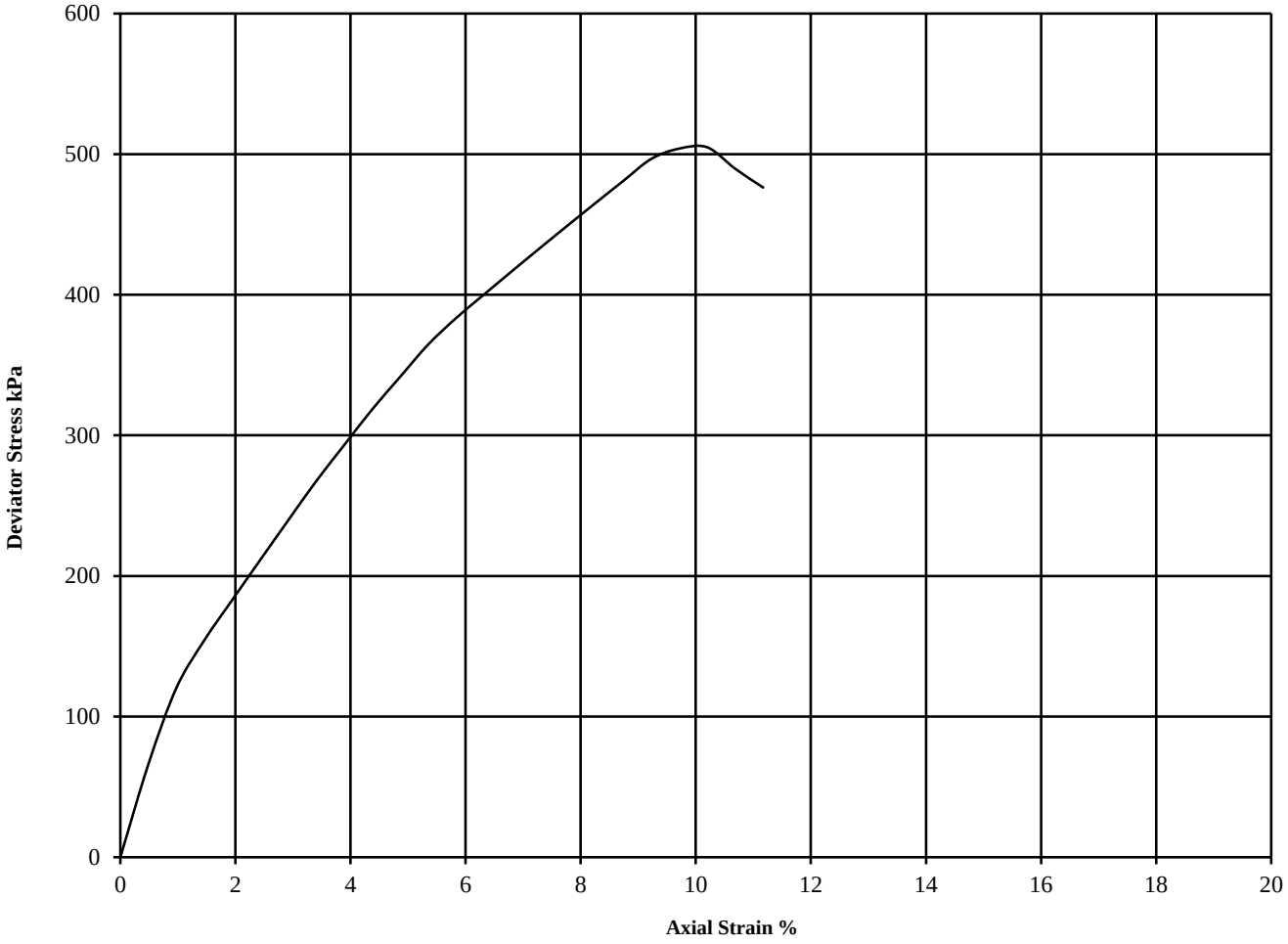
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH2**	**Top Depth (m):**	**9.50**
Sample Number:		**Base Depth (m):**	**9.95**
Sample Type	**U**		



Diameter (mm):		102.0	Height (mm):		210.0	Test:	UU Single Stage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.35
1	25	1.97	1.57	190	505	252	10.2	Brittle	See summary of soil descriptions.

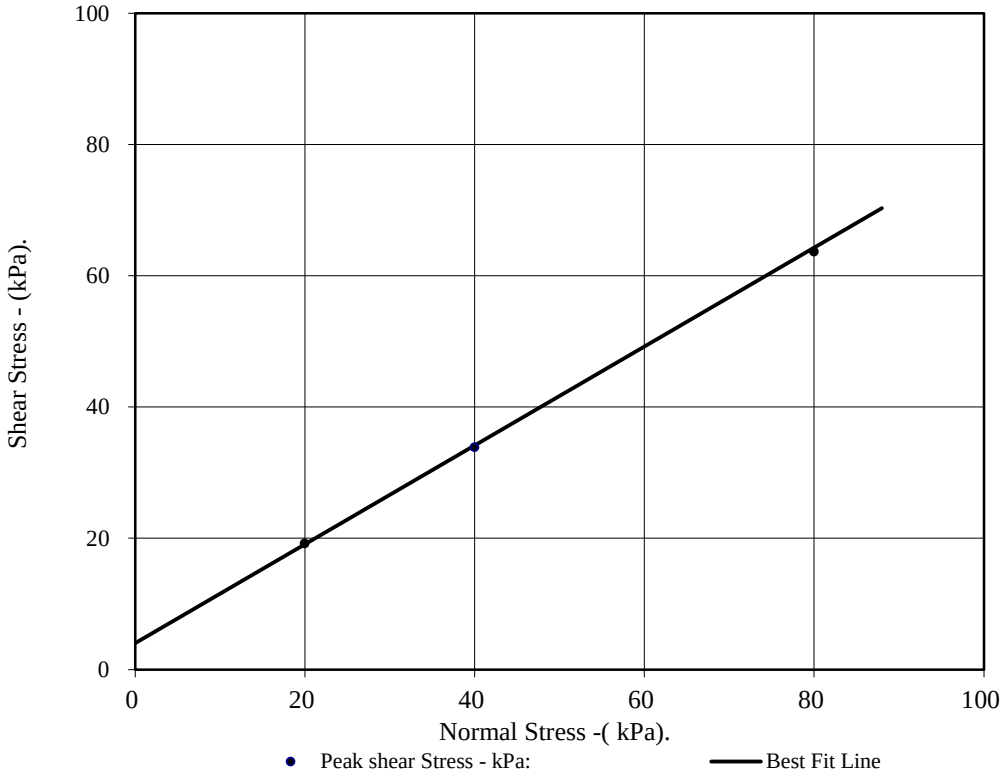
UKAS TESTING 4043	PSL Professional Soils Laboratory	**Checked / Approved**	**Date**	**29/03/16**	**Contract No:**
		150 Holburn			**PSL16/1211**
					Client Ref:
					HLEI 39025

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	**BH01**		Top Depth:	**2.00**	
Sample Number:			Base Depth:	**2.50**	
Sample Conditions:	Dry		Sample Type	**D**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Remoulded with hand tamped pressure Material tested passing 2mm sieve				
Sample Description:	**Brown gravelly SAND.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	19.78	19.78	19.78
Length - mm:	60.01	60.01	60.01
Moisture Content - %:	7.8	7.8	7.8
Bulk Density - Mg/m3:	1.59	1.59	1.59
Dry Density - Mg/m3:	1.47	1.47	1.48
Voids Ratio:	0.802	0.797	0.792
Normal Pressure- kPa	20	40	80
Consolidation Stage			
Consolidated Height - mm:	19.72	19.67	19.64
Shearing Stage			
Rate of Strain (mm/min)	0.600	0.600	0.600
Displacement at peak shear stress (mm)	2.00	2.50	4.00
Peak shear Stress - kPa:	19	34	64
Final Consolidated Conditons			
Moisture Content - %:	7.3	7.1	6.9
Bulk Density - Mg/m3:	1.59	1.60	1.61
Dry Density - Mg/m3:	1.48	1.49	1.50
Peak			
Angle of Shearing Resistance:(~~θ~~)	**37**		
Effective Cohesion - kPa:	**4**		

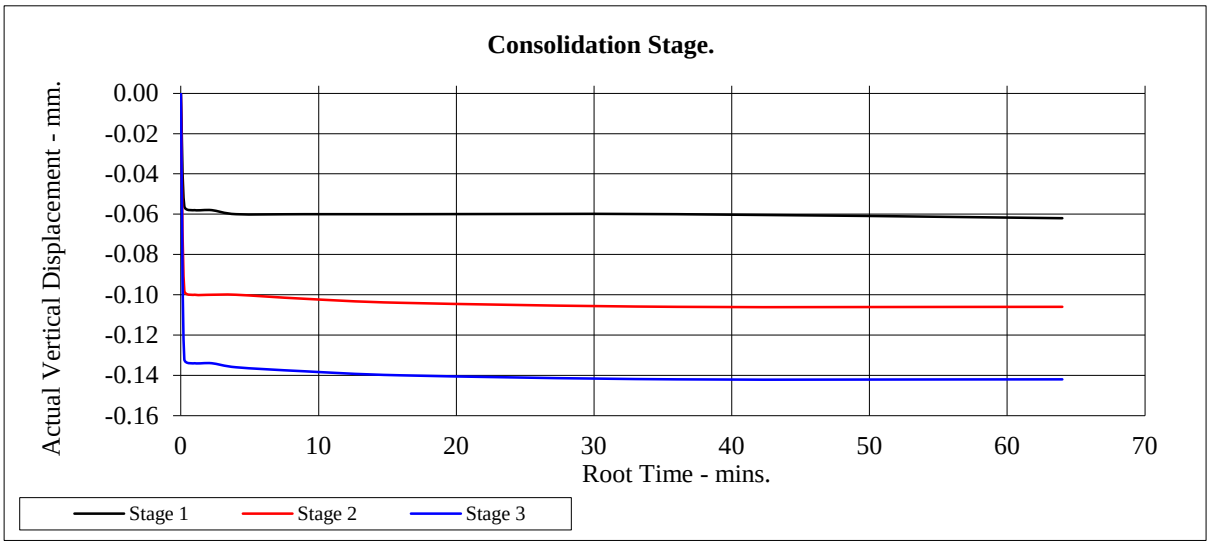


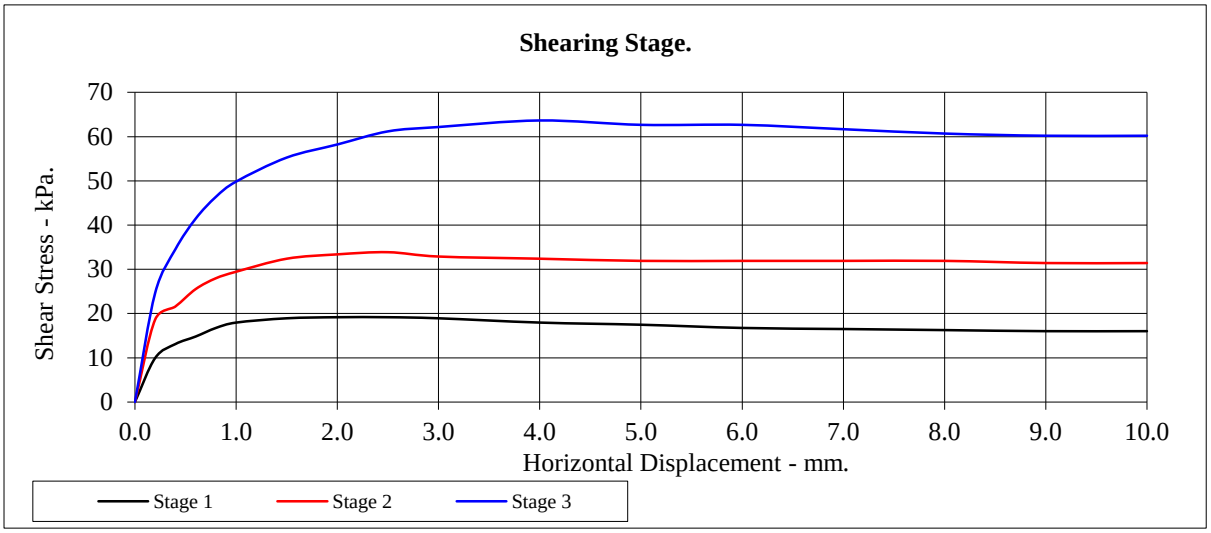
UKAS TESTING 4043	PSL Professional Soils Laboratory	**Checked / Approved**		**Date**	**19/04/16**
		150 Hilborn			Contract No: **PSL16/1211** Client Ref: **HLEI 39025**

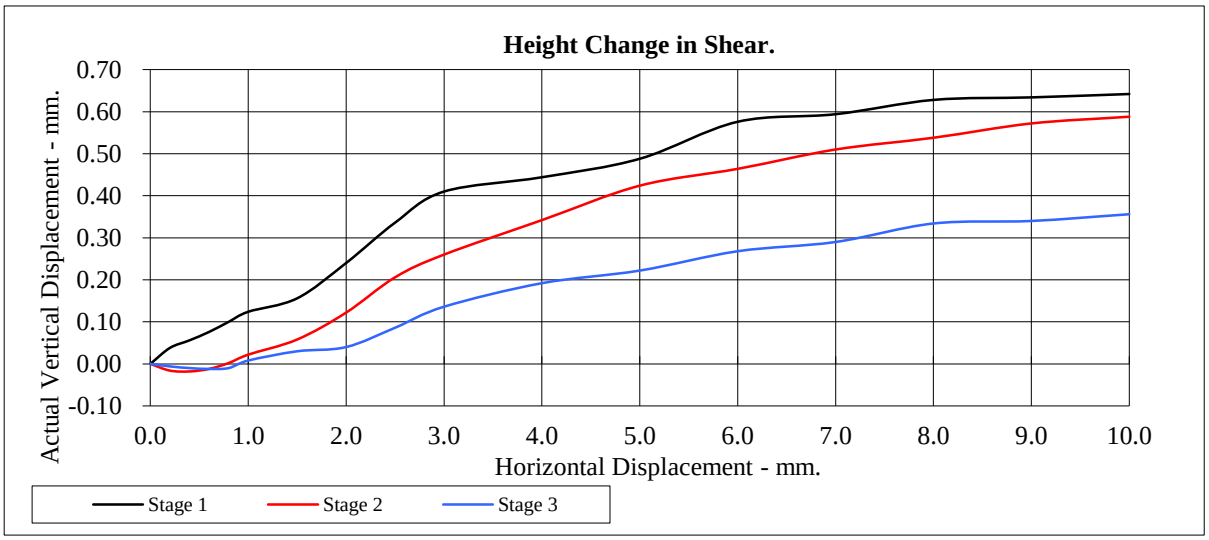
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	**BH01**	Top Depth:	**2.00**
Sample Number:		Base Depth:	**2.50**







