

Appendix G – Photographic Record – Trial pits



Photo 1: Trial Pit TP01



Photo 2: Trial Pit TP01 Spoil



Photo 3: Trial Pit TP02



Photo 4: Trial Pit TP02 Spoil



Photo 5: Trial Pit TP03



Photo 6: Trial Pit TP03 Spoil



Photo 7: Trial Pit TP04



Photo 8: Trial Pit TP04 Spoil



Photo 9: Trial Pit TP05



Photo 10: Trial Pit TP05 Spoil



Photo 11: Trial Pit TP06



Photo 12: Trial Pit TP06 Spoil



Photo 13: Trial Pit TP07



Photo 14: Trial Pit TP07 Spoil



Photo 15: Trial Pit TP08



Photo 16: Trial Pit TP08 Spoil

Appendix H – Chemical Results Summary Tables

CHEMICAL SUMMARY - METALS & INORGANICS (SOILS)

Client Sample No	Units	Limit of Detection (LoD)	GAC*	WS01	WS03	TP03	WS04	WS05
Client Sample ID				ES1	ES1	ES1	ES1	ES1
Depth to Top				0.10	0.05	0.20	0.10	0.30
Soil Type				BSF	TS	BSF	BSF	BSF
% Stones >10mm	% w/w	0.1		-	-	-	-	-
pH	pH	0.01	-	7.76	6.44	6.41	6.66	6.51
Sulphate BRE (water sol 2:1)	mg/l	10	-	-	-	-	-	-
Sulphate BRE (acid sol)	% w/w	0.02	-	-	0.03	-	0.04	0.03
Sulphur BRE (total)	% w/w	0.01	-	-	0.01	-	0.02	0.02
Cyanide (total)	mg/kg	1	-	-	-	-	-	-
Phenols - Total by HPLC	mg/kg	0.2	-	-	-	-	-	-
Organic matter	% w/w	0.1	-	0.2	1.6	0.5	2.2	2.4
Arsenic	mg/kg	1	640	-	4	-	3	2
Cadmium	mg/kg	0.5	410	0.8	0.8	0.8	0.9	1
Copper	mg/kg	1	68000	7	8	7	12	14
Chromium	mg/kg	1	8600	20	18	20	26	25
Chromium (hexavalent)	mg/kg	1	21	-	-	-	-	-
Lead	mg/kg	1	2330	7	15	8	22	24
Mercury	mg/kg	0.17	320	-	-	-	-	-
Nickel	mg/kg	1	980	24	16	21	25	24
Selenium	mg/kg	1	12000	-	-	1	1	1
Zinc	mg/kg	5	730000	32	35	30	53	59
Asbestos in Soil (inc. matrix) ^				NAD	NAD	NAD	NAD	NAD
Asbestos in soil				N/A	N/A	N/A	N/A	N/A

* GACs - Industrial and Commercial

Concentrations in excess of the GAC

Elevated Concentrations not exceeding the GAC

Not detected

CHEMICAL SUMMARY - POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (SOILS)

Client Sample No	Units	Limit of Detection (LoD)	GAC*	WS01	WS03	TP03	WS04	WS05
Client Sample ID				ES1	ES1	ES1	ES1	ES1
Depth to Top				0.10	0.05	0.20	0.10	0.30
Soil Type				BSF	TS	BSF	BSF	BSF
Acenaphthene	mg/kg	0.01	84000	-	-	-	-	-
Acenaphthylene	mg/kg	0.01	83000	-	-	-	-	-
Anthracene	mg/kg	0.02	520000	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.04	170	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.04	35	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	44	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	3900	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.07	1200	-	-	-	-	-
Chrysene	mg/kg	0.06	350	-	-	-	-	-
Dibenzo(ah)anthracene	mg/kg	0.04	3.5	-	-	-	-	-
Fluoranthene	mg/kg	0.08	23000	-	-	-	-	-
Fluorene	mg/kg	0.01	63000	-	-	-	-	-
I-eno(123-cd)pyrene	mg/kg	0.03	500	-	-	-	-	-
Naphthalene	mg/kg	0.03	190	-	-	-	-	-
Phenanthrene	mg/kg	0.03	22000	-	-	-	-	-
Pyrene	mg/kg	0.07	54000	-	-	-	-	-
Total PAH-16MS	mg/kg	0.01		-	-	-	-	-

* GACs - Industrial and Commercial

Concentrations in excess of the GAC
Elevated Concentrations not exceeding the GAC
Not detected

CHEMICAL SUMMARY - TOTAL PETROLEUM HYDROCARBONS (TPH) (SOILS)

