

# Factual Site Investigation

Leachate Treatment Plant, Joint Stocks Landfill,  
Coxhoe

Durham County Council

S220506

Solmek Ltd

12 Yarm Road  
Stockton-on-Tees  
TS18 3NA  
Tel: 01642 607083

[www.solmek.com](http://www.solmek.com)

[info@solmek.com](mailto:info@solmek.com)



# FACTUAL SITE INVESTIGATION REPORT

## LEACHATE TREATMENT PLANT, JOINT STOCKS LANDFILL, COXHOE

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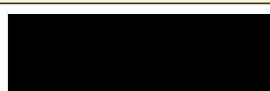

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Revision	Date	Prepared By	Signed
Final	September 2022	L Cassidy <i>Senior Environmental Engineer</i>	
		Checked By	
		R Woods <i>Principal Geotechnical Engineer</i>	
		Approved By	
		R Woods <i>Principal Geotechnical Engineer</i>	

## 1 EXECUTIVE SUMMARY

<b>Site Address</b>	Joint Stocks Landfill, Coxhoe
<b>Proposed Development</b>	The site is expected to be developed with a new leachate treatment plant.
<b>Fieldwork</b>	4no cable percussive boreholes with rotary core follow-on (BH01 to BH04) to a maximum depth of 24.00m below ground level (bgl). 4no machine excavated trial pits (TP01-TP04) to a maximum depth of 3.80mbgl.
<b>Ground Conditions</b>	Made ground was generally encountered to depths of between 2.30 and 15.90mbgl. Locally not terminated but proven to 3.60-3.80mbgl. Drift deposits only encountered within BH02 and BH02, comprising slightly sandy gravelly clay and slightly clayey slightly gravelly sand, respectively. Rockhead of limestone within BH01 (6.50mbgl) and BH02 (9.30mbgl), rockhead of mudstone within BH03 (15.90mbgl) and BH04 (14.80mbgl). Groundwater strikes were encountered within BH03 & BH04 at 13.60-14.50mbgl.
<b>Contamination Testing</b>	4no made ground samples. Chemical testing results provided in Appendix C.
<b>Gas Monitoring Results</b>	Six visits undertaken to date. Flows 0.1/hr. Generally no VOCs, CO or H <sub>2</sub> S recorded (CO 1ppm within BH04 during Visit 1) No methane recorded within BH02, 0-0.7% in BH01, 1.2-2.3% in BH03 and 55.2-64.6% in BH04. CO <sub>2</sub> generally between 1.7 and 5.6% (20.9-30.3% in BH04). O <sub>2</sub> between 1.4 and 20.5%.
<b>Geotechnical Testing</b>	Standard Penetration Tests within granular deposits recorded an N value of 36. SPTs within cohesive deposits ranged from 8 to 27. Geotechnical laboratory testing scheduled in agreement with Sirius. Geotechnical testing results provided in Appendix D.

## 2 INTRODUCTION

### 2.1 Authorisation

The site investigation described in this report was carried out by Solmek to the instructions of Sirius, on behalf of Durham County Council, on land located at Joint Stocks Landfill, Coxhoe (Appendix A, Figure 1).

### 2.2 Scope of Works

The site is expected to be developed with a new leachate treatment plant.

A geotechnical and environmental investigation including a ground gas risk assessment was requested. The type and position of exploratory positions and the scope and nature of testing were all determined by Sirius.

The fieldwork and testing was generally carried out according to the recommendations of BS5930:2015+A1:2020 "Code of Practice for Ground Investigations" and where applicable BS EN 1997-2:2007 with soil descriptions to BS EN 14688-1:2013 where applicable. The information provided in this report is based on the investigation fieldwork and is subject to the comments and approval of the various regulatory authorities.

There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report. Solmek reserve the right to alter conclusions and recommendations should further information be available or provided. Any schematic representation or opinion of the possible configuration of ground conditions between exploratory holes is conjectural and given for guidance only and confirmation of intermediate ground conditions should be considered if deemed necessary.

## 3 SITE DESCRIPTION AND FIELDWORK

A site inspection, as recommended in BS 5930 and BS 10175, was undertaken on 24<sup>th</sup> May 2022. The site is centred at Ordnance Survey Co-ordinates 432844,536566.

The site consists of a roughly rectangular area with a rough grassed surfacing and a mostly level topography. The site itself is undeveloped.

The surrounding area consists of waste management buildings immediately northeast and to the west, open fields to the north and a road (B6291) to the south. The wider area is generally rural.

### 3.1 Fieldwork

The fieldwork commenced on 24<sup>th</sup> May 2022. The extent of the investigation was:

- Ground penetrating radar (GPR) scan of the exploratory positions to check for underground utilities.
- 4no cable percussive boreholes with rotary core follow-on (BH01 to BH04) to a maximum depth of 24.00m below ground level (bgl).

- o The borehole locations and depths were specified by Sirius.

- Gas monitoring wells were installed within BH01 to BH04.

- o Gas response zones were designed by Sirius and are shown in Table 2.

- 4no machine excavated trial pits (TP01-TP04) to a maximum depth of 3.80mbgl.

- o The trial pit locations were specified by Sirius.

- In situ testing in the exploratory positions as Standard Penetration Tests (SPTs).

- Retrieval of samples for geotechnical and chemical testing.

- Topographic survey of fieldwork positions.

The boreholes were backfilled with bentonite below combined gas/groundwater installations, whilst trial pits were backfilled with arisings.

Descriptions of the strata encountered in the boreholes and trial pits together with details of sampling and groundwater are presented in Appendix B of this report. A plan showing the location of the boreholes and trial pits can be found in Appendix A (Figure 2).

## 4 GROUND CONDITIONS

A brief summary of the ground conditions encountered is given below. Borehole & trial pit logs are provided in Appendix B.

### 4.1 Made Ground

Made ground across the site was variable uniform and was encountered to a minimum depth of 2.30mbgl in BH01 and a maximum depth of 15.90mbgl in BH03. The made ground generally comprised a surface covering of topsoil, overlying soft to firm sandy gravelly clay (reworked) with the gravel variably comprising mudstone, sandstone, limestone and coal.

Locally, the cohesive made ground was overlain by a band (0.50-1.20m thick) of granular made ground with the gravel component variably comprising limestone, coal, mudstone, brick and macadam.

The made ground was not fully penetrated within the trial pits, which terminated at 3.60-3.80mbgl.

### 4.2 Natural Deposits

Natural drift deposits were encountered within BH01 and BH02 only, with BH03 and BH04 encountering rockhead directly beneath the made ground and the trial pits not penetrating the made ground.

Within BH01, the drift deposits comprised firm slightly sandy gravelly medium to high strength clay from 2.30 to 6.50mbgl.

Within BH02, dense slightly clayey slightly gravelly sand was encountered instead, from 6.60 to 9.30mbgl.

### 4.3 Solid Geology

Rockhead was variable, with extremely weak limestone encountered within BH01 (6.50mbgl) and BH02 (9.30mbgl), whilst rockhead of extremely weak mudstone was encountered within BH03 (15.90mbgl) and BH04 (14.80mbgl).

Drilling continued to 24.00mbgl within all boreholes, generally comprising limestone in BH01, limestone in BH02 with mudstone from 13.00-18.30mbgl, mudstone to 19.10mbgl overlying sandstone to 24.00mbgl in BH03 and mudstone to 19.60mbgl overlying sandstone to 24.00mbgl in BH04.

### 4.4 Groundwater

Groundwater strikes, where encountered, are presented on the exploratory logs (Appendix B) and are summarised below in Table 1:

**TABLE 1: SUMMARY OF GROUNDWATER STRIKES**

Exploratory Position	Depth Encountered (mbgl)	Depth after 20 minutes (mbgl)	Strata
BH03	14.50	13.90	MADE GROUND
BH04	13.60	12.80	MADE GROUND

It should be noted the rapid rate of advancement of the exploratory holes may mask minor seepages and it should be borne in mind that water levels fluctuate with a number of influences including season, rainfall, dewatering and pumping activities. Therefore, water levels significantly higher than those found during this investigation may be encountered.

## 5 CONTAMINATION TESTING RESULTS

The site is expected to be developed with a new leachate treatment facility. The chemical samples were

generally retrieved in line with BS ISO 18400-105:2017 "Soil Quality. Sampling". The chemical results are presented in Appendix C.

## 5.1 Contamination Testing and Rationale

### 5.1.1 Soil Contamination Testing

To provide information upon the possibility of ground contamination, 4no samples of made ground were selected for contamination testing:

- TP01 – 0.10m (Made ground – topsoil)
- TP02 – 0.60m (Made ground – granular)
- TP03 – 0.10m (Made ground – topsoil)
- TP04 – 0.50m (Made ground – granular)

The samples selected are considered to provide coverage of the made ground and natural deposits from across the site that would be most likely to be exposed during future site works. The samples were tested for the following contaminant suites:

- 4no Metals, semi-metals, non-metals, inorganic determinants
- 4no Organic Matter
- 4no Speciated Polyaromatic Hydrocarbons (PAHs)
- 4no Total Petroleum Hydrocarbon Criteria Working Group fractions (TPHCWG)
- 4no Phenol
- 4no Asbestos identification screenings

## 5.2 Test Results

The test results are presented in Appendix C.

## 6 GROUND GAS

The site is expected to be developed with a new leachate treatment facility.

Ground gases such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), carbon monoxide (CO) and volatile organic compounds (VOCs) can be classed as a form of contamination where there is a potential risk to human health.

For this report, gas monitoring is via measuring emissions from four standpipes that were installed within the boreholes during the sitework. The gas monitoring consisted of six visits.

### 6.1 Monitoring Wells and Response Zones

During the site investigation works, gas monitoring wells were installed within all four boreholes, at the request of Sirius. The response zones were specified by Sirius, and are briefly summarised below in Table 2.

**TABLE 2: SUMMARY OF MONITORING WELL RESPONSE ZONES**

Borehole	Pipework	Installation Depth (mbgl)	Response zone of slotted pipework (mbgl)	Response Zone Stratum
BH01	50mm HDPE pipe	6.50	1.00-6.50	MADE GROUND/CLAY
BH02	50mm HDPE pipe	12.00	9.00-12.00	LIMESTONE
BH03	50mm HDPE pipe	24.00	16.00-24.00	MUDSTONE/SANDSTONE
BH04	50mm HDPE pipe	12.00	3.00-12.00	MADE GROUND

## 6.2 Ground Gas Results

Six visits have been completed to date. The atmospheric pressure has an impact on the concentrations of gas released. Atmospheric pressure was between 988 and 1007 during the six visits to date. The results for the visits undertaken to date are summarised below in Table 3 and are presented in full in Appendix E.

**TABLE 3: SUMMARY OF GAS MONITORING RESULTS**

Borehole	Flow Range (l/hr)	CH <sub>4</sub> Range (%v/v)	CO <sub>2</sub> Range (%v/v)	O <sub>2</sub> Range (%v/v)	PID Range (ppm)	CO Range (ppm)	H <sub>2</sub> S Range (ppm)	GW Range (mbgl)
BH01	0.1	0.0 – 0.7	2.3 – 5.6	6.4 – 17.0	0	0	0	Dry
BH02	0.1	0.0	1.7 – 2.5	16.3 – 20.5	0	0	0	10.82 – 11.00
BH03	0.1	1.2 – 2.3	2.5 – 3.0	9.6 – 15.8	0	0	0	16.40 – 20.20
BH04	0.1	55.2 – 64.6	20.9 – 30.3	1.4 – 3.0	0	0 – 1	0	11.25 – 12.00

## 7 GEOTECHNICAL TESTING

Samples taken from the boreholes and trial pits underwent a series of geotechnical tests (BS 1377:1990) to aid foundation design and soil description. In addition, insitu Standard Penetration Tests (SPTs) were undertaken at regular intervals during drilling. The geotechnical results are presented in Appendix D.

The scope of the testing undertaken was determined in agreement with Sirius.

### 7.1 In-Situ Testing

Standard Penetration Tests (SPTs) undertaken within the made ground deposits generally yielded N values of between 6 and 50+.

Within the natural granular deposits, N values of 36 were recorded, indicating medium dense deposits. Within localised bands of cohesive deposits, N values ranged from 8 to 27, indicating medium to high strength deposits.

SPT N values upon the rockhead yielded N values of 50+.

### 7.2 Laboratory Testing

The scope of the laboratory testing to be undertaken was determined in agreement with Sirius. The below testing was scheduled:

- 6no Moisture Contents
- 3no Atterberg Limits
- 4no Particle Size Distribution
- 6no Particle Density
- 2no Compaction – 2.5kg
- 2no Suite C (Brownfield) Tests
- 4no Laboratory Shear Vanes
- 5no Unconsolidated Undrained Triaxials
- 5no One Dimensional Consolidations
- 4no Sulphate Content (Soil)
- 4no pH (Soil)
- 2no Permeability (Constant Head)
- 7no Point Load Tests (Rock)
- 6no Unconfined Compressive Strength Tests (Rock)

The geotechnical results are presented in Appendix D.

## SOLMEK


## **APPENDIX A: Figures & Drawings**





12-16 Yarm Road, Stockton on Tees, TS18 3NA  
Tel: 01642 607083 Email: info@solmek.com

<b>Figure Title</b>
Site Location Plan
<b>Project Number</b>
S220506
<b>Project Name</b>
Leachate Treatment Plant, Joint Stocks Landfill, Coxhoe
<b>Client</b>
Durham CC
<b>Date</b>
June 2022
<b>DRG Number</b>
Figure 1
<b>Scale</b>
1:2000 @ A4 [DO NOT SCALE]

Legend Key  
 Project Bounds - Project Bounds



12-16 Yarm Road, Stockton on Tees, TS18 3NA  
Tel: 01642 607083 Email: info@solmek.com

**Figure Title**

Exploratory Hole Location Plan

**Project Number**

S220506

**Project Name**

Leachate Treatment Plant, Joint Stocks Landfill, Coxhoe

**Client**

Durham CC

**Date**

June 2022

**DRG Number**

Figure 2

**Scale**

1:500 @ A4 [DO NOT SCALE]

**Legend Key**




-  Locations By Type - CP+RC
-  Locations By Type - TP
-  Project Bounds - Project Bounds



Figure 3: TP01.



Figure 4: TP01 Spoil.

<b>Title</b>	<b>Date</b>
Figures 3 & 4	August 2022
<b>Project</b>	
Joint Stocks Landfill, Coxhoe	
<b>Client</b>	
Durham County Council	

**Solmek Ltd.**  
 12 Yarm Road  
 Stockton-on-Tees  
 TS18 3NA

Tel: +44 (0) 1642 607083  
 Fax: +44 (0) 1642 612355  
 e-mail: south@solmek.com  
[www.solmek.com](http://www.solmek.com)





Figure 5: TP02.



Figure 6: TP02 Spoil.


<b>Title</b>	<b>Date</b>	<p><b>Solmek Ltd.</b>          12 Yarm Road          Stockton-on-Tees          TS18 3NA</p> <p>Tel: +44 (0) 1642 607083          Fax: +44 (0) 1642 612355          e-mail: south@solmek.com  <a href="http://www.solmek.com">www.solmek.com</a></p>  <b>SOLMEK</b>
Figures 5 & 6	August 2022	
<b>Project</b>		
Joint Stocks Landfill, Coxhoe		
<b>Client</b>		
Durham County Council		



Figure 7: TP03.



Figure 8: TP03 Spoil.

<b>Title</b>	<b>Date</b>
Figures 7 & 8	August 2022
<b>Project</b>	
Joint Stocks Landfill, Coxhoe	
<b>Client</b>	
Durham County Council	

**Solmek Ltd.**  
 12 Yarm Road  
 Stockton-on-Tees  
 TS18 3NA

Tel: +44 (0) 1642 607083  
 Fax: +44 (0) 1642 612355  
 e-mail: south@solmek.com  
[www.solmek.com](http://www.solmek.com)






Figure 9: TP04.



Figure 10: TP04 Spoil

<b>Title</b>	<b>Date</b>	<p><b>Solmek Ltd.</b> 12 Yarm Road Stockton-on-Tees TS18 3NA</p> <p>Tel: +44 (0) 1642 607083 Fax: +44 (0) 1642 612355 e-mail: south@solmek.com <a href="http://www.solmek.com">www.solmek.com</a></p>  <p><b>SOLMEK</b></p>
Figures 9 & 10	August 2022	
<b>Project</b>		
Joint Stocks Landfill, Coxhoe		
<b>Client</b>		
Durham County Council		

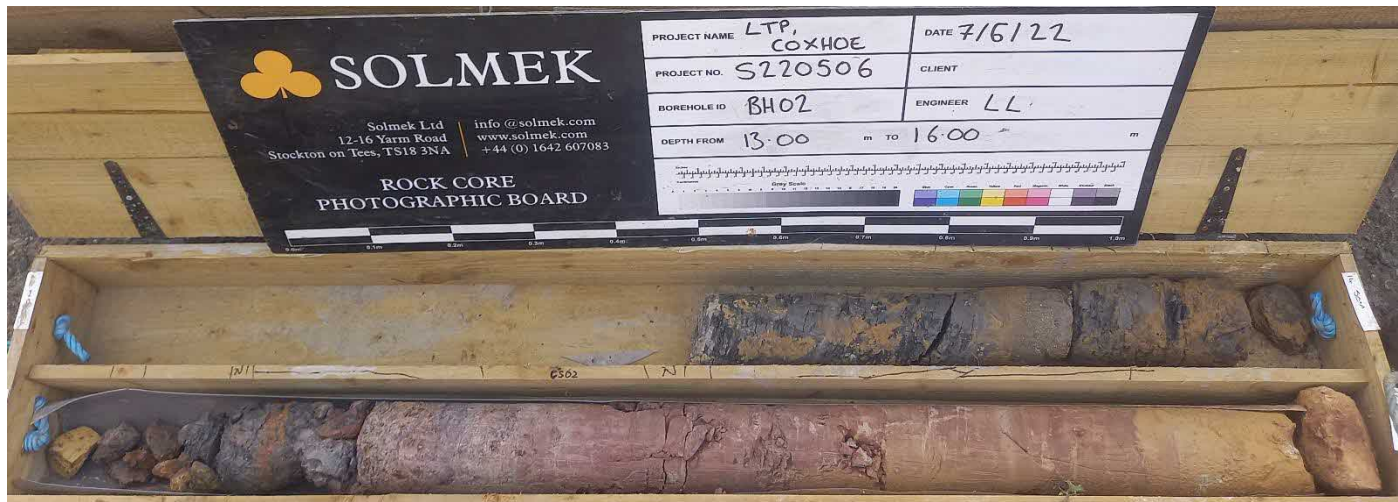


Figure 11: BH02 13.00-16.00m.



Figure 12: BH03 16.50-19.50m.

