



KEY:
 Rotary Borehole Location
 Trial Pit Location

REV	BY	DATE	DETAILS	P01
STATUS	-SELECT-			
CLIENT				
WEPCo				
PROJECT				
CAVAC Cardiff Airport Technology College				
TITLE				
Site Investigation Layout Plan				
				
<small>Lawrence House, 6 Meadowbank Way, Eastwood, Nottingham, NG16 3SR, Tel: 01773 335555 www.hspconsulting.com</small>				
SCALE	PROJECT NO.	SHEET		
N75	C3296	SIZE A0		
DATE	DRAWN	CHECKED		
Nov 23	DRS	LJ		
DRAWING NO.			REV	
C3296-HSP-00-00DR-C-5100			P01	

Appendix V

Final Report

Report No.: 23-32273-1

Initial Date of Issue: 05-Oct-2023

Re-Issue Details:

Client HSP Consulting Engineers Limited

Client Address: Lawrence House
 Meadowbank Way
 Eastwood
 Nottinghamshire
 NG16 3SB

Contact(s): Laura Jones

Project C3296 Cardiff ATC

Quotation No.: Q23-31701

Date Received: 27-Sep-2023

Order No.:

Date Instructed: 29-Sep-2023

No. of Samples: 4

Turnaround (Wkdays): 5

Results Due: 05-Oct-2023

Date Approved: 05-Oct-2023

Subcon Results Due: 05-Oct-2023

Approved By:



Details: Stuart Henderson, Technical
 Manager

Results - Soil

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited		Chemtest Job No.:		23-32273	23-32273	23-32273	23-32273
Quotation No.: Q23-31701		Chemtest Sample ID.:		1707972	1707974	1707976	1707978
		Sample Location:		TP02	TP04	TP10	TP11
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.00	0.00	0.00	0.00
		Bottom Depth (m):		0.30	0.30	0.30	0.30
		Date Sampled:		25-Sep-2023	25-Sep-2023	25-Sep-2023	25-Sep-2023
		Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	19	21	23
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones, Roots and Wood
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH at 20C	U	2010		4.0	7.3	7.3	7.9
pH (2.5:1) at 20C	N	2010		4.0	7.5	7.5	6.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	2.3	2.5	4.0
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	0.80
Arsenic	U	2455	mg/kg	0.5	15	15	36
Cadmium	U	2455	mg/kg	0.10	0.94	0.58	1.9
Chromium	U	2455	mg/kg	0.5	33	46	110
Copper	U	2455	mg/kg	0.50	26	32	66
Mercury	U	2455	mg/kg	0.05	0.05	0.11	0.14
Nickel	U	2455	mg/kg	0.50	28	25	66
Lead	U	2455	mg/kg	0.50	34	41	92
Selenium	U	2455	mg/kg	0.25	1.2	1.5	3.3
Zinc	U	2455	mg/kg	0.50	86	96	200
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.6	< 3.0	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	< 5.0	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05

Results - Soil

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited		Chemtest Job No.:		23-32273	23-32273	23-32273	23-32273
Quotation No.: Q23-31701		Chemtest Sample ID.:		1707972	1707974	1707976	1707978
		Sample Location:		TP02	TP04	TP10	TP11
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.00	0.00	0.00	0.00
		Bottom Depth (m):		0.30	0.30	0.30	0.30
		Date Sampled:		25-Sep-2023	25-Sep-2023	25-Sep-2023	25-Sep-2023
		Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	9.7	< 2.0	6.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	9.7	< 5.0	6.5
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	14	< 10	< 10
Total EPH >C10-C40	N	2690	mg/kg	10.00	14	< 10	< 10
Organic Matter	U	2625	%	0.40	6.3	4.9	4.9
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	0.18	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	0.13	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.10	0.89	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	0.26	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.27	2.4	0.42
Pyrene	U	2800	mg/kg	0.10	0.22	1.7	0.29
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.17	1.5	0.24
Chrysene	U	2800	mg/kg	0.10	0.19	1.3	0.21
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	0.24	1.9	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.12	0.61	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	0.17	1.1	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	0.76	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	0.22	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	0.66	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	14	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH at 20°C	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10-C12, >C12-C16, >C16-C21, >C21- C35, >C35- C40 Aromatics: >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5-C6, >C6-C7,>C7-C8,>C8-C10 Aromatics: >C5-C7,>C7-C8,>C8-C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Final Report

Report No.: 23-32474-1

Initial Date of Issue: 16-Oct-2023

Re-Issue Details:

Client HSP Consulting Engineers Limited

Client Address: Lawrence House
 Meadowbank Way
 Eastwood
 Nottinghamshire
 NG16 3SB

Contact(s): Laura Jones

Project C3296 Cardiff ATC

Quotation No.: Q23-31701

Date Received: 28-Sep-2023

Order No.: SC1427

Date Instructed: 29-Sep-2023

No. of Samples: 10

Turnaround (Wkdays): 7

Results Due: 09-Oct-2023

Date Approved: 16-Oct-2023

Approved By:



Details: Stuart Henderson, Technical
 Manager

Results - Leachate

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited		Chemtest Job No.:		23-32474	23-32474	23-32474	23-32474		
Quotation No.: Q23-31701		Chemtest Sample ID.:		1708760	1708763	1708768	1708769		
		Client Sample ID.:		TP05	TP07	BH02	BH03		
		Sample Location:		TP05	TP07	BH02	BH03		
		Sample Type:		SOIL	SOIL	SOIL	SOIL		
		Top Depth (m):		1.0	0.00	0.00	0.00		
		Bottom Depth (m):		1.2	0.3	0.50	0.50		
		Date Sampled:		26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023		
Determinand	Accred.	SOP	Type	Units	LOD				
pH at 20C	U	1010	2:1		N/A	8.0	8.0	8.0	8.7
pH C8 at 20C	U	1010	8:1		N/A	7.9	7.9	8.0	8.5
Cyanide (Total)	U	1300	2:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
C8 Cyanide (Total)	U	1300	8:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	< 0.20	0.61	0.80	0.49
C8 Arsenic (Dissolved)	U	1455	8:1	µg/l	0.20	< 0.20	0.51	1.0	0.41
Cadmium (Dissolved)	U	1455	2:1	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11
C8 Cadmium (Dissolved)	U	1455	8:1	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	1.5	1.1	1.5
C8 Chromium (Dissolved)	U	1455	8:1	µg/l	0.50	< 0.50	1.0	2.7	0.74
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	0.53	4.0	2.8	2.7
C8 Copper (Dissolved)	U	1455	8:1	µg/l	0.50	0.50	3.2	3.3	2.2
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05
C8 Mercury (Dissolved)	U	1455	8:1	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	2.1	1.1	1.2
C8 Nickel (Dissolved)	U	1455	8:1	µg/l	0.50	< 0.50	1.4	1.6	0.78
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50	0.57	< 0.50
C8 Lead (Dissolved)	U	1455	8:1	µg/l	0.50	< 0.50	< 0.50	0.60	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	0.65	0.86	0.64
C8 Selenium (Dissolved)	U	1455	8:1	µg/l	0.50	0.87	0.77	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	< 2.5	5.4	7.4	8.1
C8 Zinc (Dissolved)	U	1455	8:1	µg/l	2.5	< 2.5	11	9.6	< 2.5
C2 Naphthalene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Acenaphthylene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Acenaphthene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Fluorene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Phenanthrene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Anthracene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Fluoranthene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Pyrene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Benzo[a]anthracene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Chrysene	N	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Benzo[b]fluoranthene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Benzo[k]fluoranthene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Benzo[a]pyrene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Indeno(1,2,3-c,d)Pyrene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Dibenz(a,h)Anthracene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Leachate

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited		Chemtest Job No.:		23-32474	23-32474	23-32474	23-32474		
Quotation No.: Q23-31701		Chemtest Sample ID.:		1708760	1708763	1708768	1708769		
		Client Sample ID.:		TP05	TP07	BH02	BH03		
		Sample Location:		TP05	TP07	BH02	BH03		
		Sample Type:		SOIL	SOIL	SOIL	SOIL		
		Top Depth (m):		1.0	0.00	0.00	0.00		
		Bottom Depth (m):		1.2	0.3	0.50	0.50		
		Date Sampled:		26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023		
Determinand	Accred.	SOP	Type	Units	LOD				
C2 Benzo[g,h,i]perylene	U	1700	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C2 Total Of 16 PAH's	N	1700	2:1	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
C8 Naphthalene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Acenaphthylene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Acenaphthene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Fluorene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Phenanthrene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Benzo[j]fluoranthene	N	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Anthracene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Fluoranthene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Pyrene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Benzo[a]anthracene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Chrysene	N	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Benzo[b]fluoranthene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Benzo[a]pyrene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Indeno(1,2,3-c,d)Pyrene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Dibenz(a,h)Anthracene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
C8 Benzo[g,h,i]perylene	U	1700	8:1	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
C8 Benzene	U	1760	8:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
C8 Toluene	U	1760	8:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
C8 Ethylbenzene	U	1760	8:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
C8 m & p-Xylene	U	1760	8:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
C8 o-Xylene	U	1760	8:1	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Phenols	U	1920	2:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030
C8 Total Phenols	U	1920	8:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited		Chemtest Job No.:		23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474
Quotation No.: Q23-31701		Chemtest Sample ID.:		1708759	1708760	1708761	1708762	1708763	1708764	1708765	1708767	1708768	
		Client Sample ID.:		TP05	TP05	TP06	TP06	TP07	TP07	TP09	BH01	BH02	
		Sample Location:		TP05	TP05	TP06	TP06	TP07	TP07	TP09	BH01	BH02	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.00	1.0	0.00	1.0	0.00	1.0	0.00	0.00	0.00	
		Bottom Depth (m):		0.3	1.2	0.3	1.2	0.3	1.2	0.3	0.50	0.50	
		Date Sampled:		26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	
		Asbestos Lab:		COVENTRY				COVENTRY			NEW-ASB		
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-			-			-		
Asbestos Identification	U	2192		N/A	No Asbestos Detected			No Asbestos Detected			No Asbestos Detected		
Moisture	N	2030	%	0.020	24	16	22	18	26	13	23	30	20
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones and Roots	Stones	Stones and Roots	Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones and Roots
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Clay	Sand	Sand	Sand	Clay	Clay
pH at 20C	U	2010		4.0	7.4	8.6		8.2	6.6	7.9		7.6	8.1
pH (2.5:1) at 20C	N	2010		4.0	7.6	8.8	7.2	8.4	6.9	8.1	7.6	7.8	8.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	2.8	< 0.40		0.40	2.3	1.9		< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50		< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	11	17		5.2	16	9.2		21	16
Cadmium	U	2455	mg/kg	0.10	0.53	0.20		0.22	0.67	0.25		0.78	1.6
Chromium	U	2455	mg/kg	0.5	31	34		20	33	18		59	38
Copper	U	2455	mg/kg	0.50	22	31		14	61	93		38	22
Mercury	U	2455	mg/kg	0.05	0.06	< 0.05		< 0.05	0.05	< 0.05		0.07	0.05
Nickel	U	2455	mg/kg	0.50	23	35		18	32	28		32	24
Lead	U	2455	mg/kg	0.50	33	20		12	56	56		49	250
Selenium	U	2455	mg/kg	0.25	0.91	0.99		0.49	1.0	0.64		2.1	1.4
Zinc	U	2455	mg/kg	0.50	67	42		50	270	470		120	170
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50			< 0.50		< 0.50		< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05		< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05		< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05		< 0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10		< 0.10	< 0.10
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05		< 0.05	< 0.05	< 0.05		< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25		< 0.25	< 0.25	< 0.25		< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0		< 2.0	< 2.0	< 2.0		< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0		< 1.0	< 1.0	< 1.0		< 1.0	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0		< 2.0	< 2.0	< 2.0		< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.8	< 3.0		< 3.0	< 3.0	< 3.0		5.5	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10		< 10	< 10	< 10		< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	< 5.0		< 5.0	< 5.0	< 5.0		7.4	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10		< 10	< 10	< 10		< 10	< 10

Results - Soil

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited		Chemtest Job No.:									
		23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474
Quotation No.: Q23-31701		Chemtest Sample ID.:									
		1708759	1708760	1708761	1708762	1708763	1708764	1708765	1708767	1708768	1708768
		Client Sample ID.:									
		TP05	TP05	TP06	TP06	TP07	TP07	TP09	BH01	BH02	BH02
		Sample Location:									
		TP05	TP05	TP06	TP06	TP07	TP07	TP09	BH01	BH02	BH02
		Sample Type:									
		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):									
		0.00	1.0	0.00	1.0	0.00	1.0	0.00	0.00	0.00	0.00
		Bottom Depth (m):									
		0.3	1.2	0.3	1.2	0.3	1.2	0.3	0.50	0.50	0.50
		Date Sampled:									
		26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023
		Asbestos Lab:									
		COVENTRY				COVENTRY			NEW-ASB		
Determinand	Accred.	SOP	Units	LOD							
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	5.2	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	20
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	30	< 2.0	< 2.0	3.8	< 2.0	33	55
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	2.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	36	< 5.0	< 5.0	5.3	< 5.0	34	76
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	38	< 10	< 10	< 10	< 10	34	76
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	40	< 10	< 10	< 10	< 10	41	77
Total EPH >C10-C40	N	2690	mg/kg	10.00	42	< 10	< 10	< 10	< 10	41	77
Organic Matter	U	2625	%	0.40	7.4	0.44	< 0.40	7.4	1.2	7.4	8.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11	0.12
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.22
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.15
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12
Phenanthrene	U	2800	mg/kg	0.10	0.18	< 0.10	< 0.10	< 0.10	0.10	0.13	2.5
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.68
Fluoranthene	U	2800	mg/kg	0.10	0.49	< 0.10	< 0.10	0.14	0.16	0.21	5.6
Pyrene	U	2800	mg/kg	0.10	0.39	< 0.10	< 0.10	0.14	0.14	0.18	4.5
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.31	< 0.10	< 0.10	0.13	< 0.10	< 0.10	2.5
Chrysene	U	2800	mg/kg	0.10	0.27	< 0.10	< 0.10	0.13	< 0.10	< 0.10	2.8
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	0.40	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.5
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.2
Benzo[a]pyrene	U	2800	mg/kg	0.10	0.32	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.4
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	0.33	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.6
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.18	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.36
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	0.23	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.5

Results - Soil

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited	Chemtest Job No.:		23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474	23-32474
Quotation No.: Q23-31701	Chemtest Sample ID.:		1708759	1708760	1708761	1708762	1708763	1708764	1708765	1708767	1708768
	Client Sample ID.:		TP05	TP05	TP06	TP06	TP07	TP07	TP09	BH01	BH02
	Sample Location:		TP05	TP05	TP06	TP06	TP07	TP07	TP09	BH01	BH02
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):		0.00	1.0	0.00	1.0	0.00	1.0	0.00	0.00	0.00
	Bottom Depth (m):		0.3	1.2	0.3	1.2	0.3	1.2	0.3	0.50	0.50
	Date Sampled:		26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023
	Asbestos Lab:		COVENTRY				COVENTRY			NEW-ASB	
Determinand	Accred.	SOP	Units	LOD							
Total Of 16 PAH's	N	2800	mg/kg	2.0	3.2	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	30
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited	Chemtest Job No.: 23-32474				
Quotation No.: Q23-31701	Chemtest Sample ID.: 1708769				
	Client Sample ID.: BH03				
	Sample Location: BH03				
	Sample Type: SOIL				
	Top Depth (m): 0.00				
	Bottom Depth (m): 0.50				
	Date Sampled: 26-Sep-2023				
	Asbestos Lab: NEW-ASB				
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	25
Soil Colour	N	2040		N/A	Brown
Other Material	N	2040		N/A	Stones
Soil Texture	N	2040		N/A	Clay
pH at 20C	U	2010		4.0	7.9
pH (2.5:1) at 20C	N	2010		4.0	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	16
Cadmium	U	2455	mg/kg	0.10	0.87
Chromium	U	2455	mg/kg	0.5	38
Copper	U	2455	mg/kg	0.50	24
Mercury	U	2455	mg/kg	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	32
Lead	U	2455	mg/kg	0.50	38
Selenium	U	2455	mg/kg	0.25	1.5
Zinc	U	2455	mg/kg	0.50	80
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10

