

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550



TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	D of E	Job No.:	784-B030162	Instruments Used:	Infrared gas analyser
Project:	Hinckley	Date:	8.12.21	Make / Model:	GA5000
Weather:	Overcast	Monitored By:	SC	Serial Number:	

Installation No.	Elevation of cover (m agl)	Peak ¹		Steady ²					PID (ppm)	Total gas flow rate (l/hr)	Peak CH ₄ flow rate (l/hr)	Peak CO ₂ flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH ₄	CO ₂	CH ₄	CO ₂	O ₂	CO	H ₂ S								
		(% vol)	(% vol)	(% vol)	(% vol)	(% vol)	(ppm)	(ppm)								
BH01	0.00	0.1	3.1	0.1	3.1	16.4	0	0	0.3	0.0	0.000	0.000	973	10.39	13.38	
WS01	0.00	0.1	0.2	0.1	0.2	20.5	0	0	0.2	0.0	0.000	0.000	973	DRY	4.34	
WS02	0.00	0.1	1.8	0.1	1.8	19.8	0	0	0.4	0.0	0.000	0.000	973	DRY	3.20	
WS03	0.00	0.1	2.0	0.1	2.0	17.8	1	0	0.3	0.0	0.000	0.000	972	DRY	3.69	

Background Gas Levels:

	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Atmos (mbar)
Before Monitoring	0.1	0.1	20.9	972
After Monitoring	0.1	0.1	21.1	973

Characteristic Gas Situation	
1	
2	
3	
4	

¹ The peak reading is the maximum recorded level during a monitoring event.

² The steady reading is the level which remained constant after approximately 1 minute.

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GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	D of E	Job No.:	784-B030162	Instruments Used:	Infrared gas analyser									
Project:	Hinckley	Date:	8.2.22	Make / Model:	GA5000									
Weather:	Overcast	Monitored By:	SC	Serial Number:										

Installation No.	Elevation of cover (m agl)	Peak ¹		Steady ²					PID (ppm)	Total gas flow rate (l/hr)	Peak CH ₄ flow rate (l/hr)	Peak CO ₂ flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH ₄	CO ₂	CH ₄	CO ₂	O ₂	CO	H ₂ S								
		(% vol)	(% vol)	(% vol)	(% vol)	(% vol)	(ppm)	(ppm)								
BH01	0.00	0.1	2.9	0.1	2.7	15.6	0	0	0.2	0.1	0.000	0.003	1010	10.22	13.36	
WS01	0.00	0.0	0.1	0.0	0.1	21.4	0	0	0.0	0.0	0.000	0.000	1010	DRY	4.34	
WS02	0.00	0.1	0.8	0.0	0.8	20.2	0	0	0.1	-2.5	-0.003	-0.020	1010	DRY	3.21	
WS03	0.00	0.1	1.2	0.1	1.2	18.6	0	0	0.2	0.0	0.000	0.000	1010	DRY	3.68	

Background Gas Levels:

	CH ₄	CO ₂	O ₂	Atmos
	(%)	(%)	(%)	(mbar)
Before Monitoring	0.1	0.1	20.8	1010
After Monitoring	0.1	0.1	21.1	1010

Characteristic Gas Situation	
1	
2	
3	
4	

¹ The peak reading is the maximum recorded level during a monitoring event.
² The steady reading is the level which remained constant after approximately 1 minute.

7 LABORATORY GEOTECHNICAL ASSESSMENT CERTIFICATES



Contract Number: 57009

Client Ref: **784-B030162**

Report Date: **17-12-2021**

Client PO:

Client **Tetra Tech**
WYG ENVIRONMENT
100 St John Street
London
EC1M 4EH

Contract Title: **Hinckley**
For the attention of: **Richard Tonge**

Date Received: **01-12-2021**

Date Completed: **17-12-2021**

Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	8
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	7
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	10
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	8
BRE Reduced Suite includes pH, water & acid soluble sulphate and total sulphur Sub-contracted Test	2
Water Soluble Sulphate 2:1 extract Sub-contracted Test	2
pH value of soil Sub-contracted Test	2

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:

Emma Sharp (Business Support Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager)

Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (Quality Assistant / Administrator / Health and Safety Coordinator)



Laboratory Report



Contract Number: 57009

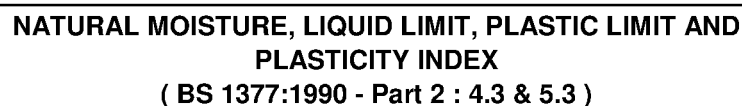
Test Description	Qty
Quick Undrained Triaxial Compression test - single specimen at one confining pressure (100mm or 38mm diameter) BS 1377:1990 - Part 7 : 8 - * UKAS	1
Samples Received - @ Non Accredited Test	28
Disposal of samples for job	1

Notes: Observations and Interpretations are outside the UKAS Accreditation
* - denotes test included in laboratory scope of accreditation
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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Approved Signatories:

Emma Sharp (Business Support Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager)
Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (Quality Assistant / Administrator / Health and Safety Coordinator)

[illegible]

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

The Plasticity Chart (Figure 1) plots Plasticity Index (PI) on the Y-axis (0 to 90) against Liquid Limit (LL) on the X-axis (0 to 120). The chart is divided into five regions: CL (Low Plasticity Clay), CI (Intermediate Plasticity Clay), CH (High Plasticity Clay), CV (High Plasticity Silty Clay), and CE (Extreme Plasticity Clay). A diagonal line (A-line) and a horizontal line (U-line) define the boundaries for classification. Data points are plotted for various soil samples, showing their plasticity characteristics.

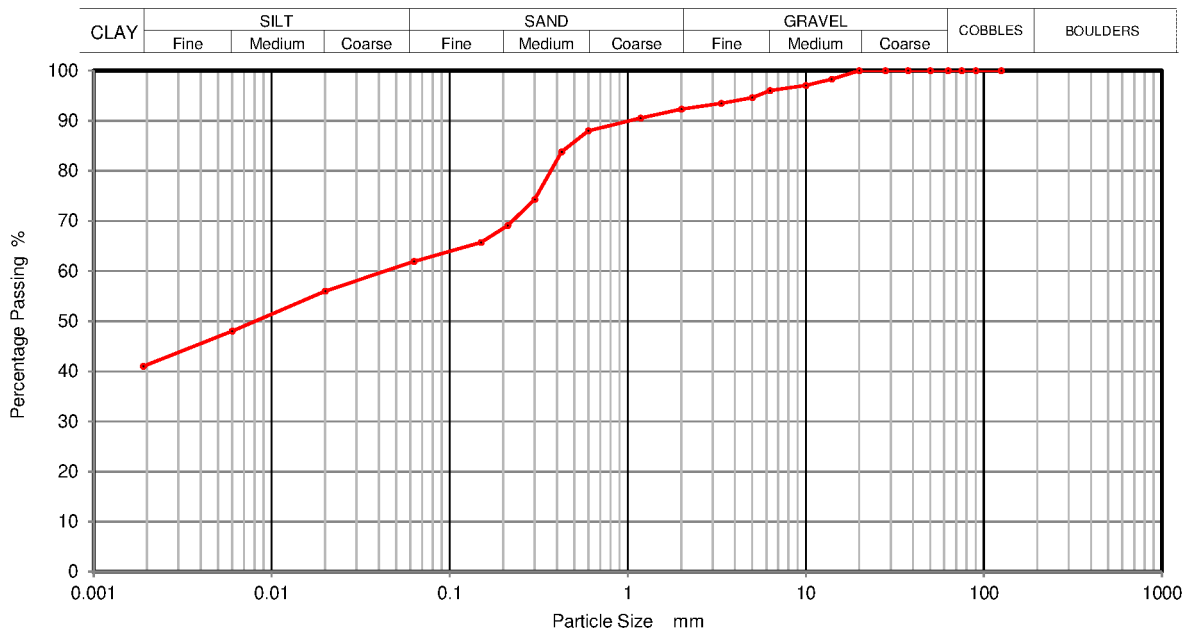
Sample	Liquid Limit (%)	Plasticity Index (%)	Region
1	0	0	CL
2	25	14	CL
3	30	20	CL
4	32	19	CL
5	40	29	CI
6	42	29	CI
7	50	42	CH