Client Sample No	Units	Limit of Detection (LoD)	GAC*	WS01	WS03	TP03	WS04	WS05
Client Sample ID				ES1	ES1	ES1	ES1	ES1
Depth to Top				0.10	0.05	0.20	0.10	0.30
Soil Type				BSF	TS	BSF	BSF	BSF
>C6-C8	mg/kg	5	2000	-	-	-	-	-
>C8-C10	mg/kg	1	9700	1	-	-	-	-
>C10-C12	mg/kg	1	36000	3	-	-	-	-
>C12-C16	mg/kg	2	28000	-	-	-	-	-
>C16-C21	mg/kg	2	28000	-	-	-	-	-
>C21-C40	mg/kg	5	28000	10	6	-	7	8
Total TPH Banded 1	mg/kg	5		14	6	-	7	8

* GACs - Industrial and Commercial

Concentrations in excess of the GAC
Elevated Concentrations not exceeding the GAC
Not detected

Appendix I – Groundwater and Ground Gas Monitoring Summary Tables

Groundwater and Gas Monitoring Data

Monitoring Point		Date	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		Comments																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			Methane (%v/v)		%LEL		Carbon Dioxide (%v/v)		Carbon Monoxide (ppmv)		Hydrogen Sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to level to equalise (secs)	Water level (mbgl)	Depth of well (m)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady			Min.	Steady						Peak	Steady																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
WS01		30/12/2020	0.0	0.0	0.0	0.0	3.8	3.8	0.0	0.0	0.0	0.0	0.0	0.0	17.2	17.2	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0

Groundwater and Gas Monitoring Data

Monitoring Point		Date	GAS CONCENTRATIONS										FLOW DATA				WEATHER			Gas Screening Value (l/hr)		Is CH4 typically <1%?	Is CO2 typically <5%?	Characteristic Gas Situation (CS)	Traffic Lights
			Methane (%v/v)		%LEL		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Flowrate (l/hr)		Differential borehole Pressure (Pa)	flow to equalise (secs)	Air Temperature (°C)	Barometric Pressure (mb)	Methane	Carbon Dioxide							
			Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady	Peak	Steady													
WS01		30/12/2020	0.0	0.0	0.0	0.0	3.8	3.8	17.2	17.2	0.0	0.0	0.09	NA	2	1003	0.000	0.000	Y	Y		CS1	NA		
WS01		07/01/2020	0.0	0.0	0.0	0.0	3.4	3.4	17.2	17.2	0.0	0.0	-0.19	NA	-2	1011	0.000	0.000	Y	Y		CS1	NA		
WS01		14/01/2020	0.0	0.0	0.0	0.0	3.9	3.9	16.3	16.3	0.0	0.0	-1.19	NA	9	1008	0.000	0.000	Y	Y		CS1	NA		
WS02		30/12/2020	0.0	0.0	0.0	0.0	1.7	1.7	18.2	18.2	0.0	0.0	0.19	NA	2	1003	0.000	0.000	Y	Y		CS1	NA		
WS02		07/01/2020	0.0	0.0	0.0	0.0	4.7	4.7	9.0	9.0	0.0	0.0	-0.02	NA	-2	1011	0.000	0.000	Y	Y		CS1	NA		
WS02		14/01/2020	0.0	0.0	0.0	0.0	4.6	4.6	11.0	11.0	0.0	0.0	-1.13	NA	9	1008	0.000	0.000	Y	Y		CS1	NA		
WS03		30/12/2020	0.0	0.0	0.0	0.0	0.4	0.4	19.7	19.7	0.0	0.0	0.21	NA	2	1003	0.000	0.000	Y	Y		CS1	NA		
WS03		07/01/2020	0.0	0.0	0.0	0.0	1.3	1.3	19.6	19.6	0.0	0.0	-0.01	NA	-2	1011	0.000	0.000	Y	Y		CS1	NA		
WS03		14/01/2020	0.0	0.0	0.0	0.0	5.3	5.3	11.4	11.4	0.0	0.0	-1.09	NA	9	1008	0.000	0.000	Y	N		CS1	NA		

Situation 1 - CIRRIA C665: For all development types except for low-rise houses and gardens:

Characteristic situation	Risk classification	Gas Screening Value (CH4 or CH4 or	Additional factors		Typical sources of generation
1	Very low	<0.7	Typically Methane ≤1% and/or Carbon Dioxide ≤5%. Otherwise consider an increase to characteristic situation 2.		Natural soils with low organic matter content and 'typical' made ground.
2	Low	<0.7	Borehole air flow rate not to exceed 70 l/hr. Otherwise consider an increase to characteristic situation 3.		Natural soil with high organic peat/organic content and 'typical' made ground.
3	Moderate	<3.5	Quantitative risk assessment required to evaluate scope of protection measures.		Old landfill, inert waste and flooded mine working.
4	Moderate to high	<15			Mine working susceptible to flooding and landfill completed to WMP 26B criteria.
5	High	<70			Mine working unflooded/inactive with shallow workings near surface.
6	Very high	>70			Recent landfill site.