Results - Soil

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited	Chemtest Job No.: 23-32474				
Quotation No.: Q23-31701	Chemtest Sample ID.: 1708769				
	Client Sample ID.: BH03				
	Sample Location: BH03				
	Sample Type: SOIL				
	Top Depth (m): 0.00				
	Bottom Depth (m): 0.50				
	Date Sampled: 26-Sep-2023				
	Asbestos Lab: NEW-ASB				
Determinand	Accred.	SOP	Units	LOD	
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	3.7
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	< 10
Total EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Organic Matter	U	2625	%	0.40	4.8
Benzene	U	2760	µg/kg	1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.13
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.12
Anthracene	U	2800	mg/kg	0.10	0.12
Fluoranthene	U	2800	mg/kg	0.10	0.23
Pyrene	U	2800	mg/kg	0.10	0.18
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.13
Chrysene	U	2800	mg/kg	0.10	0.13
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10

Results - Soil

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited	Chemtest Job No.: 23-32474			
Quotation No.: Q23-31701	Chemtest Sample ID.: 1708769			
	Client Sample ID.: BH03			
	Sample Location: BH03			
	Sample Type: SOIL			
	Top Depth (m): 0.00			
	Bottom Depth (m): 0.50			
	Date Sampled: 26-Sep-2023			
	Asbestos Lab: NEW-ASB			
Determinand	Accred.	SOP	Units	LOD
Total Of 16 PAH's	N	2800	mg/kg	2.0
Total Phenols	U	2920	mg/kg	0.10

Results - 2 Stage WAC

Project: C3296 Cardiff ATC

Chemtest Job No: 23-32474 Chemtest Sample ID: 1708759 Sample Ref: Sample ID: TP05 Sample Location: TP05 Top Depth(m): 0.00 Bottom Depth(m): 0.3 Sampling Date: 26-Sep-2023										Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill			
Determinand	SOP	Accred.	Units									
Total Organic Carbon	2625	U	%				4.3	3	5	6		
Loss On Ignition	2610	U	%				9.1	--	--	10		
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--		
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--		
TPH Total WAC	2670	U	mg/kg				< 10	500	--	--		
Total (Of 17) PAH's	2700	N	mg/kg				2.2	100	--	--		
pH at 20C	2010	U					7.4	--	>6	--		
Acid Neutralisation Capacity	2015	N	mol/kg				0.021	--	To evaluate	To evaluate		
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg				
Arsenic	1455	U	0.0006	0.0004	0.0011	0.0042	0.5	2	25			
Barium	1455	U	< 0.005	< 0.005	< 0.0005	< 0.0005	20	100	300			
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5			
Chromium	1455	U	0.0005	0.0005	0.0010	0.0054	0.5	10	70			
Copper	1455	U	0.0045	0.0019	0.0086	0.0045	2	50	100			
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2			
Molybdenum	1455	U	0.0004	0.0002	0.0008	0.0022	0.5	10	30			
Nickel	1455	U	0.0016	0.0007	0.0031	0.0080	0.4	10	40			
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50			
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5			
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7			
Zinc	1455	U	0.004	0.003	0.007	0.033	4	50	200			
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000			
Fluoride	1220	U	0.34	0.27	< 1.0	2.8	10	150	500			
Sulphate	1220	U	1.5	< 1.0	< 10	< 10	1000	20000	50000			
Total Dissolved Solids	1020	N	140	27	280	380	4000	60000	100000			
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-			
Dissolved Organic Carbon	1610	U	7.8	4.0	< 50	< 50	500	800	1000			

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	24

Leachate Test Information	
Leachant volume 1st extract/l	0.295
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.178

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: C3296 Cardiff ATC

Chemtest Job No: 23-32474 Chemtest Sample ID: 1708762 Sample Ref: Sample ID: TP06 Sample Location: TP06 Top Depth(m): 1.0 Bottom Depth(m): 1.2 Sampling Date: 26-Sep-2023										Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill			
Determinand	SOP	Accred.	Units									
Total Organic Carbon	2625	U	%				< 0.20	3	5	6		
Loss On Ignition	2610	U	%				20	--	--	10		
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--		
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--		
TPH Total WAC	2670	U	mg/kg				< 10	500	--	--		
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--		
pH at 20C	2010	U					8.2	--	>6	--		
Acid Neutralisation Capacity	2015	N	mol/kg				0.032	--	To evaluate	To evaluate		
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg					
Arsenic	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	2	25			
Barium	1455	U	< 0.005	< 0.005	< 0.0005	< 0.0005	20	100	300			
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5			
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70			
Copper	1455	U	< 0.0005	0.0005	< 0.0005	< 0.0005	2	50	100			
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2			
Molybdenum	1455	U	0.0009	0.0013	0.0017	0.012	0.5	10	30			
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40			
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50			
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5			
Selenium	1455	U	0.0005	< 0.0005	0.0011	0.0006	0.1	0.5	7			
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200			
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000			
Fluoride	1220	U	0.31	0.18	< 1.0	1.9	10	150	500			
Sulphate	1220	U	1.3	< 1.0	< 10	< 10	1000	20000	50000			
Total Dissolved Solids	1020	N	120	37	230	470	4000	60000	100000			
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-			
Dissolved Organic Carbon	1610	U	< 2.5	3.3	< 50	< 50	500	800	1000			

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	18

Leachate Test Information	
Leachant volume 1st extract/l	0.312
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.211

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: C3296 Cardiff ATC

Chemtest Job No: 23-32474 Chemtest Sample ID: 1708764 Sample Ref: Sample ID: TP07 Sample Location: TP07 Top Depth(m): 1.0 Bottom Depth(m): 1.2 Sampling Date: 26-Sep-2023										Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill			
Determinand	SOP	Accred.	Units									
Total Organic Carbon	2625	U	%				0.67	3	5	6		
Loss On Ignition	2610	U	%				3.8	--	--	10		
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--		
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--		
TPH Total WAC	2670	U	mg/kg				< 10	500	--	--		
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--		
pH at 20C	2010	U					7.9	--	>6	--		
Acid Neutralisation Capacity	2015	N	mol/kg				0.018	--	To evaluate	To evaluate		
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg				
Arsenic	1455	U	0.0005	0.0010	0.0009	0.0009	0.0096	0.5	2	25		
Barium	1455	U	< 0.005	< 0.005	< 0.0005	< 0.0005	< 0.0005	20	100	300		
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5		
Chromium	1455	U	< 0.0005	0.0006	< 0.0005	0.0056	0.0056	0.5	10	70		
Copper	1455	U	0.0020	0.0023	0.0040	0.0022	0.0022	2	50	100		
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2		
Molybdenum	1455	U	0.0005	0.0009	0.0009	0.0087	0.0087	0.5	10	30		
Nickel	1455	U	< 0.0005	0.0011	< 0.0005	0.010	0.010	0.4	10	40		
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50		
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5		
Selenium	1455	U	0.0007	< 0.0005	0.0014	0.0008	0.0008	0.1	0.5	7		
Zinc	1455	U	< 0.003	0.006	< 0.003	0.056	0.056	4	50	200		
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	< 10	800	15000	25000		
Fluoride	1220	U	0.38	0.33	< 1.0	3.3	3.3	10	150	500		
Sulphate	1220	U	7.8	< 1.0	15	< 10	< 10	1000	20000	50000		
Total Dissolved Solids	1020	N	140	34	270	450	450	4000	60000	100000		
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	< 0.50	1	-	-		
Dissolved Organic Carbon	1610	U	7.9	6.2	< 50	64	64	500	800	1000		

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	13

Leachate Test Information	
Leachant volume 1st extract/l	0.324
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.187

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: C3296 Cardiff ATC

Chemtest Job No: 23-32474 Chemtest Sample ID: 1708767 Sample Ref: Sample ID: BH01 Sample Location: BH01 Top Depth(m): 0.00 Bottom Depth(m): 0.50 Sampling Date: 26-Sep-2023										Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill			
Determinand	SOP	Accred.	Units									
Total Organic Carbon	2625	U	%				4.3	3	5	6		
Loss On Ignition	2610	U	%				13	--	--	10		
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--		
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--		
TPH Total WAC	2670	U	mg/kg				< 10	500	--	--		
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--		
pH at 20C	2010	U					7.6	--	>6	--		
Acid Neutralisation Capacity	2015	N	mol/kg				0.016	--	To evaluate	To evaluate		
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg					
Arsenic	1455	U	0.0013	0.0002	0.0024	0.0030	0.5	2	25			
Barium	1455	U	< 0.005	0.037	< 0.0005	0.33	20	100	300			
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5			
Chromium	1455	U	0.0032	0.0046	0.0060	0.045	0.5	10	70			
Copper	1455	U	0.0040	0.0016	0.0074	0.0031	2	50	100			
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2			
Molybdenum	1455	U	0.0003	0.0009	0.0006	0.0083	0.5	10	30			
Nickel	1455	U	0.0026	< 0.0005	0.0049	0.0020	0.4	10	40			
Lead	1455	U	0.0007	< 0.0005	0.0013	0.0006	0.5	10	50			
Antimony	1455	U	< 0.0005	0.0012	< 0.0005	0.011	0.06	0.7	5			
Selenium	1455	U	< 0.0005	0.0012	< 0.0005	0.011	0.1	0.5	7			
Zinc	1455	U	0.013	< 0.003	0.024	0.010	4	50	200			
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000			
Fluoride	1220	U	0.22	0.25	< 1.0	2.4	10	150	500			
Sulphate	1220	U	< 1.0	51	< 10	460	1000	20000	50000			
Total Dissolved Solids	1020	N	64	270	120	2500	4000	60000	100000			
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-			
Dissolved Organic Carbon	1610	U	5.6	3.6	< 50	< 50	500	800	1000			

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	30

Leachate Test Information	
Leachant volume 1st extract/l	0.274
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.135

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: C3296 Cardiff ATC

Chemtest Job No: 23-32474 Chemtest Sample ID: 1708769 Sample Ref: Sample ID: BH03 Sample Location: BH03 Top Depth(m): 0.00 Bottom Depth(m): 0.50 Sampling Date: 26-Sep-2023										Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill			
Determinand	SOP	Accred.	Units									
Total Organic Carbon	2625	U	%				2.8	3	5	6		
Loss On Ignition	2610	U	%				5.9	--	--	10		
Total BTEX	2760	U	mg/kg				< 0.010	6	--	--		
Total PCBs (7 Congeners)	2815	U	mg/kg				< 0.10	1	--	--		
TPH Total WAC	2670	U	mg/kg				52	500	--	--		
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--		
pH at 20C	2010	U					7.9	--	>6	--		
Acid Neutralisation Capacity	2015	N	mol/kg				0.038	--	To evaluate	To evaluate		
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg					
Arsenic	1455	U	0.0005	0.0004	0.0009	0.0041	0.5	2	25			
Barium	1455	U	< 0.005	< 0.005	< 0.0005	< 0.0005	20	100	300			
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5			
Chromium	1455	U	0.0015	0.0007	0.0028	0.0081	0.5	10	70			
Copper	1455	U	0.0027	0.0022	0.0051	0.0028	2	50	100			
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2			
Molybdenum	1455	U	0.0002	< 0.0002	0.0004	0.0002	0.5	10	30			
Nickel	1455	U	0.0012	0.0008	0.0024	0.0082	0.4	10	40			
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50			
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5			
Selenium	1455	U	0.0006	< 0.0005	0.0012	0.0007	0.1	0.5	7			
Zinc	1455	U	0.008	< 0.003	0.015	0.008	4	50	200			
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000			
Fluoride	1220	U	0.22	0.27	< 1.0	2.6	10	150	500			
Sulphate	1220	U	< 1.0	< 1.0	< 10	< 10	1000	20000	50000			
Total Dissolved Solids	1020	N	180	22	350	380	4000	60000	100000			
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-			
Dissolved Organic Carbon	1610	U	3.5	5.5	< 50	53	500	800	1000			

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	25

Leachate Test Information	
Leachant volume 1st extract/l	0.291
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.183

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH at 20°C	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH at 20°C	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Test Methods

SOP	Title	Parameters included	Method summary
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7, >C7–C8, >C8–C10 Aromatics: >C5–C7, >C7–C8, >C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	Compliance Test for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	Compliance Test for Leaching of Granular Waste Material and Sludge

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 23-32709-1

Initial Date of Issue: 11-Oct-2023

Re-Issue Details:

Client HSP Consulting Engineers Limited

Client Address: Lawrence House
Meadowbank Way
Eastwood
Nottinghamshire
NG16 3SB

Contact(s): Laura Jones

Project C3296 Cardiff ATC

Quotation No.: Q23-31701

Date Received: 27-Sep-2023

Order No.:

Date Instructed: 29-Sep-2023

No. of Samples: 3

Turnaround (Wkdays): 8

Results Due: 10-Oct-2023

Date Approved: 11-Oct-2023

Subcon Results Due: 10-Oct-2023

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Leachate

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited	Chemtest Job No.: 23-32709					
Quotation No.: Q23-31701	Chemtest Sample ID.: 1709849					
	Sample Location: TP04					
	Sample Type: SOIL					
	Top Depth (m): 0.00					
	Bottom Depth (m): 0.30					
	Date Sampled: 25-Sep-2023					
Determinand	Accred.	SOP	Type	Units	LOD	
pH at 20C	U	1010	2:1		N/A	8.6
pH C8 at 20C	U	1010	8:1		N/A	8.5
Ammoniacal Nitrogen	U	1220	2:1	mg/l	0.050	< 0.050
C8 Ammoniacal Nitrogen	U	1220	8:1	mg/l	0.050	0.051
Cyanide (Total)	U	1300	2:1	mg/l	0.050	< 0.050
C8 Cyanide (Total)	U	1300	8:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	0.25
C8 Arsenic (Dissolved)	U	1455	8:1	µg/l	0.20	0.52
Boron (Dissolved)	U	1455	2:1	µg/l	10.0	< 10
C8 Boron (Dissolved)	U	1455	8:1	µg/l	10.0	< 10
Beryllium (Dissolved)	U	1455	2:1	µg/l	1.00	< 1.0
C8 Beryllium (Dissolved)	U	1455	8:1	µg/l	1.00	< 1.0
Cadmium (Dissolved)	U	1455	2:1	µg/l	0.11	< 0.11
C8 Cadmium (Dissolved)	U	1455	8:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
C8 Chromium (Dissolved)	U	1455	8:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	1.9
C8 Copper (Dissolved)	U	1455	8:1	µg/l	0.50	1.5
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05
C8 Mercury (Dissolved)	U	1455	8:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
C8 Nickel (Dissolved)	U	1455	8:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
C8 Lead (Dissolved)	U	1455	8:1	µg/l	0.50	< 0.50
Antimony (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
C8 Antimony (Dissolved)	U	1455	8:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
C8 Selenium (Dissolved)	U	1455	8:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50
C8 Vanadium (Dissolved)	U	1455	8:1	µg/l	0.50	0.63
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	< 2.5
C8 Zinc (Dissolved)	U	1455	8:1	µg/l	2.5	< 2.5
C2 Naphthalene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Acenaphthylene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Acenaphthene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Fluorene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Phenanthrene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Anthracene	U	1700	2:1	µg/l	0.10	< 0.10

Results - Leachate

Project: C3296 Cardiff ATC

Client: HSP Consulting Engineers Limited	Chemtest Job No.:		23-32709			
Quotation No.: Q23-31701	Chemtest Sample ID.:		1709849			
	Sample Location:		TP04			
	Sample Type:		SOIL			
	Top Depth (m):		0.00			
	Bottom Depth (m):		0.30			
	Date Sampled:		25-Sep-2023			
Determinand	Accred.	SOP	Type	Units	LOD	
C2 Fluoranthene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Pyrene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Benzo[a]anthracene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Chrysene	N	1700	2:1	µg/l	0.10	< 0.10
C2 Benzo[b]fluoranthene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Benzo[k]fluoranthene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Benzo[a]pyrene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Indeno(1,2,3-c,d)Pyrene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Dibenz(a,h)Anthracene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Benzo[g,h,i]perylene	U	1700	2:1	µg/l	0.10	< 0.10
C2 Total Of 16 PAH's	N	1700	2:1	µg/l	2.0	< 2.0
C8 Naphthalene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Acenaphthylene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Acenaphthene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Fluorene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Phenanthrene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Anthracene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Benzo[a]anthracene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Chrysene	N	1700	8:1	µg/l	0.10	< 0.10
C8 Benzo[b]fluoranthene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Benzo[k]fluoranthene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Benzo[a]pyrene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Indeno(1,2,3-c,d)Pyrene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Dibenz(a,h)Anthracene	U	1700	8:1	µg/l	0.10	< 0.10
C8 Total Of 16 PAH's	N	1700	8:1	µg/l	2.0	< 2.0
Benzene	U	1760	2:1	µg/l	1.0	< 1.0
C8 Benzene	U	1760	8:1	µg/l	1.0	< 1.0
Toluene	U	1760	2:1	µg/l	1.0	< 1.0
C8 Toluene	U	1760	8:1	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	2:1	µg/l	1.0	< 1.0
C8 Ethylbenzene	U	1760	8:1	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	2:1	µg/l	1.0	< 1.0
C8 m & p-Xylene	U	1760	8:1	µg/l	1.0	< 1.0
o-Xylene	U	1760	2:1	µg/l	1.0	< 1.0
C8 o-Xylene	U	1760	8:1	µg/l	1.0	< 1.0
Total Phenols	U	1920	2:1	mg/l	0.030	< 0.030
C8 Total Phenols	U	1920	8:1	mg/l	0.030	< 0.030