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

		Contract Number	57009
		Borehole/Pit No.	BH01
Site Name	Hinckley	Sample No.	2
Soil Description	Brown slightly fine to medium gravelly silty fine to coarse sandy CLAY	Depth Top	1.30
		Depth Base	
Date Tested	14/12/2021	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	56
90	100	0.0060	48
75	100	0.0020	41
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	97		
6.3	96		
5	95		
3.35	93		
2	92		
1.18	91		
0.6	88		
0.425	84		
0.3	74		
0.212	69		
0.15	66		
0.063	62		

Sample Proportions	% dry mass
Cobbles	0
Gravel	8
Sand	30
Silt	21
Clay	41

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	16/12/2021	Richard John
David	Approved	17/12/2021	Paul Evans

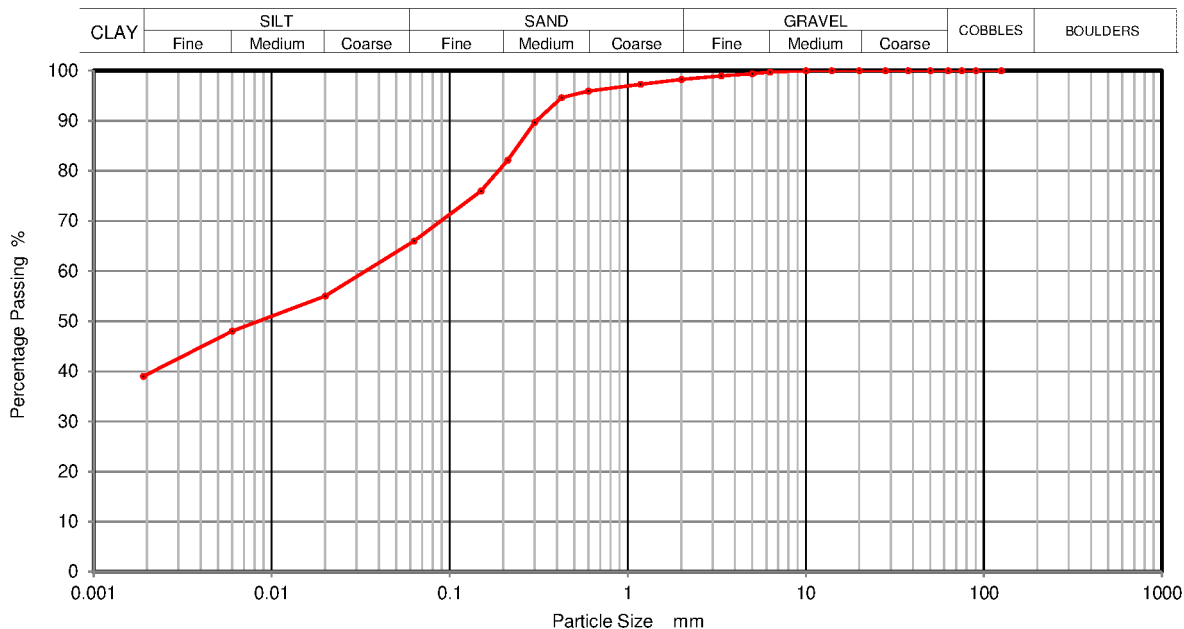




PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Contract Number	57009
Borehole/Pit No.	BH01
Sample No.	4
Depth Top	3.00
Depth Base	
Sample Type	D

Site Name	Hinckley
Soil Description	Reddish brown slightly fine to medium gravelly silty fine to coarse sandy CLAY
Date Tested	14/12/2021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	55
90	100	0.0060	48
75	100	0.0020	39
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	96		
0.425	95		
0.3	90		
0.212	82		
0.15	76		
0.063	66		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	32
Silt	27
Clay	39

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

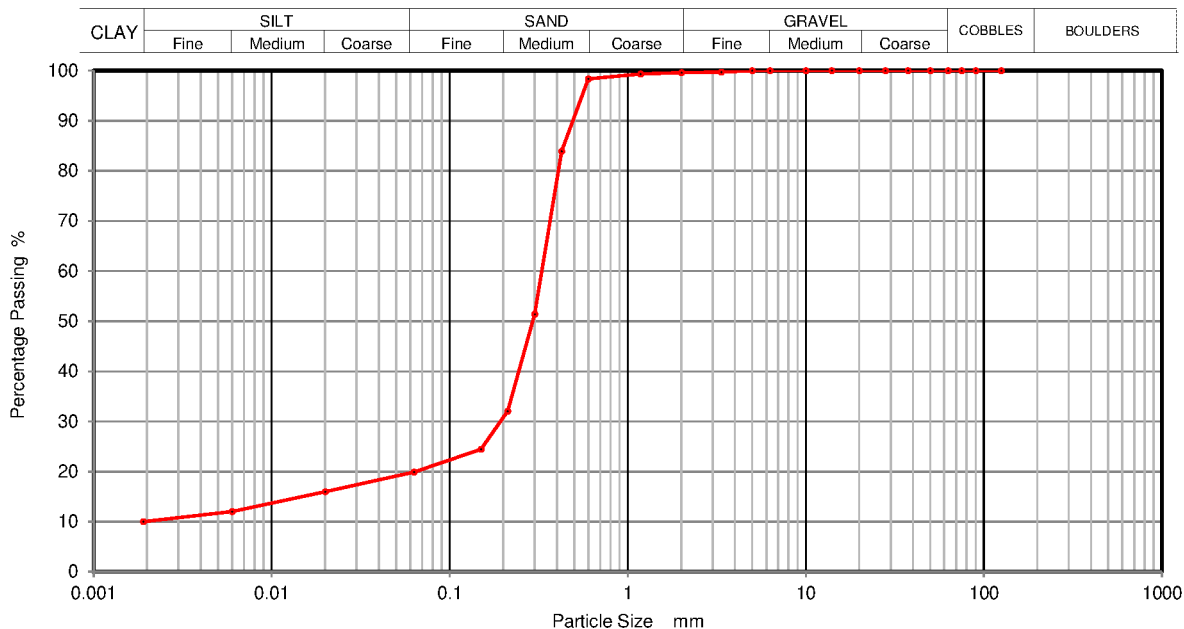
Operator	Checked	16/12/2021	Richard John
David	Approved	17/12/2021	Paul Evans





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

		Contract Number	57009
		Borehole/Pit No.	BH01
Site Name	Hinckley	Sample No.	2
Soil Description	Brown silty clayey fine to coarse SAND	Depth Top	6.00
		Depth Base	6.45
Date Tested	14/12/2021	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	16
90	100	0.0060	12
75	100	0.0020	10
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	84		
0.3	51		
0.212	32		
0.15	24		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	80
Silt	10
Clay	10

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	16/12/2021	Richard John
David	Approved	17/12/2021	Paul Evans





