



Photo 07: View of excavated TP02



Photo 08: View of water strike within excavated TP07



Photo 09: Standpipe of completed borehole WS07



Photo 10: Standpipe of completed borehole CP02



Photo 11: Deep tracks on Parcel 1



Photo 12: View of adjacent East Lancashire Road from Parcel 2



RPS | Consulting UK & Ireland
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Manchester
M1 4JB, United Kingdom

Client: Network Space

Project: Alchemy, Knowsley

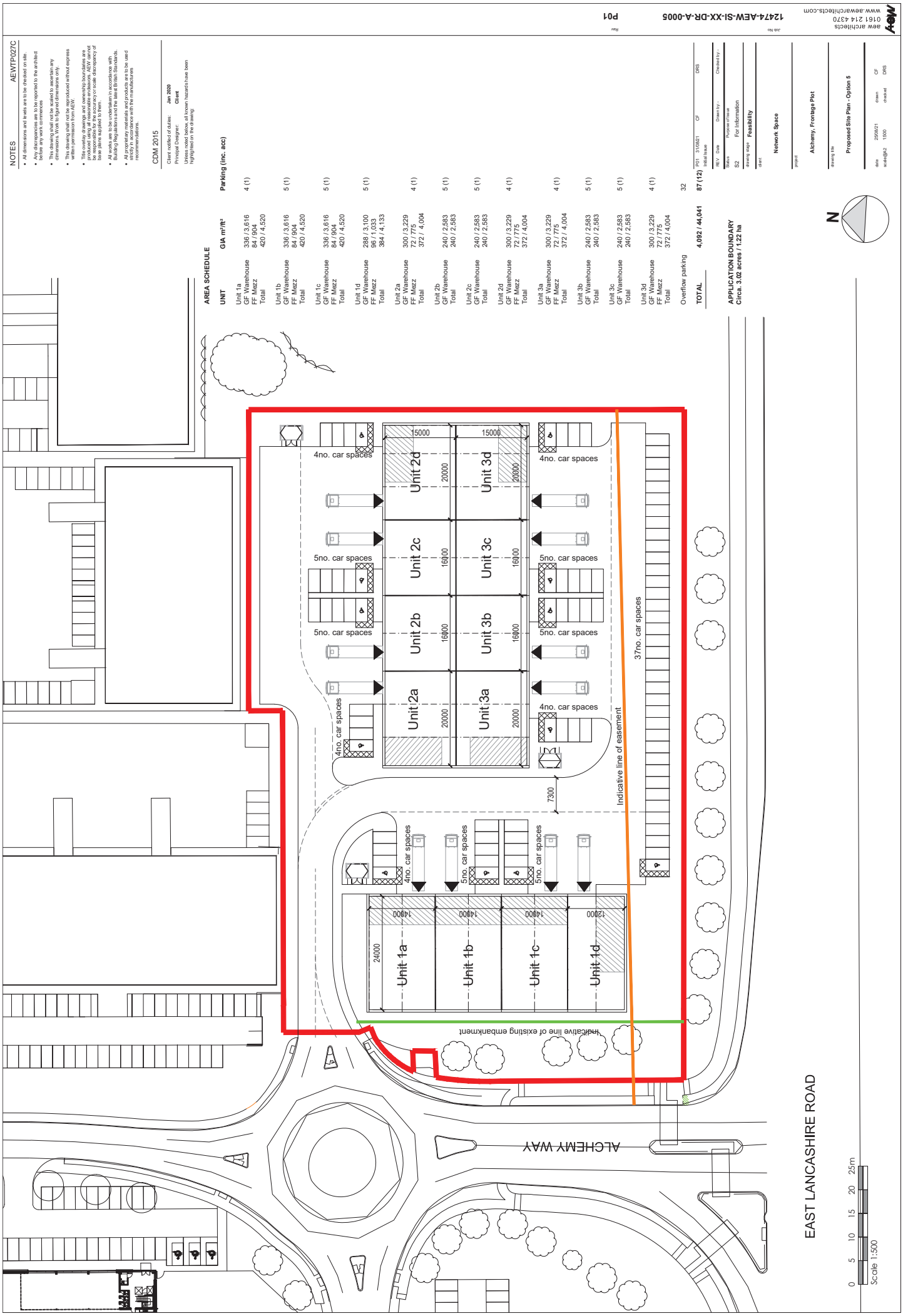
Checked By: SC

Job ref: JER9563

Date: SEPT 2022

Appendix C

Proposed Development Plans



- NOTES**
- All dimensions and levels are to be checked on site.
 - All work shall be carried out in accordance with the relevant standards and specifications.
 - This drawing shall not be scaled to ascertain any dimensions. Work to figure dimensions only.
 - This drawing shall not be reproduced without express written permission from AEW.
 - The order of drawings and assembly boundaries are produced using all reasonable endeavours. AEW cannot be held responsible for any discrepancy or inaccuracy of the information provided.
 - All works are to be undertaken in accordance with the Building Regulations and the latest British Standards.
 - All work shall be carried out in accordance with the relevant standards and specifications.
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CDM 2015

Client notified of duties: Jan 2020

Principal Designer: Client

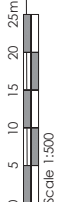
Unless stated below, all known hazards have been taken into account for the drawing.

AREA SCHEDULE

UNIT	GIA m ² /ft ²	Parking (inc. acc)
Unit 1a	336 / 3,616	4 (1)
GF Warehouse	84 / 904	
FF Mezz	463 / 4,520	
Total		
Unit 1b	336 / 3,616	5 (1)
GF Warehouse	84 / 904	
FF Mezz	463 / 4,520	
Total		
Unit 1c	336 / 3,616	5 (1)
GF Warehouse	84 / 904	
FF Mezz	463 / 4,520	
Total		
Unit 1d	288 / 3,100	5 (1)
GF Warehouse	96 / 1,033	
FF Mezz	384 / 4,133	
Total		
Unit 2a	300 / 3,229	4 (1)
GF Warehouse	72 / 775	
FF Mezz	372 / 4,004	
Total		
Unit 2b	240 / 2,583	5 (1)
GF Warehouse	240 / 2,583	
Total		
Unit 2c	240 / 2,583	5 (1)
GF Warehouse	240 / 2,583	
Total		
Unit 2d	300 / 3,229	4 (1)
GF Warehouse	72 / 775	
FF Mezz	372 / 4,004	
Total		
Unit 3a	300 / 3,229	4 (1)
GF Warehouse	72 / 775	
FF Mezz	372 / 4,004	
Total		
Unit 3b	240 / 2,583	5 (1)
GF Warehouse	240 / 2,583	
Total		
Unit 3c	240 / 2,583	5 (1)
GF Warehouse	240 / 2,583	
Total		
Unit 3d	300 / 3,229	4 (1)
GF Warehouse	72 / 775	
FF Mezz	372 / 4,004	
Total		
Overflow parking		32
TOTAL	4,082 / 44,041	87 (12)

APPLICATION BOUNDARY
Circs 3.02 acres / 1.22 ha

EAST LANCASHIRE ROAD



Appendix D

Part 2A (The Contaminated Land Regime)

Contaminated Land Definition

Under Section 57 of the Environmental Act 1995, Part 2A was inserted into the Environmental Protection Act 1990 to include provisions for the management of contaminated land.

Subsequent regulations were first implemented in England in April 2000, Scotland in July 2000 and Wales in July 2001³, providing a definition of 'contaminated land' and setting out the nature of liabilities that can be incurred by owners of contaminated land and groundwater.

According to the Act, contaminated land is defined as 'any land which appears to the local authority in whose area the land is situated to be in such a condition, by reason of substances in, on or under the land that:

- a) *significant harm* is being caused or there is a *significant possibility* of such harm being caused; or
- b) *significant pollution* of controlled waters⁴ is being caused or there is a significant possibility of such pollution being caused⁵

The guidance on determining whether a particular possibility is significant is based on the principles of risk assessment and in particular on considerations of the magnitude or consequences of the different types of significant harm caused. The term 'possibility of significant harm being caused' should be taken, as referring to a measure of the probability, or frequency, of the occurrence of circumstances that could lead to significant harm being caused.

The following situations are defined where harm is to be regarded as significant:

- i. Chronic or acute toxic effect, serious injury or death to humans
- ii. Irreversible or other adverse harm to the ecological system
- iii. Substantial damage to, or failure of, buildings
- iv. Disease, other physical damage or death of livestock or crops
- v. The pollution of controlled waters⁶.

³ In England by The Contaminated Land (England) Regulations 2000, updated by The Contaminated Land (England) (Amendment) Regulations 2012; in Scotland by The Contaminated Land (Scotland) Regulations 2000, updated by the Contaminated Land (Scotland) Regulations 2005; and in Wales by The Contaminated Land (Wales) Regulations 2001, updated by the Contaminated Land (Wales) Regulations 2006.

⁴ In Scotland the term "controlled water" has been updated to "water environment" under the Contaminated Land (Scotland) Regulations 2005 in line with the Water Environment and Water Services (Scotland) Act 2003.

⁵ The definition was amended in 2012 by implementation of the Water Act 2003.

⁶ Groundwater in this context does not include waters within underground strata but above the saturated zone.

With regard to radioactivity, contaminated land is defined as ‘any land which appears to be in such a condition, by reason of substances in, on or under the land that harm is being caused, or there is a *significant possibility of such harm being caused*⁷’.

The Risk Assessment Methodology

Risk assessment is the process of collating known information on a hazard or set of hazards in order to estimate actual or potential risks to receptors. The receptor may be humans, a water resource, a sensitive local ecosystem or future construction materials. Receptors can be connected with the hazard via one or several exposure pathways (e.g. the pathway of direct contact). Risks are generally managed by isolating or removing the hazard, isolating the receptor, or by intercepting the exposure pathway. Without the three essential components of a source (hazard), pathway and receptor, there can be no risk. Thus, the mere presence of a hazard at a site does not mean that there will necessarily be attendant risks.

The Risk Assessment

By considering where a viable pathway exists which connects a source with a receptor, this assessment will identify where pollutant linkages may exist. A pollutant linkage is the term used by the DEFRA in their standard procedure on risk assessment. If there is no pollutant linkage, then there is no risk. Therefore, only where a viable pollutant linkage is established does this assessment go on to consider the level of risk. Risk should be based on a consideration of both:

- The likelihood of an event (probability) - takes into account both the presence of the hazard and receptor and the integrity of the pathway.
- The severity of the potential consequence - takes into account both the potential severity of the hazard and the sensitivity of the receptor.

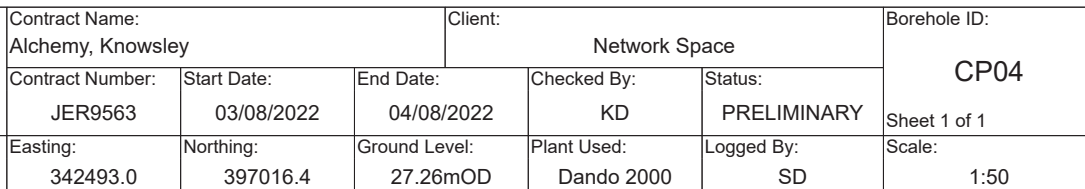
For further information please see the Contaminated Land section on the DEFRA website (www.defra.gov.uk).

⁷ The Radioactive Contaminated Land (Modification of Enactments) (England) Regulations 2006 and Contaminated Land (Wales) Regulations 2006.

Appendix E

Exploratory Hole Logs

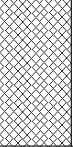
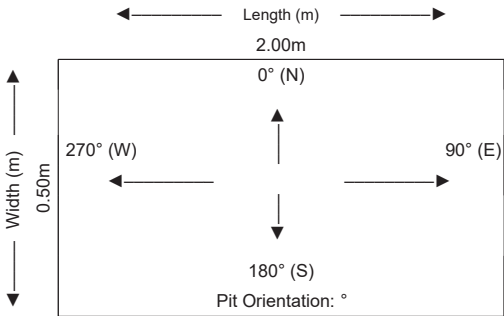
	Contract Name: Alchemy, Knowsley			Client: Network Space			Borehole ID: CP03		
	Contract Number: JER9563	Start Date: 03/08/2022	End Date: 03/08/2022	Checked By: KD	Status: PRELIMINARY				
Cable Percussion Borehole Log	Easting: 342615.6	Northing: 397054.1	Ground Level: 28.06mOD	Plant Used: Dando 2000	Logged By: SD	Sheet 1 of 1			
	Weather: Sun			Termination: Refusal.		SPT Hammer: AR812 Energy Ratio: 64%			
Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.00 - 1.20	B1						Brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of sandstone and mudstone. MADE GROUND		
0.50	ES1		PID 0.50m, 0.2ppm		(2.00)			1	
1.20 - 1.65	B2	SPT(S)							
1.20 - 1.65	D1	1.20m, N=4 (1,1/1,1,2)							
1.80	D2								
2.00 - 2.45	B3	SPT(S)		26.06	2.00		Black organic rich gravelly CLAY. Gravel is angular to subangular fine to coarse of brick. MADE GROUND	2	
2.00 - 2.45	D3	2.00m, N=7 (1,1/2,2,1,2)			(0.70)				
2.70 - 3.00	B4			25.36	2.70		Red brown slightly clayey gravelly SAND. Gravel is subangular to subrounded fine to coarse of sandstone. CHESTER FORMATION	3	
2.80	ES2								
3.00 - 3.45	B5	SPT(S)							
3.00 - 3.45	D4	3.00m, N=21 (8,6/5,4,5,7)			(0.90)				
3.60 - 4.00	B6	SPT(C)		24.46	3.60		Red SANDSTONE. CHESTER FORMATION	4	
3.60 - 4.00	D5	3.60m, N=0 (75 for 65mm/,,,) SPT(C)			(0.70)				
4.00 - 4.45	B7			23.76	4.30		Red and brown SANDSTONE and MUDSTONE. CHESTER FORMATION	5	
4.00 - 4.45	D6	4.00m, 20 (55 for 135mm/20 for 280mm)			(1.30)				
5.00 - 5.45	B8	SPT(S)		22.46	5.60		End of Borehole at 5.60m	6	
5.00 - 5.45	D7	5.00m, N=50 (25 for 125mm/50,,,) SPT(C)							
								7	
								8	
								9	
								10	
Start & End of Shift Observations				Installation				Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)
					1	0.00	3.60	PLAIN	
					1	3.60	5.60	SLOTTED	
1) Cable percussive borehole terminated at 5.60m bgl due to refusal. 2) Gas and groundwater monitoring standpipe installed with a response zone between 3.60m bgl and 5.60m bgl. 3) Groundwater seepage encountered at 3.60m bgl.									
Water Strikes									
Chiselling		Borehole Diameter		Casing Diameter		Strike (m)	Casing (m)	Sealed (m)	Time (mins)
From (m)	To (m)	Duration	Remarks	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
3.60	3.70	00:30						3.60	0
3.70	4.00	00:30							
4.00	4.70	00:30							
Groundwater seepage encountered at 3.60m bgl.									
RPS CP Template Issue Number: 1 Issue Date: 13/09/2017									

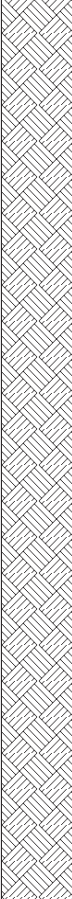
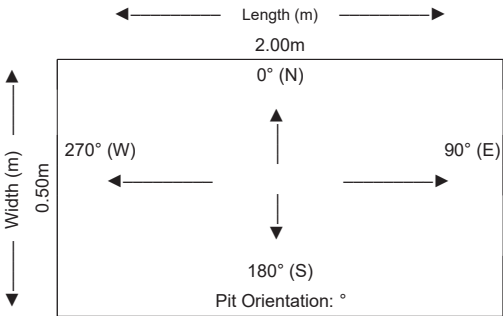


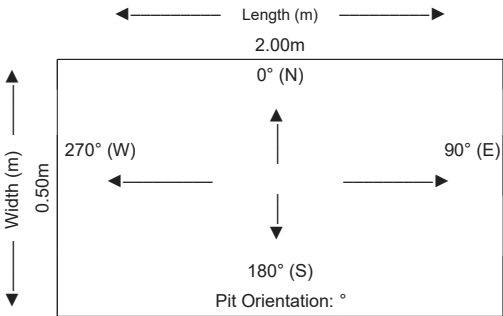
Samples & In Situ Testing	Strata Details	Groundwater
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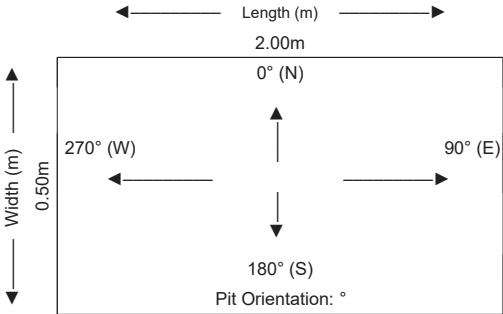
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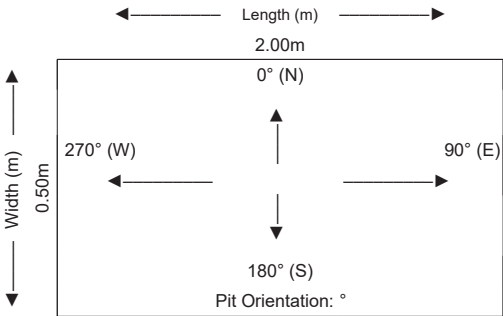
Start & End of Shift Observations					Installation					Remarks: 1) Cable percussive borehole terminated at 4.60m bgl due to refusal. 2) Gas and groundwater monitoring standpipe installed with a response zone between 3.00m bgl and 4.60m bgl. 3) No groundwater encountered.				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)					
					1	0.00	3.00	PLAIN						
					1	3.00	4.60	SLOTTED						
Chiselling					Borehole Diameter		Casing Diameter		Water Strikes					
From (m)	To (m)	Duration	Remarks		Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
4.50	4.60	00:30										0		No groundwater encountered
RPS CP Template Issue Number: 1 Issue Date: 13/09/2017														

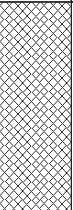
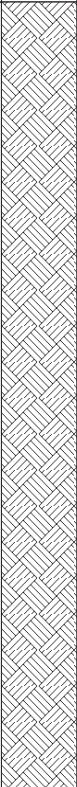
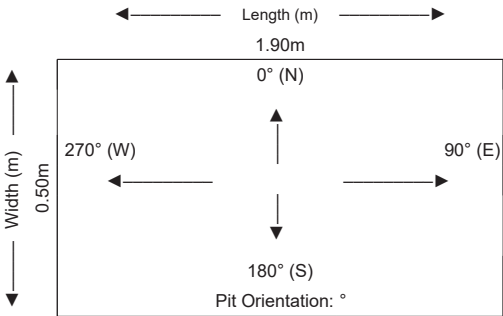
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	Contract Number: JER9563	Start Date: 04/08/2022	End Date: 04/08/2022	Checked By: KD	Status: PRELIMINARY	Sheet 1 of 1			
Trial Pit Log	Easting: 342621.6	Northing: 397090.4	Ground Level: 28.35mOD	Plant Used: JCB 3CX	Logged By: SD	Scale: 1:25			
	Weather: Sun		Hole Termination: Sandstone encountered.		Stability: Stable				
Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.60	ES1	PID 0.60m, 0.0ppm	27.85	(0.50)		Brown sandy gravelly SILT with boulders of concrete. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick and concrete. MADE GROUND		1	
				0.50		Firm brown and dark grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone. MADE GROUND			
1.70 - 1.90	B1			(2.00)				2	
2.60	ES2	PID 2.60m, 0.0ppm	25.85	2.50		Dark grey organic rich CLAY with medium cobble content of whole brick. MADE GROUND		3	
				25.65		SANDSTONE.			
				(0.30)		CHESTER FORMATION			
				25.35		3.00			
						End of Trial Pit at 3.00m			
Dimensions:						General Remarks:			
Final Depth: 3.00m						1) Trial pit terminated at 3.00m bgl due to encountering sandstone. 2) Backfilled with arisings upon completion. 3) No groundwater encountered.			
									
						Water Strikes			
						Strike (m) Remarks			
						No groundwater encountered.			
						RPS TP Template Issue Number: 1 Issue Date: 13/09/2017			

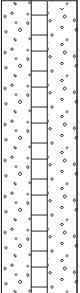
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	Contract Number: JER9563	Start Date: 04/08/2022	End Date: 04/08/2022	Checked By: KD	Status: PRELIMINARY	Sheet 1 of 1				
Trial Pit Log	Easting: 342559.3	Northing: 397035.2	Ground Level: 27.87mOD	Plant Used: JCB 3CX	Logged By: SD	Scale: 1:25				
	Weather: Sun			Hole Termination: Sandstone encountered.		Stability: Stable				
Samples & In Situ Testing				Strata Details				Water	Backfill	
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description				
0.30	ES1	PID 0.30m, 3.0ppm	27.47	(0.40)		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick, sandstone and mudstone. MADE GROUND		1		
				0.40		Brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone. MADE GROUND				
				(0.80)						
				26.67	1.20		Dark brown and grey organic rich CLAY with medium cobble content of whole brick. MADE GROUND			
	ES2	PID 2.20m, 3.7ppm	26.47	1.40		Brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone. MADE GROUND		2		
				(1.10)						
2.10				25.37	2.50		Dark brown and grey organic rich CLAY with medium cobble content of whole brick. MADE GROUND			
				25.17	2.70		Red brown very sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse of sandstone and mudstone.			
				24.97	2.90		CHESTER FORMATION SANDSTONE.			
				24.87	3.00		CHESTER FORMATION			
						End of Trial Pit at 3.00m		3		
Dimensions:										
Final Depth: 3.00m										
										
General Remarks:										
1) Trial pit terminated at 3.00m bgl due to encountering sandstone. 2) Backfilled with arisings upon completion. 3) No groundwater encountered.										
Water Strikes										
Strike (m)		Remarks								
		No groundwater encountered.								
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017										

	Contract Name: Alchemy, Knowsley			Client: Network Space		Trial Pit ID: TP06		
	Contract Number: JER9563	Start Date: 03/08/2022	End Date: 03/08/2022	Checked By: KD	Status: PRELIMINARY	Sheet 1 of 1		
Trial Pit Log	Easting: 342547.7	Northing: 397085.7	Ground Level: 28.03mOD	Plant Used: JCB 3CX	Logged By: SD	Scale: 1:25		
	Weather: Sun			Hole Termination: Complete.		Stability: Stable		
Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.80	ES1	PID 0.80m, 0.5ppm		(2.50)		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of metal, timber, pottery, concrete, sandstone and mudstone. MADE GROUND <i>At 0.30m bgl a piece of brick wall was present.</i> <i>At 0.80m bgl pocket of black organic rich clay is present.</i>	1	
2.40 2.50 - 2.70	ES2 B1	PID 2.40m, 0.1ppm	25.53	2.50 (1.00)		Red fine to coarse slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of mudstone and sandstone. CHESTER FORMATION	3	
						End of Trial Pit at 3.50m		
Dimensions:						General Remarks:		
Final Depth: 3.50m						1) Trial pit completed at 3.50m bgl. 2) Soakaway test performed in pit and was terminated after 4.00 hours due to limited infiltration. 3) Backfilled with arisings upon completion. 4) Groundwater seepage encountered at 1.90m bgl.		
								
						Water Strikes		
						Strike (m)	Remarks	
						1.90	Groundwater seepage encountered at 1.90m bgl.	
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017								

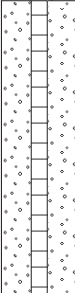
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	Contract Number: JER9563	Start Date: 03/08/2022	End Date: 03/08/2022	Checked By: KD	Status: PRELIMINARY	Sheet 1 of 1		
Trial Pit Log	Easting: 342507.2	Northing: 397077.9	Ground Level: 28.11mOD	Plant Used: JCB 3CX	Logged By: SD	Scale: 1:25		
	Weather: Sun		Hole Termination: Instability.		Stability: Unstable.			
Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
1.50	ES1	PID 1.50m, 0.0ppm		(0.60)		Brown sandy gravelly SILT with medium cobble content of whole brick. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of clinker and sandstone. MADE GROUND	1	
			27.51	0.60		Red brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone. MADE GROUND		
			27.01	1.10		Dark grey silty sandy angular to subangular fine to coarse GRAVEL of concrete, brick, timber and sandstone with hydrocarbon odour. MADE GROUND		
			(0.70)					
			26.31	1.80		End of Trial Pit at 1.80m	2	
							3	
Dimensions:						General Remarks:		
Final Depth: 1.80m						1) Trial pit terminated at 1.80m bgl due to instability caused by groundwater ingress. 2) Backfilled with arisings upon completion. 3) Groundwater encountered at 1.60m bgl.		
								
						Water Strikes		
						Strike (m)	Remarks	
						1.60	Groundwater encountered at 1.60m bgl.	
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017								

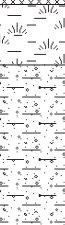
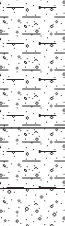
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	Contract Number: JER9563	Start Date: 03/08/2022	End Date: 03/08/2022	Checked By: KD	Status: PRELIMINARY	Sheet 1 of 1			
Trial Pit Log	Easting: 342509.4	Northing: 396950.1	Ground Level: 27.13mOD	Plant Used: JCB 3CX	Logged By: SD	Scale: 1:25			
	Weather: Sun		Hole Termination: Complete.		Stability: Stable				
Samples & In Situ Testing				Strata Details				Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
1.80	ES1	PID 1.80m, 5.4ppm	26.73	(0.40)		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of concrete, brick, metal and rope. MADE GROUND		1	
				0.40		Red brown very sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick, sandstone and mudstone. MADE GROUND			
				(1.40)					
				25.33	1.80		Black organic rich CLAY. MADE GROUND		
25.13	2.00	Red brown very sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick, sandstone, clinker and mudstone. MADE GROUND <i>Boulder of concrete present from 2.00m bgl to 2.20m bgl.</i>		2					
3.30 - 3.50 3.35	B1 ES2	PID 3.35m, 0.7ppm	23.93		3.20		Red and light grey slightly gravelly fine to coarse SAND. Gravel is subangular fine to coarse of sandstone and concrete. MADE GROUND		3
				(0.30)					
				23.63	3.50	End of Trial Pit at 3.50m			
Dimensions:						General Remarks:			
Final Depth: 3.50m						1) Trial pit completed at 3.50m bgl. 2) Backfilled with arisings upon completion. 3) No groundwater encountered.			
									