Situation 2 - NHBC 'Traffic Lights': For low-rise houses with gardens

Traffic Lights	Methane				Carbon Dioxide			
	Typical maximum concentrations (%)	Gas Screening Value (l/hr)	Typical maximum concentrations (%)		Gas Screening Value (l/hr)	Typical maximum concentrations (%)		
Green	≤1	≤0.16	≤5		≤0.78	≤30		
Amber 1	1> to ≤5	>0.16 to ≤0.63	>5 to ≤10		>0.78 to ≤1.56	>10 to ≤30		
Amber 2	5> to ≤20	>0.63 to ≤1.56	>10 to ≤30		>1.56 to ≤3.13	>30		
Red	>20	>1.56	>30		>3.13	>30		

Appendix J – Laboratory Results – Geotechnical Testing



Contract Number: 51757

Client Ref: **E19717**

Report Date: **14-01-2021**

Client PO: **0862**

Client **Environmental Management Solutions Ltd (EMS)**
Sigeric Business Park
Holme Lacy Road
Rotherwas
Hereford
HR2 6BQ

Contract Title: **Land adj A4137 A40 Junction**
For the attention of: **Olivia Benbow**

Date Received: **10-12-2020**

Date Completed: **14-01-2021**

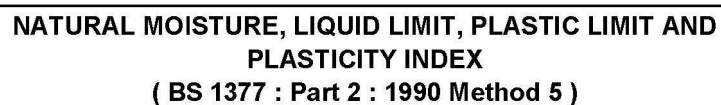
Test Description	Qty
Samples Received - @ Non Accredited Test	7
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	7
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	2
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	5
Disposal of samples for job	1

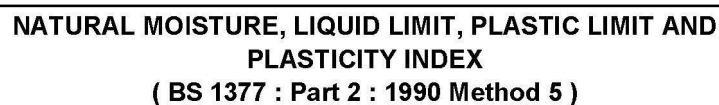
Notes: Observations and Interpretations are outside the UKAS Accreditation
* - denotes test included in laboratory scope of accreditation
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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.

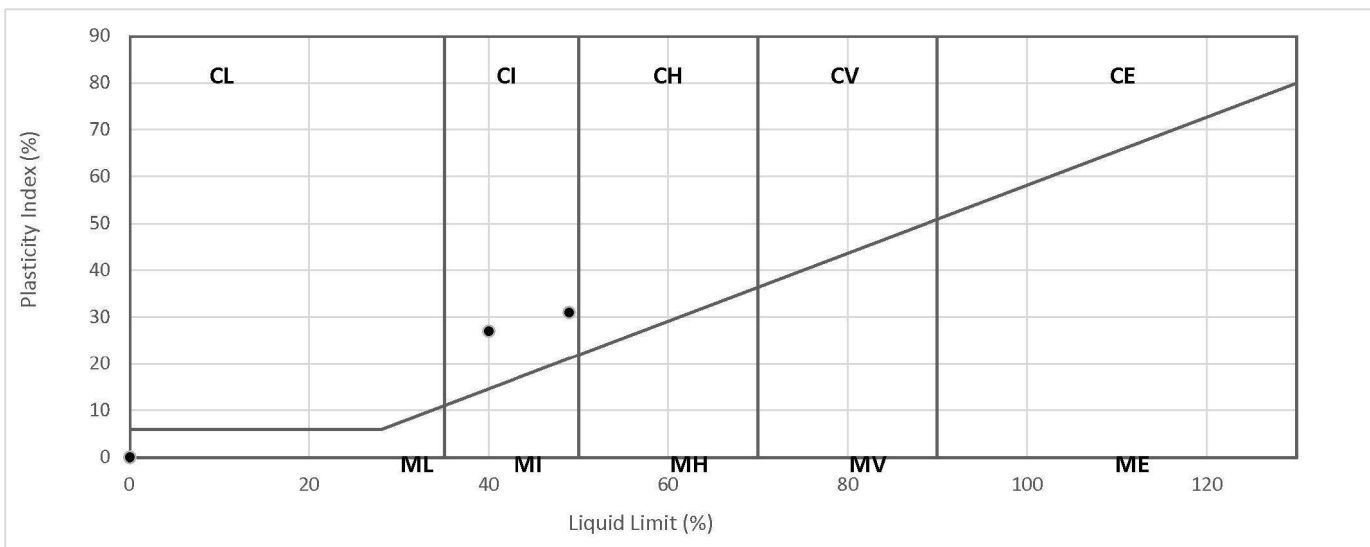
Approved Signatories:

