RSK	Report No: 371944	PHOTOGRAPHIC LOG

Client name: Rocco Ventures Ltd	Site Location: Royal College Street	

Photo No. 11	Date: 26-07-19

Direction Photo Taken:

West

Description:

View of Royal College Street and residential properties beyond

Photo No. 12	Date: 26-07-19

Direction Photo Taken:

South

Description:

Rubbish adjacent to tyre store

RSK	Report No: 371944	PHOTOGRAPHIC LOG
Client name: Rocco Ventures Ltd	Site Location: Royal College Street	

Photo No. 13	Date: 26-07-19
Direction Photo Taken: North east	
Description: Japanese Knotweed on central eastern site boundary.	

Photo No. 14	Date: 26-07-19
Direction Photo Taken: East	
Description: Japanese Knotweed on central eastern site boundary.	

RSK	Report No: 371944	PHOTOGRAPHIC LOG
Client name: Rocco Ventures Ltd	Site Location: Royal College Street	

Photo No. 15	Date: 26-07-19
Direction Photo Taken: South	
Description: Retaining wall to car park outside eastern site boundary	

Photo No. 16	Date: 16-08-19
Direction Photo Taken: North	
Description: TP1 – Golden Lion Public House. Masonry wall to public house to the north. Possible footing to northern ATS building to the south.	

RSK	Report No: 371944	PHOTOGRAPHIC LOG
Client name: Rocco Ventures Ltd	Site Location: Royal College Street	

Photo No. 17	Date: 16-08-19
Direction Photo Taken: North	
Description: TP1 – Golden Lion Public House. Masonry wall to public house to the north. Possible footing to northern ATS building to the south.	

Photo No. 18	Date: 16-08-19
Direction Photo Taken: East	
Description: TP2 – Central ATS building to the top of the picture	

RSK	Report No: 371944	PHOTOGRAPHIC LOG
Client name: Rocco Ventures Ltd	Site Location: Royal College Street	

Photo No. 19	Date: 16-08-19
Direction Photo Taken: East	
Description: TP2 – Central ATS building to the top of the picture	

Photo No. 20	Date: 16-08-19
Direction Photo Taken: South	
Description: TP3 – Tyre centre mass concrete footing exposure	

APPENDIX G
TECHNICAL BACKGROUND

H1 Desk Study

Aquifer designation and Source protection zones

Principal aquifer: layers of rock or drift deposit that have high intergranular and/or fracture permeability (usually providing a high level of water storage). They may support water supply and/or river base flow on a strategic scale.

Secondary A aquifer: permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

Secondary B aquifer: predominantly lower permeability layers that may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.

Secondary undifferentiated aquifer: it has not been possible to attribute either a category A or B to a rock type. In most cases this means that it was previously designated as both a minor and non-aquifer in different locations owing to the variable characteristics.

Unproductive' strata: low permeability with negligible significance for water supply or river base flow.

The EA generally adopts a three-fold classification of source protection zones (SPZ) surround abstractions for public water supply. The Site is situated in an area defined as follows:

- Zone 1 or the 'inner protection zone' is located immediately adjacent to the groundwater source and is based on a 50-day travel time from any point below the water table to the source. It is designed to protect against the effects of human activity and biological/chemical contaminants that may have an immediate effect on the source
- Zone 2 or the 'outer protection zone' is defined by a 400-day travel time from a point below the water table to the source. The travel time is designed to provide delay and attenuation of slowly degrading pollutants
- Zone 3 or the 'total catchment' is the area around the source within which all groundwater recharge is presumed to be discharged at the source.

Preliminary risk assessment methodology

CLR11 outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. Under CLR11, three stages of risk assessment exist: preliminary, generic quantitative and detailed quantitative. An outline conceptual model should be formed at the preliminary risk assessment stage that collates all the existing information pertaining to a site in text, tabular or diagrammatic form. The outline conceptual model identifies potentially complete (termed possible) contaminant linkages (contaminant–pathway–receptor) and is used as the basis for the design of the site investigation. The outline conceptual model is updated as further information becomes available, for example as a result of the site investigation.

Production of a conceptual model requires an assessment of risk to be made. Risk is a combination of the likelihood of an event occurring and the magnitude of its consequences. Therefore, both the likelihood and the consequences of an event must be taken into account when assessing risk. RSK has adopted guidance provided in CIRIA C552 for use in the production of conceptual models.

The likelihood of an event can be classified on a four-point system using the following terms and definitions based on CIRIA C552:

- highly likely: the event appears very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution
- likely: it is probable that an event will occur or circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term
- low likelihood: circumstances are possible under which an event could occur, but it is not certain even in the long term that an event would occur and it is less likely in the short term
- unlikely: circumstances are such that it is improbable the event would occur even in the long term.

The severity can be classified using a similar system also based on CIRIA C552. The terms and definitions relating to severity are:

- severe: short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. Short-term risk to an ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000)
- medium: chronic damage to human health ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000), pollution of sensitive water resources, significant change in an ecosystem or organism forming part of that ecosystem
- mild: pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures or the environment
- minor: harm, not necessarily significant, but that could result in financial loss or expenditure to resolve. Non-permanent human health effects easily prevented by use of personal protective clothing. Easily repairable damage to buildings, structures and services.

Once the probability of an event occurring and its consequences have been classified, a risk category can be assigned according to the table below.

		Consequences			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**Highly likely**	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very low	Very low

Definitions of these risk categories are as follows together with an assessment of the further work that may be required:

- very high: there is a high probability that severe harm could occur or there is evidence that severe harm is currently happening. This risk, if realised, could result in substantial liability; urgent investigation and remediation are likely to be required
- high: harm is likely to occur. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required. Remedial works may be necessary in the short term and are likely over the long term
- moderate: it is possible that harm could arise, but it is unlikely that the harm would be severe and it is more likely that the harm would be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term
- low: it is possible that harm could occur, but it is likely that if realised this harm would at worst normally be mild
- very low: there is a low possibility that harm could occur and if realised the harm is unlikely to be severe.

H2 Site Investigation Methodology

Ground gas monitoring

An infrared gas meter was used to measure gas flow, concentrations of carbon dioxide (CO_2), methane (CH_4) and oxygen (O_2) in percentage by volume, while hydrogen sulphide (H_2S) and carbon monoxide (CO) were recorded in parts per million. Initial and steady state concentrations were recorded. In addition, during the first monitoring round, all wells were screened with a PID to establish if there are any interferences and cross-sensitivity of other hydrocarbons with the infrared gas meter.

Low flow groundwater sampling

Groundwater samples were retrieved using a United States Environment Protection Agency (USEPA) approved low-flow purging and sampling methodology.

The low-flow method relies on moving groundwater through the well screen at approximately the same rate as it flows through the geological formation. This results in a significant reduction in the volume of water extracted before sampling and significantly reduces the amount of disturbance of the water in the monitoring well during purging and sampling. Drawdown levels in the monitoring well and water quality indicator parameters (pH, temperature, electrical conductivity, redox potential and dissolved oxygen) are monitored during low-flow purging and sampling, with stabilisation indicating that purging is complete and sampling can begin. As the flow rate used for purging, in most cases, is the same or only slightly higher than the flow rate used for sampling, and because purging and sampling are conducted as one continuous operation in the field, the process is referred to as low-flow purging and sampling.

H3 Site Investigation Methodology

Statistical assessment

Statistical analysis of the results has been conducted in accordance with *Guidance on Comparing Soil Contamination Data with a Critical Concentration* (CIEH and CL:AIRE, 2008) as detailed in Appendix D.

Statistical analysis is utilised to establish whether the land is suitable for the proposed use under the land use planning system by attempting to answer a key question. For a site being developed the key question is: '*can we confidently say that the level of contamination on this land is low relative to some appropriate measure of risk?*' More specifically, this is expressed as '*Is there sufficient evidence that the true mean concentration of the contaminant (μ) is less than the critical concentration (C_c)?*', where the critical concentration could be the GAC or a site-specific assessment criterion (SSAC). The true mean (μ) is unknown and therefore a conservative estimate, termed the upper confidence limit (UCL), of this value is derived from the data. The UCL is then compared against the GAC.

In statistical terms the question above is handled through the use of a formal hypothesis – the null hypothesis and the alternate hypothesis. The statistical tests are structured to show (with a defined level of confidence, in this case 95%) which of the two hypotheses is most likely to be true, by determining whether the null hypothesis can be rejected.

For consideration under the planning regime, the null (H_0) and alternative (H_1) hypotheses are presented below.

Null and alternative hypotheses

Hypothesis	Equation	Description
Null (H_0)	$\mu \geq C_c$	The true mean concentration is equal to, or greater than, the critical concentration
Alternative (H_1)	$\mu < C_c$	The true mean concentration is less than the critical concentration

Therefore, if the null hypothesis is accepted for a certain contaminant it can be concluded that its concentration is high relative to the critical concentration, which in the case of this assessment is taken to be the GAC/SSAC and as such the whole site may be classed as being contaminated by a particular substance.

In addition, the statistical guidance provides an outlier test (Grubbs' test) that has been used within this assessment for the identification of 'outliers' or 'hotspots'. The 'outlier' test is conducted before undertaking statistical analysis (and 'outliers' may be removed from the dataset) but **only** where the conceptual model supports this.

The statistical tests applied to the dataset are selected based on whether the data is normally or non-normally distributed. The distribution of the dataset has been assessed using the Shapiro-Wilks normality test. Where the dataset has been found to be normally distributed the one sample t-test is undertaken. Where data has been found to be non-normally distributed Chebyshev's theorem is utilised.

Reuse of suitable materials

The Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011) (CoP) was developed in cons**u**ltation with the Environment Agency and development industry to enable the re-use of materials under certain scenarios and subject to demonstrating that specific criteria are met. The current reuse scenarios covered by the CoP comprise

- reuse on the site of origin (with or without treatment)
- direct transfer of clean and natural soils between sites
- use in the development of land other than the site of origin following treatment at an authorised Hub site (including a fixed soil treatment facility).

The importation of made ground soils (irrespective of contamination status) or crushed demolition materials is not permitted currently under the CoP and requires either a standard rules environmental permit or a U1 waste exemption (see below).

In the context of excavated materials used on-sites undergoing development, four factors are considered to be of particular relevance in determining if the material is a waste or when it ceases to be waste:

- the aim of the Waste Framework Directive is not undermined, i.e. if the use of the material will create an unacceptable risk of pollution of the environment or harm to human health it is likely to be waste
- the material is certain to be used
- the material is suitable for use both chemically and geotechnically
- only the required quantity of material will be used.

The CoP requires the preparation of a materials management plan (MMP) that confirms the above factors will be met. This plan needs to be reviewed by a 'Qualified Person' (QP) who will then issue a declaration form to the EA. As the project progresses, data must be collated and on completion a verification report produced that shows the MMP was followed and describes any changes.

The MMP establishes whether specific materials are classified as waste and how excavated materials will be treated and/or reused in line with the CoP. The MMP is likely to form part of the site waste management plan.

APPENDIX H
EXPLORATORY HOLE RECORDS

FINAL

BOREHOLE LOG

Contract:	Client:	Borehole:
Royal College Street, London	**Rocco Ventures Ltd.**	**BH1**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**14.08.19** End: **15.08.19**	**---**	**---**	**1** of **3**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
						MADE GROUND: Concrete.		0.20	
0.25	1	D				MADE GROUND: Brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint, brick, asphalt and concrete.			
0.50		PID	0.2ppm						
0.60	2	D							
1.20-1.65	1	SPT(c)	1,2/2,1,2,1 N=6						
1.50	3	D						(3.20)	
2.00-2.45	2	SPT	2,2/2,2,3,3 N=10						
2.00	4	D							
2.50	5	D							
3.00-3.45	6	U	39 blows						
								3.40	
3.50	7	D				Firm light brown silty CLAY. (LONDON CLAY FORMATION)			
4.00-4.45	3	SPT	3,3/4,5,6,6 N=21			...occasional bands of silt below 4.00m depth.			
4.00	8	D							
4.50	9	D							
5.00-5.45	10	U	56 blows						
5.50	11	D							
6.00-6.45	4	SPT	4,5/4,6,6,7 N=23			...becomes stiff below 6.00m depth.			
6.00	12	D						(6.20)	
7.00	13	D							
7.50-7.95	14	U	69 blows						
8.50	15	D							
9.00-9.45	5	SPT	4,4/5,5,7,8 N=25						
9.00	16	D						9.60	
						Stiff to very stiff, grey silty CLAY. (LONDON CLAY FORMATION)			
10.00	17	D				...occasional pockets of fine selenite crystals below 10.00m depth.			
10.50-10.95	18	U	81 blows						
11.50	19	D				...increase in abundance of thin claystone bands to 20.10m.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
14/08/19	08:00	0.00	-	0	
14/08/19	19:00	11.00	1.70	150	Dry
15/08/19	07:00	11.00	1.70	150	Dry
15/08/19	19:00	30.45	1.70	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)
20.20	20.40	00:33

General Remarks

1. Inspection pit hand dug to 1.20m depth.
2. Down borehole checks for buried ferrous objects carried out during drilling by specialist unexploded ordnance (UXO) officer using magnetometer at regular intervals to 12.00m depth.
3. No groundwater encountered.

All dimensions in metres | Scale: **1:67**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**CJA**	**SAI Hilly**	

FINAL

BOREHOLE LOG

Contract:	Client:	Borehole:
Royal College Street, London	**Rocco Ventures Ltd.**	**BH1**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**14.08.19** End: **15.08.19**	**---**	**---**	**2** of **3**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
12.00-12.45	6	SPT	4,5/6,6,7,8 N=27			Stiff to very stiff, grey silty CLAY. (LONDON CLAY FORMATION) *(stratum copied from 9.60m from previous sheet)*			
12.00	20	D							
13.00	21	D							
13.50-13.95	22	U	91 blows						
14.50	23	D							
15.00-15.45	7	SPT	5,6/7,8,9,9 N=33						
15.00	24	D							
16.00	25	D							
16.50-16.95	26	U	98 blows						
17.50	27	D							
18.00-18.45	8	SPT	7,7/10,12,13,14 N=49			...rare bioturbation noted below 18.00m depth.			
18.00	28	D							
19.00	29	D							
19.50-19.95	30	U	114 blows						
19.50	30	D						(20.85)	
20.50	31	D				...grey claystone band from 20.10m to 20.50m.			
21.00-21.45	9	SPT	7,8/10,12,14,14 N=50						
21.00	32	D							
22.00	33	D							
22.50-22.95	34	U	126 blows						
23.50	35	D							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

4. 50mm diameter water standpipe (complete with flush protective cover) installed to 6.00m depth on completion. Response zone 2.00m to 6.00m.
5. 35mm diameter gas standpipe (complete with flush protective cover) installed to 1.00m depth on completion. Response zone 0.50m

All dimensions in metres | Scale: **1:67**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**CJA**	**SAI Hilly**	

FINAL

BOREHOLE LOG

Contract:	Client:	Borehole:
Royal College Street, London	**Rocco Ventures Ltd.**	**BH1**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**14.08.19** End: **15.08.19**	**---**	**---**	**3** of **3**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
24.00-24.45	10	SPT	8,8/10,11,13,15 N=49			Stiff to very stiff, grey silty CLAY. (LONDON CLAY FORMATION) *(stratum copied from 9.60m from previous sheet)*			
24.00	36	D							
25.00	37	D							
25.50-25.95	38	U	156 blows						
26.50	39	D							
27.00-27.44	11	SPT	8,9/11,13,13,13 for 65mm N=52*						
27.00	40	D							
28.00	41	D							
28.50-28.95	42	U	176 blows						
29.50	43	D							
30.00-30.42	12	SPT	8,10/13,14,15,8 for 45mm N=56*					30.45	
30.00	44	D				Borehole terminated at 30.45m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

to 1.00m.

All dimensions in metres | Scale: **1:67**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**CJA**	**SAI Hilly**	

FINAL

BOREHOLE LOG

Contract:	Client:	Borehole:
Royal College Street, London	**Rocco Ventures Ltd.**	**BH2**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**13.08.19** End: **14.08.19**	**---**	**---**	**1** of **3**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
0.20	1	D				MADE GROUND: Asphalt.		0.08	
0.50	2	D				MADE GROUND: Yellow medium to coarse SAND.		0.15	
0.60		PID	0.2ppm			MADE GROUND: Brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse brick, flint, slate and concrete.		(1.15)	
1.20-1.65	1	SPT	1,2/1,2,2,2 N=7					1.30	
1.20	3	D				Firm light brown silty slightly gravelly CLAY. Gravel is angular to rounded fine to coarse flint, chert and mixed lithology. (POSSIBLE REWORKED LONDON CLAY)		(0.90)	
1.50	4	D							
2.00-2.45	5	U	38 blows					2.20	
2.50	6	D				Firm brown gravelly CLAY. Gravel is angular to rounded fine to coarse flint, chert and mixed lithology. (POSSIBLE REWORKED LONDON CLAY)		(1.10)	
3.00-3.45	2	SPT	3,3/4,3,4,3 N=14					3.30	
3.00	7	D				Firm light brown silty CLAY. (LONDON CLAY FORMATION)			
3.50	8	D							
4.00-4.45	9	U	45 blows						
4.50	10	D				...becomes dark brown grey below 4.50m depth.			
5.00-5.45	3	SPT	4,6/6,10,8,8 N=32						
5.00	11	D							
5.50	12	D						(5.00)	
6.00-6.45	13	U	108 blows						
6.50	14	D							
7.50-7.95	4	SPT	5,6/7,10,9,8 N=34			...becomes stiff below 7.50m depth.			
7.50	15	D						8.30	
8.50	16	D				Stiff to very stiff grey silty CLAY. (LONDON CLAY FORMATION)			
9.00-9.45	17	U	80 blows						
9.50	18	D							
10.50-10.95	5	SPT	5,7/7,8,8,9 N=32						
10.50	19	D							
11.50	20	D							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
13/08/19	08:00	0.00	-	0	
13/08/19	19:00	25.95	3.15	150	Dry
14/08/19	07:30	24.70	3.15	150	Dry
14/08/19	13:30	30.45	3.15	150	Dry

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m depth.
3. Down borehole checks for buried ferrous objects carried out during drilling by specialist unexploded ordnance (UXO) officer using magnetometer at regular intervals to 12.00m

All dimensions in metres | Scale: **1:67**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**CJA**	**SAlhilly**	

FINAL

BOREHOLE LOG

Contract:	Client:	Borehole:
Royal College Street, London	**Rocco Ventures Ltd.**	**BH2**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**13.08.19** End: **14.08.19**	**---**	**---**	**2** of **3**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
12.00-12.45	21	U	125 blows			Stiff to very stiff grey silty CLAY. (LONDON CLAY FORMATION) *(stratum copied from 8.30m from previous sheet)*			
12.50	22	D				...occasional pockets of fine selenite crystals below 12.00m depth.			
13.50-13.95	6	SPT	6,7/7,8,9,9 N=33						
13.50	23	D							
14.50	24	D				...grey claystone band from 14.40m to 14.80m.			
15.00-15.45	25	U	134 blows			...increase in abundance of thin claystone bands from 14.80m to 16.60m.			
15.50	26	D							
16.50-16.82	7	SPT	25/31,9,8,2 for 15mm N=62*			...grey claystone band from 16.60m to 16.90m.			
16.50	27	D							
17.50	28	D							
18.00-18.45	29	U	116 blows						
19.00	30	D						(22.15)	
19.50-19.95	8	SPT	9,10/10,11,12,17 for 70mm N=51*						
19.50	31	D				...occasional pockets and bands of silt below 20.00m depth.			
20.50	32	D							
21.00-21.45	33	U	119 blows						
22.00	34	D							
22.50-22.95	9	SPT	8,9/10,11,13,13 N=47						
22.50	35	D							
23.00	36	D							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

depth.
4. No groundwater encountered.
5. 50mm diameter water standpipe (complete with flush protective cover) installed to 6.00m depth on completion. Response zone 2.00m to 6.00m depth.
6. 35mm diameter gas standpipe (complete with

All dimensions in metres | Scale: **1:67**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**CJA**	**SAlhilly**	

FINAL

BOREHOLE LOG

Contract:	Client:	Borehole:
Royal College Street, London	**Rocco Ventures Ltd.**	**BH2**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**13.08.19** End: **14.08.19**	**---**	**---**	**3** of **3**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
24.00-24.45	37	U	125 blows			Stiff to very stiff grey silty CLAY. (LONDON CLAY FORMATION) *(stratum copied from 8.30m from previous sheet)*			
24.50	38	D							
25.50-25.95	10	SPT	8,10/10,12,12,14 N=48						
25.50	39	D							
26.00	40	D							
27.00-27.45	41	U	139 blows						
28.00	42	D							
28.50-28.91	11	SPT	8,11/13,15,15,7 for 30mm N=59*						
28.50	43	D							
29.50	44	D							
30.00-30.37	12	SPT	10,14/17,16,17 for 70mm N=68*					30.45	
30.00	45	D				Borehole terminated at 30.45m depth.			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

flush protective cover) installed to 1.00m depth on completion. Response zone 0.50m to 1.00m depth.

All dimensions in metres | Scale: **1:67**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 2000**	**CJA**	**SAlhilly**	

FINAL

TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Royal College Street, London	**Rocco Ventures Ltd.**	**TP1**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**15.08.19**	**---**	**---**	**1** of **1**
	End: **15.08.19**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						MADE GROUND: Asphalt:		0.08	
0.50 0.50	1	ES PID	0.0ppm			MADE GROUND: Grey brown very gravelly medium to coarse SAND. Gravel is angular to subrounded fine to coarse brick, flint, concrete, slate, tiles and asphalt.		(1.12)	
						Trial pit terminated at 1.20m depth.		1.20	

General Remarks

1. Checks for buried ferrous objects carried out during excavation by specialist unexploded ordnance (UXO) officer using magnetometer.
2. Trial pit remained stable during excavation.
3. No groundwater encountered.
4. Ease of trial pit excavation: easy.
5. On completion, trial pit backfilled with arisings.