						Water Strikes			
						Strike (m) Remarks			
						No groundwater encountered.			
						RPS TP Template Issue Number: 1 Issue Date: 13/09/2017			

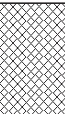
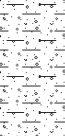
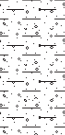
	Contract Name: Alchemy, Knowsley			Client: Network Space		Trial Pit ID: TP09			
	Contract Number: JER9563	Start Date: 03/08/2022	End Date: 03/08/2022	Checked By: KD	Status: PRELIMINARY	Sheet 1 of 1			
Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used: JCB 3CX	Logged By: SD	Scale: 1:25			
	Weather: Fair		Hole Termination: Complete.		Stability: Stable				
Samples & In Situ Testing			Strata Details				Water	Backfill	
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
2.45	ES1			(0.70)		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick, clinker, sandstone, metal and concrete. MADE GROUND	1		
				0.70		Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick, sandstone, mudstone and coal. MADE GROUND			
				(1.70)					2
				2.40		Dark grey and black organic rich CLAY. SEDIMENT			3
				2.50		Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone. CHESTER FORMATION			
				2.60		End of Trial Pit at 2.60m			
Dimensions:						General Remarks:			
Final Depth: 2.60m						1) Soakaway testing pit complete at 2.60m bgl. 2) Test was ran for 3.00 hours before termination due to limited infiltration. 3) No groundwater encountered. 4) Backfilled upon completion.			
									
						Water Strikes			
						Strike (m)	Remarks		
							No groundwater encountered.		
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017									

	Contract Name: Alchemy, Knowsley			Client: Network Space			Borehole ID: WS04					
	Contract Number: JER9563	Start Date: 02/08/2022	End Date: 02/08/2022	Checked By: KD	Status: PRELIMINARY							
Windowless Borehole Log	Easting: 342644.5	Northing: 397062.7	Ground Level: 28.28mOD	Plant Used: Terrier rig	Logged By: SD	Sheet 1 of 1 Scale: 1:25						
	Weather: Sun			Termination: Refusal.		SPT Hammer: WS01 Energy Ratio: 61%						
Samples & In Situ Testing				Strata Details				Groundwater				
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation			
0.90	ES1		PID 0.90m, 0.0ppm		(1.10)		Brown sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick, coal, sandstone and mudstone. MADE GROUND	1				
1.20 - 1.65	D1	SPT(S) 1.20m, N=9 (1,1/1,2,3,3)	PID 1.20m, 0.0ppm	27.18	1.10		Firm brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mudstone and sandstone. MADE GROUND					
2.00 - 2.45	D2	SPT(S) 2.00m, N=30 (3,3/4,7,8,11)			(1.20)			2				
2.40	ES2			25.98	2.30		Black organic rich CLAY. SEDIMENT					
				25.78	2.50		Red brown very sandy SILT with white fine sand intrusions. Sand is fine to coarse. CHESTER FORMATION					
		SPT(S) 3.00m, 100 (7,15/100 for 227mm)		25.28	3.00		End of Borehole at 3.00m	3				
									4			
								5				
Start & End of Shift Observations				Installation				Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)			Type	Diameter (mm)	
					1	0.00	2.00	PLAIN				
					1	2.00	3.00	SLOTTED				
Windowless Sample Run Details				Casing				Water Strikes				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)	Depth (m)	Diameter (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
										0		No groundwater encountered.
RPS WLS Template Issue Number: 2 Issue Date: 02/01/2018												

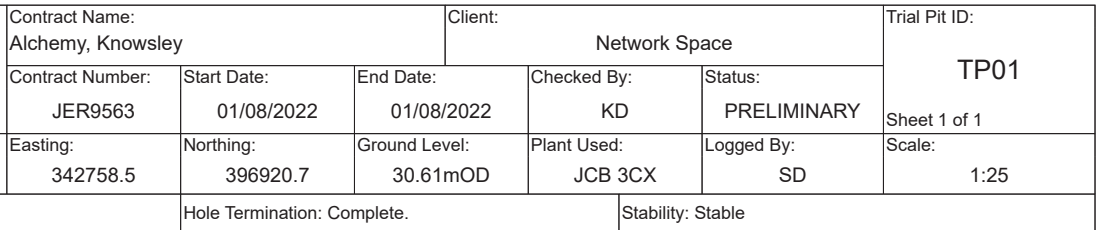
	Contract Name: Alchemy, Knowsley			Client: Network Space			Borehole ID: WS05		
	Contract Number: JER9563	Start Date: 02/08/2022	End Date: 02/08/2022	Checked By: KD	Status: PRELIMINARY				
Windowless Borehole Log	Easting: 342579.6	Northing: 397025.3	Ground Level: 27.75mOD	Plant Used: Terrier rig	Logged By: SD	Sheet 1 of 1 Scale: 1:25			
	Weather: Sun			Termination: Refusal.		SPT Hammer: WS01 Energy Ratio: 61%			
Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.40	ES1		PID 0.40m, 3.0ppm	27.05	0.70		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick, coal, sandstone and mudstone. MADE GROUND	1	
1.20 - 1.65	D1	SPT(S) 1.20m, N=11 (2,2/2,2,4,3)			(1.10)		Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick, coal, sandstone and mudstone. MADE GROUND		
2.00 - 2.45	D2	SPT(S) 2.00m, 100 (9,13/100 for 255mm)		25.95	1.80		Black organic rich CLAY. SEDIMENT	2	
				25.65	2.10		Red brown very sandy SILT. Sand is fine to coarse. CHESTER FORMATION		
2.60	ES2		PID 2.60m, 2.8ppm	25.05	2.70		End of Borehole at 2.70m	3	
								4	
								5	
Start & End of Shift Observations				Installation				Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Diameter (mm)
					1	0.00	1.70	PLAIN	
					1	1.70	2.70	SLOTTED	
1) Window sample borehole terminated at 2.70m bgl due to refusal. 2) Gas and groundwater monitoring standpipe installed with response zone between 1.70m bgl and 2.70m bgl. 3) No groundwater encountered.									
Windowless Sample Run Details						Casing		Water Strikes	
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)	Depth (m)	Diameter (mm)	Strike (m)	Casing (m)	Sealed (m)
							Time (mins)	Rose to (m)	Remarks
							0		No groundwater encountered.
RPS WLS Template Issue Number: 2 Issue Date: 02/01/2018									

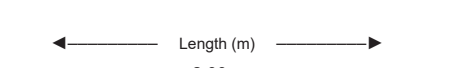
	Contract Name: Alchemy, Knowsley			Client: Network Space			Borehole ID: WS06					
	Contract Number: JER9563	Start Date: 02/08/2022	End Date: 02/08/2022	Checked By: KD	Status: PRELIMINARY							
Windowless Borehole Log	Easting: 342559.9	Northing: 396963.0	Ground Level: 27.83mOD	Plant Used: Terrier rig	Logged By: SD	Sheet 1 of 1						
	Weather: Sun			Termination: Refusal.		SPT Hammer: WS01 Energy Ratio: 61%						
Samples & In Situ Testing				Strata Details				Groundwater				
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation			
0.60	ES1		PID 0.60m, 0.4ppm	27.18	0.65		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick, sandstone, mudstone and coal. MADE GROUND	1				
1.20 - 1.65	D1	SPT(S) 1.20m, N=11 (1,1/2,3,3,3)		26.98	0.85		Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick, sandstone, mudstone and coal. MADE GROUND Brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of sandstone, mudstone and coal. MADE GROUND <i>After 0.85m bgl no brick was present.</i>					
2.00 - 2.45	D2	SPT(S) 2.00m, N=22 (4,5/6,4,6,6)			(2.25)			2				
3.20	ES2	SPT(S) 3.00m, 50 (7,9/50 for 275mm)	PID 3.20m, 4.7ppm	24.73	3.10					3		
				24.63	3.20		Soft dark brown organic rich CLAY. SEDIMENT					
				24.53	3.30		Red sandy SILT. Sand is fine to coarse. CHESTER FORMATION End of Borehole at 3.20m					
								4				
									5			
Start & End of Shift Observations				Installation				Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)			Type	Diameter (mm)	
					1	0.00	2.00	PLAIN				
					1	2.00	3.00	SLOTTED				
Windowless Sample Run Details				Casing				Water Strikes				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)	Depth (m)	Diameter (mm)	Strike (m)			Casing (m)	Sealed (m)	Time (mins)
										0		No groundwater encountered.
RPS WLS Template Issue Number: 2 Issue Date: 02/01/2018												

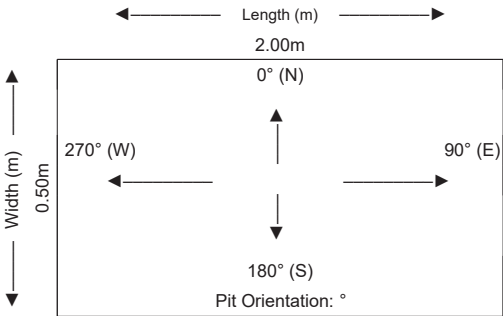
	Contract Name: Alchemy, Knowsley			Client: Network Space		Borehole ID: WS07			
	Contract Number: JER9563	Start Date: 02/08/2022	End Date: 02/08/2022	Checked By: KD	Status: PRELIMINARY				
Windowless Borehole Log	Easting: 342494.7	Northing: 396975.4	Ground Level: 27.35mOD	Plant Used: Terrier rig	Logged By: SD	Sheet 1 of 1			
						Scale: 1:25			
Weather: Sun			Termination: Refusal.		SPT Hammer: WS01 Energy Ratio: 61%				
Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
1.20 - 1.65	D1	SPT(S) 1.20m, N=16 (3,3/3,4,4,5)	PID 1.50m, 0.2ppm	26.65	0.70		Brown sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of plastic, sandstone and mudstone. MADE GROUND	1	
1.50	ES1			26.40	0.95		Dark brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium of sandstone and mudstone. MADE GROUND		
				25.90	1.45		Dark brown very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of sandstone and mudstone. MADE GROUND		
2.00 - 2.45	D2	SPT(S) 2.00m, N=32 (6,6/4,9,10,9)		25.70	1.65		Brown very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of sandstone and mudstone. CHESTER FORMATION		
2.85	ES2		PID 2.85m, 0.0ppm	24.75	2.60		Dark brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of sandstone, slate and mudstone. CHESTER FORMATION	2	
3.00 - 3.45	D3	SPT(S) 3.00m, N=45 (9,9/10,11,11,13)		24.55	2.80		Brown very sandy subangular to subrounded fine to coarse GRAVEL of sandstone and mudstone. CHESTER FORMATION		
				24.25	3.10		Red sandy SILT. Sand is fine to coarse. CHESTER FORMATION		
				23.85	3.50		End of Borehole at 3.50m		
Start & End of Shift Observations				Installation				Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Diameter (mm)
					1	0.00	1.50	PLAIN	
					1	1.50	3.00	SLOTTED	
Windowless Sample Run Details				Casing				Water Strikes	
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)	Depth (m)	Diameter (mm)	Strike (m)	Casing (m)	Sealed (m)
								Time (mins)	Rose to (m)
								0	
								Remarks	
								No groundwater encountered.	
RPS WLS Template Issue Number: 2 Issue Date: 02/01/2018									

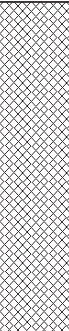
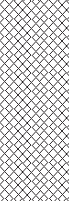
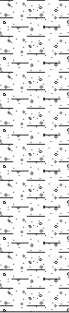
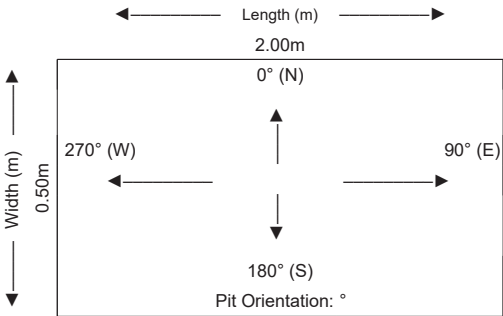
	Contract Name: Alchemy, Knowsley			Client: Network Space			Borehole ID: CP01		
	Contract Number: JER9563	Start Date: 02/08/2022	End Date: 02/08/2022	Checked By: KD	Status: PRELIMINARY		Sheet 1 of 1		
Cable Percussion Borehole Log	Easting: 342737.5	Northing: 396891.0	Ground Level: 30.05mOD	Plant Used: Dando 2000	Logged By: SD	Scale: 1:50			
Weather: Fair.		Termination: Refusal.			SPT Hammer: AR812 Energy Ratio: 64%				
Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.00 - 0.80	B1				(0.80)		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is very angular to subangular fine to coarse of brick, mudstone and sandstone. MADE GROUND		
0.80 - 1.20 0.90	B2 ES1		PID 0.90m, 0.0ppm	29.25	0.80 (0.40)		Brown and light grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick and coal. MADE GROUND	1	
1.20 - 1.65 1.20 - 1.65	B3 D1	SPT(S) 1.20m, N=12 (2,2/2,4,3,3)		28.85	1.20		Soft to firm brown mottled light grey sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone. GLACIAL TILL	2	
2.00 - 2.45 2.00 - 2.50	U- NR1 B4				(1.80)		Red brown gravelly fine to coarse SAND. Gravel is sub angular to subrounded fine to coarse of sandstone. CHESTER FORMATION	3	
3.00 - 3.45 3.00 - 3.45	B5 D2	SPT(S) 3.00m, N=36 (3,4/4,11,10,11)		27.05	3.00 (0.50)		Stiff red brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded of sandstone and mudstone. CHESTER FORMATION	4	
4.00 - 4.45 4.00 - 4.45	B6 D3	SPT(S) 4.00m, N=34 (2,5/5,10,9,10)						5	
5.00 - 5.45 5.00 - 5.45	B7 D4	SPT(S) 5.00m, N=33 (6,6/7,7,8,11)						6	
6.00 - 6.45 6.00 - 6.45	B8 D5	SPT(S) 6.00m, N=34 (6,7/7,8,9,10)			(5.50)			7	
7.50 - 7.95 7.50 - 7.95	B9 D6	SPT(S) 7.50m, 50 (25 for 140mm/50 for 280mm)						8	
9.00 - 9.45 9.00 - 9.45	B10 D7	SPT(S) 9.00m, 50 (11,14/50 for 265mm)		21.05	9.00		End of Borehole at 9.00m	9	
Start & End of Shift Observations				Installation				Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)
					1	0.00	5.00	PLAIN	
					1	5.00	9.00	SLOTTED	
Chiselling				Borehole Diameter				Casing Diameter	
From (m)	To (m)	Duration	Remarks	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
Water Strikes									
Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks				
9.00			0		Groundwater seepage at 9.00m bgl.				
RPS CP Template Issue Number: 1 Issue Date: 13/09/2017									

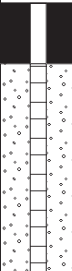
	Contract Name: Alchemy, Knowsley			Client: Network Space			Borehole ID: CP02		
	Contract Number: JER9563	Start Date: 04/08/2022	End Date: 04/08/2022	Checked By: KD	Status: PRELIMINARY				
Cable Percussion Borehole Log	Easting: 342811.3	Northing: 396909.9	Ground Level: 31.61mOD	Plant Used: Dando 2000	Logged By: SD	Sheet 1 of 1			
	Weather: Sun			Termination: Refusal.		SPT Hammer: AR812 Energy Ratio: 64%			
Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.00 - 1.20	B1			31.41	0.20		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick, coal and mudstone. MADE GROUND	1	
0.70	ES1		PID 0.70m, 0.0ppm				Brown mottled light grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded of brick, sandstone and mudstone. MADE GROUND		
1.20 - 1.65	B2	SPT(S)			(1.80)		Black organic rich gravelly CLAY. Gravel is angular fine to coarse of brick. MADE GROUND	2	
1.20 - 1.65	D1	1.20m, N=12 (2,3/3,2,3,4)							
2.00 - 2.45	B3	SPT(S)		29.61	2.00		Stiff red brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of mudstone and sandstone. CHESTER FORMATION	3	
2.00 - 2.45	D2	2.00m, N=18 (2,3/4,5,5,4)	PID 2.30m, 2.4ppm		(0.50)				
2.50 - 3.00	B4			29.11	2.50		Red SANDSTONE. Recovered as red fine to coarse SAND. CHESTER FORMATION	5	
3.00 - 3.45	B5	SPT(S)							
3.00 - 3.45	D3	3.00m, N=45 (3,5/6,13,12,14)			(2.00)				
4.00 - 4.45	B6	SPT(S)					End of Borehole at 5.10m	6	
4.00 - 4.45	D4	4.00m, 50 (5,8/50 for 290mm)							
4.50 - 4.95	B7	SPT(S)		27.11	4.50			7	
4.50 - 4.95	D5	4.50m, N=0 (75 for 145mm/,...)			(0.60)				
5.00 - 5.10	D6	SPT(S)		26.51	5.10			8	
		5.00m, N=0 (75 for 100mm/,...)						9	
								10	
Start & End of Shift Observations				Installation				Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Dia (mm)
					1	0.00	3.00	PLAIN	
					1	3.00	5.00	SLOTTED	
								1) Cable percussive borehole terminated at 5.10m bgl due to refusal. 2) Gas and groundwater monitoring standpipe installed with a response zone between 3.00m bgl and 5.00m bgl. 3) No groundwater encountered.	
								Water Strikes	
								Strike (m)	Casing (m)
								Sealed (m)	Time (mins)
								Rose to (m)	Remarks
								0	No groundwater encountered.
Chiselling				Borehole Diameter		Casing Diameter			
From (m)	To (m)	Duration	Remarks	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)		
4.50	5.00	00:45							
RPS CP Template Issue Number: 1 Issue Date: 13/09/2017									



Dimensions: Final Depth: 3.50m 	General Remarks: 1) Trial pit completed at 3.50m bgl. 2) Backfilled with arisings upon completion. 3) Groundwater encountered at 1.10m bgl from land drain.						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Water Strikes</th> </tr> <tr> <th style="width: 20%;">Strike (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.10</td> <td>Groundwater encountered from land drain at 1.10m bgl</td> </tr> </tbody> </table>		Water Strikes		Strike (m)	Remarks	1.10	Groundwater encountered from land drain at 1.10m bgl
Water Strikes							
Strike (m)	Remarks						
1.10	Groundwater encountered from land drain at 1.10m bgl						
RPS TP Template Issue Number: 1 Issue Date: 13/09/2017							

	Contract Name: Alchemy, Knowsley			Client: Network Space		Trial Pit ID: TP02			
	Contract Number: JER9563	Start Date: 04/08/2022	End Date: 04/08/2022	Checked By: KD	Status: PRELIMINARY	Sheet 1 of 1			
Trial Pit Log	Easting: 342784.4	Northing: 396877.1	Ground Level: 30.71mOD	Plant Used: JCB 3CX	Logged By: SD	Scale: 1:25			
	Weather: Sun			Hole Termination: Complete.		Stability: Stable			
Samples & In Situ Testing				Strata Details			Water	Backfill	
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			
0.35	ES1			(0.50)		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone, mudstone and brick. MADE GROUND	1		
			30.21	0.50		Red very sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of tarmac and sandstone. MADE GROUND			
			29.96	0.75		Weak CONCRETE. CONCRETE			
1.30	ES2			29.71	1.00		Dark grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of sandstone and mudstone. MADE GROUND	2	
				(0.40)					
			29.31	1.40		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of coal, sandstone, mudstone and clinker. MADE GROUND	3		
				(2.10)					
3.00 - 3.20	B1								
			27.21	3.50		End of Trial Pit at 3.50m			
Dimensions:						General Remarks:			
Final Depth: 3.50m						1) Trial pit completed at 3.50m bgl. 2) Backfilled with arisings upon completion. 3) No groundwater encountered.			
									
						Water Strikes			
						Strike (m) Remarks			
						No groundwater encountered.			
						RPS TP Template Issue Number: 1 Issue Date: 13/09/2017			

	Contract Name: Alchemy, Knowsley			Client: Network Space		Trial Pit ID: TP03		
	Contract Number: JER9563	Start Date: 01/08/2022	End Date: 01/08/2022	Checked By: KD	Status: PRELIMINARY	Sheet 1 of 1		
Trial Pit Log	Easting: 342830.9	Northing: 396934.9	Ground Level: 31.75mOD	Plant Used: JCB 3CX	Logged By: SD	Scale: 1:25		
	Weather: Sun			Hole Termination: Complete.		Stability: Stable		
Samples & In Situ Testing				Strata Details			Water	Backfill
Depths	Type/Ref	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
1.60	ES1	PID 1.60m, 0.7ppm	30.65	(1.10)		Brown sandy gravelly CLAY with cobbles of whole brick. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of coal and sandstone. MADE GROUND	1	
				1.10		Dark brown sandy gravelly CLAY with high organic content and cobbles of whole brick. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of coal and sandstone. MADE GROUND		
				1.55		Black sandy subangular fine to medium GRAVEL of clinker and coal with a strong hydrocarbon odour. MADE GROUND		
				1.70		Grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is very angular to subangular of brick, clinker and ceramics. MADE GROUND		
2.00	ES2	PID 2.00m, 0.4ppm	29.35	(0.70)			2	
				2.40		Red brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of sandstone and mudstone. CHESTER FORMATION		
			28.25	(1.10)			3	
			3.50			End of Trial Pit at 3.50m		
Dimensions:						General Remarks:		
Final Depth: 3.50m						1) Trial pit completed at 3.50m bgl. 2) Soakaway test performed in pit and was terminated after 4.00 hours due to limited infiltration. 2) Backfilled with arisings upon completion. 3) No groundwater encountered.		
								
						Water Strikes		
						Strike (m) Remarks		
						No groundwater encountered.		
						RPS TP Template Issue Number: 1 Issue Date: 13/09/2017		

	Contract Name: Alchemy, Knowsley			Client: Network Space			Borehole ID: WS01		
	Contract Number: JER9563	Start Date: 01/08/2022	End Date: 01/08/2022	Checked By: KD	Status: PRELIMINARY				
Windowless Borehole Log	Easting: 342754.9	Northing: 396874.8	Ground Level: 30.09mOD	Plant Used: Terrier rig	Logged By: SD	Sheet 1 of 1			
	Weather: Sun			Termination: Refusal.		SPT Hammer: WS01 Energy Ratio: 61%			
Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
1.00	ES1		PID 1.00m, 13.8ppm		(0.60)		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is very angular to subangular fine to coarse of brick, concrete and glass. MADE GROUND	1	
				29.49	0.60		Brown and light yellow silty sandy subangular fine to coarse GRAVEL of sandstone. MADE GROUND		
				29.29	0.80		Dark grey silty sandy angular to subangular fine to coarse GRAVEL of sandstone, clinker and coal. MADE GROUND		
1.30	ES2	SPT(S) 1.20m, N=7 (1,2/1,1,2,3)	PID 1.30m, 3.8ppm		(0.40)		Light brown light grey sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of brick and coal. MADE GROUND	2	
				28.89	1.20		Soft to firm red brown mottled light grey sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone. MADE GROUND		
				28.74	1.35				
		SPT(S) 2.00m, N=7 (2,2/2,3,1,1)			(2.10)		Red brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone, mudstone and quartz. MADE GROUND	3	
				26.64	3.45		Dark brown sandy very gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of clinker, coal and sandstone. MADE GROUND		
				26.54	3.55				
3.65	ES3	SPT(S) 3.00m, N=37 (25,17/9,9,11,8)					Dark brown sandy very gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of clinker, coal and sandstone. MADE GROUND	4	
				26.29	3.80		End of Borehole at 3.80m		
								5	
Start & End of Shift Observations				Installation				Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Diameter (mm)
					1	0.00	0.20	PLAIN	
					1	0.20	0.90	SLOTTED	
Windowless Sample Run Details				Casing				Water Strikes	
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)	Depth (m)	Diameter (mm)	Strike (m)	Casing (m)	Sealed (m)
								Time (mins)	Rose to (m)
								0	
								Remarks	
								No groundwater encountered.	
RPS WLS Template Issue Number: 2 Issue Date: 02/01/2018									

	Contract Name: Alchemy, Knowsley			Client: Network Space			Borehole ID: WS02		
	Contract Number: JER9563	Start Date: 01/08/2022	End Date: 01/08/2000	Checked By: KD	Status: PRELIMINARY				
Windowless Borehole Log	Easting: 342778.7	Northing: 396908.9	Ground Level: 31.01mOD	Plant Used: Terrier rig	Logged By: SD	Sheet 1 of 1 Scale: 1:25			
	Weather: Sun			Termination: Refusal.		SPT Hammer: WS01 Energy Ratio: 61%			
Samples & In Situ Testing				Strata Details				Groundwater	
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
0.80	ES1		PID 0.80m, 0.9ppm	30.11	(0.90)		Brown slightly sandy gravelly CLAY with dark grey organic intrusions. Sand is fine to coarse. Gravel is angular to subangular fine to medium of brick and mudstone. MADE GROUND		
1.20 - 1.65	D1	SPT(S) 1.20m, N=12 (2,2/2,3,3,4)			0.90		Dark brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium of brick, timber and mudstone. MADE GROUND	1	
2.00 - 2.45	D2	SPT(S) 2.00m, N=26 (4,4/4,6,9,7)		28.86	(1.25)			2	
3.00 - 3.30	D3	SPT(S) 3.00m, 50 (9,11/50 for 275mm)		27.71	2.15		Brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of sandstone and mudstone. GLACIAL TILL	3	
					(1.15)			4	
					3.30		End of Borehole at 3.30m	5	
Start & End of Shift Observations				Installation				Remarks:	
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)	Type	Diameter (mm)
					1	0.00	1.00	PLAIN	
					1	1.00	2.00	SLOTTED	
Windowless Sample Run Details				Casing				Water Strikes	
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)	Depth (m)	Diameter (mm)	Strike (m)	Casing (m)	Sealed (m)
RPS WLS Template							Issue Number: 2 Issue Date: 02/01/2018		