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number 57009

Borehole/Pit No. BH01

Site Name Hinckley

Sample No. 3

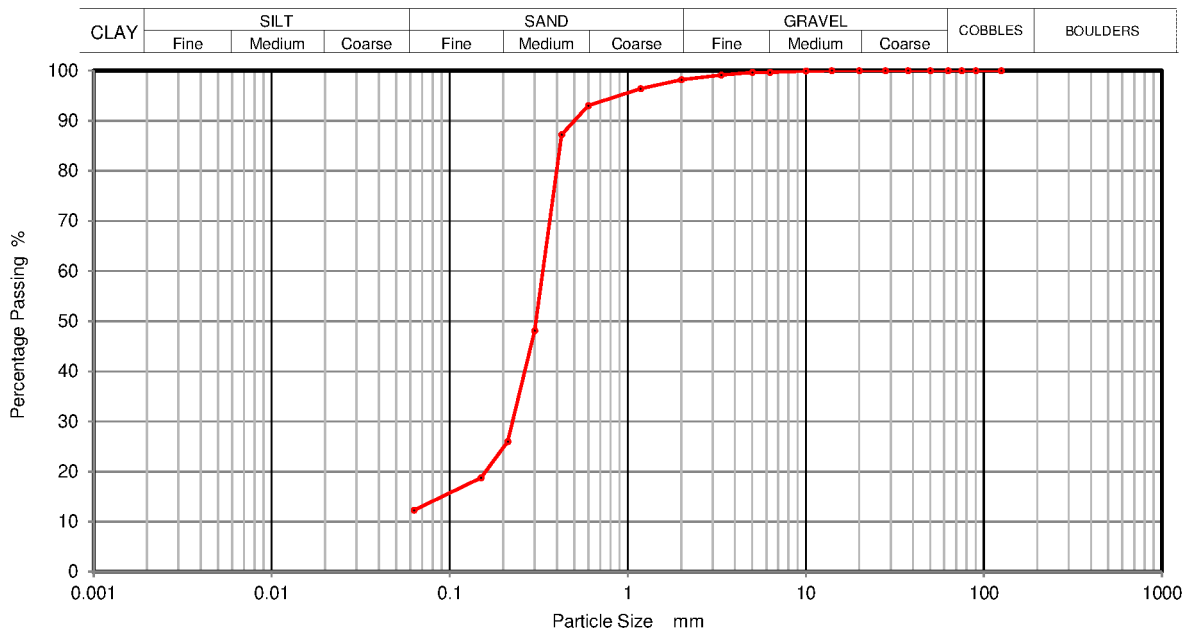
Soil Description Brown slightly fine to medium gravelly clayey/silty fine to coarse SAND

Depth Top 9.00

Depth Base 9.45

Date Tested 14/12/2021

Sample Type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	98		
1.18	96		
0.6	93		
0.425	87		
0.3	48		
0.212	26		
0.15	19		
0.063	12		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	86
Silt and Clay	12

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	16/12/2021	Richard John
David	Approved	17/12/2021	Paul Evans





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number 57009

Borehole/Pit No. BH01

Site Name Hinckley

Sample No. 4

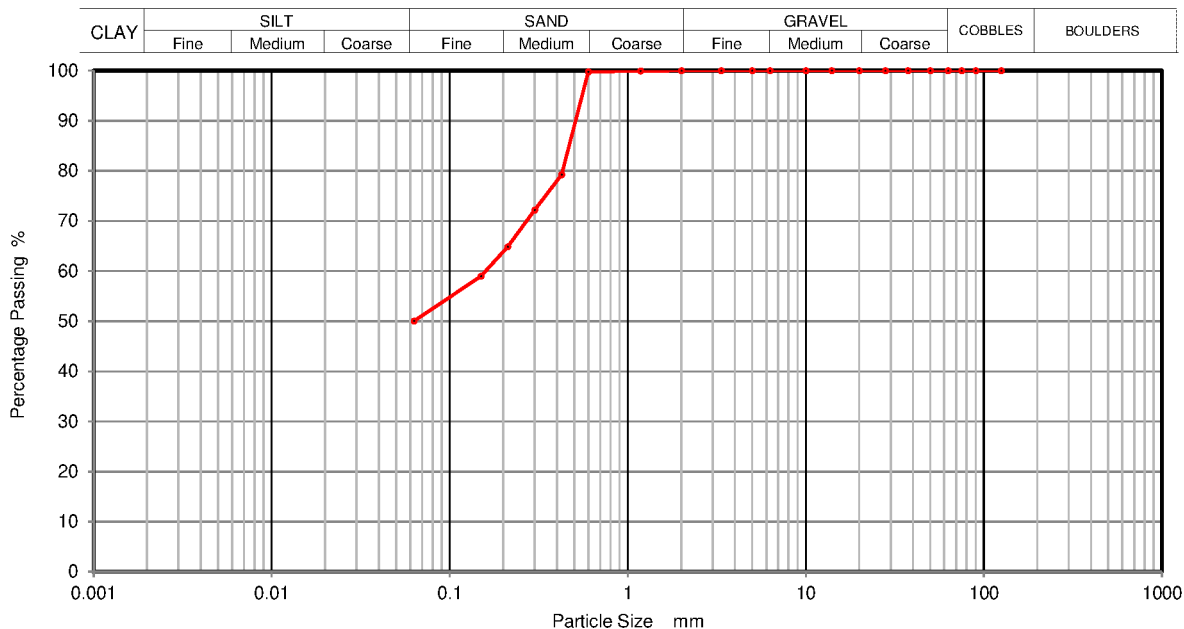
Soil Description Brown silty/clayey fine to medium SAND

Depth Top 14.50

Depth Base 14.95

Date Tested 14/12/2021

Sample Type B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	79		
0.3	72		
0.212	65		
0.15	59		
0.063	50		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	50
Silt and Clay	50

Remarks
Preparation and testing in accordance with BS1377 unless noted below

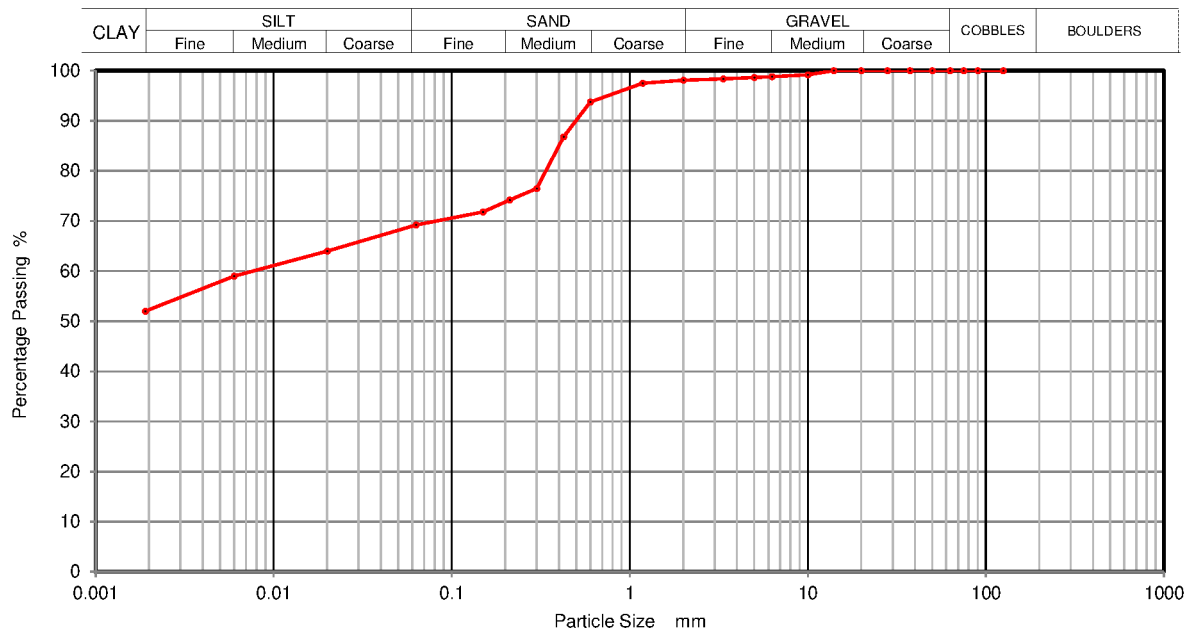
Operator	Checked	16/12/2021	Richard John
David	Approved	17/12/2021	Paul Evans





