

	Contract: Hoxton hotel, Holborn	Job No: M516
	Client: Ennismore Capital	<b>BH1A</b>
Core Photographs	Date: September 2017	From 22.50m to 24.00m




	<b>Contract:</b> Hoxton hotel, Holborn	<b>Job No:</b> M516
	<b>Client:</b> Ennismore Capital	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date:</b> September 2017	<b>From 24.00 to 25.50m</b>




	<b>Contract:</b> Hoxton hotel, Holborn	<b>Job No:</b> M516
	<b>Client:</b> Ennismore Capital	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date:</b> September 2017	<b>From 25.50m to 27.00m</b>




	<b>Contract:</b> Hoxton hotel, Holborn	<b>Job No:</b> M516
	<b>Client:</b> Ennismore Capital	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date:</b> September 2017	<b>From 27.00m to 28.50m</b>




	<b>Contract:</b> Hoxton hotel, Holborn	<b>Job No:</b> M516
	<b>Client:</b> Ennismore Capital	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date:</b> September 2017	<b>From 28.50m to 30.00m</b>




	<b>Contract:</b> Hoxton hotel, Holborn	<b>Job No:</b> M516
	<b>Client:</b> Ennismore Capital	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date:</b> September 2017	<b>From 30.00m to 31.50m</b>




	<b>Contract: Hoxton hotel, Holborn</b>	<b>Job No: M516</b>
	<b>Client: Ennismore Capital</b>	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date: September 2017</b>	<b>From 31.50m to 33.00m</b>



	<b>Contract:</b> Hoxton hotel, Holborn	<b>Job No:</b> M516
	<b>Client:</b> Ennismore Capital	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date:</b> September 2017	<b>From 33.00m to 34.50m</b>





	<b>Contract:</b> Hoxton hotel, Holborn	<b>Job No:</b> M516
	<b>Client:</b> Ennismore Capital	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date:</b> September 2017	<b>From 34.50m to 36.00m</b>




**DUNELM**  
 GEOTECHNICAL & ENVIRONMENTAL

PROJECT NAME: THE HOXTON      BH No: **1**


PROJECT No: M516

DEPTH FROM: **36.00**      TO: **37.50**


KODAK ColourChecker Plus 24      ZODIAC Grey Scale

	<b>Contract: Hoxton hotel, Holborn</b>	<b>Job No: M516</b>
	<b>Client: Ennismore Capital</b>	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date: September 2017</b>	<b>From 36.00m to 37.50m</b>



	<b>Contract:</b> Hoxton hotel, Holborn	<b>Job No:</b> M516
	<b>Client:</b> Ennismore Capital	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date:</b> September 2017	<b>From 37.50m to 39.00m</b>



	<b>Contract:</b> Hoxton hotel, Holborn	<b>Job No:</b> M516
	<b>Client:</b> Ennismore Capital	<b>BH1A</b>
<b>Core Photographs</b>	<b>Date:</b> September 2017	<b>From 39.00m to 40.00m</b>

## **APPENDIX D**

### **Geotechnical Laboratory Results**

<b>Unconsolidated Undrained Triaxial Test</b> <b>(In accordance with BS1377:Part 7:1990)</b>		<b>(UU)</b>
Borehole Number:	1A	Description (visual) : Stiff fissured mottled grey and brown silty CLAY
Sample Number:	U26	
Sample Depth (m):	28.20-28.45	
<b>SPECIMEN DETAILS</b>	Preparation: Undisturbed	
	Initial Values	
Height :	201.9 mm	
Diameter :	96.2 mm	
Moisture content :	21.24 %	
Bulk density :	2.09 Mg/m <sup>3</sup>	
Dry density :	1.72 Mg/m <sup>3</sup>	
Particle density (assumed)	2.72 Mg/m <sup>3</sup>	
Initial voids ratio (e <sub>0</sub> )	0.5783	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	1128	
<b>At failure:</b>		
External axial strain	10.27	(%)
Peak deviator stress	355	(kPa)
Undrained shear strength	177	(kPa)
<p>The graph plots Principal stress difference (kPa) on the y-axis (0 to 400) against External axial strain (%) on the x-axis (0.00 to 25.00). The curve rises steeply from the origin, reaching a peak of 355 kPa at 10.27% strain, and then gradually declines to approximately 340 kPa at 20% strain.</p>		
Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 28/09/2017	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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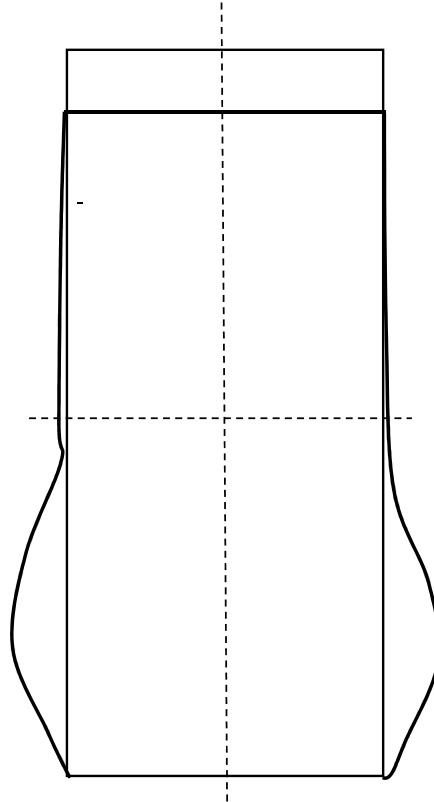
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description : Stiff fissured mottled grey and brown silty CLAY
Sample Number:	U26	
Sample Depth (m):	28.20-28.45	


**SPECIMEN DETAILS**

Initial Height: 201.9 mm  
Initial Diameter: 96.2 mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b>	 Russell Geotechnical Innovations
	Project Name: <b>THE HOXTON, HOLBORN</b>	
	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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<b>Unconsolidated Undrained Triaxial Test</b> <b>(In accordance with BS1377:Part 7:1990)</b>		<b>(UU)</b>
Borehole Number:	1A	Description (visual) :
Sample Number:	U27	Very stiff mottled grey and brown silty CLAY
Sample Depth (m):	29.30-29.55	with organic black spots (sample appears dry)
<b>SPECIMEN DETAILS</b>	Preparation:	Undisturbed
	Initial Values	
Height :	201.8	mm
Diameter :	97.4	mm
Moisture content :	13.38	%
Bulk density :	2.25	Mg/m <sup>3</sup>
Dry density :	1.98	Mg/m <sup>3</sup>
Particle density (assumed)	2.72	Mg/m <sup>3</sup>
Initial voids ratio (e <sub>0</sub> )	0.3737	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	1172	
<b>At failure:</b>		
External axial strain	10.61	(%)
Peak deviator stress	1029	(kPa)
Undrained shear strength	515	(kPa)
Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 28/09/2017	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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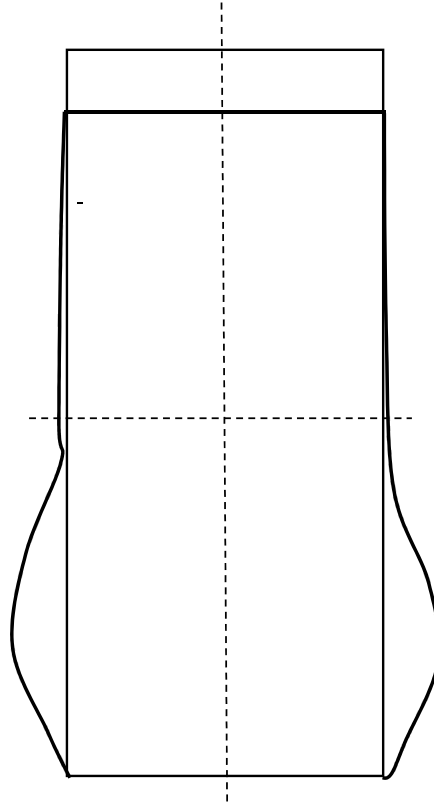
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description : Very stiff mottled grey and brown silty CLAY with organic black spots (sample appears dry)
Sample Number:	U27	
Sample Depth (m):	29.30-29.55	


**SPECIMEN DETAILS**

Initial Height:	201.8	mm
Initial Diameter:	97.4	mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b>	 Russell Geotechnical Innovations
	Project Name: <b>THE HOXTON, HOLBORN</b>	
	<b>M516</b>	

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Authorised Signatory: C.S.Russell (Director)

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<b>Unconsolidated Undrained Triaxial Test</b> <b>(In accordance with BS1377:Part 7:1990)</b>		<b>(UU)</b>
Borehole Number:	1A	Description (visual) :
Sample Number:	U31	Stiff fissured dark grey silty CLAY
Sample Depth (m):	34.10-34.46	with organic black spots
<b>SPECIMEN DETAILS</b>	Preparation: Undisturbed	
	Initial Values	
Height :	201.5	mm
Diameter :	99.1	mm
Moisture content :	26.93	%
Bulk density :	1.99	Mg/m <sup>3</sup>
Dry density :	1.57	Mg/m <sup>3</sup>
Particle density (assumed)	2.72	Mg/m <sup>3</sup>
Initial voids ratio (e <sub>0</sub> )	0.7336	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	1364	
<b>At failure:</b>		
External axial strain	5.65	(%)
Peak deviator stress	328	(kPa)
Undrained shear strength	164	(kPa)
Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 28/09/2017	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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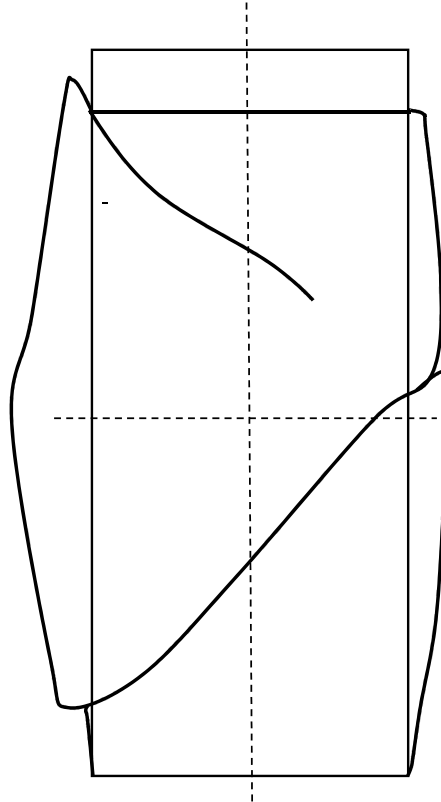
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description : Stiff fissured dark grey silty CLAY with organic black spots
Sample Number:	U31	
Sample Depth (m):	34.10-34.46	


**SPECIMEN DETAILS**

Initial Height: 201.5 mm  
Initial Diameter: 99.1 mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b>	 Russell Geotechnical Innovations
	Project Name: <b>THE HOXTON, HOLBORN M516</b>	

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Authorised Signatory: C.S.Russell (Director)

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<b>Unconsolidated Undrained Triaxial Test</b> (In accordance with BS1377:Part 7:1990)		<b>(UU)</b>
Borehole Number:	1A	Description (visual) :
Sample Number:	U32	Stiff fissured dark grey silty CLAY with rare
Sample Depth (m):	35.20-35.40	pyrite and shell fragments
<b>SPECIMEN DETAILS</b>	Preparation:	Undisturbed
	Initial Values	
Height :	201.9	mm
Diameter :	97.2	mm
Moisture content :	20.19	%
Bulk density :	2.02	Mg/m <sup>3</sup>
Dry density :	1.68	Mg/m <sup>3</sup>
Particle density (assumed)	2.72	Mg/m <sup>3</sup>
Initial voids ratio (e <sub>0</sub> )	0.6171	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	1408	
<b>At failure:</b>		
External axial strain	10.61	(%)
Peak deviator stress	351	(kPa)
Undrained shear strength	175	(kPa)
Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 28/09/2017	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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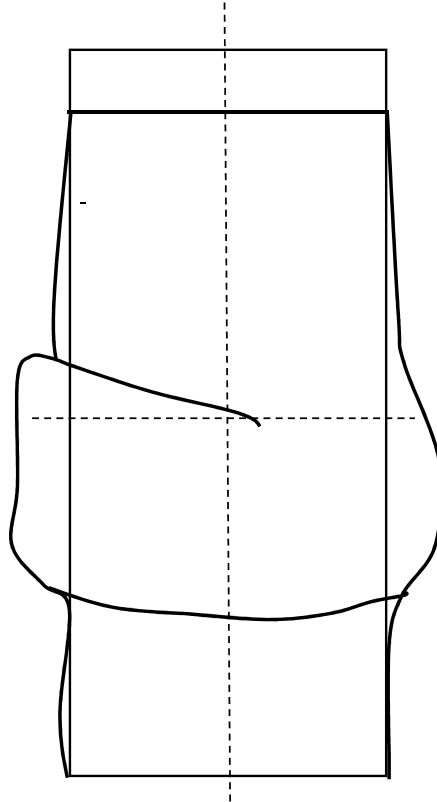
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description : Stiff fissured dark grey silty CLAY with rare pyrite and shell fragments
Sample Number:	U32	
Sample Depth (m):	35.20-35.40	


**SPECIMEN DETAILS**

Initial Height: 201.9 mm  
Initial Diameter: 97.2 mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b>	 Russell Geotechnical Innovations
	Project Name: <b>THE HOXTON, HOLBORN</b>	
	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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<b>Unconsolidated Undrained Triaxial Test</b> <b>(In accordance with BS1377:Part 7:1990)</b>		<b>(UU)</b>
Borehole Number:	1A	Description (visual) :
Sample Number:	U34	Very stiff mottled grey and brown silty CLAY
Sample Depth (m):	36.65-36.80	(sample lathed to achieve correct H:D ratio)
<b>SPECIMEN DETAILS</b>	Preparation:	Undisturbed/lathed
	Initial Values	
Height :	172.7	mm
Diameter :	85.6	mm
Moisture content :	15.59	%
Bulk density :	2.09	Mg/m <sup>3</sup>
Dry density :	1.81	Mg/m <sup>3</sup>
Particle density (assumed)	2.72	Mg/m <sup>3</sup>
Initial voids ratio (e <sub>0</sub> )	0.5058	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	1466	
<b>At failure:</b>		
External axial strain	3.01	(%)
Peak deviator stress	808	(kPa)
Undrained shear strength	404	(kPa)
Checked and approved	Project Number:	<b>RG1/1166</b>
Initials: <i>CSR</i>	Project Name:	<b>THE HOXTON, HOLBORN</b>
Date: 28/09/2017		<b>M516</b>

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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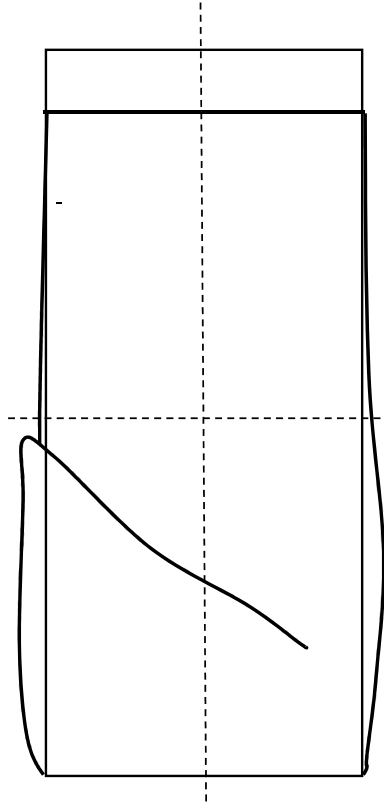
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description : Very stiff mottled grey and brown silty CLAY (sample lathed to achieve correct H:D ratio)
Sample Number:	U34	
Sample Depth (m):	36.65-36.80	


**SPECIMEN DETAILS**

Initial Height: 172.7 mm  
Initial Diameter: 85.6 mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b>	 Russell Geotechnical Innovations
	Project Name: <b>THE HOXTON, HOLBORN</b>	
	<b>M516</b>	

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<b>Unconsolidated Undrained Triaxial Test</b> <b>(In accordance with BS1377:Part 7:1990)</b>		<b>(UU)</b>
Borehole Number:	1A	Description (visual) :
Sample Number:	U11	Firm fissured greyish-brown silty CLAY
Sample Depth (m):	7.60-7.87	with organic black spots
<b>SPECIMEN DETAILS</b>	Preparation:	Undisturbed
	Initial Values	
Height :	187.5	mm
Diameter :	100.0	mm
Moisture content :	29.21	%
Bulk density :	1.98	Mg/m <sup>3</sup>
Dry density :	1.53	Mg/m <sup>3</sup>
Particle density (assumed)	2.72	Mg/m <sup>3</sup>
Initial voids ratio (e <sub>0</sub> )	0.7748	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	304	
<b>At failure:</b>		
External axial strain	14.93	(%)
Peak deviator stress	152	(kPa)
Undrained shear strength	76	(kPa)
Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 28/09/2017	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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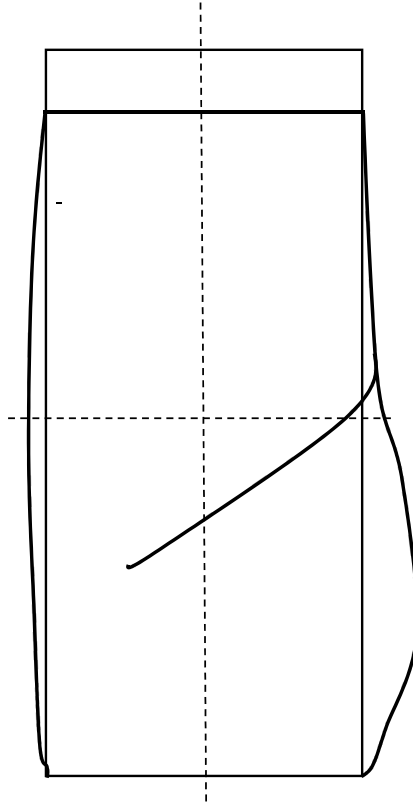
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description : Firm fissured greyish-brown silty CLAY with organic black spots
Sample Number:	U11	
Sample Depth (m):	7.60-7.87	


**SPECIMEN DETAILS**

Initial Height: 187.5 mm  
Initial Diameter: 100.0 mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b> Project Name: <b>THE HOXTON, HOLBORN M516</b>	 Russell Geotechnical Innovations
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Authorised Signatory: C.S.Russell (Director)

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<b>Unconsolidated Undrained Triaxial Test</b> <b>(In accordance with BS1377:Part 7:1990)</b>		<b>(UU)</b>
Borehole Number:	1A	Description (visual) :
Sample Number:	U14	Firm fissured greyish-brown silty CLAY
Sample Depth (m):	11.52-11.76	with organic black spots
<b>SPECIMEN DETAILS</b>	Preparation:	Undisturbed
	Initial Values	
Height :	201.5	mm
Diameter :	103.3	mm
Moisture content :	29.18	%
Bulk density :	1.91	Mg/m <sup>3</sup>
Dry density :	1.48	Mg/m <sup>3</sup>
Particle density (assumed)	2.72	Mg/m <sup>3</sup>
Initial voids ratio (e <sub>0</sub> )	0.8387	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	461	
<b>At failure:</b>		
External axial strain	11.99	(%)
Peak deviator stress	114	(kPa)
Undrained shear strength	57	(kPa)
<p>The graph plots Principal stress difference (kPa) on the y-axis (0 to 120) against External axial strain (%) on the x-axis (0.00 to 18.00). The curve starts at (0,0), rises steeply to about 70 kPa at 1% strain, then continues to rise more gradually, reaching a peak of 114 kPa at 11.99% strain. After the peak, the stress difference slightly decreases to approximately 105 kPa at 16% strain.</p>		
Checked and approved	Project Number: <b>RG1/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 28/09/2017	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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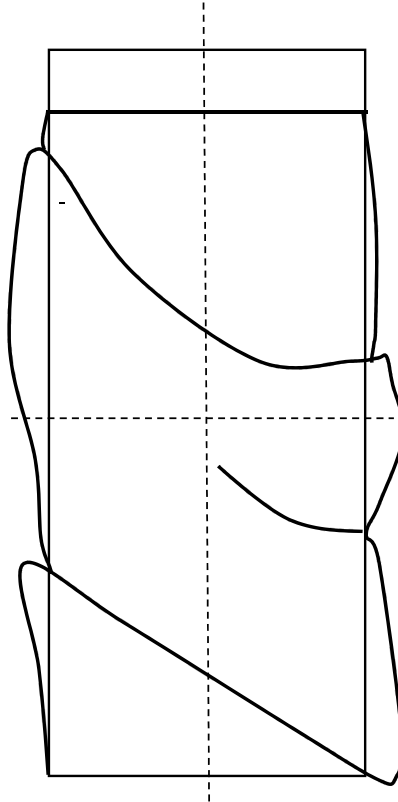
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description : Firm fissured greyish-brown silty CLAY with organic black spots
Sample Number:	U14	
Sample Depth (m):	11.52-11.76	


**SPECIMEN DETAILS**

Initial Height: 201.5 mm  
Initial Diameter: 103.3 mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b> Project Name: <b>THE HOXTON, HOLBORN M516</b>	 Russell Geotechnical Innovations
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Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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<b>Unconsolidated Undrained Triaxial Test</b> <b>(In accordance with BS1377:Part 7:1990)</b>		<b>(UU)</b>
Borehole Number:	1A	Description (visual) :
Sample Number:	U17	Firm/stiff fissured dark greyish-brown silty CLAY
Sample Depth (m):	16.60-16.85	with organic black spots
<b>SPECIMEN DETAILS</b>	Preparation:	Undisturbed
	Initial Values	
Height :	201.7	mm
Diameter :	96.7	mm
Moisture content :	27.19	%
Bulk density :	1.97	Mg/m <sup>3</sup>
Dry density :	1.55	Mg/m <sup>3</sup>
Particle density (assumed)	2.72	Mg/m <sup>3</sup>
Initial voids ratio (e <sub>0</sub> )	0.7601	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	664	
<b>At failure:</b>		
External axial strain	11.65	(%)
Peak deviator stress	262	(kPa)
Undrained shear strength	131	(kPa)
<p>The graph plots Principal stress difference (kPa) on the y-axis (0 to 300) against External axial strain (%) on the x-axis (0.00 to 25.00). The curve rises steeply from the origin, reaching a peak deviator stress of 262 kPa at an external axial strain of 11.65%. After the peak, the stress difference gradually decreases to approximately 240 kPa at 20% strain.</p>		
Checked and approved	Project Number: <b>RG1/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 28/09/2017	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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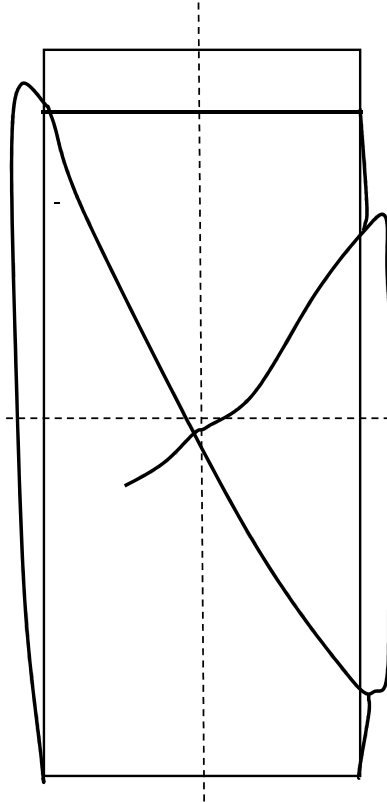
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description :
Sample Number:	U17	Firm/stiff fissured dark greyish-brown silty CLAY
Sample Depth (m):	16.60-16.85	with organic black spots


**SPECIMEN DETAILS**

Initial Height: 201.7 mm  
Initial Diameter: 96.7 mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b> Project Name: <b>THE HOXTON, HOLBORN M516</b>	 Russell Geotechnical Innovations
--	--	---

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

C:\Users\Chris\Documents\A Processing Files\RGI\_1166 The Hoxton Holborn\BH1A U17 1660m OUTXL.xlsx\Sheet1

<b>Unconsolidated Undrained Triaxial Test</b> <b>(In accordance with BS1377:Part 7:1990)</b>		<b>(UU)</b>
Borehole Number:	1A	Description (visual) :
Sample Number:	U18	Firm/stiff fissured dark greyish-brown silty CLAY
Sample Depth (m):	17.50-17.76	with organic black spots
<b>SPECIMEN DETAILS</b>	Preparation:	Undisturbed
	Initial Values	
Height :	201.8	mm
Diameter :	99.0	mm
Moisture content :	28.19	%
Bulk density :	1.98	Mg/m <sup>3</sup>
Dry density :	1.55	Mg/m <sup>3</sup>
Particle density (assumed)	2.72	Mg/m <sup>3</sup>
Initial voids ratio (e <sub>0</sub> )	0.7578	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	700	
<b>At failure:</b>		
External axial strain	14.62	(%)
Peak deviator stress	221	(kPa)
Undrained shear strength	110	(kPa)
Checked and approved	Project Number: <b>RG1/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 28/09/2017	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

C:\Users\Chris\Documents\A Processing Files\RG1\_1166 The Hoxton Holborn\BH1A U18 1750m QUTXL.xlsx\Sheet1

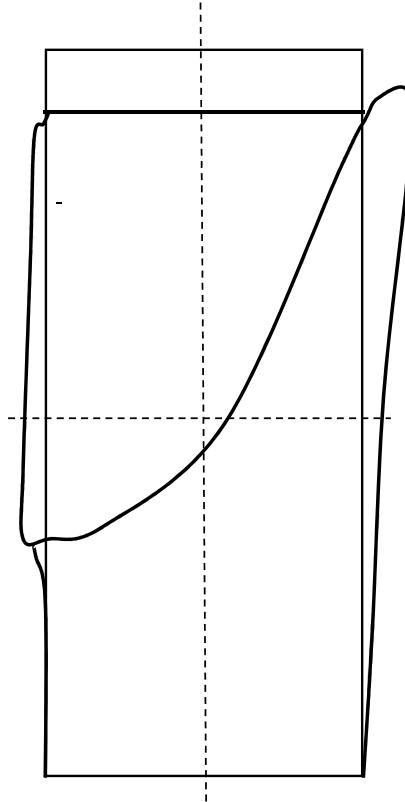
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description : Firm/stiff fissured dark greyish-brown silty CLAY with organic black spots
Sample Number:	U18	
Sample Depth (m):	17.50-17.76	


**SPECIMEN DETAILS**

Initial Height: 201.8 mm  
Initial Diameter: 99.0 mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b>	 Russell Geotechnical Innovations
	Project Name: <b>THE HOXTON, HOLBORN</b>	
	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

C:\Users\Chris\Documents\A Processing Files\RGI\_1166 The Hoxton Holborn\BH1A U18 1750m OUTXL.xlsx\Sheet1

<b>Unconsolidated Undrained Triaxial Test</b> (In accordance with BS1377:Part 7:1990)		<b>(UU)</b>
Borehole Number:	1A	Description (visual) :
Sample Number:	U22	Stiff fissured dark brown silty CLAY
Sample Depth (m):	23.50-23.80	with organic black spots
<b>SPECIMEN DETAILS</b>	Preparation:	Undisturbed
	Initial Values	
Height :	201.8	mm
Diameter :	97.5	mm
Moisture content :	25.94	%
Bulk density :	2.05	Mg/m <sup>3</sup>
Dry density :	1.63	Mg/m <sup>3</sup>
Particle density (assumed)	2.72	Mg/m <sup>3</sup>
Initial voids ratio (e <sub>0</sub> )	0.6736	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	940	
<b>At failure:</b>		
External axial strain	3.57	(%)
Peak deviator stress	305	(kPa)
Undrained shear strength	153	(kPa)
Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 28/09/2017	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

C:\Users\Chris\Documents\A Processing Files\RGI\_1166 The Hoxton Holborn\BH1A U22 2350m QUTXL.xlsx\Sheet1



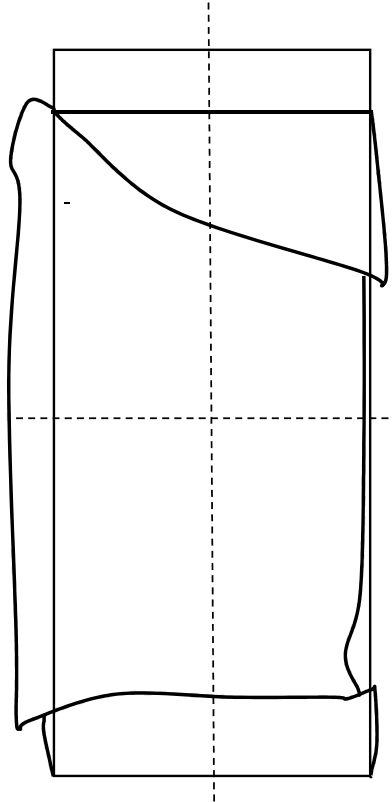
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description : Stiff fissured dark brown silty CLAY with organic black spots
Sample Number:	U22	
Sample Depth (m):	23.50-23.80	


**SPECIMEN DETAILS**

Initial Height: 201.8 mm  
Initial Diameter: 97.5 mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b>	 Russell Geotechnical Innovations
	Project Name: <b>THE HOXTON, HOLBORN M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

C:\Users\Chris\Documents\A Processing Files\RGI\_1166 The Hoxton Holborn\BH1A U22 2350m OUTXL.xlsx\Sheet1

<b>Unconsolidated Undrained Triaxial Test</b> <b>(In accordance with BS1377:Part 7:1990)</b>		<b>(UU)</b>
Borehole Number:	1A	Description (visual) :
Sample Number:	U24	Stiff fissured dark grey silty CLAY
Sample Depth (m):	26.10-26.35	with organic black spots
<b>SPECIMEN DETAILS</b>	Preparation:	Undisturbed
	Initial Values	
Height :	201.5	mm
Diameter :	100.1	mm
Moisture content :	23.48	%
Bulk density :	2.05	Mg/m <sup>3</sup>
Dry density :	1.66	Mg/m <sup>3</sup>
Particle density (assumed)	2.72	Mg/m <sup>3</sup>
Initial voids ratio (e <sub>0</sub> )	0.6349	
Rate of strain:	2% per minute	
Cell Pressure (kPa):	1044	
<b>At failure:</b>		
External axial strain	4.64	(%)
Peak deviator stress	281	(kPa)
Undrained shear strength	141	(kPa)
Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 28/09/2017	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

C:\Users\Chris\Documents\A Processing Files\RGI\_1166 The Hoxton Holborn\BH1A U24 2610m QUTXL.xlsx\Sheet1

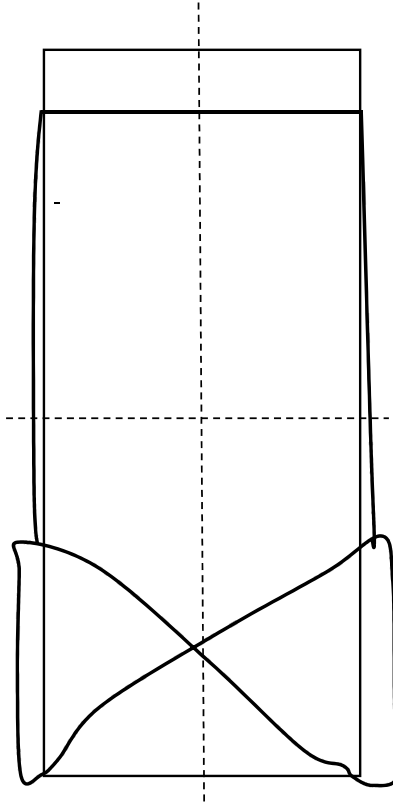
**Unconsolidated Undrained Triaxial Test  
(In accordance with BS1377:Part 7:1990)**

Borehole Number:	1A	Description : Stiff fissured dark grey silty CLAY with organic black spots
Sample Number:	U24	
Sample Depth (m):	26.10-26.35	


**SPECIMEN DETAILS**

Initial Height: 201.5 mm  
Initial Diameter: 100.1 mm

Elevation



**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 28/09/2017	Project Number: <b>RGI/1166</b>	 Russell Geotechnical Innovations
	Project Name: <b>THE HOXTON, HOLBORN</b>	
	<b>M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

C:\Users\Chris\Documents\A Processing Files\RGI\_1166 The Hoxton Holborn\BH1A U24 2610m OUTXL.xlsx\Sheet1

# Laboratory Report Front Sheet

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



Site name	Job number
The Hoxton, Holborn	M516

## Client details:

Reference: M516  
Name: Dunelm North West  
Address: Dunelm Geotechnical &  
Environmental Limited  
1 The Old Shippon  
Sandlow Green Farm  
Holmes Chapel Road  
Holmes Chapel  
CW4 8AS

Telephone: 01477 668142  
Email: sfishburne@dunelm.co.uk

FAO: S Fishburne


**Date commenced:** 25/09/2017

**Date reported:** 06/10/2017

### Observations and interpretations are outside of the UKAS Accreditation

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

Samples will be held at the laboratory for a period of 4 weeks after the report date. After the 06-11-2017 all samples will be disposed of. Should further testing be required then the office should be informed before the above date.