Results - 2 Stage WAC

Project: C3296 Cardiff ATC

Chemtest Job No: 23-32709 Chemtest Sample ID: 1709848 Sample Ref: Sample ID: Sample Location: TP02 Top Depth(m): 0.00 Bottom Depth(m): 0.30 Sampling Date: 25-Sep-2023										Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill			
Determinand	SOP	Accred.	Units									
Total Organic Carbon	2625	M	%				2.1	3	5	6		
Loss On Ignition	2610	M	%				96	--	--	10		
Total BTEX	2760	M	mg/kg				< 0.010	6	--	--		
Total PCBs (7 Congeners)	2815	M	mg/kg				< 0.10	1	--	--		
TPH Total WAC	2670	M	mg/kg				< 10	500	--	--		
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--		
pH at 20C	2010	M					7.6	--	>6	--		
Acid Neutralisation Capacity	2015	N	mol/kg				0.0080	--	To evaluate	To evaluate		
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg				
Arsenic	1455	U	0.0003	0.0003	0.0004	0.0005	0.0040	0.5	2	25		
Barium	1455	U	0.007	< 0.0005	< 0.0005	0.013	0.0075	20	100	300		
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5		
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70		
Copper	1455	U	0.0026	0.0015	0.0048	0.0029	0.0029	2	50	100		
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2		
Molybdenum	1455	U	0.0006	0.0007	0.0011	0.0065	0.0065	0.5	10	30		
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40		
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50		
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5		
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7		
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200		
Chloride	1220	U	4.1	< 1.0	< 10	< 10	< 10	800	15000	25000		
Fluoride	1220	U	0.34	0.39	< 1.0	3.8	3.8	10	150	500		
Sulphate	1220	U	2.6	< 1.0	< 10	< 10	< 10	1000	20000	50000		
Total Dissolved Solids	1020	N	260	72	490	920	920	4000	60000	100000		
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	< 0.50	1	-	-		
Dissolved Organic Carbon	1610	U	8.8	5.9	< 50	62	62	500	800	1000		

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	27

Leachate Test Information	
Leachant volume 1st extract/l	0.284
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.197

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: C3296 Cardiff ATC

Chemtest Job No: 23-32709 Chemtest Sample ID: 1709850 Sample Ref: Sample ID: Sample Location: TP11 Top Depth(m): 0.00 Bottom Depth(m): 0.30 Sampling Date: 25-Sep-2023										Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill			
Determinand	SOP	Accred.	Units									
Total Organic Carbon	2625	M	%				2.7	3	5	6		
Loss On Ignition	2610	M	%				12	--	--	10		
Total BTEX	2760	M	mg/kg				< 0.010	6	--	--		
Total PCBs (7 Congeners)	2815	M	mg/kg				< 0.10	1	--	--		
TPH Total WAC	2670	M	mg/kg				< 10	500	--	--		
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0	100	--	--		
pH at 20C	2010	M					7.9	--	>6	--		
Acid Neutralisation Capacity	2015	N	mol/kg				0.0060	--	To evaluate	To evaluate		
Eluate Analysis				2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg				
Arsenic	1455	U	0.0003	0.0003	0.0003	0.0006	0.0030	0.5	2	25		
Barium	1455	U	< 0.005	< 0.005	< 0.005	< 0.0005	< 0.0005	20	100	300		
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5		
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70		
Copper	1455	U	0.0024	0.0015	0.0042	0.0028	0.0028	2	50	100		
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2		
Molybdenum	1455	U	0.0003	< 0.0002	0.0004	0.0003	0.0003	0.5	10	30		
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40		
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50		
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5		
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7		
Zinc	1455	U	< 0.003	0.003	< 0.003	0.023	0.023	4	50	200		
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	< 10	800	15000	25000		
Fluoride	1220	U	0.33	0.37	< 1.0	3.6	3.6	10	150	500		
Sulphate	1220	U	< 1.0	< 1.0	< 10	< 10	< 10	1000	20000	50000		
Total Dissolved Solids	1020	N	100	98	180	960	960	4000	60000	100000		
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	< 0.50	1	-	-		
Dissolved Organic Carbon	1610	U	9.5	7.4	< 50	74	74	500	800	1000		

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	39

Leachate Test Information	
Leachant volume 1st extract/l	0.240
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.204

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH at 20°C	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH at 20°C	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

SI.20.3 Chemical testing for contamination (Clause 15.3)

Test Suites E to G are specified in the following tables. The Contractor shall confirm in its Tender return the test methods and shall detail what accreditation requirement shall be provided. Gas sampling is not required (Suite G).

SCHEDULE 1.20.3: TEST SUITES

CHEMICAL LABORATORY TESTING FOR CONTAMINANTS

Nominated test laboratory? *	
Required testing turnaround times? *	

* To be completed in the Tender return

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
SUITE E1 - Soil samples general			
Arsenic	1 mg/kg		
Cadmium	0.5 mg/kg		
Chromium - total	10 mg/kg		
Copper	10 mg/kg		
Lead	10 mg/kg		
Mercury	0.5 mg/kg		
Nickel	10 mg/kg		
Selenium	0.5 mg/kg		
Zinc	10 mg/kg		
Cyanide - total	5 mg/kg		
pH	0.1 units		
Boron (water soluble)	0.5 mg/kg		
Phenols - total	1 mg/kg		
Total Organic Carbon	0.1% w/w	ASTM D2974-87	
SUITE E2 - Soil samples Asbestos			
Asbestos presence and identification	0.001% w/w	Note E2a	
Asbestos quantification HSG248	0.001%w/w	Note E2b	
SUITE E3 - Soil samples TPHCWG and BTEX			
TPHCWG	10 mg/kg	GC-FID Note E3a	
BTEX	0.05 mg/kg	GCMS	
SUITE E4 - Soil samples PAH			

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
USEPA 16 Polyaromatic Hydrocarbons	0.2 mg/kg	CGMS	
SUITE E5 - Soil samples VOC and SVOC			
Semi-Volatile Hydrocarbons	0.01 mg/kg	GC-MS US EPA Method 8270	
Volatile Hydrocarbons	0.01 mg/kg	GC-MS US EPA Method 8260	
SUITE E6 - Soil samples PCB			
Polychlorinated Biphenyls	0.005 mg/kg	WHO 12	
SUITE E7 - Soil samples hydrocarbon fuel identification			
Total Petroleum Hydrocarbons	50 mg/kg	C8 to C40 by GC FID	
SUITE E8 - Soil samples cyanide speciation- not required			
SUITE E9 - Soil samples hexavalent chromium			
Chromium - hexavalent	1 mg/kg		
SUITE E10 - Soil samples speciated phenols – not required			
SUITE E11 - Soil samples herbicides– not required			
SUITE E12 - Soil samples pesticides– not required			
SUITE E13 - Soil samples organotins– not required			
SUITE E14 - Soil samples dioxins, furans and dioxin-like PCBs– not required			
SUITE E15 - Soil samples for UKWIR water pipe selection I (Note E11) – not required			
SUITE E16 - Soil samples - other tests			
Loss on ignition	0.1% w/w		
<p>Note E2a</p> <p>Initial Stereo-binocular/PLM identification</p> <p>Each sample is thoroughly mixed, spread across a clean plastic tray and examined visually for the presence of asbestos. Any obvious asbestos material (asbestos cement, pieces of loose lagging, etc.) is removed by hand picking and set aside for weighing.</p> <p>The samples in which asbestos is detected are dried and weighed along with any materials removed to determine the proportion of asbestos in the original soil sample. The asbestos content of the asbestos containing materials (ACM) are determined by comparison with standard reference materials.</p> <p>A representative sub-sample of approximately for each soil is selected by coning and quartering. These samples are analysed visually under stereo binocular microscope and by polarised light microscopy (PLM) using the method described in HSG 248 (HSE, 2005).</p> <p>Note E2b</p> <p>Approximately 1 gramme of each sample shall be transferred to a clean 500ml conical flask and 300ml of filtered distilled water added. The sample/water mixture shall be agitated for 20 seconds and allowed to stand for 10 seconds. After sedimentation time, aliquots shall be removed from just below the liquid surface and deposited onto a 0.8µm pore size blank tested membrane filter. The filter shall be carefully dried, cleared and fixed onto glass microscope slides using the acetone/triacetin method described in HSG 248 (2005).</p>			

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
<p>Two microscope slides produced from each sample. The estimated mass percentage calculated as the mean of the two results for each sample.</p> <p>Phase contrast microscopy shall be based closely on HSG 248 (2005) including reagents, equipment and filter clearing and mounting. A specific Walton-Beckett graticule shall be used for fibre sizing.</p> <p>For the purposes of estimating the asbestos mass percentage, a countable fibre is defined as an amphibole asbestos or chrysotile fibre. Non-asbestos fibres should not be counted.</p> <p>Fibre dimensions (length and diameter), number of ends falling in the graticule, and fibre identity shall be recorded for each individual countable fibre. Measurements shall be recorded to the nearest 5µm for length and to the nearest 0.5µm for diameter, up to a maximum of 5µm. The identity of each fibre shall be recorded as amphibole or chrysotile, where possible. Fibre identification shall be based on morphology and optical properties determined by polarised light microscopy.</p> <p>The overall mass percentage of asbestos is given by: $A.W.(\sum V.p_A + \sum V.p_c) \times 100 / (a.N.q.S)$</p> <p>$p_A$ = average density of amphibole asbestos ($3.0 \times 10^{-6} \mu g \mu m^{-3}$)</p> <p>$p_c$ = density of chrysotile ($2.5 \times 10^{-6} \mu g \mu m^{-3}$)</p> <p>A = area of filter (mm²)</p> <p>V = volume of fibre (µ m³)</p> <p>W = volume of water in suspension (ml)</p> <p>a = area of graticule (mm²)</p> <p>N = number of graticules evaluated</p> <p>S = mass of soil in suspension (µ g)</p> <p>q = aliquot on filter (ml)</p> <p>Note E3a</p> <p>Aliphatic: EC5-EC6; >EC6-EC8; >EC8-EC10; >EC10-EC12; >EC12-EC16 ;>EC16-EC35;>EC35-EC44</p> <p>Aromatic: >EC6-EC7; >EC7-EC8; >EC8-EC10; >EC10-EC12; >EC12-EC16; >EC16-EC21; >EC21-EC35; >EC35-EC44</p>			

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
SUITE F1 – Water samples general			
pH value	0.1 pH units		
Hardness	2 mg/l		
Arsenic	1 µg/l		
Cadmium	0.5 µg/l		
Chromium	5 µg/l		
Copper	0.5 µg/l		
Lead	1 µg/l		
Mercury	0.1 µg/l		
Nickel	1 µg/l		
Selenium	1 µg/l		
Zinc	1 µg/l		
Cyanide - total	10 µg /l		

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
Phenols - total	10 µg/l		
Dissolved organic carbon (DOC)	10 µg/l		
SUITE F2 - Water samples speciated TPH and BTEX			
TPH CWG	10 µg/l	Note F12a GC-FID	
BTEX	1 µg/l	GCMS	
SUITE F3 - Water samples PAH			
16 USEPA Polyaromatic Hydrocarbons	0.01 µg/l	GCMS	
SUITE F4 - Water samples VOC and SVOC			
Volatile Organic compounds	1 µg/l	GC-MS US EPA Method 8260	
Semi-Volatile Organic compounds	1 µg/l	GC-MS US EPA Method 8270	
SUITE F5 - Water samples PCB			
Polychlorinated biphenyls	0.001 µg/l		
SUITE F6 - Water samples hydrocarbon fuel identification			
Total Petroleum Hydrocarbons	50 µg/l	C8 to C40 by GC FID	
Suite F14 - Other tests			
PFAS (incl. PFOS and PFOA)	<0.001 µg/l (total)	Lab to confirm	
Note F12a Aliphatic: >EC5-EC6; >EC6-EC8; >EC8-EC10; >EC10-EC12; >EC12-EC16; >EC16-EC35; >EC35-EC44 Aromatic: >EC6-EC7; >EC7-EC8; >EC8-EC10; >EC10-EC12; >EC12-EC16; >EC16-EC21; >EC21-EC35; >EC35-EC44			

S1.20.4 Waste characterisation (Clause 15.4)

Not required.

S1.20.5 Waste Acceptance Criteria (WAC) testing (Clause 15.5)

Test Suites H to I are specified in the following tables. The Contractor shall confirm the test methods and detail what accreditation requirement will be provided.

Leachate testing is to be undertaken as per the two stage BS EN 12457-3 method whereby the leachate 2:1 results are also reported.

SCHEDULE 1.20.5: TEST SUITES

CHEMICAL TESTING FOR WASTE ACCEPTANCE CRITERIA TESTING (from STWAPs 2003)

Nominated test laboratory? *	
Required testing turnaround times? *	

* To be completed in the Tender return

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
SUITE H - Waste acceptance total soils			
Total organic carbon	0.1%		
BTEX	0.1mg/kg		
PCBs (7 congeners)	0.1mg/kg		
Mineral oil (C10 - C40)	10 mg/kg		
Polyaromatic hydrocarbons	0.1 mg/kg		
Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
SUITE I - Leachability			
Arsenic	0.5 mg/kg		
Barium	20 mg/kg		
Cadmium	0.04 mg/kg		
Chromium	0.5 mg/kg		
Copper	2 mg/kg		
Mercury	0.01 mg/kg		
Molybdenum	0.5 mg/kg		
Nickel	0.4 mg/kg		
Lead	0.5 mg/kg		
Antimony	0.06 mg/kg		
Selenium	0.1 mg/kg		
Zinc	4 mg/kg		
Chloride	800 mg/kg		
Fluoride	10 mg/kg		
Sulphate	1,000 mg/kg		
Total dissolved solids (TDS)	4,000 mg/kg		
Phenol Index	1 mg/kg		

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
Dissolved organic carbon at own pH or pH 7.5-8.05	500 mg/kg		

S1.20.6 Geoenvironmental laboratory testing on site (Clause 15.6)

Not required.

S1.20.7 Special geoenvironmental laboratory testing (Clause 15.7)

The following special geoenvironmental laboratory testing is required:

Soil leachability testing for purposes other than waste classification using method BS EN 12457-3 and testing for suites below. Results shall be reported in mg/l.

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
SUITE J1 – Soil leachability general			
pH value	0.1 pH units		
Arsenic	1 µg/l		
Cadmium	0.5 µg/l		
Chromium	5 µg/l		
Copper	0.5 µg/l		
Lead	1 µg/l		
Mercury	0.1 µg/l		
Nickel	1 µg/l		
Selenium	1 µg/l		
Zinc	1 µg/l		
Cyanide - total	10 µg /l		
Phenols - total	10 µg/l		
SUITE J2 – Soil leachability PAH and BTEX			
BTEX	1 µg/l	GCMS	
16 Polyaromatic Hydrocarbons	0.01 µg/l	GCMS	

S1.21 Reporting (Clause 16) Particular restrictions/relaxations

S1.21.1 Form of exploratory hole logs (Clauses 16.1 and 16.2.1)

No project-specific format requirements apply.