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

		Contract Number	57009
		Borehole/Pit No.	WS01
Site Name	Hinckley	Sample No.	2
Soil Description	Brown slightly fine to medium gravelly silty fine to coarse sandy CLAY	Depth Top	2.50
		Depth Base	3.00
Date Tested	14/12/2021	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	64
90	100	0.0060	59
75	100	0.0020	52
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	99		
3.35	98		
2	98		
1.18	97		
0.6	94		
0.425	87		
0.3	76		
0.212	74		
0.15	72		
0.063	69		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	29
Silt	17
Clay	52

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	16/12/2021	Richard John
David	Approved	17/12/2021	Paul Evans

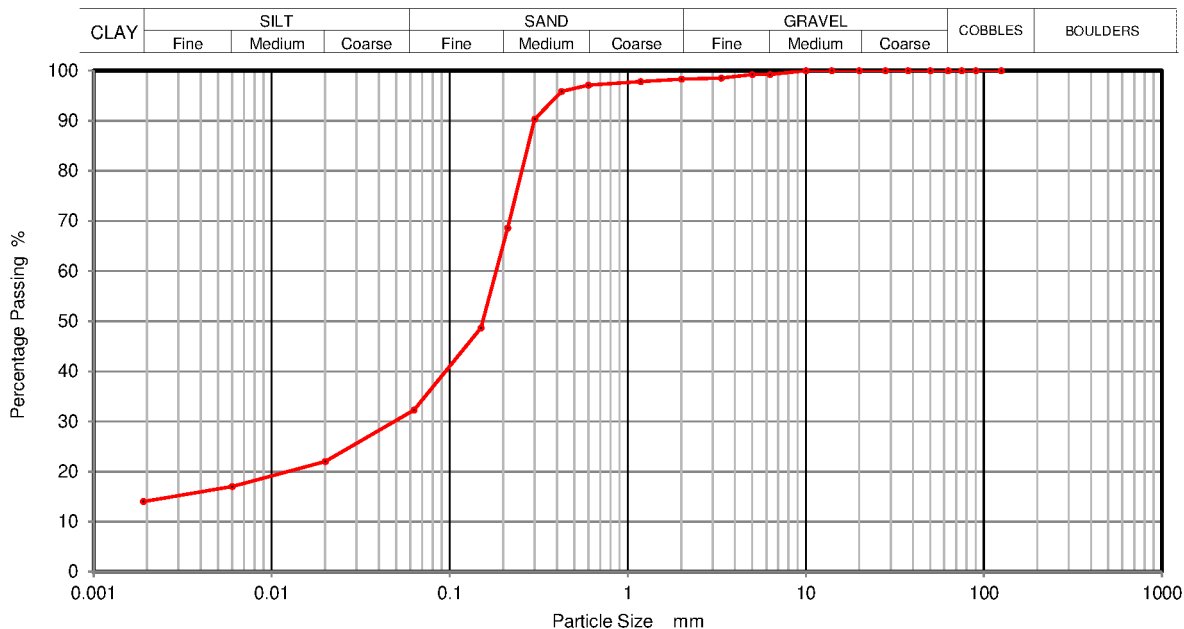




PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Contract Number	57009
Borehole/Pit No.	WS01
Sample No.	4
Depth Top	4.60
Depth Base	5.00
Sample Type	B

Site Name	Hinckley
Soil Description	Reddish brown slightly fine to medium gravelly clayey silty fine to coarse SAND
Date Tested	14/12/2021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	22
90	100	0.0060	17
75	100	0.0020	14
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	97		
0.425	96		
0.3	90		
0.212	69		
0.15	49		
0.063	32		

MC in accordance with BS1377 Part 2 1990 Clause 3.2	
Moisture Content %	11

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	66
Silt	18
Clay	14

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	16/12/2021	Richard John
David	Approved	17/12/2021	Paul Evans



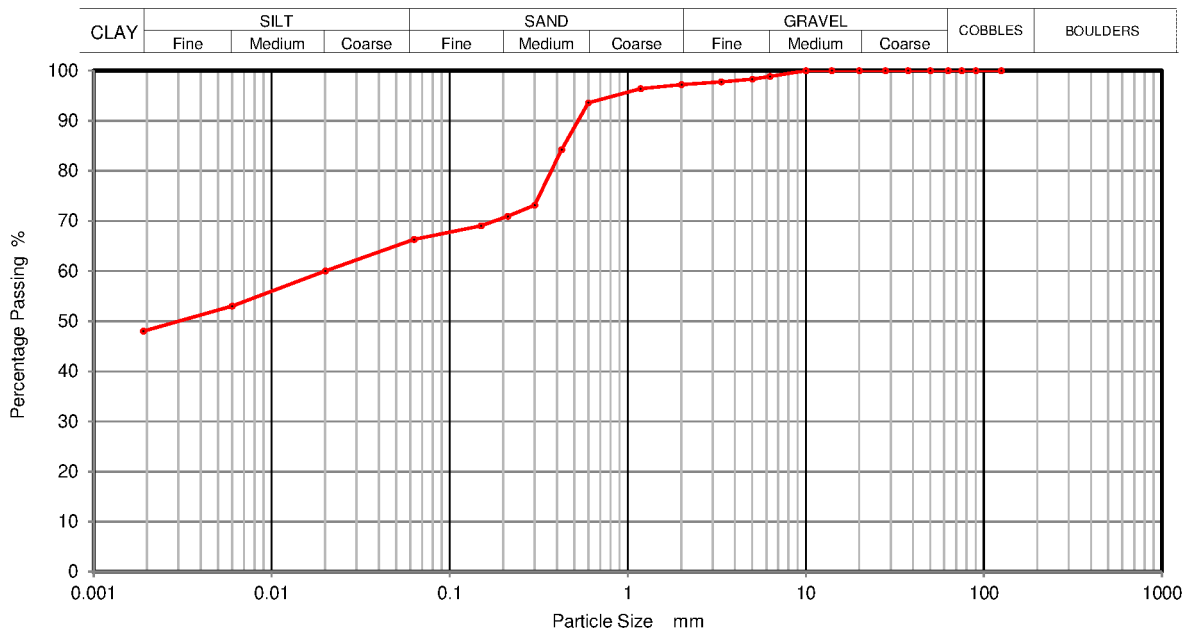
2788



PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Contract Number	57009
Borehole/Pit No.	WS02
Sample No.	2
Depth Top	3.50
Depth Base	3.80
Sample Type	B

Site Name	Hinckley
Soil Description	Reddish brown slightly fine to medium gravelly silty fine to coarse sandy CLAY
Date Tested	14/12/2021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	60
90	100	0.0060	53
75	100	0.0020	48
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	98		
2	97		
1.18	96		
0.6	94		
0.425	84		
0.3	73		
0.212	71		
0.15	69		
0.063	66		

Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	31
Silt	18
Clay	48

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	16/12/2021	Richard John
David	Approved	17/12/2021	Paul Evans