	Contract Name: Alchemy, Knowsley			Client: Network Space			Borehole ID: WS03					
	Contract Number: JER9563	Start Date: 01/08/2022	End Date: 01/08/2022	Checked By: KD	Status: PRELIMINARY							
Windowless Borehole Log	Easting: 342839.9	Northing: 396906.9	Ground Level: 31.51mOD	Plant Used: Terrier rig	Logged By: SD	Sheet 1 of 1 Scale: 1:25						
	Weather: Sun			Termination: Refusal.		SPT Hammer: WS01 Energy Ratio: 61%						
Samples & In Situ Testing				Strata Details				Groundwater				
Depths	Type/ Ref	SPT	Testing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation			
0.80	ES1	PID 0.80m, 0.0ppm		30.91	0.60		Brown sandy gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick and mudstone. MADE GROUND	1				
					(0.30)		Brown sandy gravelly CLAY including organic material. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of clinker, brick and mudstone. MADE GROUND					
					0.90		Brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone. MADE GROUND					
1.20	D1	SPT(S) 1.20m, N=7 (1,1/1,1,2,3)	PID 1.40m, 0.3ppm	30.61	(1.10)		Brown very sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone. GLACIAL TILL	2				
1.40	ES2											
2.50	ES3	SPT(S) 2.00m, N=33 (3,3/3,7,11,12)					28.91			2.60	Light grey and light brown fine to medium SAND. CHESTER FORMATION	
2.70	D2	SPT(S) 3.00m, N=0 (25 for 75mm/,...)		28.71	2.80		End of Borehole at 2.80m	3				
2.80	D3											
								4				
								5				
Start & End of Shift Observations				Installation				Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Ref	Top (m)	Base (m)			Type	Diameter (mm)	
					1	0.00	0.80	PLAIN				
					1	0.80	2.80	SLOTTED				
Windowless Sample Run Details				Casing				Water Strikes				
Test Number	Diameter (mm)	Depth Top (m)	Depth Base (m)	Recovery (%)	Depth (m)	Diameter (mm)	Strike (m)	Casing (m)	Sealed (m)	Time (mins)	Rose to (m)	Remarks
RPS WLS Template Issue Number: 2 Issue Date: 02/01/2018												

Appendix F

DCP Results

	Summary Of DCP Results together with CBR vr Depth	Parcel 1 - Option 2 Site
Project ID: JER9563	Project Title: Land at Alchemy Way	
Client: Network Space	Location: Knowsley Industrial Park, Kirby, L33 7AQ	

Location ID	Depth Top	Blows Cumulative	Depth Increment	mm/Blow	CBR(%)
DCP-CP03	0.0	2	100	50	4.8
DCP-CP03	0.1	4	100	25	10.1
DCP-CP03	0.2	6	100	17	15.4
DCP-CP03	0.3	4	100	25	10.1
DCP-CP03	0.4	4	100	25	10.1
DCP-CP03	0.5	5	100	20	12.7
DCP-CP03	0.6	3	100	33	7.4
DCP-CP03	0.7	3	100	33	7.4
DCP-CP03	0.8	3	100	33	7.4
DCP-CP03	0.9	3	100	33	7.4
DCP-CP04	0.0	4	100	25	10.1
DCP-CP04	0.1	5	100	20	12.7
DCP-CP04	0.2	10	100	10	26.5
DCP-CP04	0.3	26	100	4	72.7
DCP-CP04	0.4	4	100	25	10.1
DCP-CP04	0.5	4	100	25	10.1
DCP-CP04	0.6	6	100	17	15.4
DCP-CP04	0.7	5	100	20	12.7
DCP-CP04	0.8	5	100	20	12.7
DCP-CP04	0.9	3	100	33	7.4
DCP-TP04	0.0	1	100	100	2.3
DCP-TP04	0.1	4	100	25	10.1
DCP-TP04	0.2	9	100	11	23.7
DCP-TP04	0.3	18	100	6	49.3
DCP-TP04	0.4	6	100	17	15.4
DCP-TP04	0.5	3	100	33	7.4
DCP-TP04	0.6	4	100	25	10.1
DCP-TP04	0.7	4	100	25	10.1
DCP-TP04	0.8	4	100	25	10.1
DCP-TP04	0.9	4	100	25	10.1
DCP-TP05	0.0	1	100	100	2.3
DCP-TP05	0.1	3	100	33	7.4
DCP-TP05	0.2	6	100	17	15.4
DCP-TP05	0.3	5	100	20	12.7
DCP-TP05	0.4	5	100	20	12.7
DCP-TP05	0.5	3	100	33	7.4
DCP-TP05	0.6	4	100	25	10.1
DCP-TP05	0.7	3	100	33	7.4
DCP-TP05	0.8	3	100	33	7.4
DCP-TP05	0.9	2	100	50	4.8
DCP-TP06	0.0	2	100	50	4.8
DCP-TP06	0.1	4	100	25	10.1
DCP-TP06	0.2	5	100	20	12.7
DCP-TP06	0.3	5	100	20	12.7
DCP-TP06	0.4	12	100	8	32.1
DCP-TP06	0.5	9	100	11	23.7
DCP-TP06	0.6	4	100	25	10.1
DCP-TP06	0.7	4	100	25	10.1
DCP-TP06	0.8	2	100	50	4.8
DCP-TP06	0.9	2	100	50	4.8

	Summary Of DCP Results together with CBR vr Depth	Parcel 1 - Option 2 Site
Project ID: JER9563	Project Title: Land at Alchemy Way	
Client: Network Space	Location: Knowsley Industrial Park, Kirby, L33 7AQ	

Location ID	Depth Top	Blows Cumulative	Depth Increment	mm/Blow	CBR(%)
DCP-TP07	0.5	28	100	4	78.6
DCP-TP07	0.6	31	100	3	87.6
DCP-TP07	0.7	33	100	3	93.6
DCP-TP07	0.8	27	100	4	75.7
DCP-TP07	0.9	22	100	5	60.9
DCP-TP08	0.0	2	100	50	4.8
DCP-TP08	0.1	2	100	50	4.8
DCP-TP08	0.2	2	100	50	4.8
DCP-TP08	0.3	3	100	33	7.4
DCP-TP08	0.4	9	100	11	23.7
DCP-TP08	0.5	7	100	14	18.2
DCP-TP08	0.6	4	100	25	10.1
DCP-TP08	0.7	4	100	25	10.1
DCP-TP08	0.8	2	100	50	4.8
DCP-TP08	0.9	2	100	50	4.8
DCP-WS04	0.0	4	100	25	10
DCP-WS04	0.1	5	100	20	13
DCP-WS04	0.2	5	100	20	13
DCP-WS04	0.3	5	100	20	13
DCP-WS04	0.4	5	100	20	13
DCP-WS04	0.5	3	100	33	7
DCP-WS04	0.6	2	100	50	5
DCP-WS04	0.7	2	100	50	5
DCP-WS04	0.8	2	100	50	5
DCP-WS04	0.9	2	100	50	5
DCP-WS05	0.0	1	100	100	2
DCP-WS05	0.1	4	100	25	10
DCP-WS05	0.2	6	100	17	15
DCP-WS05	0.3	5	100	20	13
DCP-WS05	0.4	5	100	20	13
DCP-WS05	0.5	4	100	25	10
DCP-WS05	0.6	3	100	33	7
DCP-WS05	0.7	2	100	50	5
DCP-WS05	0.8	2	100	50	5
DCP-WS05	0.9	2	100	50	5
DCP-WS06	0.0	2	100	50	5
DCP-WS06	0.1	3	100	33	7
DCP-WS06	0.2	5	100	20	13
DCP-WS06	0.3	6	100	17	15
DCP-WS06	0.4	4	100	25	10
DCP-WS06	0.5	4	100	25	10
DCP-WS06	0.6	4	100	25	10
DCP-WS06	0.7	2	100	50	5
DCP-WS06	0.8	3	100	33	7
DCP-WS06	0.9	2	100	50	5
DCP-WS07	0.0	2	100	50	5
DCP-WS07	0.1	4	100	25	10
DCP-WS07	0.2	7	100	14	18
DCP-WS07	0.3	11	100	9	29
DCP-WS07	0.4	7	100	14	18

	Summary Of DCP Results together with CBR vr Depth	Parcel 1 - Option 2 Site
Project ID: JER9563	Project Title: Land at Alchemy Way	
Client: Network Space	Location: Knowsley Industrial Park, Kirby, L33 7AQ	

Location ID	Depth Top	Blows Cumulative	Depth Increment	mm/Blow	CBR(%)
DCP-WS07	0.5	6	100	17	15
DCP-WS07	0.6	5	100	20	13
DCP-WS07	0.7	5	100	20	13
DCP-WS07	0.8	7	100	14	18
DCP-WS07	0.9	6	100	17	15



Summary Of DCP Results
together with CBR vs Depth

Parcel 2 -
Option 5 Site

Project ID: **JER9563**

Project Title: **Land at Alchemy Way**

Client: **Network Space**

Location: **Knowsley Industrial Park, Kirby, L33 7AQ**

Location ID	Depth Top	Blows Cumulative	Depth Increment	mm/Blow	CBR(%)
DCP-CP01	0.0	1	100	100	2
DCP-CP01	0.1	1	100	100	2
DCP-CP01	0.2	3	100	33	7
DCP-CP01	0.3	7	100	14	18
DCP-CP01	0.4	4	100	25	10
DCP-CP01	0.5	4	100	25	10
DCP-CP01	0.6	5	100	20	13
DCP-CP01	0.7	7	100	14	18
DCP-CP01	0.8	8	100	13	21
DCP-CP01	0.9	5	100	20	13
DCP-CP02	0.0	4	100	25	10
DCP-CP02	0.1	6	100	17	15
DCP-CP02	0.2	8	100	13	21
DCP-CP02	0.3	7	100	14	18
DCP-CP02	0.4	6	100	17	15
DCP-CP02	0.5	4	100	25	10
DCP-CP02	0.6	7	100	14	18
DCP-CP02	0.7	3	100	33	7
DCP-CP02	0.8	3	100	33	7
DCP-CP02	0.9	3	100	33	7
DCP-TP01	0.0	1	100	100	2
DCP-TP01	0.1	1	100	100	2
DCP-TP01	0.2	3	100	33	7
DCP-TP01	0.3	3	100	33	7
DCP-TP01	0.4	7	100	14	18
DCP-TP01	0.5	11	100	9	29
DCP-TP01	0.6	9	100	11	24
DCP-TP01	0.7	8	100	13	21
DCP-TP01	0.8	7	100	14	18
DCP-TP01	0.9	4	100	25	10
DCP-TP02	0.0	1	100	100	2
DCP-TP02	0.1	2	100	50	5
DCP-TP02	0.2	4	100	25	10
DCP-TP02	0.3	9	100	11	24
DCP-TP02	0.4	7	100	14	18
DCP-TP02	0.5	3	100	33	7
DCP-TP02	0.6	9	100	11	24
DCP-TP02	0.7	3	100	33	7
DCP-TP02	0.8	3	100	33	7
DCP-TP02	0.9	2	100	50	5
DCP-TP03	0.0	3	100	33	7
DCP-TP03	0.1	3	100	33	7
DCP-TP03	0.2	5	100	20	13
DCP-WS01	0.0	1	100	100	2.3



Summary Of DCP Results
together with CBR vr Depth

Parcel 2 -
Option 5 Site

Project ID: **JER9563**

Project Title:

Land at Alchemy Way

Client: **Network Space**

Location:

Knowsley Industrial Park, Kirby, L33 7AQ

DCP-WS01	0.1	2	100	50	4.8
DCP-WS01	0.2	4	100	25	10.1
DCP-WS01	0.3	6	100	17	15.4
DCP-WS01	0.4	5	100	20	12.7
DCP-WS01	0.5	5	100	20	12.7
DCP-WS01	0.6	7	100	14	18.2
DCP-WS01	0.7	6	100	17	15.4
DCP-WS01	0.8	4	100	25	10.1
DCP-WS01	0.9	4	100	25	10.1
DCP-WS02	0.0	1	100	100	2.3
DCP-WS02	0.1	3	100	33	7.4
DCP-WS02	0.2	3	100	33	7.4
DCP-WS02	0.3	4	100	25	10.1
DCP-WS02	0.4	6	100	17	15.4
DCP-WS02	0.5	7	100	14	18.2
DCP-WS02	0.6	5	100	20	12.7
DCP-WS02	0.7	3	100	33	7.4
DCP-WS02	0.8	3	100	33	7.4
DCP-WS02	0.9	4	100	25	10.1
DCP-WS03	0.0	1	100	100	2.3
DCP-WS03	0.1	2	100	50	4.8
DCP-WS03	0.2	3	100	33	7.4
DCP-WS03	0.3	3	100	33	7.4
DCP-WS03	0.4	3	100	33	7.4
DCP-WS03	0.5	4	100	25	10.1
DCP-WS03	0.6	5	100	20	12.7
DCP-WS03	0.7	3	100	33	7.4
DCP-WS03	0.8	2	100	50	4.8
DCP-WS03	0.9	2	100	50	4.8

Appendix G

Soakaway Report Sheets



SOIL INFILTRATION TEST RATE

In accordance with BRE Digest 365 (2016)

Job Name: Alchemy, Knowsley

Date: 03/08/2022

Client: Network Space

Job Number: JER9563

Test Pit
Reference.: S2

Trial pit filled with gravel to prevent instability in pit walls?:

No

Test No.:

1

Pit Dimensions (m)

Depth	2.60
Width	0.50
Length	1.90
Height of pipe above ground level (if applicable)	0.00

Start % for calculations:

75% full

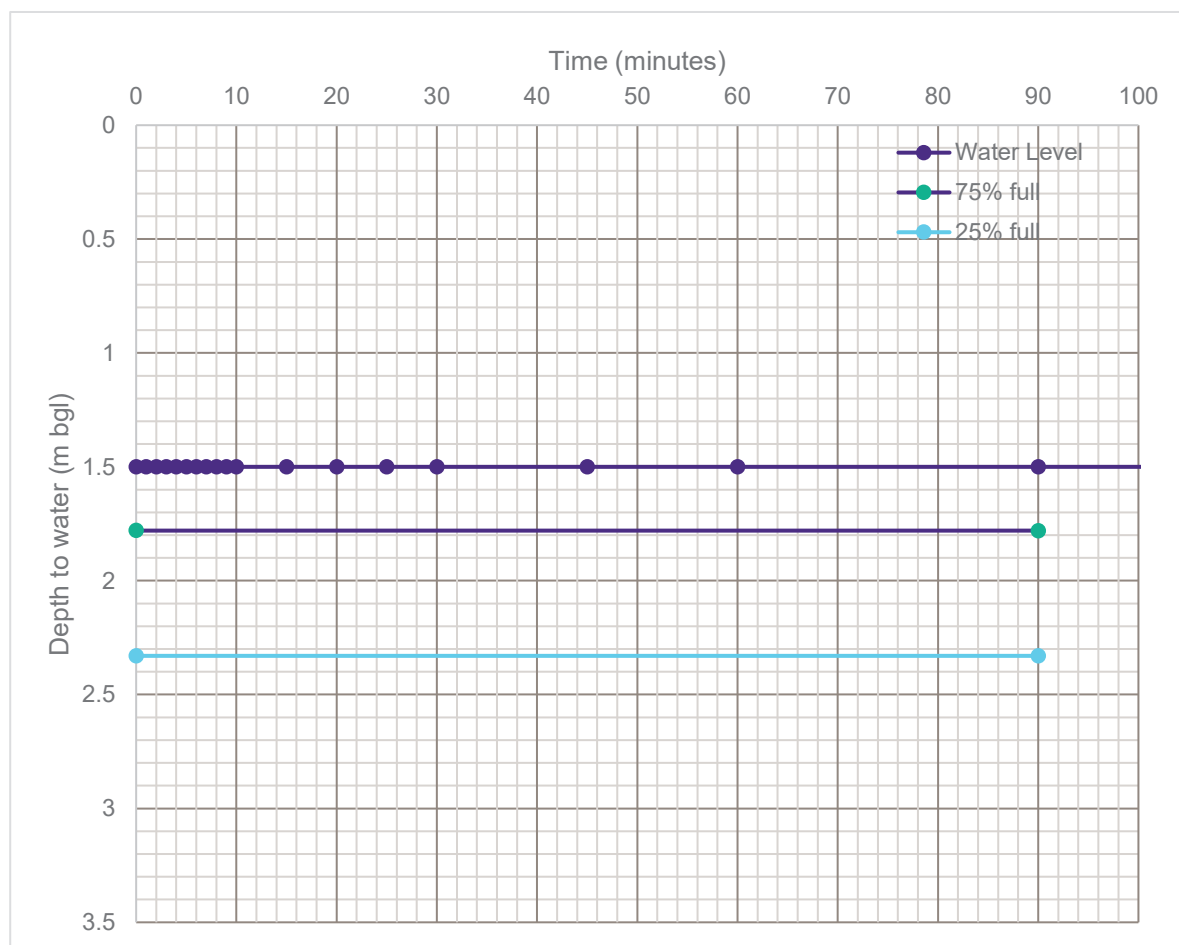
End % for calculations:

Extrapolated 25% full

Soil Infiltration Rate (f)

N/A

m/s



Remarks: 1) Limited fall in water level. Ground conditions considered impermeable. 2) Time to fill ~1.40 minutes



SOIL INFILTRATION TEST RATE

In accordance with BRE Digest 365 (2016)

Job Name: Alchemy, Knowsley

Date: 04/08/2022

Client: Network Space

Job Number: JER9563

Test Pit
Reference.: TP03

Trial pit filled with gravel to prevent instability in pit walls?:

No

Test No.:

1

Pit Dimensions (m)

Depth	3.20
Width	0.50
Length	2.25
Height of pipe above ground level (if applicable)	0.00

Start % for calculations:

75% full

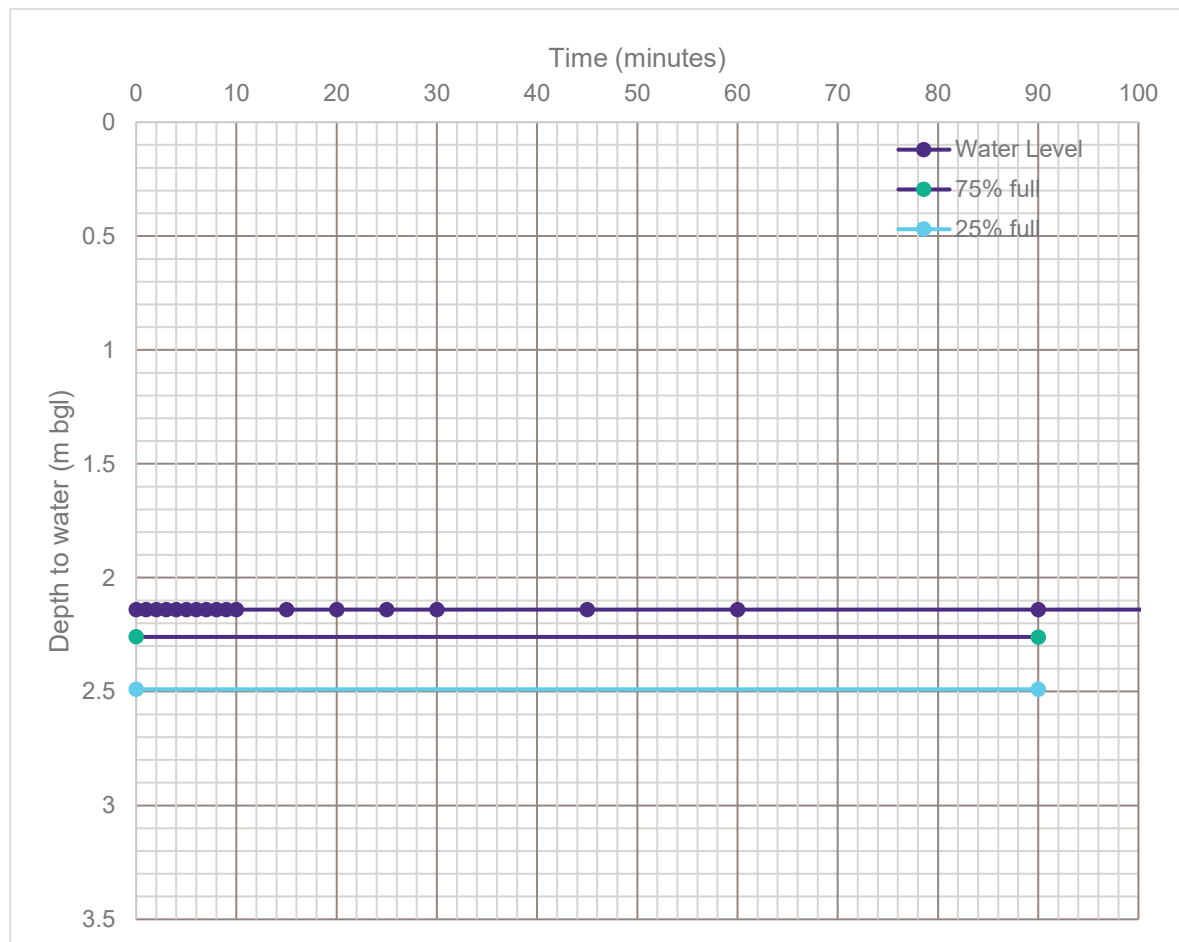
End % for calculations:

Extrapolated 25% full

Soil Infiltration Rate (f)

N/A

m/s



Remarks: 1) Limited fall in water level. Ground conditions considered impermeable. 2) Time to fill ~1.40 minutes



SOIL INFILTRATION TEST RATE

In accordance with BRE Digest 365 (2016)

Job Name: Alchemy, Knowsley

Date: 03/08/2022

Client: Network Space

Job Number: JER9563

Test Pit
Reference.: TP06

Trial pit filled with gravel to prevent instability in pit walls?:

No

Test No.:

1

Pit Dimensions (m)

Depth	3.50
Width	0.50
Length	2.00
Height of pipe above ground level (if applicable)	0.00

Start % for calculations:

75% full

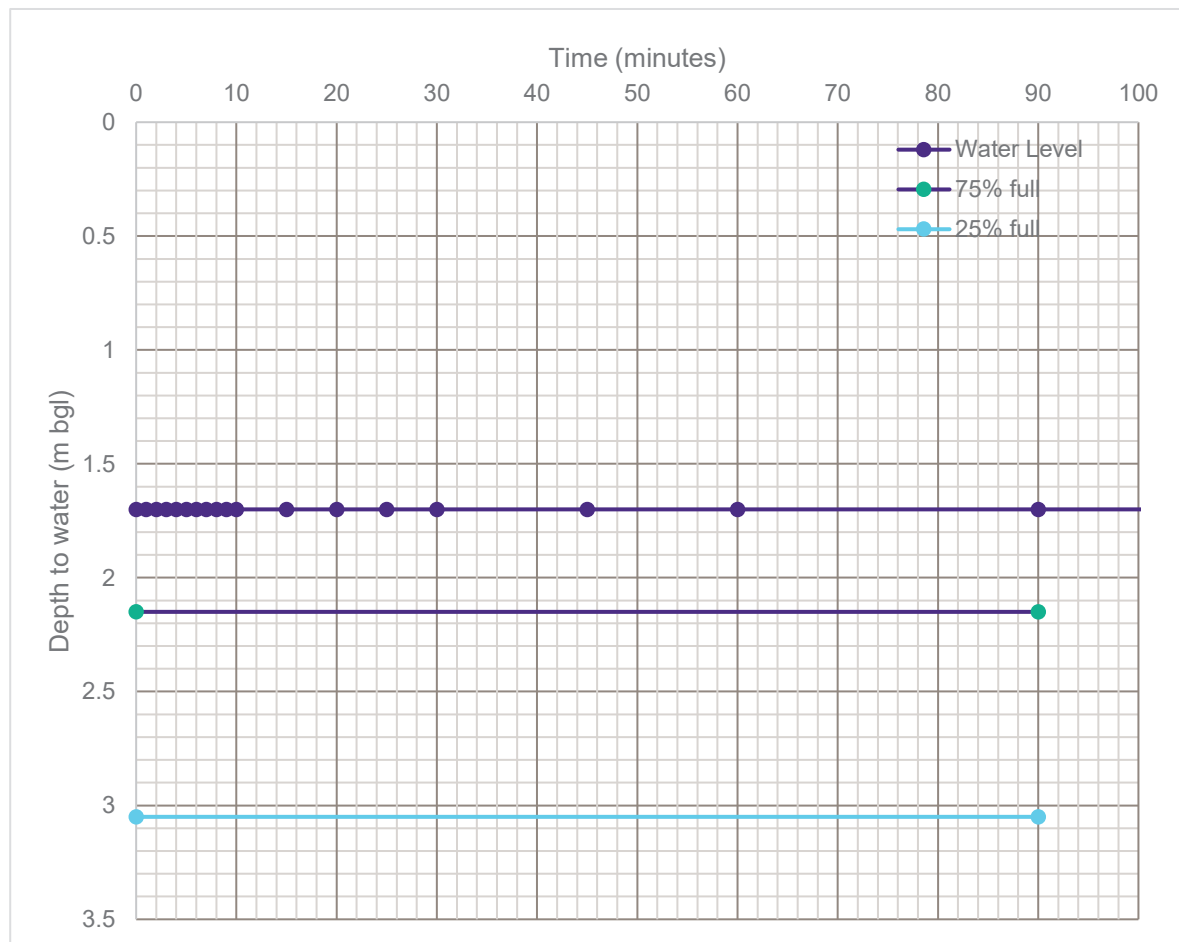
End % for calculations:

Extrapolated 25% full

Soil Infiltration Rate (f)

N/A

m/s



Remarks: 1) Limited fall in water level. Ground conditions considered impermeable. 2) Time to fill ~3.30 minutes

Appendix H

Geotechnical Laboratory Certificates



LABORATORY REPORT



4043

Contract Number: PSL22/5595

Report Date: 14 September 2022
Client's Reference: JER9563
Client Name: RPS Health, Safety & Environment
14 Cornhill
London
EC3V 3ND

For the attention of: Stuart Clarke

Contract Title: Alchemy Knowsley
Date Received: 25/8/2022
Date Commenced: 25/8/2022
Date Completed: 14/9/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

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(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

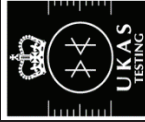
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Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
CP01	1	B	0.80		Brown gravelly very sandy CLAY.
CP01	4	B	2.00	2.50	Brown slightly gravelly very sandy CLAY.
CP01	5	B	3.00	3.45	Brown gravelly very sandy CLAY.
CP01	3	D	4.00	4.45	Brown slightly gravelly very sandy CLAY.
CP01	5	D	6.00	6.45	Reddish brown slightly gravelly very sandy CLAY.
CP01	7	D	9.00	9.45	Reddish brown very sandy CLAY.
CP02	1	B	0.00	1.20	Brown slightly gravelly very sandy CLAY.
CP02	2	B	1.20	1.65	Brown slightly gravelly very sandy CLAY.
CP02	2	D	2.00	2.45	Brown slightly gravelly very sandy CLAY.
CP02	3	D	3.00	3.45	Reddish brown slightly gravelly sandy CLAY.
CP02	7	B	4.50	4.95	Reddish brown gravelly very sandy CLAY.
CP03	1	B	0.80	1.20	MADE GROUND brown gravelly very sandy clay.
CP03	5	B	3.00	3.45	Brown very clayey SAND & GRAVEL.
CP03	8	B	5.00	5.45	Brown gravelly very clayey SAND.
CP04	1	B	0.00	1.20	MADE GROUND brown gravelly very clayey sand.
CP04	5	B	3.00	3.45	Brown mottled grey very clayey SAND & GRAVEL.
CP04	6	B	4.00	4.45	Brown slightly gravelly very sandy CLAY.
WS02	1	D	1.20	1.65	Brown slightly gravelly very sandy CLAY.
WS02	3	D	3.00	3.45	Brown slightly gravelly very sandy CLAY.