All dimensions in metres | Scale: **1:11**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**SAlhilly**	

FINAL

TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Royal College Street, London	**Rocco Ventures Ltd.**	**TP2**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**15.08.19**	**---**	**---**	**1** of **1**
	End: **16.08.19**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						MADE GROUND: Concrete.		(0.15) 0.15	
0.50 0.50	1	ES PID	0.2ppm			MADE GROUND: Light yellow brown very gravelly medium to corse SAND. Gravel is subangular to subrounded fine to coarse flint and rare fragments of brick.		(1.27) 1.42	
						Trial pit terminated at 1.42m depth.			

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Checks for buried ferrous objects carried out during excavation by specialist unexploded ordnance (UXO) officer using magnetometer.
3. Trial pit remained stable during excavation.
4. No groundwater encountered.
5. Ease of trial pit excavation: difficult.
6. On completion, trial pit backfilled with arisings.

All dimensions in metres | Scale: **1:11**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**SAlhilly**	

FINAL

TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Royal College Street, London	**Rocco Ventures Ltd.**	**TP3**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**15.08.19**	**---**	**---**	**1** of **1**
	End: **15.08.19**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						MADE GROUND: Asphalt.		0.09	
						MADE GROUND: Pink gravelly medium to coarse SAND. Gravel is angular to subangular fine to coarse roadstone.		0.15	
						MADE GROUND: Yellow medium to coarse SAND.		(0.15)	
								0.30	
0.30 0.30	1	ES PID	0.3ppm			MADE GROUND: Grey brown gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse flint, brick, concrete slate and asphalt.		(0.25)	
								0.55	
0.60 0.60	2	ES PID	0.0ppm			MADE GROUND: Dark brown grey slightly clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse flint, brick, concrete and slate.		(0.27)	
								0.82	
						Trial pit terminated at 0.82m depth.			

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Checks for buried ferrous objects carried out during excavation by specialist unexploded ordnance (UXO) officer using magnetometer.
3. Trial pit remained stable during excavation.
4. No groundwater encountered.
5. Ease of trial pit excavation: easy.
6. On completion, trial pit backfilled with arisings.

All dimensions in metres | Scale: **1:11**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**SAlhilly**	

FINAL

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Royal College Street, London	**Rocco Ventures Ltd.**	**WS1**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**15.08.19**	**---**	**---**	**1** of **1**
	End: **15.08.19**			

Progress	Samples / Tests				Water	Backfill	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results						
	0.04		PID	0.7ppm			MADE GROUND: Concrete (slab).		0.25	
	0.40	1	ES	TXJXV			MADE GROUND: Brown very gravelly medium to coarse SAND. Gravel is angular to subangular fine to coarse flint and concrete.		0.50	
							Trial pit terminated at 0.50m depth.			

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Checks for buried ferrous objects carried out during excavation by specialist unexploded ordnance (UXO) officer using magnetometer.
2. Trial pit remained stable during excavation.
3. No groundwater encountered.
4. Ease of trial pit excavation: moderate.
5. On completion, trial pit backfilled with arisings.

All dimensions in metres | Scale: **1:36**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Archway Competitor 130**	**GEH Groundworks**	**SAI Hilly**	

FINAL

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Royal College Street, London	**Rocco Ventures Ltd.**	**WS2**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**15.08.19**	**---**	**---**	**1** of **1**
	End: **15.08.19**			

Progress	Samples / Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Window Run	Depth	No	Type	Results						
							MADE GROUND: Reinforced concrete (200mm spacing rebar mesh - 10mm diameter).		0.20	
	0.30 0.30	1	ES PID	TXJXV 0.4ppm			MADE GROUND: Light brown gravelly medium to coarse SAND. Gravel is angular to subangular fine to coarse flint, brick and concrete. Occasional cobbles of brick and concrete.		0.50 (0.70)	
	0.80 0.80	2	ES PID	TXJXV 0.3ppm			MADE GROUND: Dark grey brown / black slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse brick, flint, concrete, chalk and black ash.		1.20	
1.20 - 2.00 (115mm dia) 100% rec	1.20-1.65	1	SPT	1,1/1,1,1,1 N=4			Firm light brown silty slightly gravelly CLAY. Gravel is angular to subangular fine to coarse mixed lithology. (POSSIBLE REWORKED LONDON CLAY)		(1.30)	
	1.40 1.40 1.60	3 4	ES PID D	TXJXV 0.2ppm			...becoming stiff below 2.00m depth.		2.50	
2.00 - 3.00 (98mm dia) 100% rec	2.00-2.45	2	SPT	2,2/2,3,3,2 N=10			Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse mixed lithology. (POSSIBLE REWORKED LONDON CLAY)		(0.50)	
	2.30 2.80	6 7	D D				Stiff light brown silty CLAY. (LONDON CLAY FORMATION)		3.00	
3.00 - 4.00 (85mm dia) 100% rec	3.00-3.45	3	SPT	3,3/3,3,4,4 N=14					(1.00)	
	3.50	8	D				Borehole terminated at 4.00m depth on recommendation of UXO specialist due to abnormal high reading on magnetometer.		4.00	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m depth.
3. Down borehole checks for buried ferrous objects carried out during drilling by specialist unexploded ordnance (UXO) officer using magnetometer at regular intervals to 4.00m depth.
4. No groundwater encountered.
5. On completion, borehole backfilled with arisings.

All dimensions in metres | Scale: **1:36**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Archway Competitor 130**	**GEH Groundworks**	**SAlhilly**	

FINAL

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Royal College Street, London	**Rocco Ventures Ltd.**	**WS3**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**15.08.19**	**---**	**---**	**1** of **2**
	End: **15.08.19**			

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results						
							MADE GROUND: Asphalt.		0.08	
							MADE GROUND: Yellow medium to coarse SAND.		0.15	
	0.40	1	ES	TxVxJ					(0.55)	
	0.40		PID	3.7ppm			MADE GROUND: Grey brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse brick, flint, concrete, slate and rare shell fragments. Occasional cobbles of brick and concrete.		0.70	
	0.80	2	ES	TxVxJ						
	0.80		PID	146.6ppm					1.00	
	1.20-1.65	1	SPT	2,1/2,2,2,2 N=8			MADE GROUND: Dark grey black brown slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse brick and flint. Strong hydrocarbon odour noted.			
1.20 - 2.00 (115mm dia) 100% rec	1.20	3	ES	TxVxJ			Firm grey brown with dark grey / black staining silty CLAY. (LONDON CLAY FORMATION)			
	1.20		PID	52.9ppm						
	1.50	4	D							
	1.50		PID	10.2ppm						
	2.00-2.45	2	SPT	2,2/2,3,3,3 N=11			...black staining stops at 2.10m depth.			
2.00 - 3.00 (98mm dia) 100% rec	2.30	5	ES	TxVxJ						
	2.30		PID	35.0ppm						
	2.50	6	D							
	2.50		PID	2.9ppm						
	3.00-3.45	3	SPT	3,2/3,3,3,2 N=11			...becomes slightly sandy with rare bands and pockets of fine sand below 3.00m depth.		(4.45)	
3.00 - 4.00 (85mm dia) 100% rec	3.50	7	D							
	3.50		PID	2.3ppm						
	4.00-4.45	4	SPT	3,3/3,3,3,3 N=12						
4.00 - 5.00 (75mm dia) 100% rec	4.50	8	D							
	4.50		PID	1.6ppm						
	5.00-5.45	5	SPT	4,4/4,4,4,4 N=16					5.45	
							Borehole terminated at 5.45m depth.			

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m depth.
3. Down borehole checks for buried ferrous objects carried out during drilling by specialist unexploded ordnance (UXO) officer using magnetometer at regular intervals to 4.00m depth.
4. No groundwater encountered.
5. 35mm diameter standpipe piezometer (complete with flush protective cover)

All dimensions in metres | Scale: **1:36**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**GEH Groundworks**	**SAI Hilly**	

FINAL

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Royal College Street, London	**Rocco Ventures Ltd.**	**WS3**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
371944	**15.08.19**	**---**	**---**	**2** of **2**
	End: **15.08.19**			

Progress	Samples / Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Window Run	Depth	No	Type	Results						

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

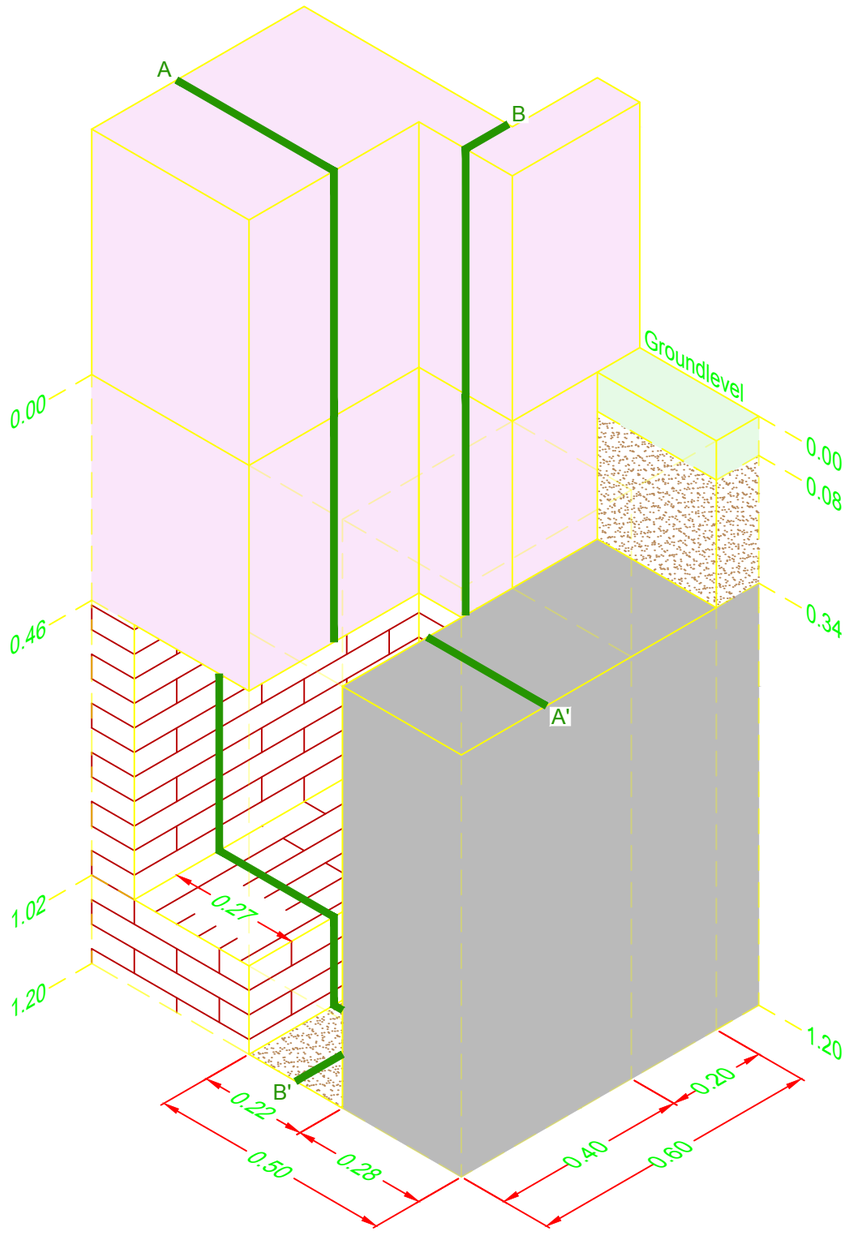
General Remarks

installed to 1.00m depth on completion. Response zone 0.50m to 1.00m.

All dimensions in metres | Scale: **1:36**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window sampling	**Dando Terrier**	**GEH Groundworks Specialists**	**SAI Hilly**	

Isometric Plan view:
(1:12.5)



Scale 1 : 12.5
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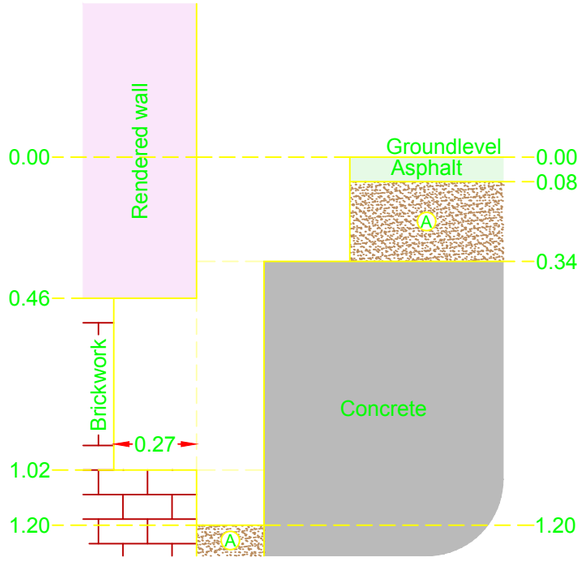
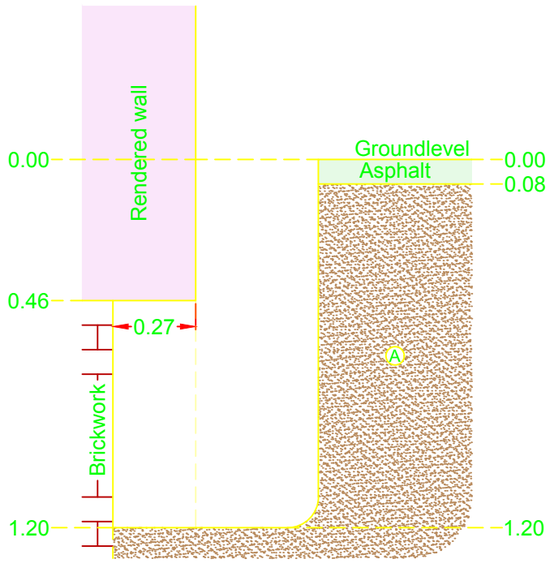
Section A-A':
(1:20)



Scale 1 : 20
0 200 400 600 800 1000 1200 1400 1600 1800 2000mm

Section B-B':
(1:20)



Scale 1 : 20
0 200 400 600 800 1000 1200 1400 1600 1800 2000mm

LEGEND

- Section Line
- Brick
- Concrete
- Asphalt
- Rendered Wall
- A: Made Ground: Grey brown very gravelly medium to coarse SAND. Gravel is angular to subrounded fine to coarse brick, flint, concrete, slate, tiles and asphalt.

Rev.	Date	Amendment	Drawn	Chkd.	Appd.

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Client
ROCCO VENTURES LTD

Project Title
60-86 ROYAL
COLLEGE STREET,
LONDON

Drawing Title
TRIAL PIT
DIAGRAM
(TRIAL PIT 1)

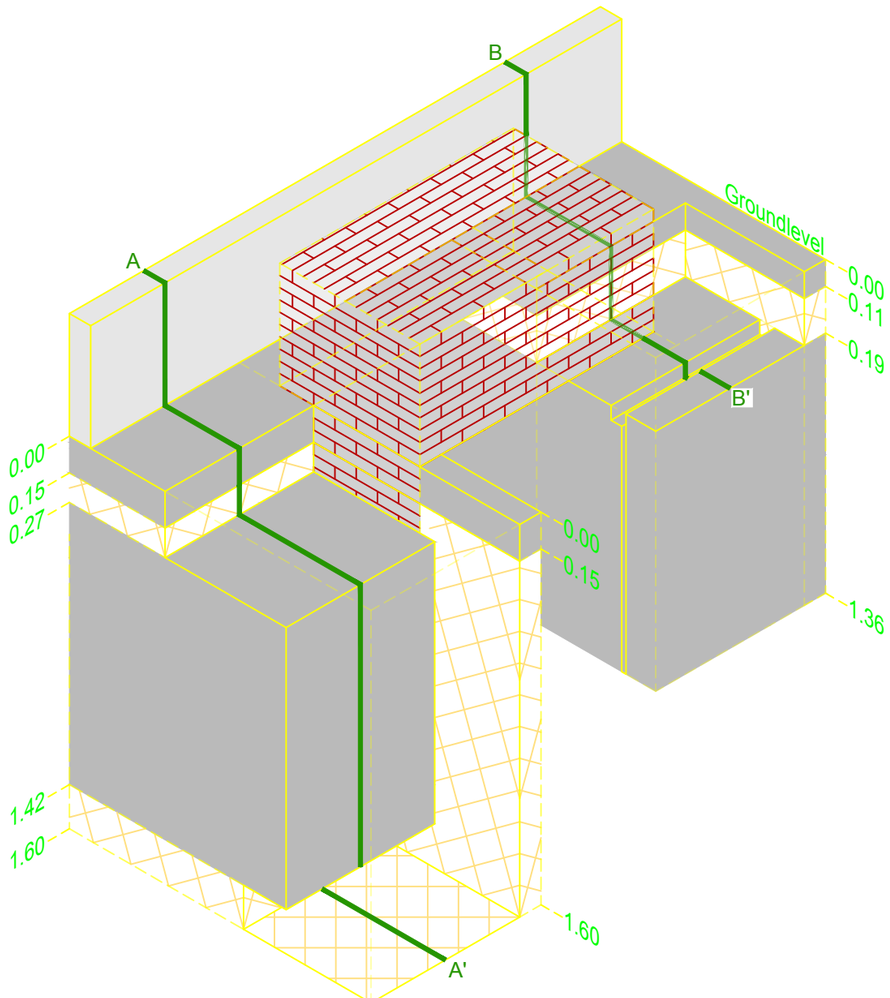
Drawn	Date	Checked	Date	Approved	Date
ASC	28.08.19	AT	28.08.19	AT	19.09.19

Scale	Orig Size	Dimensions
AS SHOWN	A3	m

Project No.	Drawing File
371944 - R01 (00)	Trial Pit Sections 371944.dwg

Drawing No.	Rev.
TP1	P1

Isometric Plan view:
(1:25)



Scale 1 : 25

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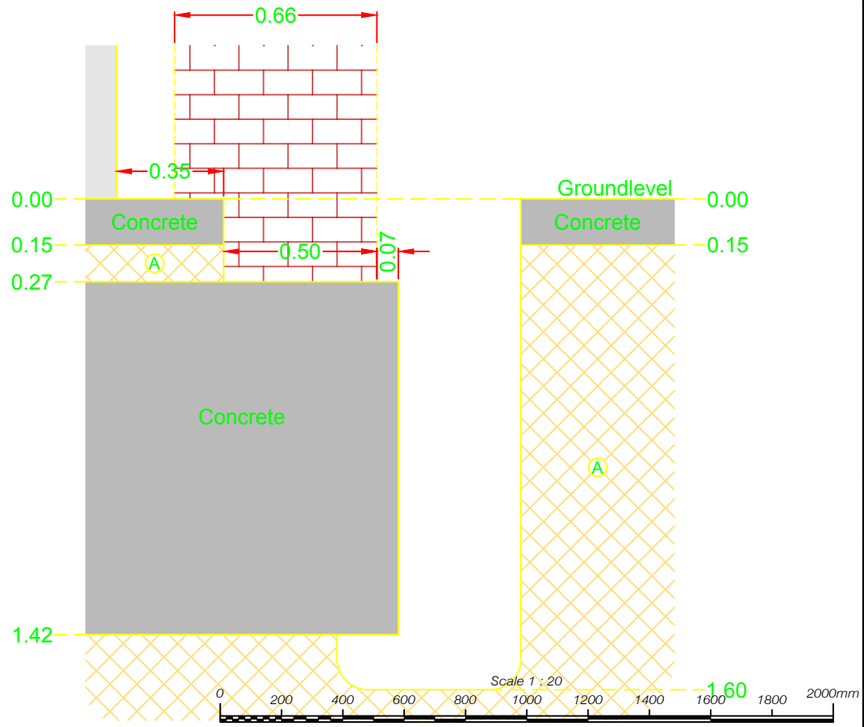
Section A-A':
(1:20)



Scale 1 : 20

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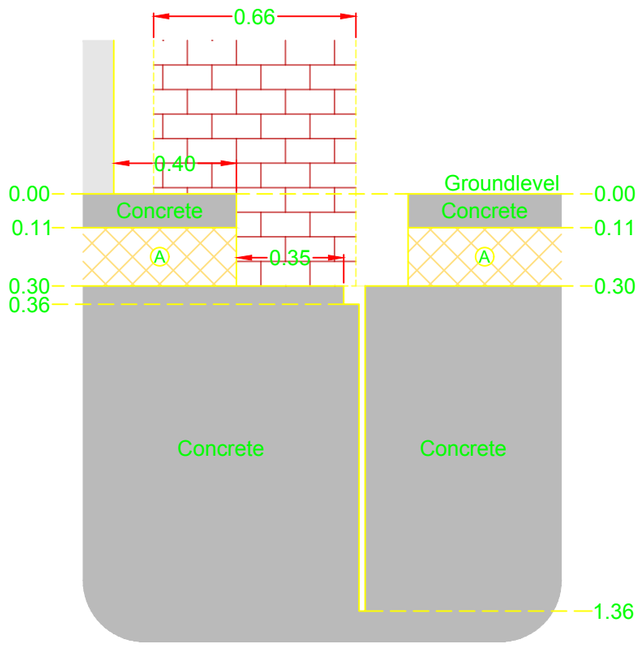
Section B-B':
(1:20)



Scale 1 : 20

0 200 400 600 800 1000 1200 1400 1600 1800 2000mm

LEGEND

- Section Line
- Brick
- Concrete
- Metal Shutter
- A — Made Ground: Light yellow brown very gravelly medium to corse SAND. Gravel is subangular to subrounded fine to coarse flint and rare fragments of brick.

Rev.	Date	Amendment	Drawn	Chkd.	Appd.

