



The Sizewell C Project

6.3 Volume 2 Main Development Site Chapter 18 Geology and Land Quality Appendix 18A Phase 2 Geo-environmental Interpretative Report Part 8 of 11

Revision: 1.0
Applicable Regulation: Regulation 5(2)(a)
PINS Reference Number: EN010012

May 2020

Planning Act 2008
Infrastructure Planning (Applications: Prescribed
Forms and Procedure) Regulations 2009



NOT PROTECTIVELY MARKED

Appendix F – Ground Investigation Factual Reports

On-shore Investigations Phase 1 for Sizewell Site 2011

CONTINUED

NOT PROTECTIVELY MARKED

Report No A0012-10/4

ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE

FACTUAL REPORT ON GROUND INVESTIGATION

VOLUME 4 : GEOTECHNICAL LABORATORY TESTING

Carried out for: NNB Generation Company Limited

August 2011

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**ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE
FACTUAL REPORT ON GROUND INVESTIGATION**

VOLUME 4 : GEOTECHNICAL LABORATORY TESTING

Report No: A0012-10/4

Date: August 2011

Employer:

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Issue No	Date	Details
1	August 2011	Report as submitted

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INDEX PROPERTIES - SUMMARY OF RESULTS

Project No	Project Name												
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE												
Hole No.	Sample			Soil Description	ρ	ρ_d	W	< 425 μ m sieve	W _L	W _P	I _p	ρ_s	Remarks
	No.	Depth (m)											
		from	to										
CBH 2009_1	9	47.10	47.50	CS	Stiff grey slightly gravelly silty CLAY.	1.67	1.09	53	97 n	91 a	35	56	
CBH 2009_1	15	68.75	69.20	CS	Stiff brown mottled grey slightly sandy CLAY.	2.18	1.83	19	100 n	48 a	18	30	
CBH 2009_1	16	75.24	75.64	CS	Stiff greyish brown slightly sandy CLAY.			44	100 n	127 a	40	87	2.61-p
CBH 2009_1	17	80.10	80.50	CS	Very stiff brown silty CLAY.			31	100 n	96 a	31	65	2.66-p
CBH 2009_1	18	84.35	84.75	CS	Greyish brown slightly sandy slightly gravelly CLAY.			39	96 n	136 a	43	93	2.66-p
CBH 2009_1UA	3	1.20	1.65	U	Black brown and grey silty SAND with occasional shell fragments.	2.07	1.76	18					2.79-p
CBH 2009_1UA	15	5.90	6.35	U	Soft to firm brownish grey slightly organic slightly sandy fibrous CLAY.			160	98 n	223 a	101	122	
CBH 2009_1UA	21	8.00	8.45	U	Firm dark brown peaty CLAY.	1.10	0.26	324					
CBH 2009_1UA	25	9.40	9.85	U	Greyish black peaty gravelly SAND.			48	79 s	32 b	NP		
CBH 2009_1UA	27	10.10	10.55	U	Grey slightly gravelly SAND with occasional clay pockets.	2.05	1.69	23					2.68-p
CBH 2009_1UA	51	18.50	18.95	U	Stiff to very stiff grey SAND with shell fragments.	2.02	1.71	18					
CBH 2009_1UA	72	27.60	28.05	U	Grey SAND with shell fragments.	2.05	1.72	19					2.69-p
CBH 2009_1UA	94	36.70	37.15	U	Firm to stiff brownish grey SAND with shell fragments.	1.97	1.65	19					2.67-p
CBH 2009_1UA	114	45.10	45.55	U	Soft to firm greyish brown very sandy CLAY with rare shell fragments.	1.90	1.49	27	72 s	41 a	19	22	
CBH 2009_1UA	116	45.80	46.25	U	Firm to stiff dark brownish grey slightly sandy slightly organic CLAY.	1.66	1.15	45	100 n	108 a	51	57	2.70-p
CBH 2009_1UA	118	46.50	46.95	U	Firm to stiff greyish brown slightly sandy CLAY.	1.74	1.23	42	92 n	97 a	30	67	
CBH 2009_2	15	43.40	43.80	CS	Firm to stiff brownish grey slightly sandy CLAY.			43					
CBH 2009_2	16	49.75	50.15	CS	Stiff brownish grey slightly sandy CLAY.	1.78	1.21	47	98 n	92 a	37	55	2.63-p
CBH 2009_2	17	51.80	52.20	CS	Stiff greyish brown slightly sandy CLAY.			35	100 n	78 a	26	52	
CBH 2009_2	18	54.80	55.20	CS	Firm to stiff brownish grey slightly sandy CLAY.	1.94	1.46	33	98 s	75 a	26	49	2.62-p
CBH 2009_2	20	58.50	58.90	CS	Soft brownish grey slightly sandy silty CLAY.	1.99	1.57	27	96 n	32 a	21	11	2.63-p
CBH 2009_2	21	61.75	62.15	CS	Firm to stiff brownish grey slightly sandy CLAY.	2.06	1.66	24	100 n	55 a	21	34	
CBH 2009_2	22	65.10	65.50	CS	Brownish grey silty SAND.	2.06	1.70	21					2.62-p
CBH 2009_2	23	70.90	71.30	CS	Light greyish brown SAND.	1.97	1.56	26					2.61-p
CBH 2009_2	24	74.00	74.40	CS	Firm to stiff dark grey slightly sandy CLAY.	1.74	1.19	46	97 n	102 a	40	62	
CBH 2009_2	25	77.10	77.50	CS	Firm greyish brown slightly sandy CLAY.	1.69	1.17	45	91 n	129 a	40	89	
CBH 2009_2U	7	1.90	2.53	U	Greyish brown slightly clayey gravelly SAND with 1 cobble.	2.14	1.86	15					2.64-p
CBH 2009_2UA	8	5.00	5.45	U	Firm grey CLAY with organic fibrous clay partings.	1.42	0.71	99	100 n	143 a	54	89	
CBH 2009_2UA	25	10.80	11.25	U	Light brown slightly gravelly SAND.	2.05	1.75	17					2.63-p
CBH 2009_2UA	51	19.90	20.35	U	Grey and light grey slightly gravelly SAND with occasional shell fragments.	1.98	1.62	22					2.67-p
CBH 2009_2UA	69	28.30	28.75	U	Grey SAND with shell fragments.	2.07	1.75	18					2.65-p
CBH 2009_2UA	90	37.40	37.85	U	Grey SAND with shell fragments.	1.97	1.64	20					2.68-p

General notes: All above tests carried out to BS1377 : 1990 definitive method in all cases unless annotated otherwise. See individual test reports for further details.

Key : ρ bulk density, linear W_L Liquid limit W_P Plastic limit <425um preparation ρ_s particle density
 ρ_d dry density a 4 point cone test NP non - plastic n from natural soil -g = gas jar
w moisture content b 1 point cone test I_p Plasticity Index s sieved specimen -p = small pycnometer

INDEX PROPERTIES - SUMMARY OF RESULTS

Project No	Project Name
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE

Hole No.	Sample			Soil Description	ρ	ρ_d	W	< 425 μ m sieve	W _L	W _P	I _P	ρ_s	Remarks
	No.	Depth (m)											
		from	to										
CBH 2009_4	9	47.55	47.95	CS			44						
CBH 2009_4	12	50.30	50.75	CS			50	100 n	81 a	33	48		
CBH 2009_4	13	53.50	53.90	CS	1.92	1.43	34	100 n	77 a	31	46	2.67-p	
CBH 2009_4U	10	3.15	3.60	U	2.00	1.72	16					2.64-p	
CBH 2009_4U	18	5.40	5.85	U	0.84	0.49	71						
CBH 2009_4U	46	13.55	14.00	U	2.05	1.70	20					2.65-p	
CBH 2009_4U	71	22.00	22.45	U	2.13	1.81	18					2.65-p	
CBH 2009_4U	97	30.50	30.95	U	1.98	1.73	15					2.67-g	
CBH 2009_4U	111	37.70	38.15	U	2.09	1.77	18					2.69-p	
CBH 2009_5	12	43.80	44.20	CS			46	100 n	99 a	40	59		
CBH 2009_5	13	46.80	47.20	CS			27	100 n	86 a	28	58		
CBH 2009_5	14	49.70	50.10	CS	1.68	1.08	55	99 n	105 a	43	62		
CBH 2009_5	15	52.80	53.20	CS			33						
CBH 2009_5UB	7	3.40	3.85	U			20						
CBH 2009_5UB	10	4.10	4.55	U			71	100 n	98 a	39	59		
CBH 2009_5UB	15	5.50	5.95	U	1.54	0.89	73						
CBH 2009_5UB	42	14.60	15.05	U	2.05	1.73	19					2.67-p	
CBH 2009_5UB	66	23.00	23.45	U	2.04	1.77	15					2.66-p	
CBH 2009_5UB	81	29.30	29.75	U	2.10	1.78	18						
CBH 2009_5UB	103	40.30	40.75	U	2.04	1.69	21					2.73-p	
CBH 2009_6	9	43.00	43.40	CS			41	100 s	101 a	37	64		
CBH 2009_6	10	45.42	45.76	CS			43						
CBH 2009_6	11	49.70	50.10	CS			44	100 n	84 a	31	53		
CBH 2009_6	12	52.70	53.09	CS	1.93	1.46	32	99 n	77 a	28	49		
CBH 2009_6U	12	4.00	4.45	U	2.07	1.79	16					2.64-p	
CBH 2009_6U	20	6.80	7.25	U			77	100 n	167 a	96	71		
CBH 2009_6U	22	7.50	7.95	U			271						
CBH 2009_6U	24	8.20	8.65	U	1.12	0.12	842						
CBH 2009_6U	44	15.20	15.65	U	2.05	1.68	22					2.66-p	
CBH 2009_6U	69	23.60	24.05	U	2.14	1.83	17					2.67-p	
CBH 2009_6U	94	32.70	33.15	U	2.13	1.81	18					2.67-p	
CBH 2009_6U	121	41.55	42.25	U	1.96	1.66	18					2.68-g	

General notes: All above tests carried out to BS1377 : 1990 definitive method in all cases unless annotated otherwise. See individual test reports for further details.

Key : ρ bulk density, linear W_L Liquid limit W_P Plastic limit <425um preparation ρ_s particle density
 ρ_d dry density a 4 point cone test NP non - plastic n from natural soil -g = gas jar
w moisture content b 1 point cone test I_P Plasticity Index s sieved specimen -p = small pycnometer

INDEX PROPERTIES - SUMMARY OF RESULTS

Project No	Project Name												
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE												
Hole No.	Sample			Soil Description	ρ	ρ_d	W	< 425 μ m sieve	W _L	W _p	I _p	ρ_s	Remarks
	No.	Depth (m)											
		from	to										
CBH 2009_7	16	51.60	51.95	CS	1.81	1.30	39	93 n	79 a	36	43	2.64-p	One sufficient sized piece of mudstone used for all testing.
CBH 2009_7	17	54.35	54.75	CS			42	100 n	66 a	27	39		
CBH 2009_7U	16	5.40	5.85	U	2.12	1.85	15					2.63-p	
CBH 2009_7U	24	8.20	8.65	U	1.10	0.28	294	100 n	498 b	NP			
CBH 2009_7U	48	16.60	17.05	U	2.11	1.79	18					2.63-p	
CBH 2009_7U	74	25.00	25.45	U	2.06	1.79	15					2.70-p	
CBH 2009_7U	99	34.10	34.55	U	2.09	1.83	14						
CBH 2009_7U	121	41.90	42.35	U	1.95	1.65	18					2.66-p	
CBH 2009_8U	4	2.80	3.25	U								2.62-p	
CBH 2009_8U	10	6.65	7.10	U			58	99 n	79 a	37	42		
CBH 2009_8U	17	8.20	8.65	U			64	100 n	84 a	32	52	2.64-p	
CBH 2009_8U	27	11.10	11.55	U			60	99 n	86 a	35	51	2.61-p	
CBH 2009_8U	33	12.75	13.20	U			20	94 s	21 b	NP			
CBH 2009_8U	35	13.00	13.45	U			19						
CBH 2009_8U	50	17.55	18.00	U	1.98	1.67	19					2.66-g	
CBH 2009_8U	73	26.00	26.45	U	2.01	1.69	19					2.64-p	
CBH 2009_8U	95	35.05	35.50	U	2.05	1.80	14					2.64-g	
CBH 2009_8U	113	43.55	44.00	U	2.05	1.75	17						
CBH 2009_8U	119	47.90	48.35	U			38	99 n	114 a	35	79		
CBH 2009_8U	121	48.77	49.32	CS			37	100 n	88 a	29	59		
CBH 2009_8U	122	51.36	51.56	CS	1.75	1.18	48	100 n	104 a	38	66		
CBH 2009_8U	124	54.52	54.72	CS			44	100 n	94 a	43	51		
CBH 2009_8U	125	58.23	58.72	CS	1.95	1.49	31	96 n	84 a	31	53	2.63-p	
CBH 2009_8U	126	61.32	61.72	CS			33	96 n	39 a	17	22	2.68-p	
CBH 2009_8U	128	67.41	67.69	CS	2.09	1.69	24	100 n	28 b	NP		2.63-p	
CBH 2009_8U	129	72.00	72.10	CS	2.06	1.67	23	100 s	27 a	19	8	2.65-p	
CBH 2009_8U	130	74.60	75.22	CS	1.93	1.34	40	96 n	111 a	44	67		
CBH 2009_8U	131	78.05	78.50	CS	1.72	1.16	48	98 n	138 a	43	95	2.67-p	
CBH 2009_8U	132	81.12	81.60	CS	1.81	1.26	44	99 n	96 a	42	54	2.72-p	
CBH 2009_8U	133	84.12	84.60	CS	1.93	1.55	32	95 n	98 a	31	67		
CBH 2009_9U	44	14.15	14.60	U	2.04	1.70	20					2.65-p	
CBH 2009_9U	65	23.20	23.65	U	2.03	1.72	18					2.63-p	

General notes: All above tests carried out to BS1377 : 1990 definitive method in all cases unless annotated otherwise. See individual test reports for further details.

Key : ρ bulk density, linear W_L Liquid limit W_p Plastic limit <425um preparation ρ_s particle density
 ρ_d dry density a 4 point cone test NP non - plastic n from natural soil -g = gas jar
w moisture content b 1 point cone test I_p Plasticity Index s sieved specimen -p = small pycnometer

INDEX PROPERTIES - SUMMARY OF RESULTS

Project No	Project Name													
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE													
Hole No.	Sample				Soil Description	ρ	ρ_d	W	< 425 μm sieve	W_L	W_P	I_P	ρ_s	Remarks
	No.	Depth (m)		type		Mg/m ³		%	%	%	%	Mg/m ³		
		from	to											
CBH 2009_9U	83	31.55	32.00	U	Firm to stiff brownish grey SAND with shell fragments.	2.14	1.81	18				2.67-p		
CBH 2009_9U	99	40.85	41.00	U	Stiff to very stiff grey SAND with shell fragments.	2.12	1.78	19				2.68-p		
CBH 2009_9U	125	52.75	53.20	U	Firm to stiff brownish grey slightly sandy CLAY.	1.78	1.25	42	100 n	80 a	32	48	2.65-p	
CBH 2009_9U	129	54.05	54.50	U	Firm to stiff grey clayey SILT.			46	100 n	76 a	47	29		
CBH 2009_9U	130	54.55	55.00	U	Firm to stiff grey silty CLAY.			48	100 n	100 a	48	52		
CBH 2009_10	20	50.45	50.90	CS	Very stiff brownish grey slightly sandy CLAY.	1.79	1.23	46	96 n	88 a	43	45		
CBH 2009_10	21	53.35	53.80	CS	Stiff to very stiff greyish brown slightly sandy CLAY.			41	100 n	93 a	35	58		
CBH 2009_11U	34	14.35	14.80	U	Orangish brown SAND with rare clay pockets.	2.05	1.74	18					2.63-p	
CBH 2009_11U	52	23.05	23.50	U	Orangish brown SAND.	1.80	1.58	14						
CBH 2009_11U	69	31.55	32.00	U	Grey slightly gravelly SAND with occasional shell fragments.	2.03	1.72	18					2.64-p	
CBH 2009_11U	88	41.55	42.00	U	Firm grey sandy silty CLAY with occasional shell fragments.	2.07	1.67	24					2.70-p	
CBH 2009_11U	90	42.10	42.55	U	Firm brown sandy silty CLAY.			29	91 n	38 a	19	19		
CBH 2009_11U	128	56.10	56.50	U	Firm to stiff brownish grey slightly sandy CLAY.			43	100 n	89 a	41	48	2.62-p	
SPT 2009_3	37	44.90	45.50	CS	Stiff greyish brown slightly gravelly silty CLAY.			58	73 s	85 a	45	40		

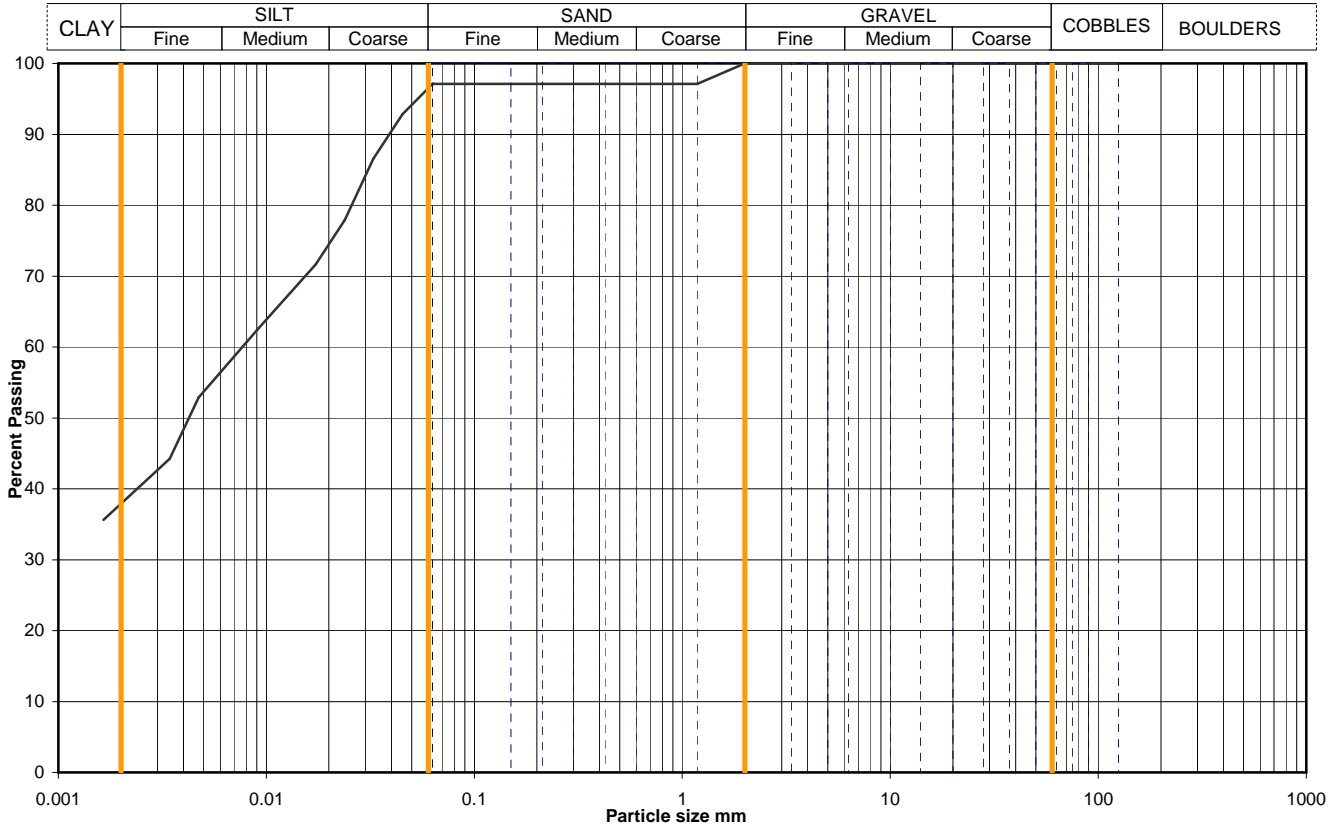
General notes: All above tests carried out to BS1377 : 1990 definitive method in all cases unless annotated otherwise. See individual test reports for further details.

Key :

ρ bulk density, linear	W_L Liquid limit	W_P Plastic limit	<425um preparation	ρ_s particle density
ρ_d dry density	a 4 point cone test	NP non - plastic	n from natural soil	-g = gas jar
w moisture content	b 1 point cone test	I_P Plasticity Index	s sieved specimen	-p = small pycnometer

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	47.10
			Samp No	9
			Type	CS
			ID	ESGA0012-10201010080000001878
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	97
90	100	0.0451	93
75	100	0.0327	87
63	100	0.0239	78
50	100	0.0172	72
37.5	100	0.0092	63
28	100	0.0047	53
20	100	0.0034	44
14	100	0.0016	36
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	97		
0.600	97		
0.425	97		
0.300	97		
0.212	97		
0.150	97		
0.063	97		
		Particle density, Mg/m ³	
		2.65 assumed	
		Dry mass of sample, kg	
		0.0	

Soil description	Stiff grey slightly gravelly silty CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		4	4
		58	58
		38	38
<small>*<60mm values to aid description only</small>			

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

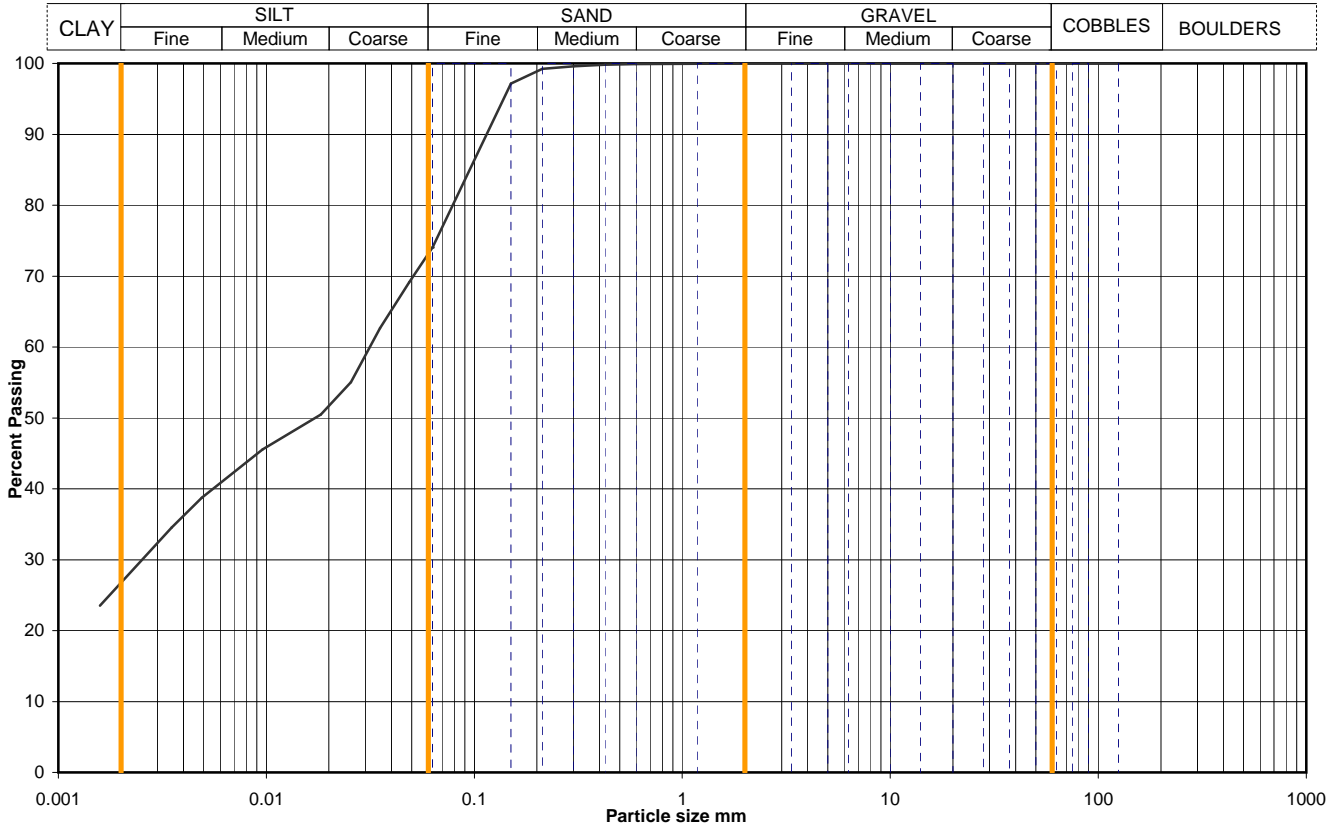


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Figure
PSD 1

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	68.75
			Samp No	15
			Type	CS
			ID	ESGA0012-10201010080000001883
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	74
90	100	0.0486	69
75	100	0.0352	63
63	100	0.0255	55
50	100	0.0183	50
37.5	100	0.0096	46
28	100	0.0049	39
20	100	0.0035	35
14	100	0.0016	24
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100		
0.425	100		
0.300	100		
0.212	99		
0.150	97		
0.063	74		

Particle density, Mg/m ³	2.65 assumed
Dry mass of sample, kg	1.8

Soil description	Stiff brown mottled grey slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		27	27
		46	46
*<60mm values to aid description only		27	27

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

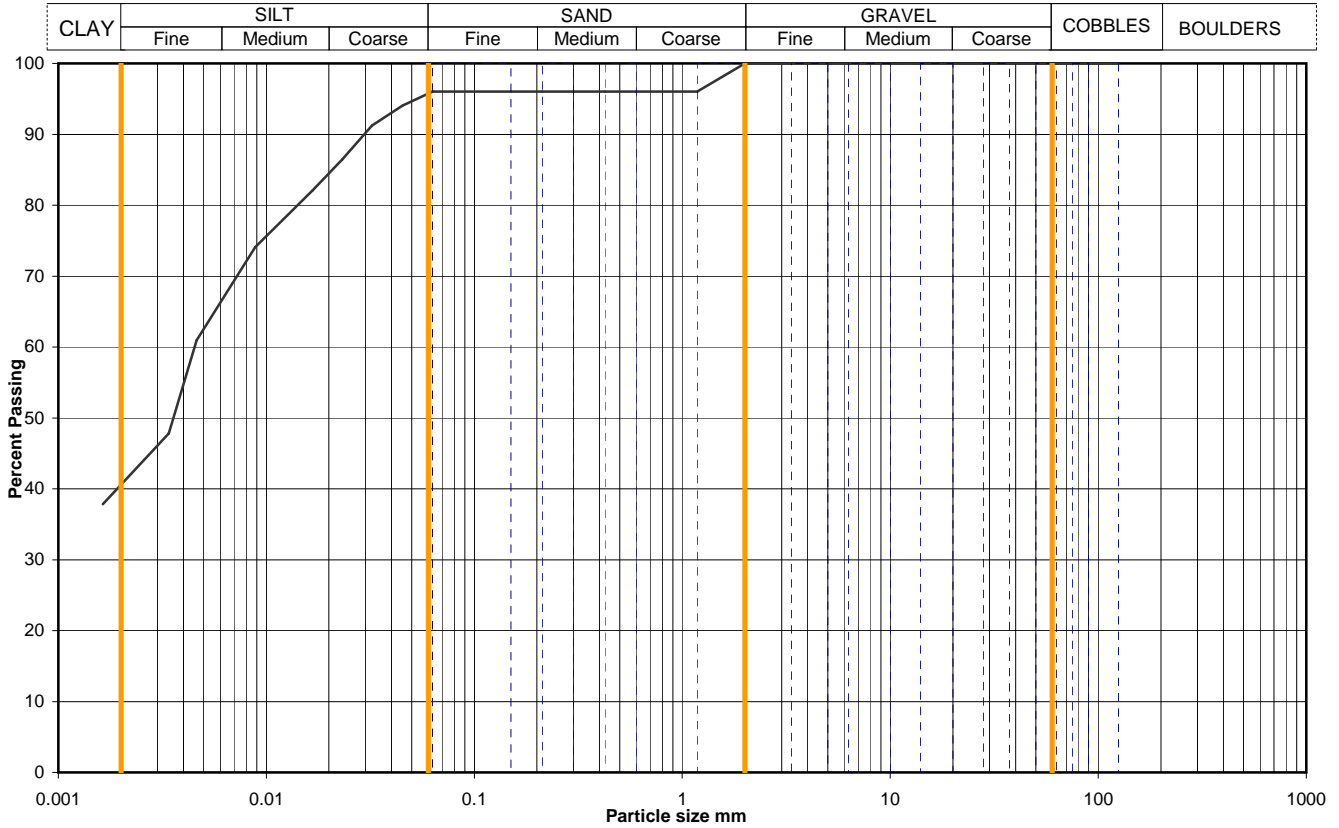


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Figure
PSD 2

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	84.35
			Samp No	18
			Type	CS
			ID	ESGA0012-10201010080000001886
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	96
90	100	0.0451	94
75	100	0.0322	91
63	100	0.0232	86
50	100	0.0167	82
37.5	100	0.0088	74
28	100	0.0046	61
20	100	0.0034	48
14	100	0.0016	38
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	96		
0.600	96		
0.425	96		
0.300	96		
0.212	96		
0.150	96		
0.063	96		
		Particle density, Mg/m ³	
		2.66 measured	
		Dry mass of sample, kg	
		0.0	

Soil description	Greyish brown slightly sandy slightly gravelly CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		4	4
		55	55
		41	41

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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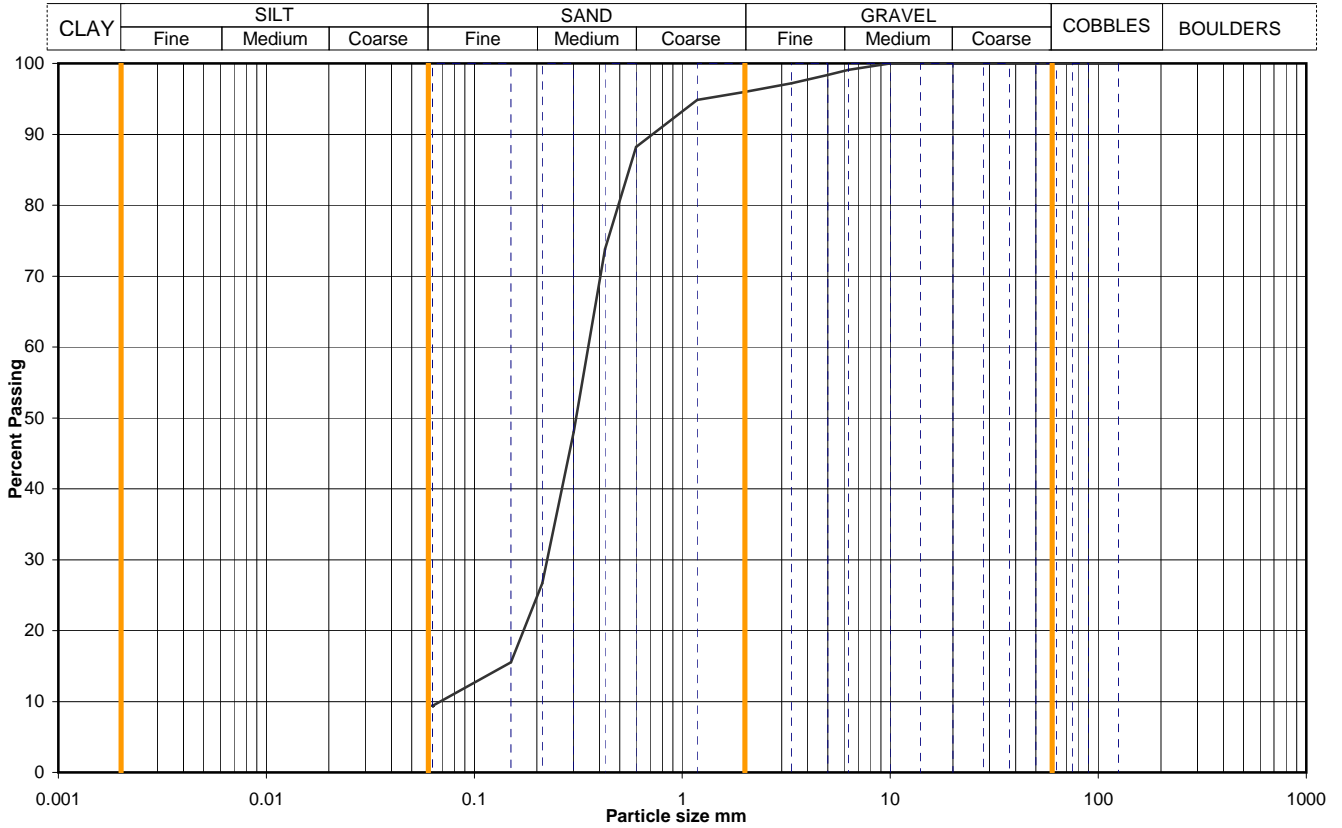


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Figure
PSD 3

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	1.20		
			Samp No	3	Type	U
			ID	ESGA0012-10201010080000001727		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5.0	98		
3.35	97		
2.00	96		
1.18	95		
0.600	88		
0.425	74		
0.300	48		
0.212	27		
0.150	16		
0.063	9		
		Dry mass of sample, kg	
		3.4	

Soil description	Black brown and grey silty SAND with occasional shell fragments.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions <small>*<60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
		0	0
	Gravel	4	4
	Sand	87	87
	Silt Clay	silt+clay =	
	9	9	

Uniformity Coefficient	D_{60} / D_{10}	5
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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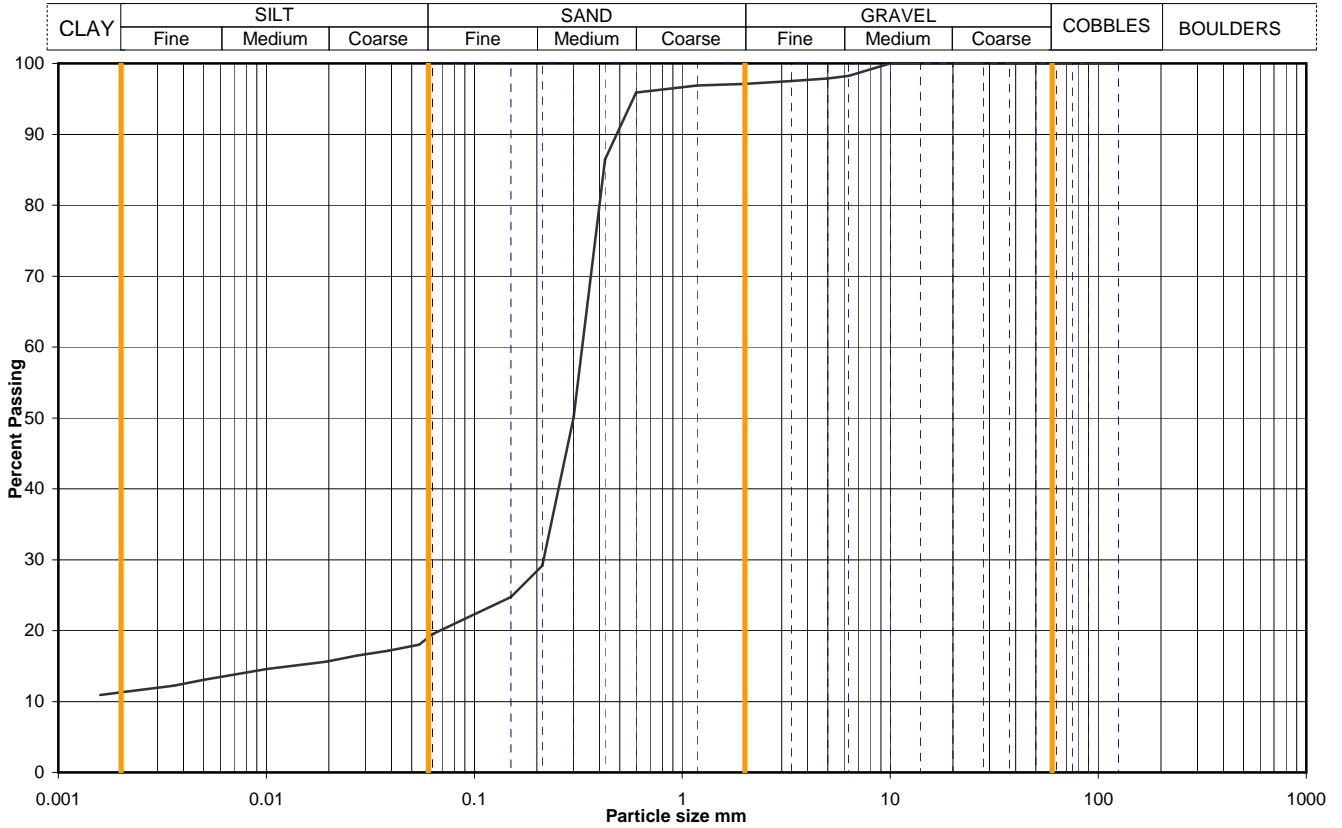


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Figure
PSD 4

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	10.10		
			Samp No	27	Type	U
			ID	ESGA0012-10201010080000001754		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	19
90	100	0.0542	18
75	100	0.0385	17
63	100	0.0273	16
50	100	0.0194	16
37.5	100	0.0101	15
28	100	0.0051	13
20	100	0.0036	12
14	100	0.0016	11
10	100		
6.3	98		
5.0	98		
3.35	98		
2.00	97		
1.18	97		
0.600	96		
0.425	86		
0.300	50		
0.212	29		
0.150	25		
0.063	19		

Particle density, Mg/m ³	2.68 measured
Dry mass of sample, kg	4.1

Soil description	Grey slightly gravelly SAND with occasional clay pockets.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		3	3
		78	78
		8	8
		11	11

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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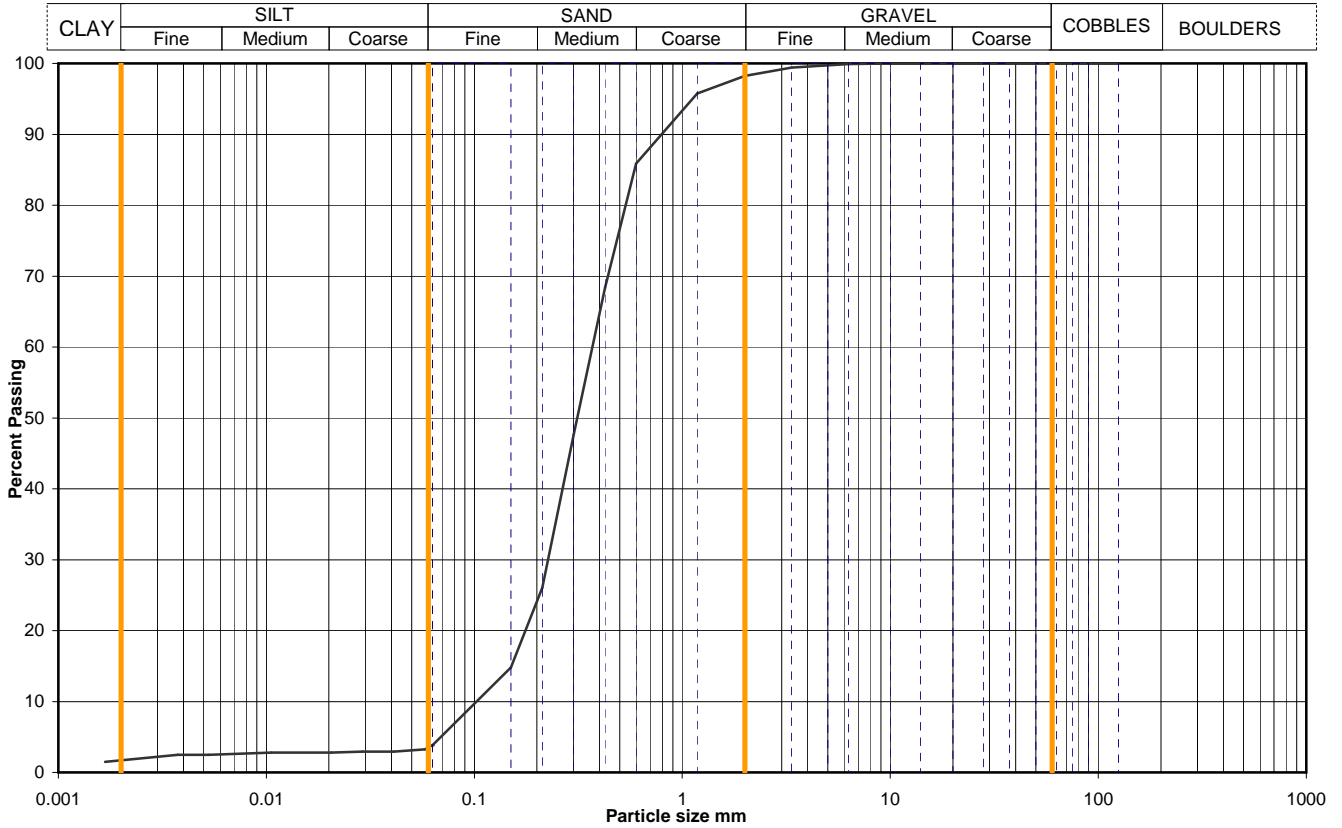


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Figure
PSD 5

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1UA
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	18.50
			Samp No	51
			Type	U
			ID	ESGA0012-10201010080000001778
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	4
90	100	0.0579	3
75	100	0.0410	3
63	100	0.0290	3
50	100	0.0205	3
37.5	100	0.0106	3
28	100	0.0053	3
20	100	0.0038	3
14	100	0.0017	1
10	100		
6.3	100		
5.0	100		
3.35	99		
2.00	98		
1.18	96		
0.600	86	Particle density, Mg/m ³	
0.425	68	2.65 assumed	
0.300	48	Dry mass of sample, kg	
0.212	26	6.3	
0.150	15		
0.063	4		

Soil description	Stiff to very stiff grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<math><60\text{mm}</math>
		0	0
		2	2
		95	95
		2	2
*<math><60\text{mm}</math> values to aid description only		1	1

Uniformity Coefficient	D_{60} / D_{10}	4
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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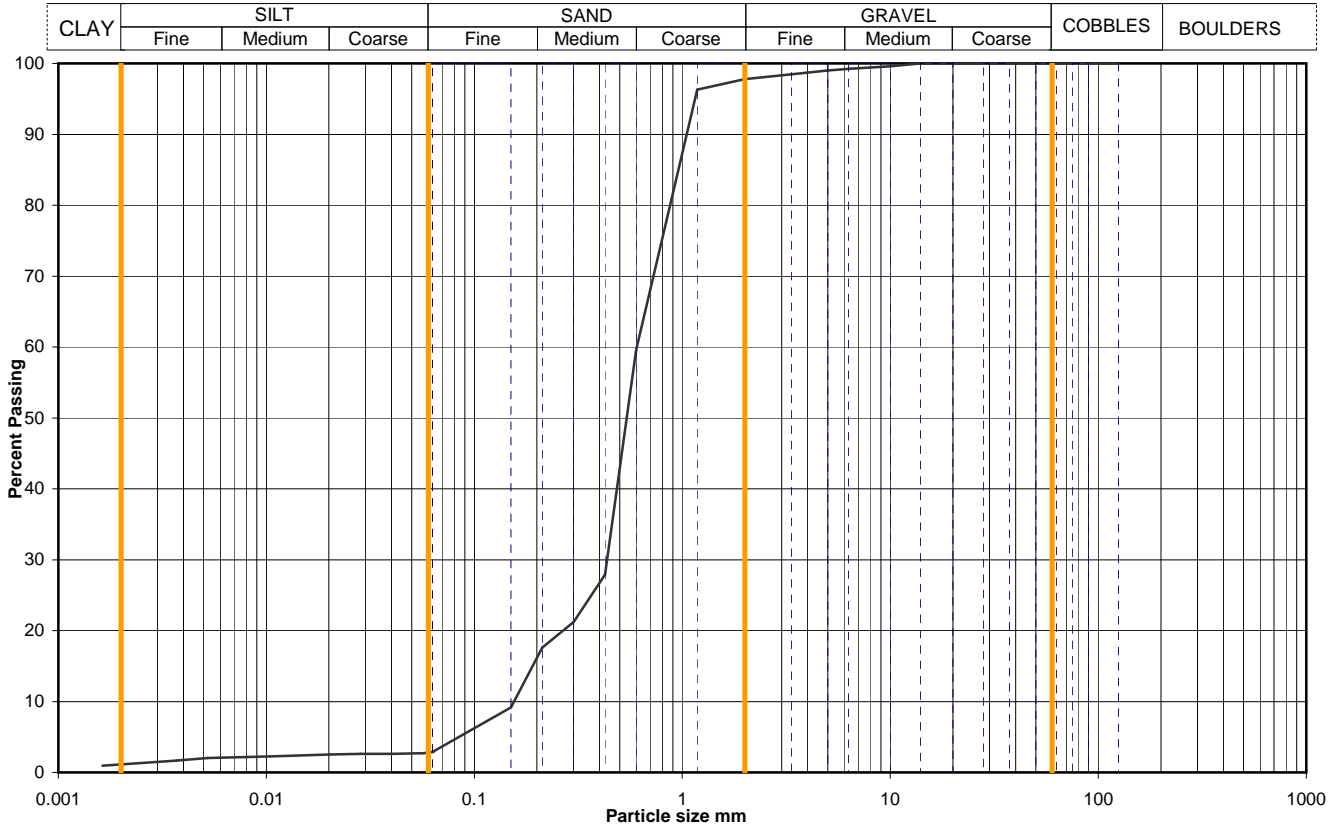


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Figure
PSD 6

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1UA
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	27.60
			Samp No	72
			Type	U
			ID	ESGA0012-10201010080000001804
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	3
90	100	0.0567	3
75	100	0.0401	3
63	100	0.0284	3
50	100	0.0201	3
37.5	100	0.0104	2
28	100	0.0052	2
20	100	0.0037	2
14	100	0.0016	1
10	100		
6.3	99		
5.0	99		
3.35	98		
2.00	98		
1.18	96		
0.600	60		
0.425	28		
0.300	21		
0.212	18		
0.150	9		
0.063	3		

Particle density, Mg/m ³ 2.69 measured	Dry mass of sample, kg 3.3
--	-------------------------------

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		2	2
		95	95
		2	2
		1	1

Uniformity Coefficient	D_{60} / D_{10}	4
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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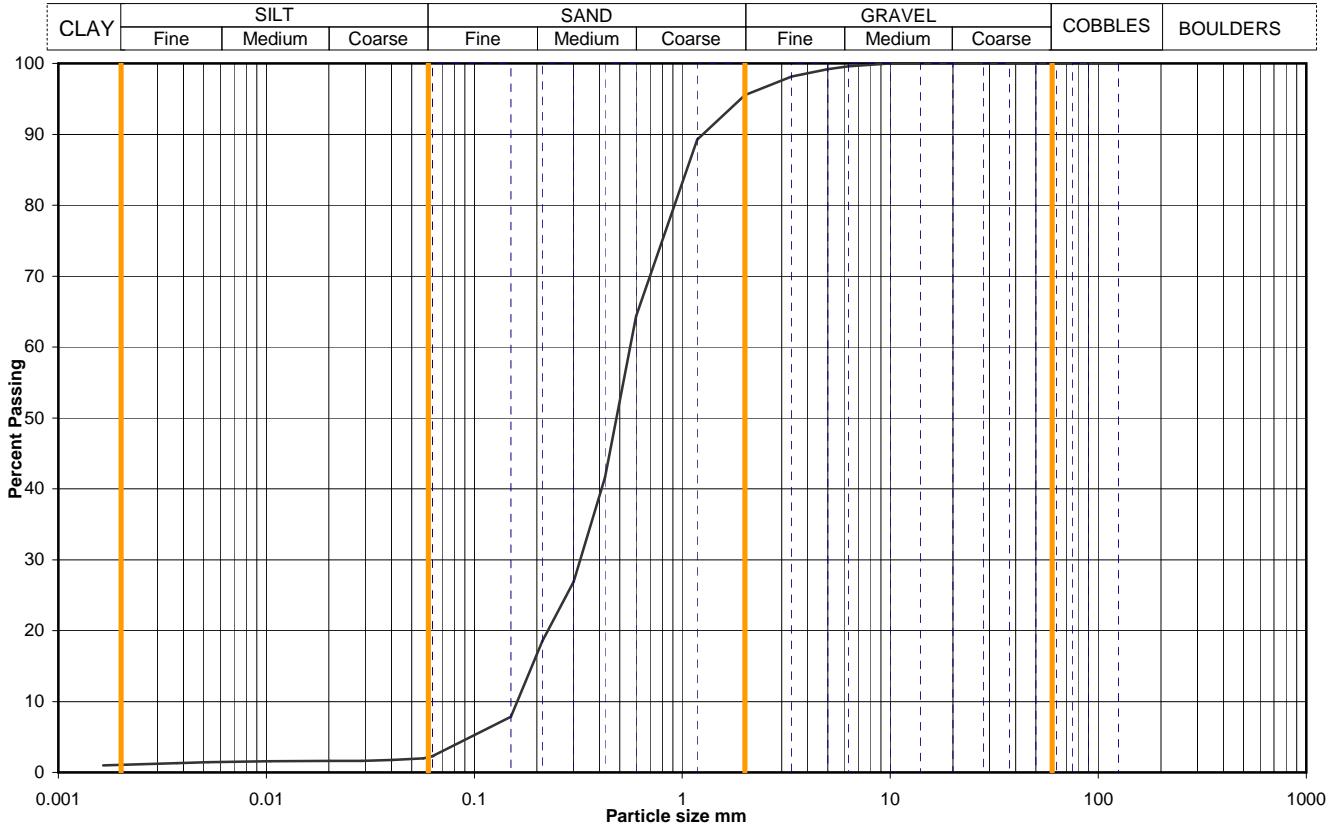


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Figure
PSD 7

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1UA
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	36.70
			Samp No	94
			Type	U
			ID	ESGA0012-10201010080000001830
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	2
90	100	0.0571	2
75	100	0.0405	2
63	100	0.0287	2
50	100	0.0203	2
37.5	100	0.0105	2
28	100	0.0053	1
20	100	0.0037	1
14	100	0.0016	1
10	100		
6.3	100		
5.0	99		
3.35	98		
2.00	96		
1.18	89		
0.600	64		
0.425	42		
0.300	27		
0.212	18		
0.150	8		
0.063	2		

Particle density, Mg/m ³ 2.67 measured	Dry mass of sample, kg 4.9
--	-------------------------------

Soil description	Firm to stiff brownish grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		4	4
		93	93
		2	2
*<60mm values to aid description only		1	1

Uniformity Coefficient	D_{60} / D_{10}	4
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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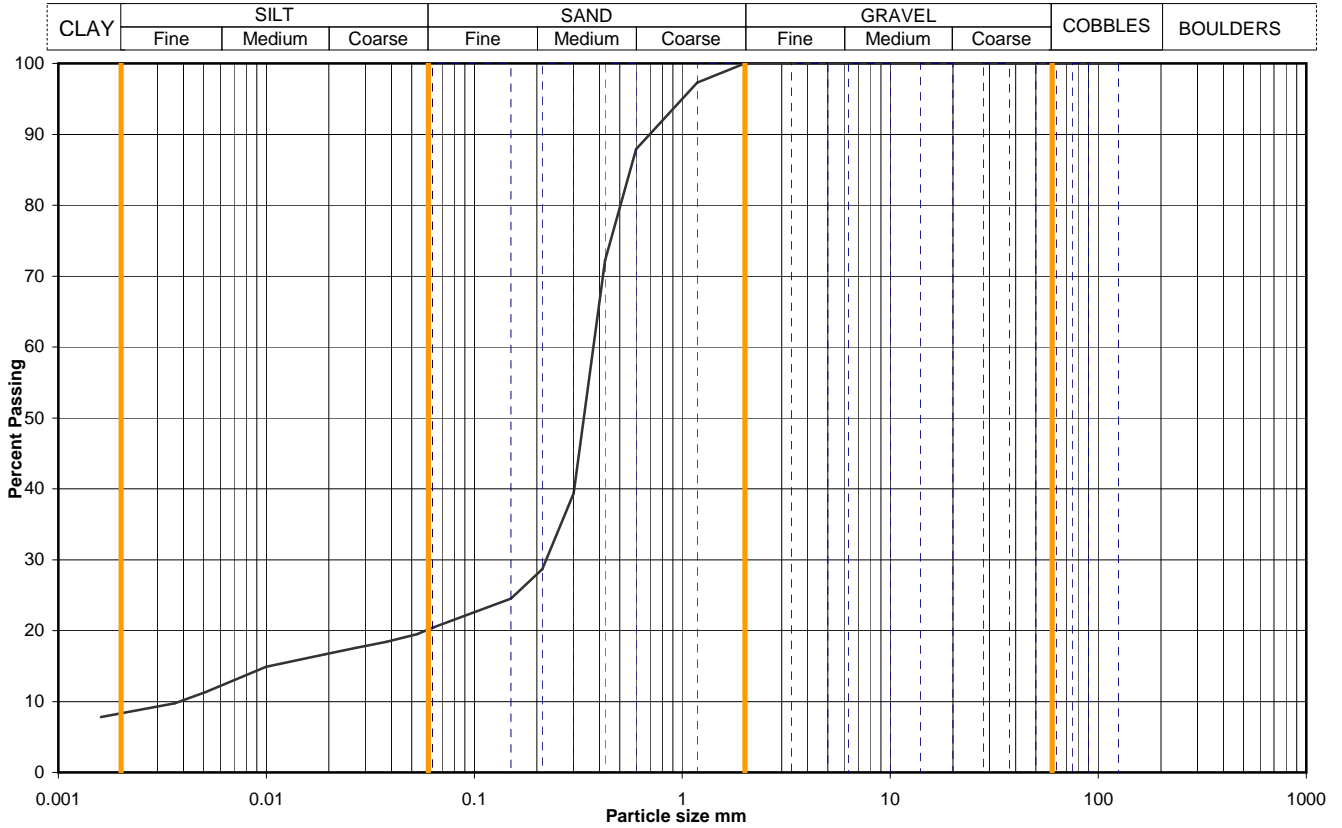


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Figure
PSD 8

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	45.10		
			Samp No	114	Type	U
			ID	ESGA0012-10201010080000001854		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	20
90	100	0.0531	19
75	100	0.0378	18
63	100	0.0269	18
50	100	0.0191	17
37.5	100	0.0100	15
28	100	0.0051	11
20	100	0.0036	10
14	100	0.0016	8
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	97	Particle density, Mg/m ³ 2.65 assumed	
0.600	88		
0.425	72		
0.300	39	Dry mass of sample, kg 0.1	
0.212	29		
0.150	24		
0.063	20		

Soil description	Soft to firm greyish brown very sandy CLAY with rare shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		80	80
		12	12
*<60mm values to aid description only		8	8

Uniformity Coefficient	D₆₀ / D₁₀	97
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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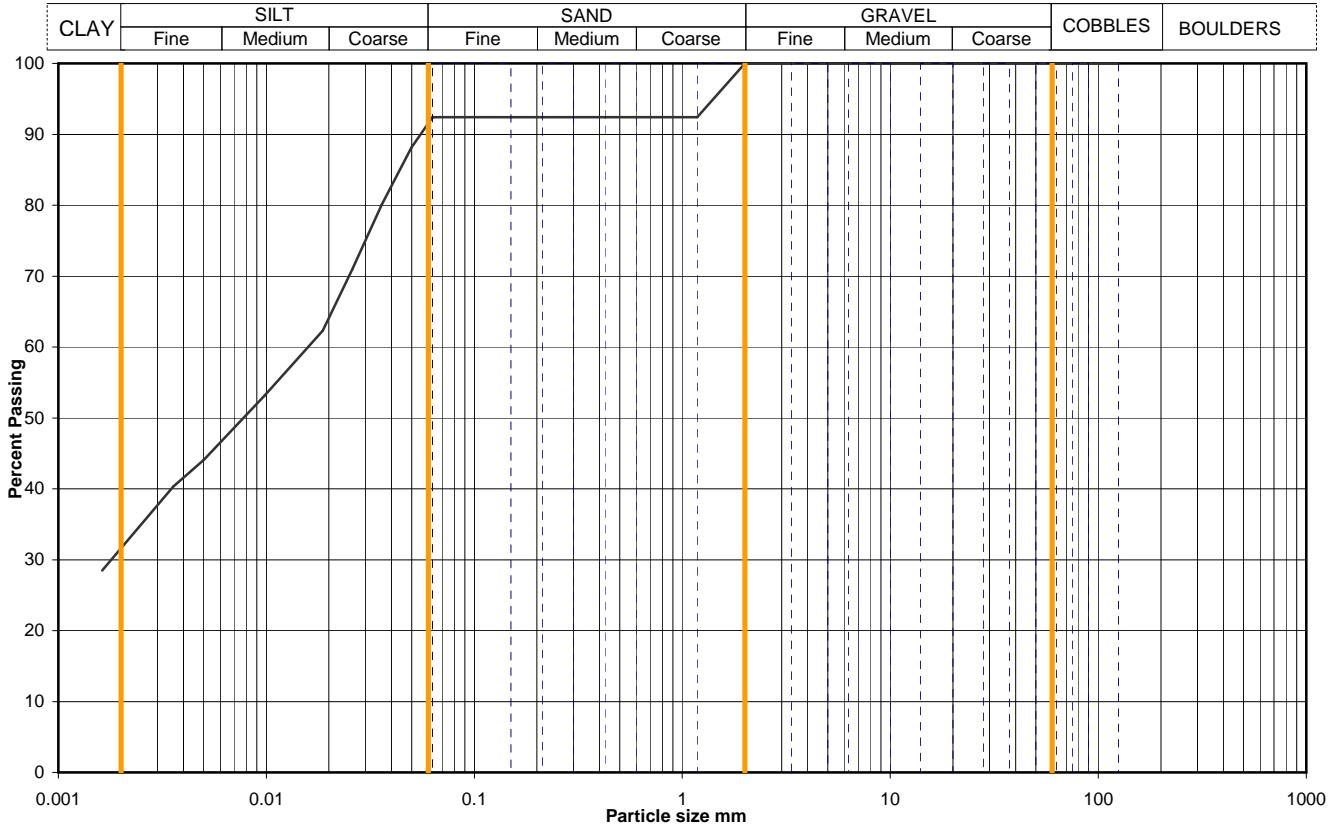


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Figure
PSD 9

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1UA
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	46.50
			Samp No	118
			Type	U
			ID	ESGA0012-10201010080000001858
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	92
90	100	0.0498	88
75	100	0.0359	80
63	100	0.0259	71
50	100	0.0187	62
37.5	100	0.0098	53
28	100	0.0050	44
20	100	0.0036	40
14	100	0.0016	28
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	92		
0.600	92	Particle density, Mg/m ³	
0.425	92	2.65 assumed	
0.300	92	Dry mass of sample, kg	
0.212	92		
0.150	92		
0.063	92	0.0	

Soil description	Firm to stiff greyish brown slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		8	8
		60	60
*<60mm values to aid description only		32	32

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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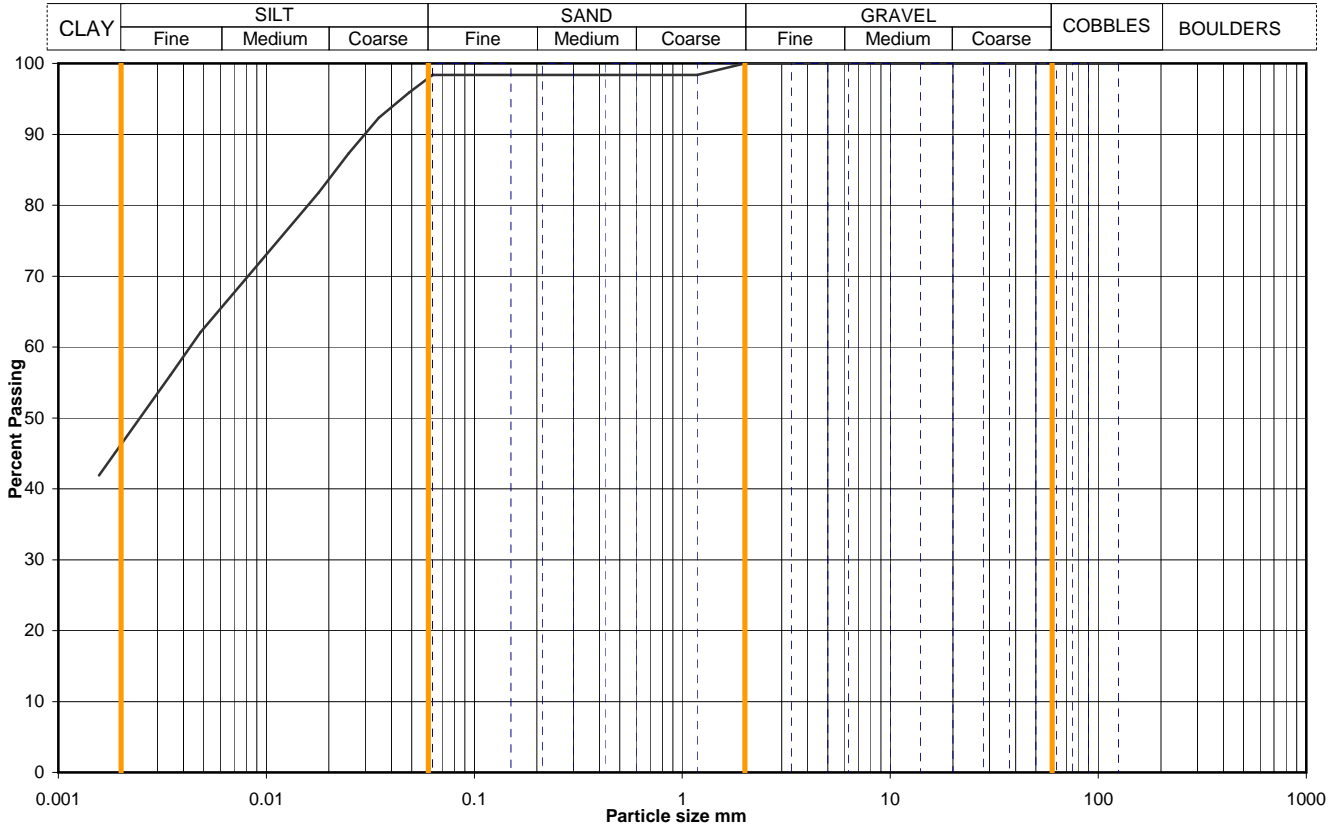


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Figure
PSD 10

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	49.75
			Samp No	16
			Type	CS
			ID	ESGA0012-10201008240000000379
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	98
90	100	0.0486	96
75	100	0.0347	92
63	100	0.0249	87
50	100	0.0178	82
37.5	100	0.0094	72
28	100	0.0048	62
20	100	0.0035	56
14	100	0.0016	42
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	98		
0.600	98		
0.425	98		
0.300	98		
0.212	98		
0.150	98		
0.063	98		
		Particle density, Mg/m ³	
		2.63 measured	
		Dry mass of sample, kg	
		0.0	

Soil description	Stiff brownish grey slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		2	2
		52	52
		46	46

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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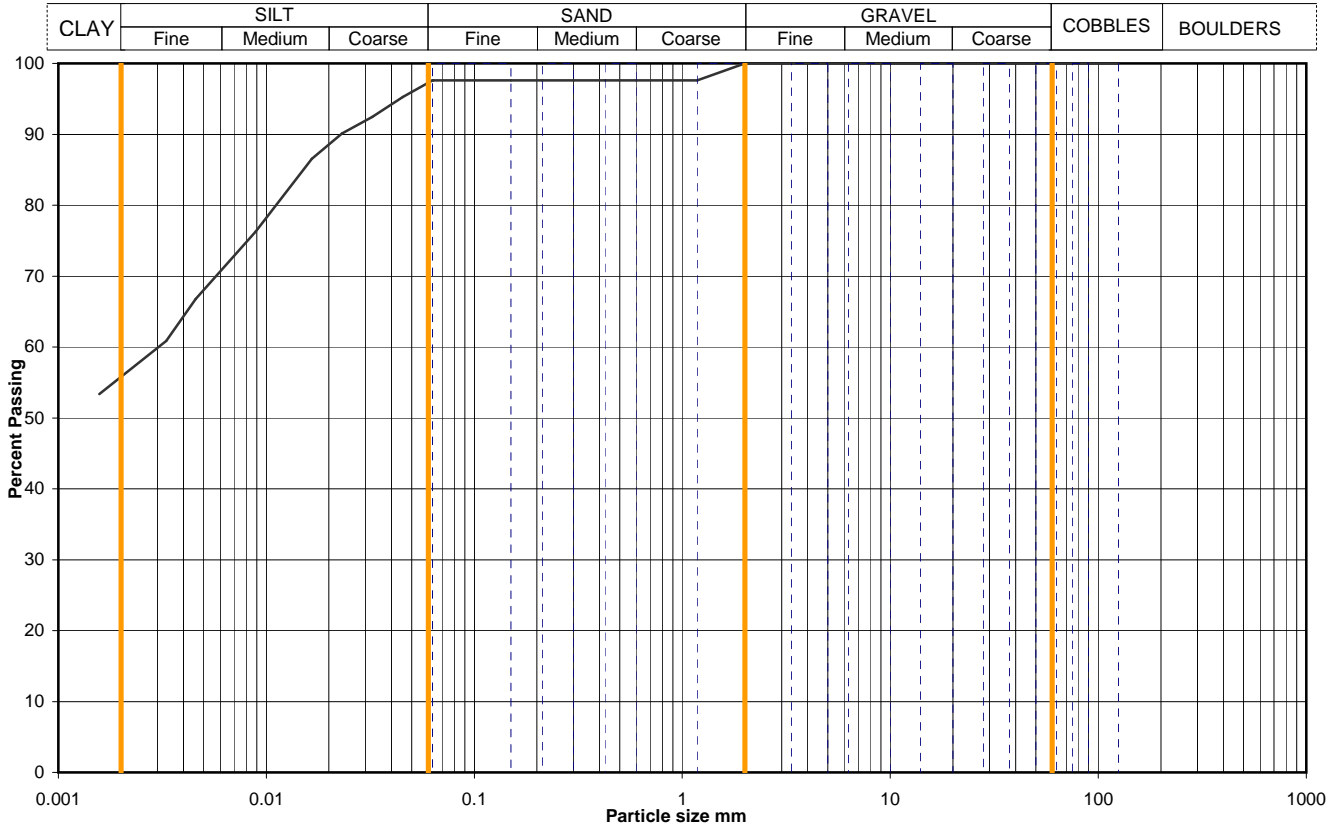


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Figure
PSD 11

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	54.80
			Samp No	18
			Type	CS
			ID	ESGA0012-10201008240000000382
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	98
90	100	0.0453	95
75	100	0.0324	92
63	100	0.0231	90
50	100	0.0165	87
37.5	100	0.0089	76
28	100	0.0046	67
20	100	0.0033	61
14	100	0.0016	53
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	98		
0.600	98		
0.425	98		
0.300	98		
0.212	98		
0.150	98		
0.063	98		
		Particle density, Mg/m ³	
		2.62 measured	
		Dry mass of sample, kg	
		0.0	

Soil description	Firm to stiff brownish grey slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		3	3
		41	41
		56	56

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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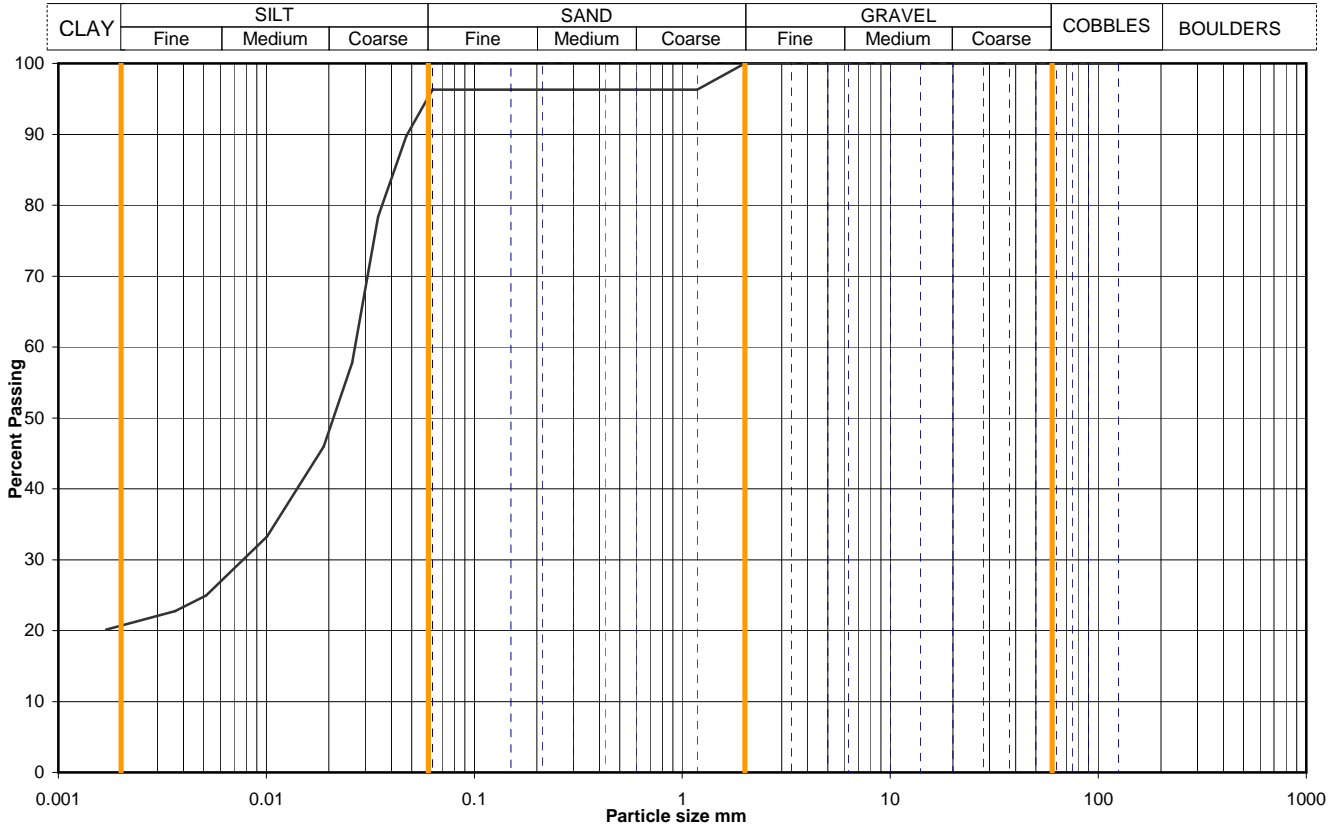


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Figure
PSD 12

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	58.50
			Samp No	20
			Type	CS
			ID	ESGA0012-10201008240000000383
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	96
90	100	0.0471	90
75	100	0.0345	78
63	100	0.0259	58
50	100	0.0189	46
37.5	100	0.0101	33
28	100	0.0051	25
20	100	0.0037	23
14	100	0.0017	20
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	96		
0.600	96		
0.425	96		
0.300	96		
0.212	96		
0.150	96		
0.063	96		
		Particle density, Mg/m ³	
		2.63 measured	
		Dry mass of sample, kg	
		0.0	

Soil description	Soft brownish grey slightly sandy silty CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		5	5
		74	74
*<60mm values to aid description only		21	21

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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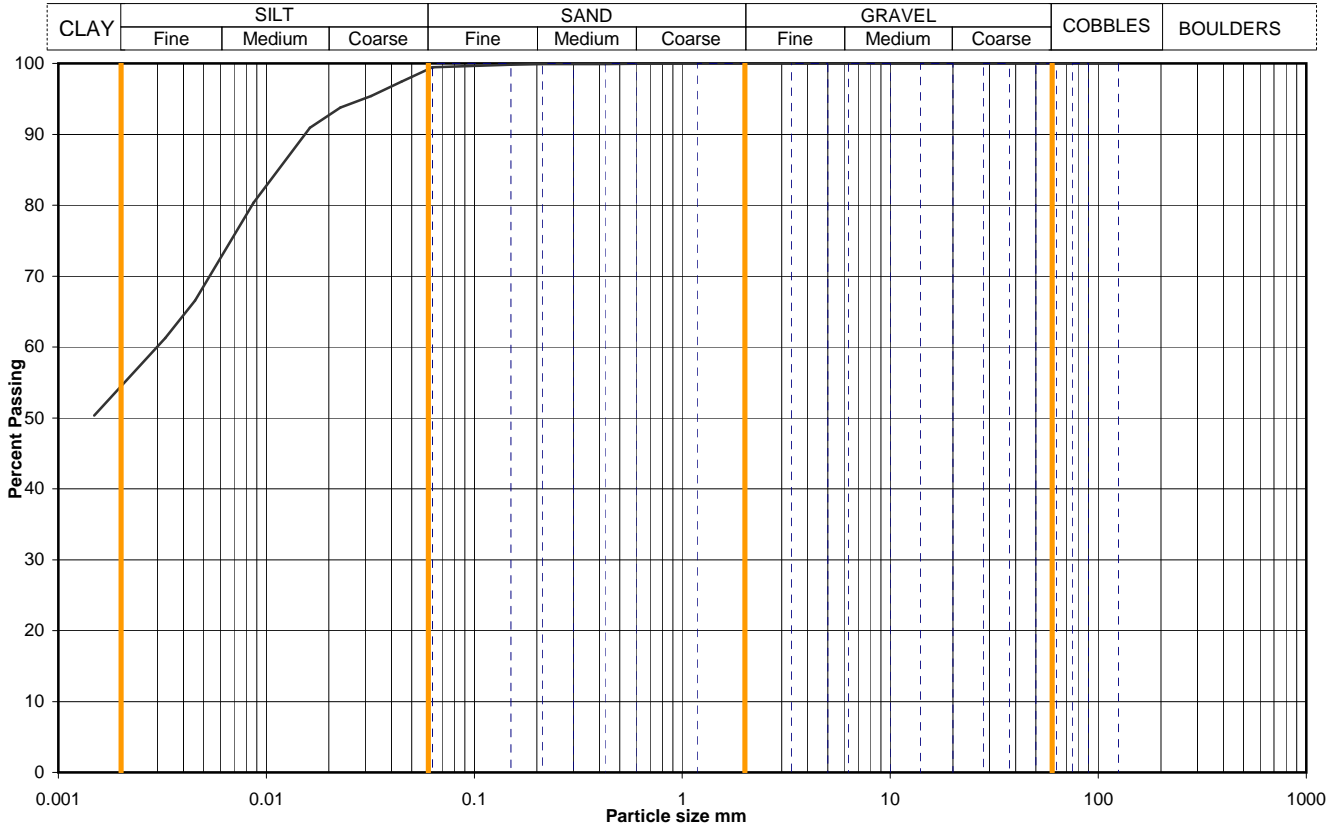


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Figure
PSD 13

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	61.75
			Samp No	21
			Type	CS
			ID	ESGA0012-10201008240000000384
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	99
90	100	0.0447	97
75	100	0.0319	95
63	100	0.0227	94
50	100	0.0162	91
37.5	100	0.0087	80
28	100	0.0045	67
20	100	0.0033	61
14	100	0.0015	50
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100	Particle density, Mg/m ³	
0.425	100	2.65 assumed	
0.300	100	Dry mass of sample, kg	
0.212	100	1.4	
0.150	100		
0.063	99		

Soil description	Firm to stiff brownish grey slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		1	1
		45	45
*<60mm values to aid description only		54	54

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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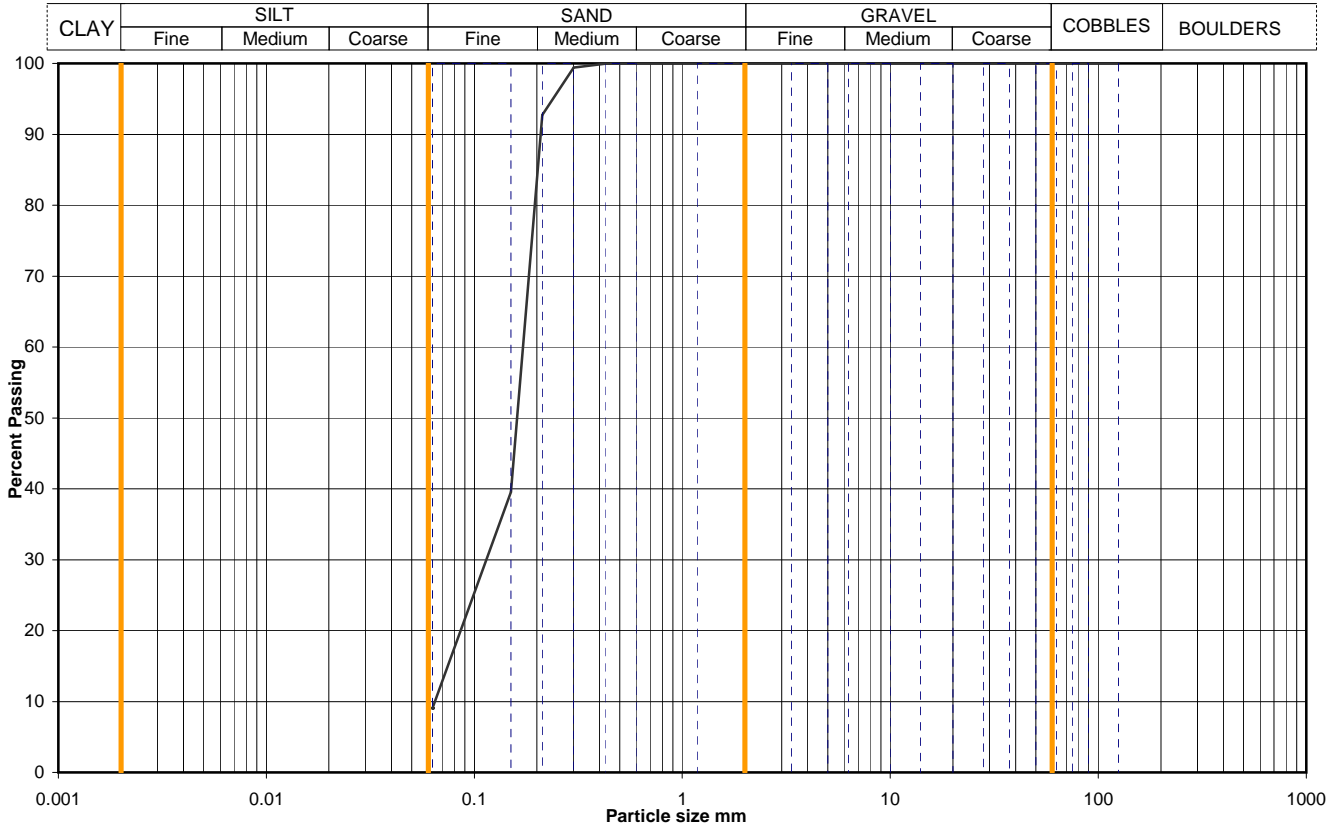


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Figure
PSD 14

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	65.10
			Samp No	22
			Type	CS
			ID	ESGA0012-10201008240000000385
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100		
0.425	100		
0.300	99		
0.212	93		
0.150	40		
0.063	9		
		Dry mass of sample, kg	
		1.2	

Soil description	Brownish grey silty SAND.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		91	91
		silt+clay =	9
*<60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	3
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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Sept 08

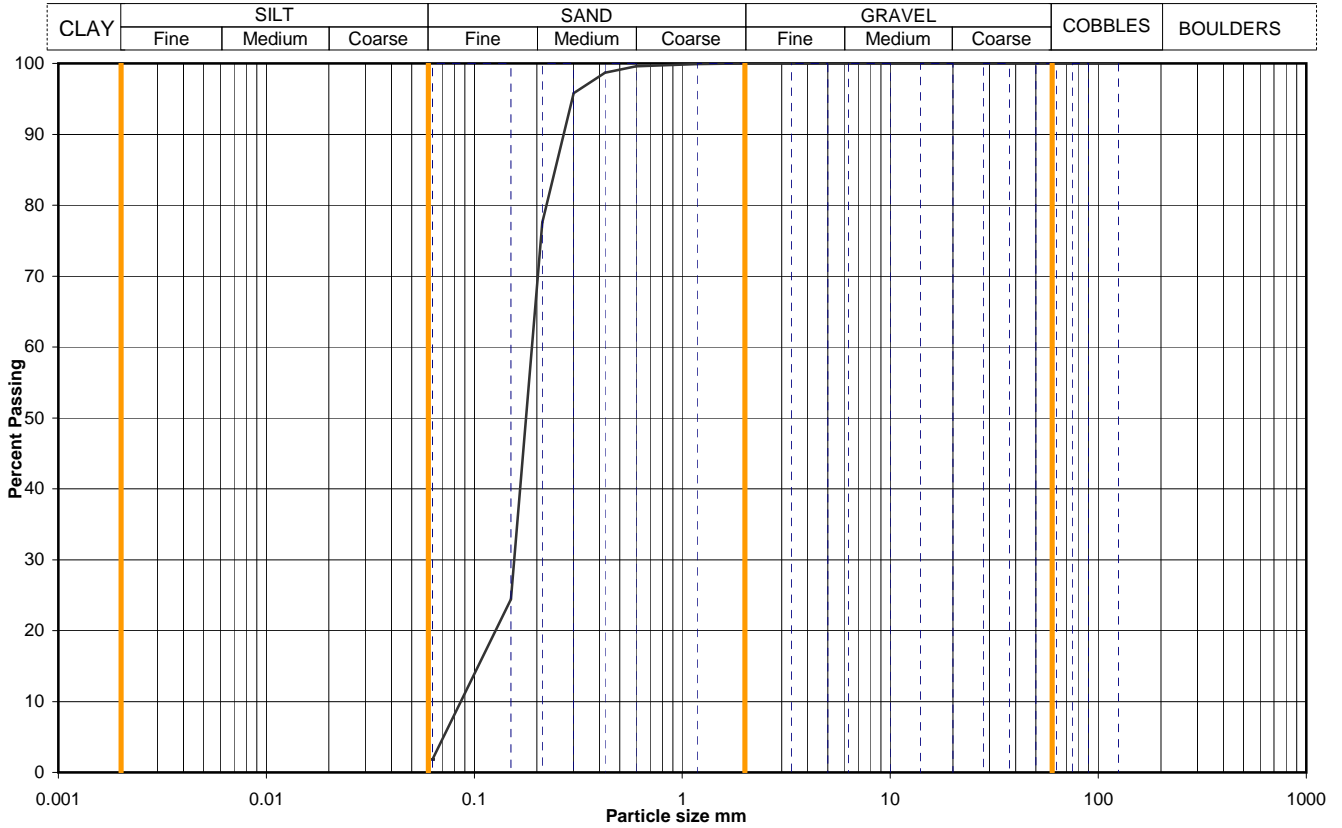


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Figure
PSD 15

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	70.90		
			Samp No	23	Type	CS
			ID	ESGA0012-1020100824000000386		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100		
0.425	99		
0.300	96		
0.212	78		
0.150	24		
0.063	2		
		Dry mass of sample, kg	
		2.1	