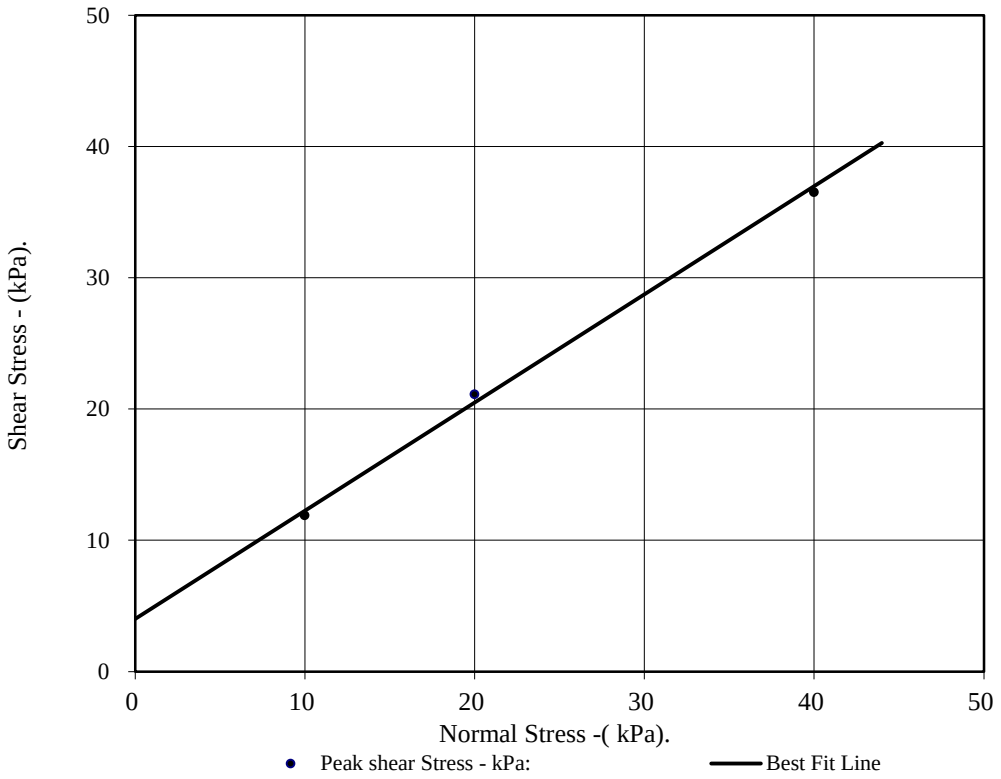
UKAS TESTING 4043	PSL Professional Soils Laboratory	**Checked/Approved**		**Date**	**19/04/16**	Contract No: **PSL16/1211**
		150 Hilborn				Client Ref: **HLEI 39025**

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	**BH02**		Top Depth:	**1.00**	
Sample Number:			Base Depth:	**1.50**	
Sample Conditions:	Dry		Sample Type	**D**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Remoulded with hand tamped pressure Material tested passing 2mm sieve				
Sample Description:	**Brown gravelly silty SAND.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	19.78	19.78	19.78
Length - mm:	60.01	60.01	60.01
Moisture Content - %:	5.9	5.9	5.9
Bulk Density - Mg/m3:	1.63	1.63	1.63
Dry Density - Mg/m3:	1.54	1.54	1.54
Voids Ratio:	0.725	0.724	0.719
Normal Pressure- kPa	10	20	40
Consolidation Stage			
Consolidated Height - mm:	19.77	19.74	19.67
Shearing Stage			
Rate of Strain (mm/min)	0.600	0.600	0.600
Displacement at peak shear stress (mm)	4.00	4.00	2.50
Peak shear Stress - kPa:	12	21	37
Final Consolidated Conditons			
Moisture Content - %:	5.8	5.6	5.5
Bulk Density - Mg/m3:	1.63	1.63	1.64
Dry Density - Mg/m3:	1.54	1.54	1.56
Peak			
Angle of Shearing Resistance:(~~θ~~)	**40**		
Effective Cohesion - kPa:	**4**		

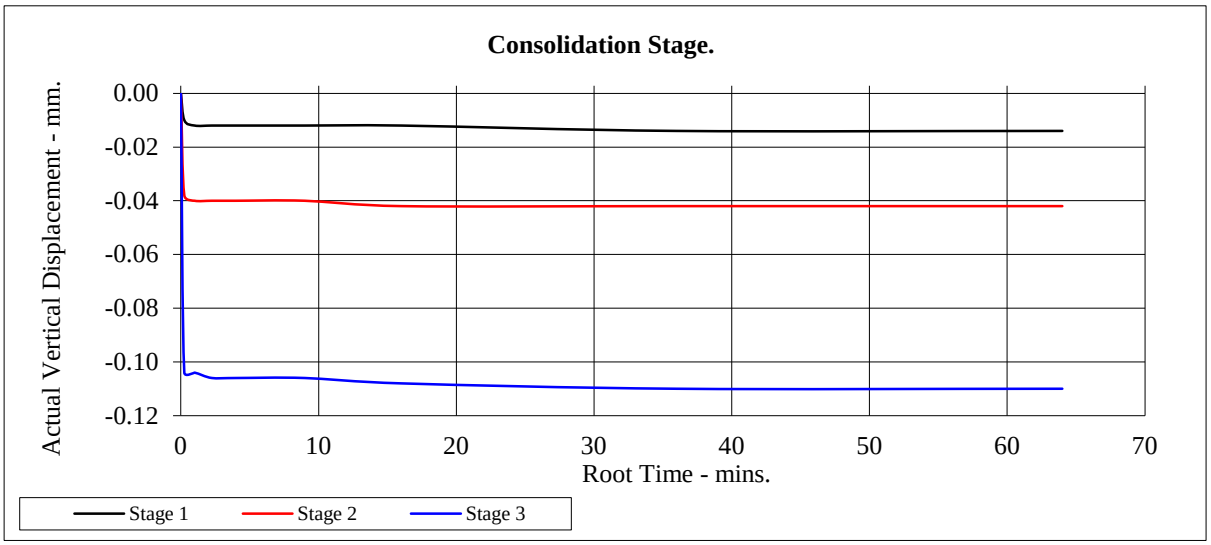


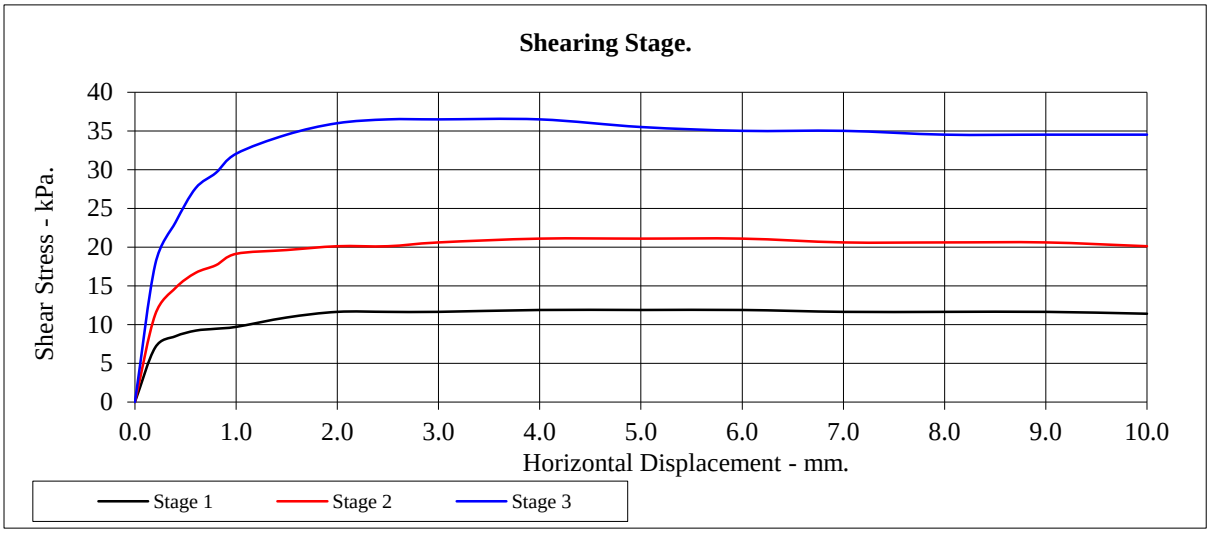
UKAS TESTING 4043	PSL Professional Soils Laboratory	**Checked / Approved**		**Date**	**19/04/16**
		150 Hilborn			Contract No: **PSL16/1211**
					Client Ref: **HLEI 39025**

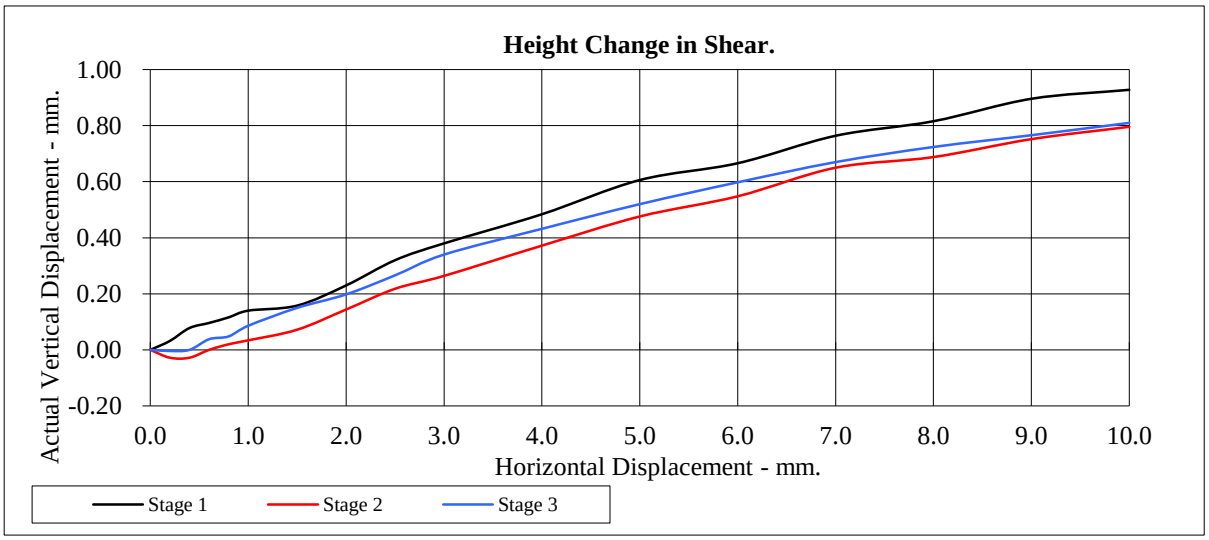
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4.5.4

Hole Number:	**BH02**	Top Depth:	**1.00**
Sample Number:		Base Depth:	**1.50**





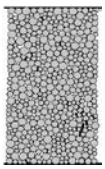


UKAS TESTING 4043	PSL Professional Soils Laboratory	**Checked/Approved**		**Date**	**19/04/16**
		150 Hilborn			Contract No: **PSL16/1211**
					Client Ref: **HLEI 39025**

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details				
 *sketch showing specimen location in original sample*	Depth			8.00-8.45m
	Description			Greyish brown CLAY.
	Type			Undisturbed, vertical orientation.
	Initial Length	L_0	(mm)	208.0
	Initial Diameter	D_0	(mm)	104.0
	Initial Weight	W_0	(gr)	3381.0
	Initial Bulk Density	ρ_0	(Mg/m3)	1.91
	Particle Density	ρ_s	(Mg/m3)	2.65

Initial Conditions			Stage 1	2	3	4
Initial Cell Pressure	σ_{3i}	(kPa)	730	807	969	
Initial Back Pressure	U_{bi}	(kPa)	650	650	649	
Membrane Thickness	m_b	(mm)	0.400			
Displacement Input	L_{IP}	(mm)	CH 2			
Load Input	N_{IP}	(N)	CH 1			
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3			
Sample Volume	V	(cm3)	CH 2			
Initial Moisture	$\omega_i\%$	(%)	33			
Initial Dry Density	ρ_{di}	(Mg/m3)	1.44			
Initial Voids Ratio	e_i	.	0.838			
Initial Degree of Saturation	S_i	(%)	100			
B Value	B	.	0.96			

Final Conditions						
Final Moisture	$\omega_f\%$	(%)	34			
Final Dry Density	ρ_{df}	(Mg/m3)	1.50			
Final Voids Ratio	e_f	.	0.763			
Final Degree of Saturation	S_f	(%)	100.0			
			Stage 1	2	3	4
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress	
Strain At Failure	$\varepsilon\%$	(%)	1.47	3.43	5.82	
Stress At Failure	$(\sigma_1-\sigma_3)$	(kPa)	86.1	109.7	150.2	
Minor Stress At Failure	σ_3'	(kPa)	35.0	52.0	83.0	
Major Stress At Failure	σ_1'	(kPa)	121.1	161.7	233.2	
Principal Stress At Failure	σ_1'/σ_3'		3.460	3.109	2.810	