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[illegible]

 4043		Alchemy, Knowsley
		Contract No:
		PSL22/5595
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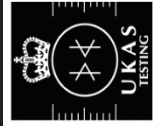
SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
CP01	1	B	0.80		27							
CP01	4	B	2.00	2.50	16			29	13	16	98	Low Plasticity CL
CP01	3	D	4.00	4.45	12							
CP01	5	D	6.00	6.45	7.8			26	12	14	97	Low Plasticity CL
CP01	7	D	9.00	9.45	9.1			27	13	14	100	Low Plasticity CL
CP02	2	B	1.20	1.65	14							
CP02	2	D	2.00	2.45	19							
CP02	3	D	3.00	3.45	9.6			51	23	28	95	High Plasticity CH
CP03	1	B	0.80	1.20	18			33	16	17	72	Low Plasticity CL
CP04	6	B	4.00	4.45	12							
WS02	1	D	1.20	1.65	13							
WS02	3	D	3.00	3.45	7.1			25	12	13	93	Low Plasticity CL
WS03	1	D	1.20		16			31	16	15	95	Low Plasticity CL
WS04	1	D	1.20	1.65	14			29	14	15	98	Low Plasticity CL
WS04	2	D	2.00	2.45	14							
WS05	1	D	1.20	1.65	16							

SYMBOLS: NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



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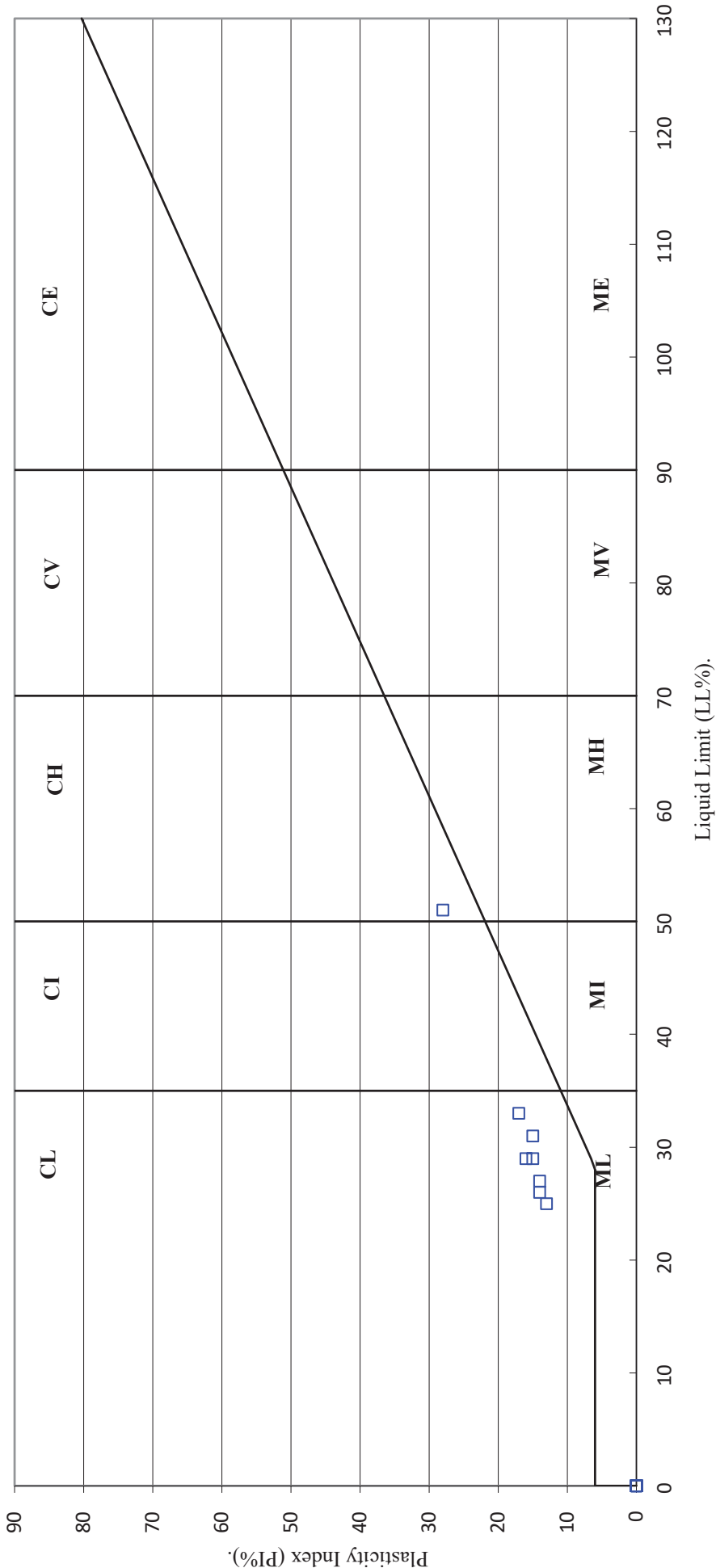
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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



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PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

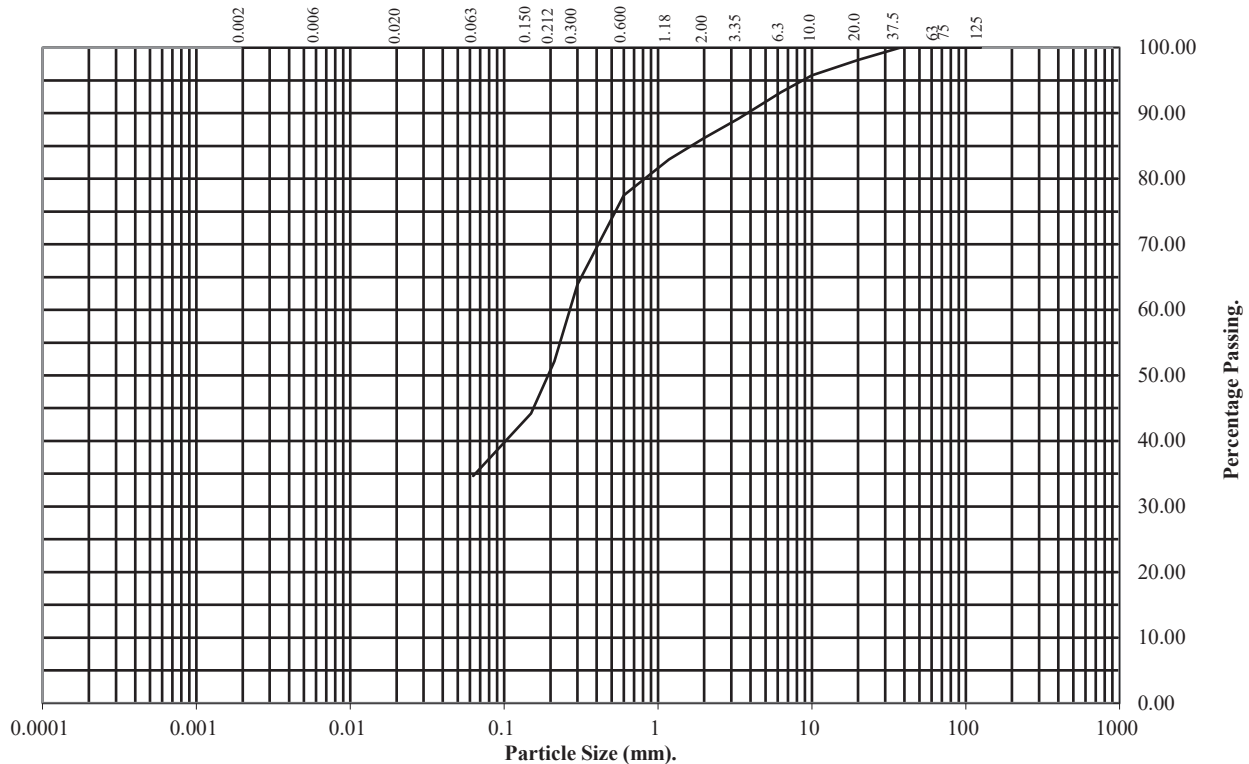
Hole Number: CP01

Top Depth (m): 0.80

Sample Number: 1

Base Depth(m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	96
6.3	93
3.35	89
2	86
1.18	83
0.6	77
0.3	64
0.212	52
0.15	44
0.063	35

Soil Fraction	Total Percentage
Cobbles	0
Gravel	14
Sand	51
Silt/Clay	35

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

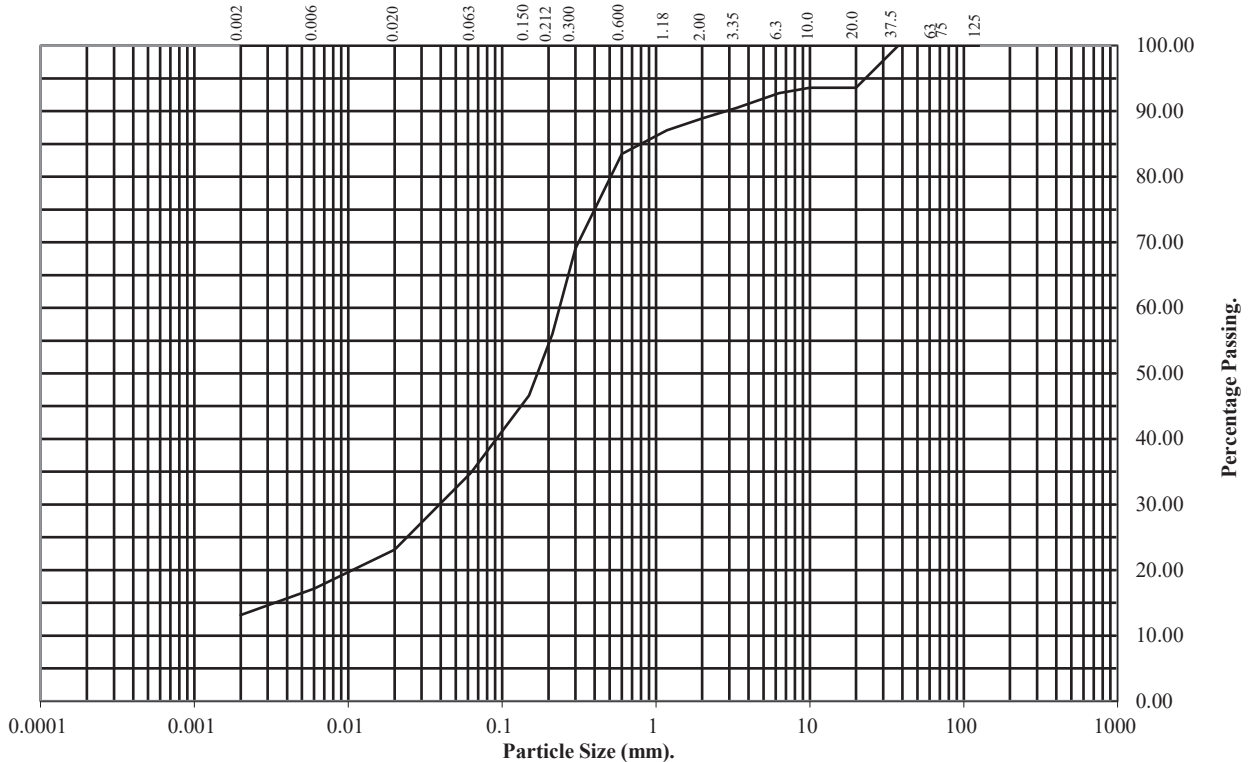
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP01 Top Depth (m): 3.00

Sample Number: 5 Base Depth(m): 3.45

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	94
6.3	93
3.35	90
2	89
1.18	87
0.6	83
0.3	69
0.212	56
0.15	47
0.063	35

Particle Diameter	Percentage Passing
0.02	23
0.006	17
0.002	13

Soil Fraction	Total Percentage
Cobbles	0
Gravel	11
Sand	54
Silt	22
Clay	13

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

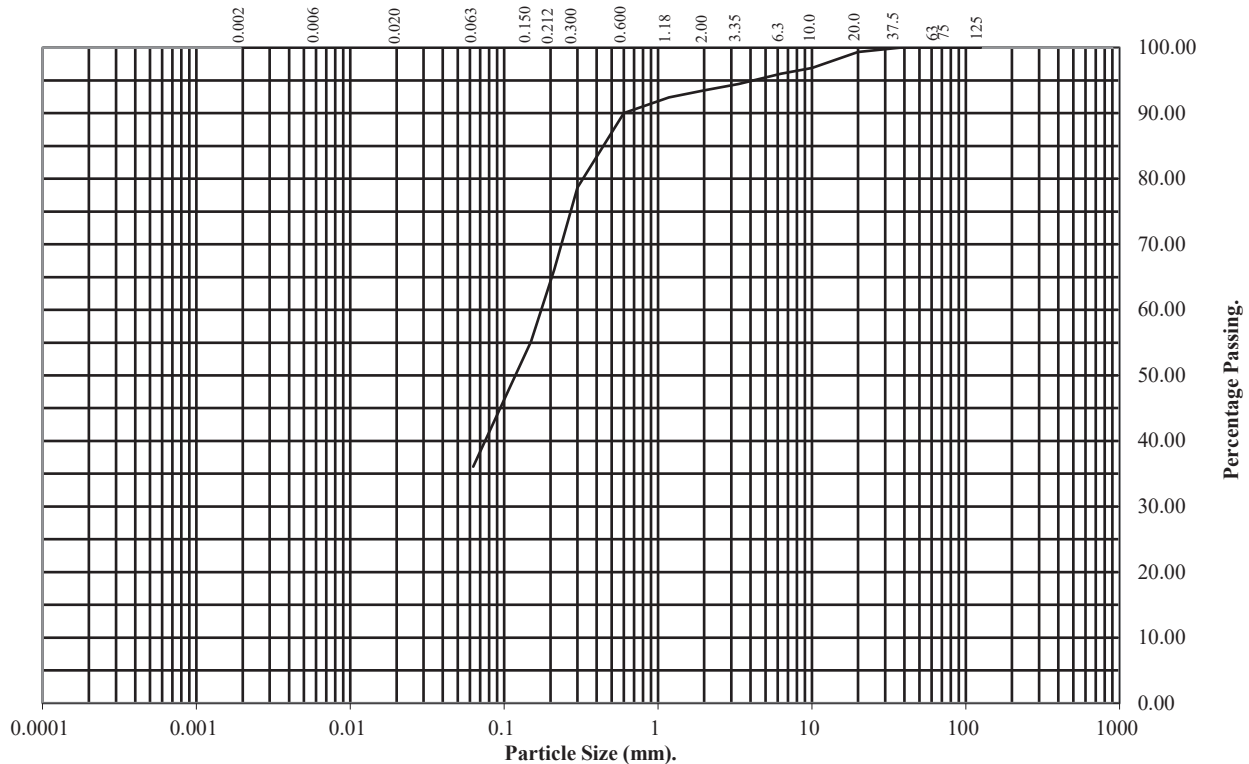
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: CP02 Top Depth (m): 0.00

Sample Number: 1 Base Depth(m): 1.20

Sample Type: B

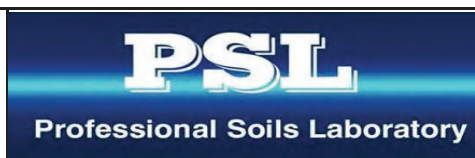


BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	97
6.3	96
3.35	94
2	94
1.18	92
0.6	90
0.3	79
0.212	66
0.15	55
0.063	36

Soil Fraction	Total Percentage
Cobbles	0
Gravel	6
Sand	58
Silt/Clay	36

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

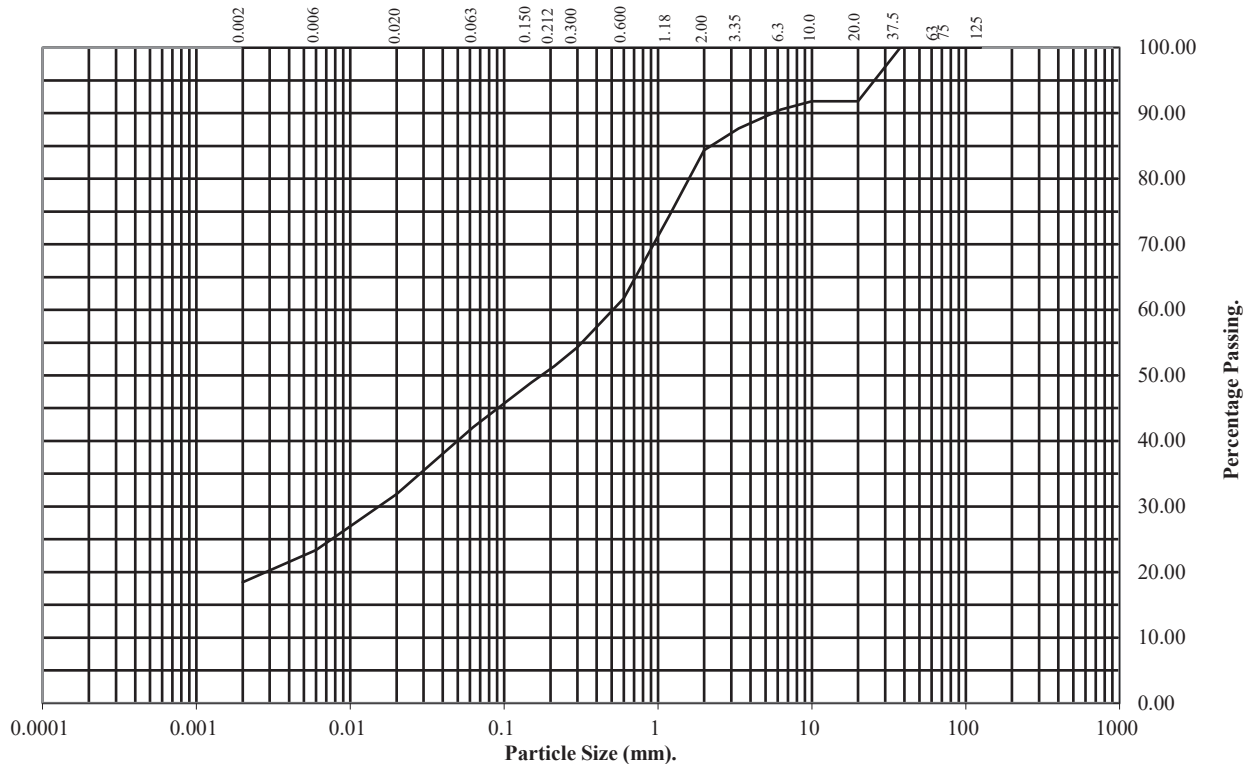
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP02 Top Depth (m): 4.50

Sample Number: 7 Base Depth(m): 4.95

Sample Type: B



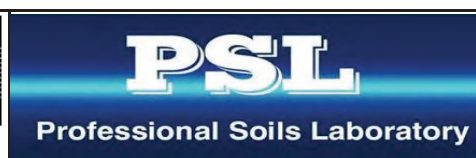
BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	92
6.3	91
3.35	88
2	84
1.18	74
0.6	62
0.3	54
0.212	51
0.15	49
0.063	42

Particle Diameter	Percentage Passing
0.02	32
0.006	23
0.002	18

Soil Fraction	Total Percentage
Cobbles	0
Gravel	16
Sand	42
Silt	24
Clay	18

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

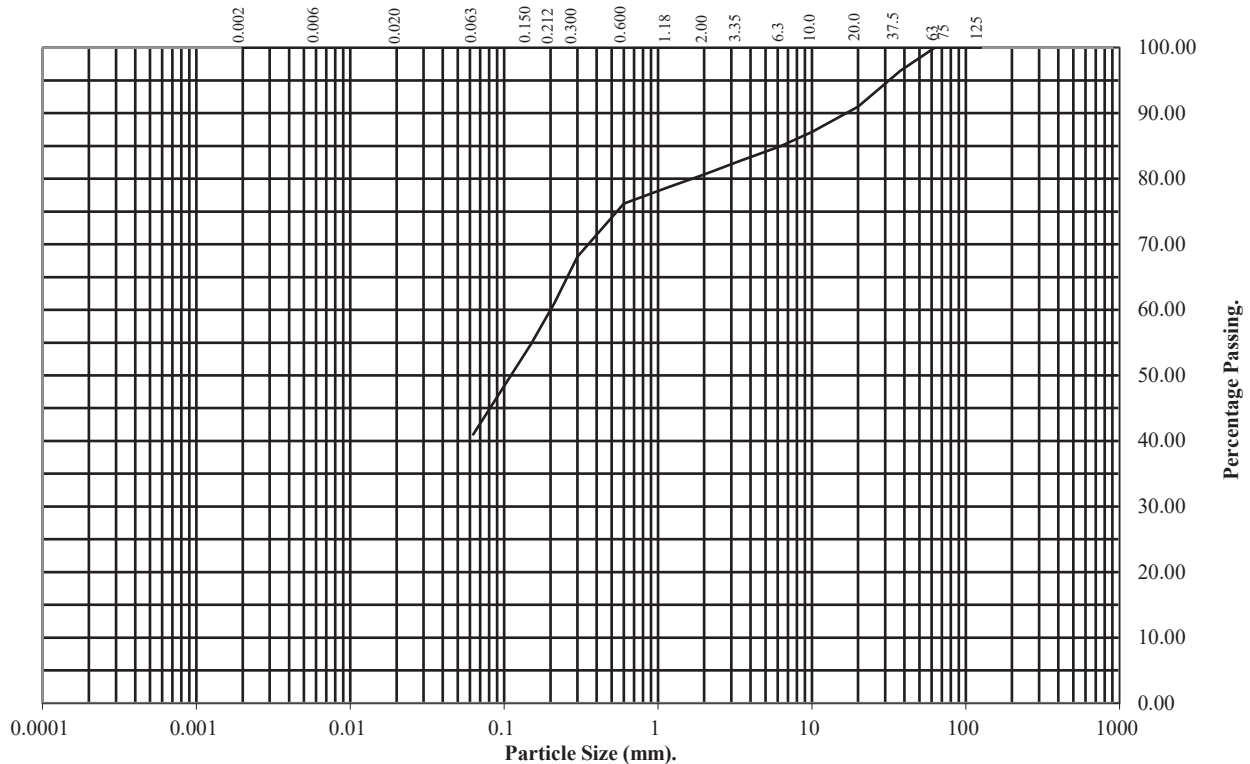
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: CP03 Top Depth (m): 0.80

Sample Number: 1 Base Depth(m): 1.20

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	96
20	91
10	87
6.3	85
3.35	83
2	81
1.18	79
0.6	76
0.3	68
0.212	61
0.15	55
0.063	41

Soil Fraction	Total Percentage
Cobbles	0
Gravel	19
Sand	40
Silt/Clay	41

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

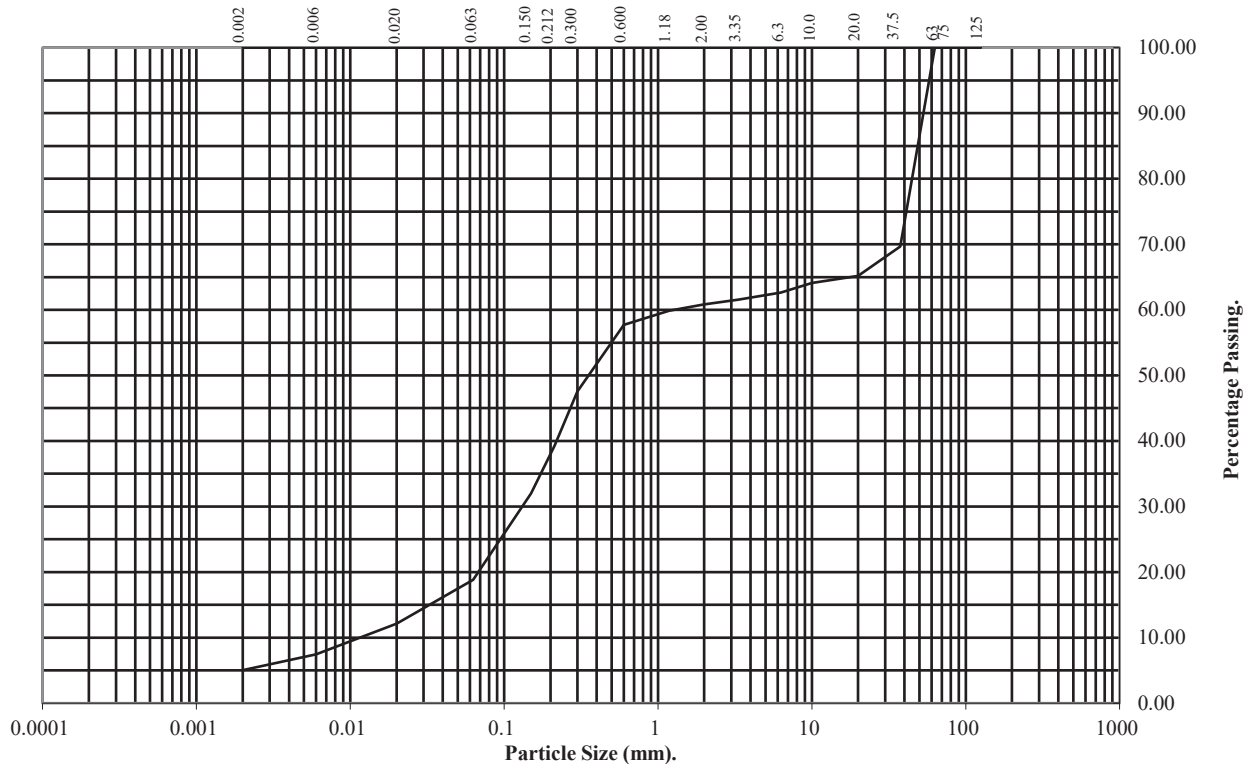
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP03 Top Depth (m): 3.00

Sample Number: 5 Base Depth(m): 3.45

Sample Type: B



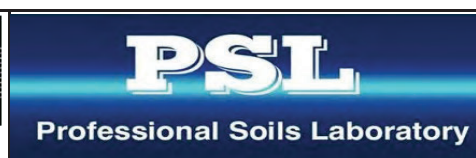
BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	70
20	65
10	64
6.3	63
3.35	62
2	61
1.18	60
0.6	58
0.3	48
0.212	39
0.15	32
0.063	19

Particle Diameter	Percentage Passing
0.02	12
0.006	7
0.002	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	39
Sand	42
Silt	14
Clay	5