<b>Title</b>	<b>Date</b>
Figures 11 & 12	August 2022
<b>Project</b>	
Joint Stocks Landfill, Coxhoe	
<b>Client</b>	
Durham County Council	

**Solmek Ltd.**  
 12 Yarm Road  
 Stockton-on-Tees  
 TS18 3NA

Tel: +44 (0) 1642 607083  
 Fax: +44 (0) 1642 612355  
 e-mail: south@solmek.com  
[www.solmek.com](http://www.solmek.com)





Figure 13: BH03 19.50-22.50m.



Figure 14: BH03 22.50-24.00m.

<b>Title</b>	<b>Date</b>
Figures 13 & 14	August 2022
<b>Project</b>	
Joint Stocks Landfill, Coxhoe	
<b>Client</b>	
Durham County Council	

**Solmek Ltd.**  
 12 Yarm Road  
 Stockton-on-Tees  
 TS18 3NA

Tel: +44 (0) 1642 607083  
 Fax: +44 (0) 1642 612355  
 e-mail: south@solmek.com  
**www.solmek.com**





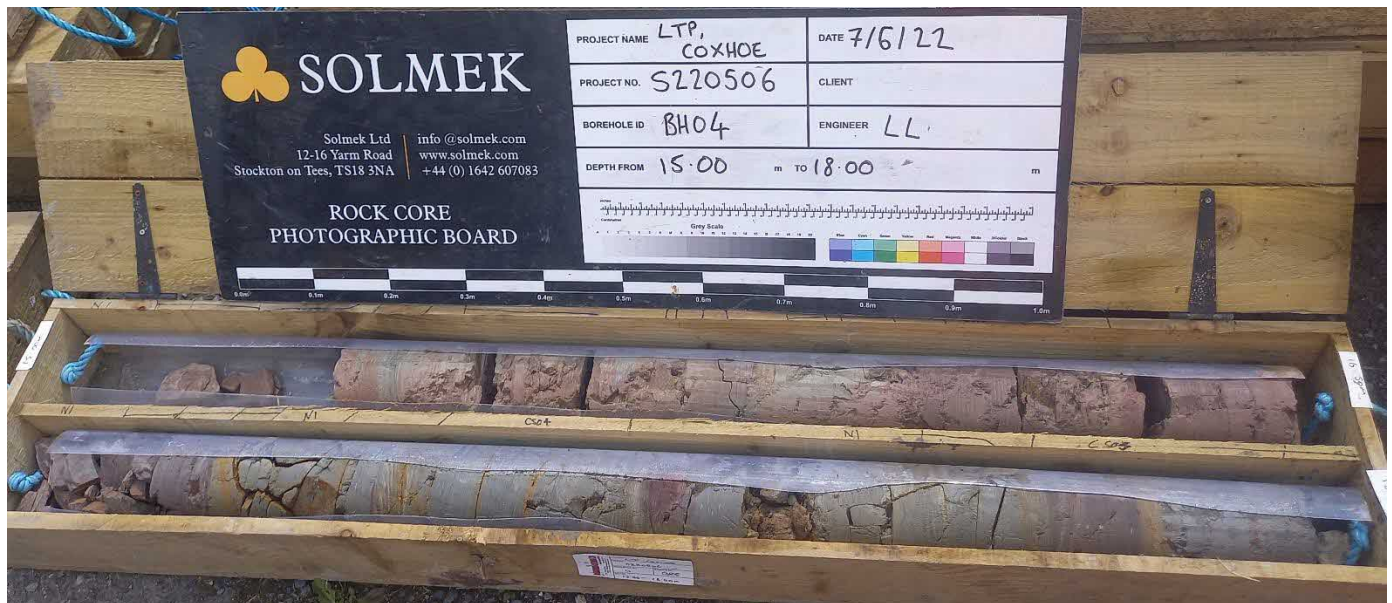


Figure 15: BH04 15.00-18.00m.

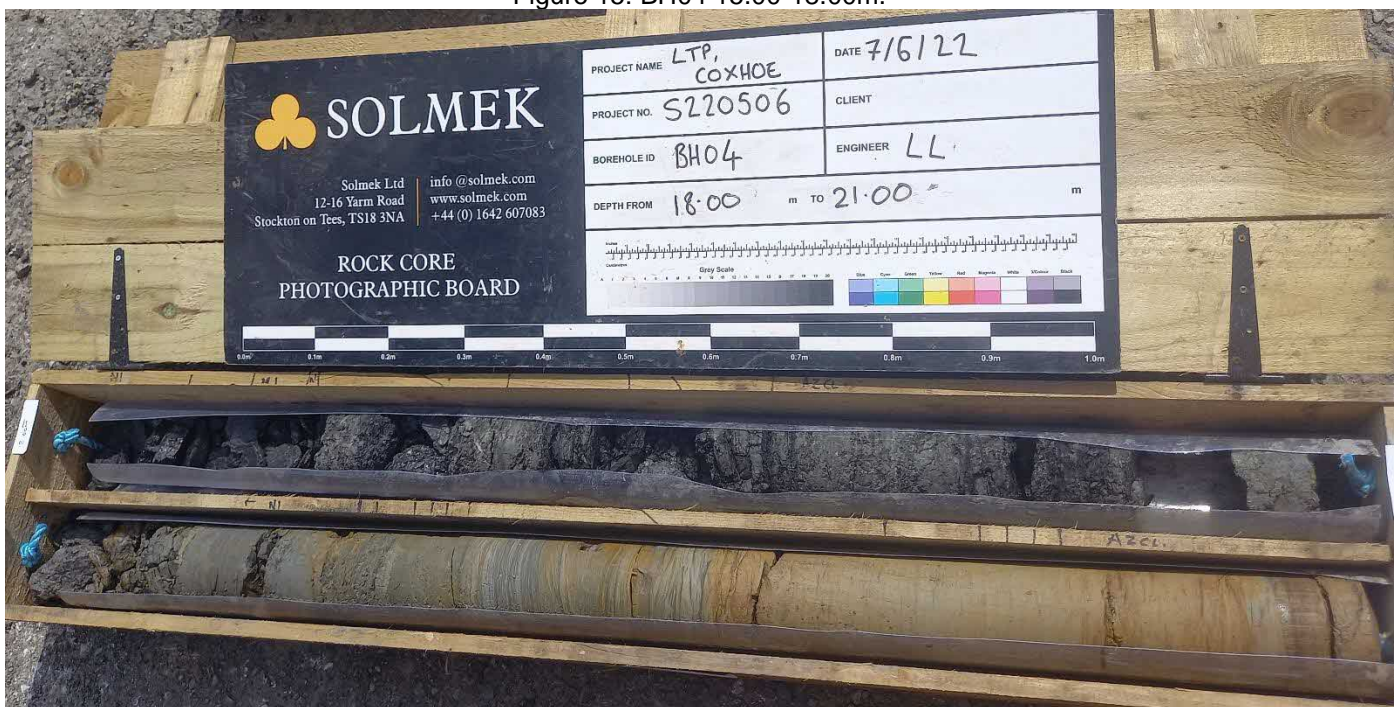


Figure 16: BH04 18.00-21.00m.


<b>Title</b>	<b>Date</b>
Figures 15 & 16	August 2022
<b>Project</b>	
Joint Stocks Landfill, Coxhoe	
<b>Client</b>	
Durham County Council	

**Solmek Ltd.**  
 12 Yarm Road  
 Stockton-on-Tees  
 TS18 3NA  
 Tel: +44 (0) 1642 607083  
 Fax: +44 (0) 1642 612355  
 e-mail: south@solmek.com  
**www.solmek.com**





Figure 17: BH04 21.00-24.00m.

<b>Title</b>	<b>Date</b>	<p style="text-align: right;"><b>Solmek Ltd.</b> 12 Yarm Road Stockton-on-Tees TS18 3NA</p> <p style="text-align: right;">Tel: +44 (0) 1642 607083 Fax: +44 (0) 1642 612355 e-mail: south@solmek.com <b>www.solmek.com</b></p> 
Figure 17	August 2022	
<b>Project</b>		
Joint Stocks Landfill, Coxhoe		
<b>Client</b>		
Durham County Council		

**APPENDIX B:  
Borehole & Trial Pit Logs**



















Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend
	Depth	Type	Results			
				0.50	133.23	
				1.70	132.03	
				2.40	131.33	
				3.60	130.13	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend
	Depth	Type	Results			
				0.50	132.60	
				1.00	132.10	
				1.70	131.40	
				3.80	129.30	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend
	Depth	Type	Results			
				0.30	135.07	
				1.20	134.17	
				3.70	131.67	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend
	Depth	Type	Results			
				0.30	133.81	
				0.45	133.66	
				0.90	133.21	
				3.70	130.41	

**APPENDIX C:  
Contamination Laboratory Results**





# Final Report

---

**Report No.:** 22-21809-1  
**Initial Date of Issue:** 22-Jun-2022  
**Client:** Solmek Ltd  
**Client Address:** 12 Yarm Road  
Stockton-on-Tees  
TS18 3NA  
**Contact(s):** Lab  
Leo Cassidy  
Office  
**Project:** S220506 LTP Coxhoe  
**Quotation No.:**  
**Order No.:** SOL-6300  
**No. of Samples:** 4  
**Turnaround (Wkdays):** 5  
**Date Approved:** 22-Jun-2022

**Date Received:** 13-Jun-2022  
**Date Instructed:** 13-Jun-2022  
**Results Due:** 17-Jun-2022

**Approved By:**



**Details:** Stuart Henderson, Technical  
Manager

---

## Results - Soil

**Project: S220506 LTP Coxhoe**

Client: Solmek Ltd		Chemtest Job No.:		22-21809	22-21809	22-21809	22-21809
Quotation No.:		Chemtest Sample ID.:		1446644	1446645	1446646	1446647
		Sample Location:		TP01	TP02	TP03	TP04
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Date Sampled:		27-May-2022	27-May-2022	27-May-2022	27-May-2022
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	25	18	32
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones and Roots	Stones and Roots
Soil Texture	N	2040		N/A	Clay	Clay	Clay
pH	M	2010		4.0	8.6	8.8	8.2
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	2.6	0.66	0.99
Sulphate (2:1 Water Soluble) as SO4	M	2120	mg/l	10	78	24	150
Cyanide (Total)	M	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Arsenic	M	2455	mg/kg	0.5	5.1	3.1	6.9
Cadmium	M	2455	mg/kg	0.10	0.46	0.26	0.66
Chromium	M	2455	mg/kg	0.5	6.6	5.1	11
Copper	M	2455	mg/kg	0.50	28	10	20
Mercury	M	2455	mg/kg	0.05	0.07	< 0.05	0.05
Nickel	M	2455	mg/kg	0.50	10	6.2	16
Lead	M	2455	mg/kg	0.50	51	37	47
Selenium	M	2455	mg/kg	0.25	0.66	0.44	1.0
Zinc	M	2455	mg/kg	0.50	62	49	75
Organic Matter	M	2625	%	0.40	31	9.3	17
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[B] 45	[B] < 1.0	[B] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[B] 45	[B] < 5.0	[B] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[B] 280	[B] < 1.0	[B] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[B] 280	[B] < 5.0	[B] < 5.0

## Results - Soil

Project: S220506 LTP Coxhoe

Client: Solmek Ltd		Chemtest Job No.:		22-21809	22-21809	22-21809	22-21809	
Quotation No.:		Chemtest Sample ID.:		1446644	1446645	1446646	1446647	
		Sample Location:		TP01	TP02	TP03	TP04	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	
		Date Sampled:		27-May-2022	27-May-2022	27-May-2022	27-May-2022	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD				
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[B] 320	[B] < 10	[B] < 10	[B] 570
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.47	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	0.31	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.43	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	0.62	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	3.0	< 0.10	1.1
Anthracene	M	2700	mg/kg	0.10	< 0.10	2.0	< 0.10	0.15
Fluoranthene	M	2700	mg/kg	0.10	1.7	12	< 0.10	0.62
Pyrene	M	2700	mg/kg	0.10	1.3	12	< 0.10	0.87
Benzo[a]anthracene	M	2700	mg/kg	0.10	1.8	11	< 0.10	0.66
Chrysene	M	2700	mg/kg	0.10	1.1	13	< 0.10	0.52
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	1.5	15	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.63	5.3	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	0.68	9.8	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	6.6	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	3.0	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	6.5	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	8.7	100	< 2.0	3.9
Benzene	M	2760	µg/kg	1.0		[B] < 1.0		[B] < 1.0
Toluene	M	2760	µg/kg	1.0		[B] < 1.0		[B] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0		[B] < 1.0		[B] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0		[B] < 1.0		[B] < 1.0
o-Xylene	M	2760	µg/kg	1.0		[B] < 1.0		[B] < 1.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10	0.39	0.29	< 0.10

## Results - Single Stage WAC

Project: S220506 LTP Coxhoe

Chemtest Job No: 22-21809				Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 1446644				Limits			
Sample Ref:					Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill
Sample ID:							
Sample Location: TP01							
Top Depth(m):							
Bottom Depth(m):							
Sampling Date: 27-May-2022							
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	18	3	5	6
Loss On Ignition	2610	M	%	11	--	--	10
Total BTEX	2760	M	mg/kg	[B] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[B] 320	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	8.7	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0060	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0005	0.0050	0.5	2	25
Barium	1455	U	0.13	1.3	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0033	0.033	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0042	0.042	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	0.0024	0.024	0.5	10	50
Antimony	1455	U	0.0008	0.0078	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.004	0.036	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	1.3	13	10	150	500
Sulphate	1220	U	5.1	51	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.4	74	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	25

### Waste Acceptance Criteria

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

## Results - Single Stage WAC

Project: S220506 LTP Coxhoe

Chemtest Job No: 22-21809				Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 1446647				Limits			
Sample Ref:					Inert Waste Landfill	Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill
Sample ID:							
Sample Location: TP04							
Top Depth(m):							
Bottom Depth(m):							
Sampling Date: 27-May-2022							
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	11	3	5	6
Loss On Ignition	2610	M	%	9.5	--	--	10
Total BTEX	2760	M	mg/kg	[B] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[B] 570	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	3.9	100	--	--
pH	2010	M		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0060	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0015	0.015	0.5	2	25
Barium	1455	U	0.031	0.31	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0013	0.013	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0042	0.042	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	0.0012	0.012	0.5	10	50
Antimony	1455	U	0.0018	0.018	0.06	0.7	5
Selenium	1455	U	0.0013	0.013	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	1.3	13	10	150	500
Sulphate	1220	U	11	110	1000	20000	50000
Total Dissolved Solids	1020	N	91	910	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	21	210	500	800	1000

### Solid Information

Dry mass of test portion/kg	0.090
Moisture (%)	14

### Waste Acceptance Criteria

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

## Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1446644			TP01	27-May-2022	B	Amber Glass 250ml
1446644			TP01	27-May-2022	B	Amber Glass 60ml
1446644			TP01	27-May-2022	B	Plastic Tub 500g
1446645			TP02	27-May-2022	B	Amber Glass 250ml
1446645			TP02	27-May-2022	B	Amber Glass 60ml
1446645			TP02	27-May-2022	B	Plastic Tub 500g
1446646			TP03	27-May-2022	B	Amber Glass 250ml
1446646			TP03	27-May-2022	B	Amber Glass 60ml
1446646			TP03	27-May-2022	B	Plastic Tub 500g
1446647			TP04	27-May-2022	B	Amber Glass 250ml
1446647			TP04	27-May-2022	B	Amber Glass 60ml
1446647			TP04	27-May-2022	B	Plastic Tub 500g

## Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS

## Test Methods

<b>SOP</b>	<b>Title</b>	<b>Parameters included</b>	<b>Method summary</b>
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	Compliance Test for Leaching of Granular Waste Material and Sludge



## **Report Information**

### **Key**

---

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

### **Sample Deviation Codes**

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

### **Sample Retention and Disposal**

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

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

Charges may apply to extended sample storage

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

[customerservices@chemtest.com](mailto:customerservices@chemtest.com)

**APPENDIX D:  
Geotechnical Laboratory Results**

# Laboratory Report Front Sheet

Solmek  
12-16 Yarm Road,  
Stockton on Tees,  
TS18 3NA  
01642 607083  
lab@solmek.com



Site name	Job number
LTP Coxhoe	S220506

## Client details:

Reference: S220506  
Name: Solmek  
Address: 12 Yarm Road,  
Stockton-on-tees,  
TS18 3NA

Telephone: 01642 607083  
Email: lcassidy@solmek.com

FAO: Leo Cassidy

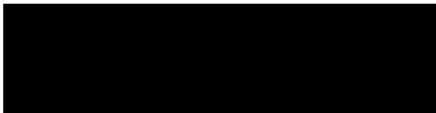
Date commenced: 14/07/2022

Date reported: 19/07/2022

## Observations and interpretations are outside of 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 in full, without the prior written approval of the laboratory.

Samples will be held at the laboratory for a period of 4 weeks after the report date. After the above reporting date the samples will be disposed of. Should further testing be required then the office should be informed before the above date.