Emma Sharp (Office Manager/Director) - Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager)
Shaun Jones (Laboratory manager) - Wayne Honey (Administrative/Quality Assistant)

[illegible]

[illegible]

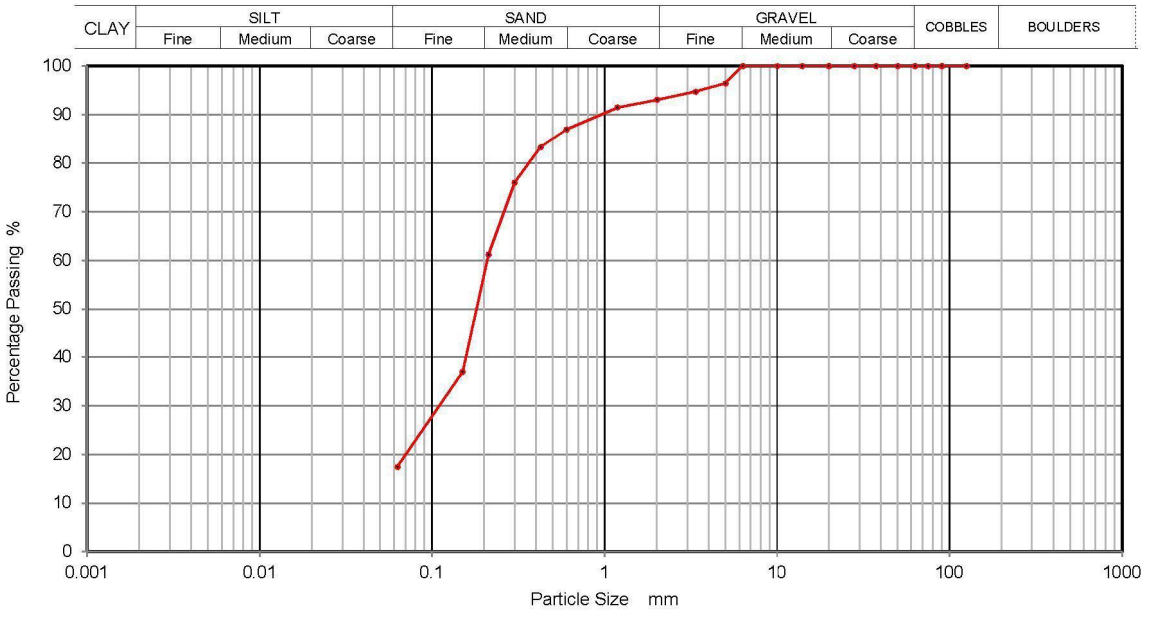
: Liquid Limit and Plastic Limit Wet Sieved



Operators	Checked	14/01/2021	Wayne Honey (Administrative/Quality Assistant)
Daniel Bassett	Approved	14/01/2021	Paul Evans (Quality/Technical Manager)



GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	51757
		Borehole/Pit No.	TP01
Site Name	Land adj A4137 A40 Junction	Sample No.	2
Soil Description	Brown slightly fine gravelly clayey/silty fine to coarse SAND	Depth Top	2.00
		Depth Base	
Date Tested	05/01/2021	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	96		
3.35	95		
2	93		
1.18	91		
0.6	87		
0.425	83		
0.3	76		
0.212	61		
0.15	37		
0.063	17		

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

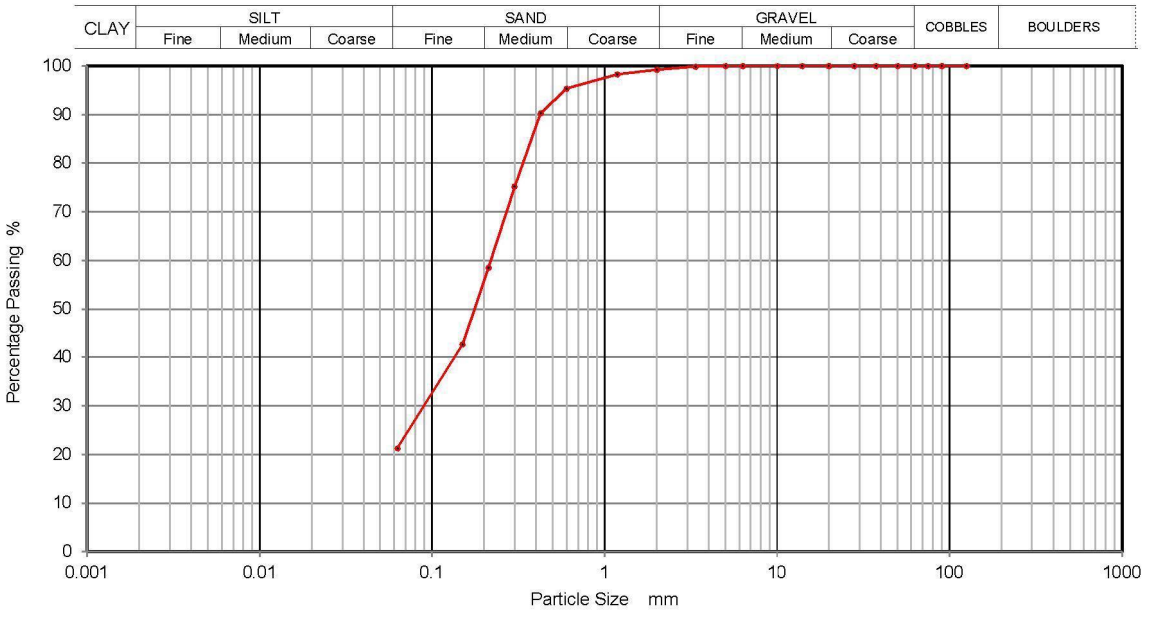
Sample Proportions	% dry mass
Cobbles	0
Gravel	7
Sand	76
Silt and Clay	17