<b>Signature:</b>  	<b>Approved Signatories:</b> <input checked="" type="checkbox"/> K Watkin (Lab Manager) <input type="checkbox"/> U Mazhar (Assistant Lab Manager) <input type="checkbox"/> I Nicholson (Technical Manager)
--	---

# Summary of Classification Tests

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



Site name	Job number
The Hoxton, Holborn	M516

Hole	Depth		Type	w %	Oven temp. oc	wa %	Pa %	Pr %	wL %	wP %	IP %	IL	Plasticity class	Preparation method
	Top m	Base m												
1A	35.20	35.40	U	20	105		100	0	41-f	23	18		CI	Tested after >425µm removed by hand
BH1A	6.00	6.45	D	28	105									
BH1A	9.00	9.45	D	34	105		87	13	69-s	27	42		CH	Tested after >425µm removed by hand
BH1A	15.00	15.45	D	26	105		100	0	70-s	24	46		CV	Tested in natural condition
BH1A	18.00	18.45	D	26	105		100	0	72-s	26	46		CV	Tested in natural condition
BH1A	24.00	24.45	D	27	105		100	0	62-s	23	39		CH	Tested after >425µm removed by hand
BH1A	27.00	27.45	D	17	105		100	0	58-s	20	38		CH	Tested in natural condition
BH1A	30.00	30.36	D	20	105		100	0	49-s	22	27		CI	Tested in natural condition
DCS2A	1.50		D	24	105									
DCS2A	2.70		D	23	105		93	7	46-s	20	26		CI	Tested after >425µm removed by hand
DCS2A	3.20	3.65	D	8.8	105									

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

Key	Description	Category	BS Test Code
w	Moisture content		BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moisture content passing 425µm sieve		BS 1377:1990 Part 2 Clause 3.2
wL	Liquid limit	Single point	-s BS 1377:1990 Part 2 Clause 4.4
		Four point	-f BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit		BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing 425µm sieve		
Pr	Percentage retained 425µm sieve		
IP	Plasticity index		BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index		BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating test is "Not UKAS Accredited"	*	

Approved by	KW
Approval date	03/10/2017 13:24
Date report generated	
Report Number	

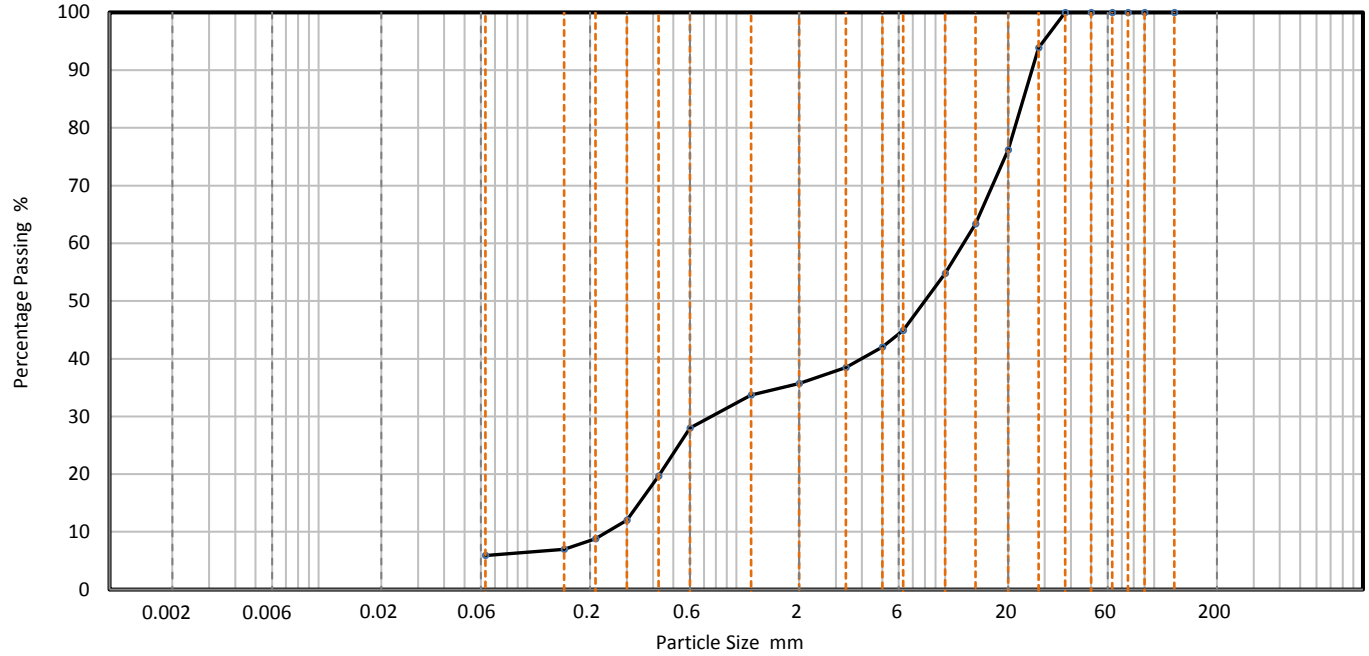
# PARTICLE SIZE DISTRIBUTION

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



Site name	The Hoxton, Holborn	Job number	M516
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Hole	BH1	Lab sample ID	SLMK2017092511
Depth (Top)	m 0.50	Test Method	BS 1377 - 2 : 1990 Clause 9.2
Depth (Base)	m 0.6	Soil Description	Brown, slightly clayey, slightly sandy GRAVEL
Sample type	B		



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

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	94		
20	76		
14	63		
10	55		
6.3	45		
5	42		
3.35	39		
2	36		
1.18	34		
0.6	28		
0.425	20		
0.3	12		
0.212	9		
0.15	7		
0.063	6		

Dry Mass of sample, g

1257

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	64.3
Sand	29.8
Fines <0.063mm	6.0

Grading Analysis	
D100	mm
D60	mm 12.3
D30	mm 0.763
D10	mm 0.242
Uniformity Coefficient	51
Curvature Coefficient	0.2

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

**Accreditation status**

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

Approved by	KW
Approval date	27/09/2017 15:38

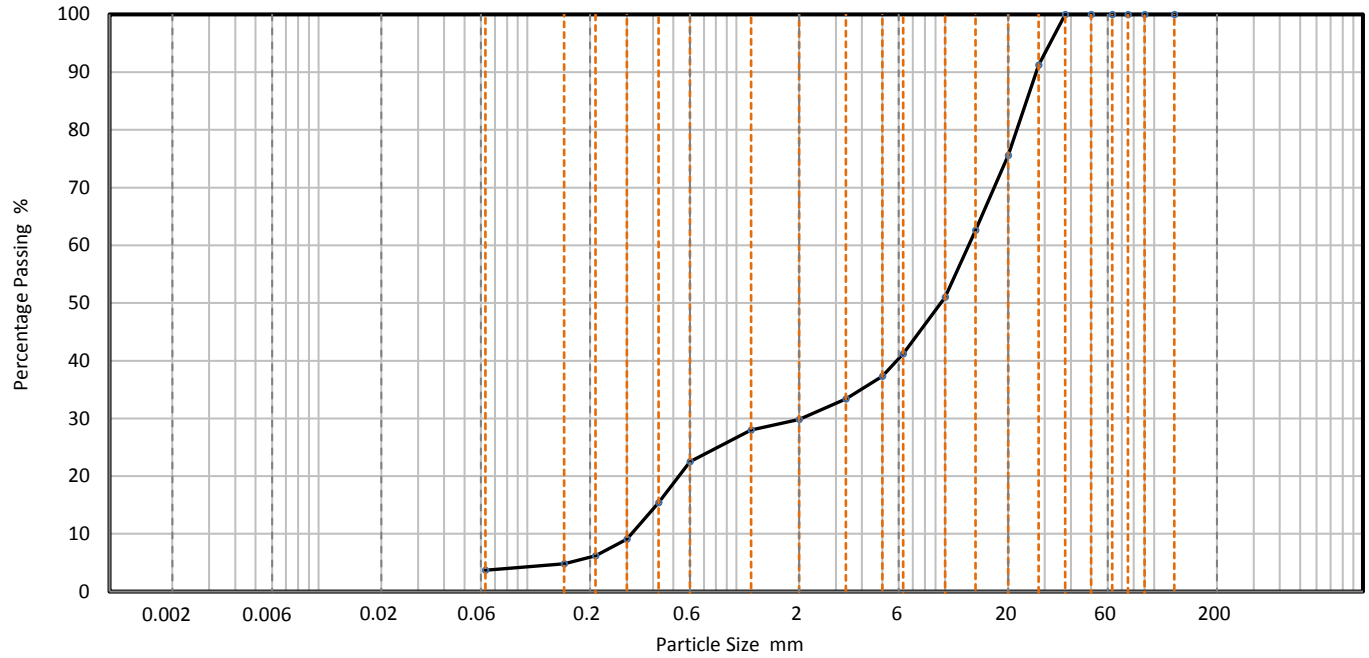
# PARTICLE SIZE DISTRIBUTION

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



Site name	The Hoxton, Holborn	Job number	M516
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Hole	BH1A	Lab sample ID	SLMK2017092512
Depth (Top)	m 0.25	Test Method	BS 1377 - 2 : 1990 Clause 9.2
Depth (Base)	m 0.35	Soil Description	Brown, slightly clayey, slightly sandy GRAVEL
Sample type	B		



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

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	91		
20	76		
14	63		
10	51		
6.3	41		
5	37		
3.35	33		
2	30		
1.18	28		
0.6	23		
0.425	15		
0.3	9		
0.212	6		
0.15	5		
0.063	4		

Dry Mass of sample, g

2620

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	70.2
Sand	26.2
Fines <0.063mm	4.0

Grading Analysis		
D100	mm	
D60	mm	13
D30	mm	2.05
D10	mm	0.315
Uniformity Coefficient		41
Curvature Coefficient		1

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

**Accreditation status**

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

Approved by	KW
Approval date	27/09/2017 16:00

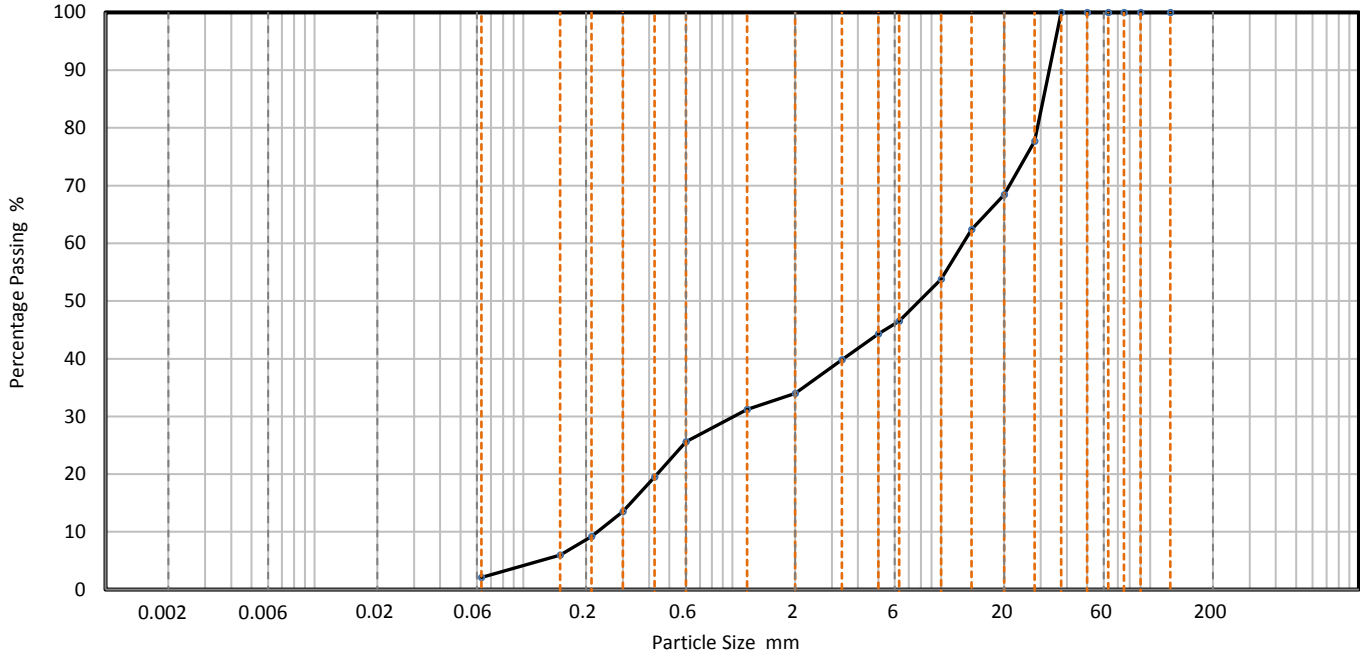
# PARTICLE SIZE DISTRIBUTION

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



Site name	The Hoxton, Holborn	Job number	M516
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Hole	BH1A	Lab sample ID	SLMK2017092513
Depth (Top)	m 1.00	Test Method	BS 1377 - 2 : 1990 Clause 9.2
Depth (Base)	m 1	Soil Description	Brown, slightly sandy GRAVEL
Sample type	B		



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

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	78		
20	68		
14	62		
10	54		
6.3	47		
5	44		
3.35	40		
2	34		
1.18	31		
0.6	26		
0.425	20		
0.3	14		
0.212	9		
0.15	6		
0.063	2		

Dry Mass of sample, g

1451

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	66.0
Sand	31.9
Fines <0.063mm	2.0

Grading Analysis		
D100	mm	
D60	mm	12.8
D30	mm	1.02
D10	mm	0.226
Uniformity Coefficient		56
Curvature Coefficient		0.36

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

**Accreditation status**

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

Approved by	KW
Approval date	27/09/2017 15:14



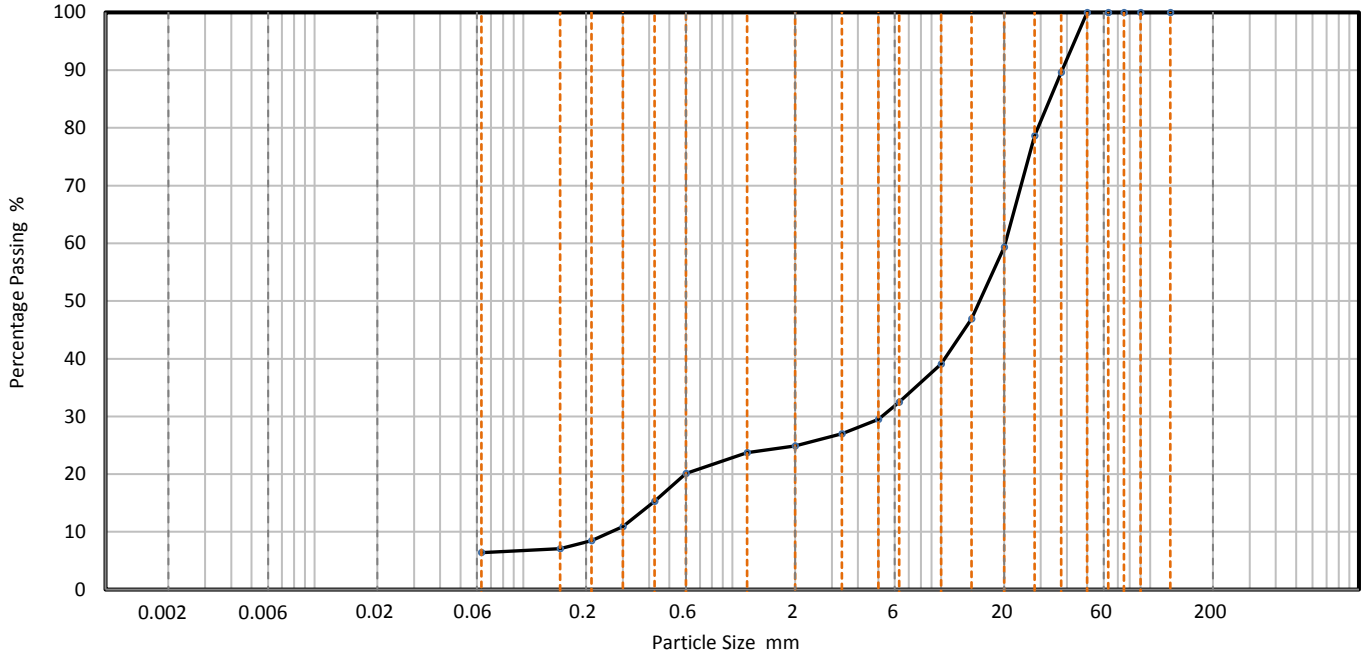
# PARTICLE SIZE DISTRIBUTION

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



Site name		Job number	
The Hoxton, Holborn		M516	

Hole	DCS1A	Lab sample ID	SLMK2017092514
Depth (Top)	m 0.50	Test Method	BS 1377 - 2 : 1990 Clause 9.2
Depth (Base)	m 0.7	Soil Description	Brown, slightly clayey, sandy GRAVEL
Sample type	B		



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

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	90		
28	79		
20	59		
14	47		
10	39		
6.3	33		
5	30		
3.35	27		
2	25		
1.18	24		
0.6	20		
0.425	15		
0.3	11		
0.212	9		
0.15	7		
0.063	6		

Dry Mass of sample, g

2072

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	75.1
Sand	18.5
Fines <0.063mm	6.0

Grading Analysis		
D100	mm	
D60	mm	20.3
D30	mm	5.19
D10	mm	0.265
Uniformity Coefficient		77
Curvature Coefficient		5

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

**Accreditation status**

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

Approved by	KW
Approval date	27/09/2017 15:23

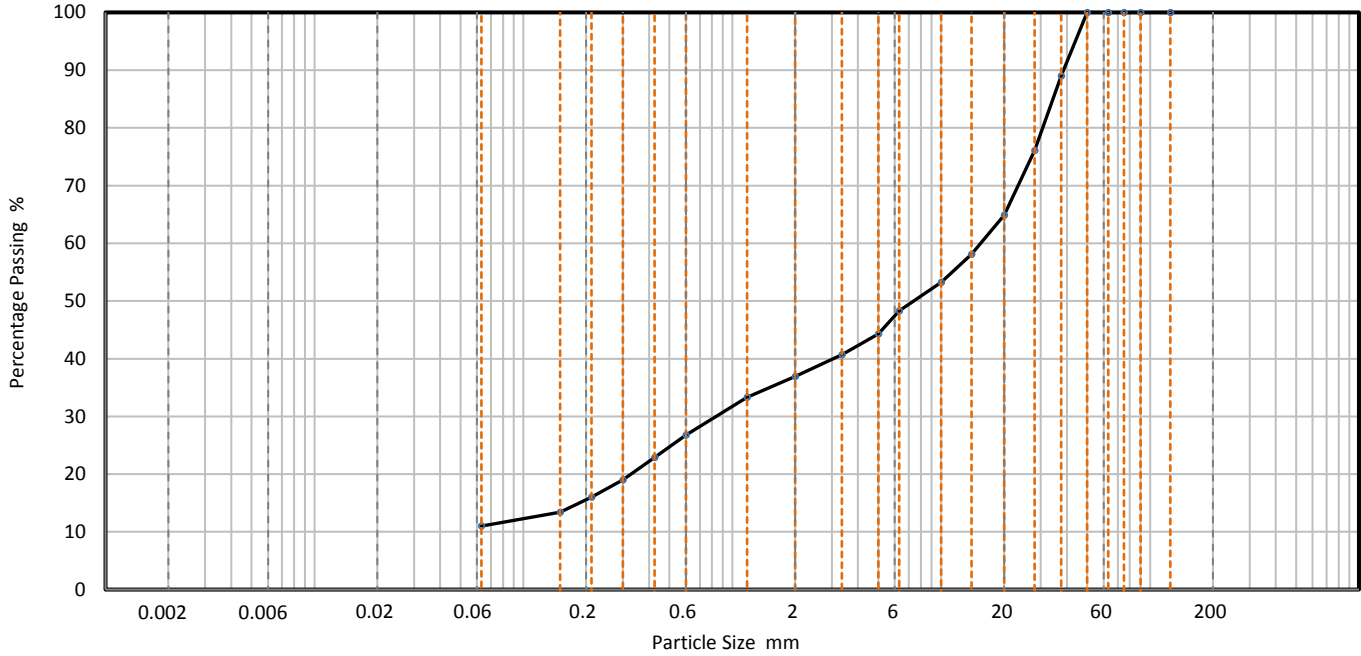
# PARTICLE SIZE DISTRIBUTION

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



Site name	The Hoxton, Holborn	Job number	M516
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Hole	DCS2B	Lab sample ID	SLMK2017092515	
Depth (Top)	m	0.50	Test Method	BS 1377 - 2 : 1990 Clause 9.2
Depth (Base)	m	0.6	Soil Description	Brown, slightly clayey, sandy GRAVEL
Sample type	B			



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

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	89		
28	76		
20	65		
14	58		
10	53		
6.3	48		
5	44		
3.35	41		
2	37		
1.18	33		
0.6	27		
0.425	23		
0.3	19		
0.212	16		
0.15	13		
0.063	11		

Dry Mass of sample, g

939

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	63.1
Sand	25.9
Fines <0.063mm	11.0

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

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

**Accreditation status**

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

Approved by	KW
Approval date	27/09/2017 15:25



## ANALYTICAL TEST REPORT

**Contract no:** 67728  
**Contract name:** The Hoxton, Holborn  
**Client reference:** M516  
**Clients name:** Solmek  
**Clients address:** 12 Yarm Road  
Stockton-on-Tees  
TS18 3NA

**Samples received:** 06 October 2017

**Analysis started:** 06 October 2017

**Analysis completed** 12 October 2017

**Report issued:** 13 October 2017

**Notes:** Opinions and interpretations expressed herein are outside the UKAS accreditation scope. Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling. Methods, procedures and performance data are available on request. Results reported herein relate only to the material supplied to the laboratory. This report shall not be reproduced except in full, without prior written approval. Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

**Key:** U UKAS accredited test  
M MCERTS & UKAS accredited test  
\$ Test carried out by an approved subcontractor  
I/S Insufficient sample to carry out test  
N/S Sample not suitable for testing

**Approved by:**

Dave Bowerbank  
Customer Services Co-ordinator

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.  
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
67728-1	DCS2A	3.20-3.65	Sandy Clay with Gravel	-	-	7.7

# Chemtech Environmental Limited

## SOILS

<b>Lab number</b>	67728-1		
<b>Sample id</b>	DCS2A		
<b>Depth (m)</b>	3.20-3.65		
<b>Date sampled</b>	24/08/2017		
<b>Test</b>	<b>Method</b>	<b>Units</b>	
Total Organic Carbon (TOC)	CE072 <sup>M</sup>	% w/w C	0.60
Estimate of OMC (calculated from TOC)	CE072 <sup>M</sup>	% w/w	1.03

# Chemtech Environmental Limited

## METHOD DETAILS

<b>METHOD</b>	<b>SOILS</b>	<b>METHOD SUMMARY</b>	<b>SAMPLE</b>	<b>STATUS</b>	<b>LOD</b>	<b>UNITS</b>
CE072	Total Organic Carbon (TOC)	Removal of IC by acidification, Carbon Analyser	Dry	M	0.1	% w/w C
CE072	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry	M	0.1	% w/w

# Chemtech Environmental Limited

## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
IT	Sample not cooled
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
67728-1	DCS2A	3.20-3.65	N	



2531



## ANALYTICAL TEST REPORT

Contract no: 67913  
Contract name: Hoxton  
Client reference: M516  
Clients name: Solmek  
Clients address: 12 Yarm Road  
Stockton-On-Tees  
TS18 3NA

Samples received: 17 October 2017

Analysis started: 17 October 2017

Analysis completed 23 October 2017

Report issued: 23 October 2017

Notes: Opinions and interpretations expressed herein are outside the UKAS accreditation scope.  
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.  
Methods, procedures and performance data are available on request.  
Results reported herein relate only to the material supplied to the laboratory.  
This report shall not be reproduced except in full, without prior written approval.  
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key: U UKAS accredited test  
M MCERTS & UKAS accredited test  
\$ Test carried out by an approved subcontractor  
I/S Insufficient sample to carry out test  
N/S Sample not suitable for testing

Approved by:

James Spittle  
Customer Services Team Leader



# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
67913-1	DCS20	1.50	Sandy Clay with Gravel, Roots & Brick	-	-	18.7

# Chemtech Environmental Limited

## SOILS

Lab number	67913-1		
Sample id	DCS20		
Depth (m)	1.50		
Date sampled	16/10/2017		
Test	Method	Units	
Total Organic Carbon (TOC)	CE072 <sup>M</sup>	% w/w C	0.90
Estimate of OMC (calculated from TOC)	CE072 <sup>M</sup>	% w/w	1.56

# Chemtech Environmental Limited

## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE072	Total Organic Carbon (TOC)	Removal of IC by acidification, Carbon Analyser	Dry	M	0.1	% w/w C
CE072	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry	M	0.1	% w/w

# Chemtech Environmental Limited

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HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
IT	Sample not cooled
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
67913-1	DCS20	1.50	N	



2531



## ANALYTICAL TEST REPORT

Contract no: 67460  
Contract name: The Hoxton, Holborn  
Client reference: M516  
Clients name: Dunelm Geotechnical & Environmental  
Clients address: Foundation House  
St Johns Road, Meadowfield  
Durham  
DH7 8TZ

Samples received: 25 September 2017

Analysis started: 25 September 2017

Analysis completed 28 September 2017

Report issued: 28 September 2017

Notes: Opinions and interpretations expressed herein are outside the UKAS accreditation scope.  
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.  
Methods, procedures and performance data are available on request.  
Results reported herein relate only to the material supplied to the laboratory.  
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Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key: U UKAS accredited test  
M MCERTS & UKAS accredited test  
\$ Test carried out by an approved subcontractor  
I/S Insufficient sample to carry out test  
N/S Sample not suitable for testing

Approved by:

James Spittle  
Customer Services Team Leader

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
67460-1	BH1A	0.50	Sandy Clay with Gravel	-	-	3.3
67460-2	BH1A	1.00	Sandy Clay with Gravel	-	-	11.1
67460-3	BH1A	6.00-6.45	Clay with Gravel	-	-	7.8
67460-4	BH1A	9.00-9.45	Clay	-	-	20.0
67460-5	BH1A	15.00-15.45	Clay	-	-	15.7
67460-6	BH1A	18.00-18.45	Clay	-	-	17.9
67460-7	BH1A	24.00-24.45	Sandy Clay	-	-	17.0
67460-8	BH1A	30.00-30.45	Sandy Clay	-	-	10.4
67460-9	BH1A	36.00-36.45	Clay	-	-	14.6
67460-10	BH1A	39.00-39.45	Clay with Gravel	-	-	9.5
67460-11	DCS1	0.25	Sandy Clay with Gravel	-	-	8.7
67460-12	DCS1A	0.50	Sandy Clay with Gravel	-	-	7.5
67460-13	DCS1C	5.20-5.65	Clay	-	-	19.1
67460-14	DCS2A	0.50	Sandy Clay with Gravel	-	-	16.9
67460-15	DCS2B	1.00	Sandy Clay with Gravel	-	-	18.4

# Chemtech Environmental Limited

## SOILS

Lab number			67460-1	67460-2	67460-3	67460-4	67460-5	67460-6
Sample id			BH1A	BH1A	BH1A	BH1A	BH1A	BH1A
Depth (m)			0.50	1.00	6.00-6.45	9.00-9.45	15.00-15.45	18.00-18.45
Date sampled			19/09/2017	19/09/2017	19/09/2017	19/09/2017	19/09/2017	19/09/2017
Test	Method	Units						
pH	CE004 <sup>M</sup>	units	8.8	8.8	8.1	8.0	7.0	8.4
Sulphate (2:1 water soluble)	CE061 <sup>M</sup>	mg/l SO <sub>4</sub>	19	84	156	298	684	490

# Chemtech Environmental Limited

## SOILS

Lab number			67460-7	67460-8	67460-9	67460-10	67460-11	67460-12
Sample id			BH1A	BH1A	BH1A	BH1A	DCS1	DCS1A
Depth (m)			24.00-24.45	30.00-30.45	36.00-36.45	39.00-39.45	0.25	0.50
Date sampled			19/09/2017	19/09/2017	19/09/2017	19/09/2017	19/09/2017	19/09/2017
Test	Method	Units						
pH	CE004 <sup>M</sup>	units	7.7	9.6	9.8	9.2	8.8	8.1
Sulphate (2:1 water soluble)	CE061 <sup>M</sup>	mg/l SO <sub>4</sub>	405	41	23	22	20	16



# Chemtech Environmental Limited

## SOILS

Lab number			67460-13	67460-14	67460-15
Sample id			DCS1C	DCS2A	DCS2B
Depth (m)			5.20-5.65	0.50	1.00
Date sampled			19/09/2017	19/09/2017	19/09/2017
Test	Method	Units			
pH	CE004 <sup>M</sup>	units	8.0	8.1	8.2
Sulphate (2:1 water soluble)	CE061 <sup>M</sup>	mg/l SO <sub>4</sub>	381	1720	1607

# Chemtech Environmental Limited

## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	Wet	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO <sub>4</sub>

# Chemtech Environmental Limited

## DEVIATING SAMPLE INFORMATION

### Comments

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IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
IT	Sample not cooled
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
67460-1	BH1A	0.50	N	
67460-2	BH1A	1.00	N	
67460-3	BH1A	6.00-6.45	N	
67460-4	BH1A	9.00-9.45	N	
67460-5	BH1A	15.00-15.45	N	
67460-6	BH1A	18.00-18.45	N	
67460-7	BH1A	24.00-24.45	N	
67460-8	BH1A	30.00-30.45	N	
67460-9	BH1A	36.00-36.45	N	
67460-10	BH1A	39.00-39.45	N	
67460-11	DCS1	0.25	N	
67460-12	DCS1A	0.50	N	
67460-13	DCS1C	5.20-5.65	N	
67460-14	DCS2A	0.50	N	
67460-15	DCS2B	1.00	N	



# DETS

## Certificate of Analysis

*Certificate Number* 17-11223

27-Sep-17

*Client* Dunelm Geotechnical & Environmental Ltd  
1 The Old Shippon  
Sandlow Green Farm  
Holmes Chapel Road  
Holmes Chapel  
CW4 8AS

*Our Reference* 17-11223

*Client Reference* M516

*Order No* (not supplied)

*Contract Title* The Hoxton, Holborn

*Description* 5 Soil samples.