<b>Signature:</b> 	<b>Approved Signatories:</b> <input type="checkbox"/> D.Anderson (Associate Director) <input checked="" type="checkbox"/> J. Brischuk (Laboratory Manager) <input type="checkbox"/>
--	--



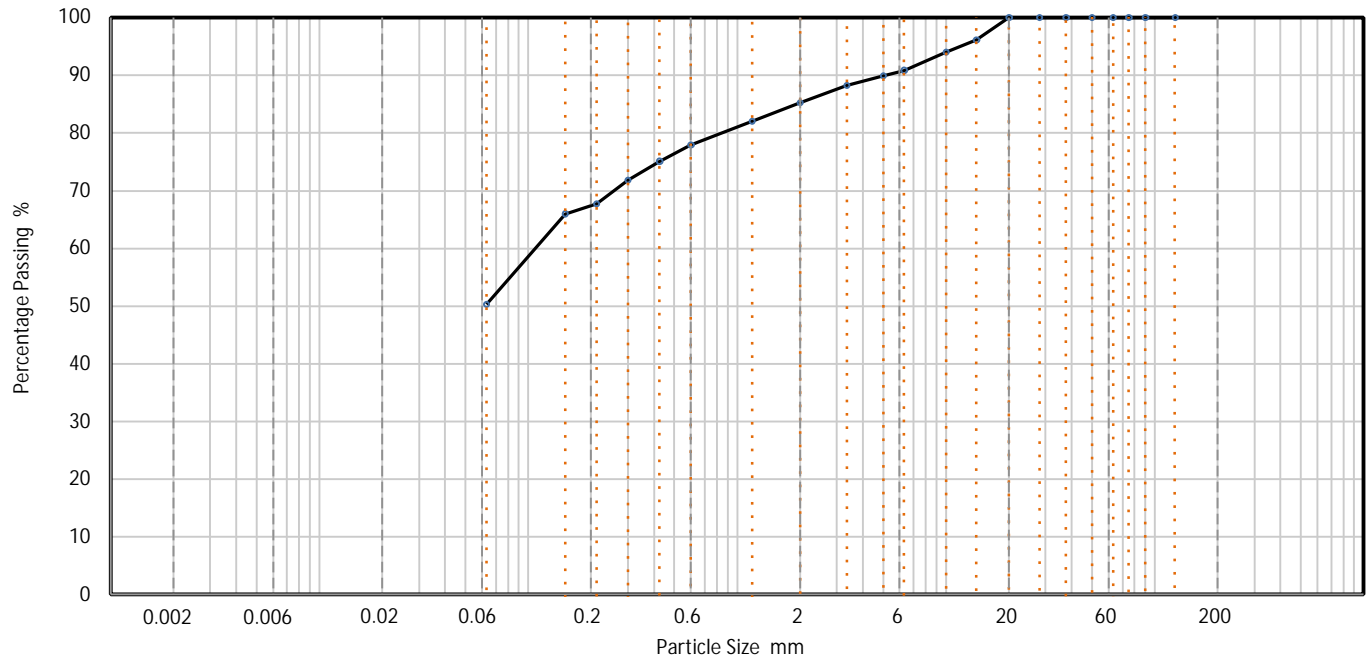
# PARTICLE SIZE DISTRIBUTION

Solmek  
12-16 Yarm Road,  
Stockton on Tees,  
TS18 3NA  
01642 607083  
lab@solmek.com



Site name	Job number
LTP Coxhoe	S220506

Hole	BH01	Lab sample ID	SLMK2022071454
Depth (Top)	m 5.00	Test Method	BS 1377 - 2 : 1990 Clause 9.2
Depth (Base)	m	Soil Description	Slightly Gravelly, Very Sandy CLAY
Sample type	B		



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	96		
10	94		
6.3	91		
5	90		
3.35	88		
2	85		
1.18	82		
0.6	78		
0.425	75		
0.3	72		
0.212	68		
0.15	66		
0.063	50		

Dry Mass of sample, g

828

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	14.8
Sand	34.8
Fines <0.063mm	50.0

Grading Analysis	
D100	mm
D60	mm 0.108
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with test method unless noted below

Accreditation status

Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

Approved by	JBrischuk
Approval date	15/07/2022 08:29

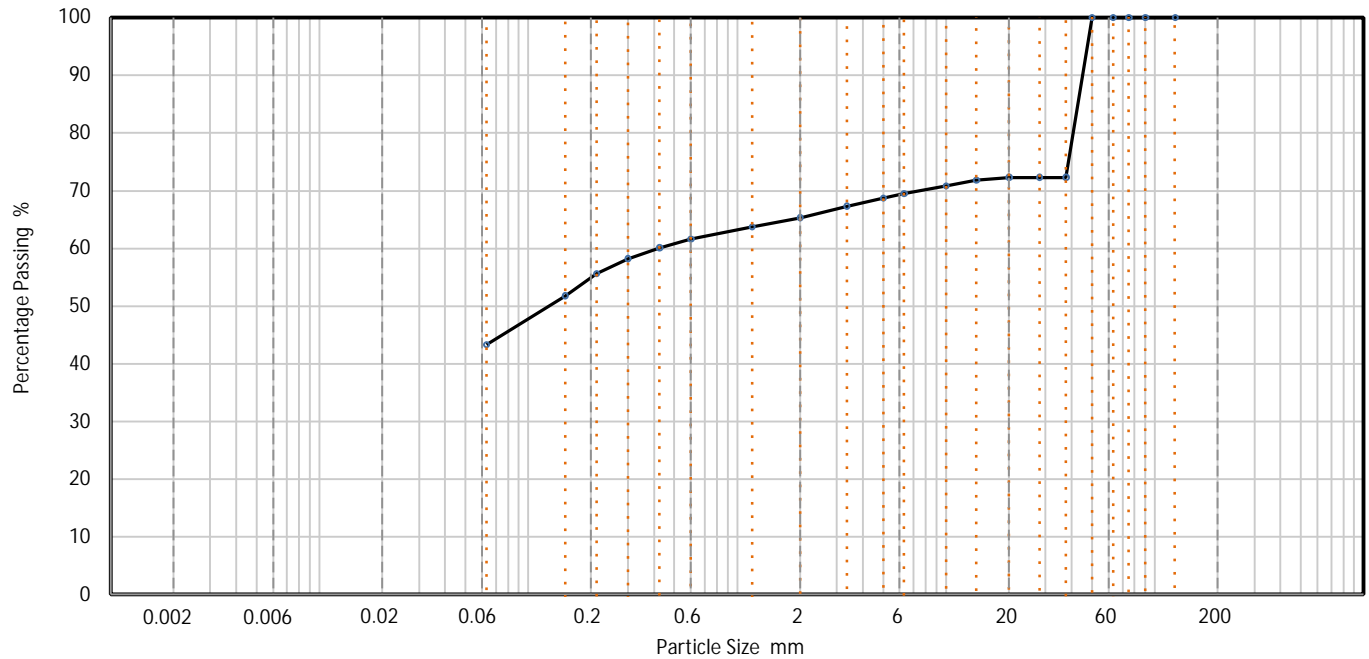
# PARTICLE SIZE DISTRIBUTION

Solmek  
12-16 Yarm Road,  
Stockton on Tees,  
TS18 3NA  
01642 607083  
lab@solmek.com



Site name	Job number
LTP Coxhoe	S220506

Hole	BH02	Lab sample ID	SLMK2022071459
Depth (Top)	m 7.50	Test Method	BS 1377 - 2 : 1990 Clause 9.2
Depth (Base)	m	Soil Description	
Sample type	B		



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	72		
28	72		
20	72		
14	72		
10	71		
6.3	70		
5	69		
3.35	67		
2	65		
1.18	64		
0.6	62		
0.425	60		
0.3	58		
0.212	56		
0.15	52		
0.063	43		

Dry Mass of sample, g

697

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	34.7
Sand	22.0
Fines <0.063mm	43.0

Grading Analysis	
D100	mm
D60	mm 0.416
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with test method unless noted below
Sample tested was deviating in accordance with BS1377 test standard

Accreditation status

Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

Approved by	JBrischuk
Approval date	15/07/2022 08:36

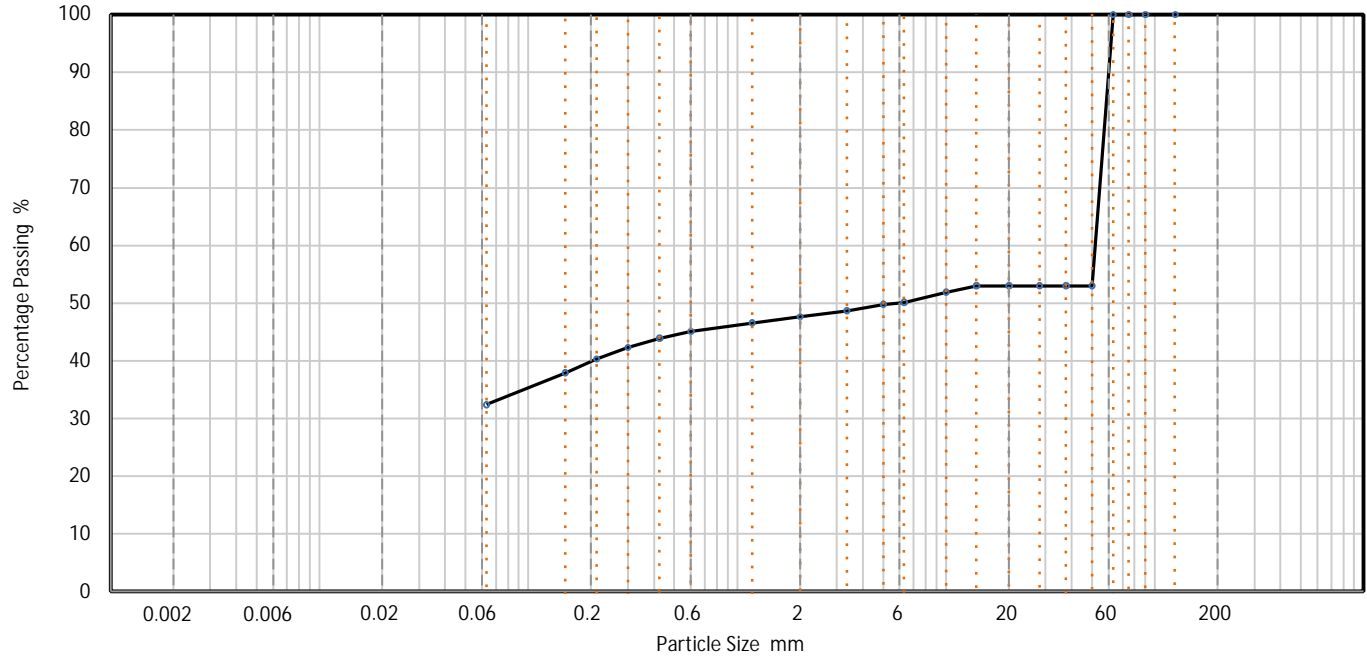
# PARTICLE SIZE DISTRIBUTION

Solmek  
12-16 Yarm Road,  
Stockton on Tees,  
TS18 3NA  
01642 607083  
lab@solmek.com



Site name	Job number
LTP Coxhoe	S220506

Hole	BH04	Lab sample ID	SLMK2022071464
Depth (Top)	m 3.00	Test Method	BS 1377 - 2 : 1990 Clause 9.2
Depth (Base)	m	Soil Description	
Sample type	U		



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	53		
37.5	53		
28	53		
20	53		
14	53		
10	52		
6.3	50		
5	50		
3.35	49		
2	48		
1.18	47		
0.6	45		
0.425	44		
0.3	42		
0.212	40		
0.15	38		
0.063	32		

Dry Mass of sample, g

654

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	52.4
Sand	15.2
Fines <0.063mm	32.0

Grading Analysis	
D100	mm
D60	mm 51.7
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with test method unless noted below
Sample tested was deviating in accordance with BS1377 test standard

Accreditation status

Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

Approved by	JBrischuk
Approval date	15/07/2022 08:35

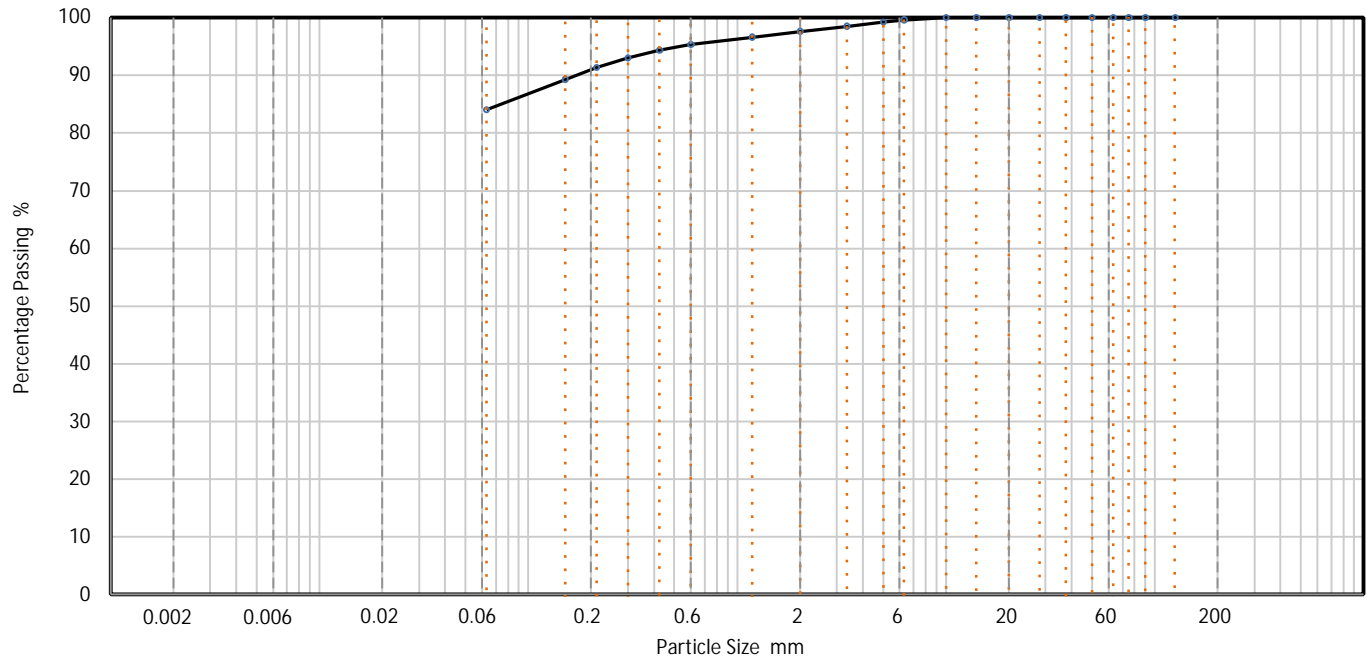
# PARTICLE SIZE DISTRIBUTION

Solmek  
12-16 Yarm Road,  
Stockton on Tees,  
TS18 3NA  
01642 607083  
lab@solmek.com



Site name	Job number
LTP Coxhoe	S220506

Hole	BH04	Lab sample ID	SLMK2022071467
Depth (Top)	m 10.50	Test Method	BS 1377 - 2 : 1990 Clause 9.2
Depth (Base)	m	Soil Description	Slightly Gravelly, Slightly Sandy, CLAY
Sample type	U		



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	95		
0.425	94		
0.3	93		
0.212	91		
0.15	89		
0.063	84		

Dry Mass of sample, g

498

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	2.4
Sand	13.6
Fines <0.063mm	84.0

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with test method unless noted below

Accreditation status

Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

Approved by	JBrischuk
Approval date	15/07/2022 08:36



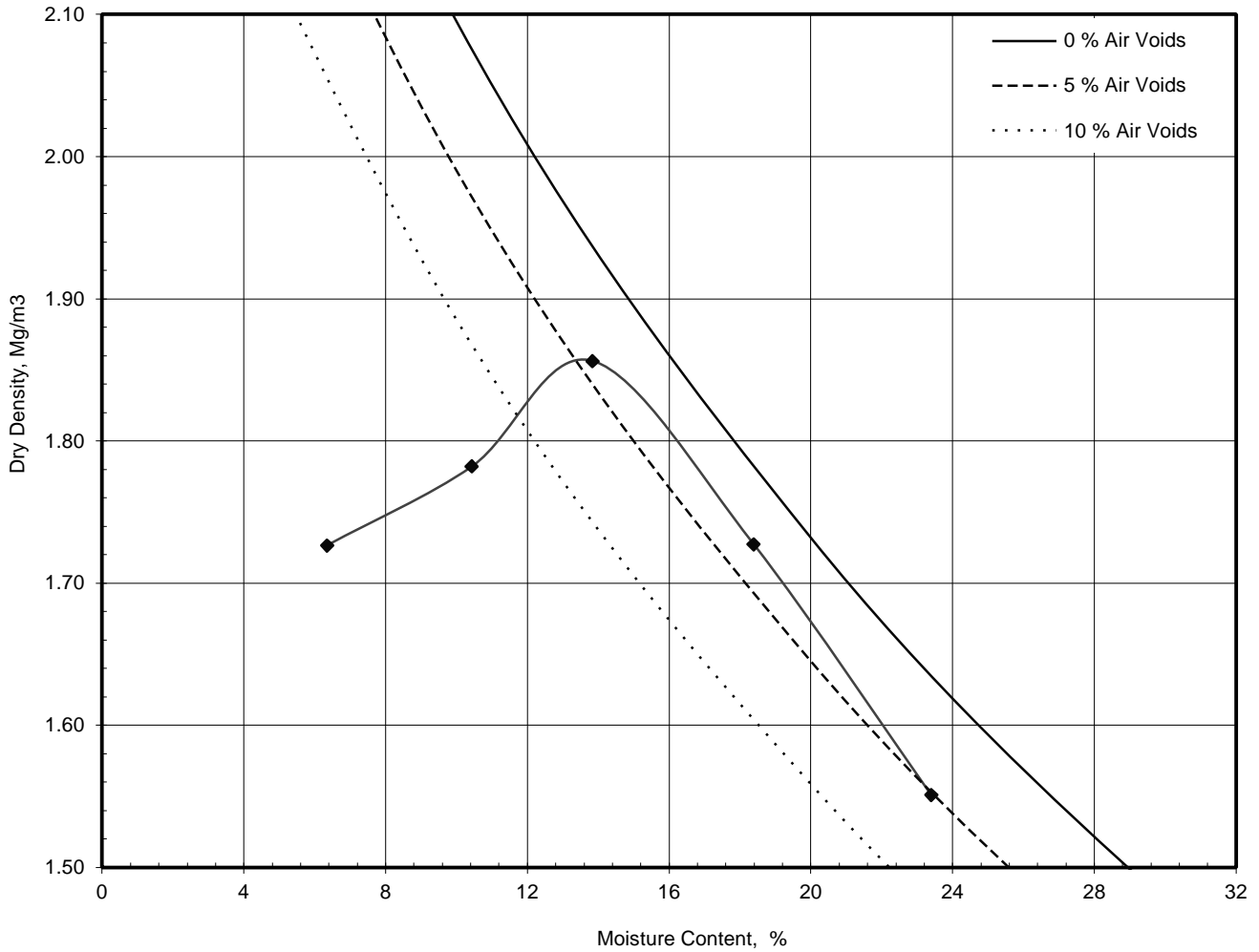


### Dry Density / Moisture Content Relationship Light Compaction

Job Ref	<b>S220506</b>
Borehole / Pit No	BH01
Sample No	
Depth	0.70 m
Sample Type	B
Keylab ID	SLMK2022071452

Site Name	<b>S220506</b>	
Soil Description		
Specimen Ref.	1	Specimen Depth
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer	

Compaction Test Reference/No.