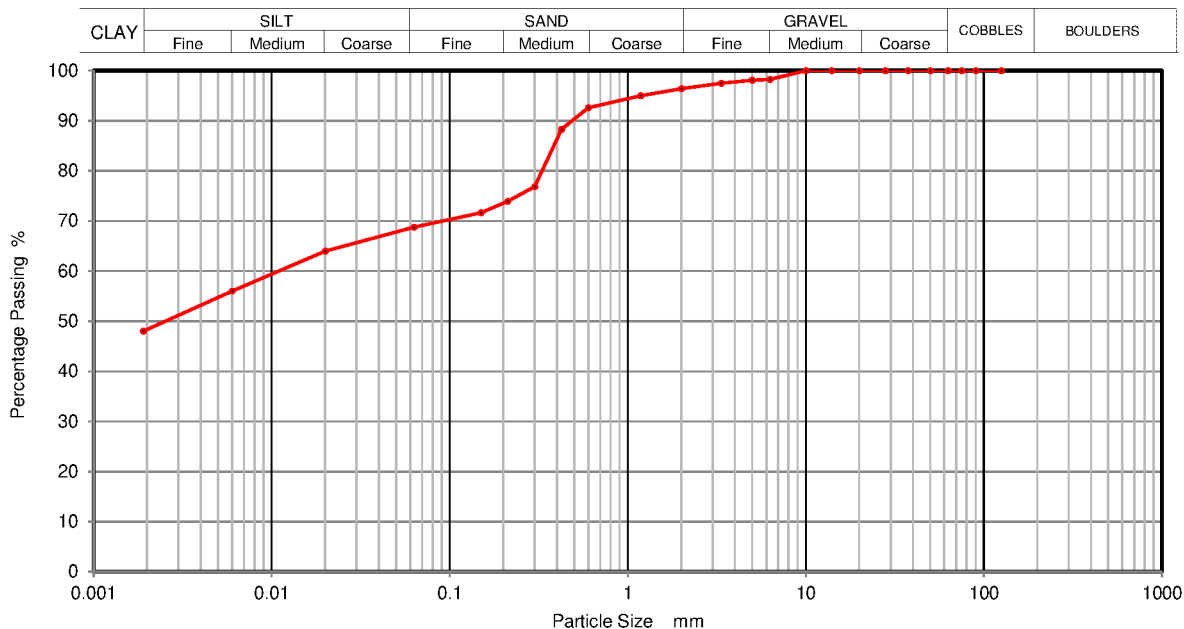




PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Contract Number	57009
Borehole/Pit No.	WS03
Sample No.	2
Depth Top	2.50
Depth Base	3.00
Sample Type	B

Site Name	Hinckley
Soil Description	Reddish brown slightly fine to medium gravelly silty fine to coarse sandy CLAY
Date Tested	14/12/2021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	64
90	100	0.0060	56
75	100	0.0020	48
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	98		
5	98		
3.35	97		
2	96		
1.18	95		
0.6	93		
0.425	88		
0.3	77		
0.212	74		
0.15	72		
0.063	69		

Sample Proportions	% dry mass
Cobbles	0
Gravel	4
Sand	27
Silt	21
Clay	48

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	16/12/2021	Richard John
David	Approved	17/12/2021	Paul Evans

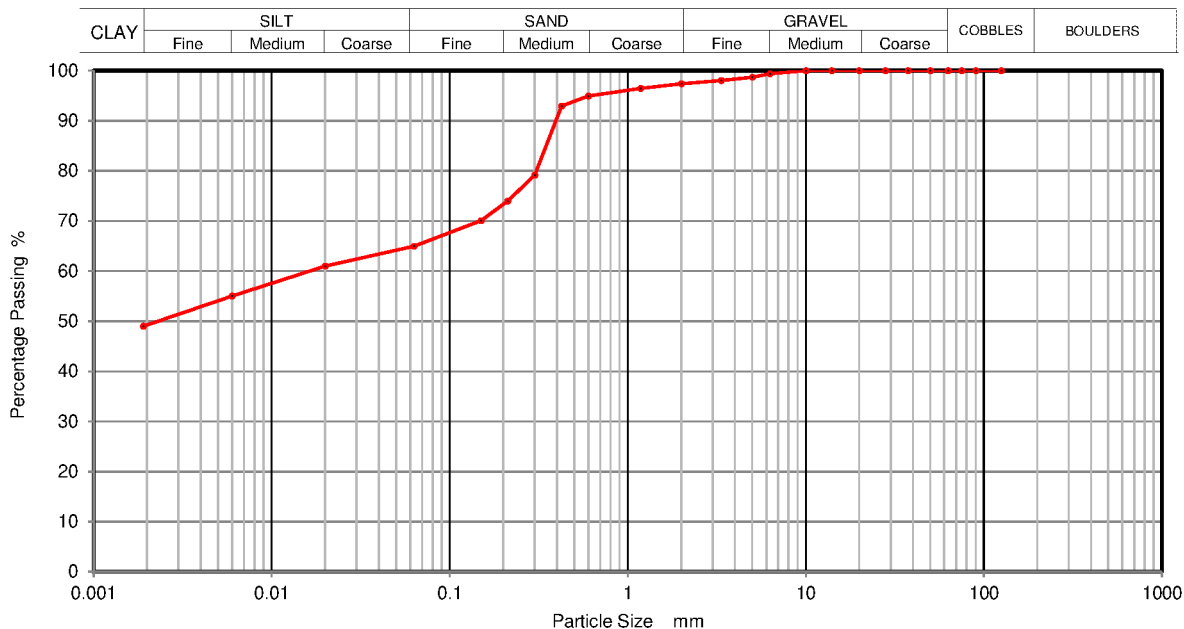




PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Contract Number	57009
Borehole/Pit No.	WS03
Sample No.	3
Depth Top	3.50
Depth Base	3.90
Sample Type	B

Site Name	Hinckley
Soil Description	Reddish brown slightly fine to medium gravelly silty fine to coarse sandy CLAY
Date Tested	14/12/2021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	61
90	100	0.0060	55
75	100	0.0020	49
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	98		
2	97		
1.18	96		
0.6	95		
0.425	93		
0.3	79		
0.212	74		
0.15	70		
0.063	65		

Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	32
Silt	16
Clay	49

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	16/12/2021	Richard John	
David	Approved	17/12/2021	Paul Evans	