Notes

Test Method	BS1377-8 : 1990 : Clause 7			Test Name	BH1 8.00-8.45m
				Test Date	22/03/2016
Site Reference				Borehole	BH1
Jobfile	150 Holborn			Sample	8.00-8.45m
Client	RPS			Depth	8.00-8.45m
Operator	David Burton	Checked	Sean Royle	Approved	Anthony Watkins

Database: .\SQLEXPRESS \ PSL - System 2

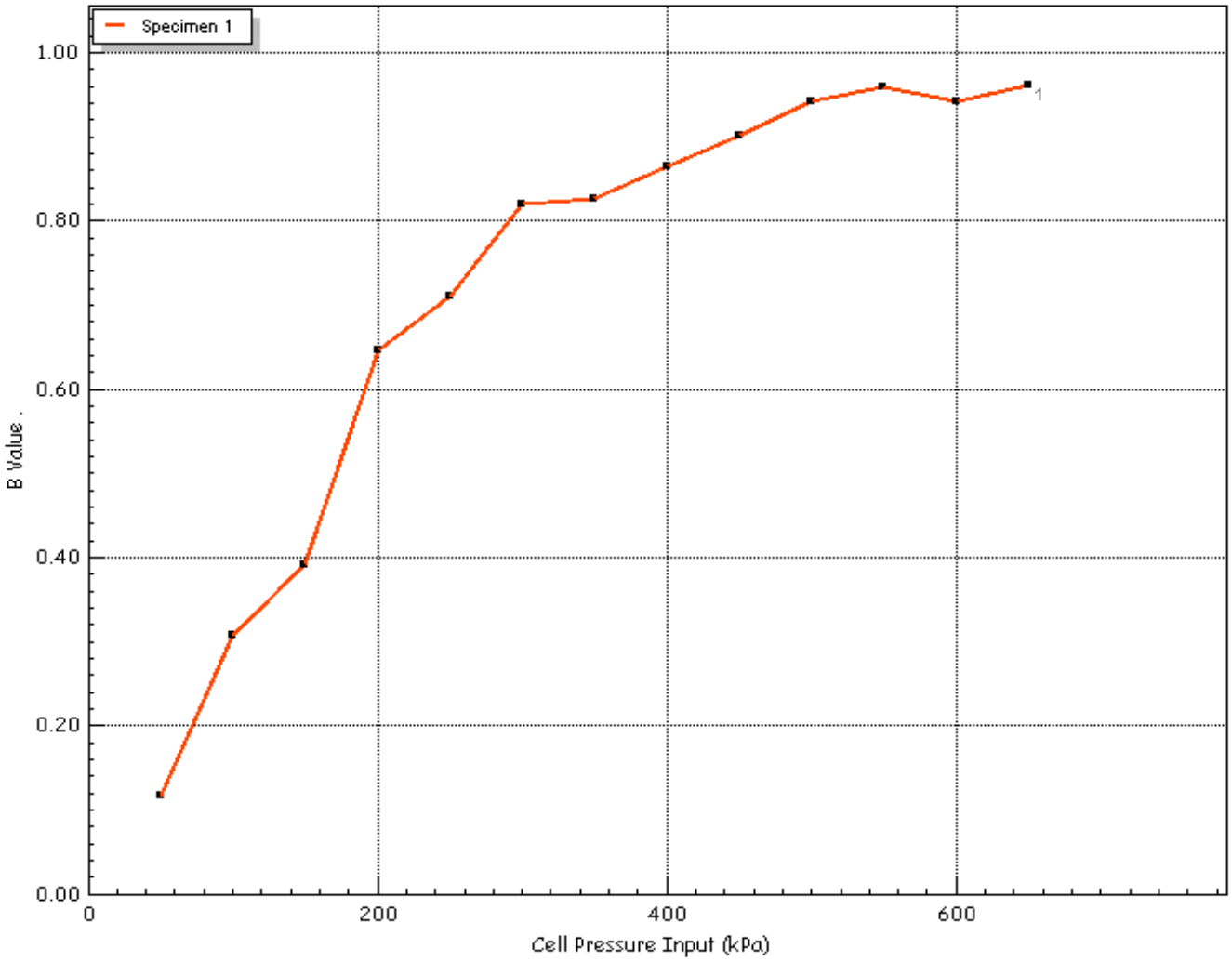
Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			1
Saturation Method			Stepped
Cell Pressure Input	σ	(kPa)	650
Pore Water Pressure Input	u pwp	(kPa)	639
B Value	B	.	0.96



PSL Professional Soils Laboratory	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH1 8.00-8.45m
	Database: .\SQLEXPRESS \ PSL - System 2			Test Date	22/03/2016
	Site Reference			Borehole	BH1
	Jobfile	150 Holborn		Sample	8.00-8.45m
	Client	RPS		Depth	8.00-8.45m
	Operator	David Burton	Checked	Sean Royle	Approved Anthony Watkins

Effective Stress Triaxial Compression

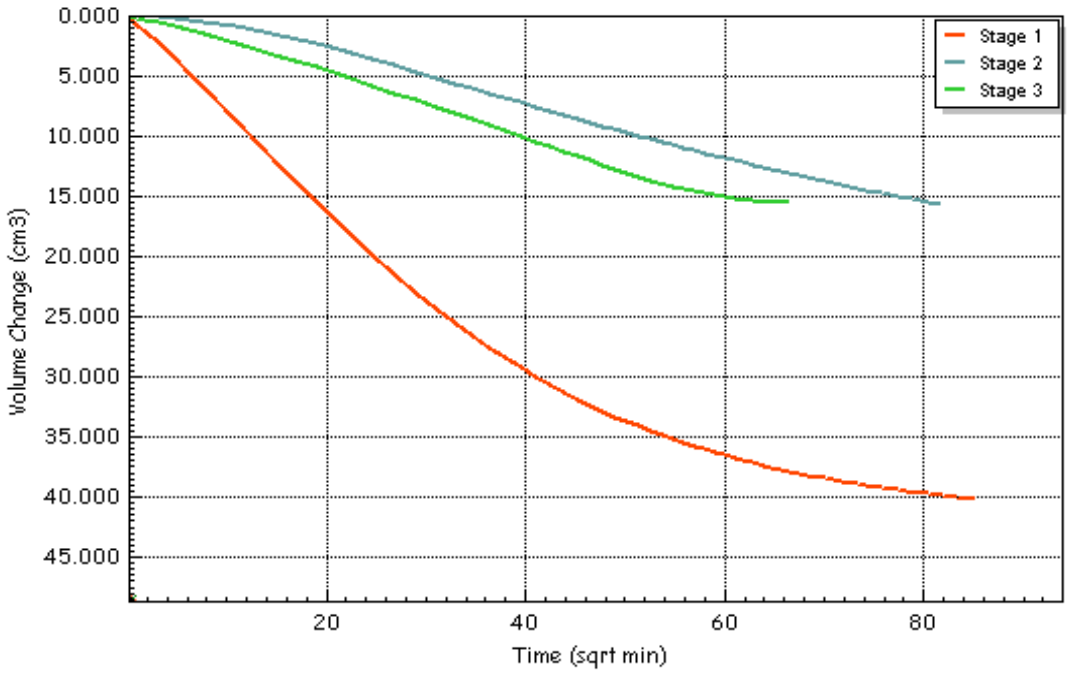
Consolidated Undrained

Consolidation Plots

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	σ_3	(kPa)	730	810	970
Initial Back Pressure	u_{bi}	(kPa)	650	650	650
Pore Water Pressure Input	u_{pwp}	(kPa)	720	732	852
Drainage Method			Radial+One End		

Final Conditions			Stage 1	2	3
PWP Dissipation %	U%	(%)	95.71	95.12	95.05
Volumetric Strain	ε_v%	(%)	2.27	3.16	4.05
Corrected Length	L_C	(mm)	206.4	200.2	190.7
Corrected Area	A_C	83.66	83.66	83.52	86.06
Corrected Volume	V_C	(cm3)	1726.754	1711.036	1695.422
T100 Time to Failure	t_{100}	(min)	2357.69	5714.94	3329.47
Consolidation	c_v	(m2/year)	0.095	0.039	0.067
Compressibility	m_v	(m2/MN)	0.339	0.406	0.211
Test Time	t_F	(h:m:s)	70:43:50	171:26:53	99:53:02
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min)	0.00243	0.00097	0.00159

Notes



Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH1 8.00-8.45m	
Database: .\SQLEXPRESS \ PSL - System 2			Test Date	22/03/2016	
Site Reference			Borehole	BH1	
Jobfile	150 Holborn		Sample	8.00-8.45m	
Client	RPS		Depth	8.00-8.45m	
Operator	David Burton	Checked	Sean Royle	Approved	Anthony Watkins

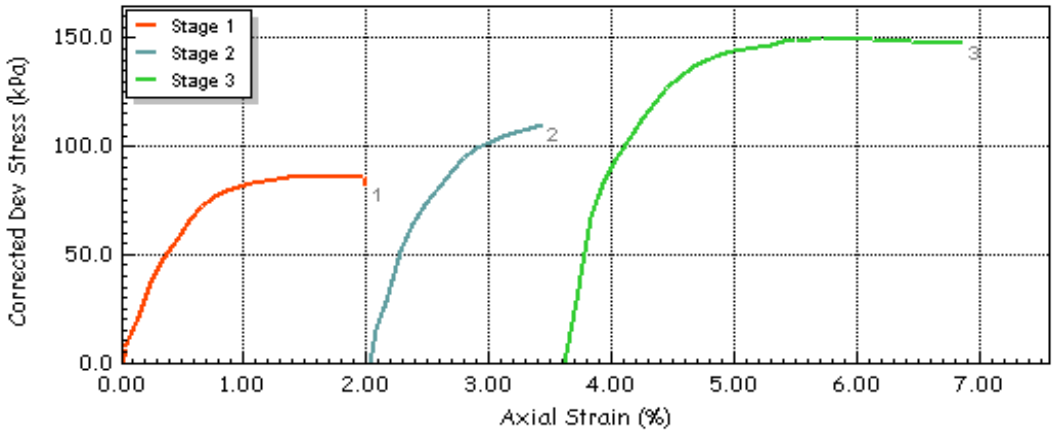
PSL Professional Soils Laboratory

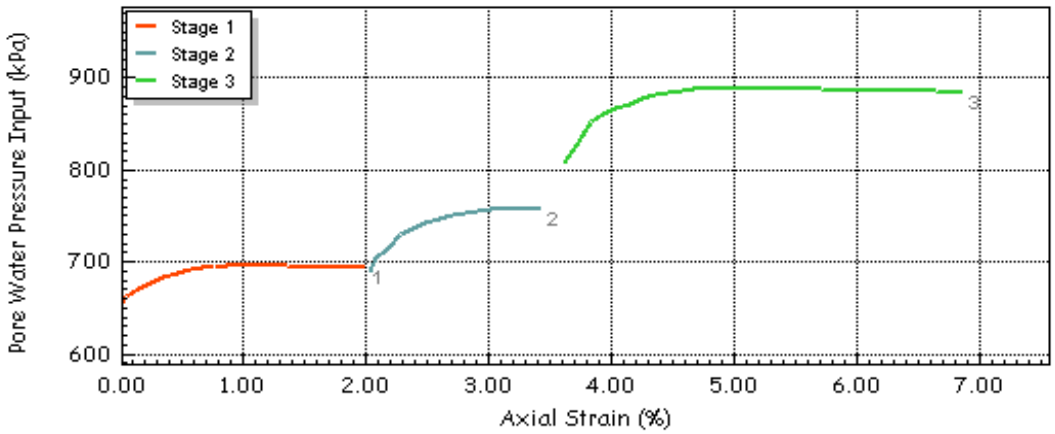
Professional Soils Laboratory

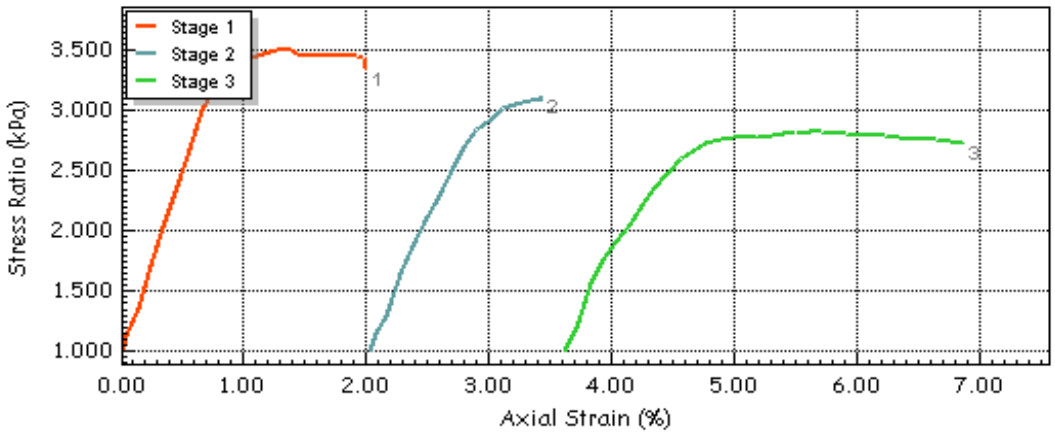
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