RSK

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Client

ROCCO VENTURES LTD

Project Title

60-86 ROYAL
COLLEGE STREET,
LONDON,

Drawing Title

TRIAL PIT
DIAGRAM
(TRIAL PIT 2)

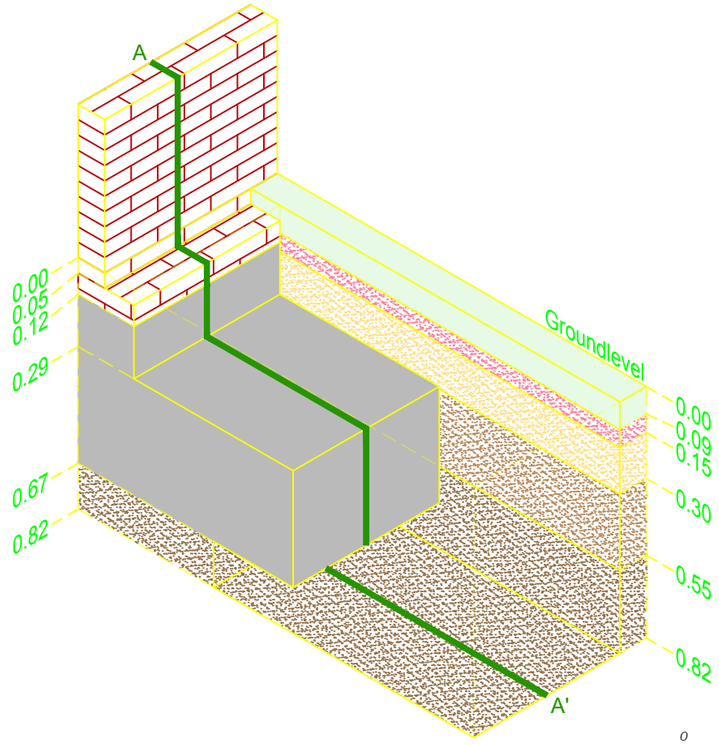
Drawn	Date	Checked	Date	Approved	Date
ASC	28.08.19	AT	28.08.19	AT	19.09.19

Scale	Orig Size	Dimensions
AS SHOWN	A3	m

Project No.	Drawing File
371944 - R01 (00)	Trial Pit Sections 371944.dwg

Drawing No.	Rev.
TP2	P1

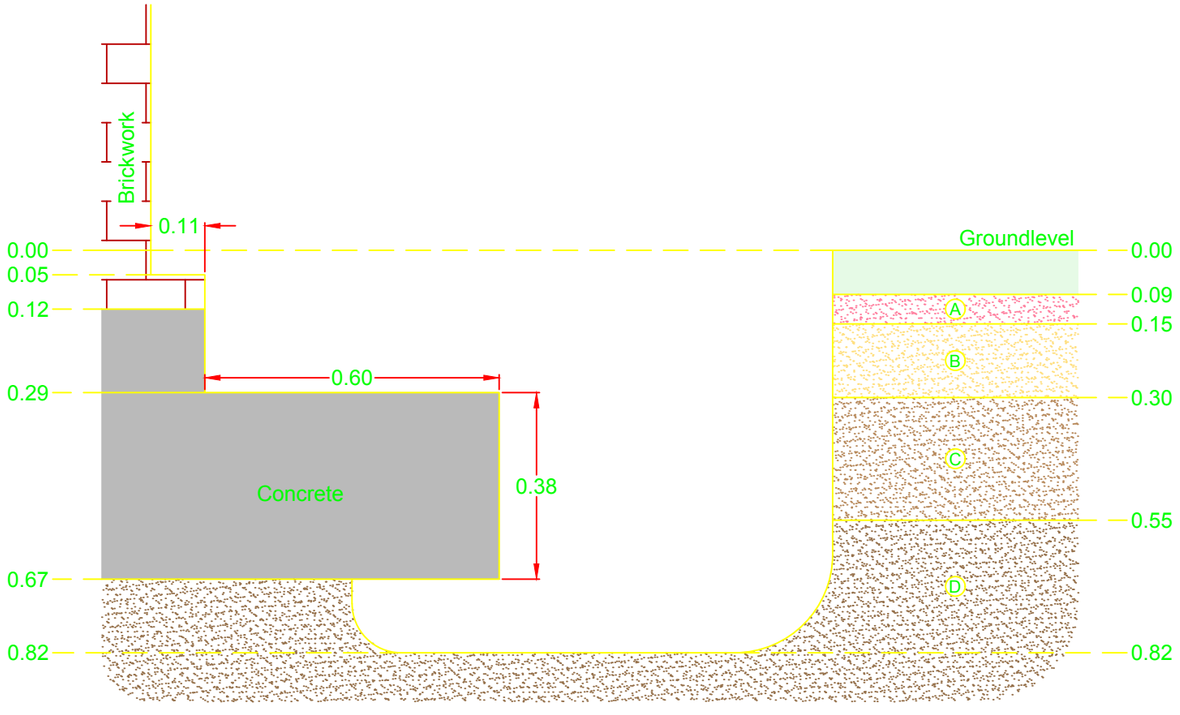
Isometric Plan view:
(1:20)



Scale 1 : 20

0 200 400 600 800 1000 1200 1400 1600 1800 2000mm

Section A-A':
(1:12.5)



Scale 1 : 12.5

0 100 200 300 400 500 600 700 800 900 1000mm

LEGEND

- Section Line
- Brick
- Concrete
- Asphalt
- A: Made Ground: Pink gravelly medium to coarse SAND. Gravel is angular to subangular fine to coarse roadstone.
- B: Made Ground: Yellow medium to coarse SAND.
- C: Made Ground: Grey brown gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse flint, brick, concrete slate and asphalt.
- D: Made Ground: Dark brown grey slightly clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse flint, brick, concrete and slate.

Rev.	Date	Amendment	Drawn	Chkd.	Appd.

RSK

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Client
ROCCO VENTURES LTD

Project Title
60-86 ROYAL
COLLEGE STREET,
LONDON,

Drawing Title
TRIAL PIT
DIAGRAM
(TRIAL PIT 3)

Drawn	Date	Checked	Date	Approved	Date
ASC	28.08.19	AT	28.08.19	AT	19.09.19

Scale	Orig Size	Dimensions
AS SHOWN	A3	m

Project No.	Drawing File
371944 - R01 (00)	Trial Pit Sections 371944.dwg

Drawing No.	Rev.
TP3	P1

RSK ENVIRONMENT LTD

STANDARD PENETRATION TEST SUMMARY TABLE

Contract:		Client:		Contract ref:
Royal College Street, London		**Rocco Ventures Ltd.**		**371944**

Exploratory Position ID	Depth (m)	Seating Drive		Test Drive			Comments
		Blows	Pen (mm)	Blows	R (mm)	Result	
BH1	1.20	1,2	150	2,1,2,1		1,2/2,1,2,1	SPT(c)
						N=6	
	2.00	2,2	150	2,2,3,3		2,2/2,2,3,3	
						N=10	
	4.00	3,3	150	4,5,6,6		3,3/4,5,6,6	
						N=21	
	6.00	4,5	150	4,6,6,7		4,5/4,6,6,7	
						N=23	
	9.00	4,4	150	5,5,7,8		4,4/5,5,7,8	
						N=25	
	12.00	4,5	150	6,6,7,8		4,5/6,6,7,8	
						N=27	
	15.00	5,6	150	7,8,9,9		5,6/7,8,9,9	
						N=33	
	18.00	7,7	150	10,12,13,14		7,7/10,12,13,14	
						N=49	
	21.00	7,8	150	10,12,14,14		7,8/10,12,14,14	
						N=50	
	24.00	8,8	150	10,11,13,15		8,8/10,11,13,15	
						N=49	
	27.00	8,9	150	11,13,13,13+	290	8,9/11,13,13,13	
						for 65mm	
						N=52*	
	30.00	8,10	150	13,14,15,8+	270	8,10/13,14,15,8	
						for 45mm	
						N=56*	
BH2	1.20	1,2	150	1,2,2,2		1,2/1,2,2,2	
						N=7	
	3.00	3,3	150	4,3,4,3		3,3/4,3,4,3	
						N=14	
	5.00	4,6	150	6,10,8,8		4,6/6,10,8,8	
						N=32	

Notes:
1. **Tests carried out in general accordance with BS EN ISO 22476-3:2005**
2. **Reported blows are for 75mm penetration unless indicated "+".**
3. **Where full test drive was not achieved, actual penetration (R) and extrapolated N value (N*) reported.**
4. **Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.**

AGS

RSK ENVIRONMENT LTD

STANDARD PENETRATION TEST SUMMARY TABLE

Contract:		Client:		Contract ref:
Royal College Street, London		**Rocco Ventures Ltd.**		**371944**

Exploratory Position ID	Depth (m)	Seating Drive		Test Drive			Comments
		Blows	Pen (mm)	Blows	R (mm)	Result	
BH2	7.50	5,6	150	7,10,9,8		5,6/7,10,9,8	
						N=34	
	10.50	5,7	150	7,8,8,9		5,7/7,8,8,9	
						N=32	
	13.50	6,7	150	7,8,9,9		6,7/7,8,9,9	
						N=33	
	16.50	25,0	75	31,9,8,2+	240	25/31,9,8,2	
						for 15mm	
						N=62*	
	19.50	9,10	150	10,11,12,17+	295	9,10/10,11,12,17	
						for 70mm	
						N=51*	
	22.50	8,9	150	10,11,13,13		8,9/10,11,13,13	
						N=47	
	25.50	8,10	150	10,12,12,14		8,10/10,12,12,14	
						N=48	
	28.50	8,11	150	13,15,15,7+	255	8,11/13,15,15,7	
						for 30mm	
						N=59*	
	30.00	10,14	150	17,16,17+,0+	220	10,14/17,16,17	
						for 70mm	
						N=68*	
WS2	1.20	1,1	150	1,1,1,1		1,1/1,1,1,1	
						N=4	
	2.00	2,2	150	2,3,3,2		2,2/2,3,3,2	
						N=10	
	3.00	3,3	150	3,3,4,4		3,3/3,3,4,4	
						N=14	
WS3	1.20	2,1	150	2,2,2,2		2,1/2,2,2,2	
						N=8	
	2.00	2,2	150	2,3,3,3		2,2/2,3,3,3	
						N=11	

Notes:
1. **Tests carried out in general accordance with BS EN ISO 22476-3:2005**
2. **Reported blows are for 75mm penetration unless indicated "+".**
3. **Where full test drive was not achieved, actual penetration (R) and extrapolated N value (N*) reported.**
4. **Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.**

AGS

STANDARD PENETRATION TEST SUMMARY TABLE

Contract:		Client:		Contract ref:
Royal College Street, London		**Rocco Ventures Ltd.**		**371944**

Exploratory Position ID	Depth (m)	Seating Drive		Test Drive			Comments
		Blows	Pen (mm)	Blows	R (mm)	Result	
WS3	3.00	3,2	150	3,3,3,2		3,2/3,3,3,2	
						N=11	
	4.00	3,3	150	3,3,3,3		3,3/3,3,3,3	
						N=12	
	5.00	4,4	150	4,4,4,4		4,4/4,4,4,4	
						N=16	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and extrapolated N value (N*) reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.

Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd
5-8 victory parkway
victory road
Derby
DE24 8ZF

Hammer Ref:	CJ08
Test Date:	07/06/2019
Report Date:	07/06/2019
File Name:	CJ08.spt
Test Operator:	TP

Instrumented Rod Data

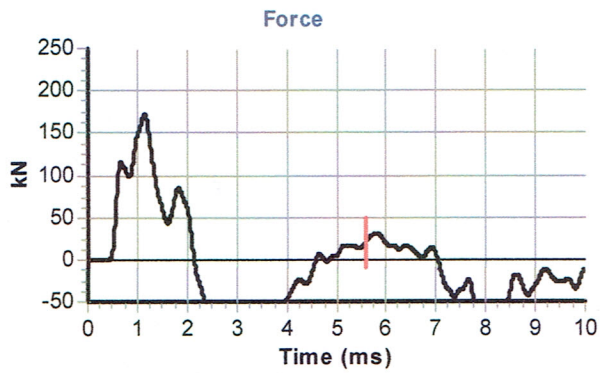
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	9603
Accelerometer No.2:	6457

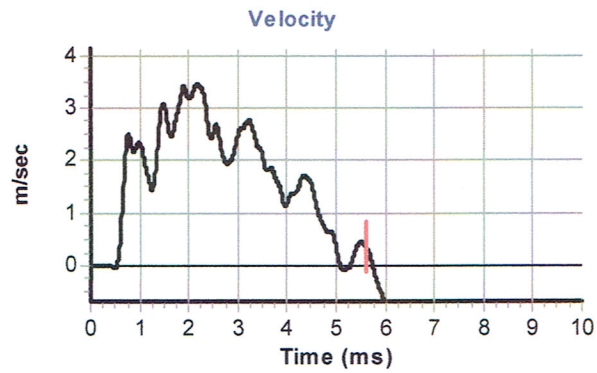
Hammer Information

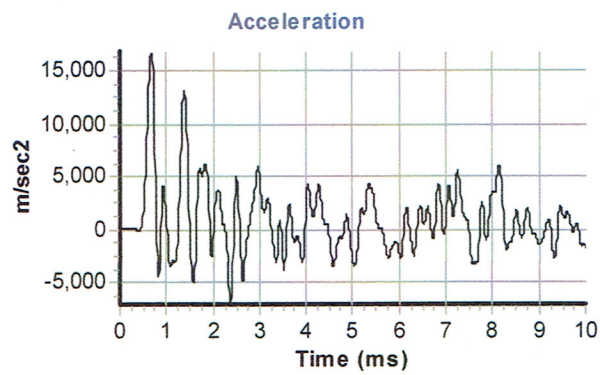
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
String Length L (m):	15.0

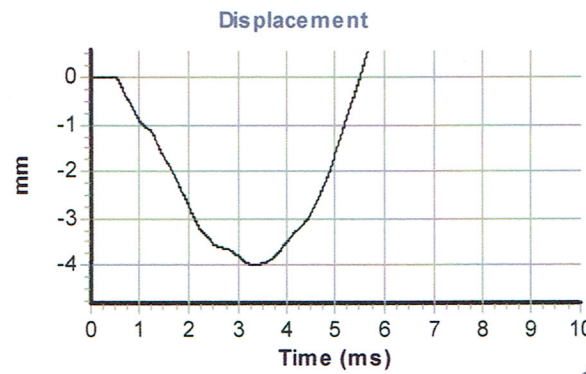
Comments / Location

CJ associates hammer tested at Dynamic samplings yard.





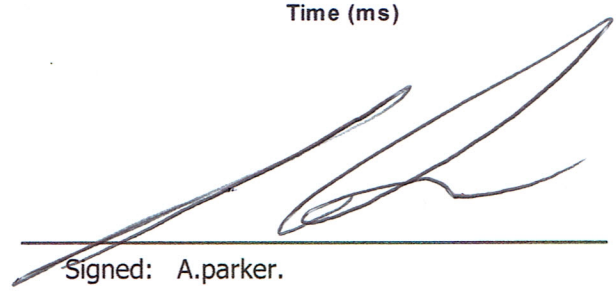




Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	317

Energy Ratio E_r (%): **67**



Signed: A.parker.

Title: Associate Director.

The recommended calibration interval is 12 months

APPENDIX I
GROUND GAS MONITORING DATA

IN-SITU GAS MONITORING RESULTS

	Start Date	End Date	Pressures Previous	Pressures During	Pressures Start	Pressures End	Equipment Used & Remarks
Round 1	23/08/19	23/08/19	-	-	1024	1024	
Round 2	02/09/19	02/09/19	-	-	1021	1022	
Round 3	18/09/19	18/09/19	-	-	10127	-	

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH1	2	35	1	1.00	1.00	0.50 to 1.00	30/12/1899 00:00:15	-	1024	-	DRY	0.3	0.0	20.4	0.0	-	-	-
BH1	2	35	1		1.00	0.50 to 1.00	30 secs	-	1024	-	DRY	0.3	0.0	20.2	0.0	-	-	-
BH1	2	35	1		1.00	0.50 to 1.00	60 secs	-	1024	-	DRY	0.4	0.0	19.9	0.0	-	-	-
BH1	2	35	1		1.00	0.50 to 1.00	90 secs	-	1024	-	DRY	0.5	0.0	19.7	0.0	-	-	-
BH1	2	35	1		1.00	0.50 to 1.00	120 secs	-	1024	-	DRY	0.5	0.0	19.7	0.0	-	-	-
BH1	2	35	1		1.00	0.50 to 1.00	150 secs	-	1024	-	DRY	0.5	0.0	19.7	0.0	-	-	-
BH1	2	35	1	1.00	1.00	0.50 to 1.00	23/08/2019 12:00:00	-	1024	$0.0_{(SS)}$	DRY	0.3	0.0	20.7	0.0	-	-	-
BH1	1	50	2	6.00	5.64	2.00 to 6.00	02/09/2019 10:09:00	-	1022	$0.0_{(SS)}$	3.31	0.1	0.0	20.9	0.0	0.3	0	0
BH1	1	50	2		5.64	2.00 to 6.00	15 secs	-	1022	-	3.31	0.6	0.0	20.3	0.0	0.3	0	0
BH1	1	50	2		5.64	2.00 to 6.00	30 secs	-	1022	-	3.31	0.6	0.0	20.0	0.0	0.3	0	0
BH1	1	50	2		5.64	2.00 to 6.00	60 secs	-	1022	-	3.31	0.7	0.0	19.8	0.0	0.3	0	0
BH1	1	50	2		5.64	2.00 to 6.00	90 secs	-	1022	-	3.31	0.8	0.0	19.8	0.0	0.3	0	0
BH1	1	50	2		5.64	2.00 to 6.00	120 secs	-	1022	-	3.31	0.7	0.0	19.8	0.0	0.3	0	0
BH1	1	50	2		5.64	2.00 to 6.00	180 secs	-	1022	-	3.31	0.7	0.0	19.8	0.0	0.3	0	0
BH1	1	50	2		5.64	2.00 to 6.00	240 secs	-	1022	-	3.31	0.7	0.0	19.8	0.0	0.3	0	0
BH1	1	50	2		5.64	2.00 to 6.00	300 secs	-	1022	-	3.31	0.7	0.0	19.8	0.0	0.3	0	0
BH1	1	50	3	6.00	5.82	2.00 to 6.00	18/09/2019 12:38:00	-	1029	$0.0_{(I)}$	2.69	0.1	0.0	20.9	-	0.2	0	0
BH1	1	50	3		---	2.00 to 6.00	15 secs	-	-	$0.0_{(SS)}$	-	0.3	0.0	20.6	-	-	0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

RSK Environment Ltd
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date	Checked By	Date	Contract Ref:
A. Fyfe	19/09/19			371944

Contract: **Royal College Street, London**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH1	1	50	3		---	2.00 to 6.00	30 secs	-	-	-	-	0.4	0.0	20.3	-	-	0	0
BH1	1	50	3		---	2.00 to 6.00	60 secs	-	-	-	-	0.7	0.0	20.0	-	-	0	0
BH1	1	50	3		---	2.00 to 6.00	90 secs	-	-	-	-	0.8	0.0	20.0	-	-	0	0
BH1	1	50	3		---	2.00 to 6.00	120 secs	-	-	-	-	0.8	0.0	20.0	-	-	0	0
BH1	1	50	3		---	2.00 to 6.00	180 secs	-	-	-	-	0.8	0.0	20.0	-	-	0	0
BH1	1	50	3		---	2.00 to 6.00	240 secs	-	-	-	-	0.8	0.0	20.1	-	-	0	0
BH1	1	50	3		---	2.00 to 6.00	300 secs	-	-	-	-	0.7	0.0	20.1	-	-	0	0
BH2	2	35	1	1.00	1.00	0.50 to 1.00	23/08/2019	-	1024	0.0	DRY	0.3	0.0	20.6	0.0	-	-	-
BH2	2	35	1		1.00	0.50 to 1.00	15 secs	-	1024	0.0	DRY	0.3	0.0	20.7	0.0	-	-	-
BH2	2	35	1		1.00	0.50 to 1.00	30 secs	-	1024	0.0	DRY	0.3	0.0	20.7	0.0	-	-	-
BH2	2	35	1		1.00	0.50 to 1.00	60 secs	-	1024	0.0	DRY	0.3	0.0	20.6	0.0	-	-	-
BH2	2	35	1		1.00	0.50 to 1.00	90 secs	-	1024	0.0	DRY	0.3	0.0	20.6	0.0	-	-	-
BH2	2	35	1		1.00	0.50 to 1.00	120 secs	-	1024	0.0	DRY	0.4	0.0	20.6	0.0	-	-	-
BH2	2	35	1		1.00	0.50 to 1.00	150 secs	-	1024	0.0	DRY	0.4	0.0	20.6	0.0	-	-	-
BH2	1	50	2	6.00	5.72	2.00 to 6.00	02/09/2019 09:05:00	-	1021	$0.0_{(I)}$	3.26	0.2	0.0	20.9	0.0	0.3	0	0
BH2	1	50	2		5.72	2.00 to 6.00	15 secs	-	1021	$-0.1_{(SS)}$	3.26	0.2	0.0	20.6	0.0	0.3	0	0
BH2	1	50	2		5.72	2.00 to 6.00	30 secs	-	1021	-	3.26	0.3	0.0	20.5	0.0	0.3	0	0
BH2	1	50	2		5.72	2.00 to 6.00	60 secs	-	1021	-	3.26	0.3	0.0	20.4	0.0	0.3	0	1
BH2	1	50	2		5.72	2.00 to 6.00	90 secs	-	1021	-	3.26	0.4	0.0	20.4	0.0	0.3	0	1
BH2	1	50	2		5.72	2.00 to 6.00	120 secs	-	1021	-	3.26	0.3	0.0	20.4	0.0	0.3	0	1
BH2	1	50	2		5.72	2.00 to 6.00	190 secs	-	1021	-	3.26	0.3	0.0	20.4	0.0	0.3	0	1
BH2	1	50	2		5.72	2.00 to 6.00	240 secs	-	1021	-	3.26	0.3	0.0	20.4	0.0	0.3	0	1
BH2	1	50	2		5.72	2.00 to 6.00	300 secs	-	1021	-	3.26	0.3	0.0	20.4	0.0	0.3	0	1
BH2	1	50	3	6.00	5.94	2.00 to 6.00	18/09/2019 11:57:00	-	1027	$0.0_{(I)}$	3.48	0.1	0.0	20.9	-	-	0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