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	13/01/2021	Wayne Honey	
RO/MH	Approved	14/01/2021	Paul Evans	



GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	51757
		Borehole/Pit No.	TP03
Site Name	Land adj A4137 A40 Junction	Sample No.	2
Soil Description	Brown slightly fine gravelly clayey/silty fine to coarse SAND	Depth Top	1.50
		Depth Base	
Date Tested	05/01/2021	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	99		
1.18	98		
0.6	95		
0.425	90		
0.3	75		
0.212	59		
0.15	43		
0.063	21		

MC in accordance with BS1377 Part 2 1990 Clause 3.2	
Moisture Content %	18

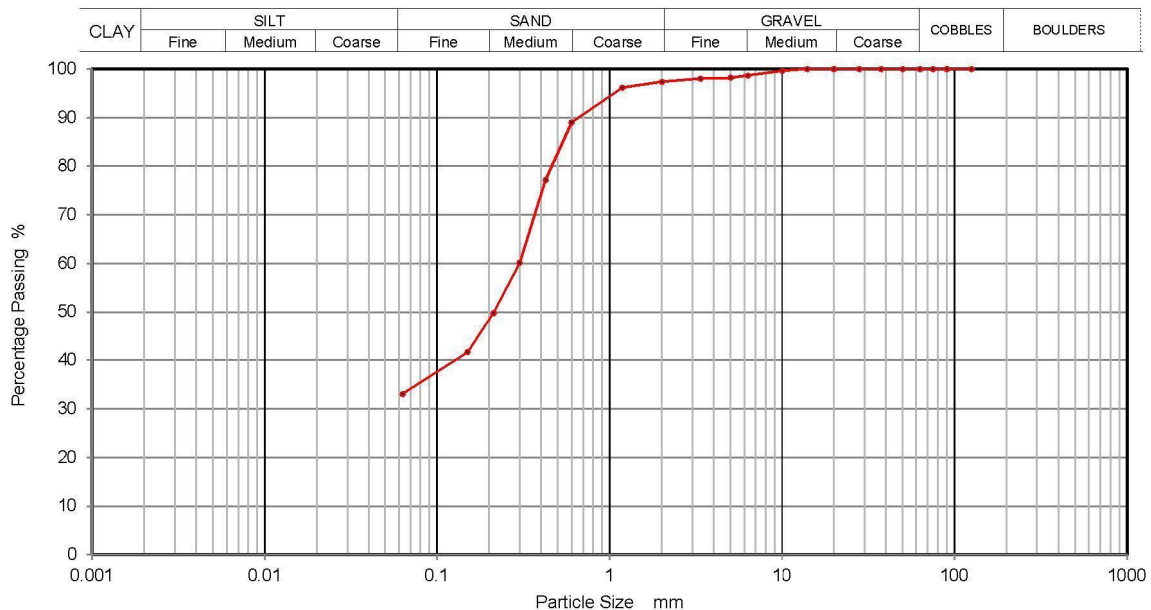
Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	78
Silt and Clay	21

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	13/01/2021	Wayne Honey	
RO/MH	Approved	14/01/2021	Paul Evans	



GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	51757
		Borehole/Pit No.	TP05
Site Name	Land adj A4137 A40 Junction	Sample No.	2
Soil Description	Brown slightly fine to medium gravelly clayey/silty fine to coarse SAND	Depth Top	1.80
		Depth Base	
Date Tested	05/01/2021	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	99		
5	98		
3.35	98		
2	97		
1.18	96		
0.6	89		
0.425	77		
0.3	60		
0.212	50		
0.15	42		
0.063	33		