Soil description	Light greyish brown SAND.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions <small>*<60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	98	98
	Silt	silt+clay =	
	Clay	2	2

Uniformity Coefficient	D_{60} / D_{10}	2
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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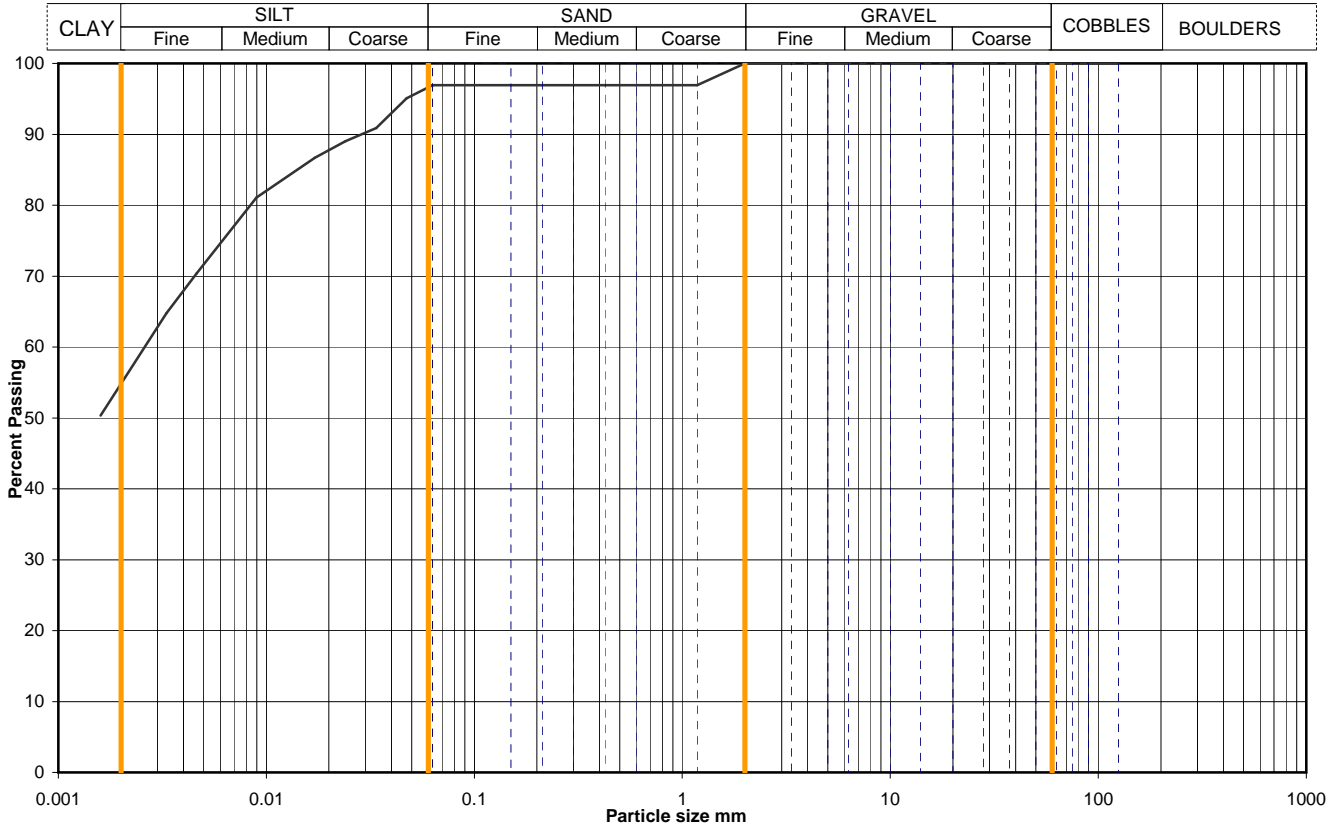


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Figure
PSD 16

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	74.00
			Samp No	24
			Type	CS
			ID	ESGA0012-10201008240000000387
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	97
90	100	0.0472	95
75	100	0.0338	91
63	100	0.0240	89
50	100	0.0171	87
37.5	100	0.0090	81
28	100	0.0046	70
20	100	0.0033	65
14	100	0.0016	50
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	97		
0.600	97		
0.425	97		
0.300	97		
0.212	97		
0.150	97		
0.063	97		
		Particle density, Mg/m ³	
		2.65 assumed	
		Dry mass of sample, kg	
		0.0	

Soil description	Firm to stiff dark grey slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		3	3
		42	42
*<60mm values to aid description only		55	55

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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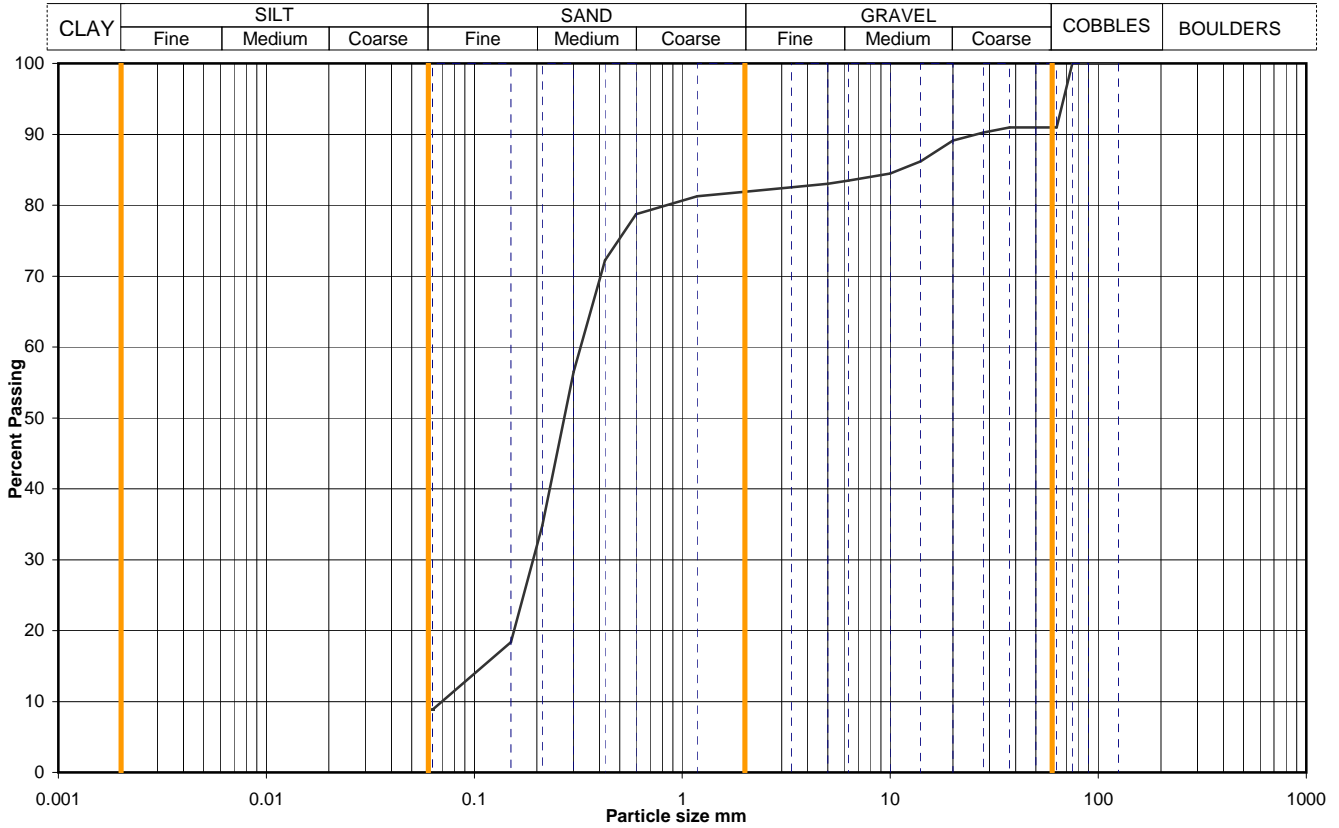


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Figure
PSD 17

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	1.90
			Samp No	7
			Type	U
			ID	ESGA0012-10201010180000002065
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	91		
50	91		
37.5	91		
28	90		
20	89		
14	86		
10	84		
6.3	83		
5.0	83		
3.35	83		
2.00	82		
1.18	81		
0.600	79		
0.425	72		
0.300	57		
0.212	35		
0.150	18		
0.063	9		
		Dry mass of sample, kg	
		6.4	

Soil description	Greyish brown slightly clayey gravelly SAND with 1 cobble.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<math><60\text{mm}</math>
		9	0
		9	10
		73	80
		silt+clay =	9
*<math><60\text{mm}</math> values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	5
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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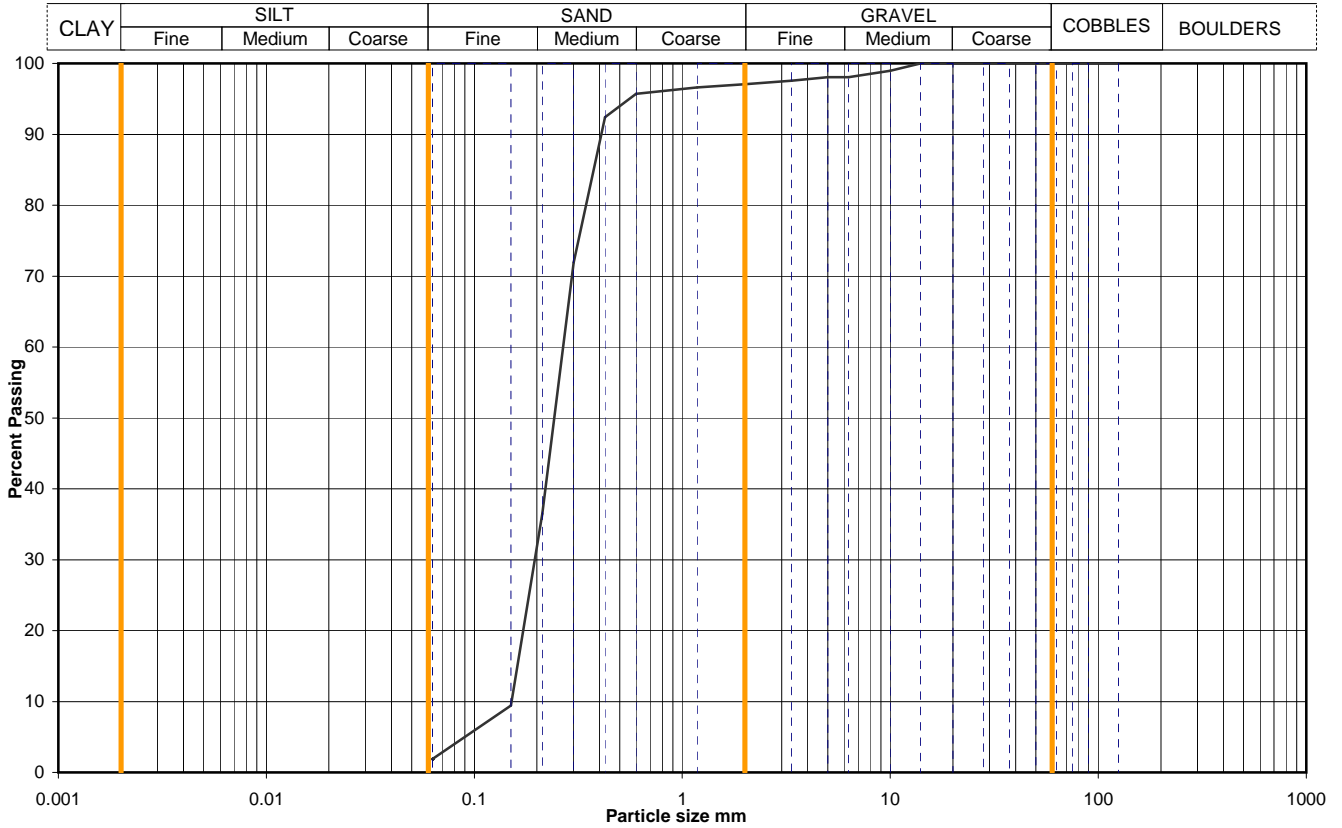


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Figure
PSD 19

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2UA
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	10.80
			Samp No	25
			Type	U
			ID	ESGA0012-10201010190000002168
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	98		
5.0	98		
3.35	98		
2.00	97		
1.18	97		
0.600	96		
0.425	92		
0.300	72		
0.212	36		
0.150	9		
0.063	2		
		Dry mass of sample, kg	
		5.9	

Soil description	Light brown slightly gravelly SAND.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		3	3
		95	95
		silt+clay =	2
*<60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	2
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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Sept 08

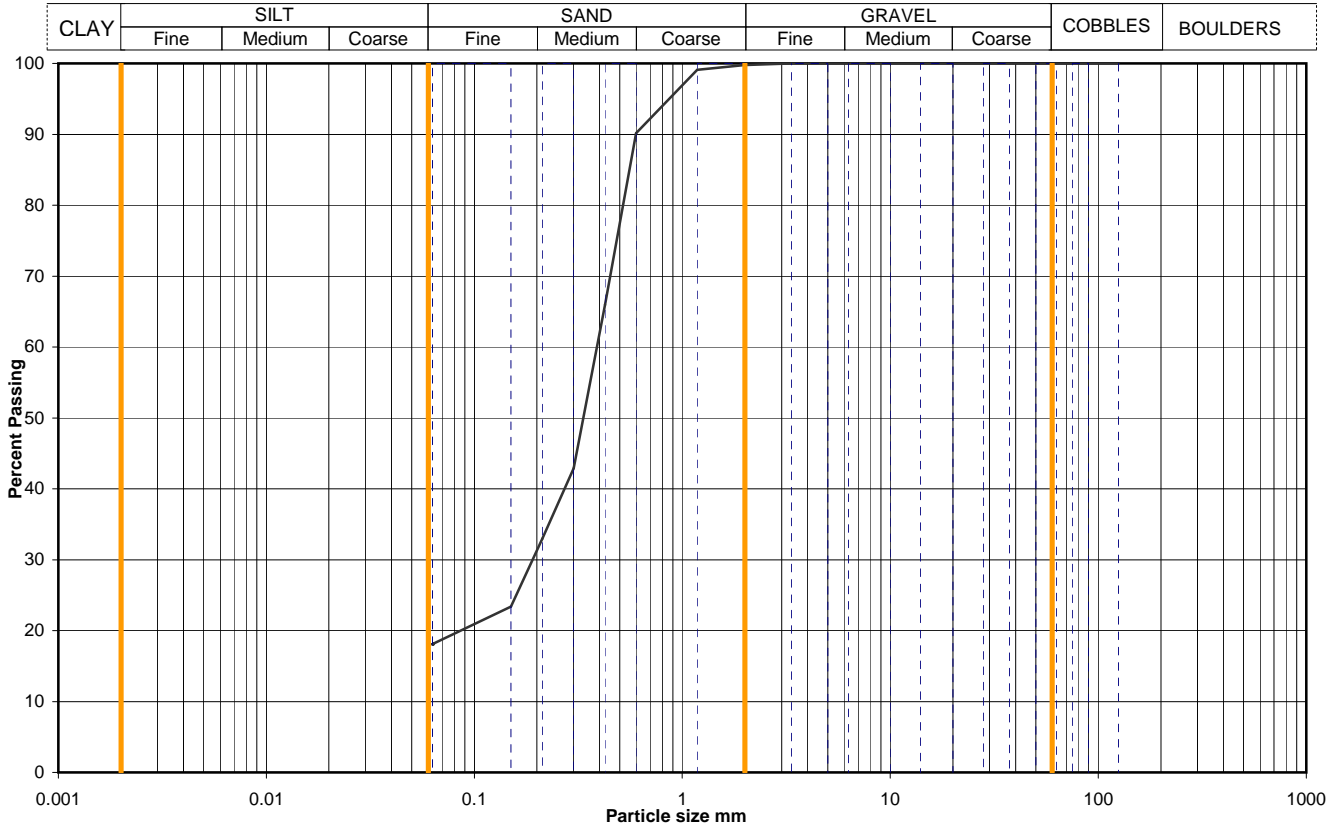


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Figure
PSD 20

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	15.00		
			Samp No	37	Type	U
			ID	ESGA0012-10201010190000002180		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	99		
0.600	90		
0.425	66		
0.300	43		
0.212	33		
0.150	23		
0.063	18		
		Dry mass of sample, kg	
		2.8	

Soil description	Dark grey silty SAND with rare shell fragments.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		82	82
		silt+clay =	18
*<60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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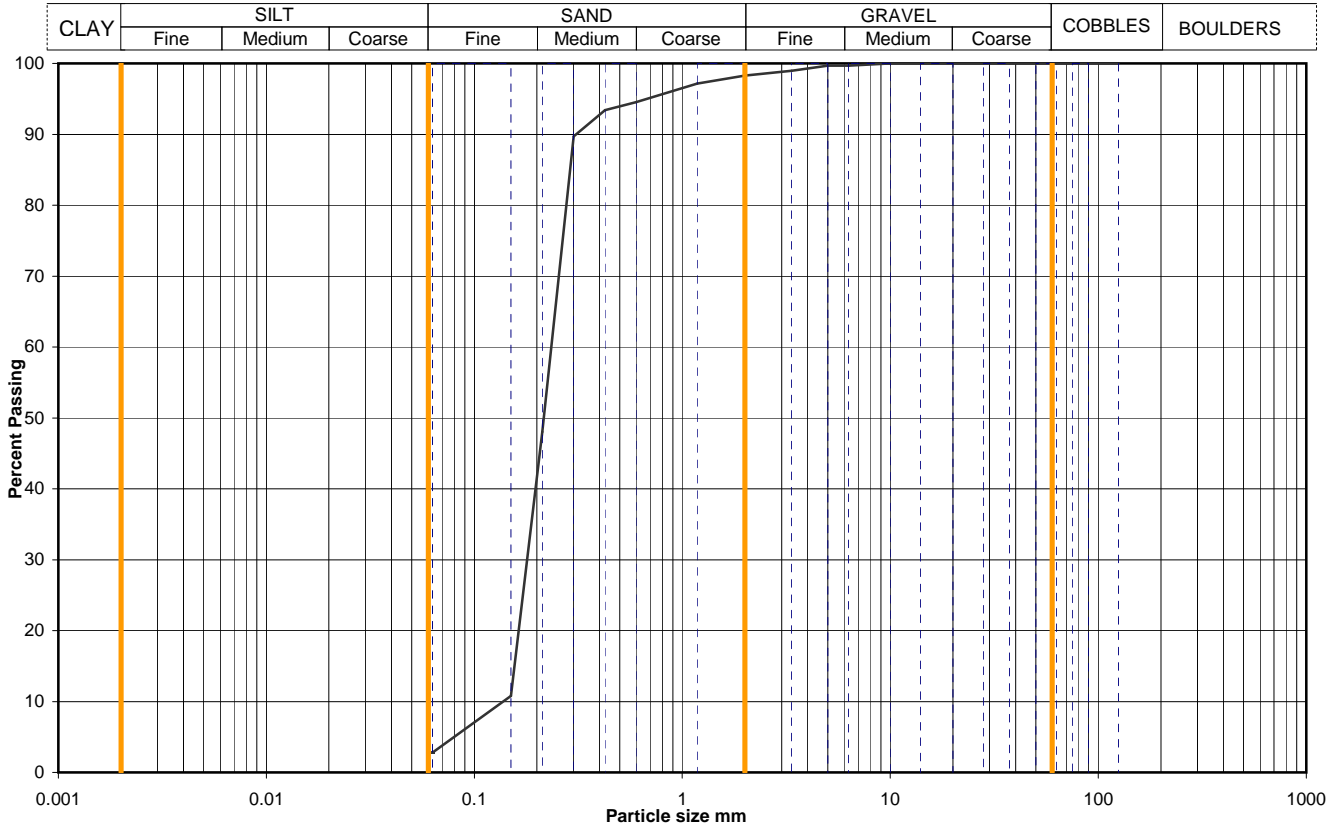


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Figure
PSD 21

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2UA
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	19.90
			Samp No	51
			Type	U
			ID	ESGA0012-10201010210000002295
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
3.35	99		
2.00	98		
1.18	97		
0.600	95		
0.425	93		
0.300	90		
0.212	48		
0.150	11		
0.063	3		

Dry mass of sample, kg	
3.0	

Soil description	Grey and light grey slightly gravelly SAND with occasional shell fragments.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		2	2
		95	95
		silt+clay =	3

Uniformity Coefficient	D_{60} / D_{10}	2
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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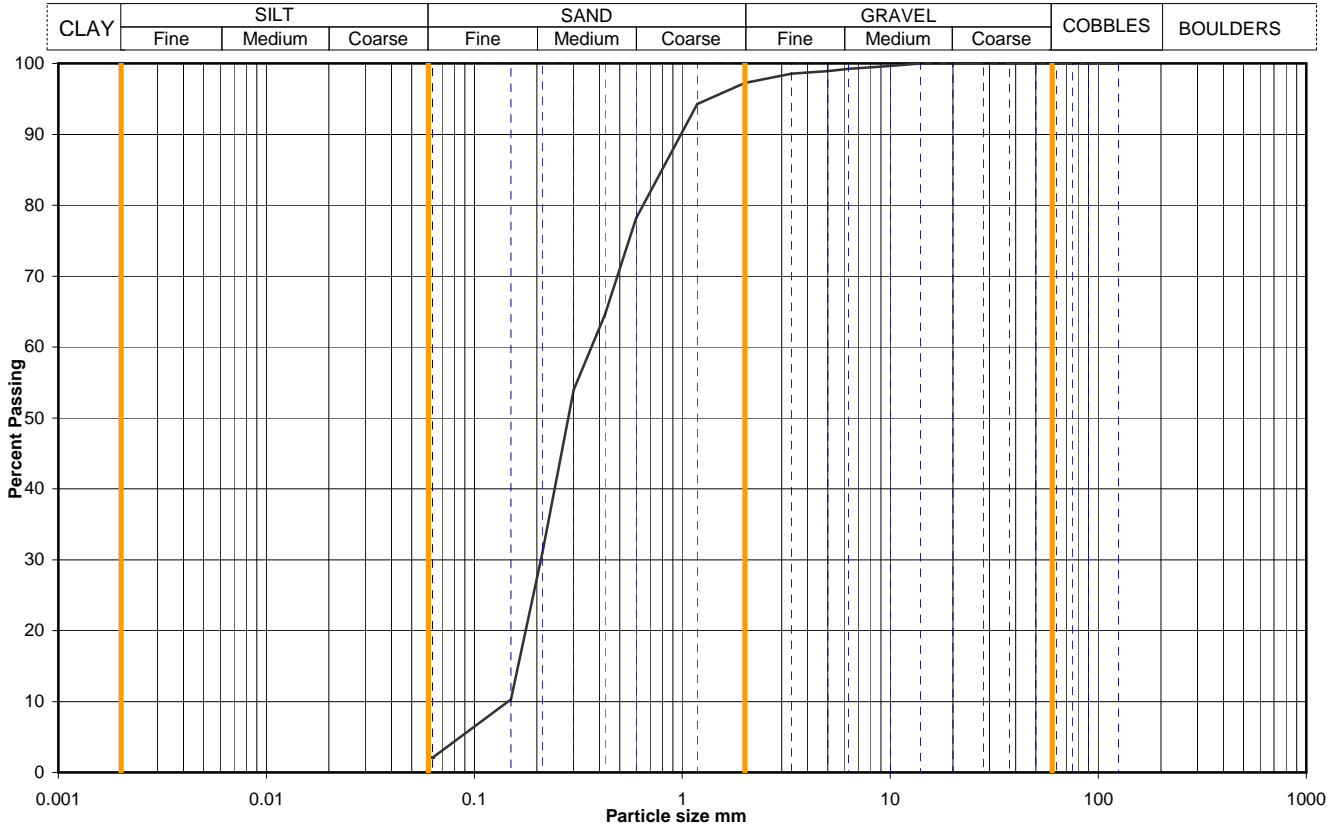


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Figure
PSD 22

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	28.30		
			Samp No	69	Type	U
			ID	ESGA0012-10201010210000002320		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5.0	99		
3.35	99		
2.00	97		
1.18	94		
0.600	78		
0.425	65		
0.300	54		
0.212	31		
0.150	10		
0.063	2		

Dry mass of sample, kg	3.4
------------------------	-----

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions <small>*<60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	3	3
	Silt	95	95
	Clay	silt+clay =	2

Uniformity Coefficient	D_{60} / D_{10}	3
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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Sept 08

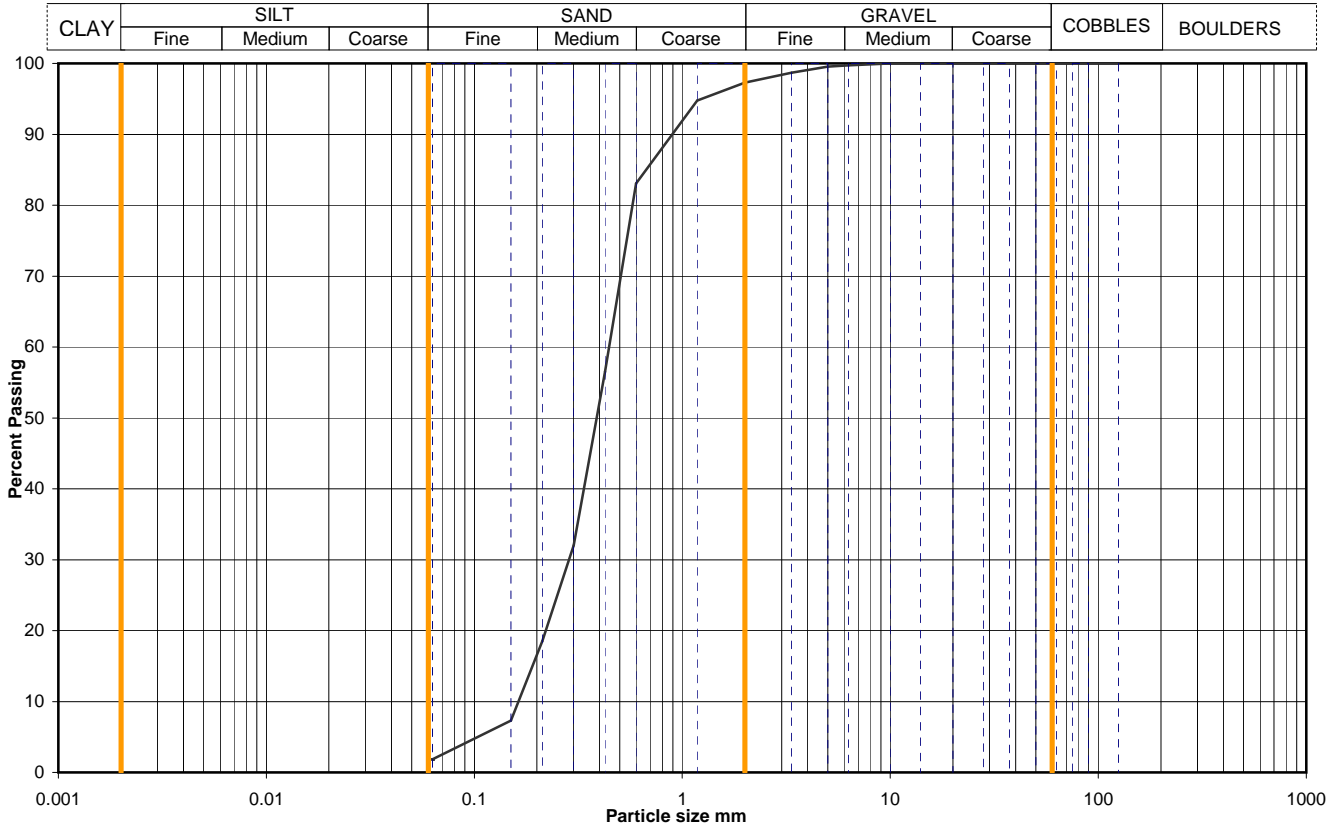


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Figure
PSD 23

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2UA
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	37.40
			Samp No	90
			Type	U
			ID	ESGA0012-10201010210000002345
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
3.35	99		
2.00	97		
1.18	95		
0.600	83		
0.425	57		
0.300	32		
0.212	19		
0.150	7		
0.063	2		
		Dry mass of sample, kg	
		4.1	

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		3	3
		95	95
		silt+clay =	2
*<60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	3
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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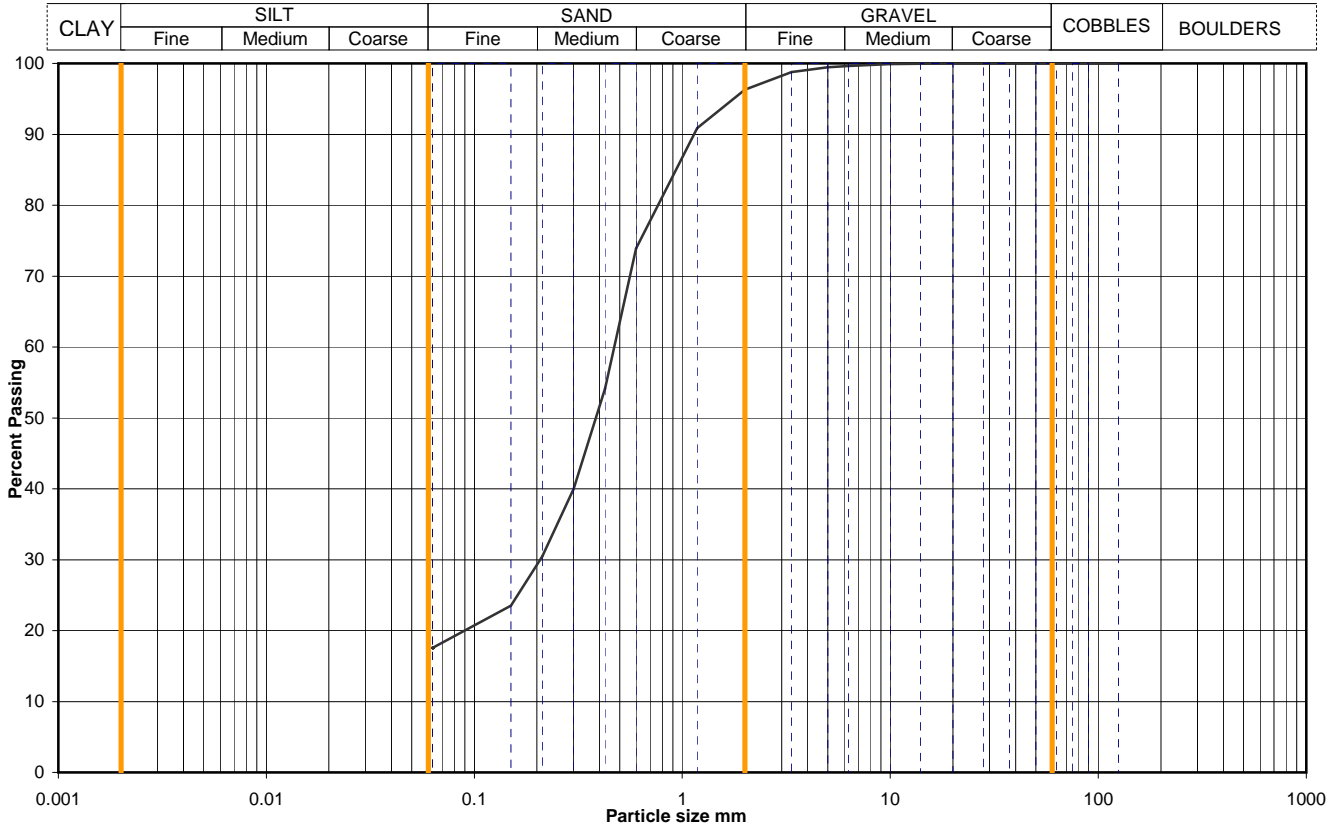


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Figure
PSD 24

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2UA
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	40.20
			Samp No	98
			Type	U
			ID	ESGA0012-10201010210000002290
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	99		
3.35	99		
2.00	96		
1.18	91		
0.600	74		
0.425	54		
0.300	40		
0.212	30		
0.150	23		
0.063	18		
		Dry mass of sample, kg	
		3.4	

Soil description	Dark grey silty SAND with rare shell fragments.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		4	4
		79	79
		silt+clay =	17
*<60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
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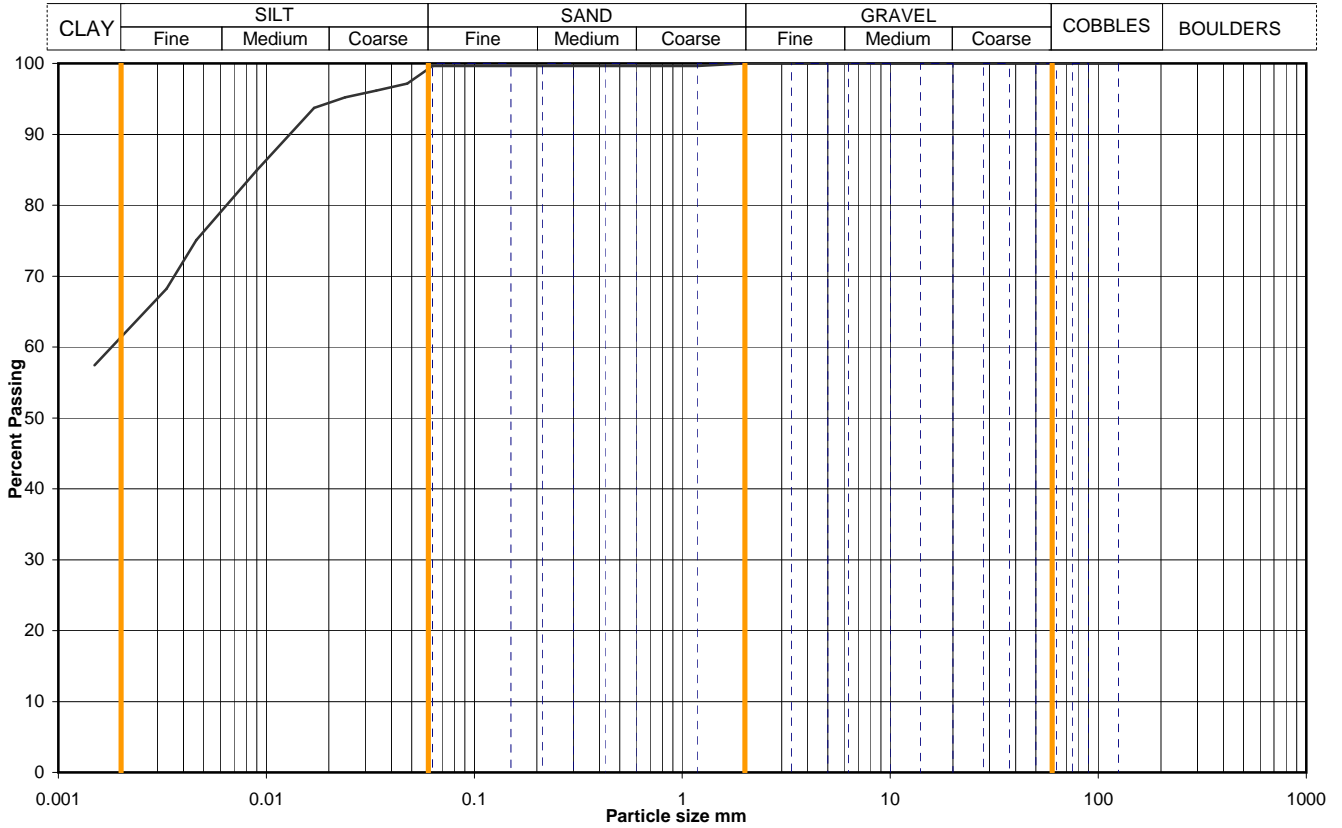


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Figure
PSD 25

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_4
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	53.50
			Samp No	13
			Type	CS
			ID	ESGA0012-10201007260000000093
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	100
90	100	0.0475	97
75	100	0.0337	96
63	100	0.0239	95
50	100	0.0170	94
37.5	100	0.0090	85
28	100	0.0046	75
20	100	0.0033	68
14	100	0.0015	57
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100		
0.425	100		
0.300	100		
0.212	100		
0.150	100		
0.063	100		
		Particle density, Mg/m ³	
		2.67 measured	
		Dry mass of sample, kg	
		0.0	

Soil description	Very stiff greyish brown CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		1	1
		38	38
*<60mm values to aid description only		61	61

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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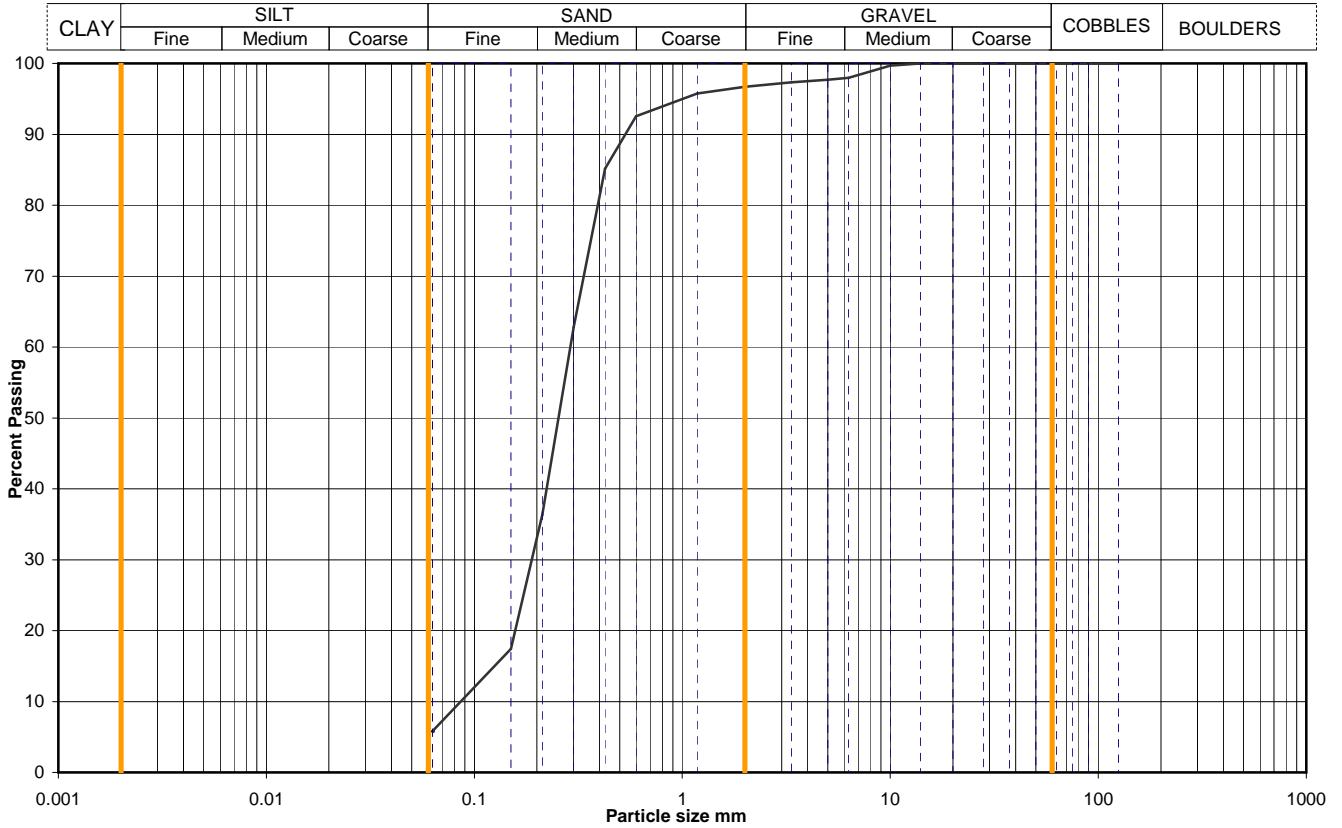


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Figure
PSD 26

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_4U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	3.15
			Samp No	10
			Type	U
			ID	ESGA0012-10201009100000000574
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	98		
5.0	98		
3.35	97		
2.00	97		
1.18	96		
0.600	93		
0.425	85		
0.300	63		
0.212	36		
0.150	17		
0.063	6		
		Dry mass of sample, kg	
		4.4	

Soil description	Orangish brown slightly gravelly SAND with occasional shell fragments and clay pockets.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions <small>*<60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
		0	0
	Gravel	3	3
		Sand	91
	Silt	silt+clay =	
Clay	6	6	

Uniformity Coefficient	D_{60} / D_{10}	3
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
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Sept 08

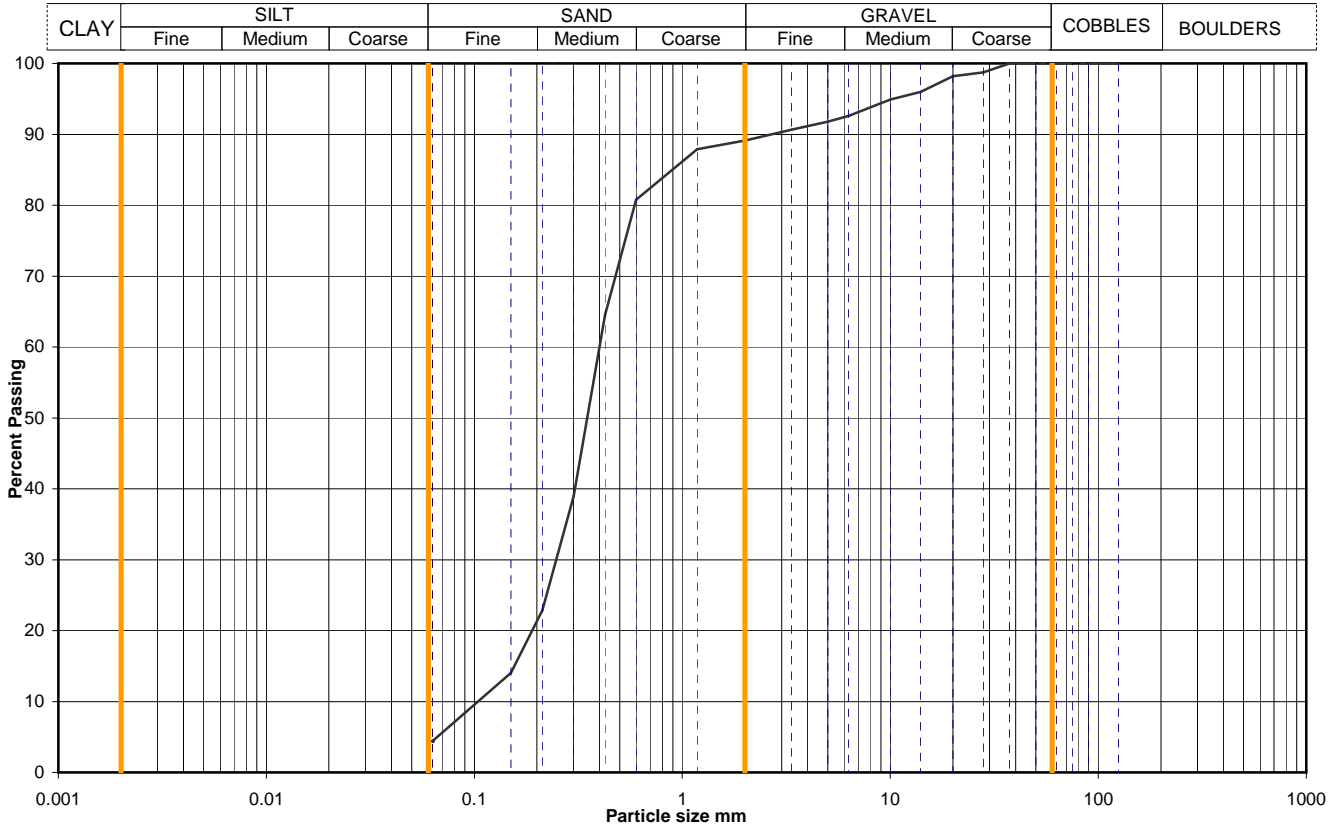


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Figure
PSD 27

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_4U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	4.45
			Samp No	14
			Type	U
			ID	ESGA0012-10201009100000000578
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	99		
20	98		
14	96		
10	95		
6.3	93		
5.0	92		
3.35	91		
2.00	89		
1.18	88		
0.600	81		
0.425	65		
0.300	39		
0.212	23		
0.150	14		
0.063	4		
		Dry mass of sample, kg	
		5.9	

Soil description	Orangish brown gravelly SAND.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		11	11
		85	85
		silt+clay =	4

Uniformity Coefficient	D_{60} / D_{10}	4
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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SLR 2,9
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Sept 08

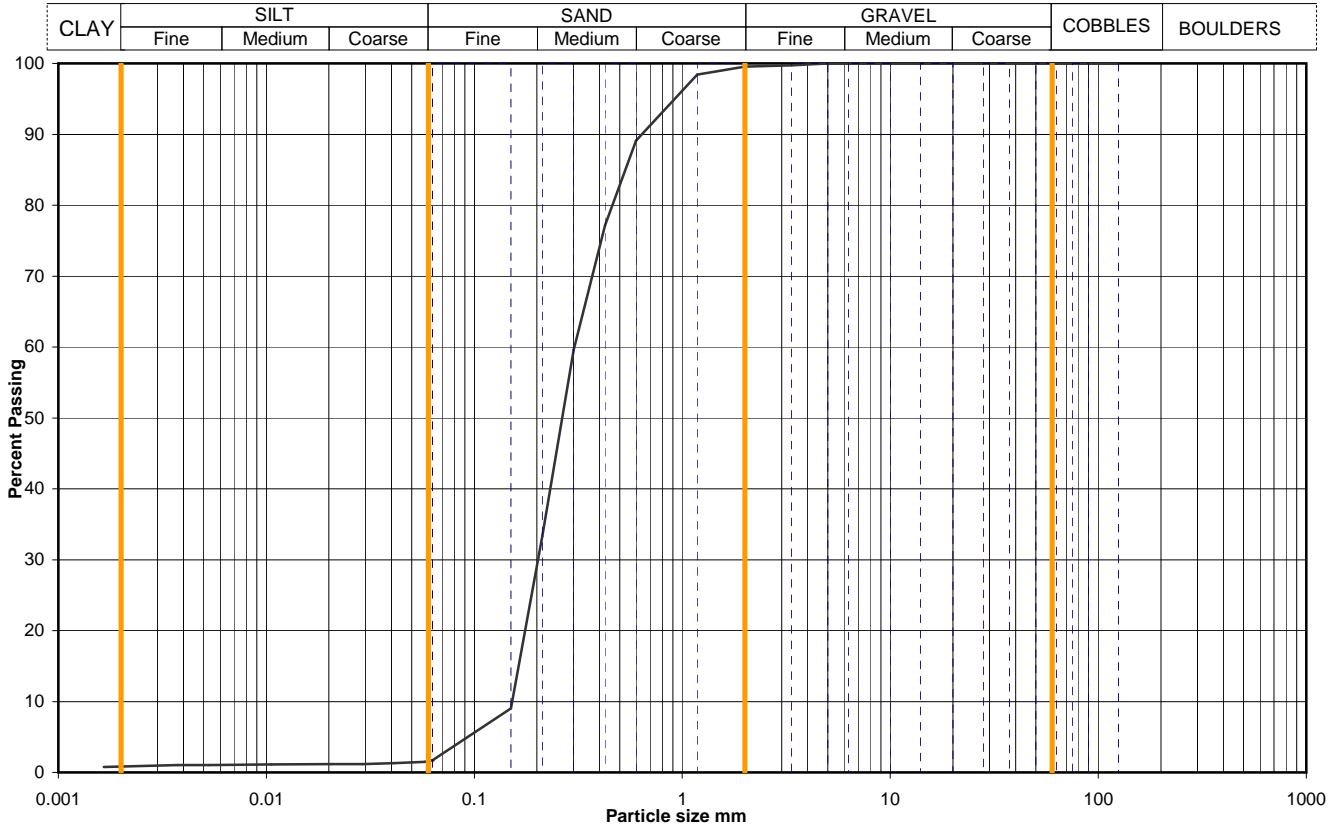


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Figure
PSD 28

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_4U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	13.55
			Samp No	46
			Type	U
			ID	ESGA0012-10201009100000000610
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	2
90	100	0.0577	1
75	100	0.0409	1
63	100	0.0290	1
50	100	0.0205	1
37.5	100	0.0106	1
28	100	0.0053	1
20	100	0.0038	1
14	100	0.0017	1
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	98		
0.600	89		
0.425	77		
0.300	60		
0.212	33		
0.150	9		
0.063	2		

Particle density, Mg/m ³	2.65 measured
Dry mass of sample, kg	2.0

Soil description	Stiff brownish grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		98	98
		1	1
*<60mm values to aid description only		1	1

Uniformity Coefficient	D_{60} / D_{10}	2
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

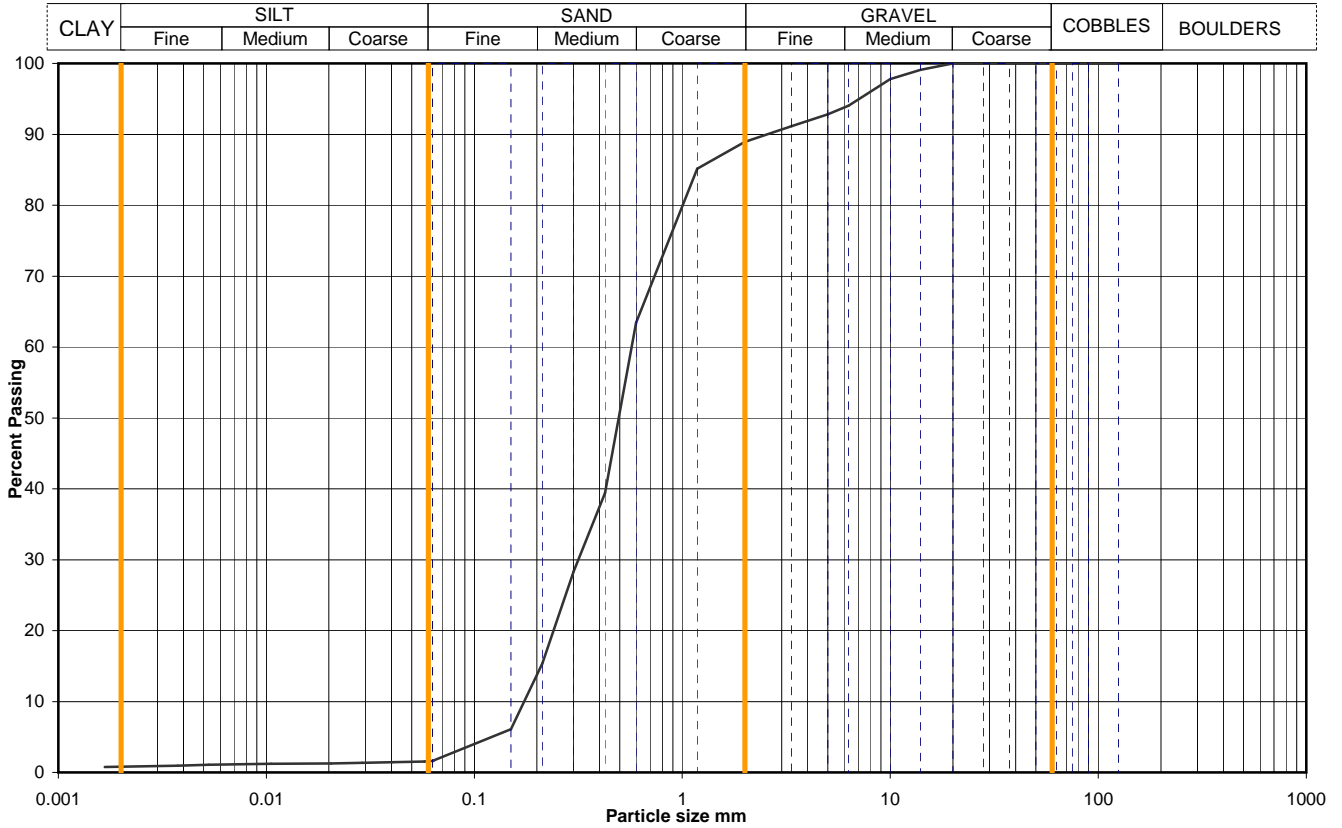


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Figure
PSD 29

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_4U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	22.00
			Samp No	71
			Type	U
			ID	ESGA0012-10201009130000000658
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	2
90	100	0.0575	2
75	100	0.0408	1
63	100	0.0289	1
50	100	0.0204	1
37.5	100	0.0106	1
28	100	0.0053	1
20	100	0.0038	1
14	99	0.0017	1
10	98		
6.3	94		
5.0	93		
3.35	91		
2.00	89		
1.18	85		
0.600	63		
0.425	39		
0.300	28		
0.212	15		
0.150	6		
0.063	2		

Particle density, Mg/m ³ 2.65 measured	Dry mass of sample, kg 4.3
--	-------------------------------

Soil description	Stiff grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		11	11
		87	87
		1	1
*<60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	3
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

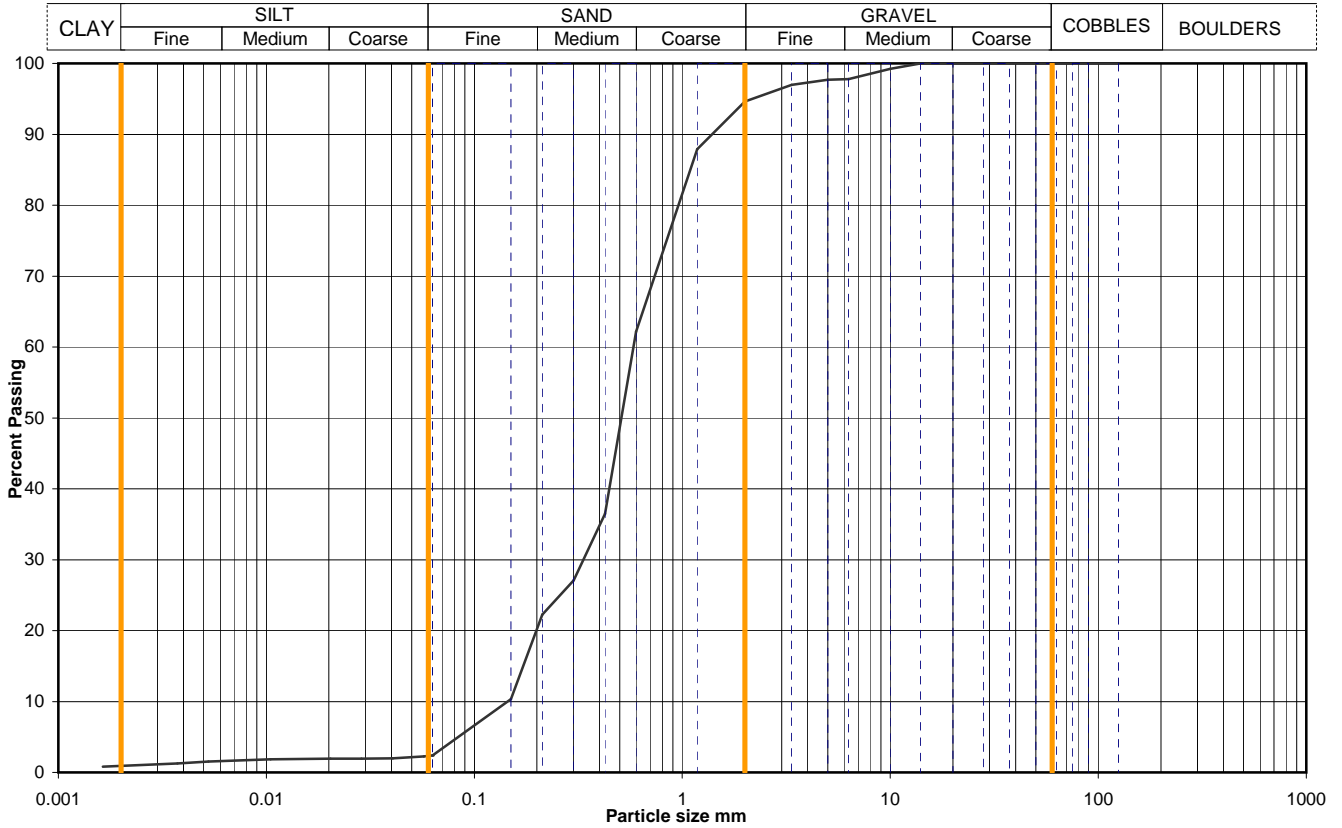


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Figure
PSD 30

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_4U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	30.50
			Samp No	97
			Type	U
			ID	ESGA0012-10201009140000000779
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	2
90	100	0.0572	2
75	100	0.0406	2
63	100	0.0287	2
50	100	0.0203	2
37.5	100	0.0105	2
28	100	0.0053	2
20	100	0.0037	1
14	100	0.0016	1
10	99		
6.3	98		
5.0	98		
3.35	97		
2.00	95		
1.18	88		
0.600	62		
0.425	36		
0.300	27		
0.212	22		
0.150	10		
0.063	2		

Particle density, Mg/m ³	2.67 measured
Dry mass of sample, kg	5.0

Soil description	Brownish grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		5	5
		92	92
		2	2
		1	1

Uniformity Coefficient	D_{60} / D_{10}	4
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

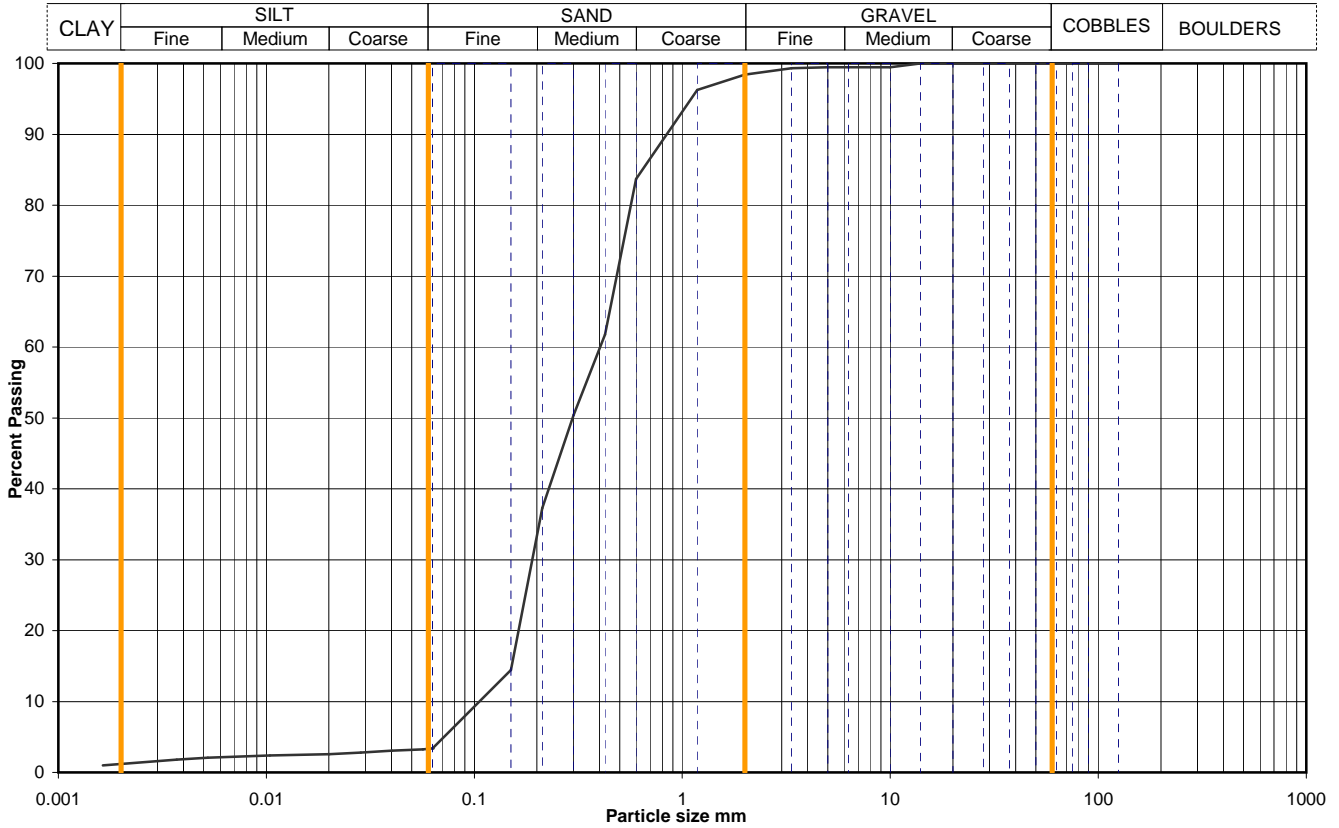


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Figure
PSD 31

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_4U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	37.70
			Samp No	111
			Type	U
			ID	ESGA0012-10201009150000000806
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	3
90	100	0.0566	3
75	100	0.0401	3
63	100	0.0284	3
50	100	0.0201	3
37.5	100	0.0104	2
28	100	0.0052	2
20	100	0.0037	2
14	100	0.0016	1
10	99		
6.3	99		
5.0	99		
3.35	99		
2.00	98		
1.18	96		
0.600	84		
0.425	62		
0.300	50		
0.212	37		
0.150	14		
0.063	3		

Particle density, Mg/m ³	2.69 measured
Dry mass of sample, kg	2.7

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		2	2
		95	95
		2	2
		1	1

Uniformity Coefficient	D_{60} / D_{10}	4
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

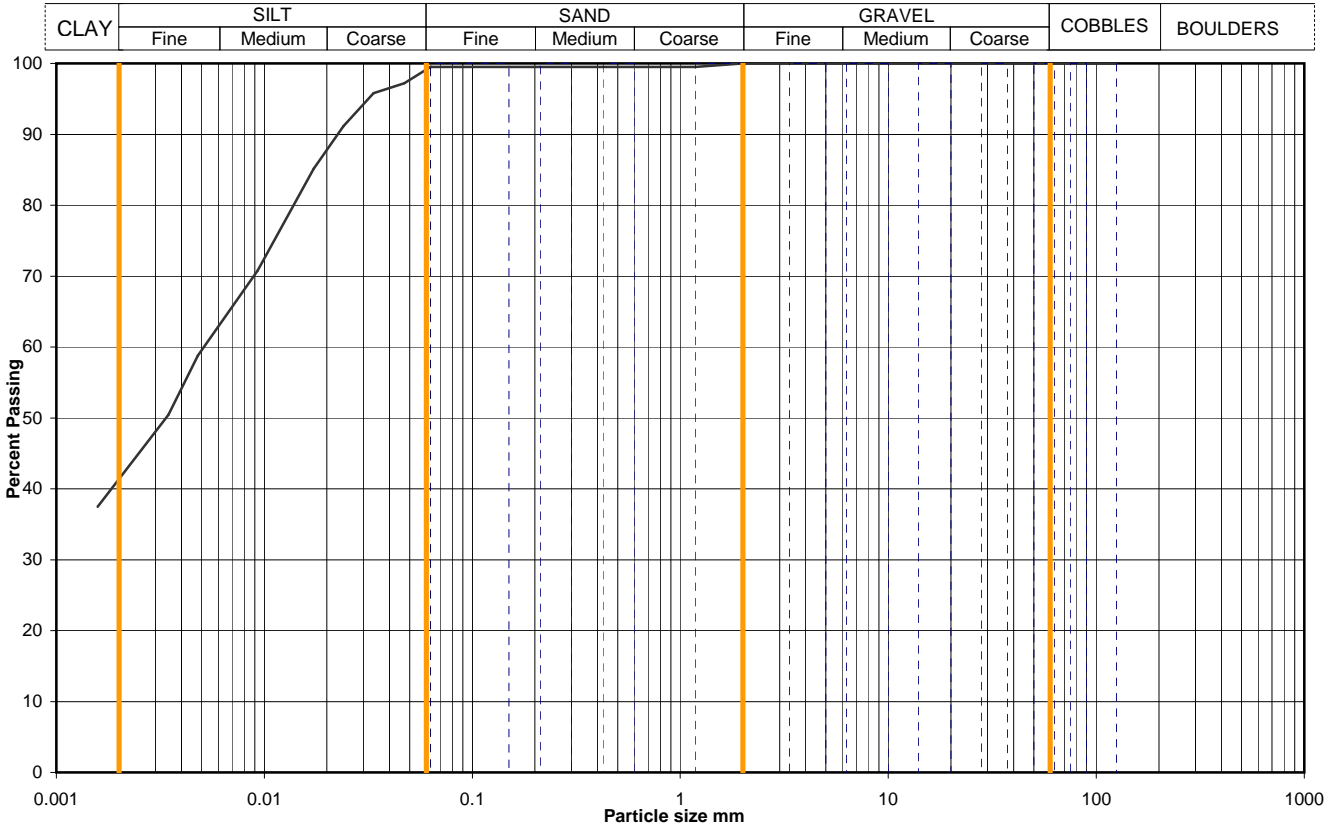


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Figure
PSD 32

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_5
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	49.70
			Samp No	14
			Type	CS
			ID	ESGA0012-10201007230000000018
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	99
90	100	0.0471	97
75	100	0.0335	96
63	100	0.0240	91
50	100	0.0173	85
37.5	100	0.0093	71
28	100	0.0048	59
20	100	0.0035	50
14	100	0.0016	37
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	99		
0.600	99		
0.425	99		
0.300	99		
0.212	99		
0.150	99		
0.063	99		
		Particle density, Mg/m ³	
		2.65 assumed	
		Dry mass of sample, kg	
		0.0	

Soil description	Very stiff brownish grey silty CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		1	1
		58	58
		41	41

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

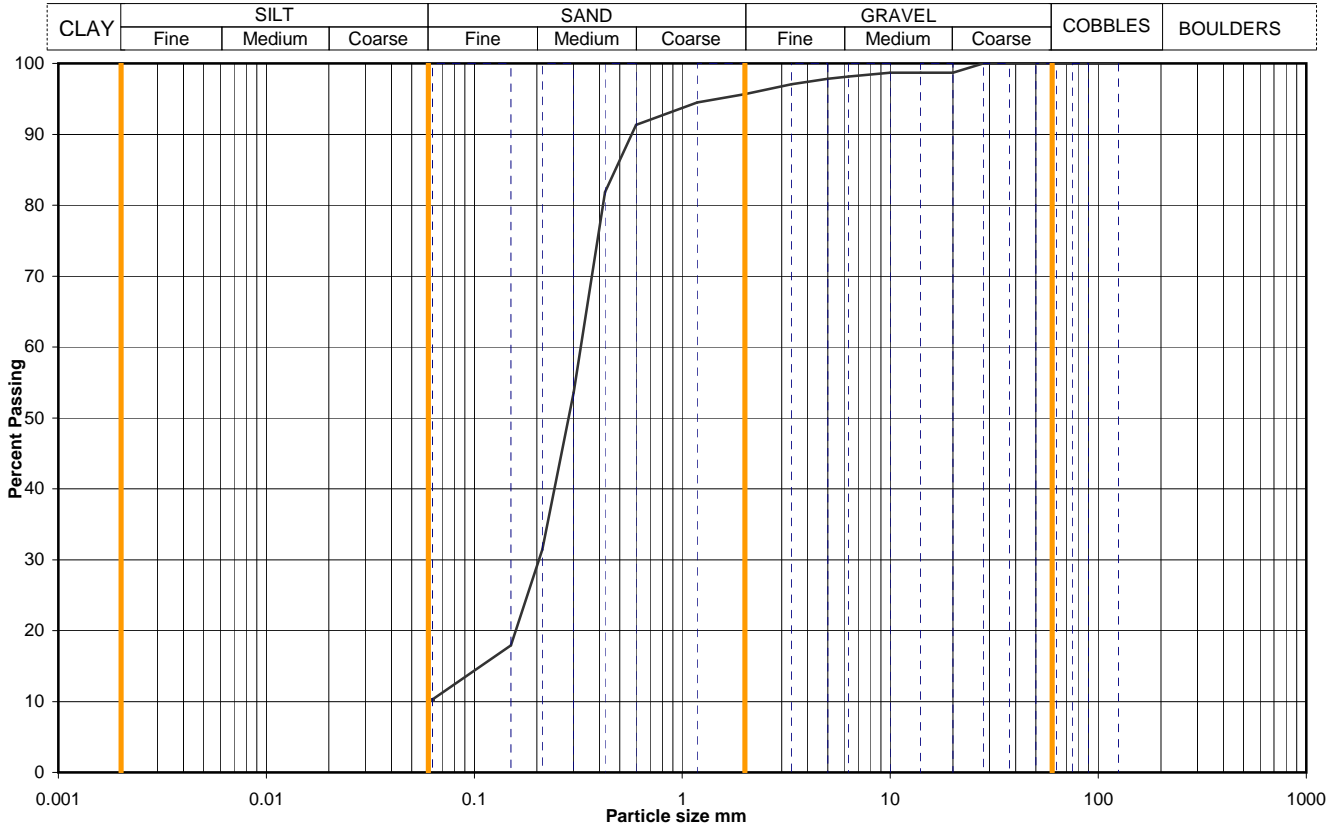


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Figure
PSD 33

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_5UA
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	1.80
			Samp No	5
			Type	U
			ID	ESGA0012-10201010010000001198
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	99		
10	99		
6.3	98		
5.0	98		
3.35	97		
2.00	96		
1.18	95		
0.600	91		
0.425	82		
0.300	54		
0.212	31		
0.150	18		
0.063	10		

Dry mass of sample, kg	2.0
------------------------	-----

Soil description	Brownish grey slightly gravelly silty SAND.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	* < 60mm
		0	0
		4	4
		85	85
		silt+clay =	11

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

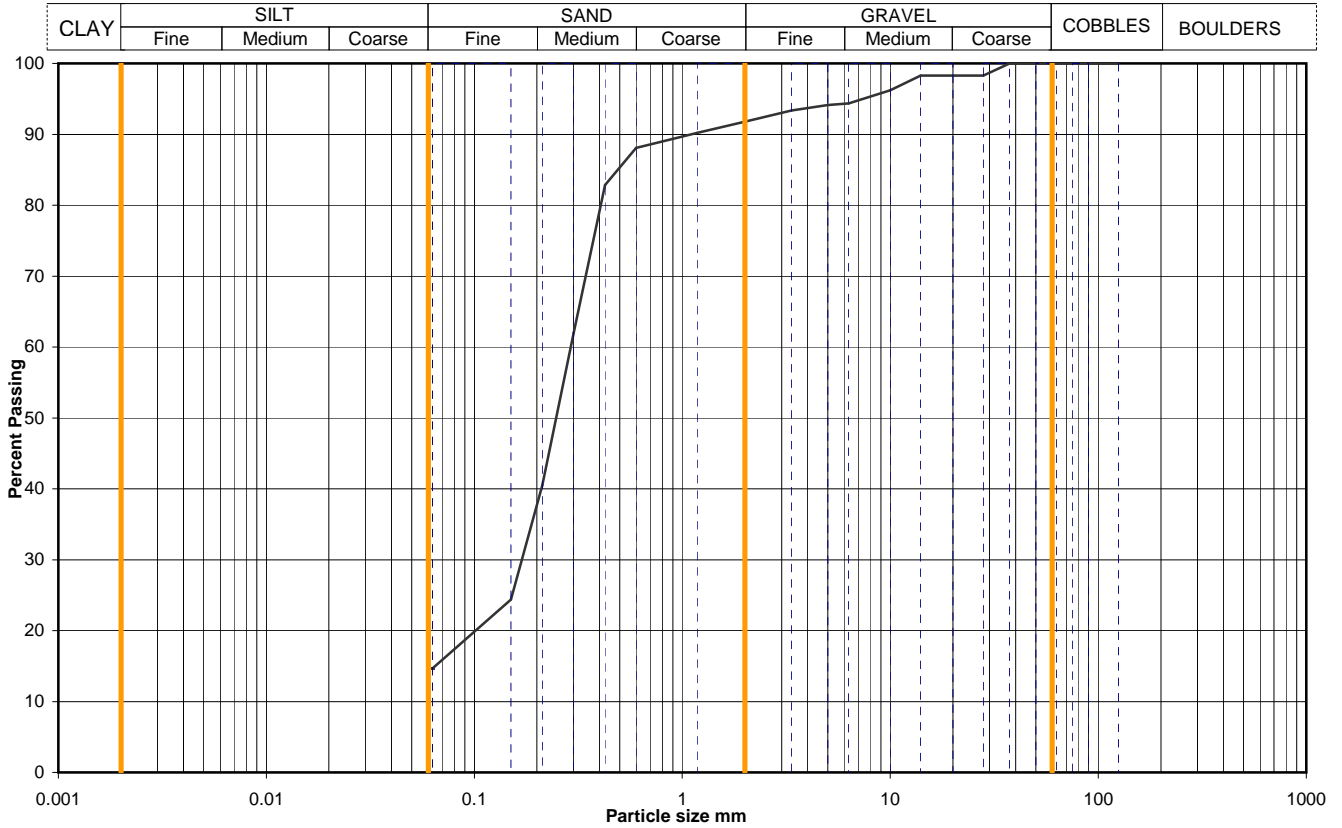


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Figure
PSD 34

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_5UB
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	2.70
			Samp No	5
			Type	U
			ID	ESGA0012-10201010010000001223
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	98		
20	98		
14	98		
10	96		
6.3	94		
5.0	94		
3.35	93		
2.00	92		
1.18	90		
0.600	88		
0.425	83		
0.300	62		
0.212	41		
0.150	24		
0.063	15		
		Dry mass of sample, kg	
		3.9	

Soil description	Firm to stiff brownish grey slightly sandy very gravelly CLAY with frequent rootlets.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	* <60mm
		0	0
		8	8
		77	77
		silt+clay =	15
* <60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

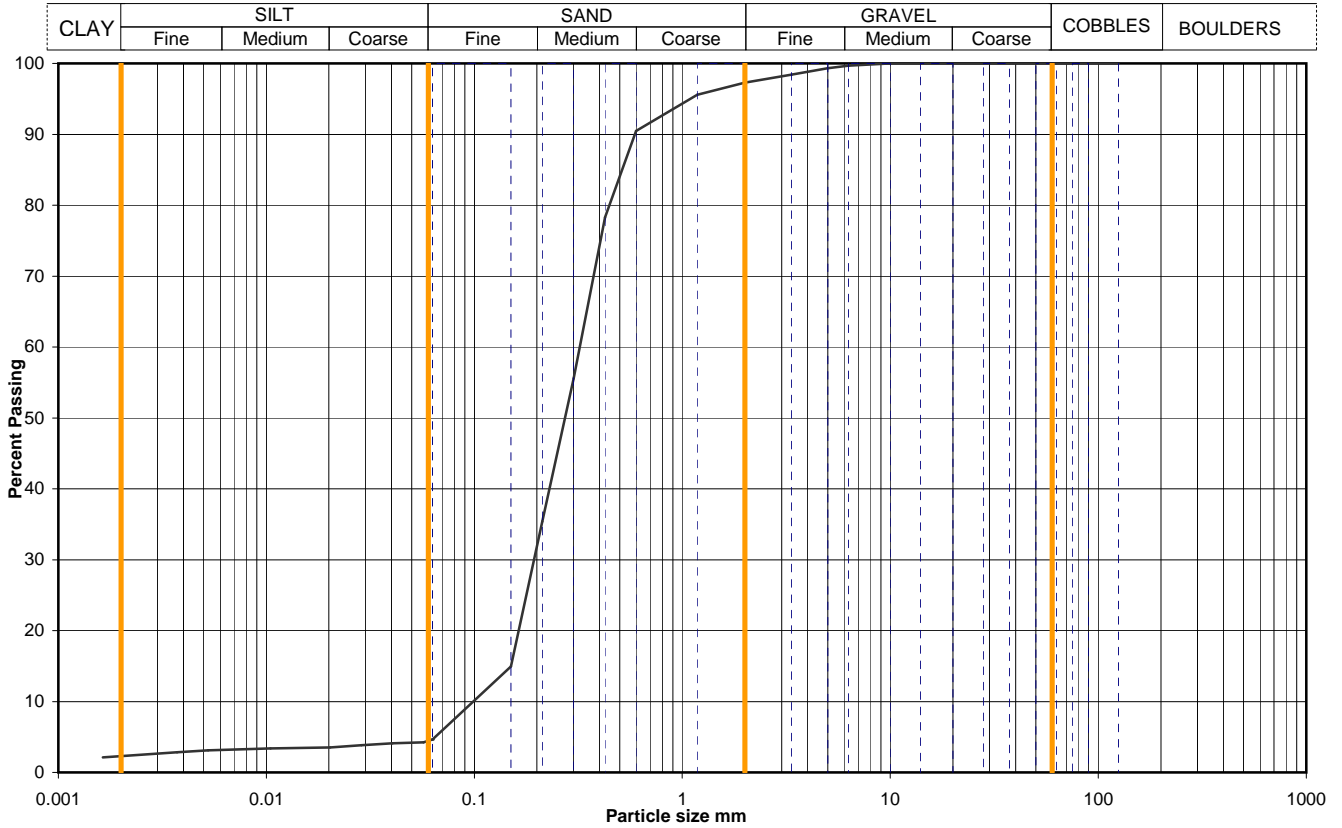


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Figure
PSD 35

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_5UB		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	14.60		
			Samp No	42	Type	U
			ID	ESGA0012-10201010010000001261		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	5
90	100	0.0571	4
75	100	0.0404	4
63	100	0.0286	4
50	100	0.0203	4
37.5	100	0.0105	3
28	100	0.0053	3
20	100	0.0037	3
14	100	0.0016	2
10	100		
6.3	100		
5.0	99		
3.35	98		
2.00	97		
1.18	96		
0.600	90		
0.425	78		
0.300	56		
0.212	35		
0.150	15		
0.063	5		
		Particle density, Mg/m ³	
		2.67 measured	
		Dry mass of sample, kg	
		3.3	

Soil description	Greyish brown SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		3	3
		93	93
		2	2
*<60mm values to aid description only		2	2

Uniformity Coefficient	D_{60} / D_{10}	3
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

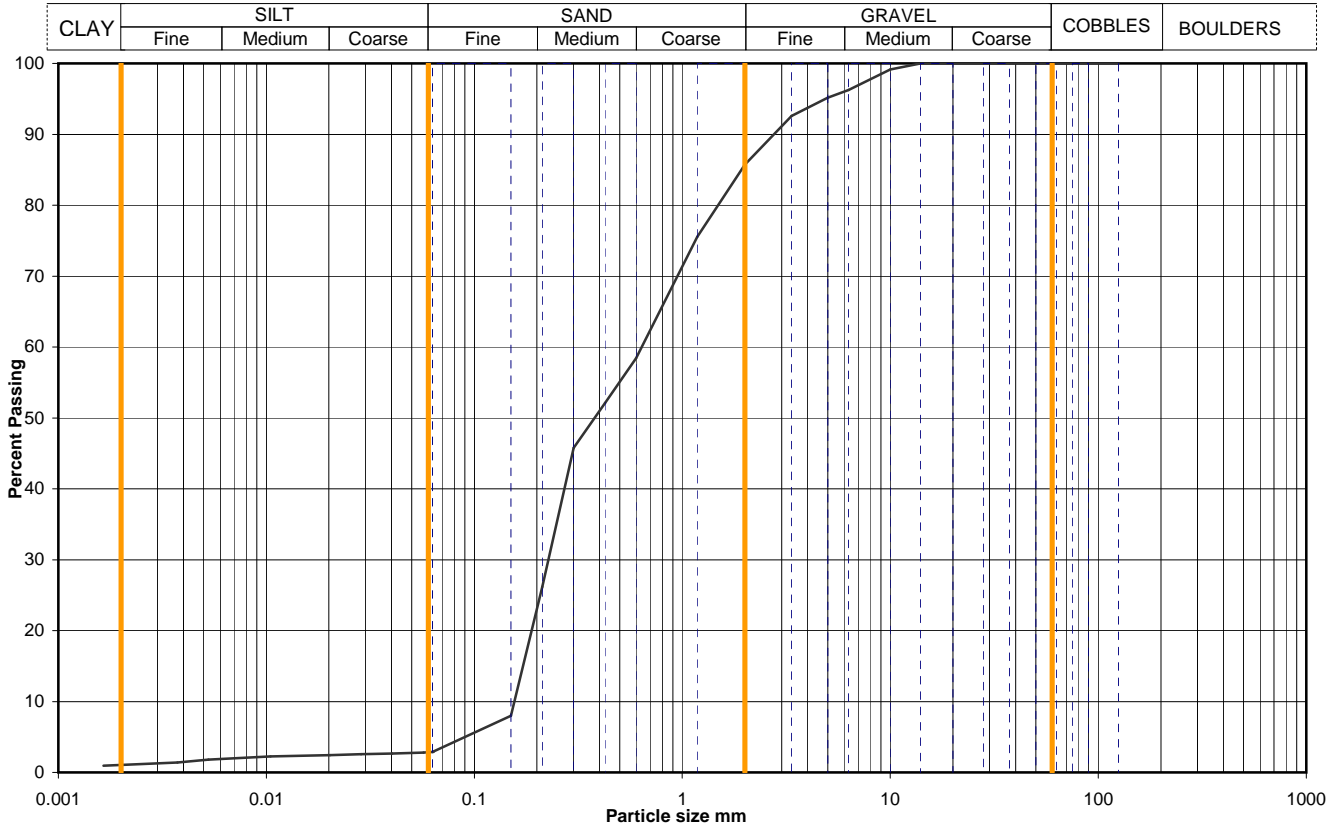


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Figure
PSD 36

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_5UB		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	23.00		
			Samp No	66	Type	U
			ID	ESGA0012-10201010040000001309		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	3
90	100	0.0569	3
75	100	0.0403	3
63	100	0.0285	3
50	100	0.0202	2
37.5	100	0.0105	2
28	100	0.0053	2
20	100	0.0037	1
14	100	0.0016	1
10	99		
6.3	96		
5.0	95		
3.35	93		
2.00	86		
1.18	76		
0.600	58		
0.425	52		
0.300	46		
0.212	26		
0.150	8		
0.063	3		

Particle density, Mg/m ³ 2.66 measured	Dry mass of sample, kg 6.7
--	-------------------------------

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		14	14
		83	83
		2	2
		1	1

Uniformity Coefficient	D_{60} / D_{10}	4
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