Appendix VI



Results Summary

Apex Testing Solutions Limited
Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ
Telephone: 01656 746762
E-mail: andrew.grogan@apex-drilling.com
laura.davis@apex-drilling.com

<u>Reporting Details</u>	<u>Key Information</u>
Company Name: HSP Consulting Address: Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB Contact Name: Laura Jones Contact Number:	Site Name: CAVAC ATC Job Number: D23452 Date Received: 17/10/2023 Job Coordinator: L. Davies

Item No.	Tests Undertaken	Number of Tests
1	Water Content - ISO 17892 2014+A1:2022	15
2	Atterburg Limits (4 point) - BS1377-2: 1990	15
3	Particle Size Distribution - BS1377-2: 1990	8
4	Sedimentation by Pipette Method - BS1377-2: 1990	8
5	OMC - BS1377-4: 1990 using 2.5kg Rammer in 1L mould	3
6	# Organic Matter	6

Results Issued: 26/10/2023

Comments

Results herein relate only to samples received in the laboratory and where not sampled by Apex Testing Solutions personnel relate to the samples as received.

Where tests are UKAS accredited any Opinion and/or Interpretation expressed herein are outside the scope of the UKAS Accreditation. The reports shall not be reproduced in full without the written approval of the laboratory.

Please contact the job coordinator should any further information be required.



Unit 7-8 Hawarden Business Park
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Hawarden
Deeside
CH5 3US

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email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Apex Testing Solutions Limited
Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ

Attention: Laura Davies

CERTIFICATE OF ANALYSIS

Date of report Generation: 25 October 2023
Customer: Apex Testing Solutions Limited
Sample Delivery Group (SDG): 231019-59
Your Reference: D23452
Location: CAVAC ATC
Report No: 708679
Order Number: ATS 1869

We received 6 samples on Thursday October 19, 2023 and 6 of these samples were scheduled for analysis which was completed on Wednesday October 25, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 231019-59
Client Ref.: D23452

Report Number: 708679
Location: CAVAC ATC

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28808141	TP2		0.50 - 0.70	18/10/2023
28808144	TP4		0.50 - 0.70	18/10/2023
28808148	TP5		0.50 - 0.70	18/10/2023
28808155	TP6		0.50 - 0.70	18/10/2023
28808163	TP9		0.50 - 0.70	18/10/2023
28808136	TP11		0.50 - 0.70	18/10/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 231019-59
Client Ref.: D23452

Report Number: 708679
Location: CAVAC ATC

Superseded Report:

Results Legend							
<p>X Test</p> <p>N No Determination Possible</p> <p>Sample Types -</p> <p>S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</p>	Lab Sample No(s)	28808141	28808144	28808148	28808155	28808163	28808136
	Customer Sample Reference	TP2	TP4	TP5	TP6	TP9	TP11
	AGS Reference						
	Depth (m)	0.50 - 0.70	0.50 - 0.70	0.50 - 0.70	0.50 - 0.70	0.50 - 0.70	0.50 - 0.70
	Container	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
	Sample Type	S	S	S	S	S	S
	Sample description	All	NDPs: 0 Tests: 6		X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 6		X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 231019-59
Client Ref.: D23452

Report Number: 708679
Location: CAVAC ATC

Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
------------------	----------	-------------	-----------------	---------------	-------------	---------------	------------	--------------------	-------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28808141	TP2	0.50 - 0.70	Dark Brown	Silty Clay	Vegetation	None
28808144	TP4	0.50 - 0.70	Light Brown	Silty Clay	Stones	Vegetation
28808148	TP5	0.50 - 0.70	Dark Brown	Silty Clay	None	None
28808155	TP6	0.50 - 0.70	Dark Brown	Silty Clay Loam	Stones	Vegetation
28808163	TP9	0.50 - 0.70	Dark Brown	Silty Clay	Vegetation	None
28808136	TP11	0.50 - 0.70	Dark Brown	Sandy Silt Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 231019-59
Client Ref.: D23452

Report Number: 708679
Location: CAVAC ATC

Superseded Report:

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM132	ELTRA CS800 Operators Guide

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 231019-59
Client Ref.: D23452

Report Number: 708679
Location: CAVAC ATC

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28808141	28808144	28808148	28808155	28808163	28808136
Customer Sample Ref.	TP2	TP4	TP5	TP6	TP9	TP11
AGS Ref.						
Depth	0.50 - 0.70	0.50 - 0.70	0.50 - 0.70	0.50 - 0.70	0.50 - 0.70	0.50 - 0.70
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Sample description	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	25-Oct-2023	25-Oct-2023	25-Oct-2023	25-Oct-2023	25-Oct-2023	25-Oct-2023



CERTIFICATE OF ANALYSIS

SDG: 231019-59
Client Ref: D23452

Report Number: 708679
Location: CAVAC ATC

Superseded Report:

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452

Project Name: CAVAC ATC

Client: HSP Consulting

Address: Lawrence House
Unit 6, Meadowbank Way
Nottingham
NG16 3SB

ATS Sample No: 34772

Site Ref / Hole ID: TP11

Sample No:

Sampling Certificate
Received: No

Location in Works: N/a

Date Sampled: Unknown

Sampled By: Client

Date Received: 17 October 2023

Depth (m): 0.50 - 0.70

Sample Type: Bulk

Material Description: Greyish brown slightly
gravelly slightly sandy
CLAY

Material Source: Ex-Site

Material Supplier: Ex-Site

Specification: ISO 17892-1

Date Tested: 28 October 2023

Test Results

Moisture Content (%)

28.6

Remarks:

QA Ref.

EN ISO 17892-1:2014 A1:2022



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est,
Pyle, Bridgend, CF33 6BZ

Tel: 01656 746762 Fax: 01656 749096



7771

Approver

A Grogan

A Grogan, Laboratory Manager

Date

23/10/2023

Fig

MC

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

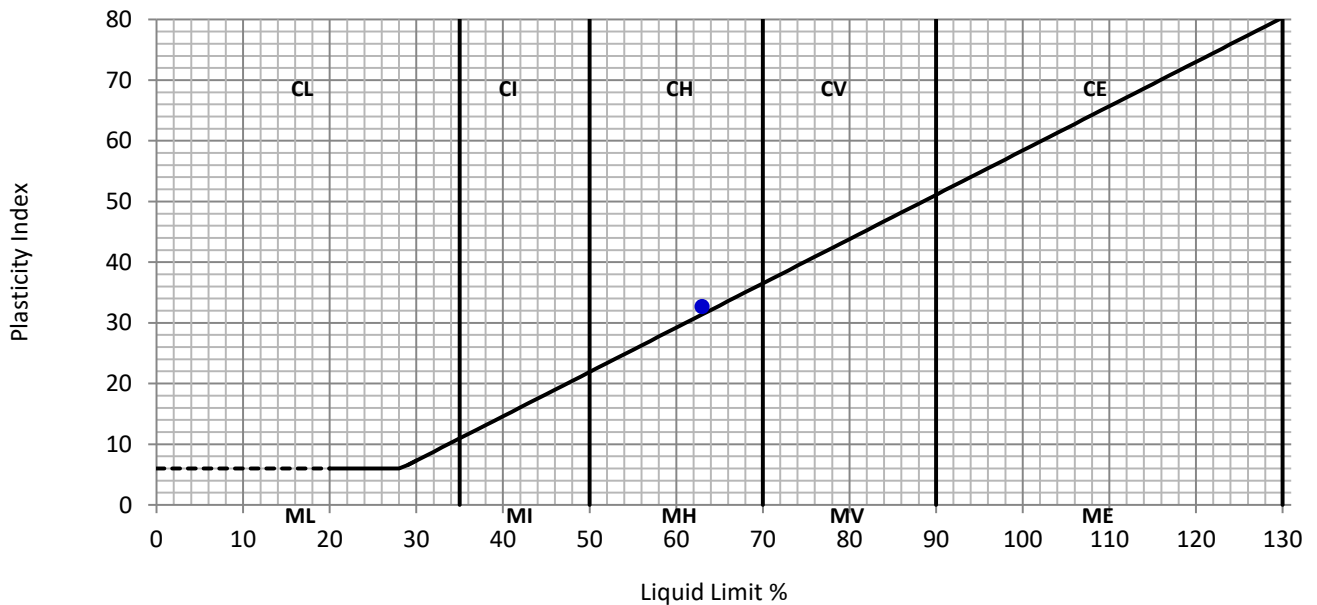
Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34772		

Site Ref / Hole ID:	TP11	Depth (m):	0.50 - 0.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly gravelly slightly sandy CLAY
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	21 October 2023

Test Results

Liquid Limit	63	%
Plastic Limit	30	%
Plasticity Index	33	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	11 %



Remarks:

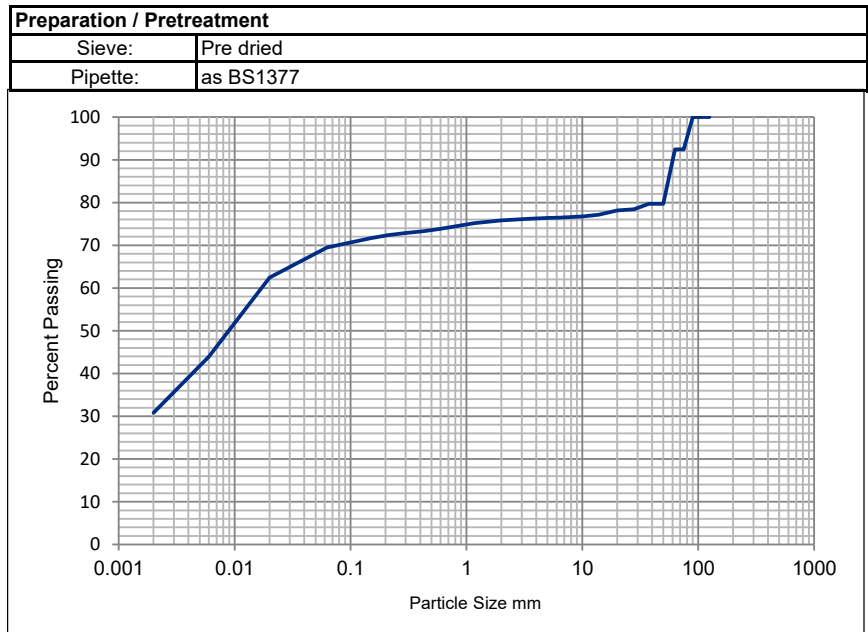
TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34773		

Site Ref / Hole ID:	TP11	Depth (m):	0.50 - 0.80
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly sandy gravelly CLAY with low cobble content
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	24 October 2023

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	92
63	92
50	80
37.5	80
28	78
20	78
14	77
10	77
6.3	76
5.0	76
3.35	76
2.00	76
1.18	75
0.600	74
0.425	73
0.300	73
0.212	72
0.150	72
0.063	69



Sedimentation	
Particle Size mm	% Passing
0.0201	62
0.0060	44
0.0020	31

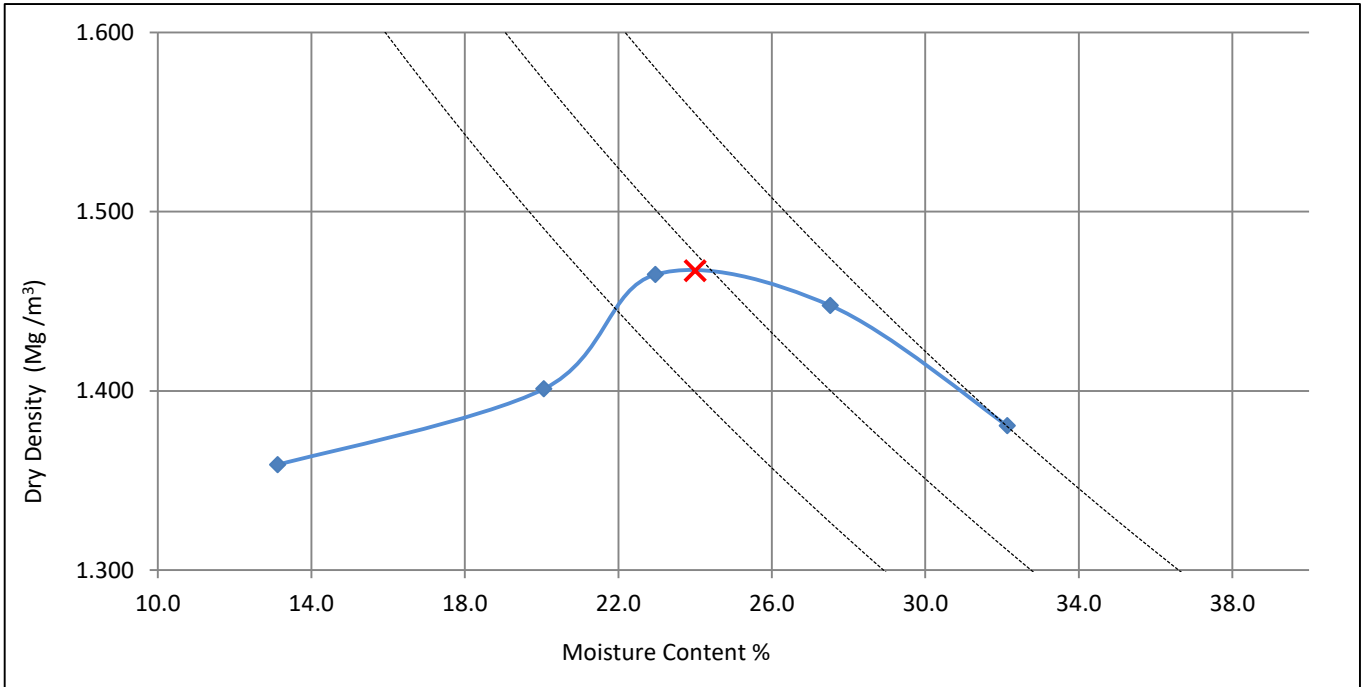
Sample Portions		Particle Density Mg/m3		Uniformity Coefficient D ₆₀ / D ₁₀
Cobbles / Boulders	8	2.65	assumed	
Gravel	17			
Sand	6	Dry mass of sample, kg		
Silt	39	6.7		n/a
Clay	31			

Remarks:

TEST REPORT
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP
BS1377:Part 4:1990

Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34773		

Site Ref / Hole ID:	TP11	Depth (m):	0.50
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly sandy gravelly CLAY with low cobble content
Location in Works:	N/A	Material Source:	Site Generated
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	19 October 2023



Test Method:	BS 1377: part 4: 1990: clause 3.3, 2.5kg rammer in a 1 litre mould
Preparation:	Original sample was oven dried @ 105 oC, single specimen tested

Particle Density, Mg/m ³	2.48	assumed	Derived Parameters ✗
Material > 37.5mm	20	%	Maximum Dry Density, Mg/m ³
Material < 37.5mm > 20mm	2	%	Optimum Moisture Content %
			1.47
			24

Remarks: NMC =29 %
 Tested a 'X' sample due to oversize material

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452

Project Name: CAVAC ATC

Client: HSP Consulting

Address: Lawrence House
Unit 6, Meadowbank Way
Nottingham
NG16 3SB

ATS Sample No: 34774

Site Ref / Hole ID: TP11

Sample No:

Sampling Certificate
Received: No

Location in Works: N/a

Date Sampled: Unknown

Sampled By: Client

Date Received: 17 October 2023

Depth (m): 1.50 - 1.70

Sample Type: Bulk

Material Description: Light brown slightly
gravelly slightly sandy
CLAY

Material Source: Ex-Site

Material Supplier: Ex-Site

Specification: ISO 17892-1

Date Tested: 23 October 2023

Test Results

Moisture Content (%)	18.6
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Remarks:

QA Ref.