**Single Stage Unconsolidated-Undrained Triaxial
Test
BS 1377 : 1990 Part 7 : 8**

Contract Number 57009

Borehole/Pit No. BH01

Site Name Hinckley

Sample No. 1

Soil Description Brown fine to medium gravelly silty CLAY

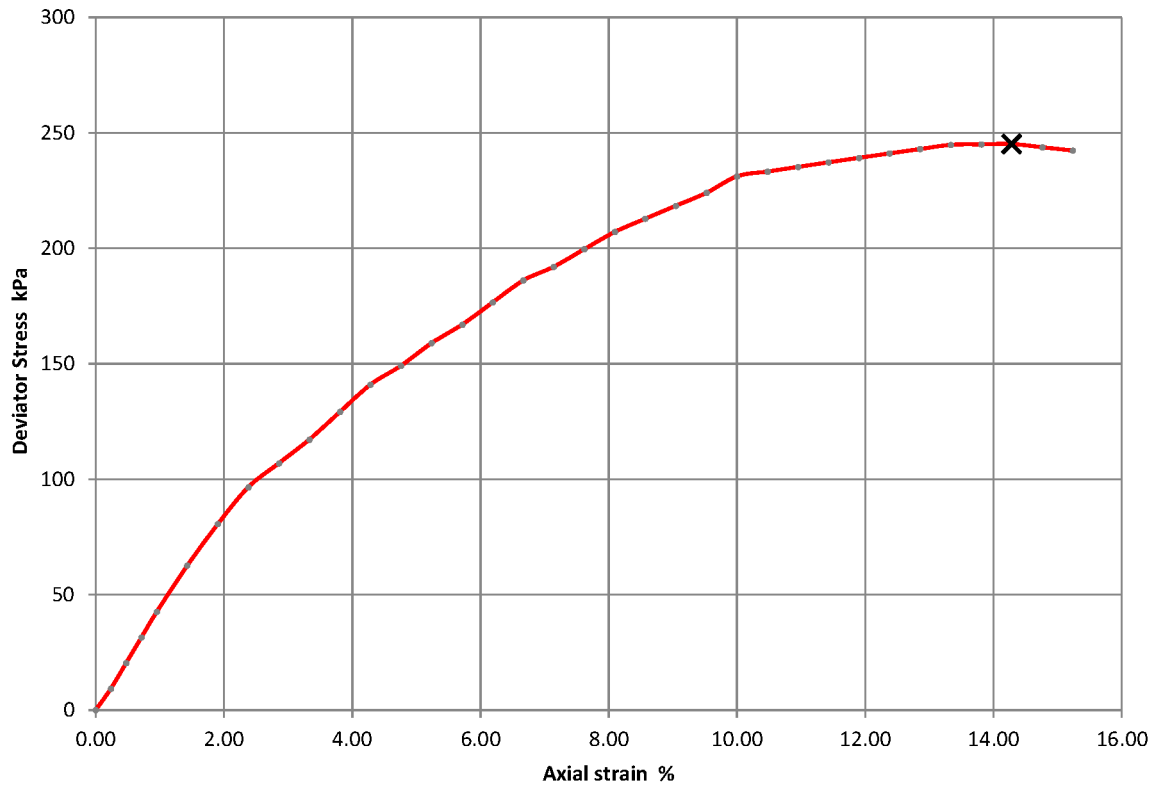
Depth Top (m) 2.50

Depth Base (m)

Date Tested 15/12/2021

Sample Type U

Technician Daniel B



Moisture Content (%)	16
Bulk Density (Mg/m ³)	1.98
Dry Density (Mg/m ³)	1.71
Specimen Length (mm)	210
Specimen Diameter (mm)	105
Cell Pressure (kPa)	50
Deviator Stress (kPa)	245
Undrained Shear Strength (kPa)	123
Failure Strain (%)	14
Mode Of Failure	Brittle
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.43

Checked	16/12/2021	Richard John
Approved	17/12/2021	Paul Evans





ANALYTICAL TEST REPORT

Contract no: 103703

Contract name: Hinckley

Client reference: 784-B030162

Clients name: Geo Site & Testing Services

Clients address: Unit 3 and 4 Heol Aur
Dafen Industrial Estate, Dafen
Llanelli, Carmarthenshire
SA14 8QN

Samples received: 09 December 2021

Analysis started: 09 December 2021

Analysis completed: 16 December 2021

Report issued: 16 December 2021

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

Approved by:



Rachael Burton
Reporting Team Lead

Chemtech Environmental Limited

SOILS

Lab number			103703-1	103703-2	103703-3	103703-4
Sample id			BH01	WS01	WS02	WS03
Depth (m)			1.50-1.95	2.50-3.00	1.50-2.00	1.50-2.00
Sample Type			D3	B2	B1	B1
Date sampled			-	-	-	-
Test	Method	Units				
pH	CE004 ^u	units	8.6	8.6	8.5	8.6
Sulphate (2:1 water soluble)	CE061 ^u	mg/l SO ₄	62	41	72	53
Sulphate (total)	CE062 ^u	mg/kg SO ₄	335	-	363	-
Sulphate (total)	CE062 ^u	% w/w SO ₄	0.03	-	0.04	-
Sulphur (total)	CE119	mg/kg S	159	-	185	-
Sulphur (total)	CE119	% w/w S	0.02	-	0.02	-

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO ₄
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	U	100	mg/kg SO ₄
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	U	0.01	% w/w SO ₄
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

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)
103730-1	BH01	1.50-1.95	Y	All (NSD)
103730-2	WS01	2.50-3.00	Y	All (NSD)
103730-3	WS02	1.50-2.00	Y	All (NSD)
103730-4	WS03	1.50-2.00	Y	All (NSD)

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 6 weeks from initial receipt unless otherwise instructed.

For soils and solids, 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.

8 LABORATORY GEOENVIRONMENTAL ASSESSMENT CERTIFICATES



Tetra Tech
11th Floor, 1 Angel Court,
London
EC2R 7HJ



Attention :	Richard Tonge
Date :	30th November, 2021
Your reference :	B030162
Our reference :	Test Report 21/18688 Batch 1
Location :	Hinckley
Date samples received :	25th November, 2021
Status :	Final Report
Issue :	1

Ten samples were received for analysis on 25th November, 2021 of which seven 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: Tetra Tech
Reference: B030162
Location: Hinckley
Contact: Richard Tonge
EMT Job No: 21/18688

Report : Solid

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

EMT Sample No.	1-3	4-6	10-12	13-15	16-18	28-30					Please see attached notes for all abbreviations and acronyms		
Sample ID	WS01	WS02	IP01	IP02	IP03	WS03							
Depth	0.20	0.30	0.50	0.50	0.50	0.90							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021	20/11/2021							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	25/11/2021	25/11/2021	25/11/2021	25/11/2021	25/11/2021	25/11/2021					LOD/LOR	Units	Method No.
Arsenic #	10.2	6.2	14.8	20.7	16.5	14.4					<0.5	mg/kg	TM30/PM15
Beryllium	1.3	1.2	1.5	1.6	1.6	1.6					<0.5	mg/kg	TM30/PM15
Cadmium #	0.2	0.1	0.3	0.4	0.4	0.4					<0.1	mg/kg	TM30/PM15
Chromium #	55.7	46.0	53.7	62.7	60.4	60.0					<0.5	mg/kg	TM30/PM15
Copper #	23	20	28	36	33	30					<1	mg/kg	TM30/PM15
Lead #	30	13	57	66	90	65					<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	0.2	<0.1					<0.1	mg/kg	TM30/PM15
Nickel #	29.1	28.0	29.3	28.6	26.7	27.6					<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	1	<1	<1	1					<1	mg/kg	TM30/PM15
Vanadium	44	38	41	50	48	45					<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.4	0.8	1.9	1.7	1.6	1.4					<0.1	mg/kg	TM74/PM32
Zinc #	83	64	119	127	108	89					<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<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 #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	0.17	0.36	<0.03	<0.03					<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	0.09	0.09	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	0.38	0.71	0.09	0.07					<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	0.33	0.57	0.08	0.06					<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	0.21	0.30	0.09	<0.06					<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	0.18	0.30	0.05	0.05					<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	0.33	0.44	0.10	<0.07					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	0.16	0.23	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	0.15	0.20	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	0.15	0.15	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	2.2	3.4	<0.6	<0.6					<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	0.24	0.32	0.07	<0.05					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	0.09	0.12	0.03	<0.02					<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	94	92	96	95	96	98					<0	%	TM4/PM8
EPH >C10-C40 (EH_1D_Total) #	<30	<30	258	182	30	<30					<30	mg/kg	TM5/PM8
GRO (>C5-C10) (HS_1D_Total)	<0.1	<0.1	0.3	<0.1	<0.1	<0.1					<0.1	mg/kg	TM36/PM12
MTBE #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					<0.005	mg/kg	TM36/PM12
Benzene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					<0.005	mg/kg	TM36/PM12
Toluene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					<0.005	mg/kg	TM36/PM12
Ethylbenzene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					<0.005	mg/kg	TM36/PM12
m/p-Xylene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					<0.005	mg/kg	TM36/PM12
o-Xylene #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					<0.005	mg/kg	TM36/PM12

Client Name: Tetra Tech
Reference: B030162
Location: Hinckley
Contact: Richard Tonge
EMT Job No: 21/18688

[illegible]

Element Materials Technology

Client Name: Tetra Tech
Reference: B030162
Location: Hinckley
Contact: Richard Tonge
EMT Job No: 21/18688