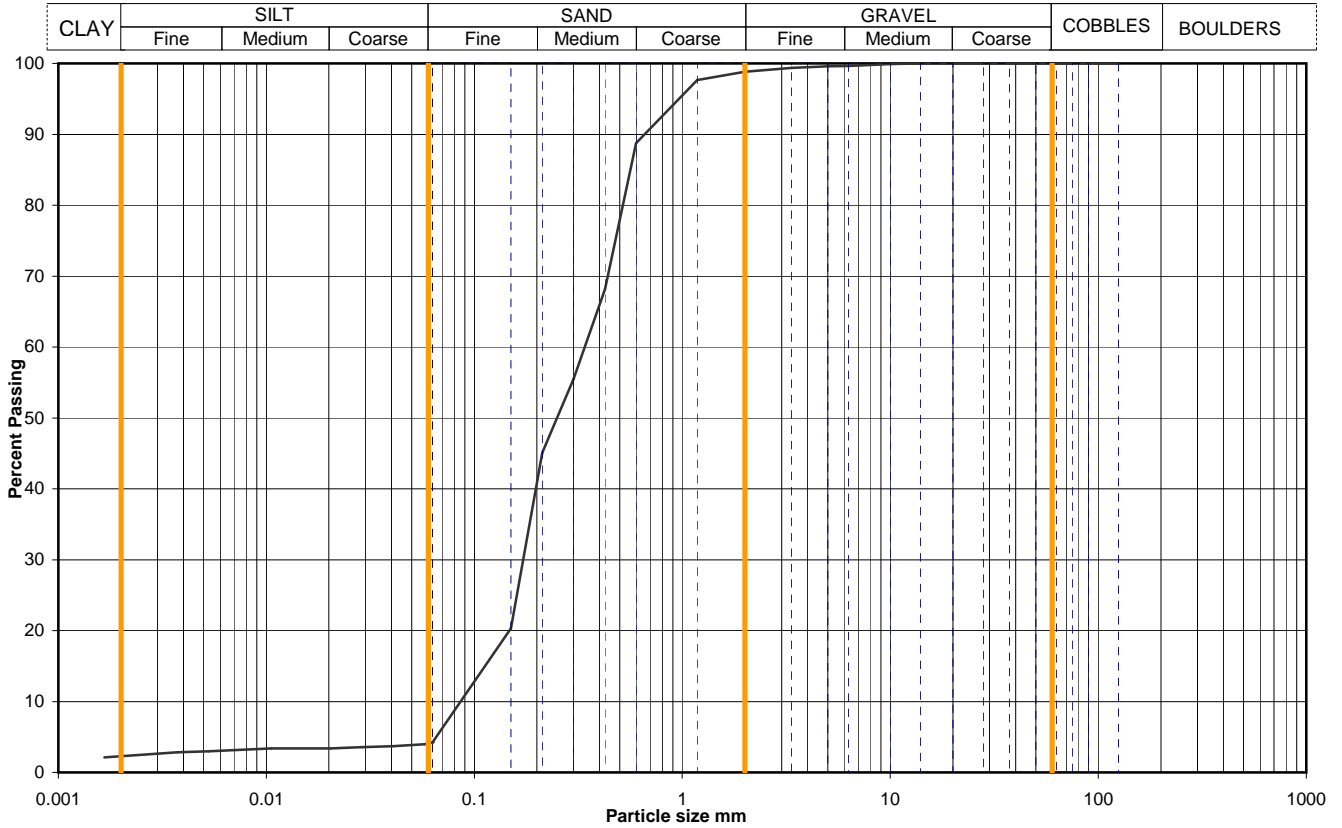


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Figure
PSD 37

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_5UB		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	29.30		
			Samp No	81	Type	U
			ID	ESGA0012-10201010050000001440		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	4
90	100	0.0575	4
75	100	0.0408	4
63	100	0.0289	4
50	100	0.0204	3
37.5	100	0.0105	3
28	100	0.0053	3
20	100	0.0037	3
14	100	0.0017	2
10	100		
6.3	100		
5.0	100		
3.35	99		
2.00	99		
1.18	98		
0.600	89		
0.425	68		
0.300	56		
0.212	45		
0.150	20		
0.063	4		

Particle density, Mg/m ³ 2.65 assumed	Dry mass of sample, kg 5.4
---	-------------------------------

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		1	1
		95	95
		2	2
*<60mm values to aid description only		2	2

Uniformity Coefficient	D_{60} / D_{10}	4
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

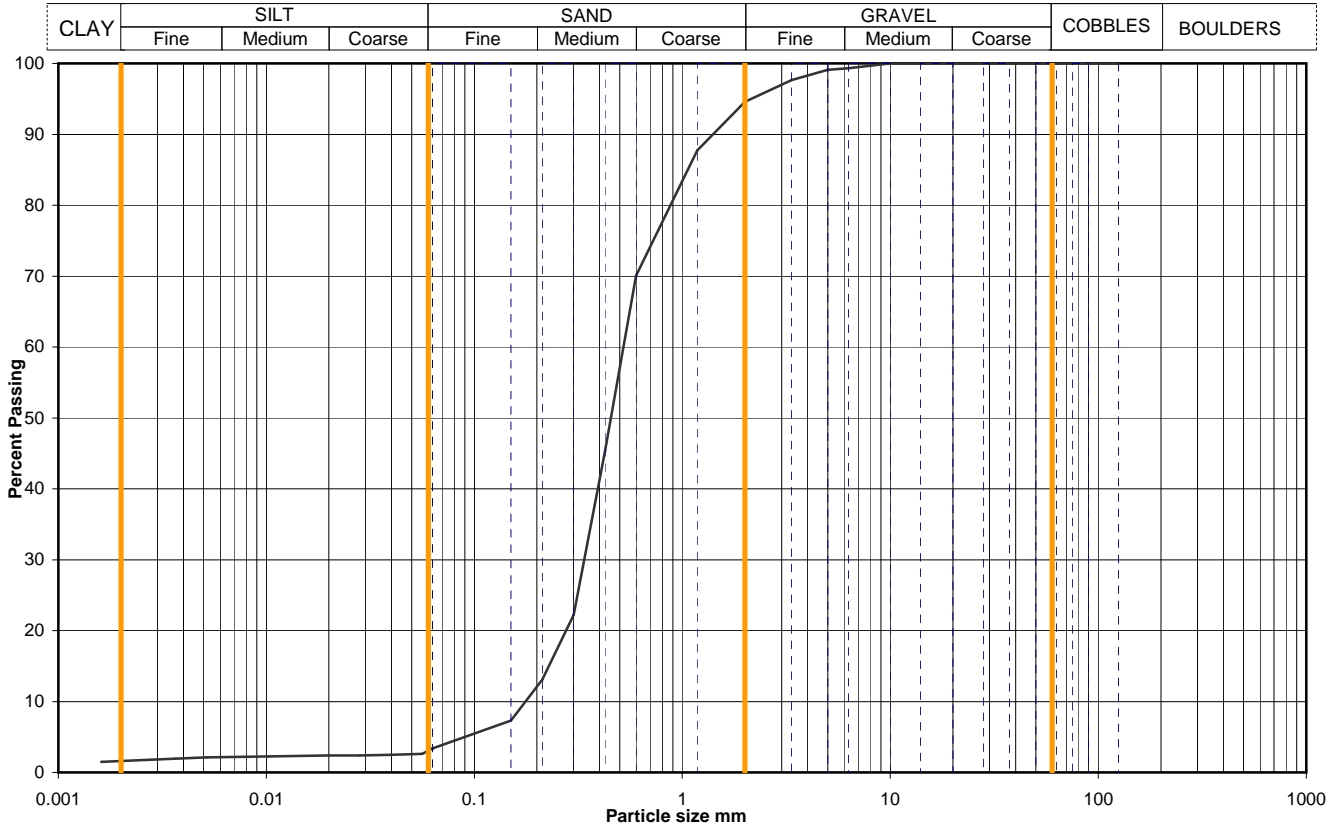


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Figure
PSD 38

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_5UB		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	40.30		
			Samp No	103	Type	U
			ID	ESGA0012-10201010050000001470		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	3
90	100	0.0561	3
75	100	0.0397	2
63	100	0.0281	2
50	100	0.0199	2
37.5	100	0.0103	2
28	100	0.0052	2
20	100	0.0037	2
14	100	0.0016	2
10	100		
6.3	99		
5.0	99		
3.35	98		
2.00	95		
1.18	88		
0.600	70		
0.425	45		
0.300	22		
0.212	13		
0.150	7		
0.063	3		

Particle density, Mg/m ³	2.73 measured
Dry mass of sample, kg	1.7

Soil description	Grey SAND with occasional shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<math><60\text{mm}</math>
		0	0
		5	5
		92	92
		1	1
		2	2

Uniformity Coefficient	D_{60} / D_{10}	3
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

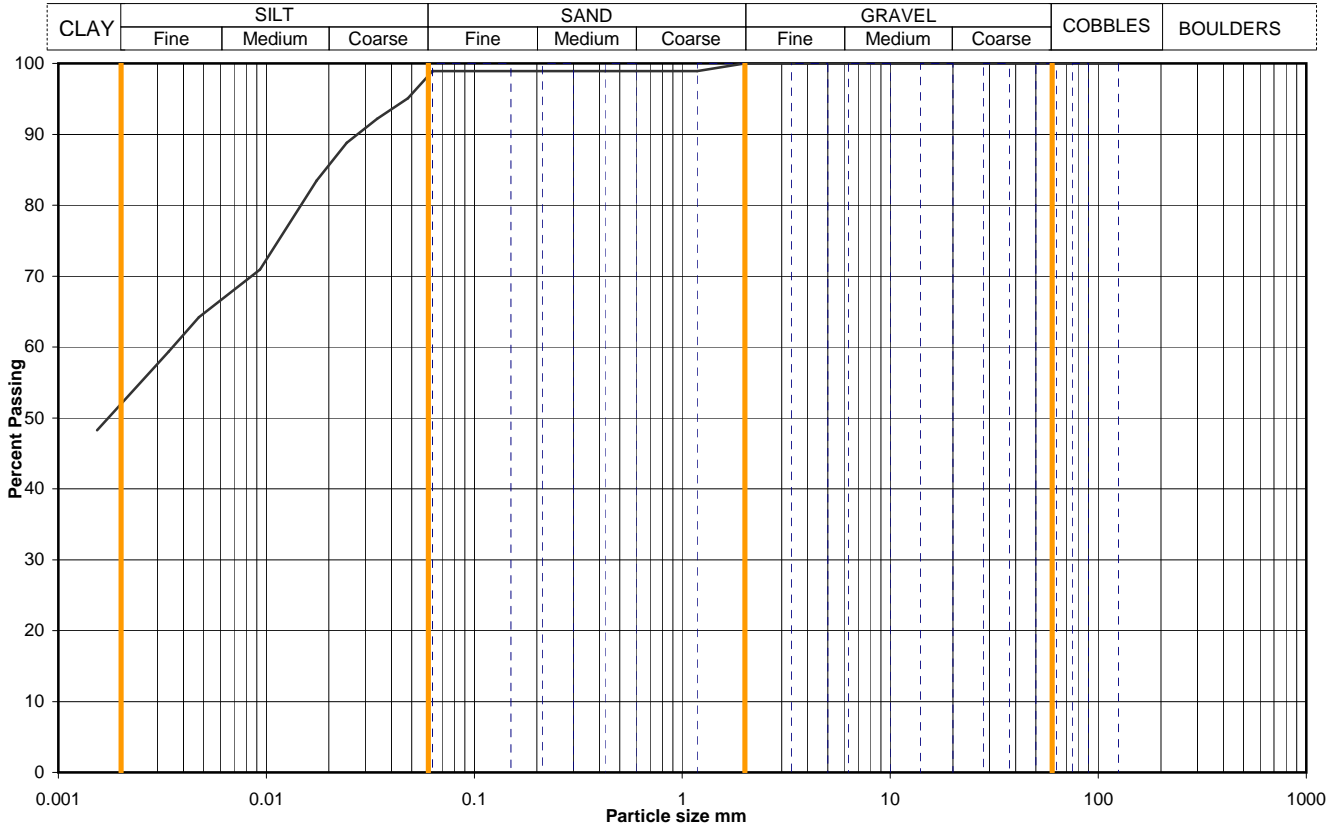


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Figure
PSD 39

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	52.70
			Samp No	12
			Type	CS
			ID	ESGA0012-10201007230000000031
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	99
90	100	0.0479	95
75	100	0.0341	92
63	100	0.0244	89
50	100	0.0175	83
37.5	100	0.0093	71
28	100	0.0047	64
20	100	0.0034	59
14	100	0.0015	48
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	99		
0.600	99		
0.425	99		
0.300	99		
0.212	99		
0.150	99		
0.063	99		
		Particle density, Mg/m ³	
		2.65 assumed	
		Dry mass of sample, kg	
		0.0	

Soil description	Stiff brownish grey CLAY with occasional silt partings.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		2	2
		46	46
		52	52

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

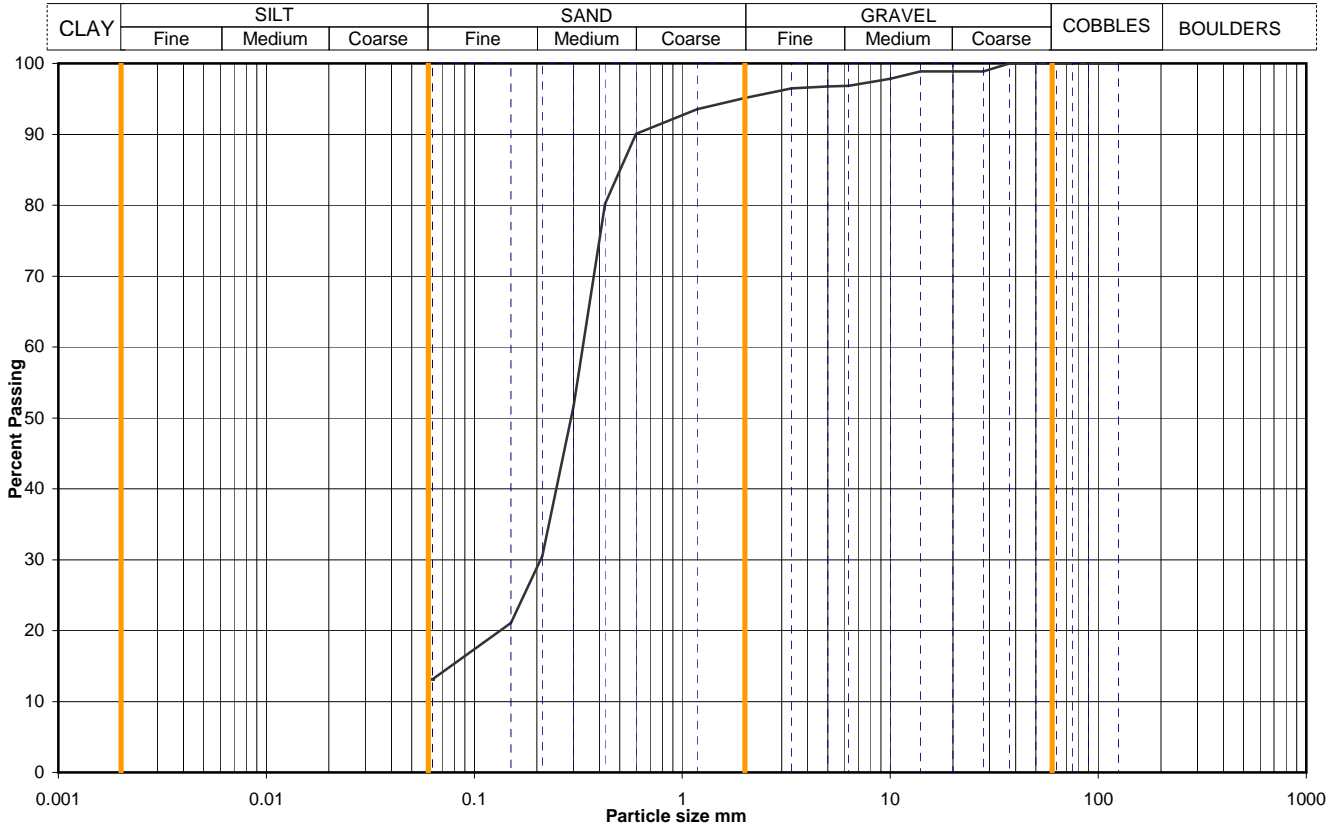


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Figure
PSD 40

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	2.60		
			Samp No	8	Type	U
			ID	ESGA0012-10201010050000001492		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	99		
20	99		
14	99		
10	98		
6.3	97		
5.0	97		
3.35	96		
2.00	95		
1.18	94		
0.600	90		
0.425	80		
0.300	52		
0.212	31		
0.150	21		
0.063	13		
		Dry mass of sample, kg	
		3.5	

Soil description	Greyish brown silty gravelly SAND.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions <small>*<60mm values to aid description only</small>	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		5	5
		82	82
		silt+clay =	13

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

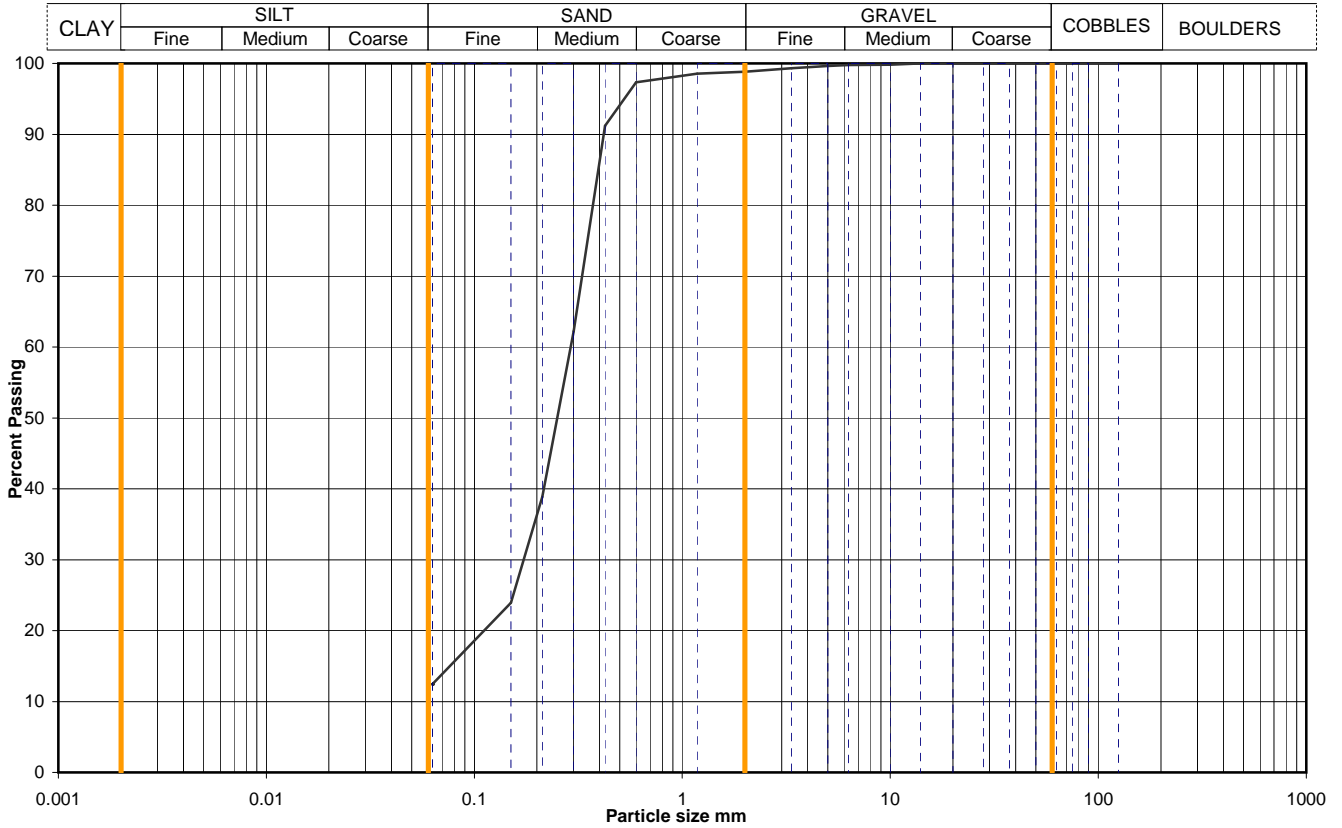


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Figure
PSD 41

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	4.00
			Samp No	12
			Type	U
			ID	ESGA0012-10201010050000001496
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
3.35	99		
2.00	99		
1.18	99		
0.600	97		
0.425	91		
0.300	62		
0.212	39		
0.150	24		
0.063	12		
		Dry mass of sample, kg	
		5.8	

Soil description	Yellowish brown silty SAND.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		1	1
		86	86
		silt+clay =	13
*<60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

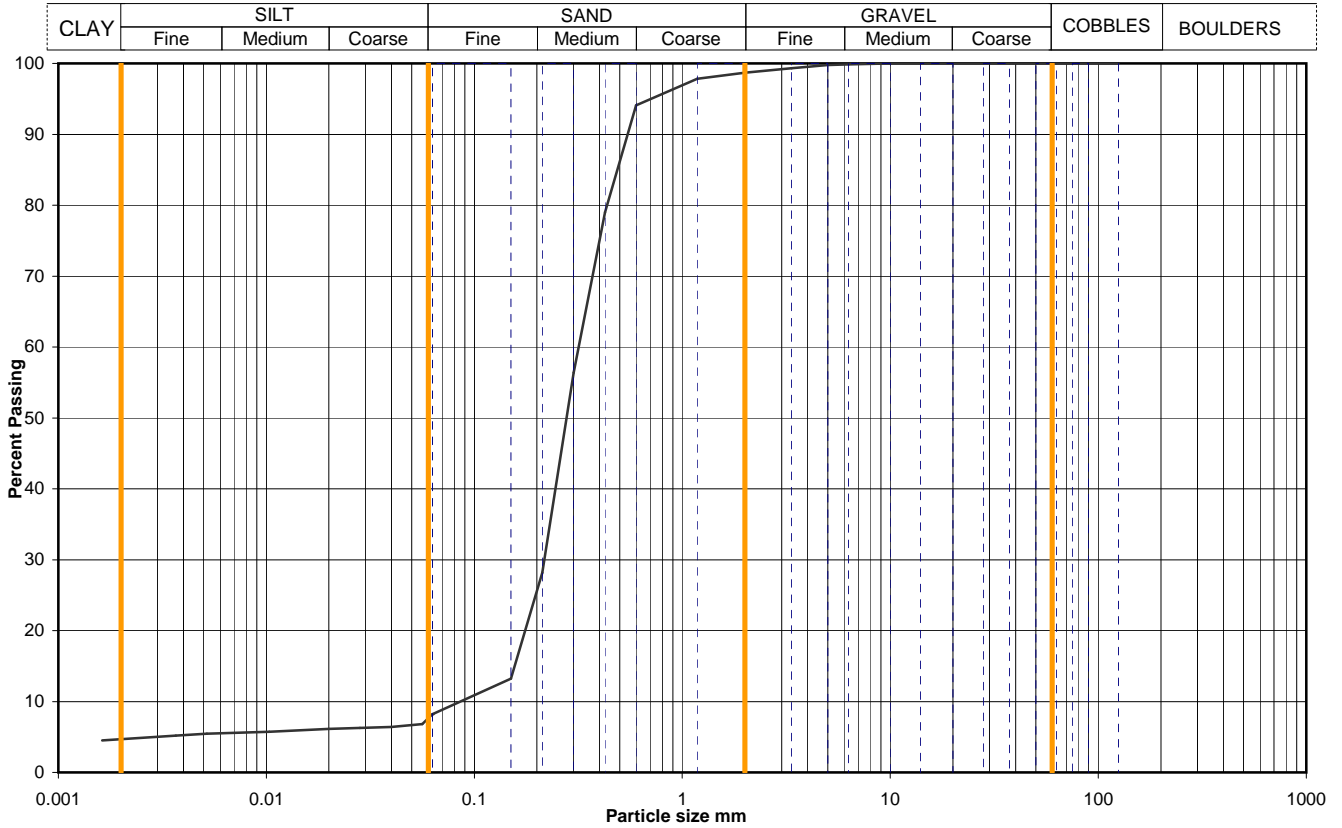


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Figure
PSD 42

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	15.20
			Samp No	44
			Type	U
			ID	ESGA0012-10201010050000001528
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	8
90	100	0.0562	7
75	100	0.0398	6
63	100	0.0282	6
50	100	0.0200	6
37.5	100	0.0103	6
28	100	0.0052	5
20	100	0.0037	5
14	100	0.0016	5
10	100		
6.3	100		
5.0	100		
3.35	99		
2.00	99		
1.18	98		
0.600	94		
0.425	79		
0.300	56		
0.212	28		
0.150	13		
0.063	8		

Particle density, Mg/m ³	2.66 measured
Dry mass of sample, kg	6.2

Soil description	Brown SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		1	1
		91	91
		3	3
		5	5

Uniformity Coefficient	D_{60} / D_{10}	4
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

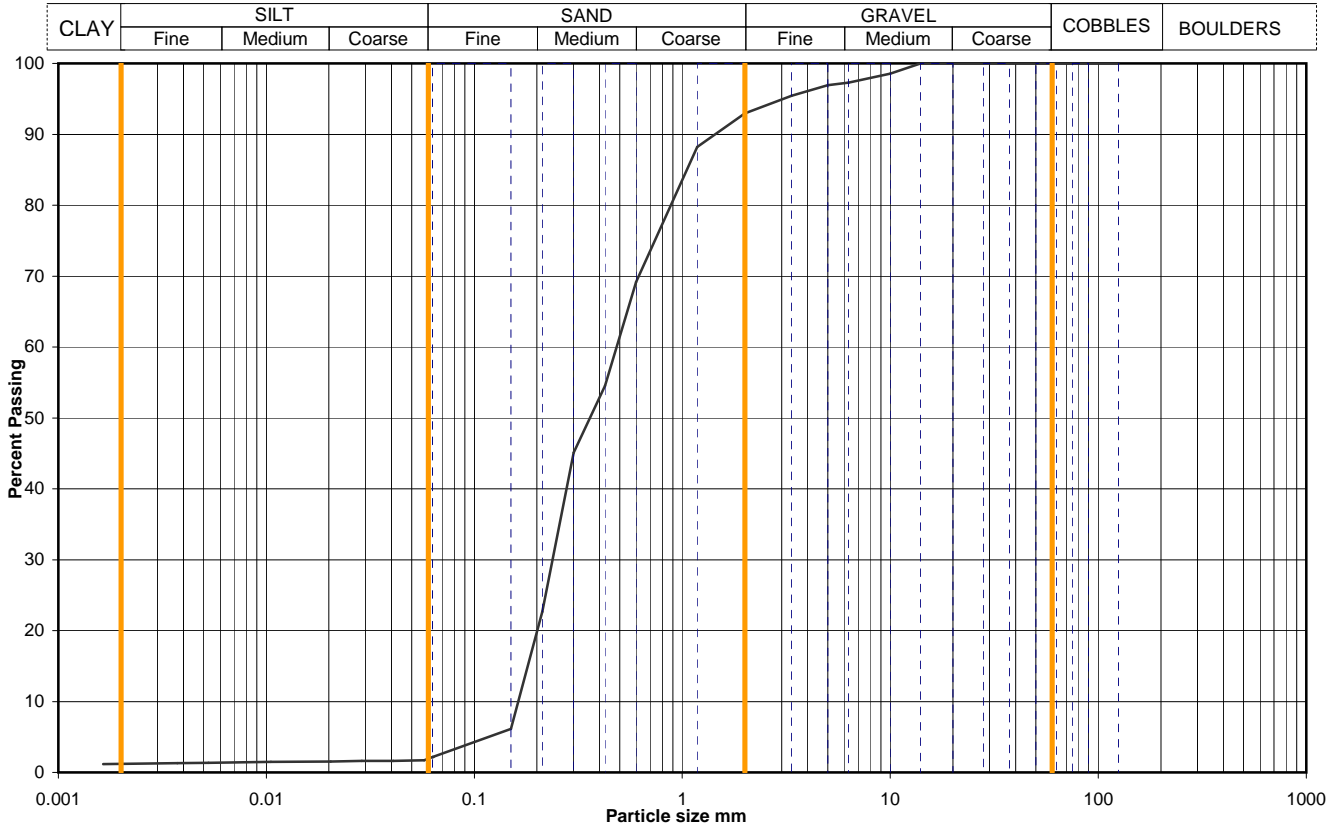


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Figure
PSD 43

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	23.60
			Samp No	69
			Type	U
			ID	ESGA0012-10201010050000001553
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	2
90	100	0.0575	2
75	100	0.0407	2
63	100	0.0288	2
50	100	0.0204	2
37.5	100	0.0105	1
28	100	0.0053	1
20	100	0.0037	1
14	100	0.0016	1
10	99		
6.3	97		
5.0	97		
3.35	95		
2.00	93		
1.18	88		
0.600	69		
0.425	55		
0.300	45		
0.212	23		
0.150	6		
0.063	2		

Particle density, Mg/m ³	2.67 measured
Dry mass of sample, kg	5.2

Soil description	Grey SAND with occasional silt pockets and shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		7	7
		91	91
		1	1
*<60mm values to aid description only		1	1

Uniformity Coefficient	D_{60} / D_{10}	3
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

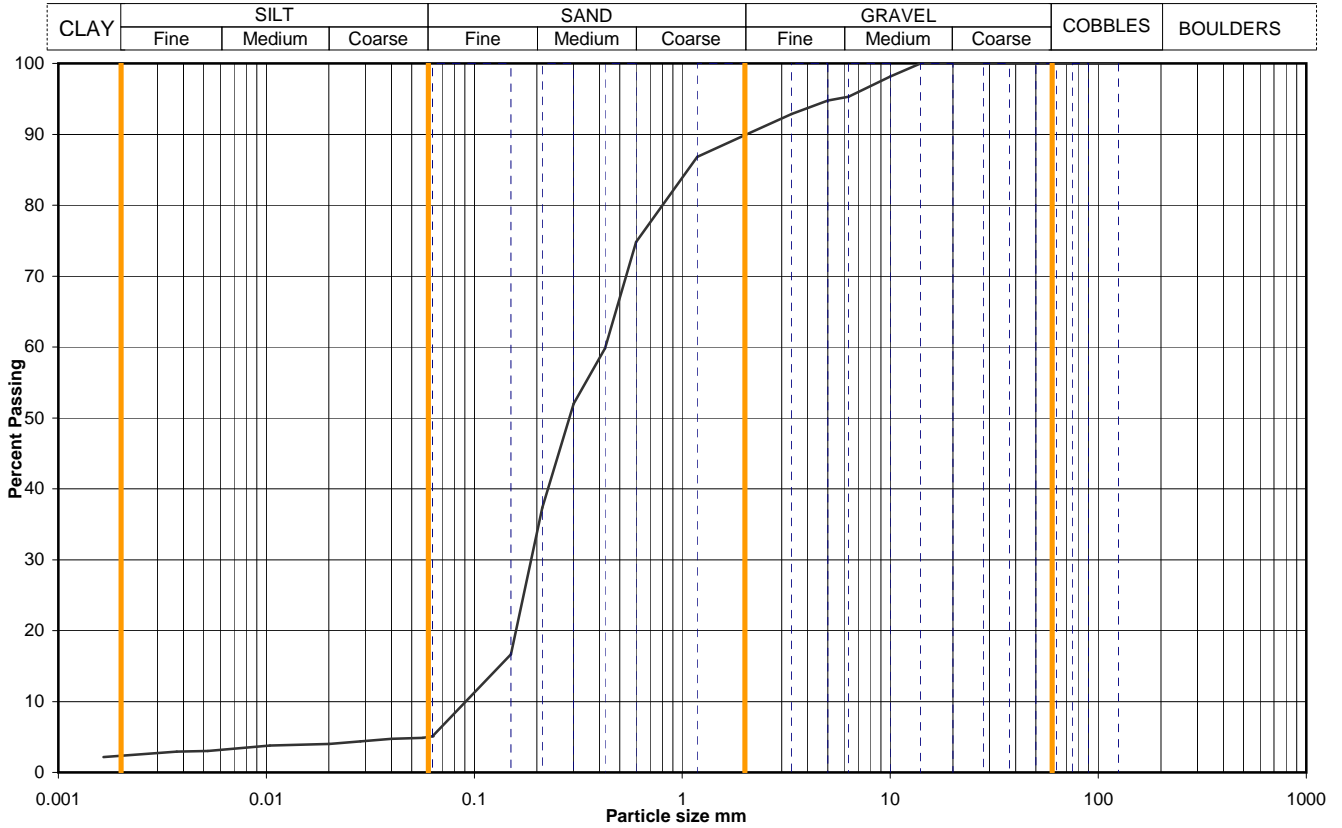


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Figure
PSD 44

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	32.70		
			Samp No	94	Type	U
			ID	ESGA0012-10201010050000001579		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	5
90	100	0.0565	5
75	100	0.0400	5
63	100	0.0284	4
50	100	0.0201	4
37.5	100	0.0104	4
28	100	0.0052	3
20	100	0.0037	3
14	100	0.0016	2
10	98		
6.3	95		
5.0	95		
3.35	93		
2.00	90		
1.18	87		
0.600	75		
0.425	60		
0.300	52		
0.212	37		
0.150	17		
0.063	5		
		Particle density, Mg/m ³	
		2.67 measured	
		Dry mass of sample, kg	
		4.8	

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		10	10
		85	85
		3	3
		2	2

*<60mm values to aid description only

Uniformity Coefficient	D_{60} / D_{10}	5
------------------------	-------------------	---

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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Sept 08

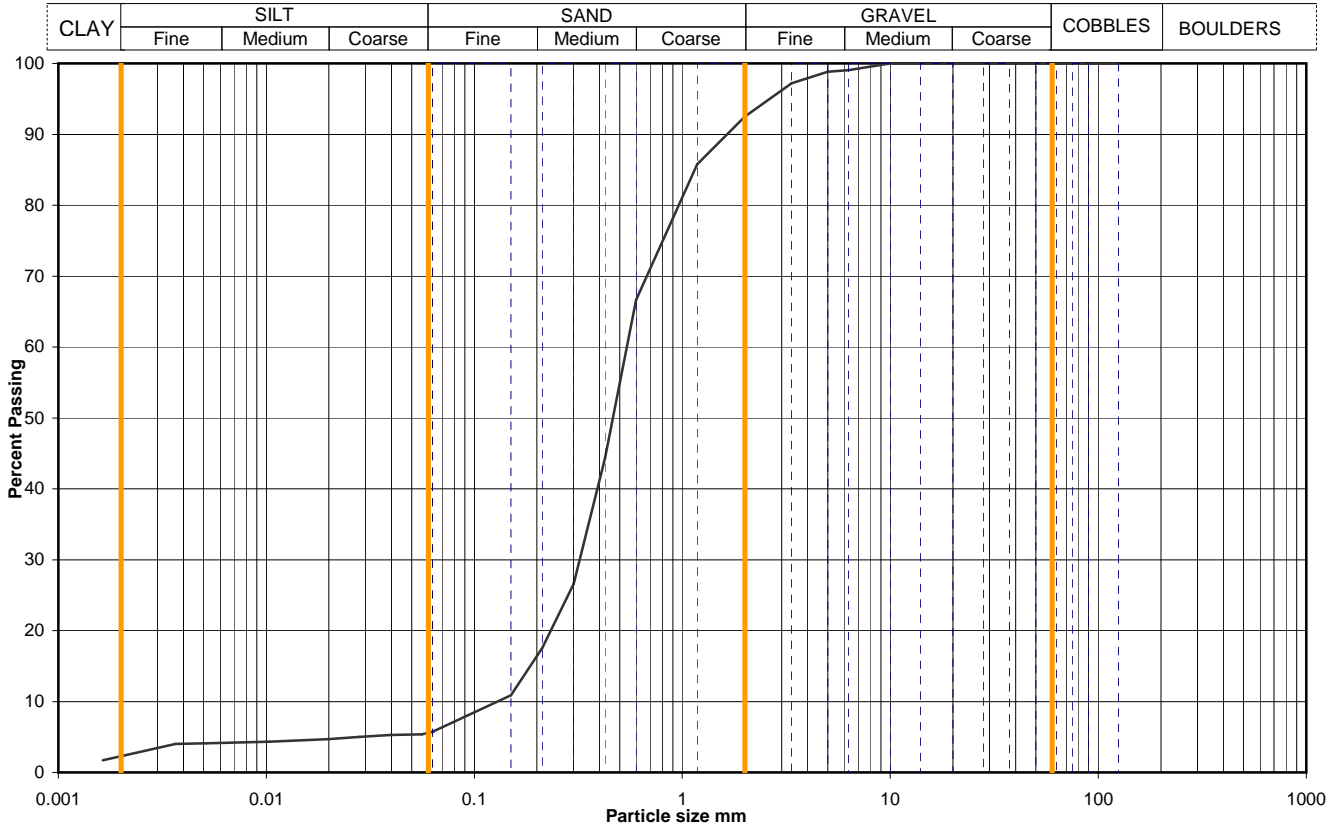


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Figure
PSD 45

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	41.55
			Samp No	121
			Type	U
			ID	ESGA0012-10201010050000001606
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	6
90	100	0.0560	5
75	100	0.0396	5
63	100	0.0281	5
50	100	0.0199	5
37.5	100	0.0103	4
28	100	0.0052	4
20	100	0.0037	4
14	100	0.0016	2
10	100		
6.3	99		
5.0	99		
3.35	97		
2.00	92		
1.18	86		
0.600	67		
0.425	44		
0.300	27		
0.212	18		
0.150	11		
0.063	6		

Particle density, Mg/m ³	2.68 measured
Dry mass of sample, kg	6.3

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		8	8
		87	87
		3	3
		2	2

Uniformity Coefficient	D_{60} / D_{10}	4
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
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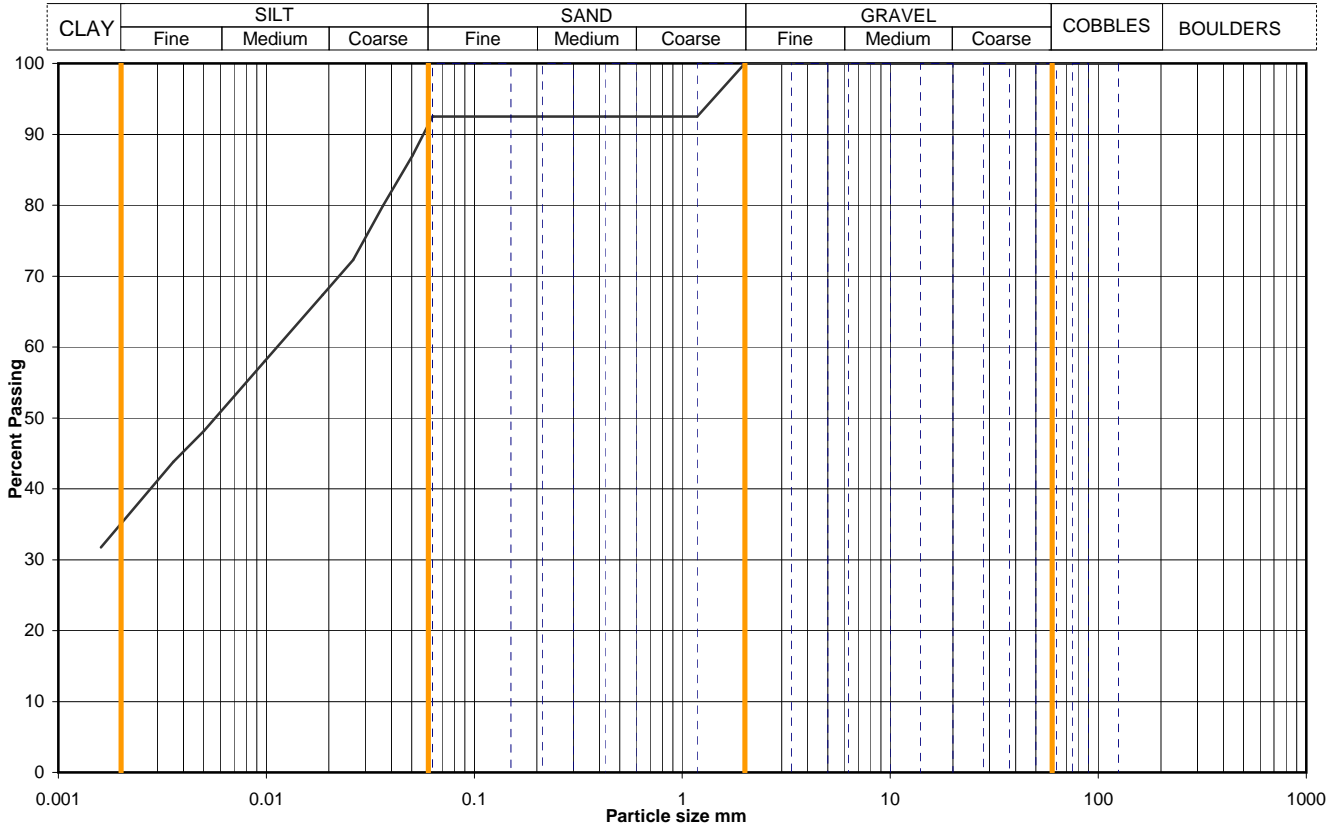


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Figure
PSD 46

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_7
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	51.60
			Samp No	16
			Type	CS
			ID	ESGA0012-10201009140000000688
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	93
90	100	0.0506	87
75	100	0.0363	80
63	100	0.0261	72
50	100	0.0187	67
37.5	100	0.0098	58
28	100	0.0050	48
20	100	0.0036	44
14	100	0.0016	32
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	93		
0.600	93		
0.425	93		
0.300	93		
0.212	93		
0.150	93		
0.063	93		

Particle density, Mg/m ³	2.64 measured
Dry mass of sample, kg	0.0

Soil description	Very weak greyish brown MUDSTONE and very soft brown clay.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		9	9
		56	56
*<60mm values to aid description only		35	35

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

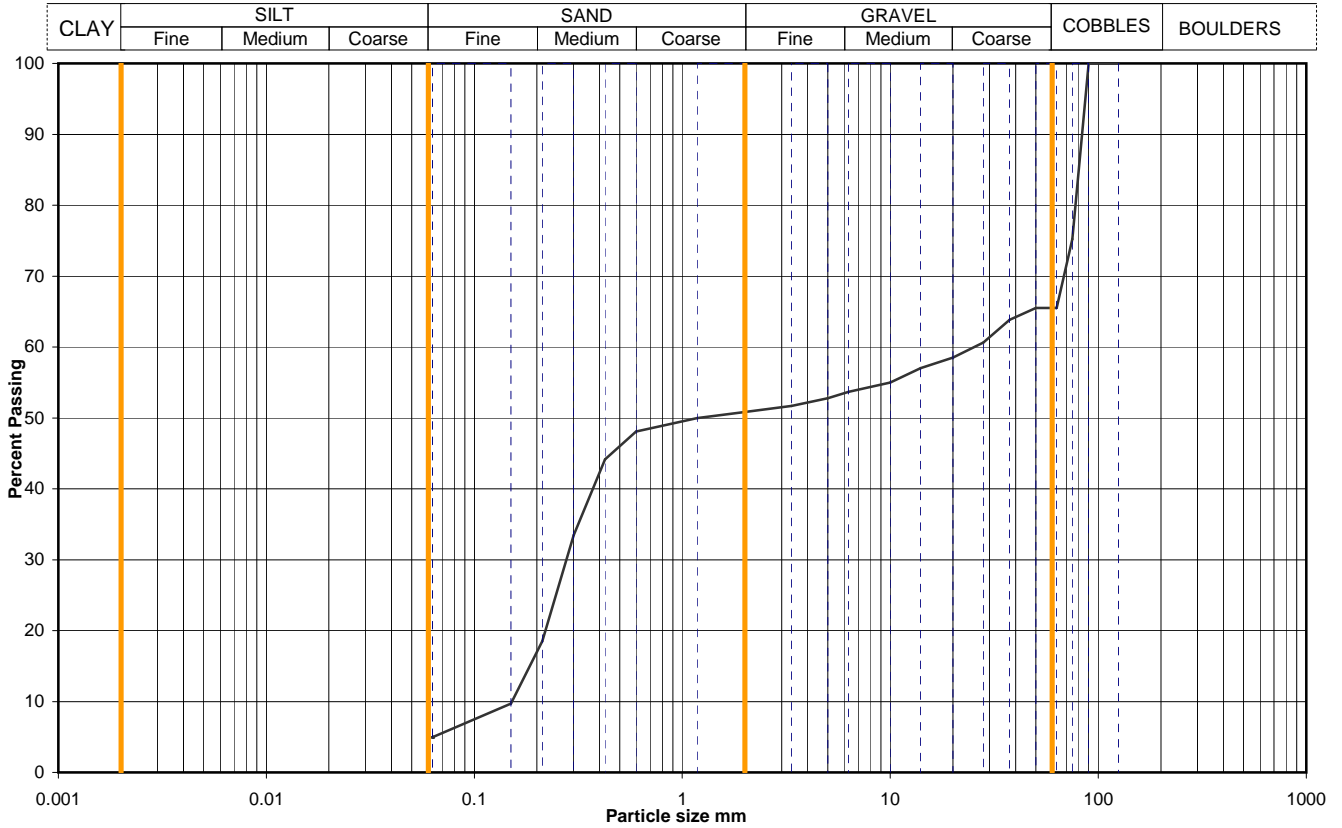


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Figure
PSD 47

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_7U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	4.00
			Samp No	12
			Type	U
			ID	ESGA0012-10201010210000002378
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	75		
63	65		
50	65		
37.5	64		
28	61		
20	59		
14	57		
10	55		
6.3	54		
5.0	53		
3.35	52		
2.00	51		
1.18	50		
0.600	48		
0.425	44		
0.300	33		
0.212	18		
0.150	10		
0.063	5		
		Dry mass of sample, kg	
		4.0	

Soil description	Greyish brown slightly organic silty very gravelly SAND with 2 cobbles.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	* <60mm
		35	0
		14	22
		46	71
		silt+clay =	5
* <60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	167
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

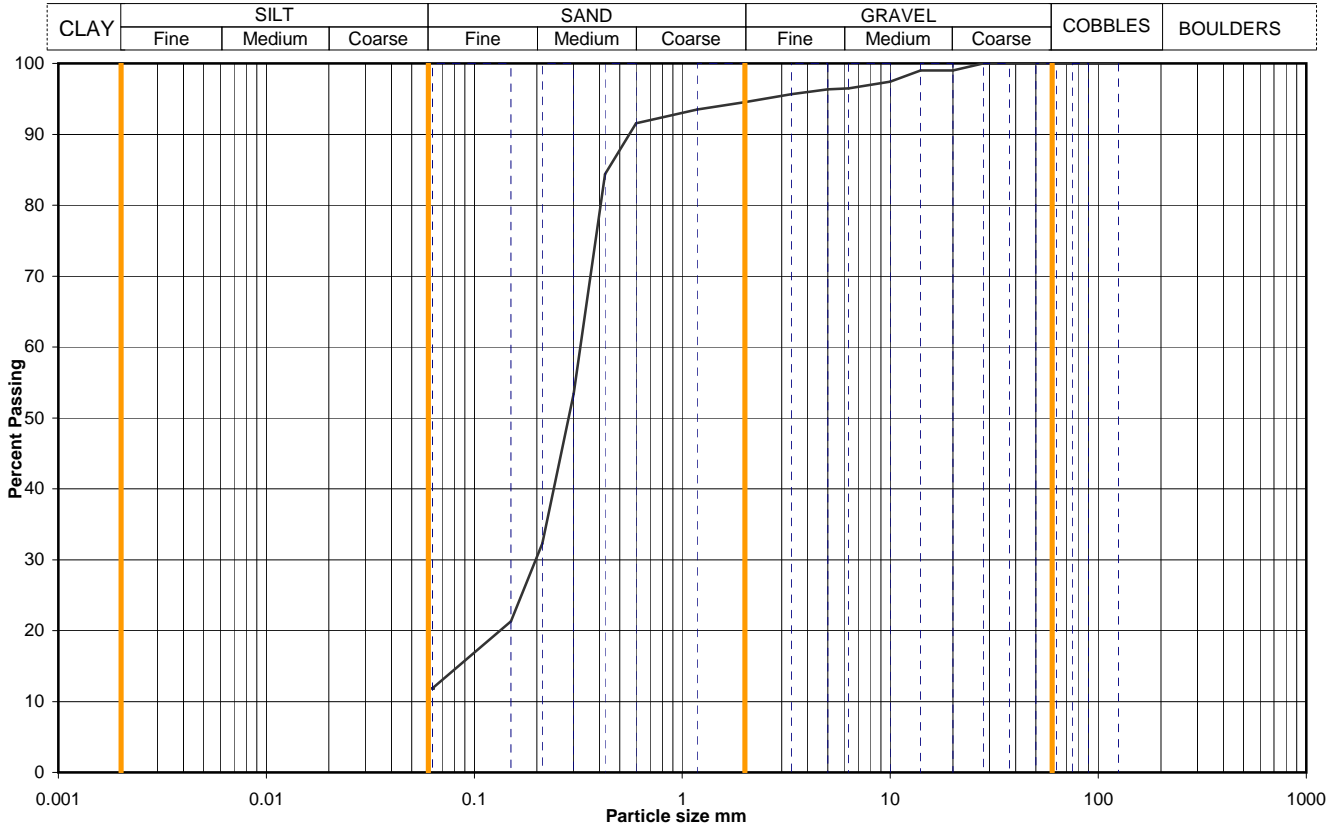


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Figure
PSD 48

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_7U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	5.40		
			Samp No	16	Type	U
			ID	ESGA0012-10201010260000002492		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	99		
10	97		
6.3	96		
5.0	96		
3.35	96		
2.00	95		
1.18	94		
0.600	92		
0.425	84		
0.300	53		
0.212	32		
0.150	21		
0.063	12		
		Dry mass of sample, kg	
		2.3	

Soil description	Greyish brown slightly gravelly SAND with occasional clay pockets and rare shell fragments.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions <small>*<60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
		0	0
	Gravel	5	5
		83	83
	Silt	silt+clay =	
Clay	12	12	

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

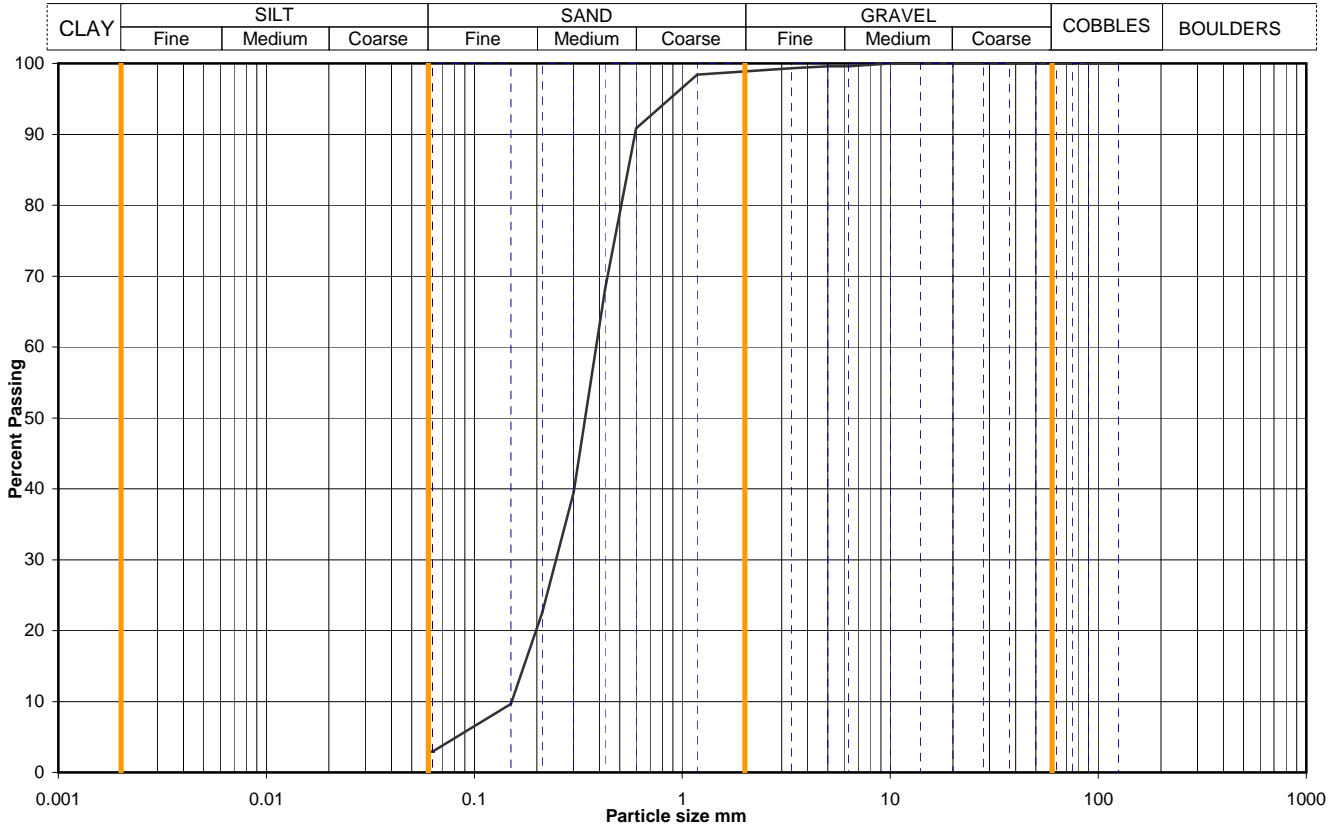


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Figure
PSD 49

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_7U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	16.60
			Samp No	48
			Type	U
			ID	ESGA0012-10201010260000002524
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
3.35	99		
2.00	99		
1.18	98		
0.600	91		
0.425	68		
0.300	40		
0.212	23		
0.150	10		
0.063	3		
		Dry mass of sample, kg	
		5.0	

Soil description	Greyish brown SAND with occasional shell fragments.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions <small>*<60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	1	1
	Silt	96	96
	Clay	silt+clay =	
		3	3

Uniformity Coefficient	D_{60} / D_{10}	3
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

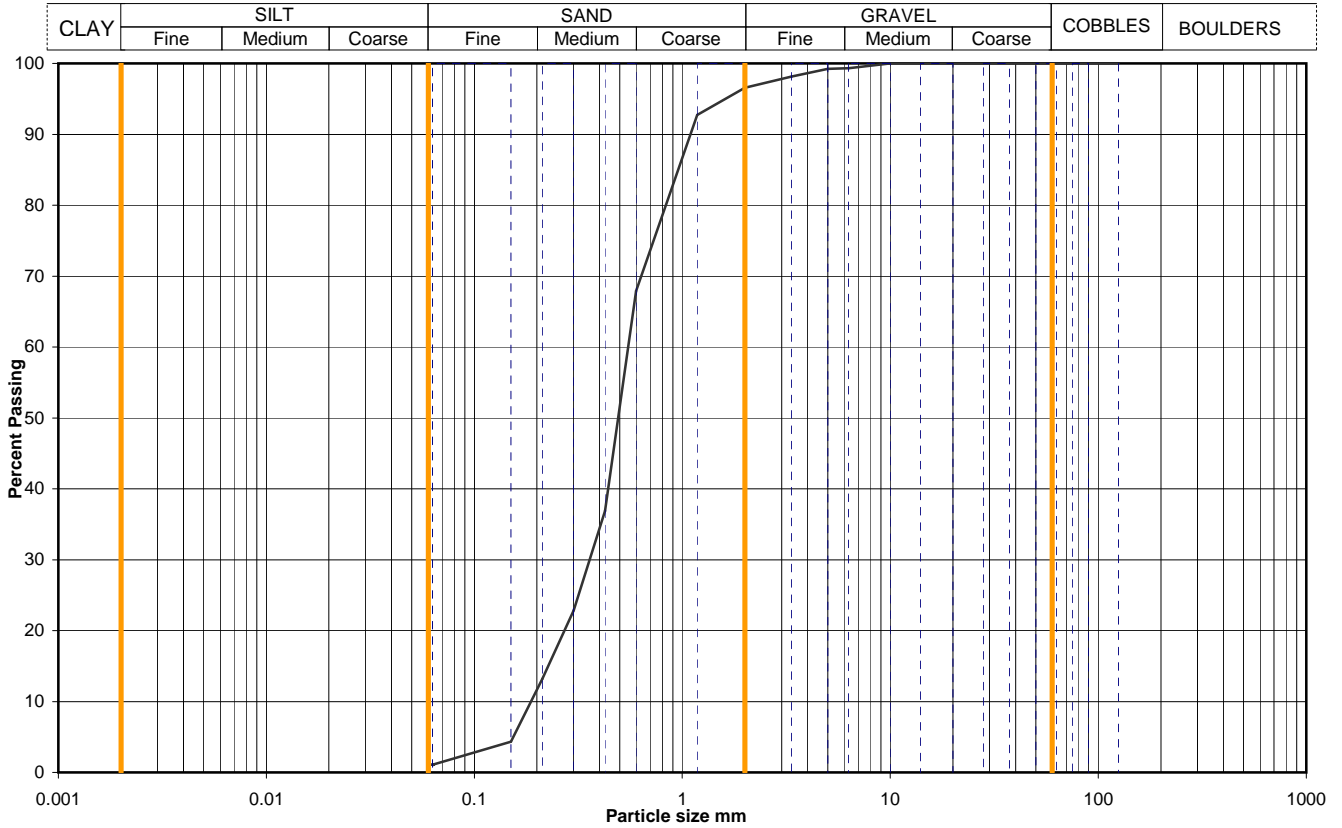


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Figure
PSD 50

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_7U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	25.00
			Samp No	74
			Type	U
			ID	ESGA0012-10201010260000002551
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5.0	99		
3.35	98		
2.00	97		
1.18	93		
0.600	68		
0.425	37		
0.300	23		
0.212	13		
0.150	4		
0.063	1		
		Dry mass of sample, kg	
		5.5	

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		3	3
		96	96
		silt+clay =	1
*<60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	3
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

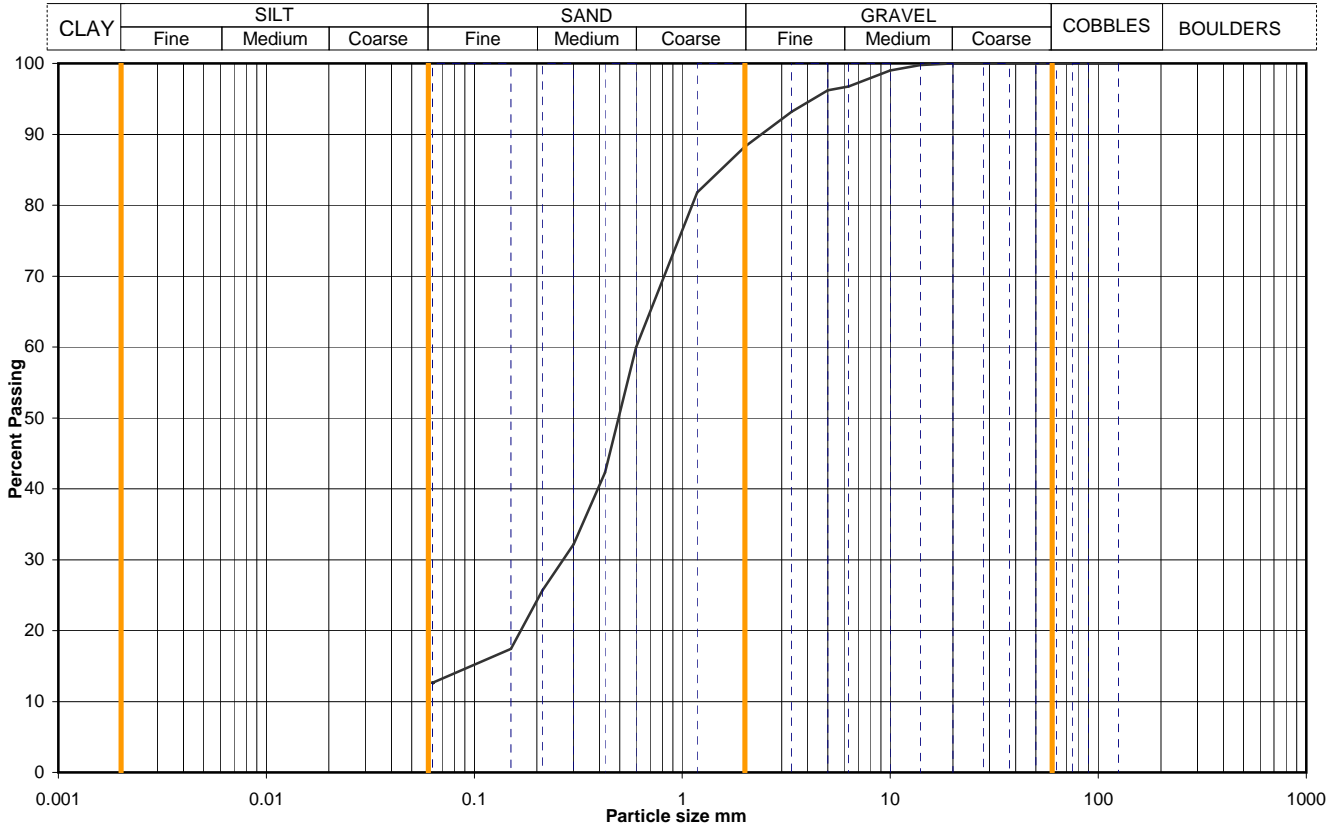


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Figure
PSD 51

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_7U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	32.70
			Samp No	95
			Type	U
			ID	ESGA0012-10201010260000002572
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	97		
5.0	96		
3.35	93		
2.00	88		
1.18	82		
0.600	60		
0.425	42		
0.300	32		
0.212	26		
0.150	17		
0.063	13		
		Dry mass of sample, kg	
		3.8	

Soil description	Dark grey silty SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders	Whole	*<60mm
		0	0
	Gravel	12	12
		76	76
	Silt	silt+clay =	
Clay	12	12	

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

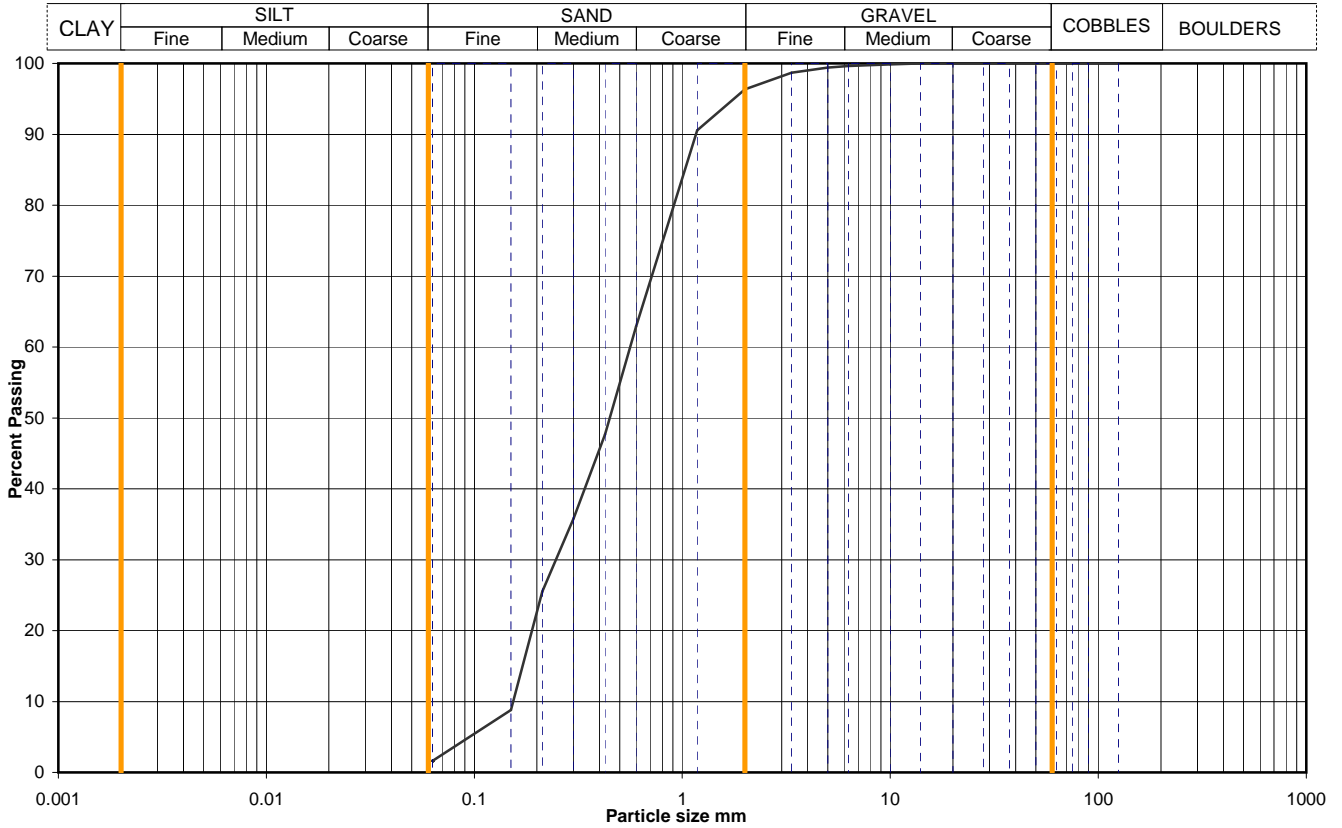


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Figure
PSD 52

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_7U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	34.10
			Samp No	99
			Type	U
			ID	ESGA0012-10201010260000002577
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	99		
3.35	99		
2.00	96		
1.18	91		
0.600	63		
0.425	48		
0.300	36		
0.212	25		
0.150	9		
0.063	2		
		Dry mass of sample, kg	
		2.2	

Soil description	Grey SAND with occasional shell fragments.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	* <60mm
		0	0
		4	4
		95	95
		silt+clay =	1
* <60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	4
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

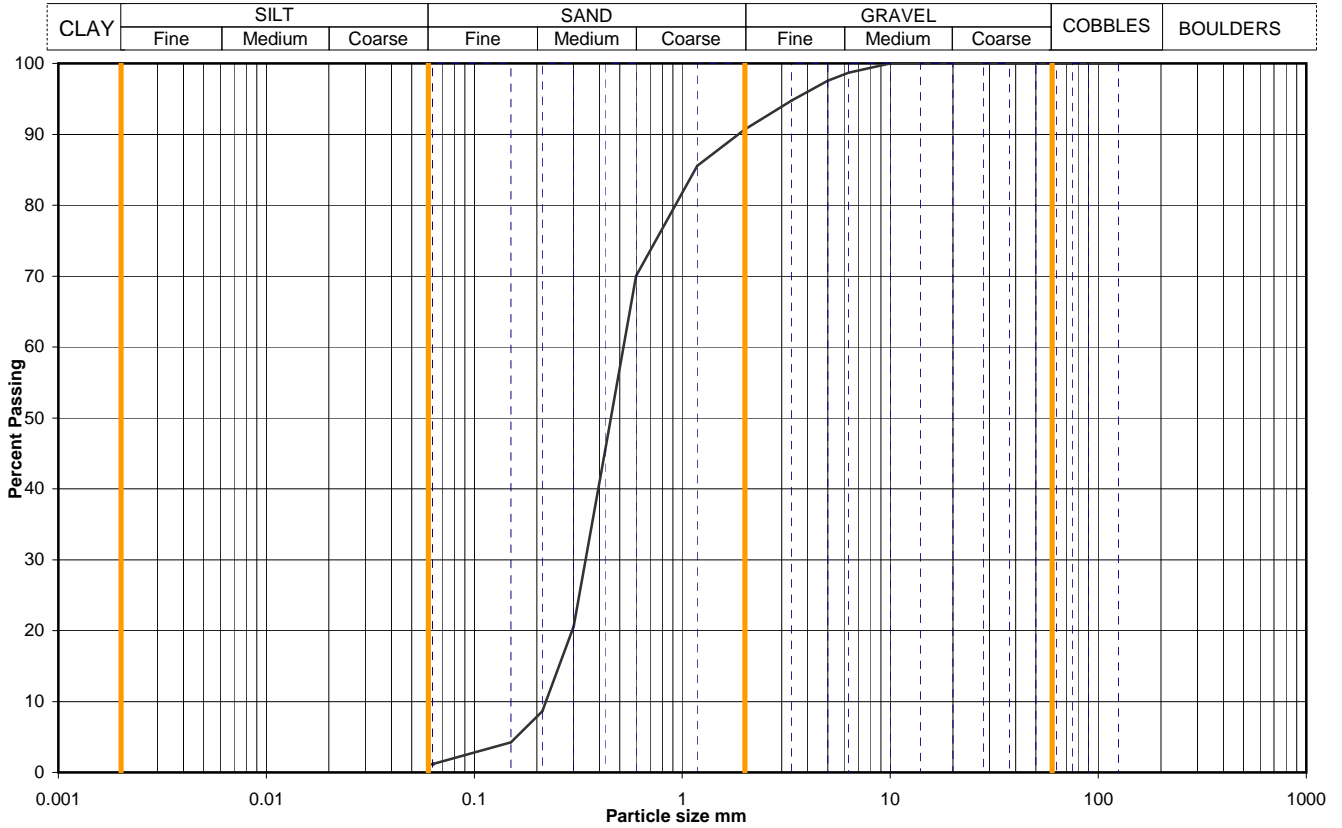


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Figure
PSD 53

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_7U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	41.90		
			Samp No	121	Type	U
			ID	ESGA0012-10201010260000002599		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5.0	98		
3.35	95		
2.00	91		
1.18	86		
0.600	70		
0.425	45		
0.300	21		
0.212	9		
0.150	4		
0.063	1		
		Dry mass of sample, kg	
		4.3	

Soil description	Greyish brown SAND with occasional shell fragments.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		9	9
		90	90
		silt+clay =	1

Uniformity Coefficient	D_{60} / D_{10}	2
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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SLR 2,9
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Sept 08

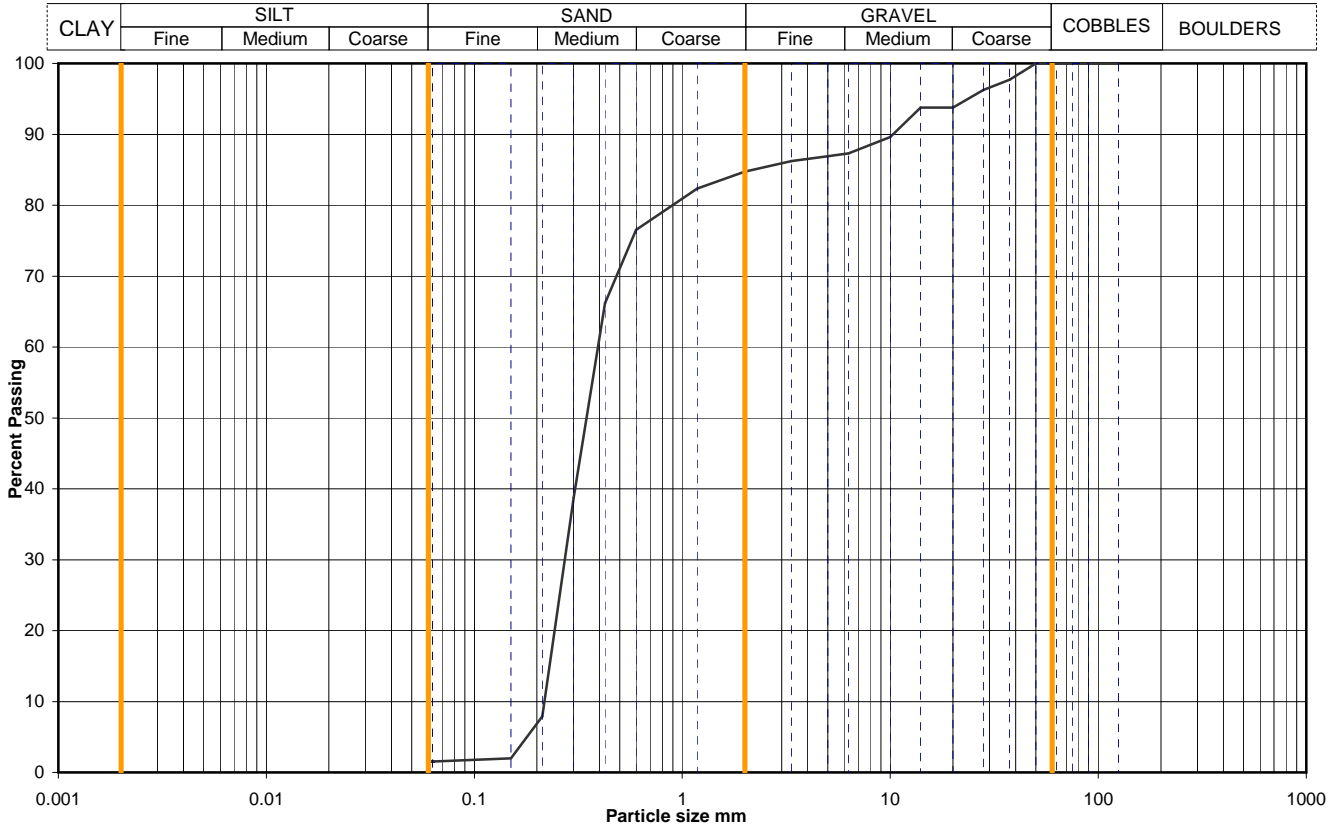


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Figure
PSD 54

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	3.80
			Samp No	6
			Type	U
			ID	ESGA0012-10201009200000000869
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	98		
28	96		
20	94		
14	94		
10	90		
6.3	87		
5.0	87		
3.35	86		
2.00	85		
1.18	82		
0.600	77		
0.425	66		
0.300	39		
0.212	8		
0.150	2		
0.063	2		

Dry mass of sample, kg	4.5
------------------------	-----

Soil description	Light brown gravelly SAND.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		15	15
		83	83
		silt+clay =	2

Uniformity Coefficient	D_{60} / D_{10}	2
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
Rev 84
Sept 08

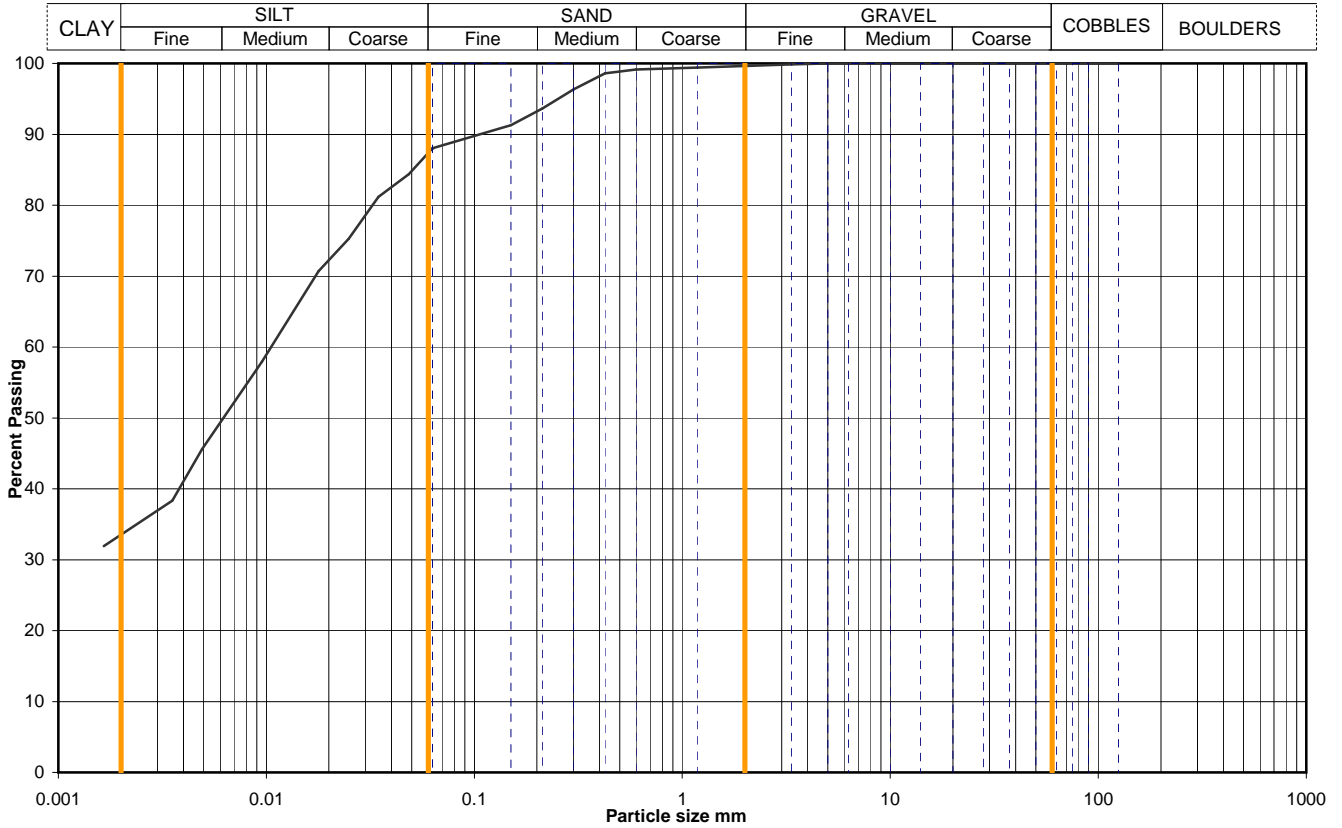


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Figure
PSD 55

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	6.65
			Samp No	10
			Type	U
			ID	ESGA0012-10201009200000000874
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	88
90	100	0.0485	84
75	100	0.0346	81
63	100	0.0249	75
50	100	0.0178	71
37.5	100	0.0095	58
28	100	0.0049	46
20	100	0.0035	38
14	100	0.0017	32
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	99		
0.600	99		
0.425	99		
0.300	96		
0.212	94		
0.150	91		
0.063	88		

Particle density, Mg/m ³	2.65 assumed
Dry mass of sample, kg	2.2

Soil description	Soft grey slightly organic slightly sandy CLAY with occasional rootlets.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		12	12
		54	54
*<60mm values to aid description only		34	34

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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Rev 84
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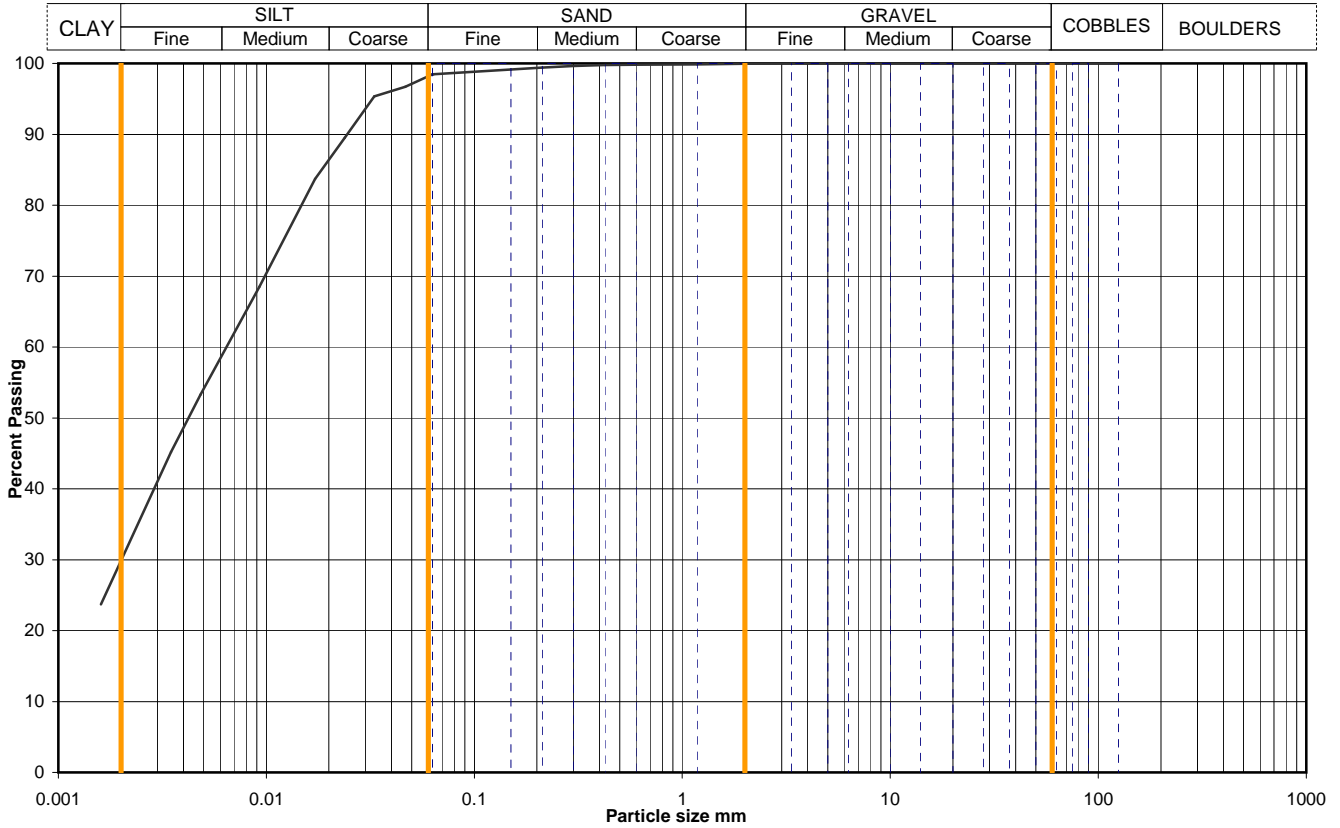


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Figure
PSD 56

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	8.20
			Samp No	17
			Type	U
			ID	ESGA0012-10201009200000000880
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	98
90	100	0.0465	97
75	100	0.0330	95
63	100	0.0238	90
50	100	0.0171	84
37.5	100	0.0092	68
28	100	0.0048	53
20	100	0.0035	45
14	100	0.0016	24
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100	Particle density, Mg/m ³	
0.425	100	2.64 measured	
0.300	100	Dry mass of sample, kg	
0.212	99	1.3	
0.150	99		
0.063	98		

Soil description	Soft to firm grey slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		2	2
		68	68
*<60mm values to aid description only		30	30