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

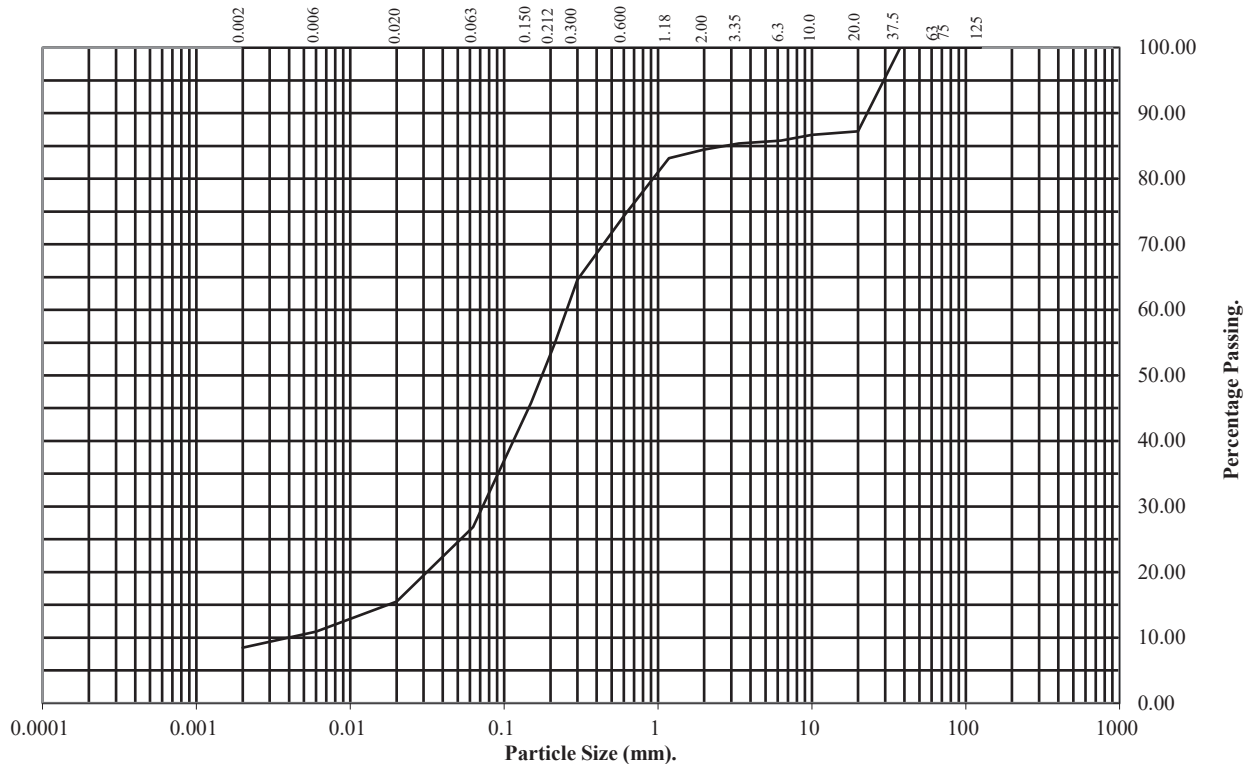
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP03 Top Depth (m): 5.00

Sample Number: 8 Base Depth(m): 5.45

Sample Type: B



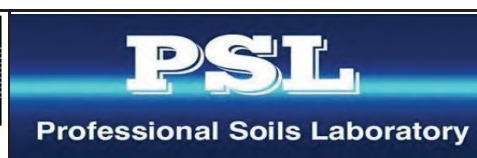
BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	87
10	87
6.3	86
3.35	85
2	84
1.18	83
0.6	74
0.3	65
0.212	55
0.15	46
0.063	27

Particle Diameter	Percentage Passing
0.02	16
0.006	11
0.002	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	16
Sand	57
Silt	19
Clay	8

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

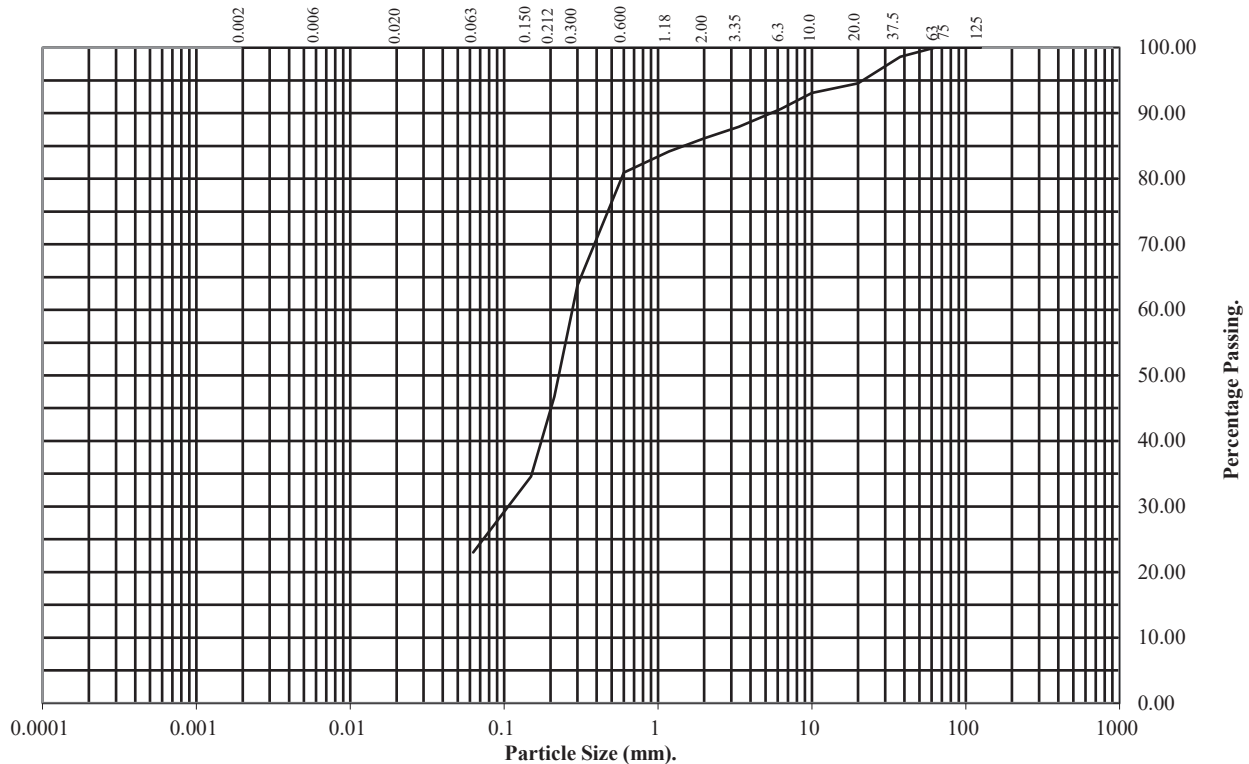
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: CP04 Top Depth (m): 0.00

Sample Number: 1 Base Depth(m): 1.20

Sample Type: B

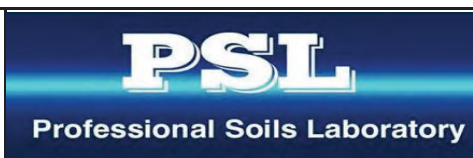


BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	99
20	95
10	93
6.3	91
3.35	88
2	86
1.18	84
0.6	81
0.3	64
0.212	47
0.15	35
0.063	23

Soil Fraction	Total Percentage
Cobbles	0
Gravel	14
Sand	63
Silt/Clay	23

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

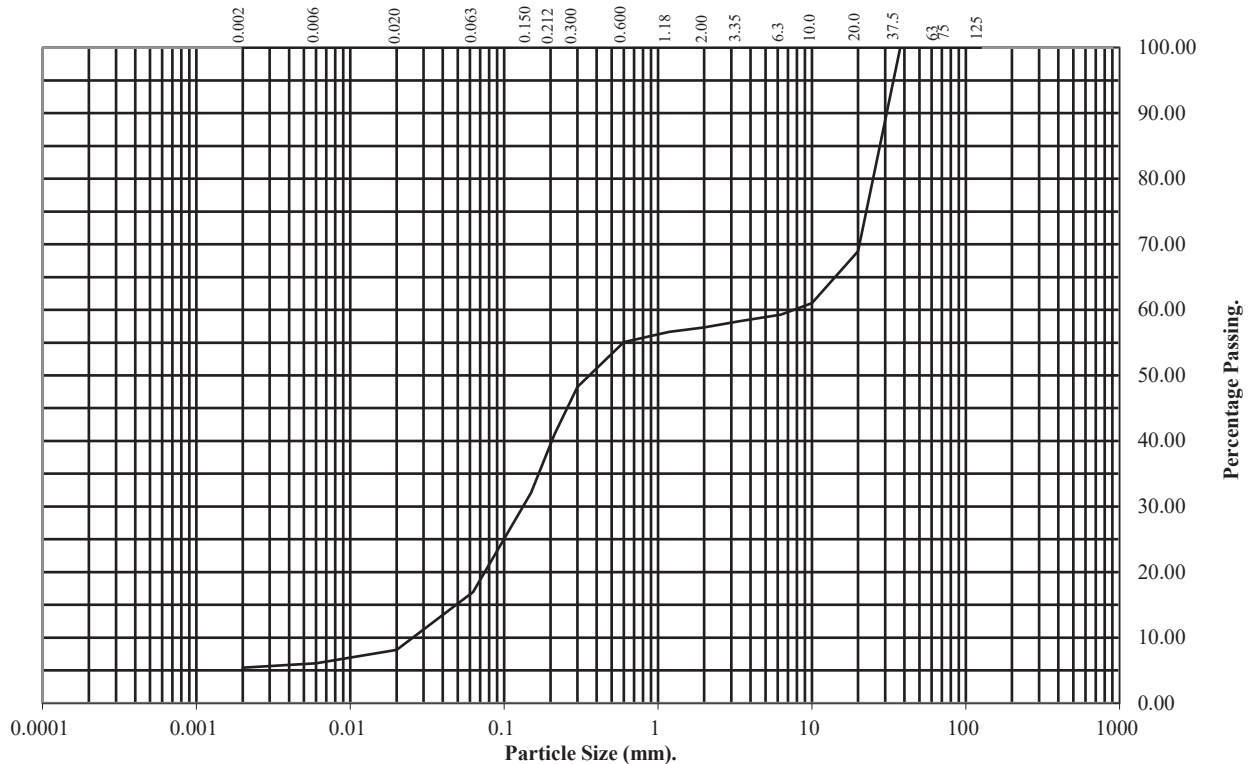
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP04 Top Depth (m): 3.00

Sample Number: 5 Base Depth(m): 3.45

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	69
10	61
6.3	59
3.35	58
2	57
1.18	57
0.6	55
0.3	48
0.212	41
0.15	32
0.063	17

Particle Diameter	Percentage Passing
0.02	8
0.006	6
0.002	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	43
Sand	40
Silt	12
Clay	5

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

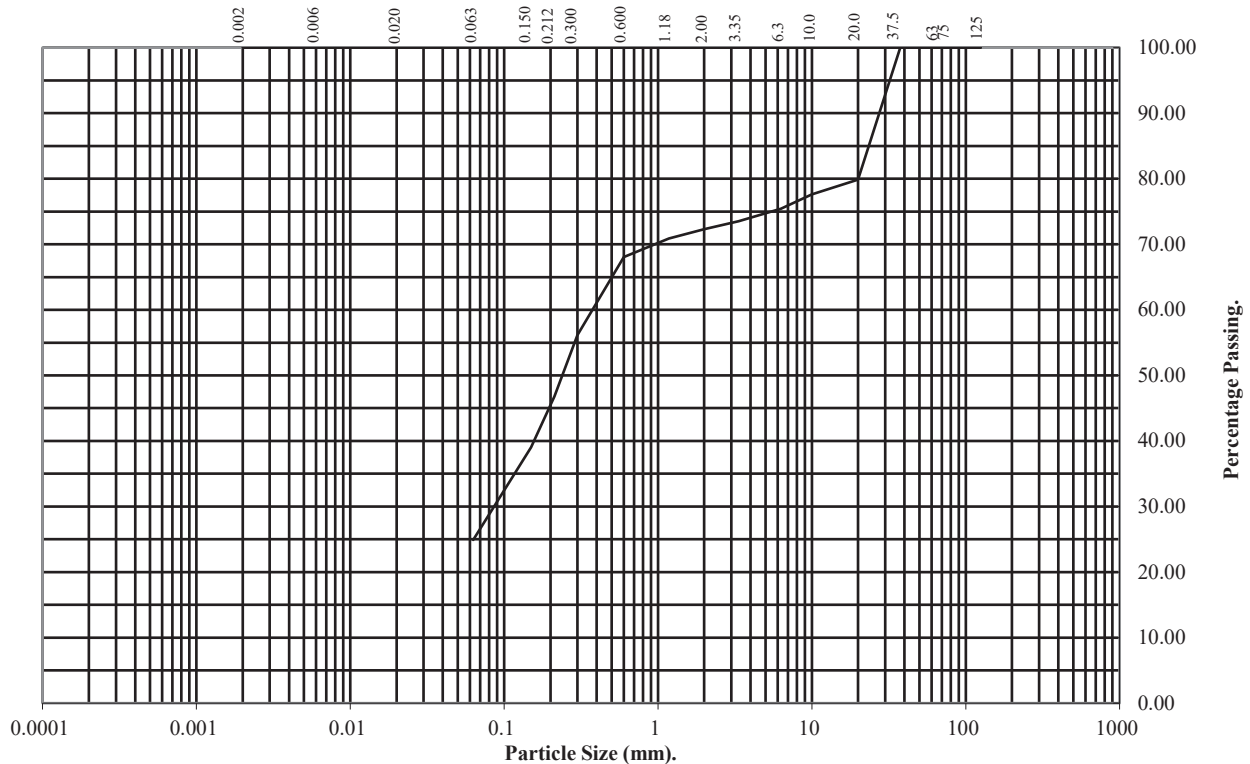
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP02 Top Depth (m): 3.00

Sample Number: 1 Base Depth(m): 3.20

Sample Type: B

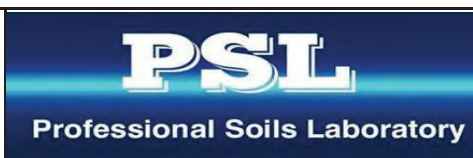


BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	80
10	78
6.3	75
3.35	74
2	72
1.18	71
0.6	68
0.3	56
0.212	47
0.15	39
0.063	25

Soil Fraction	Total Percentage
Cobbles	0
Gravel	28
Sand	47
Silt/Clay	25

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

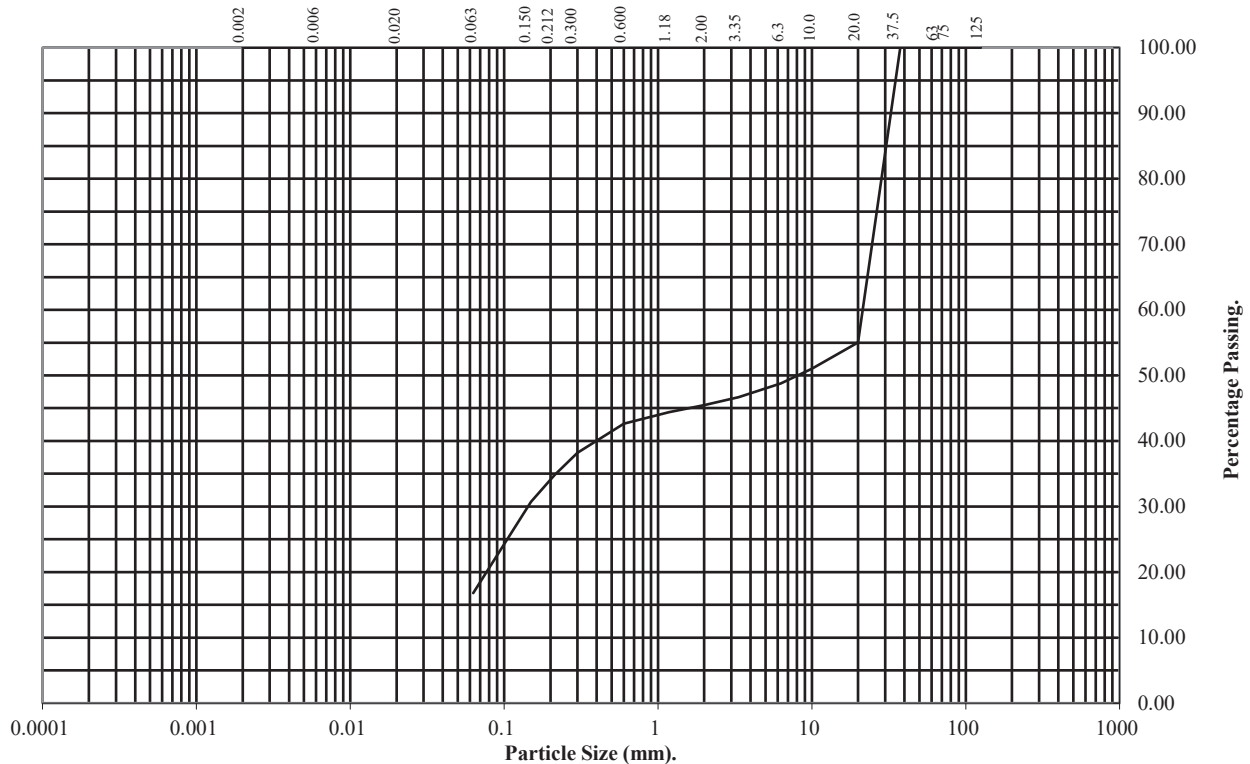
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP06 Top Depth (m): 2.50

Sample Number: 1 Base Depth(m): 2.70

Sample Type: B

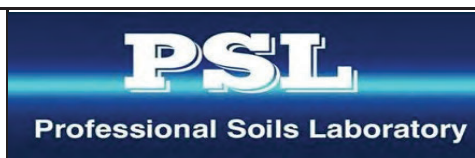


BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	55
10	51
6.3	49
3.35	47
2	45
1.18	44
0.6	43
0.3	38
0.212	35
0.15	31
0.063	17

Soil Fraction	Total Percentage
Cobbles	0
Gravel	55
Sand	28
Silt/Clay	17

Remarks:

See Summary of Soil Descriptions



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

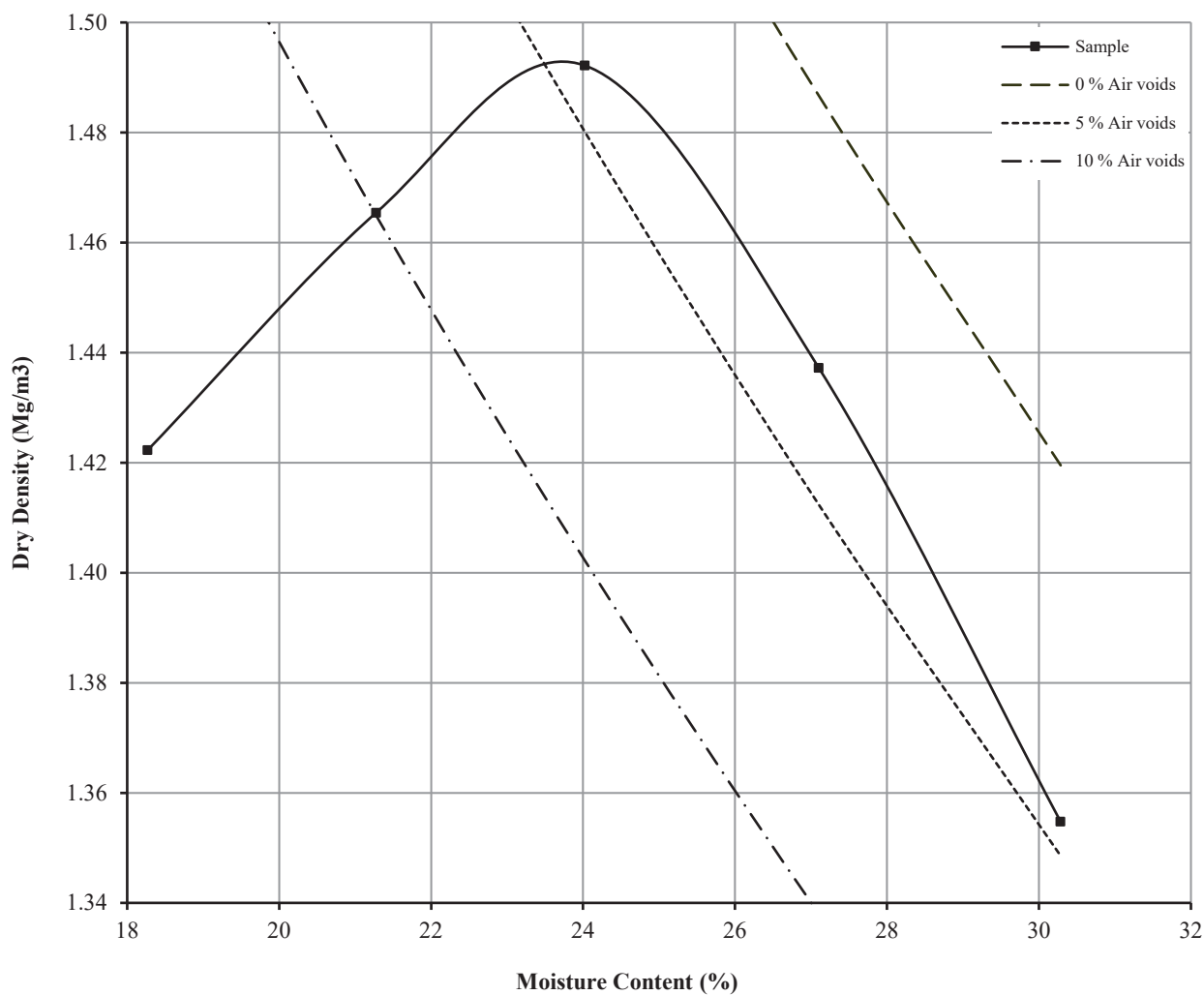
Hole Number: CP01

Top Depth (m) : 0.80

Sample Number: 1

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	27	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.49	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m3):	1.49		Material Retained on 20.0 mm Test Sieve (%):	2
Optimum Moisture Content (%):	24			
Remarks See summary of soil descriptions				



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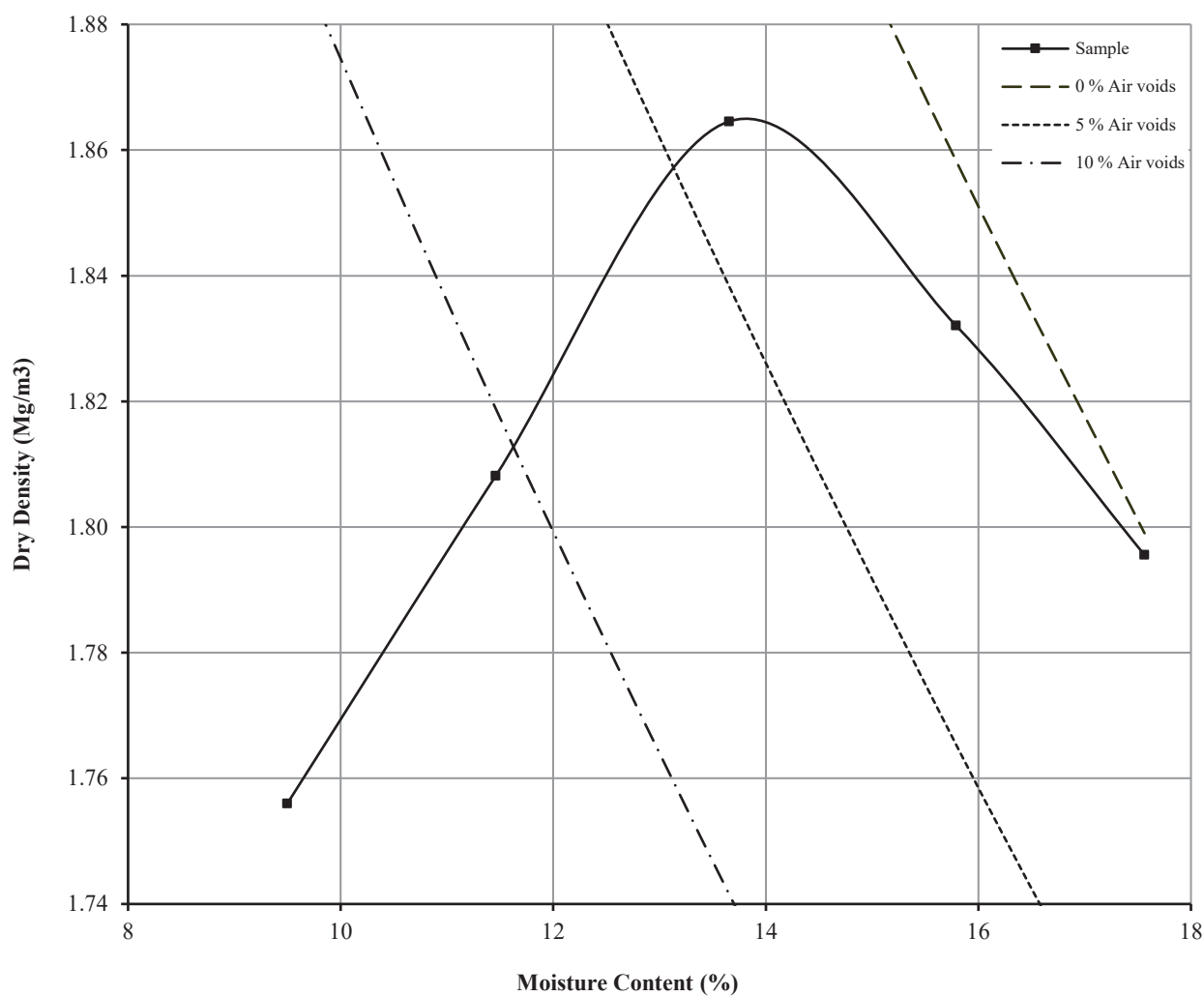
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.5 : 1990

Hole Number: CP04 Top Depth (m) : 0.00

Sample Number: 1 Base Depth (m) : 1.20

Sample Type: B



Initial Moisture Content:	16	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.63	Assumed	Material Retained on 37.5 mm Test Sieve (%):	4
Maximum Dry Density (Mg/m3):	1.86		Material Retained on 20.0 mm Test Sieve (%):	1
Optimum Moisture Content (%):	14			
Remarks See summary of soil descriptions				



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CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