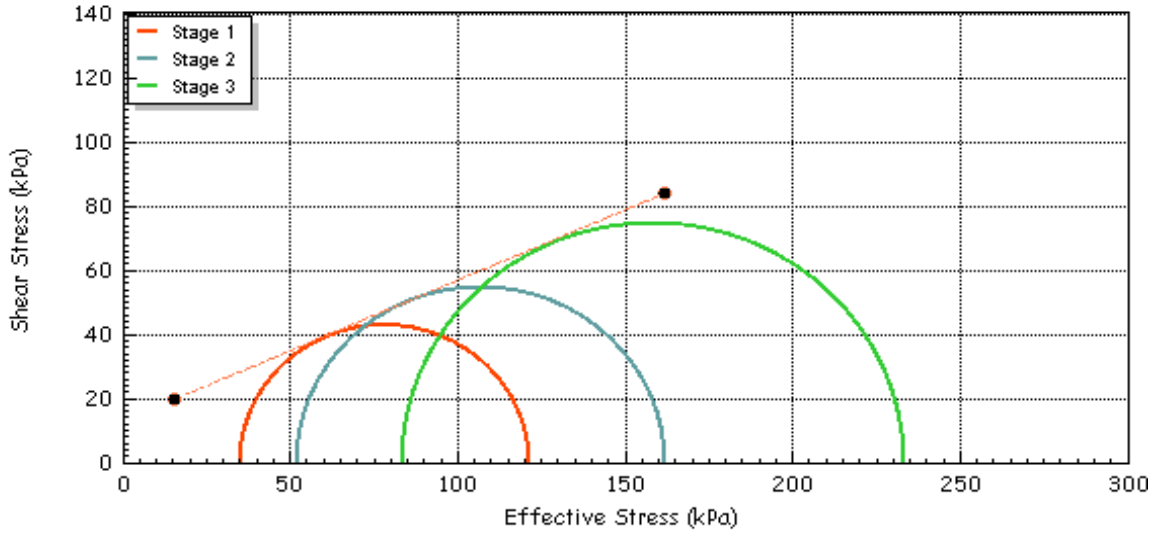
PSL Professional Soils Laboratory	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH1 8.00-8.45m
	Database: .\SQLEXPRESS \ PSL - System 2			Test Date	22/03/2016
	Site Reference			Borehole	BH1
	Jobfile	150 Holborn		Sample	8.00-8.45m
	Client	RPS		Depth	8.00-8.45m
	Operator	David Burton	Checked	Sean Royle	Approved Anthony Watkins

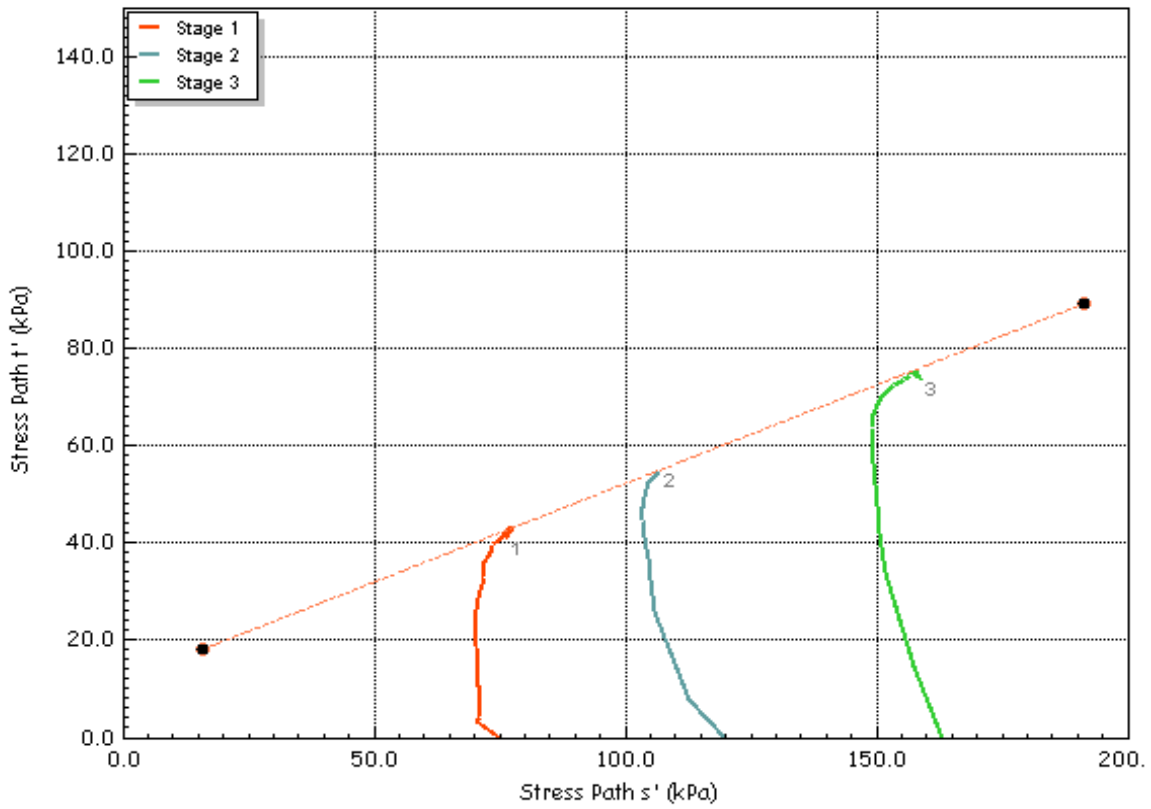
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	12.91	Effective Cohesion	c'	(kPa)	12.91
Effective Friction	ϕ'	(deg)	23.8	Effective Friction	ϕ'	(deg)	23.8





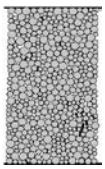
Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH1 8.00-8.45m	
Database: .\SQLEXPRESS \ PSL - System 2			Test Date	22/03/2016	
Site Reference			Borehole	BH1	
Jobfile	150 Holborn		Sample	8.00-8.45m	
Client	RPS		Depth	8.00-8.45m	
Operator	David Burton	Checked	Sean Royle	Approved	Anthony Watkins

PSL Professional Soils Laboratory

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

Sample Details				
 *sketch showing specimen location in original sample*	Depth			12.50-12.95m
	Description			Greyish brown slightly sandy CLAY.
	Type			Undisturbed, vertical orientation.
	Initial Length	L_0	(mm)	208.0
	Initial Diameter	D_0	(mm)	104.0
	Initial Weight	W_0	(gr)	3404.0
	Initial Bulk Density	ρ_0	(Mg/m3)	1.93
	Particle Density	ρ_s	(Mg/m3)	2.65

Initial Conditions			Stage 1	2	3	4
Initial Cell Pressure	σ_{3i}	(kPa)	576	700	950	
Initial Back Pressure	U_{bi}	(kPa)	451	450	450	
Membrane Thickness	m_b	(mm)	0.400			
Displacement Input	L_{IP}	(mm)	CH 2			
Load Input	N_{IP}	(N)	CH 1			
Pore Water Pressure Input	u_{pwp}	(kPa)	CH 3			
Sample Volume	V	(cm3)	CH 2			
Initial Moisture	$\omega_i\%$	(%)	22			
Initial Dry Density	ρ_{di}	(Mg/m3)	1.58			
Initial Voids Ratio	e_i	.	0.680			
Initial Degree of Saturation	S_i	(%)	86			
B Value	B	.	0.92			

Final Conditions						
Final Moisture	$\omega_f\%$	(%)	22			
Final Dry Density	ρ_{df}	(Mg/m3)	1.67			
Final Voids Ratio	e_f	.	0.585			
Final Degree of Saturation	S_f	(%)	100.0			
			Stage 1	2	3	4
Failure Criteria		.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress	
Strain At Failure	$\varepsilon\%$	(%)	3.78	6.52	9.62	
Stress At Failure	$(\sigma_1-\sigma_3)$	(kPa)	150.3	317.6	477.0	
Minor Stress At Failure	σ_3'	(kPa)	51.0	118.0	242.0	
Major Stress At Failure	σ_1'	(kPa)	201.3	435.6	719.0	
Principal Stress At Failure	σ_1'/σ_3'		3.946	3.692	2.971	

Notes

Test Method	BS1377-8 : 1990 : Clause 7	Test Name	BH2 12.50-12.95m
		Test Date	23/03/2016
Site Reference		Borehole	BH2
Jobfile	150 Holborn	Sample	12.50-12.95m
Client	RPS	Depth	12.50-12.95m

Operator	David Burton	Checked	Sean Royle	Approved	Anthony Watkins

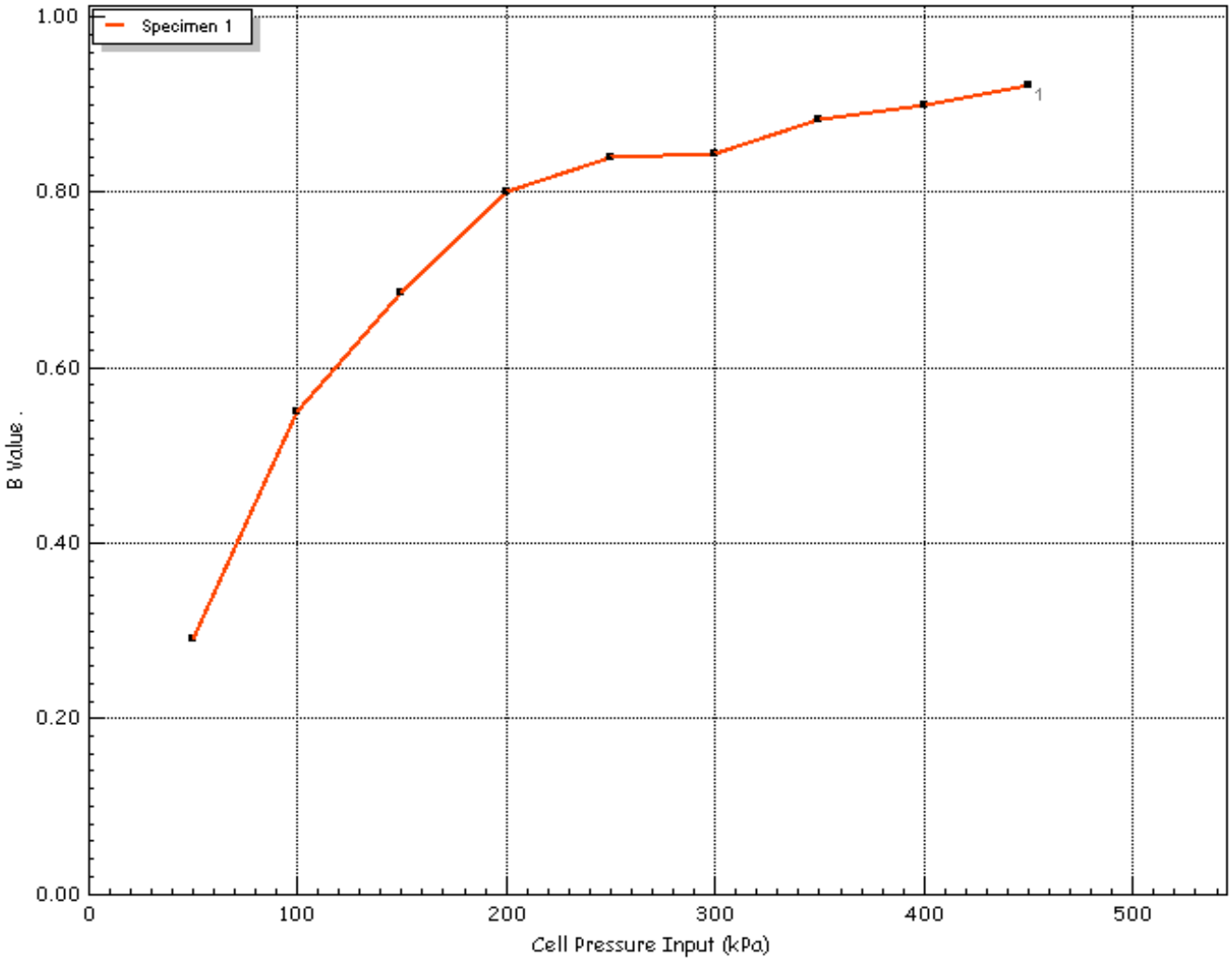
Database: .\SQLEXPRESS \ PSL - System 2

Effective Stress Triaxial Compression

Consolidated Undrained

Saturation Plots

			1
Saturation Method			Stepped
Cell Pressure Input	σ	(kPa)	450
Pore Water Pressure Input	u pwp	(kPa)	437
B Value	B	.	0.92



PSL Professional Soils Laboratory	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH2 12.50-12.95m
	Database: .\SQLEXPRESS \ PSL - System 2			Test Date	23/03/2016
	Site Reference			Borehole	BH2
	Jobfile	150 Holborn		Sample	12.50-12.95m
	Client	RPS		Depth	12.50-12.95m
	Operator	David Burton	Checked	Sean Royle	Approved Anthony Watkins

Effective Stress Triaxial Compression

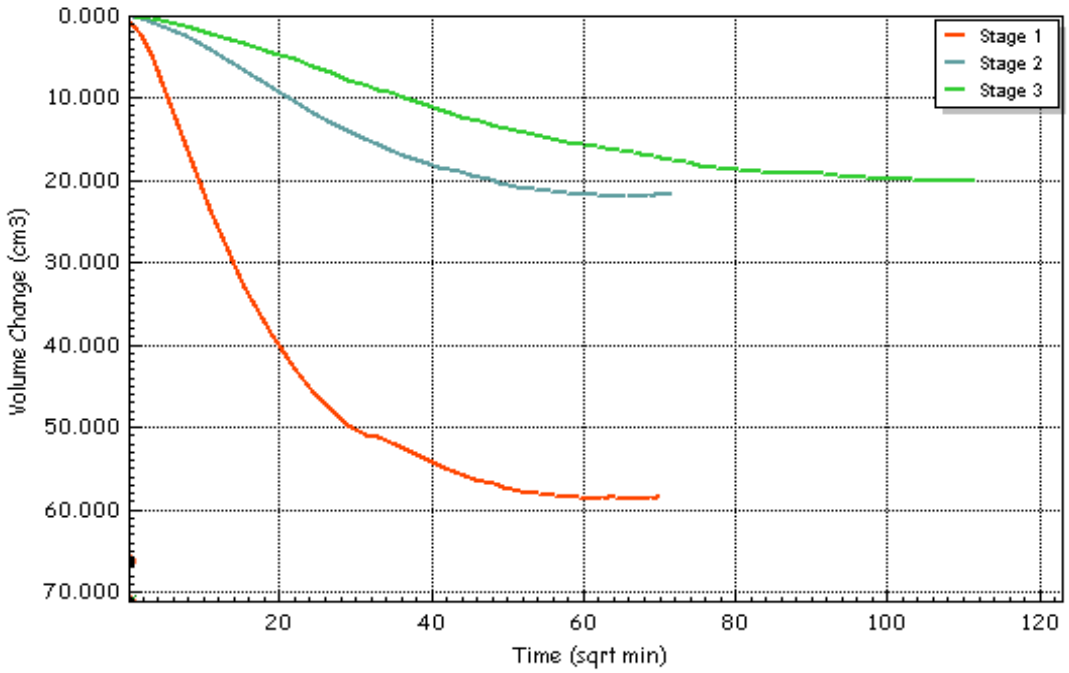
Consolidated Undrained

Consolidation Plots

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	σ_3	(kPa)	575	700	950
Initial Back Pressure	u_{bi}	(kPa)	450	450	450
Pore Water Pressure Input	u_{pwp}	(kPa)	560	603	772
Drainage Method			Radial+One End		