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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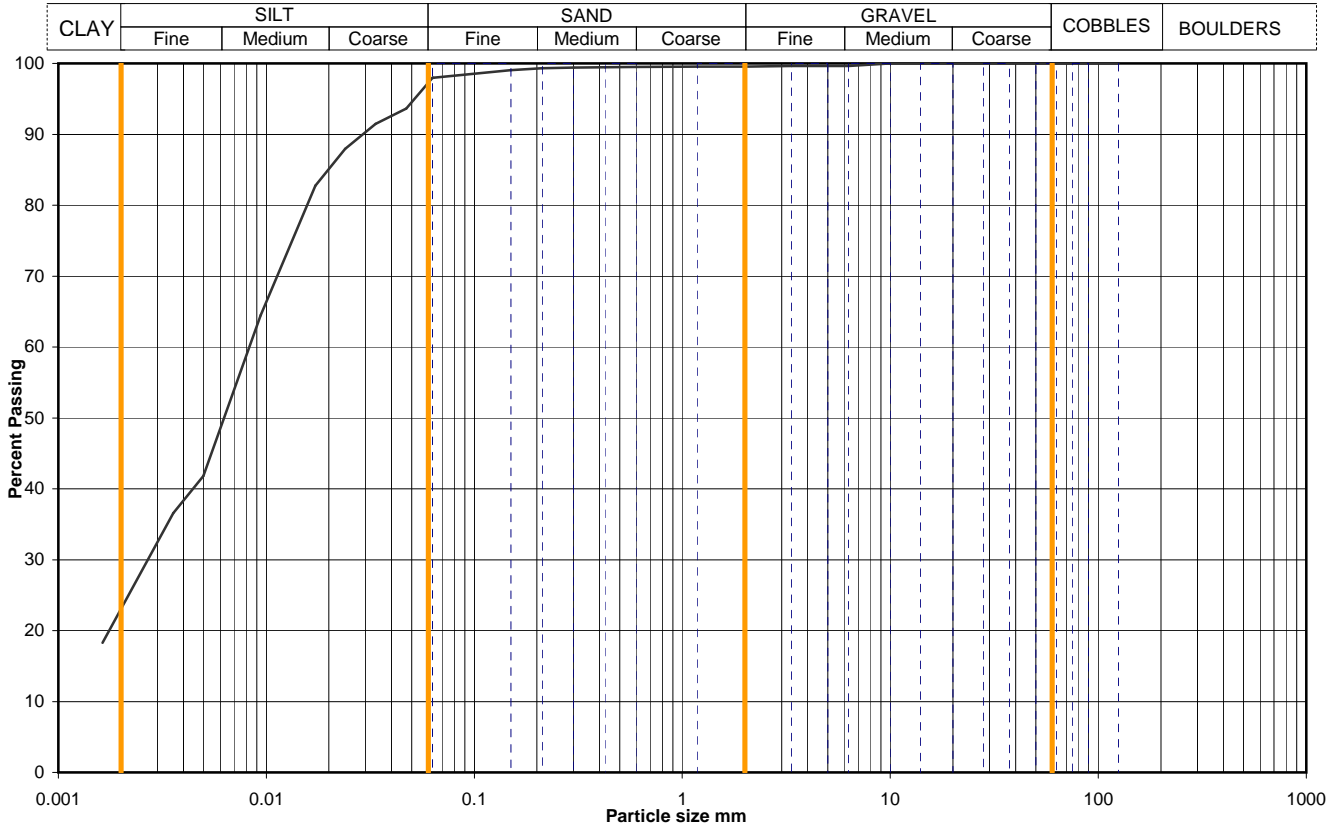


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Figure
PSD 57

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	11.10		
			Samp No	27	Type	U
			ID	ESGA0012-10201009200000000890		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	98
90	100	0.0470	94
75	100	0.0335	91
63	100	0.0240	88
50	100	0.0172	83
37.5	100	0.0094	64
28	100	0.0050	42
20	100	0.0036	37
14	100	0.0016	18
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	99	Particle density, Mg/m ³	2.61 measured
0.425	99		
0.300	99	Dry mass of sample, kg	1.3
0.212	99		
0.150	99		
0.063	98		

Soil description	Soft to firm dark grey slightly sandy organic CLAY with rare plant remains.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		2	2
		75	75
*<60mm values to aid description only		23	23

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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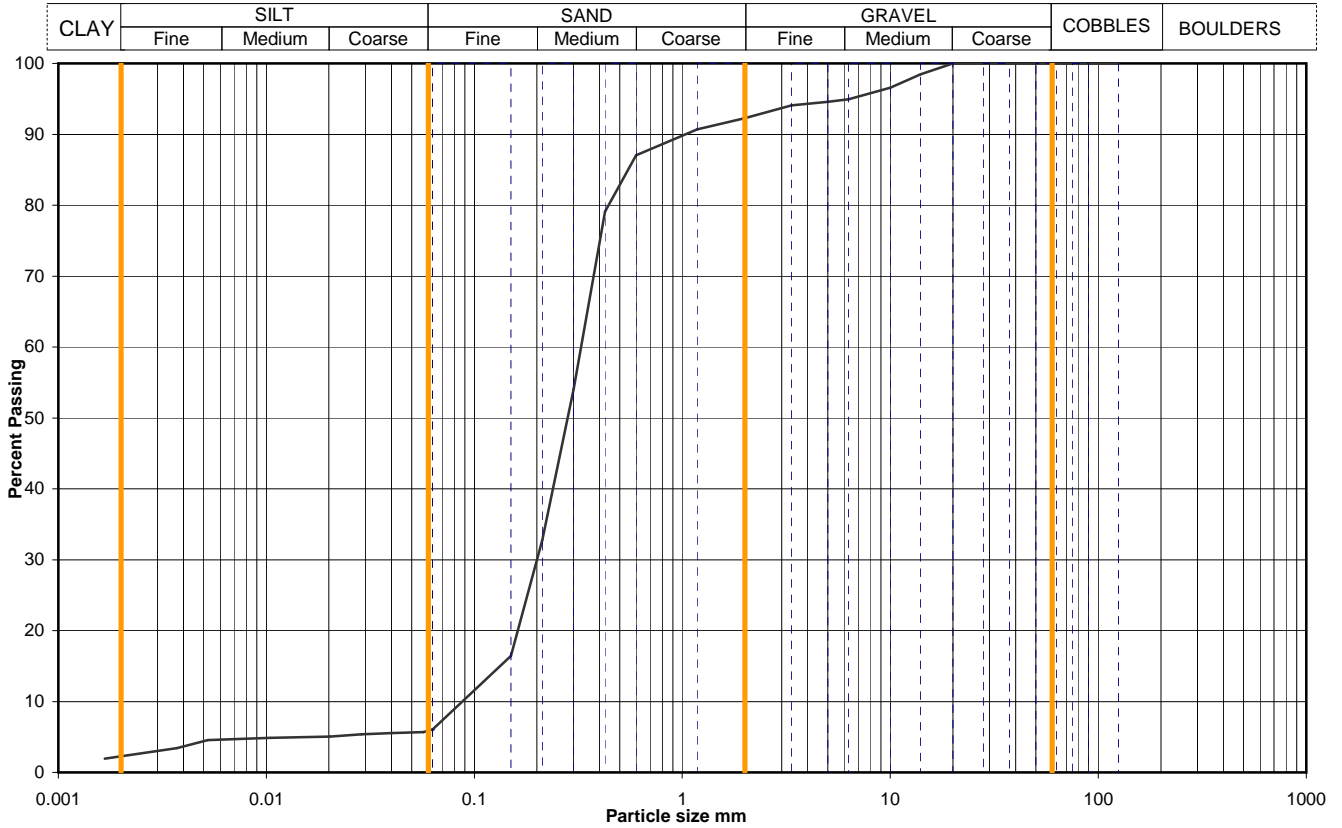


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Figure
PSD 58

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	17.55
			Samp No	50
			Type	U
			ID	ESGA0012-10201009200000000913
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	6
90	100	0.0570	6
75	100	0.0403	6
63	100	0.0285	5
50	100	0.0202	5
37.5	100	0.0105	5
28	100	0.0052	5
20	100	0.0037	3
14	98	0.0017	2
10	97		
6.3	95		
5.0	95		
3.35	94		
2.00	92		
1.18	91		
0.600	87		
0.425	79		
0.300	54		
0.212	33		
0.150	16		
0.063	6		

Particle density, Mg/m ³	2.66 measured
Dry mass of sample, kg	6.2

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		8	8
		86	86
		4	4
*<60mm values to aid description only		2	2

Uniformity Coefficient	D_{60} / D_{10}	4
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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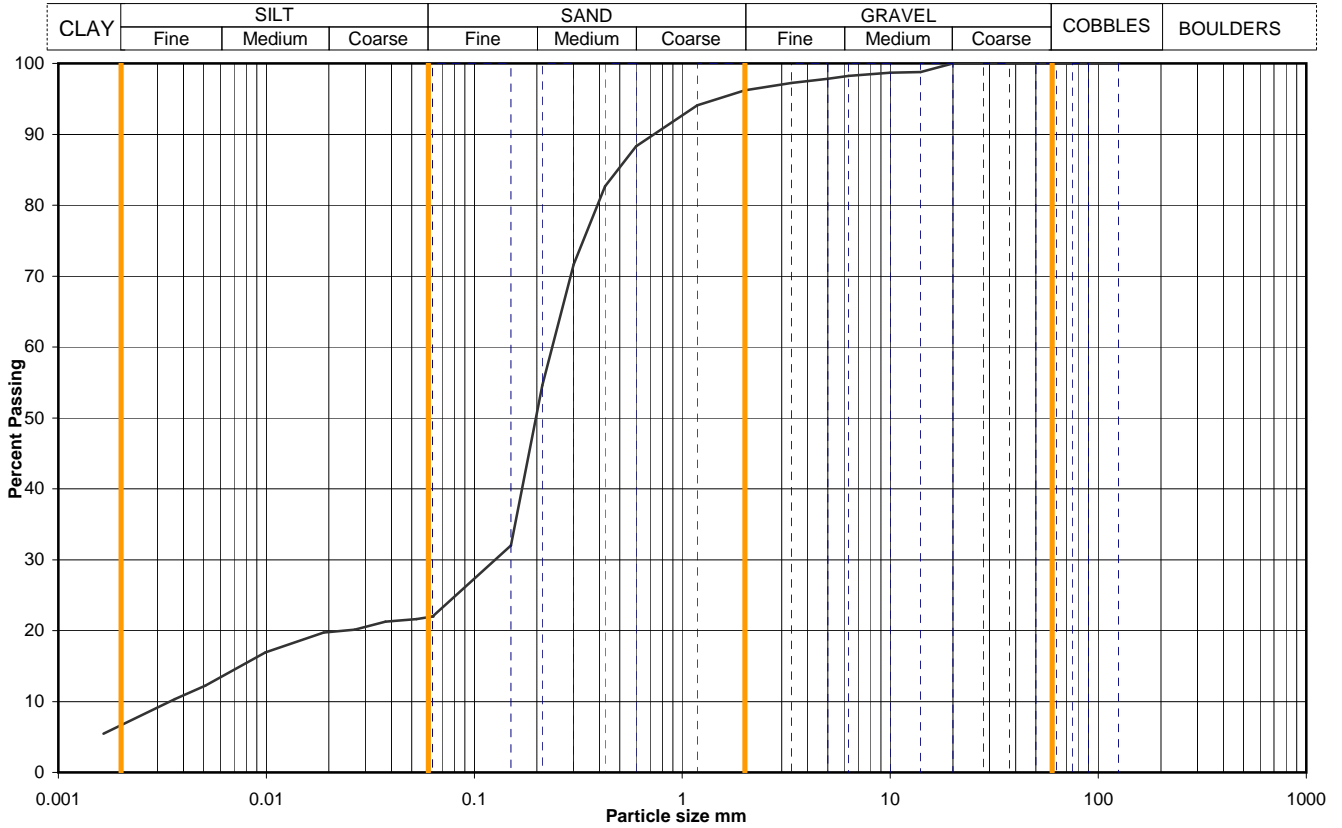


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Figure
PSD 59

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	26.00		
			Samp No	73	Type	U
			ID	ESGA0012-10201009270000001132		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	22
90	100	0.0527	22
75	100	0.0373	21
63	100	0.0266	20
50	100	0.0188	20
37.5	100	0.0099	17
28	100	0.0051	12
20	100	0.0036	10
14	99	0.0016	5
10	99		
6.3	98		
5.0	98		
3.35	97		
2.00	96		
1.18	94		
0.600	88	Particle density, Mg/m ³	
0.425	83	2.64	measured
0.300	72	Dry mass of sample, kg	
0.212	55	6.2	
0.150	32		
0.063	22		

Soil description	Grey to brownish grey silty SAND with shell fragments and pockets of very silty clay		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		4	4
		74	74
		15	15
		7	7

Uniformity Coefficient	D_{60} / D_{10}	69
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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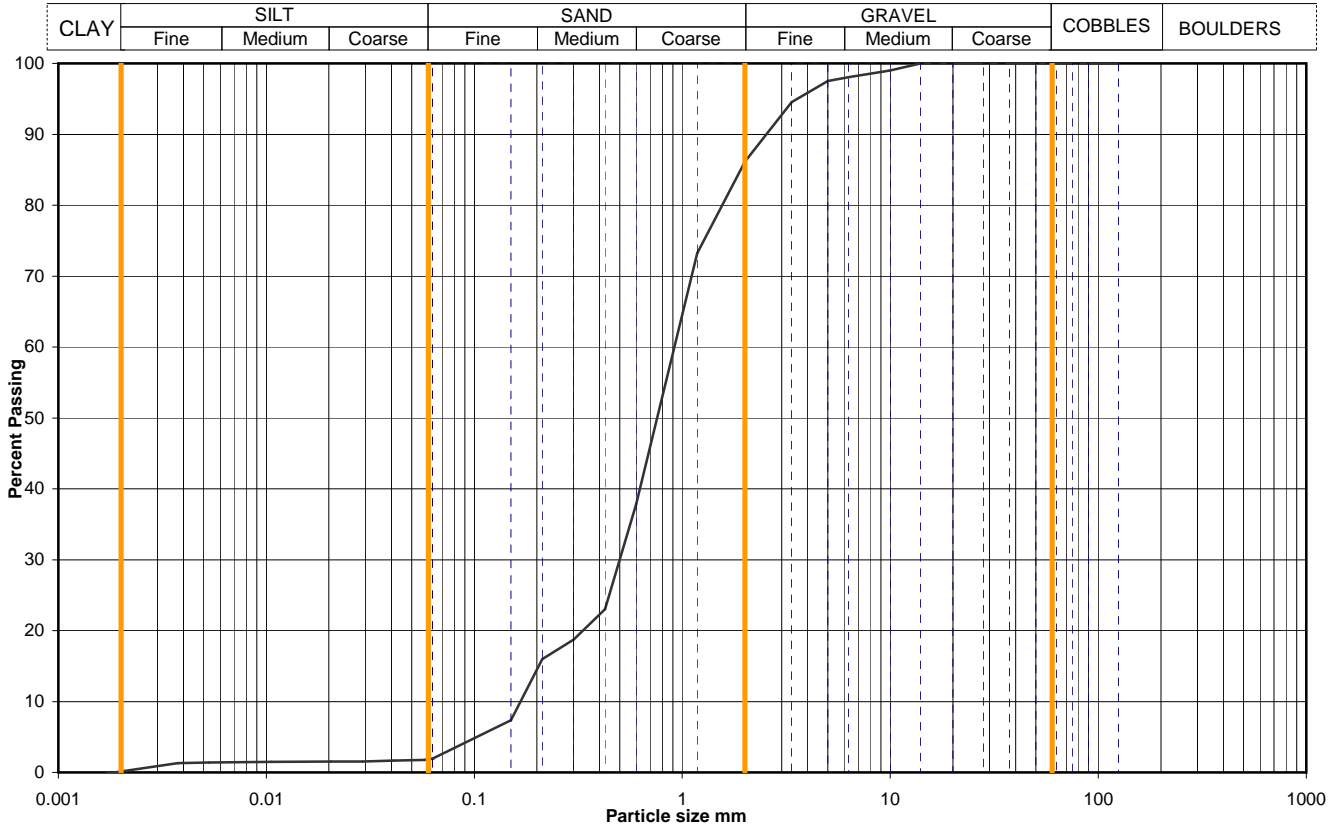


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Figure
PSD 60

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	35.05
			Samp No	95
			Type	U
			ID	ESGA0012-10201009270000001156
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	2
90	100	0.0576	2
75	100	0.0408	2
63	100	0.0289	2
50	100	0.0204	2
37.5	100	0.0106	1
28	100	0.0053	1
20	100	0.0037	1
14	100	0.0017	0
10	99		
6.3	98		
5.0	98		
3.35	95		
2.00	86		
1.18	73		
0.600	38		
0.425	23		
0.300	19		
0.212	16		
0.150	7		
0.063	2		

Particle density, Mg/m ³ 2.64 measured	Dry mass of sample, kg 3.2
--	-------------------------------

Soil description	Brownish grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		14	14
		84	84
		2	2
		0	0

*<60mm values to aid description only

Uniformity Coefficient	D_{60} / D_{10}	6
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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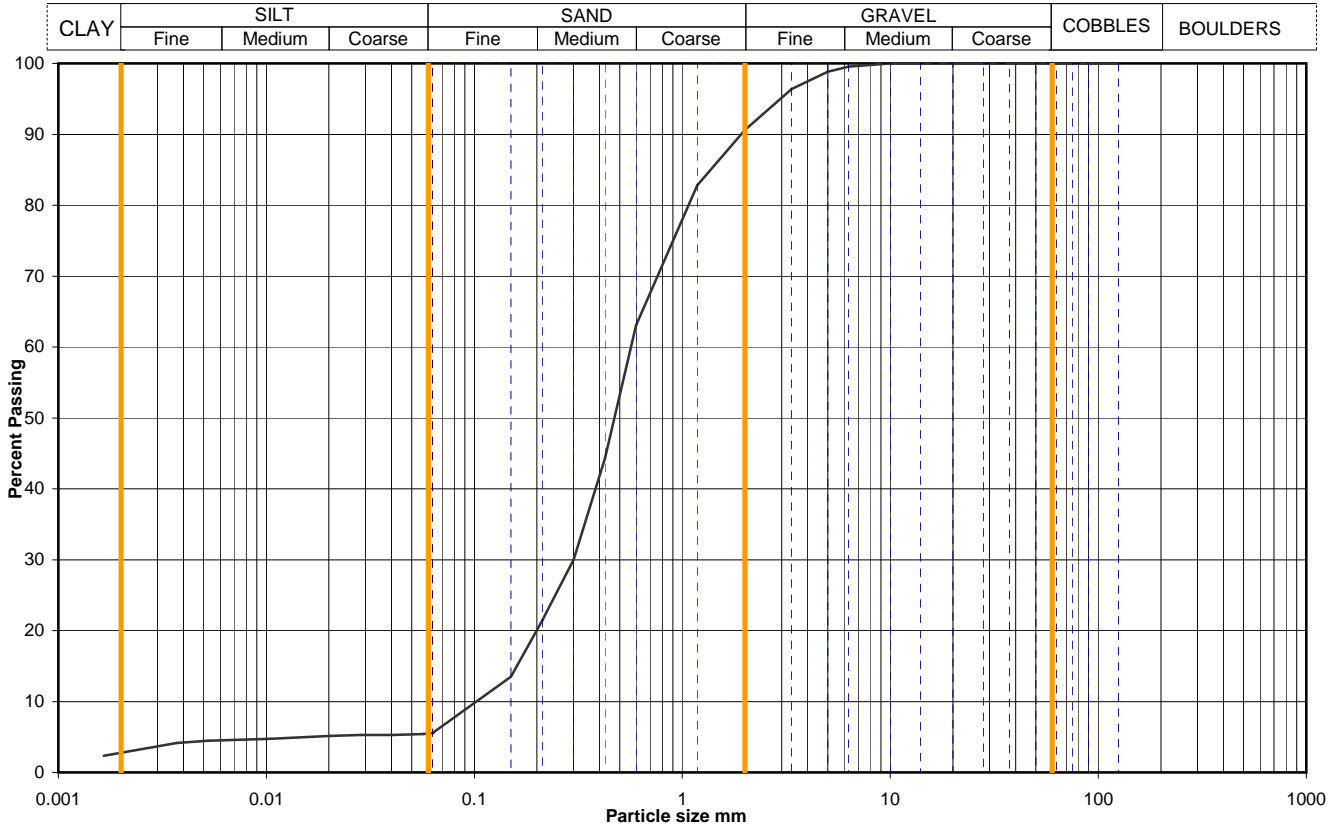


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Figure
PSD 61

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.55
			Samp No	113
			Type	U
			ID	ESGA0012-10201010010000001200
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	6
90	100	0.0569	5
75	100	0.0403	5
63	100	0.0285	5
50	100	0.0202	5
37.5	100	0.0104	5
28	100	0.0052	4
20	100	0.0037	4
14	100	0.0017	2
10	100		
6.3	100		
5.0	99		
3.35	96		
2.00	91		
1.18	83		
0.600	63		
0.425	44		
0.300	30		
0.212	21		
0.150	14		
0.063	6		

Particle density, Mg/m ³ 2.65 assumed	Dry mass of sample, kg 2.4
---	-------------------------------

Soil description	Grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		9	9
		85	85
		3	3
*<60mm values to aid description only		3	3

Uniformity Coefficient	D_{60} / D_{10}	6
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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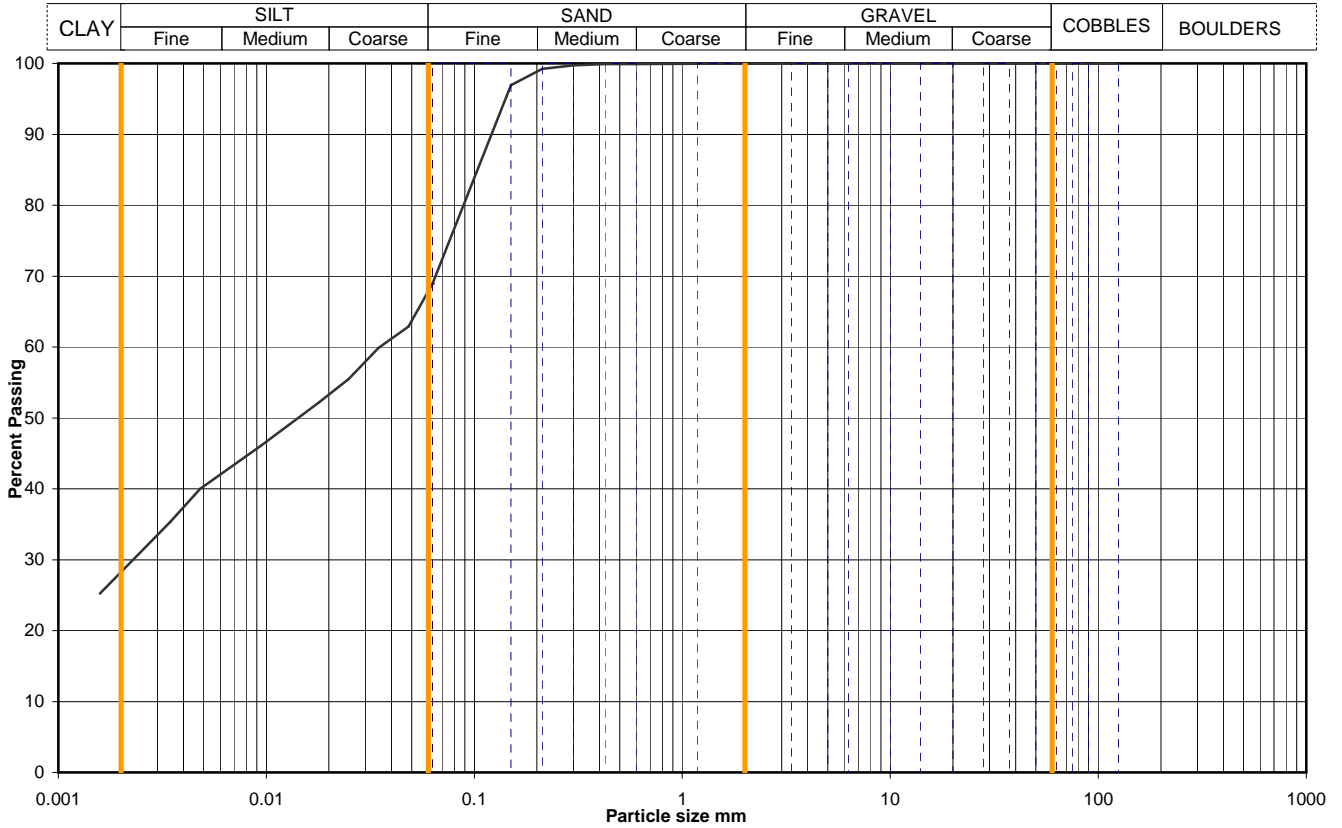


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Figure
PSD 62

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	48.77		
			Samp No	121	Type	CS
			ID	ESGA0012-10201010280000002713		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	69
90	100	0.0483	63
75	100	0.0346	60
63	100	0.0249	55
50	100	0.0178	52
37.5	100	0.0094	46
28	100	0.0048	40
20	100	0.0034	35
14	100	0.0016	25
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100	Particle density, Mg/m ³	
0.425	100	2.65 assumed	
0.300	100	Dry mass of sample, kg	
0.212	99	0.4	
0.150	97		
0.063	69		

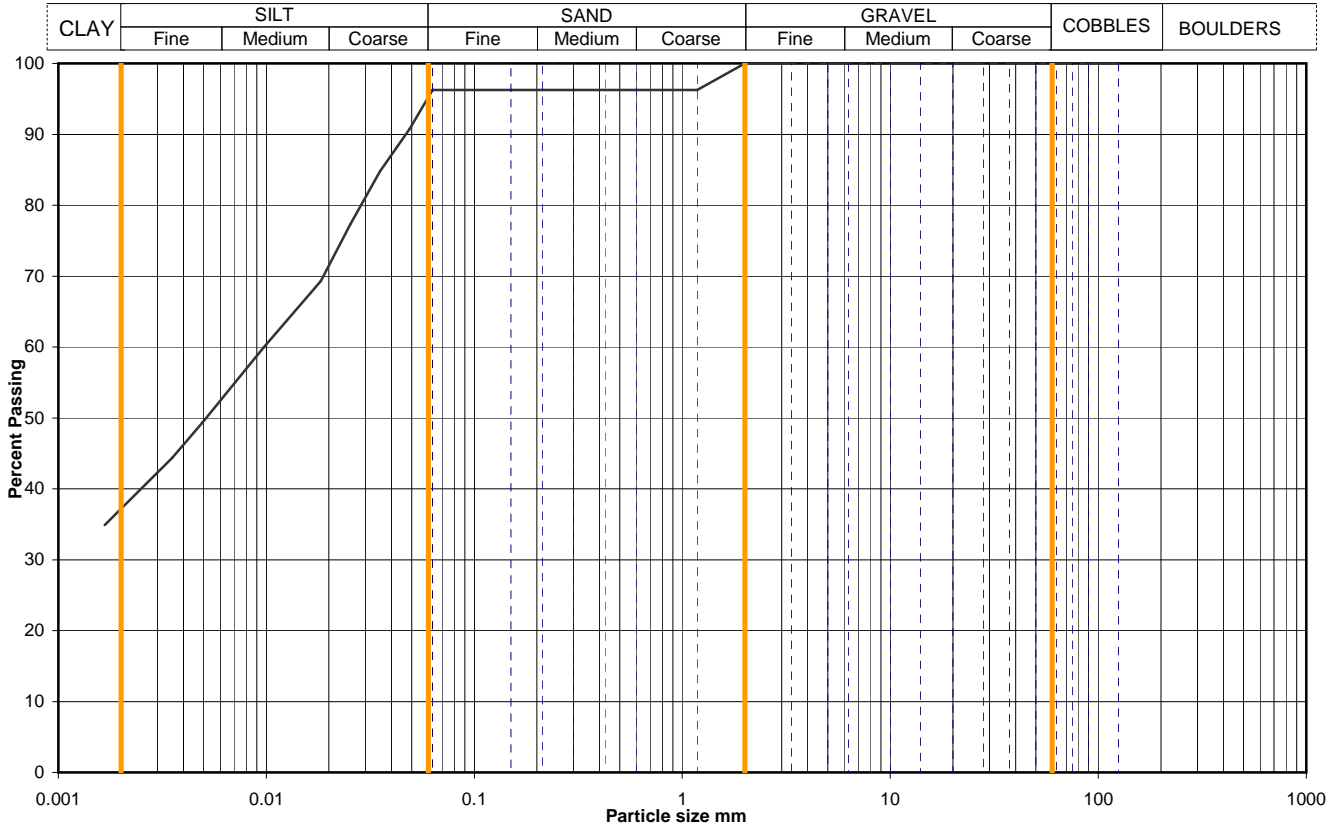
Soil description	Very stiff brownish grey fissured slightly sandy silty CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		32	32
		40	40
*<60mm values to aid description only		28	28

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	58.23
			Samp No	125
			Type	CS
			ID	ESGA0012-10201010280000002717
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	96
90	100	0.0489	91
75	100	0.0352	85
63	100	0.0253	77
50	100	0.0183	69
37.5	100	0.0097	60
28	100	0.0049	49
20	100	0.0035	44
14	100	0.0017	35
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	96		
0.600	96		
0.425	96		
0.300	96		
0.212	96		
0.150	96		
0.063	96		
		Particle density, Mg/m ³	
		2.63 measured	
		Dry mass of sample, kg	
		0.0	

Soil description	Very stiff greyish brown slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <math><2\text{ mm}</math> material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<math><60\text{ mm}</math>
		0	0
		0	0
		5	5
		58	58
		37	37
<small>*<math><60\text{ mm}</math> values to aid description only</small>			

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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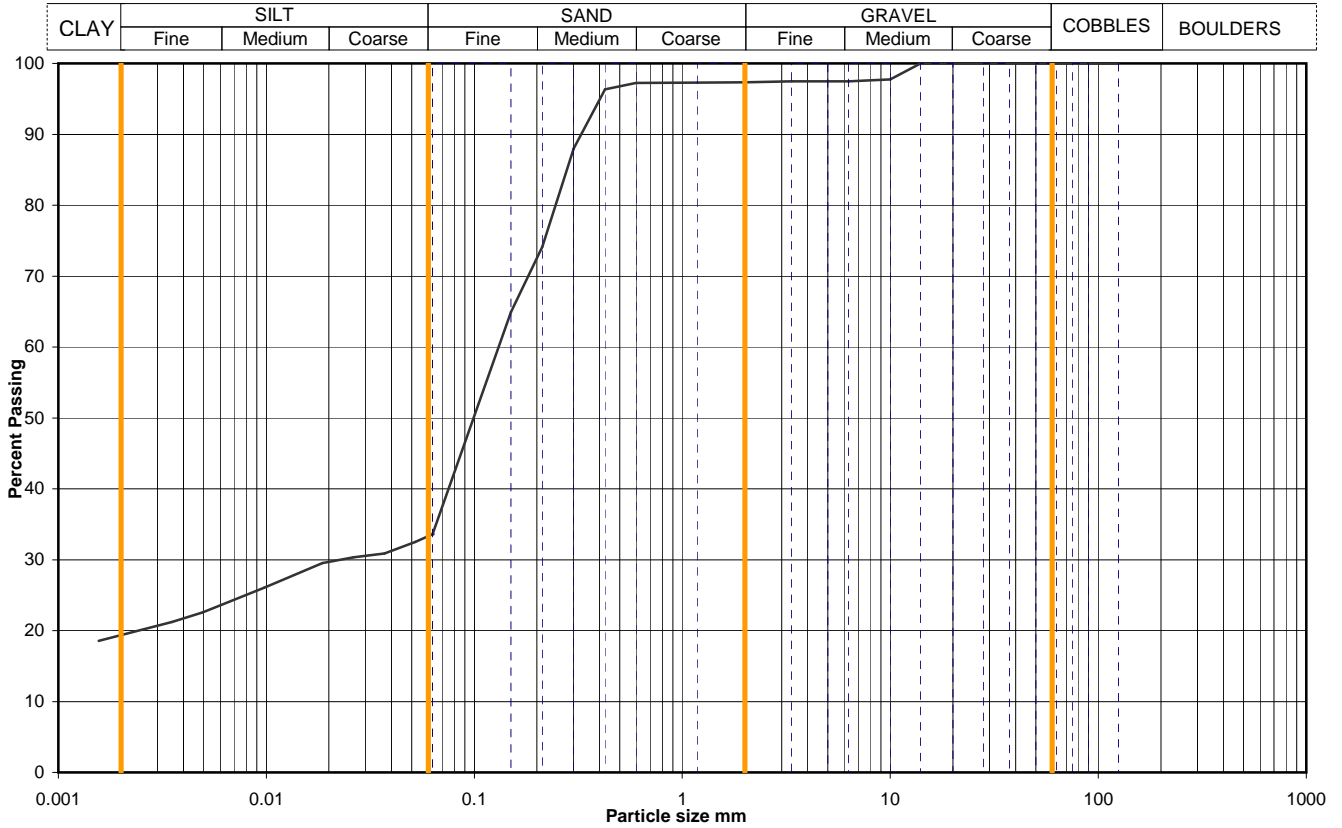


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Figure
PSD 64

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	61.32
			Samp No	126
			Type	CS
			ID	ESGA0012-10201010280000002718
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	34
90	100	0.0520	33
75	100	0.0370	31
63	100	0.0262	30
50	100	0.0186	30
37.5	100	0.0098	26
28	100	0.0049	23
20	100	0.0035	21
14	100	0.0016	19
10	98		
6.3	97		
5.0	97		
3.35	97		
2.00	97		
1.18	97		
0.600	97		
0.425	96		
0.300	88		
0.212	74		
0.150	65		
0.063	34		

Particle density, Mg/m ³	2.68 measured
Dry mass of sample, kg	1.5

Soil description	Firm brownish grey slightly gravelly sandy CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		3	3
		64	64
		14	14
		19	19

*<60mm values to aid description only

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
------------------------	-------------------	----------------

Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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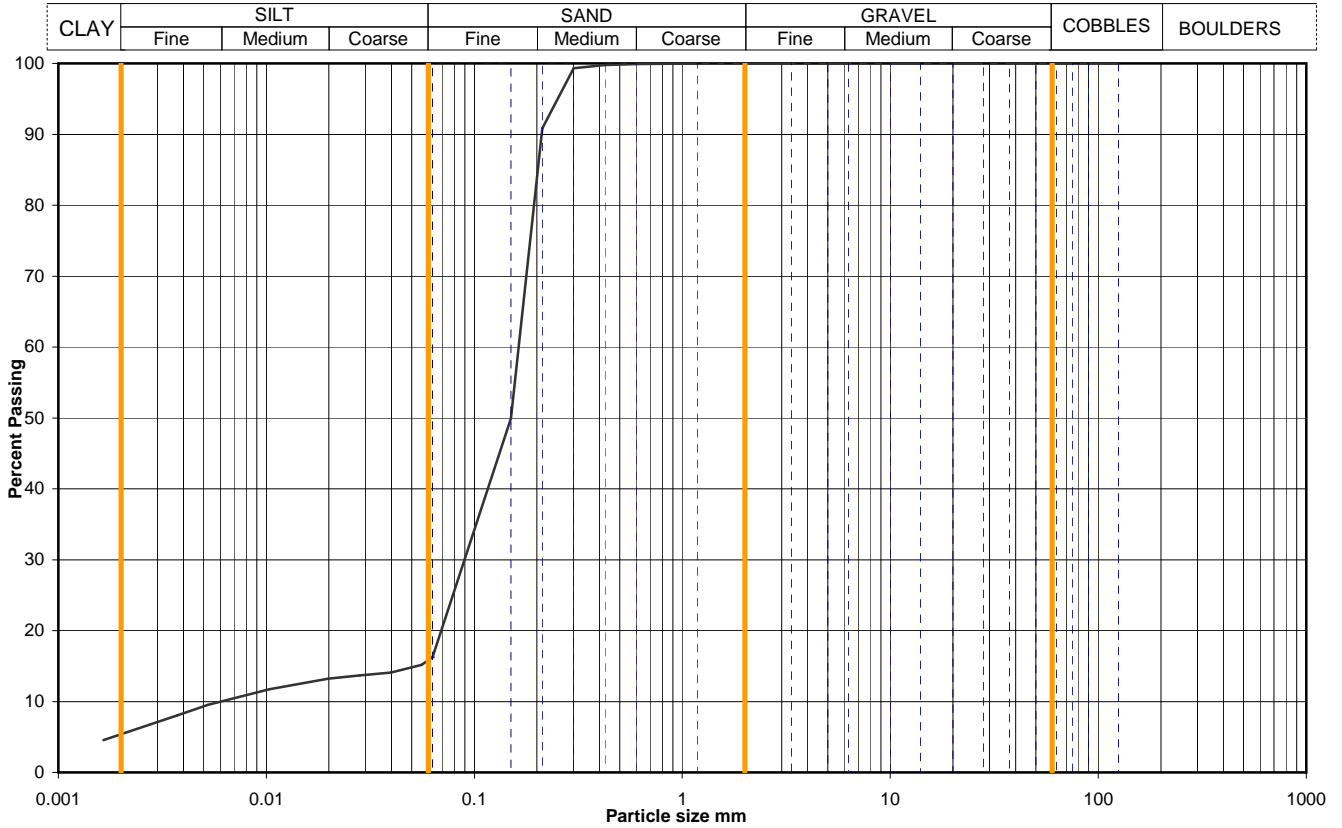


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Figure
PSD 65

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	67.41
			Samp No	128
			Type	CS
			ID	ESGA0012-10201010280000002720
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	16
90	100	0.0558	15
75	100	0.0397	14
63	100	0.0281	14
50	100	0.0199	13
37.5	100	0.0104	12
28	100	0.0052	10
20	100	0.0037	8
14	100	0.0016	5
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100		
0.425	100		
0.300	99		
0.212	91		
0.150	50		
0.063	16		

Particle density, Mg/m ³	2.63 measured
Dry mass of sample, kg	0.1

Soil description	Brownish grey clayey SAND.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		84	84
		11	11
		5	5

Uniformity Coefficient	D_{60} / D_{10}	27
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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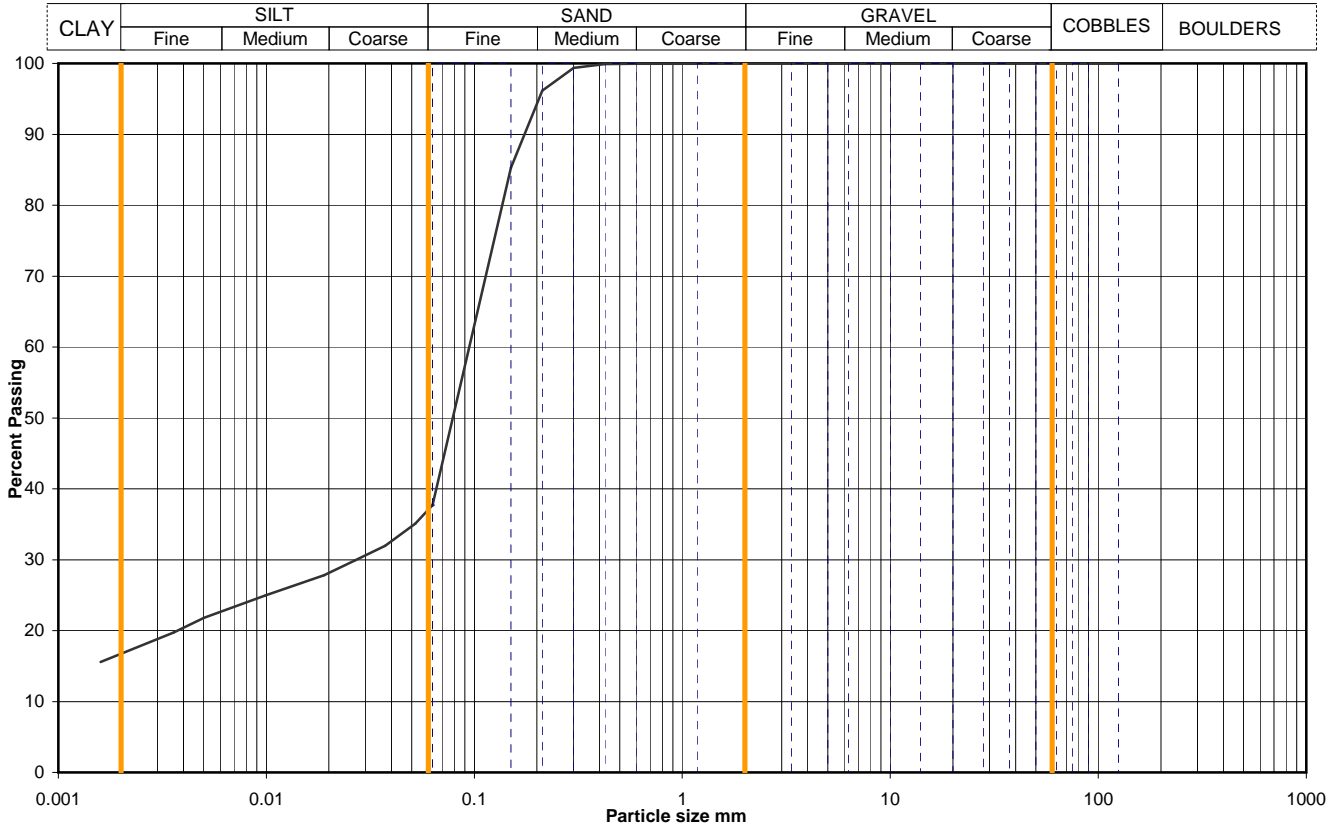


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Figure
PSD 66

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	72.00
			Samp No	129
			Type	CS
			ID	ESGA0012-10201010280000002721
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	38
90	100	0.0519	35
75	100	0.0372	32
63	100	0.0266	30
50	100	0.0190	28
37.5	100	0.0099	25
28	100	0.0050	22
20	100	0.0036	20
14	100	0.0016	16
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100		
0.425	100		
0.300	99		
0.212	96		
0.150	85		
0.063	38		

Particle density, Mg/m ³	2.65 measured
Dry mass of sample, kg	1.0

Soil description	Soft to firm grey and brown sandy CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		63	63
		20	20
*<60mm values to aid description only		17	17

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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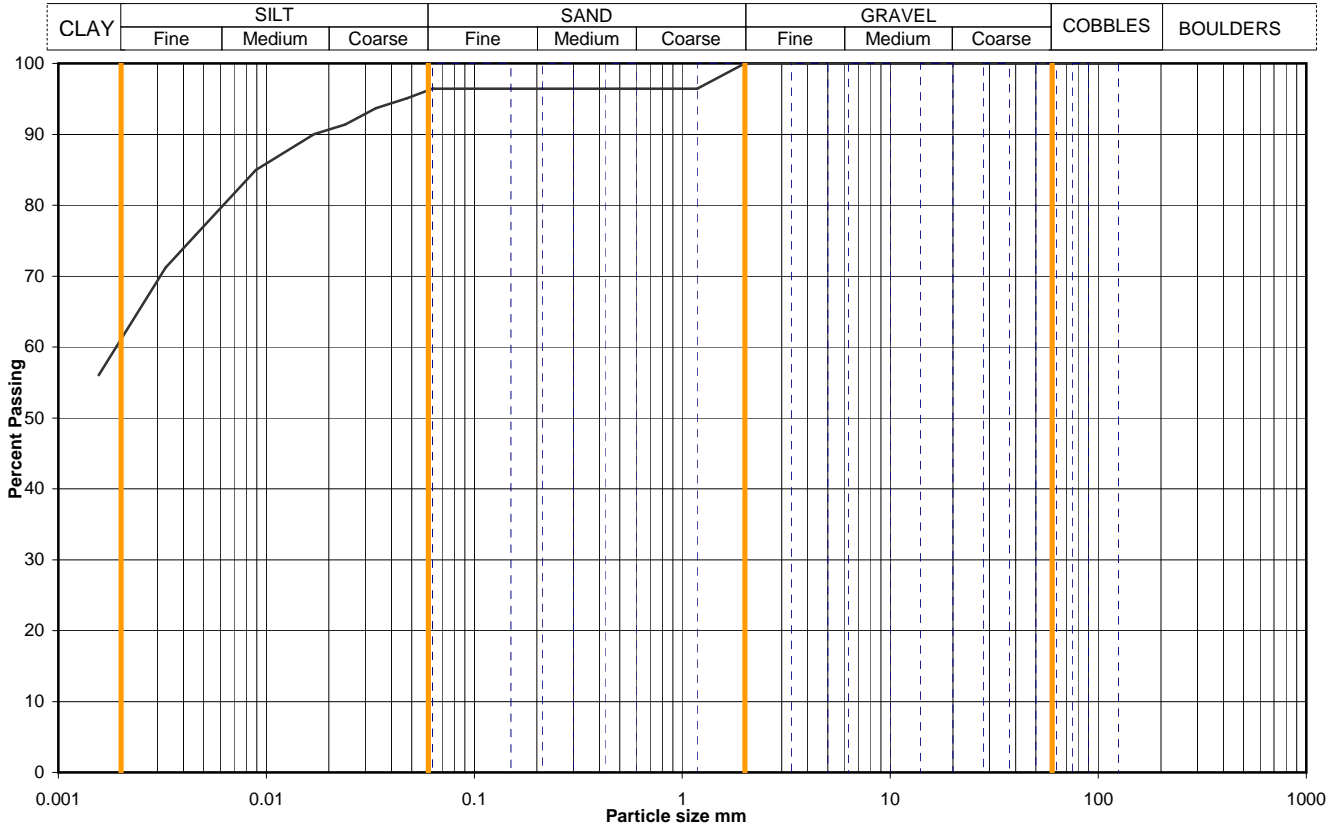


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Figure
PSD 67

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	74.60
			Samp No	130
			Type	CS
			ID	ESGA0012-10201010280000002722
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	96
90	100	0.0473	95
75	100	0.0336	94
63	100	0.0239	91
50	100	0.0170	90
37.5	100	0.0089	85
28	100	0.0046	76
20	100	0.0033	71
14	100	0.0016	56
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	96		
0.600	96		
0.425	96		
0.300	96		
0.212	96		
0.150	96		
0.063	96		
		Particle density, Mg/m ³	
		2.65 assumed	
		Dry mass of sample, kg	
		0.0	

Soil description	Stiff dark grey slightly sandy fissured CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		4	4
		35	35
*<60mm values to aid description only		61	61

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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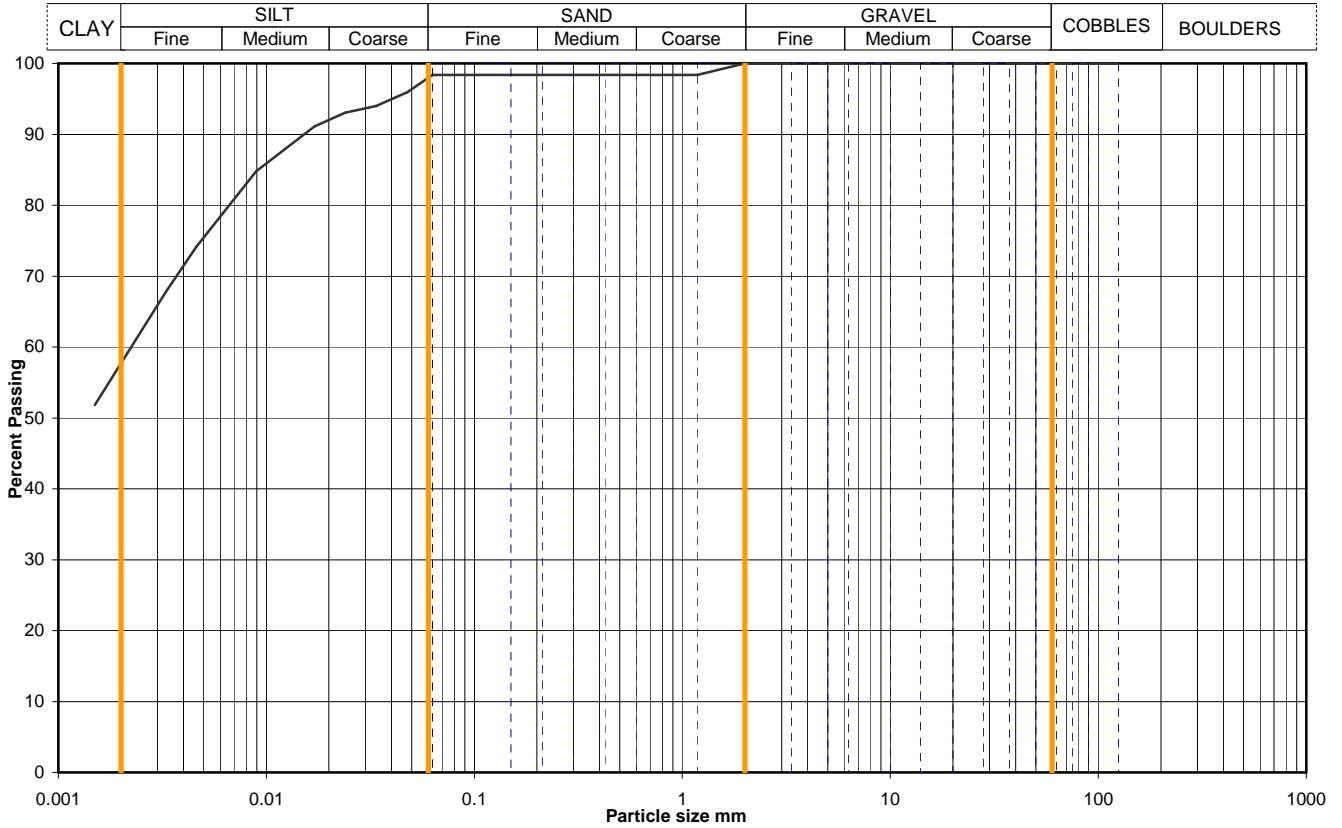


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Figure
PSD 68

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	78.05		
			Samp No	131	Type	CS
			ID	ESGA0012-10201010280000002723		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	98
90	100	0.0475	96
75	100	0.0338	94
63	100	0.0239	93
50	100	0.0170	91
37.5	100	0.0089	85
28	100	0.0046	74
20	100	0.0033	68
14	100	0.0015	52
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	98	Particle density, Mg/m ³	2.67 measured
0.600	98		
0.425	98	Dry mass of sample, kg	0.0
0.300	98		
0.212	98		
0.150	98		
0.075	98		
0.063	98		

Soil description	Stiff brownish grey slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <math><2\text{ mm}</math> material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<math><60\text{ mm}</math>
		0	0
		0	0
		2	2
		40	40
		58	58

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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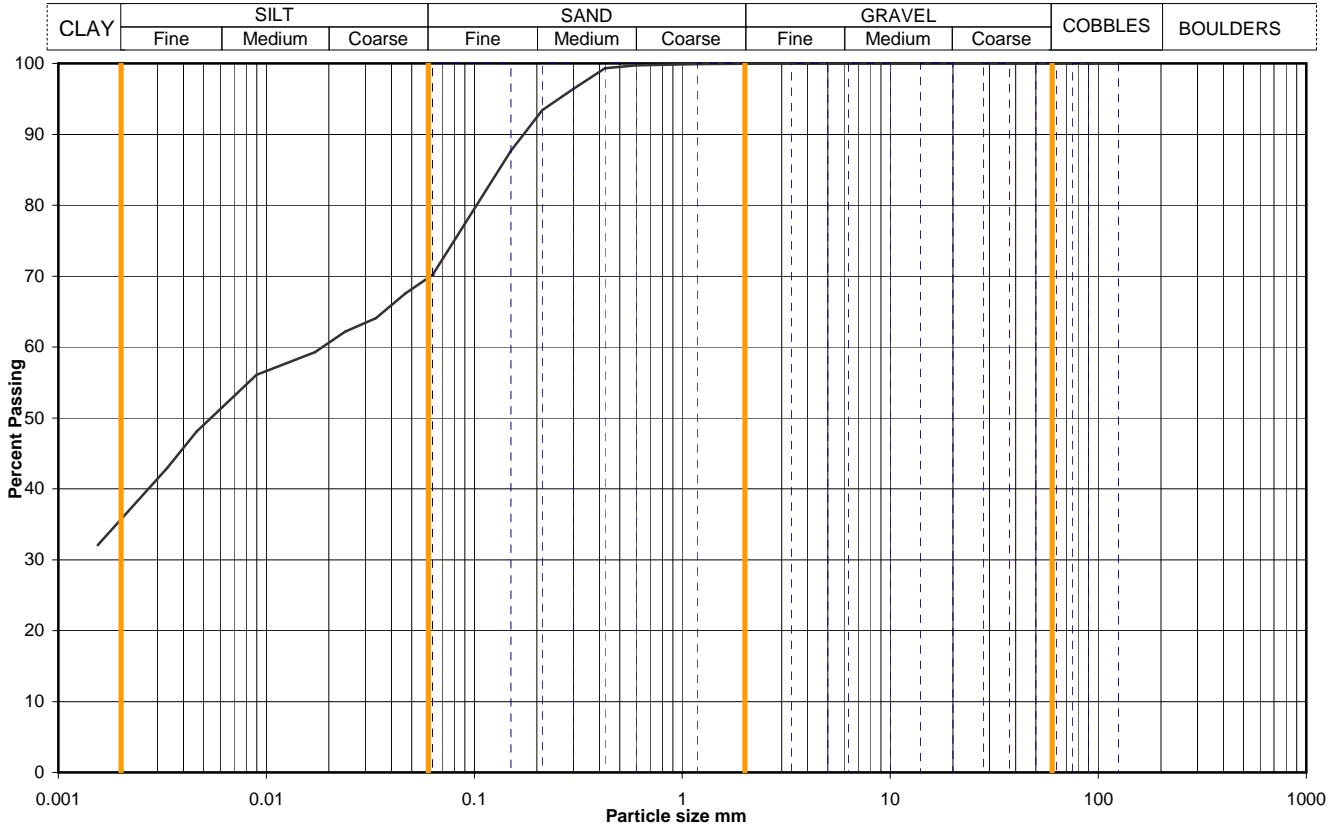


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Figure
PSD 69

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	81.12		
			Samp No	132	Type	CS
			ID	ESGA0012-10201010280000002724		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	70
90	100	0.0467	68
75	100	0.0336	64
63	100	0.0239	62
50	100	0.0171	59
37.5	100	0.0090	56
28	100	0.0046	48
20	100	0.0033	43
14	100	0.0015	32
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100	Particle density, Mg/m ³	
0.425	99	2.65 assumed	
0.300	96	Dry mass of sample, kg	
0.212	93	0.4	
0.150	88		
0.063	70		

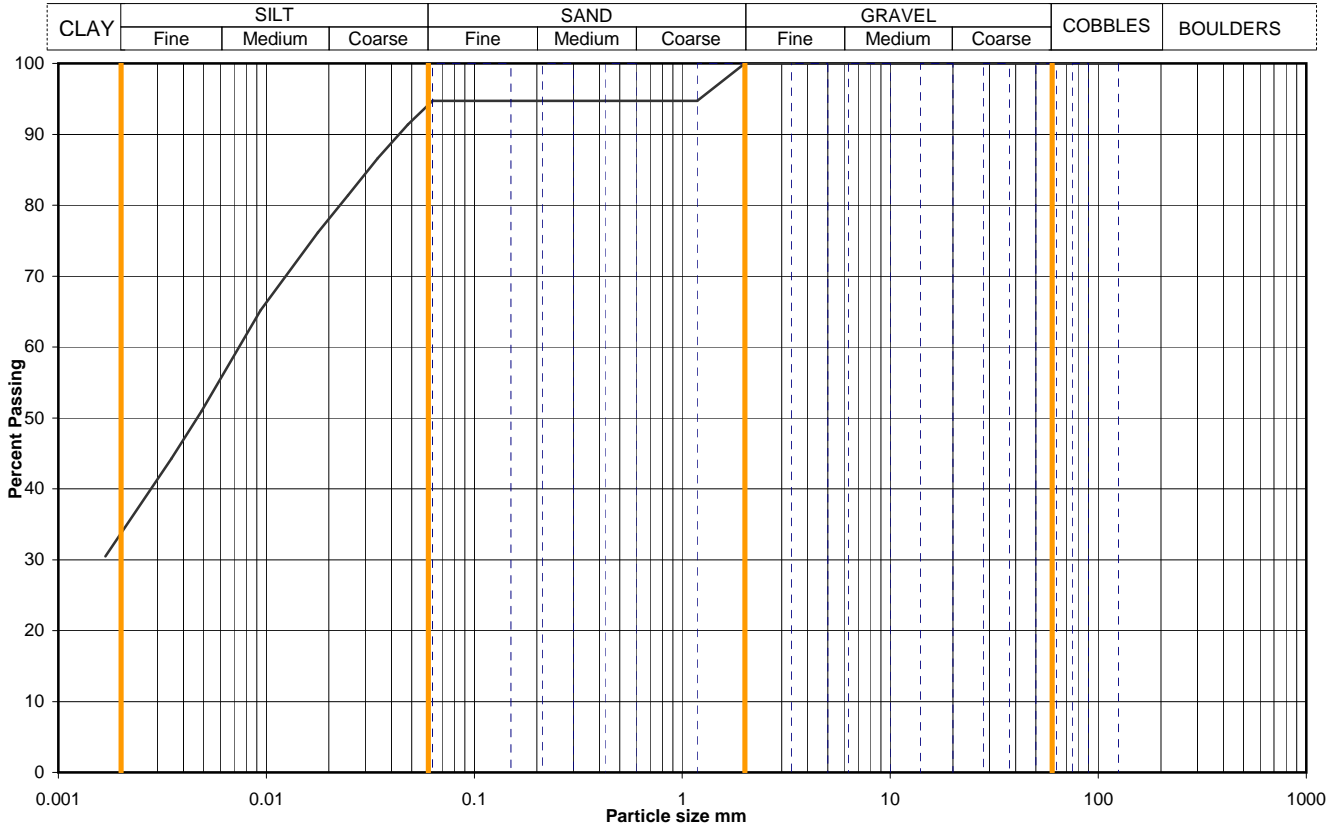
Soil description	Very stiff brownish grey slightly sandy silty fissured CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		30	30
		34	34
*<60mm values to aid description only		36	36

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	84.12
			Samp No	133
			Type	CS
			ID	ESGA0012-10201010280000002725
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	95
90	100	0.0480	91
75	100	0.0344	87
63	100	0.0247	81
50	100	0.0177	76
37.5	100	0.0094	65
28	100	0.0049	51
20	100	0.0035	44
14	100	0.0017	30
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	95		
0.600	95		
0.425	95		
0.300	95		
0.212	95		
0.150	95		
0.063	95		
		Particle density, Mg/m ³	
		2.65 assumed	
		Dry mass of sample, kg	
		0.0	

Soil description	Very stiff brown slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		6	6
		60	60
*<60mm values to aid description only		34	34

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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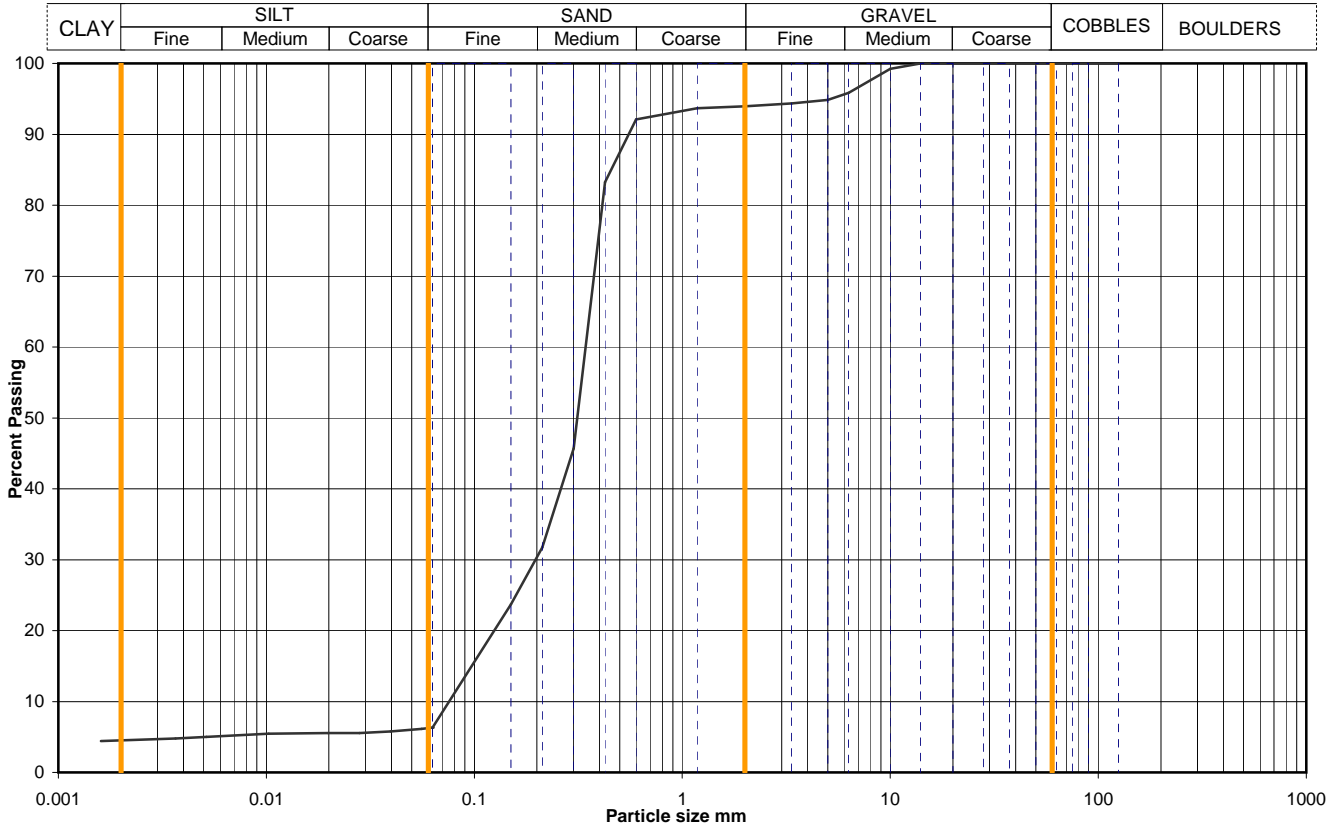


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Figure
PSD 71

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_9U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	14.15
			Samp No	44
			Type	U
			ID	ESGA0012-10201010050000001401
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	6
90	100	0.0558	6
75	100	0.0396	6
63	100	0.0281	6
50	100	0.0199	6
37.5	100	0.0103	5
28	100	0.0052	5
20	100	0.0037	5
14	100	0.0016	4
10	99		
6.3	96		
5.0	95		
3.35	94		
2.00	94		
1.18	94		
0.600	92		
0.425	83		
0.300	46		
0.212	32		
0.150	24		
0.063	6		

Particle density, Mg/m ³	2.65 measured
Dry mass of sample, kg	4.8

Soil description	Light brown SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		6	6
		88	88
		2	2
		4	4

Uniformity Coefficient	D_{60} / D_{10}	5
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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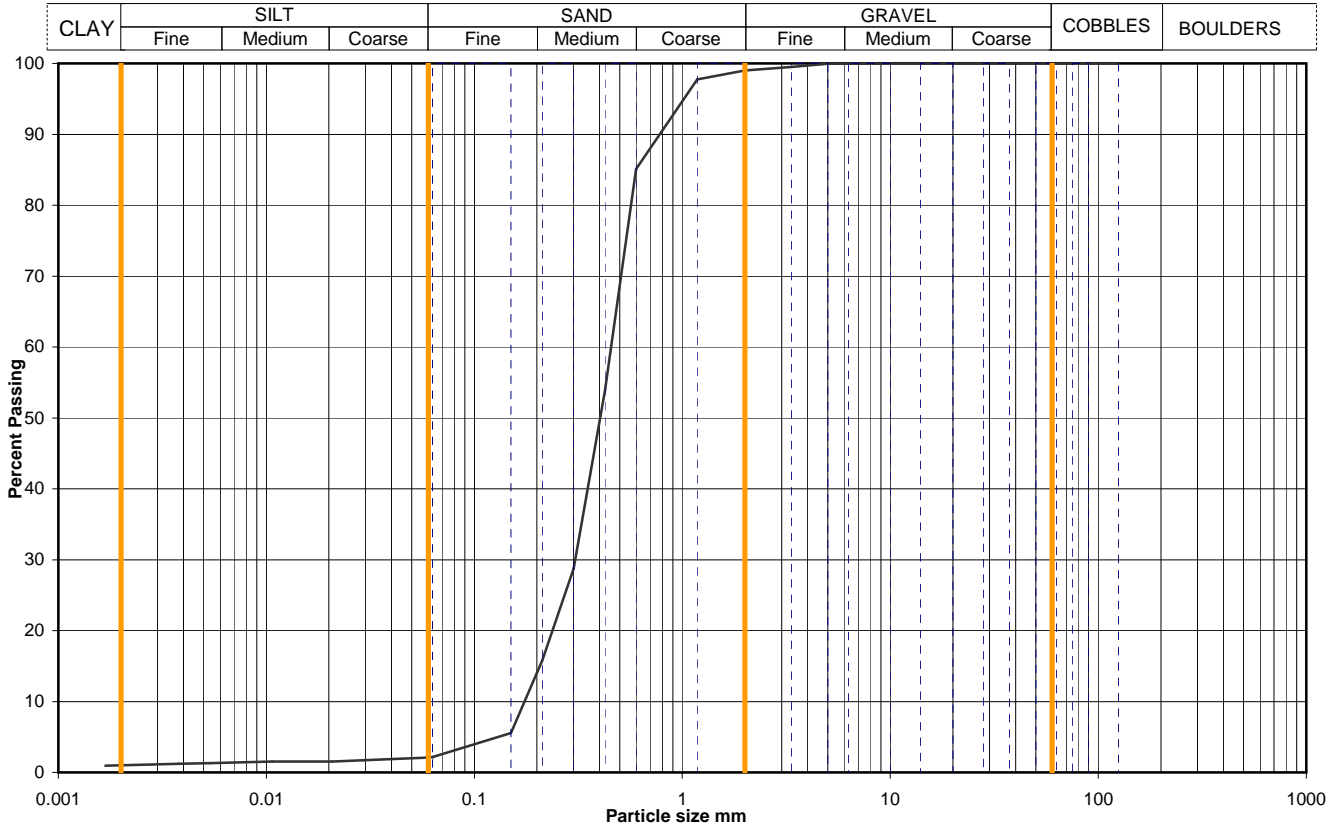


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Figure
PSD 72

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_9U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	23.20		
			Samp No	65	Type	U
			ID	ESGA0012-10201010050000001423		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	2
90	100	0.0581	2
75	100	0.0412	2
63	100	0.0292	2
50	100	0.0207	2
37.5	100	0.0107	2
28	100	0.0054	1
20	100	0.0038	1
14	100	0.0017	1
10	100		
6.3	100		
5.0	100		
3.35	99		
2.00	99		
1.18	98		
0.600	85		
0.425	54		
0.300	29		
0.212	16		
0.150	6		
0.063	2		

Particle density, Mg/m ³	2.63 measured
Dry mass of sample, kg	5.4

Soil description	Reddish brown SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		1	1
		97	97
		1	1

*<60mm values to aid description only

Uniformity Coefficient	D_{60} / D_{10}	3
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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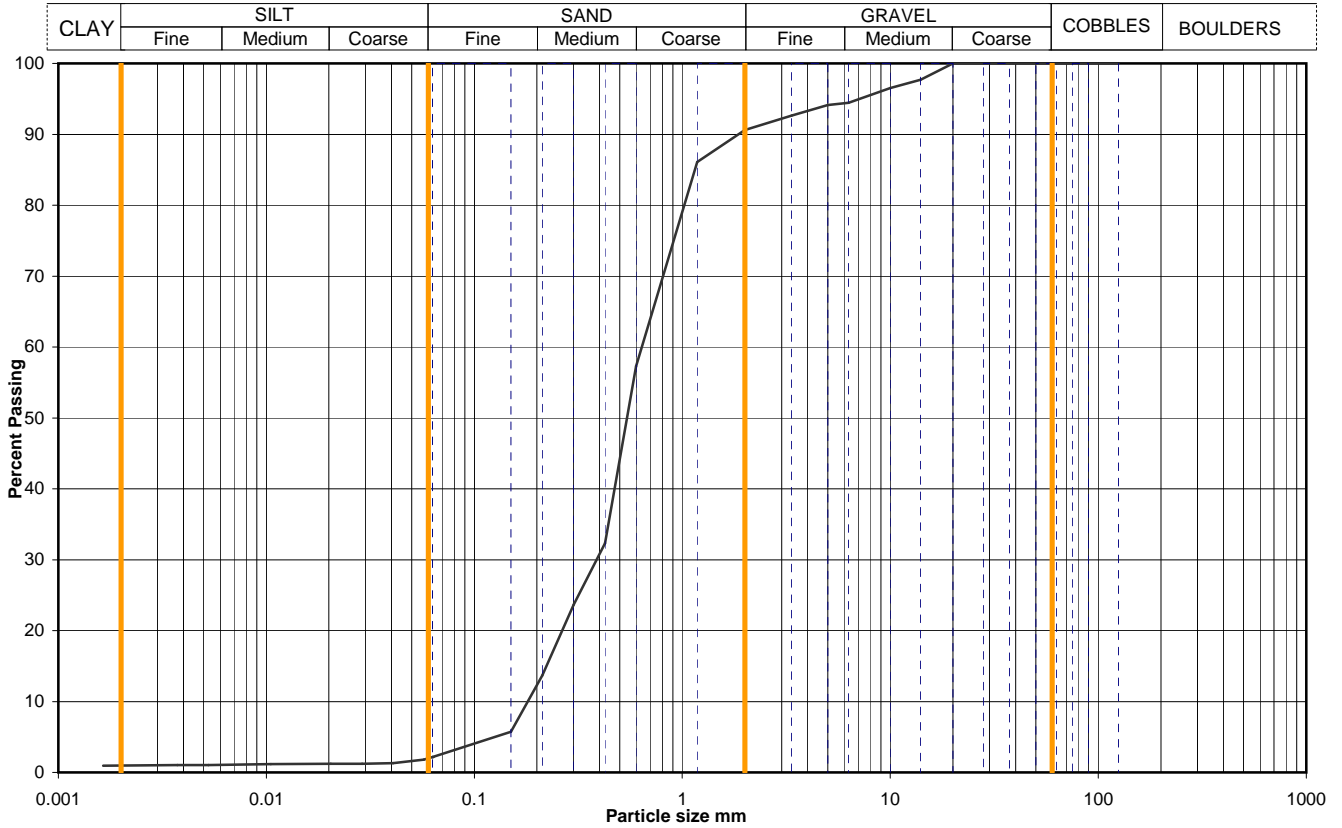


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Figure
PSD 73

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_9U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	31.55		
			Samp No	83	Type	U
			ID	ESGA0012-10201010080000001662		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	2
90	100	0.0571	2
75	100	0.0407	1
63	100	0.0288	1
50	100	0.0204	1
37.5	100	0.0105	1
28	100	0.0053	1
20	100	0.0037	1
14	98	0.0016	1
10	97		
6.3	94		
5.0	94		
3.35	93		
2.00	91		
1.18	86		
0.600	57		
0.425	32		
0.300	24		
0.212	14		
0.150	6		
0.063	2		

Particle density, Mg/m ³ 2.67 measured	Dry mass of sample, kg 3.4
--	-------------------------------

Soil description	Firm to stiff brownish grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		9	9
		89	89
		1	1
*<60mm values to aid description only		1	1

Uniformity Coefficient	D_{60} / D_{10}	4
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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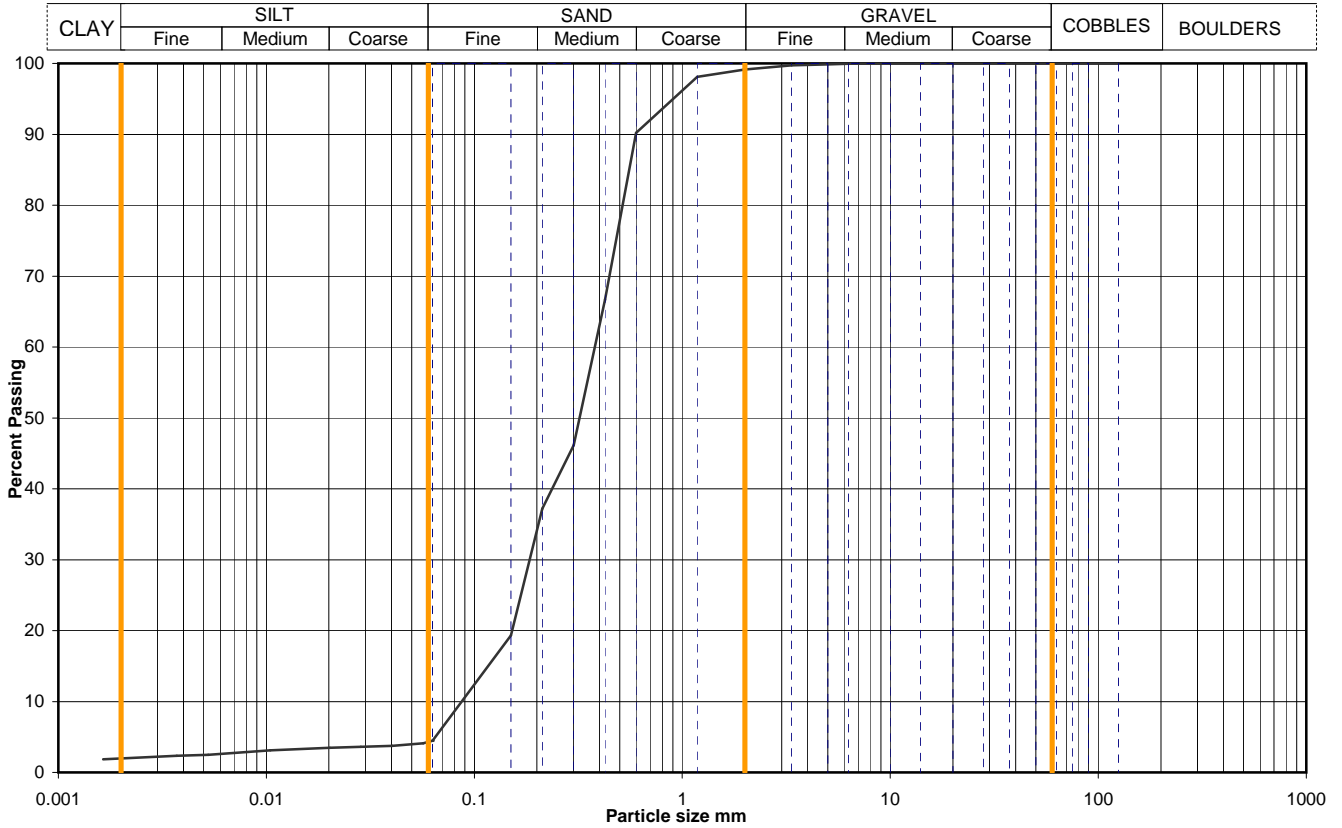


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Figure
PSD 74

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_9U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	40.85
			Samp No	99
			Type	U
			ID	ESGA0012-10201010080000001683
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	4
90	100	0.0568	4
75	100	0.0403	4
63	100	0.0285	4
50	100	0.0202	3
37.5	100	0.0104	3
28	100	0.0052	2
20	100	0.0037	2
14	100	0.0016	2
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	99		
1.18	98		
0.600	90	Particle density, Mg/m ³	
0.425	67	2.68	measured
0.300	46	Dry mass of sample, kg	
0.212	37	2.3	
0.150	19		
0.063	4		

Soil description	Stiff to very stiff grey SAND with shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		1	1
		95	95
		2	2
*<60mm values to aid description only		2	2

Uniformity Coefficient	D_{60} / D_{10}	4
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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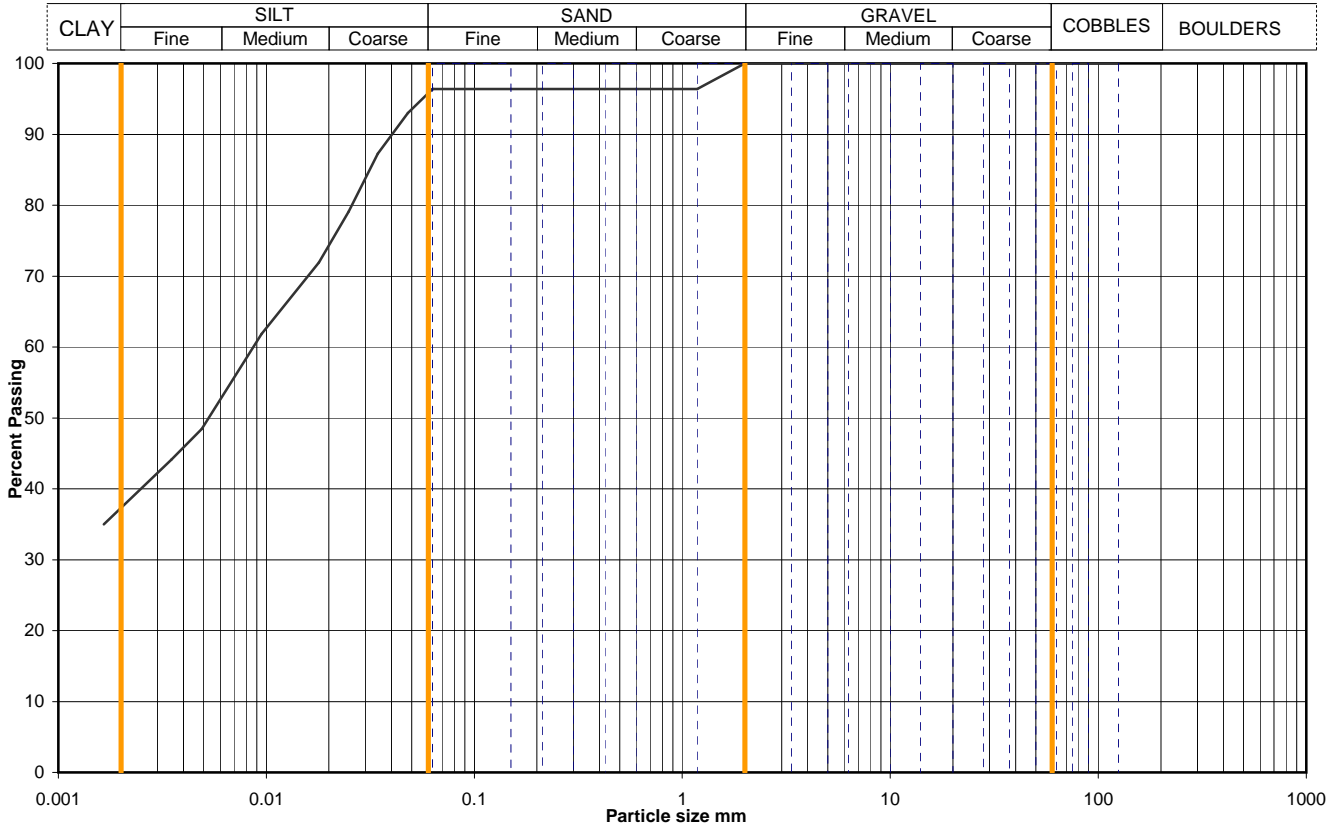


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Figure
PSD 75

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_10		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	50.45		
			Samp No	20	Type	CS
			ID	ESGA0012-10201011030000002776		
			Spec Ref			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	96
90	100	0.0479	93
75	100	0.0344	87
63	100	0.0249	79
50	100	0.0179	72
37.5	100	0.0095	62
28	100	0.0049	48
20	100	0.0035	44
14	100	0.0017	35
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	96	Particle density, Mg/m ³ 2.65 assumed	
0.600	96		
0.425	96		
0.300	96		
0.212	96	Dry mass of sample, kg 0.0	
0.150	96		
0.075	96		
0.063	96		

Soil description	Very stiff brownish grey slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks	Sieve: Sedimentation only carried out as instructed, so ignore sieving percentages and sedimentation is only based on <2mm material.		
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		4	4
		59	59
*<60mm values to aid description only		37	37

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

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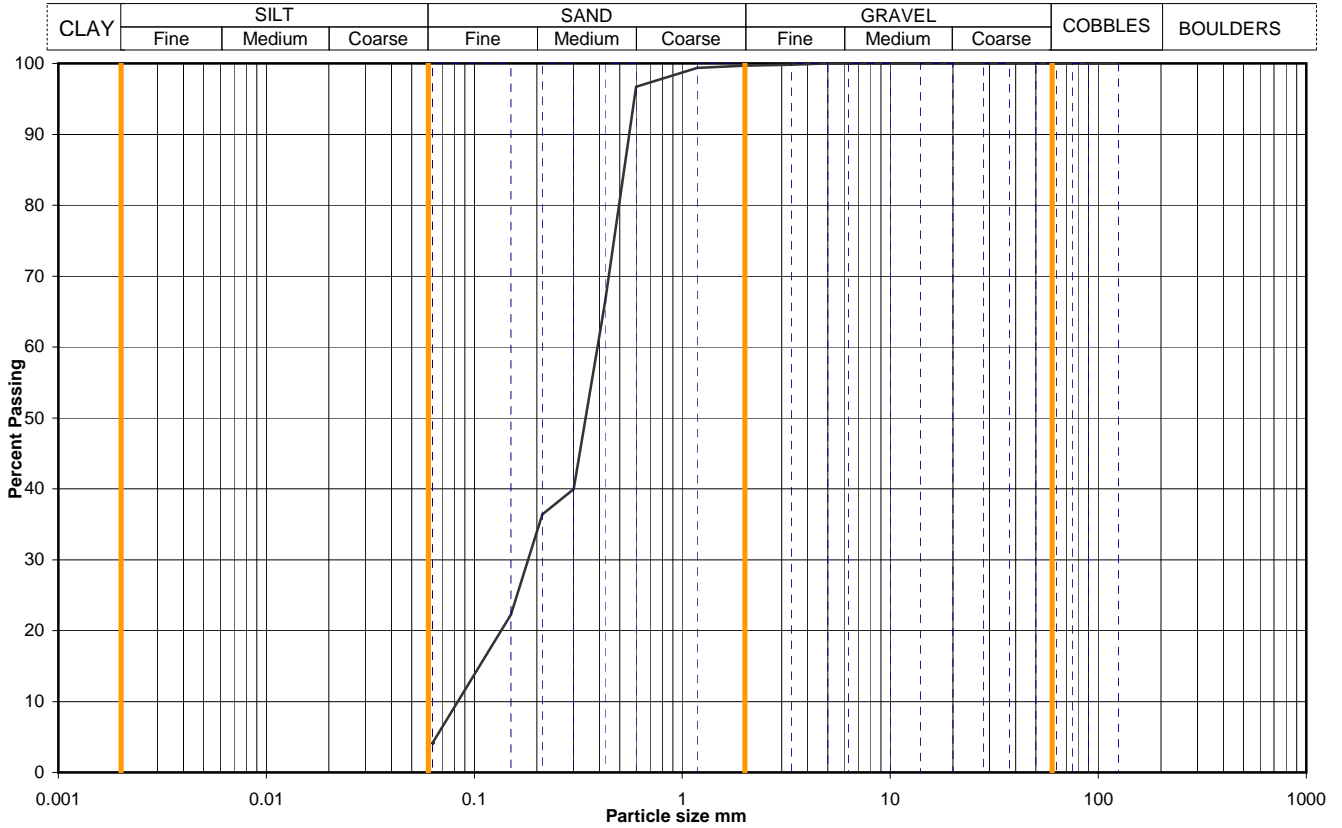


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Figure
PSD 76

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_11U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	14.35
			Samp No	34
			Type	U
			ID	ESGA0012-10201010210000002256
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	99		
0.600	97		
0.425	66		
0.300	40		
0.212	36		
0.150	22		
0.063	4		
		Dry mass of sample, kg	
		5.7	