Mould Type	1 LITRE	
Samples Used	Single sample tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m <sup>3</sup>	2.65
Natural Moisture Content	%	
<b>Maximum Dry Density</b>	Mg/m <sup>3</sup>	<b>1.86</b>
<b>Optimum Moisture Content</b>	%	<b>14</b>

Operator	Checked	Approved	Remarks	<b>Fig</b>  Sheet 1 of 1
		JBrischuk		

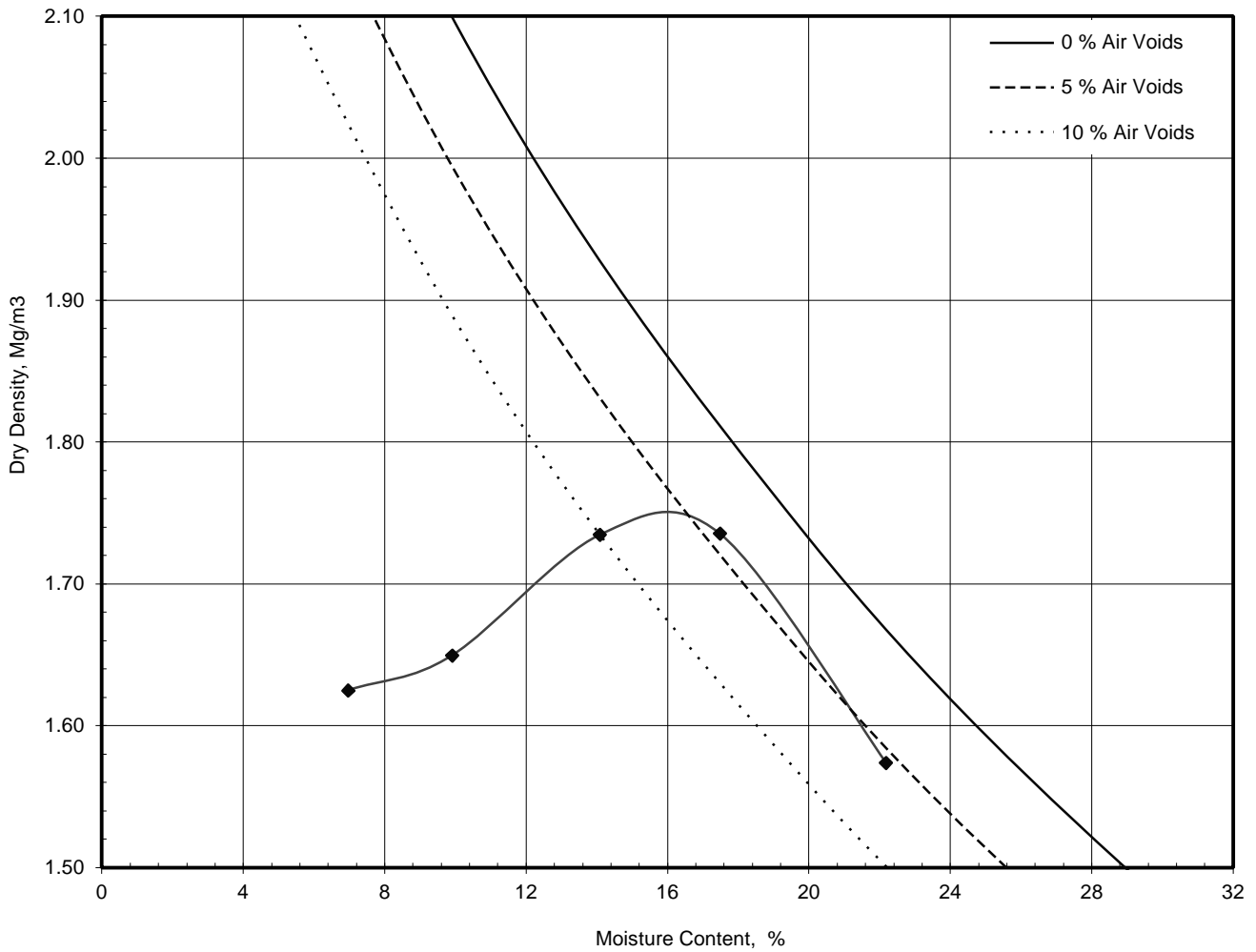


### Dry Density / Moisture Content Relationship Light Compaction

Job Ref	<b>S220506</b>
Borehole / Pit No	BH02
Sample No	
Depth	1.20 m
Sample Type	B
Keylab ID	SLMK2022071456


Site Name	<b>S220506</b>	
Soil Description		
Specimen Ref.	1	Specimen Depth
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer	

Compaction Test Reference/No. \_\_\_\_\_



Mould Type	1 LITRE	
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m <sup>3</sup>	2.65
Natural Moisture Content	%	
<b>Maximum Dry Density</b>	Mg/m <sup>3</sup>	<b>1.74</b>
<b>Optimum Moisture Content</b>	%	<b>17</b>

Operator	Checked	Approved	Remarks	<b>Fig</b>  Sheet 1 of 1
		JBrischuk		

	<b>Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen</b>		Job Ref	S220506	
			Borehole/Pit No.	BH02	
Site Name	LTP Coxhoe		Sample No.		
Soil Description			Depth	5.00	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	High strength CLAY		KeyLAB ID	SLMK2022071458	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		Date of test	27/06/2022	

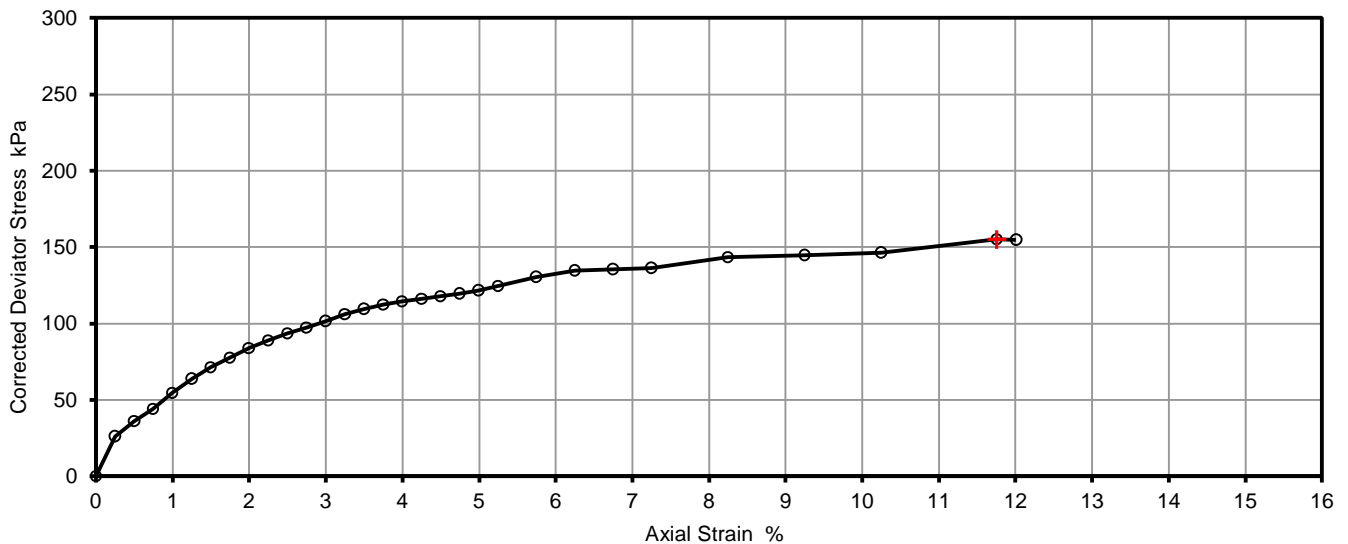
Test Number	1
Length	201.0 mm
Diameter	103.0 mm
Bulk Density	2.05 Mg/m <sup>3</sup>
Moisture Content	31.0 %
Dry Density	1.56 Mg/m <sup>3</sup>

**Tracable Equipment Record**

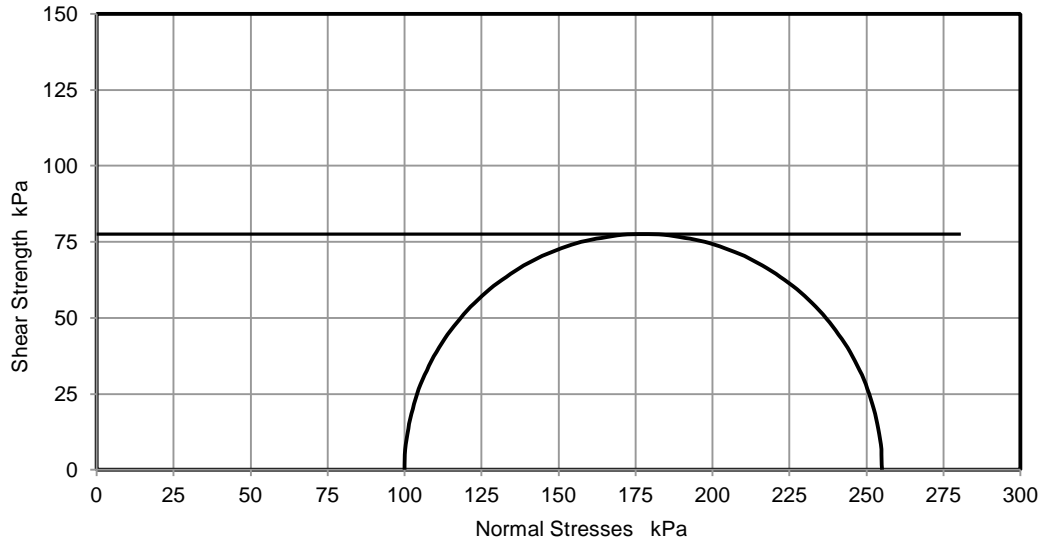
Test Frame	TRI 004
Load Ring	LOAD CELL 003
Pressure Gauge	PRE 006
Digital Caliper	CAL-005
Balance	BAL-007

Rate of Strain	1.0 %/min
Cell Pressure	100 kPa
At failure	
Axial Strain	11.8 %
Deviator Stress, (σ <sub>1</sub> - σ <sub>3</sub> ) <sub>f</sub>	155 kPa
Undrained Shear Strength, c <sub>u</sub>	78 kPa ½(σ <sub>1</sub> - σ <sub>3</sub> ) <sub>f</sub>
Mode of Failure	Compound

**Deviator Stress v Axial Strain**




**Mohr Circles**



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

No of membranes used	1
Total thickness (mm)	0.25
Membrane Correction	
Membrane Type	

	<b>Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen</b>		Job Ref	S220506	
			Borehole/Pit No.	BH03	
Site Name	LTP Coxhoe		Sample No.		
Soil Description			Depth	6.00	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	High strength CLAY		KeyLAB ID	SLMK2022071461	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		Date of test	27/06/2022	

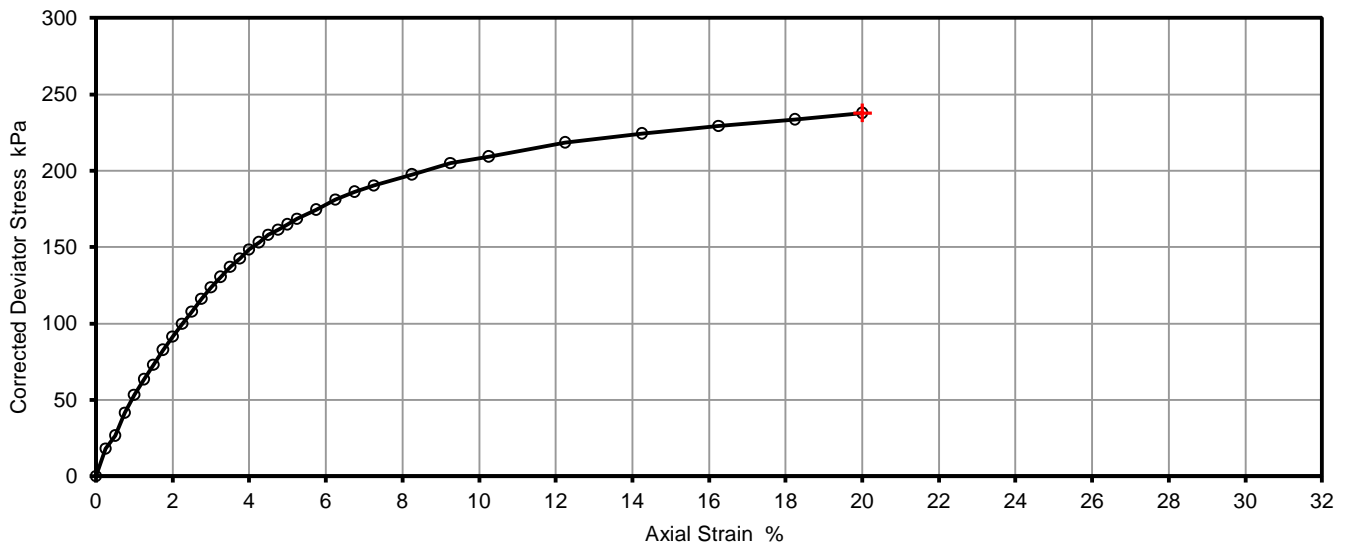
Test Number	1
Length	202.0 mm
Diameter	103.0 mm
Bulk Density	2.13 Mg/m <sup>3</sup>
Moisture Content	16.8 %
Dry Density	1.83 Mg/m <sup>3</sup>

**Tracable Equipment Record**

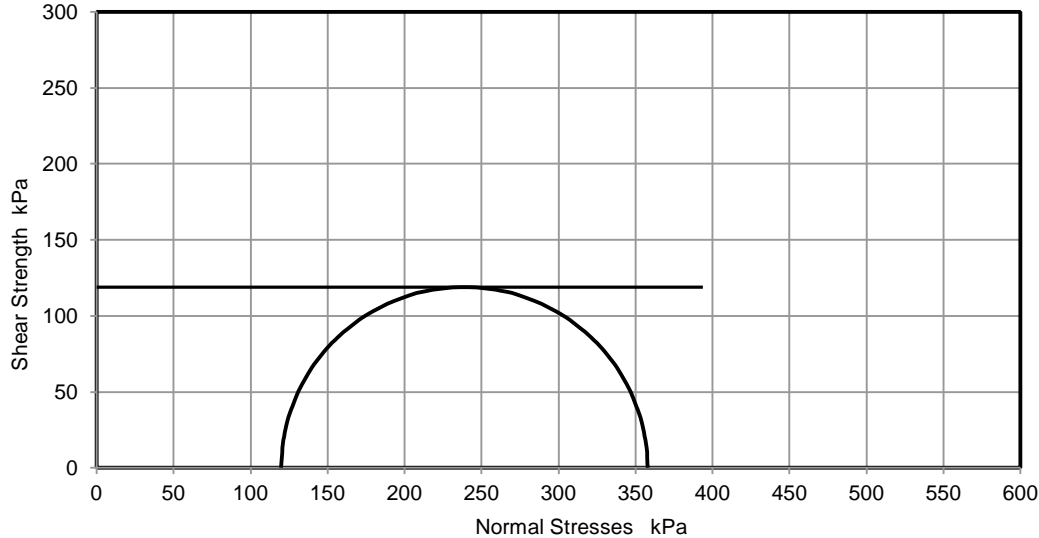
Test Frame	TRI 004
Load Ring	LOAD CELL 003
Pressure Gauge	PRE 006
Digital Caliper	CAL-005
Balance	BAL-007

Rate of Strain	1.0 %/min
Cell Pressure	120 kPa
At failure	
Axial Strain	20.0 %
Deviator Stress, ( $\sigma_1 - \sigma_3$ ) <sub>f</sub>	238 kPa
Undrained Shear Strength, $c_u$	119 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)_f$
Mode of Failure	Plastic

**Deviator Stress v Axial Strain**




**Mohr Circles**



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

No of membranes used	1
Total thickness (mm)	0.25
Membrane Correction	
Membrane Type	

	<b>Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen</b>		Job Ref	S220506
			Borehole/Pit No.	BH03
Site Name	LTP Coxhoe		Sample No.	
Soil Description			Depth	12.00
Specimen Reference		Specimen Depth	m	
Specimen Description	Very high strength CLAY		Sample Type	U
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		KeyLAB ID	SLMK2022071463
			Date of test	27/06/2022

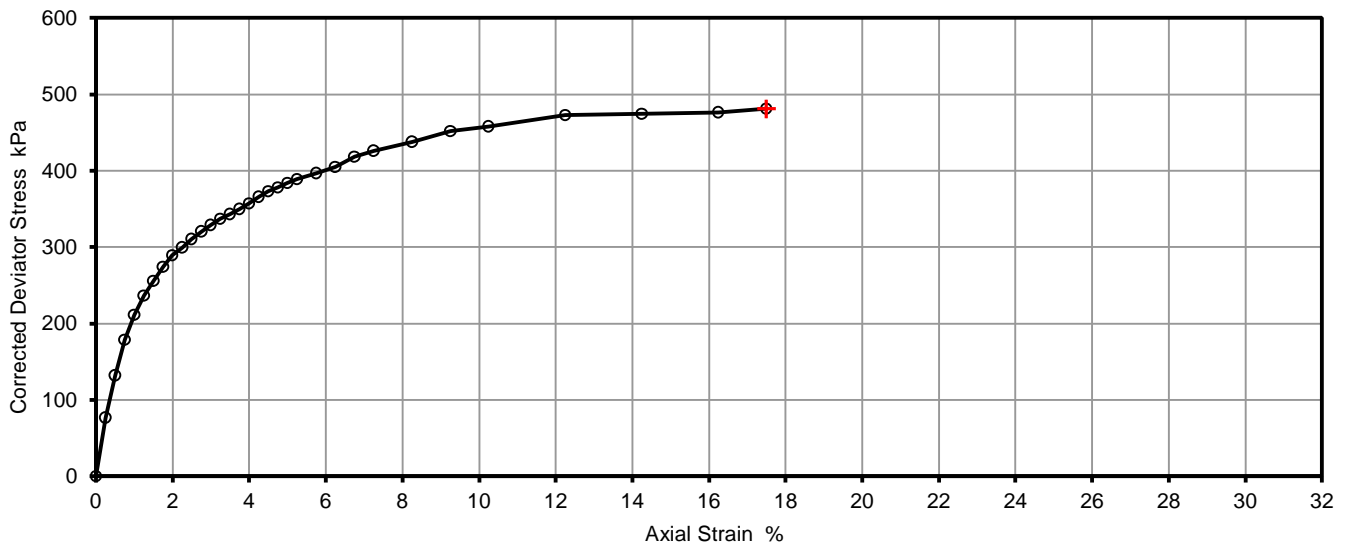
Test Number	1
Length	202.0 mm
Diameter	101.0 mm
Bulk Density	2.19 Mg/m <sup>3</sup>
Moisture Content	13.2 %
Dry Density	1.94 Mg/m <sup>3</sup>