Final Conditions			Stage 1	2	3
PWP Dissipation %	U%	(%)	95.45	95.42	95.03
Volumetric Strain	ε_v%	(%)	3.31	4.54	5.68
Corrected Length	L_C	(mm)	205.7	195.0	178.8
Corrected Area	A_C	83.08	83.08	83.61	88.89
Corrected Volume	V_C	(cm3)	1708.517	1686.725	1666.643
T100 Time to Failure	t_{100}	(min)	650.92	1699.63	4742.26
Consolidation	c_V	(m2/year)	0.343	0.131	0.047
Compressibility	m_V	(m2/MN)	0.315	0.311	0.185
Test Time	t_F	(h:m:s)	19:31:39	50:59:20	142:16:04
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min)	0.00878	0.00319	0.00105

Notes



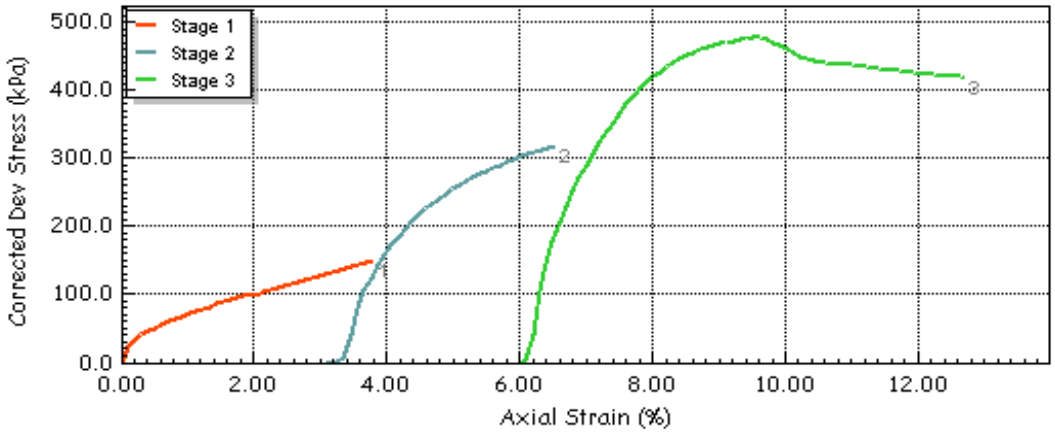
Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH2 12.50-12.95m	
Database: .\SQLEXPRESS \ PSL - System 2			Test Date	23/03/2016	
Site Reference			Borehole	BH2	
Jobfile	150 Holborn		Sample	12.50-12.95m	
Client	RPS		Depth	12.50-12.95m	
Operator	David Burton	Checked	Sean Royle	Approved	Anthony Watkins

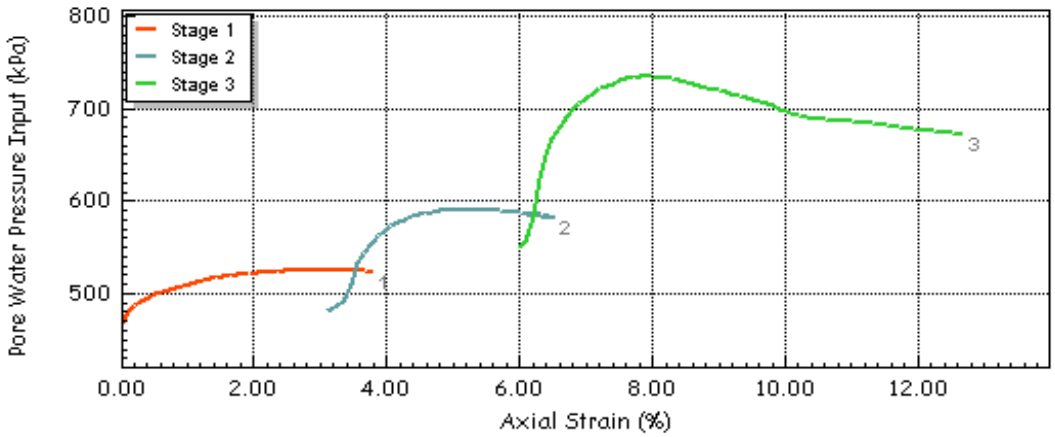
Professional Soils Laboratory

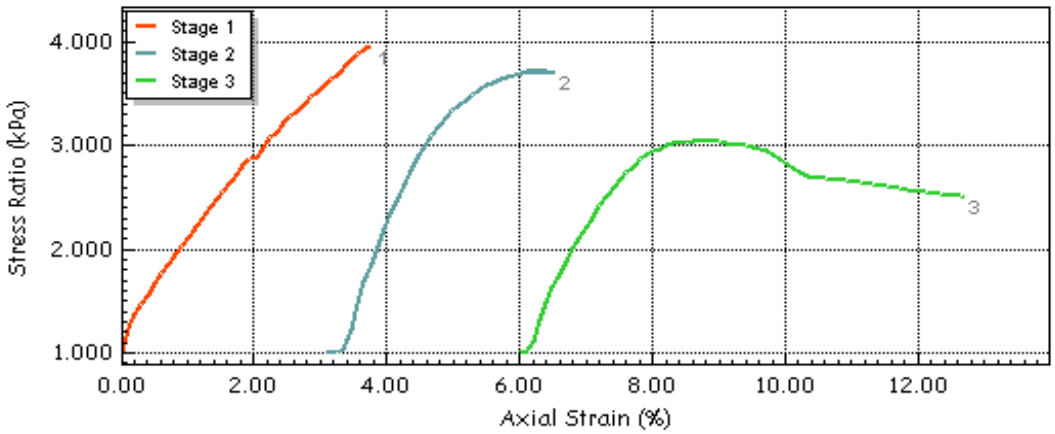
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots







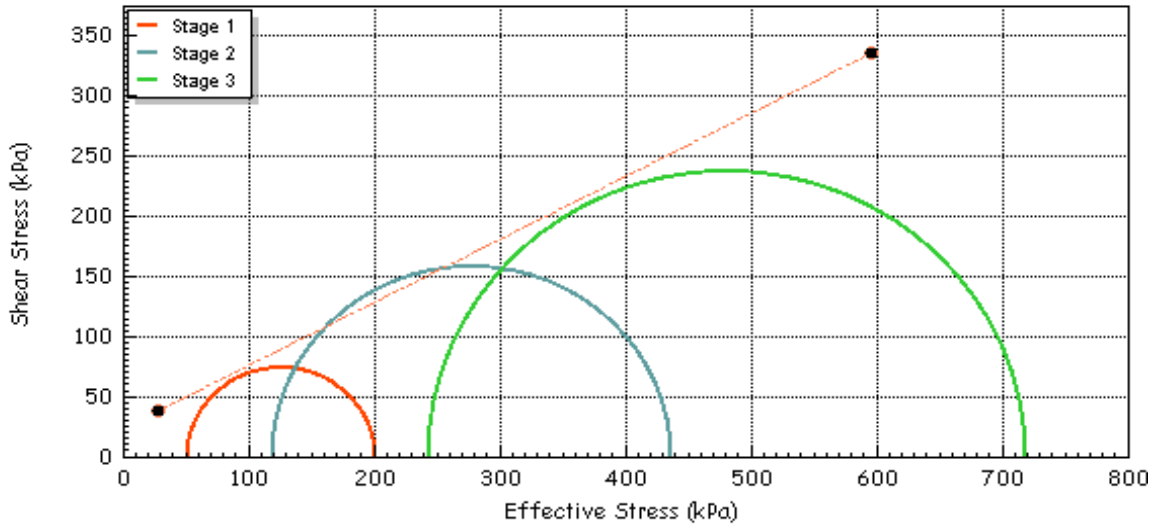
PSL Professional Soils Laboratory	Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH2 12.50-12.95m
	Database: .\SQLEXPRESS \ PSL - System 2			Test Date	23/03/2016
	Site Reference			Borehole	BH2
	Jobfile	150 Holborn		Sample	12.50-12.95m
	Client	RPS		Depth	12.50-12.95m
	Operator	David Burton	Checked	Sean Royle	Approved Anthony Watkins

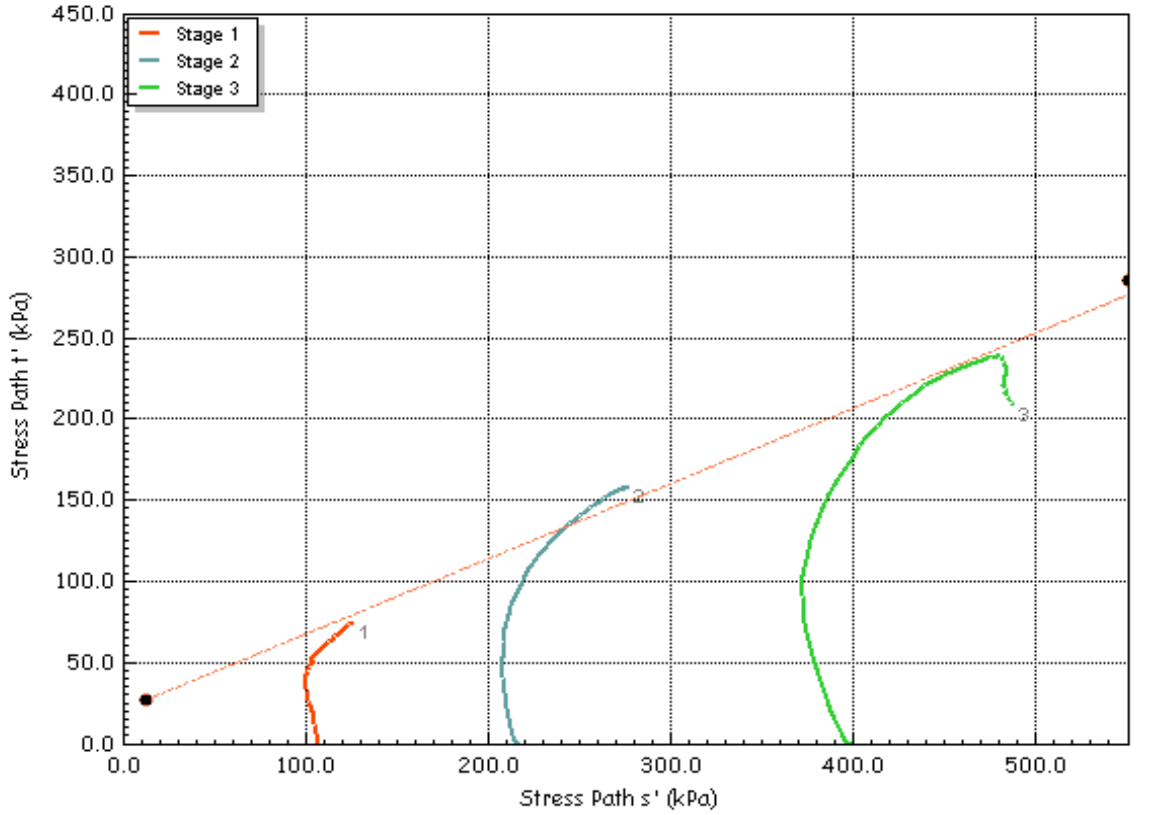
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	24.35	Effective Cohesion	c'	(kPa)	24.35
Effective Friction	ϕ'	(deg)	27.6	Effective Friction	ϕ'	(deg)	27.6





Test Method	BS1377-8 : 1990 : Clause 7		Test Name	BH2 12.50-12.95m	
Database: .\SQLEXPRESS \ PSL - System 2			Test Date	23/03/2016	
Site Reference			Borehole	BH2	
Jobfile	150 Holborn		Sample	12.50-12.95m	
Client	RPS		Depth	12.50-12.95m	
Operator	David Burton	Checked	Sean Royle	Approved	Anthony Watkins

Derwentside Environmental Testing Services

Certificate of Analysis

Certificate Number 16-61674

29-Mar-16

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

Our Reference	16-61674
Client Reference	PSL16/1211
Order No	(not supplied)
Contract Title	150 Holburn
Description	8 Soil samples.
Date Received	22-Mar-16
Date Started	22-Mar-16
Date Completed	29-Mar-16
Test Procedures	Identified by prefix DETSn (details on request).