Soil description	Orangish brown SAND with rare clay pockets.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		96	96
		silt+clay =	4
*<60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	5
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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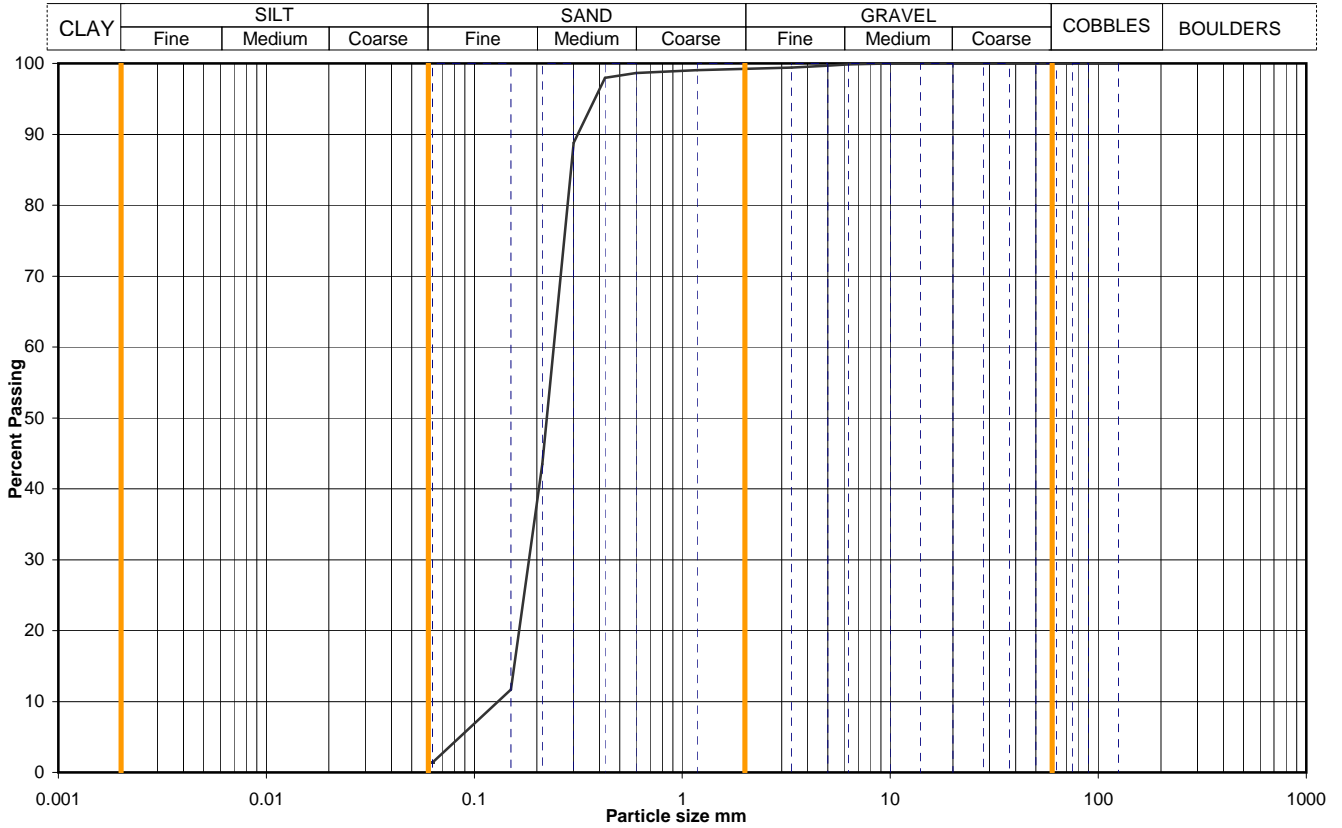


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Figure
PSD 77

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_11U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	23.05
			Samp No	52
			Type	U
			ID	ESGA0012-10201010210000002274
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
3.35	99		
2.00	99		
1.18	99		
0.600	99		
0.425	98		
0.300	89		
0.212	43		
0.150	12		
0.063	1		
		Dry mass of sample, kg	
		5.4	

Soil description	Orangish brown SAND.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	* <60mm
		0	0
		1	1
		98	98
		silt+clay =	1
* <60mm values to aid description only			

Uniformity Coefficient	D_{60} / D_{10}	2
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

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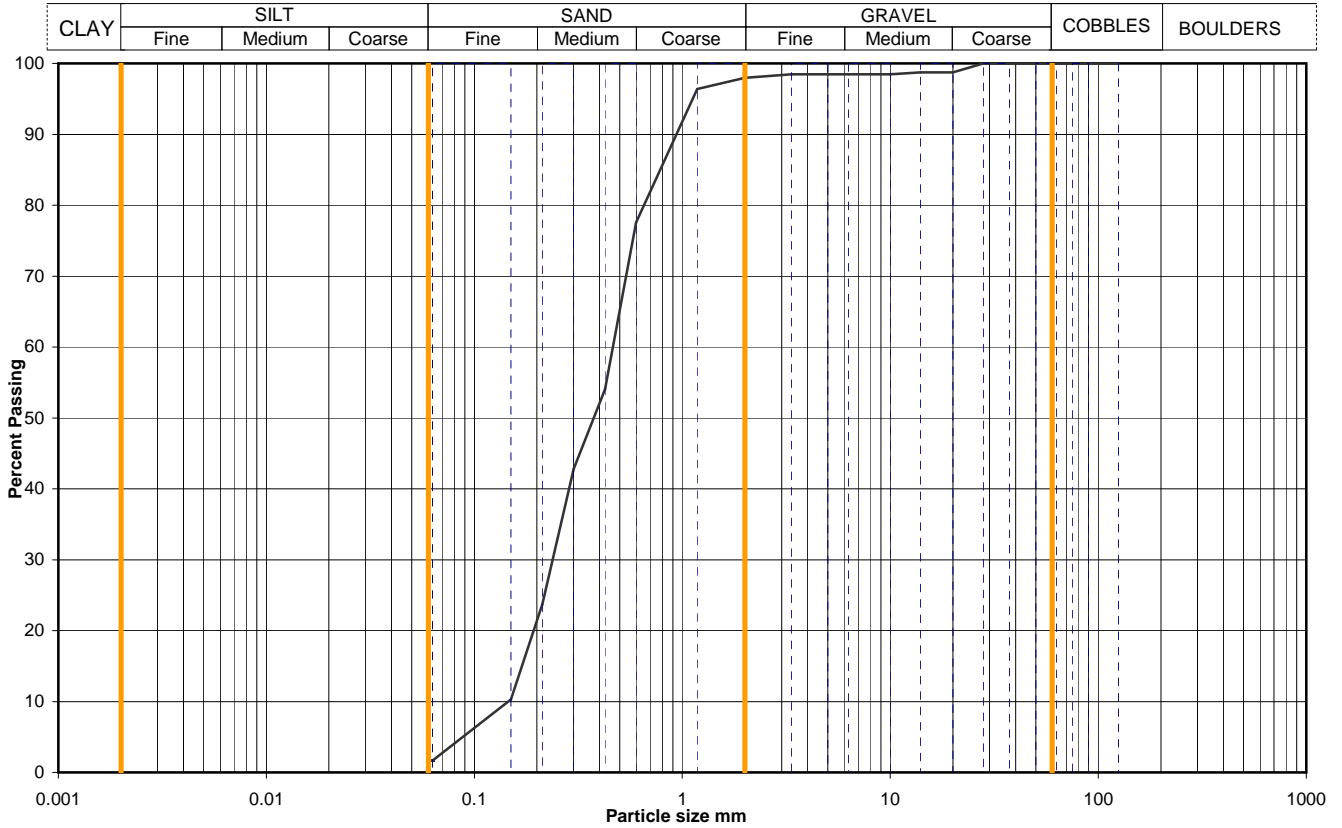


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Figure
PSD 78

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_11U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	31.55
			Samp No	69
			Type	U
			ID	ESGA0012-10201010260000002434
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	99		
10	98		
6.3	98		
5.0	98		
3.35	98		
2.00	98		
1.18	96		
0.600	78		
0.425	54		
0.300	43		
0.212	24		
0.150	10		
0.063	2		

Dry mass of sample, kg	2.7
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Soil description	Grey slightly gravelly SAND with occasional shell fragments.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*60mm
		0	0
		2	2
		96	96
		silt+clay =	2

Uniformity Coefficient	D_{60} / D_{10}	3
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref
SLR 2,9
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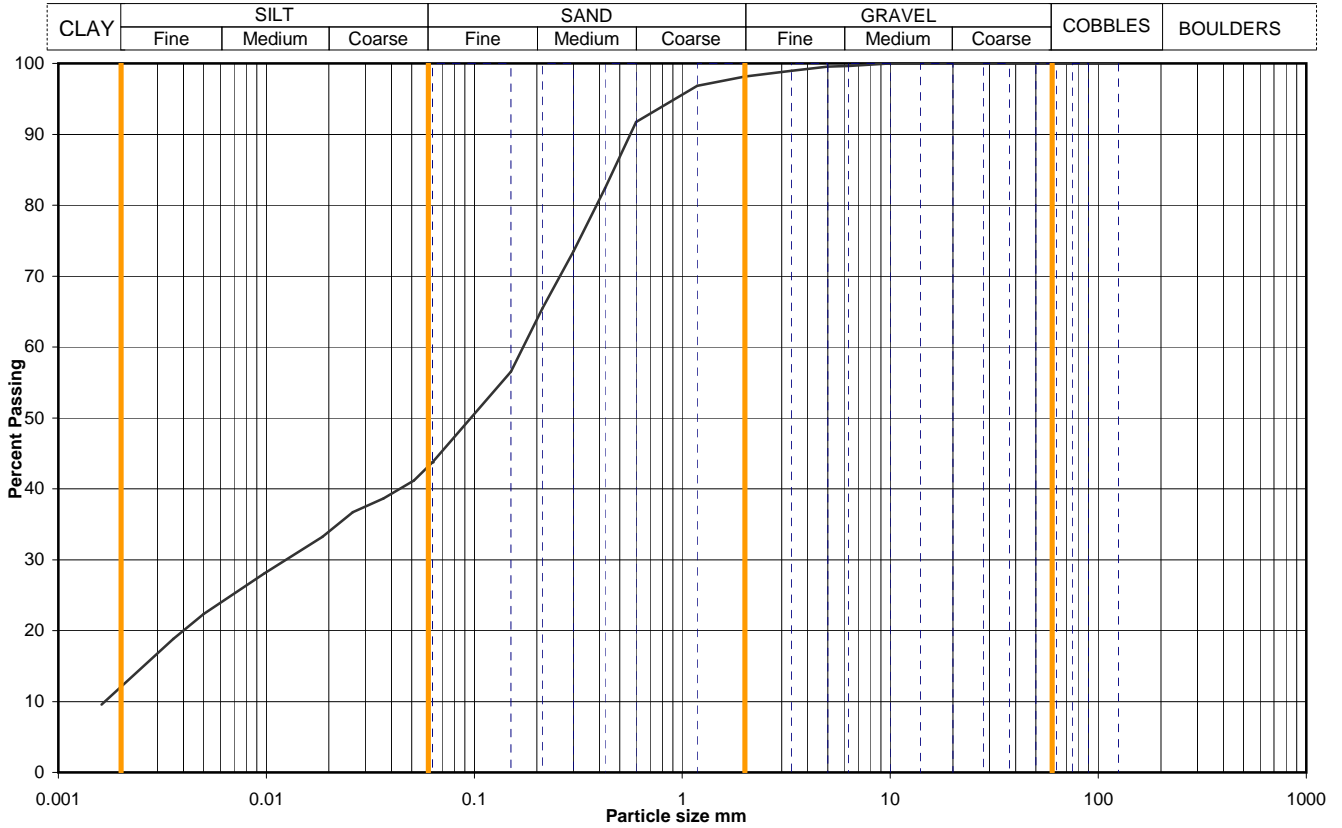


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Figure
PSD 79

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_11U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	41.55
			Samp No	88
			Type	U
			ID	ESGA0012-10201010260000002461
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	44
90	100	0.0512	41
75	100	0.0366	39
63	100	0.0260	37
50	100	0.0186	33
37.5	100	0.0098	28
28	100	0.0050	22
20	100	0.0036	19
14	100	0.0016	10
10	100		
6.3	100		
5.0	100		
3.35	99		
2.00	98		
1.18	97		
0.600	92		
0.425	82		
0.300	74		
0.212	65		
0.150	57		
0.063	44		

Particle density, Mg/m ³	2.70 measured
Dry mass of sample, kg	5.6

Soil description	Firm grey sandy silty CLAY with occasional shell fragments.		
Preparation / Pretreatment	Sieve: pre dried, Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		2	2
		55	55
		31	31
*<60mm values to aid description only		12	12

Uniformity Coefficient	D_{60} / D_{10}	103
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
Rev 84
Sept 08

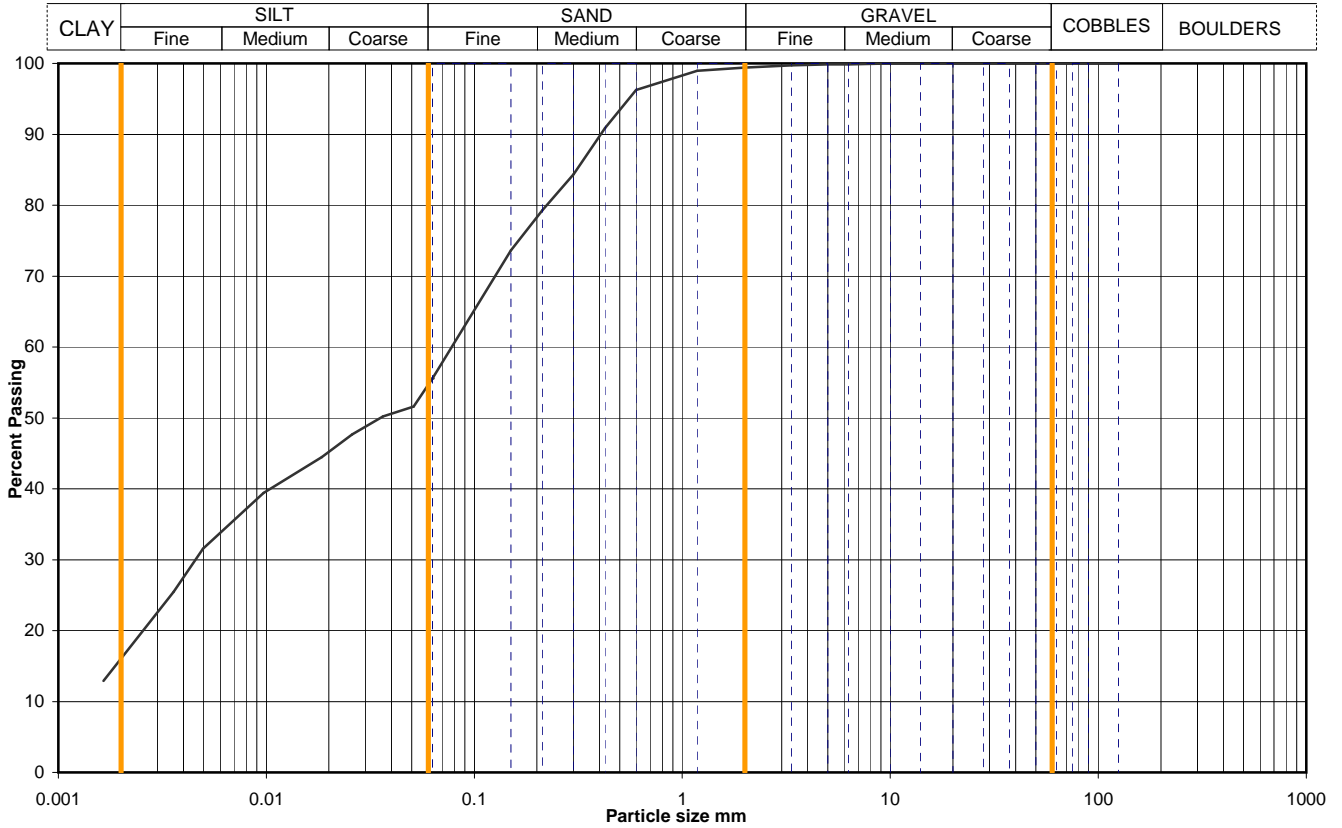


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Figure
PSD 80

Particle Size Distribution Analysis

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_11U
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	42.10
			Samp No	90
			Type	U
			ID	ESGA0012-10201010260000002464
			Spec Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	56
90	100	0.0511	52
75	100	0.0363	50
63	100	0.0259	48
50	100	0.0185	44
37.5	100	0.0097	39
28	100	0.0050	32
20	100	0.0036	25
14	100	0.0017	13
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	99		
1.18	99		
0.600	96		
0.425	91		
0.300	84		
0.212	79		
0.150	74		
0.063	56		

Particle density, Mg/m ³	2.65 assumed
Dry mass of sample, kg	5.6

Soil description	Firm brown sandy silty CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
Sample Proportions	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		1	1
		45	45
		38	38
		16	16

Uniformity Coefficient	D_{60} / D_{10}	Not applicable
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Test Method	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref
SLR 2,9
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Figure
PSD 81


MAXIMUM AND MINIMUM DRY DENSITY - SUMMARY OF RESULTS

Project No	Project Name											
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE											
Hole No.	Sample				Soil Description	Test spec.	Oversize, as appropriate*			ρ_{dmax}	ρ_{dmin}	Remarks
	No.	Depth (m)		type			>37.5mm	>6.3mm	>2mm			
		from	to				%	%	%	Mg/m ³	Mg/m ³	
CBH 2009_1UA	29	10.80	11.25	U	Brownish grey slightly gravelly SAND with occasional clay pockets.	4.2 , 4.4		13	17	1.82	1.37	
CBH 2009_1UA	31	11.50	11.95	U	Greyish brown SAND with rare shell fragments.	4.2 , 4.4		0	2	1.81	1.45	
CBH 2009_1UA	51	18.50	18.95	U	Stiff to very stiff grey SAND with shell fragments.	4.2 , 4.4	0	0	3	1.67	1.52	
CBH 2009_1UA	72	27.60	28.05	U	Grey SAND with shell fragments.	4.2 , 4.4	0	1	2	1.85	1.47	
CBH 2009_1UA	94	36.70	37.15	U	Firm to stiff brownish grey SAND with shell fragments.	4.2 , 4.4	0	0	5	1.84	1.47	
CBH 2009_2UA	25	10.80	11.25	U	Light brown slightly gravelly SAND.	4.2 , 4.4	0	1	2	1.80	1.47	
CBH 2009_2UA	51	19.90	20.35	U	Grey and light grey slightly gravelly SAND with occasional shell fragments.	4.2 , 4.4	0	0	1	1.69	1.41	
CBH 2009_2UA	69	28.30	28.75	U	Grey SAND with shell fragments.	4.2 , 4.4	0	0	3	1.78	1.51	
CBH 2009_2UA	90	37.40	37.85	U	Grey SAND with shell fragments.	4.2 , 4.4	0	0	3	1.75	1.43	
CBH 2009_4U	46	13.55	14.00	U	Stiff brownish grey SAND with shell fragments.	4.2 , 4.4	0	0	1	1.65	1.45	
CBH 2009_4U	71	22.00	22.45	U	Stiff grey SAND with shell fragments.	4.2 , 4.4	0	2	7	1.84	1.47	
CBH 2009_4U	97	30.50	30.95	U	Brownish grey SAND with shell fragments.	4.2 , 4.4	0	1	4	1.86	1.59	
CBH 2009_4U	111	37.70	38.15	U	Grey SAND with shell fragments.	4.2 , 4.4	0	0	1	1.77	1.49	
CBH 2009_5UB	42	14.60	15.05	U	Greyish brown SAND with shell fragments.	4.2 , 4.4	0	0	2	1.82	1.47	
CBH 2009_5UB	66	23.00	23.45	U	Grey SAND with shell fragments.	4.2 , 4.4	0	3	16	1.91	1.54	
CBH 2009_5UB	81	29.30	29.75	U	Grey SAND with shell fragments.	4.2 , 4.4	0	0	1	1.82	1.52	
CBH 2009_5UB	103	40.30	40.75	U	Grey SAND with occasional shell fragments.	4.2 , 4.4	0	0	4	1.69	1.41	
CBH 2009_6U	44	15.20	15.65	U	Brown SAND with shell fragments.	4.2 , 4.4	0	1	4	1.74	1.41	
CBH 2009_6U	69	23.60	24.05	U	Grey SAND with occasional silt pockets and shell fragments.	4.2 , 4.4	0	3	7	1.87	1.49	
CBH 2009_6U	94	32.70	33.15	U	Grey SAND with shell fragments.	4.2 , 4.4	0	2	7	1.87	1.52	
CBH 2009_6U	121	41.55	42.25	U	Grey SAND with shell fragments.	4.2 , 4.4	0	1	8	1.77	1.43	
CBH 2009_7U	48	16.60	17.05	U	Greyish brown SAND with occasional shell fragments.	4.2 , 4.4	0	1	2	1.78	1.47	
CBH 2009_7U	74	25.00	25.45	U	Grey SAND with shell fragments.	4.2 , 4.4	0	0	4	1.80	1.49	
CBH 2009_7U	99	34.10	34.55	U	Grey SAND with occasional shell fragments.	4.2 , 4.4	0	0	4	1.80	1.52	
CBH 2009_7U	121	41.90	42.35	U	Greyish brown SAND with occasional shell fragments.	4.2 , 4.4	0	1	8	1.73	1.45	
CBH 2009_8U	50	17.55	18.00	U	Grey SAND with shell fragments.	4.2 , 4.4	0	7	11	1.78	1.45	
CBH 2009_8U	75	26.55	27.00	U	Brownish grey slightly gravelly SAND with occasional clay pockets.	4.2 , 4.4		5	12	1.82	1.49	
CBH 2009_8U	95	35.05	35.50	U	Brownish grey SAND with shell fragments.	4.2 , 4.4	0	1	12	1.84	1.56	
CBH 2009_8U	113	43.55	44.00	U	Grey SAND with shell fragments.	4.2 , 4.4	0	2	13	1.79	1.49	
CBH 2009_9U	44	14.15	14.60	U	Light brown SAND with shell fragments.	4.2 , 4.4	0	3	6	1.93	1.47	
CBH 2009_9U	83	31.55	32.00	U	Firm to stiff brownish grey SAND with shell fragments.	4.2 , 4.4	0	2	5	1.84	1.51	
CBH 2009_9U	99	40.85	41.00	U	Stiff to very stiff grey SAND with shell fragments.	4.2 , 4.4	0	0	2	1.78	1.49	
CBH 2009_11U	34	14.35	14.80	U	Orangish brown SAND with rare clay pockets.	4.2 , 4.4	0	0	2	1.89	1.52	
CBH 2009_11U	52	23.05	23.50	U	Orangish brown SAND.	4.2 , 4.4	0	0	1	1.71	1.41	

Key : Test Spec. BS 1377 : Part 4 : 1990 : clauses : *oversize material not replaced by smaller particles unless confirmed in remarks

4.4, 4.2 Maximum, minimum dry density of sandy soil ρ_{dmax} Maximum dry density

4.5, 4.3 Maximum, minimum dry density of gravelly soil ρ_{dmin} Minimum dry density

Ref	SLR SUM 4.4 Rev 15 Jul 07	 <b style="font-size: 1.2em;">Soil Mechanics	Printed:02/03/2011 13:59	Table	RELD 1
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MAXIMUM AND MINIMUM DRY DENSITY - SUMMARY OF RESULTS

Project No	Project Name											
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE											
Hole No.	Sample				Soil Description	Test spec.	Oversize, as appropriate*			ρ_{dmax}	ρ_{dmin}	Remarks
	No.	Depth (m)		type			>37.5mm	>6.3mm	>2mm			
		from	to				%	%	%	Mg/m ³	Mg/m ³	
CBH 2009_11U	69	31.55	32.00	U	Grey slightly gravelly SAND with occasional shell fragments.	4.2, 4.4	0	0	1	1.74	1.49	

Key : Test Spec. BS 1377 : Part 4 : 1990 : clauses : *oversize material not replaced by smaller particles unless confirmed in remarks

4.4, 4.2 Maximum, minimum dry density of sandy soil ρ_{dmax} Maximum dry density

4.5, 4.3 Maximum, minimum dry density of gravelly soil ρ_{dmin} Minimum dry density

Ref SLR SUM 4.4 Rev 15 Jul 07	 Soil Mechanics	Printed:02/03/2011 13:59	Table RELD 2
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UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TESTS WITHOUT MEASUREMENT OF PORE PRESSURE - SUMMARY OF RESULTS

Project No	Project Name															
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE															
Hole No.	Sample				Soil Description	Density		w	Test type	Dia.	σ_3	At failure / end of stage				Remarks
	No.	Depth (m)		type		bulk	dry					Axial strain	$\sigma_1 - \sigma_3$	C_u	M O D E	
		from	to				%			mm	kPa	%	kPa	kPa		
CBH 2009_1	9	47.10	47.50	CS	Stiff grey slightly gravelly silty CLAY.	1.67	1.09	53	UU	103.1	425	17.6	264	132	C	
CBH 2009_1UA	21	8.00	8.45	U	Firm dark brown peaty CLAY.	1.10	0.26	320	UU	101.1	72	6.9	96	48	B	
CBH 2009_2	17	51.80	52.20	CS	Stiff greyish brown slightly sandy CLAY.	1.95	1.44	35	UU	101.6	930	8.9	164	82	B	
CBH 2009_2UA	8	5.00	5.45	U	Firm grey CLAY with organic fibrous clay partings.	1.42	0.71	99	UU	102.4	45	5.9	85	42	B	
CBH 2009_4	9	47.55	47.95	CS	Brownish grey clayey SILT.	1.73	1.20	44	UU	104.1	855	2.0	631	315	B	
CBH 2009_4	13	53.50	53.90	CS	Very stiff greyish brown CLAY.	1.92	1.44	34	UU	103.5	1,700	9.9	329	165	C	
CBH 2009_4U	20	6.00	6.45	U	Firm dark brown fibrous PEAT.	1.11	0.29	290	UU	102.0	108	8.8	81	40	B	
CBH 2009_5	13	46.80	47.20	CS	Stiff greyish brown silty CLAY.	1.81	1.25	44	UU	106.9	1,685	3.0	193	97	C	
CBH 2009_5	14	49.70	50.10	CS	Very stiff brownish grey silty CLAY.	1.68	1.09	55	UU	38.5	895	3.5	691	345	B	
CBH 2009_5	15	52.80	53.20	CS	Stiff greyish brown slightly sandy CLAY.	1.99	1.49	33	UU	92.8	475	7.5	263	132	B	
CBH 2009_5UB	15	5.50	5.95	U	Very soft grey slightly organic slightly sandy CLAY.	1.54	0.89	73	UU	103.7	198	17.3	26	13	C	
CBH 2009_6	12	52.70	53.09	CS	Stiff brownish grey CLAY with occasional silt partings.	1.93	1.47	32	UU	99.6	1,700	4.0	167	83	B	
CBH 2009_6U	24	8.20	8.65	U	Firm black fibrous PEAT.	1.12	0.12	830	UU	99.3	148	5.9	129	64	B	
CBH 2009_7	17	54.35	54.75	CS	Firm to stiff greyish brown fissured CLAY.	1.79	1.26	42	UU	103.5	1,700	19.4	58	29	B	
CBH 2009_7U	24	8.20	8.65	U	Firm pseudo fibrous PEAT.	1.10	0.28	290	UU	101.4	295	11.3	136	68	C	
CBH 2009_8U	124	54.52	54.72	CS	Stiff grey silty CLAY.	1.82	1.27	44	UU	97.4	850	2.5	477	238	B	
CBH 2009_10	21	53.35	53.80	CS	Stiff to very stiff greyish brown slightly sandy CLAY.	1.83	1.30	41	UU	106.9	480	3.0	359	180	B	

General notes: Tests carried out in accordance with BS1377: Part 7: 1990, clause 8 for single stage, clause 9 for multistage tests. Specimens nominally 2:1 height diameter ratio and tested at a rate of strain of 2%/minute, unless annotated otherwise. See individual test reports for further details.

Legend
 UU - single stage test (may be in sets of specimens) σ_3 cell pressure Mode of failure P plastic
 UUM - multistage test on a single specimen $\sigma_1 - \sigma_3$ deviator stress B brittle
 suffix R - remoulded or recompactd C_u undrained shear strength C compound

**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_1UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	1.20-1.65		
			Sample No	3	Type	U
			ID			
			Spec Ref			

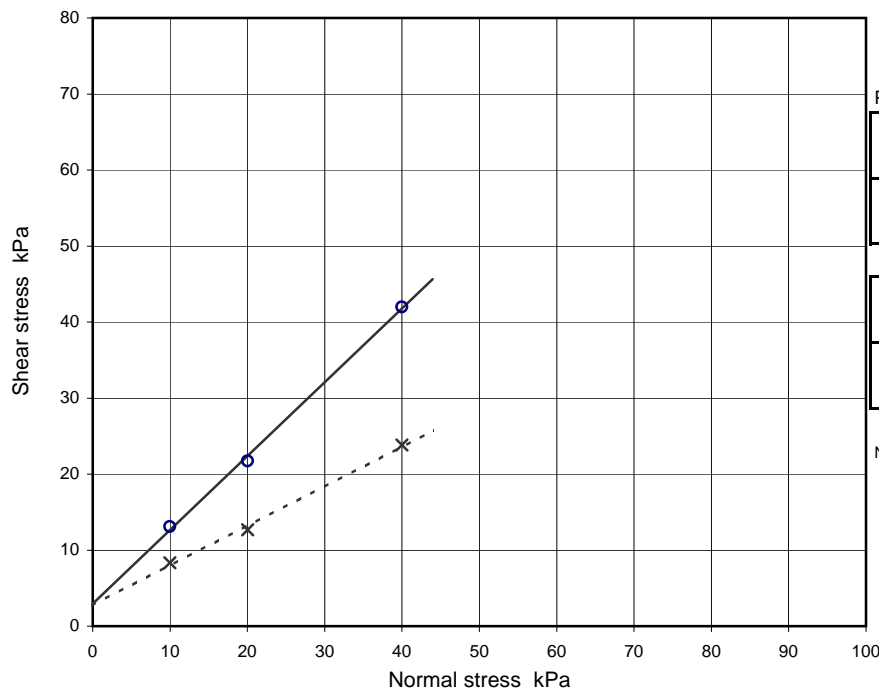
Soil Description	Black and grey slightly silty gravelly SAND.
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, measured 2.79 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.5	23.5	23.5			
	Bulk Density	Mg/m ³	2.12	2.09	2.07			
	Water Content	%	16.5	19.1	17.9			
	Dry density	Mg/m ³	1.82	1.75	1.75			
	Voids ratio		0.531	0.512	0.512			
	Degree of Saturation	%	87	99	93			
Consol ¹	Consolidation / Normal Stress applied	kPa	10	20	40			
	Change in height during consolidation	mm	-0.002	-0.060	-0.026			
	Voids ratio after consolidation		0.531	0.509	0.510			
Shear see note 1	Voids ratio at end of test		0.590	0.559	0.528			
	Moisture content at end of test	%	20.0	21.1	19.9			
	Saturation at end of test	%	95	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	1.80	2.00	1.60			
	Shear stress	kPa	13.1	21.7	42.0			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	19.00	8.00	17.00			
	Shear stress	kPa	8.3	12.7	23.8			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	3.0	-
Ø'	degrees	44	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	2.7	-
Ø' _R	degrees	27½	-

Notes :

1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages

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Figure

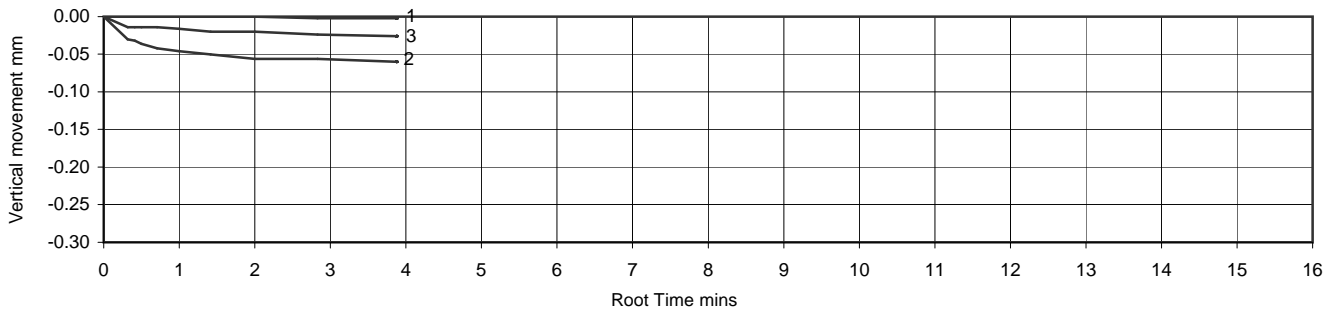
SSB 1

sheet 1 of 2

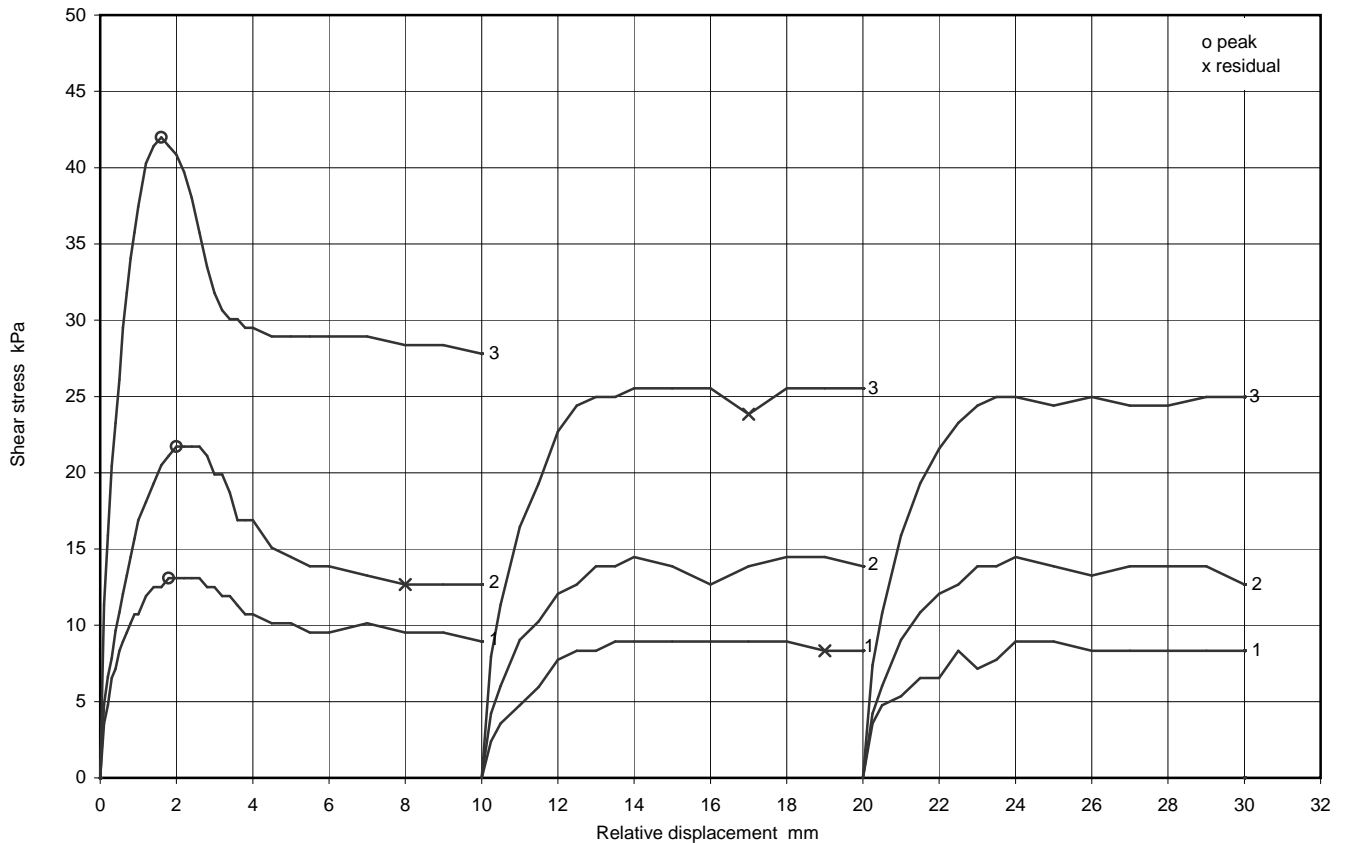
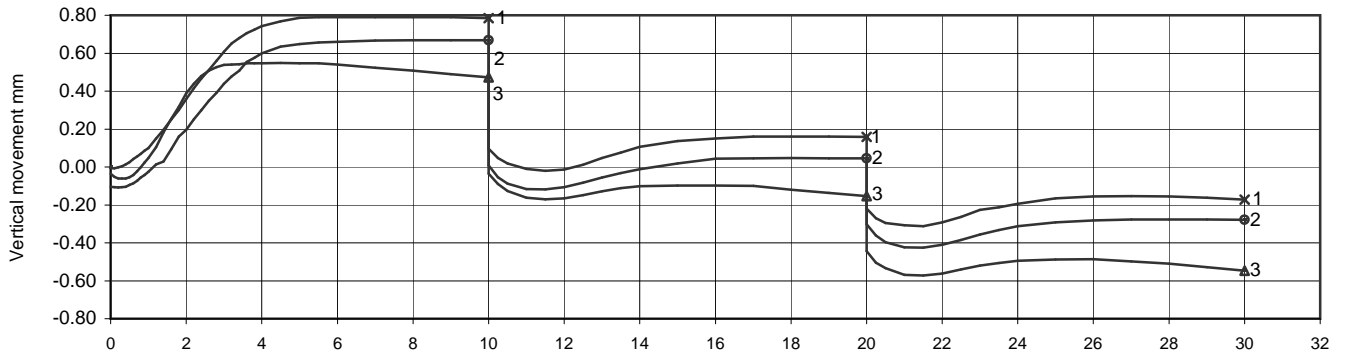
Determination of shear strength by direct shear (Small shearbox apparatus) (BS1377 : Part 7 : clause 4 : 1990)

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_1UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	1.20-1.65		
		Sample No	3	Type	U	
		ID				
		Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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Figure

SSB 1

sheet 2 of 2

**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_1UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	10.10-10.55		
			Sample No	27	Type	U
			ID			
			Spec Ref			

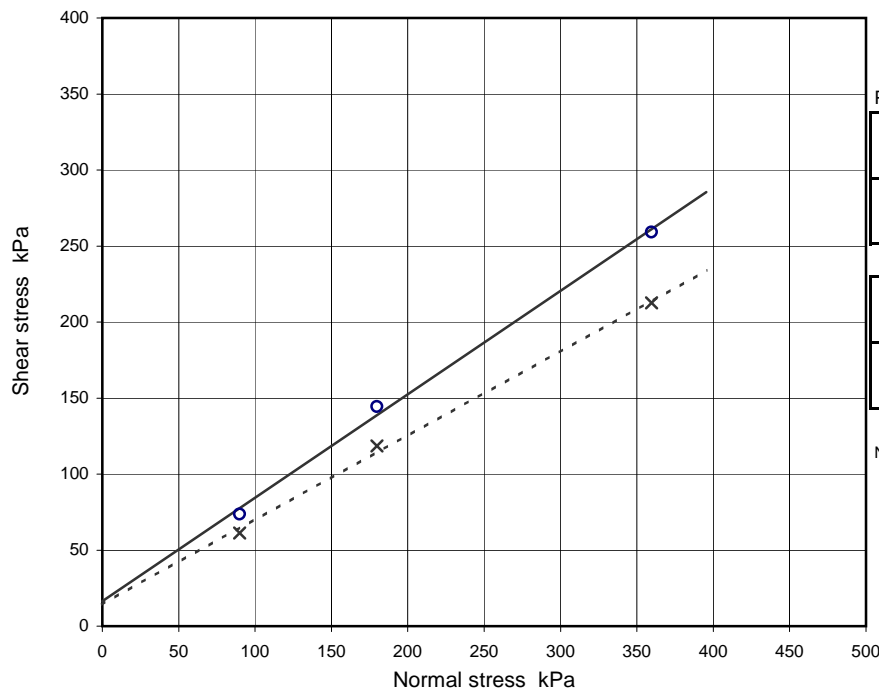
Soil Description	Grey SAND with occasional pockets of greyish brown clay and rare shell fragments and plant remains.
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, measured 2.68 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.5	23.5	23.5			
	Bulk Density	Mg/m ³	2.04	2.07	2.05			
	Water Content	%	21.4	20.7	20.1			
	Dry density	Mg/m ³	1.68	1.71	1.70			
	Voids ratio		0.598	0.565	0.574			
	Degree of Saturation	%	96	98	94			
Consol ¹	Consolidation / Normal Stress applied	kPa	90	180	360			
	Change in height during consolidation	mm	-0.350	-0.490	-0.814			
	Voids ratio after consolidation		0.574	0.532	0.519			
Shear see note 1	Voids ratio at end of test		0.520	0.528	0.474			
	Moisture content at end of test	%	19.4	19.7	17.7			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	8.00	3.60	2.80			
	Shear stress	kPa	73.7	144.5	259.1			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	29.00	27.00	7.00			
	Shear stress	kPa	61.2	118.6	212.6			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	16	-
Ø'	degrees	34	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	14	-
Ø' _R	degrees	29	-

Notes :

- After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages
- Box tilting during shear.

Ref

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Figure

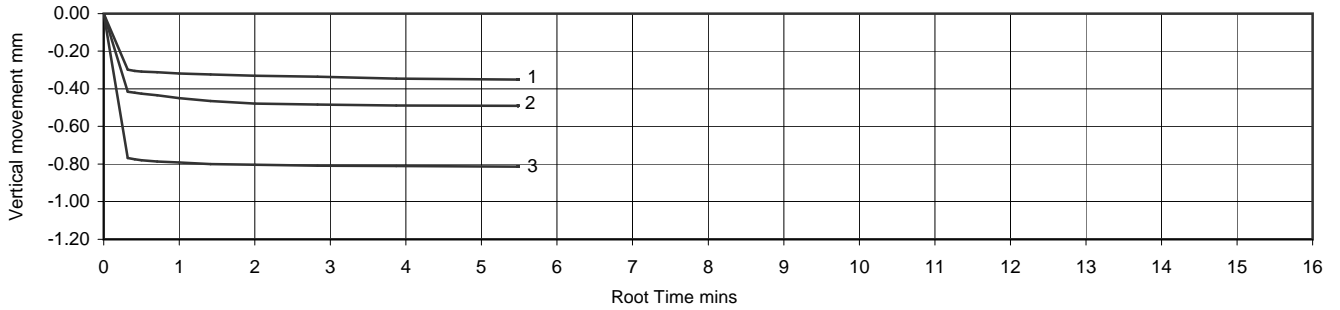
SSB 2

sheet 1 of 2

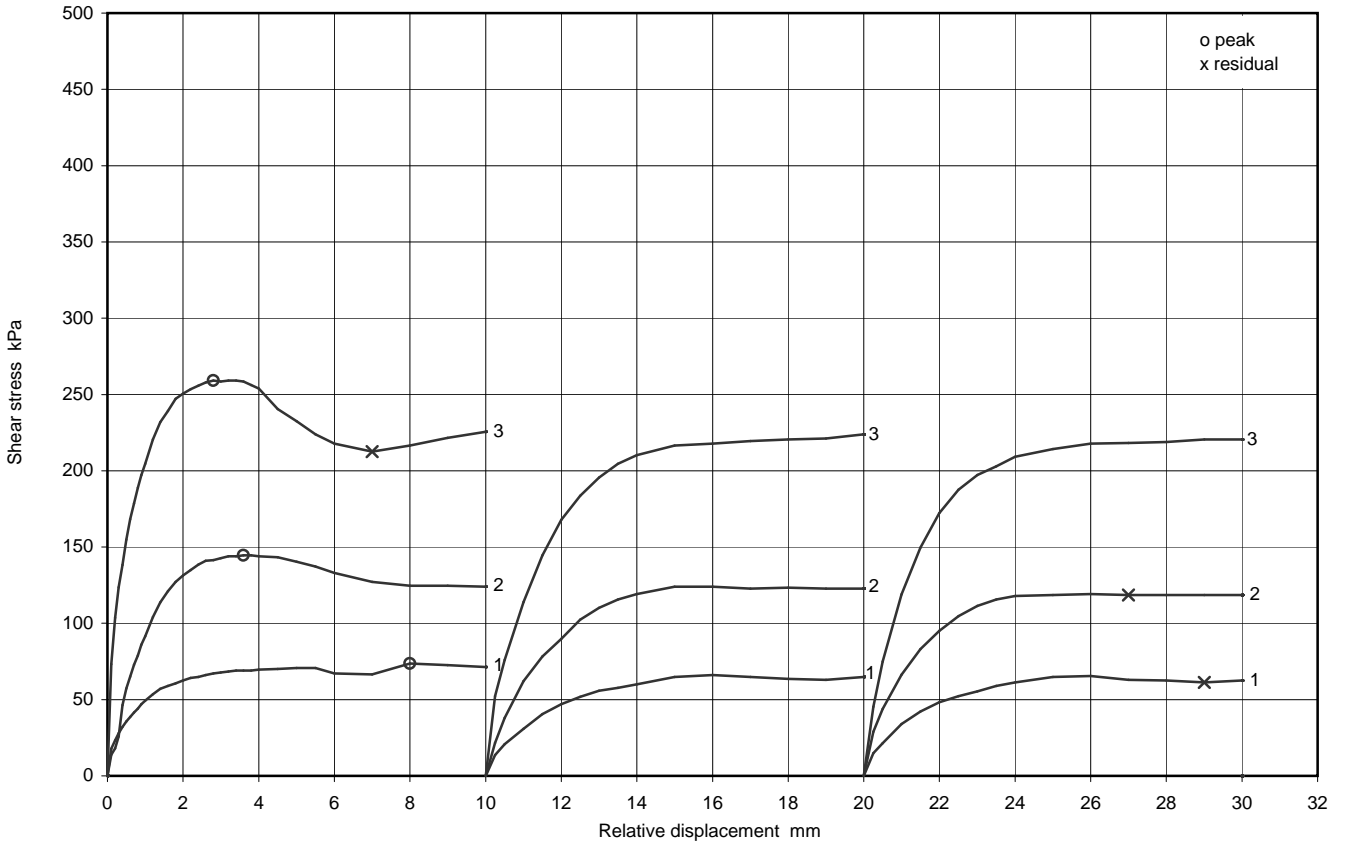
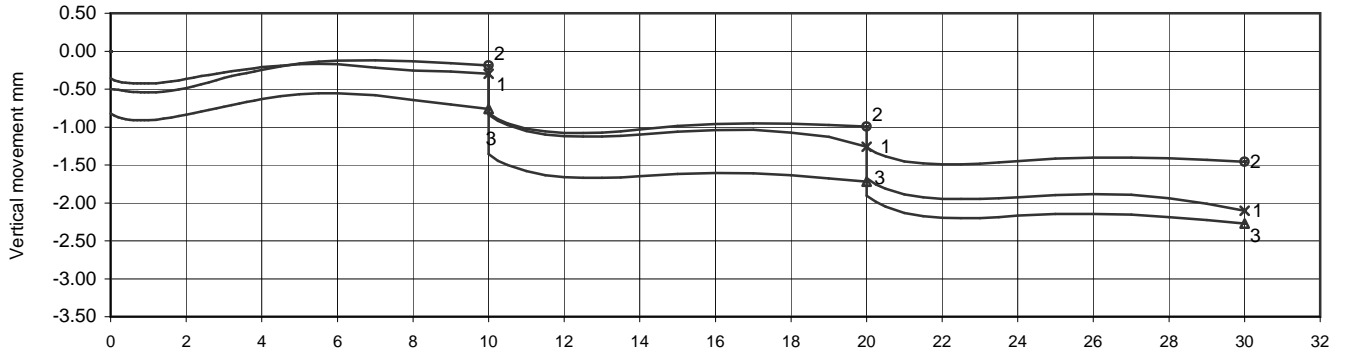
**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_1UA			
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	10.10-10.55			
			Sample No	27	Type	U	
			ID				
			Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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Figure

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**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_2UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	19.90-20.35		
			Sample No	51	Type	U
			ID			
			Spec Ref			

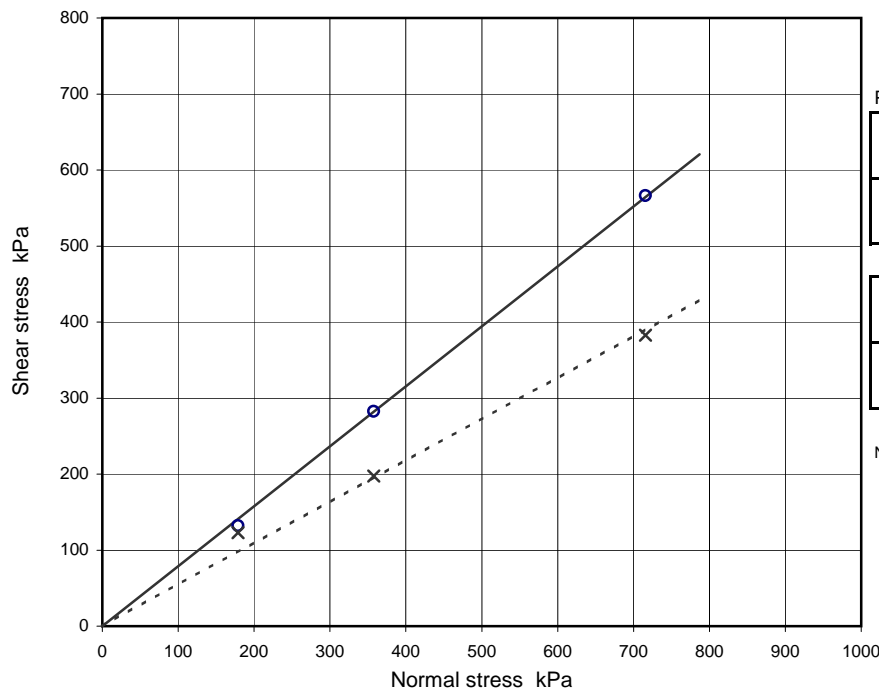
Soil Description	Grey SAND with occasional shell fragments and rare gravel.
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, measured 2.67 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.6	23.6	23.5			
	Bulk Density	Mg/m ³	1.97	2.04	1.94			
	Water Content	%	21.0	18.6	15.2			
	Dry density	Mg/m ³	1.63	1.72	1.68			
	Voids ratio		0.641	0.554	0.585			
	Degree of Saturation	%	87	90	70			
Consol ⁿ	Consolidation / Normal Stress applied	kPa	179	358	716			
	Change in height during consolidation	mm	-0.526	-0.450	-0.810			
	Voids ratio after consolidation		0.605	0.524	0.530			
Shear see note 1	Voids ratio at end of test		0.533	0.502	0.361			
	Moisture content at end of test	%	20.0	18.8	13.5			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	3.00	2.80	5.50			
	Shear stress	kPa	132.0	282.5	566.4			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	5.50	20.00	19.00			
	Shear stress	kPa	123.1	197.4	382.7			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	(-9.7)	0.0
Ø'	degrees	(38)	38½

Residual strength, (x)		Regression	Manual
c' _R	kPa	(31)	0.0
Ø' _R	degrees	(26)	28½

Notes :

- 1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages
- 2 Box tilting during shear.

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Figure

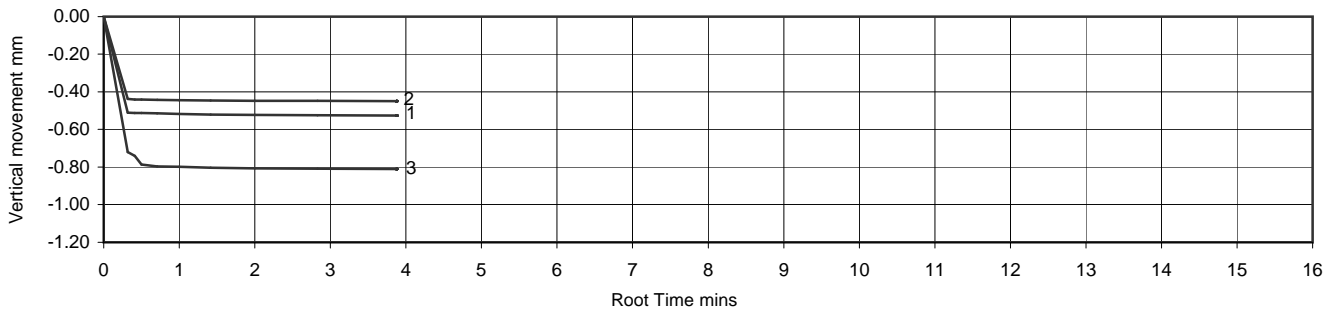
SSB 3

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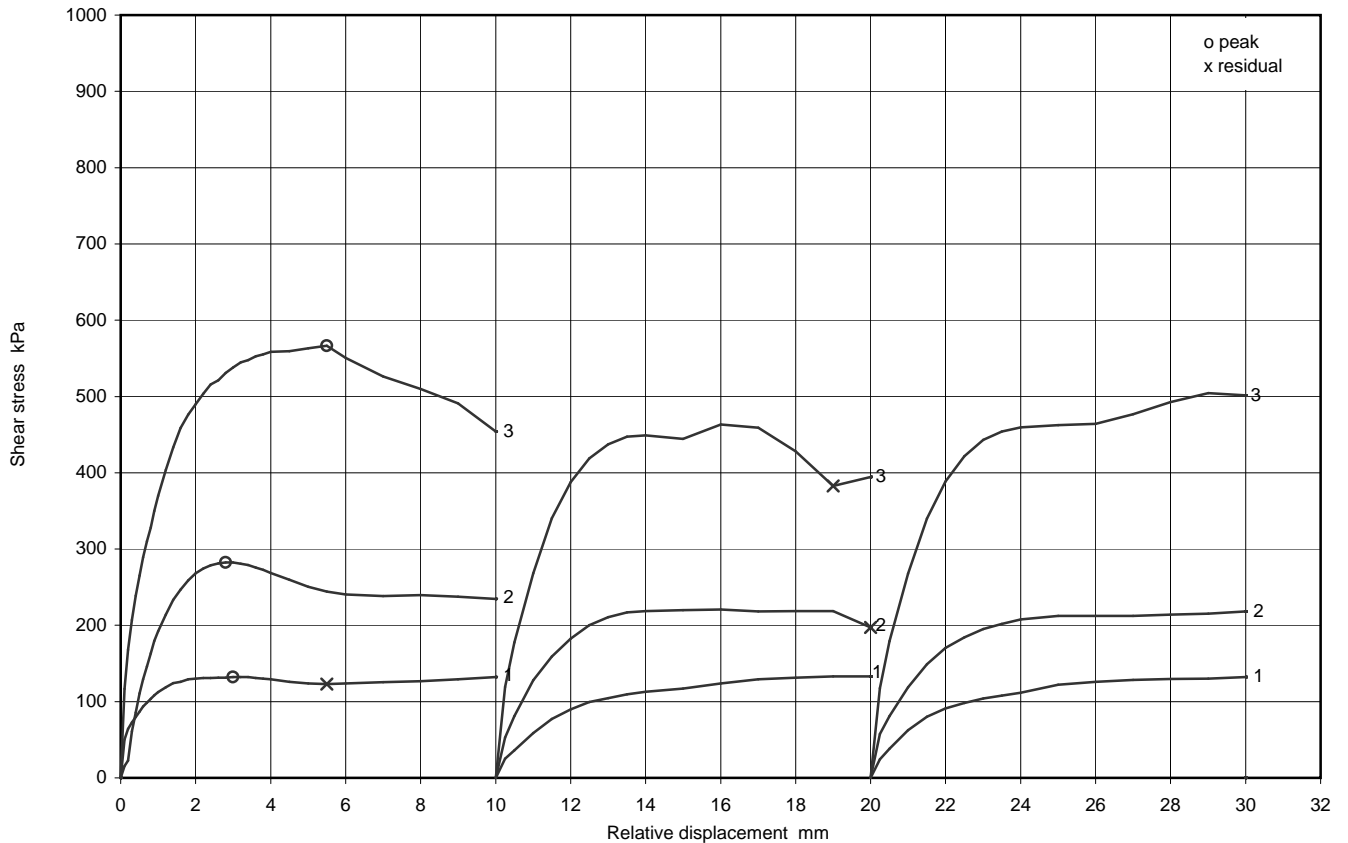
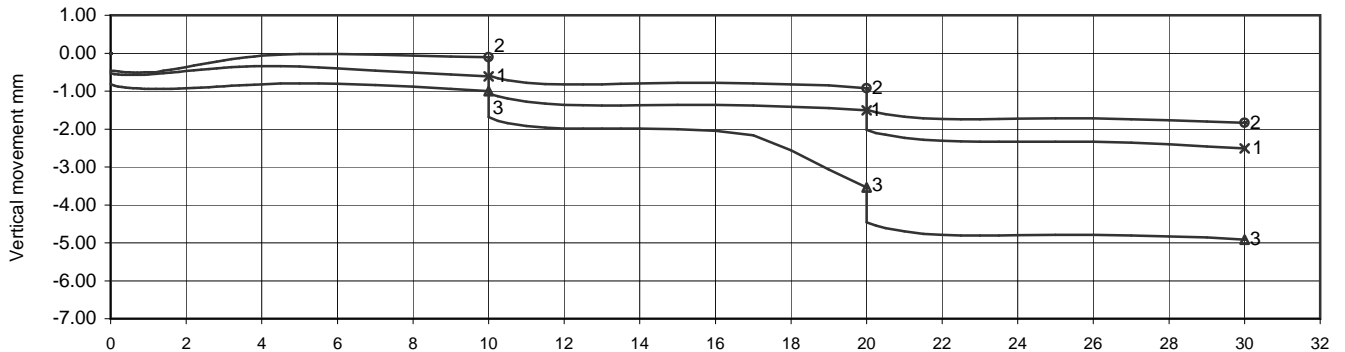
Determination of shear strength by direct shear (Small shearbox apparatus) (BS1377 : Part 7 : clause 4 : 1990)

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_2UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	19.90-20.35		
		Sample No	51	Type	U	
		ID				
		Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_2UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	28.30-28.75		
			Sample No	69	Type	U
			ID			
			Spec Ref			

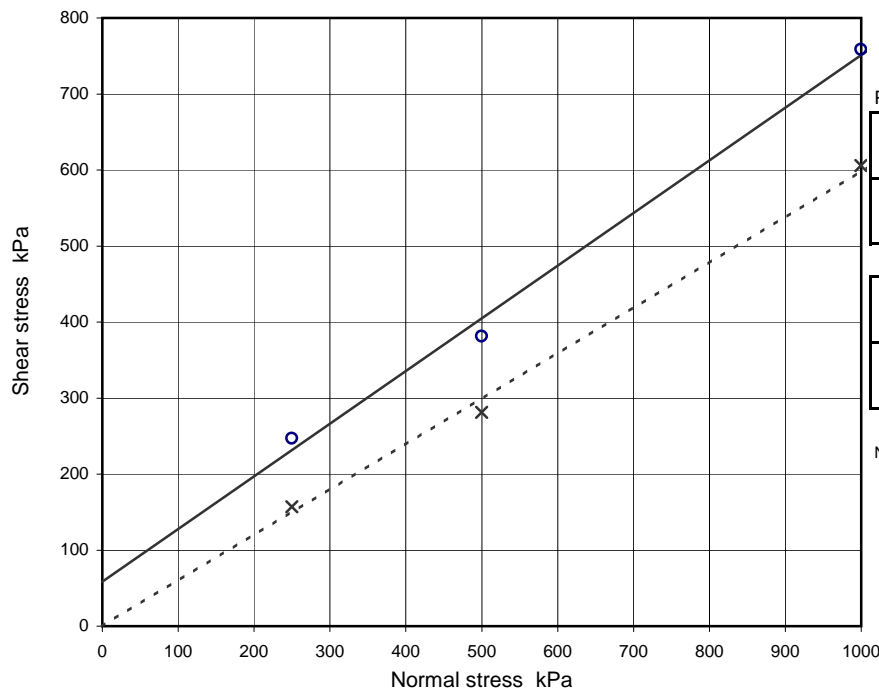
Soil Description	Grey SAND with frequent shell fragments.
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, measured 2.65 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.6	23.6	23.5			
	Bulk Density	Mg/m ³	2.14	2.09	2.07			
	Water Content	%	15.8	14.9	13.1			
	Dry density	Mg/m ³	1.85	1.82	1.83			
	Voids ratio		0.436	0.458	0.451			
	Degree of Saturation	%	96	86	77			
Consol ⁿ	Consolidation / Normal Stress applied	kPa	250	500	1000			
	Change in height during consolidation	mm	-0.204	-0.546	-0.638			
	Voids ratio after consolidation		0.424	0.424	0.411			
Shear see note 1	Voids ratio at end of test		0.384	0.338	0.325			
	Moisture content at end of test	%	14.5	12.8	12.3			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	1.80	2.40	2.60			
	Shear stress	kPa	247.0	381.5	758.5			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	20.00	10.00	20.00			
	Shear stress	kPa	156.9	281.2	606.1			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	59	-
Ø'	degrees	34½	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	(-5.3)	0.0
Ø' _R	degrees	(31)	30

Notes :

- 1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages
- 2 Box tilting during shear, severe on specimen 1 and 3.

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Figure

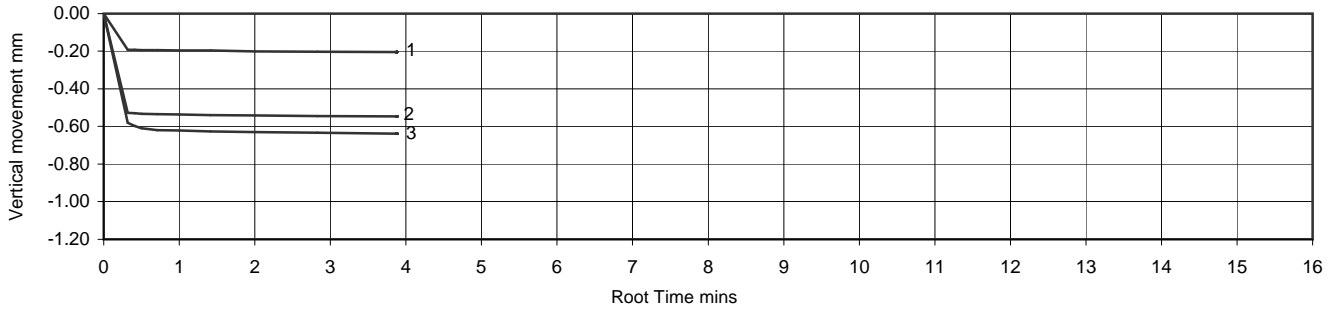
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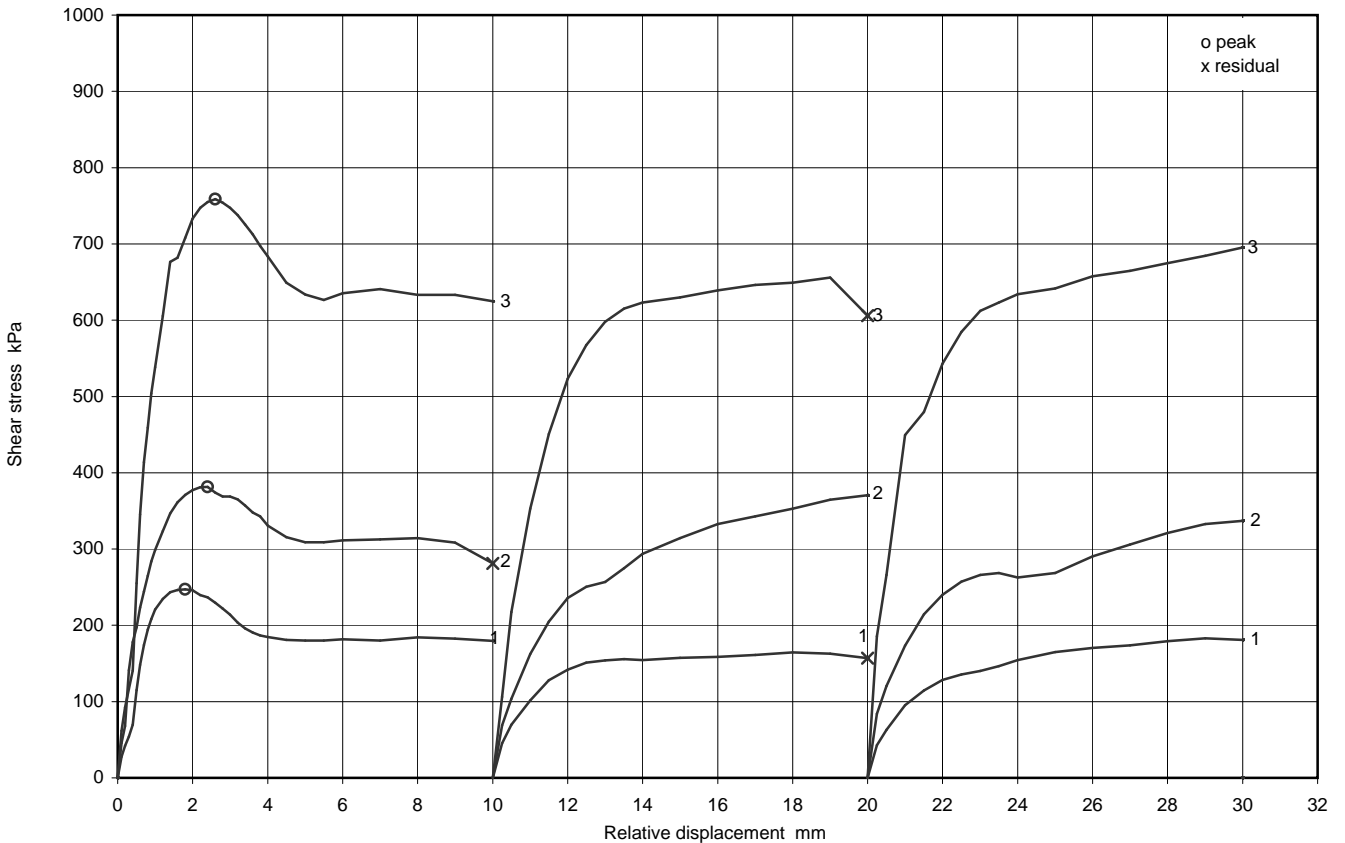
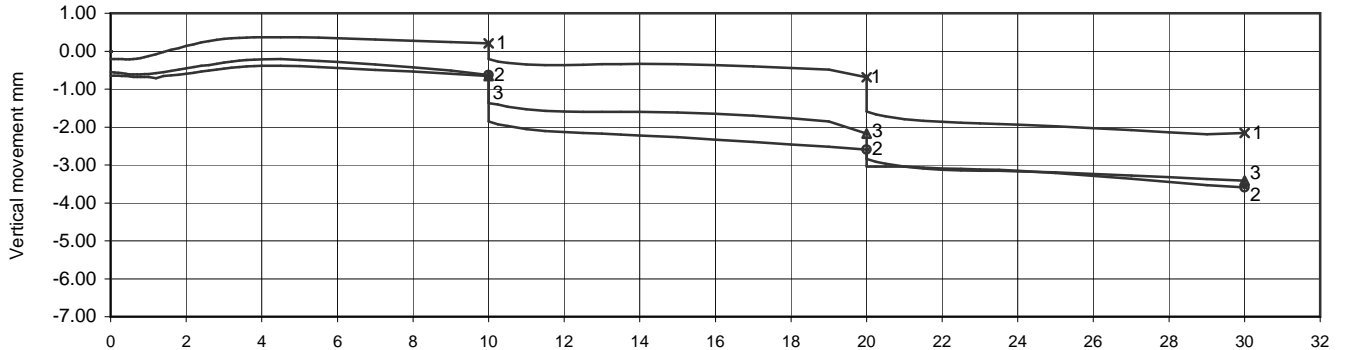
Determination of shear strength by direct shear (Small shearbox apparatus) (BS1377 : Part 7 : clause 4 : 1990)

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_2UA		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	28.30-28.75		
		Sample No	69	Type	U	
		ID				
		Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_4U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	3.15-3.60		
			Sample No	10	Type	U
			ID			
			Spec Ref			

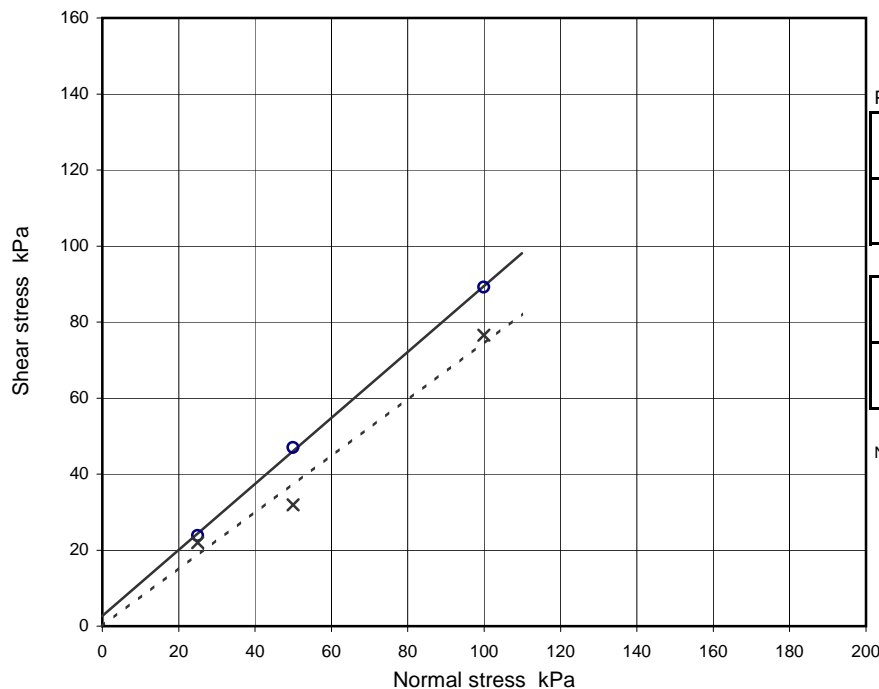
Soil Description	Orangish brown slightly gravelly SAND with occasional shell fragments and clay pockets.
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, measured 2.64 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.5	23.5	23.5			
	Bulk Density	Mg/m ³	1.96	2.00	2.00			
	Water Content	%	17.5	16.5	14.6			
	Dry density	Mg/m ³	1.67	1.72	1.74			
	Voids ratio		0.584	0.538	0.514			
	Degree of Saturation	%	79	81	75			
Consol ⁿ	Consolidation / Normal Stress applied	kPa	25	50	100			
	Change in height during consolidation	mm	-0.118	-0.276	-0.226			
	Voids ratio after consolidation		0.576	0.520	0.500			
Shear see note 1	Voids ratio at end of test		0.564	0.539	0.497			
	Moisture content at end of test	%	21.4	20.1	18.0			
	Saturation at end of test	%	100	99	96			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	9.00	2.40	5.50			
	Shear stress	kPa	23.8	47.0	89.2			
Residual values, (x)	No. of reversals		2	2	3			
	Relative displacement	mm	20.00	20.00	40.00			
	Shear stress	kPa	22.0	31.9	76.6			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	2.7	-
Ø'	degrees	40	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	(-0.3)	0.0
Ø' _R	degrees	(36)	36

Notes :

- After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages
- Box tilted during shear on specimen 1.

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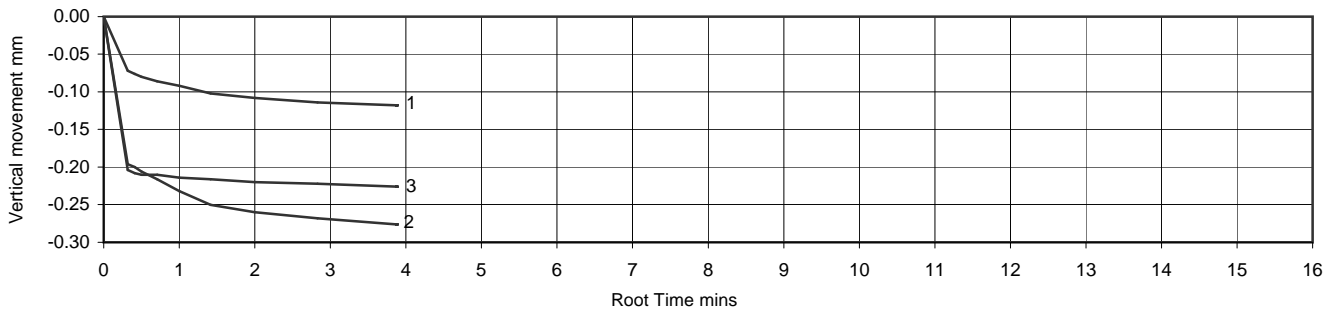
Figure

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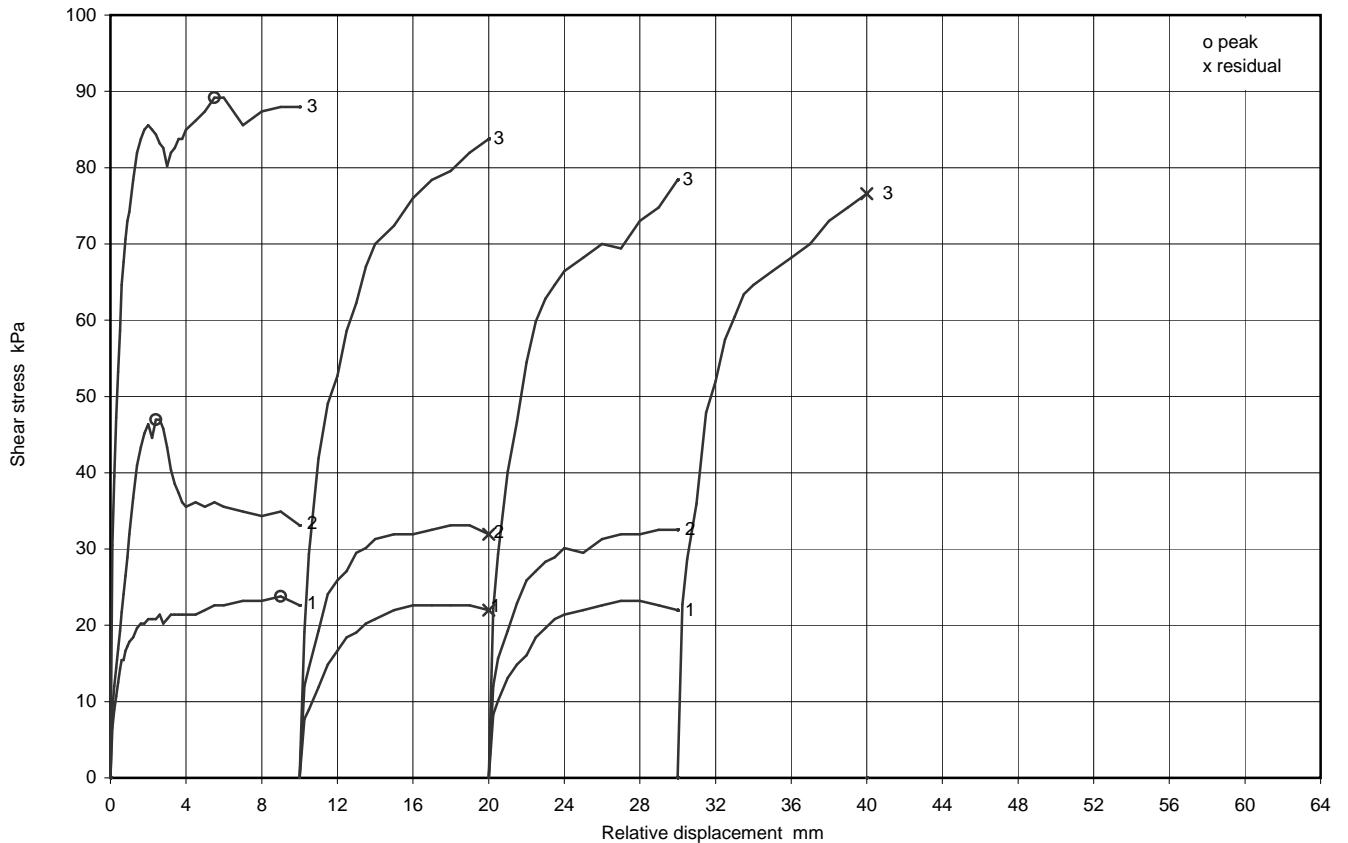
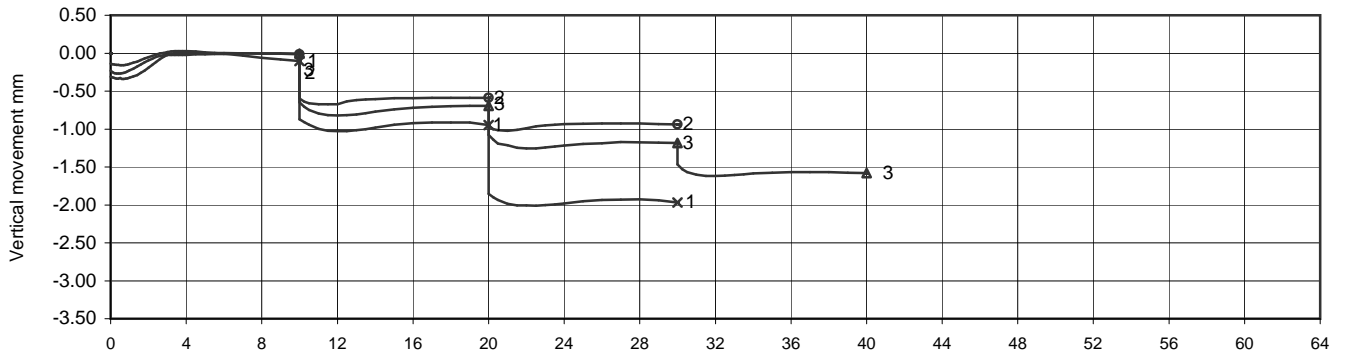
Determination of shear strength by direct shear (Small shearbox apparatus) (BS1377 : Part 7 : clause 4 : 1990)

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_4U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	3.15-3.60		
		Sample No	10	Type	U	
		ID				
		Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_5UB		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	14.60 - 15.05		
			Sample No	42	Type	U
			ID			
			Spec Ref			

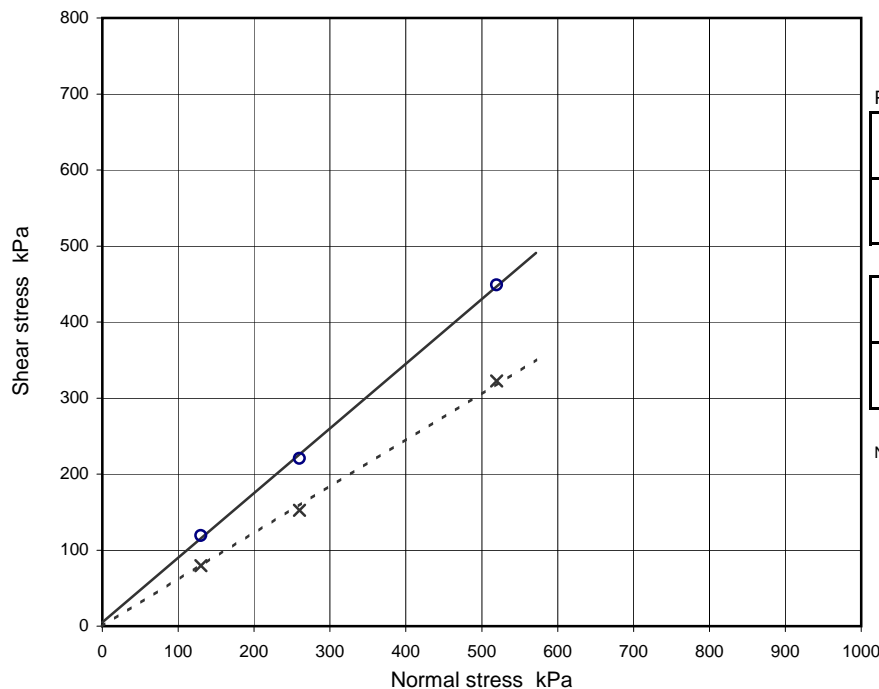
Soil Description	Greyish brown SAND with occasional medium sand to medium gravel sized shell fragments
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, measured 2.67 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.5	23.5	23.5			
	Bulk Density	Mg/m ³	2.06	2.06	2.06			
	Water Content	%	17.1	16.1	17.2			
	Dry density	Mg/m ³	1.76	1.77	1.75			
	Voids ratio		0.517	0.506	0.522			
	Degree of Saturation	%	88	85	88			
Consol ¹	Consolidation / Normal Stress applied	kPa	130	260	520			
	Change in height during consolidation	mm	-0.182	-0.464	-0.588			
	Voids ratio after consolidation		0.505	0.476	0.484			
Shear see note 1	Voids ratio at end of test		0.445	0.455	0.454			
	Moisture content at end of test	%	16.6	17.0	17.0			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	2.00	2.60	2.20			
	Shear stress	kPa	119.0	220.7	448.7			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	20.00	30.00	18.00			
	Shear stress	kPa	79.7	152.4	322.4			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	5.0	-
Ø'	degrees	40½	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	(-5.3)	0.0
Ø' _R	degrees	(32)	31½

Notes :

- 1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages
- 2 Severe tilt of box during shear.