**Tracable Equipment Record**

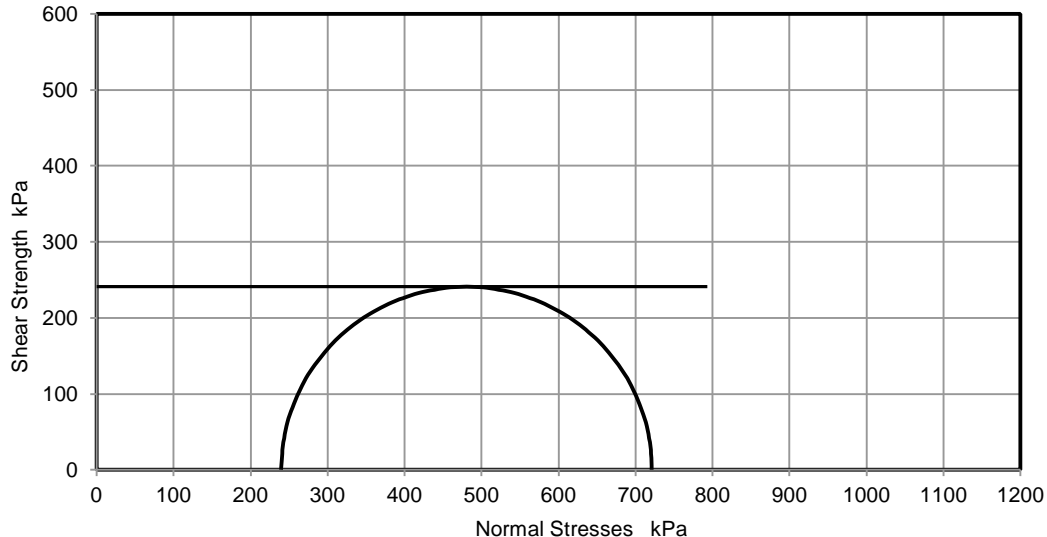
Test Frame	TRI 004
Load Ring	LOAD CELL 003
Pressure Gauge	PRE 006
Digital Caliper	CAL-005
Balance	BAL-006

Rate of Strain	1.0 %/min
Cell Pressure	240 kPa
At failure	
Axial Strain	17.5 %
Deviator Stress, ( $\sigma_1 - \sigma_3$ ) <sub>f</sub>	481 kPa
Undrained Shear Strength, $c_u$	241 kPa $\frac{1}{2}(\sigma_1 - \sigma_3)_f$
Mode of Failure	Plastic

**Deviator Stress v Axial Strain**




**Mohr Circles**



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

No of membranes used	1
Total thickness (mm)	0.25
Membrane Correction	
Membrane Type	

	<b>Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen</b>		Job Ref	S220506	
			Borehole/Pit No.	BH04	
Site Name	LTP Coxhoe		Sample No.		
Soil Description			Depth	7.50	
Specimen Reference		Specimen Depth	m	Sample Type	U
Specimen Description	High strength CLAY		KeyLAB ID	SLMK2022071466	
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		Date of test	27/06/2022	

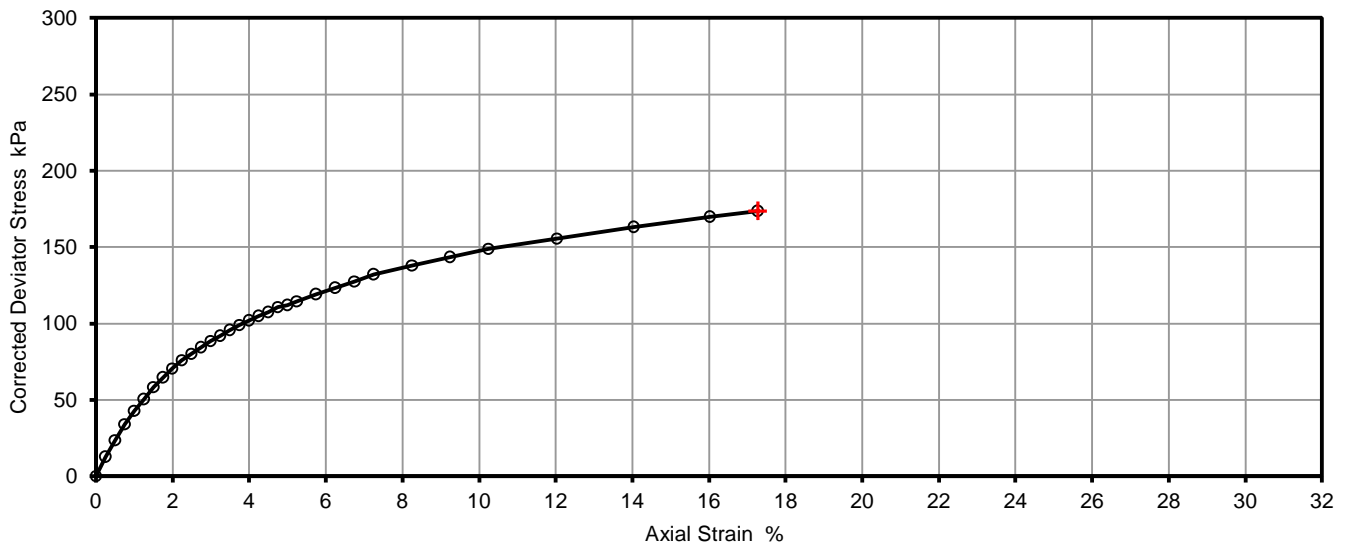
Test Number	1
Length	200.0 mm
Diameter	102.0 mm
Bulk Density	2.17 Mg/m <sup>3</sup>
Moisture Content	16.8 %
Dry Density	1.86 Mg/m <sup>3</sup>

**Tracable Equipment Record**

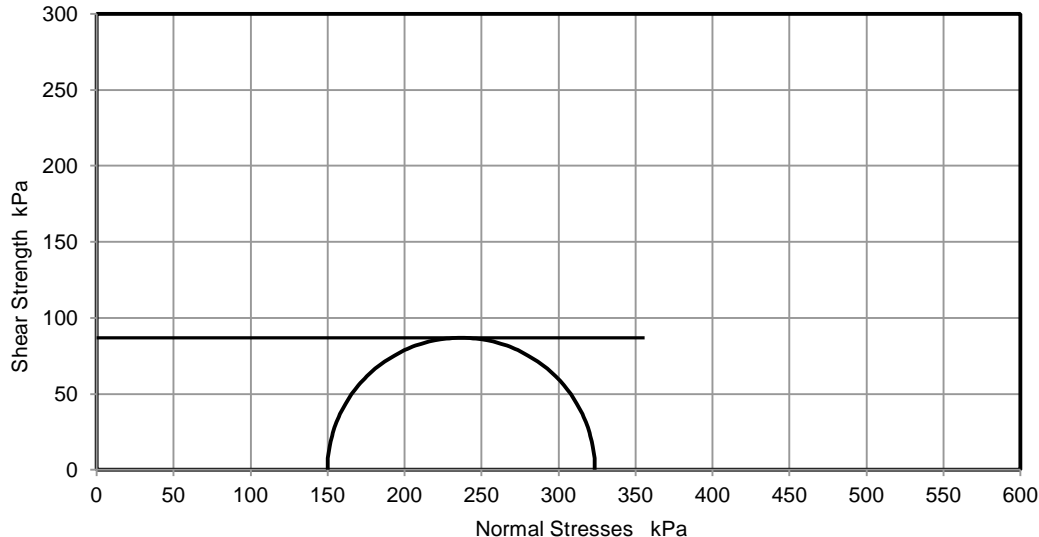
Test Frame	TRI 004
Load Ring	LOAD CELL 003
Pressure Gauge	PRE 006
Digital Caliper	CAL-005
Balance	BAL-007

Rate of Strain	1.0 %/min
Cell Pressure	150 kPa
At failure Axial Strain	17.3 %
Deviator Stress, (σ <sub>1</sub> - σ <sub>3</sub> ) <sub>f</sub>	174 kPa
Undrained Shear Strength, c <sub>u</sub>	87 kPa ½(σ <sub>1</sub> - σ <sub>3</sub> ) <sub>f</sub>
Mode of Failure	Compound

**Deviator Stress v Axial Strain**




**Mohr Circles**



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

No of membranes used	1
Total thickness (mm)	0.25
Membrane Correction	
Membrane Type	

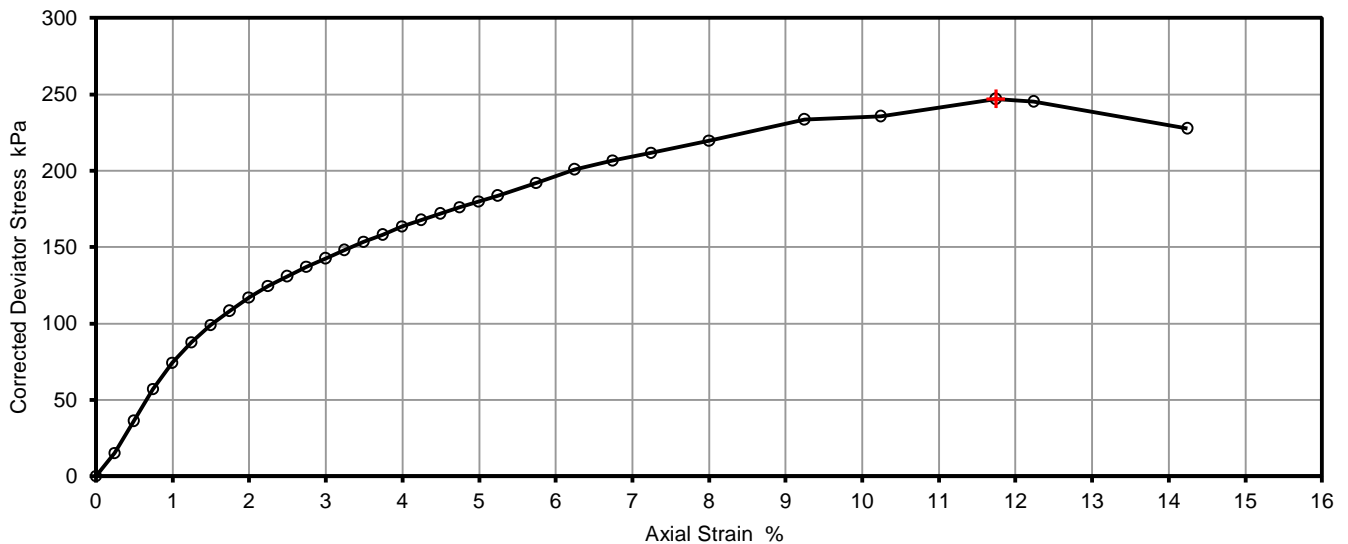
	<b>Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - single specimen</b>		Job Ref	S220506
			Borehole/Pit No.	BH04
Site Name	LTP Coxhoe		Sample No.	
Soil Description			Depth	10.50
Specimen Reference		Specimen Depth	m	
Specimen Description	High strength CLAY		KeyLAB ID	SLMK2022071467
Test Method	BS1377 : Part 7 : 1990, clause 8, single specimen		Date of test	24/06/2022

Test Number	1		
Length	200.0	mm	
Diameter	103.0	mm	
Bulk Density	2.08	Mg/m <sup>3</sup>	
Moisture Content	20.6	%	
Dry Density	1.73	Mg/m <sup>3</sup>	
Rate of Strain	1.0	%/min	
Cell Pressure	210	kPa	
At failure	Axial Strain	11.7	%
	Deviator Stress, ( $\sigma_1 - \sigma_3$ ) <sub>f</sub>	247	kPa
	Undrained Shear Strength, $c_u$	124	kPa $\frac{1}{2}(\sigma_1 - \sigma_3)_f$
	Mode of Failure	Compound	

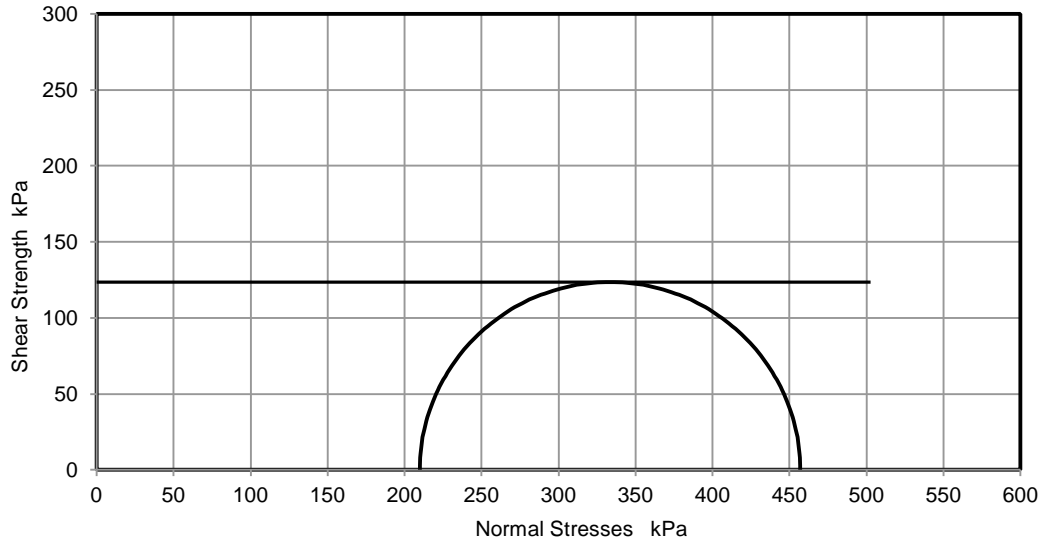
**Tracable Equipment Record**

Test Frame	TRI 004
Load Ring	LOAD CELL 003
Pressure Gauge	PRE 006
Digital Caliper	CAL-005
Balance	BAL-007

**Deviator Stress v Axial Strain**



**Mohr Circles**



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

No of membranes used	1
Total thickness (mm)	0.25
Membrane Correction	
Membrane Type	















SITE NAME: LTP Coxhoe  
JOB NUMBER: S220506



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Hole	Depth m	Type	Hand Vane (kPa)
BH01	6.00	BULK	40kPa
BH02	5.00	U100	120+ kPa
BH03	9.00	BULK	81kPa
BH04	10.50	U100	70kPa

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# LABORATORY REPORT



4043

**Contract Number: PSL22/4213**

Report Date: 14 July 2022  
Client's Reference: S220506  
Client Name: Solmek  
12 Yarm Road  
Stockton-on-Tees  
TS18 3NA

**For the attention of: Leo Cassidy**

Contract Title: LTP Coxhoe  
Date Received: 20/6/2022  
Date Commenced: 20/6/2022  
Date Completed: 14/7/2022

**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:

A Watkins  
(Director)

R Berriman  
(Quality Manager)

S Royle  
(Laboratory Manager)

L Knight  
(Assistant Laboratory Manager)

S Eyre  
(Senior Technician)

T Watkins  
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,  
Doncaster DN4 0AR  
tel: +44 (0)844 815 6641  
fax: +44 (0)844 815 6642  
e-mail: rberriman@prosoils.co.uk  
awatkins@prosoils.co.uk

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# LABORATORY REPORT



4043

**Contract Number: PSL22/5392**

Report Date: 16 September 2022

Client's Reference: S220506

Client Name: Solmek  
12 Yarm Road  
Stockton-on-Tees  
TS18 3NA

**For the attention of: Leo Cassidy**

Contract Title: LTP Coxhoe

Date Received: 17/8/2022

Date Commenced: 17/8/2022

Date Completed: 16/9/2022

**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:

A Watkins  
(Director)

R Berriman  
(Quality Manager)

S Royle  
(Laboratory Manager)

L Knight  
(Assistant Laboratory Manager)

  
S Eyre  
(Senior Technician)

T Watkins  
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,  
Doncaster DN4 0AR  
tel: +44 (0)844 815 6641  
fax: +44 (0)844 815 6642  
e-mail: rberriman@prosoils.co.uk  
awatkins@prosoils.co.uk

Page 1 of



# ONE DIMENSIONAL CONSOLIDATION TEST

BS 1377: Part 5: 1990: Clause 3

Hole Number: BH04

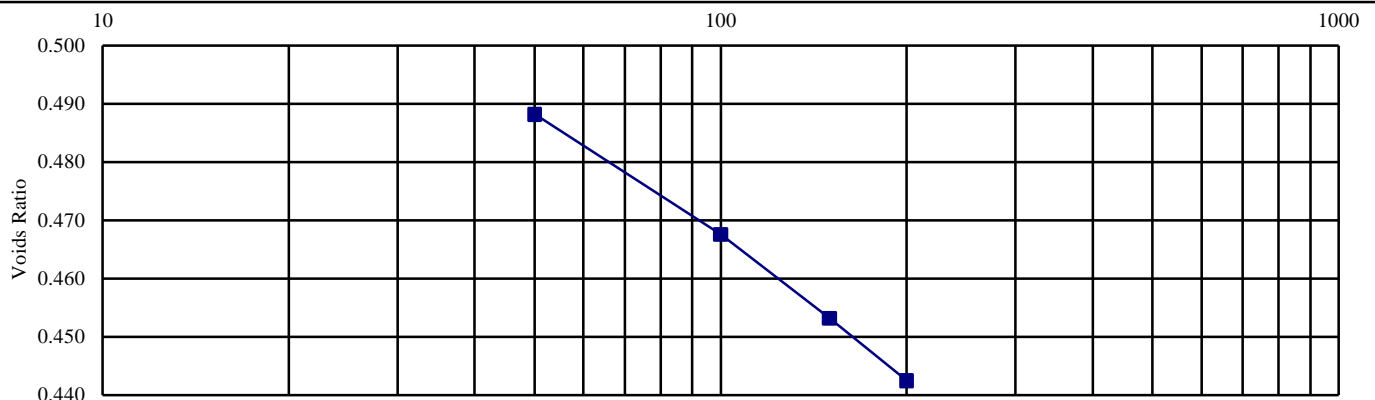
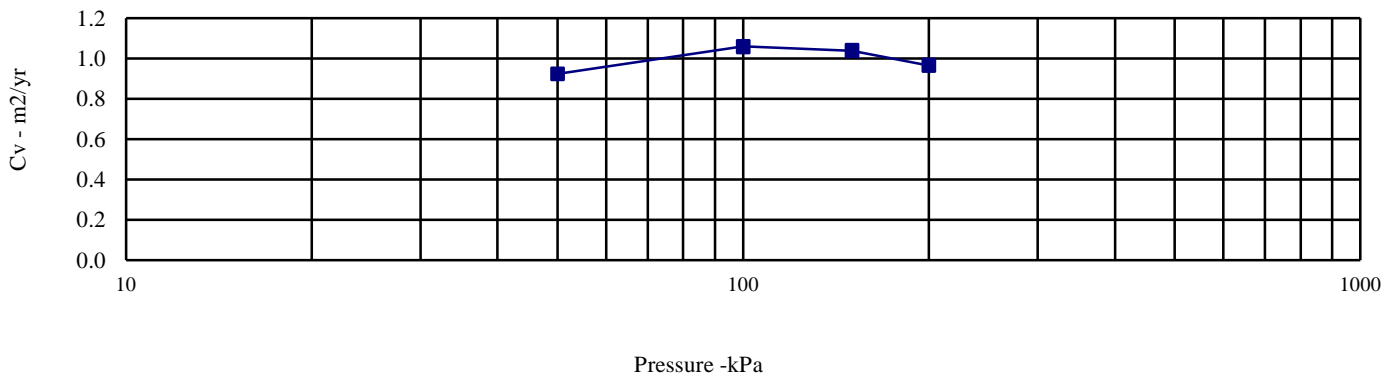
Top Depth (m): 3.00