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

Approved By

Mark Hughes
Operations Manager

UKAS TESTING
2139

Summary of Chemical Analysis

Soil Samples

Our Ref 16-61674
Client Ref PSL16/1211
Contract Title 150 Holburn

				Lab No	961672	961673	961674	961675	961676	961677	961678	961679
				Sample ID	BH1	BH1	BH1	BH1	BH2	BH2	BH2	BH2
				Depth	4.50	9.50-9.95	23.50	26.50	2.50	5.50	14.50	30.00
				Other ID								
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**									
Inorganics												
pH	DETSC 2008#			8.2	8.6	9.1	9.3	8.8	8.0	8.5	9.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	240	290	30	36	10	210	280	32

Key: # -MCERTS (accreditation only implied if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 16-61674
Client Ref PSL16/1211
Contract 150 Holburn

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
961672	BH1 4.50 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
961673	BH1 9.50-9.95 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
961674	BH1 23.50 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
961675	BH1 26.50 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
961676	BH2 2.50 SOIL		PG	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
961677	BH2 5.50 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
961678	BH2 14.50 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	
961679	BH2 30.00 SOIL		PT 500ml	Sample date not supplied, Anions 2:1 (365 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub G-Bag

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

Soil Analysis Notes

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

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

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

Disposal

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

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

APPENDIX E

Field Monitoring Data

Ground Gas Monitoring Results

Ground gas concentrations 14th April 2016

Borehole ID	Flow Rate (l/hr)		Methane (% vol)		Carbon Dioxide (% vol)		Oxygen (% vol)	iVOCs (ppm)
	Peak	Steady	Peak	Steady	Peak	Steady		
BH1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	20.5	<0.1
BH2	<0.1	<0.1	<0.1	<0.1	0.4	0.4	20.5	3.0
BH3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	18.8	2.6

Atmospheric Pressure: 1006mb to 1005mb.

Ground gas concentrations 22nd April 2016

Borehole ID	Flow Rate (l/hr)		Methane (% vol)		Carbon Dioxide (% vol)		Oxygen (% vol)	iVOCs (ppm)
	Peak	Steady	Peak	Steady	Peak	Steady		
BH1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	21.6	<0.1
BH2	<0.1	<0.1	<0.1	<0.1	0.3	0.3	20.9	<0.1
BH3	<0.1	<0.1	<0.1	<0.1	0.1	0.1	21.1	<0.1

Atmospheric Pressure: 1017mb to 1016mb.

Ground gas concentrations 9th May 2016

Borehole ID	Flow Rate (l/hr)		Methane (% vol)		Carbon Dioxide (% vol)		Oxygen (% vol)	iVOCs (ppm)
	Peak	Steady	Peak	Steady	Peak	Steady		
BH1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	21.0	<0.1
BH2	<0.1	<0.1	<0.1	<0.1	0.4	0.4	20.7	<0.1
BH3	<0.1	<0.1	<0.1	<0.1	0.1	0.1	21.0	<0.1

Atmospheric Pressure: 1005mb.

Ground gas concentrations 16th May 2016

Borehole ID	Flow Rate (l/hr)		Methane (% vol)		Carbon Dioxide (% vol)		Oxygen (% vol)	iVOCs (ppm)
	Peak	Steady	Peak	Steady	Peak	Steady		
BH1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	21.1	<0.1
BH2	<0.1	<0.1	<0.1	<0.1	0.2	0.2	21.0	<0.1
BH3	<0.1	<0.1	<0.1	<0.1	0.1	0.1	20.7	<0.1

Atmospheric Pressure: 1017mb to 1016mb.

Ground gas concentrations 23rd May 2016

Borehole ID	Flow Rate (l/hr)		Methane (% vol)		Carbon Dioxide (% vol)		Oxygen (% vol)	iVOCs (ppm)
	Peak	Steady	Peak	Steady	Peak	Steady		
BH1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	21.2	<0.1
BH2	<0.1	<0.1	<0.1	<0.1	0.1	0.1	21.3	<0.1
BH3	<0.1	<0.1	<0.1	<0.1	0.1	0.1	20.8	<0.1

Atmospheric Pressure: 1017mb to 1016mb.

Ground gas concentrations 2nd June 2016

Borehole ID	Flow Rate (l/hr)		Methane (% vol)		Carbon Dioxide (% vol)		Oxygen (% vol)	iVOCs (ppm)
	Peak	Steady	Peak	Steady	Peak	Steady		
BH1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	21.3	<0.1
BH2	<0.1	<0.1	<0.1	<0.1	0.1	0.1	21.4	<0.1
BH3	<0.1	<0.1	<0.1	<0.1	0.1	0.1	21.0	<0.1

Atmospheric Pressure: 1017mb to 1016mb.

Groundwater Monitoring Results

Borehole ID	Well Screen Depth m bgl	Strata	Depth to Groundwater m bbl (m AOD)					
			14/04/16	22/04/16	09/05/16	16/05/16	23/05/16	02/06/16
BH1	1.00 to 3.70	Hackney Gravel Member	0.90 (14.50)	0.86 (14.54)	0.90 (14.50)	0.83 (14.57)	0.89 (14.51)	0.89 (14.51)
BH2	1.00 to 4.30	Hackney Gravel Member	0.90 (14.50)	0.88 (14.52)	0.80 (14.60)	0.87 (14.53)	0.89 (14.51)	0.89 (14.51)
BH3	1.40 to 5.90	Hackney Gravel Member	1.54 (15.29)	-	2.23 (14.60)	2.23 (14.60)	2.23 (14.60)	2.22 (14.59)

- Borehole silted up. Unable to determine groundwater level

APPENDIX F

Analytical Data

Derwentside Environmental Testing Services

Certificate of Analysis

Certificate Number 16-61925-1

16-May-16

Client RPS Group
35 New Bridge Street
London
EC4V 6BW

Our Reference	16-61925-1
Client Reference	HLEI39025
Order No	(not supplied)
Contract Title	Holborn
Description	5 Soil samples, 4 Leachate samples.
Date Received	23-Mar-16
Date Started	23-Mar-16
Date Completed	16-May-16
Test Procedures	Identified by prefix DETSn (details on request).

Notes **This report supersedes 16-61925. Extra testing.**

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

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 16-61925-1
Client Ref HLEI39025
Contract Title Holborn

			Lab No	962940	962941	962942	962943	962944
			Sample ID	BH1	BH1	BH2	BH2	T10
			Depth	1.60	3.80	1.00	3.20	1.00
			Other ID					
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	01/03/16	02/03/16	09/03/16	08/03/16	08/03/16
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Metals								
Arsenic	DETSC 2301#	0.2	mg/kg	9.4	23	13	13	15
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.1
Chromium	DETSC 2301#	0.15	mg/kg	9.4	33	14	14	17
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	4.3	31	6.0	5.8	25
Lead	DETSC 2301#	0.3	mg/kg	4.0	19	4.4	4.4	980
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	1.5
Nickel	DETSC 2301#	1	mg/kg	13	45	18	17	11
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	16	95	20	21	220
Inorganics								
pH	DETSC 2008#			8.8	8.0	8.6	8.5	11.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.4
Organic matter	DETSC 2002#	0.1	%	< 0.1	0.3	< 0.1	1.6	0.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	< 10	52	12	17	1300
Sulphide	DETSC 2024#	10	mg/kg	20	16	16	20	28
Petroleum Hydrocarbons								
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	2.6
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	4.1
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	55
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	62
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	2.1
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	65
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	67
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	130
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 16-61925-1
Client Ref HLEI39025
Contract Title Holborn

			Lab No	962940	962941	962942	962943	962944
			Sample ID	BH1	BH1	BH2	BH2	T10
			Depth	1.60	3.80	1.00	3.20	1.00
			Other ID					
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	01/03/16	02/03/16	09/03/16	08/03/16	08/03/16
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
PAHs								
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.9
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.8
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	2.3
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	0.5	2.6	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil VOC Samples

Our Ref 16-61925-1
Client Ref HLEI39025
Contract Title Holborn

			Lab No	962940	962944
			Sample ID	BH1	T10
			Depth	1.60	1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	01/03/16	08/03/16
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
VOCs					
Vinyl Chloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1 Dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trans-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Cis-1,2-dichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chloroform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Carbon tetrachloride	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Benzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Trichloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromomethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromodichloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
cis-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
trans-1,3-dichloropropene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,2-trichloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tetrachloroethylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Dibromochloromethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromoethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Chlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
m+p-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
o-Xylene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Styrene	DETSC 3431*	0.01	mg/kg	< 0.01	< 0.01
Bromoform	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Isopropylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Bromobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-propylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
2-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3,5-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
4-chlorotoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Tert-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trimethylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Soil VOC Samples

Our Ref 16-61925-1
Client Ref HLEI39025
Contract Title Holborn

			Lab No	962940	962944
			Sample ID	BH1	T10
			Depth	1.60	1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	01/03/16	08/03/16
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
sec-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
p-isopropyltoluene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,3-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,4-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
n-butylbenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,4-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
Hexachlorobutadiene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01
1,2,3-trichlorobenzene	DETSC 3431	0.01	mg/kg	< 0.01	< 0.01

Summary of Asbestos Analysis
Soil Samples

Our Ref 16-61925-1
Client Ref HLEI39025
Contract Title Holborn

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
962940	BH1 1.60	SOIL	NAD	none	Jeff Cruddas
962942	BH2 1.00	SOIL	NAD	none	Jeff Cruddas
962944	T10 1.00	SOIL	NAD	none	Jeff Cruddas

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

WASTE ACCEPTANCE CRITERIA TESTING
ANALYTICAL REPORT

Our Ref 16-61925
Client Ref HLEI39025
Contract Title Holborn
Sample Id BH1 1.60

Sample Numbers 962940 985011
Date Analysed 16/05/2016

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084* Total Organic Carbon	%	< 0.1	3	5	6
DETSC 2003# Loss On Ignition	%	0.95	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# TPH (C10 - C40)	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.8	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1	0.01	0.5	2	25
DETSC 2306 Barium as Ba	41	0.4	20	100	300
DETSC 2306 Cadmium as Cd	0.04	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.9	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.01	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.5	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	1.1	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.35	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.45	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	4.8	0.05	4	50	200
DETSC 2055 Chloride as Cl	590	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	940	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	89000	890	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
* Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.2
DETSC 2009 Conductivity uS/cm	127
* Temperature*	21

Mass of Sample Kg	0.140
Mass of dry Sample Kg	0.120

Stage 1

Volume of Leachant L2	1.177
Volume of Eluate VE1	0.99

Disclaimer: The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.

WASTE ACCEPTANCE CRITERIA TESTING
ANALYTICAL REPORT

Our Ref 16-61925
Client Ref HLEI39025
Contract Title Holborn
Sample Id BH1 3.80

Sample Numbers 962941 985012
Date Analysed 16/05/2016

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084* Total Organic Carbon	%	0.2	3	5	6
DETSC 2003# Loss On Ignition	%	3.7	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# TPH (C10 - C40)	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	1.7	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.2	0.01	0.5	2	25
DETSC 2306 Barium as Ba	74	0.7	20	100	300
DETSC 2306 Cadmium as Cd	< 0.03	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	24	0.2	0.5	10	70
DETSC 2306 Copper as Cu	4	0.04	2	50	100
DETSC 2306 Mercury as Hg	< 0.01	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.5	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.5	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.09	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	1.9	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.94	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.8	0.02	4	50	200
DETSC 2055 Chloride as Cl	660	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	1400	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	62000	620	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
* Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	4.4
DETSC 2009 Conductivity uS/cm	89.1
* Temperature*	21

Mass of Sample Kg	0.140
Mass of dry Sample Kg	0.120

Stage 1

Volume of Leachant L2	1.177
Volume of Eluate VE1	0.99

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

WASTE ACCEPTANCE CRITERIA TESTING
ANALYTICAL REPORT

Our Ref 16-61925
Client Ref HLEI39025
Contract Title Holborn
Sample Id BH2 1.00

Sample Numbers 962942 985013
Date Analysed 16/05/2016

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084* Total Organic Carbon	%	< 0.1	3	5	6
DETSC 2003# Loss On Ignition	%	5.1	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# TPH (C10 - C40)	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.6	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.1	0.01	0.5	2	25
DETSC 2306 Barium as Ba	120	1.2	20	100	300
DETSC 2306 Cadmium as Cd	0.08	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.88	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	5.9	0.06	2	50	100
DETSC 2306 Mercury as Hg	0.04	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	1.8	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.09	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.36	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	26	0.26	4	50	200
DETSC 2055 Chloride as Cl	890	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	2200	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	52000	520	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
* Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	4.4
DETSC 2009 Conductivity uS/cm	74.8
* Temperature*	21

Mass of Sample Kg	0.140
Mass of dry Sample Kg	0.120

Stage 1

Volume of Leachant L2	1.177
Volume of Eluate VE1	0.99

Disclaimer: The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.

WASTE ACCEPTANCE CRITERIA TESTING
ANALYTICAL REPORT

Our Ref 16-61925
Client Ref HLEI39025
Contract Title Holborn
Sample Id T10 1.00

Sample Numbers 962944 985014
Date Analysed 16/05/2016

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084* Total Organic Carbon	%	0.2	3	5	6
DETSC 2003# Loss On Ignition	%	0.80	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	0.05	1	n/a	n/a
DETSC 3311# TPH (C10 - C40)	mg/kg	550	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	2.3	100	n/a	n/a
DETSC 2008# pH	pH Units	11.2	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.4	0.01	0.5	2	25
DETSC 2306 Barium as Ba	60	0.6	20	100	300
DETSC 2306 Cadmium as Cd	0.03	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	2.5	0.02	2	50	100
DETSC 2306 Mercury as Hg	0.01	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.9	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.09	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.34	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	4.9	0.05	4	50	200
DETSC 2055 Chloride as Cl	1600	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	100000	1000	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	220000	2200	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
* Dissolved Organic Carbon	3900	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.2
DETSC 2009 Conductivity uS/cm	318
* Temperature*	21

Mass of Sample Kg	0.140
Mass of dry Sample Kg	0.120

Stage 1

Volume of Leachant L2	1.177
Volume of Eluate VE1	0.99

Disclaimer: The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.