*Date Received* 25-Sep-17

*Date Started* 25-Sep-17

*Date Completed* 27-Sep-17

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

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

*Approved By*



Adam Fenwick  
Contracts Manager



# Summary of Chemical Analysis

## Soil Samples

Our Ref 17-11223  
 Client Ref M516  
 Contract Title The Hoxton, Holborn

<b>Lab No</b>	1234270	1234271	1234272	1234273	1234274
<b>Sample ID</b>	DCS2B	DCS1C	DCS2A	DCS3	DCS3
<b>Depth</b>	2.00	1.00	2.70	0.50	2.00
<b>Other ID</b>	10				
<b>Sample Type</b>	D	ES	ES	ES	ES
<b>Sampling Date</b>	06/09/17	30/08/17	23/08/17	23/08/17	23/08/17
<b>Sampling Time</b>	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
<b>Inorganics</b>								
pH	DETSC 2008#			8.7	10.5	7.7	9.8	10.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1300	340	240	85	640
Sulphur as S, Total	DETSC 2320	0.01	%			0.02		
Sulphate as SO4, Total	DETSC 2321#	0.01	%			0.07		

## Information in Support of the Analytical Results

Our Ref 17-11223  
 Client Ref M516  
 Contract The Hoxton, Holborn

### Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1234270	DCS2B 2.00 SOIL	06/09/17	GJ 250ml x2, GJ 60ml x2, PT 1L	pH + Conductivity (7 days)	
1234271	DCS1C 1.00 SOIL	30/08/17	GJ 500ml x2, GJ 60ml x2, PT 500ml	pH + Conductivity (7 days)	
1234272	DCS2A 2.70 SOIL	23/08/17	GJ 250ml x2, GJ 60ml x2, PT 1L	pH + Conductivity (7 days)	
1234273	DCS3 0.50 SOIL	23/08/17	GJ 250ml x2, GJ 60ml x2, PT 1L	pH + Conductivity (7 days)	
1234274	DCS3 2.00 SOIL	23/08/17	GJ 250ml x2, GJ 60ml x2, PT 1L	pH + Conductivity (7 days)	

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

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### 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



# DETS

## Certificate of Analysis

*Certificate Number* 17-11547

02-Oct-17

*Client* Dunelm Geotechnical & Environmental Ltd  
1 The Old Shippon  
Sandlow Green Farm  
Holmes Chapel Road  
Holmes Chapel  
CW4 8AS

*Our Reference* 17-11547

*Client Reference* (not supplied)

*Order No* (not supplied)

*Contract Title* DGE Hoxton

*Description* 3 Water samples.

*Date Received* 28-Sep-17

*Date Started* 28-Sep-17

*Date Completed* 02-Oct-17

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

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

*Approved By*



Adam Fenwick  
Contracts Manager



## Summary of Chemical Analysis

### Water Samples

Our Ref 17-11547

Client Ref

Contract Title DGE Hoxton

<b>Lab No</b>	1235925	1235926	1235927
<b>Sample ID</b>	DCS1	DCS2	BH1-U
<b>Depth</b>	4.00	4.00	9.00
<b>Other ID</b>			
<b>Sample Type</b>	WATER	WATER	WATER
<b>Sampling Date</b>	25/09/17	25/09/17	25/09/17
<b>Sampling Time</b>	n/s	n/s	n/s

Test	Method	LOD	Units			
<b>Inorganics</b>						
pH	DETSC 2008			7.6	7.4	7.6
Sulphate as SO4	DETSC 2055	0.1	mg/l	370	710	540



## Information in Support of the Analytical Results

Our Ref 17-11547

Client Ref

Contract DGE Hoxton

### Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1235925	DCS1 4.00 WATER	25/09/17	GB 1L x2, PB 1L x2		
1235926	DCS2 4.00 WATER	25/09/17	GB 1L x2, PB 1L x2		
1235927	BH1-U 9.00 WATER	25/09/17	GB 1L x2, PB 1L x2		

Key: G-Glass P-Plastic B-Bottle

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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



# DETS

## Certificate of Analysis

*Certificate Number* 17-13030

20-Oct-17

*Client* Dunelm Geotechnical & Environmental Ltd  
Foundation House  
St. John's Road  
Meadowfield  
Durham  
DH7 8TZ

*Our Reference* 17-13030

*Client Reference* (not supplied)

*Order No* (not supplied)

*Contract Title* HOXTON

*Description* 3 Water samples.

*Date Received* 16-Oct-17

*Date Started* 16-Oct-17

*Date Completed* 20-Oct-17

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

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*Approved By*



Adam Fenwick  
Contracts Manager



## Summary of Chemical Analysis

### Water Samples

Our Ref 17-13030

Client Ref

Contract Title HOXTON

<b>Lab No</b>	1244056	1244057	1244058
<b>Sample ID</b>	BH1-U	DSC1	DSC2
<b>Depth</b>			
<b>Other ID</b>			
<b>Sample Type</b>	WATER	WATER	WATER
<b>Sampling Date</b>	11/10/17	11/10/17	11/10/17
<b>Sampling Time</b>	n/s	n/s	n/s

Test	Method	LOD	Units			
<b>Inorganics</b>						
pH	DETSC 2008			7.2	7.5	7.2
Sulphate as SO4	DETSC 2055	0.1	mg/l	430	330	490

## Information in Support of the Analytical Results

Our Ref 17-13030

Client Ref

Contract HOXTON

### Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1244056	BH1-U WATER	11/10/17	GB 1L, GV, PB 1L		
1244057	DSC1 WATER	11/10/17	GB 1L, GV, PB 1L		
1244058	DSC2 WATER	11/10/17	GB 1L, GV, PB 1L		


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

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

<b>Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement</b>				<b>(CAUC)</b>
Borehole Number:	1A	Description (visual) :		
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare		
Sample Depth (m):	9.15-9.40	fine gravel and some organic black spots		
<b>SPECIMEN DETAILS</b>				
	Initial Values	Final Values		
Height :	201.9 mm			
Diameter :	99.6 mm			
Moisture content :	31.42 %	28.67	%	
Bulk density :	1.96 Mg/m <sup>3</sup>			
Dry density :	1.49 Mg/m <sup>3</sup>			
Particle density (assumed)	2.70 Mg/m <sup>3</sup>			
Initial voids ratio (e <sub>0</sub> )	0.8115			
Test Duration:		13 Days		
<b>INITIAL MEASUREMENT OF EFFECTIVE STRESS</b>				
Stage	#1	#2	#3	#4
Cell pressure (kPa):	278	371	464	564
Base pwp (kPa):	206.4	298.4	389.4	488.3
Mid-plane pwp (kPa):	205.2	297.9	390.3	488.8
Base B values :	0.77	0.99	0.98	0.99
Mid-plane B values :	1.03	1.00	0.99	0.99
Initial effective stress (mid-plane) :		75.3	kPa	
<b>ISOTROPIC CONSOLIDATION/SWELLING STAGE</b>				
Final cell pressure (kPa):	564	Final back Pressure (kPa):	330	
<b>SHEAR STAGE</b>				
Effective stress, p <sub>o'</sub> , at start		220.8	(kPa)	
Δe/e <sub>0</sub>		0.0026		
<b>Stiffnesses:</b>				
Stiffness at 0.01% axial strain		123	(MPa)	
- normalised with respect to p <sub>o'</sub>		556		
- normalised with respect to C <sub>u</sub>		1499		
Stiffness at 0.1% axial strain		55	(MPa)	
- normalised with respect to p <sub>o'</sub>		249		
- normalised with respect to C <sub>u</sub>		670		
Degree of non-linearity (L) during shear		0.447		
<b>At failure:</b>				
Local axial strain		#N/A	(%)	
External axial strain		10.00	(%)	
Peak deviator stress		164	(kPa)	
Undrained shear strength		82	(kPa)	
Mid plane pore pressure		419	(kPa)	
Base pore pressure		415	(kPa)	
Horizontal effective stress		160	(kPa)	
Vertical effective stress		324	(kPa)	
Note: In all notation p <sub>o'</sub> is mean effective stress: $p' = (\sigma'_a + (2\sigma'_v))/3$				
NOTE: on post-test examination sample may have had a pre-existing angular shear plane through sample.				
Checked and approved		Project Number: <b>RGI/1166</b>		
Initials: <i>CSR</i>		Project Name:		
Date: 27/10/2017		<b>THE HOXTON, HOLBORN M516</b>		

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

C:\Users\Chris\Documents\A Processing Files\RGI\_1166 The Hoxton Holborn\BH1A 13 0915 CAUCSS.xlsx\Sheet1

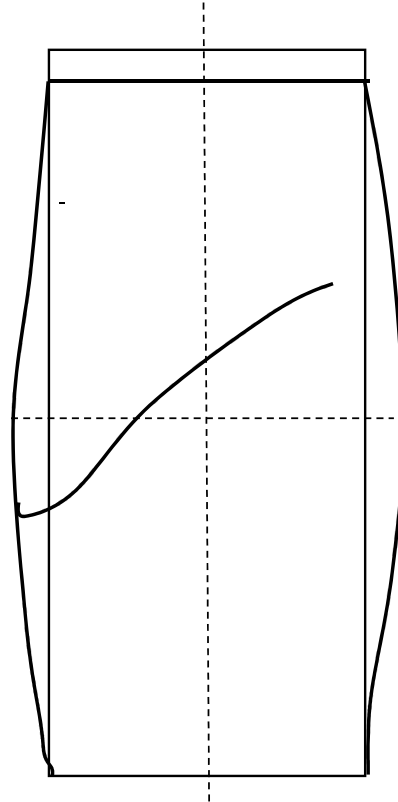
**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare fine gravel and some organic black spots
Sample Depth (m):	9.15-9.40	


**SPECIMEN DETAILS**

Initial Height:	201.9	mm
Initial Diameter:	99.6	mm

Elevation




**Failure Sketch**

Checked and approved Initials: <i>CSR</i> Date: 27/10/2017	Project Number: <b>RGI/1166</b>	
	Project Name: <b>THE HOXTON, HOLBORN M516</b>	

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement			
Borehole Number:	1A	Description :	
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare	
Sample Depth (m):	9.15-9.40	fine gravel and some organic black spots	
STRESS PATH STAGES			
ISOTROPIC CONSOLIDATION/SWELLING			
	Initial Values	Final Values	
Cell Press. (kPa)	564	564	
Mid pwp (kPa)	488.7	330.4	
Base pwp (kPa)	488.6	330.3	
s' (kPa)	75.3	233.6	
t (kPa)	0.0	0.0	
Voids ratio (e)	0.8115	0.7511	
Creep (%/min)		3.99E-06	
ANISOTROPIC STAGE 1			
	Initial Values	Final Values	
Cell Press. (kPa)	564	576	
Mid pwp (kPa)	330.4	331.3	
Base pwp (kPa)	330.3	330.5	
s' (kPa)	233.6	195.6	
t (kPa)	0.0	-49.1	
Voids ratio (e)	0.7511	0.7507	
Creep (%/min)		#N/A	
ANISOTROPIC STAGE 1			
	Initial Values	Final Values	
Cell Press. (kPa)	576	579	
Mid pwp (kPa)	331.3	330.4	
Base pwp (kPa)	330.5	330.3	
s' (kPa)	195.6	206.9	
t (kPa)	-49.1	-41.7	
Voids ratio (e)	0.7507	0.8094	
Creep (%/min)		0.00E+00	
Checked and approved Initials: <i>CSR</i> Date: 27/10/2017	Project Number: <b>RGI/1166</b> Project Name: <b>THE HOXTON, HOLBORN M516</b>		

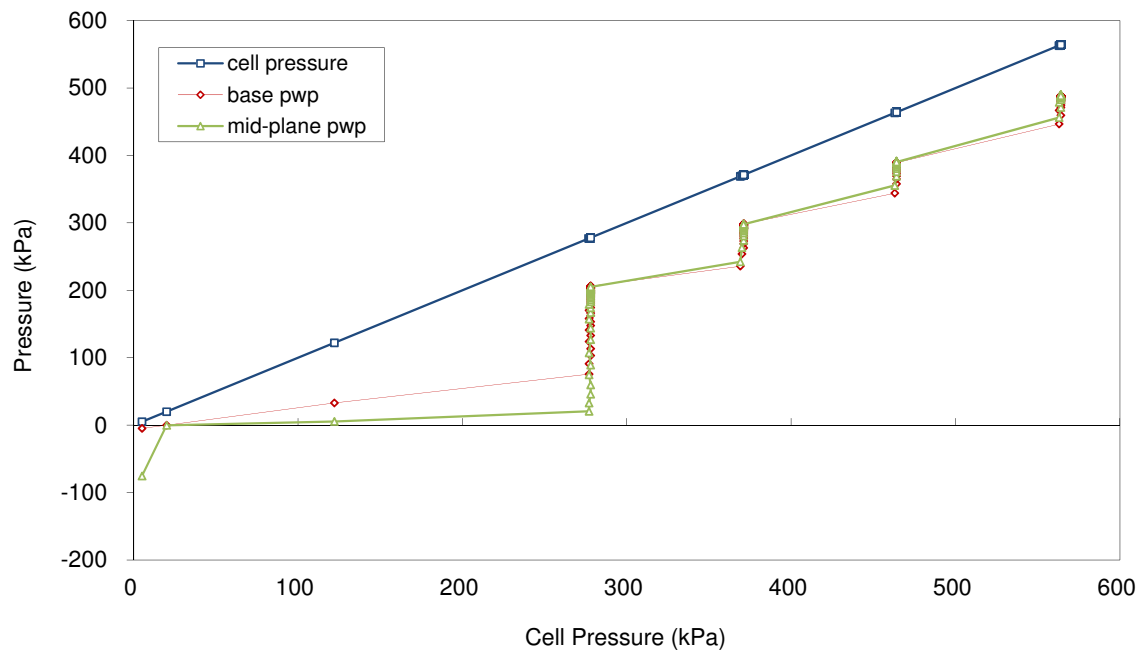
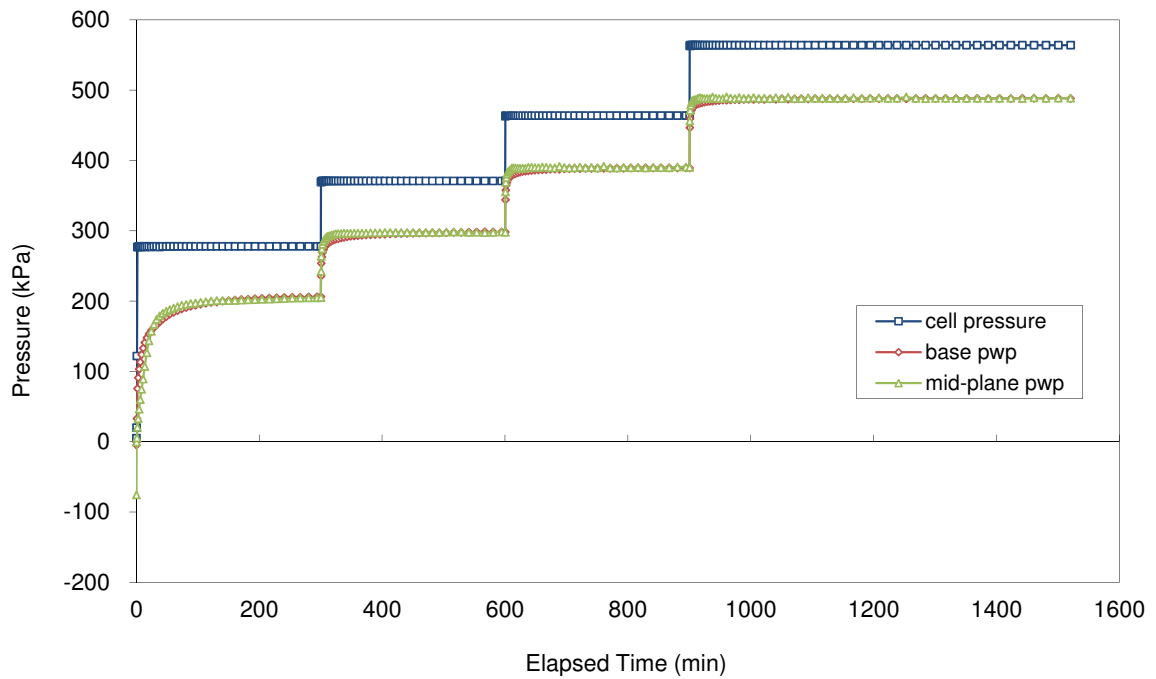
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
Sample Depth (m):	9.15-9.40	fine gravel and some organic black spots



**Determination of Initial Effective Stress**

Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 27/10/2017	<b>M516</b>	

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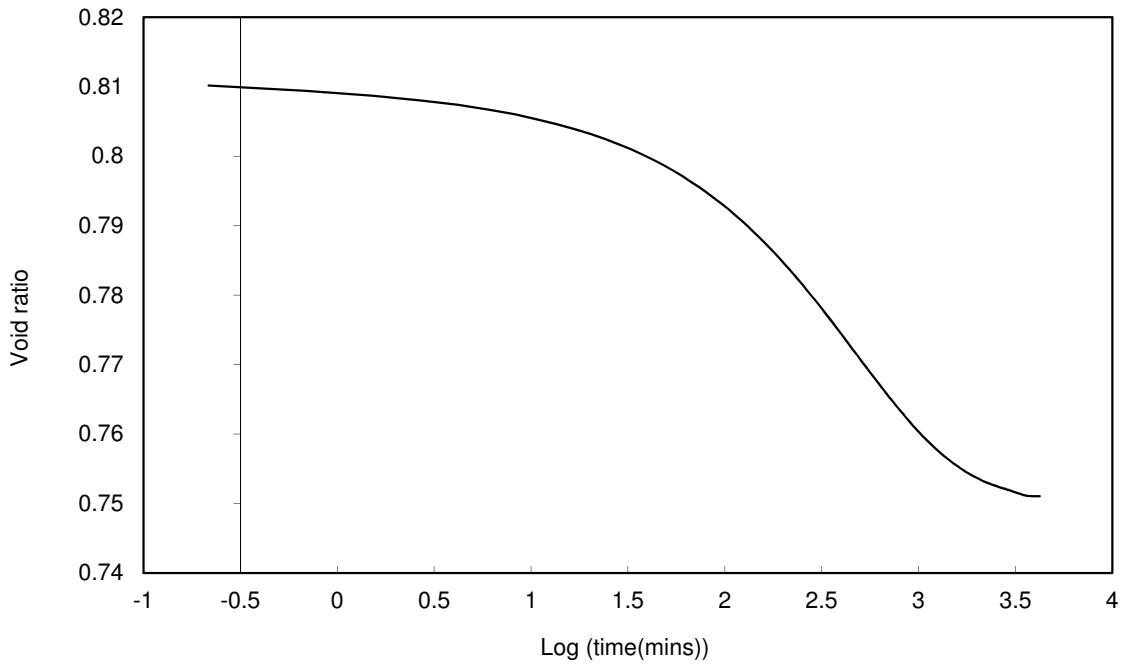
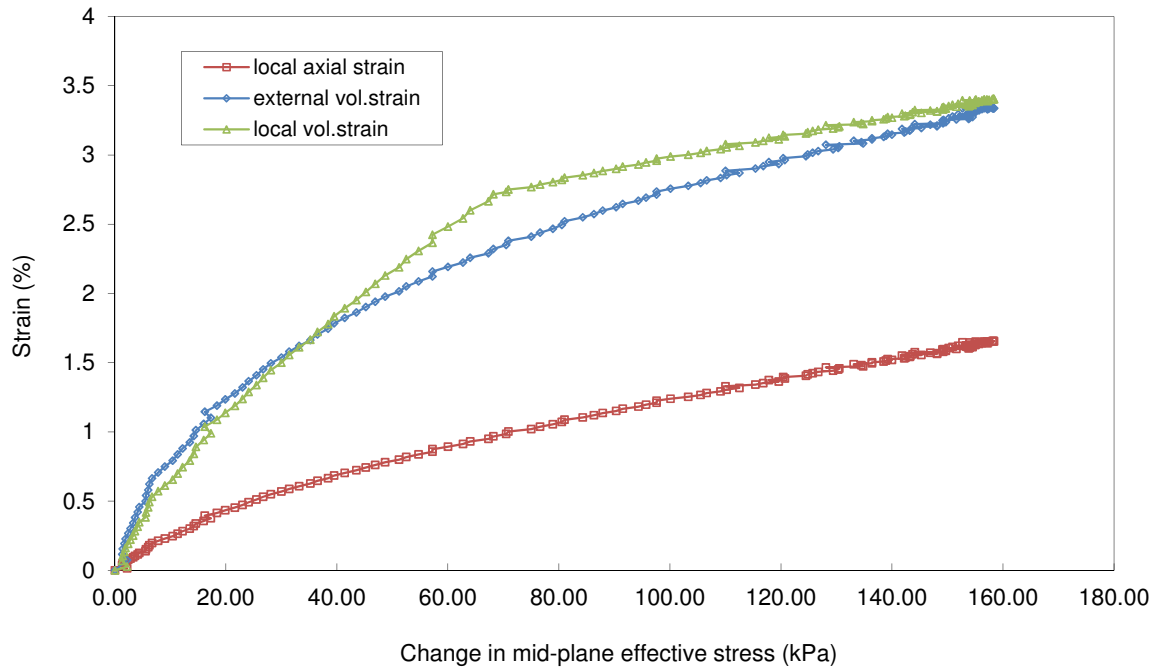
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
Sample Depth (m):	9.15-9.40	fine gravel and some organic black spots



**Isotropic Consolidation/Swelling Stage**

Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name:	
Date: 27/10/2017	<b>THE HOXTON, HOLBORN M516</b>	

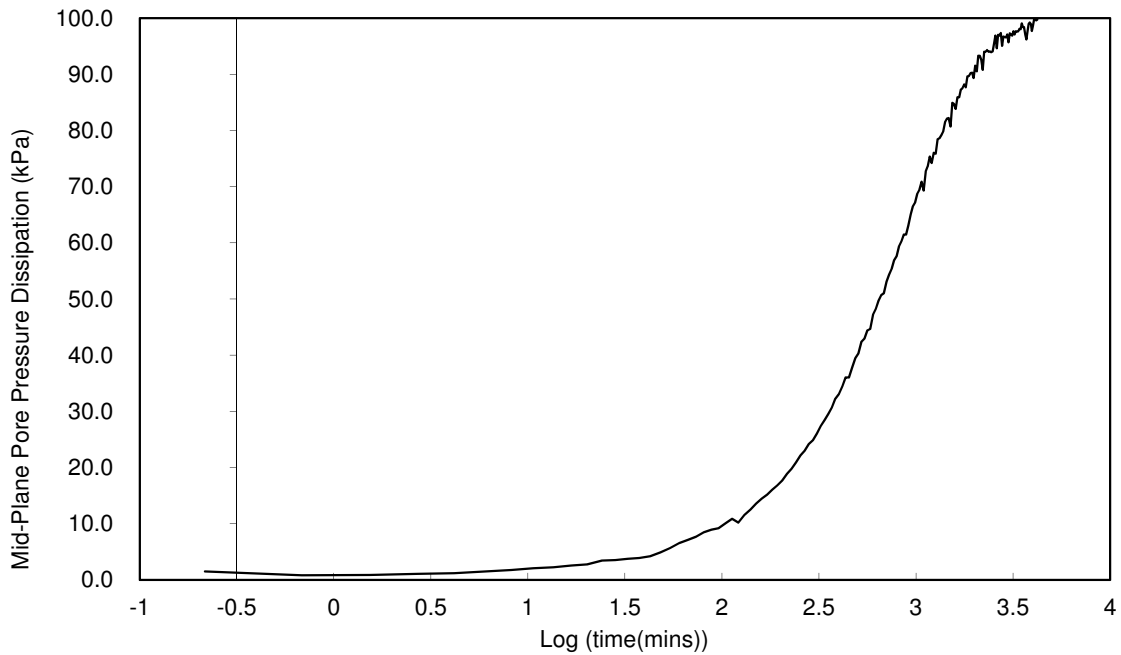
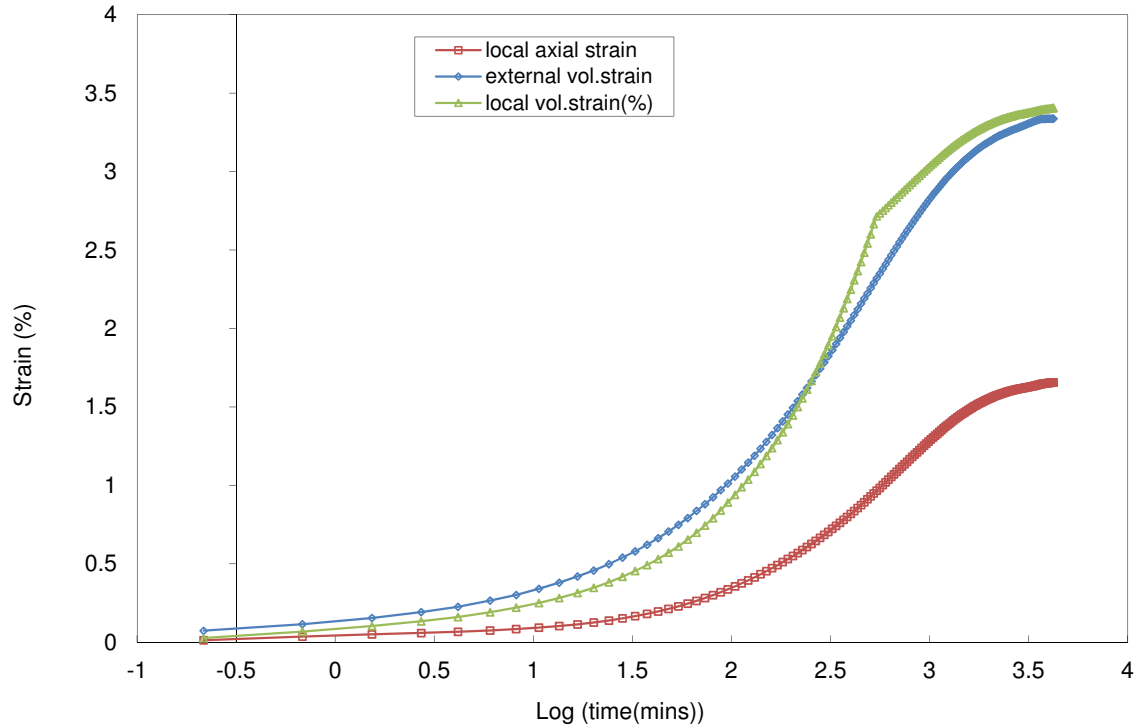
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
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**Isotropic Consolidation/Swelling Stage**

Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name:	
Date: 27/10/2017	<b>THE HOXTON, HOLBORN M516</b>	

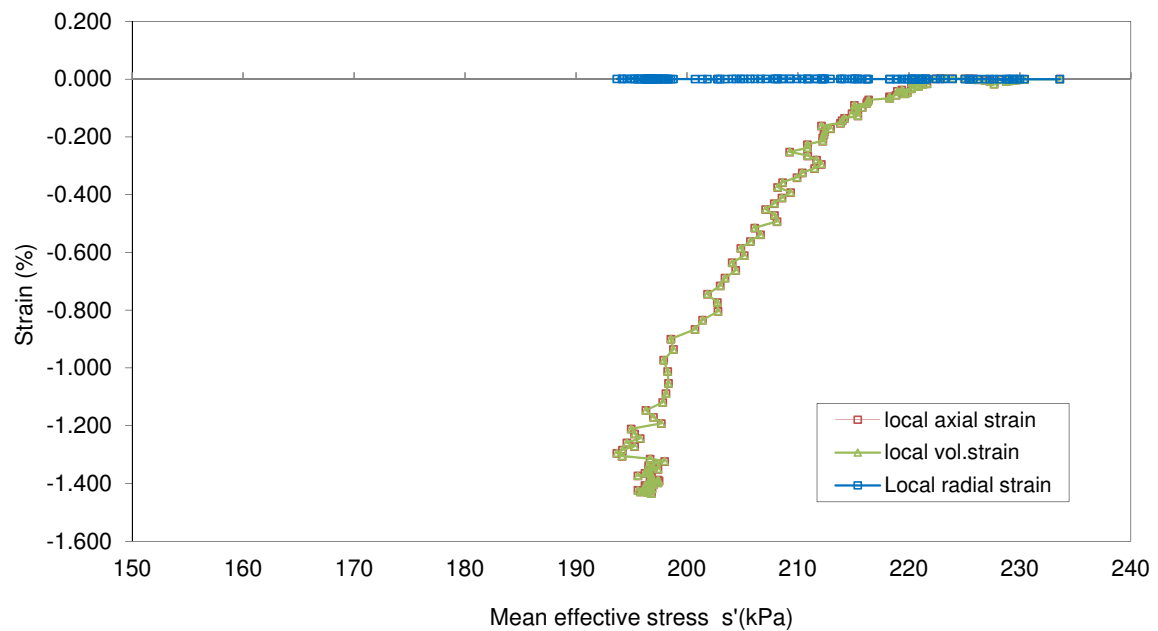
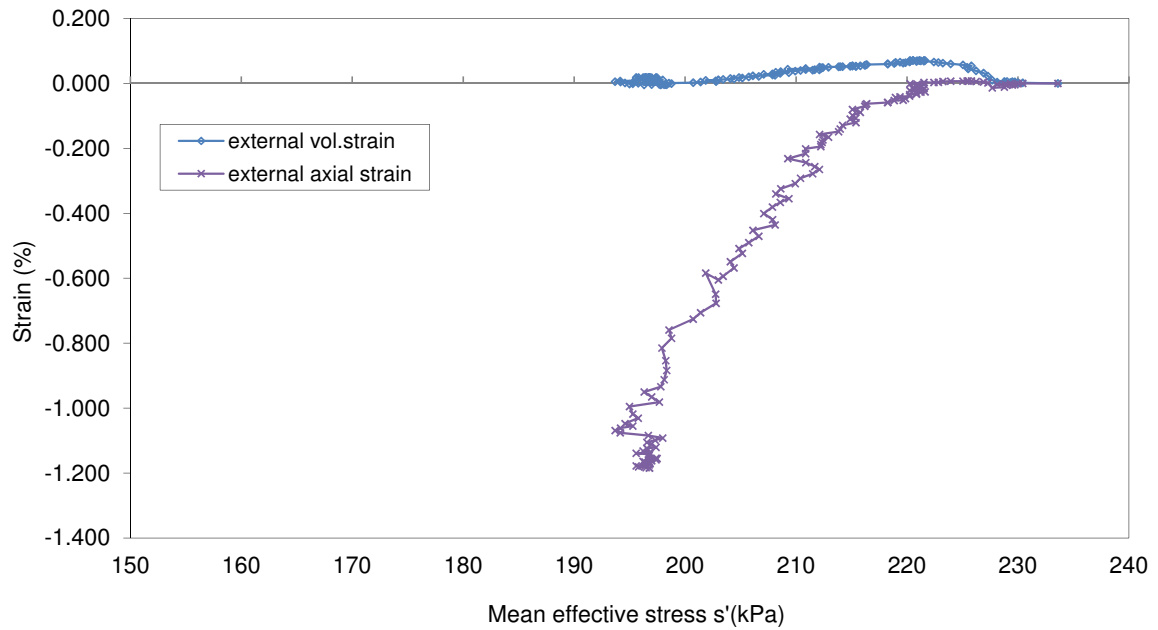
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
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**Anisotropic Stage 1**

Checked and approved Initials: <i>CSR</i> Date: 27/10/2017	Project Number: <b>RGI/1166</b>	
	Project Name: <b>THE HOXTON, HOLBORN M516</b>	

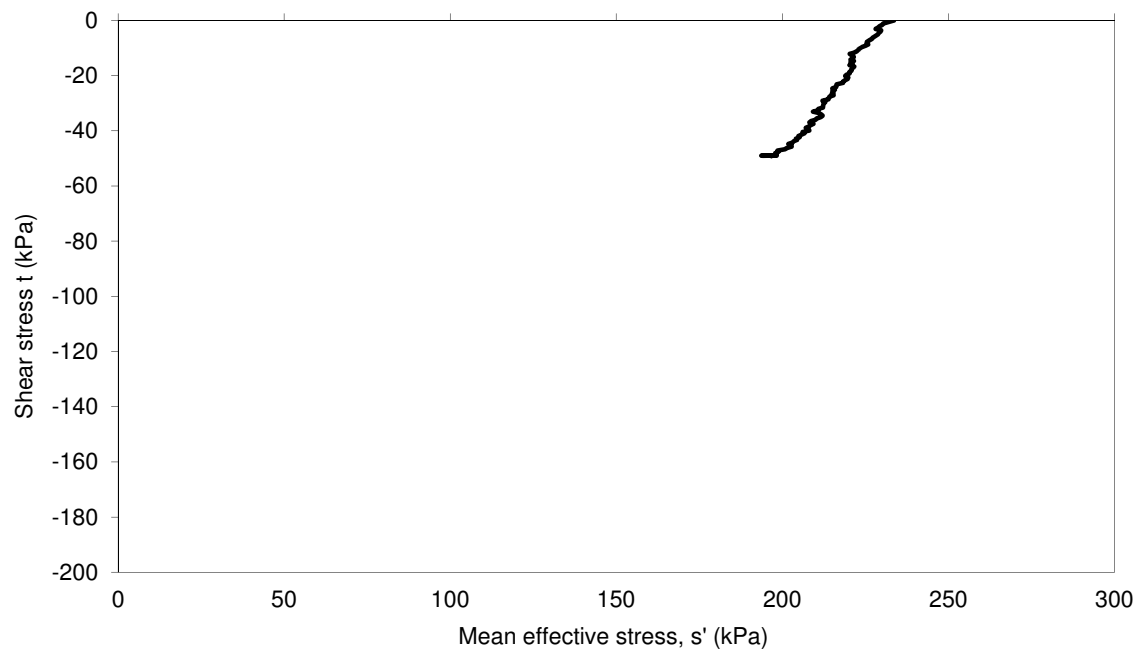
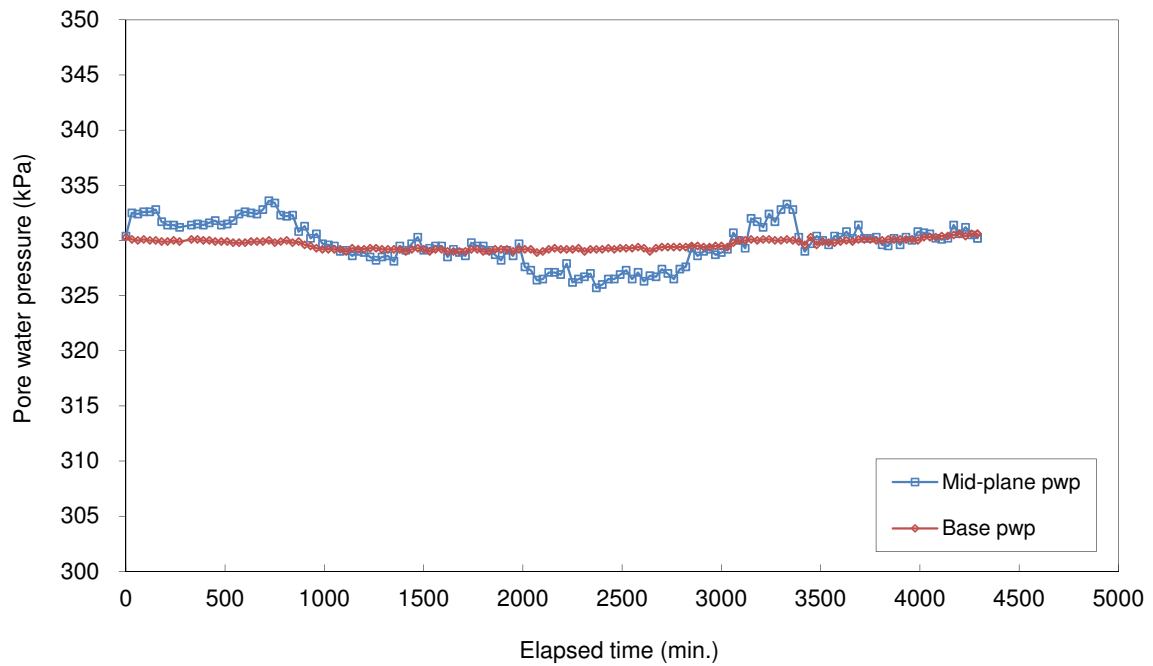
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
Sample Depth (m):	9.15-9.40	fine gravel and some organic black spots



**Anisotropic Stage 1**

Checked and approved Initials: <i>CSR</i> Date: 27/10/2017	Project Number: <b>RGI/1166</b> Project Name: <b>THE HOXTON, HOLBORN M516</b>	
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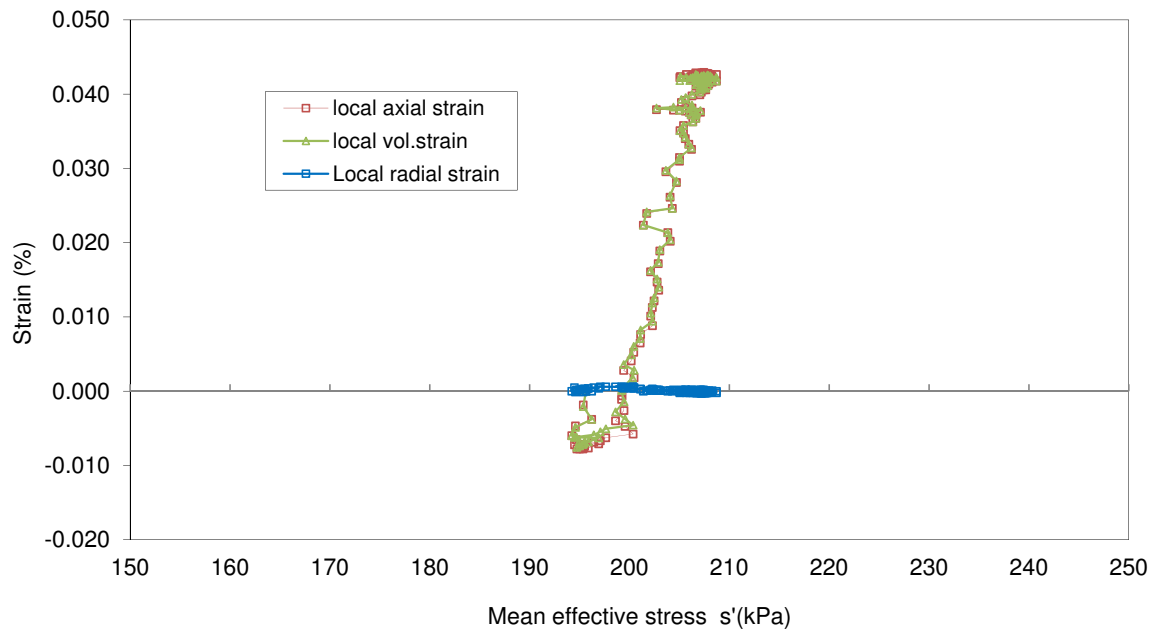
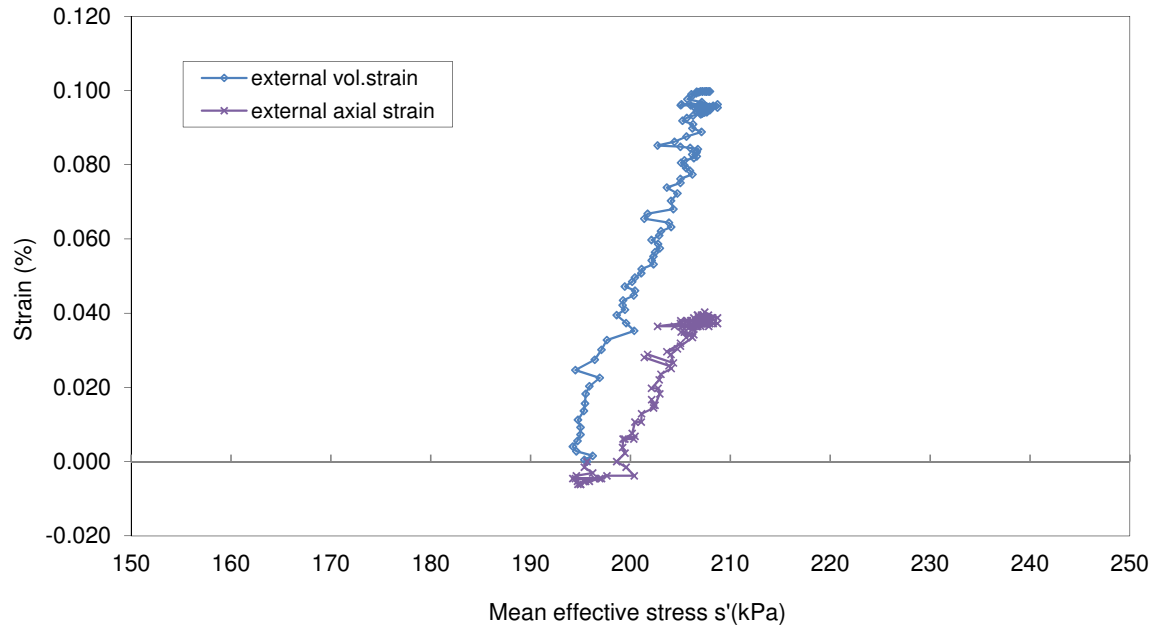
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
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Sample Depth (m):	9.15-9.40	fine gravel and some organic black spots



**Anisotropic Stage2**

Checked and approved Initials: <i>CSR</i> Date: 27/10/2017	Project Number: <b>RGI/1166</b>	
	Project Name: <b>THE HOXTON, HOLBORN M516</b>	

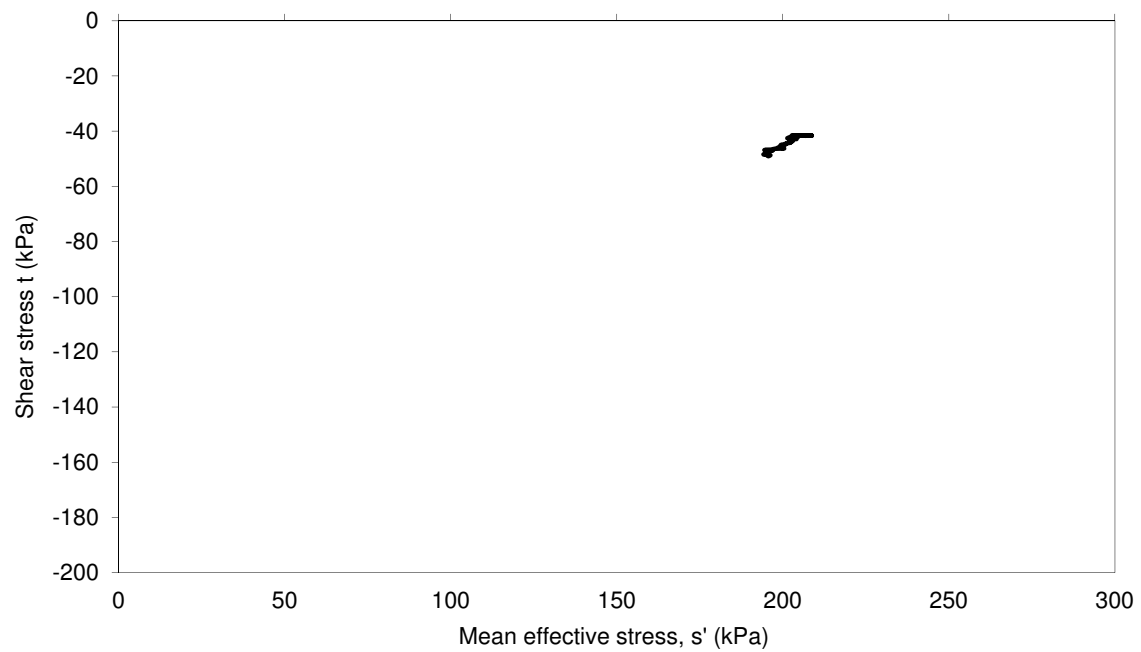
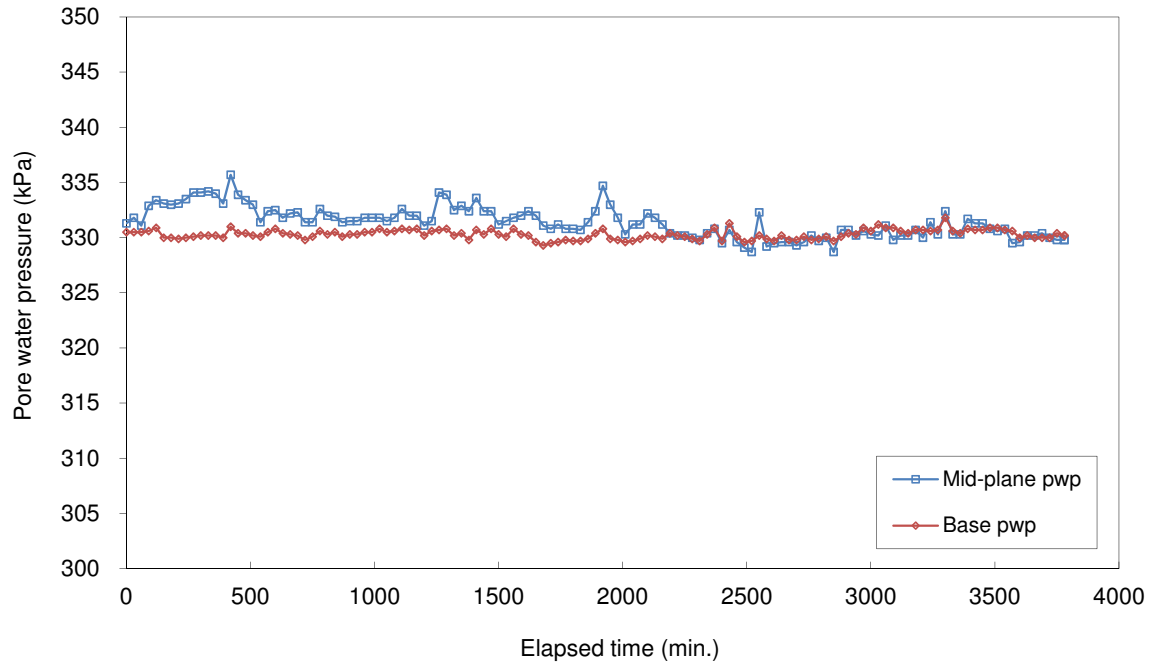
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
Sample Depth (m):	9.15-9.40	fine gravel and some organic black spots



**Anisotropic Stage2**

Checked and approved Initials: <i>CSR</i> Date: 27/10/2017	Project Number: <b>RGI/1166</b> Project Name: <b>THE HOXTON, HOLBORN M516</b>	
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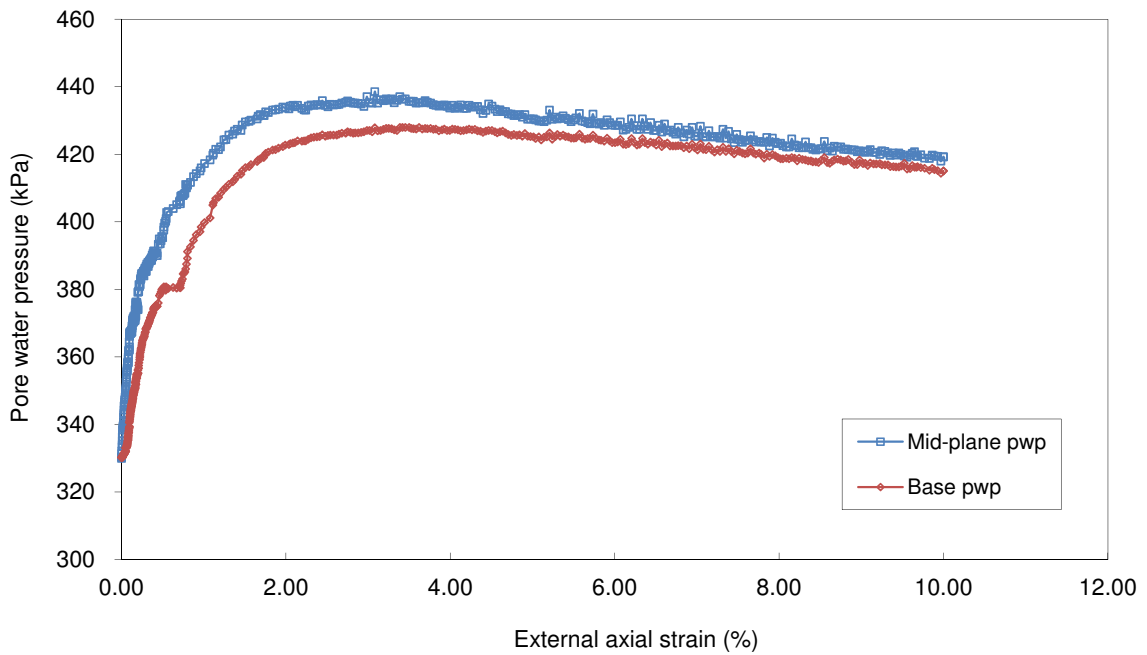
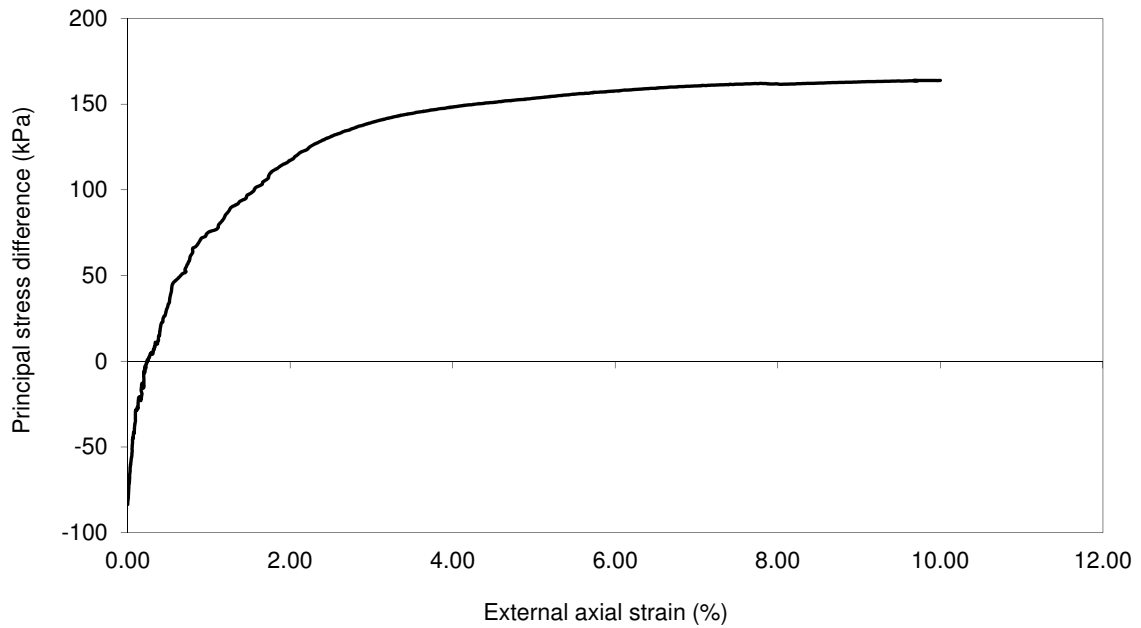
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
Sample Depth (m):	9.15-9.40	fine gravel and some organic black spots



**Undrained Shear Stage**

Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name:	
Date: 27/10/2017	<b>THE HOXTON, HOLBORN M516</b>	

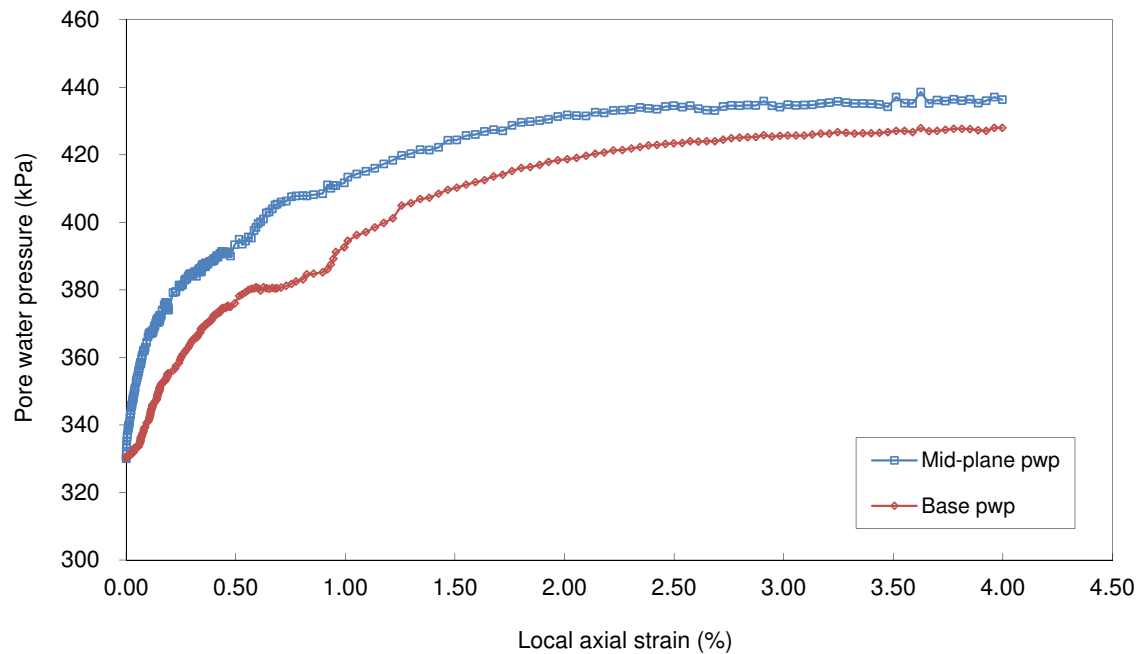
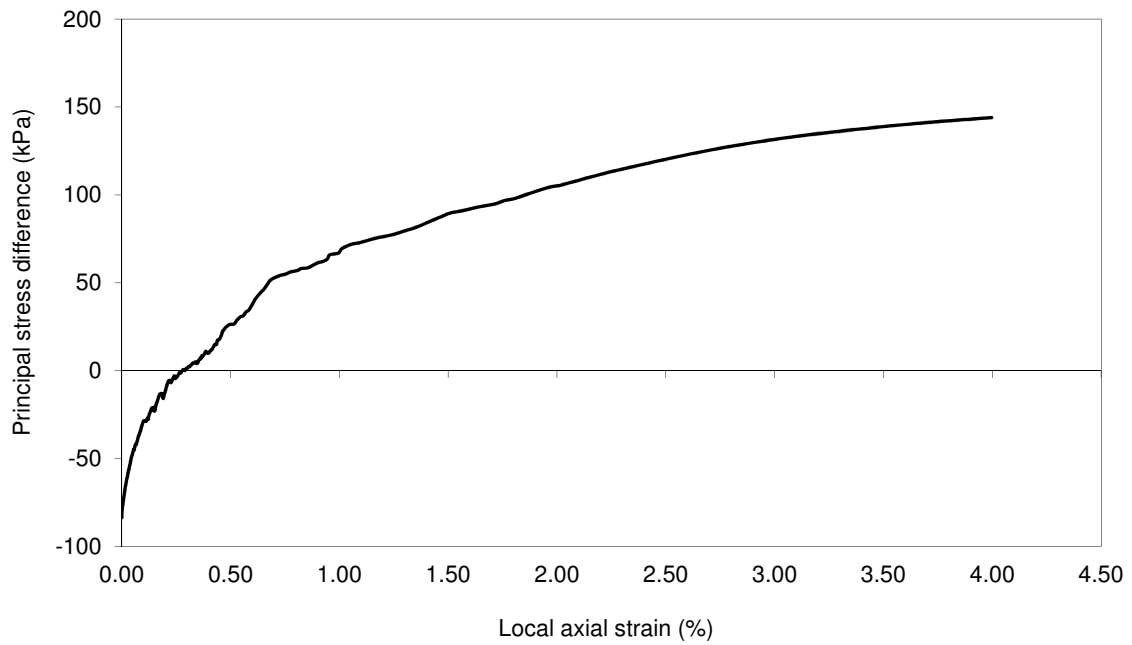
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
Sample Depth (m):	9.15-9.40	fine gravel and some organic black spots



