK. In numerical terms, this standard typically equates to soil containing contaminants at around 25% of their adopted screening values in the risk assessment.

For the cover system itself, EPS would usually carry out a verification process of your site to demonstrate the control measure has been implemented as intended to satisfy all interested parties such as planning authorities, the NHBC and the future property owner. To document this process, EPS will prepare a Verification Report. If you wish for EPS to do this, we will need the following points confirmed relating to the soils preferably before they are installed in gardens.

If there are any queries, please contact EPS before purchasing any soil.

EPS Contact Details:

Tel: 01954 710666

Email: info@epstrategies.co.uk

Pre-Verification Cover System Checklist		Yes?
Soil Source	The soil must not be a waste. Has it been confirmed that the soil is not a waste and has never been deemed as such in the past?	
	Has the source of the soil been provided?	
	Have all the delivery notes confirming the source, volume and type of soil been provided for all that is to be used? Where suppliers such as British Sugar are used, the soils should be delivered direct to site (not via an intermediary depot).	
Soil Quality	The soils are free of invasive plant species such as Japanese Knotweed, and have not been sourced from an affected area?	
	Do the soils look clean and of a high quality? I.e. the soil must not have an odour or contain any visual evidence of contamination, including oils, asbestos, glass, plastic, rubble, metal, ash, sharp objects or tarmac/bitumen?	
	Testing to 'BS 3882:2015 *Specification for topsoil and requirements for use*' is preferable but generally not essential for public health regulation, provided you can confirm the soils comply with the above points, are suitable for their intended purpose and will provide an adequate growing medium?	
	Has the soil been chemically tested prior to it arriving at site? Any soil test results presented to EPS by a third party must be current and clearly relate to the soil used, i.e. the testing must generally be dated within 6 weeks of delivery. The quantity of testing will be dependent on how much confidence is generated in the quality of the material, as well any specific local regulatory requirements. If the soil is clean soil from an established source such as British Sugar, the testing they provide at source may be sufficient alone without further testing (by EPS). For other soils, EPS can advise on the likely testing frequencies but as a rule of thumb, anticipate at least one sample per average-sized plot. The testing would usually comprise the following: Heavy Metals, Poly Aromatic Hydrocarbons, Asbestos and Total Petroleum Hydrocarbons at an accredited lab. If adequate testing has not been completed, then EPS will need to test it from stockpiles prior to installation. Installing the soils into gardens without any testing data is not advised, as it may need to all be removed later.	
Cover Thickness	Are all excavations ready which will allow the necessary thickness of cover soils to be installed?	
	If yes, can you provide waste transfer documentation for any excavated soils?	

LIMITATIONS & CONSTRAINTS

This report has been prepared for the client(s) listed on the report title page. EPS accepts no liability or responsibility for use of, or reliance upon, this report and / or the information contained within it by third parties.

If third parties have been contracted / consulted during compilation of this report, the validity of any data they may have supplied, and which are included in the report, have been assessed as far as possible by EPS however, EPS cannot guarantee the validity of these data.

No part of this report, or references to it, may be included in published documents of any kind without approval from EPS.

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Where ground investigations have been conducted, these have been limited to the level of detail required for the site in order to achieve the objectives of the investigation.

The report has been written, reviewed and authorised by the persons listed above. It has also undergone EPS' in house quality management inspection. Should you require any further assistance regarding the information provided within the report, please do not hesitate to contact us.

No investigation method is capable of completely identifying all ground conditions that might be present in the soil or groundwater under a site. Where outlined in our report, we have examined the ground beneath a site by constructing a number of boreholes and / or trial pits to recover soil and / or groundwater samples. The locations of these excavations and sampling points are considered to be representative of the condition of the whole site subsurface however, ground conditions are naturally variable and it may be possible that the ground conditions may differ to those encountered during the investigation.

Whilst it is recognised that information contained within this report may assist relevant and suitably qualified professionals, this report does not provide a geotechnical appraisal of ground conditions with respect to suitability of foundations or future structures, nor does it intend to identify a need for any associated geotechnical ground improvement works.

No visible evidence of Japanese Knotweed was identified during the site walkover, however this plant can be difficult to identify in the early stages of growth and therefore it is not always possible to identify its presence at certain times of the year. For this reason EPS cannot confirm that Japanese Knotweed rhizomes do not exist and it is recommended that if it is suspected that this species, or other similarly invasive plants are present at the site, a specialist contractor should be commissioned to make a detailed assessment.

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