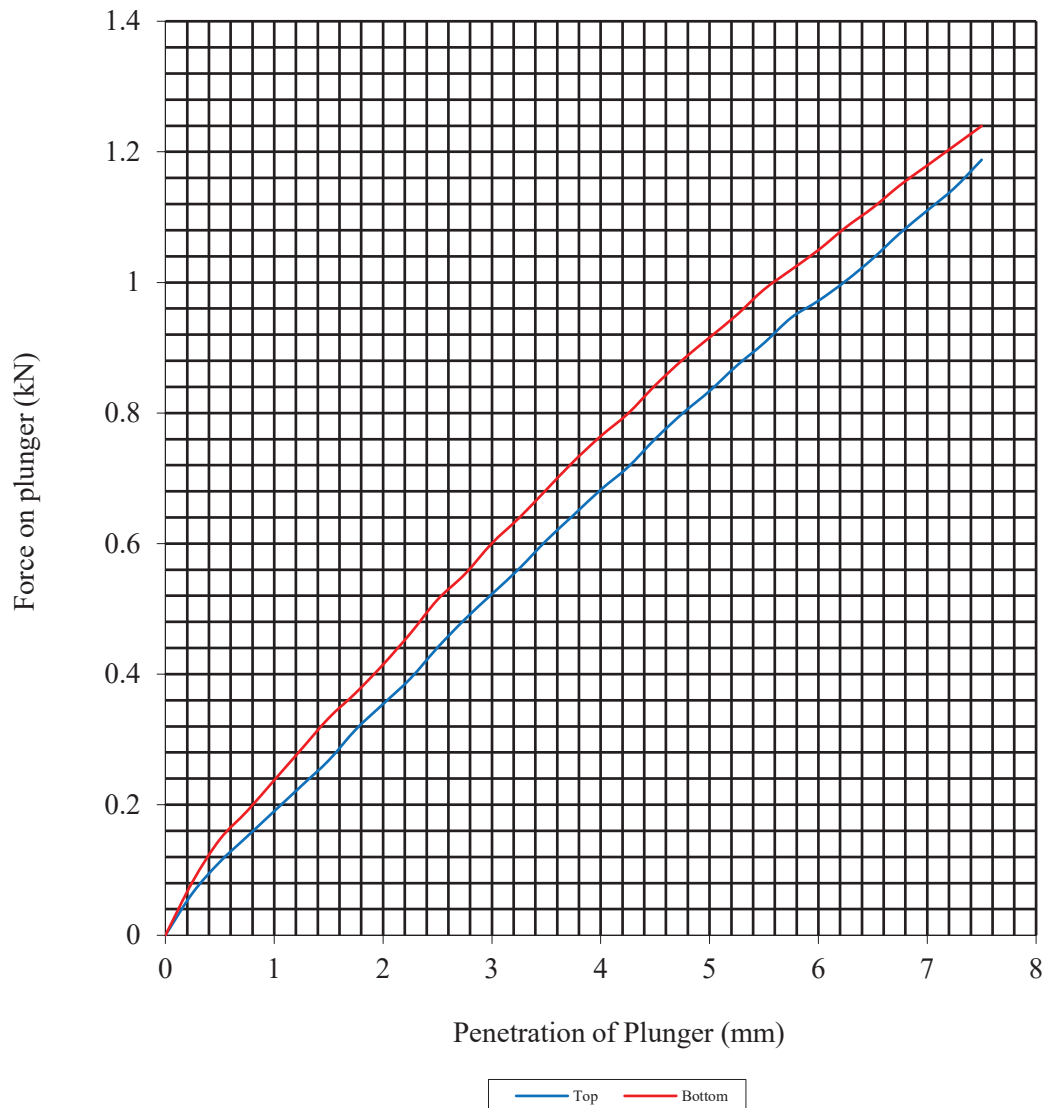
Hole Number: CP01

Top Depth (m): 0.80

Sample Number: 1

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	27	Surcharge Kg:	4.20	Sample Top	27	Sample Top	4.2
Bulk Density Mg/m3:	1.84	Soaking Time hrs	0	Sample Bottom	27	Sample Bottom	4.6
Dry Density Mg/m3:	1.44	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		2					
Compaction Conditions		2.5kg					



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CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

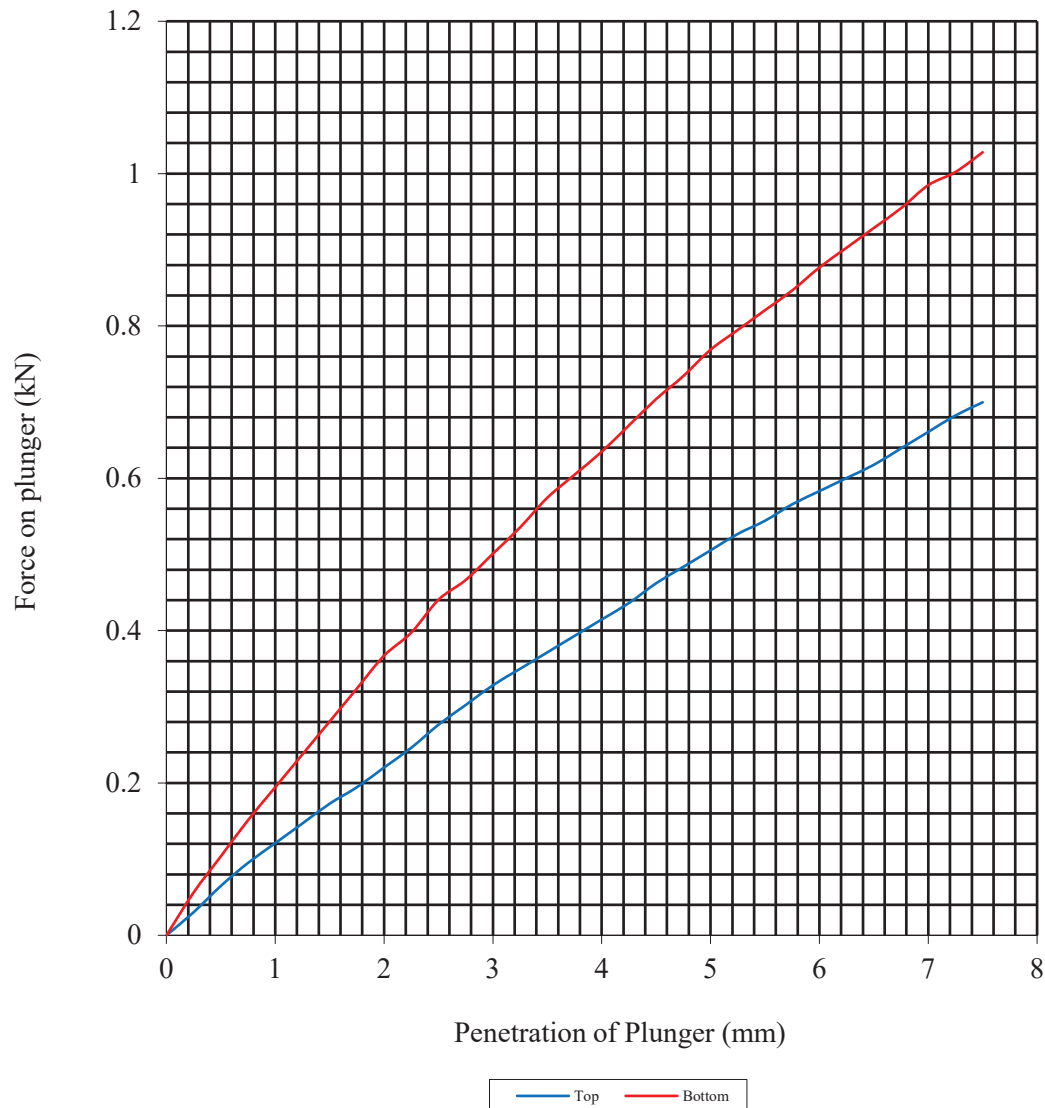
Hole Number: CP01

Top Depth (m): 0.80

Sample Number: 1

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	27	Surcharge Kg:	4.20	Sample Top	29	Sample Top	2.5
Bulk Density Mg/m3:	1.84	Soaking Time hrs	96	Sample Bottom	29	Sample Bottom	3.8
Dry Density Mg/m3:	1.44	Swelling mm:	2.42	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		2					
Compaction Conditions		2.5kg					



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CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

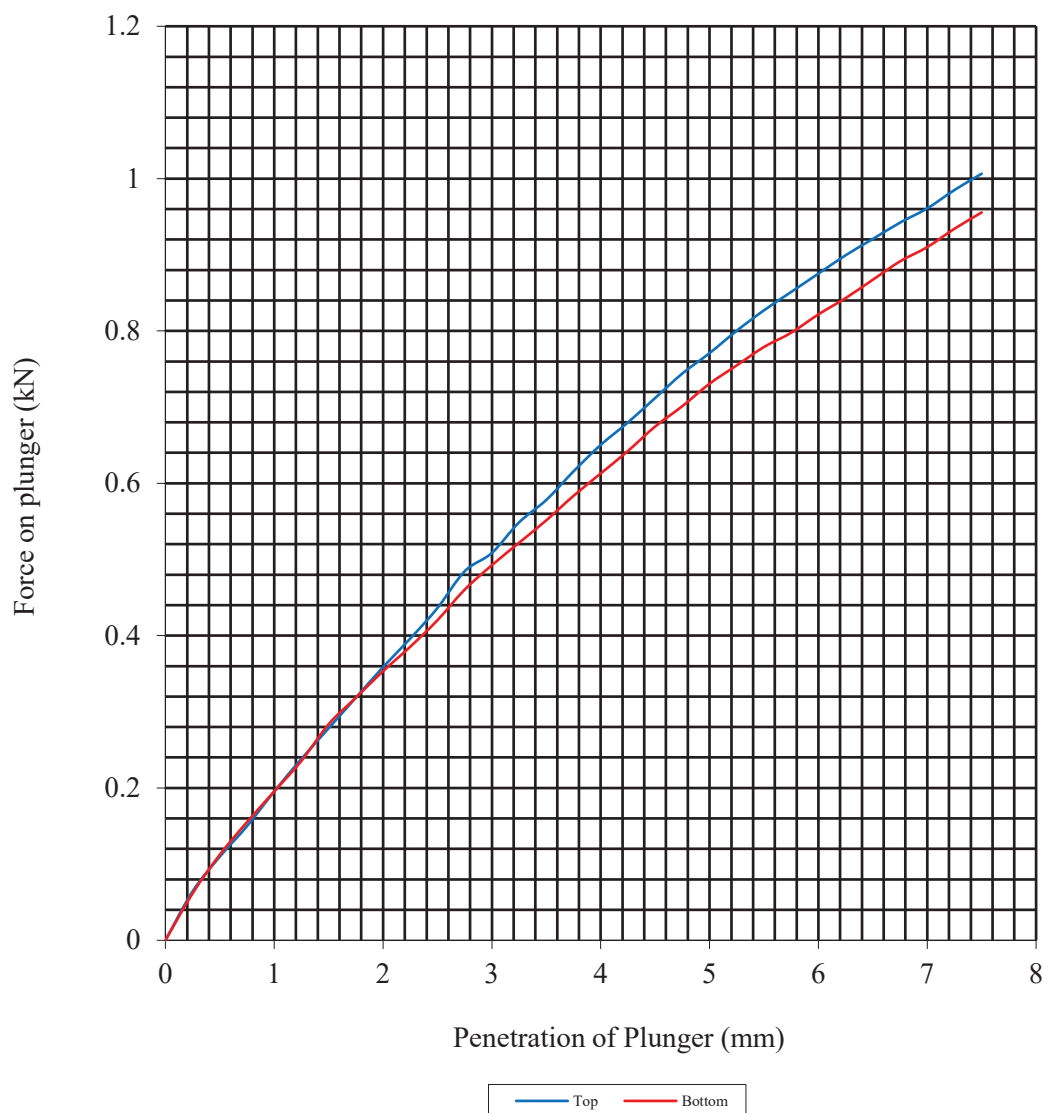
Hole Number: CP02

Top Depth (m): 0.00

Sample Number: 1

Base Depth (m): 1.20

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	15	Surcharge Kg:	4.20	Sample Top	15	Sample Top	3.9
Bulk Density Mg/m3:	2.13	Soaking Time hrs	0	Sample Bottom	15	Sample Bottom	3.7
Dry Density Mg/m3:	1.85	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		1					
Compaction Conditions		2.5kg					



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CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

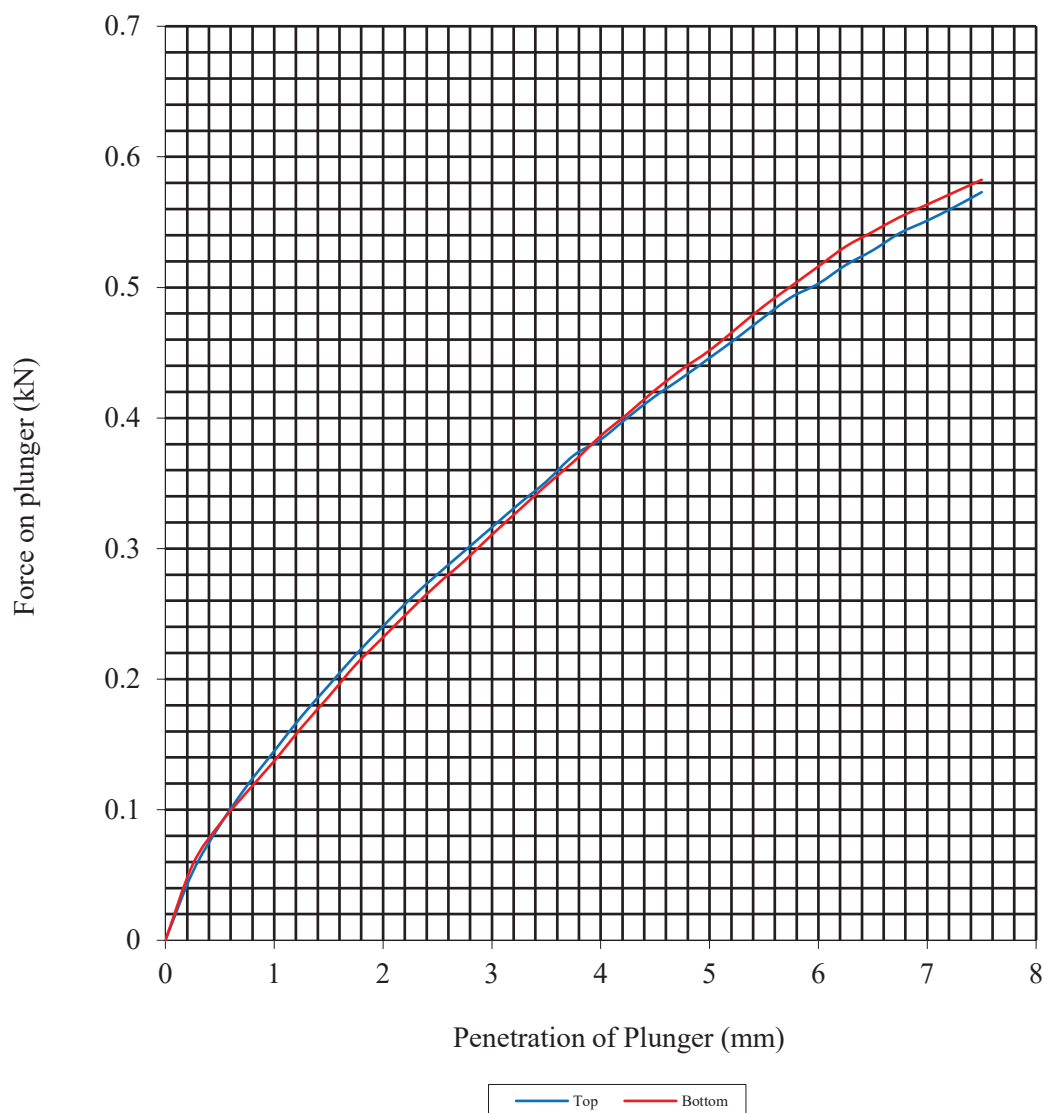
Hole Number: CP03

Top Depth (m): 0.80

Sample Number: 1

Base Depth (m): 1.20

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	18	Surcharge Kg:	4.00	Sample Top	18	Sample Top	2.2
Bulk Density Mg/m3:	2.11	Soaking Time hrs	0	Sample Bottom	18	Sample Bottom	2.3
Dry Density Mg/m3:	1.79	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		9					
Compaction Conditions		2.5kg					



PSL
Professional Soils Laboratory

Alchemy, Knowsley

Contract No:
PSL22/5595
Client Ref:

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

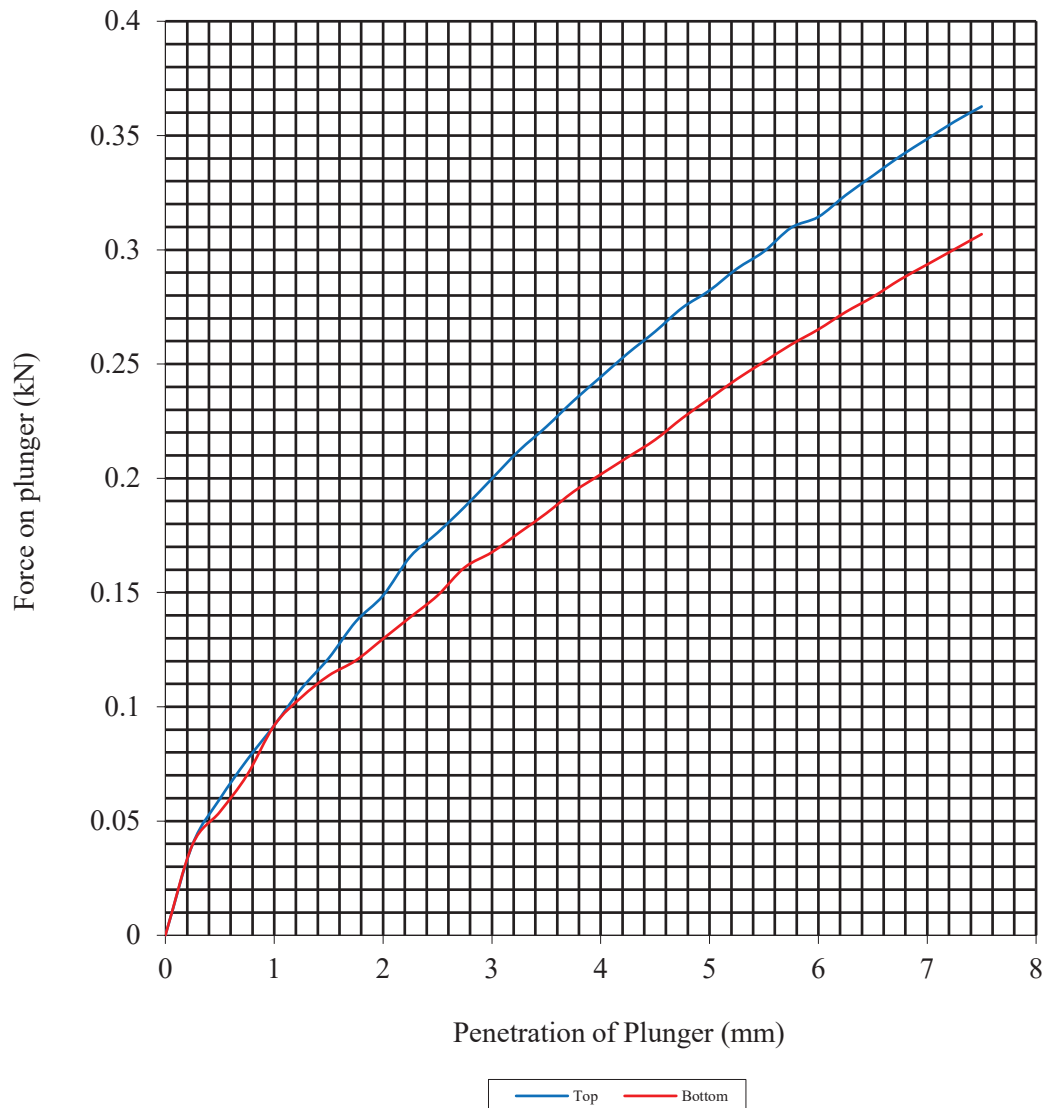
Hole Number: CP03

Top Depth (m): 0.80

Sample Number: 1

Base Depth (m): 1.20

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	18	Surcharge Kg:	4.00	Sample Top	18	Sample Top	1.4
Bulk Density Mg/m3:	2.11	Soaking Time hrs	96	Sample Bottom	18	Sample Bottom	1.2
Dry Density Mg/m3:	1.79	Swelling mm:	0.32	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		9					
Compaction Conditions		2.5kg					



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CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

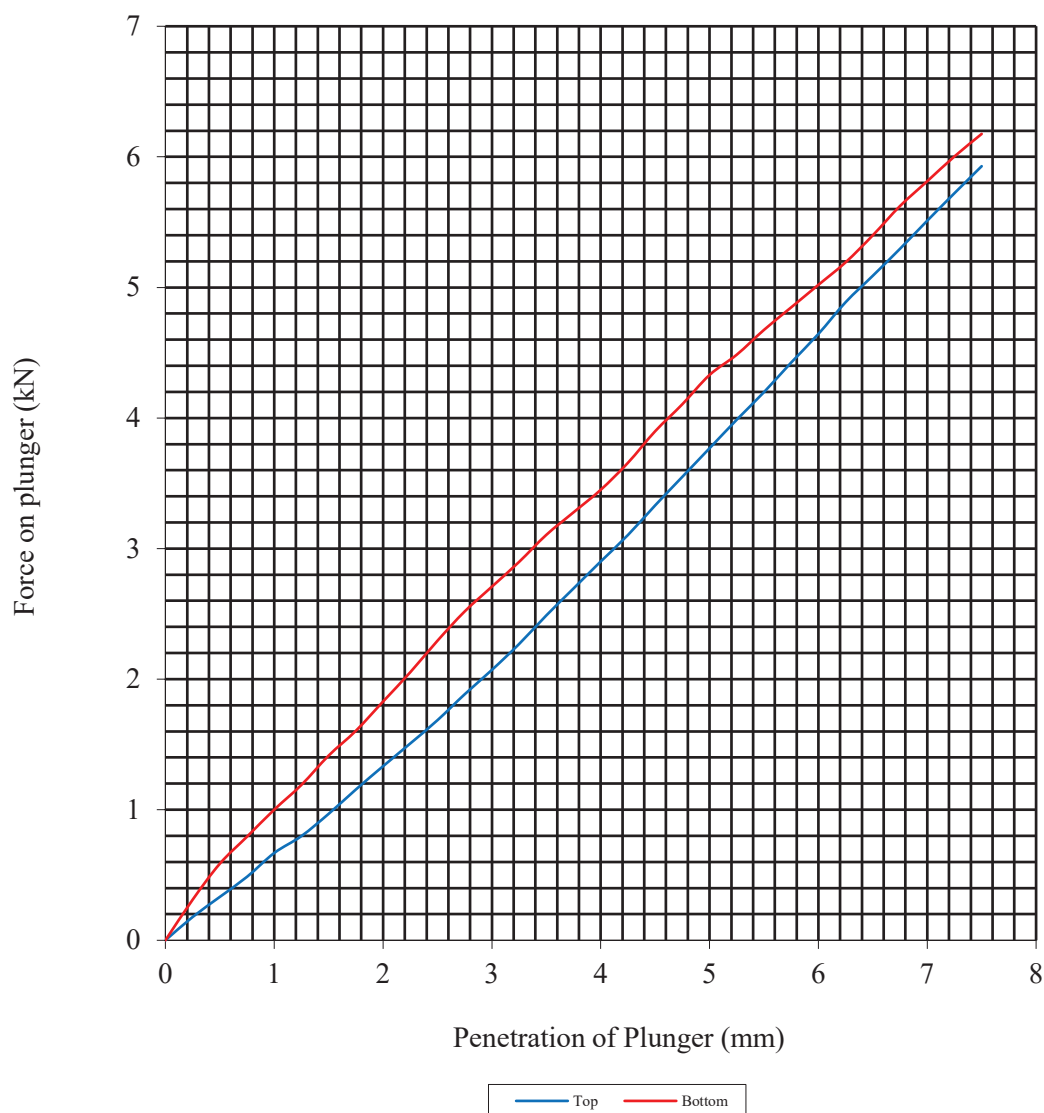
Hole Number: CP04

Top Depth (m): 0.00

Sample Number: 1

Base Depth (m): 1.20

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	16	Surcharge Kg:	4.00	Sample Top	16	Sample Top	18.8
Bulk Density Mg/m3:	2.05	Soaking Time hrs	0	Sample Bottom	16	Sample Bottom	21.6
Dry Density Mg/m3:	1.77	Swelling mm:	0	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		5					
Compaction Conditions		2.5kg					



PSL
Professional Soils Laboratory

Alchemy, Knowsley

Contract No:
PSL22/5595
Client Ref:



Certificate of Analysis

Certificate Number 22-17532

Issued: 09-Sep-22

Client Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference 22-17532

Client Reference PSL22/5595

Order No (not supplied)

Contract Title Alchemy, Knowsley

Description 7 Soil samples.

Date Received 06-Sep-22

Date Started 06-Sep-22

Date Completed 09-Sep-22

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read "K. Bridgewood".