**Undrained Shear Stage**

Checked and approved	Project Number: <b>RGI/1166</b>	
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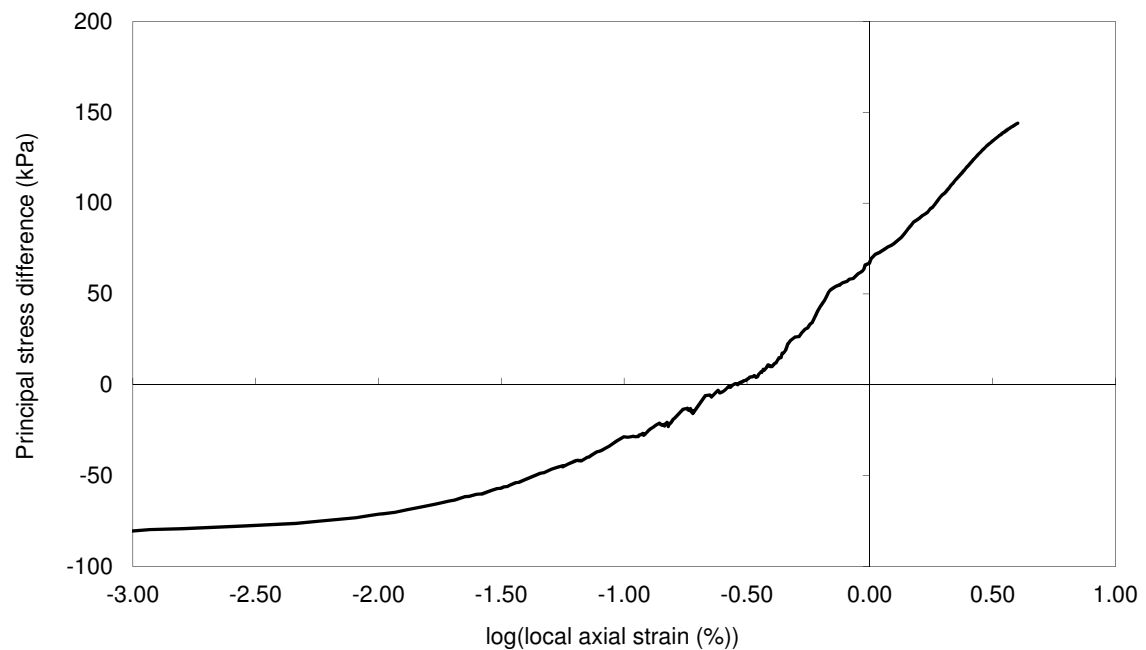
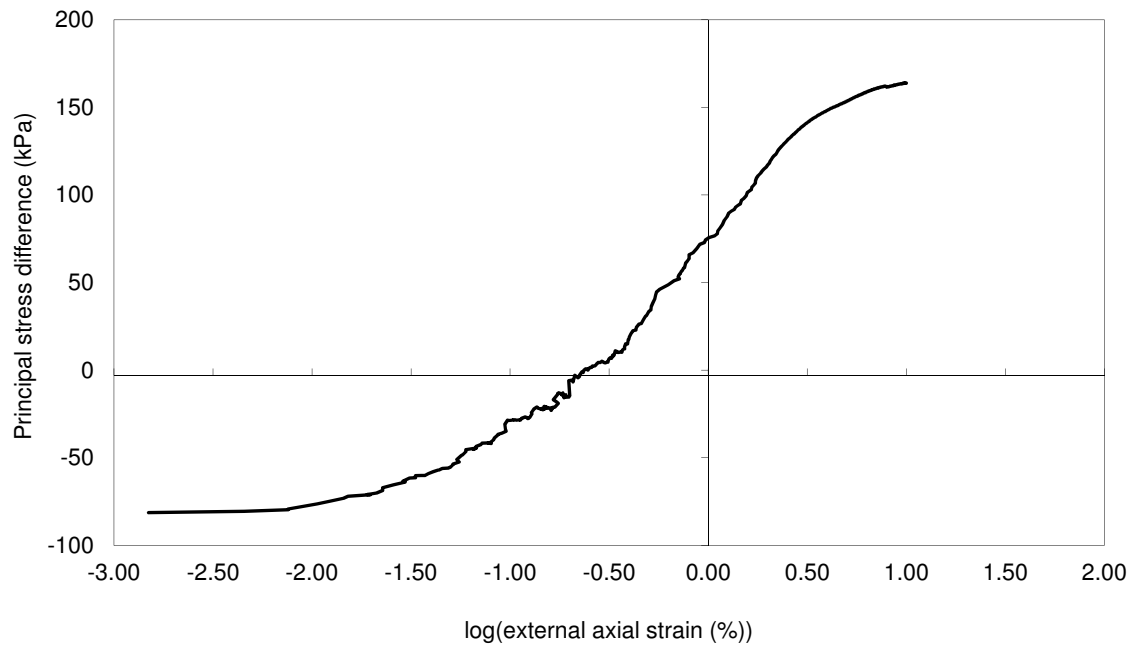
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
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**Undrained Shear Stage**

Checked and approved	Project Number: <b>RGI/1166</b>	
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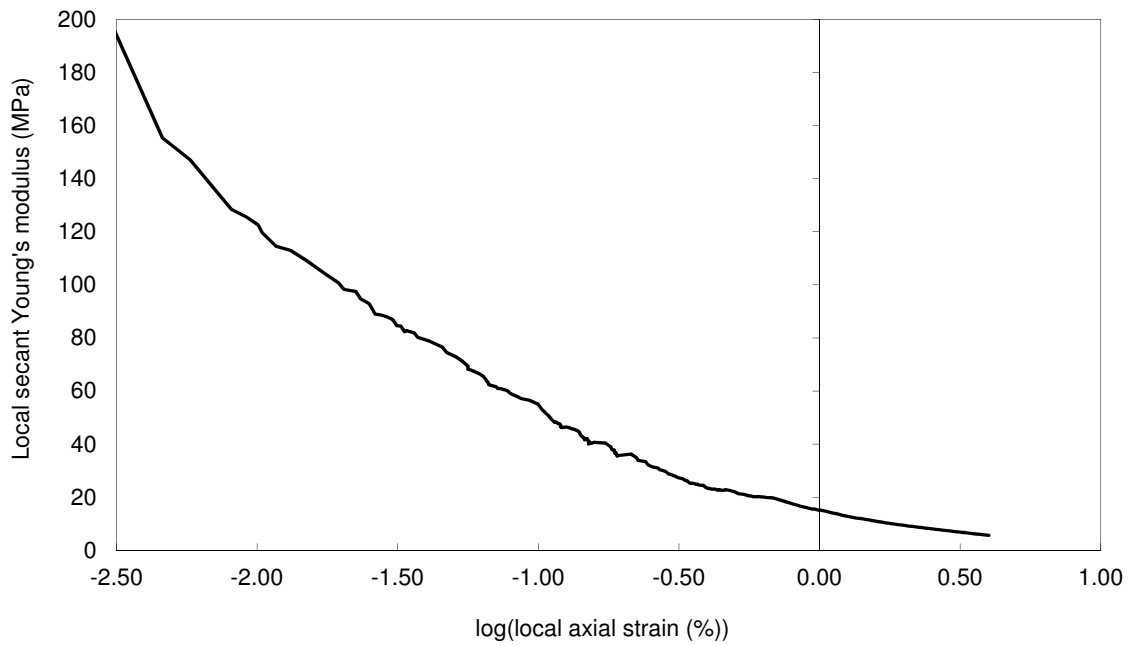
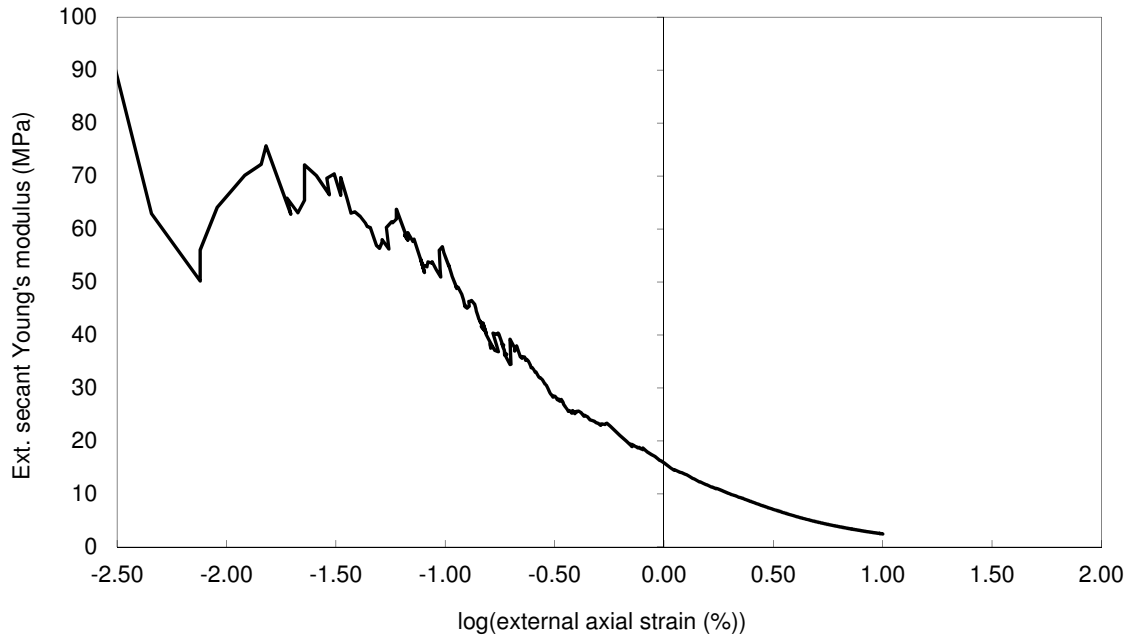
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
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**Undrained Shear Stage**

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Date: 27/10/2017	<b>M516</b>	

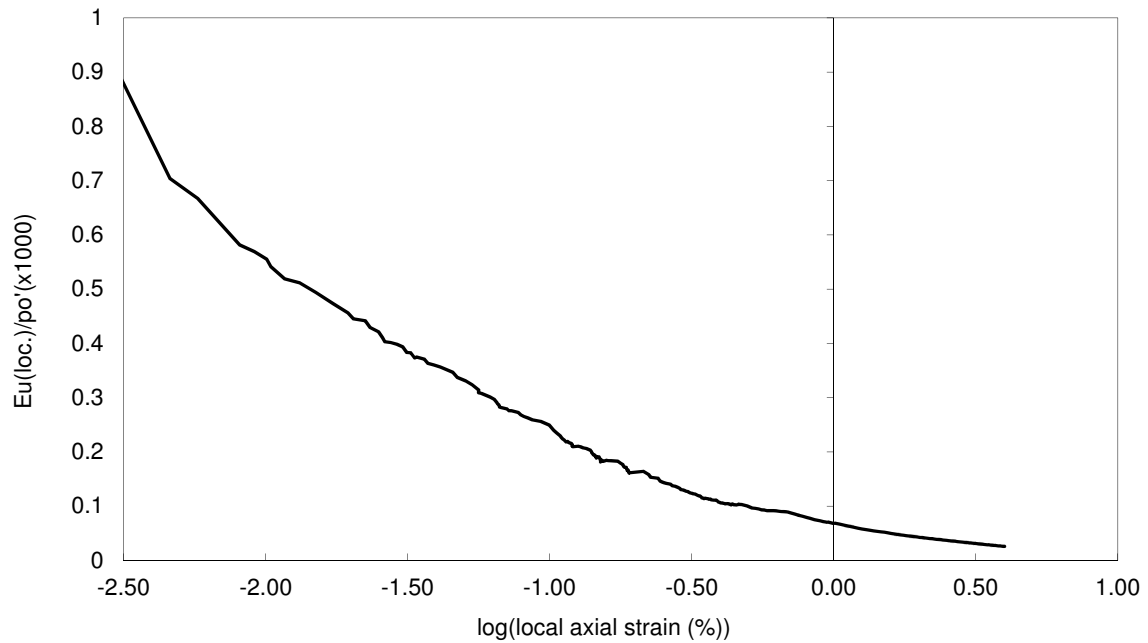
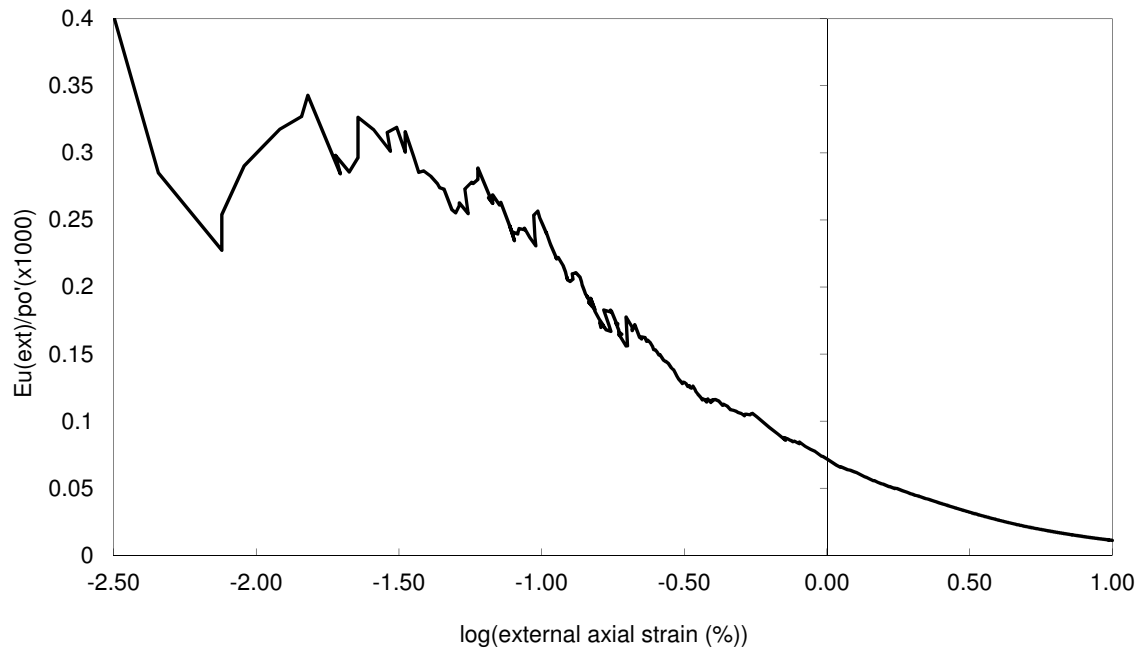
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
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**Undrained Shear Stage**

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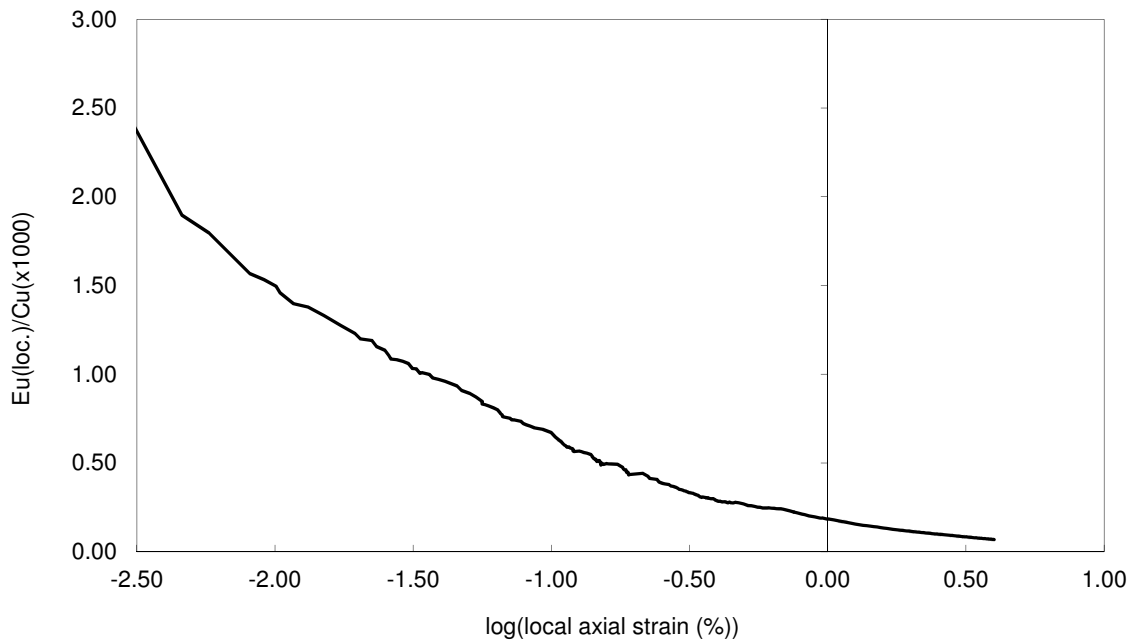
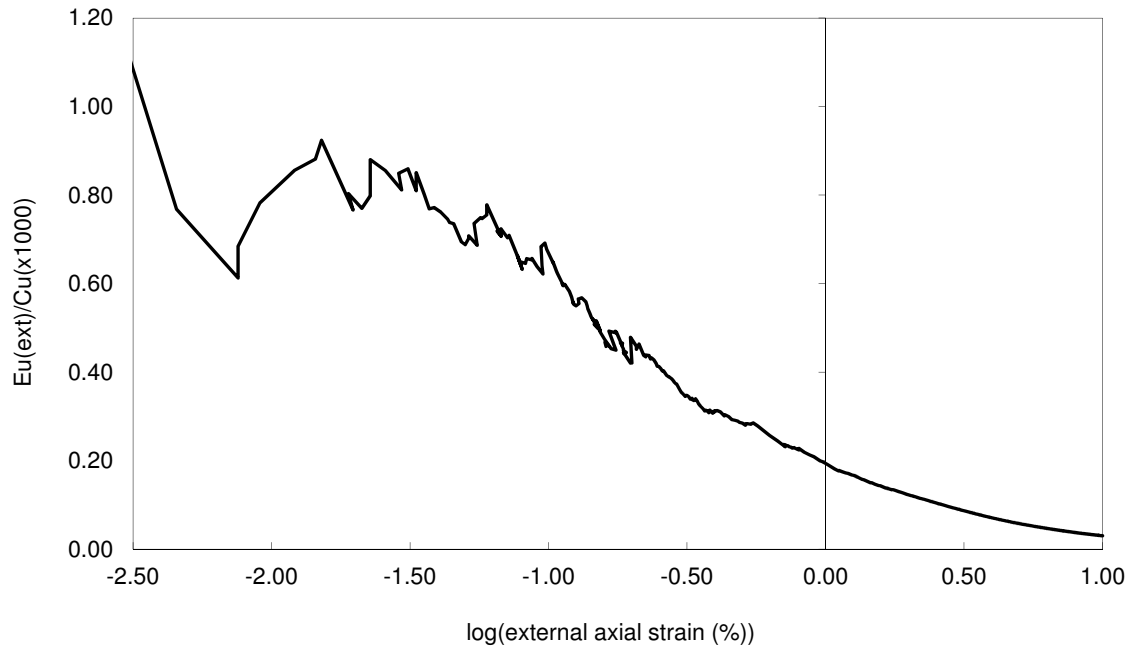
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
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**Undrained Shear Stage**

Checked and approved	Project Number: <b>RGI/1166</b>	
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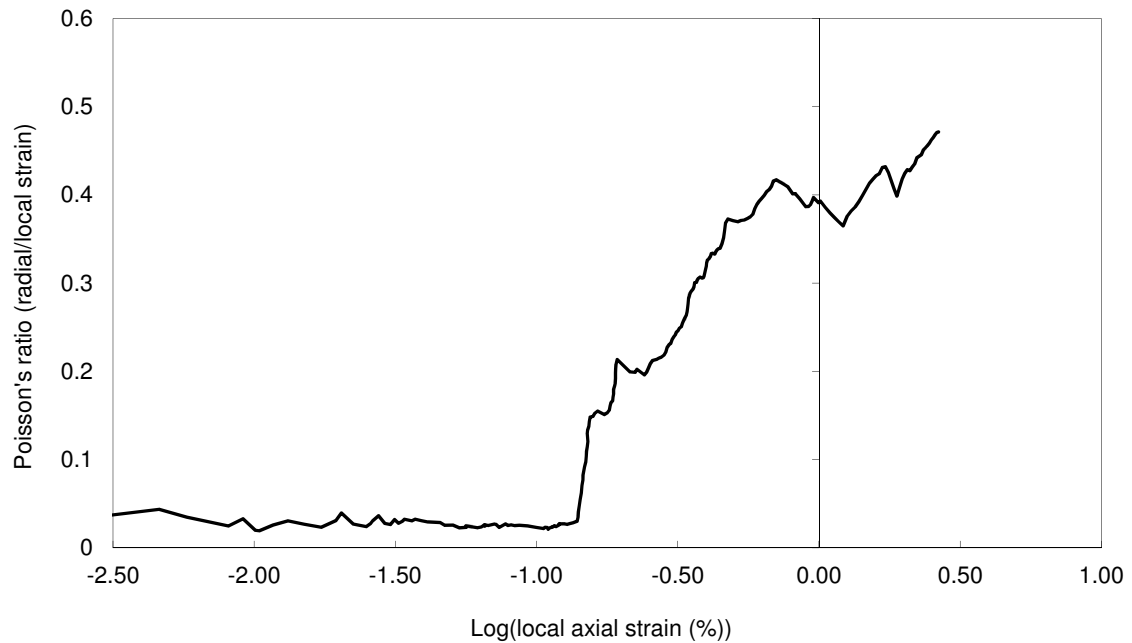
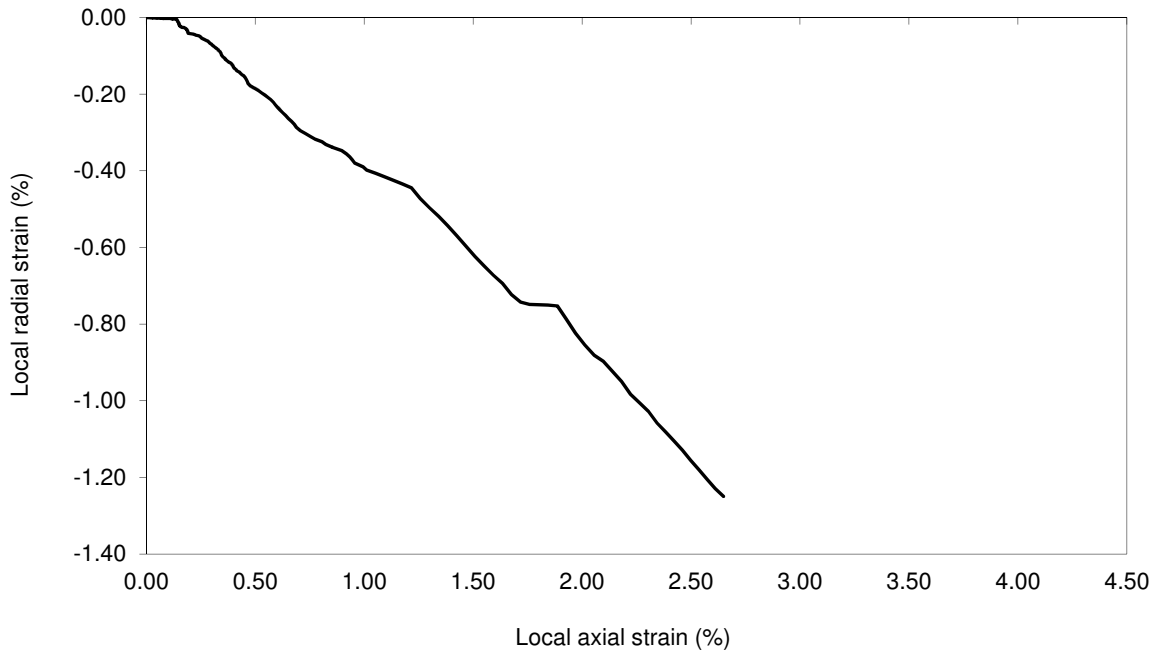
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
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**Undrained Shear Stage**

Checked and approved Initials: <i>CSR</i> Date: 27/10/2017	Project Number: <b>RGI/1166</b> Project Name: <b>THE HOXTON, HOLBORN M516</b>	
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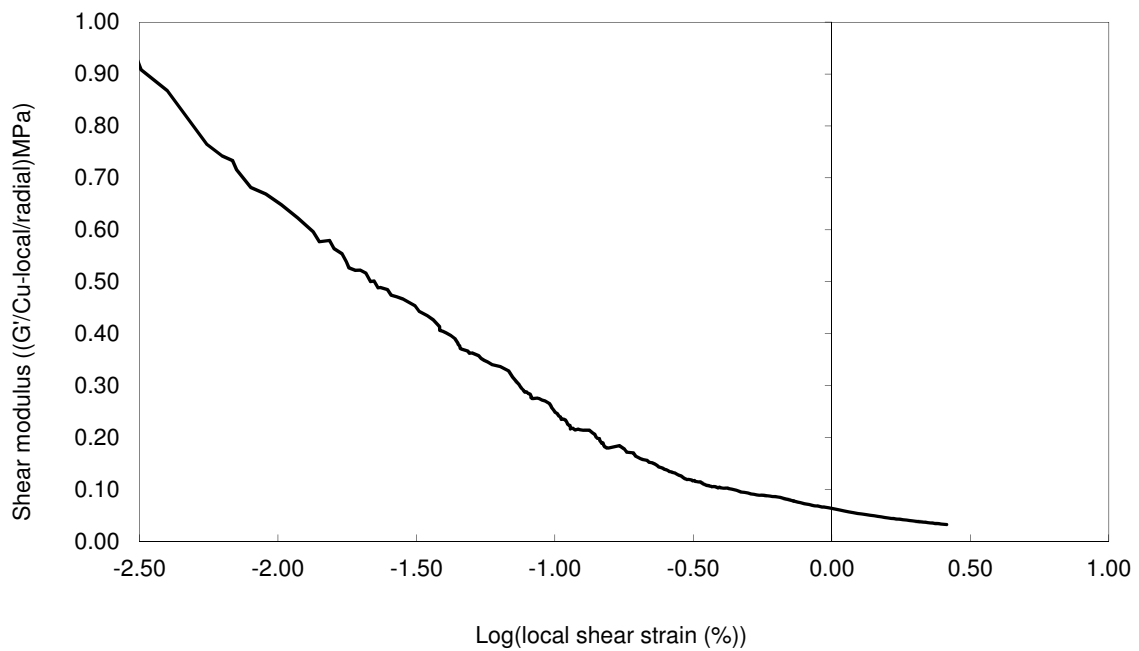
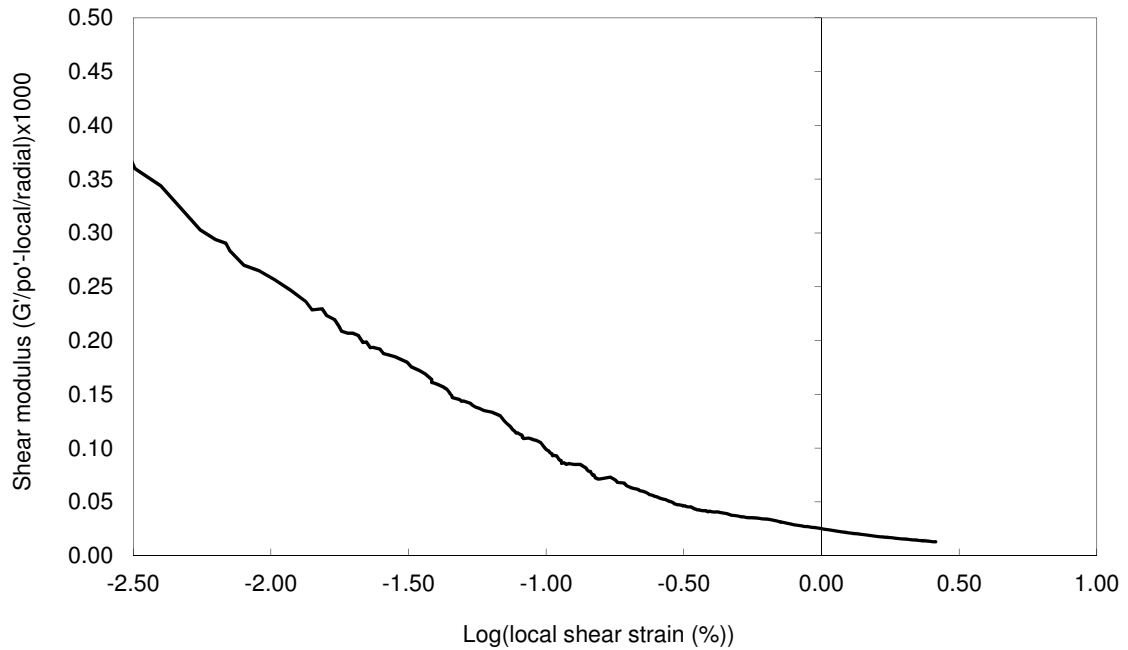
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
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**Undrained Shear Stage**