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Figure

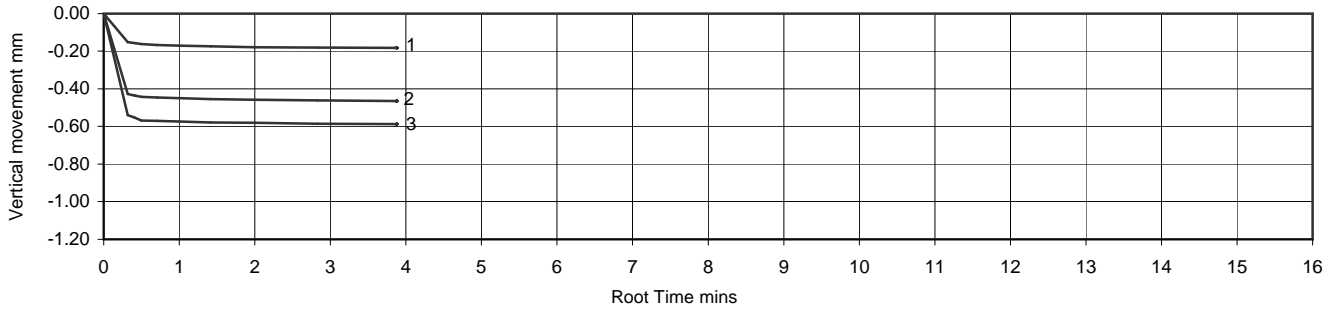
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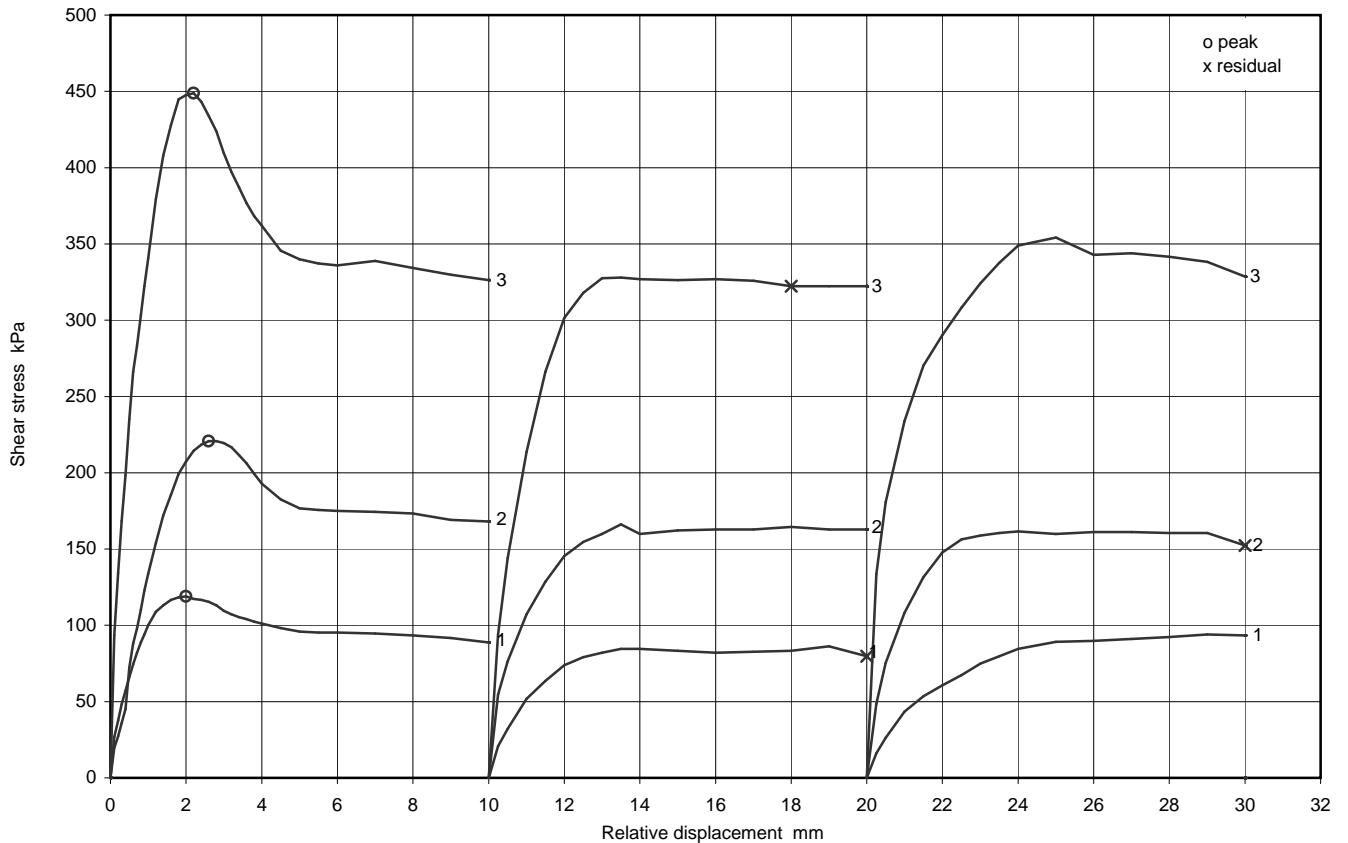
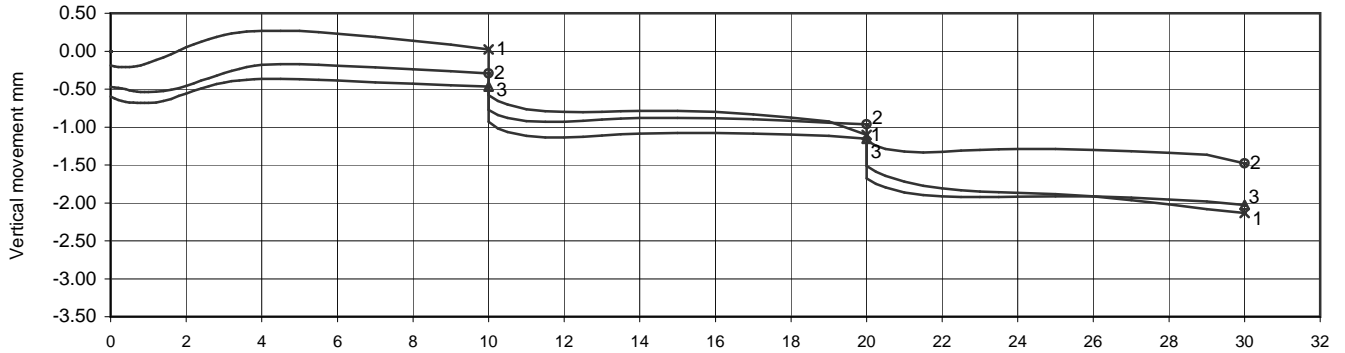
**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_5UB			
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	14.60 - 15.05			
			Sample No	42	Type	U	
			ID				
			Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_5UB		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	40.30 - 40.75		
			Sample No	103	Type	U
			ID			
			Spec Ref			

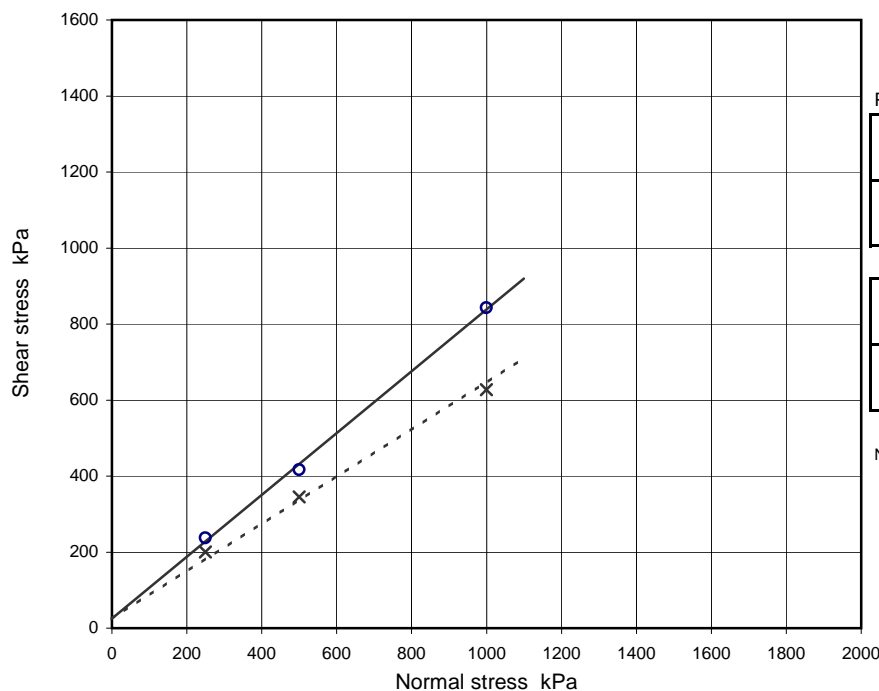
Soil Description	Grey SAND with frequent fine to medium gravel sized shell fragments
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, measured 2.73 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.5	23.5	23.5			
	Bulk Density	Mg/m ³	2.06	2.09	2.04			
	Water Content	%	18.9	16.7	17.7			
	Dry density	Mg/m ³	1.73	1.79	1.73			
	Voids ratio		0.577	0.524	0.577			
	Degree of Saturation	%	89	87	84			
Consol ¹	Consolidation / Normal Stress applied	kPa	250	500	1000			
	Change in height during consolidation	mm	-0.292	-0.470	-0.538			
	Voids ratio after consolidation		0.557	0.493	0.541			
Shear see note 1	Voids ratio at end of test		0.557	0.451	0.456			
	Moisture content at end of test	%	20.4	16.5	16.7			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	2.60	3.40	2.80			
	Shear stress	kPa	237.9	417.1	843.0			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	6.00	19.00	28.00			
	Shear stress	kPa	200.4	345.3	627.2			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	25	-
Ø'	degrees	39	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	(59)	25
Ø' _R	degrees	(29½)	32

Notes :

- 1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages
- 2 Box tilting during shear, severe on specimen 3

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Figure

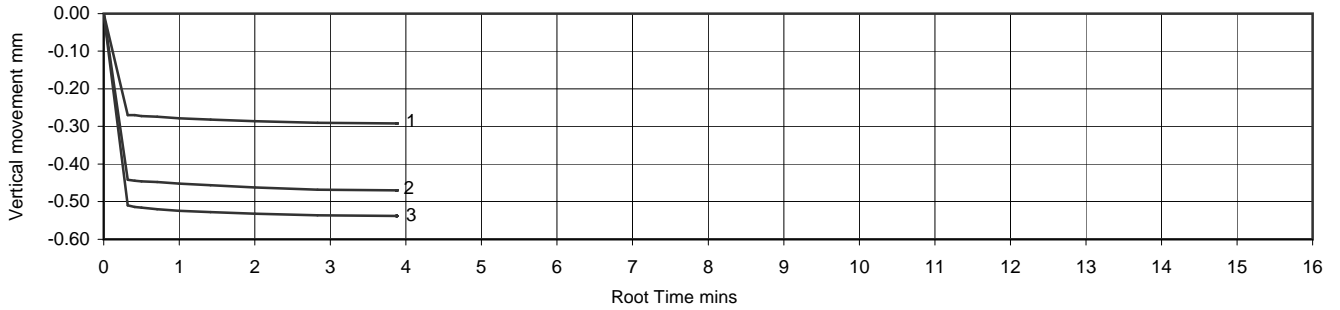
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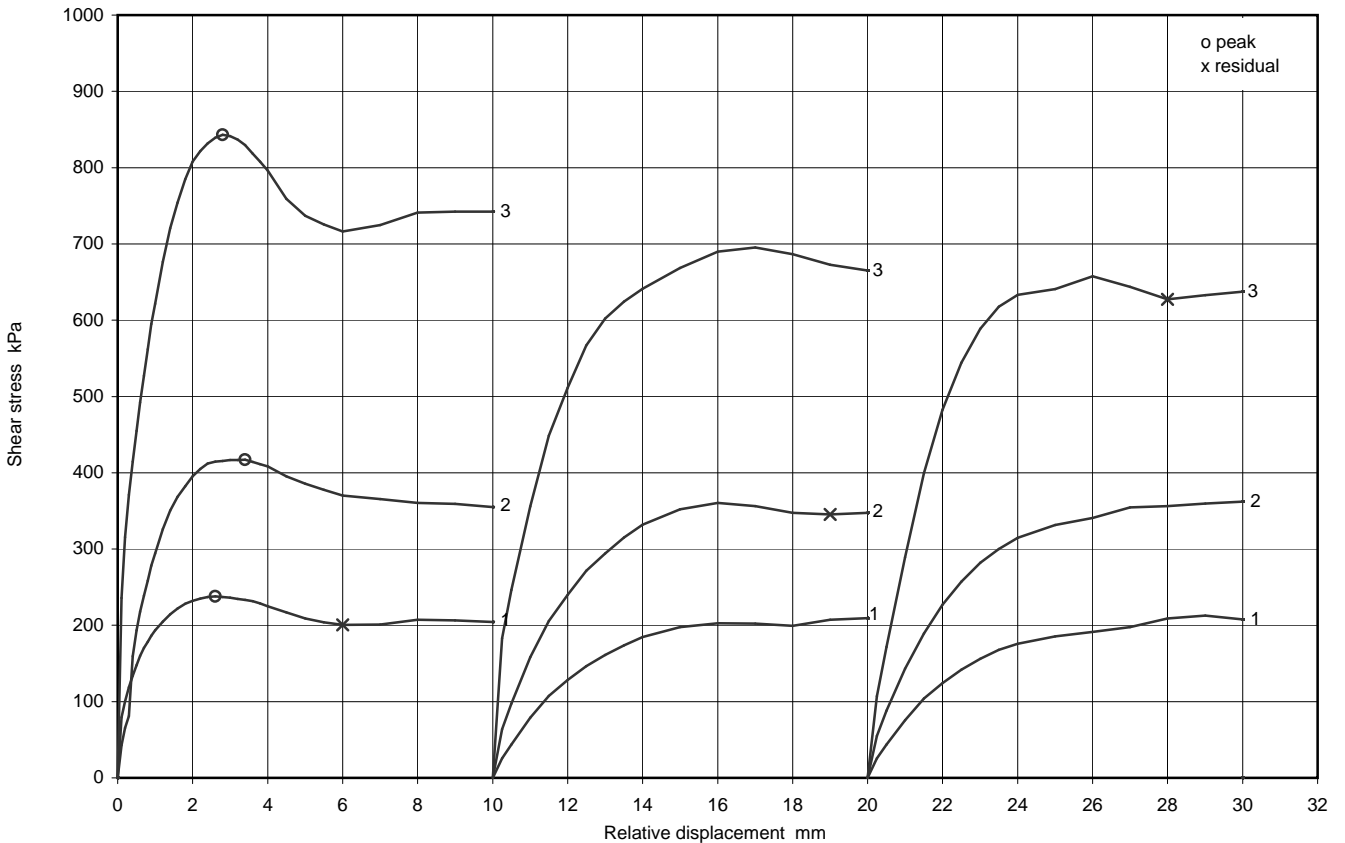
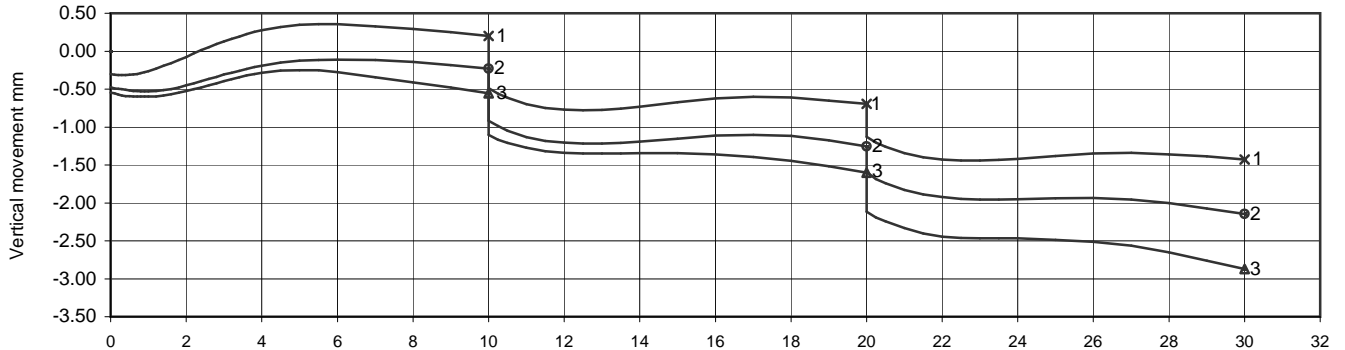
Determination of shear strength by direct shear (Small shearbox apparatus) (BS1377 : Part 7 : clause 4 : 1990)

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_5UB		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	40.30 - 40.75		
		Sample No	103	Type	U	
		ID				
		Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_6U			
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	23.60 - 24.05			
			Sample No	69	Type	U	
			ID				
			Spec Ref				

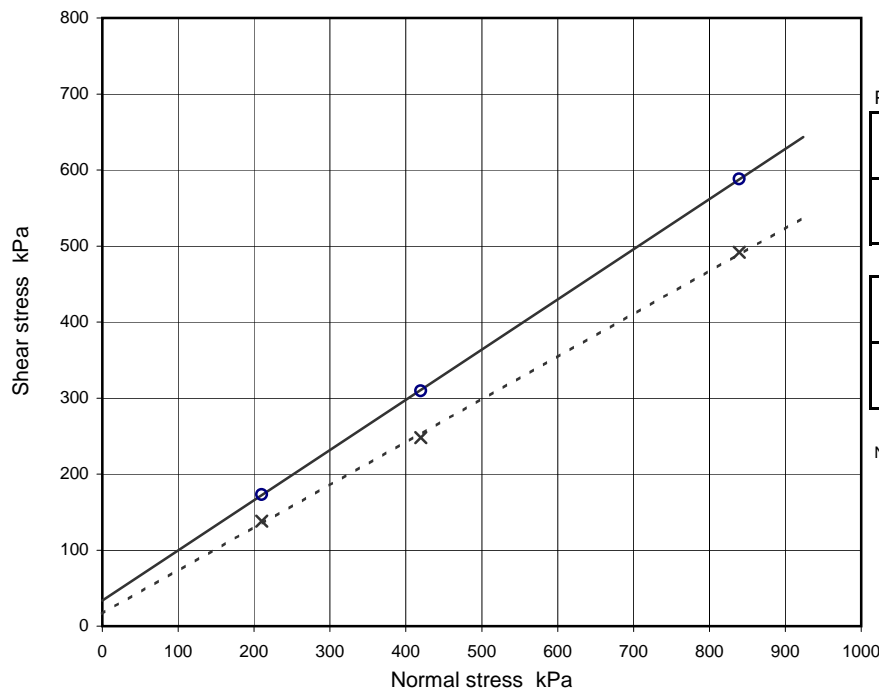
Soil Description	Grey SAND with occasional silt pockets and shell fragments
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, measured 2.67 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.5	23.5	23.5			
	Bulk Density	Mg/m ³	2.13	2.13	2.13			
	Water Content	%	13.4	15.1	16.3			
	Dry density	Mg/m ³	1.87	1.86	1.83			
	Voids ratio		0.425	0.439	0.461			
	Degree of Saturation	%	84	92	95			
Consol ¹	Consolidation / Normal Stress applied	kPa	210	420	840			
	Change in height during consolidation	mm	-0.374	-1.064	-0.560			
	Voids ratio after consolidation		0.402	0.374	0.426			
Shear see note 1	Voids ratio at end of test		0.346	0.316	0.258			
	Moisture content at end of test	%	13.0	11.8	9.7			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	3.40	2.60	2.80			
	Shear stress	kPa	173.0	309.5	588.3			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	30.00	9.00	5.00			
	Shear stress	kPa	138.1	248.2	492.0			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	34	-
Ø'	degrees	33½	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	16	-
Ø' _R	degrees	29½	-

Notes :

- 1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages
- 2 Box tilted during shear, severe on specimen 1 and 3.

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Figure

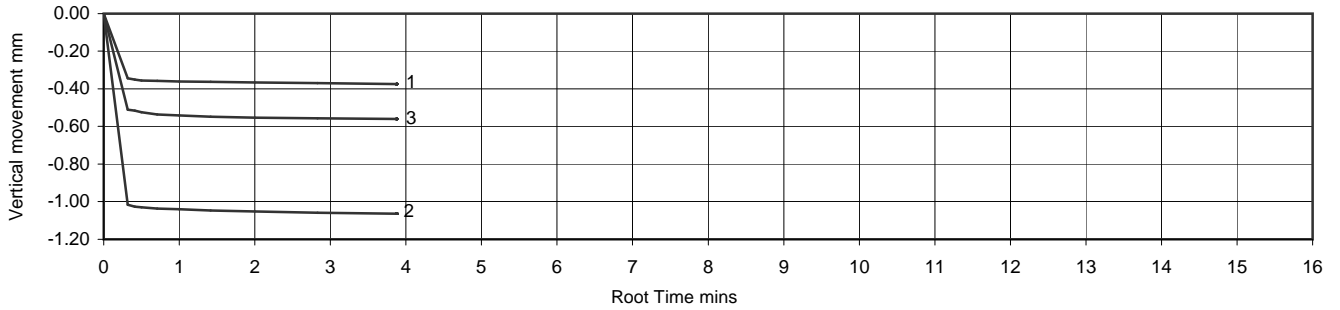
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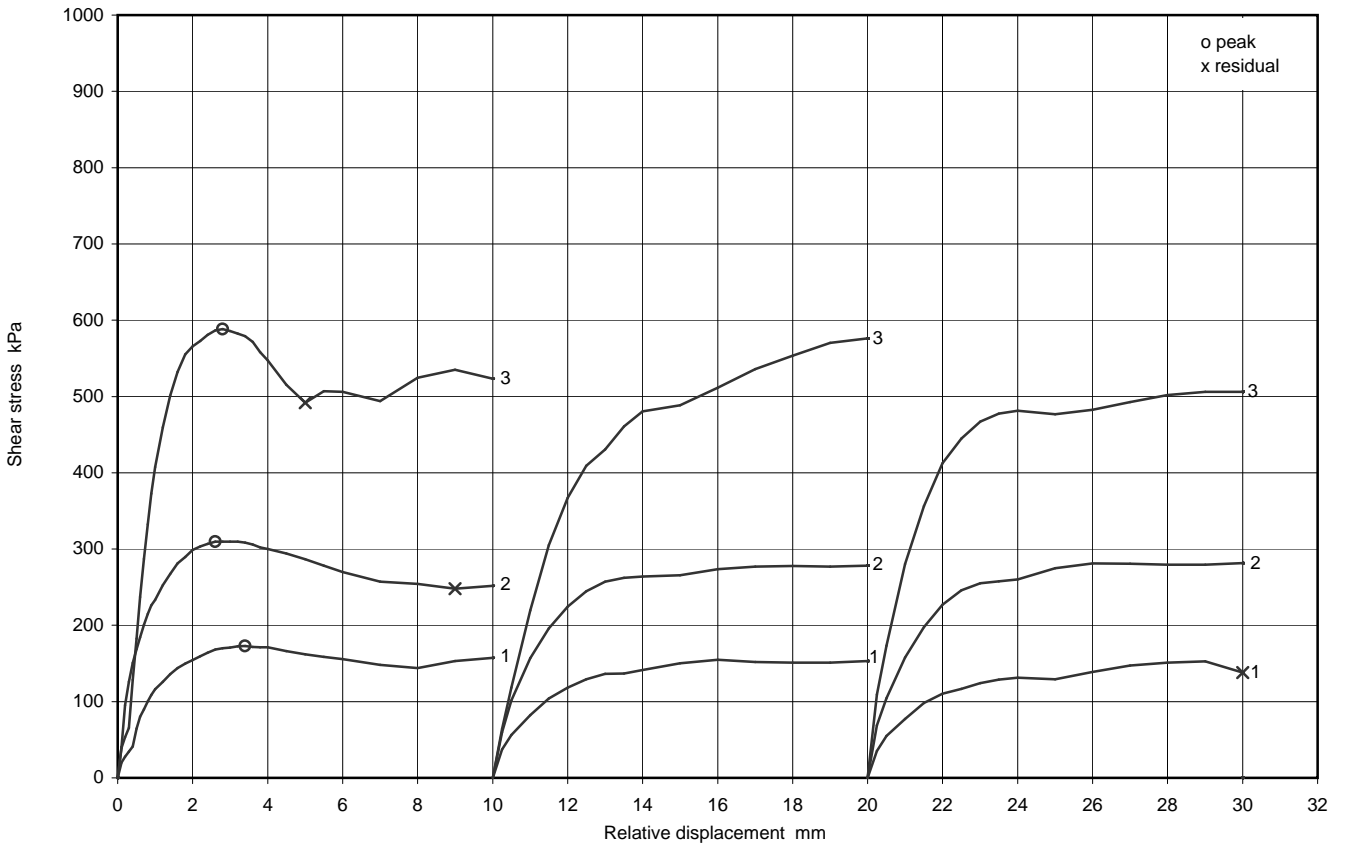
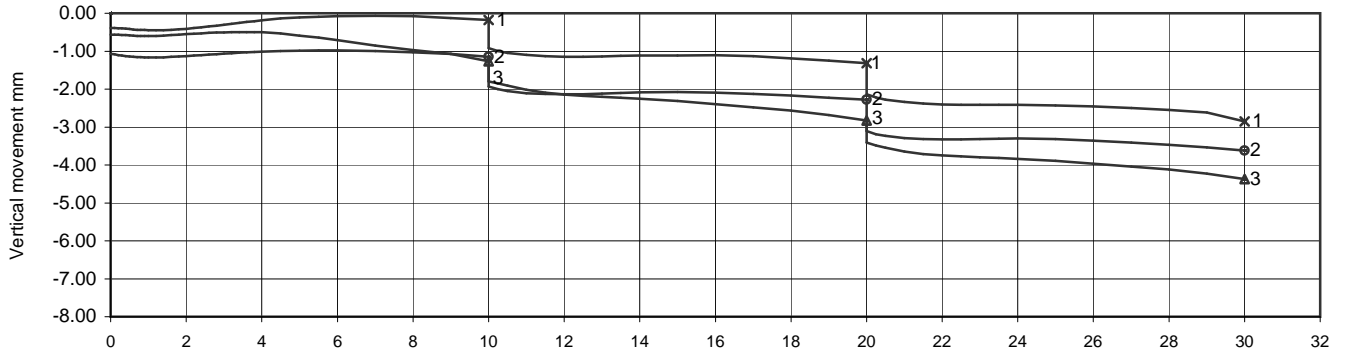
**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_6U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	23.60 - 24.05		
		Sample No	69	Type	U	
		ID				
		Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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Figure

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**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_7U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	5.40-5.85		
			Sample No	16	Type	U
			ID			
			Spec Ref			

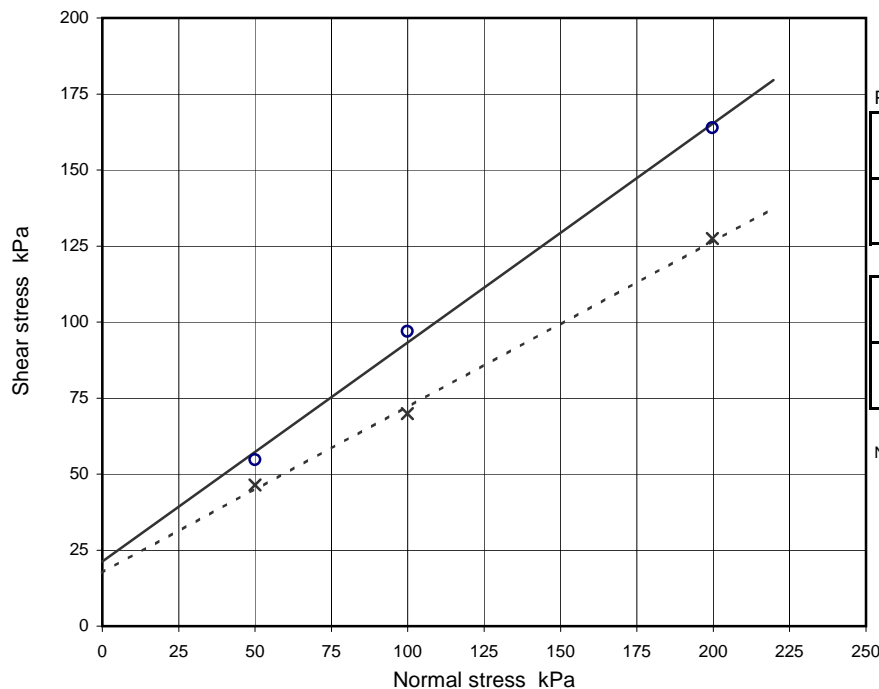
Soil Description	Greyish brown slightly gravelly SAND with occasional clay pockets and rare shell fragments.
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, measured 2.63 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.5	23.5	23.5			
	Bulk Density	Mg/m ³	2.13	2.13	2.13			
	Water Content	%	16.5	16.0	17.2			
	Dry density	Mg/m ³	1.83	1.84	1.82			
	Voids ratio		0.440	0.432	0.444			
	Degree of Saturation	%	99	97	102			
Consol ¹	Consolidation / Normal Stress applied	kPa	50	100	200			
	Change in height during consolidation	mm	-0.110	-0.168	-0.294			
	Voids ratio after consolidation		0.433	0.422	0.426			
Shear see note 1	Voids ratio at end of test		0.463	0.433	0.429			
	Moisture content at end of test	%	16.9	16.5	16.3			
	Saturation at end of test	%	96	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	2.20	2.20	1.60			
	Shear stress	kPa	54.7	97.0	163.9			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	30.00	30.00	30.00			
	Shear stress	kPa	46.4	69.9	127.4			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	21	-
Ø'	degrees	35	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	18	-
Ø' _R	degrees	28½	-

Notes :
 1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages

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Figure

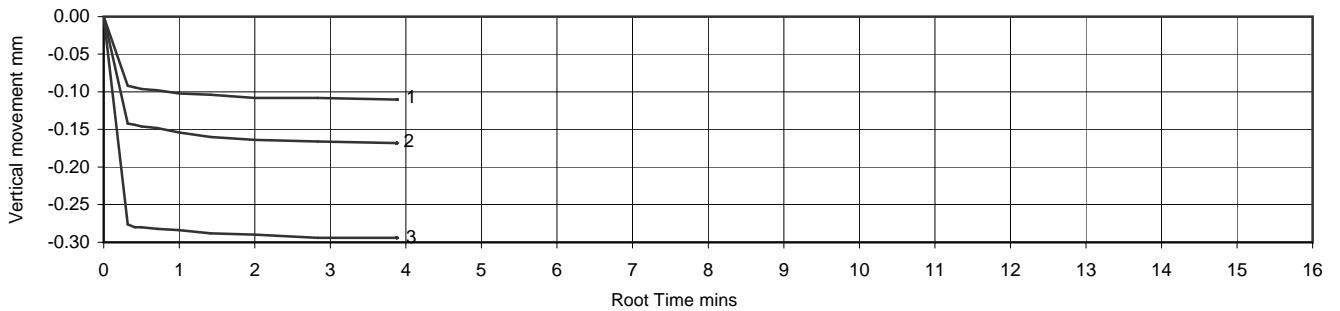
SSB 9

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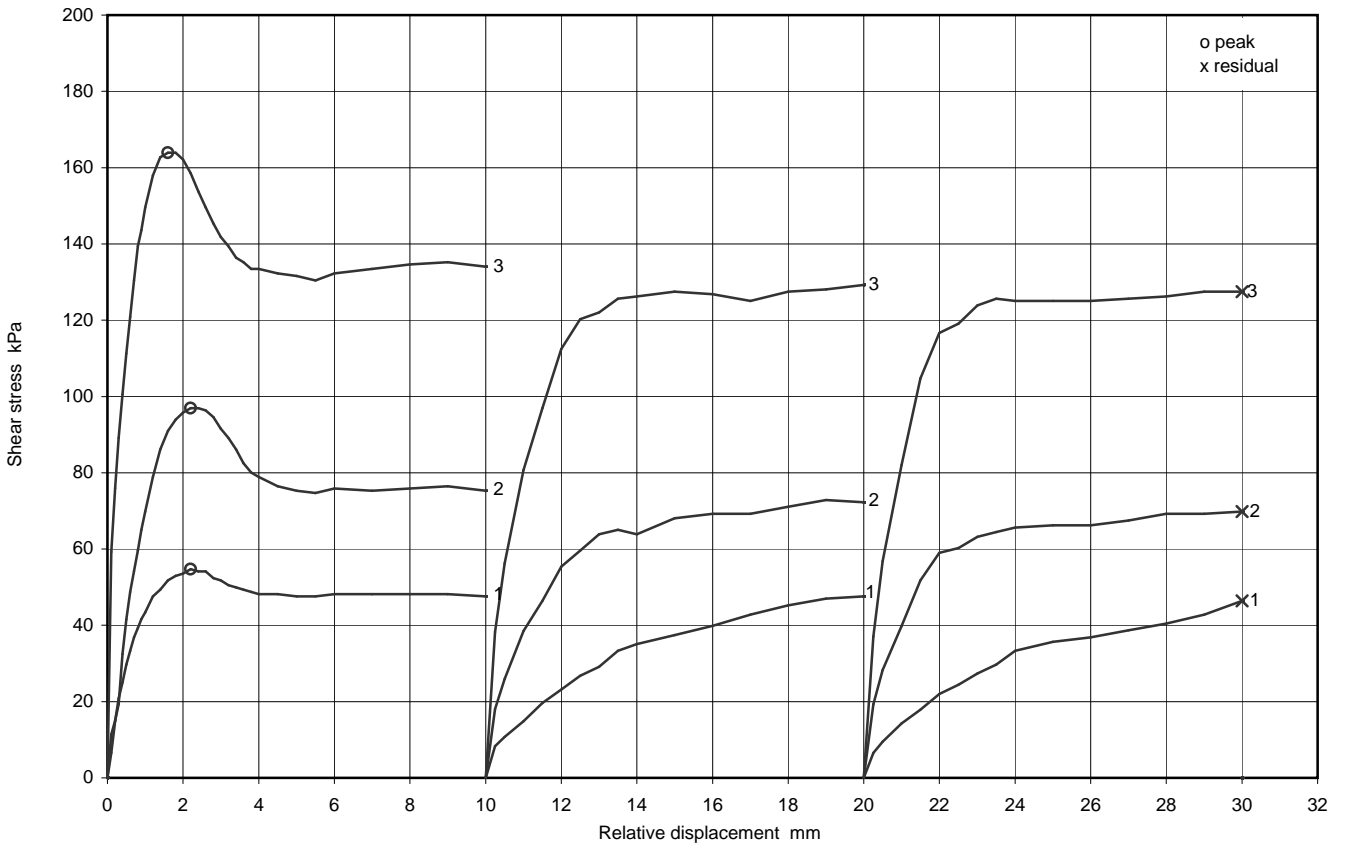
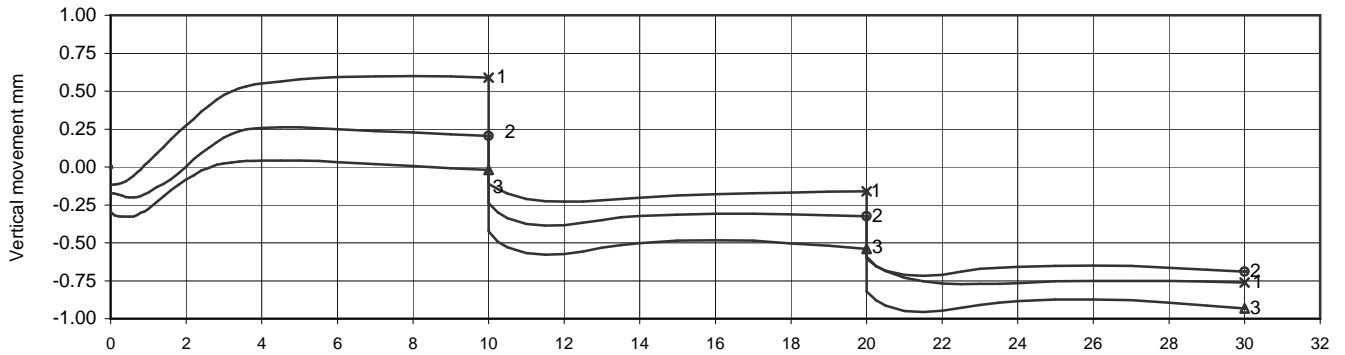
Determination of shear strength by direct shear (Small shearbox apparatus) (BS1377 : Part 7 : clause 4 : 1990)

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_7U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	5.40-5.85		
		Sample No	16	Type	U	
		ID				
		Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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Figure

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**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_7U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	34.10-34.55		
		Sample No	99	Type	U	
		ID				
		Spec Ref				

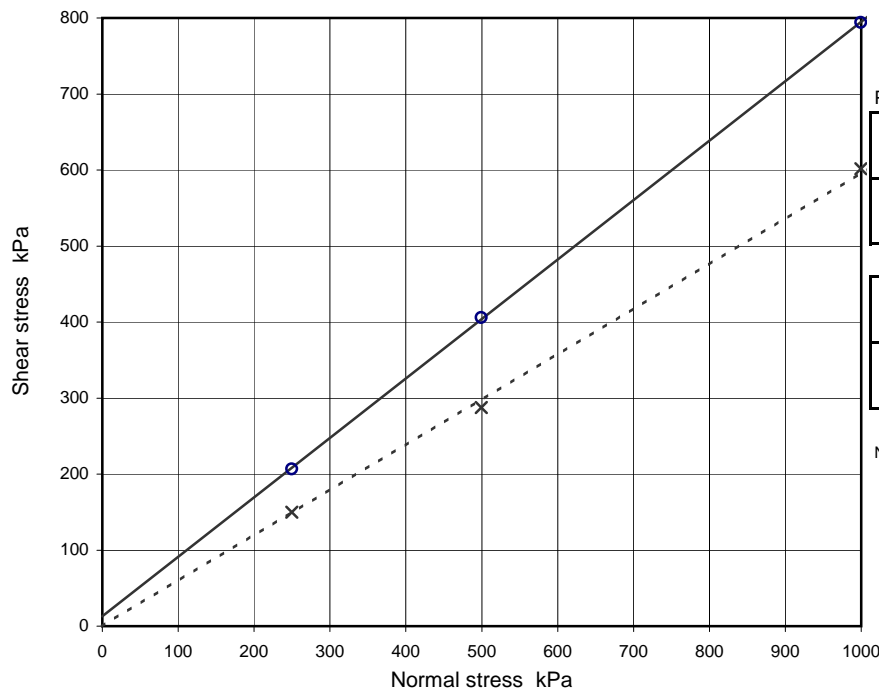
Soil Description	Grey SAND with occasional shell fragments.
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, assumed 2.65 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.6	23.6	23.5			
	Bulk Density	Mg/m ³	2.07	2.10	2.10			
	Water Content	%	14.5	14.5	13.5			
	Dry density	Mg/m ³	1.81	1.83	1.85			
	Voids ratio		0.468	0.446	0.430			
	Degree of Saturation	%	82	86	83			
Consol ¹	Consolidation / Normal Stress applied	kPa	250	500	1000			
	Change in height during consolidation	mm	-0.222	-0.480	-0.606			
	Voids ratio after consolidation		0.454	0.416	0.393			
Shear see note 1	Voids ratio at end of test		0.403	0.347	0.316			
	Moisture content at end of test	%	15.2	13.1	11.9			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	1.80	1.60	2.60			
	Shear stress	kPa	206.9	405.8	793.9			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	20.00	19.00	20.00			
	Shear stress	kPa	149.9	287.6	601.5			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	13	-
Ø'	degrees	38	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	(-6.8)	0.0
Ø' _R	degrees	(31)	30

Notes :

- After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages
- Box tilted during shear, severe on specimen 3.

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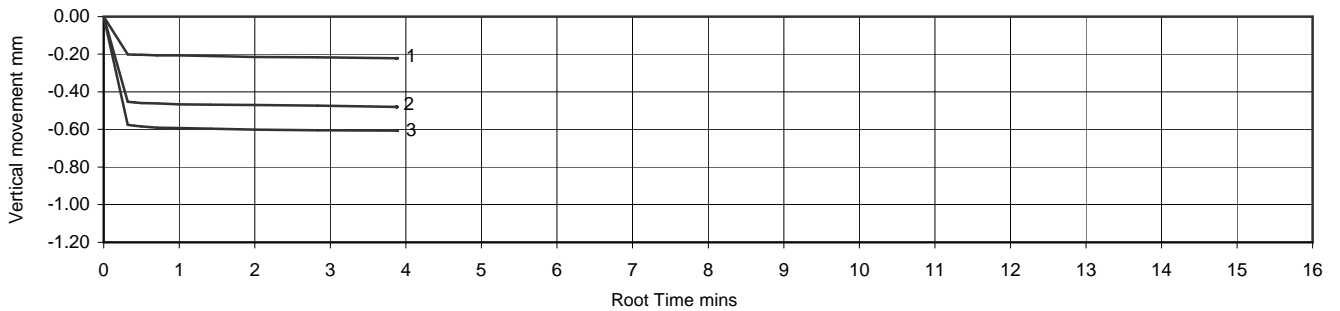
Figure

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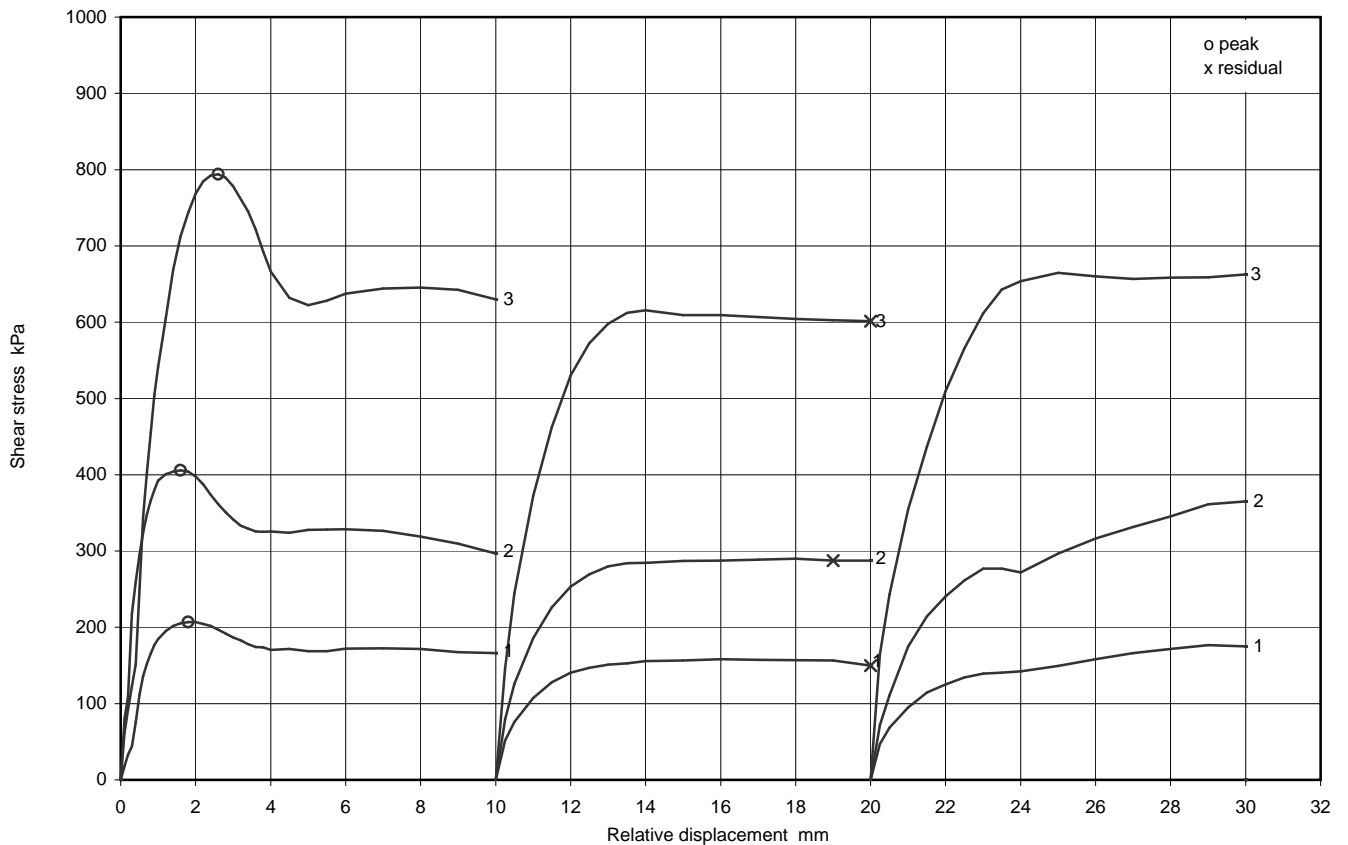
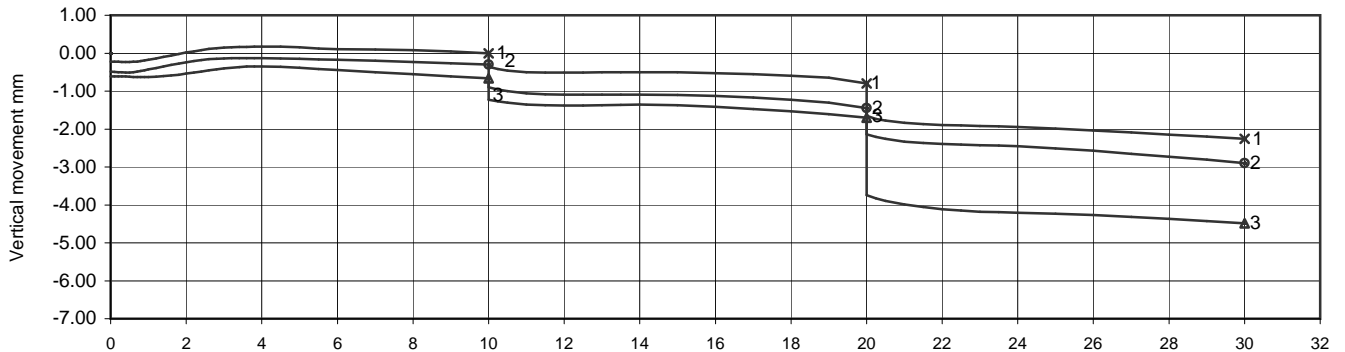
Determination of shear strength by direct shear (Small shearbox apparatus) (BS1377 : Part 7 : clause 4 : 1990)

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_7U	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	34.10-34.55	
		Sample No	99	Type	U
		ID			
		Spec Ref			

Consolidation stage(s)



Shearing stage(s)



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**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.55 - 44.00		
			Sample No	113	Type	U
			ID			
			Spec Ref			

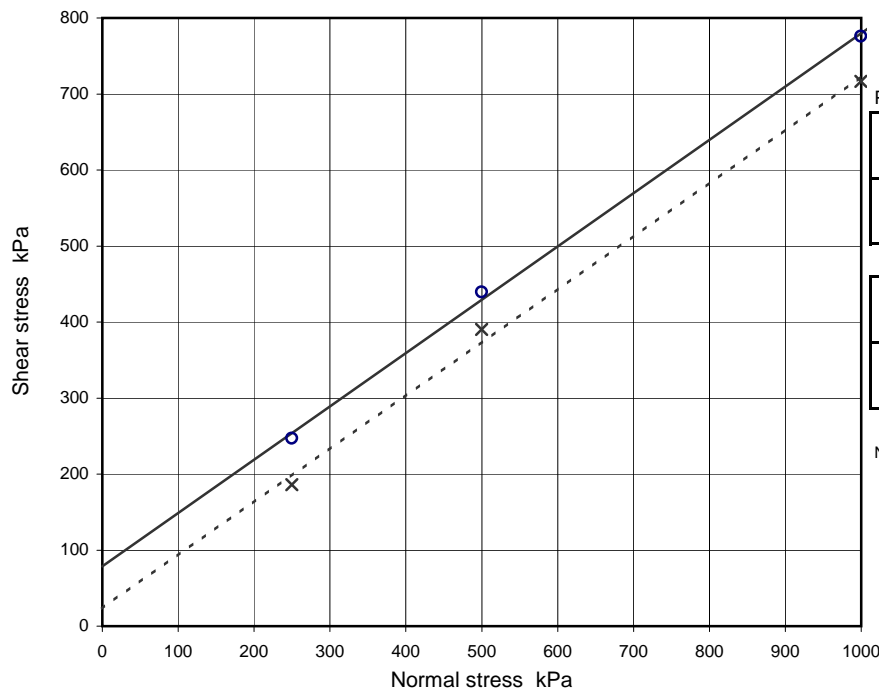
Soil Description	Grey SAND with frequent fine to medium gravel sized shell fragments
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, assumed 2.65 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.5	23.5	23.5			
	Bulk Density	Mg/m ³	2.12	2.08	2.04			
	Water Content	%	17.2	17.8	17.6			
	Dry density	Mg/m ³	1.81	1.77	1.73			
	Voids ratio		0.467	0.497	0.530			
	Degree of Saturation	%	98	95	88			
Consol ¹	Consolidation / Normal Stress applied	kPa	250	500	1000			
	Change in height during consolidation	mm	-0.656	-0.694	-0.740			
	Voids ratio after consolidation		0.426	0.453	0.482			
Shear see note 1	Voids ratio at end of test		0.374	0.363	0.393			
	Moisture content at end of test	%	14.1	13.7	14.8			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	2.60	2.60	3.00			
	Shear stress	kPa	247.1	439.8	776.0			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	9.00	4.50	5.50			
	Shear stress	kPa	186.3	390.4	716.8			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	79	-
Ø'	degrees	35	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	23	-
Ø' _R	degrees	34	-

Notes :

- 1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages
- 2 Box tilted during shear, severe on specimen 1 and 3.

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Figure

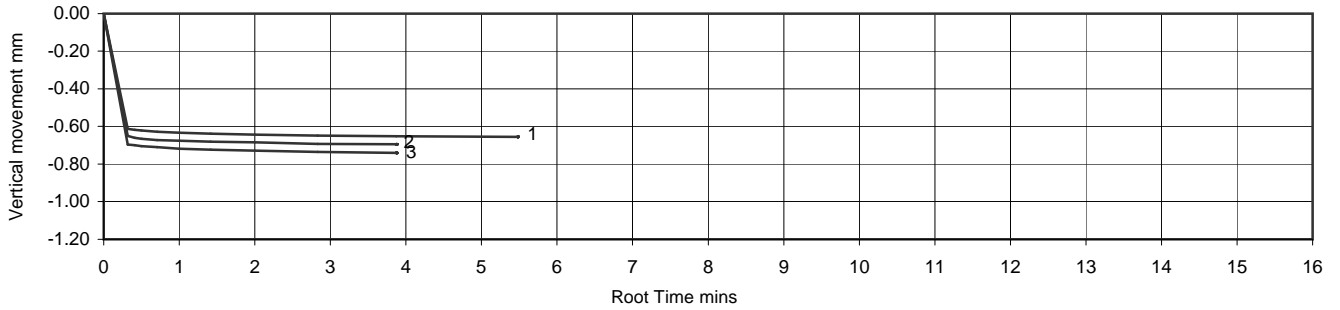
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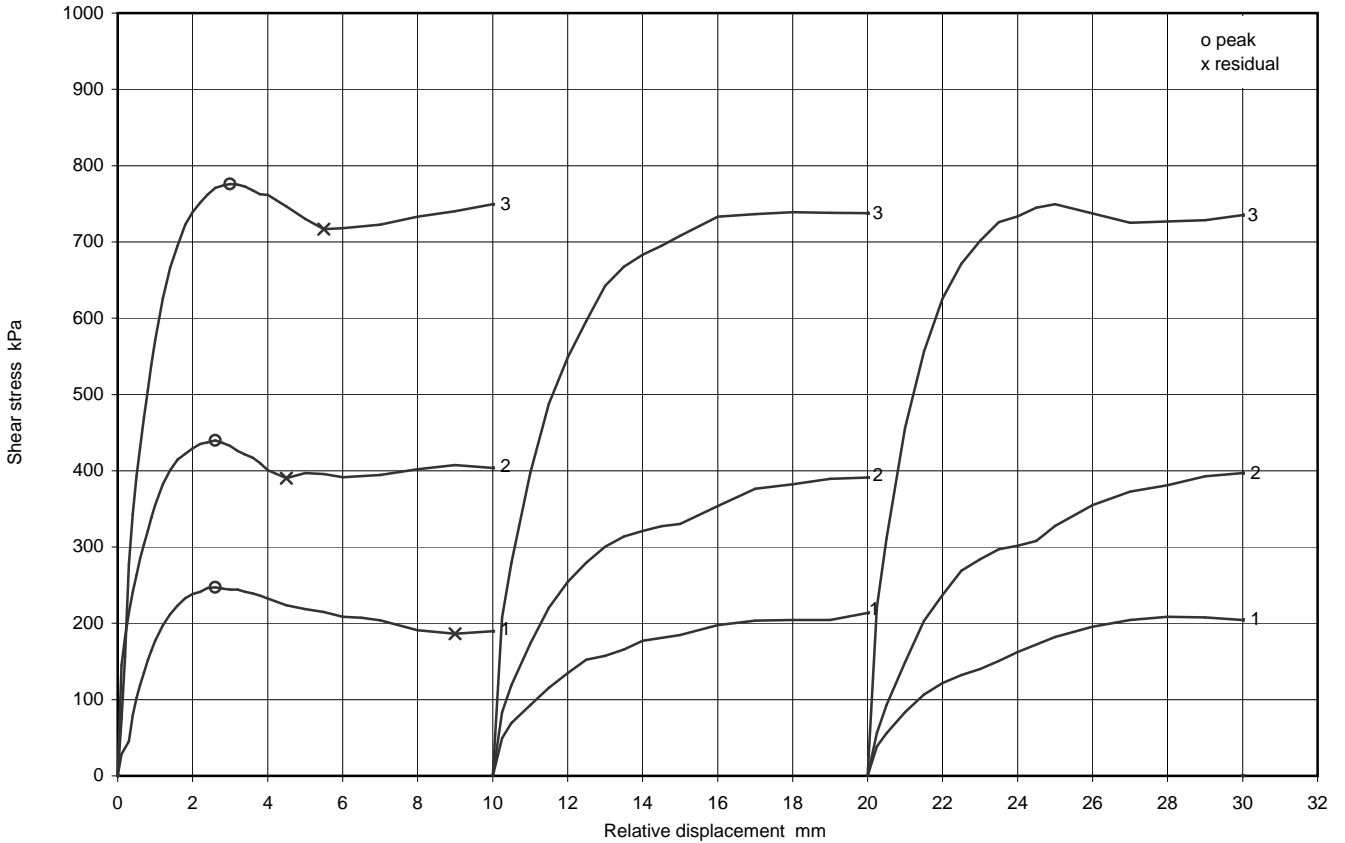
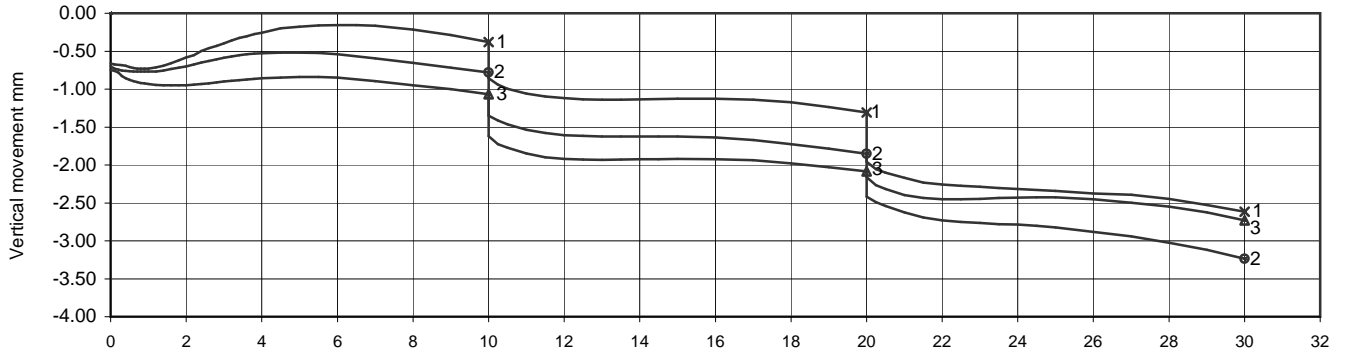
**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.55 - 44.00		
		Sample No	113	Type	U	
		ID				
		Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_9U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	14.15 - 14.60		
			Sample No	44	Type	U
			ID			
			Spec Ref			

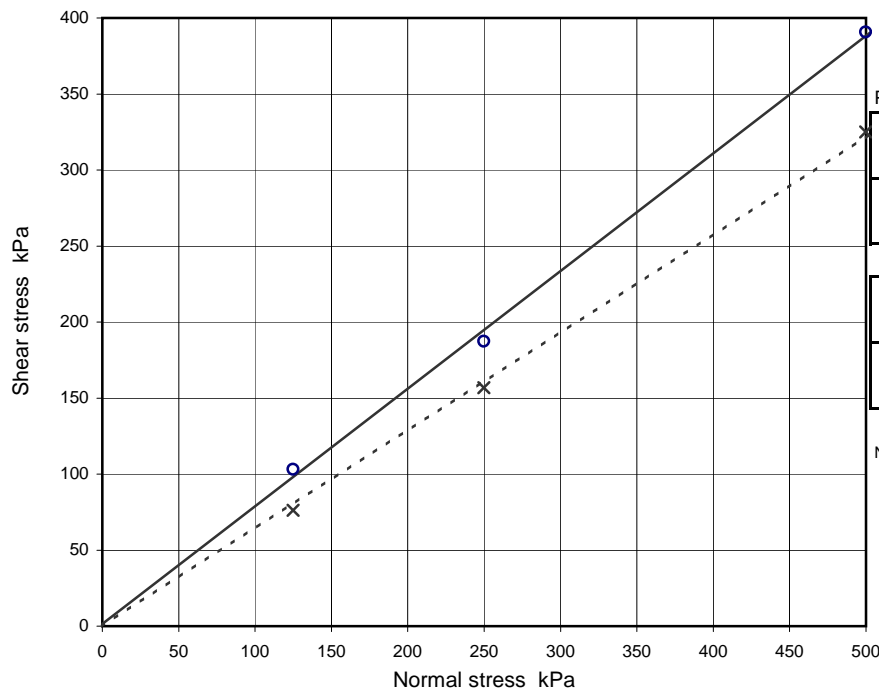
Soil Description	Light brown SAND with shell fragments
Specimen Type /Preparation	UNDISTURBED

Specimen(s) nominally 60mm x 60mm square
 Test(s) carried out in submerged condition
 Particle density, measured 2.65 Mg/m³

Specimen Details		No.	1	2	3	4	5	6
Initial	Height	mm	23.5	23.5	23.5			
	Bulk Density	Mg/m ³	2.04	2.00	2.04			
	Water Content	%	19.5	18.6	20.8			
	Dry density	Mg/m ³	1.71	1.69	1.69			
	Voids ratio		0.553	0.569	0.567			
	Degree of Saturation	%	93	86	97			
Consol ⁿ	Consolidation / Normal Stress applied	kPa	125	250	500			
	Change in height during consolidation	mm	-0.188	-0.250	-0.550			
	Voids ratio after consolidation		0.541	0.553	0.531			
Shear see note 1	Voids ratio at end of test		0.503	0.468	0.424			
	Moisture content at end of test	%	19.0	17.7	16.0			
	Saturation at end of test	%	100	100	100			

Shearing stage

Rate of displacement	Peak	mm/min	0.60	0.60	0.60			
	Residual	mm/min	0.60	0.60	0.60			
Peak values, (o)	Relative displacement	mm	1.60	1.80	1.80			
	Shear stress	kPa	103.1	187.4	390.6			
Residual values, (x)	No. of reversals		2	2	2			
	Relative displacement	mm	30.00	20.00	20.00			
	Shear stress	kPa	76.3	156.8	325.0			



Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c'	kPa	1.5	-
Ø'	degrees	37½	-

Residual strength, (x)		Regression	Manual
c' _R	kPa	(-7.9)	0.0
Ø' _R	degrees	(33½)	32

Notes :

- 1 After shear values based on BS1377. Pt 7 cl. 4.6.1.6 using δH calculated from consolidation and shear stages
- 2 Box tilted during shear, severe on specimen 2 and 3.

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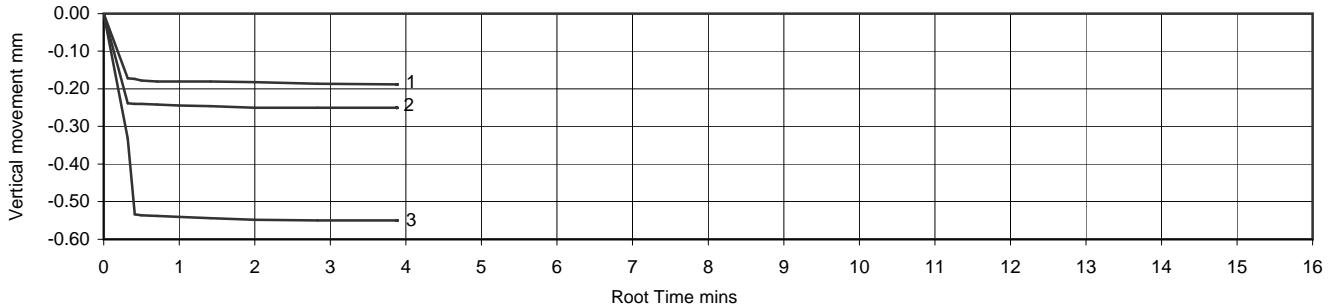
Figure

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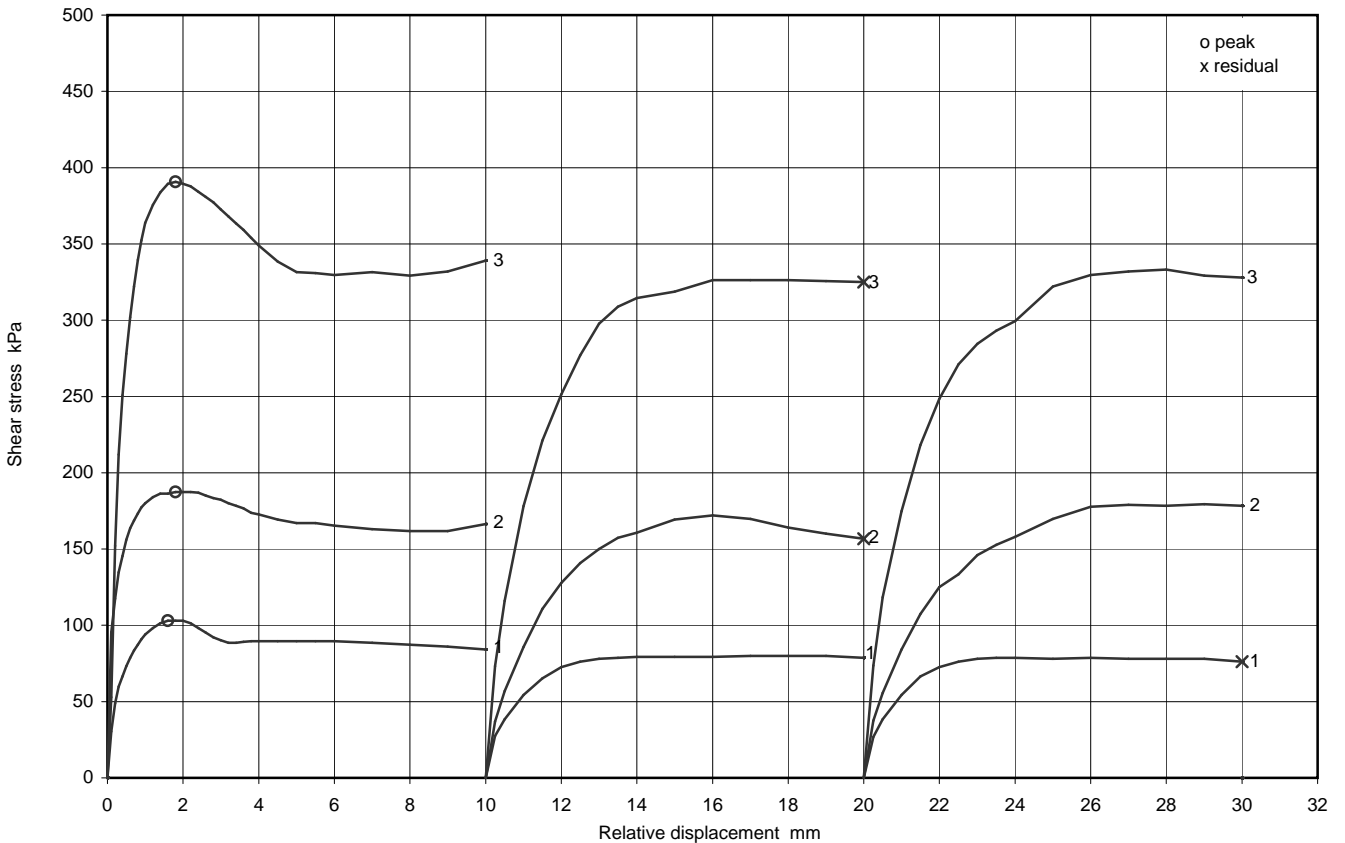
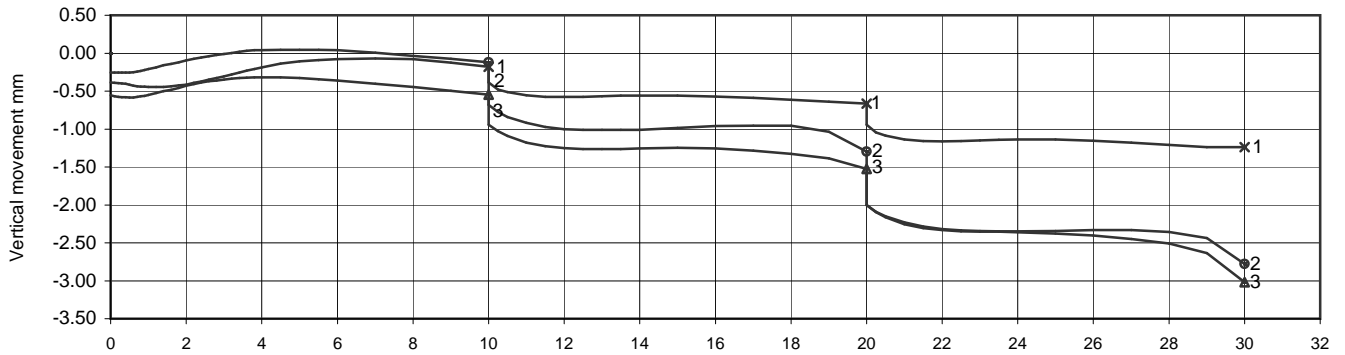
**Determination of shear strength by direct shear (Small shearbox apparatus)
(BS1377 : Part 7 : clause 4 : 1990)**

Project No	A0012-10	Sample Details:	Hole No.	CBH2009_9U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	14.15 - 14.60		
		Sample No	44	Type	U	
		ID				
		Spec Ref				

Consolidation stage(s)



Shearing stage(s)



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Figure

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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

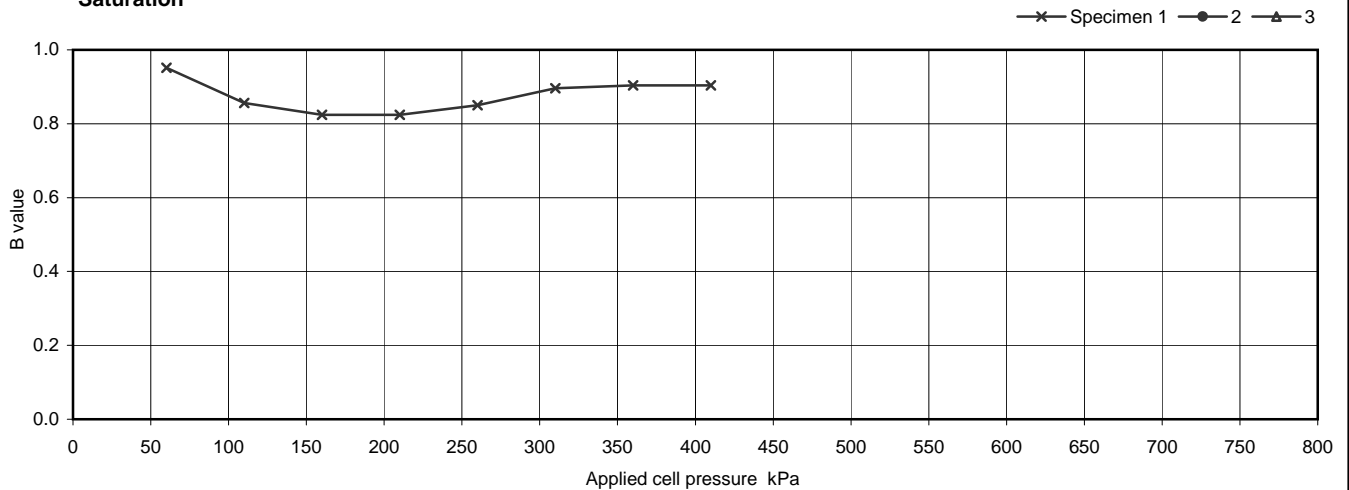
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1			
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	75.24-75.64			
			No	16	Type	CS	
			ID				
			Spec Ref				

Specimen Details		1	2	3
Initial	Length mm	192.6		
	Diameter mm	95.6		
	Bulk Density Mg/m ³	1.75		
	Water Content %	43.6		
	Dry density Mg/m ³	1.22		
After consolidation	Length mm	191.0		
	Diameter mm	94.8		
	Bulk Density* Mg/m ³	1.79		
	Water Content* %	43.0		
	Dry density* Mg/m ³	1.25		
After test	Bulk Density* Mg/m ³	1.80		
	Water Content* %	41.3		
	Dry density* Mg/m ³	1.28		

Soil Description	Stiff brownish grey slightly sandy CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	410		
Final pore water pressure	kPa	350		
Final B Value		0.90		

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		650			kPa
	Back Pressure applied		350			kPa
	Effective Pressure		300			kPa
	Pore pressure at start of consolidation		631			kPa
	Pore pressure at end of consolidation		361			kPa
	Pore pressure dissipation at end of consolidation		96			%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	Coefficient of Consolidation	C _{vi}	0.32			m ² /year
	Coefficient of Compressibility	M _{vi}	0.15			m ² /MN
	Coefficient of Permeability (calculated)	k _{vi}	1.5E-11			m/s

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Figure

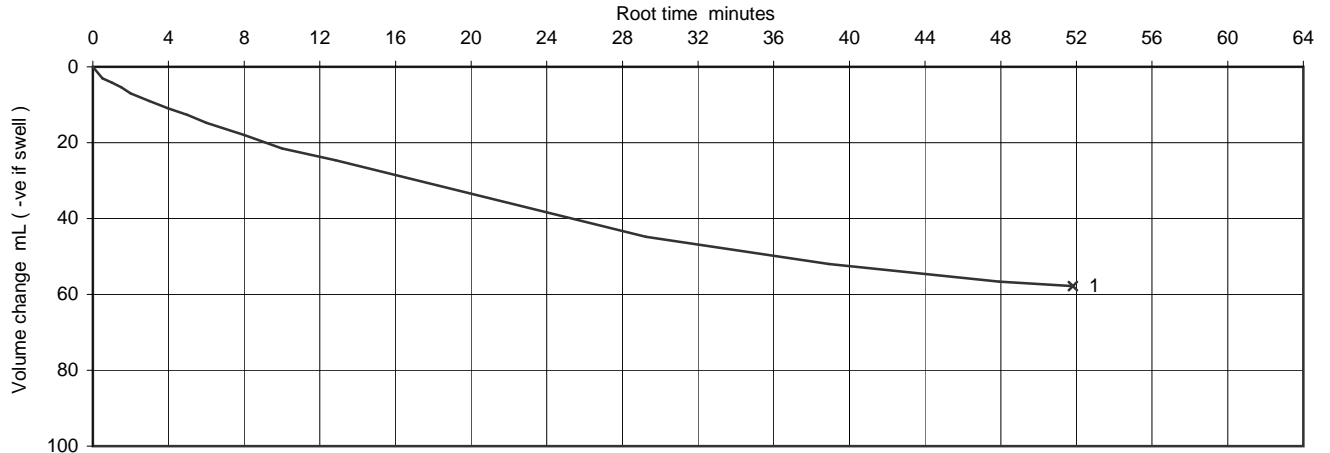
CD 1

sheet 1 of 3

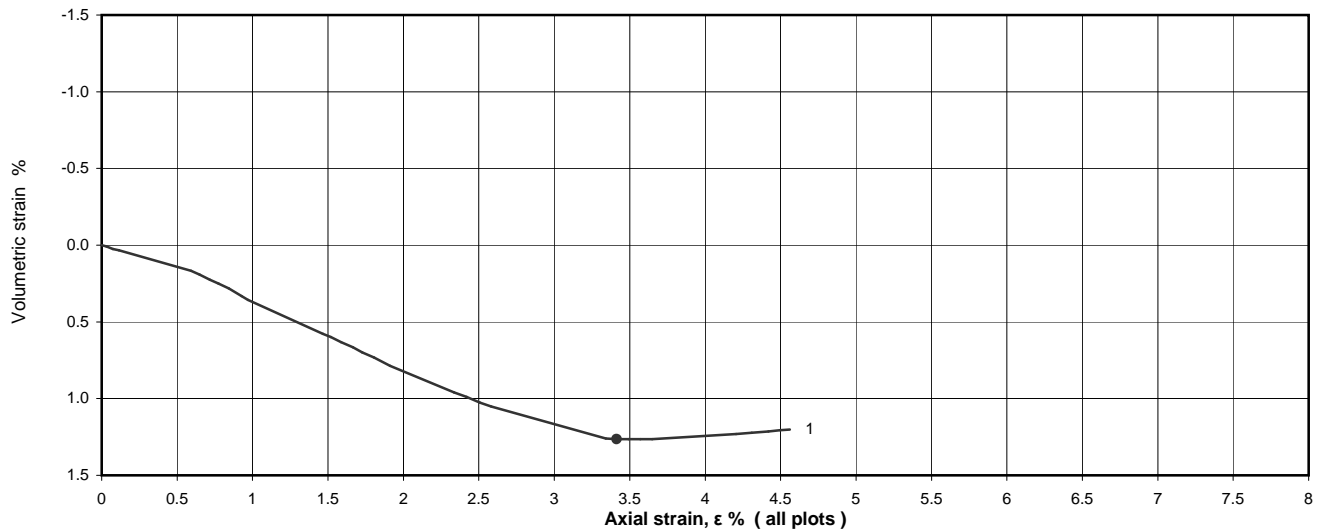
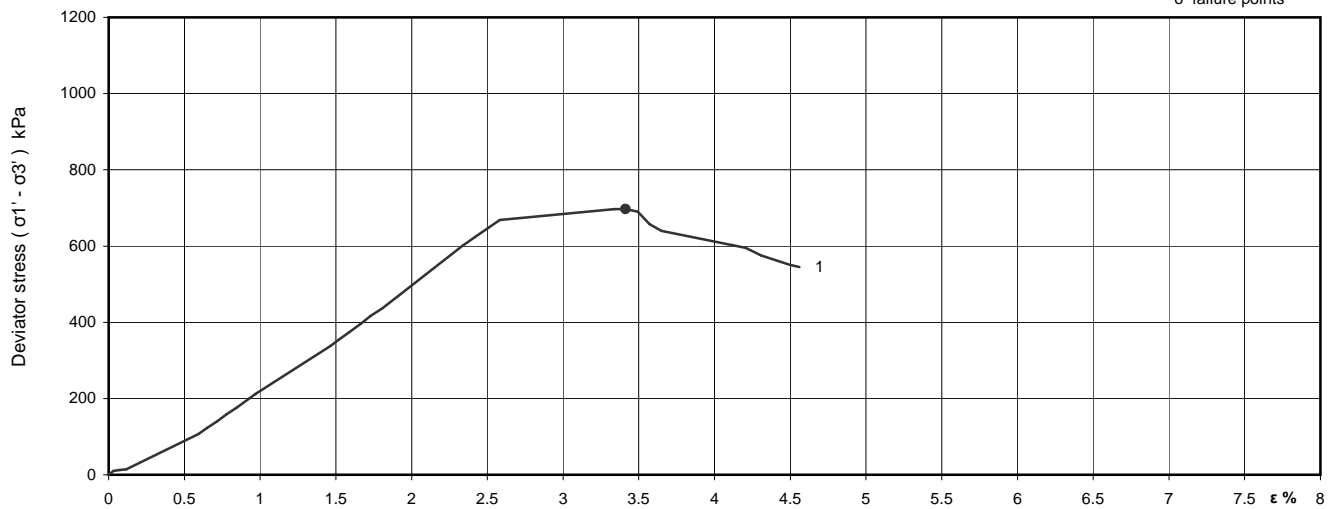
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	75.24-75.64		
			No	16	Type	CS
			ID			
			Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

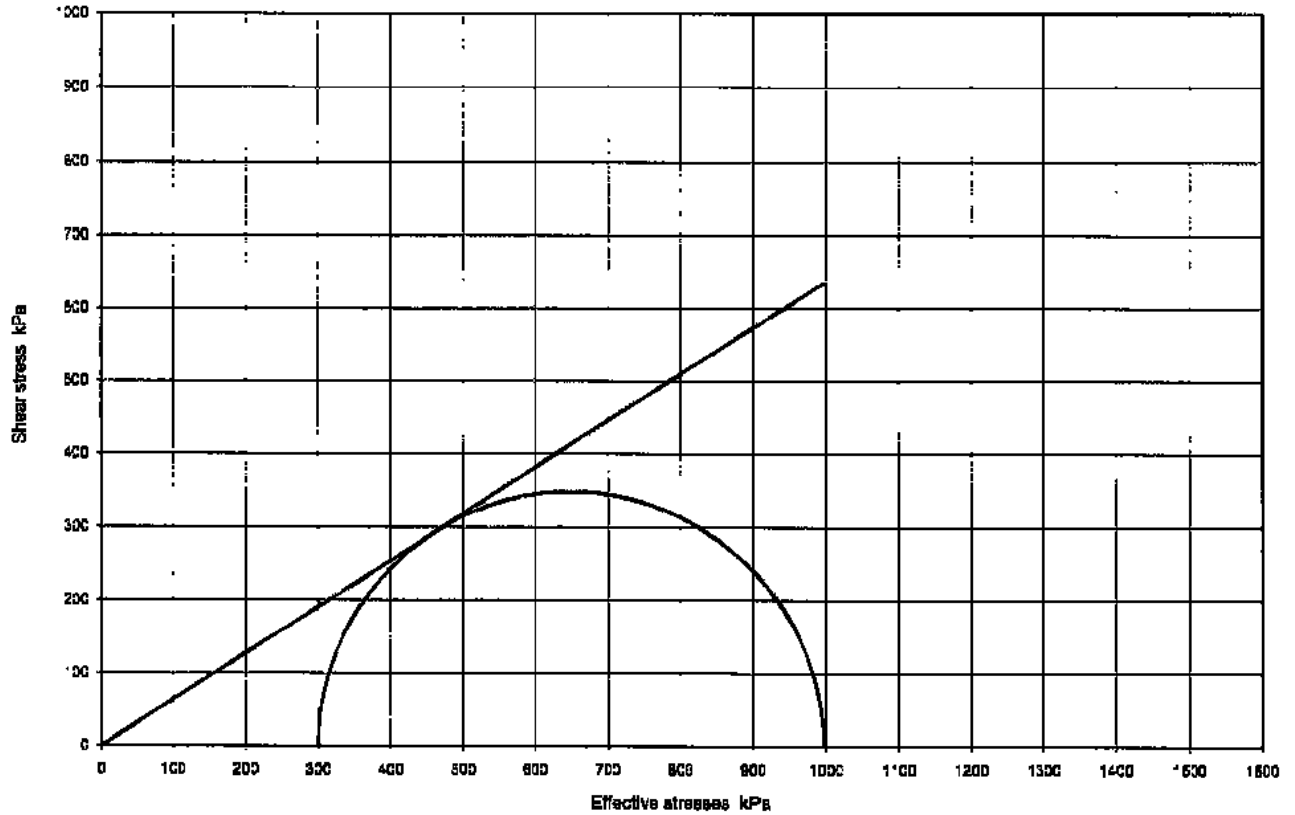
CD 1

sheet 2 of 3

**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	75.24-75.64		
		No	16	Type	CS	
		ID				
		Spec Ref				

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	850	kPa
Initial pwp	350	kPa
Initial σ_3'	300	kPa
Rate of strain	0.04	%/hr

Failure conditions

Criterion	Maximum deviator stress		
Axial strain	3.41		%
$(\sigma_1' - \sigma_3')$	898.9		kPa
Volumetric strain	1.26		%
σ_3'	300		kPa
σ_1'	997		kPa
Time to failure	85.3		hrs

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	32.6

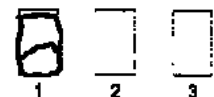
Manual re-assessment

c'	kPa	-
ϕ'	degrees	-

Notes :

Deviator stresses corrected for area change, vertical side drains and 0.45 mm thick rubber membrane(s)

Mode of failure



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Figure

CD 1

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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

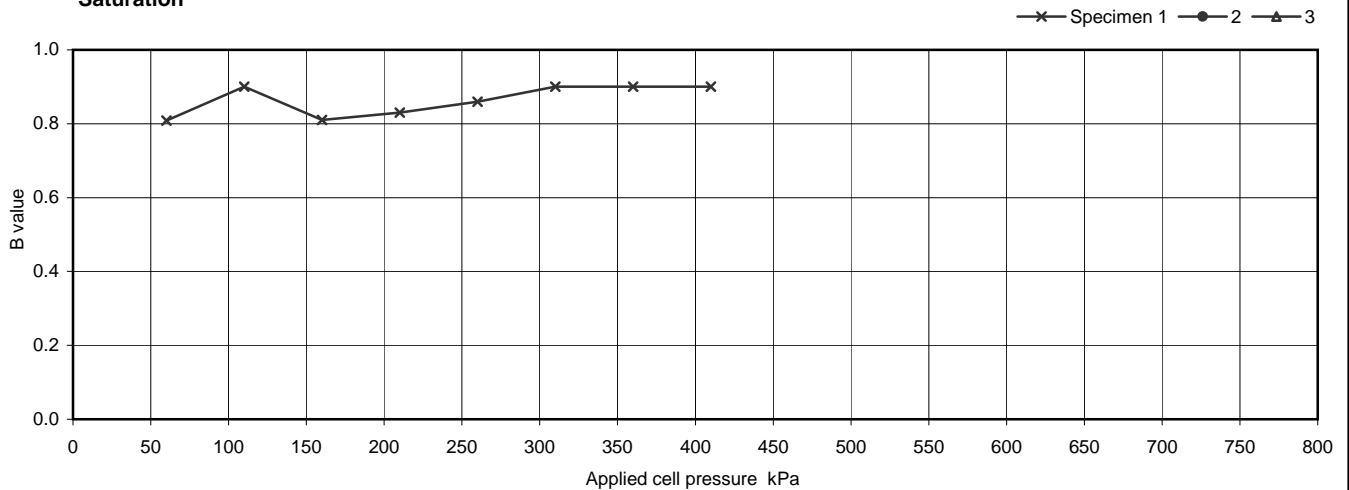
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	80.10-80.50		
		No	17	Type	CS	
		ID				
		Spec Ref				

Specimen Details		1	2	3
Initial	Length	mm	193.7	
	Diameter	mm	93.8	
	Bulk Density	Mg/m ³	1.87	
	Water Content	%	34.1	
	Dry density	Mg/m ³	1.39	
After consolidation	Length	mm	192.2	
	Diameter	mm	93.1	
	Bulk Density*	Mg/m ³	1.90	
	Water Content*	%	33.2	
	Dry density*	Mg/m ³	1.42	
After test	Bulk Density*	Mg/m ³	1.91	
	Water Content*	%	32.0	
	Dry density*	Mg/m ³	1.45	