Report : CEN 10:1 1 Batch

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

EMT Sample No.	22-24	28-30										
Sample ID	WS01	WS03										
Depth	0.90	0.90										
COC No / misc												
Containers	V J T	V J T										
Sample Date	20/11/2021	20/11/2021										
Sample Type	Soil	Soil										
Batch Number	1	1										
Date of Receipt	25/11/2021	25/11/2021										
										LOD/LOR	Units	Method No.
Dissolved Antimony [#]	<2	2								<2	ug/l	TM30/PM14
Dissolved Arsenic [#]	<2.5	<2.5								<2.5	ug/l	TM30/PM14
Dissolved Barium [#]	79	29								<3	ug/l	TM30/PM14
Dissolved Boron [#]	25	15								<12	ug/l	TM30/PM14
Dissolved Cadmium [#]	<0.5	<0.5								<0.5	ug/l	TM30/PM14
Dissolved Chromium [#]	<1.5	<1.5								<1.5	ug/l	TM30/PM14
Dissolved Copper [#]	<7	<7								<7	ug/l	TM30/PM14
Dissolved Lead [#]	<5	<5								<5	ug/l	TM30/PM14
Dissolved Mercury [#]	<1	<1								<1	ug/l	TM30/PM14
Dissolved Nickel [#]	<2	<2								<2	ug/l	TM30/PM14
Dissolved Selenium [#]	<3	<3								<3	ug/l	TM30/PM14
Dissolved Zinc [#]	<3	<3								<3	ug/l	TM30/PM14
PAH MS												
Naphthalene	<0.1 ^{SV}	<0.1								<0.1	ug/l	TM4/PM30
Acenaphthylene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Acenaphthene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Fluorene	0.03 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Phenanthrene	0.03 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Anthracene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Fluoranthene	0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Pyrene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Benzo(a)anthracene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Chrysene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Benzo(bk)fluoranthene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Benzo(a)pyrene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Indeno(123cd)pyrene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Dibenzo(ah)anthracene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
PAH 16 Total	<0.1 ^{SV}	<0.1								<0.1	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01 ^{SV}	<0.01								<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	67 ^{SV}	73								<0	%	TM4/PM30
EPH (C8-C44)	<10	<10								<10	ug/l	TM5/PM30
GRO (>C5-C10)	<100	<100								<100	ug/l	TM36/PM69
Total Phenols HPLC	<0.005	<0.005								<0.005	mg/l	TM26/PM0
Sulphate as SO ₄ [#]	13.7	3.7								<0.5	mg/l	TM38/PM0
Ammoniacal Nitrogen as NH ₄ [#]	0.10	0.03								<0.03	mg/l	TM38/PM0
pH	7.61	6.50								<0.01	pH units	TM73/PM0

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Tetra Tech
Reference: B030162
Location: Hinckley
Contact: Richard Tonge
EMT Job No: 21/18688

Report : CEN 10:1 1 Batch

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

[illegible]

Client Name: Tetra Tech
Reference: B030162
Location: Hinckley
Contact: Richard Tonge

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). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

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.	Date Of Analysis	Analysis	Result
21/18688	1	WS01	0.20	3	26/11/2021	General Description (Bulk Analysis)	Soil/Stone
					26/11/2021	Asbestos Fibres	NAD
					26/11/2021	Asbestos ACM	NAD
					26/11/2021	Asbestos Type	NAD
					26/11/2021	Asbestos Level Screen	NAD
21/18688	1	WS02	0.30	6	26/11/2021	General Description (Bulk Analysis)	Soil/Stone
					26/11/2021	Asbestos Fibres	NAD
					26/11/2021	Asbestos ACM	NAD
					26/11/2021	Asbestos Type	NAD
					26/11/2021	Asbestos Level Screen	NAD
21/18688	1	IP01	0.50	12	26/11/2021	General Description (Bulk Analysis)	Soil/Stone
					26/11/2021	Asbestos Fibres	NAD
					26/11/2021	Asbestos ACM	NAD
					26/11/2021	Asbestos Type	NAD
					26/11/2021	Asbestos Level Screen	NAD
21/18688	1	IP02	0.50	15	26/11/2021	General Description (Bulk Analysis)	Soil/Stone
					26/11/2021	Asbestos Fibres	NAD
					26/11/2021	Asbestos ACM	NAD
					26/11/2021	Asbestos Type	NAD
					26/11/2021	Asbestos Level Screen	NAD
21/18688	1	IP03	0.50	18	26/11/2021	General Description (Bulk Analysis)	Soil/Stone
					26/11/2021	Asbestos Fibres	NAD
					26/11/2021	Asbestos ACM	NAD
					26/11/2021	Asbestos Type	NAD
					26/11/2021	Asbestos Level Screen	NAD
21/18688	1	WS03	0.90	30	26/11/2021	General Description (Bulk Analysis)	Soil/Stone
					26/11/2021	Asbestos Fibres	NAD
					26/11/2021	Asbestos ACM	NAD
					26/11/2021	Asbestos Type	NAD
					26/11/2021	Asbestos Level Screen	NAD

Client Name: Tetra Tech
Reference: B030162
Location: Hinckley
Contact: Richard Tonge

[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.: 21/18688

SOILS

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.

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.

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.

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.

Please include all sections of this report if it is reproduced

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.

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: 21/18688

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.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.			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.			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 GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	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 CO ₂ 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.	PM0	No preparation is required.			AR	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.	Yes		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 USEPA 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes		AR	Yes

EMT Job No: 21/18688

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
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.			AD	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
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
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.	PM69	One part soil is mixed with 10 parts water in a vial leaving no headspace. The mixture is shaken and then left to leach for 24 hours before VOC analysis.			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	PM0	No preparation is required.	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		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 First edition (2006)	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.	PM0	No preparation is required.			AR	Yes
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

EMT Job No: 21/18688

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM75	Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.			AR	Yes
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.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				
NONE	No Method Code	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.			AR	

Tetra Tech
11th Floor, 1 Angel Court,
London
EC2R 7HJ



Attention :	Richard Tonge
Date :	24th December, 2021
Your reference :	B030162
Our reference :	Test Report 21/19421 Batch 1
Location :	Hinckley Academy
Date samples received :	4th December, 2021
Status :	Final report
Issue :	1

Three samples were received for analysis on 4th December, 2021 of which two 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:



Phil Sommerton BSc
Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Tetra Tech
Reference: B030162
Location: Hinckley Academy
Contact: Richard Tonge
EMT Job No: 21/19421

Report : Solid

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

EMT Sample No.	1-4	5-8									Please see attached notes for all abbreviations and acronyms		
Sample ID	IP05	IP05											
Depth	0.10	0.20											
COC No / misc													
Containers	V J T	V J T											
Sample Date	02/12/2021	02/12/2021											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	04/12/2021	04/12/2021									LOD/LOR	Units	Method No.
Arsenic #	10.6	7.4									<0.5	mg/kg	TM30/PM15
Beryllium	1.2	3.1									<0.5	mg/kg	TM30/PM15
Cadmium #	0.5	1.5									<0.1	mg/kg	TM30/PM15
Chromium #	72.1	35.9									<0.5	mg/kg	TM30/PM15
Copper #	24	53									<1	mg/kg	TM30/PM15
Lead #	62	72									<5	mg/kg	TM30/PM15
Mercury #	0.1	0.2									<0.1	mg/kg	TM30/PM15
Nickel #	22.7	48.9									<0.7	mg/kg	TM30/PM15
Selenium #	1	<1									<1	mg/kg	TM30/PM15
Vanadium	42	62									<1	mg/kg	TM30/PM15
Water Soluble Boron #	2.1	2.1									<0.1	mg/kg	TM74/PM32
Zinc #	160	546									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.14	<0.03									<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.28	<0.03									<0.03	mg/kg	TM4/PM8
Pyrene #	0.21	<0.03									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.14	<0.06									<0.06	mg/kg	TM4/PM8
Chrysene #	0.11	<0.02									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.18	<0.07									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.11	<0.04									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.07	<0.04									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.07	<0.04									<0.04	mg/kg	TM4/PM8
PAH 16 Total	1.3	<0.6									<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.13	<0.05									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.05	<0.02									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	99	93									<0	%	TM4/PM8
EPH >C10-C40 (EH_1D_Total) #	62	<30									<30	mg/kg	TM5/PM8
GRO (>C5-C10) (HS_1D_Total)	0.2										<0.1	mg/kg	TM36/PM12
MTBE #	<0.005										<0.005	mg/kg	TM36/PM12
Benzene #	<0.005										<0.005	mg/kg	TM36/PM12
Toluene #	0.015										<0.005	mg/kg	TM36/PM12
Ethylbenzene #	<0.005										<0.005	mg/kg	TM36/PM12
m/p-Xylene #	<0.005										<0.005	mg/kg	TM36/PM12
o-Xylene #	<0.005										<0.005	mg/kg	TM36/PM12