EN ISO 17892-1:2014 A1:2022



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est,
Pyle, Bridgend, CF33 6BZ

Tel: 01656 746762 Fax: 01656 749096



7771

Approver

A Grogan

A Grogan, Laboratory Manager

Date

23/10/2023

Fig

MC

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

Project No: D23452
Project Name: CAVAC ATC

Client: HSP Consulting
Address: Lawrence House
 Unit 6, Meadowbank Way
 Nottingham
 NG16 3SB

ATS Sample No: 34774

Site Ref / Hole ID: TP11

Depth (m): 1.50 - 1.70

Sample No:

Sample Type: Bulk

Sampling Certificate Received: No

Material Description: Light brown slightly gravelly slightly sandy CLAY

Location in Works: N/a

Material Source: Ex-Site

Date Sampled: Unknown

Material Supplier: Ex-Site

Sampled By: Client

Specification: BS1377

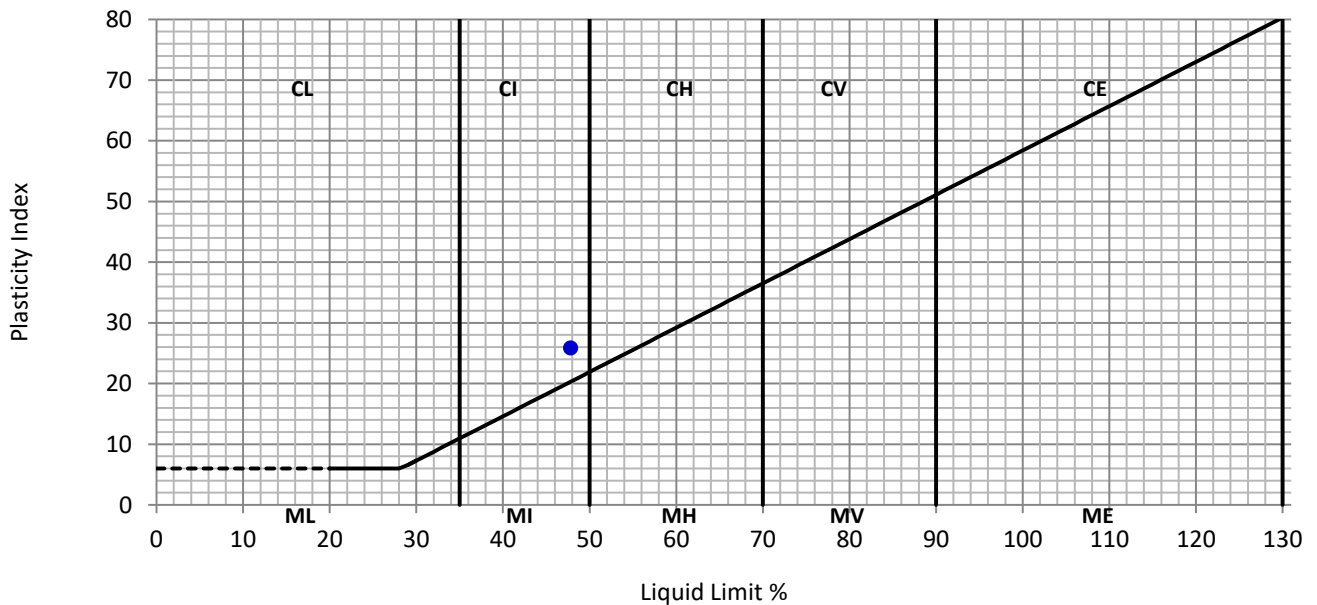
Date Received: 17 October 2023

Date Tested: 21 October 2023

Test Results

Liquid Limit	48	%
Plastic Limit	22	%
Plasticity Index	26	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	41 %



Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452

Project Name: CAVAC ATC

Client: HSP Consulting

Address: Lawrence House
Unit 6, Meadowbank Way
Nottingham
NG16 3SB

ATS Sample No: 34775

Site Ref / Hole ID: TP10

Sample No:

Sampling Certificate Received: No

Depth (m): 0.50 - 0.70

Sample Type: Bulk

Material Description: Brownish grey CLAY

Location in Works: N/a

Date Sampled: Unknown

Sampled By: Client

Date Received: 17 October 2023

Material Source: Ex-Site

Material Supplier: Ex-Site

Specification: ISO 17892-1

Date Tested: 19 October 2023

Test Results

Moisture Content (%)	21.7
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Remarks:

QA Ref.

EN ISO 17892-1:2014 A1:2022



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est,
Pyle, Bridgend, CF33 6BZ

Tel: 01656 746762 Fax: 01656 749096



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Approver

L Davis

L Davis, Quality Manager

Date

19/10/2023

Fig

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TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

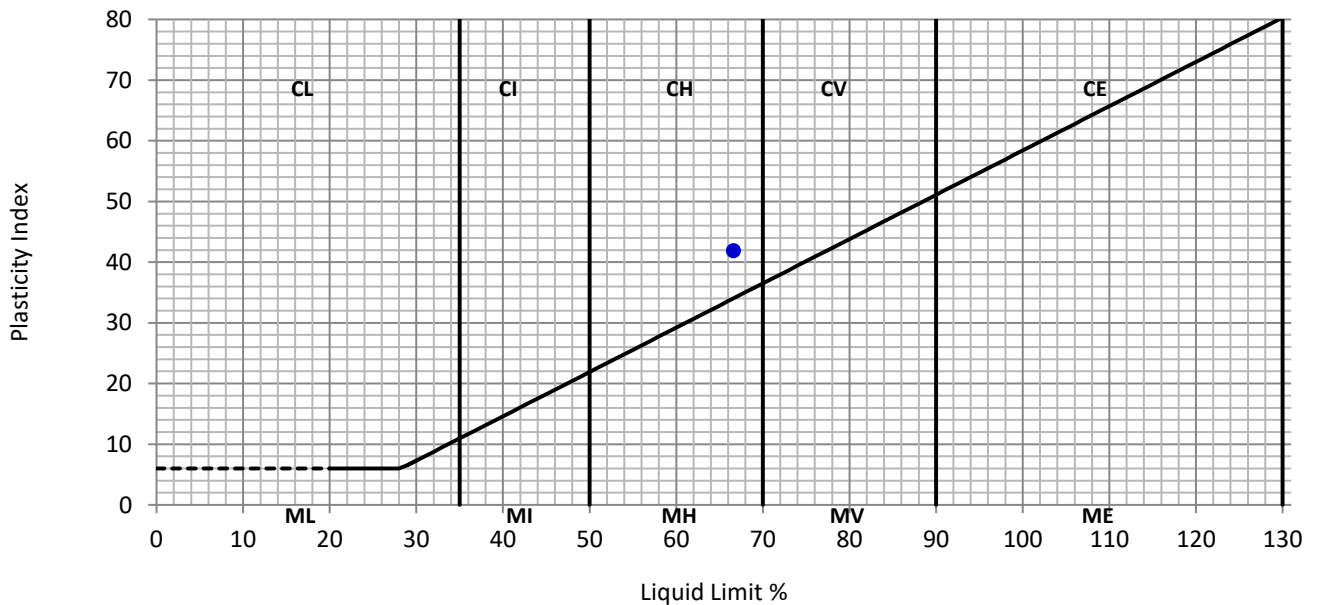
Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34775		

Site Ref / Hole ID:	TP10	Depth (m):	0.50 - 0.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Brownish grey CLAY
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	18 October 2023

Test Results

Liquid Limit	67	%
Plastic Limit	25	%
Plasticity Index	42	%

Preparation:	4.2.3 Natural Specimen
Proportion retained on 425µm sieve:	0 %



Remarks:

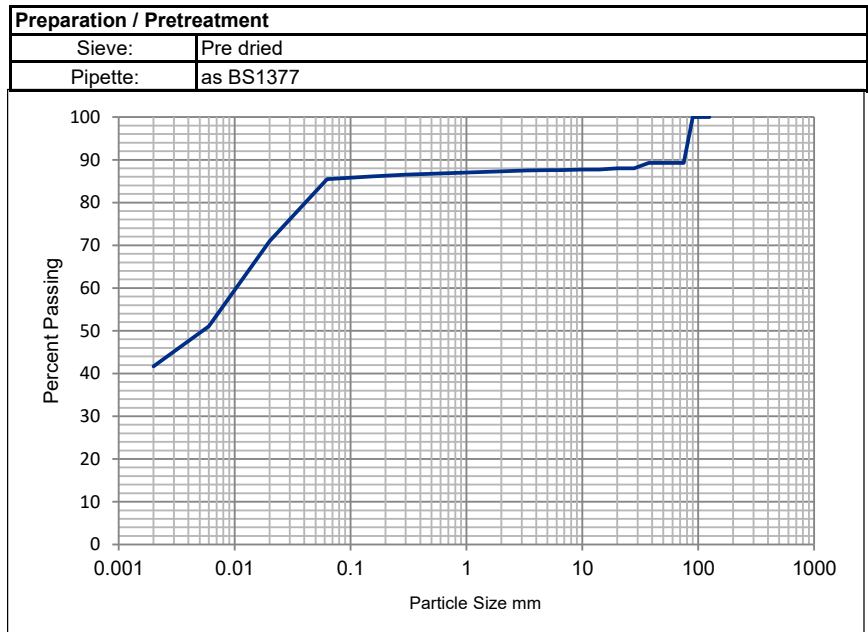
TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34776		

Site Ref / Hole ID:	TP10	Depth (m):	0.50 - 0.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Brownish grey CLAY with low cobble content
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	24 October 2023

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	89
63	89
50	89
37.5	89
28	88
20	88
14	88
10	88
6.3	88
5.0	88
3.35	87
2.00	87
1.18	87
0.600	87
0.425	87
0.300	86
0.212	86
0.150	86
0.063	85



Sedimentation	
Particle Size mm	% Passing
0.0201	71
0.0060	51
0.0020	42

Sample Portions		Particle Density Mg/m3		Uniformity Coefficient D₆₀ / D₁₀
Cobbles / Boulders	11	2.65	assumed	
Gravel	2			
Sand	2	Dry mass of sample, kg		
Silt	44	7.2		n/a
Clay	42			

Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452

Project Name: CAVAC ATC

Client: HSP Consulting

Address: Lawrence House
Unit 6, Meadowbank Way
Nottingham
NG16 3SB

ATS Sample No: 34778

Site Ref / Hole ID: TP2

Sample No:

Sampling Certificate
Received: No

Location in Works: N/a

Date Sampled: Unknown

Sampled By: Client

Date Received: 17 October 2023

Depth (m): 0.50 - 0.70

Sample Type: Bulk

Material Description: Greyish brown slightly
gravelly CLAY

Material Source: Ex-Site

Material Supplier: Ex-Site

Specification: ISO 17892-1

Date Tested: 23 October 2023

Test Results

Moisture Content (%)	24.4
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Remarks:

QA Ref.

EN ISO 17892-1:2014 A1:2022



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est,
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Tel: 01656 746762 Fax: 01656 749096



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Approver

A Grogan

A Grogan, Laboratory Manager

Date

23/10/2023

Fig

MC

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

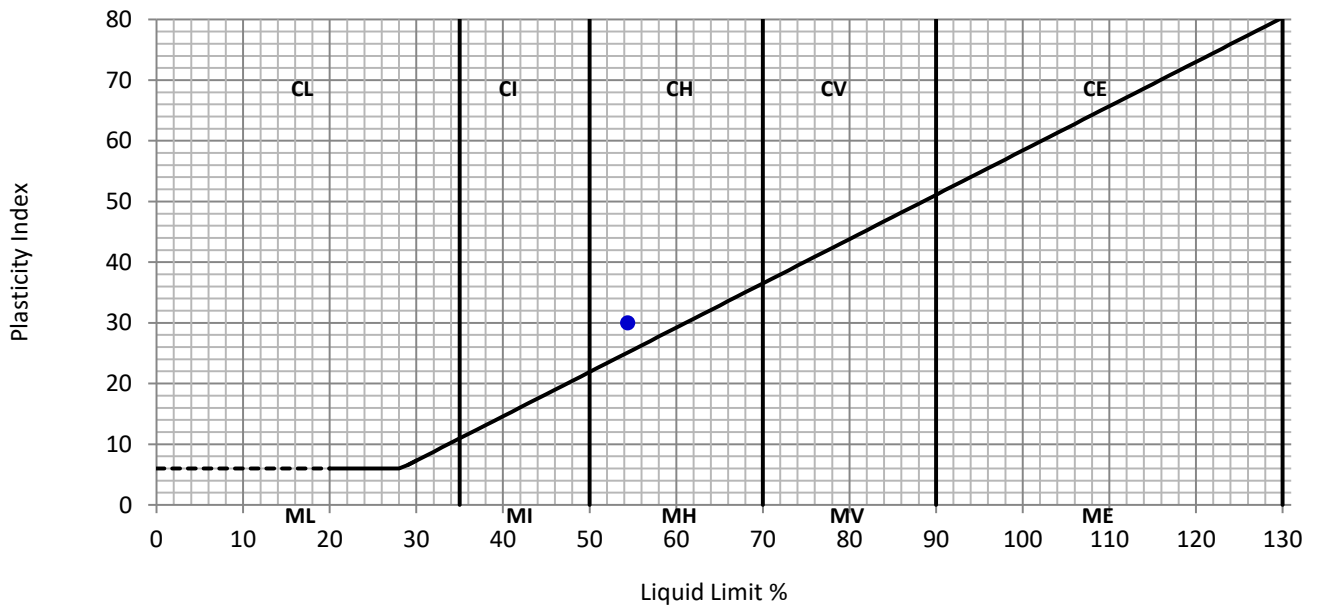
Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34778		

Site Ref / Hole ID:	TP2	Depth (m):	0.50 - 0.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly gravelly CLAY
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	21 October 2023

Test Results

Liquid Limit	54	%
Plastic Limit	24	%
Plasticity Index	30	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	33 %



Remarks:

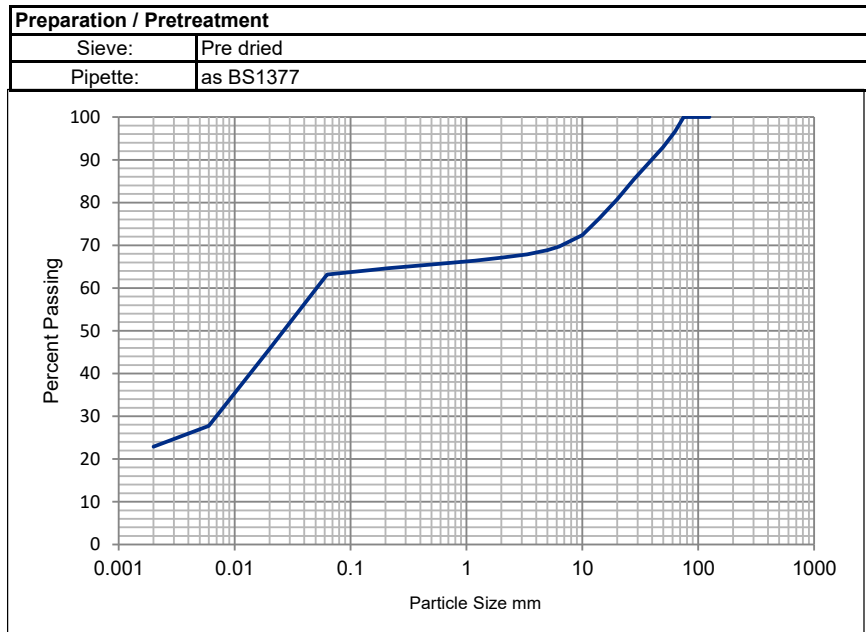
TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34779		

Site Ref / Hole ID:	TP2	Depth (m):	0.50 - 0.80
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown gravelly CLAY with low cobble content
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	25 October 2023

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	97
50	93
37.5	89
28	85
20	81
14	76
10	72
6.3	70
5.0	69
3.35	68
2.00	67
1.18	66
0.600	66
0.425	65
0.300	65
0.212	65
0.150	64
0.063	63