MC in accordance with BS1377 Part 2 1990 Clause 3.2	
Moisture Content %	16

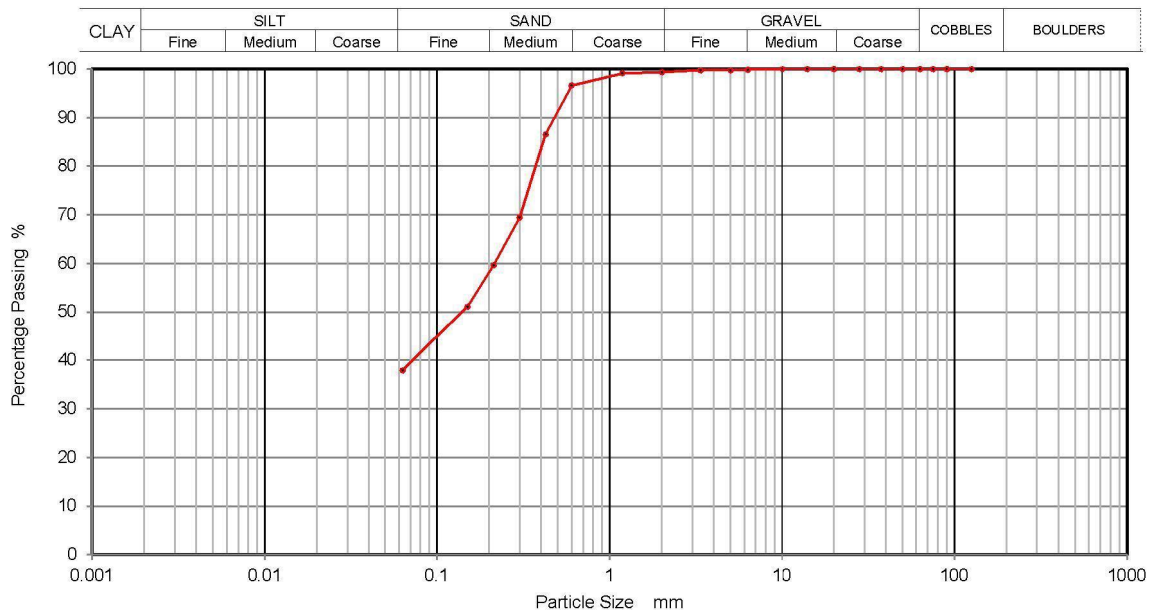
Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	64
Silt and Clay	33

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	13/01/2021	Wayne Honey	
RO/MH	Approved	14/01/2021	Paul Evans	



GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	51757
		Borehole/Pit No.	TP08
Site Name	Land adj A4137 A40 Junction	Sample No.	1
Soil Description	Brown slightly fine to medium gravelly clayey/silty fine to coarse SAND	Depth Top	1.20
		Depth Base	
Date Tested	05/01/2021	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	99		
1.18	99		
0.6	97		
0.425	87		
0.3	69		
0.212	60		
0.15	51		
0.063	38		

MC in accordance with BS1377 Part 2 1990 Clause 3.2	
Moisture Content %	17

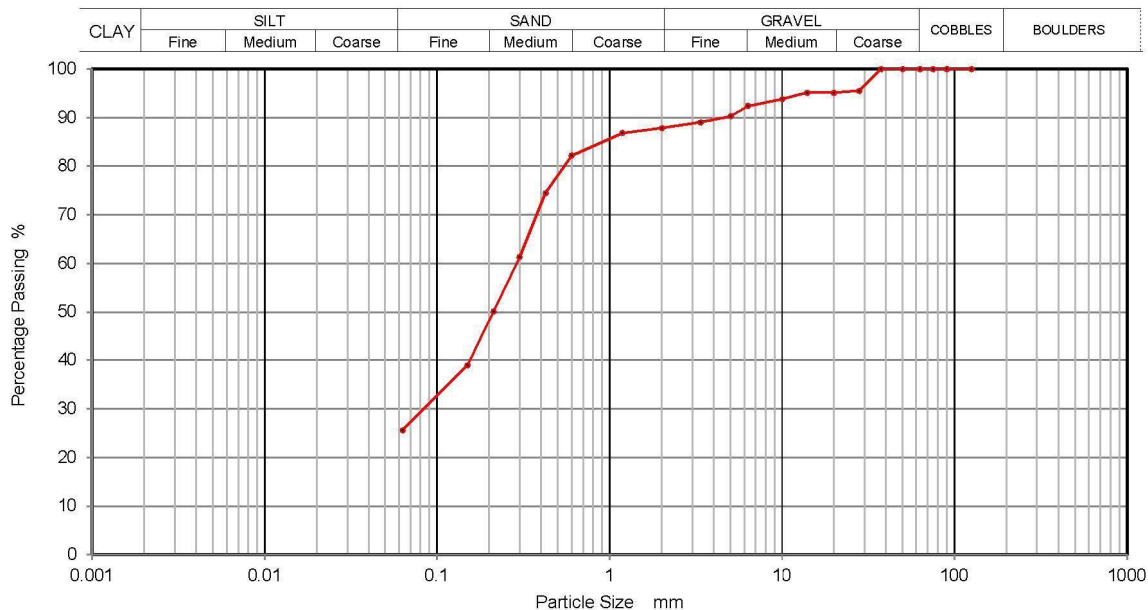
Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	61
Silt and Clay	38