Element Materials Technology

Client Name: Tetra Tech
Reference: B030162
Location: Hinckley Academy
Contact: Richard Tonge
EMT Job No: 21/19421

Report : Solid

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

[illegible]

Client Name: Tetra Tech
Reference: B030162
Location: Hinckley Academy
Contact: Richard Tonge

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). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

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

[illegible]

Client Name: Tetra Tech
Reference: B030162
Location: Hinckley Academy
Contact: Richard Tonge

[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.: 21/19421

SOILS

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.

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.

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.

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.

Please include all sections of this report if it is reproduced

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.

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: 21/19421

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 GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	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	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.	Yes		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.			AD	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 GC/FID 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
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 GC/FID 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

EMT Job No: 21/19421

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
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		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 First edition (2006)	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
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
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.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

Tetra Tech
11th Floor, 1 Angel Court,
London
EC2R 7HJ



Attention :	Richard Tonge
Date :	17th December, 2021
Your reference :	B030162
Our reference :	Test Report 21/19883 Batch 1
Location :	Hinckley
Date samples received :	11th December, 2021
Status :	Final Report
Issue :	1

One sample was received for analysis on 11th December, 2021 and was 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: Tetra Tech
Reference: B030162
Location: Hinckley
Contact: Richard Tonge
EMT Job No: 21/19883

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HN0₃

EMT Sample No.	1-7										Please see attached notes for all abbreviations and acronyms		
Sample ID	BH01												
Depth													
COC No / misc													
Containers	VHHNNP G												
Sample Date	08/12/2021												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	11/12/2021										LOD/LOR	Units	Method No.
Dissolved Antimony [#]	<2										<2	ug/l	TM30/PM14
Dissolved Arsenic [#]	<2.5										<2.5	ug/l	TM30/PM14
Dissolved Barium [#]	199										<3	ug/l	TM30/PM14
Dissolved Boron	64										<12	ug/l	TM30/PM14
Dissolved Cadmium [#]	<0.5										<0.5	ug/l	TM30/PM14
Total Dissolved Chromium [#]	3.0										<1.5	ug/l	TM30/PM14
Dissolved Copper [#]	<7										<7	ug/l	TM30/PM14
Dissolved Lead [#]	<5										<5	ug/l	TM30/PM14
Dissolved Mercury [#]	<1										<1	ug/l	TM30/PM14
Dissolved Nickel [#]	<2										<2	ug/l	TM30/PM14
Dissolved Selenium [#]	<3										<3	ug/l	TM30/PM14
Dissolved Zinc [#]	32										<3	ug/l	TM30/PM14
PAH MS													
Naphthalene	<0.1										<0.1	ug/l	TM4/PM30
Acenaphthylene	<0.01										<0.01	ug/l	TM4/PM30
Acenaphthene	<0.01										<0.01	ug/l	TM4/PM30
Fluorene	<0.01										<0.01	ug/l	TM4/PM30
Phenanthrene	<0.01										<0.01	ug/l	TM4/PM30
Anthracene	<0.01										<0.01	ug/l	TM4/PM30
Fluoranthene	<0.01										<0.01	ug/l	TM4/PM30
Pyrene	0.01										<0.01	ug/l	TM4/PM30
Benzo(a)anthracene	<0.01										<0.01	ug/l	TM4/PM30
Chrysene	<0.01										<0.01	ug/l	TM4/PM30
Benzo(bk)fluoranthene	<0.01										<0.01	ug/l	TM4/PM30
Benzo(a)pyrene	<0.01										<0.01	ug/l	TM4/PM30
Indeno(123cd)pyrene	<0.01										<0.01	ug/l	TM4/PM30
Dibenzo(ah)anthracene	<0.01										<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene	<0.01										<0.01	ug/l	TM4/PM30
PAH 16 Total	<0.1										<0.1	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01										<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01										<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	70										<0	%	TM4/PM30
GRO (>C5-C10)	<10										<10	ug/l	TM36/PM12
EPH (C8-C44)	<10										<10	ug/l	TM5/PM30
Phenol [#]	<0.01										<0.01	mg/l	TM26/PM0
Sulphate as SO4 [#]	57.9										<0.5	mg/l	TM38/PM0
Ammoniacal Nitrogen as NH4 [#]	0.11										<0.03	mg/l	TM38/PM0

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[illegible]

Client Name: Tetra Tech
Reference: B030162
Location: Hinckley
Contact: Richard Tonge

[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.: 21/19883

SOILS

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.

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.

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.

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.

Please include all sections of this report if it is reproduced

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.

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: 21/19883

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
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
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.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.	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	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
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	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	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.				
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	PM0	No preparation is required.	Yes			
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.	PM0	No preparation is required.	Yes			
TM75	Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.	Yes			

9 QUALITATIVE RISK ASSESSMENT MATRIX

This qualitative risk assessment has been undertaken in accordance with CIRIA C552: Contaminated Land Risk Assessment, A Guide to Good Practice (Rudland et al., 2001). The CIRIA C552 risk categories and the assessment methodology are detailed in the following Table 15.

Table 15 Definition of Magnitude of Consequence

Category	Definition
Severe	Acute risks to human health, catastrophic damage to buildings/property, major pollution of controlled waters.
Medium	Chronic risk to human health, pollution of sensitive controlled waters, significant effects on sensitive ecosystems or species, significant damage to buildings or structures.
Mild	Pollution of non-sensitive waters, minor damage to buildings or structures.
Minor	Requirement for protective equipment during site works to mitigate health effects, damage to non-sensitive ecosystems or species.

The likelihood of an event (probability) takes into account both the presence of the hazard and target and the integrity of the pathway and has been assessed based on the categories given in Table 16.

Table 16 Definition of Probability of Exposure

Category	Definition
High Likelihood	Pollutant linkage may be present, and risk is almost certain to occur in long term, or there is evidence of harm to the receptor.
Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term.
Low Likelihood	Pollutant linkage may be present, and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Unlikely	Pollutant linkage may be present, but the circumstances under which harm would occur are improbable.

The potential severity of the risk and the probability of the risk occurring have been combined in accordance with the matrix presented in Table 17, in order to give a level of risk for each potential hazard.

Table 17 Risk Assessment Matrix

		Potential Severity			
		Severe	Medium	Mild	Minor
Probability of Risk	High Likelihood	Very High	High	Moderate	Low / Moderate
	Likely	High	Moderate	Low / Moderate	Low
	Low Likelihood	Moderate	Low / Moderate	Low	Very Low
	Unlikely	Low / Moderate	Low	Very Low	Very Low