Sample Number:

Base Depth (m) : 3.45

Sample Type: U

Initial Conditions		Pressure Range		Mv	Cv	Specimen location	
Moisture Content (%):	20	kPa		m2/MN	m2/yr	within tube:	Top
Bulk Density (Mg/m3):	2.07	0	50	0.628	0.924	Method used to	
Dry Density (Mg/m3):	1.72	50	100	0.278	1.060	determine CV:	T90
Voids Ratio:	0.536	100	150	0.196	1.039	Nominal temperature	
Degree of saturation:	98.4	150	200	0.147	0.966	during test ' C:	20
Height (mm):	20.012	Remarks: Pre-Saturated					
Diameter (mm)	74.99						
Particle Density (Mg/m3): Assumed	2.65						



LTP Coxhoe

Contract No:
PSL22/5392
Client Ref:
S220506

# ONE DIMENSIONAL CONSOLIDATION TEST

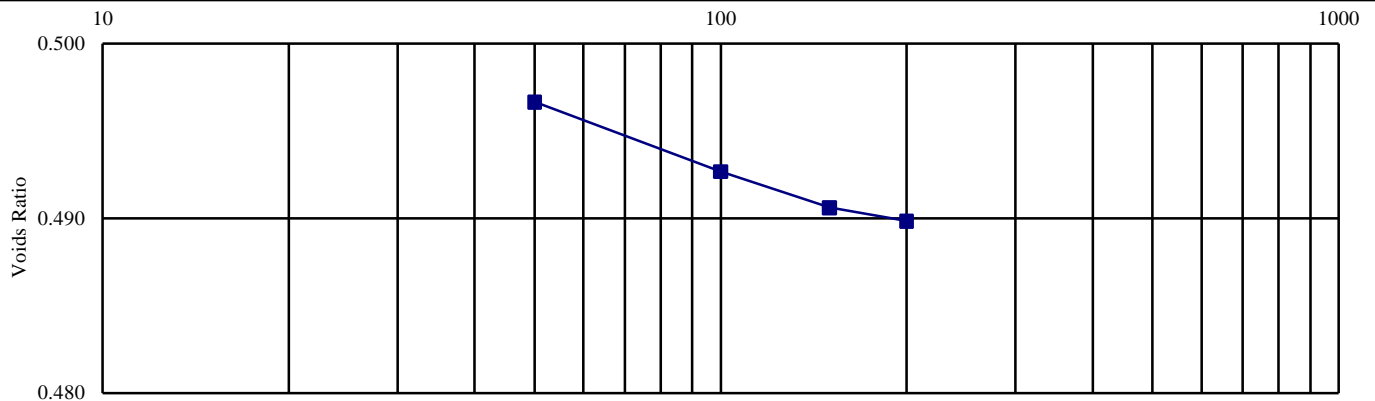
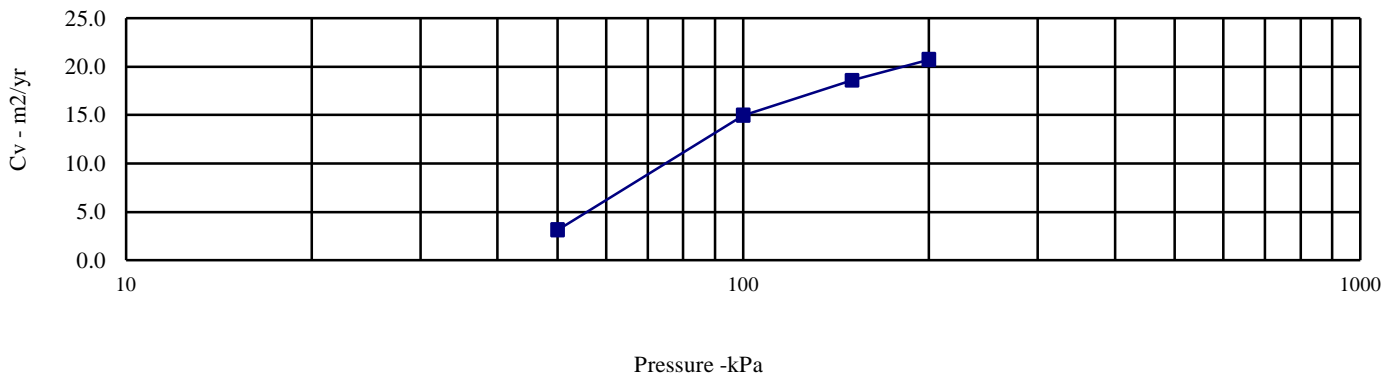
BS 1377: Part 5: 1990: Clause 3

**Hole Number:** BH04 **Top Depth (m):** 3.00

**Sample Number:** **Base Depth (m) :** 3.45

**Sample Type:** U

Initial Conditions		Pressure Range		Mv	Cv	Specimen location	
Moisture Content (%):	20	kPa		m2/MN	m2/yr	within tube:	Top
Bulk Density (Mg/m3):	2.06	0	50	0.517	3.143	Method used to	
Dry Density (Mg/m3):	1.72	50	100	0.053	14.962	determine CV:	T90
Voids Ratio:	0.536	100	150	0.028	18.590	Nominal temperature	
Degree of saturation:	96.8	150	200	0.010	20.741	during test ' C:	20
Height (mm):	20.03	Remarks: Post-Saturated					
Diameter (mm)	75.01						
Particle Density (Mg/m3): Assumed	2.65						



LTP Coxhoe

<b>Contract No:</b>
<b>PSL22/5392</b>
<b>Client Ref:</b>
<b>S220506</b>

# PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: BH01 Top Depth (m) : 6.00

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen		
See summary of soil descriptions		
Remarks		
Undisturbed		

Initial Specimen Conditions		
Height	mm	101.15
Diameter	mm	101.54
Area	mm <sup>2</sup>	8097.75
Volume	cm <sup>3</sup>	819.09
Mass	g	1744
Dry Mass	g	1512
Bulk Density	Mg/m <sup>3</sup>	2.13
Dry Density	Mg/m <sup>3</sup>	1.85
Moisture Content	%	15
Voids Ratio	-	0.436
Specific Gravity	Mg/m <sup>3</sup>	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	17
Bulk Density	Mg/m <sup>3</sup>	2.15
Dry Density	Mg/m <sup>3</sup>	1.85

Test Setup		
Date Started		30/08/2022
Date Finished		07/09/2022
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	3
Permeability Time	Days	1



**PSL**  
Professional Soils Laboratory

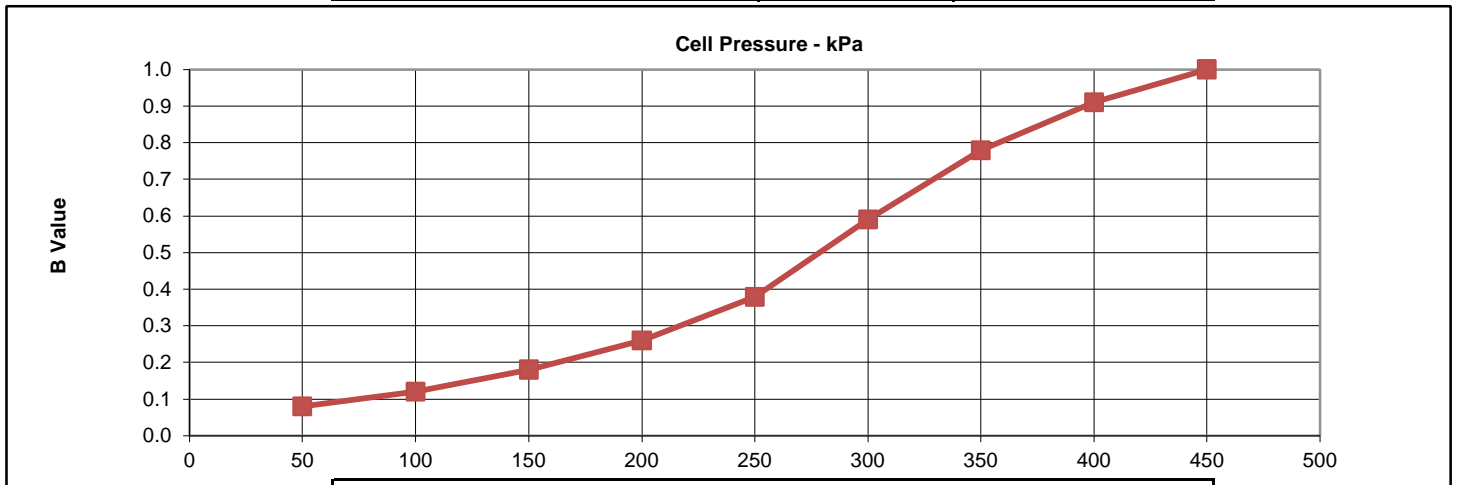
LTP Coxhoe

Contract No.  
PSL22/5392  
Client Ref  
S220506

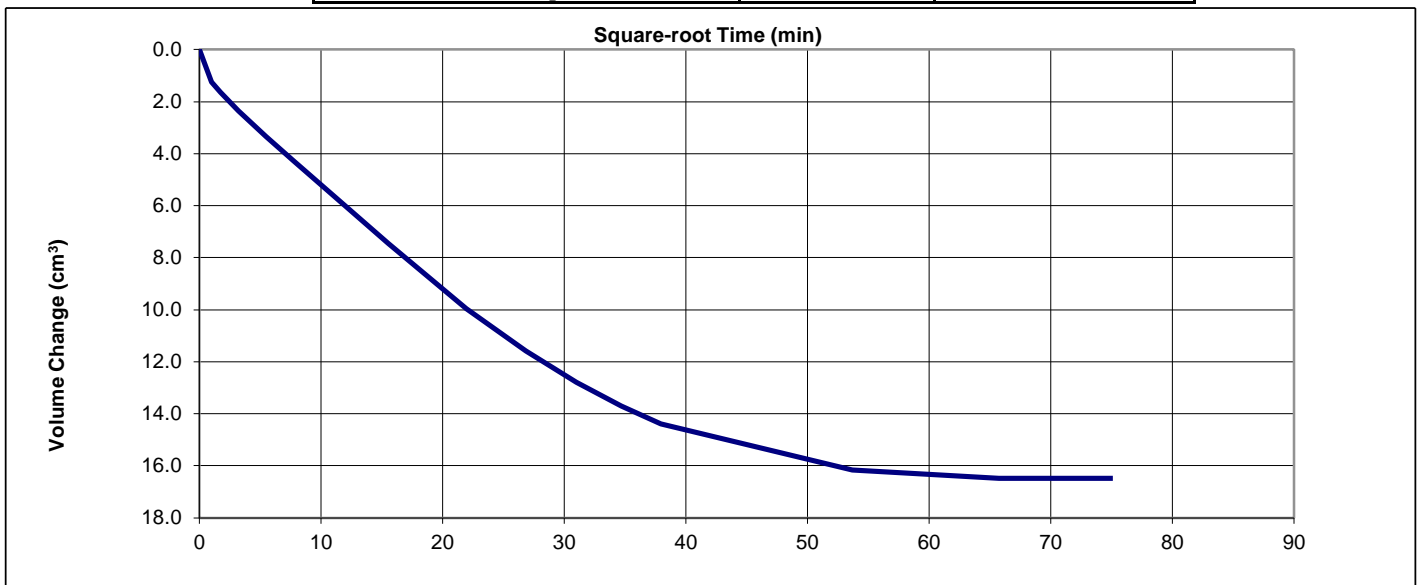
# PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		BH01
Sample Depth	m	6.00
Sample No.		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	450
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	150
Cell Pressure	kPa	550
Back Pressure	kPa	400
Final PWP	kPa	403
PWP dissipation	%	97



**PSL**  
Professional Soils Laboratory

LTP Coxhoe

<b>Contract No.</b>
<b>PSL22/5392</b>
<b>Client Ref</b>
<b>S220506</b>

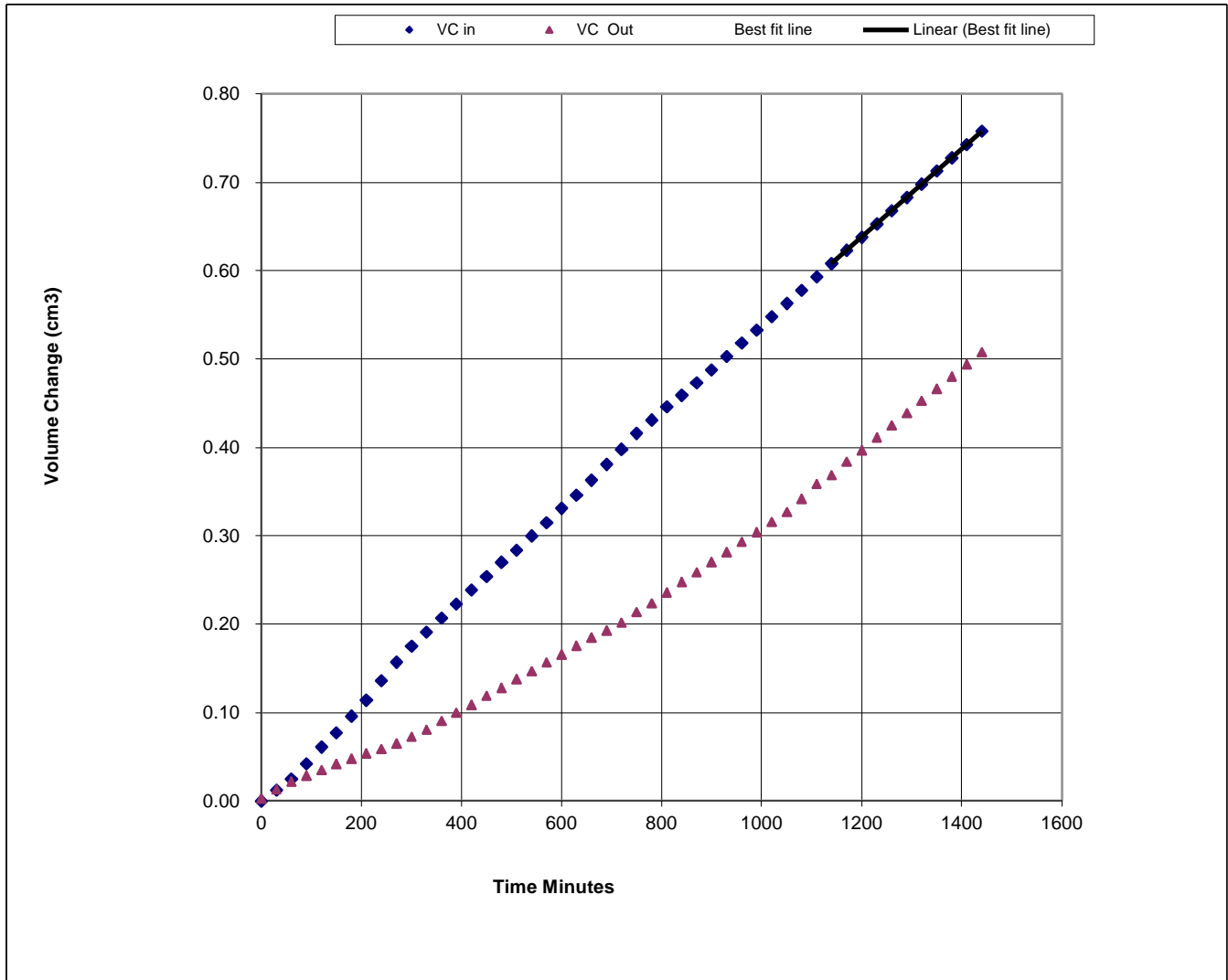


# PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		BH01
Sample Depth	m	6.00
Sample No.		
Grid Reference		
Lift Number		

## Permeability Stage



Permeability Stage		
Cell Pressure	kPa	550
Mean Effective Stress	kPa	150
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0005
Average Temperature	'C	20
Vertical Permeability K <sub>v</sub>	m/s	5.1E-11



**PSL**  
Professional Soils Laboratory

LTP Coxhoe

<b>Contract No.</b>
<b>PSL22/5392</b>
<b>Client Ref</b>
<b>S220506</b>

# PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: BH03 Top Depth (m) : 9.00

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen		
See summary of soil descriptions		
Remarks		
Undisturbed		

Initial Specimen Conditions		
Height	mm	100.97
Diameter	mm	102.29
Area	mm <sup>2</sup>	8217.81
Volume	cm <sup>3</sup>	829.75
Mass	g	1773
Dry Mass	g	1509
Bulk Density	Mg/m <sup>3</sup>	2.14
Dry Density	Mg/m <sup>3</sup>	1.82
Moisture Content	%	17
Voids Ratio	-	0.457
Specific Gravity	Mg/m <sup>3</sup>	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	17
Bulk Density	Mg/m <sup>3</sup>	2.13
Dry Density	Mg/m <sup>3</sup>	1.82

Test Setup		
Date Started		30/08/2022
Date Finished		07/09/2022
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	4
Permeability Time	Days	1