RSK Environment Ltd
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date	Checked By	Date	Contract Ref:
A. Fyfe	19/09/19			371944

Contract: **Royal College Street, London**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH2	1	50	3		---	2.00 to 6.00	15 secs	-	-	$0.0_{(SS)}$	-	0.1	0.0	20.7	-	-	0	0
BH2	1	50	3		---	2.00 to 6.00	30 secs	-	-	-	-	0.2	0.0	20.6	-	-	0	0
BH2	1	50	3		---	2.00 to 6.00	60 secs	-	-	-	-	0.2	0.0	20.5	-	-	0	1
BH2	1	50	3		---	2.00 to 6.00	90 secs	-	-	-	-	0.2	0.0	20.5	-	-	0	1
BH2	1	50	3		---	2.00 to 6.00	120 secs	-	-	-	-	0.2	0.0	20.5	-	-	0	1
BH2	1	50	3		---	2.00 to 6.00	190 secs	-	-	-	-	0.2	0.0	20.4	-	-	0	1
BH2	1	50	3		---	2.00 to 6.00	240 secs	-	-	-	-	0.2	0.0	20.3	-	-	0	1
BH2	1	50	3		---	2.00 to 6.00	300 secs	-	-	-	-	0.2	0.0	20.3	-	-	0	1
WS2	1	35	2	1.00	0.80	0.50 to 1.00	02/09/2019 09:52:00	-	1022	$0.0_{(SS)}$	DRY	0.1	0.0	20.9	0.0	0.0	0	0
WS2	1	35	2		0.80	0.50 to 1.00	15 secs	-	1022	-	DRY	0.1	0.0	19.8	0.0	0.0	1	0
WS2	1	35	2		0.80	0.50 to 1.00	30 secs	-	1022	-	DRY	0.0	0.0	19.2	0.0	0.0	1	0
WS2	1	35	2		0.80	0.50 to 1.00	60 secs	-	1022	-	DRY	0.0	0.0	19.1	0.0	0.0	1	0
WS2	1	35	2		0.80	0.50 to 1.00	90 secs	-	1022	-	DRY	0.0	0.0	19.1	0.0	0.0	1	0
WS2	1	35	2		0.80	0.50 to 1.00	120 secs	-	1022	-	DRY	0.0	0.0	19.2	0.0	0.0	1	0
WS2	1	35	2		0.80	0.50 to 1.00	180 secs	-	1022	-	DRY	0.0	0.0	19.2	0.0	0.0	1	0
WS2	1	35	2		0.80	0.50 to 1.00	240 secs	-	1022	-	DRY	0.0	0.0	19.2	0.0	0.0	1	0
WS2	1	35	2		0.80	0.50 to 1.00	300 secs	-	1022	-	DRY	0.0	0.0	19.3	0.0	0.0	1	0
WS2	1	35	3	1.00	0.91	0.50 to 1.00	18/09/2019 12:23:00	-	1028	$0.0_{(I)}$	0.91	0.1	0.0	20.9	-	0.1	0	0
WS2	1	35	3		---	0.50 to 1.00	15 secs	-	-	$0.0_{(SS)}$	-	0.0	0.0	18.7	-	-	1	0
WS2	1	35	3		---	0.50 to 1.00	30 secs	-	-	-	-	0.0	0.0	17.4	-	-	1	1
WS2	1	35	3		---	0.50 to 1.00	60 secs	-	-	-	-	0.0	0.0	17.2	-	-	1	1
WS2	1	35	3		---	0.50 to 1.00	90 secs	-	-	-	-	0.0	0.0	17.2	-	-	1	1
WS2	1	35	3		---	0.50 to 1.00	120 secs	-	-	-	-	0.0	0.0	17.2	-	-	1	1
WS2	1	35	3		---	0.50 to 1.00	180 secs	-	-	-	-	0.0	0.0	17.3	-	-	1	1

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

RSK Environment Ltd
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date	Checked By	Date	Contract Ref:
A. Fyfe	19/09/19			371944

Contract: **Royal College Street, London**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS2	1	35	3		---	0.50 to 1.00	240 secs	-	-	-	-	0.0	0.0	17.3	-	-	1	1
WS2	1	35	3		---	0.50 to 1.00	300 secs	-	-	-	-	0.0	0.0	17.4	-	-	1	1
WS3	1	35	1	1.00	1.00	0.50 to 1.00	23/08/2019	-	1024	0.0	DRY	0.5	0.0	20.8	0.0	-	-	-
WS3	1	35	1		1.00	0.50 to 1.00	15 secs	-	1024	0.0	DRY	0.5	0.0	20.1	0.0	-	-	-
WS3	1	35	1		1.00	0.50 to 1.00	30 secs	-	1024	0.0	DRY	0.5	0.0	20.0	0.0	-	-	-
WS3	1	35	1		1.00	0.50 to 1.00	60 secs	-	1024	0.0	DRY	0.6	0.0	19.8	0.0	-	-	-
WS3	1	35	1		1.00	0.50 to 1.00	90 secs	-	1024	0.0	DRY	0.6	0.0	19.7	0.0	-	-	-
WS3	1	35	1		1.00	0.50 to 1.00	120 secs	-	1024	0.0	DRY	0.6	0.0	19.7	0.0	-	-	-
WS3	1	35	1		1.00	0.50 to 1.00	150 secs	-	1024	0.0	DRY	0.6	0.0	19.7	0.0	-	-	-
WS3	1	35	2	1.00	0.81	0.50 to 1.00	02/09/2019 09:37:00	-	1022	$0.0_{(I)}$	DRY	0.1	0.0	20.9	0.0	0.0	0	0
WS3	1	35	2		0.81	0.50 to 1.00	15 secs	-	1022	$0.0_{(SS)}$	DRY	0.9	0.0	19.9	0.0	0.0	1	0
WS3	1	35	2		0.81	0.50 to 1.00	30 secs	-	1022	-	DRY	0.9	0.0	19.4	0.0	0.0	0	0
WS3	1	35	2		0.81	0.50 to 1.00	60 secs	-	1022	-	DRY	1.0	0.0	19.3	0.0	0.0	0	0
WS3	1	35	2		0.81	0.50 to 1.00	90 secs	-	1022	-	DRY	1.0	0.0	19.3	0.0	0.0	0	0
WS3	1	35	2		0.81	0.50 to 1.00	120 secs	-	1022	-	DRY	1.0	0.0	19.3	0.0	0.0	0	0
WS3	1	35	2		0.81	0.50 to 1.00	180 secs	-	1022	-	DRY	1.0	0.0	19.3	0.0	0.0	0	0
WS3	1	35	2		0.81	0.50 to 1.00	240 secs	-	1022	-	DRY	1.0	0.0	19.3	0.0	0.0	0	0
WS3	1	35	2		0.81	0.50 to 1.00	300 secs	-	1022	-	DRY	1.0	0.0	19.4	0.0	0.0	0	0
WS3	1	35	3	1.00	0.99	0.50 to 1.00	18/09/2019 12:09:00	-	1028	$0.0_{(I)}$	0.99	0.1	0.0	20.9	-	-	0	0
WS3	1	35	3		---	0.50 to 1.00	15 secs	-	-	$0.0_{(SS)}$	-	0.7	0.0	20.2	-	-	1	0
WS3	1	35	3		---	0.50 to 1.00	30 secs	-	-	-	-	0.7	0.0	19.9	-	-	0	0
WS3	1	35	3		---	0.50 to 1.00	60 secs	-	-	-	-	0.8	0.0	19.8	-	-	0	0
WS3	1	35	3		---	0.50 to 1.00	90 secs	-	-	-	-	0.8	0.0	19.8	-	-	0	0
WS3	1	35	3		---	0.50 to 1.00	120 secs	-	-	-	-	0.8	0.0	19.7	-	-	0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

RSK Environment Ltd
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date	Checked By	Date	Contract Ref:
A. Fyfe	19/09/19			371944

Contract: **Royal College Street, London**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS3	1	35	3		---	0.50 to 1.00	180 secs	-	-	-	-	0.8	0.0	19.7	-	-	0	0
WS3	1	35	3		---	0.50 to 1.00	240 secs	-	-	-	-	0.7	0.0	19.7	-	-	0	0
WS3	1	35	3		---	0.50 to 1.00	300 secs	-	-	-	-	0.7	0.0	19.7	-	-	0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

RSK Environment Ltd
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date	Checked By	Date
A. Fyfe	19/09/19		

Contract Ref: 371944

Contract: Royal College Street, London

APPENDIX J
LABORATORY CERTIFICATES FOR SOIL ANALYSIS

envirolab
Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	19/07826		
Issue Number:	1	Date:	3-Sep-19

Client: RSK Environment Ltd Hemel
18 Frogmore Road
Hemel Hempstead
Hertfordshire
UK
HP3 9RT

Project Manager:	Andrew Tyler
Project Name:	60 - 86 Royal College Street, London
Project Ref:	371944
Order No:	N/A
Date Samples Received:	20-Aug-19
Date Instructions Received:	20-Aug-19
Date Analysis Completed:	2-Sep-19

Notes - Soil analysis

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

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

If results are in italic font they are associated with such quality control failures and may be unreliable.

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

Predominant Matrix Codes: 1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample

Secondary Matrix Codes: A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis, NDP indicates No Determination Possible and NAD indicates No Asbestos Detected.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Prepared by:

MMarshall

Melanie Marshall
Laboratory Coordinator

Approved by:

Holly Neary-King

Holly Neary-King
Client Manager

envirolab

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

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	19/07826/8				
Client Sample Number				ES1		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				WS3				
Depth to Top				0.4				
Depth to Bottom								
Date Sampled				14/08/2019				
Sample Type				Soil - ES				
Sample Matrix Code				5A				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**9.20**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.57**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.07**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**6.8**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**3.25**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**4.95**		100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**62**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using**		
				mg/l	**mg/kg**	**BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
Arsenic	A-T-025	N	N	0.016	**0.160**	0.5	2	25
Barium	A-T-025	N	N	0.028	**0.280**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.003	**0.030**	0.5	10	70
Copper	A-T-025	N	N	0.038	**0.380**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.005	**0.050**	0.5	10	30
Nickel	A-T-025	N	N	0.003	**0.030**	0.4	10	40
Lead	A-T-025	N	N	0.198	**1.980**	0.5	10	50
Antimony	A-T-025	N	N	0.004	**0.040**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.032	**0.320**	4	50	200
Chloride	A-T-026	N	N	6	**60**	800	15000	25000
Fluoride	A-T-026	N	N	0.4	**4.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	13	**128**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	73	**730**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<0.2	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	6.9				
Conductivity (µS/cm)	A-T-037	N	N	147				
Mass Sample (kg)				0.229				
Dry Matter (%)	A-T-044	N	N	76.3				

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/07826
Issue Number: 1 **Date:** 03 September, 2019

Client:
RSK Environment Ltd Hemel
18 Frogmore Road
Hemel Hempstead
Hertfordshire
UK
HP3 9RT

Project Manager: Andrew Tyler
Project Name: 60 - 86 Royal College Street, London
Project Ref: 371944
Order No: N/A
Date Samples Received: 20/08/19
Date Instructions Received: 20/08/19
Date Analysis Completed: 02/09/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Holly Neary-King
Client Manager

Envirolab Job Number: 19/07826

Client Project Name: 60 - 86 Royal College Street, London

Client Project Ref: 371944

Lab Sample ID	19/07826/1	19/07826/2	19/07826/3	19/07826/4	19/07826/5	19/07826/6	19/07826/7	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES1	ES1	ES1	ES1	ES2	ES3			
Client Sample ID	TP1	BH1	WS1	TP2	WS2	WS2	WS2			
Depth to Top	0.50	0.50	0.40	0.50	0.30	0.80	1.40			
Depth To Bottom										
Date Sampled	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	8	4AB	4A	4A	5A	5A			
% Moisture at <40C$_A$	12.4	8.6	-	6.3	-	-	-	% w/w	0.1	A-T-044
% Stones >10mm$_A$	30.1	<0.1	17.1	30.8	54.2	6.7	<0.1	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.85	12.91	-	11.34	12.33	-	-	pH	0.01	A-T-031s
Total Organic Carbon$_D$$^{M\#}$	-	-	0.23	-	-	-	0.41	% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	22	6	-	3	4	-	-	mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	0.8	<0.5	-	<0.5	<0.5	-	-	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	43	24	-	3	22	-	-	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	14	48	-	6	11	-	-	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	-	<1	-	-	-	mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	514	72	-	13	17	-	-	mg/kg	1	A-T-024s
Mercury$_D$	0.78	0.26	-	<0.17	<0.17	-	-	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	37	41	-	3	9	-	-	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	-	<1	<1	-	-	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	215	58	-	10	26	-	-	mg/kg	5	A-T-024s

Envirolab Job Number: 19/07826

Client Project Name: 60 - 86 Royal College Street, London

Client Project Ref: 371944

Lab Sample ID	19/07826/1	19/07826/2	19/07826/3	19/07826/4	19/07826/5	19/07826/6	19/07826/7	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES1	ES1	ES1	ES1	ES2	ES3			
Client Sample ID	TP1	BH1	WS1	TP2	WS2	WS2	WS2			
Depth to Top	0.50	0.50	0.40	0.50	0.30	0.80	1.40			
Depth To Bottom										
Date Sampled	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	8	4AB	4A	4A	5A	5A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_D^{\#}$	NAD	NAD	NAD	NAD	NAD	NAD	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A	N/A	N/A	N/A	-			

Envirolab Job Number: 19/07826

Client Project Name: 60 - 86 Royal College Street, London

Client Project Ref: 371944

Lab Sample ID	19/07826/1	19/07826/2	19/07826/3	19/07826/4	19/07826/5	19/07826/6	19/07826/7	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES1	ES1	ES1	ES1	ES2	ES3			
Client Sample ID	TP1	BH1	WS1	TP2	WS2	WS2	WS2			
Depth to Top	0.50	0.50	0.40	0.50	0.30	0.80	1.40			
Depth To Bottom										
Date Sampled	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	8	4AB	4A	4A	5A	5A			
PAH-16MS plus Coronene										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	-	<0.01	-	-	-	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	-	<0.01	-	-	-	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	0.03	-	<0.02	-	-	-	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.05	0.33	-	<0.04	-	-	-	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	0.38	-	<0.04	-	-	-	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	0.49	-	<0.05	-	-	-	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	0.28	-	<0.05	-	-	-	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	0.16	-	<0.07	-	-	-	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	0.36	-	<0.06	-	-	-	mg/kg	0.06	A-T-019s
Coronene$_A$	0.02	0.10	-	<0.01	-	-	-	mg/kg	0.01	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	0.05	-	<0.04	-	-	-	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	0.44	-	<0.08	-	-	-	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	-	<0.01	-	-	-	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.03	0.32	-	<0.03	-	-	-	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	-	<0.03	-	-	-	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	0.05	0.11	-	<0.03	-	-	-	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	0.42	-	<0.07	-	-	-	mg/kg	0.07	A-T-019s
Total PAH-16MS plus Coronene$_A$	0.15	3.47	-	<0.08	-	-	-	mg/kg	0.01	A-T-019s

Envirolab Job Number: 19/07826

Client Project Name: 60 - 86 Royal College Street, London

Client Project Ref: 371944

Lab Sample ID	19/07826/1	19/07826/2	19/07826/3	19/07826/4	19/07826/5	19/07826/6	19/07826/7	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES1	ES1	ES1	ES1	ES2	ES3			
Client Sample ID	TP1	BH1	WS1	TP2	WS2	WS2	WS2			
Depth to Top	0.50	0.50	0.40	0.50	0.30	0.80	1.40			
Depth To Bottom										
Date Sampled	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	8	4AB	4A	4A	5A	5A			
Speciated PCB-EC7 & WHO12										
PCB BZ 28$_{A}^{M\#}$	-	-	<0.002	-	-	-	-	mg/kg	0.002	A-T-004s
PCB BZ 52$_{A}^{M\#}$	-	-	<0.002	-	-	-	-	mg/kg	0.002	A-T-004s
PCB BZ 81$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
PCB BZ 101$_{A}^{M\#}$	-	-	<0.004	-	-	-	-	mg/kg	0.004	A-T-004s
PCB BZ 105$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
PCB BZ 114$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
PCB BZ 118$_{A}^{M\#}$	-	-	<0.007	-	-	-	-	mg/kg	0.007	A-T-004s
PCB BZ 123$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
PCB BZ 126$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
PCB BZ 138$_{A}^{M\#}$	-	-	<0.006	-	-	-	-	mg/kg	0.006	A-T-004s
PCB BZ 153$_{A}^{M\#}$	-	-	<0.004	-	-	-	-	mg/kg	0.004	A-T-004s
PCB BZ 156$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
PCB BZ 157$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
PCB BZ 167$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
PCB BZ 169$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
PCB BZ 180$_{A}^{M\#}$	-	-	<0.004	-	-	-	-	mg/kg	0.004	A-T-004s
PCB BZ 189$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
PCB BZ 77$_{A}$	-	-	<0.005	-	-	-	-	mg/kg	0.005	A-T-004s
Total Speciated PCB-EC7 & WHO12$_{A}$	-	-	<0.007	-	-	-	-	mg/kg	0.002	A-T-004s
TPH Total with ID + GC Trace										
TPH total (>C6-C40)$_{A}^{M\#}$	30	176	-	<10	-	-	-	mg/kg	10	A-T-007s
TPH FID Chromatogram$_{A}$	Appended	Appended	-	Appended	-	-	-			A-T-007s
TPH ID (for FID characterisations)$_{A}$	Concentration too low to identify	Possible PAHs and other unknown heavier hydrocarbons	-	Concentration too low to identify	-	-	-			A-T-007s

Envirolab Job Number: 19/07826

Client Project Name: 60 - 86 Royal College Street, London

Client Project Ref: 371944

Lab Sample ID	19/07826/1	19/07826/2	19/07826/3	19/07826/4	19/07826/5	19/07826/6	19/07826/7	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES1	ES1	ES1	ES1	ES2	ES3			
Client Sample ID	TP1	BH1	WS1	TP2	WS2	WS2	WS2			
Depth to Top	0.50	0.50	0.40	0.50	0.30	0.80	1.40			
Depth To Bottom										
Date Sampled	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	8	4AB	4A	4A	5A	5A			
VOC										
Dichlorodifluoromethane$_A$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Chloromethane$_A$	-	-	-	-	-	<10	-	µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_A^\#$	-	-	-	-	-	*<1*	-	µg/kg	1	A-T-006s
Bromomethane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Chloroethane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Trichlorofluoromethane$_A^\#$	-	-	-	-	-	<4	-	µg/kg	1	A-T-006s
1,1-Dichloroethene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Carbon Disulphide$_A^\#$	-	-	-	-	-	1	-	µg/kg	1	A-T-006s
Dichloromethane$_A$	-	-	-	-	-	*<5*	-	µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,1-Dichloroethane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
2,2-Dichloropropane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Bromochloromethane$_A^\#$	-	-	-	-	-	<5	-	µg/kg	5	A-T-006s
Chloroform$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,1-Dichloropropene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Carbon Tetrachloride$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,2-Dichloroethane$_A^\#$	-	-	-	-	-	<2	-	µg/kg	2	A-T-006s
Benzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Trichloroethene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,2-Dichloropropane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Dibromomethane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Bromodichloromethane$_A^\#$	-	-	-	-	-	<10	-	µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Toluene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,3-Dichloropropane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Tetrachloroethene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Dibromochloromethane$_A^\#$	-	-	-	-	-	<3	-	µg/kg	3	A-T-006s
1,2-Dibromoethane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s

Lab Sample ID	19/07826/1	19/07826/2	19/07826/3	19/07826/4	19/07826/5	19/07826/6	19/07826/7	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES1	ES1	ES1	ES1	ES2	ES3			
Client Sample ID	TP1	BH1	WS1	TP2	WS2	WS2	WS2			
Depth to Top	0.50	0.50	0.40	0.50	0.30	0.80	1.40			
Depth To Bottom										
Date Sampled	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	8	4AB	4A	4A	5A	5A			
Chlorobenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_A$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Ethylbenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
m & p Xylene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
o-Xylene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Styrene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Bromoform$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Isopropylbenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_A$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
Bromobenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
n-Propylbenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
2-Chlorotoluene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
4-Chlorotoluene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
tert-Butylbenzene$_A^\#$	-	-	-	-	-	<2	-	µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
sec-Butylbenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
4-Isopropyltoluene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_A$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
n-Butylbenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_A$	-	-	-	-	-	<2	-	µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_A$	-	-	-	-	-	<3	-	µg/kg	3	A-T-006s
Hexachlorobutadiene$_A^\#$	-	-	-	-	-	<1	-	µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_A$	-	-	-	-	-	<3	-	µg/kg	3	A-T-006s

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Lab Sample ID	19/07826/8	19/07826/9	19/07826/10	19/07826/11	19/07826/12	19/07826/13	19/07826/14	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES2	ES3	ES4	ES1	ES2	ES1			
Client Sample ID	WS3	WS3	WS3	WS3	TP3	TP3	BH2			
Depth to Top	0.40	0.80	1.20	2.30	0.30	0.60	0.60			
Depth To Bottom										
Date Sampled	14-Aug-19	14-Aug-19	15-Aug-19	15-Aug-19	14-Aug-19	14-Aug-19	13-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	5A	5A	4A	5AB	5AB			
% Moisture at <40C$_A$	-	-	19.5	-	-	-	20.8	% w/w	0.1	A-T-044
% Stones >10mm$_A$	13.9	3.3	3.7	9.2	21.7	24.2	<0.1	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	9.20	-	8.35	-	-	8.70	8.60	pH	0.01	A-T-031s
Total Organic Carbon$_D$$^{M\#}$	3.25	2.53	-	0.08	0.61	-	-	% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	-	-	7	-	-	17	29	mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	-	-	0.8	-	-	1.4	0.8	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	-	-	15	-	-	99	104	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	-	-	47	-	-	24	28	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	-	<1	-	-	-	<1	mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	-	-	20	-	-	487	302	mg/kg	1	A-T-024s
Mercury$_D$	-	-	<0.17	-	-	1.73	1.73	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	-	-	26	-	-	23	22	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	-	-	<1	-	-	<1	<1	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	-	-	56	-	-	666	124	mg/kg	5	A-T-024s