Information in Support of the Analytical Results

Our Ref 16-61925-1
Client Ref HLEI39025
Contract Holborn

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
962940	BH1 1.60 SOIL	01/03/16	GJ 250ml, GJ 60ml, PT 1L x2	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), EPH/TPH (14 days), VOC (14 days)	
962941	BH1 3.80 SOIL	02/03/16	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), EPH/TPH (14 days)	
962942	BH2 1.00 SOIL	09/03/16	GJ 250ml, GJ 60ml, PT 1L x2	pH + Conductivity (7 days)	
962943	BH2 3.20 SOIL	08/03/16	GJ 250ml, GJ 60ml, PT 1L x2	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days)	
962944	T10 1.00 SOIL	08/03/16	GJ 250ml, GJ 60ml, PT 1L x2	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), EPH/TPH (14 days), VOC (14 days)	
985011	BH1 1.60 LEACHATE	01/03/16	GJ 1L (1L)		
985012	BH1 3.80 LEACHATE	02/03/16	GJ 1L (1L)		
985013	BH2 1.00 LEACHATE	09/03/16	GJ 1L (1L)		
985014	T10 1.00 LEACHATE	08/03/16	GJ 1L (1L)		

Key: G-Glass P-Plastic J-Jar T-Tub

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

Soil Analysis Notes

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

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

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

Disposal

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

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

Derwentside Environmental Testing Services

Certificate of Analysis

Certificate Number 16-63455-1

16-May-16

Client RPS Group
35 New Bridge Street
London
EC4V 6BW

Our Reference	16-63455-1
Client Reference	HLEI39025
Order No	(not supplied)
Contract Title	150 Holburn
Description	2 Soil samples, 2 Leachate samples.
Date Received	13-Apr-16
Date Started	13-Apr-16
Date Completed	16-May-16
Test Procedures	Identified by prefix DETSn (details on request).

Notes **This report supersedes 16-63455. Extra testing**

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

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 16-63455-1
Client Ref HLEI39025
Contract Title 150 Holburn

			Lab No	971381	971382
			Sample ID	BH3	BH3
			Depth	1.00	5.90
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	30/03/16	30/03/16
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	14	12
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	19	41
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	190	36
Lead	DETSC 2301#	0.3	mg/kg	100	19
Mercury	DETSC 2325#	0.05	mg/kg	0.24	< 0.05
Nickel	DETSC 2301#	1	mg/kg	25	35
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	55	81
Inorganics					
pH	DETSC 2008#			11.5	8.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	< 0.1
Organic matter	DETSC 2002#	0.1	%	0.9	0.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	140	44
Sulphide	DETSC 2024#	10	mg/kg	< 10	< 10
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	15	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	330	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	340	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	3.3	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	49	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	570	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	630	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	970	< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 16-63455-1
Client Ref HLEI39025
Contract Title 150 Holburn

			Lab No	971381	971382
			Sample ID	BH3	BH3
			Depth	1.00	5.90
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	30/03/16	30/03/16
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.6	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	0.2	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.6	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	0.5	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
PAH Total	DETSC 3301	1.6	mg/kg	1.8	< 1.6
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

WASTE ACCEPTANCE CRITERIA TESTING
ANALYTICAL REPORT

Our Ref 16-63455-1
Client Ref HLEI39025
Contract Title 150 Holburn
Sample Id BH3 1.00

Sample Numbers 971381 985015
Date Analysed 16/05/2016

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084* Total Organic Carbon	%	0.5	3	5	6
DETSC 2003# Loss On Ignition	%	3.9	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# TPH (C10 - C40)	mg/kg	1000	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	1.8	100	n/a	n/a
DETSC 2008# pH	pH Units	11.5	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	2.5	0.02	0.5	2	25
DETSC 2306 Barium as Ba	170	1.7	20	100	300
DETSC 2306 Cadmium as Cd	0.1	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.47	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	10	0.1	2	50	100
DETSC 2306 Mercury as Hg	0.06	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	3.1	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	1.3	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.37	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	63	0.63	4	50	200
DETSC 2055 Chloride as Cl	7000	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	6200	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	170000	1700	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
* Dissolved Organic Carbon	6800	68	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	10.3
DETSC 2009 Conductivity uS/cm	236
* Temperature*	7

Mass of Sample Kg	0.110
Mass of dry Sample Kg	0.096

Stage 1

Volume of Leachant L2	0.947
Volume of Eluate VE1	0.87

Disclaimer: The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.

WASTE ACCEPTANCE CRITERIA TESTING
ANALYTICAL REPORT

Our Ref 16-63455-1
Client Ref HLEI39025
Contract Title 150 Holburn
Sample Id BH3 5.90

Sample Numbers 971382 985016
Date Analysed 16/05/2016

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084* Total Organic Carbon	%	0.2	3	5	6
DETSC 2003# Loss On Ignition	%	6.7	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# TPH (C10 - C40)	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.2	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	2.3	0.02	0.5	2	25
DETSC 2306 Barium as Ba	69	0.7	20	100	300
DETSC 2306 Cadmium as Cd	< 0.03	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.1	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.01	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.4	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	1	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.09	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.31	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.94	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	3.2	0.03	4	50	200
DETSC 2055 Chloride as Cl	3200	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	6300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	41000	410	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
* Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	9.1
DETSC 2009 Conductivity uS/cm	58.3
* Temperature*	5.8

Mass of Sample Kg	0.110
Mass of dry Sample Kg	0.096

Stage 1

Volume of Leachant L2	0.947
Volume of Eluate VE1	0.87

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

Information in Support of the Analytical Results

Our Ref 16-63455-1
Client Ref HLEI39025
Contract 150 Holburn

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
971381	BH3 1.00 SOIL	30/03/16	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
971382	BH3 5.90 SOIL	30/03/16	GJ 250ml, GJ 60ml, PT 1L	pH + Conductivity (7 days)	
985015	BH3 1.00 LEACHATE	30/03/16	GJ 1L (1L)		
985016	BH3 5.90 LEACHATE	30/03/16	GJ 1L (1L)		

Key: G-Glass P-Plastic J-Jar T-Tub

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

Soil Analysis Notes

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

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

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

Disposal

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

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

Derwentside Environmental Testing Services

Certificate of Analysis

Certificate Number 16-63899

25-Apr-16

Client RPS Group
35 New Bridge Street
London
EC4V 6BW

Our Reference	16-63899
Client Reference	(not supplied)
Order No	(not supplied)
Contract Title	150 Holborn
Description	2 Water samples.
Date Received	18-Apr-16
Date Started	18-Apr-16
Date Completed	25-Apr-16
Test Procedures	Identified by prefix DETSn (details on request).

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

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Water Samples

Our Ref 16-63899
Client Ref
Contract Title 150 Holborn

			Lab No	973841	973842
			Sample ID	BH1	BH2
			Depth		
			Other ID		
			Sample Type	WATER	WATER
			Sampling Date	14/04/16	14/04/16
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	3.2	3.2
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.04	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	0.9	1.5
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.21	< 0.09
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	4.0	1.0
Selenium, Dissolved	DETSC 2306	0.25	ug/l	9.8	4.9
Zinc, Dissolved	DETSC 2306	1.3	ug/l	3.1	11
Inorganics					
pH	DETSC 2008			8.3	8.3
Cyanide, Total	DETSC 2130	40	ug/l	< 40	< 40
Hardness	DETSC 2303	0.1	mg/l	198	230
Sulphate as SO4	DETSC 2055	0.1	mg/l	240	89
Sulphide	DETSC 2208	10	ug/l	< 10	< 10
Total Organic Carbon	DETSC 2085	1	mg/l	5.4	2.2
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0	< 1.0
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	< 10	< 10
Benzene	DETSC 3322	1	ug/l	< 1.0	< 1.0
Toluene	DETSC 3322	1	ug/l	< 1.0	< 1.0
Ethylbenzene	DETSC 3322	1	ug/l	< 1.0	< 1.0
Xylene	DETSC 3322	1	ug/l	< 1.0	< 1.0
MTBE	DETSC 3322	1	ug/l	< 1.0	< 1.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water Samples

Our Ref 16-63899
Client Ref
Contract Title 150 Holborn

			Lab No	973841	973842
			Sample ID	BH1	BH2
			Depth		
			Other ID		
			Sample Type	WATER	WATER
			Sampling Date	14/04/16	14/04/16
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
PAHs					
Naphthalene	DETS 074*	0.01	ug/l	0.05	< 0.01
Acenaphthylene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Acenaphthene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Fluorene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Phenanthrene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Anthracene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Fluoranthene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Pyrene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Benzo(a)anthracene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Chrysene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Benzo(b)fluoranthene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Benzo(k)fluoranthene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Benzo(a)pyrene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Dibenzo(a,h)anthracene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETS 074*	0.01	ug/l	< 0.01	< 0.01
PAH Total	DETS 074*	0.2	ug/l	< 0.20	< 0.20
Phenols					
Phenol - Monohydric	DETSC 2130	100	ug/l	< 100	< 100

Key: * -not accredited. n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 16-63899
Client Ref
Contract 150 Holborn

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
973841	BH1 WATER	14/04/16	GB 1L, GV, PB 1L		
973842	BH2 WATER	14/04/16	GB 1L, GV, PB 1L		

Key: G-Glass P-Plastic B-Bottle V-Vial

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

Disposal

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

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

Derwentside Environmental Testing Services

Certificate of Analysis

Certificate Number 16-64861

05-May-16

Client RPS Group
35 New Bridge Street
London
EC4V 6BW

Our Reference	16-64861
Client Reference	HLEI39025
Order No	(not supplied)
Contract Title	150 Holburn
Description	One Water sample.
Date Received	28-Apr-16
Date Started	28-Apr-16
Date Completed	05-May-16
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Rob Brown
Business Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Water Samples

Our Ref 16-64861
Client Ref HLEI39025
Contract Title 150 Holburn

			Lab No	979001
			Sample ID	BH3
			Depth	
			Other ID	
			Sample Type	WATER
			Sampling Date	22/04/16
			Sampling Time	n/s
Test	**Method**	**LOD**	**Units**	
Metals				
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	3.9
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	< 0.4
Lead, Dissolved	DETSC 2306	0.09	ug/l	< 0.09
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	2.9
Selenium, Dissolved	DETSC 2306	0.25	ug/l	3.2
Zinc, Dissolved	DETSC 2306	1.3	ug/l	3.6
Inorganics				
pH	DETSC 2008			6.9
Cyanide, Total	DETSC 2130	40	ug/l	< 40
Hardness	DETSC 2303	0.1	mg/l	178
Sulphate as SO4	DETSC 2055	0.1	mg/l	220
Sulphide	DETSC 2208	10	ug/l	< 10
Total Organic Carbon	DETSC 2085	1	mg/l	10
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	2.9
Aliphatic C12-C16	DETSC 3072*	1	ug/l	7.6
Aliphatic C16-C21	DETSC 3072*	1	ug/l	49
Aliphatic C21-C35	DETSC 3072*	1	ug/l	1300
Aliphatic C5-C35	DETSC 3072*	10	ug/l	1300
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	8.5
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	7.8
Aromatic C16-C21	DETSC 3072*	1	ug/l	31
Aromatic C21-C35	DETSC 3072*	1	ug/l	420
Aromatic C5-C35	DETSC 3072*	10	ug/l	470
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	1800
Benzene	DETSC 3322	1	ug/l	< 1.0
Toluene	DETSC 3322	1	ug/l	< 1.0
Ethylbenzene	DETSC 3322	1	ug/l	< 1.0
Xylene	DETSC 3322	1	ug/l	< 1.0
MTBE	DETSC 3322	1	ug/l	< 1.0

Key: * -not accredited. n/s -not supplied.

Summary of Chemical Analysis
Water Samples

Our Ref 16-64861
Client Ref HLEI39025
Contract Title 150 Holburn

Lab No	979001
Sample ID	BH3
Depth	
Other ID	
Sample Type	WATER
Sampling Date	22/04/16
Sampling Time	n/s

Test	Method	LOD	Units	
PAHs				
Naphthalene	DETS 074*	0.01	ug/l	< 0.01
Acenaphthylene	DETS 074*	0.01	ug/l	< 0.01
Acenaphthene	DETS 074*	0.01	ug/l	< 0.01
Fluorene	DETS 074*	0.01	ug/l	< 0.01
Phenanthrene	DETS 074*	0.01	ug/l	< 0.01
Anthracene	DETS 074*	0.01	ug/l	< 0.01
Fluoranthene	DETS 074*	0.01	ug/l	0.03
Pyrene	DETS 074*	0.01	ug/l	< 0.01
Benzo(a)anthracene	DETS 074*	0.01	ug/l	0.03
Chrysene	DETS 074*	0.01	ug/l	< 0.01
Benzo(b)fluoranthene	DETS 074*	0.01	ug/l	< 0.01
Benzo(k)fluoranthene	DETS 074*	0.01	ug/l	< 0.01
Benzo(a)pyrene	DETS 074*	0.01	ug/l	0.03
Indeno(1,2,3-c,d)pyrene	DETS 074*	0.01	ug/l	< 0.01
Dibenzo(a,h)anthracene	DETS 074*	0.01	ug/l	< 0.01
Benzo(g,h,i)perylene	DETS 074*	0.01	ug/l	< 0.01
PAH Total	DETS 074*	0.2	ug/l	< 0.20
Phenols				
Phenol - Monohydric	DETSC 2130	100	ug/l	< 100

Key: * -not accredited. n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 16-64861
Client Ref HLEI39025
Contract 150 Holburn

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
979001	BH3 WATER	22/04/16	GB 1L x2, GV	Chromium, Hexavalent (4 days)	

Key: G-Glass B-Bottle V-Vial

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Disposal

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

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

APPENDIX G

Comparison of Analytical Data to Assessment Criteria

RPS

Key:

10 Exceeds LOD

10 Exceeds S4UL

Analyte (by group)	Units	LOD	S4UL	BH1 1.60 01/03/16	BH1 3.80 02/03/16	BH2 1.00 09/03/16	BH2 3.20 08/03/16	T10 1.00 08/03/16	BH3 1.00 30/03/16	BH3 5.90 30/03/16
				HACK	LC	HACK	HACK	MG	MG	LC
General Inorganics										
Asbestos				NAD		NAD		NAD		
Asbestos Comment				na		na		na		
Asbestos Analyst				Jeff Cruddas		Jeff Cruddas		Jeff Cruddas		
Asbestos Checker				J Woodmansey		J Woodmansey		J Woodmansey		
Arsenic	mg/kg	0.2	40	**9.4**	**23**	**13**	**13**	**15**	**14**	**12**
Cadmium	mg/kg	0.1	85	0.1	0.1	0.1	0.1	0.1	**0.3**	0.1
Chromium	mg/kg	0.15	910	**9.4**	**33**	**14**	**14**	**17**	**19**	**41**
Chromium, Hexavalent	mg/kg	1	6	1	1	1	1	1	1	1
Copper	mg/kg	0.2	7100	**4.3**	**31**	**6**	**5.8**	**25**	**190**	**36**
Lead*	mg/kg	0.3	310	**4**	**19**	**4.4**	**4.4**	**980**	**100**	**19**
Mercury	mg/kg	0.05	56	0.05	0.05	0.05	0.05	**1.5**	**0.24**	0.05
Nickel	mg/kg	1	180	**13**	**45**	**18**	**17**	**11**	**25**	**35**
Selenium	mg/kg	0.5	430	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Zinc	mg/kg	1	40000	**16**	**95**	**20**	**21**	**220**	**55**	**81**
pH			-	**8.8**	**8**	**8.6**	**8.5**	**11.2**	11.5	8.2
Cyanide, Total	mg/kg	0.1	-	0.1	0.1	0.1	0.1	**0.4**	**0.2**	0.1
Organic matter	%	0.1	-	0.1	**0.3**	0.1	**1.6**	**0.3**	**0.9**	**0.4**
Sulphate Aqueous Extract as SO4	mg/l	10	-	10	**52**	**12**	**17**	**1300**	**140**	**44**
Sulphide	mg/kg	10	-	**20**	**16**	**16**	**20**	**28**	10	10
Petroleum Hydrocarbons										
Aliphatic C5-C6	mg/kg	0.01	42	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Aliphatic C6-C8	mg/kg	0.01	100	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Aliphatic C8-C10	mg/kg	0.01	27	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Aliphatic C10-C12	mg/kg	1.5	130	1.5	1.5	1.5	1.5	**2.6**	1.5	1.5
Aliphatic C12-C16	mg/kg	1.2	1100	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Aliphatic C16-C21	mg/kg	1.5	65000	1.5	1.5	1.5	1.5	**4.1**	**15**	1.5
Aliphatic C21-C35	mg/kg	3.4	65000	3.4	3.4	3.4	3.4	**55**	**330**	3.4
Aliphatic C5-C35	mg/kg	10	-	10	10	10	10	**62**	**340**	10
Aromatic C5-C7	mg/kg	0.01	370	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Aromatic C7-C8	mg/kg	0.01	860	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Aromatic C8-C10	mg/kg	0.01	47	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Aromatic C10-C12	mg/kg	0.9	250	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Aromatic C12-C16	mg/kg	0.5	1800	0.5	0.5	0.5	0.5	0.5	**3.3**	0.5
Aromatic C16-C21	mg/kg	0.6	1900	0.6	0.6	0.6	0.6	**2.1**	**49**	0.6
Aromatic C21-C35	mg/kg	1.4	1900	1.4	1.4	1.4	1.4	**65**	**570**	1.4
Aromatic C5-C35	mg/kg	10	-	10	10	10	10	**67**	**630**	10
TPH Ali/Aro Total	mg/kg	10	-	10	10	10	10	**130**	**970**	10
Benzene	mg/kg	0.01	0.38	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ethylbenzene	mg/kg	0.01	83	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Toluene	mg/kg	0.01	880	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Xylene	mg/kg	0.01	79	0.01	0.01	0.01	0.01	0.01	0.01	0.01
MTBE	mg/kg	0.01	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Polycyclic Aromatic Hydrocarbons (PAH)										
Naphthalene	mg/kg	0.1	2.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Acenaphthylene	mg/kg	0.1	2900	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Acenaphthene	mg/kg	0.1	3000	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Fluorene	mg/kg	0.1	2800	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Phenanthrene	mg/kg	0.1	1300	0.1	0.1	0.1	0.1	**0.5**	**0.6**	0.1
Anthracene	mg/kg	0.1	31000	0.1	0.1	0.1	0.1	**0.2**	**0.2**	0.1
Fluoranthene	mg/kg	0.1	1500	0.1	0.1	0.1	0.1	**0.9**	**0.6**	0.1
Pyrene	mg/kg	0.1	3700	0.1	0.1	0.1	0.1	**0.8**	**0.5**	0.1
Benzo(a)anthracene	mg/kg	0.1	11	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chrysene	mg/kg	0.1	30	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Benzo(b)fluoranthene	mg/kg	0.1	3.9	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Benzo(k)fluoranthene	mg/kg	0.1	110	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Benzo(a)pyrene	mg/kg	0.1	3.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	45	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	0.1	0.31	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Benzo(g,h,i)perylene	mg/kg	0.1	360	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PAH Total	mg/kg	1.6	-	1.6	1.6	1.6	1.6	**2.3**	**1.8**	**1.6**
Phenol - Monohydric	mg/kg	0.3	440	0.3	0.3	**0.5**	**2.6**	0.3	**0.3**	**0.3**

* C4SL used in absence of S4UL

RPS

Key:

10	Exceeds LOD
10	Exceeds S4UL

Analyte (by group)	Units	LOD	S4UL	BH1 1.60 01/03/16	T10 1.00 08/03/16
Volatile Organic Compounds (VOCs)					
Vinyl Chloride	mg/kg	0.01		0.01	0.01
1,1 Dichloroethylene	mg/kg	0.01		0.01	0.01
Trans-1,2-dichloroethylene	mg/kg	0.01		0.01	0.01
1,1-dichloroethane	mg/kg	0.01		0.01	0.01
Cis-1,2-dichloroethylene	mg/kg	0.01		0.01	0.01
2,2-dichloropropane	mg/kg	0.01		0.01	0.01
Bromochloromethane	mg/kg	0.01		0.01	0.01
Chloroform	mg/kg	0.01		0.01	0.01
1,1,1-trichloroethane	mg/kg	0.01		0.01	0.01
1,1-dichloropropene	mg/kg	0.01		0.01	0.01
Carbon tetrachloride	mg/kg	0.01		0.01	0.01
Benzene	mg/kg	0.01		0.01	0.01
1,2-dichloroethane	mg/kg	0.01		0.01	0.01
Trichloroethylene	mg/kg	0.01		0.01	0.01
1,2-dichloropropane	mg/kg	0.01		0.01	0.01
Dibromomethane	mg/kg	0.01		0.01	0.01
Bromodichloromethane	mg/kg	0.01		0.01	0.01
cis-1,3-dichloropropene	mg/kg	0.01		0.01	0.01
Toluene	mg/kg	0.01		0.01	0.01
trans-1,3-dichloropropene	mg/kg	0.01		0.01	0.01
1,1,2-trichloroethane	mg/kg	0.01		0.01	0.01
Tetrachloroethylene	mg/kg	0.01		0.01	0.01
1,3-dichloropropane	mg/kg	0.01		0.01	0.01
Dibromochloromethane	mg/kg	0.01		0.01	0.01
1,2-dibromoethane	mg/kg	0.01		0.01	0.01
Chlorobenzene	mg/kg	0.01		0.01	0.01
1,1,1,2-tetrachloroethane	mg/kg	0.01		0.01	0.01
Ethylbenzene	mg/kg	0.01		0.01	0.01
m+p-Xylene	mg/kg	0.01		0.01	0.01
o-Xylene	mg/kg	0.01		0.01	0.01
Styrene	mg/kg	0.01		0.01	0.01
Bromoform	mg/kg	0.01		0.01	0.01
Isopropylbenzene	mg/kg	0.01		0.01	0.01
Bromobenzene	mg/kg	0.01		0.01	0.01
1,2,3-trichloropropane	mg/kg	0.01		0.01	0.01
n-propylbenzene	mg/kg	0.01		0.01	0.01
2-chlorotoluene	mg/kg	0.01		0.01	0.01
1,3,5-trimethylbenzene	mg/kg	0.01		0.01	0.01
4-chlorotoluene	mg/kg	0.01		0.01	0.01
Tert-butylbenzene	mg/kg	0.01		0.01	0.01
1,2,4-trimethylbenzene	mg/kg	0.01		0.01	0.01
sec-butylbenzene	mg/kg	0.01		0.01	0.01
p-isopropyltoluene	mg/kg	0.01		0.01	0.01
1,3-dichlorobenzene	mg/kg	0.01		0.01	0.01
1,4-dichlorobenzene	mg/kg	0.01		0.01	0.01
n-butylbenzene	mg/kg	0.01		0.01	0.01
1,2-dichlorobenzene	mg/kg	0.01		0.01	0.01
1,2-dibromo-3-chloropropane	mg/kg	0.01		0.01	0.01
1,2,4-trichlorobenzene	mg/kg	0.01		0.01	0.01
Hexachlorobutadiene	mg/kg	0.01		0.01	0.01
Naphthalene	mg/kg	0.01			
1,2,3-trichlorobenzene	mg/kg	0.01		0.01	0.01

Key:

10	Exceeds LOD
10	Exceeds relevant AC

Analyte (by group)	Units	LOD	EQS or UK DWS	BH1 14/04/16	BH2 14/04/16	BH3 22/04/16
Metals						
Arsenic, Dissolved	µg/l	0.16	50	**3.2**	**3.2**	**3.9**
Cadmium, Dissolved	µg/l	0.03	5	**0.04**	0.03	0.03
Chromium, Dissolved	µg/l	0.25	20	0.25	0.25	0.25
General Inorganics						
Chromium, Hexavalent	µg/l	7	20	7	7	7
Copper, Dissolved	µg/l	0.4	10	**0.9**	**1.5**	0.4
Lead, Dissolved	µg/l	0.09	20	**0.21**	0.09	0.09
Mercury, Dissolved	µg/l	0.01	1	0.01	0.01	0.01
Nickel, Dissolved	µg/l	0.5	150	**4**	**1**	**2.9**
Selenium, Dissolved	µg/l	0.25	10	**9.8**	**4.9**	**3.2**
Zinc, Dissolved	µg/l	1.3	75	**3.1**	**11**	**3.6**
pH			6.5 to 10	**8.3**	**8.3**	**6.9**
Cyanide, Total	µg/l	40	50	40	40	40
Hardness	mg/l	0.1	-	**198**	**230**	**178**
Sulphide	µg/l	10	-	10	10	10
Total Organic Carbon	mg/l	1	-	**5.4**	**2.2**	**10**
Petroleum Hydrocarbons						
Aliphatic C5-C6	µg/l	0.1	10	0.1	0.1	0.1
Aliphatic C6-C8	µg/l	0.1	10	0.1	0.1	0.1
Aliphatic C8-C10	µg/l	0.1	10	0.1	0.1	0.1
Aliphatic C10-C12	µg/l	1	10	1	1	**2.9**
Aliphatic C12-C16	µg/l	1	10	1	1	**7.6**
Aliphatic C16-C21	µg/l	1	10	1	1	**49**
Aliphatic C21-C35	µg/l	1	10	1	1	**1300**
Aliphatic C5-C35	µg/l	10	10	10	10	**1300**
Aromatic C5-C7	µg/l	0.1	10	0.1	0.1	0.1
Aromatic C7-C8	µg/l	0.1	10	0.1	0.1	0.1
Aromatic C8-C10	µg/l	0.1	10	0.1	0.1	**8.5**
Aromatic C10-C12	µg/l	1	10	1	1	1
Aromatic C12-C16	µg/l	1	10	1	1	**7.8**
Aromatic C16-C21	µg/l	1	10	1	1	**31**
Aromatic C21-C35	µg/l	1	10	1	1	**420**
Aromatic C5-C35	µg/l	10	10	10	10	**470**
TPH Ali/Aro Total	µg/l	10	10	10	10	**1800**
Benzene	µg/l	1	30	1	1	1
Toluene	µg/l	1	50	1	1	1
Ethylbenzene	µg/l	1	-	1	1	1
Xylene	µg/l	1	30	1	1	1
MTBE	µg/l	1	-	1	1	1
Polycyclic Aromatic Hydrocarbons (PAH)						
Naphthalene	µg/l	0.01	0.1	**0.05**	0.01	0.01
Acenaphthylene	µg/l	0.01	0.1	0.01	0.01	0.01
Acenaphthene	µg/l	0.01	0.1	0.01	0.01	0.01
Fluorene	µg/l	0.01	0.1	0.01	0.01	0.01
Phenanthrene	µg/l	0.01	0.1	0.01	0.01	0.01
Anthracene	µg/l	0.01	0.1	0.01	0.01	0.01
Fluoranthene	µg/l	0.01	0.1	0.01	0.01	**0.03**
Pyrene	µg/l	0.01	0.1	0.01	0.01	0.01
Benzo(a)anthracene	µg/l	0.01	0.1	0.01	0.01	**0.03**
Chrysene	µg/l	0.01	0.1	0.01	0.01	0.01
Benzo(b)fluoranthene	µg/l	0.01	0.1	0.01	0.01	0.01
Benzo(k)fluoranthene	µg/l	0.01	0.1	0.01	0.01	0.01
Benzo(a)pyrene	µg/l	0.01	0.1	0.01	0.01	**0.03**
Indeno(1,2,3-c,d)pyrene	µg/l	0.01	0.1	0.01	0.01	0.01
Dibenzo(a,h)anthracene	µg/l	0.01	0.1	0.01	0.01	0.01
Benzo(g,h,i)perylene	µg/l	0.01	0.01	0.01	0.01	0.01
PAH Total	µg/l	0.2	0.1	0.2	0.2	0.2
Phenol - Monohydric	µg/l	100	0.5	100	100	100
Other Results						
Sulphate as SO4	mg/l	0.1	250	**240**	**89**	**220**