Sedimentation	
Particle Size mm	% Passing
0.0201	46
0.0060	28
0.0020	23

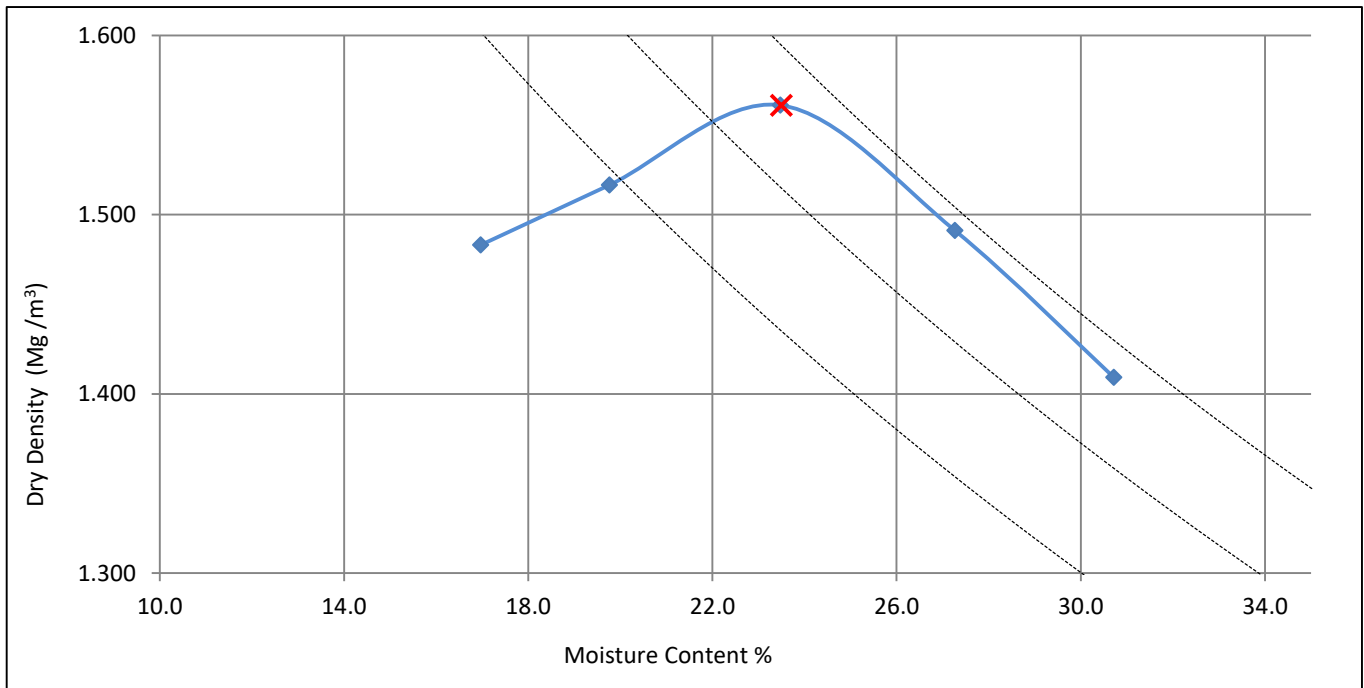
Sample Portions		Particle Density Mg/m3	Uniformity Coefficient D₆₀ / D₁₀
Cobbles / Boulders	3	2.65 assumed	
Gravel	29		
Sand	4	Dry mass of sample, kg	
Silt	40		
Clay	23		
		7.5	n/a

Remarks:

TEST REPORT
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP
BS1377:Part 4:1990

Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34779		

Site Ref / Hole ID:	TP2	Depth (m):	0.50
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown gravelly CLAY with low cobble content
Location in Works:	N/A	Material Source:	Site Generated
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	21 October 2023



Test Method:	BS 1377: part 4: 1990: clause 3.3, 2.5kg rammer in a 1 litre mould
Preparation:	Original sample was oven dried @ 105 oC, separate specimens tested

Particle Density, Mg/m ³	2.55	assumed	Derived Parameters ✗
Material > 37.5mm	11	%	Maximum Dry Density, Mg/m ³
Material < 37.5mm > 20mm	9	%	Optimum Moisture Content %
			1.56
			24

Remarks: NMC =24 %
Tested a 'X' sample due to oversize material

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452	Client: HSP Consulting
Project Name: CAVAC ATC	Address: Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No: 34780	

Site Ref / Hole ID: TP2	Depth (m): 1.25 - 1.30
Sample No:	Sample Type: Bulk
Sampling Certificate Received: No	Material Description: Light brown gravelly CLAY
Location in Works: N/a	Material Source: Ex-Site
Date Sampled: Unknown	Material Supplier: Ex-Site
Sampled By: Client	Specification: ISO 17892-1
Date Received: 17 October 2023	Date Tested: 19 October 2023

Test Results

Moisture Content (%)	9.1
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Remarks:

QA Ref.	 Apex Testing Solutions Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	 UKAS TESTING 7771	Approver	Date	Fig MC
EN ISO 17892-1:2014 A1:2022			<i>A Grogan</i>	23/10/2023	

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

Project No: D23452
Project Name: CAVAC ATC

Client: HSP Consulting
Address: Lawrence House
 Unit 6, Meadowbank Way
 Nottingham
 NG16 3SB

ATS Sample No: 34780

Site Ref / Hole ID: TP2

Depth (m): 1.25 - 1.30

Sample No:

Sample Type: Bulk

Sampling Certificate Received: No

Material Description: Light brown gravelly CLAY

Location in Works: N/a

Material Source: Ex-Site

Date Sampled: Unknown

Material Supplier: Ex-Site

Sampled By: Client

Specification: BS1377

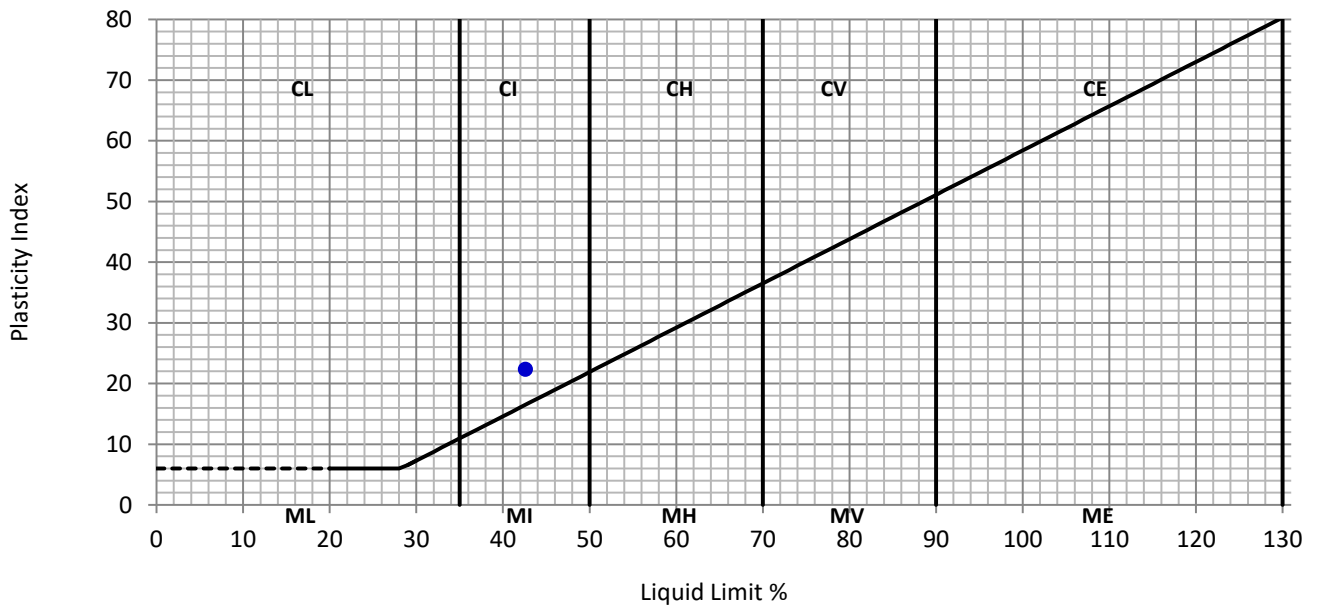
Date Received: 17 October 2023

Date Tested: 21 October 2023

Test Results

Liquid Limit	43	%
Plastic Limit	20	%
Plasticity Index	22	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	53 %



Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452

Project Name: CAVAC ATC

Client: HSP Consulting

Address: Lawrence House
Unit 6, Meadowbank Way
Nottingham
NG16 3SB

ATS Sample No: 34781

Site Ref / Hole ID: TP4

Sample No:

Sampling Certificate Received: No

Location in Works: N/a

Date Sampled: Unknown

Sampled By: Client

Date Received: 17 October 2023

Depth (m): 0.50 - 0.70

Sample Type: Bulk

Material Description: Greyish brown gravelly CLAY

Material Source: Ex-Site

Material Supplier: Ex-Site

Specification: ISO 17892-1

Date Tested: 19 October 2023

Test Results

Moisture Content (%)	24.0
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Remarks:

QA Ref.

EN ISO 17892-1:2014 A1:2022



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est,
Pyle, Bridgend, CF33 6BZ

Tel: 01656 746762 Fax: 01656 749096



7771

Approver

A Grogan

A Grogan, Laboratory Manager

Date

23/10/2023

Fig

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TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

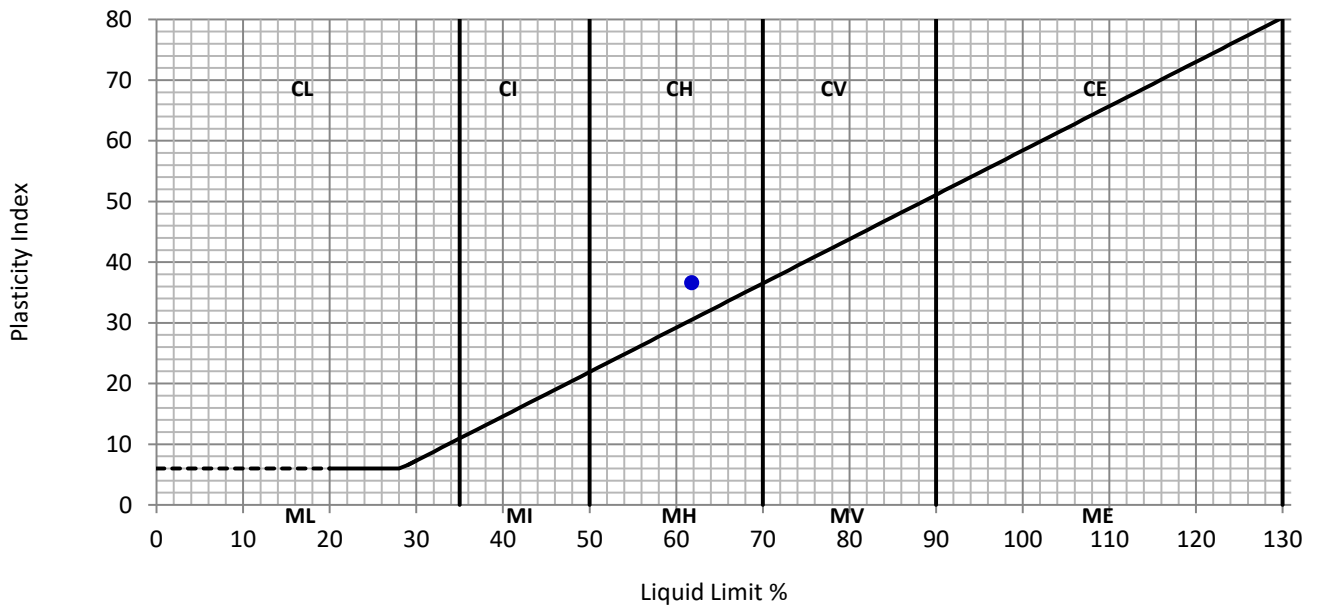
Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34781		

Site Ref / Hole ID:	TP4	Depth (m):	0.50 - 0.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown gravelly CLAY
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	21 October 2023

Test Results

Liquid Limit	62	%
Plastic Limit	25	%
Plasticity Index	37	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	29 %



Remarks:

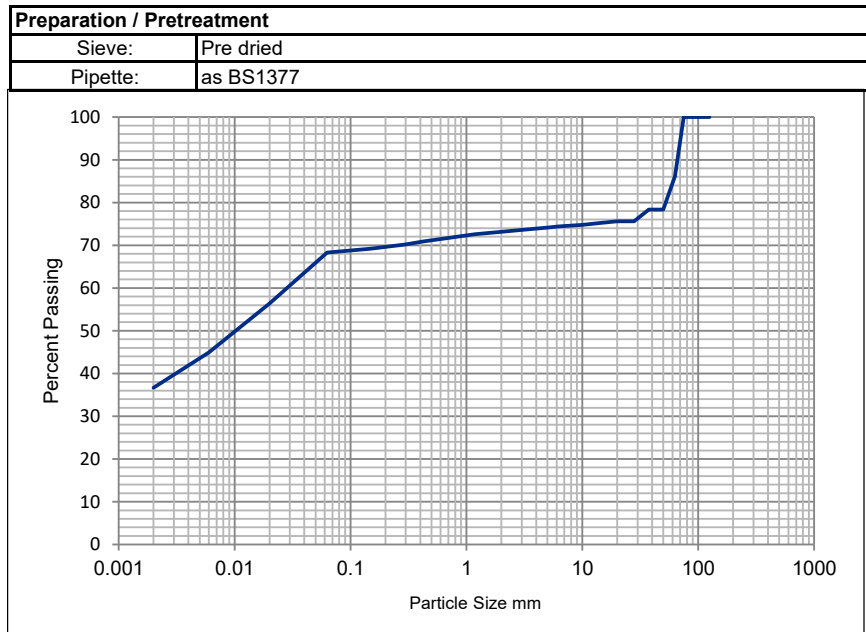
TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

Project No: D23452	Client: HSP Consulting
Project Name: CAVAC ATC	Address: Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No: 34782	

Site Ref / Hole ID: TP4	Depth (m): 0.50 - 0.80
Sample No:	Sample Type: Bulk
Sampling Certificate Received: No	Material Description: Greyish brown slightly sandy slightly gravelly CLAY with medium cobble content
Location in Works: N/a	Material Source: Ex-Site
Date Sampled: Unknown	Material Supplier: Ex-Site
Sampled By: Client	Specification: BS1377
Date Received: 17 October 2023	Date Tested: 25 October 2023

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	86
50	78
37.5	78
28	76
20	76
14	75
10	75
6.3	74
5.0	74
3.35	74
2.00	73
1.18	73
0.600	71
0.425	71
0.300	70
0.212	70
0.150	69
0.063	68



Sedimentation	
Particle Size mm	% Passing
0.0201	56
0.0060	45
0.0020	37

Sample Portions		Particle Density Mg/m3		Uniformity Coefficient D ₆₀ / D ₁₀
Cobbles / Boulders	14	2.65	assumed	
Gravel	13			
Sand	5	Dry mass of sample, kg		
Silt	32	3.6		
Clay	37			n/a

Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452	Client: HSP Consulting
Project Name: CAVAC ATC	Address: Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No: 34783	

Site Ref / Hole ID: TP4	Depth (m): 1.30 - 1.50
Sample No:	Sample Type: Bulk
Sampling Certificate Received: No	Material Description: Greyish brown slightly gravelly CLAY
Location in Works: N/a	Material Source: Ex-Site
Date Sampled: Unknown	Material Supplier: Ex-Site
Sampled By: Client	Specification: ISO 17892-1
Date Received: 17 October 2023	Date Tested: 26 October 2023

Test Results

Moisture Content (%)	19.4
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Remarks:

QA Ref. EN ISO 17892-1:2014 A1:2022	 Apex Testing Solutions Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	 UKAS TESTING 7771	Approver <i>A Grogan</i> A Grogan, Laboratory Manager	Date 26/10/2023	Fig MC
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TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

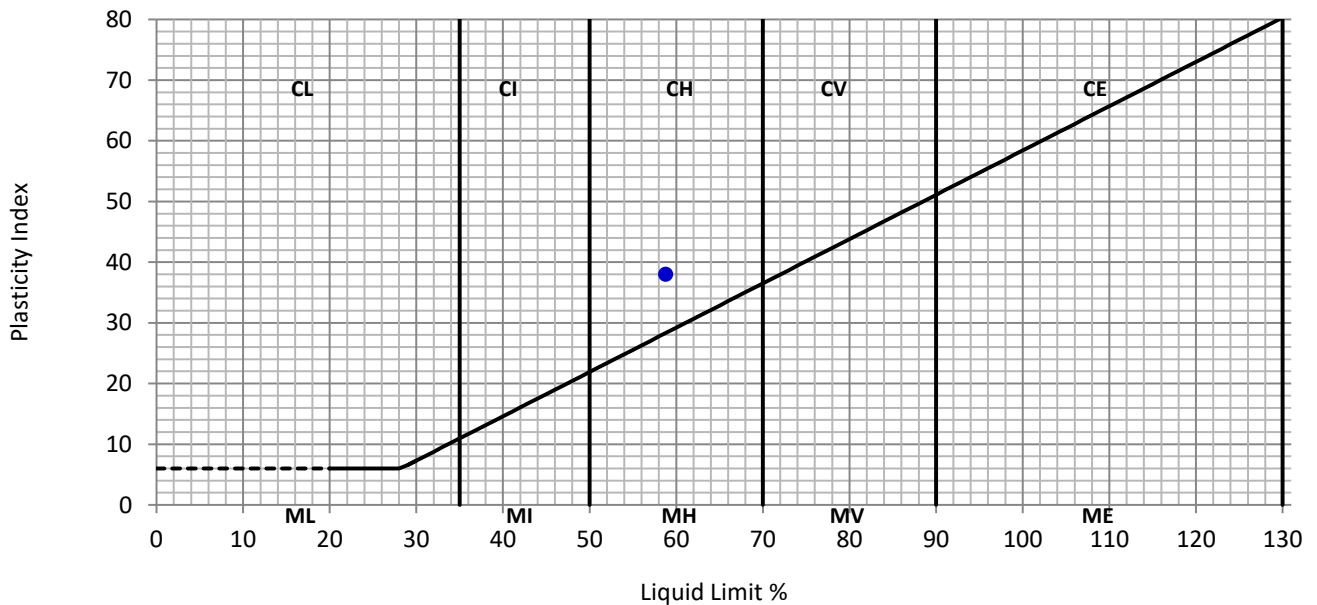
Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34783		