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Lab Sample ID	19/07826/8	19/07826/9	19/07826/10	19/07826/11	19/07826/12	19/07826/13	19/07826/14	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES2	ES3	ES4	ES1	ES2	ES1			
Client Sample ID	WS3	WS3	WS3	WS3	TP3	TP3	BH2			
Depth to Top	0.40	0.80	1.20	2.30	0.30	0.60	0.60			
Depth To Bottom										
Date Sampled	14-Aug-19	14-Aug-19	15-Aug-19	15-Aug-19	14-Aug-19	14-Aug-19	13-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	5A	5A	4A	5AB	5AB			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_D^{\#}$	-	NAD	NAD	-	NAD	-	NAD			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	-	N/A	N/A	-	N/A	-	N/A			

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Lab Sample ID	19/07826/8	19/07826/9	19/07826/10	19/07826/11	19/07826/12	19/07826/13	19/07826/14	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES2	ES3	ES4	ES1	ES2	ES1			
Client Sample ID	WS3	WS3	WS3	WS3	TP3	TP3	BH2			
Depth to Top	0.40	0.80	1.20	2.30	0.30	0.60	0.60			
Depth To Bottom										
Date Sampled	14-Aug-19	14-Aug-19	15-Aug-19	15-Aug-19	14-Aug-19	14-Aug-19	13-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	5A	5A	4A	5AB	5AB			
PAH-16MS plus Coronene										
Acenaphthene$_A^{M\#}$	-	-	<0.01	-	-	-	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	-	-	<0.01	-	-	-	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	-	-	<0.02	-	-	-	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	-	<0.04	-	-	-	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	-	<0.04	-	-	-	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	-	<0.05	-	-	-	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	-	<0.05	-	-	-	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	-	<0.07	-	-	-	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	-	-	<0.06	-	-	-	<0.06	mg/kg	0.06	A-T-019s
Coronene$_A$	-	-	<0.01	-	-	-	<0.01	mg/kg	0.01	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	-	<0.04	-	-	-	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	-	-	<0.08	-	-	-	<0.08	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	-	-	<0.01	-	-	-	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	-	<0.03	-	-	-	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	-	-	<0.03	-	-	-	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	-	-	<0.03	-	-	-	<0.03	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	-	-	<0.07	-	-	-	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS plus Coronene$_A$	-	-	<0.08	-	-	-	<0.08	mg/kg	0.01	A-T-019s

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Lab Sample ID	19/07826/8	19/07826/9	19/07826/10	19/07826/11	19/07826/12	19/07826/13	19/07826/14	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES2	ES3	ES4	ES1	ES2	ES1			
Client Sample ID	WS3	WS3	WS3	WS3	TP3	TP3	BH2			
Depth to Top	0.40	0.80	1.20	2.30	0.30	0.60	0.60			
Depth To Bottom										
Date Sampled	14-Aug-19	14-Aug-19	15-Aug-19	15-Aug-19	14-Aug-19	14-Aug-19	13-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	5A	5A	4A	5AB	5AB			
Speciated PCB-EC7 & WHO12										
PCB BZ 28$_{A}^{M\#}$	-	-	-	-	-	<0.002	-	mg/kg	0.002	A-T-004s
PCB BZ 52$_{A}^{M\#}$	-	-	-	-	-	<0.002	-	mg/kg	0.002	A-T-004s
PCB BZ 81$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 101$_{A}^{M\#}$	-	-	-	-	-	<0.004	-	mg/kg	0.004	A-T-004s
PCB BZ 105$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 114$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 118$_{A}^{M\#}$	-	-	-	-	-	<0.007	-	mg/kg	0.007	A-T-004s
PCB BZ 123$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 126$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 138$_{A}^{M\#}$	-	-	-	-	-	<0.006	-	mg/kg	0.006	A-T-004s
PCB BZ 153$_{A}^{M\#}$	-	-	-	-	-	<0.004	-	mg/kg	0.004	A-T-004s
PCB BZ 156$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 157$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 167$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 169$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 180$_{A}^{M\#}$	-	-	-	-	-	<0.004	-	mg/kg	0.004	A-T-004s
PCB BZ 189$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
PCB BZ 77$_{A}$	-	-	-	-	-	<0.005	-	mg/kg	0.005	A-T-004s
Total Speciated PCB-EC7 & WHO12$_{A}$	-	-	-	-	-	<0.007	-	mg/kg	0.002	A-T-004s
TPH Total with ID + GC Trace										
TPH total (>C6-C40)$_{A}^{M\#}$	-	-	84	-	-	-	<10	mg/kg	10	A-T-007s
TPH FID Chromatogram$_{A}$	-	-	Appended	-	-	-	Appended			A-T-007s
TPH ID (for FID characterisations)$_{A}$	-	-	Possible kerosene	-	-	-	N/A			A-T-007s

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Lab Sample ID	19/07826/8	19/07826/9	19/07826/10	19/07826/11	19/07826/12	19/07826/13	19/07826/14	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES2	ES3	ES4	ES1	ES2	ES1			
Client Sample ID	WS3	WS3	WS3	WS3	TP3	TP3	BH2			
Depth to Top	0.40	0.80	1.20	2.30	0.30	0.60	0.60			
Depth To Bottom										
Date Sampled	14-Aug-19	14-Aug-19	15-Aug-19	15-Aug-19	14-Aug-19	14-Aug-19	13-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	5A	5A	4A	5AB	5AB			
VOC										
Dichlorodifluoromethane$_A$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Chloromethane$_A$	-	<10	-	-	-	-	-	µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Bromomethane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Chloroethane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Trichlorofluoromethane$_A^\#$	-	<4	-	-	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloroethene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Carbon Disulphide$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Dichloromethane$_A$	-	*<5*	-	-	-	-	-	µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloroethane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
2,2-Dichloropropane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Bromochloromethane$_A^\#$	-	<5	-	-	-	-	-	µg/kg	5	A-T-006s
Chloroform$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1-Dichloropropene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Carbon Tetrachloride$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dichloroethane$_A^\#$	-	<2	-	-	-	-	-	µg/kg	2	A-T-006s
Benzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Trichloroethene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dichloropropane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Dibromomethane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Bromodichloromethane$_A^\#$	-	<10	-	-	-	-	-	µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Toluene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,3-Dichloropropane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Tetrachloroethene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Dibromochloromethane$_A^\#$	-	<3	-	-	-	-	-	µg/kg	3	A-T-006s
1,2-Dibromoethane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s

Lab Sample ID	19/07826/8	19/07826/9	19/07826/10	19/07826/11	19/07826/12	19/07826/13	19/07826/14	Units	Limit of Detection	Method ref
Client Sample No	ES1	ES2	ES3	ES4	ES1	ES2	ES1			
Client Sample ID	WS3	WS3	WS3	WS3	TP3	TP3	BH2			
Depth to Top	0.40	0.80	1.20	2.30	0.30	0.60	0.60			
Depth To Bottom										
Date Sampled	14-Aug-19	14-Aug-19	15-Aug-19	15-Aug-19	14-Aug-19	14-Aug-19	13-Aug-19			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	5A	5A	4A	5AB	5AB			
Chlorobenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_A$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Ethylbenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
m & p Xylene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
o-Xylene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Styrene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Bromoform$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Isopropylbenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_A$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
Bromobenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
n-Propylbenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
2-Chlorotoluene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
4-Chlorotoluene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
tert-Butylbenzene$_A^\#$	-	<2	-	-	-	-	-	µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
sec-Butylbenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
4-Isopropyltoluene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_A$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
n-Butylbenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_A$	-	<2	-	-	-	-	-	µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_A$	-	<3	-	-	-	-	-	µg/kg	3	A-T-006s
Hexachlorobutadiene$_A^\#$	-	<1	-	-	-	-	-	µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_A$	-	<3	-	-	-	-	-	µg/kg	3	A-T-006s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

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

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Envirolab Deviating Samples Report

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

Client: RSK Environment Ltd Hemel, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, UK, HP3 9RT

Project: 60 - 86 Royal College Street, London

Clients Project No: 371944

Project No: 19/07826

Date Received: 20/08/2019 (am)

Cool Box Temperatures (°C): 16.0, 15.6

NO DEVIATIONS IDENTIFIED

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

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/08021
Issue Number: 1 **Date:** 09 September, 2019

Client:
RSK Environment Ltd Hemel
18 Frogmore Road
Hemel Hempstead
Hertfordshire
UK
HP3 9RT

Project Manager: Andrew Tyler
Project Name: Royal College Street, London
Project Ref: 371944
Order No: N/A
Date Samples Received: 27/08/19
Date Instructions Received: 27/08/19
Date Analysis Completed: 09/09/19

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Holly Neary-King
Client Manager

Envirolab Job Number: 19/08021

Client Project Name: Royal College Street, London

Client Project Ref: 371944

Lab Sample ID	19/08021/1	19/08021/2	19/08021/3	19/08021/4	19/08021/5	19/08021/6	19/08021/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS2	WS3	BH1	BH1	BH2	BH2	BH1			
Depth to Top	3.50	4.50	8.50	18.00	12.50	24.50	2.00			
Depth To Bottom			9.00	18.45	13.00	25.00	2.45			
Date Sampled	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19	15-Aug-19			
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	5A	5A	5A	5A	5A	5A	5A			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	3.1	<0.1	% w/w	0.1	A-T-044
pH BRE$_D^{M\#}$	8.07	7.67	7.69	8.15	7.88	8.23	8.27	pH	0.01	A-T-031s
Ammonium NH4 BRE (water sol 2:1)$_D$	-	-	-	-	-	-	<1.00	mg/l	1	A-T-033s
Chloride BRE, SO4 equiv. (water sol 2:1)$_D^{M\#}$	-	-	-	-	-	-	14	mg/l	7	A-T-026s
Nitrate BRE, SO4 equiv. (water sol 2:1)$_D$	-	-	-	-	-	-	<0.4	mg/l	0.4	A-T-026s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	192	2240	2380	678	714	712	124	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D^{M\#}$	0.04	0.97	1.94	0.22	0.15	0.22	0.05	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.02	0.31	0.61	0.69	0.38	0.75	0.05	% w/w	0.01	A-T-024s
Magnesium BRE (water sol 2:1)$_D$	-	-	-	-	-	-	24	mg/l	1	A-T-SOLMETS

Envirolab Job Number: 19/08021

Client Project Name: Royal College Street, London

Client Project Ref: 371944

Lab Sample ID	19/08021/8							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH2									
Depth to Top	0.50									
Depth To Bottom	1.20									
Date Sampled	15-Aug-19									
Sample Type	Soil - D									
Sample Matrix Code	5A									
% Stones >10mm$_A$	0.6							% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.01							pH	0.01	A-T-031s
Ammonium NH4 BRE (water sol 2:1)$_D$	<1.00							mg/l	1	A-T-033s
Chloride BRE, SO4 equiv. (water sol 2:1)$_D$$^{M\#}$	<7							mg/l	7	A-T-026s
Nitrate BRE, SO4 equiv. (water sol 2:1)$_D$	1.8							mg/l	0.4	A-T-026s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	<10							mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	0.06							% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.04							% w/w	0.01	A-T-024s
Magnesium BRE (water sol 2:1)$_D$	2							mg/l	1	A-T-SOLMETS

REPORT NOTES

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For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

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

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Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
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Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

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1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
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N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
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Subscript "A" indicates analysis performed on the sample as received.
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Please contact us if you need any further information.

Envirolab Deviating Samples Report

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

Client: RSK Environment Ltd Hemel, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, UK, HP3 9RT

Project: Royal College Street, London

Clients Project No: 371944

Project No: 19/08021

Date Received: 27/08/2019 (am)

Cool Box Temperatures (°C): 19.3

NO DEVIATIONS IDENTIFIED

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

APPENDIX K
LABORATORY CERTIFICATES FOR GEOTECHNICAL ANALYSIS

STRUCTURAL SOILS LTD

TEST REPORT

Report No. 584118-01 (00) 1774

Date	10-September-2019	Contract	Royal College Street, London

Client RSK
Address 18 Frogmore Rd
Apsley
Hemel Hempstead
Hertfordshire
HP3 9RT
For the Attention of Sammy Al Hilly

Samples submitted by client	21-August-2019	Client Reference	371944
Testing Started	21-August-2019	Client Order No.	n/a
Testing Completed	09-September-2019	Instruction Type	Written

Tests marked 'Not UKAS Accredited' in this report are not included in the UKAS Accreditation Schedule for our Laboratory.

UKAS Accredited Tests

1.01	Moisture Content (oven drying method) BS1377:Part 2:1990:clause 3.2 (superceded)*
1.03	Liquid Limit (one point method) & Plastic Limit BS1377:Part 2:1990,clause 4.4/5.3*
5.04	Undrained shear strength triaxial compression without pore pressure measurement (definitive method) 100mm diameter specimens BS1377:Part 7:1990,clause 8.4*
4.01	One-dimensional consolidation BS1377:Part 5:1990,clause 3.5 (superseded)*

* This clause of BS1377 is no longer the most up to date method due to the publication of ISO17892

Please Note: Remaining samples will be retained for a period of one month from today and will then be disposed of .
Test were undertaken on samples 'as received' unless otherwise stated.
Opinions and interpretations expressed in this report are outside the scope of accreditation for this laboratory.

Structural Soils Ltd 18 Frogmore Rd Hemel Hempstead HP3 9RT Tel.01442 416661 e-mail dimitris.xirouchakis@soils.co.uk

TESTING VERIFICATION CERTIFICATE

UKAS TESTING
1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **06/09/2019 08:46:34**.

Testing reported after this date is not covered by this Verification Certificate.

Approved Signatory
Alan Frost (Deputy Laboratory Manager)

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
Bedminster
Bristol
BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
Castleford
West Yorkshire
WF10 1NJ

Hemel Laboratory
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Tonbridge Laboratory
Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU

STRUCTURAL SOILS LTD	Contract: **Royal College Street, London**	Job No: **584118**

AGS

TESTING VERIFICATION CERTIFICATE

UKAS TESTING
1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

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This testing verification certificate covers all testing compiled on or before the following datetime: **10/09/2019 12:19:03**.

Testing reported after this date is not covered by this Verification Certificate.

Approved Signatory
Sharon Cairns (Laboratory Manager)

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
Bedminster
Bristol
BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
Castleford
West Yorkshire
WF10 1NJ

Hemel Laboratory
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Tonbridge Laboratory
Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU

STRUCTURAL SOILS LTD	Contract: **Royal College Street, London**	Job No: **584118**

AGS

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH1		U	10.50	25	73	29	44	100	Dark brown silty CLAY with rare selenite crystals
BH1		U	13.50	21	72	31	41	100	Dark brown silty CLAY with rare selenite crystals
BH1		U	22.50	25	73	24	49	100	Dark brown silty CLAY
BH2		U	4.00	31	74	30	44	100	Brown silty CLAY
BH2		U	18.00	26	72	28	44	100	Dark brown silty CLAY with rare selenite crystals
BH2		U	24.00	20	72	24	48	100	Dark brown slightly silty CLAY

STRUCTURAL SOILS LTD

Contract:

Royal College Street, London

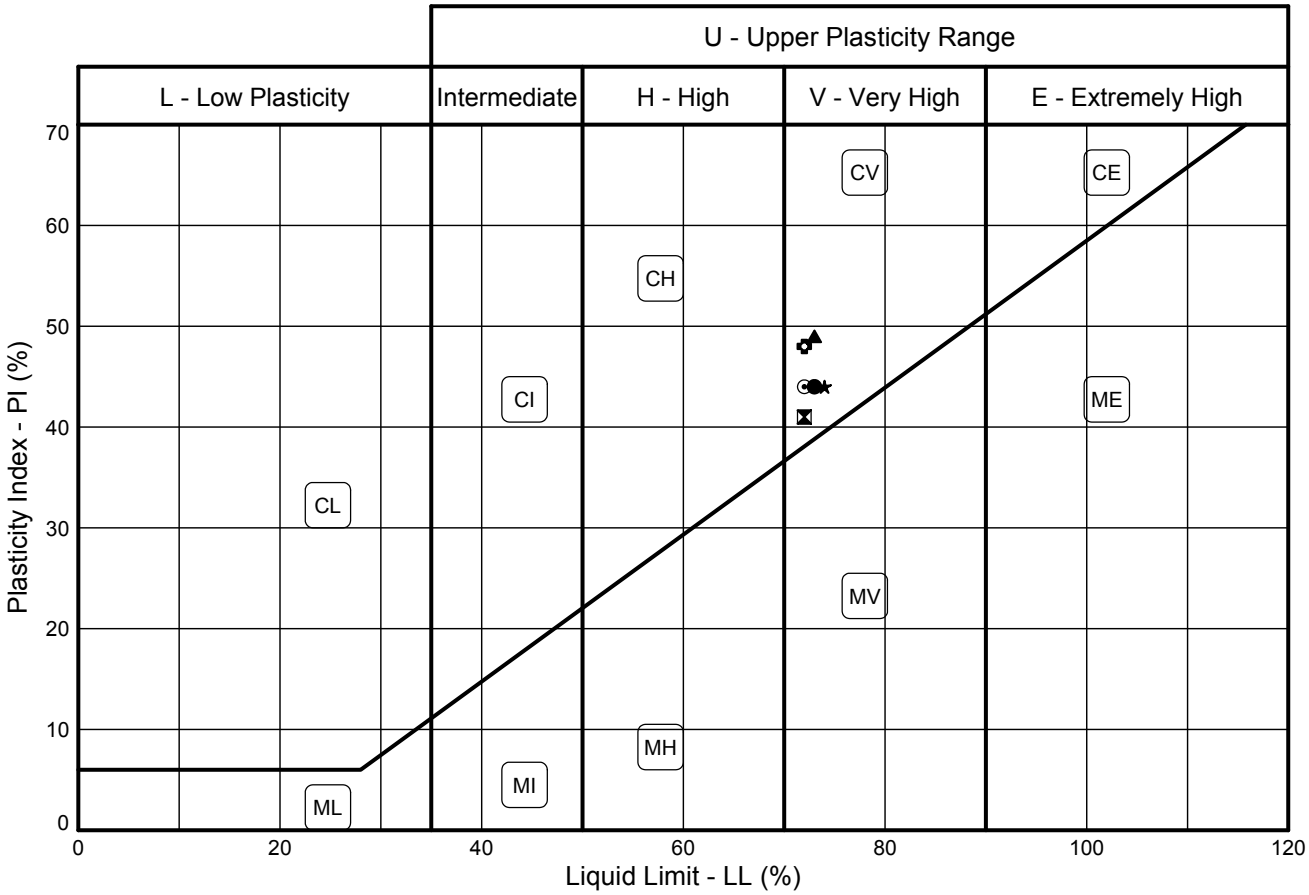
Contract Ref:

584118

AGS

PLASTICITY CHART - PI Vs LL

In accordance with BS5930:2015
Testing in accordance with BS1377-2:1990



Sample Identification				BS Test Method #	Preparation Method +	MC	LL	PL	PI	<425um	Lab location	
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	BH1	U	10.50	3.2/4.4/5.3/5.4	4.2.4	25	73	29	44	100	H	
⊠	BH1	U	13.50	3.2/4.4/5.3/5.4	4.2.4	21	72	31	41	100	H	
▲	BH1	U	22.50	3.2/4.4/5.3/5.4	4.2.4	25	73	24	49	100	H	
★	BH2	U	4.00	3.2/4.4/5.3/5.4	4.2.4	31	74	30	44	100	H	
⊙	BH2	U	18.00	3.2/4.4/5.3/5.4	4.2.4	26	72	28	44	100	H	
✿	BH2	U	24.00	3.2/4.4/5.3/5.4	4.2.4	20	72	24	48	100	H	

Tested in accordance with the following clauses of BS1377-2:1990.

3.2 - Moisture Content
4.3 - Cone Penetrometer Method
4.4 - One Point Cone Penetrometer Method
4.6 - One Point Casagrande Method
5.3 - Plastic Limit Method
5.4 - Plasticity Index

+ Tested in accordance with the following clauses of BS1377-2:1990.