Checked and approved	Project Number: <b>RGI/1166</b>	
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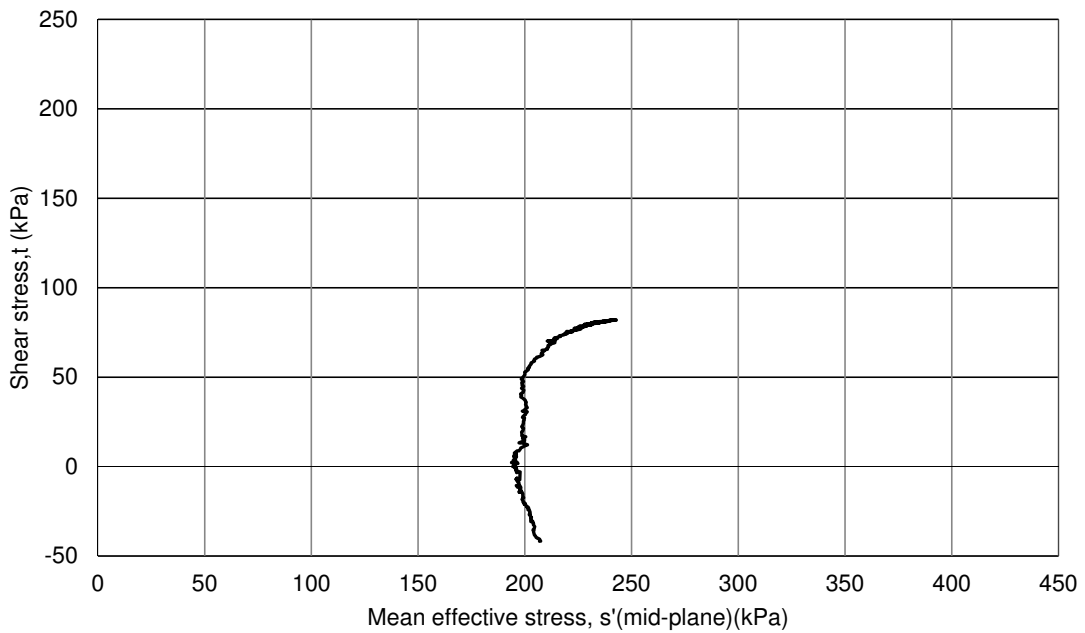
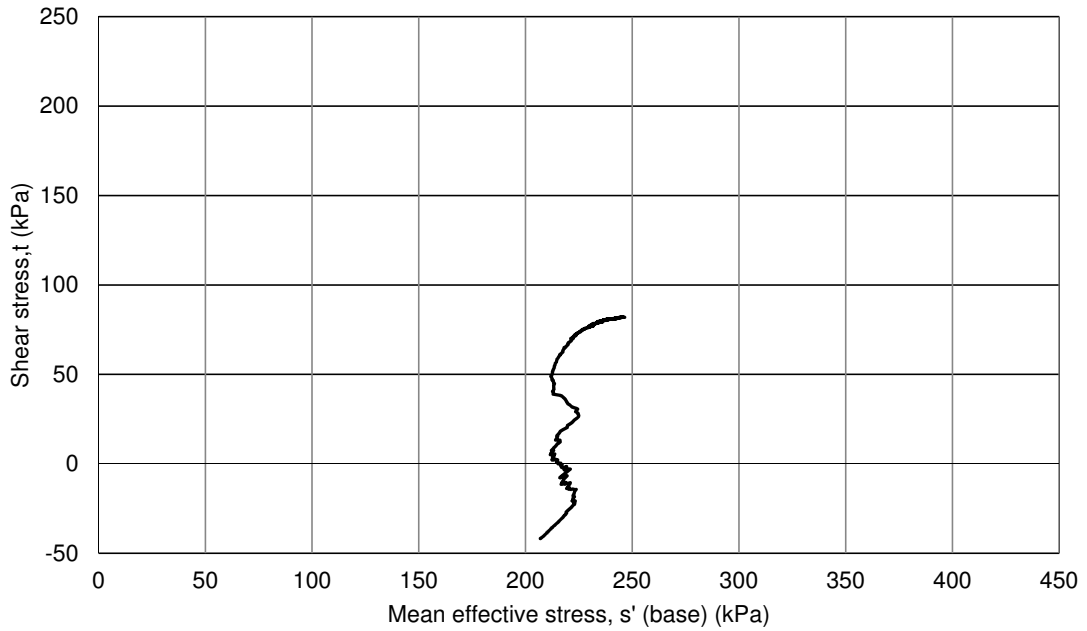
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	13	Firm fissured dark greyish-brown silty CLAY with rare
Sample Depth (m):	9.15-9.40	fine gravel and some organic black spots



**Undrained Shear Stage**

Checked and approved Initials: <i>CSR</i> Date: 27/10/2017	Project Number: <b>RGI/1166</b>	
	Project Name: <b>THE HOXTON, HOLBORN M516</b>	

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Contract: HOXTON HOTEL G1

Borehole No.: BH1A

Sample No.: 13

Depth (m): 9.15-9.40





8


Contract: HOXTON HOTEL G1

Borehole No.: BH1A

Sample No.: 13

Depth (m): 9.15-9.40



<b>Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement (CAUC)</b>			
Borehole Number:	1A	Description (visual) :	
Sample Number:	20	Stiff fissured dark greyish-brown CLAY	
Sample Depth (m):	19.70-19.95	with organic black spots	
<b>SPECIMEN DETAILS</b>			
	Initial Values	Final Values	
Height :	201.8 mm		
Diameter :	98.0 mm		
Moisture content :	26.18 %	27.45 %	
Bulk density :	1.94 Mg/m <sup>3</sup>		
Dry density :	1.54 Mg/m <sup>3</sup>		
Particle density (assumed)	2.70 Mg/m <sup>3</sup>		
Initial voids ratio (e <sub>0</sub> )	0.7574		
Test Duration:		11 Days	
<b>INITIAL MEASUREMENT OF EFFECTIVE STRESS</b>			
Stage	#1	#2	#3
Cell pressure (kPa):	397	595	793
Base pwp (kPa):	256.7	443.3	631.8
Mid-plane pwp (kPa):	244.7	439.6	630.8
Base B values :	0.65	0.94	0.95
Mid-plane B values :	0.80	0.98	0.97
Initial effective stress (mid-plane) :		161.3	kPa
<b>ISOTROPIC CONSOLIDATION/SWELLING STAGE</b>			
Final cell pressure (kPa):	793	Final back Pressure (kPa):	470
<b>SHEAR STAGE</b>			
Effective stress, p <sub>o'</sub> , at start		299.7	(kPa)
Δe/e <sub>0</sub>		-0.0072	
<b>Stiffnesses:</b>			
Stiffness at 0.01% axial strain		172	(MPa)
- normalised with respect to p <sub>o'</sub>		575	
- normalised with respect to C <sub>u</sub>		1098	
Stiffness at 0.1% axial strain		87	(MPa)
- normalised with respect to p <sub>o'</sub>		292	
- normalised with respect to C <sub>u</sub>		557	
Degree of non-linearity (L) during shear		0.507	
<b>At failure:</b>			
Local axial strain		#N/A	(%)
External axial strain		3.89	(%)
Peak deviator stress		314	(kPa)
Undrained shear strength		157	(kPa)
Mid plane pore pressure		668	(kPa)
Base pore pressure		665	(kPa)
Horizontal effective stress		139	(kPa)
Vertical effective stress		452	(kPa)
Note: In all notation p <sub>o'</sub> is mean effective stress: $p' = (\sigma'_a + (2\sigma'_r))/3$			
NOTE: on post-test examination sample may have had a pre-existing angular shear plane at base of sample.			
Checked and approved	Project Number:	<b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name:	<b>THE HOXTON, HOLBORN</b>	
Date: 03/11/2017		<b>M516</b>	
			

Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

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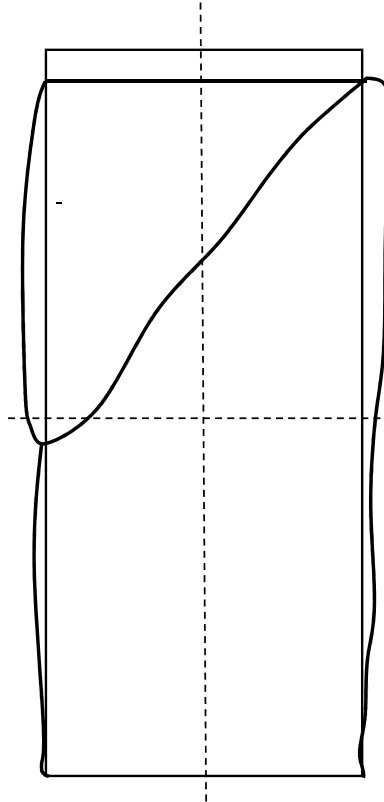
**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	20	Stiff fissured dark greyish-brown CLAY
Sample Depth (m):	19.70-19.95	with organic black spots


**SPECIMEN DETAILS**

Initial Height: 201.8 mm  
 Initial Diameter: 98.0 mm

Elevation



**Failure Sketch**

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	Project Name: <b>THE HOXTON, HOLBORN M516</b>	

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Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement			
Borehole Number:	1A	Description :	
Sample Number:	20	Stiff fissured dark greyish-brown CLAY	
Sample Depth (m):	19.70-19.95	with organic black spots	
STRESS PATH STAGES			
ISOTROPIC CONSOLIDATION/SWELLING			
	Initial Values	Final Values	
Cell Press. (kPa)	793	793	
Mid pwp (kPa)	631.7	470.1	
Base pwp (kPa)	631.8	470.4	
s' (kPa)	161.3	322.9	
t (kPa)	0.0	0.0	
Voids ratio (e)	0.7574	0.7301	
Creep (%/min)		3.14E-06	
ANISOTROPIC STAGE 1			
	Initial Values	Final Values	
Cell Press. (kPa)	793	803	
Mid pwp (kPa)	470.1	470.1	
Base pwp (kPa)	470.4	469.9	
s' (kPa)	322.9	267.0	
t (kPa)	0.0	-65.9	
Voids ratio (e)	0.7301	0.7364	
Creep (%/min)		-5.14E-05	
ANISOTROPIC STAGE 1			
	Initial Values	Final Values	
Cell Press. (kPa)	803	807	
Mid pwp (kPa)	470.1	470.1	
Base pwp (kPa)	469.9	469.9	
s' (kPa)	267.0	281.0	
t (kPa)	-65.9	-55.9	
Voids ratio (e)	0.7364	0.7629	
Creep (%/min)		0.00E+00	

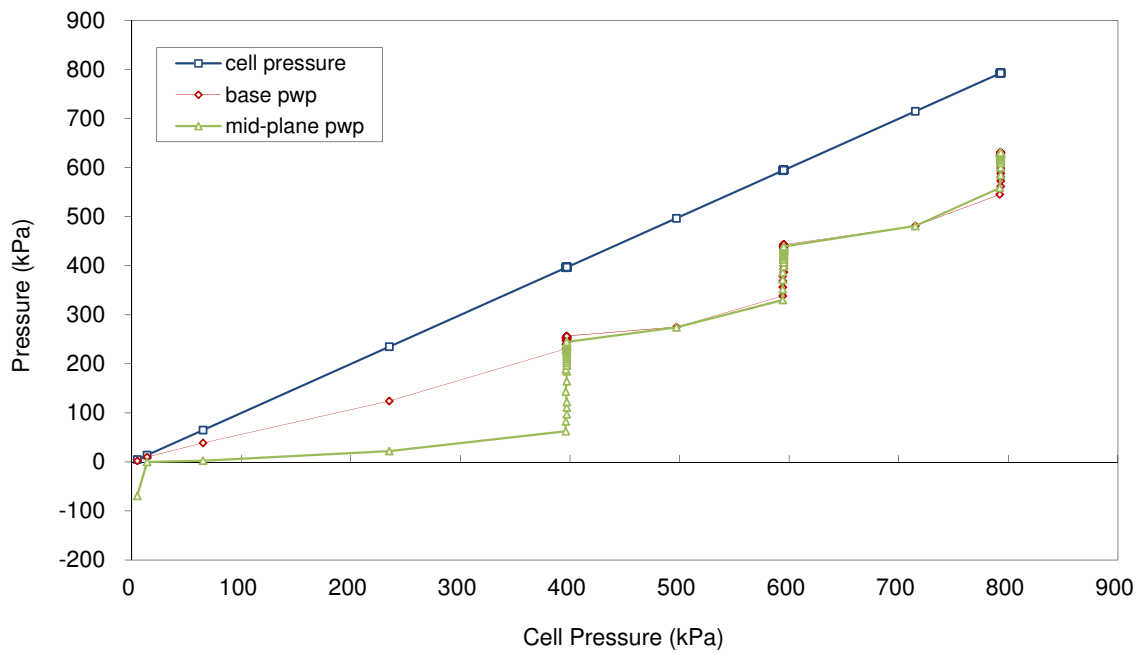
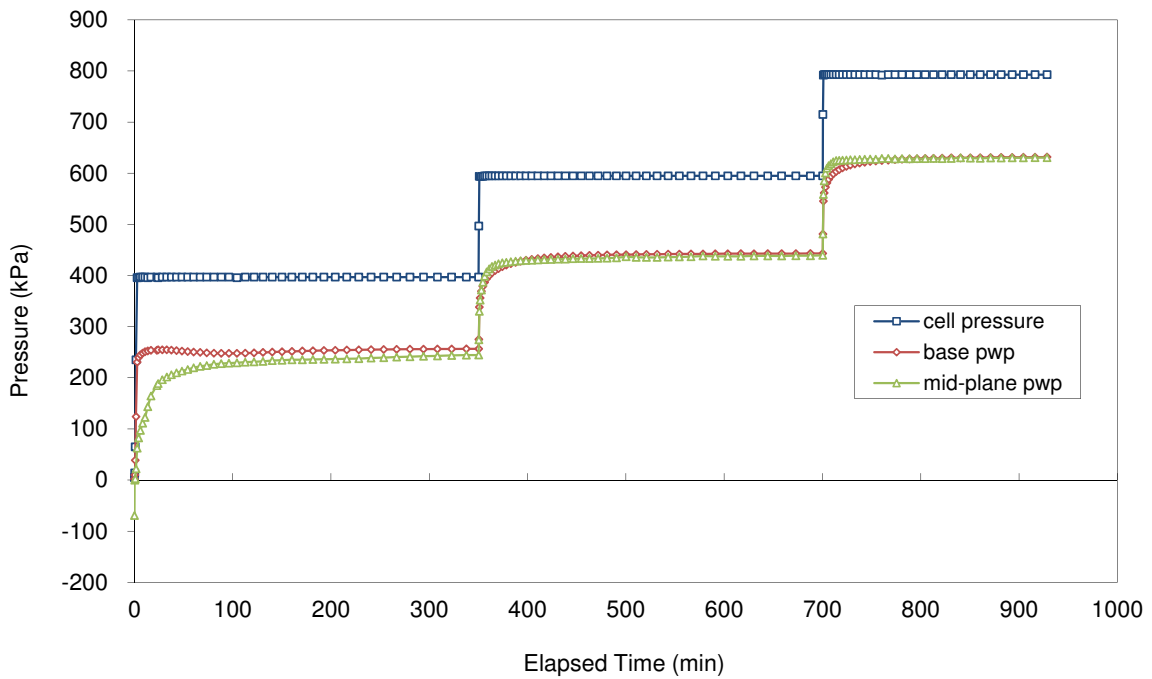
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 Initials: *CSR*  
 Date: 03/11/2017

Project Number: **RGI/1166**  
 Project Name: **THE HOXTON, HOLBORN M516**




**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	20	Stiff fissured dark greyish-brown CLAY
Sample Depth (m):	19.70-19.95	with organic black spots



**Determination of Initial Effective Stress**

Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name: <b>THE HOXTON, HOLBORN</b>	
Date: 03/11/2017	<b>M516</b>	

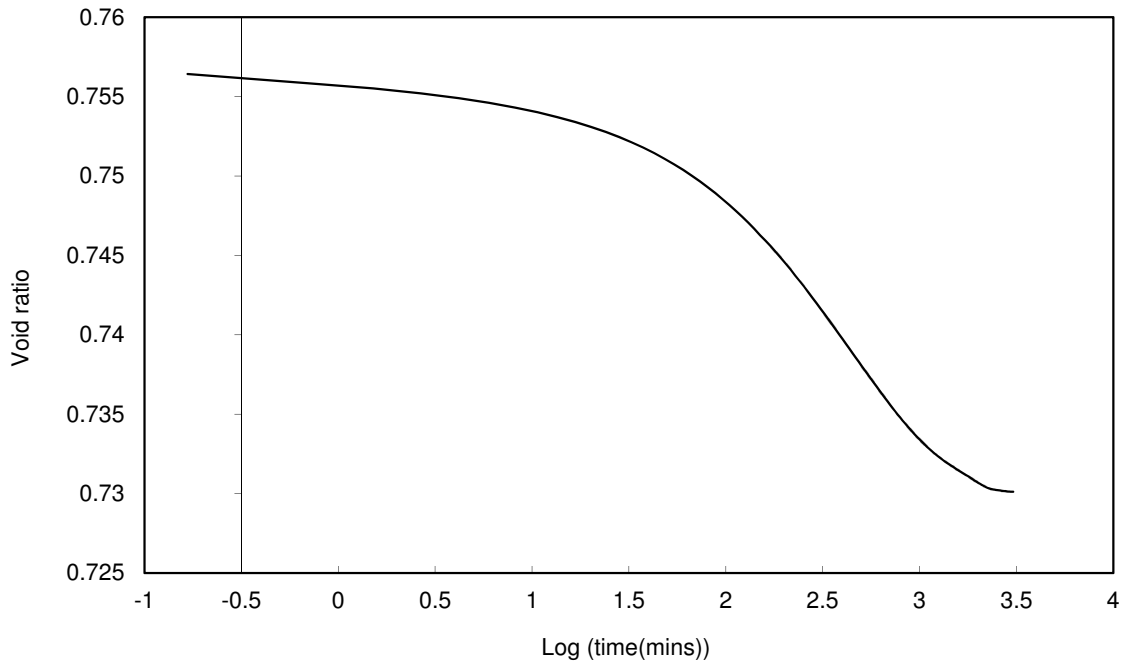
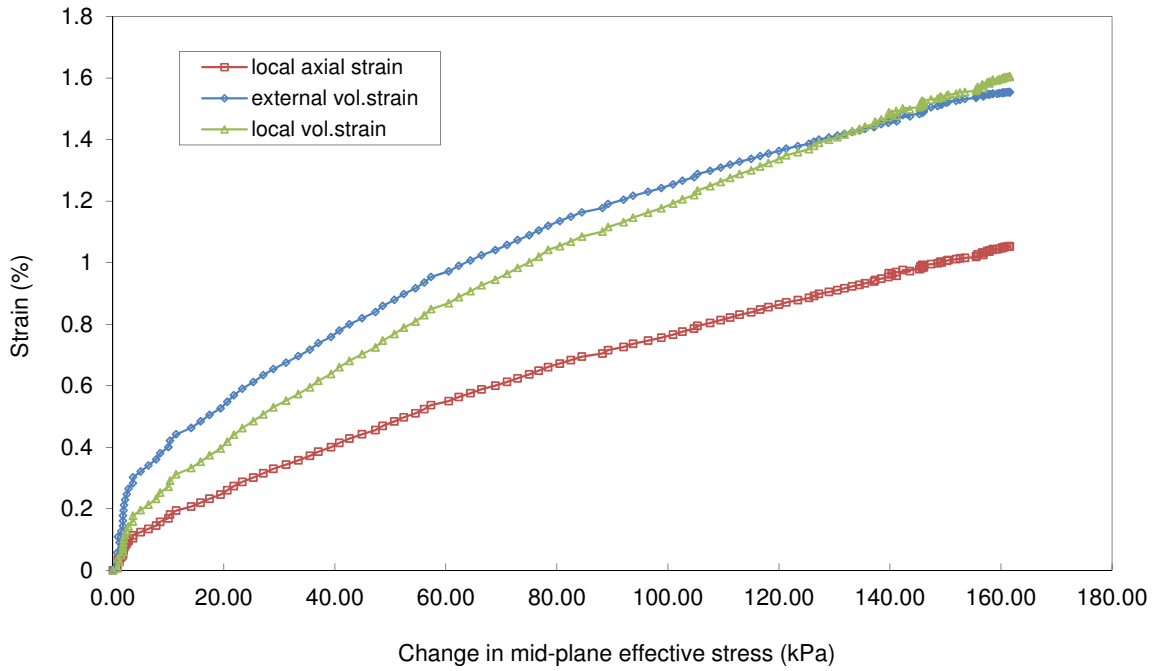
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	20	Stiff fissured dark greyish-brown CLAY
Sample Depth (m):	19.70-19.95	with organic black spots



**Isotropic Consolidation/Swelling Stage**

Checked and approved Initials: <i>CSR</i> Date: 03/11/2017	Project Number: <b>RGI/1166</b> Project Name: <b>THE HOXTON, HOLBORN M516</b>	
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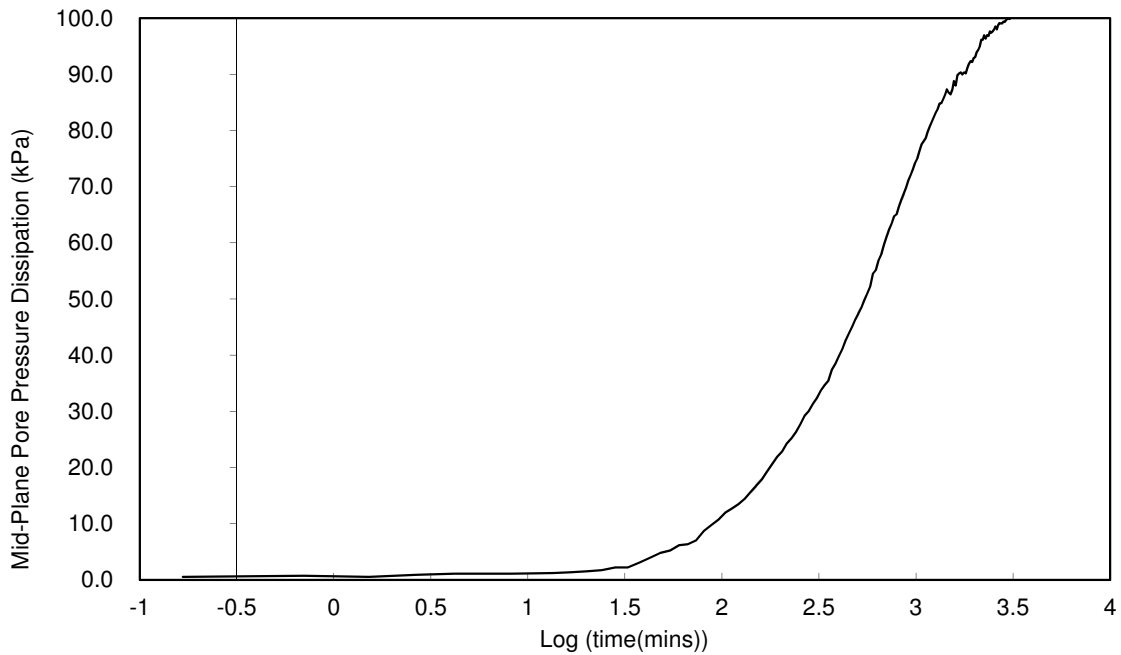
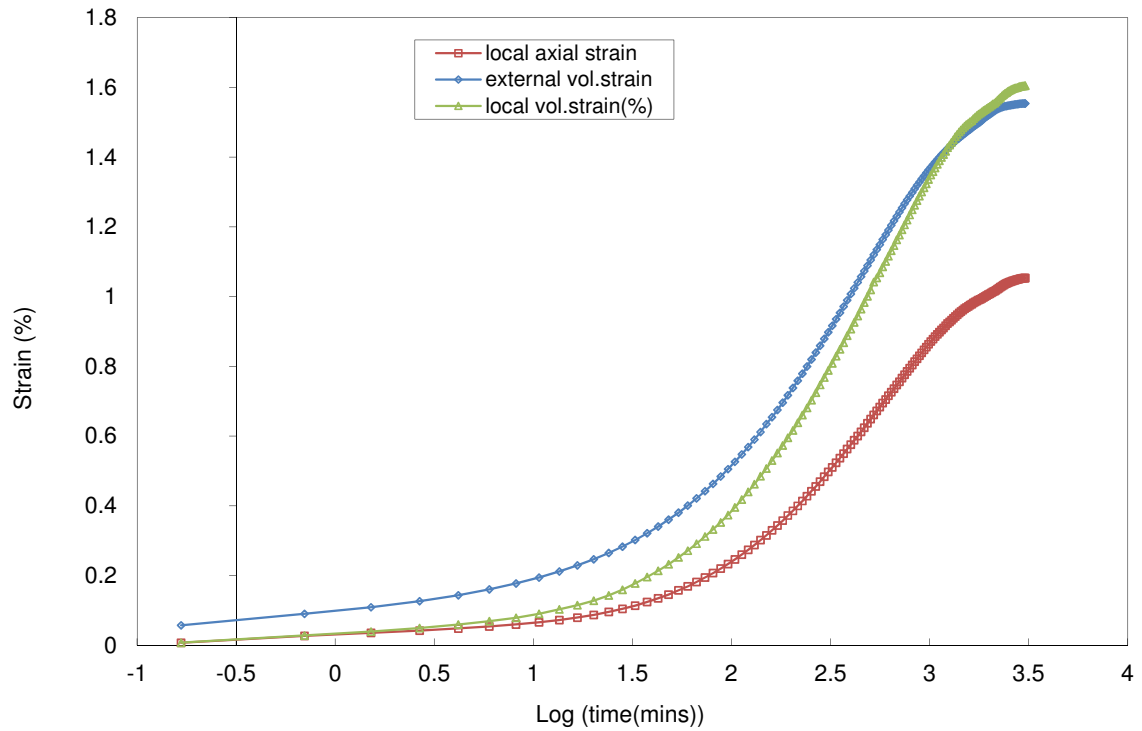
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**Isotropic Consolidation/Swelling Stage**

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Date: 03/11/2017	<b>THE HOXTON, HOLBORN M516</b>	

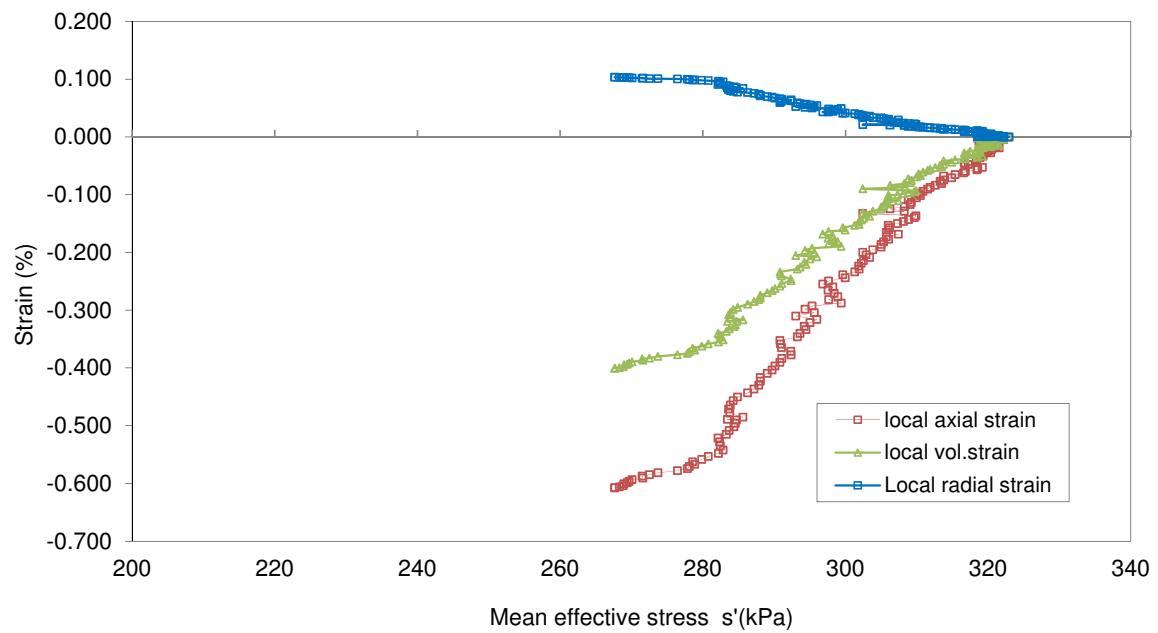
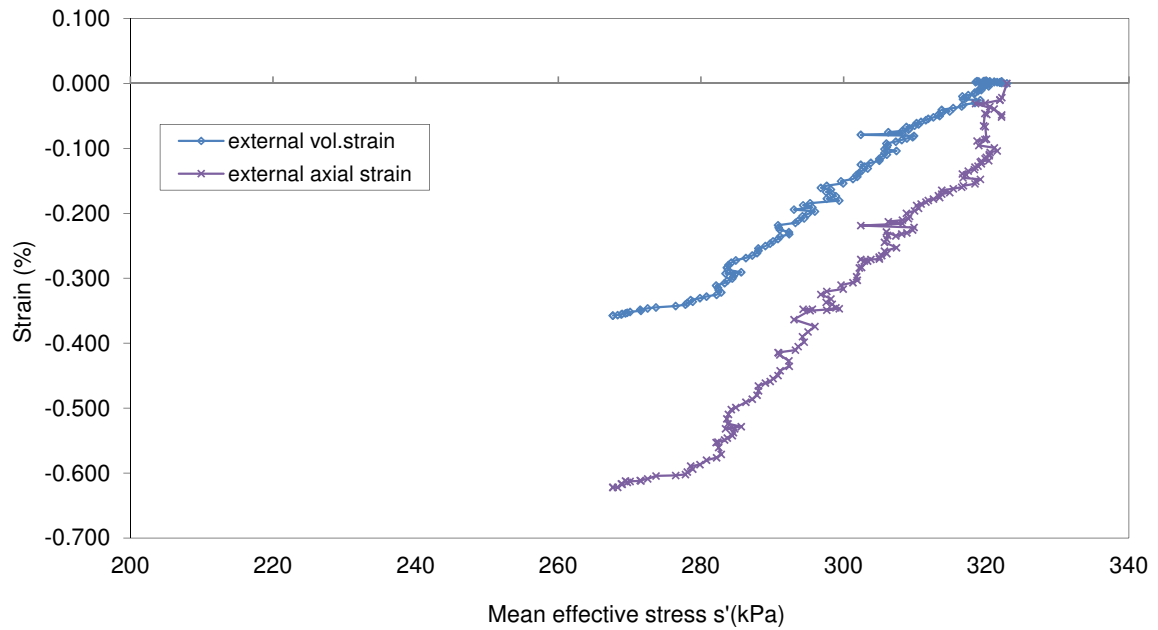
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	20	Stiff fissured dark greyish-brown CLAY
Sample Depth (m):	19.70-19.95	with organic black spots