Soil Description	Very stiff brown silty CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	410		
Final pore water pressure	kPa	350		
Final B Value		0.90		

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		670			kPa
	Back Pressure applied		350			kPa
	Effective Pressure		320			kPa
	Pore pressure at start of consolidation		650			kPa
	Pore pressure at end of consolidation		362			kPa
	Pore pressure dissipation at end of consolidation		96			%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	Coefficient of Consolidation	C _{vi}	0.59		m ² /year	
	Coefficient of Compressibility	M _{vi}	0.14		m ² /MN	
	Coefficient of Permeability (calculated)	k _{vi}	2.5E-11		m/s	

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Figure

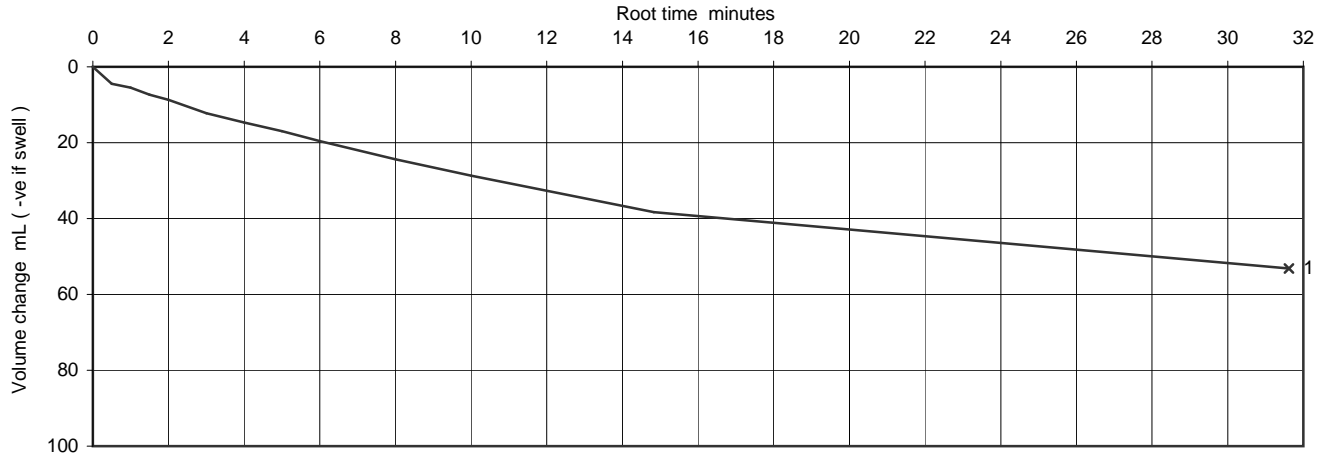
CD 2

sheet 1 of 3

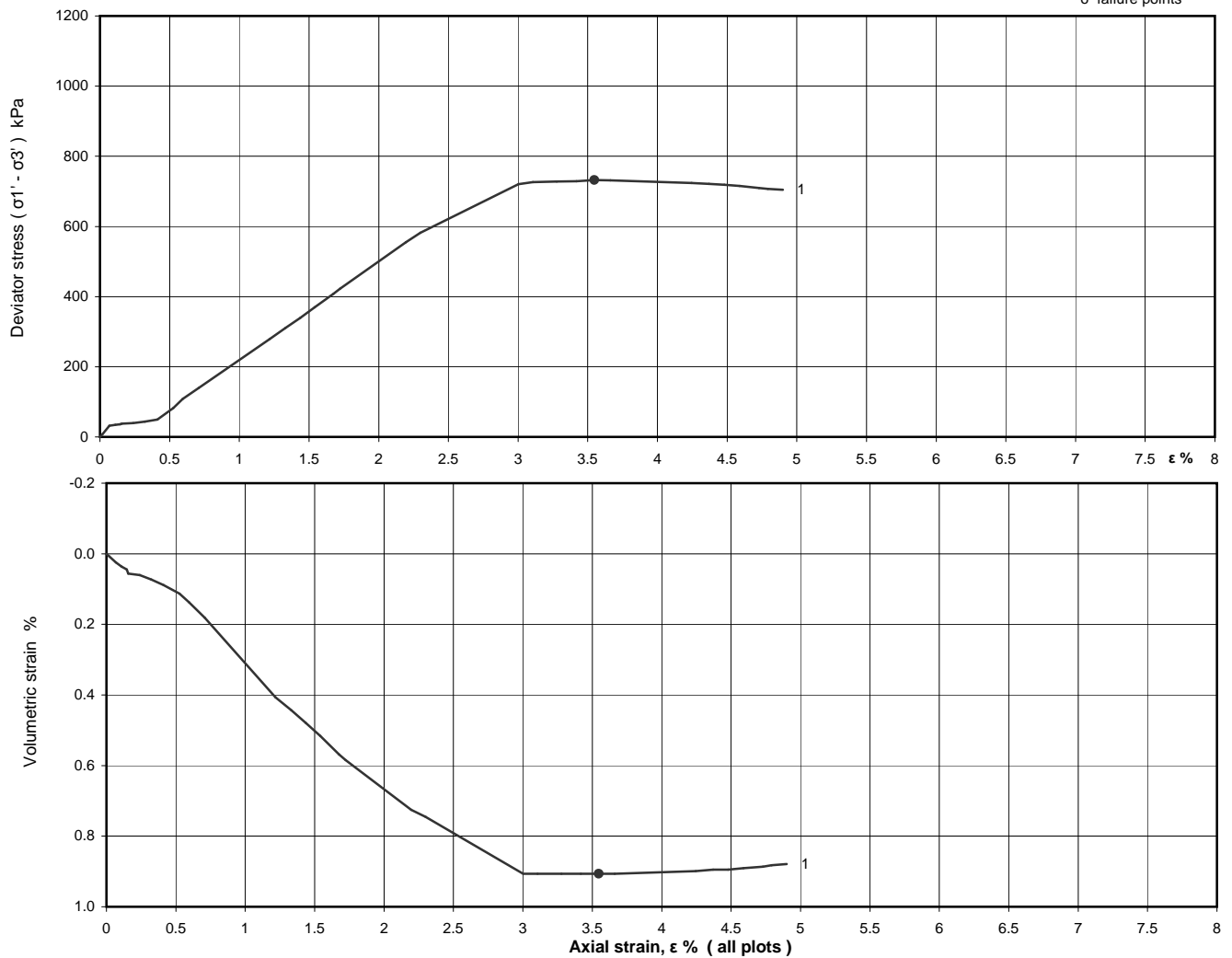
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	80.10-80.50		
			No	17	Type	CS
			ID			
			Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

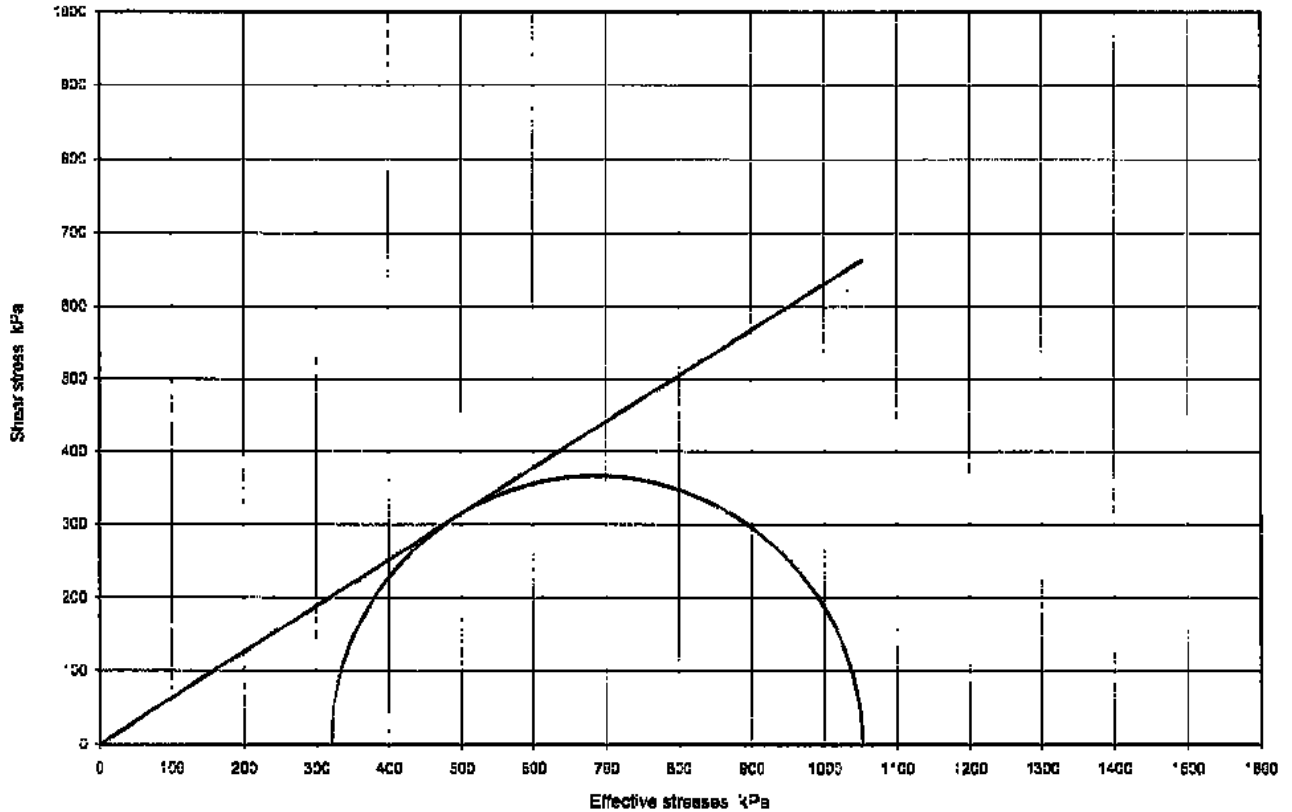
CD 2

sheet 2 of 3

**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_1	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	80.10-80.50	
		No	17	Type	CS
		ID			
		Spec Ref			

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	670	kPa
initial pwp	350	kPa
Initial σ_3'	320	kPa
Rate of strain	0.07	%/hr

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	32.2

Manual re-assessment

c'	kPa	-
ϕ'	degrees	-

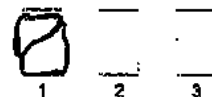
Failure conditions

Criterion	Maxium deviator stress	
Axial strain	3.55	%
$(\sigma_1' - \sigma_3')_f$	731.9	kPa
Volumetric strain	0.81	%
$\sigma_3'_f$	320	kPa
$\sigma_1'_f$	1052	kPa
Time to failure	50.7	hrs

Notes :

Deviator stresses corrected for area change, vertical side drains and 0.45 mm thick rubber membrane(s)

Mode of failure



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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

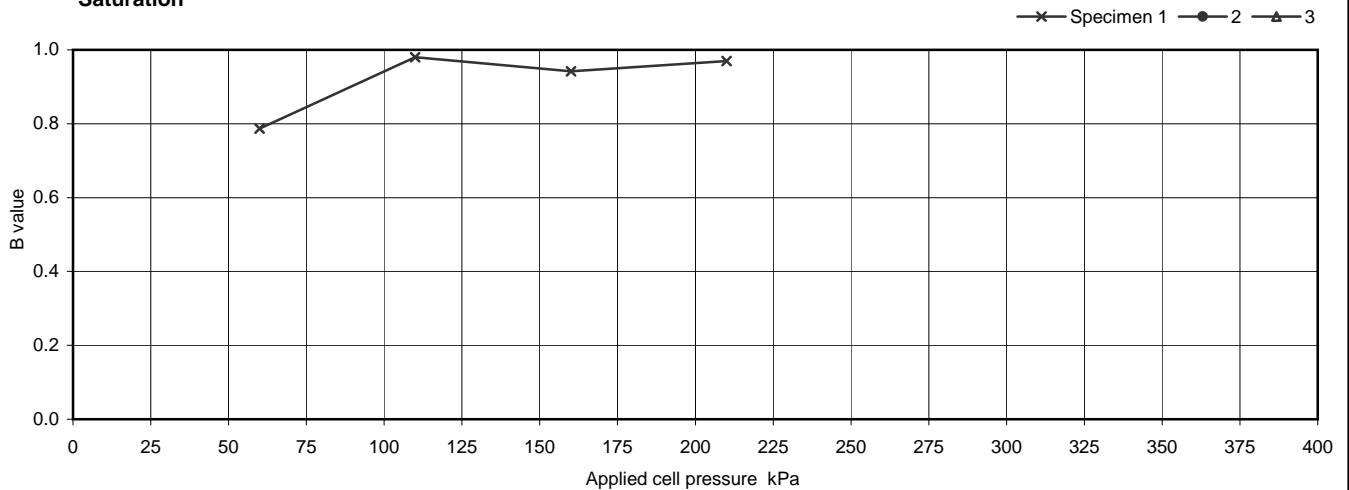
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.40-43.80		
		No	15	Type	CS	
		ID				
		Spec Ref				

Specimen Details		1	2	3
Initial	Length	mm	204.3	
	Diameter	mm	102.6	
	Bulk Density	Mg/m ³	1.81	
	Water Content	%	42.7	
	Dry density	Mg/m ³	1.27	
After consolidation	Length	mm	200.0	
	Diameter	mm	100.4	
	Bulk Density*	Mg/m ³	1.85	
	Water Content*	%	36.7	
	Dry density*	Mg/m ³	1.35	
After test	Bulk Density*	Mg/m ³	1.87	
	Water Content*	%	35.0	
	Dry density*	Mg/m ³	1.39	

Soil Description	Firm to stiff brownish grey slightly sandy CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	210		
Final pore water pressure	kPa	150		
Final B Value		0.97		

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		655			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		355			kPa
	Pore pressure at start of consolidation		637			kPa
	Pore pressure at end of consolidation		316			kPa
	Pore pressure dissipation at end of consolidation		95			%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	Coefficient of Consolidation	C _{vi}	0.66			m ² /year
	Coefficient of Compressibility	M _{vi}	0.25			m ² /MN
	Coefficient of Permeability (calculated)	k _{vi}	5.0E-11			m/s

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Figure

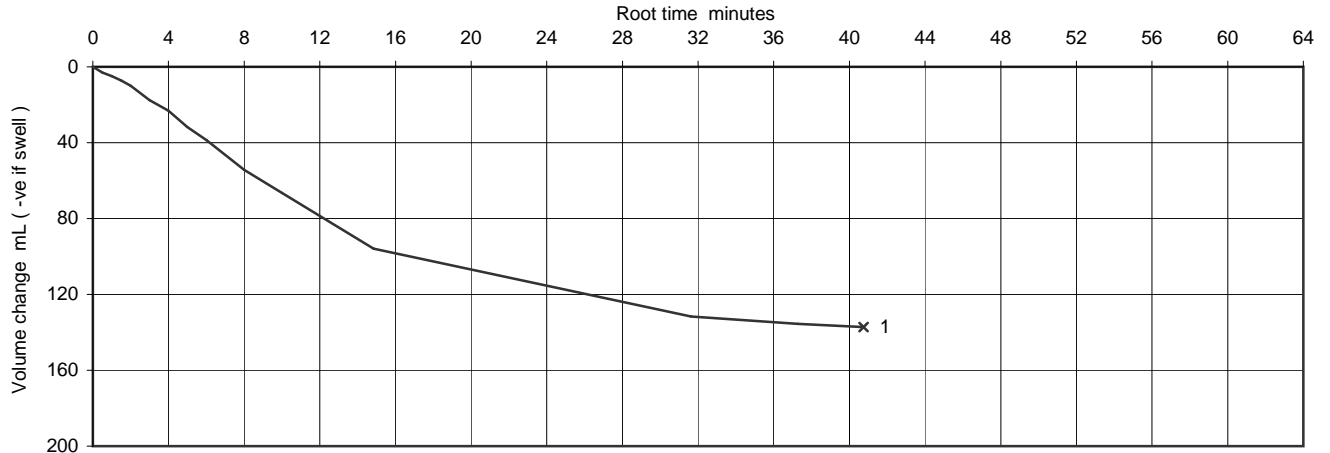
CD 3

sheet 1 of 3

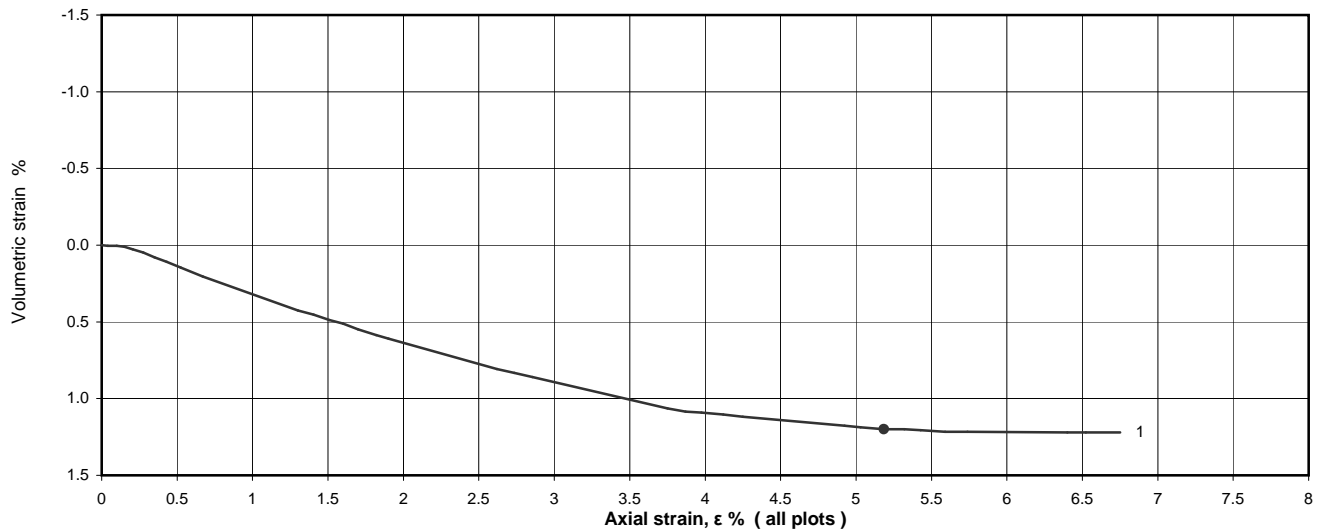
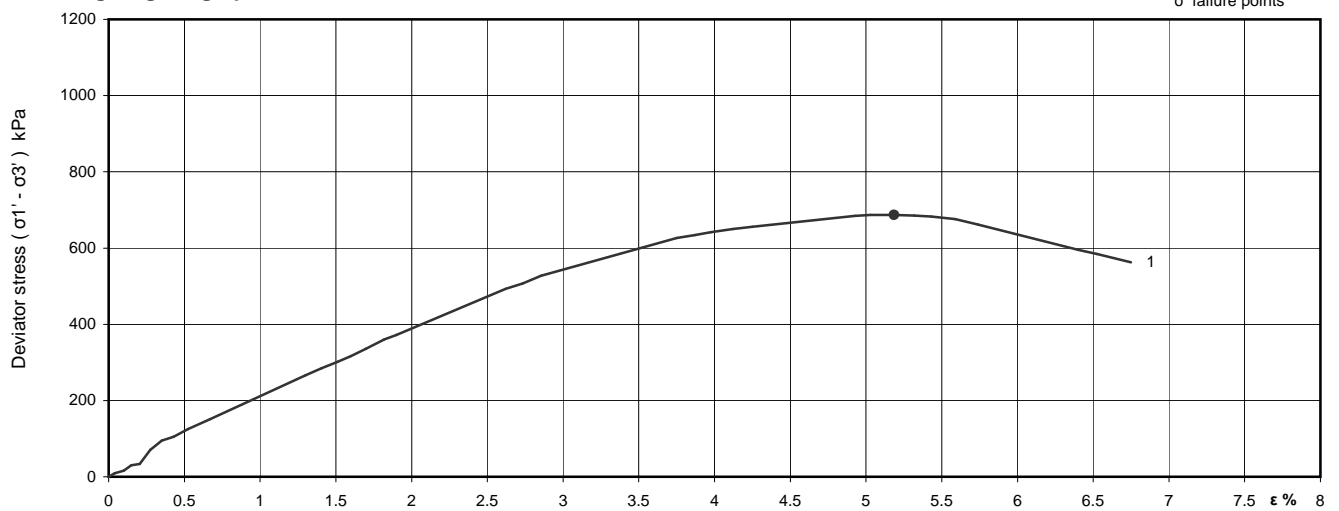
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.40-43.80		
			No	15	Type	CS
			ID			
			Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

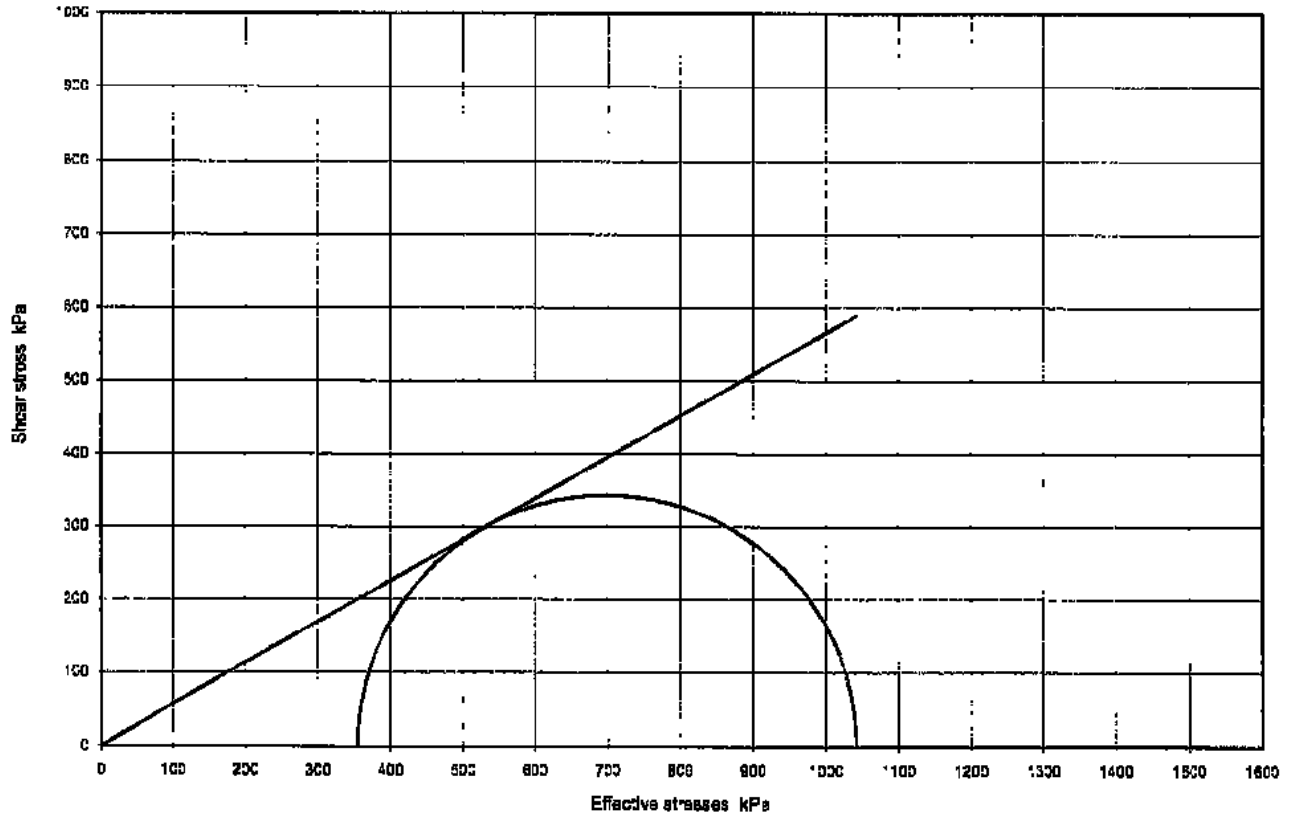
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sheet 2 of 3

**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.40-43.80	
		No	15	Type	CS
		ID			
		Spec Ref			

Mohr Circles



Compression stages

Specimen

Cell pressure	855		<Pa
Initial σ_3	330		<Pa
Initial σ_1	355		<Pa
Rate of strain	0.06		%/m

Failure conditions

Criterion	Max. min. deviator stress		
Axial strain	5.18		%
$(\sigma_1' - \sigma_3')_f$	687.2		<Pa
Volumetric strain	1.20		%
$\sigma_3'_f$	355		kPa
$\sigma_1'_f$	1042		kPa
Time to failure	86.4		mins

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	28.5

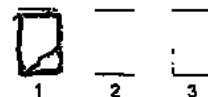
Manual re-assessment

c'	<Pa	-
ϕ'	degrees	-

Notes :

Deviator stresses corrected for area change, vertical side drains and 0.45 mm thick rubber membrane(s)

Mode of failure



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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

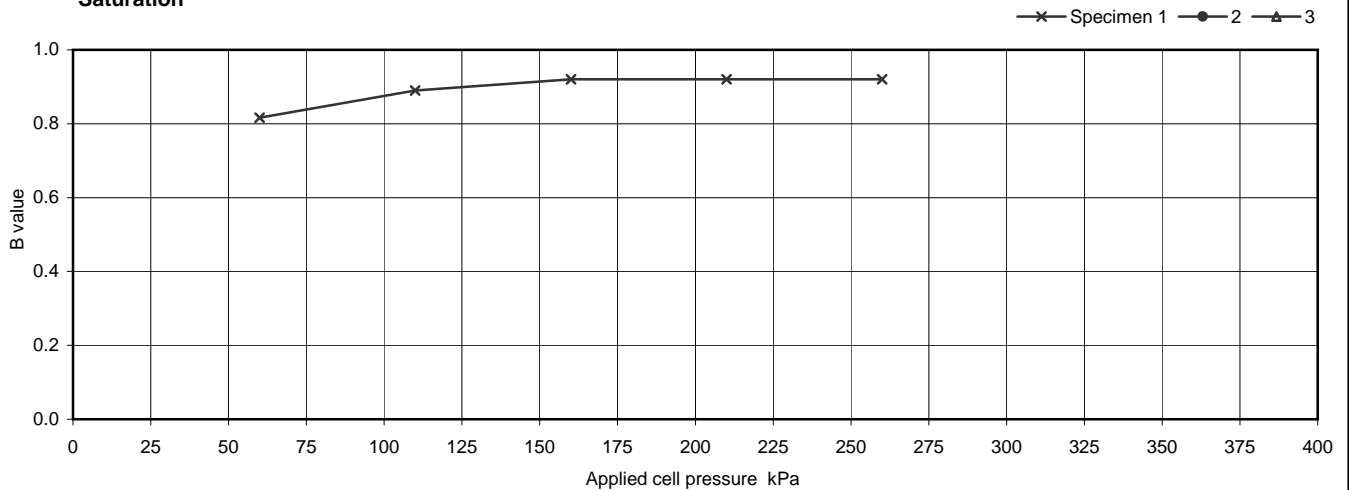
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	49.75-50.15		
			No	16	Type	CS
			ID			
		Spec Ref				

Specimen Details		1	2	3
Initial	Length	mm	183.9	
	Diameter	mm	97.4	
	Bulk Density	Mg/m ³	1.76	
	Water Content	%	46.8	
	Dry density	Mg/m ³	1.20	
After consolidation	Length	mm	183.5	
	Diameter	mm	97.2	
	Bulk Density*	Mg/m ³	1.76	
	Water Content*	%	45.9	
	Dry density*	Mg/m ³	1.21	
After test	Bulk Density*	Mg/m ³	1.77	
	Water Content*	%	44.6	
	Dry density*	Mg/m ³	1.22	

Soil Description	Stiff brownish grey slightly sandy CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	260		
Final pore water pressure	kPa	200		
Final B Value		0.92		

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		500			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		200			kPa
	Pore pressure at start of consolidation		479			kPa
	Pore pressure at end of consolidation		300			kPa
	Pore pressure dissipation at end of consolidation		100			%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	Coefficient of Consolidation	C _{vi}	3.23		m ² /year	
	Coefficient of Compressibility	M _{vi}	0.13		m ² /MN	
	Coefficient of Permeability (calculated)	k _{vi}	1.3E-10		m/s	

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Figure

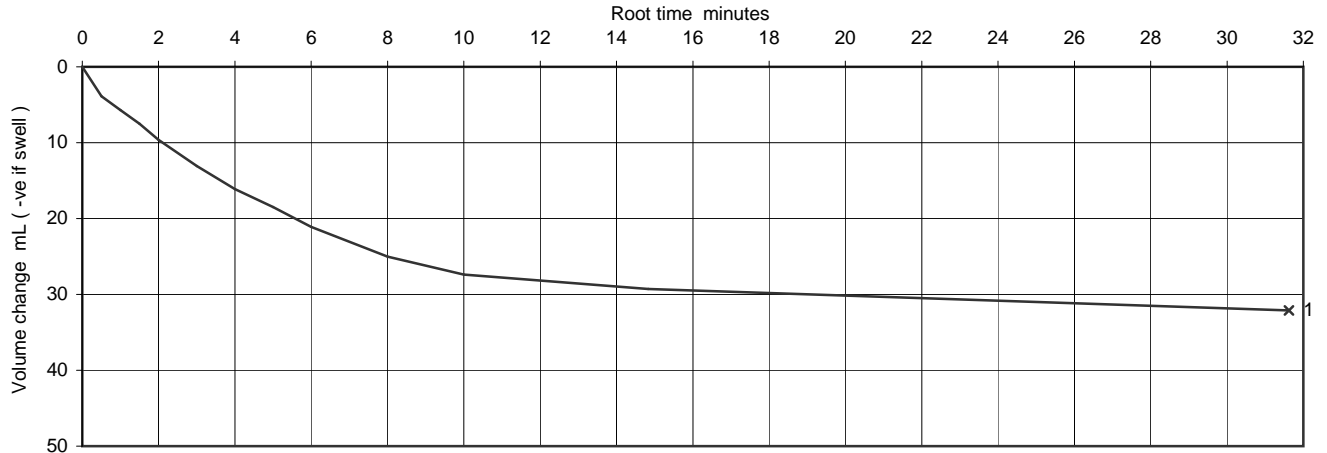
CD 4

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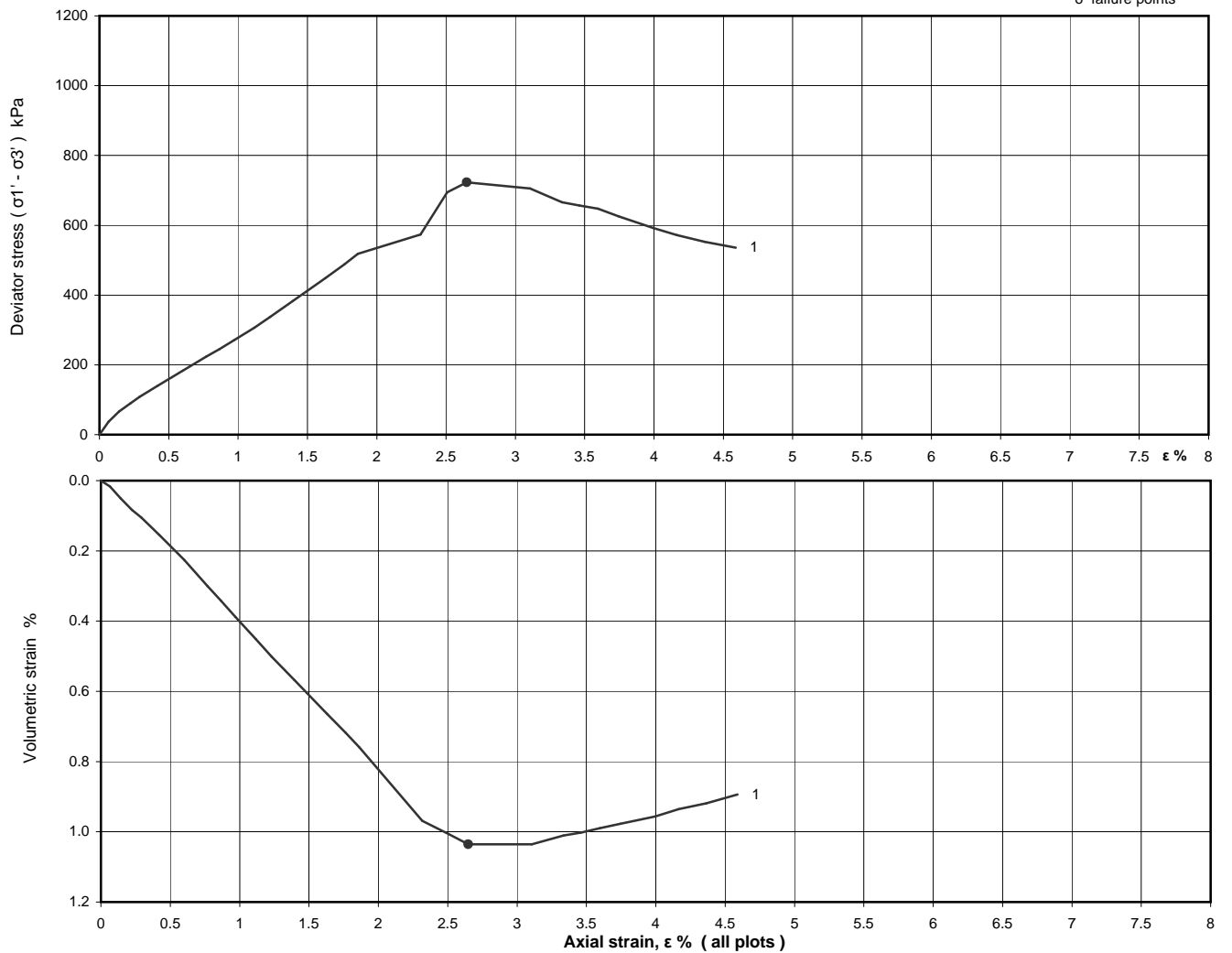
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_2	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	49.75-50.15	
		No	16	Type	CS
		ID			
		Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

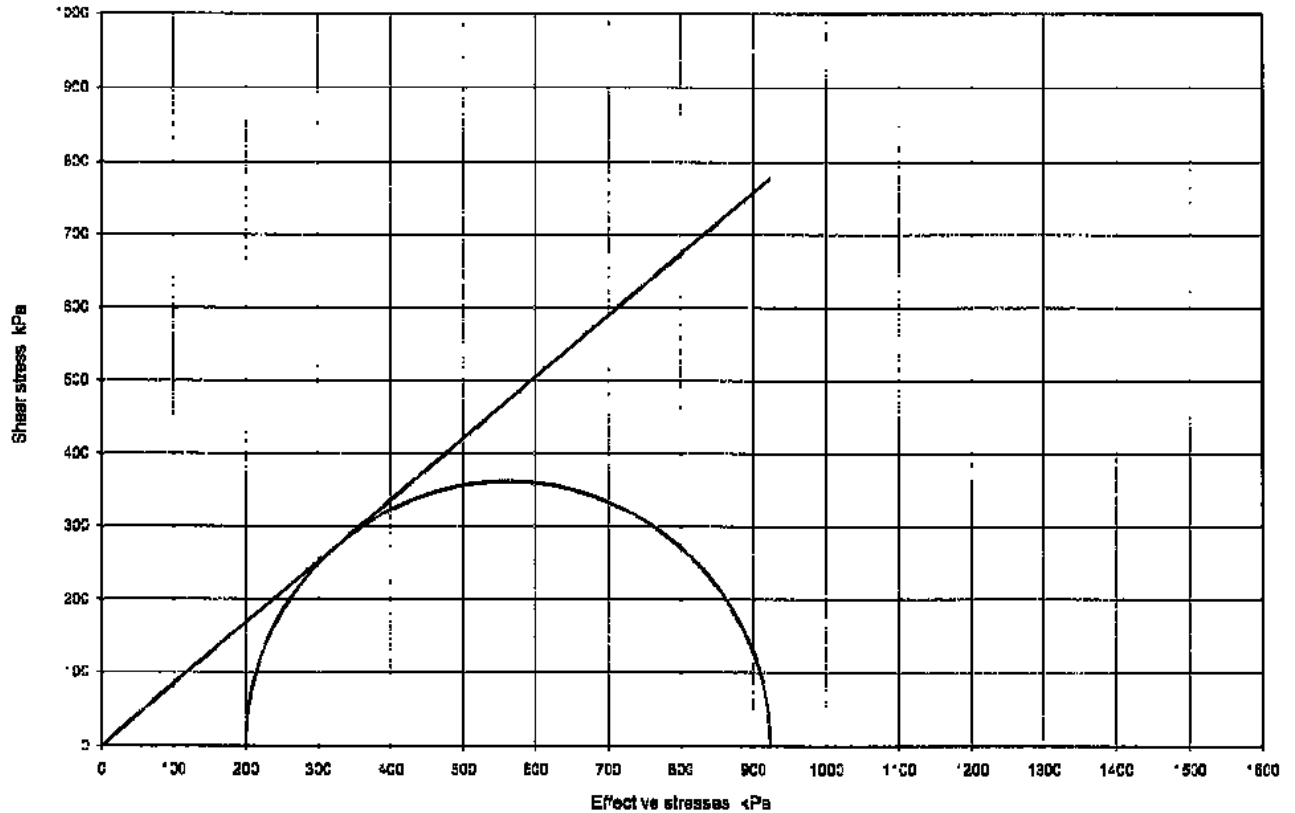
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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Spec No	CBH 2009_2	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	49.75-50.15	
		No	18	Type	CS
		ID			
		Spec Ref			

Mohr Circles



Compression stages

Specimen	1		
Cell pressure	500		kPa
Initial p_w	300		kPa
Initial σ_3'	200		kPa
Rate of strain	0.32		%/hr

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	40.1

Manual re-assessment

c'	kPa	-
ϕ'	degrees	-

Failure conditions

Criterion	Maximum deviator stress		
Axial strain	2.65		%
$(\sigma_1' - \sigma_3')$	723.2		kPa
Volumetric strain	1.04		%
σ_3'	200		kPa
σ_1'	923		kPa
Time to failure	8.3		hrs

Notes :

Deviator stresses corrected for area change, vertical side strains and 0.45 mm thick rubber membrane(s)

Mode of failure



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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

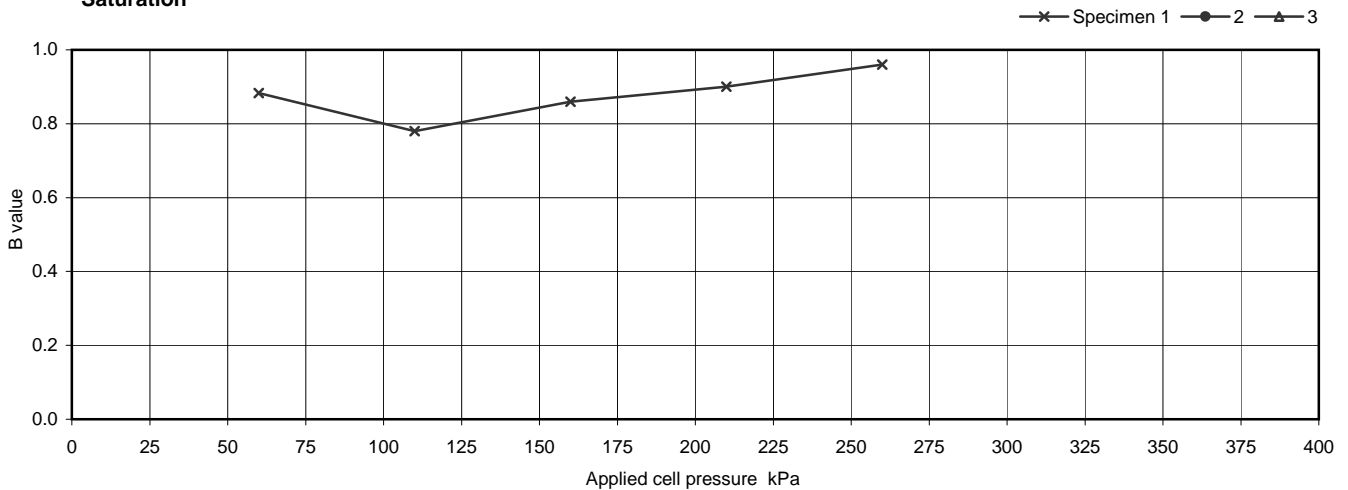
Project No	A0012-10	Sample Details:	Hole No	CBH 2009-2		
Project Name	SIZEWELL		Depth (m BGL)	54.80-55.20		
			No	18	Type	CS
			ID			
			Spec Ref			

Specimen Details		1	2	3
Initial	Length mm	204.0		
	Diameter mm	100.0		
	Bulk Density Mg/m ³	1.94		
	Water Content %	33.1		
	Dry density Mg/m ³	1.46		
After consolidation	Length mm	201.2		
	Diameter mm	98.6		
	Bulk Density* Mg/m ³	1.97		
	Water Content* %	29.4		
	Dry density* Mg/m ³	1.52		
After test	Bulk Density* Mg/m ³	1.98		
	Water Content* %	28.4		
	Dry density* Mg/m ³	1.54		

Soil Description	Firm to stiff brownish grey slightly gravelly slightly sandy CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	210		
Final pore water pressure	kPa	200		
Final B Value		0.96		

Saturation



Consolidation Details see sheet 2 for plots	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		520			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		220			kPa
	Pore pressure at start of consolidation		505			kPa
	Pore pressure at end of consolidation		301			kPa
	Pore pressure dissipation at end of consolidation		100			%
Consolidation parameters (see note to BS1377 : pt 8, clause 6.3.4)	Coefficient of Consolidation	C _{vi}	0.29			m ² /year
	Coefficient of Compressibility	M _{vi}	0.12			m ² /MN
	Coefficient of Permeability (calculated)	k _{vi}	1.1E-11			m/s

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Figure

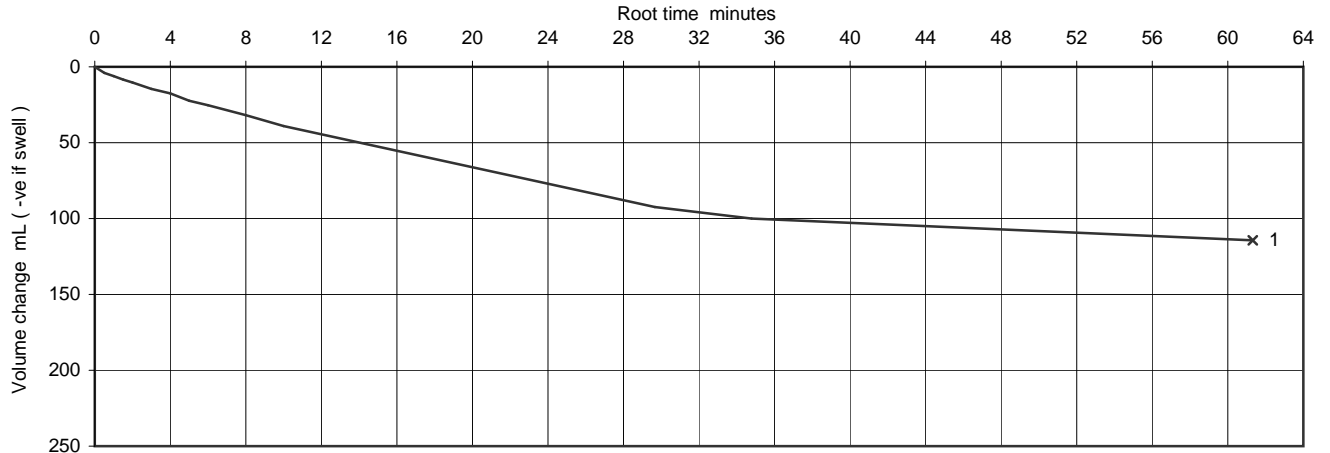
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sheet 1 of 3

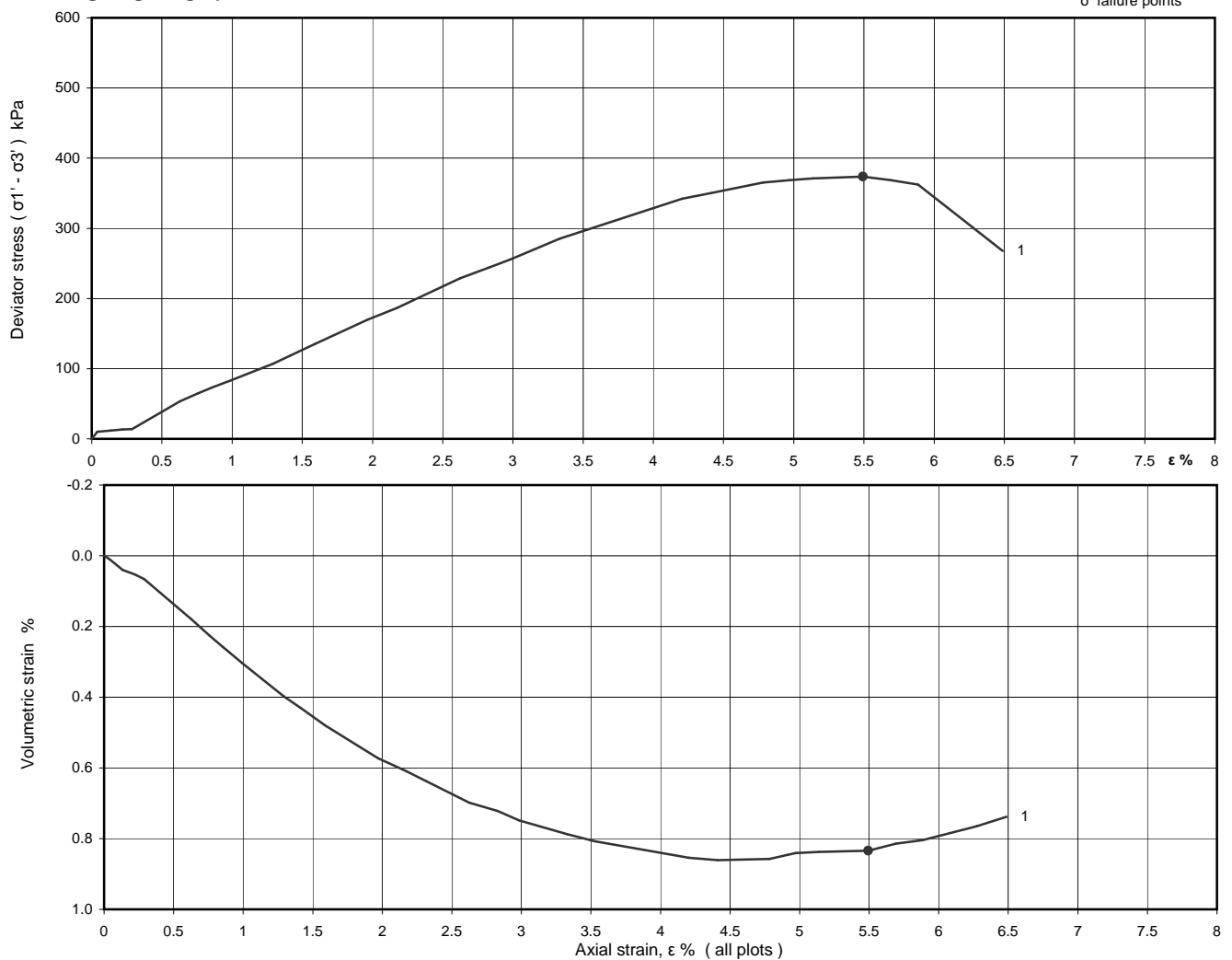
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009-2		
Project Name	SIZEWELL		Depth (m BGL)	54.80-55.20		
			No	18	Type	CS
			ID			
			Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

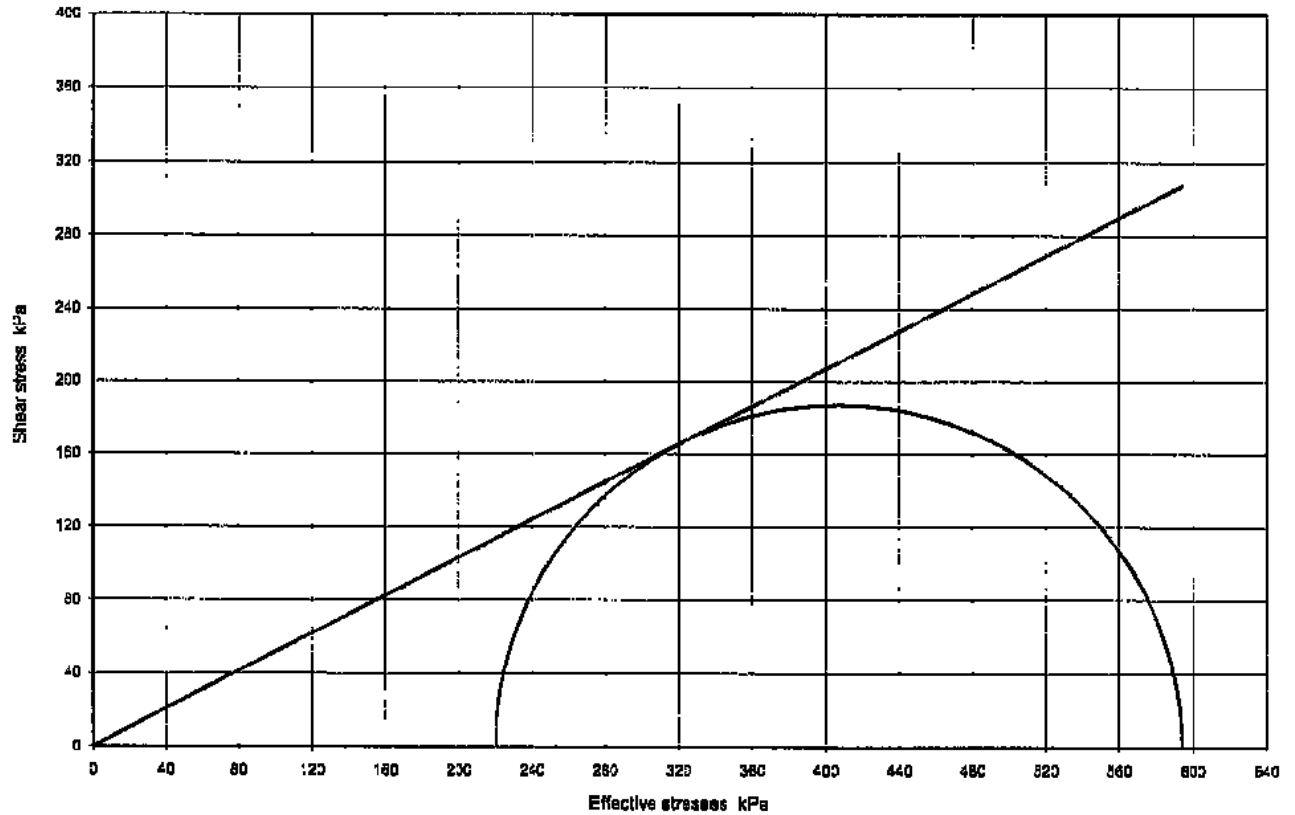
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sheet 2 of 3

**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009-2		
Project Name	SIZEWELL		Depth (m BGL)	54.80-55.20		
			No	18	Type	CS
			ID			
		Spec Ref				

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	520	kPa
Initial pwp	300	kPa
Initial σ_3'	220	kPa
Rate of strain	0.03	%/hr

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	27.3

Manual re-assessment

c'	kPa	-
ϕ'	degrees	-

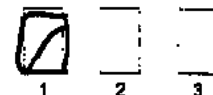
Failure conditions

Criterion	Value	Unit
	Maximum deviator stress	
Axial strain	5.49	%
$(\sigma_1' - \sigma_3')$	373.8	kPa
Volumetric strain	0.83	%
σ_3'	220	kPa
σ_1'	594	kPa
Time to failure	183.1	hrs

Notes :

Deviator stresses corrected for area change, vertical side drains and 0.46 mm thick rubber membrane(s)

Mode of failure



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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

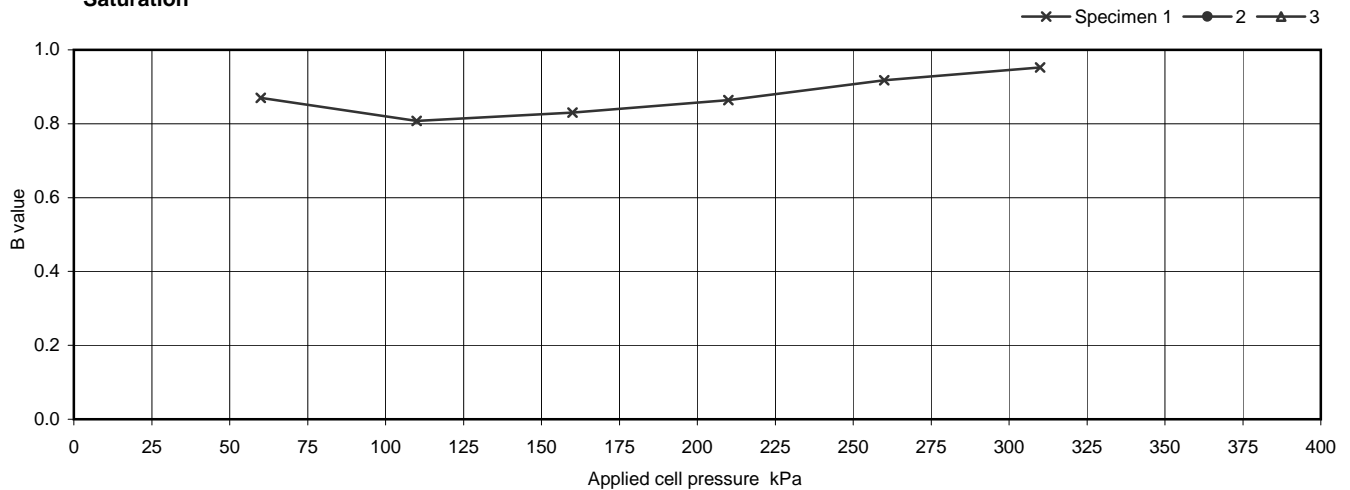
Project No	A0012-10	Sample Details:	Hole No	CBH 2009-2		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	74.00 - 74.40		
			No	24	Type	CS
			ID			
		Spec Ref				

Specimen Details		1	2	3	
Initial	Length	mm	204.1		
	Diameter	mm	104.6		
	Bulk Density	Mg/m ³	1.74		
	Water Content	%	46.0		
	Dry density	Mg/m ³	1.19		
After consolidation	Length	mm	198.7		
	Diameter	mm	101.8		
	Bulk Density*	Mg/m ³	1.81		
	Water Content*	%	40.0		
	Dry density*	Mg/m ³	1.30		
After test	Bulk Density*	Mg/m ³	1.82		
	Water Content*	%	39.5		
	Dry density*	Mg/m ³	1.30		

Soil Description	Stiff greyish brown CLAY becoming dark brownish grey slightly sandy CLAY at base with localised softening
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	310		
Final pore water pressure	kPa	250		
Final B Value		0.95		

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		890			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		590			kPa
	Pore pressure at start of consolidation		865			kPa
	Pore pressure at end of consolidation		330			kPa
	Pore pressure dissipation at end of consolidation		95			%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	Coefficient of Consolidation	C _{vi}	0.19			m ² /year
	Coefficient of Compressibility	M _{vi}	0.15			m ² /MN
	Coefficient of Permeability (calculated)	k _{vi}	8.9E-12			m/s

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Figure

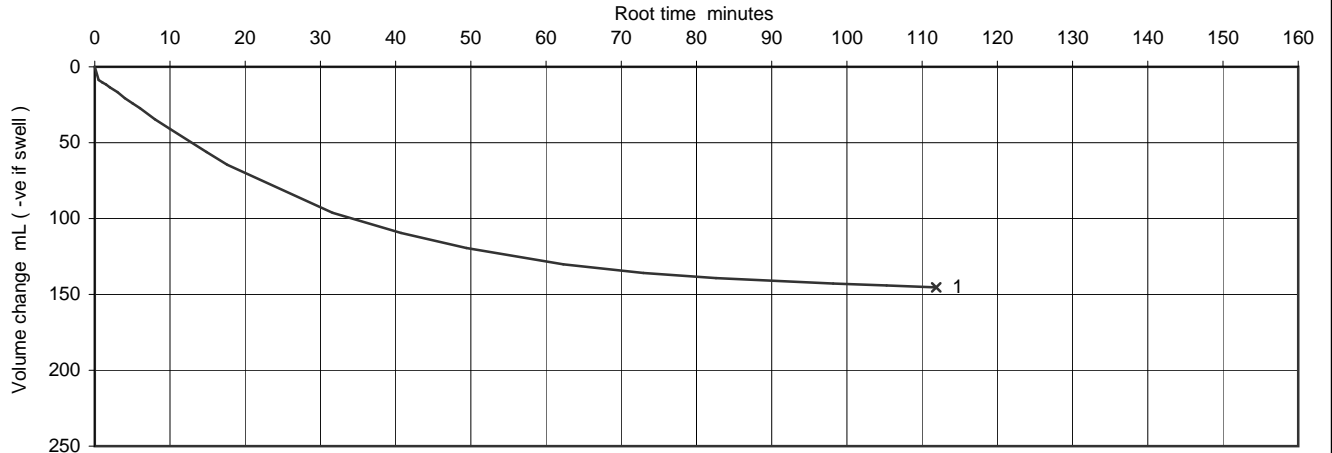
CD 6

sheet 1 of 3

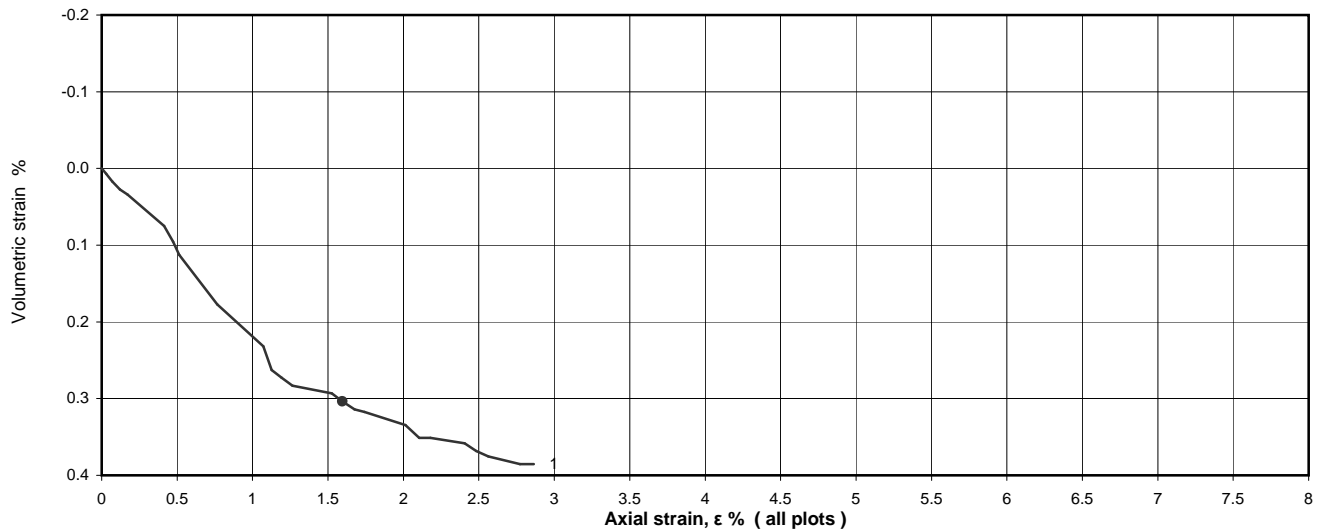
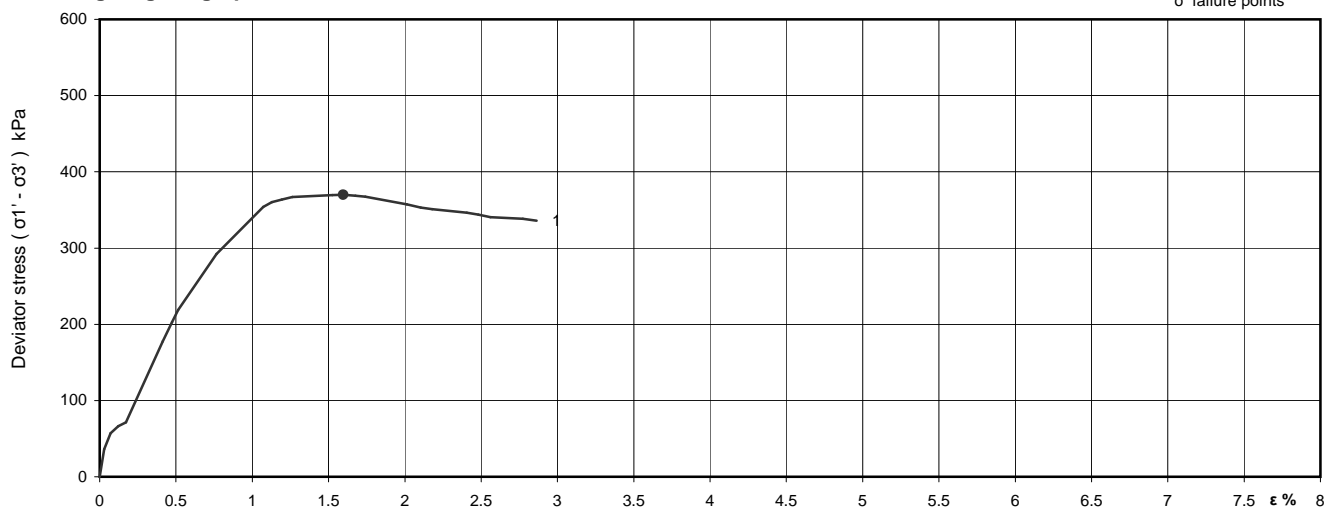
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009-2	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	74.00 - 74.40	
		No	24	Type	CS
		ID			
		Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

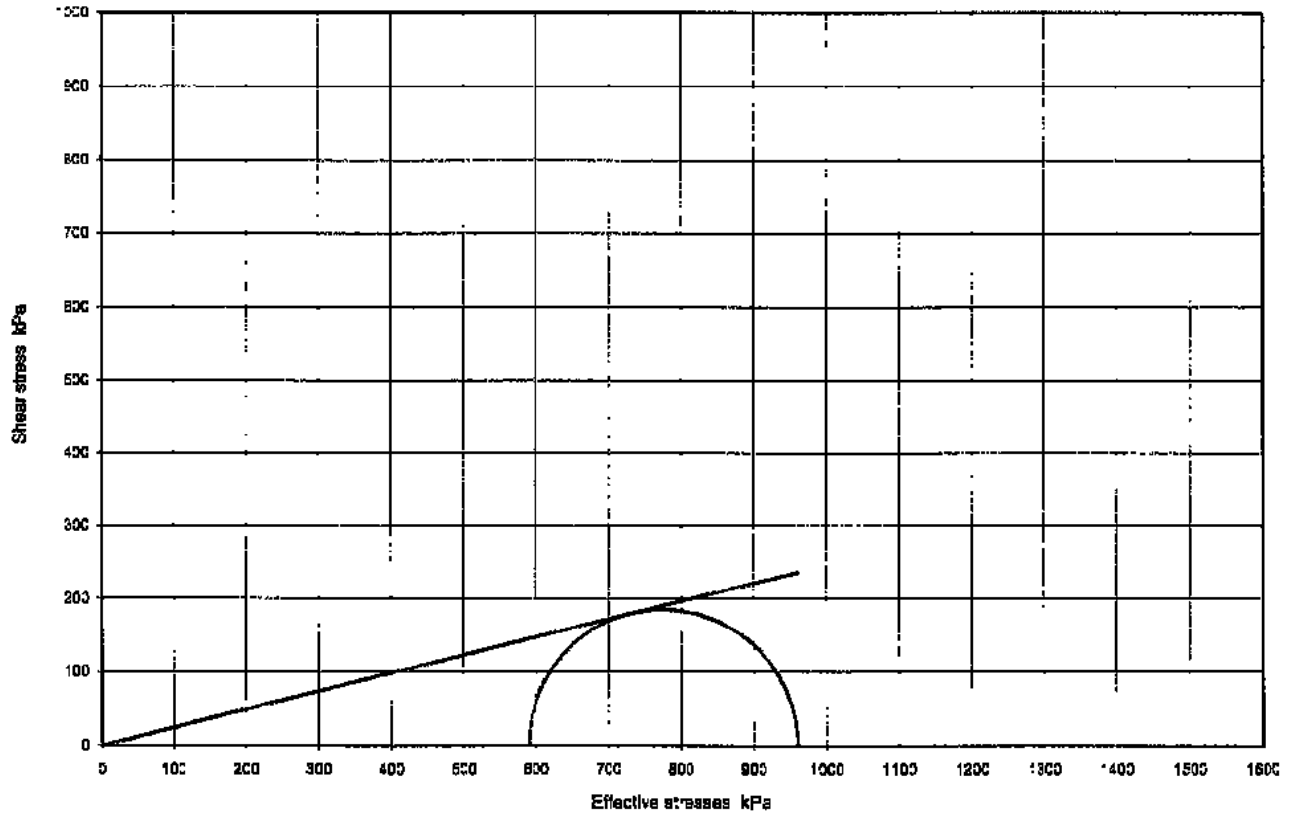
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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009-2		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	74.00 - 74.40		
			No	24	Type	CS
			ID			
		Spec Ref				

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	880	kPa
Initial pwp	300	kPa
Initial σ_3'	580	kPa
Rate of strain	0.02	%/hr

Failure conditions

Criterion	Maximum deviator stress	
Axial strain	1.60	%
$(\sigma_1' - \sigma_3')$	370.0	kPa
Volumetric strain	0.30	%
σ_3'	580	kPa
σ_1'	880	kPa
Time to failure	108.4	hrs

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	13.8

Manual re-assessment

c'	kPa	-
ϕ'	degrees	-

Notes :

Deviator stresses corrected for area change, vertical slice drains and 0.8 mm thick rubber membrane(s)

Mode of failure



1	2	3
---	---	---

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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

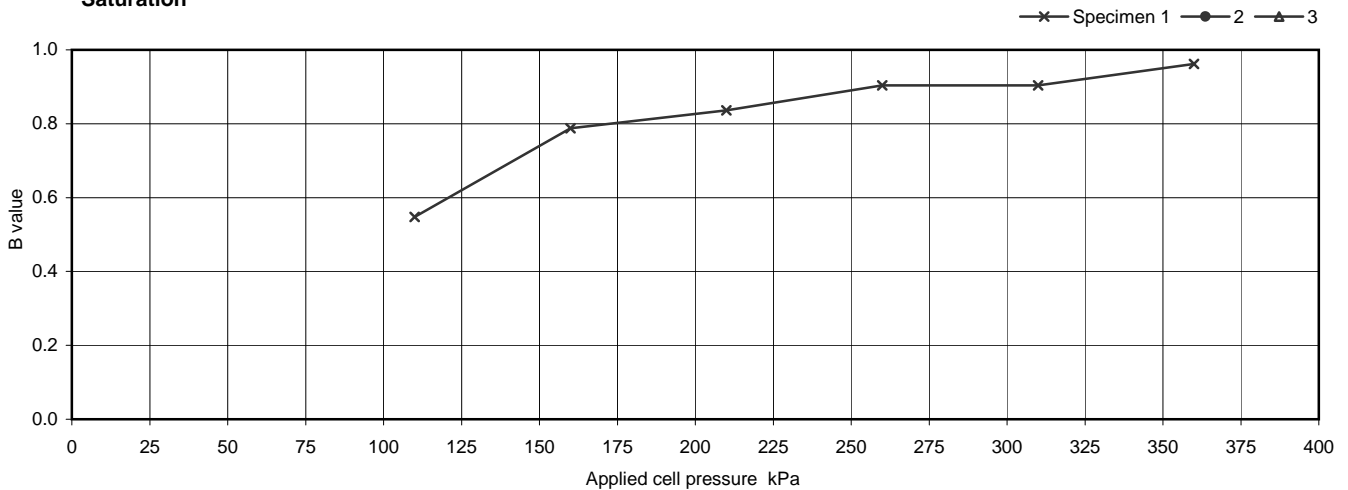
Project No	A0012-10	Sample Details:	Hole No	CBH 2009-2			
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	77.10-77.50			
			No	25	Type	CS	
			ID				
			Spec Ref				

Specimen Details		1	2	3
Initial	Length mm	194.2		
	Diameter mm	106.7		
	Bulk Density Mg/m ³	1.69		
	Water Content %	45.3		
	Dry density Mg/m ³	1.16		
After consolidation	Length mm	187.2		
	Diameter mm	102.8		
	Bulk Density* Mg/m ³	1.82		
	Water Content* %	39.5		
	Dry density* Mg/m ³	1.30		
After test	Bulk Density* Mg/m ³	1.83		
	Water Content* %	38.7		
	Dry density* Mg/m ³	1.32		

Soil Description	Stiff greyish brown slightly sandy CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	360		
Final pore water pressure	kPa	300		
Final B Value		0.96		

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		1555			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		1255			kPa
	Pore pressure at start of consolidation		1508			kPa
	Pore pressure at end of consolidation		363			kPa
	Pore pressure dissipation at end of consolidation		95			%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	Coefficient of Consolidation	C _{vi}	0.24			m ² /year
	Coefficient of Compressibility	M _{vi}	0.09			m ² /MN
	Coefficient of Permeability (calculated)	k _{vi}	6.5E-12			m/s

Ref

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Figure

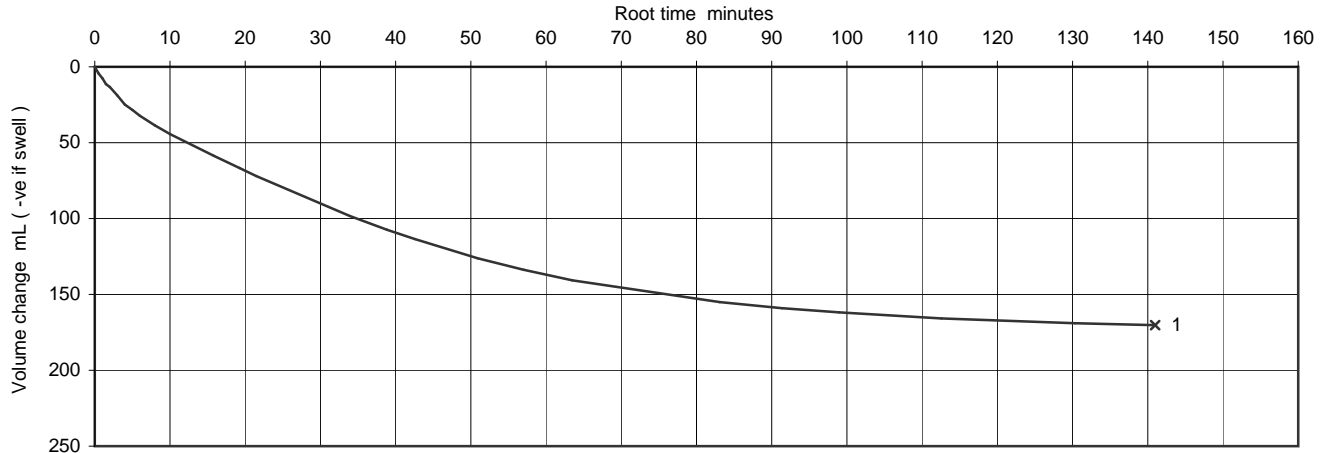
CD 7

sheet 1 of 3

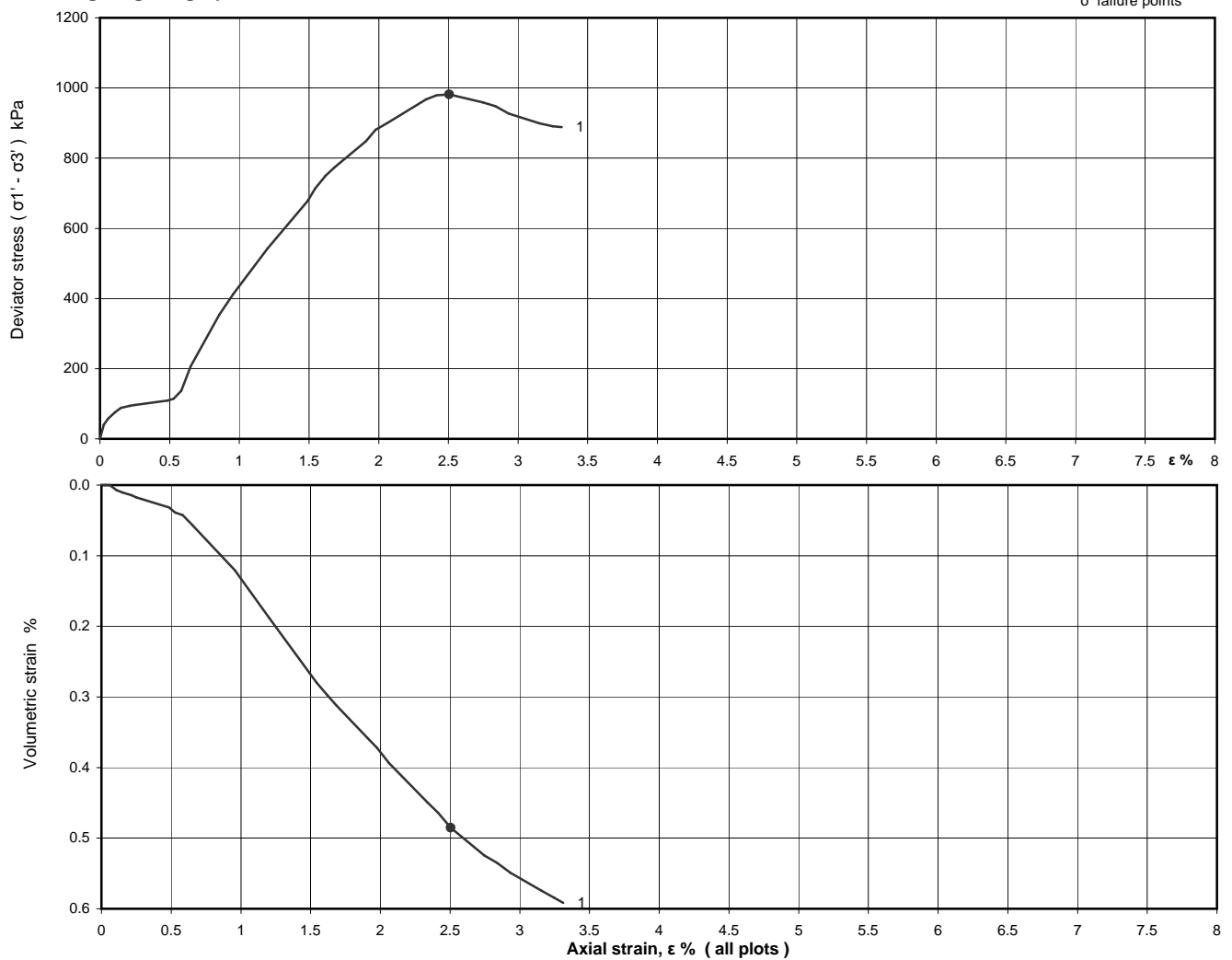
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009-2	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	77.10-77.50	
		No	25	Type	CS
		ID			
		Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

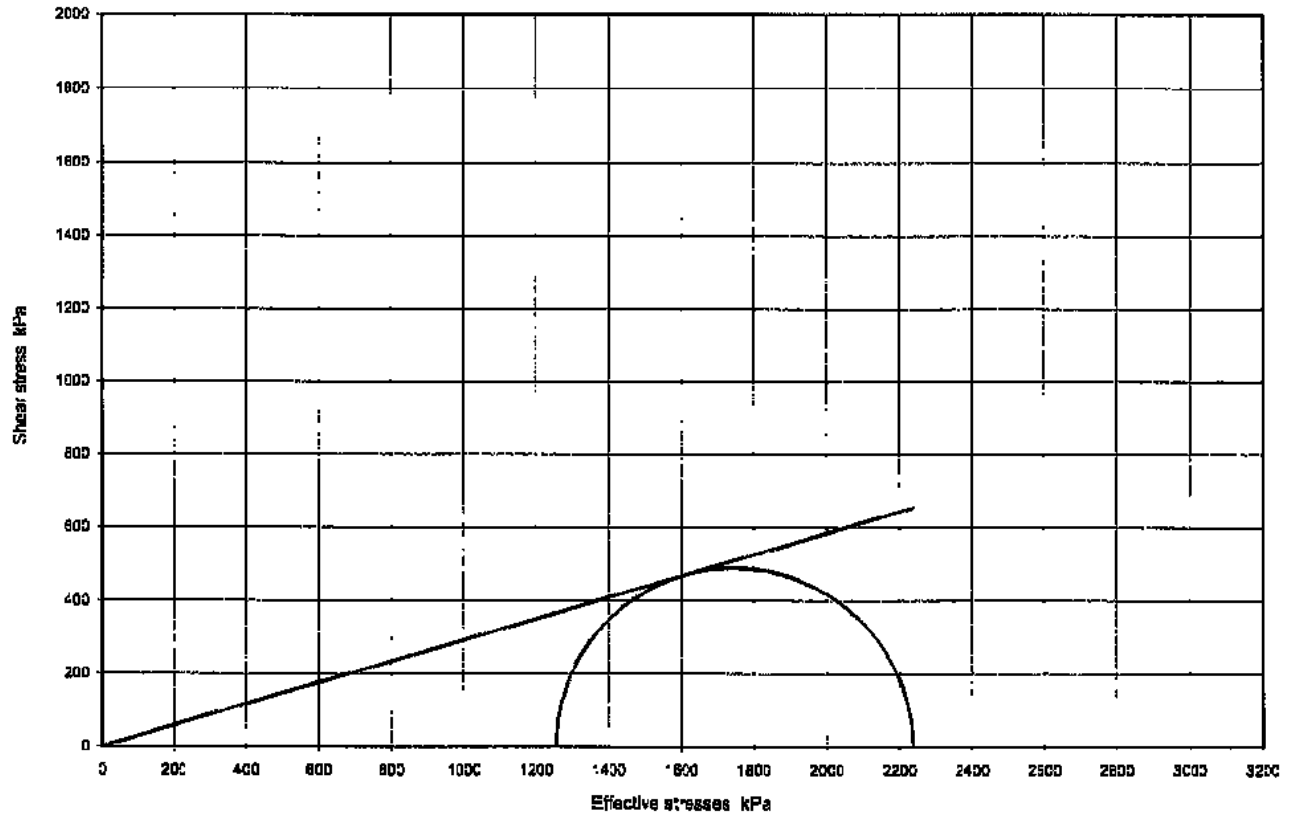
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sheet 2 of 3

**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009-2		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	77.10-77.50		
		No	25	Type	CS	
		ID				
		Spec Ref				

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	1655	kPa
Initial σ_3'	300	kPa
Initial σ_3'	1255	kPa
Rate of strain	0.32	%/min

Failure conditions

Criterion	Maximum deviator stress	
Axial strain	2.51	%
$(\sigma_1' - \sigma_3')$	981.4	kPa
Volumetric strain	0.49	%
σ_3'	1255	kPa
σ_1'	2236	kPa
Time to failure	167.0	hrs

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	16.3

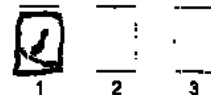
Manual re-assessment

c'	kPa	-
ϕ'	degrees	-

Notes:

Deviator stresses corrected for area change, vertical slice drains and 0.9 mm thick rubber membrane(s)

Mode of failure



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Figure

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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

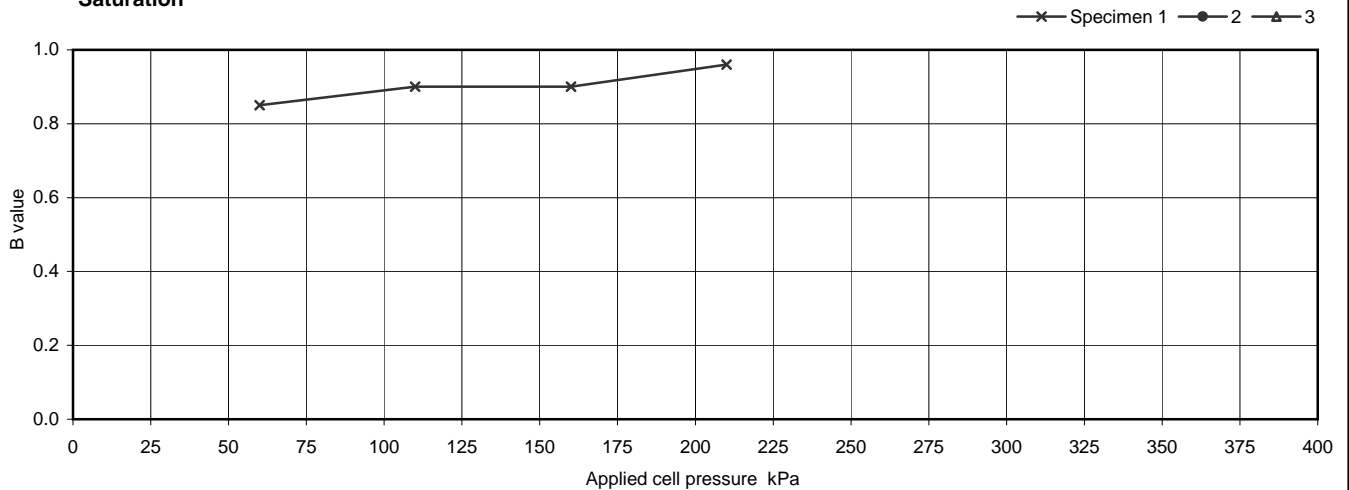
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_4		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	50.30 - 50.75		
			No	12	Type	CS
			ID			
		Spec Ref				

Specimen Details		1	2	3	
Initial	Length	mm	188.9		
	Diameter	mm	103.6		
	Bulk Density	Mg/m ³	1.74		
	Water Content	%	49.5		
	Dry density	Mg/m ³	1.17		
After consolidation	Length	mm	187.0		
	Diameter	mm	102.6		
	Bulk Density*	Mg/m ³	1.75		
	Water Content*	%	45.4		
	Dry density*	Mg/m ³	1.20		
After test	Bulk Density*	Mg/m ³	1.78		
	Water Content*	%	41.9		
	Dry density*	Mg/m ³	1.26		

Soil Description	Stiff brownish grey slightly gravelly silty CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	210		
Final pore water pressure	kPa	150		
Final B Value		0.96		

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		1125			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		825			kPa
	Pore pressure at start of consolidation		1104			kPa
	Pore pressure at end of consolidation		300			kPa
	Pore pressure dissipation at end of consolidation		100			%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	Coefficient of Consolidation	C _{vi}	1.43			m ² /year
	Coefficient of Compressibility	M _{vi}	0.06			m ² /MN
	Coefficient of Permeability (calculated)	k _{vi}	2.9E-11			m/s