Site Ref / Hole ID:	TP4	Depth (m):	1.30 - 1.50
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly gravelly CLAY
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	25 October 2023

Test Results

Liquid Limit	59	%
Plastic Limit	21	%
Plasticity Index	38	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	7 %



Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452	Client: HSP Consulting
Project Name: CAVAC ATC	Address: Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No: 34785	

Site Ref / Hole ID: TP5	Depth (m): 0.50 - 0.70
Sample No:	Sample Type: Bulk
Sampling Certificate Received: No	Material Description: Greyish brown slightly gravelly CLAY
Location in Works: N/a	Material Source: Ex-Site
Date Sampled: Unknown	Material Supplier: Ex-Site
Sampled By: Client	Specification: ISO 17892-1
Date Received: 17 October 2023	Date Tested: 23 October 2023

Test Results

Moisture Content (%)	26.3
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Remarks:

QA Ref.		Apex Testing Solutions Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096		Approver	Date	Fig MC
EN ISO 17892-1:2014 A1:2022				<i>A Grogan</i>	23/10/2023	

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

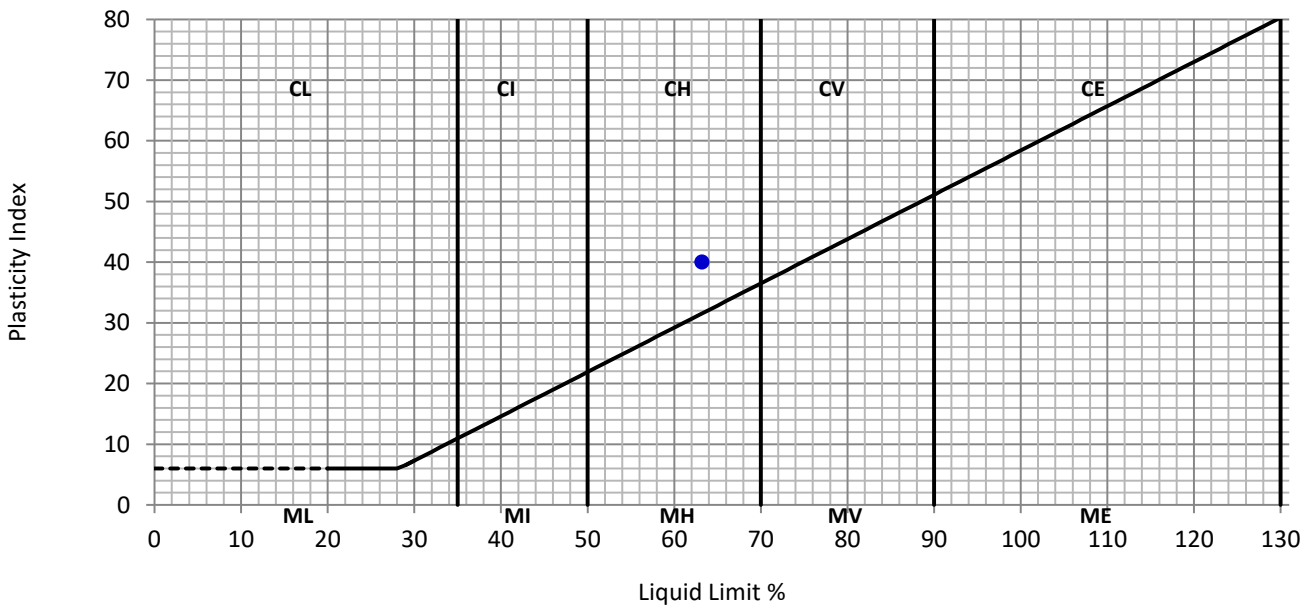
Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34785		

Site Ref / Hole ID:	TP5	Depth (m):	0.50 - 0.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly gravelly CLAY
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	21 October 2023

Test Results

Liquid Limit	63	%
Plastic Limit	23	%
Plasticity Index	40	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	18 %



Remarks:

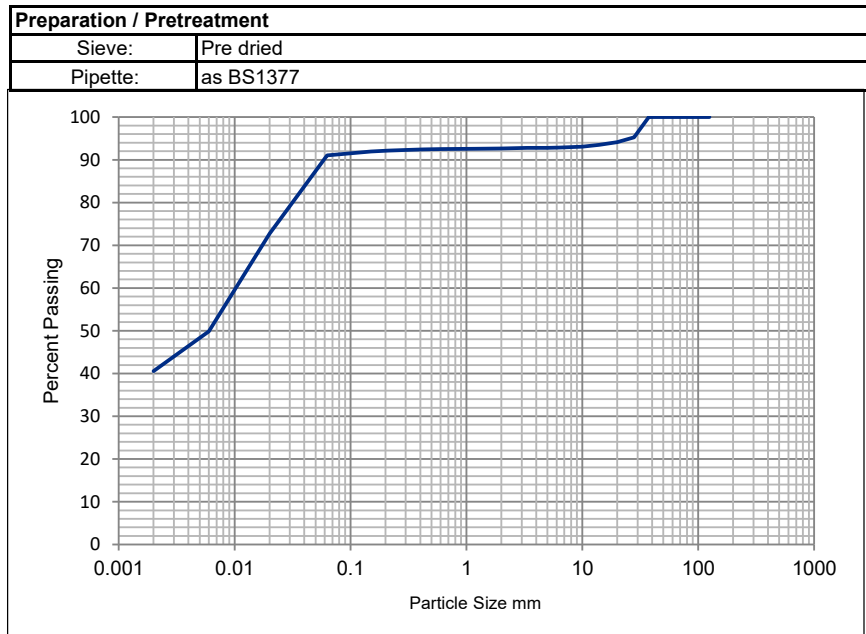
TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

Project No: D23452	Client: HSP Consulting
Project Name: CAVAC ATC	Address: Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No: 34785	

Site Ref / Hole ID: TP5	Depth (m): 0.50 - 0.80
Sample No:	Sample Type: Bulk
Sampling Certificate Received: No	Material Description: Greyish brown slightly gravelly CLAY
Location in Works: N/a	Material Source: Ex-Site
Date Sampled: Unknown	Material Supplier: Ex-Site
Sampled By: Client	Specification: BS1377
Date Received: 17 October 2023	Date Tested: 24 October 2023

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	95
20	94
14	93
10	93
6.3	93
5.0	93
3.35	93
2.00	93
1.18	93
0.600	92
0.425	92
0.300	92
0.212	92
0.150	92
0.063	91



Sedimentation	
Particle Size mm	% Passing
0.0201	73
0.0060	50
0.0020	41

Sample Portions	Particle Density Mg/m3	Uniformity Coefficient
Cobbles / Boulders	0	D_{60} / D_{10}
Gravel	7	
Sand	2	n/a
Silt	50	
Clay	41	

Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452

Project Name: CAVAC ATC

Client: HSP Consulting

Address: Lawrence House
Unit 6, Meadowbank Way
Nottingham
NG16 3SB

ATS Sample No: 34786

Site Ref / Hole ID: TP5

Sample No:

Sampling Certificate Received: No

Location in Works: N/a

Date Sampled: Unknown

Sampled By: Client

Date Received: 17 October 2023

Depth (m): 1.50 - 1.70

Sample Type: Bulk

Material Description: Light brown slightly
gravelly slightly sandy
CLAY

Material Source: Ex-Site

Material Supplier: Ex-Site

Specification: ISO 17892-1

Date Tested: 23 October 2023

Test Results

Moisture Content (%)	14.1
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Remarks:

QA Ref.

EN ISO 17892-1:2014 A1:2022



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Tel: 01656 746762 Fax: 01656 749096



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Approver

A Grogan

A Grogan, Laboratory Manager

Date

23/10/2023

Fig

MC

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

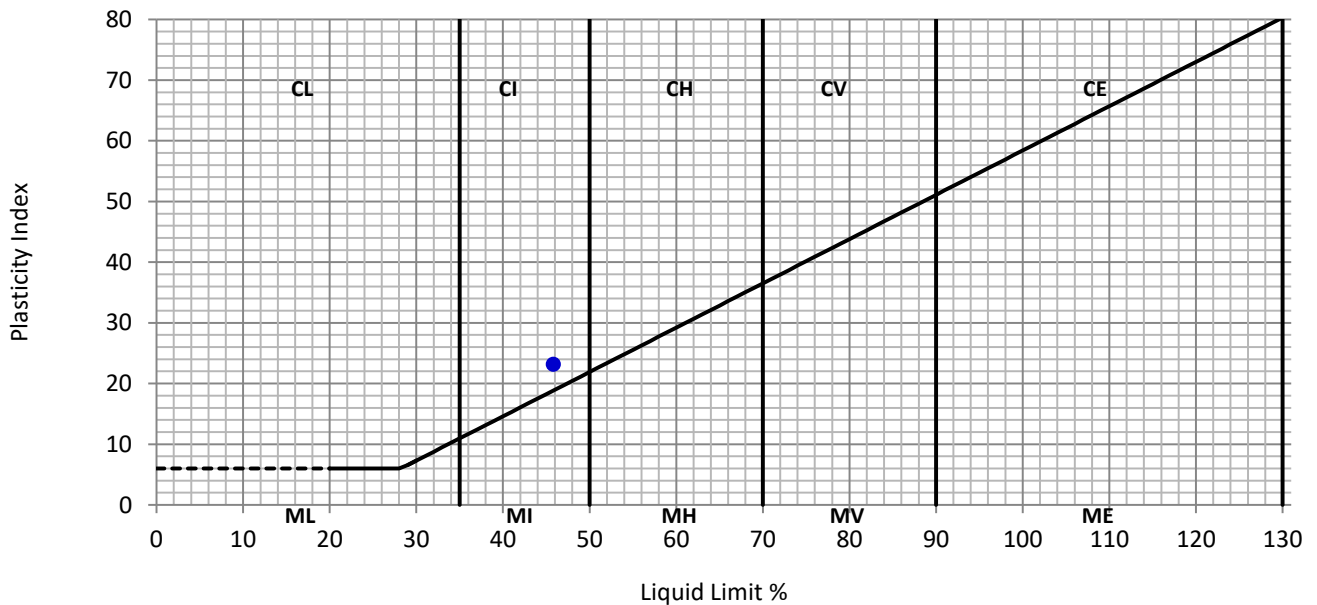
Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34786		

Site Ref / Hole ID:	TP5	Depth (m):	1.50 - 1.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Light brown slightly gravelly slightly sandy CLAY
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	21 October 2023

Test Results

Liquid Limit	46	%
Plastic Limit	23	%
Plasticity Index	23	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	24 %



Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452

Project Name: CAVAC ATC

Client: HSP Consulting

Address: Lawrence House
Unit 6, Meadowbank Way
Nottingham
NG16 3SB

ATS Sample No: 34787

Site Ref / Hole ID: TP6

Sample No:

Sampling Certificate
Received: No

Location in Works: N/a

Date Sampled: Unknown

Sampled By: Client

Date Received: 17 October 2023

Depth (m): 0.50 - 0.70

Sample Type: Bulk

Material Description: Greyish brown slightly
gravelly CLAY

Material Source: Ex-Site

Material Supplier: Ex-Site

Specification: ISO 17892-1

Date Tested: 24 October 2023

Test Results

Moisture Content (%)	32.2
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Remarks:

QA Ref.

EN ISO 17892-1:2014 A1:2022



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Approver

A Grogan

A Grogan, Laboratory Manager

Date

24/10/2023

Fig

MC

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

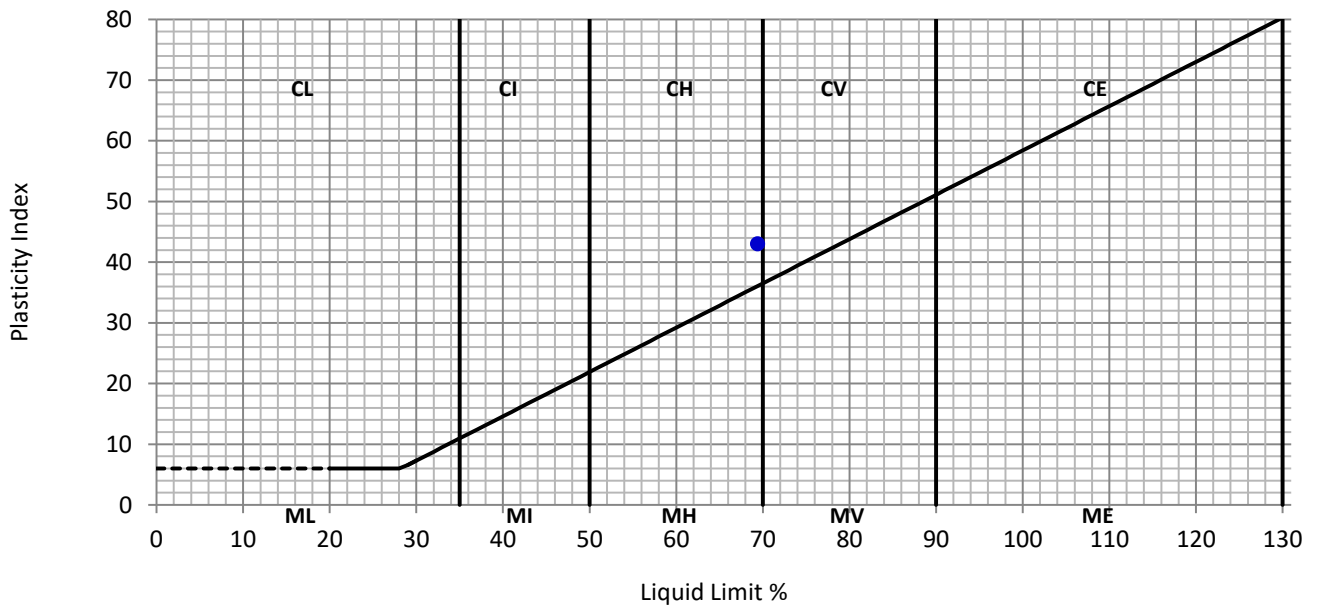
Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34787		

Site Ref / Hole ID:	TP6	Depth (m):	0.50 - 0.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly gravelly CLAY
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	23 October 2023

Test Results

Liquid Limit	69	%
Plastic Limit	26	%
Plasticity Index	43	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	21 %



Remarks:

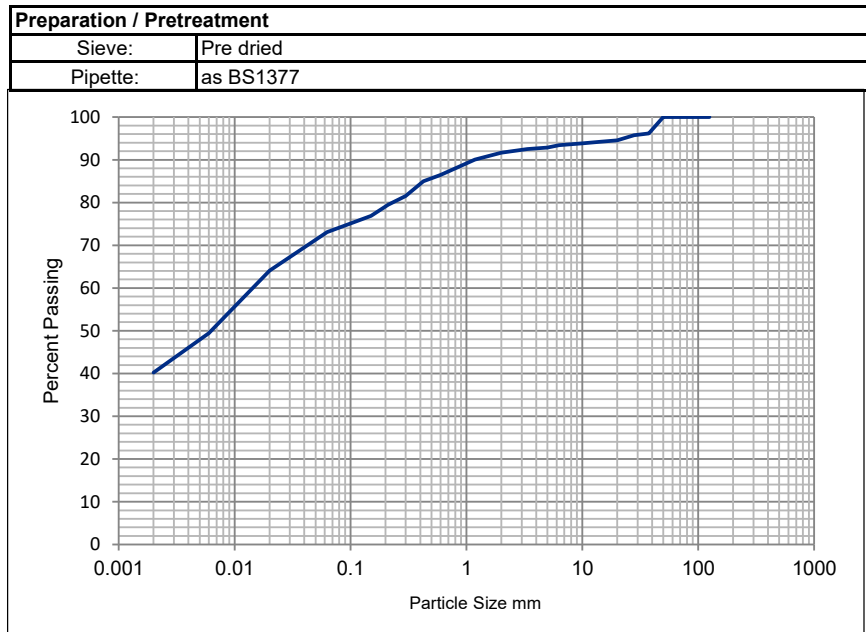
TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address	Lawrence House
			Unit 6, Meadowbank Way
			Nottingham
ATS Sample No:	34788		NG16 3SB

Site Ref / Hole ID:	TP6	Depth (m):	0.50 - 0.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly gravelly slightly sandy CLAY
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	24 October 2023

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	96
28	96
20	95
14	94
10	94
6.3	93
5.0	93
3.35	92
2.00	92
1.18	90
0.600	86
0.425	85
0.300	81
0.212	79
0.150	77
0.063	73



Sedimentation	
Particle Size mm	% Passing
0.0201	64
0.0060	49
0.0020	40

Sample Portions	Particle Density Mg/m3	Uniformity Coefficient
Cobbles / Boulders	0	D₆₀ / D₁₀
Gravel	8	
Sand	19	n/a
Silt	33	
Clay	40	

Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452

Project Name: CAVAC ATC

Client: HSP Consulting

Address: Lawrence House
Unit 6, Meadowbank Way
Nottingham
NG16 3SB

ATS Sample No: 34789

Site Ref / Hole ID: TP6

Sample No:

Sampling Certificate Received: No

Depth (m): 1.50 - 0.70

Sample Type: Bulk

Material Description: Greyish brown slightly gravelly CLAY

Location in Works: N/a

Date Sampled: Unknown

Sampled By: Client

Date Received: 17 October 2023

Material Source: Ex-Site

Material Supplier: Ex-Site

Specification: ISO 17892-1

Date Tested: 24 October 2023

Test Results

Moisture Content (%)	18.6
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Remarks:

QA Ref.