**Anisotropic Stage 1**

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	Project Name: <b>THE HOXTON, HOLBORN</b>	
	<b>M516</b>	

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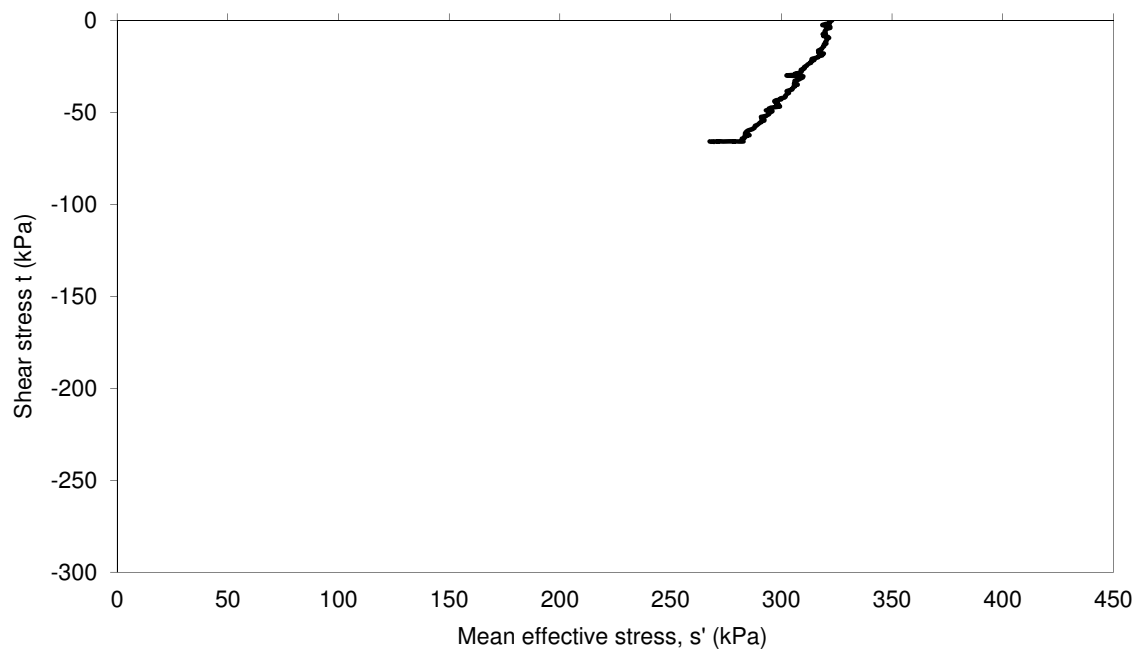
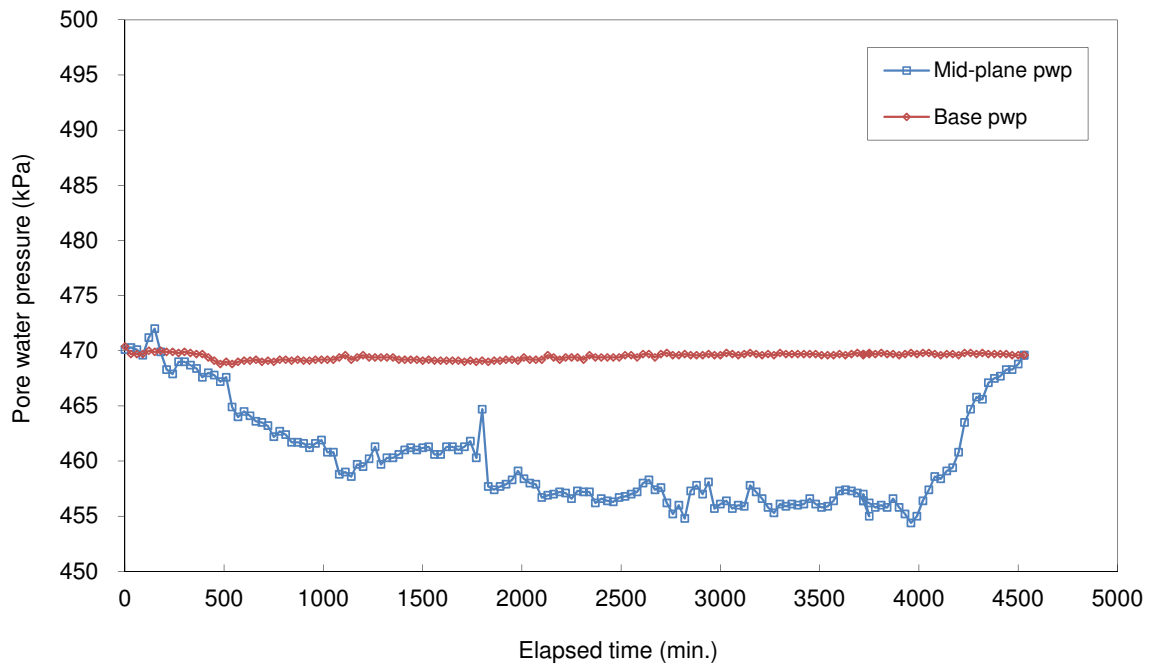
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

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Sample Depth (m):	19.70-19.95	with organic black spots



**Anisotropic Stage 1**

Checked and approved	Project Number: <b>RGI/1166</b>	
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Date: 03/11/2017	<b>THE HOXTON, HOLBORN M516</b>	

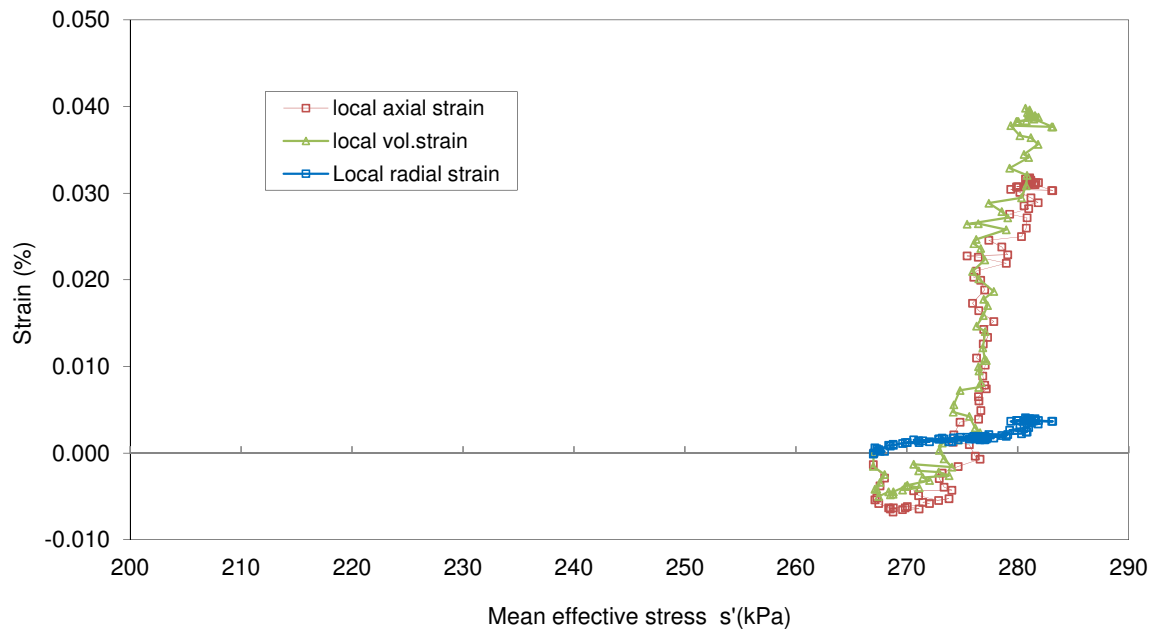
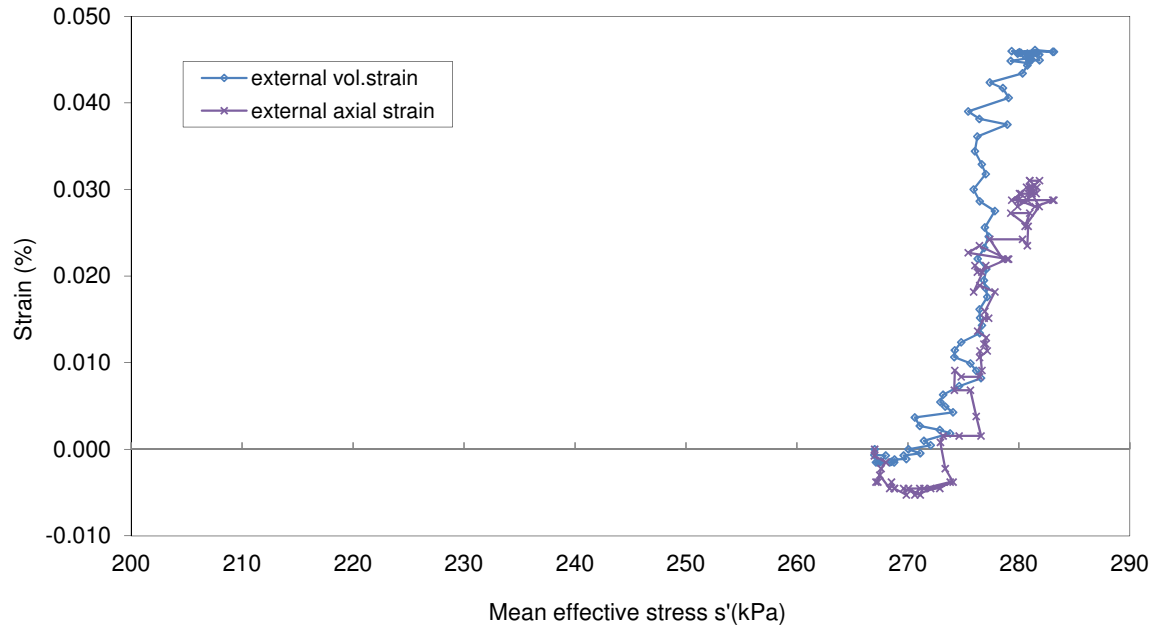
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
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Sample Depth (m):	19.70-19.95	with organic black spots



**Anisotropic Stage2**

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	Project Name:	<b>THE HOXTON, HOLBORN M516</b>	

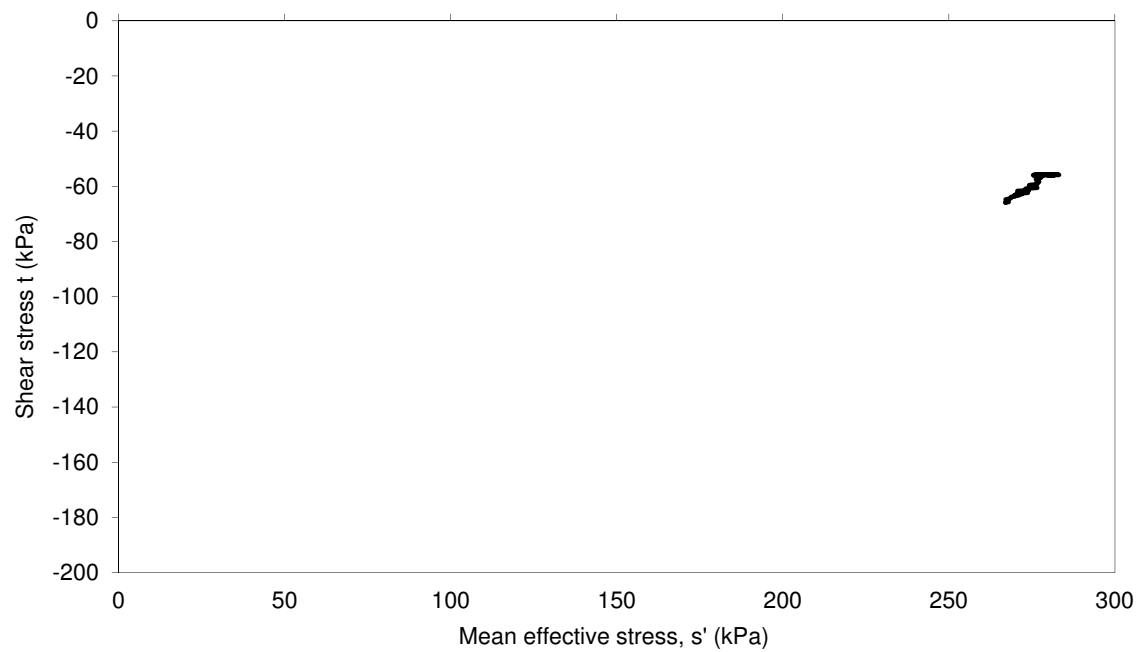
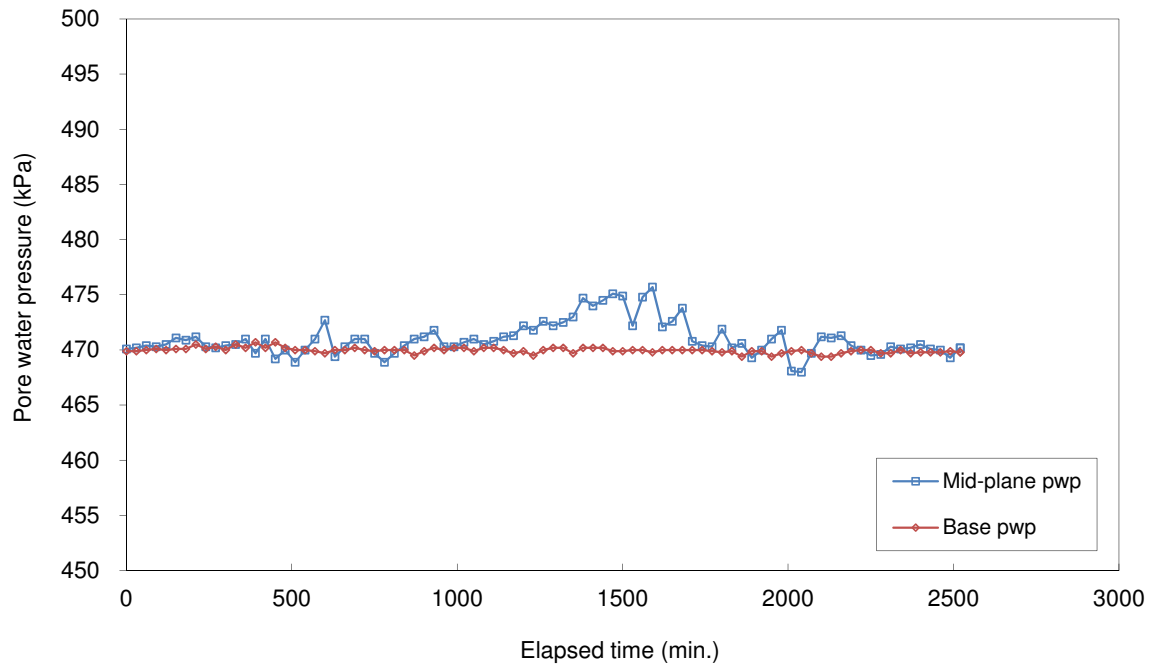
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

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Sample Depth (m):	19.70-19.95	with organic black spots



**Anisotropic Stage2**

Checked and approved Initials: <i>CSR</i> Date: 03/11/2017	Project Number: <b>RGI/1166</b> Project Name: <b>THE HOXTON, HOLBORN M516</b>	
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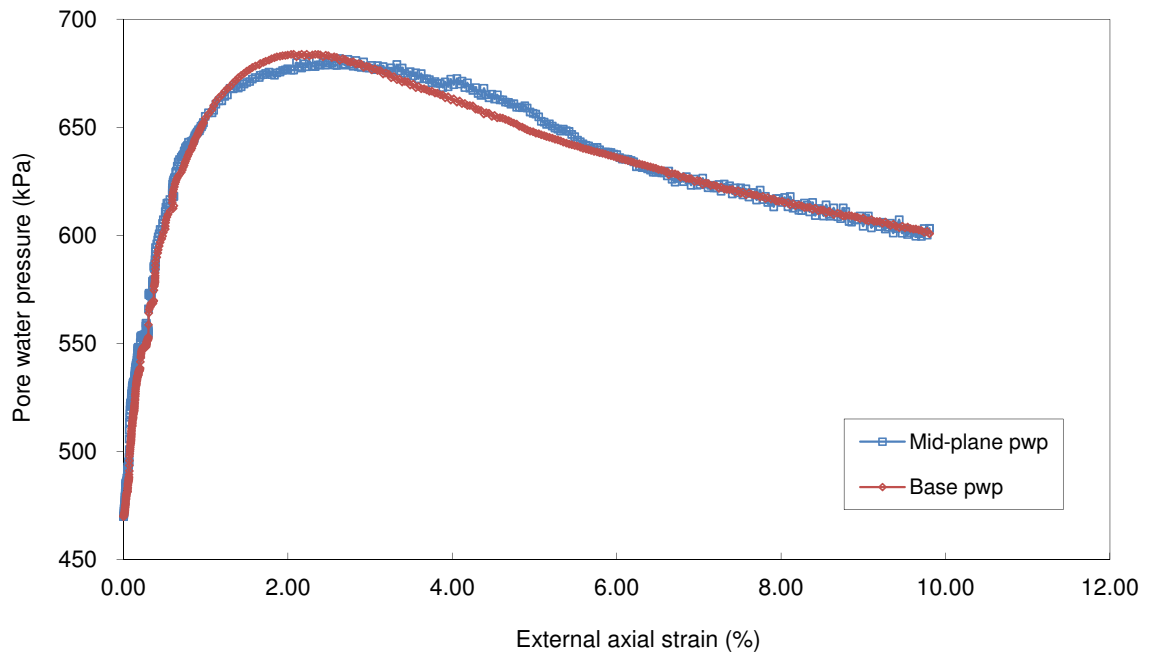
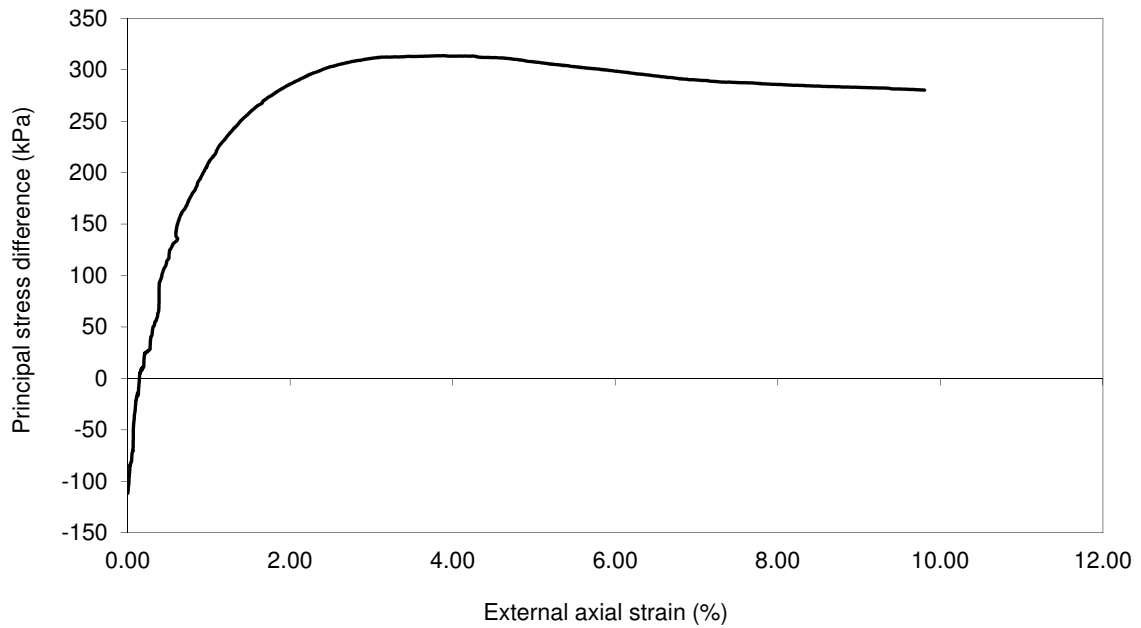
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

Borehole Number:	1A	Description :
Sample Number:	20	Stiff fissured dark greyish-brown CLAY
Sample Depth (m):	19.70-19.95	with organic black spots



**Undrained Shear Stage**

Checked and approved	Project Number: <b>RGI/1166</b>	
Initials: <i>CSR</i>	Project Name:	
Date: 03/11/2017	<b>THE HOXTON, HOLBORN M516</b>	

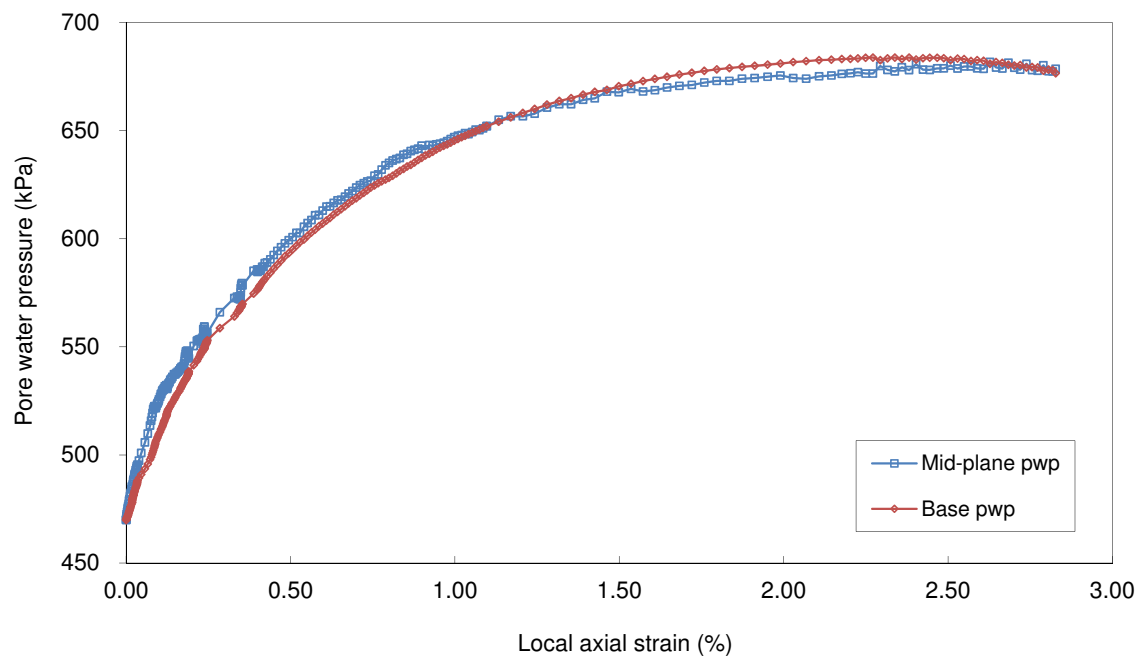
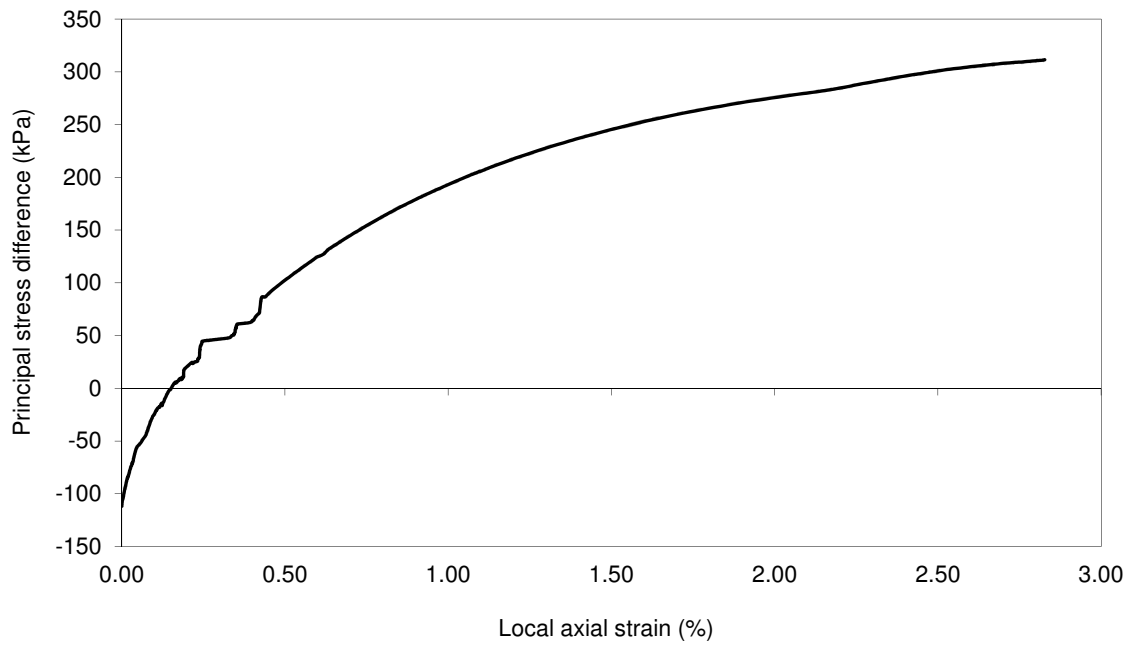
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

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**Undrained Shear Stage**

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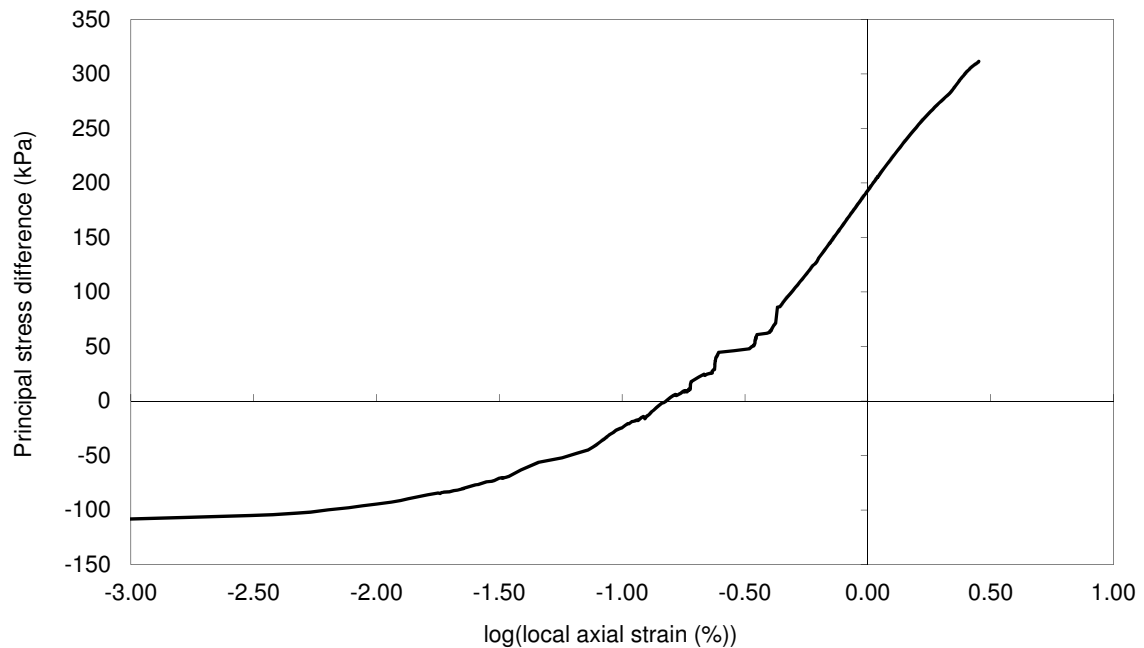
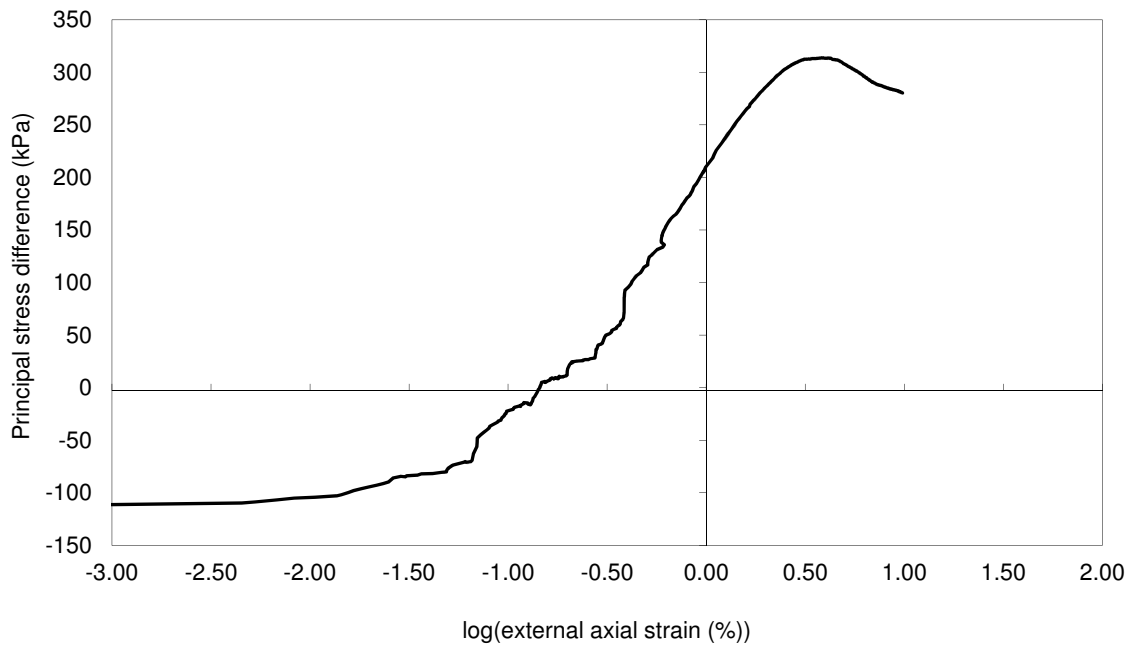
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