**PSL**  
Professional Soils Laboratory

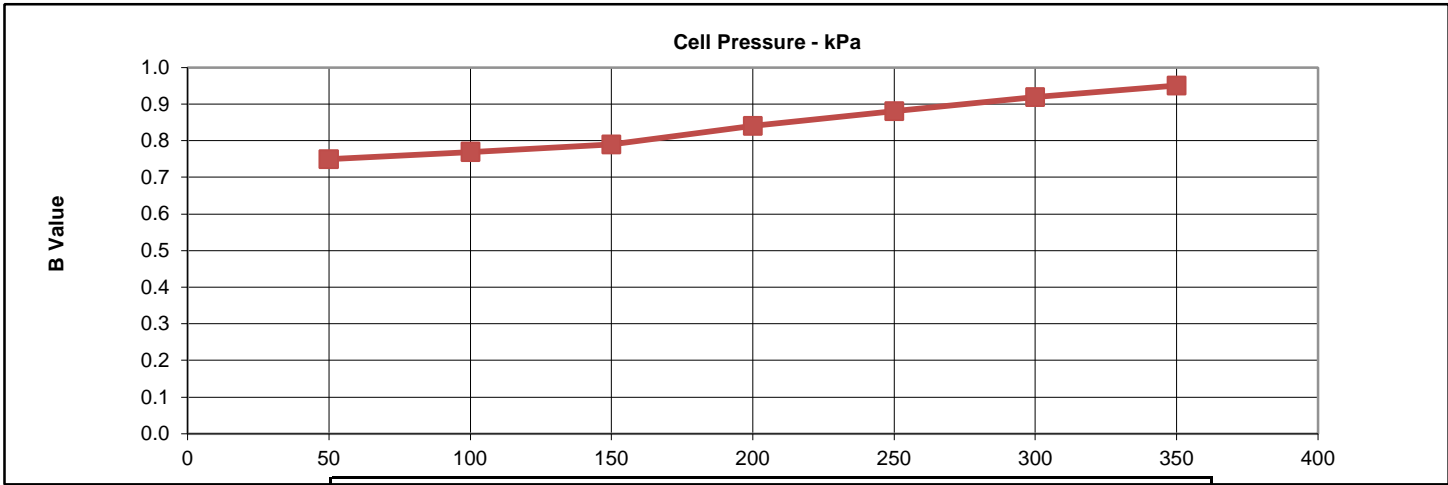
LTP Coxhoe

Contract No.  
PSL22/5392  
Client Ref  
S220506

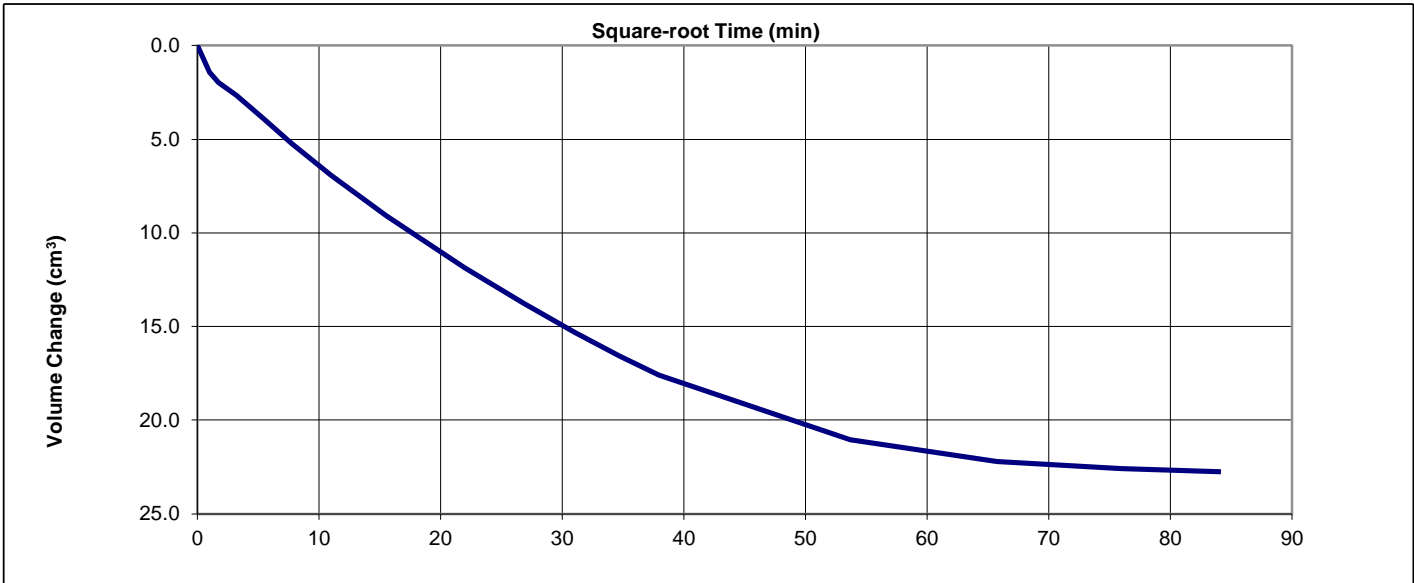
# PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		BH03
Sample Depth	m	9.00
Sample No.		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	350
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	200
Cell Pressure	kPa	500
Back Pressure	kPa	300
Final PWP	kPa	306
PWP dissipation	%	96



LTP Coxhoe

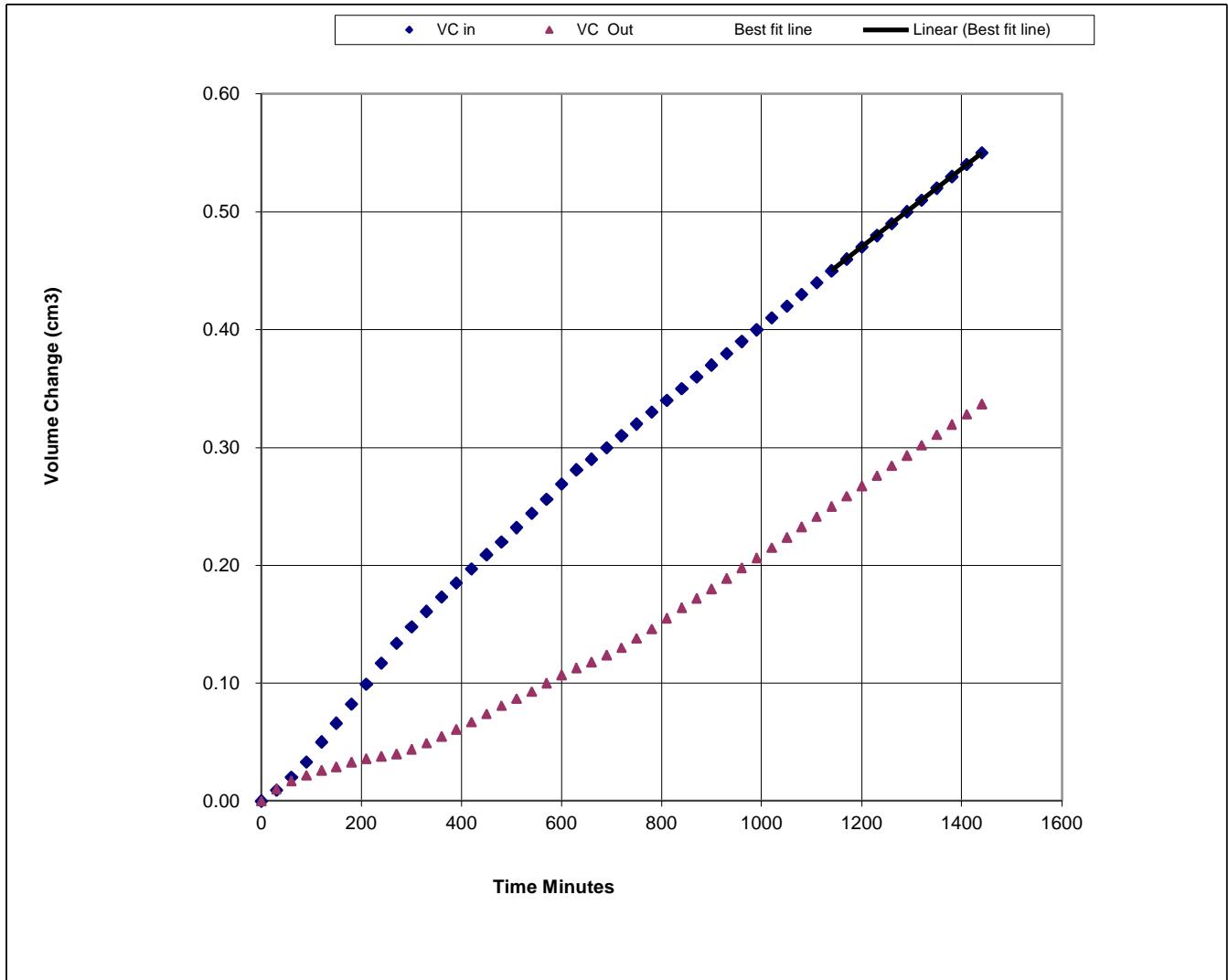
<b>Contract No.</b>
<b>PSL22/5392</b>
<b>Client Ref</b>
<b>S220506</b>

# PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		BH03
Sample Depth	m	9.00
Sample No.		
Grid Reference		
Lift Number		

## Permeability Stage



Permeability Stage		
Cell Pressure	kPa	500
Mean Effective Stress	kPa	200
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0003
Average Temperature	'C	20
Vertical Permeability K <sub>v</sub>	m/s	3.3E-11



LTP Coxhoe

<b>Contract No.</b>
<b>PSL22/5392</b>
<b>Client Ref</b>
<b>S220506</b>



# Final Report

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**Report No.:** 22-23394-1  
**Initial Date of Issue:** 27-Jun-2022  
**Client** Solmek Ltd  
**Client Address:** 12 Yarm Road  
Stockton-on-Tees  
TS18 3NA  
**Contact(s):** B Atkinson  
Joe Brischuk  
Lab  
Leo Cassidy  
Office  
**Project** S220506 LTP Coxhoe

<b>Quotation No.:</b>		<b>Date Received:</b>	23-Jun-2022
<b>Order No.:</b>	LAB1519	<b>Date Instructed:</b>	23-Jun-2022
<b>No. of Samples:</b>	6		
<b>Turnaround (Wkdays):</b>	5	<b>Results Due:</b>	29-Jun-2022
<b>Date Approved:</b>	27-Jun-2022		

**Approved By:**



**Details:** Stuart Henderson, Technical  
Manager

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## Results - Soil

**Project: S220506 LTP Coxhoe**

<b>Client: Solmek Ltd</b>	<b>Chemtest Job No.:</b>				22-23394	22-23394	22-23394	22-23394	22-23394	22-23394
Quotation No.:	<b>Chemtest Sample ID.:</b>				1453620	1453621	1453622	1453623	1453624	1453625
	Sample Location:				BH01	BH01	BH01	BH02	BH03	BH03
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.70	3.00	5.00	7.50	2.00	12.00
	Bottom Depth (m):				0.80	3.45	5.45	7.95	2.45	12.45
	Date Sampled:				01-Jun-2022	01-Jun-2022	01-Jun-2022	01-Jun-2022	01-Jun-2022	01-Jun-2022
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>						
Moisture	N	2030	%	0.020	12	19	12	16	14	14
pH	U	2010		4.0	8.9	10.0		8.5		8.8
pH (2.5:1)	N	2010		4.0			7.6		7.8	
Sulphate (2:1 Water Soluble) as SO4	U	2120	mg/l	10	24	52	11	42	27	39

## Test Methods

<b>SOP</b>	<b>Title</b>	<b>Parameters included</b>	<b>Method summary</b>
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES

**APPENDIX E:  
Ground Gas Monitoring Results**





## GAS MONITORING RESULTS

Project number	S220506
Project name	Leachate Treatment Plant
Client	Durham County Council
Visit no	1
Date	29/07/2022
Equipment	GFM 435 Gas Analyser
Operator	LO

Weather Conditions	Cloudy
Ground Conditions	Wet
Ambient Atmospheric Pressure	1003
Regional Pressure Trend	Falling

Position	Flow	Pressure	CH4		CO2		O2 (% v/v)	PID (ppm)	CO (ppm)	H2S (ppm)	Groundwater Level (mbgl)	Depth to Base (mbgl)	Notes
			(% v/v)	GSV (l/hr)	(% v/v)	GSV (l/hr)							
BH01	0.1	1003	0.0	0.0000	2.3	0.0023	17.0	0.0	0.0	0.0	Dry	6.50	
BH02	0.1	1003	0.0	0.0000	2.3	0.0023	16.3	0.0	0.0	0.0	10.82	12.00	
BH03	0.1	1003	1.7	0.0017	2.7	0.0027	12.2	0.0	0.0	0.0	16.40	24.00	
BH04	0.1	1003	63.4	0.0634	20.9	0.0209	1.5	0.0	1.0	0.0	11.33	12.00	

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.



## GAS MONITORING RESULTS

Project number	S220506
Project name	Leachate Treatment Plant
Client	Durham County Council
Visit no	2
Date	12/08/2022
Equipment	GFM 435 Gas Analyser
Operator	LO

Weather Conditions	Sunny
Ground Conditions	Dry
Ambient Atmospheric Pressure	1007
Regional Pressure Trend	Steady

Position	Flow	Pressure	CH <sub>4</sub>		CO <sub>2</sub>		O <sub>2</sub> (% v/v)	PID (ppm)	CO (ppm)	H <sub>2</sub> S (ppm)	Groundwater Level (mbgl)	Depth to Base (mbgl)	Notes
			(% v/v)	GSV (l/hr)	(% v/v)	GSV (l/hr)							
BH01	0.1	1007	0.0	0.0000	2.8	0.0028	15.1	0.0	0.0	0.0	Dry	6.50	
BH02	0.1	1007	0.0	0.0000	2.5	0.0025	18.1	0.0	0.0	0.0	10.90	12.00	
BH03	0.1	1007	2.3	0.0023	2.7	0.0027	12.1	0.0	0.0	0.0	17.40	24.00	
BH04	0.1	1007	64.6	0.0646	30.3	0.0303	1.4	0.0	0.0	0.0	12.30	12.00	

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.



## GAS MONITORING RESULTS

Project number	S220506
Project name	Leachate Treatment Plant
Client	Durham County Council
Visit no	3
Date	25/08/2022
Equipment	GFM 435 Gas Analyser
Operator	LO

Weather Conditions	Cloudy
Ground Conditions	Wet
Ambient Atmospheric Pressure	1003
Regional Pressure Trend	Steady

Position	Flow	Pressure	CH4		CO2		O2 (% v/v)	PID (ppm)	CO (ppm)	H2S (ppm)	Groundwater Level (mbgl)	Depth to Base (mbgl)	Notes
			(% v/v)	GSV (l/hr)	(% v/v)	GSV (l/hr)							
BH01	0.1	1003	0.0	0.0000	3.5	0.0035	14.0	0.0	0.0	0.0	Dry	6.50	
BH02	0.1	1003	0.0	0.0000	2.4	0.0024	17.9	0.0	0.0	0.0	10.95	12.00	
BH03	0.1	1003	1.2	0.0012	2.5	0.0025	15.8	0.0	0.0	0.0	18.56	24.00	
BH04	0.1	1003	55.2	0.0552	27.6	0.0276	3.0	0.0	0.0	0.0	11.36	12.00	

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.



## GAS MONITORING RESULTS

Project number	S220506
Project name	Leachate Treatment Plant
Client	Durham County Council
Visit no	4
Date	08/09/2022
Equipment	GFM 435 Gas Analyser
Operator	LO

Weather Conditions	Wet
Ground Conditions	Wet
Ambient Atmospheric Pressure	990
Regional Pressure Trend	Falling

Position	Flow	Pressure	CH4		CO2		O2 (% v/v)	PID (ppm)	CO (ppm)	H2S (ppm)	Groundwater Level (mbgl)	Depth to Base (mbgl)	Notes
			(% v/v)	GSV (l/hr)	(% v/v)	GSV (l/hr)							
BH01	0.1	990	0.7	0.0007	4.2	0.0042	10.5	0.0	0.0	0.0	Dry	6.50	
BH02	0.1	990	0.0	0.0000	2.4	0.0024	17.3	0.0	0.0	0.0	10.89	12.00	
BH03	0.1	990	2.1	0.0021	2.7	0.0027	12.2	0.0	0.0	0.0	19.30	24.00	
BH04	0.1	990	62.8	0.0628	28.0	0.0280	1.8	0.0	0.0	0.0	11.30	12.00	

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.



## GAS MONITORING RESULTS

Project number	S220506
Project name	Leachate Treatment Plant
Client	Durham County Council
Visit no	4
Date	08/09/2022
Equipment	GFM 435 Gas Analyser
Operator	LO

Weather Conditions	Wet
Ground Conditions	Wet
Ambient Atmospheric Pressure	990
Regional Pressure Trend	Falling

Position	Flow	Pressure	CH4		CO2		O2 (% v/v)	PID (ppm)	CO (ppm)	H2S (ppm)	Groundwater Level (mbgl)	Depth to Base (mbgl)	Notes
			(% v/v)	GSV (l/hr)	(% v/v)	GSV (l/hr)							
BH01	0.1	990	0.0	0.0000	3.7	0.0037	14.2	0.0	0.0	0.0	Dry	6.50	
BH02	0.1	990	0.0	0.0000	1.7	0.0017	18.8	0.0	0.0	0.0	11.00	12.00	
BH03	0.1	990	2.2	0.0022	3.0	0.0030	12.2	0.0	0.0	0.0	20.20	24.00	
BH04	0.1	990	60.9	0.0609	28.4	0.0284	1.5	0.0	0.0	0.0	11.25	12.00	

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.



## GAS MONITORING RESULTS

Project number	S220506
Project name	Leachate Treatment Plant
Client	Durham County Council
Visit no	4
Date	08/09/2022
Equipment	GFM 435 Gas Analyser
Operator	LO

Weather Conditions	Wet
Ground Conditions	Wet
Ambient Atmospheric Pressure	990
Regional Pressure Trend	Falling

Position	Flow	Pressure	CH <sub>4</sub>		CO <sub>2</sub>		O <sub>2</sub> (% v/v)	PID (ppm)	CO (ppm)	H <sub>2</sub> S (ppm)	Groundwater Level (mbgl)	Depth to Base (mbgl)	Notes
			(% v/v)	GSV (l/hr)	(% v/v)	GSV (l/hr)							
BH01	0.1	990	0.6	0.0006	5.6	0.0056	6.4	0.0	0.0	0.0	Dry	6.50	
BH02	0.1	990	0.0	0.0000	0.0	0.0000	20.5	0.0	0.0	0.0	11.00	12.00	
BH03	0.1	990	2.0	0.0020	3.2	0.0032	9.6	0.0	0.0	0.0	20.09	24.00	
BH04	0.1	990	55.9	0.0559	27.1	0.0271	2.7	0.0	0.0	0.0	11.36	12.00	

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.

**APPENDIX F:**  
**Notes on Limitations & Contamination Guidance**

## **Report Information**

### **Key**

---

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

### **Sample Deviation Codes**

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A - Date of sampling not supplied

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

C - Sample not received in appropriate containers

D - Broken Container

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

### **Sample Retention and Disposal**

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

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

Charges may apply to extended sample storage

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

[customerservices@chemtest.com](mailto:customerservices@chemtest.com)



**UK BACKGROUND**

**Environmental Protection Act 1990: Part 2A Revised Statutory Guidance (April 2012)**

This revised document explains how the Local Authority should decide if land, based on a legal interpretation, is contaminated. The document replaces the previous guidance given in Annex 3 of DEFRA Circular 01/2006, issued in accordance with section 78YA of the 1990 Environmental Protection Act.

The main objectives of the Part 2A regime are to *“identify and remove unacceptable risks to human health and the environment”* and to *“seek to ensure that contaminated land is made suitable for its current use”*.

Part 2A uses a risk based approach to defining contaminated land whereby the “risk” is interpreted as *“the likelihood that harm, or pollution of water, will occur as a result of contaminants in, on or under the land”* and by *“the scale and seriousness of such harm or pollution if it did occur”*.