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	13/01/2021	Wayne Honey	
RO/MH	Approved	14/01/2021	Paul Evans	



GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	51757
		Borehole/Pit No.	WS04
Site Name	Land adj A4137 A40 Junction	Sample No.	5
Soil Description	Brown fine to coarse gravelly clayey/silty fine to coarse SAND	Depth Top	1.70
		Depth Base	
Date Tested	05/01/2021	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	95		
20	95		
14	95		
10	94		
6.3	92		
5	90		
3.35	89		
2	88		
1.18	87		
0.6	82		
0.425	75		
0.3	61		
0.212	50		
0.15	39		
0.063	26		

MC in accordance with BS1377 Part 2 1990 Clause 3.2	
Moisture Content %	15

Sample Proportions	% dry mass
Cobbles	0
Gravel	12
Sand	62
Silt and Clay	26

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	13/01/2021	Wayne Honey	
RO/MH	Approved	14/01/2021	Paul Evans	



Appendix K – Laboratory Results – Chemical Analysis

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 20/10435
Issue Number: 1

Date: 16 December, 2020

Client: Environmental Management Solutions Ltd
Sigeric Business Park
Holme Lacy Road
Rotherwas
Hereford
UK
HR2 6BQ

Project Manager: Olivia Benbow
Project Name: Land adj A4137 A40 Junction to Burnthouse Green
Project Ref: E19717
Order No: 0857
Date Samples Received: 03/12/20
Date Instructions Received: 03/12/20
Date Analysis Completed: 16/12/20

Prepared by:



Melanie Marshall
Laboratory Coordinator

Approved by:



Danielle Brierley
Client Manager

Envirolab Job Number: 20/10435

Client Project Name: Land adj A4137 A40 Junction to
Burnthouse Green

Client Project Ref: E19717

Lab Sample ID	20/10435/1	20/10435/2	20/10435/3	20/10435/4	20/10435/5	20/10435/6	20/10435/7	Units	Limit of Detection	Method ref
Client Sample No	1	1	1	1	1	1	1			
Client Sample ID	WS01	WS03	TP03	WS04	WS05	TP01	TP04			
Depth to Top	0.10	0.05	0.20	0.10	0.30	0.90	1.00			
Depth To Bottom										
Date Sampled	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - D	Soil - D			
Sample Matrix Code	6AE	6AE	6A	6AE	6AE	4A	4AE			
% Stones >10mm _A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH _D ^{M#}	7.76	6.44	6.41	6.66	6.51	-	-	pH	0.01	A-T-031s
pH BRE _D ^{M#}	-	-	-	-	-	6.59	6.50	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1) _D ^{M#}	<10	<10	<10	<10	<10	<10	<10	mg/l	10	A-T-026s
Sulphate BRE (acid sol) _D ^{M#}	<0.02	0.03	<0.02	0.04	0.03	<0.02	<0.02	% w/w	0.02	A-T-028s
Sulphur BRE (total) _D	<0.01	0.01	<0.01	0.02	0.02	<0.01	<0.01	% w/w	0.01	A-T-024s
Cyanide (total) _A ^{M#}	<1	<1	<1	<1	<1	-	-	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	mg/kg	0.2	A-T-050s
Organic matter _D ^{M#}	0.2	1.6	0.5	2.2	2.4	-	-	% w/w	0.1	A-T-032 OM
Arsenic _D ^{M#}	<1	4	<1	3	2	-	-	mg/kg	1	A-T-024s
Cadmium _D ^{M#}	0.8	0.8	0.8	0.9	1.0	-	-	mg/kg	0.5	A-T-024s
Copper _D ^{M#}	7	8	7	12	14	-	-	mg/kg	1	A-T-024s
Chromium _D ^{M#}	20	18	20	26	25	-	-	mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	<1	-	-	mg/kg	1	A-T-040s
Lead _D ^{M#}	7	15	8	22	24	-	-	mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	<0.17	<0.17	<0.17	-	-	mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	24	16	21	25	24	-	-	mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	1	1	1	-	-	mg/kg	1	A-T-024s
Zinc _D ^{M#}	32	35	30	53	59	-	-	mg/kg	5	A-T-024s