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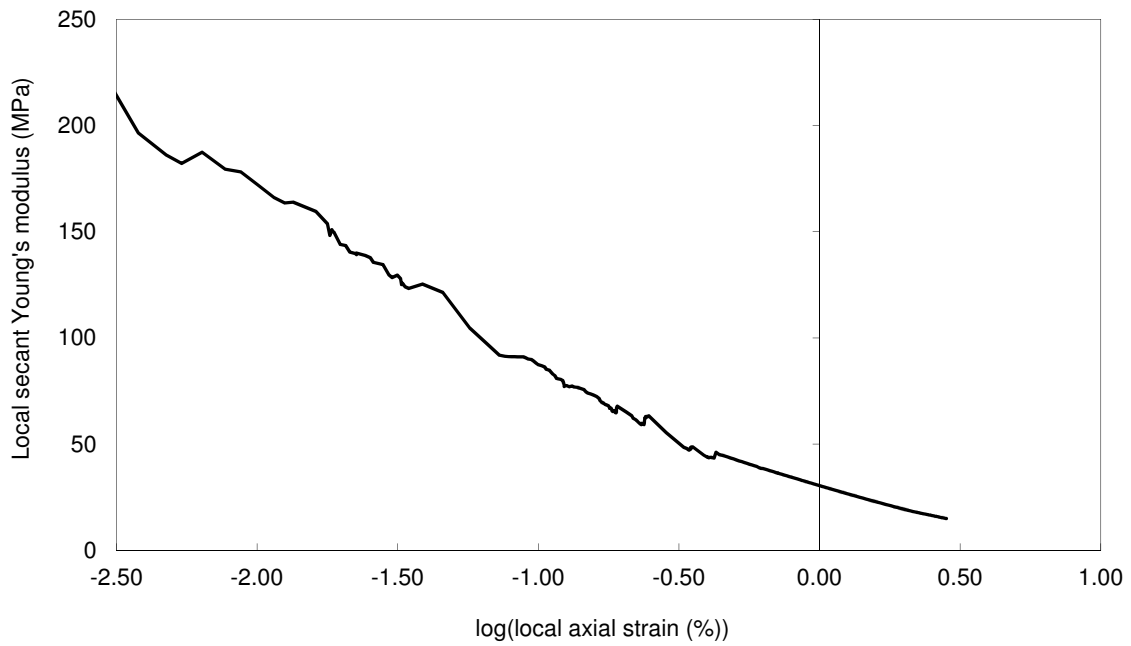
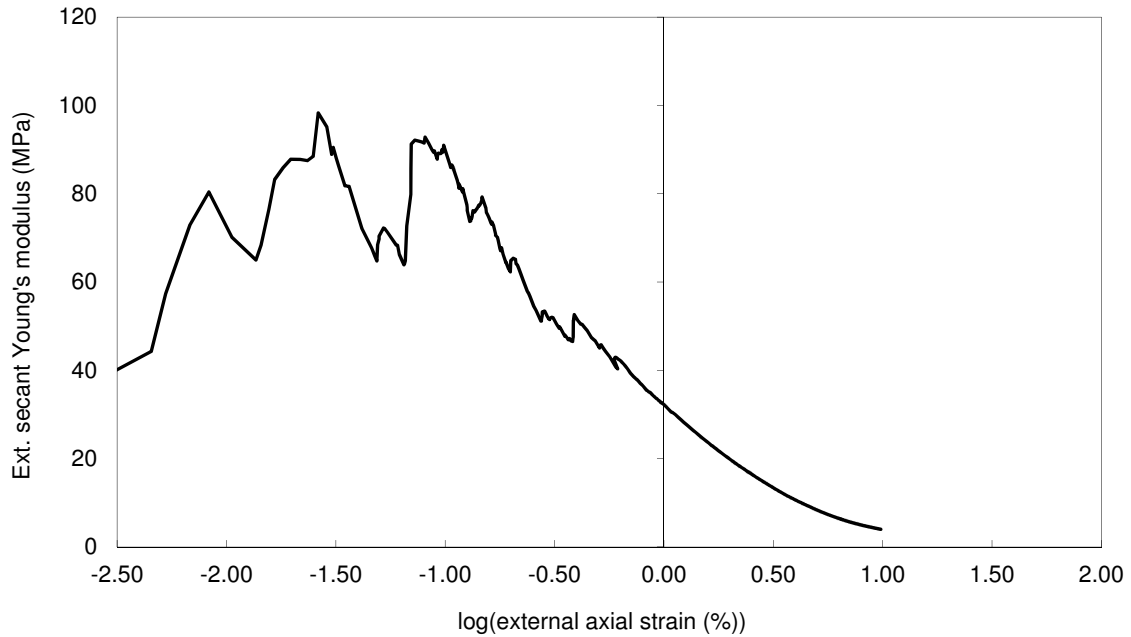
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

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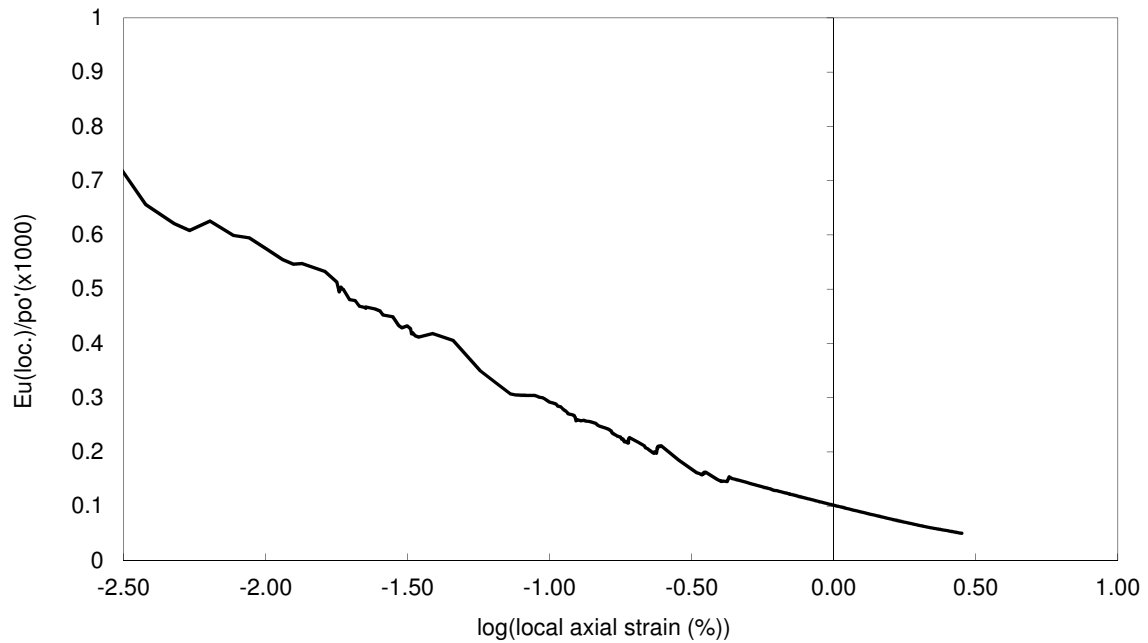
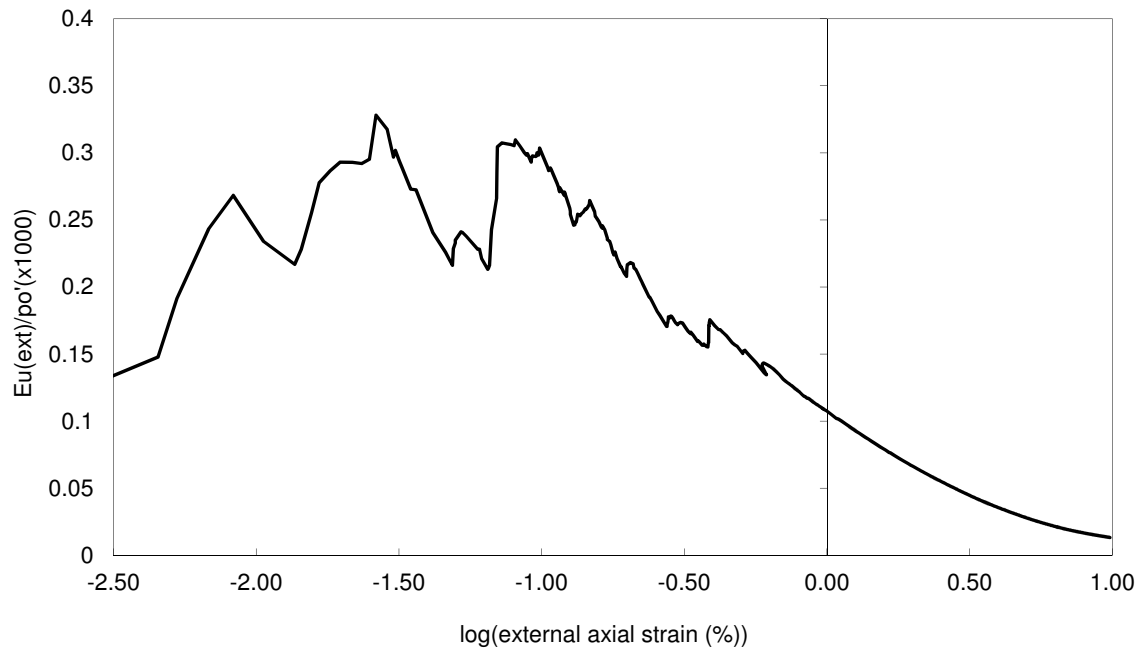
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

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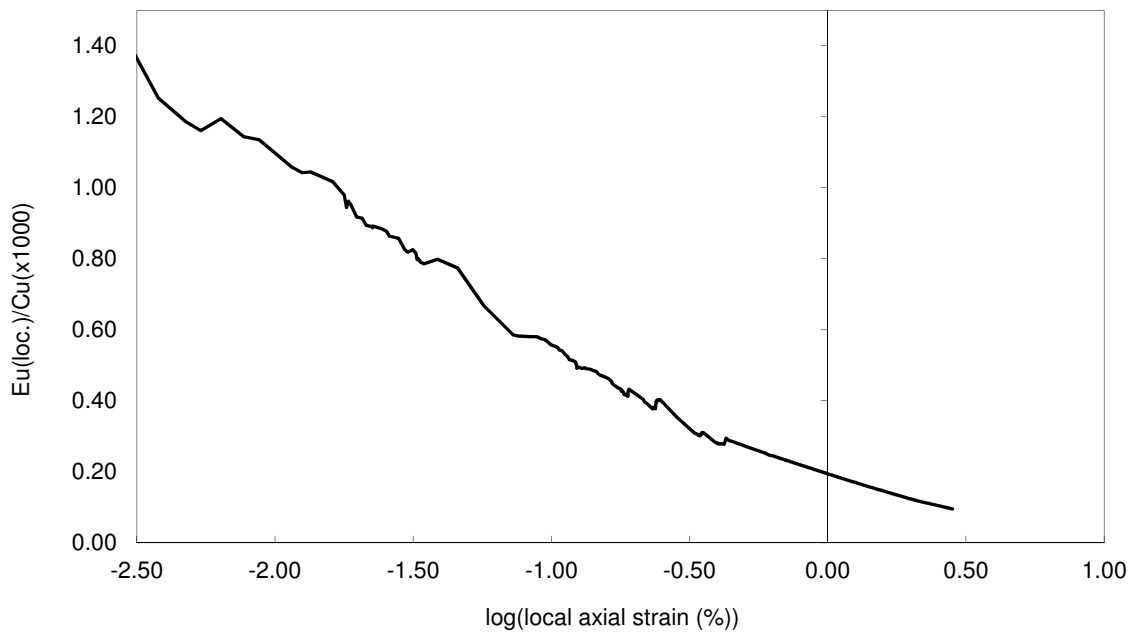
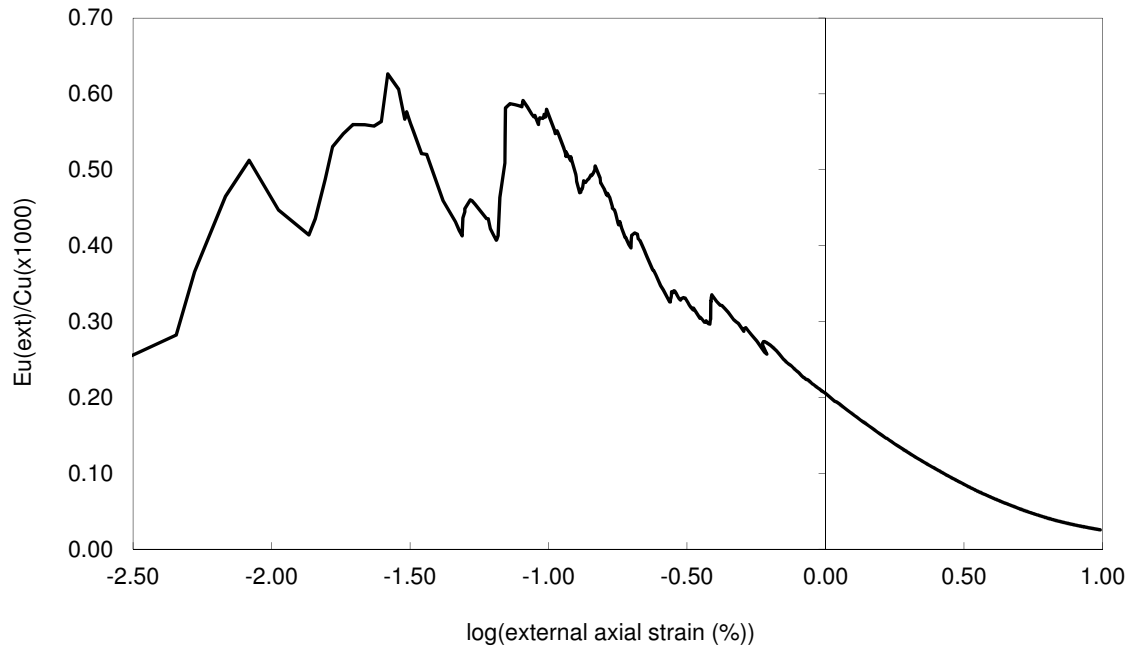
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

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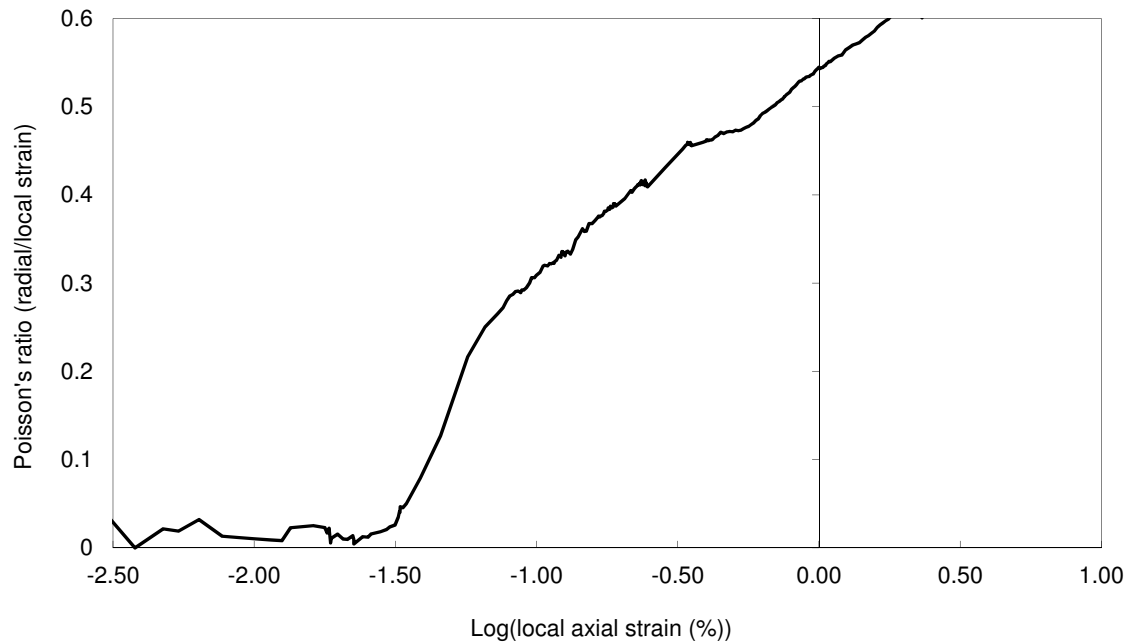
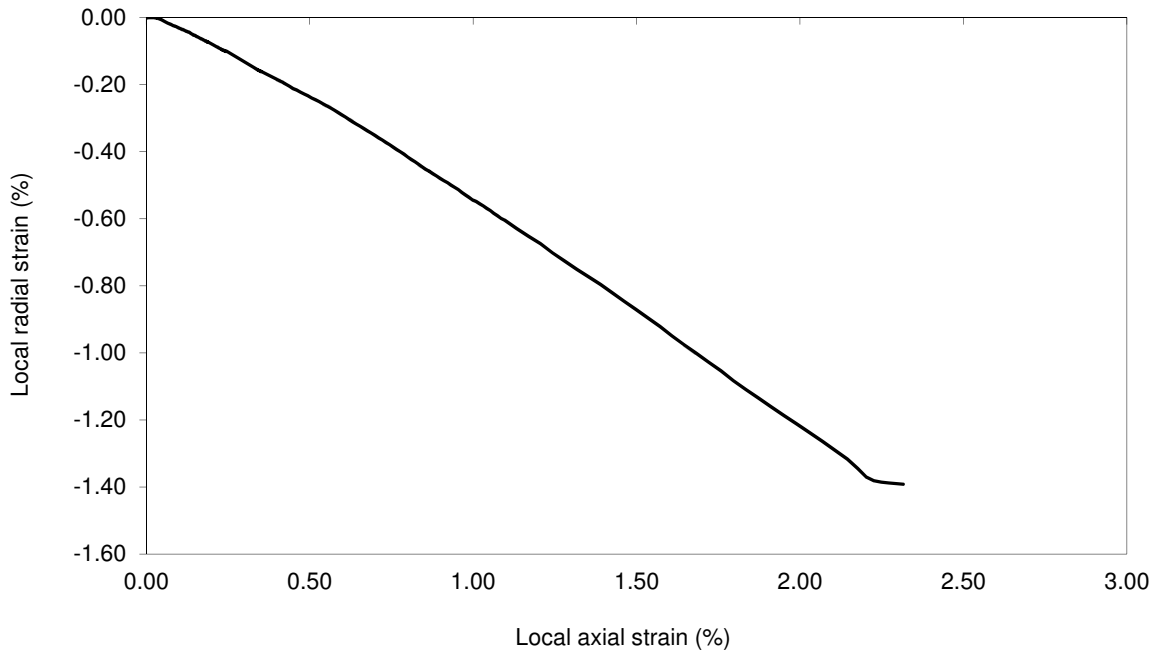
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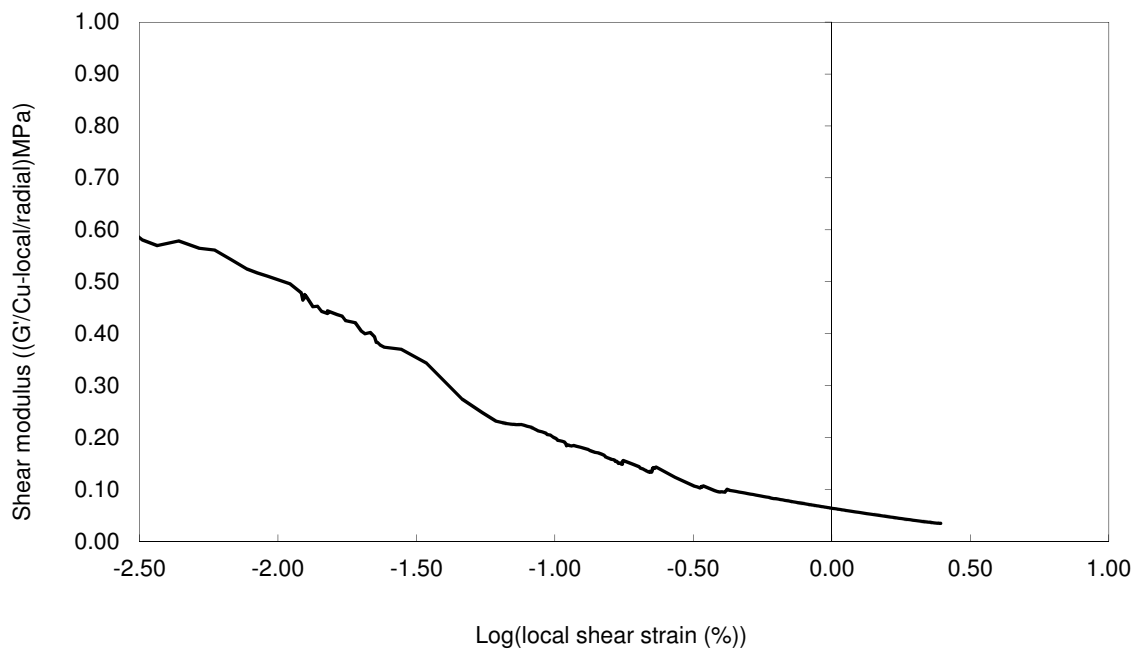
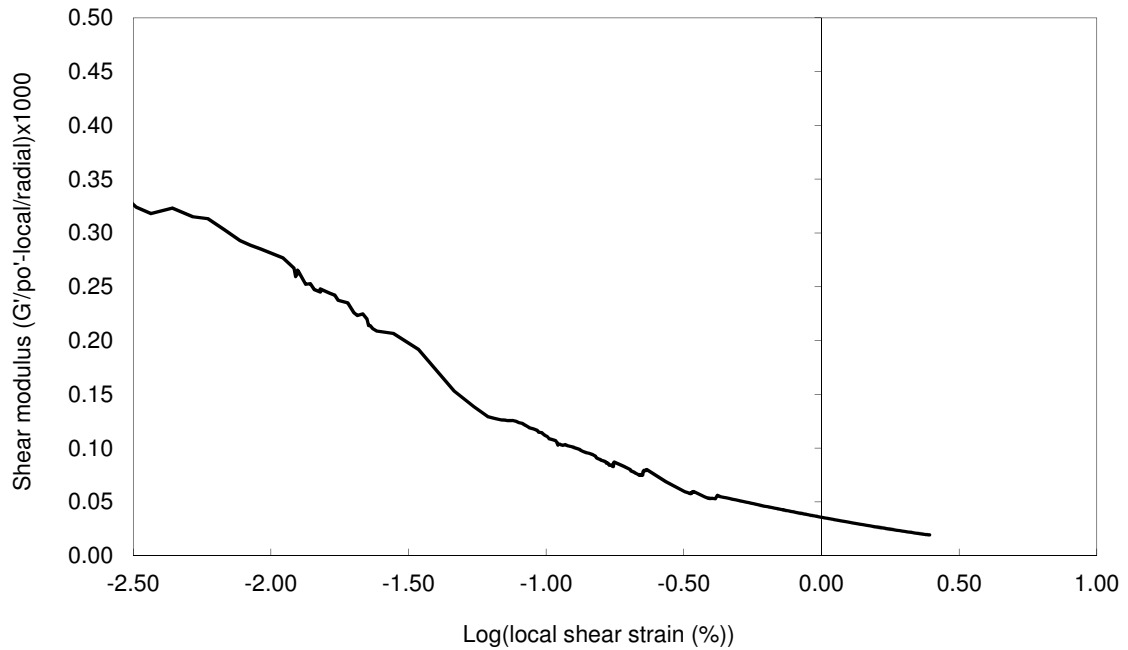
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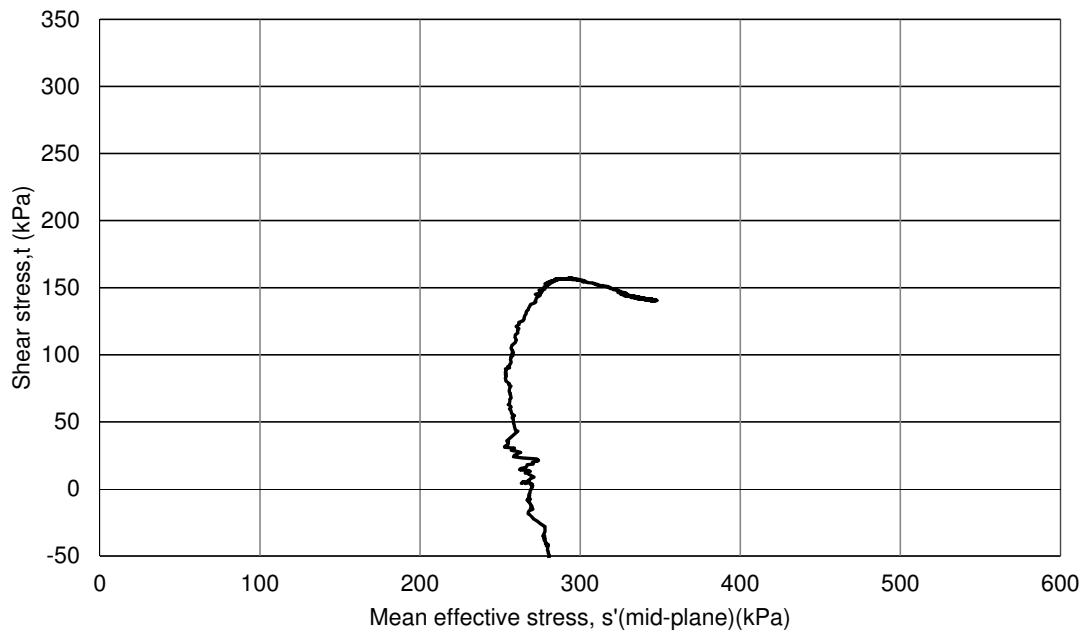
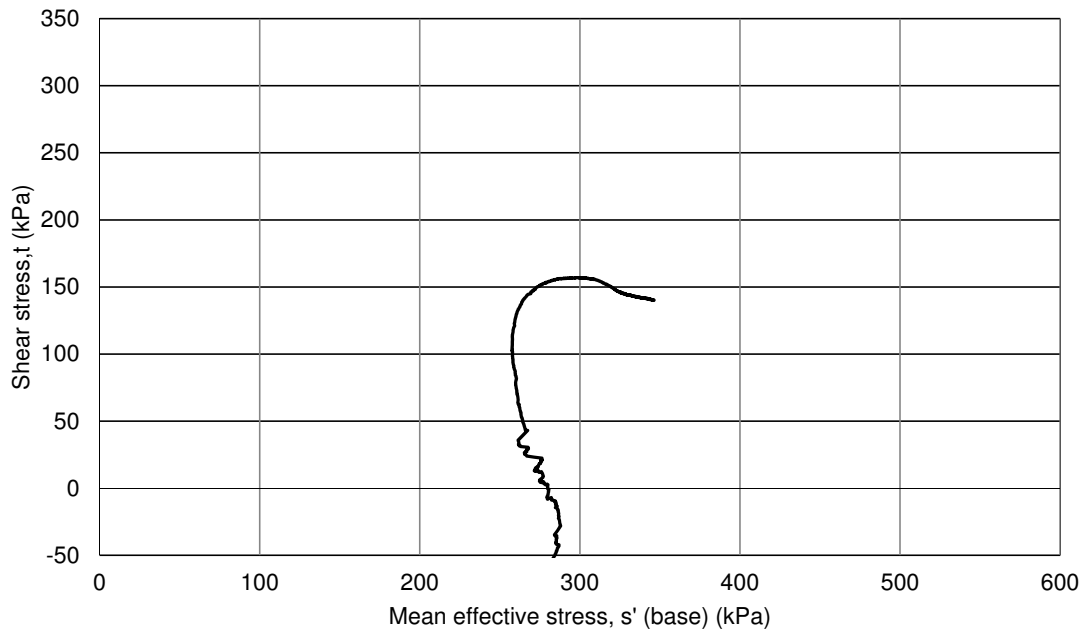
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**Stress Path Test with Base/Mid-plane PWP and Local Axial/Radial Strain Measurement**

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Test carried out by Russell Geotechnical Innovations Limited, Alpha 319, Chobham Business Centre, Chobham, Surrey, GU24 8JB

Authorised Signatory: C.S.Russell (Director)

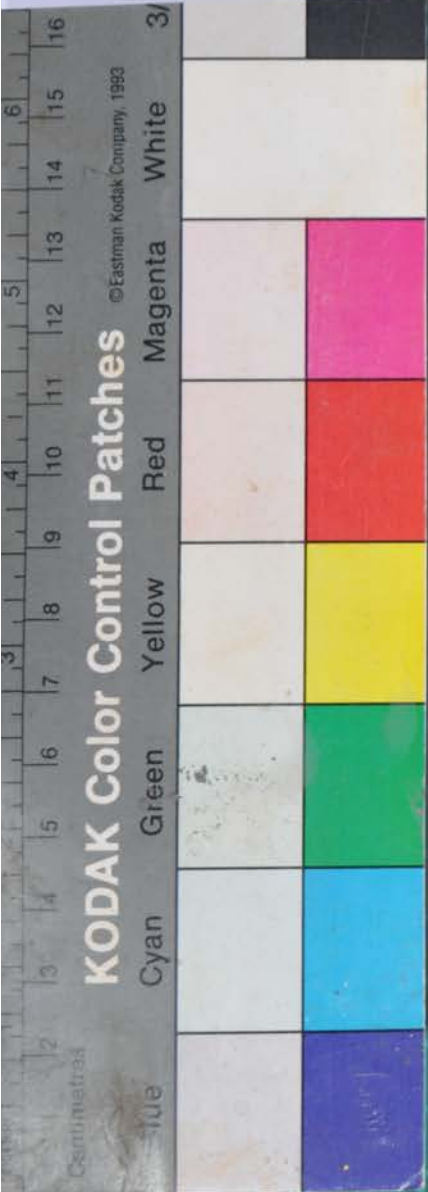
C:\Users\Chris\Documents\A Processing Files\RGI\_1166 The Hoxton Holborn\BH1A 20 1970 CAUCSS.xlsx\Sheet1

Contract: HOXTON HOTEL G.I

Borehole: BH1A

Sample No.: 20

Depth (m): 19.70-19.95



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