4.2.3 - Natural State
4.2.4 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By		Date
SC	SHARON CAIRNS	10/09/19

Contract	Contract Ref:
Royal College Street, London	584118

AGS

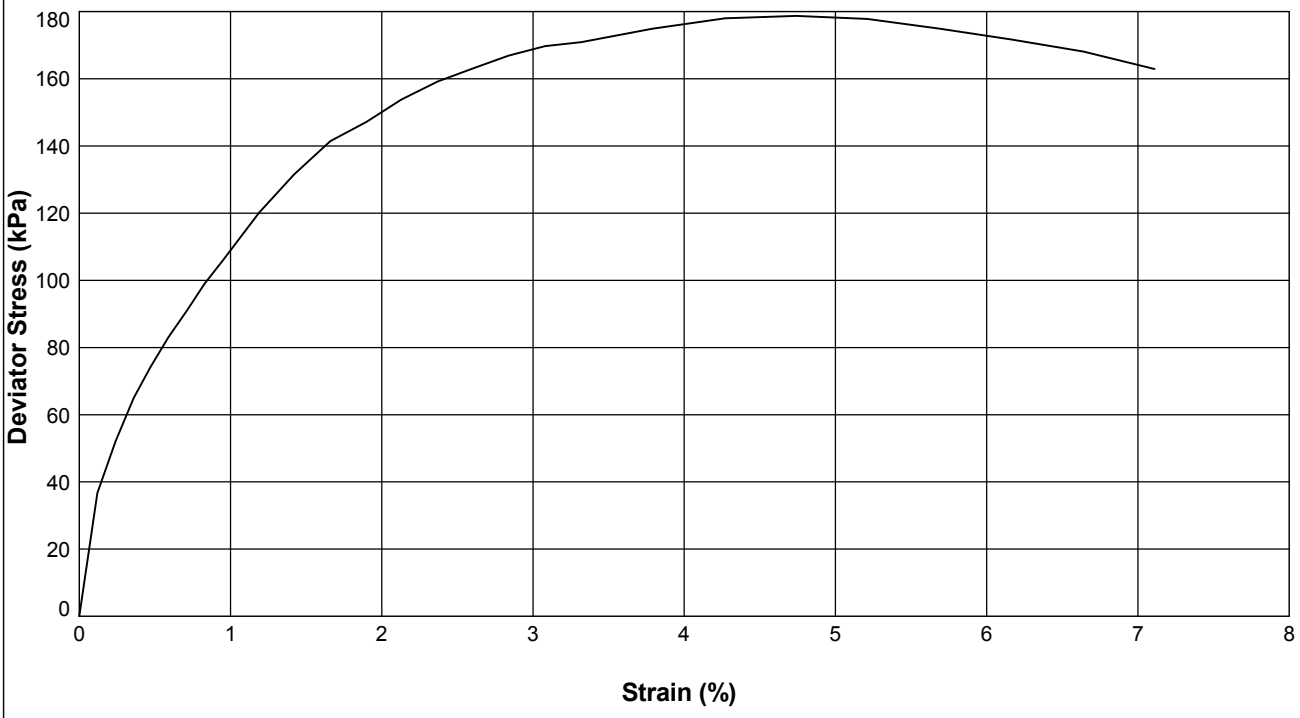
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH1** Sample Ref: **-** Sample Type: **U** Depth (m): **5.00**

Description : **Brown mottled dark brown silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	103.27		
	Height	(mm)	210.97		
	Moisture Content	(%)	29		
	Bulk Density	(Mg/m^3)	1.92		
	Dry Density	(Mg/m^3)	1.49		
TEST DETAILS	Membrane Thickness	(mm)	0.12		
	Rate of Axial Displacement	(%/min)	1.00		
	Cell Pressure	(kPa)	100		
	Membrane Correction	(kPa)	0.15		
	Corrected Deviator Stress	(kPa)	179		
	Undrained Shear Strength	(kPa)	89		
	Strain at Failure	(%)	4.7		
	Mode of Failure		Brittle		



STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By		Date
J.Baker	JONATHAN BAKER	10/09/19

Contract	Contract Ref:
Royal College Street, London	584118

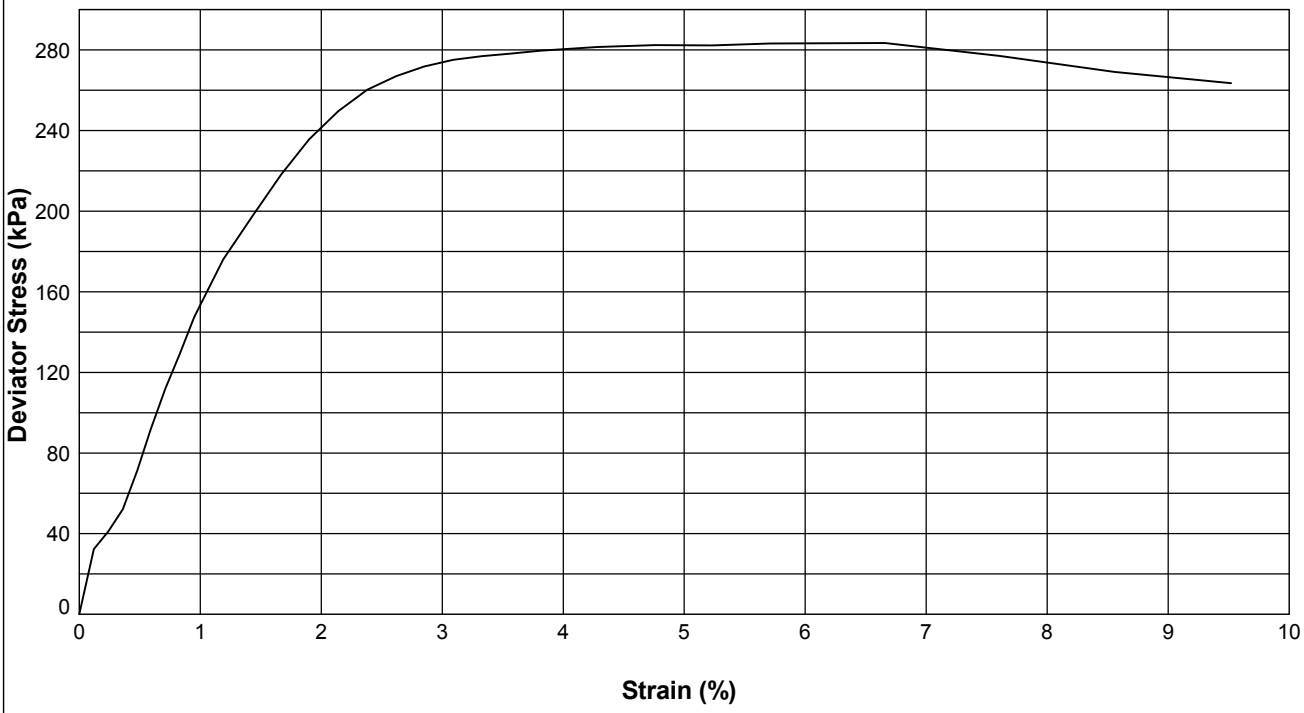
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH1** Sample Ref: **-** Sample Type: **U** Depth (m): **10.50**

Description : **Dark brown silty CLAY with rare selenite crystals**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	102.41		
	Height	(mm)	210.16		
	Moisture Content	(%)	27		
	Bulk Density	(Mg/m^3)	2.02		
	Dry Density	(Mg/m^3)	1.60		
TEST DETAILS	Membrane Thickness	(mm)	0.23		
	Rate of Axial Displacement	(%/min)	0.90		
	Cell Pressure	(kPa)	210		
	Membrane Correction	(kPa)	0.37		
	Corrected Deviator Stress	(kPa)	283		
	Undrained Shear Strength	(kPa)	142		
	Strain at Failure	(%)	6.7		
	Mode of Failure		Brittle		



STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date
JONATHAN BAKER	10/09/19

Contract	Contract Ref:
Royal College Street, London	584118

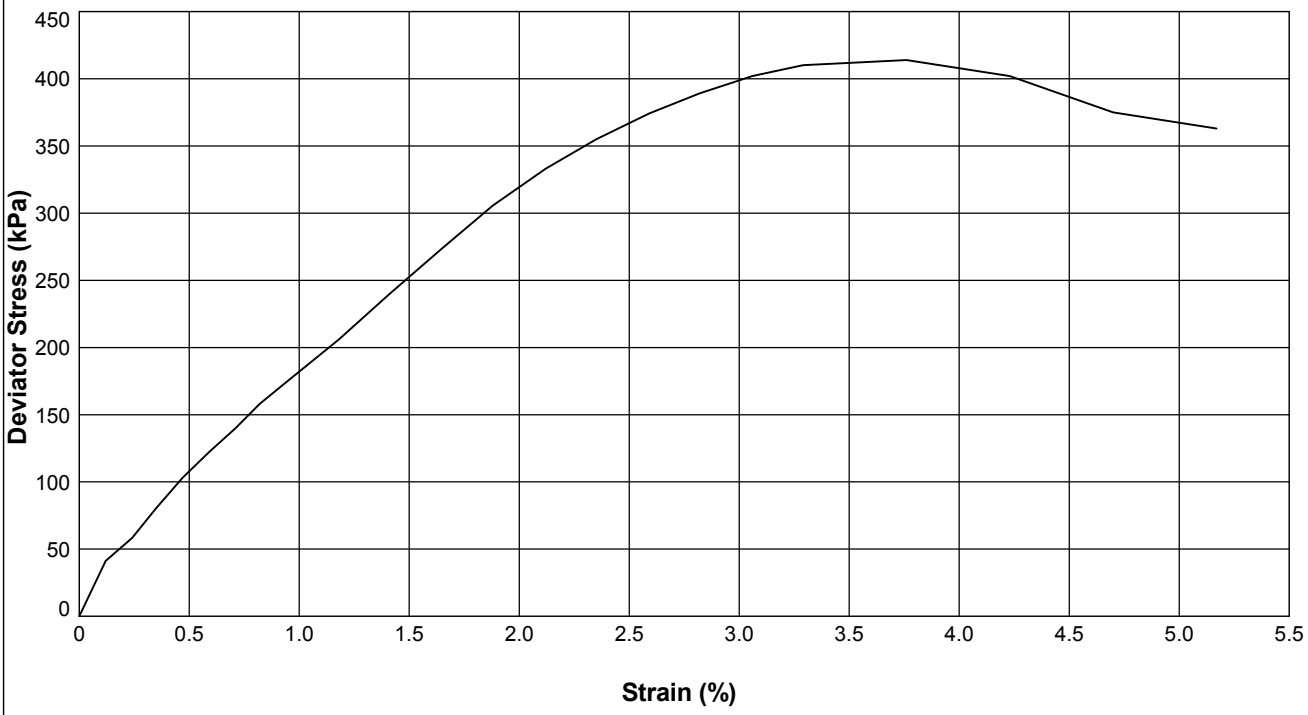
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH1** Sample Ref: **-** Sample Type: **U** Depth (m): **13.50**

Description : **Dark brown silty CLAY with rare selenite crystals**

STAGE NUMBER			**1**	**2**	**3**
SAMPLE DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**101.86**		
	Height	(mm)	**212.65**		
	Moisture Content	(%)	**26**		
	Bulk Density	(Mg/m^3)	**2.02**		
	Dry Density	(Mg/m^3)	**1.60**		
TEST DETAILS	Membrane Thickness	(mm)	**0.20**		
	Rate of Axial Displacement	(%/min)	**0.94**		
	Cell Pressure	(kPa)	**270**		
	Membrane Correction	(kPa)	**0.20**		
	Corrected Deviator Stress	(kPa)	**414**		
	Undrained Shear Strength	(kPa)	**207**		
	Strain at Failure	(%)	**3.8**		
	Mode of Failure		**Brittle**		



STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By		Date
J.Baker	**JONATHAN BAKER**	**10/09/19**

Contract	Contract Ref:
Royal College Street, London	**584118**

AGS

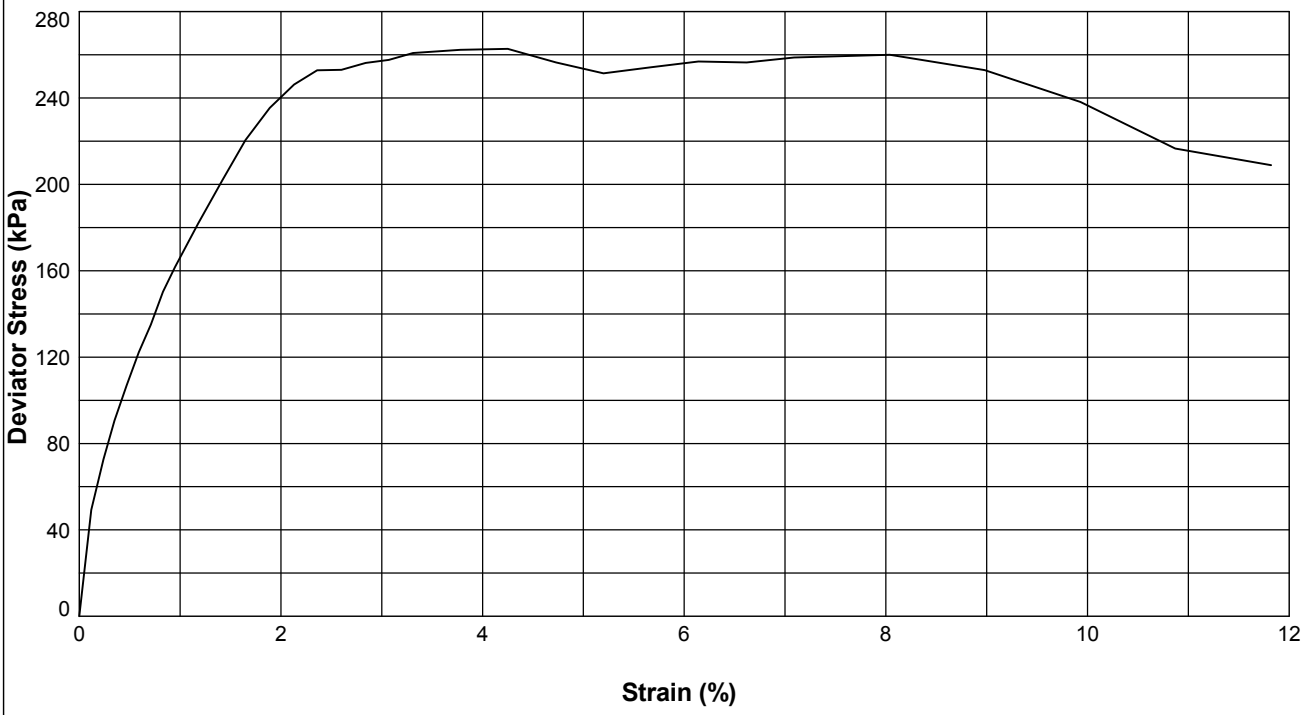
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH1** Sample Ref: **-** Sample Type: **U** Depth (m): **16.50**

Description : **Dark brown silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	101.44		
	Height	(mm)	211.57		
	Moisture Content	(%)	30		
	Bulk Density	(Mg/m^3)	1.97		
	Dry Density	(Mg/m^3)	1.51		
TEST DETAILS	Membrane Thickness	(mm)	0.36		
	Rate of Axial Displacement	(%/min)	0.90		
	Cell Pressure	(kPa)	330		
	Membrane Correction	(kPa)	0.41		
	Corrected Deviator Stress	(kPa)	263		
	Undrained Shear Strength	(kPa)	131		
	Strain at Failure	(%)	4.2		
	Mode of Failure		Brittle		



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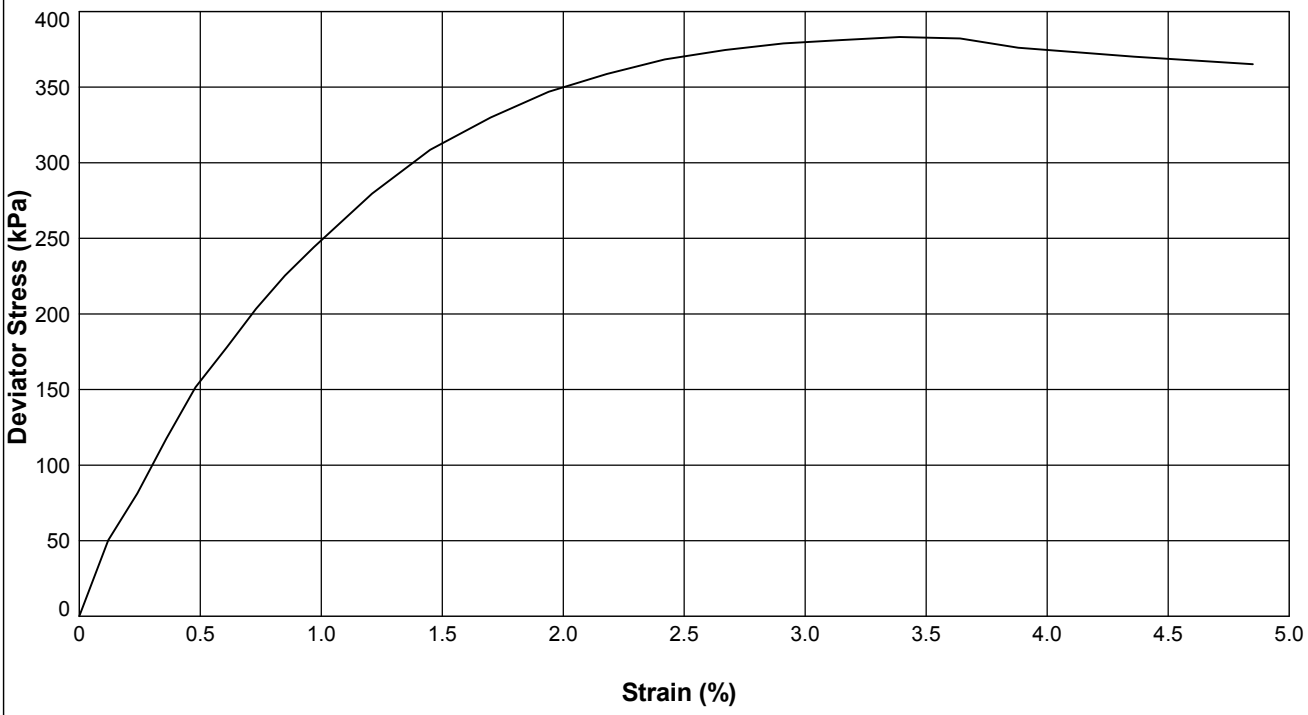
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH1** Sample Ref: **-** Sample Type: **U** Depth (m): **19.50**

Description : **Dark brown silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	103.19		
	Height	(mm)	206.29		
	Moisture Content	(%)	28		
	Bulk Density	(Mg/m^3)	1.98		
	Dry Density	(Mg/m^3)	1.54		
TEST DETAILS	Membrane Thickness	(mm)	0.11		
	Rate of Axial Displacement	(%/min)	1.02		
	Cell Pressure	(kPa)	390		
	Membrane Correction	(kPa)	0.10		
	Corrected Deviator Stress	(kPa)	383		
	Undrained Shear Strength	(kPa)	192		
	Strain at Failure	(%)	3.4		
	Mode of Failure		Brittle		



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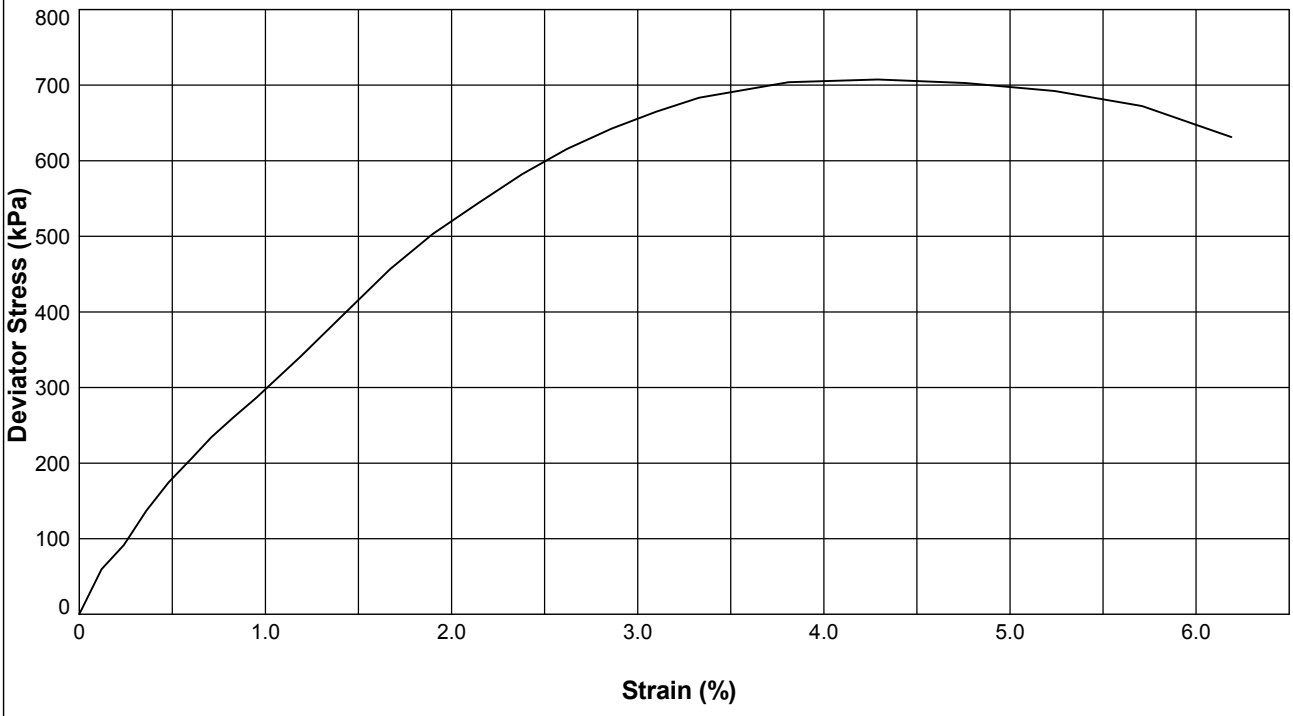
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH1** Sample Ref: **-** Sample Type: **U** Depth (m): **22.50**

Description : **Dark brown silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	102.69		
	Height	(mm)	209.99		
	Moisture Content	(%)	24		
	Bulk Density	(Mg/m^3)	2.05		
	Dry Density	(Mg/m^3)	1.66		
TEST DETAILS	Membrane Thickness	(mm)	0.36		
	Rate of Axial Displacement	(%/min)	0.86		
	Cell Pressure	(kPa)	450		
	Membrane Correction	(kPa)	0.41		
	Corrected Deviator Stress	(kPa)	708		
	Undrained Shear Strength	(kPa)	354		
	Strain at Failure	(%)	4.3		
	Mode of Failure		Brittle		