For a relevant risk to exist a contaminant, pathway and receptor linkage must be present before the land can be considered to be contaminated. The document explains that *“for a risk to exist there must be contaminants present in, on or under the land in a form and quantity that poses a hazard, and one or more pathways by which they might significantly harm people, the environment, or property; or significantly pollute controlled waters.”*

A conceptual model is used to develop and communicate the risks associated with a particular site.

To determine if land is contaminated the local authority use various categories from 1 to 4. Categories 1 and 2 include *“land which is capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health.”*

Categories 3 and 4 *“encompass land which is not capable of being determined on such grounds”*.

**PRELIMINARY CONCEPTUAL MODEL**

Preliminary Conceptual Models are undertaken in accordance with CIRIA C552. The Preliminary Conceptual Model assesses the consequence and the likelihood of a risk being realised to provide a risk classification, using the tables detailed below.

**CONSEQUENCE OF RISK BEING REALISED (Based on C552 CIRIA, 2001)**

<b>Classification</b>	<b>Definition</b>	<b>Example</b>
<b>Severe</b>	Short-term (acute) risk to human health, the environment, an element of the development or other aspect with is likely to result in <i>significant harm</i> , damage or both.	High concentrations of cyanide on the surface of an informal recreational area. Major spills of contaminants from site into controlled water. High concentrations of explosive gas in the subsurface environment that have a clear unobstructed pathway into buildings.
<b>Moderate</b>	Chronic damage to human health, a plausible chance that an event will occur, although the timeline is not immediate to be in the short-term.	Appreciable concentration of contamination that over the longer-term will cause significant harm i.e. high lead concentration in topsoil. Shallow mine workings that are potentially unstable but may remain in a satisfactory or stable conditions for a number of years.
<b>Mild</b>	Low level pollution of non-sensitive water, a feasible hazardous scenario although the timeline of such occurring can probably be considered in 10's of years.	The effect of high sulphate concentrations on structural concrete. Pollution of non-classified groundwater.
<b>Minor</b>	Harm, although not necessarily significant to human health, or with respect to other aspects of the development, which are considered implausible in terms of occurrence, or will have little consequential impact.	The presence of contaminants at such low concentrations that protective equipment is required during site works. Any damage to structures is minimal and will not be structural in characteristics.

## PROBABILITY OF RISK BEING REALISED (C552 CIRIA, 2001)

Classification	Definition
High Likelihood	There is a viable pollutant linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence that the receptor has been harmed or polluted.
Likely	There is a viable pollutant linkage and all elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a viable pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a viable pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

## RISK CLASSIFICATION MATRIX (C552 CIRIA, 2001)

Risk = Probability x Consequence		Consequence			
		Severe	Moderate	Mild	Minor
Probability	High likelihood	Very high risk	High risk	Moderate risk	Moderate/low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

## HUMAN RECEPTORS

Human exposure to contaminants present in soils can occur via several pathways. Direct exposure pathways include dermal absorption after contact with contaminated ground, inhalation of soil or dust, inhalation of volatilised compounds, and inadvertent soil ingestion (or deliberate soil ingestion in the case of some children). Other indirect pathways include human ingestion of plants grown in contaminated soil or contaminated ground or surface water. Contaminants associated with wind blown dust can affect humans on surrounding sites.

## VEGETATION

Plants can be affected by soil contamination in a number of ways resulting in growth inhibition, nutrient deficiencies and yellowing of leaves. Contaminants are taken up by plants through the roots and through foliage. Contaminants identified as being highly phytotoxic include boron, cadmium, copper, lead, nickel, and zinc.

To establish if the levels of contaminants present on a site may pose a risk to vegetation the results of the contamination testing are compared to a series of threshold values published in 'Code of Good Agricultural Practice for the Protection of Soil'.

## GROUNDWATER AND SURFACE WATER RECEPTORS

The principal pathway by which soil contamination may reach the water environment is through a slow seepage or leaching to groundwater or surface water. The potential for contaminants to migrate along such pathways is dependent on the chemical and physical characteristics of the contaminants and the local hydrogeology. Surface watercourses may also accumulate contamination as contaminated sediments are deposited within the water body.

Where the site investigated overlies major/principal aquifers (and in some cases minor/secondary aquifers depending on certain conditions), groundwater Source Protection Zones and areas in close proximity to groundwater abstractions, contamination test results have been compared with the Water Supply (Water Quality) Regulations 1989 and The Water Supply (Water Quality) Regulations 2000.

Should a surface water receptor, such as a fresh water environment (river, canal, stream, lake etc), or marine environment be considered sensitive in relation to a site, then test results are compared with DEFRA & SEPA Environmental Quality Standards (2004). Many of the Environmental Quality Standards are hardness (CaCO<sub>3</sub>) depended. Where no hardness values are available, Solmek assume conservative values (of between 0 and 50mg/l).

In the absence of vulnerable ground and surface water environments, Solmek may compare any test results with the Environment Agency Leachate Quality Threshold Values.

## DETAILED QUANTITATIVE RISK ASSESSMENT (DQRA)

In line with Environment Agency's guidance document Environment Agency *Land Contamination Risk Management*, which replaced the now-withdrawn *Contaminated Land Report 11 – Model Procedures for the Management of Land Contamination (2004)*, a DQRA for groundwater/human health may be required following a Phase 2 investigation and before the preparation of a Phase 3 Remediation Strategy. For human health DQRA, a site specific assessment criteria is undertaken using CLEA Software Version 1.06. For groundwater DQRA, the Environment Agency Remedial Targets Worksheet Version 3.1 is used.

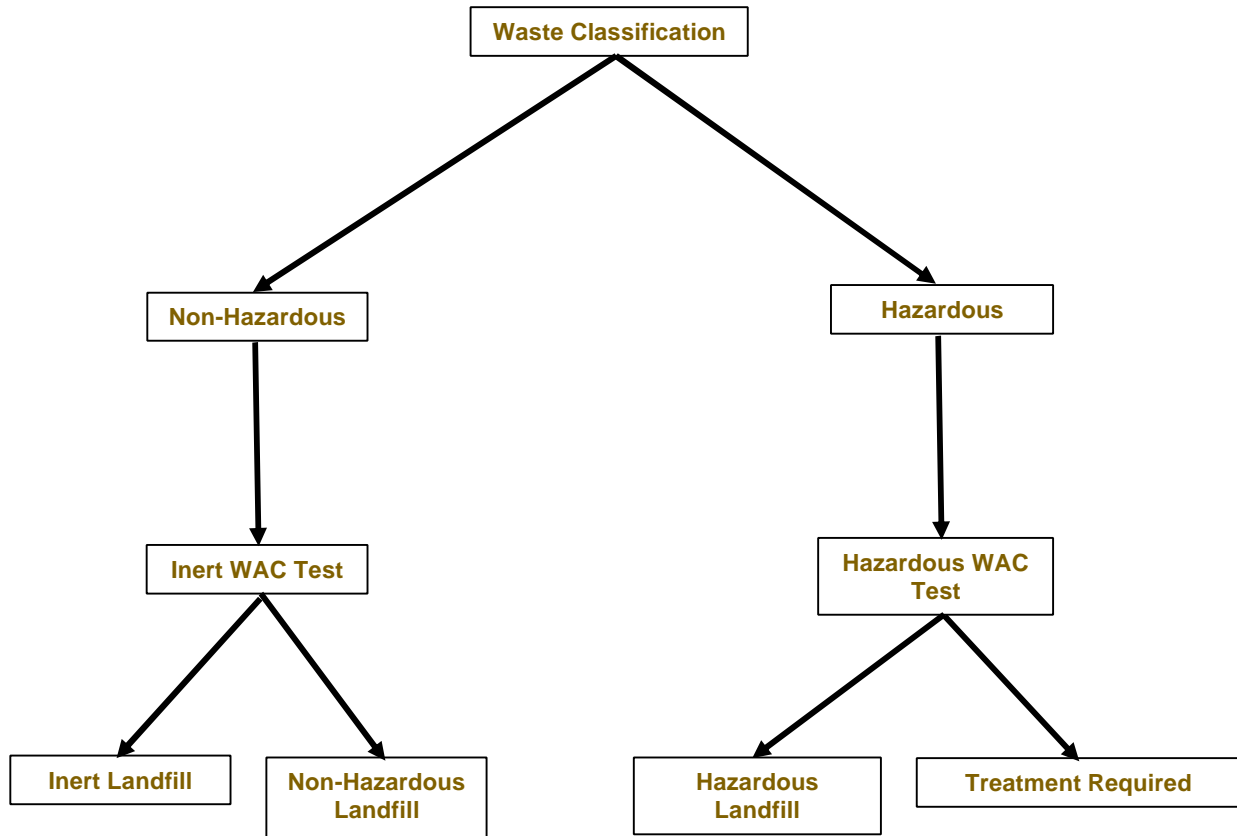
## WASTE CLASSIFICATION AND WASTE ACCEPTANCE CRITERIA

During the site strip and construction activities, material may be required to be removed from site. Any such material would require classification, in line with Environment Agency Technical Guidance *Waste Classification: Guidance on the classification and assessment of waste (2015)*. This would classify the material as either Non-Hazardous or Hazardous Waste.

Once the material has been classified, determining the suitable landfill for disposal is governed by landfill directive Waste Acceptance Criteria (WAC) testing, with landfills categorized as Inert Waste, Stable Non-Reactive Hazardous Waste and Hazardous Waste. The WAC testing relates to materials that are to be exported from a site/development to landfill, and do not directly relate to human health specifically. The testing results are generally presented as certificates which can be used by site owners/contractors etc, which should be presented to the accepting waste facility or waste contractor.

If waste classification and/or WAC testing are not undertaken, material taken off site may be subject to WAC testing by the appropriate waste disposal company. The decision on whether or not to accept waste, or whether further testing is required, is at the discretion of the waste disposal company.

The below flow chart provides further information on the waste classification process.



## CONSTRUCTION MATERIALS

Materials at risk from possible soil contaminants include inorganic matrices such as cement and concrete and also organic material such as plastics and rubbers. Acid ground conditions and high levels of sulphates can accelerate the corrosion of building materials. Where pH and soluble sulphate analysis has been undertaken, Solmek compare the test results with the guidelines presented within BRE Special Digest 1, 2005 (3<sup>rd</sup> Edition) 'Concrete in Aggressive Ground'. Plastics and rubbers are generally used for piping and service ducts and are potentially attacked by a range of chemicals, most of which are organic, particularly petroleum based substances. Drinking water supplies can be tainted by substances that can penetrate piping and water companies enforce stringent threshold values.

The levels of potential contaminants should be compared to thresholds supplied in the UK Water Industry Research (UKWIR) publication "Guidance for the selection of Water Supply Pipes to be used in Brownfield Sites" (January 2011). A Brownfield Site is defined in the document as "Land or premises that have not previously been used or developed that may be vacant or derelict". It should be noted that Brownfield sites may not be contaminated. The guidance does not apply to Greenfield Sites however water companies may have their own assessment criteria which should be checked by the developer. The table below outlines the pipe material selection threshold concentrations.

Parameter group	Pipe Material (Threshold concentrations in mg/kg)					
	PE	PVC	Barrier pipe (PE-AL-PE)	Wrapped Steel	Wrapped Ductile Iron	Copper
Extended VOC suite by purge and trap or head space and GC-MS with TIC	0.5	0.125	Pass	Pass	Pass	Pass
+ BTEX + MTBE	0.1	0.03	Pass	Pass	Pass	Pass
SVOCs TIC by purge and trap or head space and GC-MS with TIC (aliphatic and aromatic C5-C10)	2	1.4	Pass	Pass	Pass	Pass
+ Phenols	2	0.4	Pass	Pass	Pass	Pass
+ Cresols and chlorinated phenols	2	0.04	Pass	Pass	Pass	Pass
Mineral oil C11-C20	10	Pass	Pass	Pass	Pass	Pass
Mineral oil C21-C40	500	Pass	Pass	Pass	Pass	Pass
Corrosive (Conductivity, Redox and pH)	Pass	Pass	Pass	Corrosive if pH <7 and conductivity >400µS/cm	Corrosive if pH <5, Eh not neutral and conductivity >400µS/cm	Corrosive if pH <5 or >8 and Eh positive
Specific suite identified as relevant following site investigation						
Ethers	0.5	1	Pass	Pass	Pass	Pass
Nitrobenzene	0.5	0.4	Pass	Pass	Pass	Pass
Ketones	0.5	0.02	Pass	Pass	Pass	Pass
Aldehydes	0.5	0.02	Pass	Pass	Pass	Pass
Amines	Fail	Pass	Pass	Pass	Pass	Pass

## REQUIREMENTS OF PARTIES WITHIN THE DEVELOPMENT PROCESS

Interested parties involved in the development process may use the data in different ways and there may be varying views and interpretation of the factual data. Local Authority staff may have a view on contamination and human health and the wider environment. The Environment Agency are concerned principally with the protection of Controlled waters. Building insurers, funders and purchasers may be primarily concerned with issues of potential commercial blight. Purchasers are also not always fully informed, and perceptions on issues associated with risk can affect the decision to purchase. Developers and construction organisations will focus on financial aspects of dealing with the contamination in the context of the development and construction programme.

## RISKS & LIABILITIES FROM CONTAMINATION

In simple terms, risks associated with contamination may be considered in terms of 1) statutory risks and 2) development related risks. If contamination is severe or forms a potential hazard based on its potential to affect groundwater, surface water or human health, a statutory risk may be present, and as such, if the risk is not reduced, criminal proceedings may be instigated by a government body or local authority.

If the contamination is less severe or not considered to be mobile, it may be considered a commercial liability which could, in theory remain untreated, but which may at a later date affect the value of the property, or, with changing legislation, become a statutory risk. Commercial liabilities could give rise to civil proceedings by third parties if there are grounds for action.

## **♣Solmek conditions of offer, notes on limitations & basis for contract (ref: version1/2022)**

These conditions accompany our tender and supercede any previous conditions issued. Solmek will prepare a report solely for the use of the Client (the party invoiced) and its agent(s). No reliance should be placed on the contents of this report, in whole or in part by 3<sup>rd</sup> parties. The report, its content and format and associated data are copyright, and the property of Solmek. Photocopying of part or all of the contents, transfer or reproduction of any kind is forbidden without written permission from Solmek. A charge may be levied against such approval, the same to be made at the discretion of Solmek.

Solmek cannot be held liable and do not warrant, or otherwise guarantee the validity of information provided by third parties and subsequently used in our reports. Solmek are not responsible for the action negligent of otherwise of subcontractors or third parties.

Site investigation is a process of sampling. The scope and size of an investigation may be considered proportional to levels of confidence regarding the ground and groundwater conditions. The exploratory holes undertaken investigate only a small volume of the ground in relation to the overall size of the site, and can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions as encountered within each of the exploratory holes. There may be different ground conditions elsewhere on the site which have not been identified by this investigation and which therefore have not been taken into account in this report. Reports are generally subject to the comments of the local authority and Environment Agency. The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that mobile contamination, ground gas levels and groundwater levels may vary owing to seasonal, tidal and/or weather related effects. Solmek cannot be held liable for any unrecorded or unforeseen obstructions between exploratory boreholes and trial pits. This includes instances where previous structures on the site (buried man made structures) or the presence of boulder clay (cobbles and/or boulder obstructions) have been anticipated. All types of piling operations should make allowance for obstructions within the construction budget to accommodate this. Unrecorded ancient mining may occur anywhere where seams that have been worked and influence the rock and soil above. Dissolution cavities can occur where gypsum or chalk is present. Rotary drilling is the recommended technique to prove the integrity of the rock.

Where the scope of the investigation is limited via access to information, time constraints, equipment limitations, testing, interpretation or by the client or his agents budgetary constraints, elements not set out in the proposal and excluded from the report are deemed to be omitted from the scope of the investigation.

Desk studies are generally prepared in accordance with RICS guidelines. Environmental site investigations are generally undertaken as 'exploratory investigations' in accordance with the definitions provided in paragraph 5.4 of BS 10175:2011 in order to confirm the conceptual assumptions. You are advised to familiarize yourself with the typical scope of such an investigation. No pumping of water will be undertaken unless a licence or facilities/equipment have been arranged by others.

Where the type, number or/and depth of exploratory hole is specified by others, Solmek cannot and will not be responsible for any subsequent shortfall or inadequacy in data, and any consequent shortfall in interpretation of environmental and geotechnical aspects which may be required at a later date in order to facilitate the design of permanent or temporary works.

All information acquired by Solmek in the course of investigation is the property of Solmek, and, only also becomes the joint property of the Client only on the complete settlement of all invoices relating to the project. Solmek reserve the right to use the information in commercial tendering and marketing, unless the Client expressly wishes otherwise in writing. The quoted rates do not include VAT, and payment terms are 30 days from dispatch of invoice from our offices. Quotes are subject to a site visit.

We have allowed for 1 mobilisation and normal working hours unless otherwise stated. The scope of the investigation may be reviewed following the desk study and/or fieldwork. The presence or otherwise of Japanese Knotweed or other invasive plants can be difficult to identify especially during winter months. If Japanese Knotweed or other invasive species are suspect, it should be confirmed by an ecologist. We have not allowed for acquiring services information, and cannot be responsible for damage to underground services or pipes not shown to us or not clearly shown on plans. Costs incurred will be passed on to you, and in commissioning Solmek you understand and accept that you/your agent have a contractual relationship with Solmek & you accept this. Our rates assume unobstructed, reasonably level and firm access to the exploratory positions and adequate clear working areas and headroom. We have priced on the basis that you or your client have the necessary permissions, wayleaves and approvals to access land. All boreholes and pits are backfilled with arisings except where gas monitoring pipes are installed with stopcock covers. Solmek are not responsible for any uneven surfaces as a result of siteworks and rutting and backfilled excavations may require re-levelling and/or making good by others after fieldwork is complete, and Solmek has not allowed for this. No price has been provided or requested for a return visit to remove pipework and covers. Hourly rates apply to consultancy only and do not include expenses unless otherwise shown. If warranties are required, legal costs incurred will be passed on to you assuming Solmek agree to complete such warranties, modified or otherwise and you understand and agree to pay all costs.

We reserve the right to pursue full payment of the invoice prior to release of any information including reports. We advise you/your client that we may elect to pursue our statutory rights under late payment legislation, and will apply 8% to the base rate for unreasonably late payments. Solmek are exempt from the CIS Scheme. Solmek offer to undertake work only in strict accordance with conditions covered by our current insurances, which are available for inspection. Solmek are not responsible for acts, negligent or otherwise of subcontractors and as a matter of policy cannot indemnify any other parties. Professional indemnity Insurance is limited to ten times the invoice net total except where stated otherwise by Solmek. Solmek give notice that consequential loss as a direct or indirect result of Solmek's activities or omission of the same are excluded.