Envirolab Job Number: 20/10435

Client Project Name: Land adj A4137 A40 Junction to
Burnthouse Green

Client Project Ref: E19717

Lab Sample ID	20/10435/1	20/10435/2	20/10435/3	20/10435/4	20/10435/5	20/10435/6	20/10435/7	Units	Limit of Detection	Method ref
Client Sample No	1	1	1	1	1	1	1			
Client Sample ID	WS01	WS03	TP03	WS04	WS05	TP01	TP04			
Depth to Top	0.10	0.05	0.20	0.10	0.30	0.90	1.00			
Depth To Bottom										
Date Sampled	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - D	Soil - D			
Sample Matrix Code	6AE	6AE	6A	6AE	6AE	4A	4AE			
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil [#]	NAD	NAD	NAD	NAD	NAD	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test? ₀	N/A	N/A	N/A	N/A	N/A	-	-			A-T-045

Envirolab Job Number: 20/10435

Client Project Name: Land adj A4137 A40 Junction to Burnthouse Green

Client Project Ref: E19717

Lab Sample ID	20/10435/1	20/10435/2	20/10435/3	20/10435/4	20/10435/5	20/10435/6	20/10435/7	Units	Limit of Detection	Method ref
Client Sample No	1	1	1	1	1	1	1			
Client Sample ID	WS01	WS03	TP03	WS04	WS05	TP01	TP04			
Depth to Top	0.10	0.05	0.20	0.10	0.30	0.90	1.00			
Depth To Bottom										
Date Sampled	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20	01-Dec-20			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - D	Soil - D			
Sample Matrix Code	6AE	6AE	6A	6AE	6AE	4A	4AE			
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	<0.07	<0.07	<0.07	<0.07	-	-	mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	<0.06	<0.06	<0.06	<0.06	<0.06	-	-	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	<0.08	<0.08	<0.08	<0.08	<0.08	-	-	mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	<0.07	<0.07	<0.07	<0.07	<0.07	-	-	mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	<0.08	<0.08	<0.08	<0.08	<0.08	-	-	mg/kg	0.01	A-T-019s
TPH Banded 1										
>C6-C8 _A ^{M#}	<5	<5	<5	<5	<5	-	-	mg/kg	5	A-T-007s
>C8-C10 _A ^{M#}	1	<1	<1	<1	<1	-	-	mg/kg	1	A-T-007s
>C10-C12 _A ^{M#}	3	<1	<1	<1	<1	-	-	mg/kg	1	A-T-007s
>C12-C16 _A ^{M#}	<2	<2	<2	<2	<2	-	-	mg/kg	2	A-T-007s
>C16-C21 _A ^{M#}	<2	<2	<2	<2	<2	-	-	mg/kg	2	A-T-007s
>C21-C40 _A ^{M#}	10	6	<5	7	8	-	-	mg/kg	5	A-T-007s
Total TPH Banded 1 _A ^{M#}	14	6	<5	7	8	-	-	mg/kg	5	A-T-007s

Envirolab Job Number: 20/10435

Client Project Name: Land adj A4137 A40 Junction to
Burnthouse Green

Client Project Ref: E19717

Lab Sample ID	20/10435/8	20/10435/9						Units	Limit of Detection	Method ref
Client Sample No	1	2								
Client Sample ID	TP05	WS04								
Depth to Top	0.50	0.60								
Depth To Bottom										
Date Sampled	01-Dec-20	01-Dec-20								
Sample Type	Soil - D	Soil - D								
Sample Matrix Code	4A	5A								
% Stones >10mm _A	<0.1	<0.1						% w/w	0.1	A-T-044
pH BRE _D ^{M#}	6.58	7.93						pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1) _D ^{M#}	<10	<10						mg/l	10	A-T-026s
Sulphate BRE (acid sol) _D ^{M#}	<0.02	0.02						% w/w	0.02	A-T-028s
Sulphur BRE (total) _D	<0.01	0.01						% w/w	0.01	A-T-024s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921
email. ask@envirolab.co.uk

Client:	Environmental Management Solutions Ltd, Sigeric Business Park, Holme Lacy	Project No:	20/10435
Project:	Road, Rotherwas, Hereford, UK, HR2 6BQ	Date Received:	03/12/2020 (am)
Clients Project No:	Land adj A4137 A40 Junction to Burnthouse Green	Cool Box Temperatures (°C):	5.6

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

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