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Compiled By		Date
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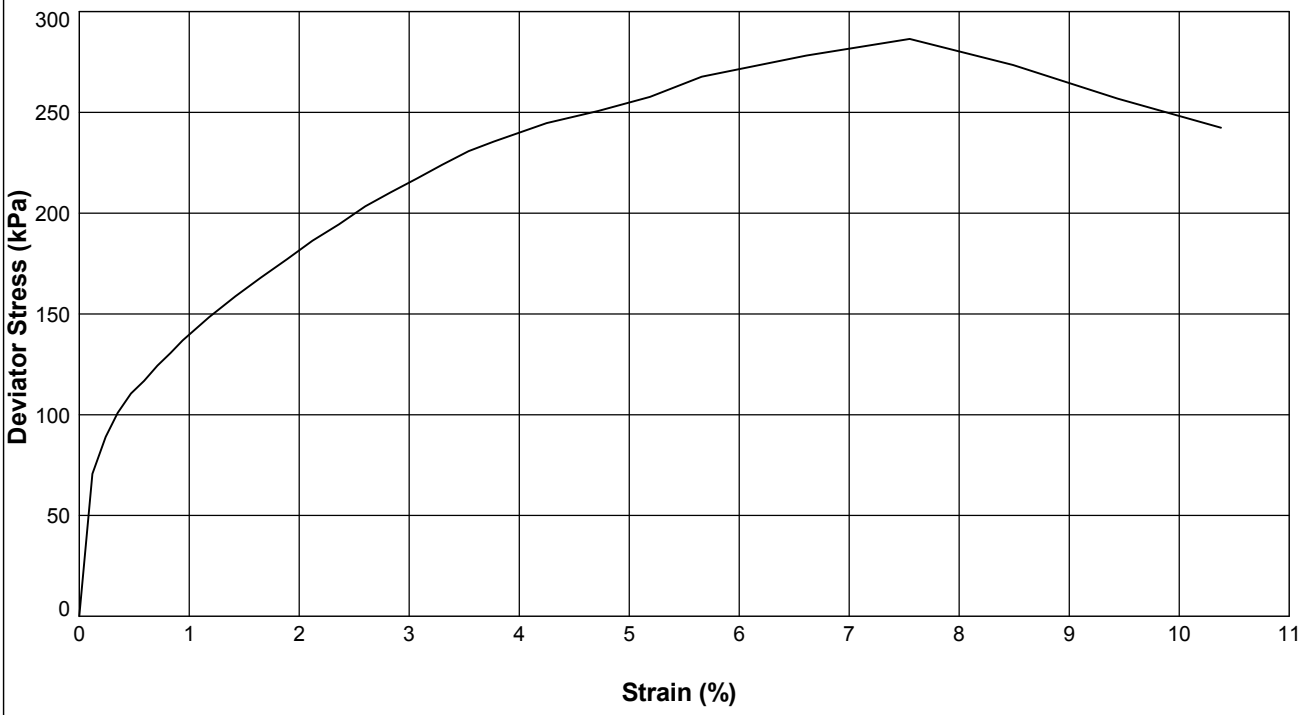
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH1** Sample Ref: **-** Sample Type: **U** Depth (m): **28.50**

Description : **Dark brown silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	102.41		
	Height	(mm)	211.93		
	Moisture Content	(%)	26		
	Bulk Density	(Mg/m^3)	2.03		
	Dry Density	(Mg/m^3)	1.62		
TEST DETAILS	Membrane Thickness	(mm)	0.24		
	Rate of Axial Displacement	(%/min)	0.94		
	Cell Pressure	(kPa)	570		
	Membrane Correction	(kPa)	0.43		
	Corrected Deviator Stress	(kPa)	286		
	Undrained Shear Strength	(kPa)	143		
	Strain at Failure	(%)	7.6		
	Mode of Failure		Compound		



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Compiled By		Date
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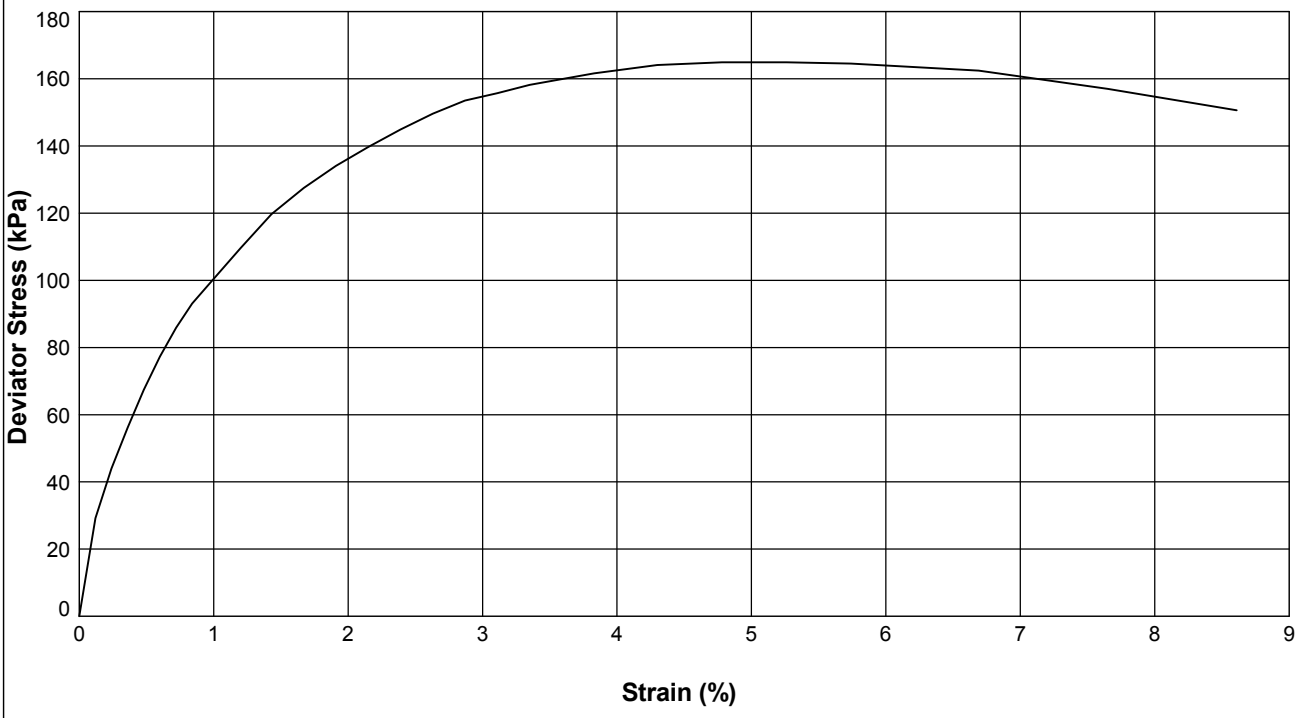
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH2** Sample Ref: **-** Sample Type: **U** Depth (m): **4.00**

Description : **Brown silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	101.02		
	Height	(mm)	209.13		
	Moisture Content	(%)	31		
	Bulk Density	(Mg/m^3)	2.00		
	Dry Density	(Mg/m^3)	1.53		
TEST DETAILS	Membrane Thickness	(mm)	0.20		
	Rate of Axial Displacement	(%/min)	52.12		
	Cell Pressure	(kPa)	80		
	Membrane Correction	(kPa)	0.26		
	Corrected Deviator Stress	(kPa)	165		
	Undrained Shear Strength	(kPa)	82		
	Strain at Failure	(%)	4.8		
	Mode of Failure		Brittle		



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Compiled By		Date
J.Baker	JONATHAN BAKER	10/09/19

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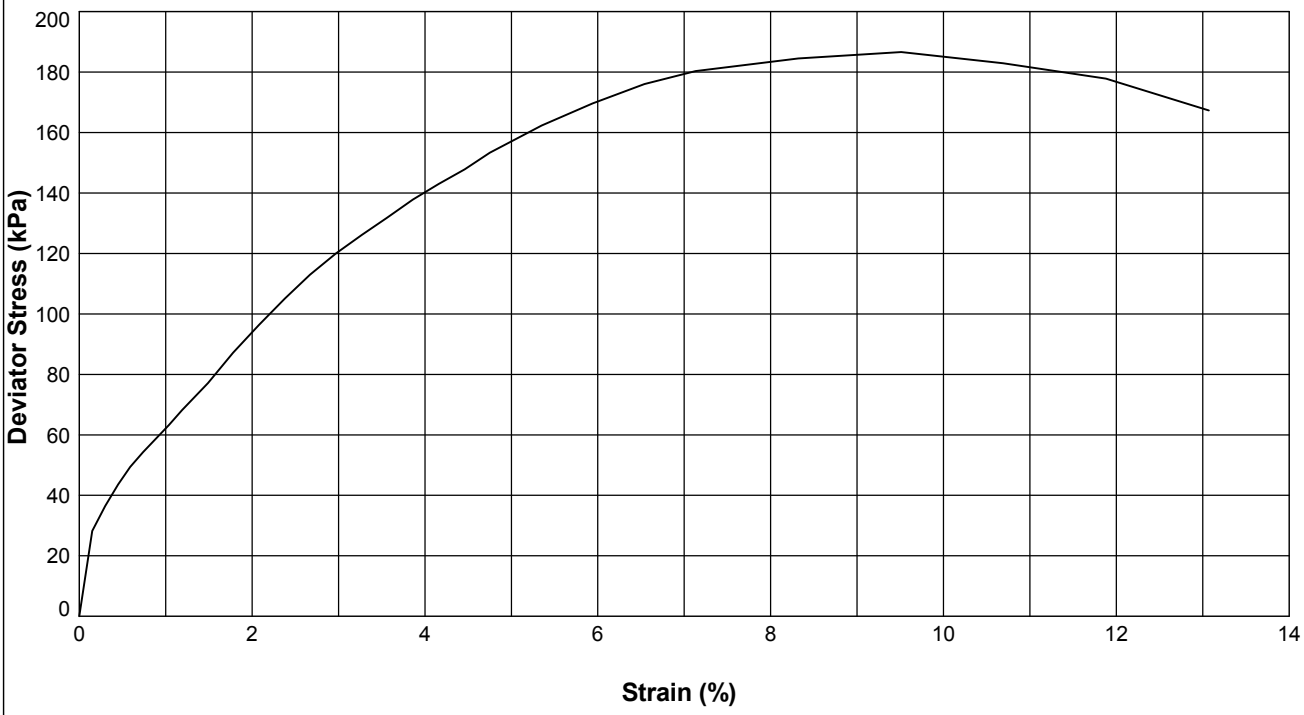
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH2** Sample Ref: **-** Sample Type: **U** Depth (m): **6.00**

Description : **Brown silty CLAY (with occasional gypsum)**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	102.88		
	Height	(mm)	168.32		
	Moisture Content	(%)	28		
	Bulk Density	(Mg/m^3)	2.32		
	Dry Density	(Mg/m^3)	1.81		
TEST DETAILS	Membrane Thickness	(mm)	0.30		
	Rate of Axial Displacement	(%/min)	1.19		
	Cell Pressure	(kPa)	120		
	Membrane Correction	(kPa)	0.64		
	Corrected Deviator Stress	(kPa)	187		
	Undrained Shear Strength	(kPa)	93		
	Strain at Failure	(%)	9.5		
	Mode of Failure		Brittle		



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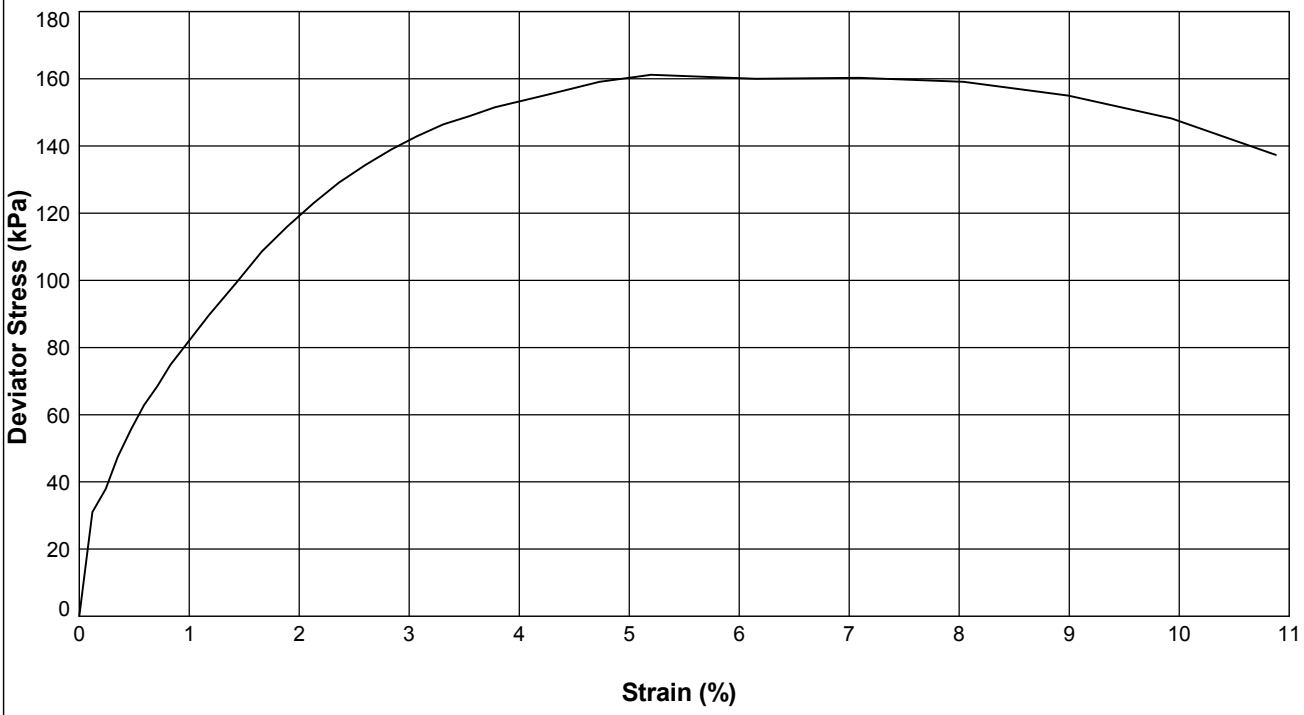
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH2** Sample Ref: **-** Sample Type: **U** Depth (m): **9.00**

Description : **Brown silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	101.04		
	Height	(mm)	211.42		
	Moisture Content	(%)	30		
	Bulk Density	(Mg/m^3)	2.01		
	Dry Density	(Mg/m^3)	1.54		
TEST DETAILS	Membrane Thickness	(mm)	0.23		
	Rate of Axial Displacement	(%/min)	1.04		
	Cell Pressure	(kPa)	180		
	Membrane Correction	(kPa)	0.32		
	Corrected Deviator Stress	(kPa)	161		
	Undrained Shear Strength	(kPa)	81		
	Strain at Failure	(%)	5.2		
	Mode of Failure		Brittle		



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Compiled By		Date
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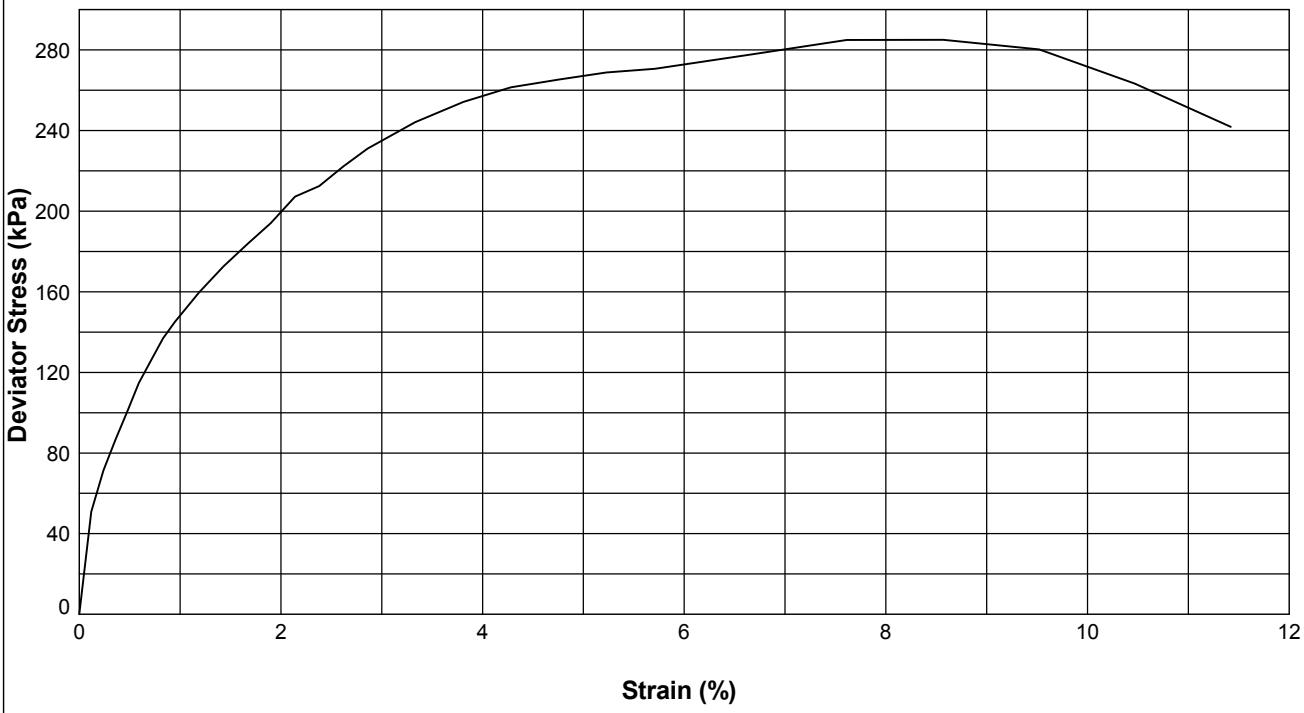
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH2** Sample Ref: **-** Sample Type: **U** Depth (m): **12.00**

Description : **Brown silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	102.92		
	Height	(mm)	210.13		
	Moisture Content	(%)	28		
	Bulk Density	(Mg/m^3)	1.97		
	Dry Density	(Mg/m^3)	1.54		
TEST DETAILS	Membrane Thickness	(mm)	0.12		
	Rate of Axial Displacement	(%/min)	1.00		
	Cell Pressure	(kPa)	240		
	Membrane Correction	(kPa)	0.24		
	Corrected Deviator Stress	(kPa)	285		
	Undrained Shear Strength	(kPa)	142		
	Strain at Failure	(%)	8.6		
	Mode of Failure		Compound		



STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By		Date
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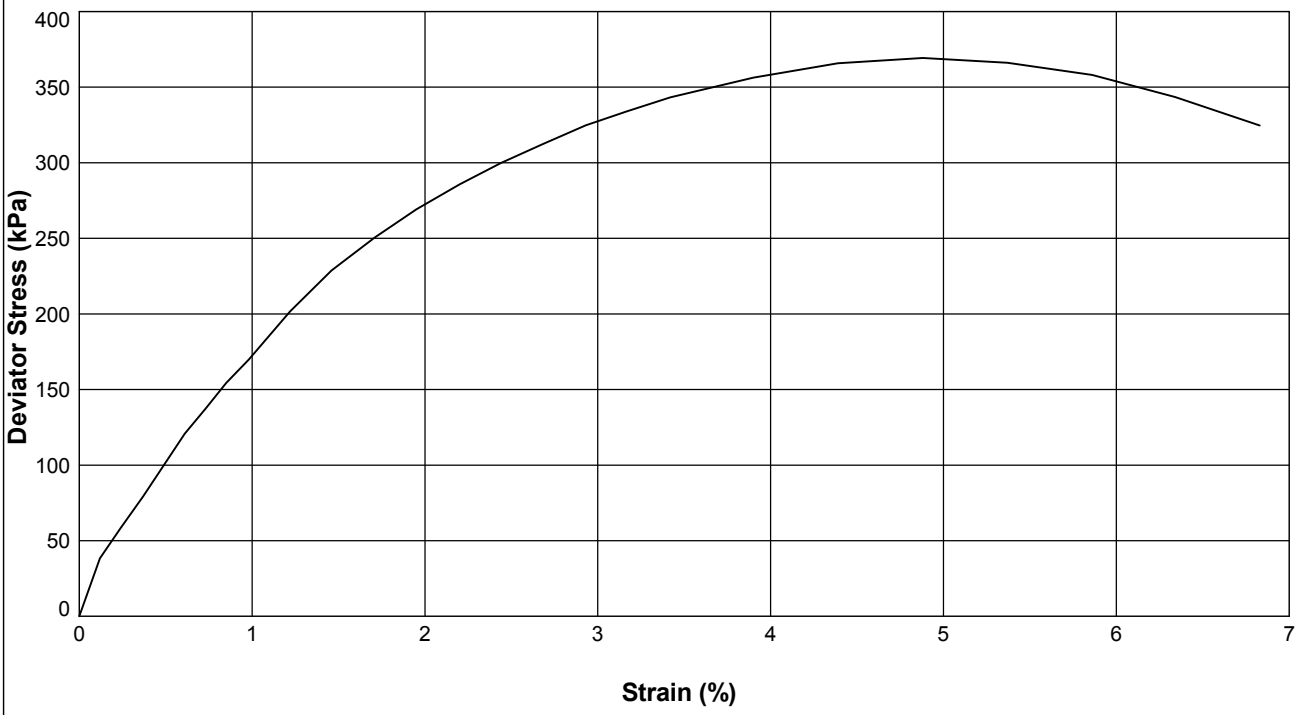
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH2** Sample Ref: **-** Sample Type: **U** Depth (m): **15.00**

Description : **Dark brown silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	100.98		
	Height	(mm)	204.89		
	Moisture Content	(%)	28		
	Bulk Density	(Mg/m^3)	1.99		
	Dry Density	(Mg/m^3)	1.56		
TEST DETAILS	Membrane Thickness	(mm)	0.11		
	Rate of Axial Displacement	(%/min)	1.12		
	Cell Pressure	(kPa)	300		
	Membrane Correction	(kPa)	0.15		
	Corrected Deviator Stress	(kPa)	369		
	Undrained Shear Strength	(kPa)	185		
	Strain at Failure	(%)	4.9		
	Mode of Failure		Brittle		



STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By		Date
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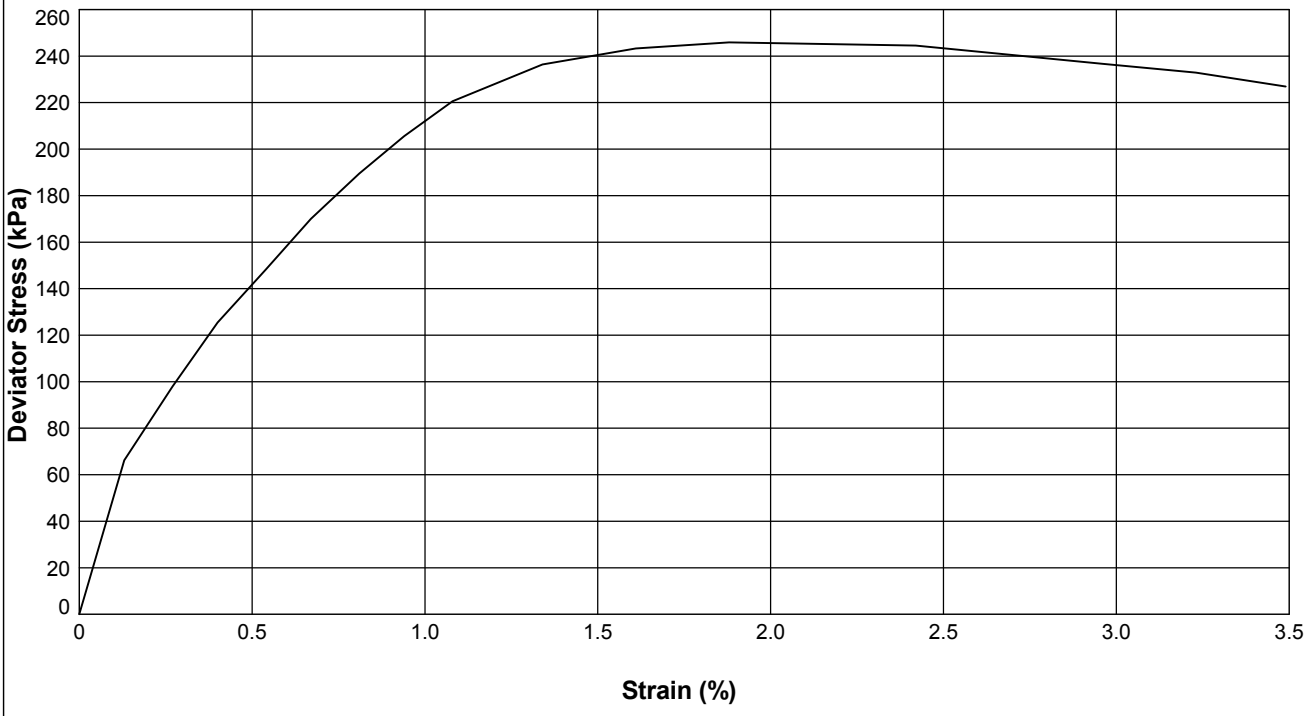
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH2** Sample Ref: **-** Sample Type: **U** Depth (m): **18.00**

Description : **Dark brown silty CLAY with rare selenite**

STAGE NUMBER			**1**	**2**	**3**
SAMPLE DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**101.69**		
	Height	(mm)	**186.00**		
	Moisture Content	(%)	**26**		
	Bulk Density	(Mg/m^3)	**1.99**		
	Dry Density	(Mg/m^3)	**1.58**		
TEST DETAILS	Membrane Thickness	(mm)	**0.11**		
	Rate of Axial Displacement	(%/min)	**1.13**		
	Cell Pressure	(kPa)	**360**		
	Membrane Correction	(kPa)	**0.06**		
	Corrected Deviator Stress	(kPa)	**246**		
	Undrained Shear Strength	(kPa)	**123**		
	Strain at Failure	(%)	**1.9**		
	Mode of Failure		**Brittle**		



STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By		Date
J.Baker	**JONATHAN BAKER**	**10/09/19**

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Royal College Street, London	**584118**

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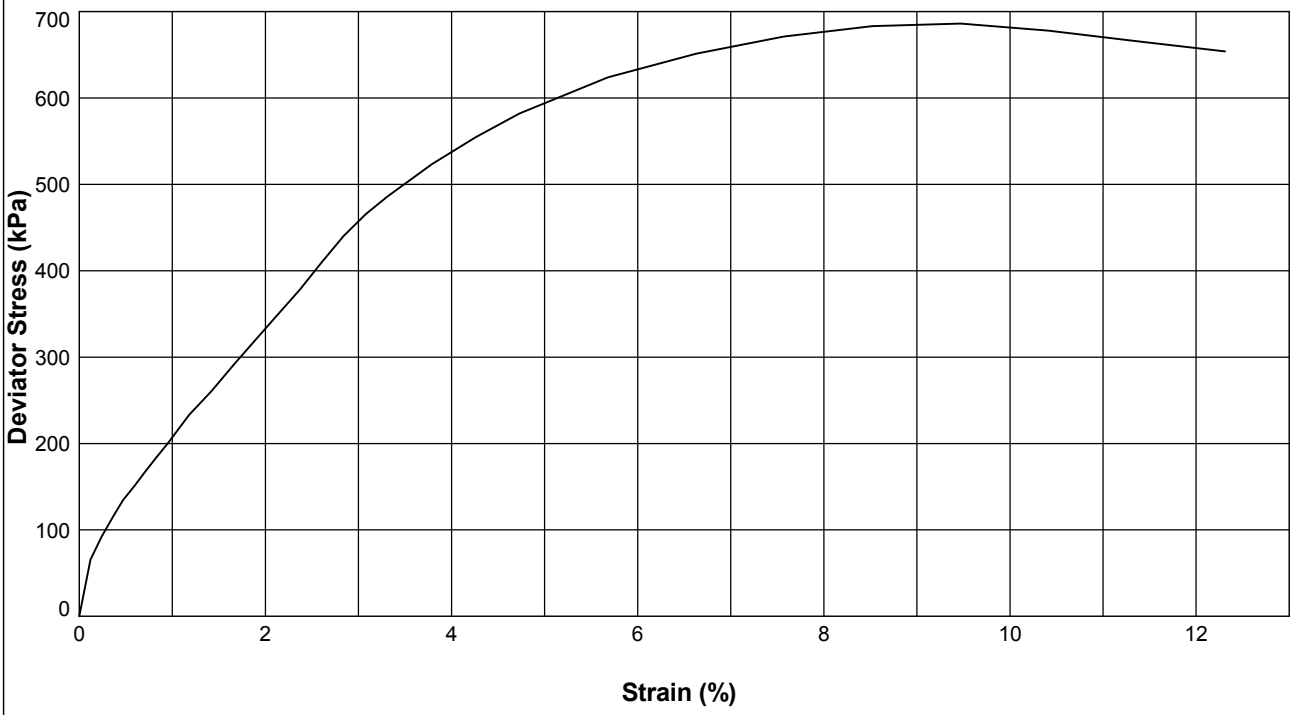
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH2** Sample Ref: **-** Sample Type: **U** Depth (m): **24.00**

Description : **Dark brown slightly silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	102.01		
	Height	(mm)	211.27		
	Moisture Content	(%)	20		
	Bulk Density	(Mg/m^3)	2.11		
	Dry Density	(Mg/m^3)	1.75		
TEST DETAILS	Membrane Thickness	(mm)	0.20		
	Rate of Axial Displacement	(%/min)	0.85		
	Cell Pressure	(kPa)	480		
	Membrane Correction	(kPa)	0.43		
	Corrected Deviator Stress	(kPa)	686		
	Undrained Shear Strength	(kPa)	343		
	Strain at Failure	(%)	9.5		
	Mode of Failure		Plastic		



STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
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Compiled By		Date
J.Baker	JONATHAN BAKER	10/09/19

Contract	Contract Ref:
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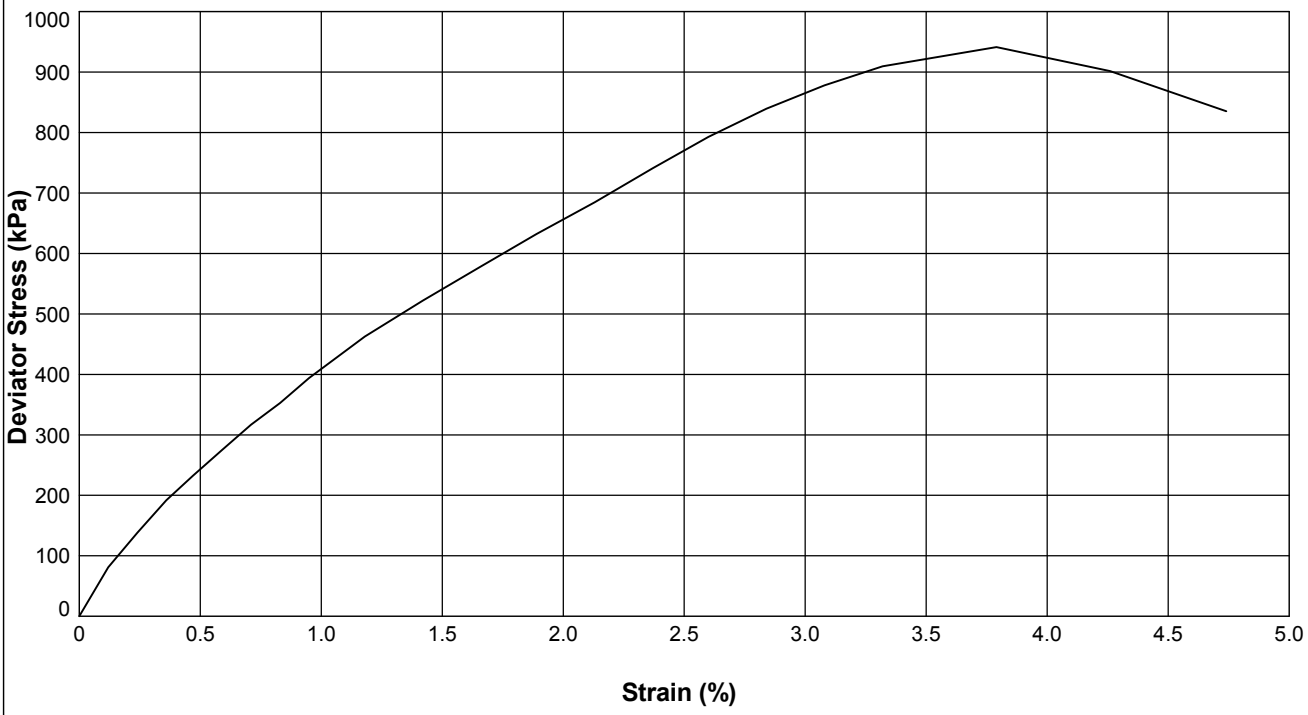
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH2** Sample Ref: **-** Sample Type: **U** Depth (m): **27.00**

Description : **Dark brown slightly silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	102.76		
	Height	(mm)	211.13		
	Moisture Content	(%)	22		
	Bulk Density	(Mg/m^3)	2.06		
	Dry Density	(Mg/m^3)	1.68		
TEST DETAILS	Membrane Thickness	(mm)	0.23		
	Rate of Axial Displacement	(%/min)	0.99		
	Cell Pressure	(kPa)	540		
	Membrane Correction	(kPa)	0.23		
	Corrected Deviator Stress	(kPa)	941		
	Undrained Shear Strength	(kPa)	471		
	Strain at Failure	(%)	3.8		
	Mode of Failure		Brittle		



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Compiled By		Date
J.Baker	JONATHAN BAKER	10/09/19

Contract	Contract Ref:
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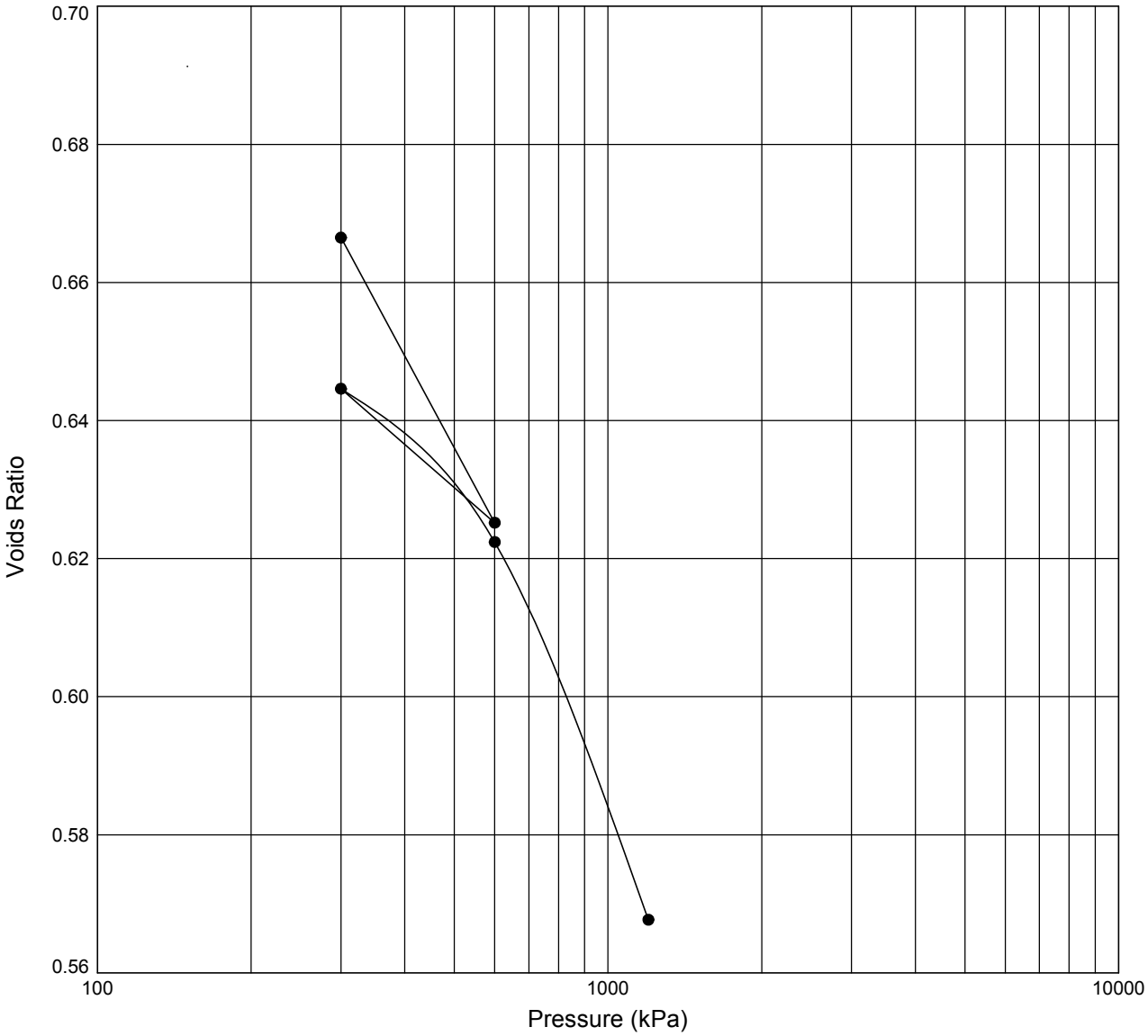
ONE DIMENSIONAL CONSOLIDATION TEST

In accordance with BS1377:Part 5:1990

Borehole: **BH1** Sample Ref: **-** Sample Type: **U** Depth (m): **7.53**



Initial Specimen Condition			Final Specimen Condition		
Moisture Content (%)	:	**28**	Moisture Content (%)	:	**25**
Bulk Density (Mg/m^3)	:	**1.99**	Bulk Density (Mg/m^3)	:	**2.12**
Dry Density (Mg/m^3)	:	**1.55**	Dry Density (Mg/m^3)	:	**1.70**
Void Ratio	:	**0.7052**	Void Ratio	:	**0.5677**

Specimen Details			
Description	Height (mm)	:	**18.93**
Greyish brown CLAY	Diameter (mm)	:	**74.94**
	Particle Density (Mg/m^3) (assumed)	:	**2.65**
	Swelling Pressure (kPa)	:	**NA**

Test Results			
Pressure Range (kPa)	Mv (m^2/MN)	Cv (m^2/yr)	Voids Ratio
0 - 150	**Sample**	**Swelling**	**0.6913**
150 - 300	**0.098**	**4.8**	**0.6665**
300 - 600	**0.083**	**2.7**	**0.6252**
600 - 300	**NA**	**NA**	**0.6446**
300 - 600	**0.045**	**4.9**	**0.6224**
600 - 1200	**0.056**	**2.4**	**0.5677**

Notes: Method of time-setting used: **T90.** Temperature range during test (degC): **19.8 - 22.5.**

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

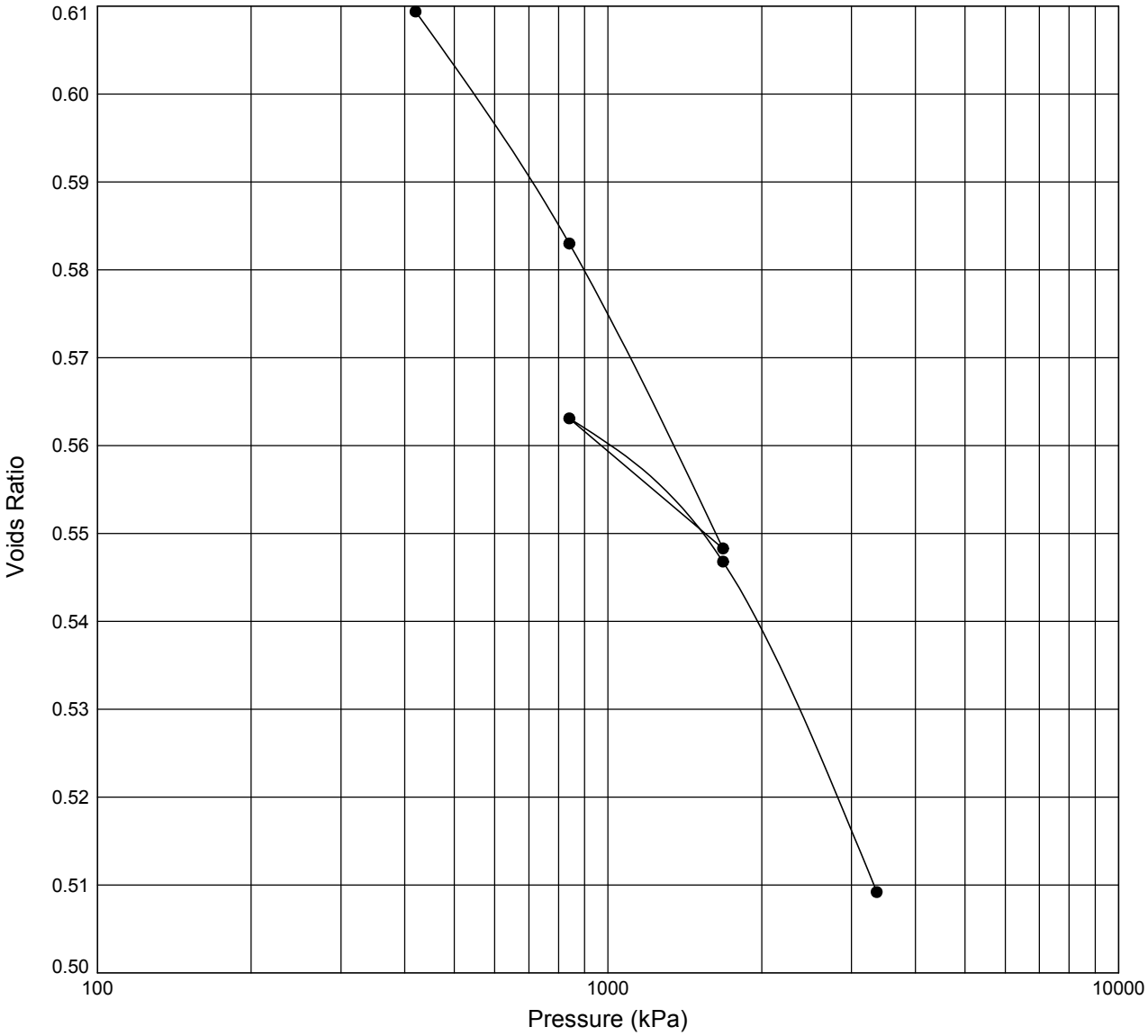
Compiled By		Date
Francesca Bennett	**FRANCESCA BENNETT**	**06/09/19**

Contract	Contract Ref:
Royal College Street, London	**584118**

ONE DIMENSIONAL CONSOLIDATION TEST

In accordance with BS1377:Part 5:1990

Borehole: **BH2** Sample Ref: **-** Sample Type: **U** Depth (m): **21.11**



Initial Specimen Condition			Final Specimen Condition		
Moisture Content (%)	:	**25**	Moisture Content (%)	:	**22**
Bulk Density (Mg/m^3)	:	**2.02**	Bulk Density (Mg/m^3)	:	**2.15**
Dry Density (Mg/m^3)	:	**1.62**	Dry Density (Mg/m^3)	:	**1.76**
Void Ratio	:	**0.6350**	Void Ratio	:	**0.5092**

Specimen Details			
Description	Height (mm)	:	**20.14**
Dark grey silty CLAY	Diameter (mm)	:	**74.97**
	Particle Density (Mg/m^3) (assumed)	:	**2.65**
	Swelling Pressure (kPa)	:	**NA**

Test Results			
Pressure Range (kPa)	Mv (m^2/MN)	Cv (m^2/yr)	Voids Ratio
0 - 420	**0.037**	**8.4**	**0.6094**
420 - 840	**0.039**	**1.5**	**0.5830**
840 - 1680	**0.026**	**1.4**	**0.5483**
1680 - 840	**NA**	**NA**	**0.5631**
840 - 1680	**0.012**	**3.1**	**0.5468**
1680 - 3360	**0.014**	**2.9**	**0.5092**

Notes: Method of time-setting used: **T90.** Temperature range during test (degC): **20 - 22.5.**

STRUCTURAL SOILS
1a Princess Street
Bedminster
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BS3 4AG

Compiled By		Date
Francesca Bennett	**FRANCESCA BENNETT**	**06/09/19**

Contract	Contract Ref:
Royal College Street, London	**584118**