EN ISO 17892-1:2014 A1:2022



Apex Testing Solutions

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Tel: 01656 746762 Fax: 01656 749096



7771

Approver

A Grogan

A Grogan, Laboratory Manager

Date

24/10/2023

Fig

MC

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

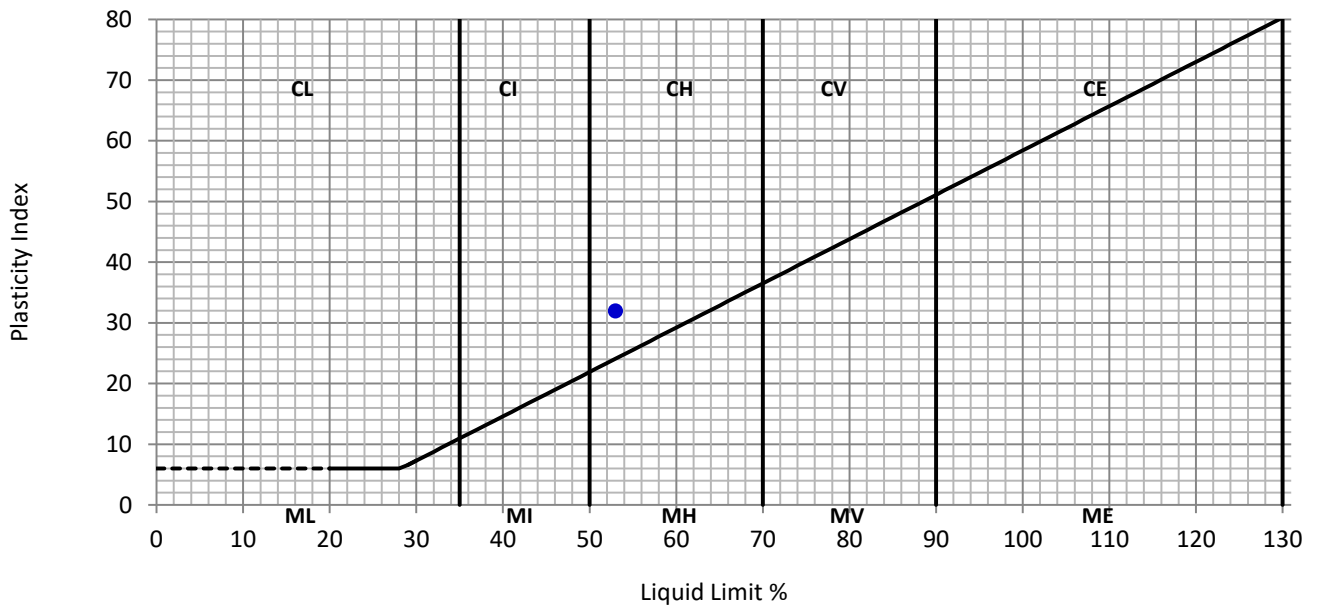
Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34789		

Site Ref / Hole ID:	TP6	Depth (m):	1.50 - 0.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly gravelly CLAY
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	23 October 2023

Test Results

Liquid Limit	53	%
Plastic Limit	21	%
Plasticity Index	32	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	10 %



Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452	Client: HSP Consulting
Project Name: CAVAC ATC	Address: Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No: 34790	

Site Ref / Hole ID: TP7	Depth (m): 0.50 - 0.70
Sample No:	Sample Type: Bulk
Sampling Certificate Received: No	Material Description: Greyish brown slightly gravelly CLAY with low cobble content
Location in Works: N/a	Material Source: Ex-Site
Date Sampled: Unknown	Material Supplier: Ex-Site
Sampled By: Client	Specification: ISO 17892-1
Date Received: 17 October 2023	Date Tested: 24 October 2023

Test Results

Moisture Content (%)	28.0
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Remarks:

QA Ref.	 Apex Testing Solutions Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	 UKAS TESTING 7771	Approver	Date	Fig MC
EN ISO 17892-1:2014 A1:2022			<i>A Grogan</i>	24/10/2023	

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

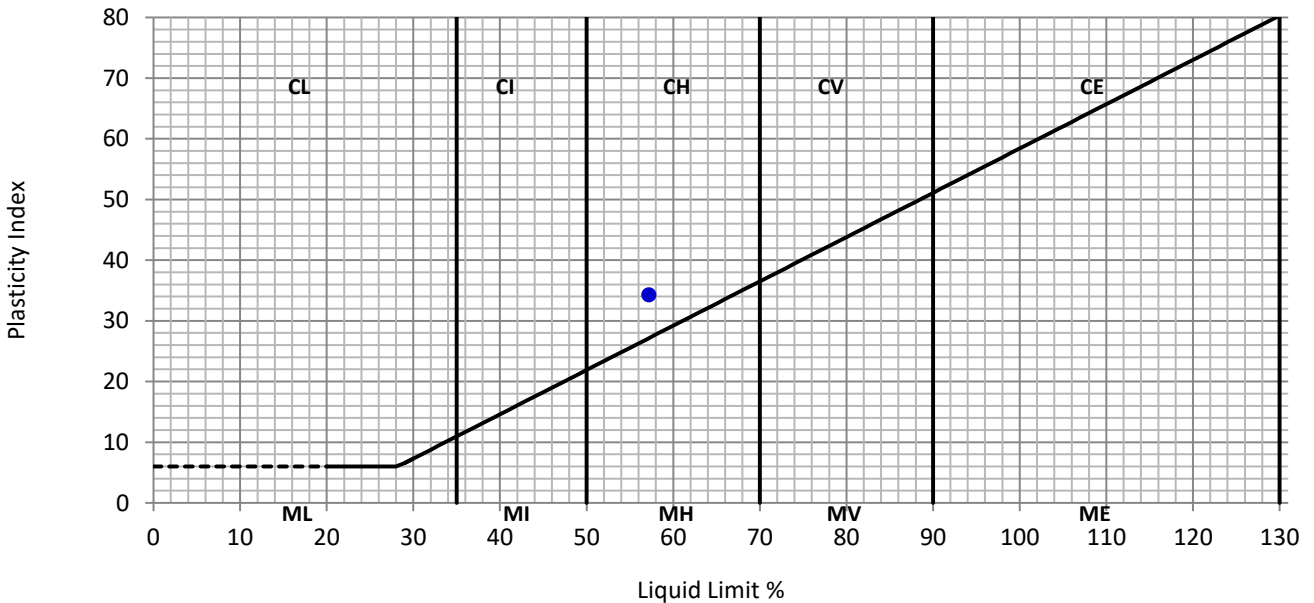
Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address:	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34790		

Site Ref / Hole ID:	TP7	Depth (m):	0.50 - 0.70
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly gravelly CLAY with low cobble content
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	23 October 2023

Test Results

Liquid Limit	57	%
Plastic Limit	23	%
Plasticity Index	34	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	33 %



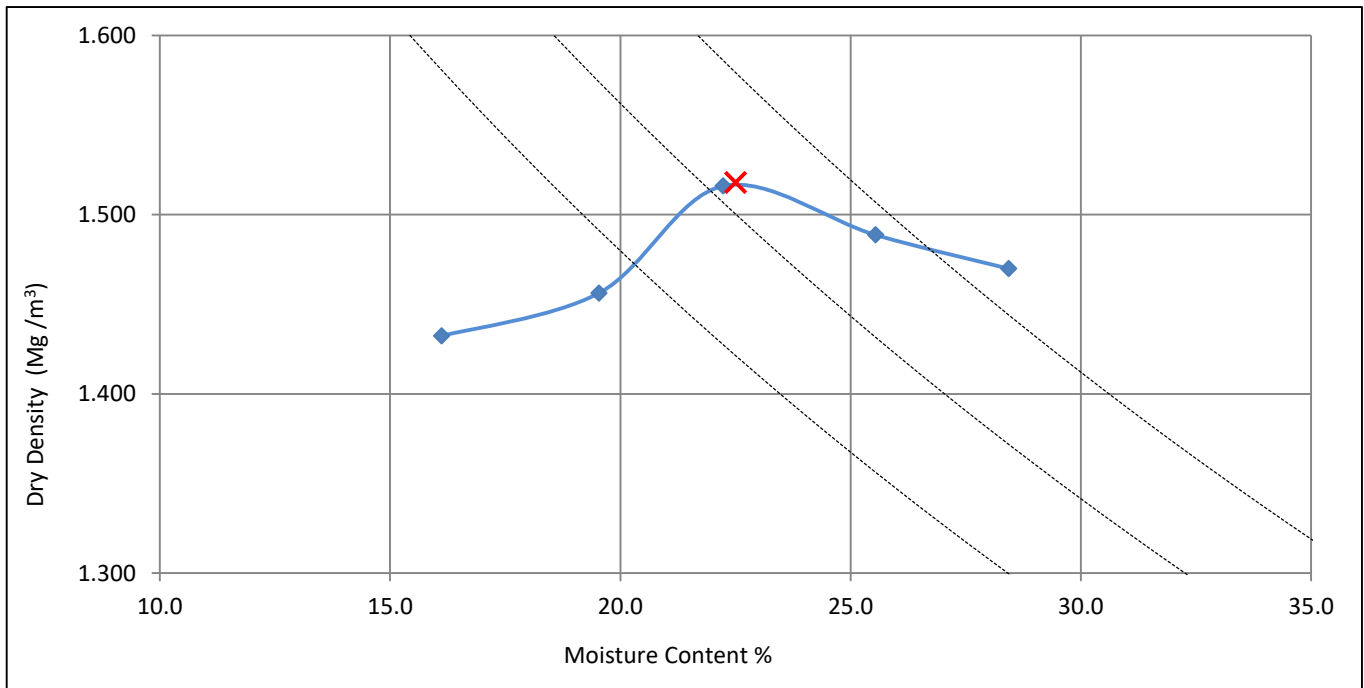
Remarks:

TEST REPORT
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP
BS1377:Part 4:1990

Project No: D23452
Project Name: CAVAC ATC
ATS Sample No: 34790

Client: HSP Consulting
Address: Lawrence House
 Unit 6, Meadowbank Way
 Nottingham
 NG16 3SB

Site Ref / Hole ID: TP7 **Depth (m):** 0.50
Sample No: **Sample Type:** Bulk
Sampling Certificate Received: No **Material Description:** Greyish brown slightly gravelly CLAY with low cobble content
Location in Works: N/A **Material Source:** Site Generated
Date Sampled: Unknown **Material Supplier:** Ex-Site
Sampled By: Client **Specification:** BS1377
Date Received: 17 October 2023 **Date Tested:** 19 October 2023



Test Method: BS 1377: part 4: 1990: clause 3.3, 2.5kg rammer in a 1 litre mould
Preparation: Original sample was oven dried @ 105 oC, single specimen tested

Particle Density, Mg/m³	2.45	assumed	Derived Parameters *	
Material > 37.5mm	15	%	Maximum Dry Density, Mg/m ³	1.52
Material < 37.5mm > 20mm	1	%	Optimum Moisture Content %	23

Remarks: NMC = 28%
 Tested a 'X' sample due to oversize material

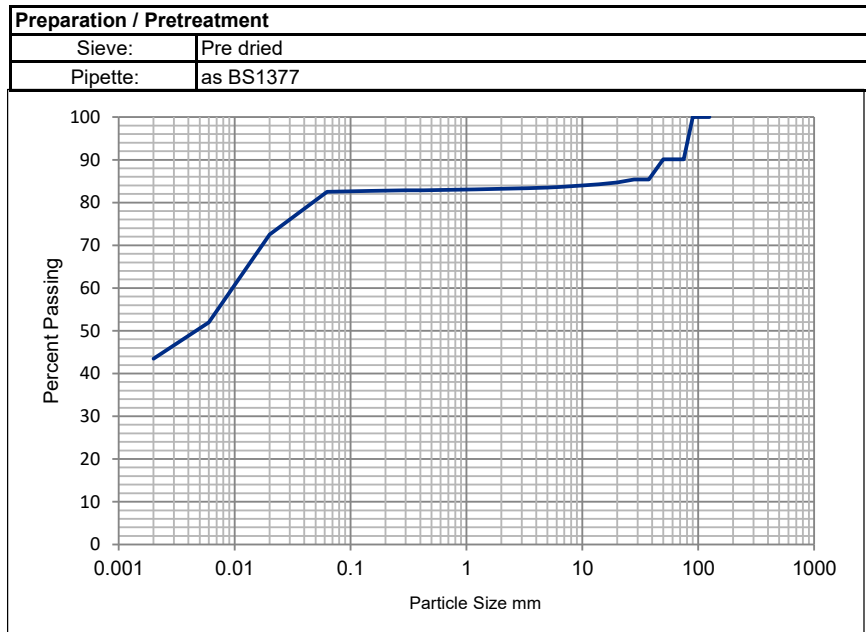
TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

Project No:	D23452	Client:	HSP Consulting
Project Name:	CAVAC ATC	Address	Lawrence House
			Unit 6, Meadowbank Way
			Nottingham
ATS Sample No:	34791		NG16 3SB

Site Ref / Hole ID:	TP7	Depth (m):	0.50 - 0.80
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown slightly gravelly CLAY with low cobble content
Location in Works:	N/a	Material Source:	Ex-Site
Date Sampled:	Unknown	Material Supplier:	Ex-Site
Sampled By:	Client	Specification:	BS1377
Date Received:	17 October 2023	Date Tested:	24 October 2023

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	90
63	90
50	90
37.5	85
28	85
20	85
14	84
10	84
6.3	84
5.0	84
3.35	83
2.00	83
1.18	83
0.600	83
0.425	83
0.300	83
0.212	83
0.150	83
0.063	83



Sedimentation	
Particle Size mm	% Passing
0.0201	73
0.0060	52
0.0020	43

Sample Portions		Particle Density Mg/m3	Uniformity Coefficient D ₆₀ / D ₁₀
Cobbles / Boulders	10	2.65 assumed	
Gravel	7		
Sand	1	Dry mass of sample, kg	
Silt	39	6.8	n/a
Clay	43		

Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No: D23452	Client: HSP Consulting
Project Name: CAVAC ATC	Address: Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No: 34792	

Site Ref / Hole ID: TP7	Depth (m): 1.50 - 1.70
Sample No:	Sample Type: Bulk
Sampling Certificate Received: No	Material Description: Light brown slightly gravelly CLAY
Location in Works: N/a	Material Source: Ex-Site
Date Sampled: Unknown	Material Supplier: Ex-Site
Sampled By: Client	Specification: ISO 17892-1
Date Received: 17 October 2023	Date Tested: 24 October 2023

Test Results

Moisture Content (%)	23.7
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Remarks:

QA Ref.		Apex Testing Solutions Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096		Approver	Date	Fig MC
EN ISO 17892-1:2014 A1:2022				<i>A Grogan</i>	24/10/2023	