Kirk Bridgewood
General Manager



2139

Summary of Chemical Analysis

Soil Samples

Our Ref 22-17532

Client Ref PSL22/5595

Contract Title Alchemy, Knowsley

Lab No	2054387	2054388	2054389	2054390	2054391	2054392
Sample ID	CP01	CP02	WS02	WS02	WS03	TP01
Depth	0.80	0.00-1.20	1.20-1.65	3.00-3.45	2.00-2.45	3.20
Other ID	1	1	1	3	2	1
Sample Type	B	B	D	D	D	D
Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Metals									
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l			< 10		< 10	
Inorganics									
pH	DETSC 2008#		pH	6.9	7.0	5.9	8.4	7.2	8.5
Chloride Aqueous Extract	DETSC 2055	1	mg/l			5.3		5.4	
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l			1.1		< 1.0	
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	25	37	65	16	58	38
Sulphur as S, Total	DETSC 2320	0.01	%			0.03		0.03	
Sulphate as SO4, Total	DETSC 2321#	0.01	%			0.05		0.03	

Summary of Chemical Analysis

Soil Samples

Our Ref 22-17532

Client Ref PSL22/5595

Contract Title Alchemy, Knowsley

Lab No	2054393
Sample ID	TP06
Depth	2.50-2.70
Other ID	1
Sample Type	B
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l	< 10
Inorganics				
pH	DETSC 2008#		pH	8.3
Chloride Aqueous Extract	DETSC 2055	1	mg/l	6.0
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l	20
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	33
Sulphur as S, Total	DETSC 2320	0.01	%	< 0.01
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.02

Information in Support of the Analytical Results

Our Ref 22-17532
 Client Ref PSL22/5595
 Contract Alchemy, Knowsley

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2054387	CP01 0.80 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
2054388	CP02 0.00-1.20 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
2054389	WS02 1.20-1.65 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2054390	WS02 3.00-3.45 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
2054391	WS03 2.00-2.45 SOIL		PT 1L	Sample date not supplied, Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	
2054392	TP01 3.20 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (30 days), pH + Conductivity (7 days)	
2054393	TP06 2.50-2.70 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), Metals ICP Prep (182 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

Appendix I

Field Monitoring Data

BH	Date	Response zone stratum	Response zone (m)	Depth m		Stratum GW Level Encountered	Atmospheric Pressure (mbar)	Flow Rate (q l/h)		Methane CH ₄ (% v/v)		Carbon dioxide CO ₂ (% v/v)		Oxygen % v/v (Low)	PID ppm	Carbon monoxide CO ppm (Peak)	Hydrogen sulphide H ₂ S ppm (Peak)	Gas Screening Values				Comments
				Water	Base			Initial	Steady	Peak	Steady	Peak	Steady					CH ₄ Peak	CH ₄ Steady	CO ₂ Peak	CO ₂ Steady	
Parcel 1																						
CP03	15/08/22	Devensian Till and Chester Formation	3.60m to 5.60m bgl	1.39	4.96	Made Ground	998	0.1	0.1	0.1	0.1	1.5	1.5	19.7	0.7	0.1	10	0.0001	0.0001	0.0015	Groundwater sampled	
	22/08/22			1.21	4.96			0.1	0.1	0.1	0.1	0.3	0.3	21.2	1.1	0.1	0.1	0.0001	0.0001	0.0003		
	05/09/22			1.43	4.91			0.1	0.1	0.1	0.1	0.1	0.1	20.7	0.1	0.1	0.1	0.0001	0.0001	0.0001		
CP04	15/08/22	Devensian Till	3.00m to 4.60m bgl	2.34	4.47	Made Ground	998	0.1	0.1	0.1	0.1	0.5	0.5	20.2	0.1	13	0.1	0.0001	0.0001	0.0005	Groundwater sampled	
	22/08/22			2.58	4.47			0.1	0.1	0.1	0.1	0.3	0.3	20.4	0.1	0.1	0.1	0.0001	0.0001	0.0003		
	05/09/22			2.72	4.46			0.3	0.2	0.1	0.1	0.1	0.1	20.7	0.1	0.1	0.1	0.0002	0.0002	0.0002		
WS04	15/08/22	Reworked Natural and Devensian Till	2.00m to 3.00 bgl	1.27	3.23	Reworked Natural	998	0.1	0.1	0.1	0.1	0.2	0.2	20.6	0.7	0.1	0.1	0.0001	0.0001	0.0002	No tap Groundwater sampled	
	22/08/22			1.30	3.22			0.1	0.1	0.1	0.1	0.2	0.2	20.8	0.1	0.1	0.1	0.0001	0.0001	0.0002		
	05/09/22			1.63	3.22			0.1	0.1	0.1	0.1	0.1	0.1	20.7	0.1	0.1	0.1	0.0001	0.0001	0.0001		
WS05	15/08/22	Made Ground, Pond Sediment and Devensian Till	1.70m to 2.70m bgl	2.37	2.62	Devensian Till	998	0.1	0.1	65.3	65.3	32.5	32.5	0.1	0.1	0.1	0.1	0.0653	0.0653	0.0325		
	22/08/22			2.41	2.62			0.1	0.1	63.5	63.5	32.9	32.9	0.1	1.5	0.1	0.1	0.0635	0.0635	0.0329		
	05/09/22			2.45	2.63			0.2	0.1	61.5	61.5	33.1	33.1	0.6	0.1	0.1	0.1	0.0615	0.0615	0.0331		
WS06	15/08/22	Made Ground	2.00m to 3.00m bgl	3.02	3.05	Made Ground	997	0.1	0.1	44.4	44.4	27.4	27.4	4.7	0.1	0.1	0.1	0.0444	0.0444	0.0274		
	22/08/22			3.05	3.06			0.1	0.1	46.1	46.1	28.7	28.7	2.2	0.1	0.1	0.1	0.0461	0.0461	0.0287		
	05/09/22			-	3.05			0.1	0.1	8.4	8.4	14.1	14.1	0.2	0.1	0.1	0.1	0.0084	0.0084	0.0141		
WS07	15/08/22	Made Ground	1.50m to 3.00m bgl	2.68	3.10	Reworked Natural	997	0.1	0.1	29.1	29.1	12.6	12.6	1.8	0.2	0.1	0.1	0.0291	0.0291	0.0126		
	22/08/22			2.77	3.10			0.1	0.1	35.8	35.8	13.4	13.4	0.6	0.1	0.1	0.1	0.0358	0.0358	0.0134		
	05/09/22			2.84	3.10			0.2	0.1	28.5	28.5	14.1	14.1	0.3	0.1	0.1	0.1	0.0285	0.0285	0.0141		
Parcel 2																						
CP01	15/08/22	Devensian Till	5.00m to 9.00m bgl	4.17	8.40	Devensian Till	998	0.1	0.1	0.1	0.1	2.3	2.3	16.9	4.8	11.0	0.1	0.0001	0.0001	0.0023	Groundwater sampled	
	22/08/22			4.20	8.36			0.1	0.1	0.1	0.1	3.6	3.6	15.0	3.8	0.1	0.1	0.0001	0.0001	0.0036		
	05/09/22			4.24	8.23			0.6	0.3	0.1	0.1	0.4	0.4	20.3	0.1	0.1	0.1	0.0003	0.0003	0.0012		
CP02	15/08/22	Devensian Till and Chester Formation	3.00m to 5.00m bgl	4.55	4.72	Chester Formation	998	0.1	0.1	8.5	8.5	7.9	7.9	3.4	0.1	0.1	0.1	0.0085	0.0085	0.0079		
	22/08/22			4.63	4.70			0.1	0.1	4.3	4.3	8.9	8.9	6.4	0.4	0.1	0.1	0.0043	0.0043	0.0089		
	05/09/22			4.62	4.66			1.0	0.8	3.9	3.9	8.7	8.7	6.8	0.1	0.1	0.1	0.0312	0.0312	0.0696		
WS01	15/08/22	Made Ground	0.20m to 0.90m bgl	-	0.83	N/A	998	0.1	0.1	0.1	0.1	2.0	2.0	19.2	-	0.1	0.1	0.0001	0.0001	0.0020	Dry - Unable to access with PID device Unable to access with PID device	
	22/08/22			-	0.83			0.1	0.1	0.1	0.1	2.2	2.2	18.2	-	0.1	0.1	0.0001	0.0001	0.0022		
	05/09/22			-	0.84			0.1	0.1	0.1	0.1	0.7	0.7	20.2	-	0.1	0.1	0.0001	0.0001	0.0007		
WS02	15/08/22	Made Ground	1.00m to 2.00m bgl	1.02	2.07	Made Ground	998	0.1	0.1	0.5	0.5	0.3	0.3	19.9	0.1	0.1	0.1	0.0005	0.0005	0.0003	LEL: 12.9 Tap left open Groundwater sampled	
	22/08/22			1.07	2.07			0.1	0.1	0.9	0.9	10.3	10.3	19.6	2.5	0.1	0.1	0.0009	0.0009	0.0103		
	05/09/22			1.76	2.06			0.4	0.2	0.1	0.1	0.8	0.8	18.4	1.6	0.1	0.1	0.0002	0.0002	0.0016		
WS03	15/08/22	Made Ground and Chester Formation	0.80m to 2.80m bgl	2.73	2.84	Chester Formation	998	0.1	0.1	0.1	0.1	4.9	4.9	13.6	0.1	0.1	0.1	0.0001	0.0001	0.0049	Tap left open	
	22/08/22			2.74	2.84			0.1	0.1	0.1	0.1	13.9	13.9	7.9	1.3	0.1	0.1	0.0001	0.0001	0.0139		
	05/09/22			2.77	2.84			0.3	0.1	0.1	0.1	8.1	8.1	14.3	0.1	0.1	0.1	0.0001	0.0001	0.0081		

Appendix J

Comparison of Analytical Data to Assessment Criteria

	Project Name	Alchemy Knowledge
	Project Number	JER563
	Date	09/09/2022
	Assessment Criteria	Commercial (1% SOM)
		Soil Type
		Sample Reference
		Depth (m)
		Date Sampled

[illegible]

Project Name	Alchemy, Knowsley								Sample Reference	CP03	CP04	WS04	CP01	WS02
Project Number	JER9563								Depth (m)					
Data Type	Groundwater													
Receiving Water Receptor	Surface Water (Freshwater) and Underlying Aq								Date Sampled	22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Analytical Parameter (Water Analysis)	Units	Limit of detection	number of samples	Min	Max	EQS	DWS	WHO DWS	Comments					
Hardness - Total	mgCaCO3/l	1	5	137	695	-	-	-		594	545	695	542	137
Arsenic (dissolved)	µg/l	2.5	5	7.2	48.7	50	-	-		7.2	13	48.7	11.8	22.9
Cadmium (dissolved)	µg/l	0.5	5	0.5	0.5	5	-	-		0.5	0.5	0.5	0.5	0.5
Chromium (dissolved)	µg/l	1.5	5	1.5	1.5	4.7	-	-		1.5	1.5	1.5	1.5	1.5
Copper (dissolved)	µg/l	7	5	7	7	40	-	-		7	7	7	7	7
Lead (dissolved)	µg/l	5	5	5	5	7.2	-	-		5	5	5	5	5
Mercury (dissolved)	µg/l	1	5	1	1	0.05	-	-		1	1	1	1	1
Nickel (dissolved)	µg/l	2	5	3	22	20	-	-		13	10	22	3	9
Selenium (dissolved)	µg/l	3	5	3	3	-	10	-		3	3	3	3	3
Zinc (dissolved)	µg/l	3	5	3	10	300	-	-		10	3	3	3	3
Acenaphthene	µg/l	0.005	5	0.005	0.084	-	-	-		0.005	0.084	0.01	0.03	0.051
Acenaphthylene	µg/l	0.005	5	0.005	0.01	-	-	-		0.005	0.005	0.005	0.01	0.005
Anthracene	µg/l	0.005	5	0.005	0.043	0.1	-	-		0.005	0.027	0.005	0.005	0.043
Benzo(a)anthracene	µg/l	0.005	5	0.005	0.08	-	-	-		0.005	0.005	0.005	0.005	0.08
Benzo(a)pyrene	µg/l	0.005	5	0.005	0.108	0.05	-	-		0.005	0.005	0.005	0.005	0.108
Benzo(b)fluoranthene	µg/l	0.008	5	0.008	0.12	0.03	-	-		0.008	0.008	0.008	0.008	0.12
Benzo(ghi)perylene	µg/l	0.005	5	0.005	0.043	0.002	-	-		0.005	0.005	0.005	0.005	0.043
Benzo(k)fluoranthene	µg/l	0.008	5	0.008	0.046	0.03	-	-		0.008	0.008	0.008	0.008	0.046
Chrysene	µg/l	0.005	5	0.005	0.102	-	-	-		0.005	0.007	0.005	0.005	0.102
Dibenz(a,h)anthracene	µg/l	0.005	5	0.005	0.005	-	-	-		0.005	0.005	0.005	0.005	0.005
Fluoranthene	µg/l		5	0.005	0.267	0.1	-	-		0.005	0.105	0.005	0.022	0.267
Fluorene	µg/l	0.005	5	0.005	0.055	-	-	-		0.005	0.04	0.006	0.055	0.033
Indeno(1,2,3-cd)pyrene	µg/l	0.005	5	0.005	0.053	0.002	-	-		0.005	0.005	0.005	0.005	0.053
Naphthalene	µg/l	0.1	5	0.1	0.1	-	-	-		0.1	0.1	0.1	0.1	0.1
Phenanthrene	µg/l	0.005	5	0.005	0.151	-	-	-		0.005	0.125	0.012	0.042	0.151
Pyrene	µg/l	0.005	5	0.005	0.246	-	-	-		0.005	0.086	0.005	0.024	0.246
Sum Benzo(a)-pyrene + Benzo(bk)fluoranthene + Benzo(ghi)perylene + Indeno(123cd)pyrene	µg/l	0.031	5	0.031	0.37	0.00017	-	-		0.031	0.031	0.031	0.031	0.37
pH (max)	pH Units	N/A	5	7.67	8.71	9	-	-		7.67	8.07	8.09	7.94	8.71
Total Phenols (monohydric)	µg/l	10	5	10	140	-	-	-		10	10	10	10	140
Total Cyanide	µg/l	10	5	10	20	1	-	-	Lod >EQS	10	10	10	10	20
Sulphate as SO ₄	mg/l	0.045	5	63.6	345.2	-	250000	-		78.9	158.6	63.6	63.8	345.2
Sulphide	µg/l	5	5	5	5	-	-	-		5	5	5	5	5
Benzene	µg/l	5	5	0.5	0.5	10	-	-		0.5	0.5	0.5	0.5	0.5
Toluene	µg/l	5	5	5	5	50	-	-		5	5	5	5	5
Ethylbenzene	µg/l	5	5	1	1	-	-	300		1	1	1	1	1
p & m-xylene	µg/l	5	5	2	2	30	-	-		2	2	2	2	2
o-xylene	µg/l	5	5	1	1	30	-	-		1	1	1	1	1
MTBE (Methyl Tertiary Butyl Ether)	µg/l	5	5	0.1	0.1	-	-	-		0.1	0.1	0.1	0.1	0.1
Aliphatic >C5 - C6	µg/l	10	5	10	10	11	-	1500		10	10	10	10	10
Aliphatic >C6 - C8	µg/l	10	5	10	10	11	-	1500		10	10	10	10	10
Aliphatic >C8 - C10	µg/l	10	5	10	10	11	-	300		10	10	10	10	10
Aliphatic >C10 - C12	µg/l	5	5	5	5	11	-	300		5	5	5	5	5
Aliphatic >C12 - C16	µg/l	10	5	10	10	11	-	-		10	10	10	10	10
Aliphatic >C16 - C21	µg/l	10	5	10	10	11	-	-		10	10	10	10	10
Aliphatic >C21 - C35	µg/l	10	5	10	10	11	-	-		10	10	10	10	10
Aliphatic (C5 - C35)	µg/l	10	5	10	10	11	-	-		10	10	10	10	10
Aromatic >C5 - C7	µg/l	10	5	10	10	11	-	10		10	10	10	10	10
Aromatic >C7 - C8	µg/l	10	5	10	10	11	-	700		10	10	10	10	10
Aromatic >C8 - C10	µg/l	10	5	10	10	11	-	300		10	10	10	10	10
Aromatic >C10 - C12	µg/l	5	5	5	5	11	-	90		5	5	5	5	5
Aromatic >C12 - C16	µg/l	10	5	10	10	11	-	90		10	10	10	10	10
Aromatic >C16 - C21	µg/l	10	5	10	10	11	-	90		10	10	10	10	10
Aromatic >C21 - C35	µg/l	10	5	10	10	11	-	90		10	10	10	10	10
Aromatic (C5 - C35)	µg/l	10	5	10	10	11	-	-		10	10	10	10	10
Chloromethane	µg/l	3	5	3	3	-	-	-		3	3	3	3	3
Chloroethane	µg/l	3	5	3	3	-	-	-		3	3	3	3	3
Bromomethane	µg/l	1	5	1	1	-	-	-		1	1	1	1	1
Vinyl Chloride	µg/l	0.1	5	0.1	0.1	-	0.5	-	Lod >EQS	0.1	0.1	0.1	0.1	0.1
Trichlorofluoromethane	µg/l	3	5	3	3	-	-	-		3	3	3	3	3
1,1-Dichloroethene	µg/l	3	5	3	3	-	-	-		3	3	3	3	3
Cis-1,2-dichloroethene	µg/l	3	5	3	3	-	-	-		3	3	3	3	3
1,1-Dichloroethane	µg/l	3	5	3	3	-	-	-		3	3	3	3	3
2,2-Dichloropropane	µg/l	1	5	1	1	-	-	-		1	1	1	1	1
1,1,1-Trichloroethane	µg/l	2	5	2	2	100	-	-		2	2	2	2	2
1,2-Dichloroethane	µg/l	2	5	2	2	10	-	-		2	2	2	2	2
1,1-Dichloropropene	µg/l	3	5	3	3	-	-	-		3	3	3	3	3
Trans-1,2-dichloroethene	µg/l	3	5	3	3	-	-	-		3	3	3	3	3
1,2-Dichloropropane	µg/l	3	5	2	2	-	-	-		2	2	2	2	2
Trichloroethene	µg/l	3	5	3	3	-	-	-		3	3	3	3	3
Dibromomethane	µg/l	3	5	3	3	-	-	-		3	3	3	3	3
Bromodichloromethane	µg/l	2	5	2	2	-	-	-		2	2	2	2	2
Cis-1,3-dichloropropene	µg/l	2	5	2	2	-	-	-		2	2	2	2	2
Trans-1,3-dichloropropene	µg/l	2	5	2	2	-	-	-		2	2	2	2	2
1,1,2-Trichloroethane	µg/l	2	5	2	2	400	-	-		2	2	2	2	2
1,3-Dichloropropane	µg/l	2	5	2	2	-	-	-		2	2	2	2	2
Dibromochloromethane	µg/l	2	5	2	2	-	-	-		2	2	2	2	2
Tetrachloroethene	µg/l	5	5	3	3	10	-	-		3	3	3	3	3
1,2-Dibromoethane	µg/l	5	5	2	2	-	-	-		2	2	2	2	2
Chlorobenzene	µg/l	2	5	2	2	-	-	-		2	2	2	2	2
1,1,1,2-Tetrachloroethane	µg/l	5	5	2	2	-	-	-		2	2	2	2	2

U/S = Unsuitable Sample I/S = Insufficient Sample

Appendix K

Laboratory Analytical Certificates

RPS

Unit 12 Watersedge Business Park
Modwen Rd
Salford
M5 3EZ



Attention : Stuart Clarke
Date : 26th August, 2022
Your reference : JER9563
Our reference : Test Report 22/12762 Batch 1
Location : Alchemy Knowsley
Date samples received : 6th August, 2022
Status : Final Report
Issue : 1

Eleven samples were received for analysis on 6th August, 2022 of which seven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/12762

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

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/12762

Report : Solid

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21				Please see attached notes for all abbreviations and acronyms		
Sample ID	JK1	JK2	JK3	JK4	CP02	CP01	CP03						
Depth	0.15	0.15	0.15	0.15	0.70	0.90	0.50						
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	04/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022				LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	<0.1				<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	<0.1				<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	<0.1				<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	9.2	<0.2				<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4				<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	<7				<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	51	26	<7	<7	42	23	<7				<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	51	26	<19	<19	42	32	<19				<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	<0.1				<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	<0.1				<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1 ^{SV}	<0.1 ^{SV}	<0.1				<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4				<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	68	47	<7	<7	<7	<7				<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	121	251	170	35	63	731	<7				<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR) #	121	319	217	35	63	731	<19				<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	172	345	217	<38	105	763	<38				<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE #	<5	<5 ^{SV}	<5	<5	<5 ^{SV}	<5 ^{SV}	<5				<5	ug/kg	TM36/PM12
Benzene #	<5	<5 ^{SV}	<5	<5	<5 ^{SV}	<5 ^{SV}	<5				<5	ug/kg	TM36/PM12
Toluene #	<5	17 ^{SV}	18	10	<5 ^{SV}	53 ^{SV}	9				<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5 ^{SV}	<5	<5	<5 ^{SV}	<5 ^{SV}	<5				<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	<5 ^{SV}	<5	<5	<5 ^{SV}	<5 ^{SV}	<5				<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5 ^{SV}	<5	<5	<5 ^{SV}	<5 ^{SV}	<5				<5	ug/kg	TM36/PM12
PCB 28 #	<5	-	<5	-	-	-	-				<5	ug/kg	TM17/PM8
PCB 52 #	<5	-	<5	-	-	-	-				<5	ug/kg	TM17/PM8
PCB 101 #	<5	-	<5	-	-	-	-				<5	ug/kg	TM17/PM8
PCB 118 #	<5	-	<5	-	-	-	-				<5	ug/kg	TM17/PM8
PCB 138 #	<5	-	<5	-	-	-	-				<5	ug/kg	TM17/PM8
PCB 153 #	<5	-	<5	-	-	-	-				<5	ug/kg	TM17/PM8
PCB 180 #	<5	-	<5	-	-	-	-				<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	-	<35	-	-	-	-				<35	ug/kg	TM17/PM8
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15				<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	15.0	19.0	26.8	15.0	14.2	30.0	11.3				<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3				<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0981	0.0642	0.0329	0.1607	0.0925	0.0605	0.0207				<0.0015	g/l	TM38/PM20

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	11.4		
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	89.8		
Particle Size <4mm =	>95%				
EMT Job No	22/12762		Landfill Waste Acceptance Criteria Limits		
Sample No	3				
Client Sample No	JK1		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Depth/Other	0.15				
Sample Date	04/08/2022				
Batch No	1				
Solid Waste Analysis					
Total Organic Carbon (%)	0.81		3	5	6
Loss on Ignition (%)	4.3		-	-	10
Sum of BTEX (mg/kg)	<0.025		6	-	-
Sum of 7 PCBs (mg/kg)	<0.035		1	-	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	51		500	-	-
PAH Sum of 17(mg/kg)	7.18		100	-	-
pH (pH Units)	8.42		-	>6	-
ANC to pH 7 (mol/kg)	0.05		-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.36		-	to be evaluated	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg		
	C ₁₀	A ₁₀			
	mg/l	mg/kg	mg/kg		
	Arsenic	<0.0025	<0.025	0.5	2
Barium	0.013	0.13	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	0.0023	0.023	0.5	10	70
Copper	0.009	0.09	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.005	0.05	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	0.8	8	800	15000	25000
Fluoride	0.8	8	10	150	500
Sulphate as SO4	7.0	70	1000	20000	50000
Total Dissolved Solids	87	870	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	4	40	500	800	1000

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	18.1		
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	84.7		
Particle Size <4mm =	>95%				
EMT Job No	22/12762		Landfill Waste Acceptance Criteria Limits		
Sample No	9				
Client Sample No	JK3		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Depth/Other	0.15				
Sample Date	04/08/2022				
Batch No	1				
Solid Waste Analysis					
Total Organic Carbon (%)	2.43		3	5	6
Loss on Ignition (%)	5.6		-	-	10
Sum of BTEX (mg/kg)	<0.025		6	-	-
Sum of 7 PCBs (mg/kg)	<0.035		1	-	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	<30		500	-	-
PAH Sum of 17(mg/kg)	21.53		100	-	-
pH (pH Units)	8.14		-	>6	-
ANC to pH 7 (mol/kg)	0.03		-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.13		-	to be evaluated	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg		
	C ₁₀	A ₁₀			
	mg/l	mg/kg	mg/kg		
	Arsenic	<0.0025	<0.025	0.5	2
Barium	0.022	0.22	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	<0.0015	<0.015	0.5	10	70
Copper	0.008	0.08	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.007	0.07	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	0.002	0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	0.004	0.04	4	50	200
Chloride	1.1	11	800	15000	25000
Fluoride	0.6	6	10	150	500
Sulphate as SO4	6.7	67	1000	20000	50000
Total Dissolved Solids	98	980	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	7	70	500	800	1000

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke

Note:

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

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

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

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

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/12762	1	JK1	0.15	2	Simon Postlewhite	18/08/2022	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	18/08/2022	Asbestos Fibres	NAD
					Simon Postlewhite	18/08/2022	Asbestos ACM	NAD
					Simon Postlewhite	18/08/2022	Asbestos Type	NAD
22/12762	1	JK2	0.15	6	Simon Postlewhite	18/08/2022	General Description (Bulk Analysis)	Brown oil/stones
					Simon Postlewhite	18/08/2022	Asbestos Fibres	NAD
					Simon Postlewhite	18/08/2022	Asbestos ACM	NAD
					Simon Postlewhite	18/08/2022	Asbestos Type	NAD
22/12762	1	JK3	0.15	8	Simon Postlewhite	18/08/2022	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	18/08/2022	Asbestos Fibres	NAD
					Simon Postlewhite	18/08/2022	Asbestos ACM	NAD
					Simon Postlewhite	18/08/2022	Asbestos Type	NAD
22/12762	1	JK4	0.15	12	Simon Postlewhite	18/08/2022	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	18/08/2022	Asbestos Fibres	NAD
					Simon Postlewhite	18/08/2022	Asbestos ACM	NAD
					Simon Postlewhite	18/08/2022	Asbestos Type	NAD
22/12762	1	CP02	0.70	15	Catherine Coles	18/08/2022	General Description (Bulk Analysis)	red soil
					Catherine Coles	18/08/2022	Asbestos Fibres	Fibre Bundles
					Catherine Coles	18/08/2022	Asbestos ACM	NAD
					Catherine Coles	18/08/2022	Asbestos Type	Amosite
					Matthew Turner	24/08/2022	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					Matthew Turner	24/08/2022	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					Matthew Turner	24/08/2022	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
					Matthew Turner	24/08/2022	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					Matthew Turner	24/08/2022	Asbestos Gravimetric & PCOM Total	<0.001 (mass %)
22/12762	1	CP01	0.90	18	Catherine Coles	18/08/2022	General Description (Bulk Analysis)	loose soil
					Catherine Coles	18/08/2022	Asbestos Fibres	NAD
					Catherine Coles	18/08/2022	Asbestos ACM	NAD
					Catherine Coles	18/08/2022	Asbestos Type	NAD
22/12762	1	CP03	0.50	21	Catherine Coles	18/08/2022	General Description (Bulk Analysis)	loose soil,stone
					Catherine Coles	18/08/2022	Asbestos Fibres	Fibre Bundles
					Catherine Coles	18/08/2022	Asbestos ACM	NAD
					Catherine Coles	18/08/2022	Asbestos Type	Amosite

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke

[illegible]

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/12762

SOILS and ASH

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

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

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

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

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

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

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

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

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

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

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

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/12762

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/IS ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B V2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C6-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B V2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C6-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes

EMT Job No: 22/12762

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM22	Modified BS1377-3:1990 Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (35C-440C). On request modified ASTM D2974-00 LOI (105C-440C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009. SOILS by Modified USEP 6010B, Rev.2, Dec 1996; Modified EPA Method 3050B, Rev. 2, Dec 1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes

EMT Job No: 22/12762

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/IS ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SWEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM77	Modified DDCENTVS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM89	Modified USEPA method OJA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes
TM131	Quantification of Asbestos Fibres and ACM based on HSG 248 Second edition:2021, HSG 264 Second edition:2012, HSE Contract Research Report No.83/1996, MDHS 87:1998, WM3 1st Edition v1.1:2018	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes
TM170	Determination of Trace Metals by ICP-MS (Inductively Coupled Plasma – Mass Spectrometry): Modified USEPA Method 200.8, Rev. 5.4, 1994; Modified EPA Method 6020A, Rev. 1, Feb 2007; Modified BS EN ISO 17294-2:2016	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes		AR	Yes
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.			AR	

RPS

Unit 12 Watersedge Business Park
Modwen Rd
Salford
M5 3EZ



4225

Attention : Stuart Clarke

Date : 19th August, 2022

Your reference : JER9563

Our reference : Test Report 22/12767 Batch 1

Location : Alchemy Knowsley

Date samples received : 6th August, 2022

Status : Final Report

Issue : 1

Fourteen samples were received for analysis on 6th August, 2022 of which nine were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

Authorised By:



Liza Klebe

Project Co-ordinator

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/12767

Report : Solid

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

EMT Sample No.	1-3	4-6	10-11	14-15	18-19	20-21	24-26	27-29	30-32		Please see attached notes for all abbreviations and acronyms		
Sample ID	TP01	TP03	TP06	TP08	TP07	TP04	TP02	TP02	TP05				
Depth	0.85	1.60	0.80	1.80	1.50	0.60	0.35	1.30	0.30				
COC No / misc													
Containers	V J T	V J T	V J	V J	V J	V J	V J T	V J T	V J T				
Sample Date	01/08/2022	01/08/2022	03/08/2022	03/08/2022	03/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022		LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4	6	<4		<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	14	<7	<7	<7	<7	<7	<7		<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	<7	65	<7	<7	<7	<7	16	<7		<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	<19	<19	79	<19	<19	<19	<19	22	<19		<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	1.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	45	<4	<4	<4	<4	<4	<4		<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	216	<7	23	<7	<7	17	<7		<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	<7	27	354	<7	41	<7	70	74	<7		<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR) #	<19	27	617	<19	64	<19	70	91	<19		<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics (C5-35) (EH+HS_CU_1D_Total)	<38	<38	696	<38	64	<38	70	113	<38		<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE #	<5	-	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
Benzene #	<5	-	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
Toluene #	17	-	8	13	<5	16	8	<5	<5		<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	-	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	-	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
o-Xylene #	<5	-	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15		<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	22.9	35.0	27.2	17.4	21.9	15.8	13.0	13.8	8.1		<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.2222	0.9972	0.1352	0.0309	0.0246	0.0311	0.0305	<0.0015	0.0153		<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	mg/kg	TM89/PM45
Organic Matter	8.1	40.7	6.5	0.6	0.5	1.7	3.4	2.1	1.2		<0.2	%	TM21/PM24
Sulphide	<10	<10	43	<10	<10	<10	<10	<10	<10		<10	mg/kg	TM107/PM45
pH #	6.35	5.89	7.89	8.34	8.28	7.98	8.05	6.90	8.17		<0.01	pH units	TM73/PM11

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/12767

VOC Report : Solid

EMT Sample No.	4-6												
Sample ID	TP03												
Depth	1.60												
COC No / misc													
Containers	V J T												
Sample Date	01/08/2022												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	06/08/2022												
											LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2										<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2										<2	ug/kg	TM15/PM10
Chloromethane #	7										<3	ug/kg	TM15/PM10
Vinyl Chloride	<2										<2	ug/kg	TM15_A/PM10
Bromomethane	<1										<1	ug/kg	TM15/PM10
Chloroethane #	<2										<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2										<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6										<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	20										<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3										<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3										<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3										<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4										<4	ug/kg	TM15/PM10
Bromochloromethane #	<3										<3	ug/kg	TM15/PM10
Chloroform #	<3										<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3										<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3										<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4										<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4										<4	ug/kg	TM15/PM10
Benzene #	12										<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3										<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6										<6	ug/kg	TM15/PM10
Dibromomethane #	<3										<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3										<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4										<4	ug/kg	TM15/PM10
Toluene #	89										<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3										<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3										<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3										<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3										<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3										<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3										<3	ug/kg	TM15/PM10
Chlorobenzene #	<3										<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3										<3	ug/kg	TM15/PM10
Ethylbenzene #	<3										<3	ug/kg	TM15/PM10
m/p-Xylene #	15										<5	ug/kg	TM15/PM10
o-Xylene #	5										<3	ug/kg	TM15/PM10
Styrene	<3										<3	ug/kg	TM15_A/PM10
Bromoform	<3										<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3										<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3										<3	ug/kg	TM15/PM10
Bromobenzene	<2										<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4										<4	ug/kg	TM15/PM10
Propylbenzene #	<4										<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3										<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3										<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3										<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5										<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6										<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4										<4	ug/kg	TM15/PM10
4-Isopropyltoluene	<4										<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
n-Butylbenzene	<4										<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane	<4										<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene	<7										<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4										<4	ug/kg	TM15/PM10
Naphthalene	<27										<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene	<7										<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	96										<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	57										<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke

Note:

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

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

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

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

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/12767	1	TP01	0.85	3	Catherine Coles	17/08/2022	General Description (Bulk Analysis)	soil,stone
					Catherine Coles	17/08/2022	Asbestos Fibres	Fibre Bundles
					Catherine Coles	17/08/2022	Asbestos ACM	NAD
					Catherine Coles	17/08/2022	Asbestos Type	Amosite
22/12767	1	TP03	1.60	6	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Burn soil
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP06	0.80	11	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown sand and roots
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP08	1.80	15	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown sand
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP07	1.50	19	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown sand
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP04	0.60	21	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown sand
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP02	0.35	26	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown sand
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP02	1.30	29	Catherine Coles	17/08/2022	General Description (Bulk Analysis)	soil,stone
					Catherine Coles	17/08/2022	Asbestos Fibres	NAD
					Catherine Coles	17/08/2022	Asbestos ACM	NAD
					Catherine Coles	17/08/2022	Asbestos Type	NAD

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke

[illegible]

Notification of Deviating Samples

RPS

JER9563

Alchemy Knowsley

Stuart Clarke

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/12767						

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/12767

SOILS and ASH

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

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

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

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

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

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

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

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

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

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

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

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/12767

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/IS ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C6-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a shreen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995. ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes

EMT Job No: 22/12767

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/IS ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec. 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996, Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014, Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996, Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014, Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM89	Modified USEPA method OJA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Scalar Continuous Flow Analyser	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes
TM15_A	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014, Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

RPS

Unit 12 Watersedge Business Park
Modwen Rd
Salford
M5 3EZ



Attention : Stuart Clarke
Date : 26th August, 2022
Your reference : JER9563
Our reference : Test Report 22/12767 Batch 1
Location : Alchemy Knowsley
Date samples received : 6th August, 2022
Status : Final Report
Issue : 1

Fourteen samples were received for analysis on 6th August, 2022 of which nine were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/12767

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

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/12767

Report : Solid

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

EMT Sample No.	1-3	4-6	10-11	14-15	18-19	20-21	24-26	27-29	30-32		Please see attached notes for all abbreviations and acronyms		
Sample ID	TP01	TP03	TP06	TP08	TP07	TP04	TP02	TP02	TP05				
Depth	0.85	1.60	0.80	1.80	1.50	0.60	0.35	1.30	0.30				
COC No / misc													
Containers	V J T	V J T	V J	V J	V J	V J	V J T	V J T	V J T				
Sample Date	01/08/2022	01/08/2022	03/08/2022	03/08/2022	03/08/2022	04/08/2022	04/08/2022	04/08/2022	04/08/2022				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022		LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4	6	<4		<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	14	<7	<7	<7	<7	<7	<7		<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	<7	65	<7	<7	<7	<7	16	<7		<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	<19	<19	79	<19	<19	<19	<19	22	<19		<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	1.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	45	<4	<4	<4	<4	<4	<4		<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	216	<7	23	<7	<7	17	<7		<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	<7	27	354	<7	41	<7	70	74	<7		<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR) #	<19	27	617	<19	64	<19	70	91	<19		<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics (C5-35) (EH+HS_CU_1D_Total)	<38	<38	696	<38	64	<38	70	113	<38		<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE #	<5	-	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
Benzene #	<5	-	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
Toluene #	17	-	8	13	<5	16	8	<5	<5		<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	-	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	-	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
o-Xylene #	<5	-	<5	<5	<5	<5	<5	<5	<5		<5	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15		<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	22.9	35.0	27.2	17.4	21.9	15.8	13.0	13.8	8.1		<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.2222	0.9972	0.1352	0.0309	0.0246	0.0311	0.0305	<0.0015	0.0153		<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	mg/kg	TM89/PM45
Organic Matter	8.1	40.7	6.5	0.6	0.5	1.7	3.4	2.1	1.2		<0.2	%	TM21/PM24
Sulphide	<10	<10	43	<10	<10	<10	<10	<10	<10		<10	mg/kg	TM107/PM45
pH #	6.35	5.89	7.89	8.34	8.28	7.98	8.05	6.90	8.17		<0.01	pH units	TM73/PM11

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/12767

VOC Report : Solid

EMT Sample No.	4-6												
Sample ID	TP03												
Depth	1.60												
COC No / misc													
Containers	V J T												
Sample Date	01/08/2022												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	06/08/2022												
		LOD/LOR	Units	Method No.									
VOC MS													
Dichlorodifluoromethane	<2	<2	ug/kg	TM15/PM10									
Methyl Tertiary Butyl Ether #	<2	<2	ug/kg	TM15/PM10									
Chloromethane #	7	<3	ug/kg	TM15/PM10									
Vinyl Chloride	<2	<2	ug/kg	TM15_A/PM10									
Bromomethane	<1	<1	ug/kg	TM15/PM10									
Chloroethane #	<2	<2	ug/kg	TM15/PM10									
Trichlorofluoromethane #	<2	<2	ug/kg	TM15/PM10									
1,1-Dichloroethene (1,1 DCE) #	<6	<6	ug/kg	TM15/PM10									
Dichloromethane (DCM) #	20	<7	ug/kg	TM15/PM10									
trans-1-2-Dichloroethene #	<3	<3	ug/kg	TM15/PM10									
1,1-Dichloroethane #	<3	<3	ug/kg	TM15/PM10									
cis-1-2-Dichloroethene #	<3	<3	ug/kg	TM15/PM10									
2,2-Dichloropropane	<4	<4	ug/kg	TM15/PM10									
Bromochloromethane #	<3	<3	ug/kg	TM15/PM10									
Chloroform #	<3	<3	ug/kg	TM15/PM10									
1,1,1-Trichloroethane #	<3	<3	ug/kg	TM15/PM10									
1,1-Dichloropropene #	<3	<3	ug/kg	TM15/PM10									
Carbon tetrachloride #	<4	<4	ug/kg	TM15/PM10									
1,2-Dichloroethane #	<4	<4	ug/kg	TM15/PM10									
Benzene #	12	<3	ug/kg	TM15/PM10									
Trichloroethene (TCE) #	<3	<3	ug/kg	TM15/PM10									
1,2-Dichloropropane #	<6	<6	ug/kg	TM15/PM10									
Dibromomethane #	<3	<3	ug/kg	TM15/PM10									
Bromodichloromethane #	<3	<3	ug/kg	TM15/PM10									
cis-1-3-Dichloropropene	<4	<4	ug/kg	TM15/PM10									
Toluene #	89	<3	ug/kg	TM15/PM10									
trans-1-3-Dichloropropene	<3	<3	ug/kg	TM15/PM10									
1,1,2-Trichloroethane #	<3	<3	ug/kg	TM15/PM10									
Tetrachloroethene (PCE) #	<3	<3	ug/kg	TM15/PM10									
1,3-Dichloropropane #	<3	<3	ug/kg	TM15/PM10									
Dibromochloromethane #	<3	<3	ug/kg	TM15/PM10									
1,2-Dibromoethane #	<3	<3	ug/kg	TM15/PM10									
Chlorobenzene #	<3	<3	ug/kg	TM15/PM10									
1,1,1,2-Tetrachloroethane #	<3	<3	ug/kg	TM15/PM10									
Ethylbenzene #	<3	<3	ug/kg	TM15/PM10									
m/p-Xylene #	15	<5	ug/kg	TM15/PM10									
o-Xylene #	5	<3	ug/kg	TM15/PM10									
Styrene	<3	<3	ug/kg	TM15_A/PM10									
Bromoform	<3	<3	ug/kg	TM15/PM10									
Isopropylbenzene #	<3	<3	ug/kg	TM15/PM10									
1,1,2,2-Tetrachloroethane #	<3	<3	ug/kg	TM15/PM10									
Bromobenzene	<2	<2	ug/kg	TM15/PM10									
1,2,3-Trichloropropane #	<4	<4	ug/kg	TM15/PM10									
Propylbenzene #	<4	<4	ug/kg	TM15/PM10									
2-Chlorotoluene	<3	<3	ug/kg	TM15/PM10									
1,3,5-Trimethylbenzene #	<3	<3	ug/kg	TM15/PM10									
4-Chlorotoluene	<3	<3	ug/kg	TM15/PM10									
tert-Butylbenzene #	<5	<5	ug/kg	TM15/PM10									
1,2,4-Trimethylbenzene #	<6	<6	ug/kg	TM15/PM10									
sec-Butylbenzene #	<4	<4	ug/kg	TM15/PM10									
4-Isopropyltoluene	<4	<4	ug/kg	TM15/PM10									
1,3-Dichlorobenzene #	<4	<4	ug/kg	TM15/PM10									
1,4-Dichlorobenzene #	<4	<4	ug/kg	TM15/PM10									
n-Butylbenzene	<4	<4	ug/kg	TM15/PM10									
1,2-Dichlorobenzene #	<4	<4	ug/kg	TM15/PM10									
1,2-Dibromo-3-chloropropane	<4	<4	ug/kg	TM15/PM10									
1,2,4-Trichlorobenzene	<7	<7	ug/kg	TM15/PM10									
Hexachlorobutadiene	<4	<4	ug/kg	TM15/PM10									
Naphthalene	<27	<27	ug/kg	TM15/PM10									
1,2,3-Trichlorobenzene	<7	<7	ug/kg	TM15/PM10									
Surrogate Recovery Toluene D8	96	<0	%	TM15/PM10									
Surrogate Recovery 4-Bromofluorobenzene	57	<0	%	TM15/PM10									

Please see attached notes for all abbreviations and acronyms

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke

Note:

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

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

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

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

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/12767	1	TP01	0.85	3	Catherine Coles	17/08/2022	General Description (Bulk Analysis)	soil, stone
					Catherine Coles	17/08/2022	Asbestos Fibres	Fibre Bundles
					Catherine Coles	17/08/2022	Asbestos ACM	NAD
					Catherine Coles	17/08/2022	Asbestos Type	Amosite
					Matthew Turner	24/08/2022	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					Matthew Turner	24/08/2022	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					Matthew Turner	24/08/2022	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
					Matthew Turner	24/08/2022	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					Matthew Turner	24/08/2022	Asbestos Gravimetric & PCOM Total	<0.001 (mass %)
22/12767	1	TP03	1.60	6	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Burn soil
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP06	0.80	11	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown sand and roots
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP08	1.80	15	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown snad
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP07	1.50	19	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown sand
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP04	0.60	21	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown sand
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12767	1	TP02	0.35	26	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown sand
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD

RPS
JER9563
Alchemy Knowsley
Stuart Clarke

[illegible]

Notification of Deviating Samples

RPS

JER9563

Alchemy Knowsley

Stuart Clarke

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/12767						

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/12767

SOILS and ASH

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

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

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

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

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

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

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

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

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

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

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

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/12767

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/IS ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C6-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a shreen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995. ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes

EMT Job No: 22/12767

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/IS ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec. 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec. 1996; Modified EPA Method 3050B, Rev.2, Dec. 1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996, Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014, Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996, Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014, Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM89	Modified USEPA method OJA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Scalar Continuous Flow Analyser	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes
TM131	Quantification of Asbestos Fibres and ACM based on HSG 248 Second edition:2021, HSG 264 Second edition:2012, HSE Contract Research Report No.83/1996, MDHS 87:1998, WM3 1st Edition v1.1:2018	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes

EMT Job No: 22/12767

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15_A	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

RPS

Unit 12 Watersedge Business Park
Modwen Rd
Salford
M5 3EZ



Attention : Stuart Clarke
Date : 18th August, 2022
Your reference : JER9563
Our reference : Test Report 22/12789 Batch 1
Location : Alchemy Knowsley
Date samples received : 6th August, 2022
Status : Final Report
Issue : 1

Fifteen samples were received for analysis on 6th August, 2022 of which ten were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

Authorised By:



Liza Klebe

Project Co-ordinator

Please include all sections of this report if it is reproduced

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

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/12789

Report : Solid

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

EMT Sample No.	1-2	3-4	5-6	9-10	11-12	13-14	17-19	26-28	29-31	35-37	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS07	WS07	WS06	WS05	WS05	WS04	WS03	WS02	WS01	WS01			
Depth	2.85	1.50	0.60	0.40	2.60	0.90	0.80	0.80	1.00	3.65			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J T	V J T	V J T	V J T			
Sample Date	02/08/2022	02/08/2022	02/08/2022	02/08/2022	02/08/2022	02/08/2022	02/08/2022	02/08/2022	02/08/2022	02/08/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022	LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 ⁺	<0.1 ⁺	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	19	<7	<7	<7	<7	21	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	<7	37	179	<7	44	<7	82	61	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	<19	<19	37	198	<19	44	<19	82	82	<19	<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	14	<7	<7	<7	<7	21	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	<7	<7	129	65	<7	53	<7	274	74	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR) #	<19	<19	143	65	<19	53	<19	295	74	<19	<19	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics (C5-35) (EH+HS_CU_1D_Total)	<38	<38	180	263	<38	97	<38	377	156	<38	<38	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE #	<5	<5	<5	<5	-	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Benzene #	<5	<5	<5	<5	-	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Toluene #	<5	<5	<5	<5	-	11	<5	<5	<5	9	<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5	-	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	<5	<5	<5	-	<5	<5	<5	<5	6	<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5	<5	23	-	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	0.27	<0.15	<0.15	<0.15	<0.15	<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	16.5	18.3	17.9	9.9	21.9	12.3	16.4	17.7	10.0	10.2	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0224	0.0857	0.1119	0.0489	0.0744	0.0227	0.0108	0.1422	0.0243	0.0311	<0.0015	g/l	TM38/PM20
Total Cyanide #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Organic Matter	0.2	0.6	1.7	1.5	3.6	1.2	2.9	4.1	2.7	4.2	<0.2	%	TM21/PM24
Sulphide	<10	31	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM107/PM45
pH #	7.27	7.78	8.25	7.81	6.92	8.52	8.37	7.68	8.36	8.54	<0.01	pH units	TM73/PM11

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/12789

VOC Report : Solid

EMT Sample No.	11-12												
Sample ID	WS05												
Depth	2.60												
COC No / misc													
Containers	V J												
Sample Date	02/08/2022												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	06/08/2022												
											LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2										<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2										<2	ug/kg	TM15/PM10
Chloromethane #	10										<3	ug/kg	TM15/PM10
Vinyl Chloride	<2										<2	ug/kg	TM15_A/PM10
Bromomethane	<1										<1	ug/kg	TM15/PM10
Chloroethane #	<2										<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2										<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6										<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7										<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3										<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3										<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3										<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4										<4	ug/kg	TM15/PM10
Bromochloromethane #	<3										<3	ug/kg	TM15/PM10
Chloroform #	<3										<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3										<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3										<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4										<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4										<4	ug/kg	TM15/PM10
Benzene #	<3										<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3										<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6										<6	ug/kg	TM15/PM10
Dibromomethane #	<3										<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3										<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4										<4	ug/kg	TM15/PM10
Toluene #	17										<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3										<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3										<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3										<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3										<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3										<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3										<3	ug/kg	TM15/PM10
Chlorobenzene #	<3										<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3										<3	ug/kg	TM15/PM10
Ethylbenzene #	<3										<3	ug/kg	TM15/PM10
m/p-Xylene #	<5										<5	ug/kg	TM15/PM10
o-Xylene #	<3										<3	ug/kg	TM15/PM10
Styrene	<3										<3	ug/kg	TM15_A/PM10
Bromoform	<3										<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3										<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3										<3	ug/kg	TM15/PM10
Bromobenzene	<2										<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4										<4	ug/kg	TM15/PM10
Propylbenzene #	<4										<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3										<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3										<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3										<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5										<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6										<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4										<4	ug/kg	TM15/PM10
4-Isopropyltoluene	<4										<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
n-Butylbenzene	<4										<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4										<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane	<4										<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene	<7										<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4										<4	ug/kg	TM15/PM10
Naphthalene	<27										<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene	<7										<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	95										<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	72										<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke

Note:

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

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

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

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

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/12789	1	WS07	2.85	2	Remigiusz Blichowski	17/08/2022	General Description (Bulk Analysis)	Brown Sand
					Remigiusz Blichowski	17/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	17/08/2022	Asbestos Type	NAD
22/12789	1	WS07	1.50	4	Catherine Coles	17/08/2022	General Description (Bulk Analysis)	soil,stone
					Catherine Coles	17/08/2022	Asbestos Fibres	NAD
					Catherine Coles	17/08/2022	Asbestos ACM	NAD
					Catherine Coles	17/08/2022	Asbestos Type	NAD
22/12789	1	WS06	0.60	6	Catherine Coles	17/08/2022	General Description (Bulk Analysis)	soil,stone
					Catherine Coles	17/08/2022	Asbestos Fibres	NAD
					Catherine Coles	17/08/2022	Asbestos ACM	NAD
					Catherine Coles	17/08/2022	Asbestos Type	NAD
22/12789	1	WS05	0.40	10	Simon Postlewhite	18/08/2022	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	18/08/2022	Asbestos Fibres	NAD
					Simon Postlewhite	18/08/2022	Asbestos ACM	NAD
					Simon Postlewhite	18/08/2022	Asbestos Type	NAD
22/12789	1	WS05	2.60	12	Catherine Coles	17/08/2022	General Description (Bulk Analysis)	soil,stone
					Catherine Coles	17/08/2022	Asbestos Fibres	NAD
					Catherine Coles	17/08/2022	Asbestos ACM	NAD
					Catherine Coles	17/08/2022	Asbestos Type	NAD
22/12789	1	WS04	0.90	14	Simon Postlewhite	17/08/2022	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	17/08/2022	Asbestos Fibres	NAD
					Simon Postlewhite	17/08/2022	Asbestos ACM	NAD
					Simon Postlewhite	17/08/2022	Asbestos Type	NAD
22/12789	1	WS03	0.80	19	Catherine Coles	17/08/2022	General Description (Bulk Analysis)	red soil,stone
					Catherine Coles	17/08/2022	Asbestos Fibres	NAD
					Catherine Coles	17/08/2022	Asbestos ACM	NAD
					Catherine Coles	17/08/2022	Asbestos Type	NAD
22/12789	1	WS02	0.80	28	Simon Postlewhite	17/08/2022	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	17/08/2022	Asbestos Fibres	NAD
					Simon Postlewhite	17/08/2022	Asbestos ACM	NAD
					Simon Postlewhite	17/08/2022	Asbestos Type	NAD

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke

[illegible]

Notification of Deviating Samples

RPS

JER9563

Alchemy Knowsley

Stuart Clarke

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/12789						

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/12789

SOILS and ASH

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

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

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

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

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

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

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

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

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

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

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

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/12789

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/IS ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C6-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995. ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes

EMT Job No: 22/12789

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/IS ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec 1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996, Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014, Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996, Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014, Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM89	Modified USEPA method OJA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Scalar Continuous Flow Analyser	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes
TM15_A	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014, Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

RPS

Unit 12 Watersedge Business Park
Modwen Rd
Salford
M5 3EZ



4225

Attention : Stuart Clarke

Date : 31st August, 2022

Your reference : JER9563

Our reference : Test Report 22/13653 Batch 1

Location : Alchemy Knowsley

Date samples received : 24th August, 2022

Status : Final Report

Issue : 1

Five samples were received for analysis on 24th August, 2022 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/13653

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/13653

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

EMT Sample No.	1-8	9-16	17-24	25-32	33-40						Please see attached notes for all abbreviations and acronyms		
Sample ID	CP03	CP04	WS04	CP01	WS02								
Depth													
COC No / misc													
Containers	V H N N Z P G	V H N N Z P G	V H N N Z P G	V H N U F N Z P G	V H N U F N Z P G								
Sample Date	22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022								
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water								
Batch Number	1	1	1	1	1								
Date of Receipt	24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022						LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10	<10	<10						<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10	<10	<10						<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10	<10	<10						<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	<5	<5						<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
>C21-C35 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
Aromatics													
>C5-EC7 #	<10	<10	<10	<10	<10						<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10	<10	<10						<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10	<10	<10						<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5	<5						<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
Phenol #	<0.01	<0.01	<0.01	<0.01	0.14						<0.01	mg/l	TM26/PM0
Sulphate as SO4 #	78.9	158.6	63.6	63.8	345.2						<0.5	mg/l	TM38/PM0
Total Cyanide #	<0.01	<0.03 ^{AA}	<0.03 ^{AA}	<0.01	0.02						<0.01	mg/l	TM89/PM0
Hexavalent Chromium	<0.006	<0.006	<0.006	<0.006	<0.006						<0.006	mg/l	TM38/PM0
Sulphide	<0.01	<0.01	<0.01	<0.01	<0.01						<0.01	mg/l	TM107/PM0
pH #	7.67	8.07	8.09	7.94	8.71						<0.01	pH units	TM73/PM0
Total Organic Carbon #	10	22	28	9	84						<2	mg/l	TM60/PM0

Client Name: RPS
Reference: JER9563
Location: Alchemy Knowsley
Contact: Stuart Clarke
EMT Job No: 22/13653

VOC Report : Liquid

EMT Sample No.	1-8	9-16	17-24	25-32	33-40						Please see attached notes for all abbreviations and acronyms		
Sample ID	CP03	CP04	WS04	CP01	WS02								
Depth													
COC No / misc													
Containers	V HN N Z P G	V HN N Z P G	V HN N Z P G	V HNUF N Z P G	V HNUF N Z P G								
Sample Date	22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022								
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water						LOD/LOR	Units	Method No.
Batch Number	1	1	1	1	1								
Date of Receipt	24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022								
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1						<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1						<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5						<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	<5						<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1	<1	<1						<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1	<1	<1						<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4						<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	95	113	105	105	95						<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	95	111	100	102	90						<0	%	TM15/PM10

Notification of Deviating Samples

RPS

JER9563

Alchemy Knowsley

Stuart Clarke

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/13653						

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/13653

SOILS and ASH

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

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

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

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

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

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

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

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

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

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

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x3 Dilution

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

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Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009; SOILS by Modified USEP 6010B, Rev.2, Dec 1996; Modified EPA Method 3050B, Rev. 2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009; SOILS by Modified USEP 6010B, Rev.2, Dec 1996; Modified EPA Method 3050B, Rev. 2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			

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Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/IS ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM0	No preparation is required.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM0	No preparation is required.	Yes			
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OJA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.	Yes			
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM0	No preparation is required.				