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Figure

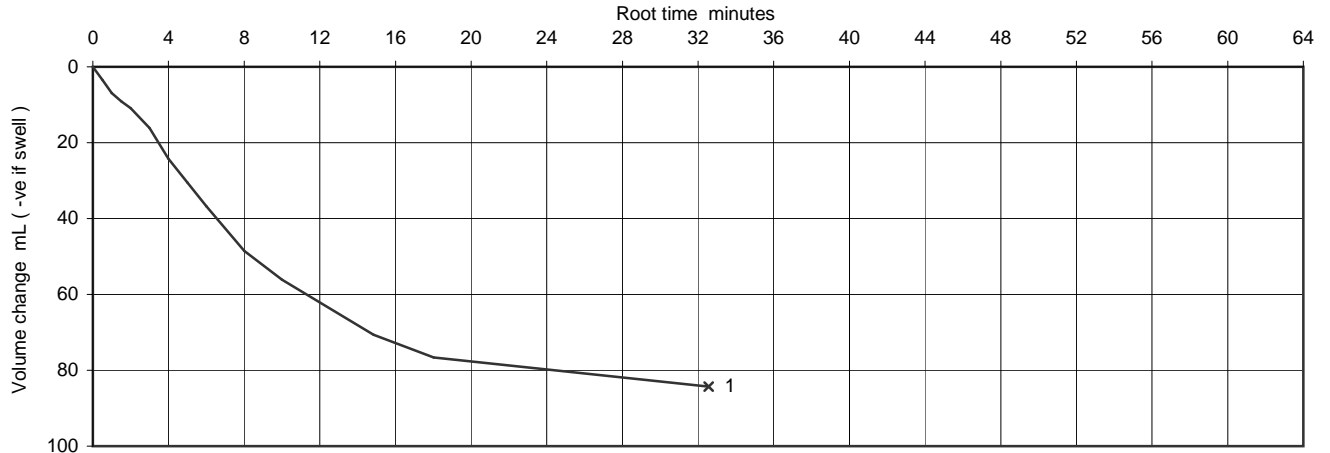
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sheet 1 of 3

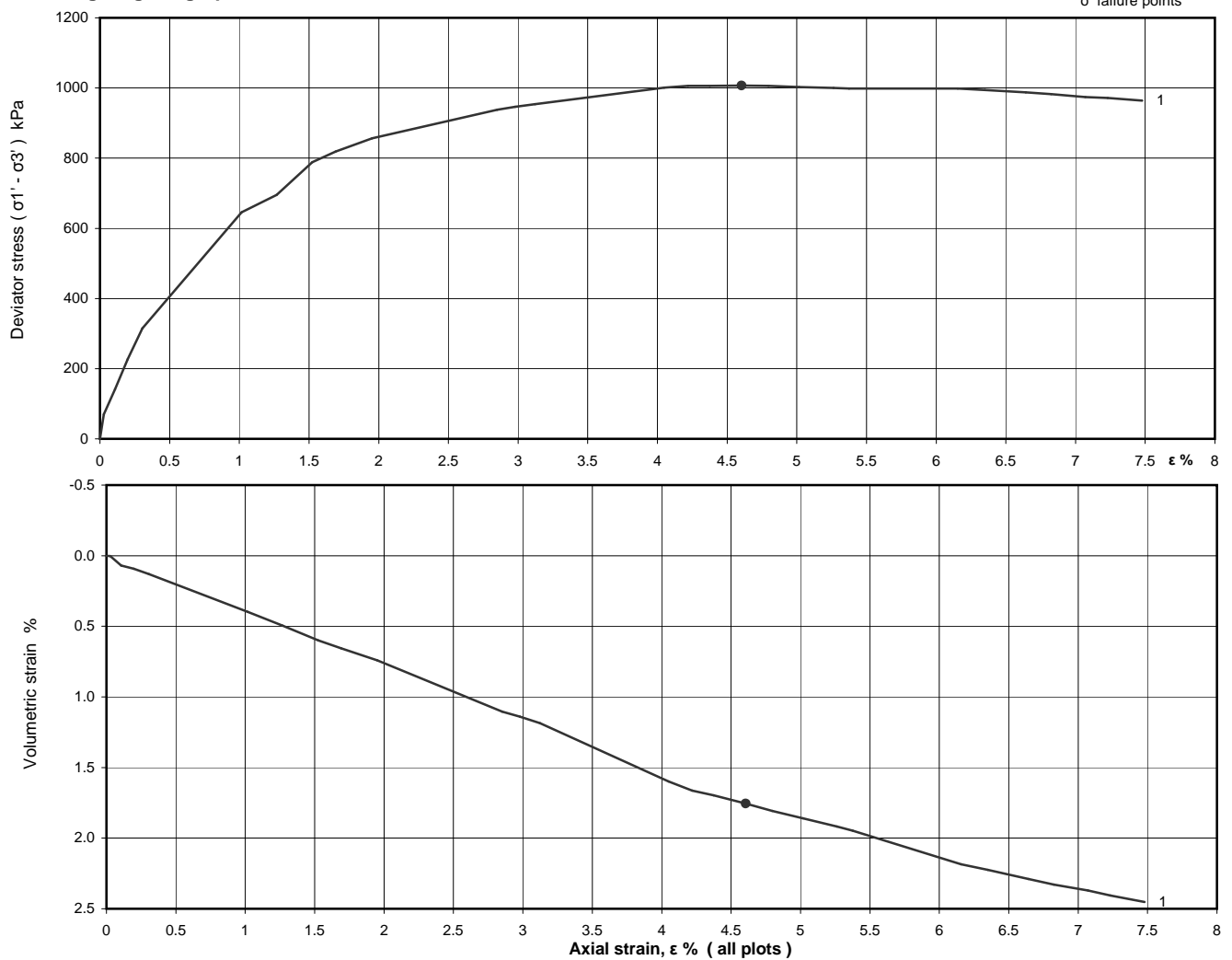
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_4			
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	50.30 - 50.75			
			No	12	Type	CS	
			ID				
			Spec Ref				

Consolidation



Shearing stages - graphical data



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Figure

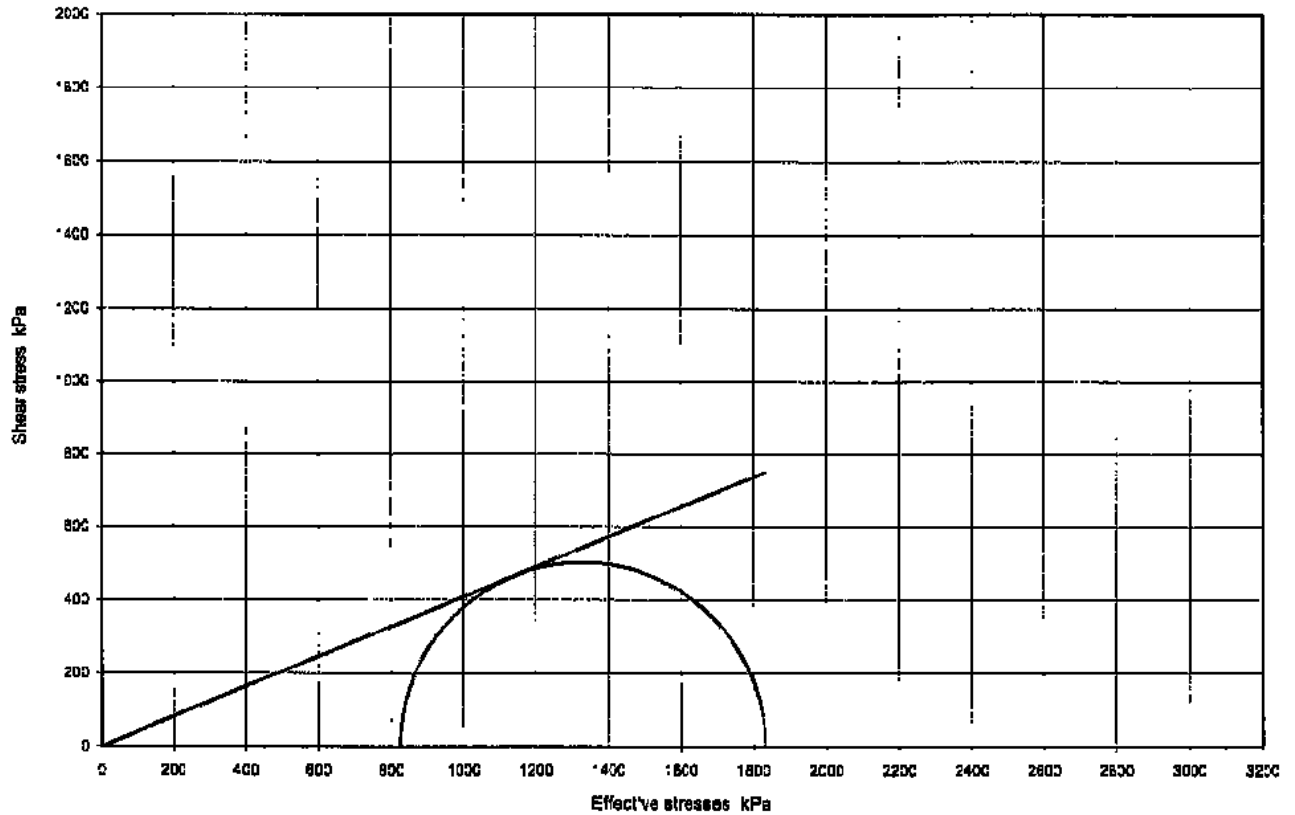
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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	AG012-10	Sample Details:	Hole No	CBH 2009_4		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	50.30 - 50.75		
			No	12	Type	CS
			ID			
		Spec Ref				

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	125	kPa
In'ial pva	300	kPa
In'ial σ_3'	825	kPa
Rate of strain	0.2	%/hr

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	22.3

Manual re-assessment:

c'	kPa	-
ϕ'	degrees	-

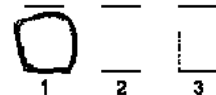
Failure conditions

Criterion	Maximum deviator stress	
Axial strain	4.8	%
$(\sigma_1' - \sigma_3')$	1007.0	kPa
Volumetric strain	1.76	%
σ_3'	825	kPa
σ_1'	1832	kPa
Time to failure	38.4	mins

Notes :

Deviator stresses corrected for area change, vertical axis drains and 0.45 mm thick rubber membrane(s)

Mode of failure



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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

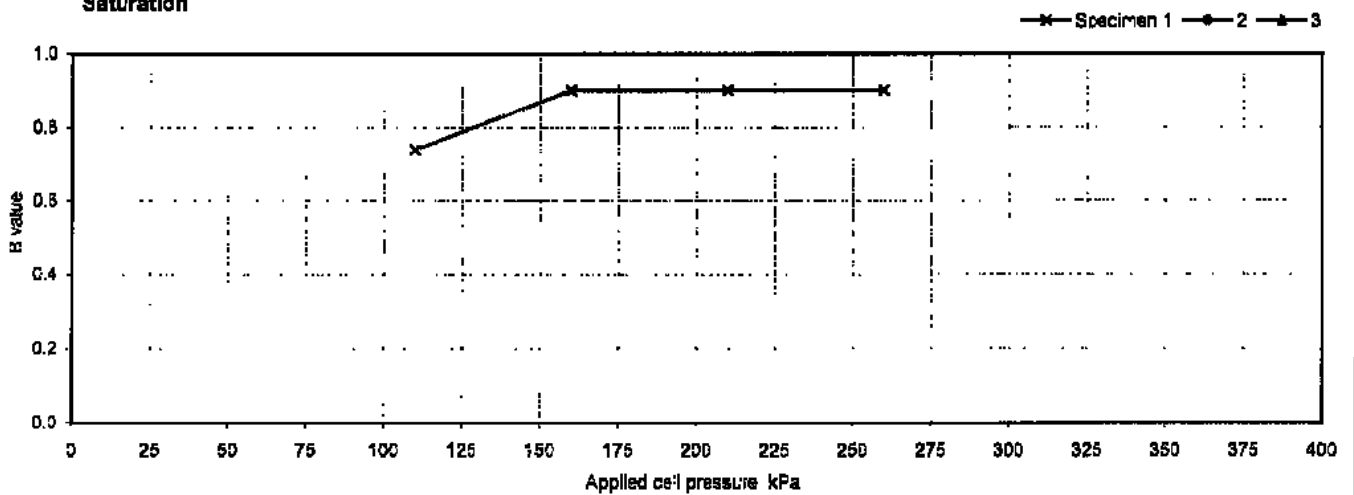
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_5		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.80-44.20		
			No	12	Type	CS
			ID			
			Spec Ref			

Specimen Details		1	2	3
Initial	Length	mm	203.9	
	Diameter	mm	103.1	
	Bulk Density	Mg/m ³	1.73	
	Water Content	%	46.4	
After consolidation	Dry density	Mg/m ³	1.18	
	Length	mm	197.4	
	Diameter	mm	99.8	
	Bulk Density*	Mg/m ³	1.81	
After test	Water Content*	%	38.0	
	Dry density*	Mg/m ³	1.93	
	Bulk Density*	Mg/m ³	1.79	
	Water Content*	%	41.0	
	Dry density*	Mg/m ³	1.27	

Soil Description	Stiff to very stiff grayish brown slightly sandy CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation	
increments of cell and back pressure			
Cell pressure increments	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	260	
Final pore water pressure	kPa	200	
Final B Value		0.90	

Saturation



		Drainage Conditions			From radial boundary and one end		
		Specimen No.	1	2	3		
Consolidation Details <small>see sheet 2 for pore</small>	Cell Pressure applied		1000				kPa
	Back Pressure applied		300				kPa
	Effective Pressure		700				kPa
	Pore pressure at start of consolidation		579				kPa
	Pore pressure at end of consolidation		325				kPa
	Pore pressure dissipation at end of consolidation		97				%
	Consolidation parameters <small>(see note to BS1377 : pt 8, clause B.3.4)</small>	Coefficient of Consolidation	C_{v1}	3.24			
	Coefficient of Compressibility	M_{v1}	0.09				m ² /MN
	Coefficient of Permeability (calculated)	k_{v1}	9.5E-11				m/s

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Figure

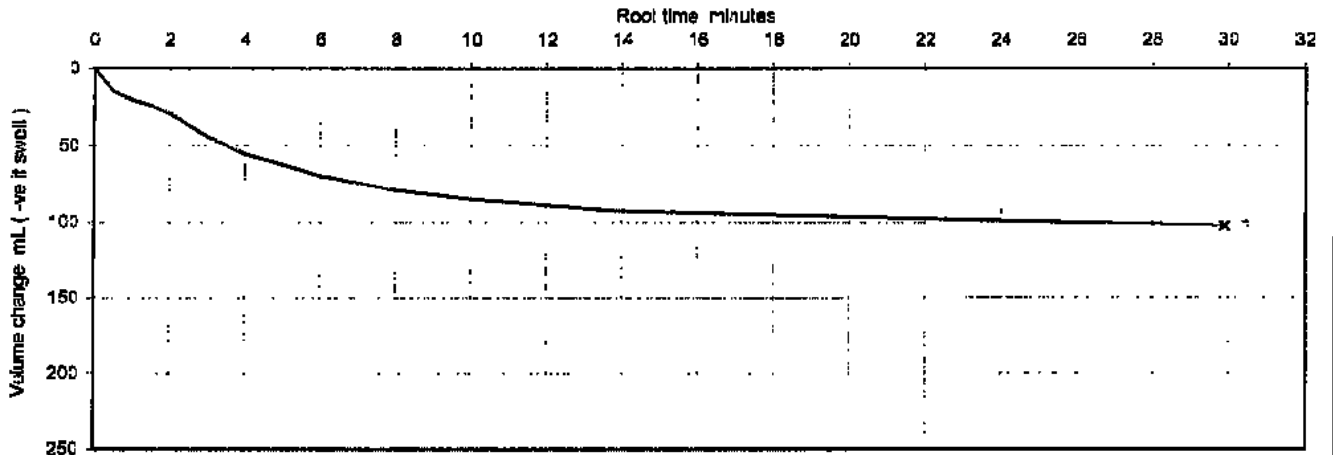
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sheet 1 of 3

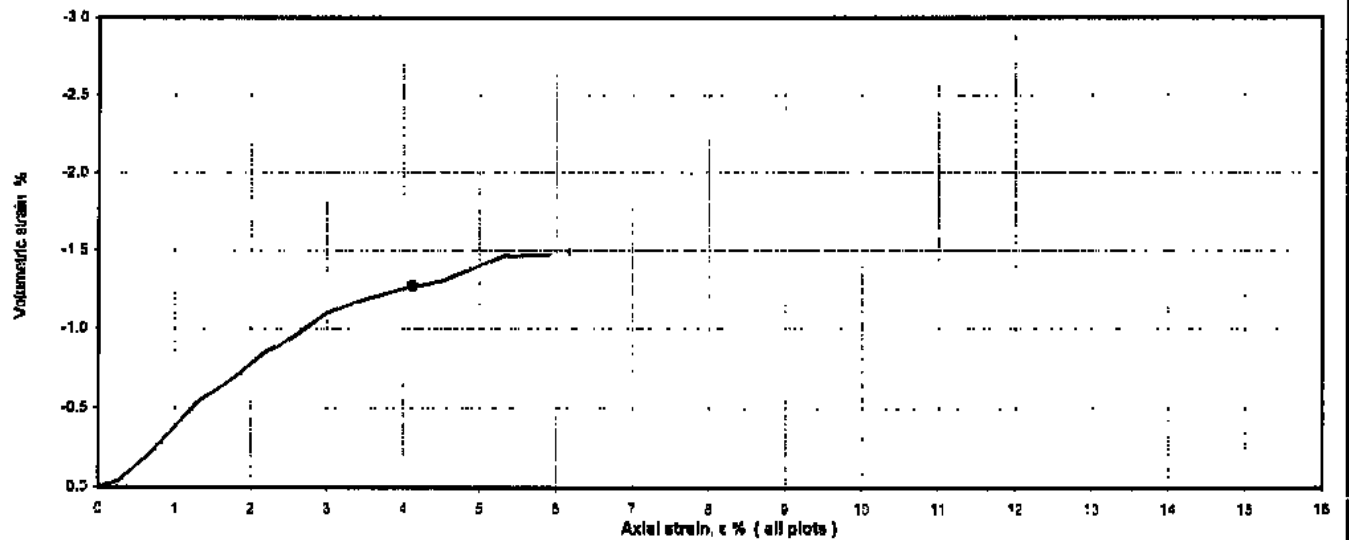
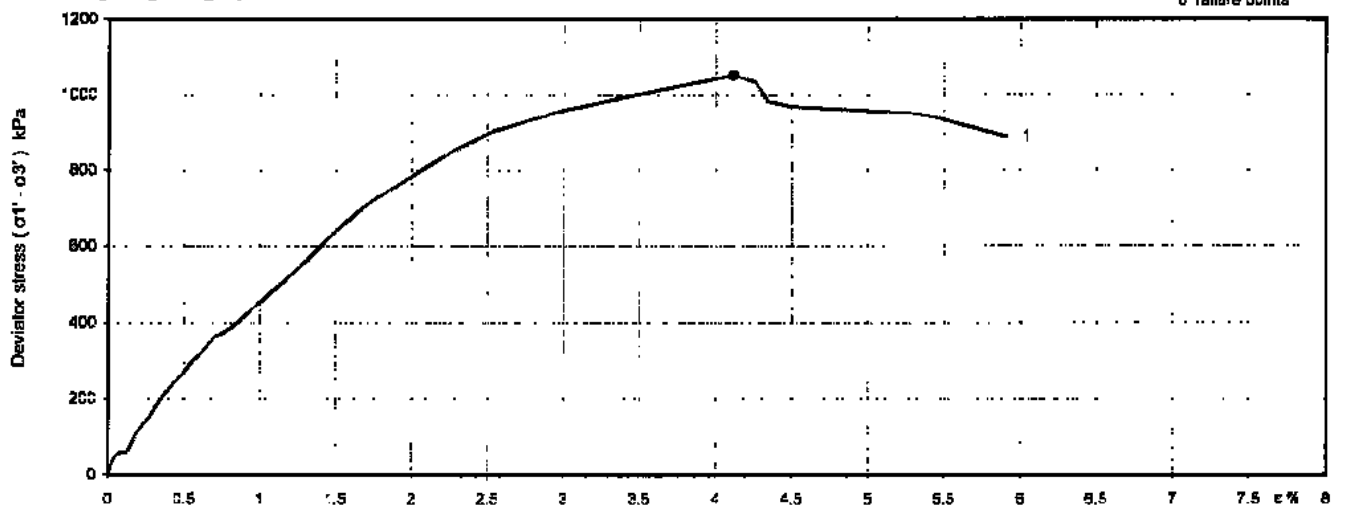
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_5	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.80-44.20	
		No	12	Type	CS
		ID			
		Spec Ref			

Consolidation



Shearing stages - graphical data



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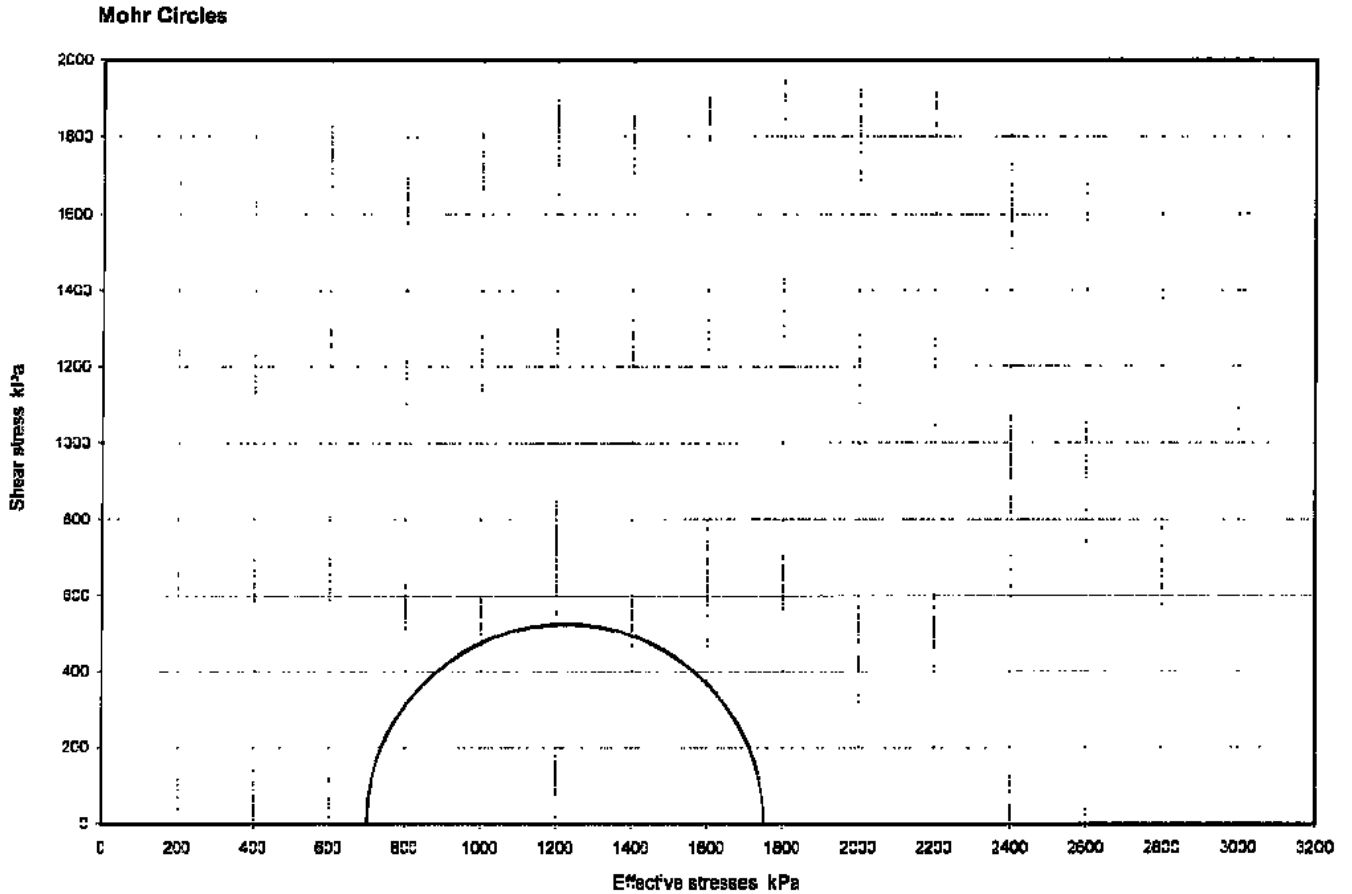
Figure

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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_5		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.80-44.20		
			No	12	Type	CS
			ID			
			Spec Ref			



Compression stages

Specimen	1	
Cell pressure	1000	kPa
Initial pwp	300	kPa
Initial σ_3'	700	kPa
Rate of strain	0.32	%/hr

Shear Strength Parameters

Linear regression			
c'	kPa		0.0
ϕ'	degrees		25.4
Manual re-assessment			
c'	kPa		-
ϕ'	degrees		-

Failure conditions

Criterion	Maximum deviator stress	
Axial strain	4.2	%
$(\sigma_1' - \sigma_3')$	1051.0	kPa
Volumetric strain		%
σ_3'	700	kPa
σ_1'	1751	kPa
Time to failure	12.9	hrs

Notes :

Deviator stresses corrected for area change, vertical side drains and 0.45 mm thick rubber membrane(s)

Mode of failure



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Figure

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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

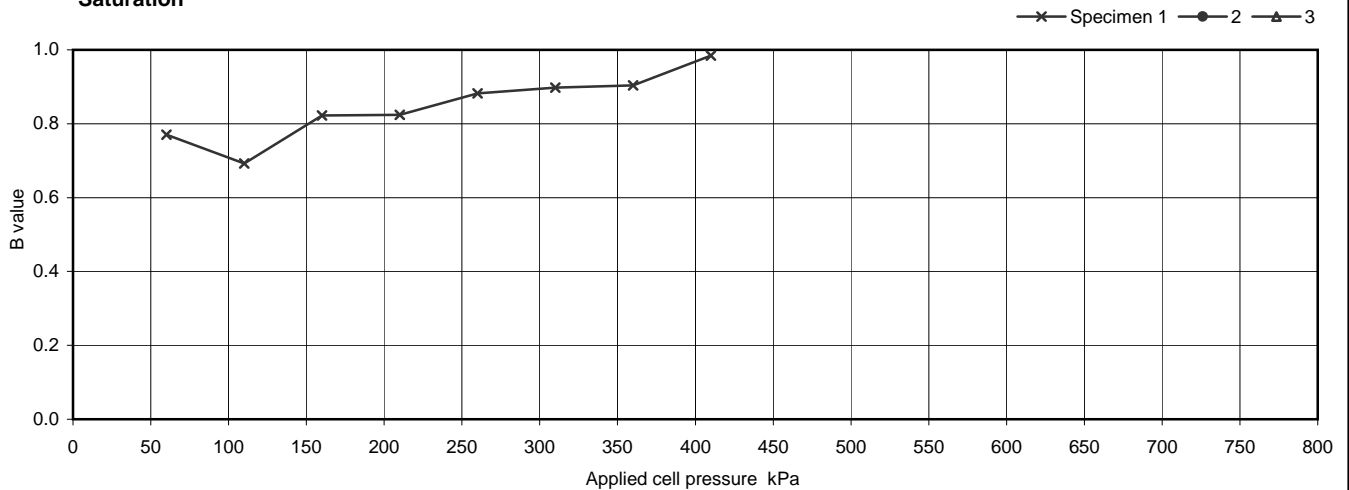
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.00--43.40		
		No	9	Type	CS	
		ID				
		Spec Ref				

Specimen Details		1	2	3
Initial	Length	mm	193.2	
	Diameter	mm	95.2	
	Bulk Density	Mg/m ³	1.83	
	Water Content	%	40.9	
	Dry density	Mg/m ³	1.30	
After consolidation	Length	mm	193.0	
	Diameter	mm	95.1	
	Bulk Density*	Mg/m ³	1.82	
	Water Content*	%	39.7	
	Dry density*	Mg/m ³	1.30	
After test	Bulk Density*	Mg/m ³	1.83	
	Water Content*	%	38.6	
	Dry density*	Mg/m ³	1.32	

Soil Description	Stiff brownish grey slightly sandy CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	410		
Final pore water pressure	kPa	350		
Final B Value		0.98		

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		520			kPa
	Back Pressure applied		350			kPa
	Effective Pressure		170			kPa
	Pore pressure at start of consolidation		502			kPa
	Pore pressure at end of consolidation		350			kPa
	Pore pressure dissipation at end of consolidation		100			%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	Coefficient of Consolidation	C _{vi}	1.59			m ² /year
	Coefficient of Compressibility	M _{vi}	0.04			m ² /MN
	Coefficient of Permeability (calculated)	k _{vi}	2.0E-11			m/s

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Figure

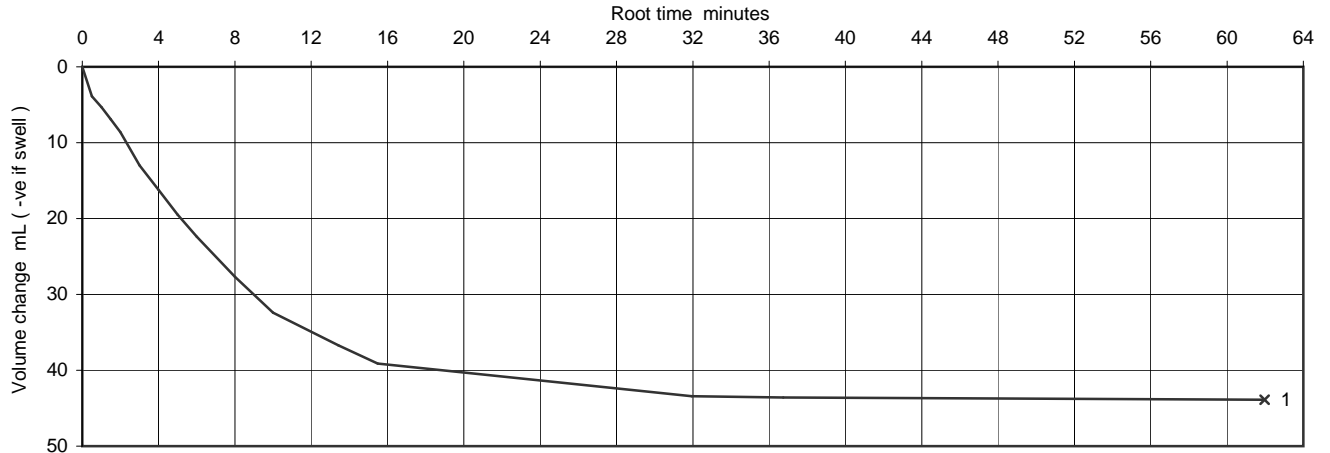
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sheet 1 of 3

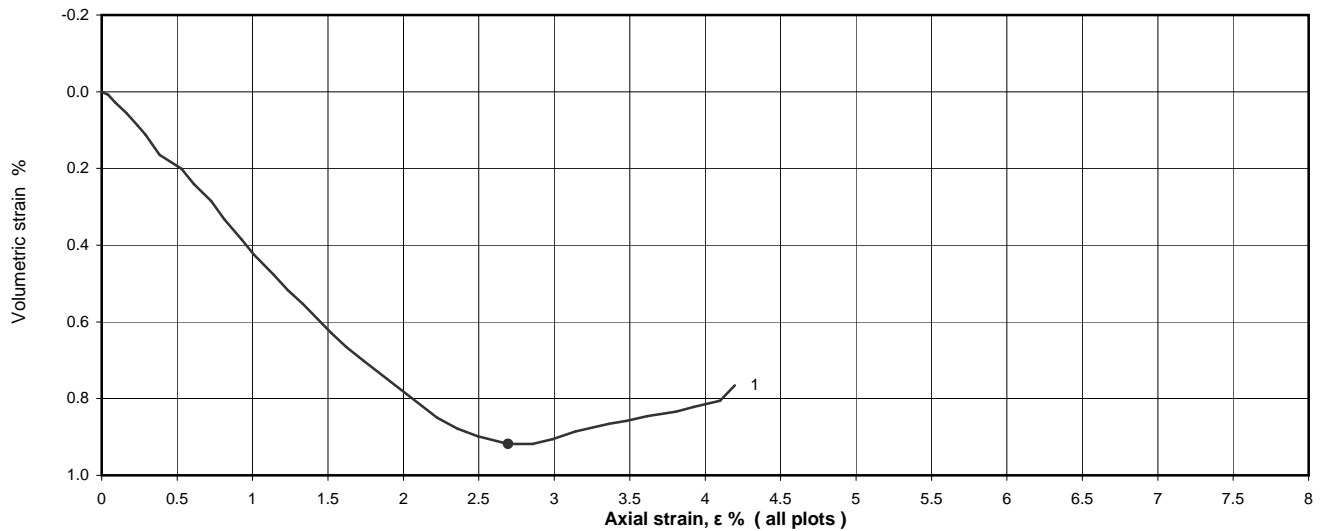
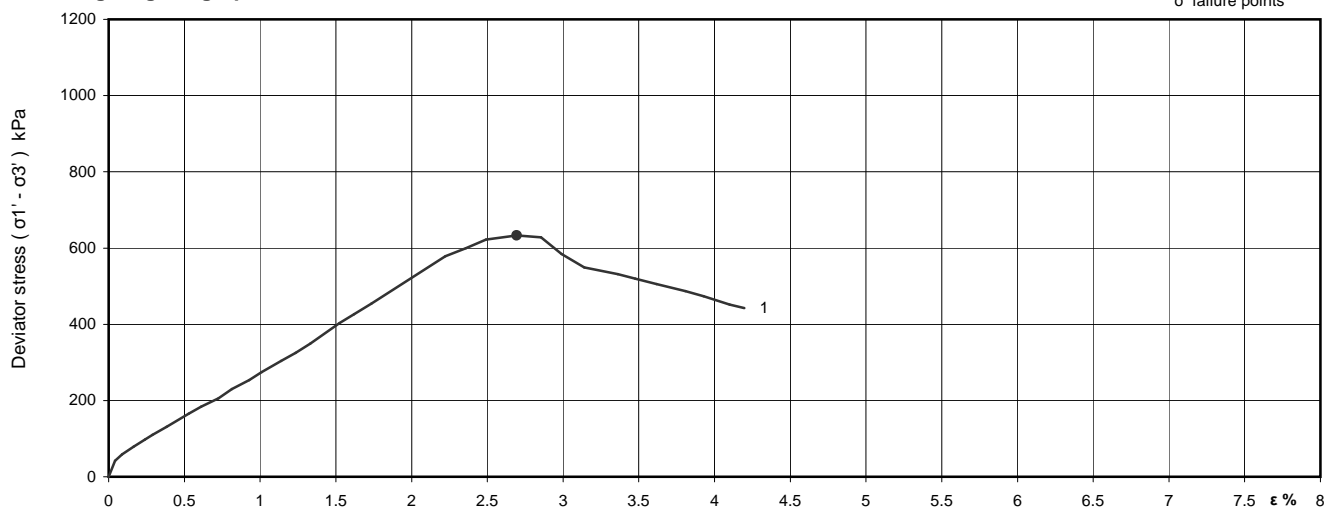
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.00--43.40		
			No	9	Type	CS
			ID			
			Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

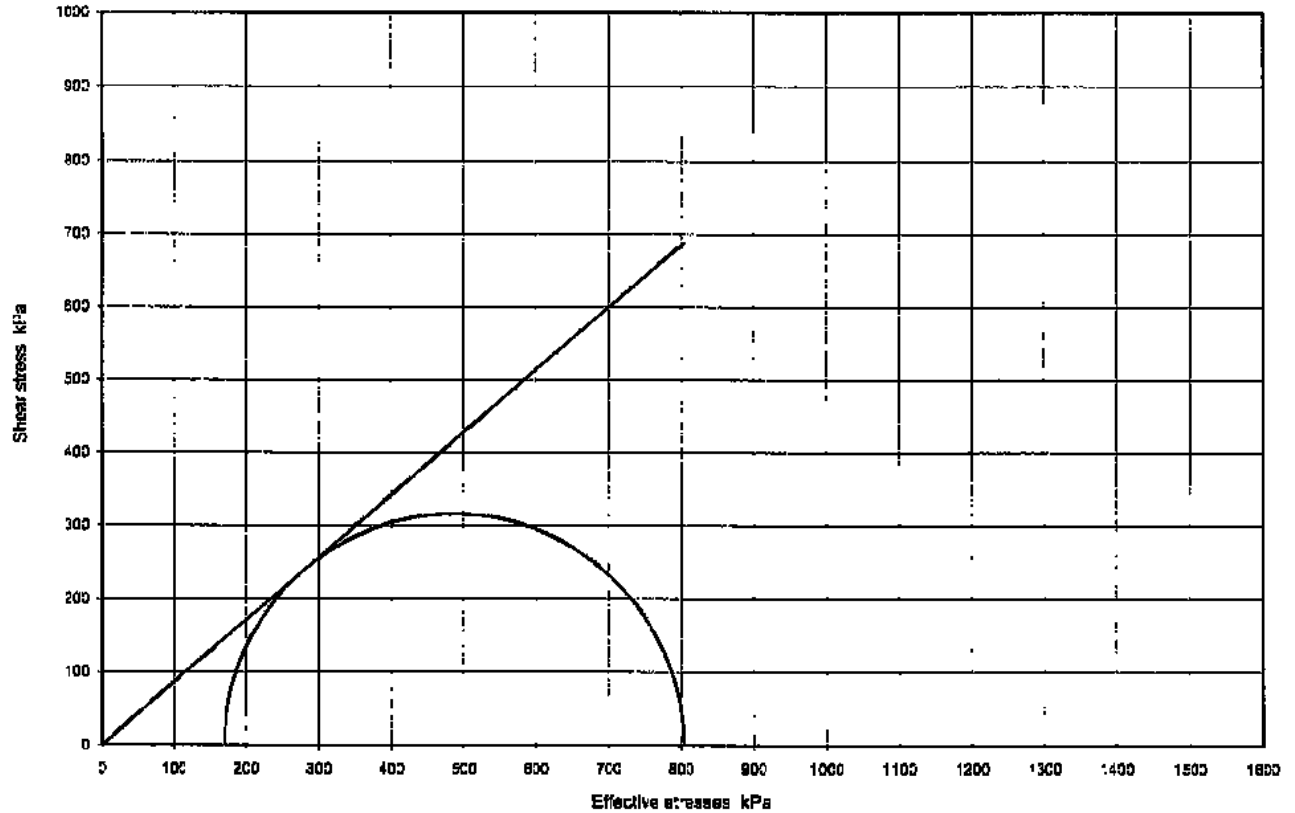
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sheet 2 of 3

**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A00*2-10	Sample Details:	Hole No	CBH 2009_6		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	43.00-43.40		
			No	9	Type	CS
			ID			
		Spec Ref				

Mohr Circles



Compression stages

Specimen

Cell pressure	520	kPa
Initial pwp	350	kPa
Initial σ_3'	170	kPa
Rate of strain	0.15	%/hr

Failure conditions

Criterion	Maximum deviator stress	
Axial strain	2.69	%
$(\sigma_1' - \sigma_3')_f$	633.2	kPa
Volumetric strain	0.92	%
$\sigma_3'_f$	172	kPa
$\sigma_1'_f$	803	kPa
Time to failure	15.0	hrs

Shear Strength Parameters

Linear regression

c'	kPa	3.0
ϕ'	degrees	40.6

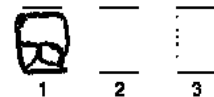
Manual re-assessment

c'	kPa	-
ϕ'	degrees	-

Notes :

Deviator stresses corrected for area change, vertical axis drainage and 0.45 mm thick rubber membrane(s)

Mode of failure



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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

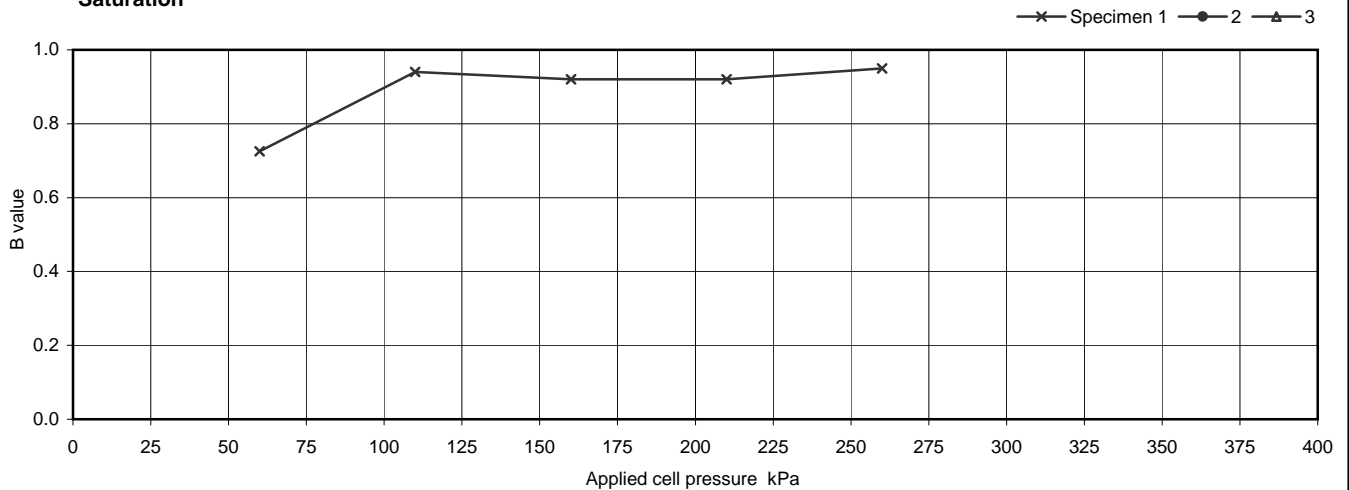
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	45.42-45.76		
			No	10	Type	CS
			ID			
		Spec Ref				

Specimen Details		1	2	3
Initial	Length	mm	193.5	
	Diameter	mm	94.3	
	Bulk Density	Mg/m ³	1.83	
	Water Content	%	42.9	
	Dry density	Mg/m ³	1.28	
After consolidation	Length	mm	192.2	
	Diameter	mm	93.7	
	Bulk Density*	Mg/m ³	1.82	
	Water Content*	%	39.4	
	Dry density*	Mg/m ³	1.31	
After test	Bulk Density*	Mg/m ³	1.84	
	Water Content*	%	38.3	
	Dry density*	Mg/m ³	1.33	

Soil Description	Firm to stiff greyish brown CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	260		
Final pore water pressure	kPa	200		
Final B Value		0.95		

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		665			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		365			kPa
	Pore pressure at start of consolidation		343			kPa
	Pore pressure at end of consolidation		300			kPa
	Pore pressure dissipation at end of consolidation		100			%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	Coefficient of Consolidation	C _{vi}	0.42			m ² /year
	Coefficient of Compressibility	M _{vi}	0.15			m ² /MN
	Coefficient of Permeability (calculated)	k _{vi}	2.0E-11			m/s

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Figure

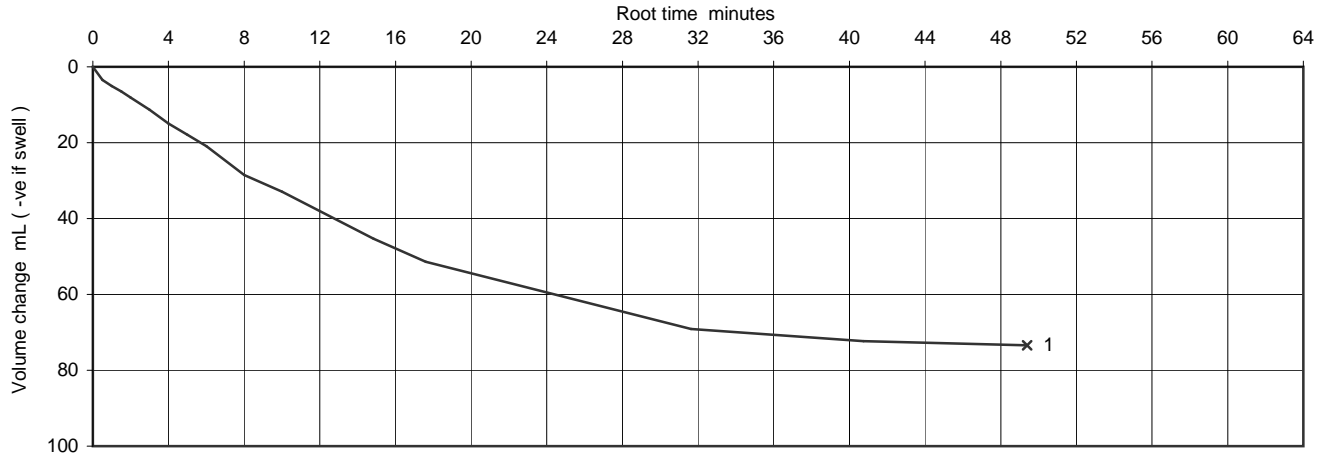
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sheet 1 of 3

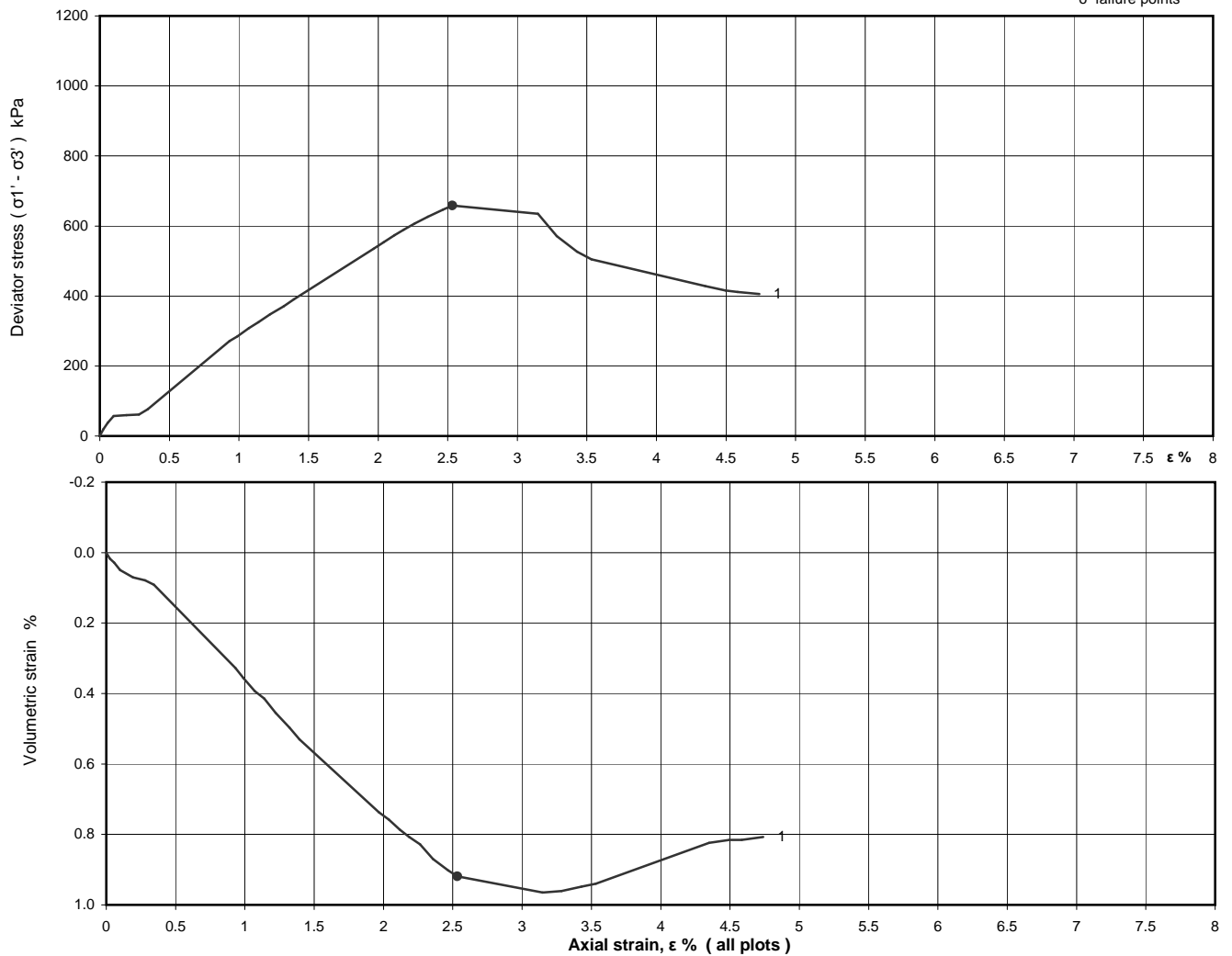
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	45.42-45.76		
			No	10	Type	CS
			ID			
			Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

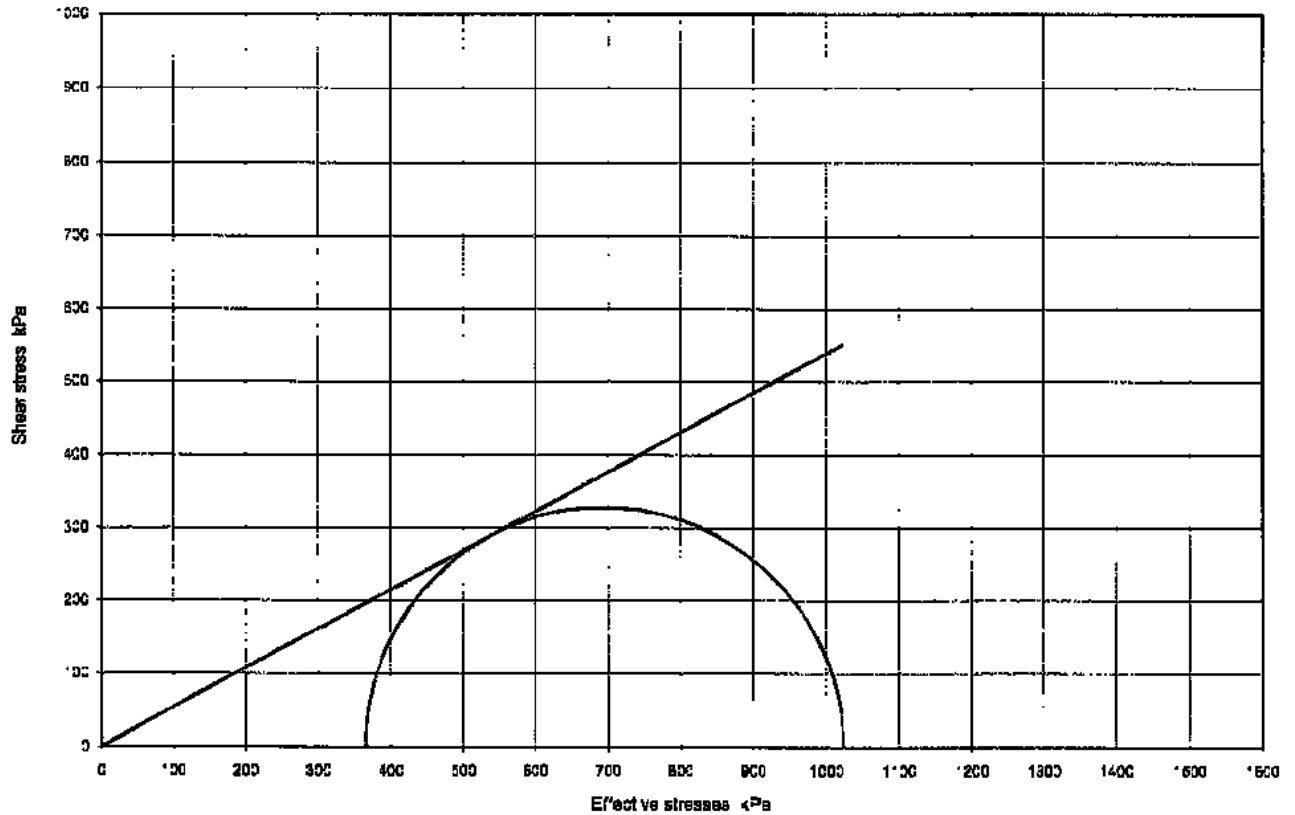
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sheet 2 of 3

**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_6	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	45.42-45.76	
		No	10	Type	CS
		ID			
		Spec Ref			

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	865	kPa
Initial p_w	300	kPa
Initial σ_3'	365	kPa
Rate of strain	0.05	%/hr

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	28.3

Manual re-assessment

c'	kPa	-
ϕ'	degrees	-

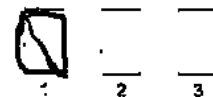
Failure conditions

Criterion	Maximum deviator stress	
Axial strain	2.53	%
$(\sigma_1' - \sigma_3')$	658.3	kPa
Volume strain	0.82	%
σ_3'	365	kPa
σ_1'	1023	kPa
Time to failure	50.7	hrs

Notes :

Deviator stresses corrected for area change, vertical side drains and 0.45 mm thick rubber membrane(s)

Mode of failure



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Figure

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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

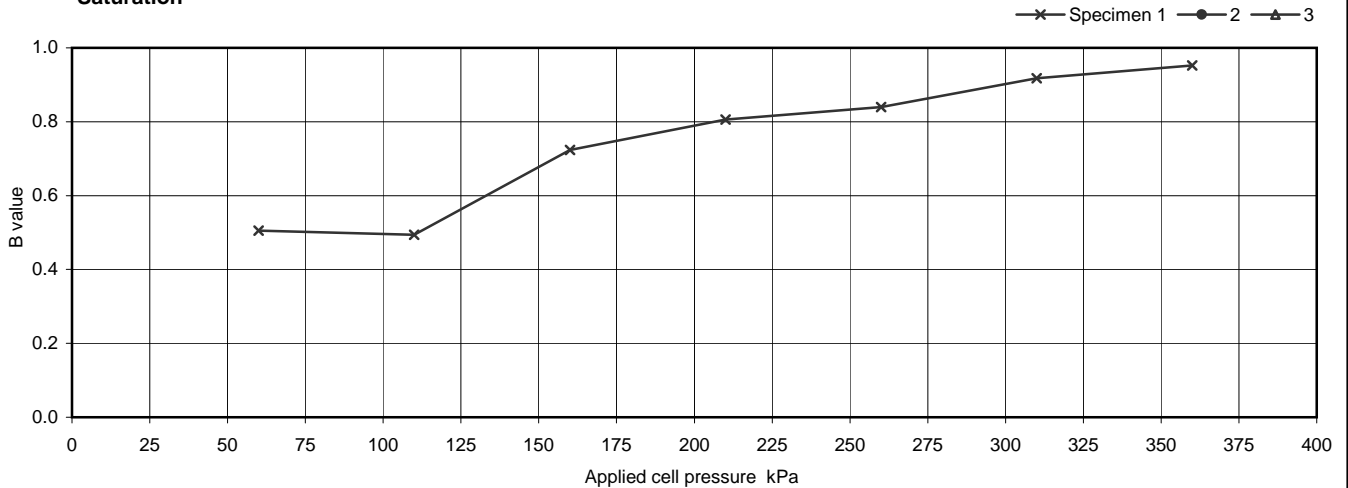
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	51.36-51.56		
			No	122	Type	CS
			ID			
			Spec Ref			

Specimen Details		1	2	3
Initial	Length mm	75.4		
	Diameter mm	38.4		
	Bulk Density Mg/m ³	1.75		
	Water Content %	48.0		
	Dry density Mg/m ³	1.18		
After consolidation	Length mm	75.2		
	Diameter mm	38.3		
	Bulk Density* Mg/m ³	1.75		
	Water Content* %	46.8		
	Dry density* Mg/m ³	1.19		
After test	Bulk Density* Mg/m ³	1.76		
	Water Content* %	45.7		
	Dry density* Mg/m ³	1.21		

Soil Description	Stiff to very stiff brownish grey slightly sandy CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	360		
Final pore water pressure	kPa	300		
Final B Value		0.95		

Saturation



Consolidation Details see sheet 2 for plots	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		710			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		410			kPa
	Pore pressure at start of consolidation		691			kPa
	Pore pressure at end of consolidation		300			kPa
	Pore pressure dissipation at end of consolidation		100			%
Consolidation parameters (see note to BS1377 : pt 8, clause 6.3.4)	Coefficient of Consolidation	C _{vi}	1.74			m ² /year
	Coefficient of Compressibility	M _{vi}	0.14			m ² /MN
	Coefficient of Permeability (calculated)	k _{vi}	7.4E-11			m/s

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Figure

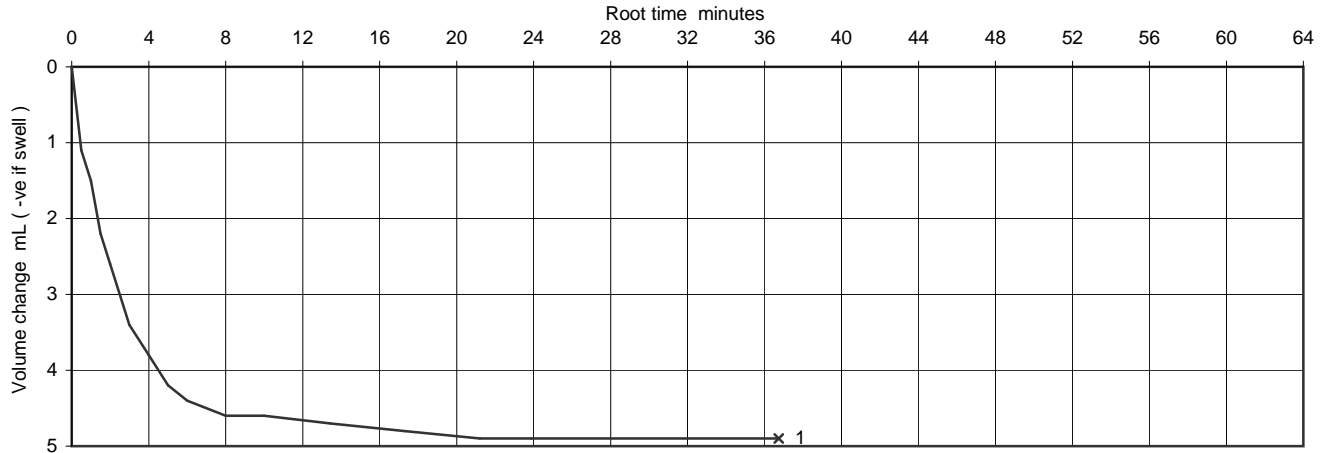
CD 12

sheet 1 of 3

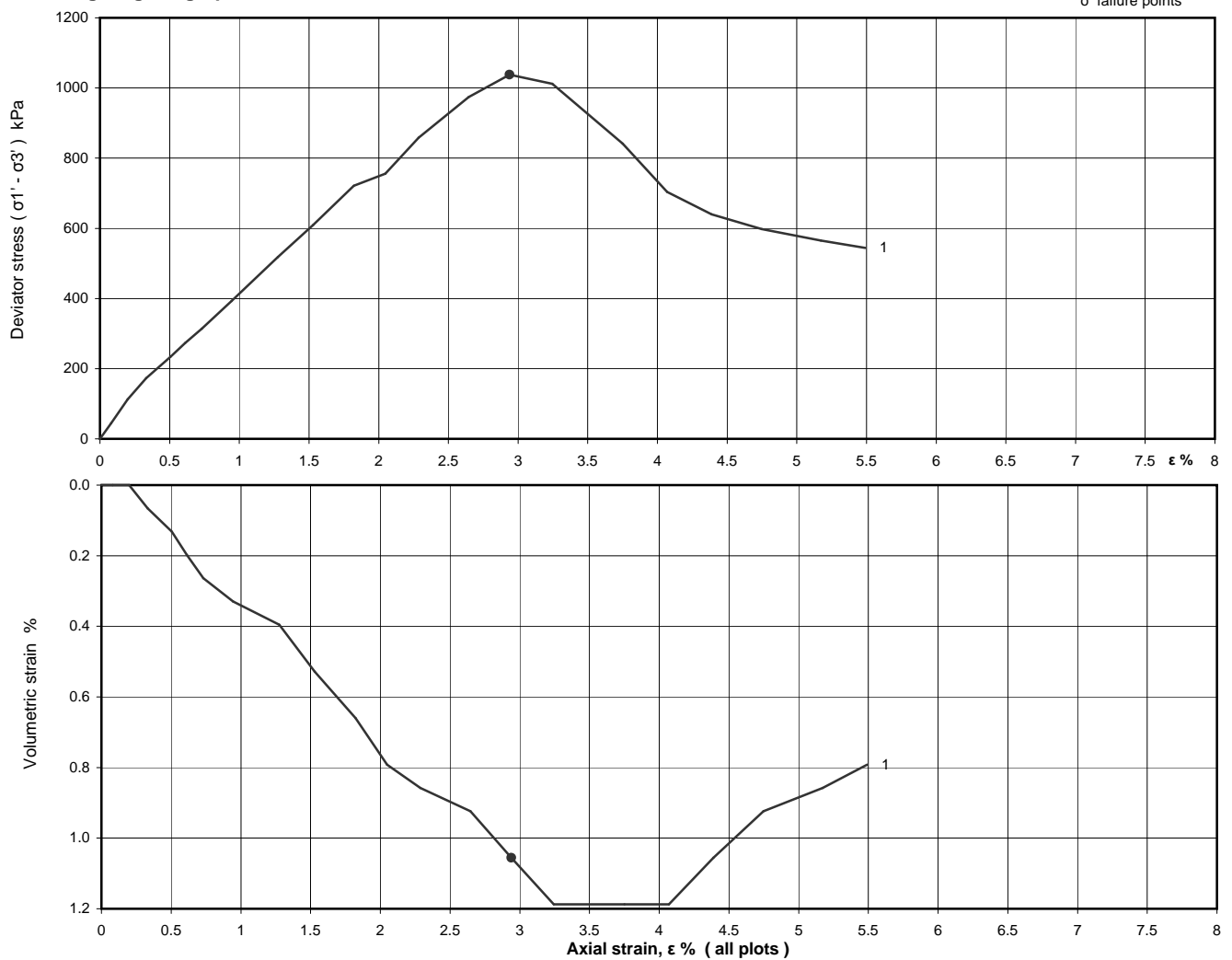
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	51.36-51.56	
		No	122	Type	CS
		ID			
		Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

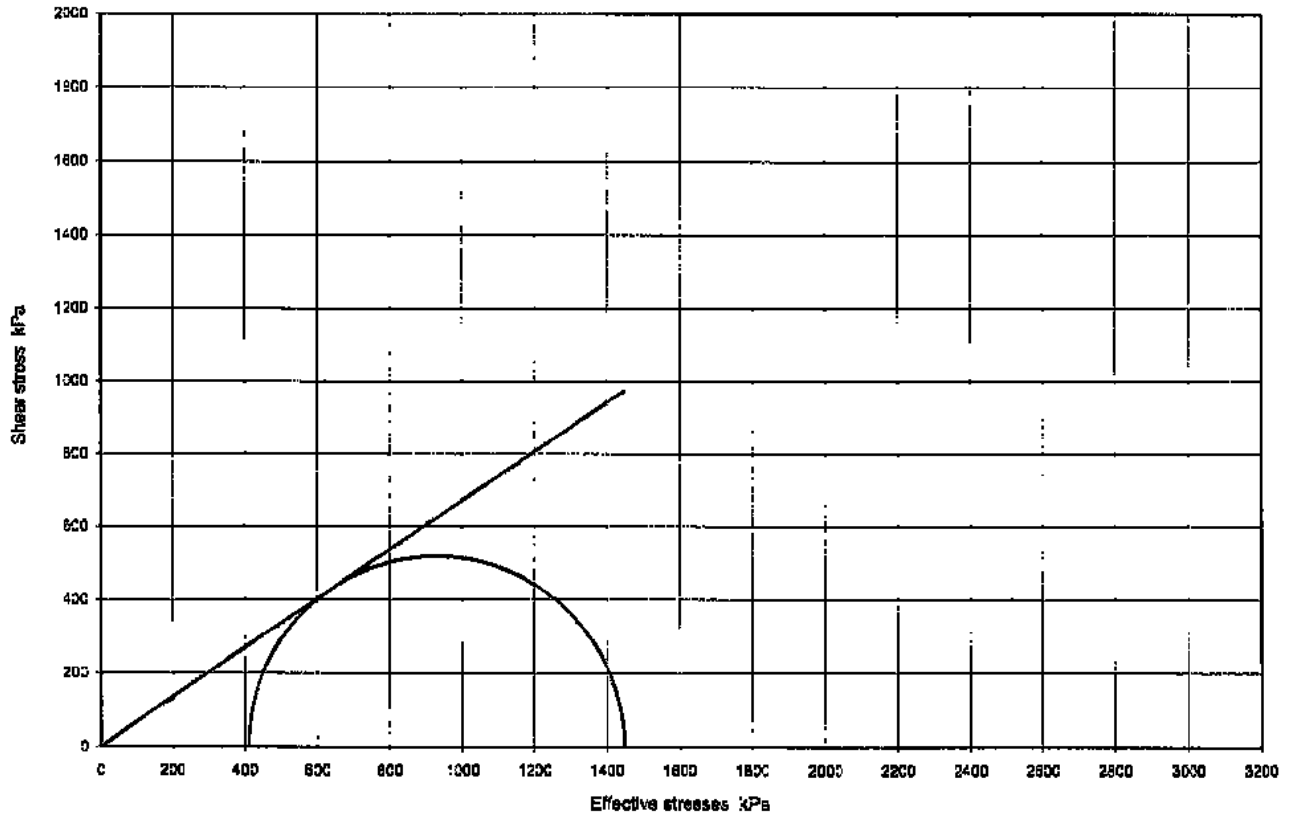
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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	51.36-51.56		
			No	122	Type	CS
			ID			
		Spec Ref				

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	710	kPa
Initial pwp	300	kPa
Initial σ_3'	410	kPa
Rate of strain	1.16	%/hr

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	34.0

Manual re-assessment

c'	kPa	-
ϕ'	degrees	-

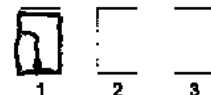
Failure conditions

Criterion	Maximum deviator stress		
Axial strain	2.94		%
$(\sigma_1' - \sigma_3')$	1037.8		kPa
Volumetric strain	1.06		%
σ_3'	410		kPa
σ_1'	1448		kPa
Time to failure	2.5		hrs

Notes :

Deviator stresses corrected for area change, vertical side drains and 0.3 mm thick rubber membrane(s)

Mode of failure



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Figure

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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

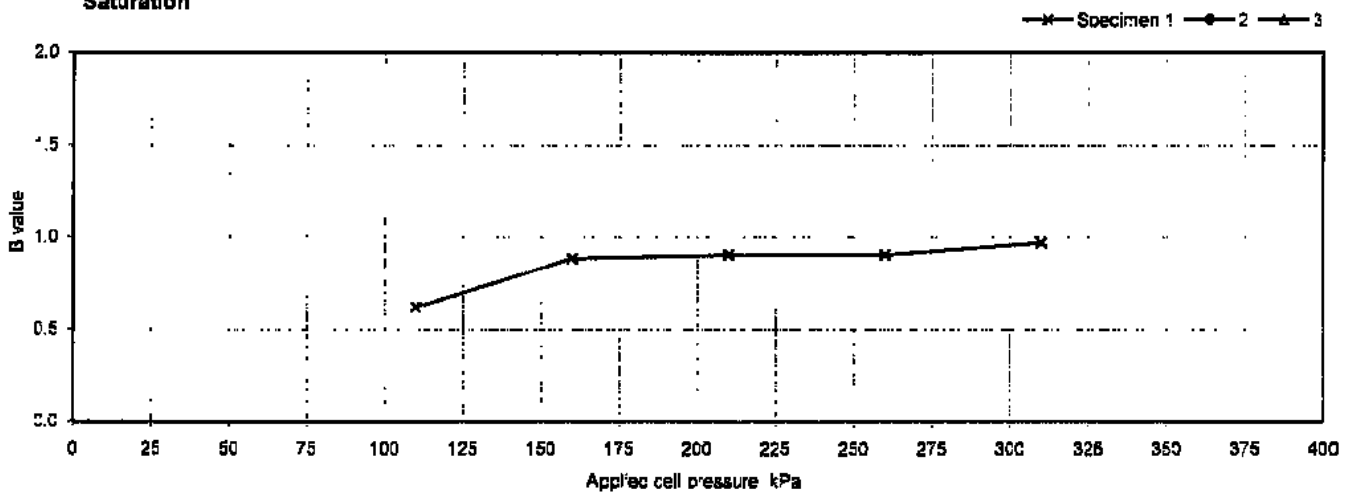
Project No	A0012-'0	Sample Details:	Hole No	CBH 2009_BJ		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	58.23-58.72		
			No	125	Type	CS
			ID			
		Spec Ref				

Specimen Details		1	2	3	
Initial	Length	mm	233.6		
	Diameter	mm	102.5		
	Bulk Density	Mg/m ³	1.91		
	Water Content	%	31.4		
After consolidation	Dry density	Mg/m ³	1.45		
	Length	mm	201.0		
	Diameter	mm	101.2		
	Bulk Density*	Mg/m ³	1.95		
After test	Water Content*	%	29.2		
	Dry density*	Mg/m ³	1.61		
	Bulk Density*	Mg/m ³	1.98		
	Water Content*	%	28.4		
Dry density*	Mg/m ³	1.53			

Soil Description	Stiff to very stiff greyish brown CLAY with rare sand.
Specimen Type /Preparator	UNDISTURBED

Saturation Details	Method of Saturation	
	Increments of cell and back pressure	
Cell pressure increments	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	300
Final pore water pressure	kPa	
Final B Value		0.97

Saturation



Consolidation Details <i>see sheet 2 for plots</i>	Drainage Conditions	From radial boundary and one end		
	Specimen No.	1	2	3
Cell Pressure applied		765		
Back Pressure applied		300		
Effective Pressure		465		
Pore pressure at start of consolidation		748		
Pore pressure at end of consolidation		310		
Pore pressure dissipation at end of consolidation		88		
Coefficient of Consolidation	C_v	0.10		
Coefficient of Compressibility	M_v	0.15		
Coefficient of Permeability (calculated)	k_d	4.6E-12		

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Figure

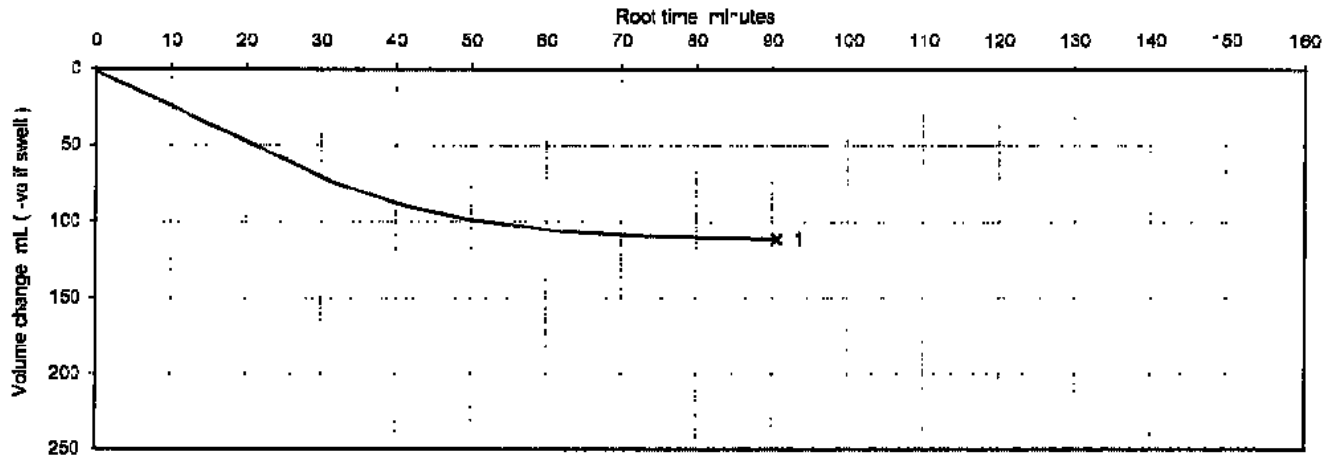
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sheet 1 of 3

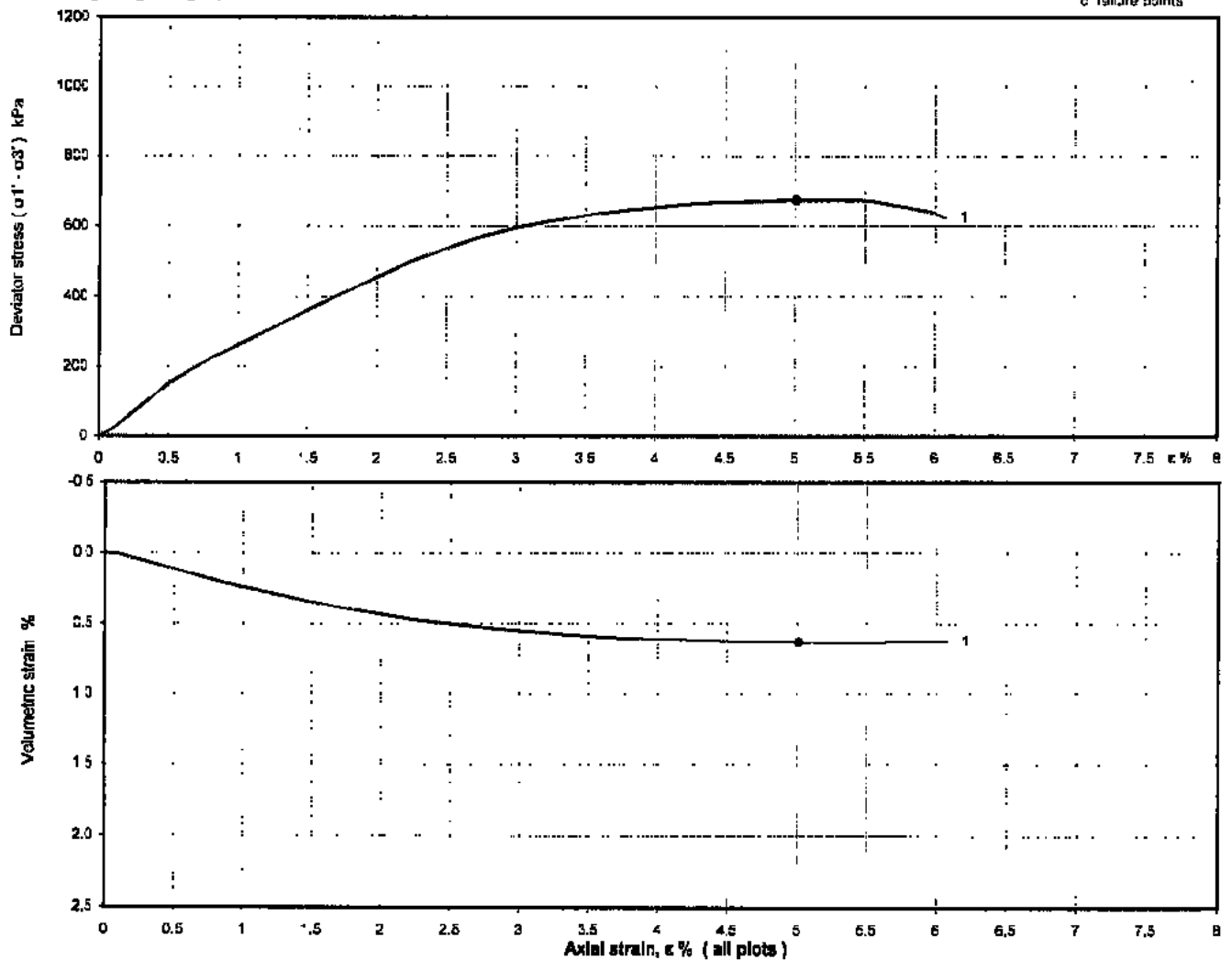
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8J	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	58.23-58.72	
		No	125	Type	CS
		ID			
		Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

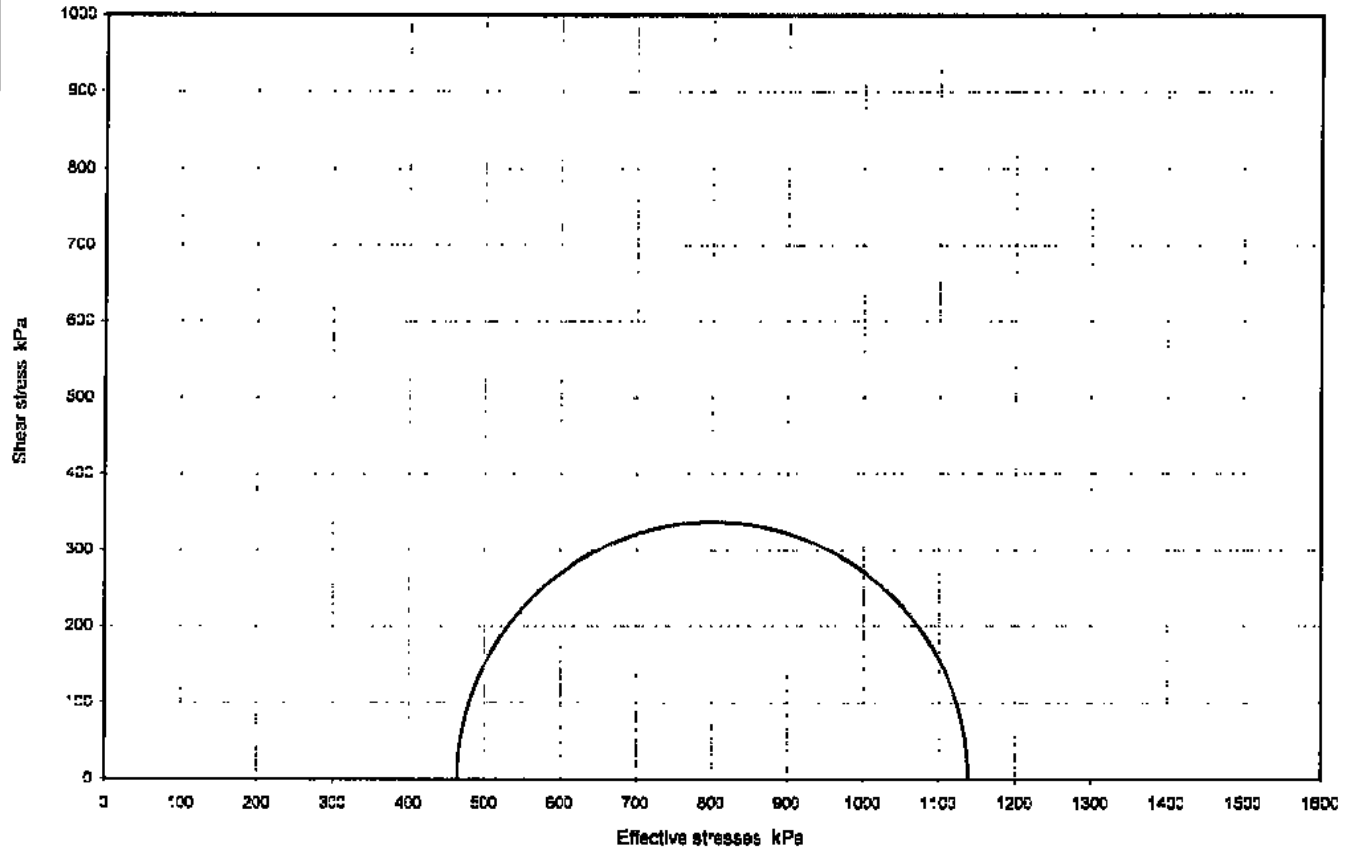
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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	AC012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	58.23-58.72		
			No	125	Type	CS
			ID			
			Spec Ref			

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	785	kPa
Initial pwp	300	kPa
Initial σ_3'	465	kPa
Rate of strain	0.01	%/hr

Shear Strength Parameters

Linear regression			
c'	kPa		0.0
ϕ'	degrees		24.8
Manual re-assessment			
c'	kPa		
ϕ'	degrees		

Failure conditions

Criterion	Maximum deviator stress	
Axial strain	5.01	%
$(\sigma_1' - \sigma_3')$	673.6	kPa
Volumetric strain	0.63	%
σ_3'	465	kPa
σ_1'	1139	kPa
Time to failure	501.0	hrs

Notes :

Deviator stresses corrected for free change, vertical side drains and 0.45 mm thick rubber membrane(s)

Mode of failure



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Figure

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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

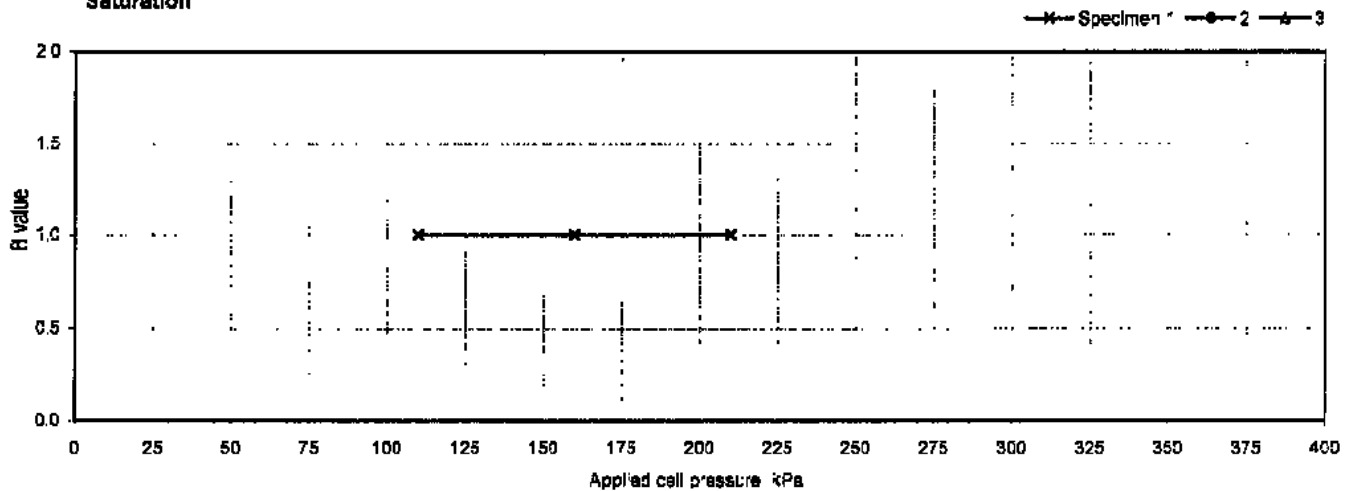
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	81.32-81.72		
			No	126	Type	CS
			ID			
			Spec Ref			

Specimen Details		1	2	3
Initial	Length	mm	292.8	
	Diameter	mm	194.4	
	Bulk Density	Mg/m ³	2.03	
	Water Content	%	32.5	
After consolidation	Dry density	Mg/m ³	1.53	
	Length	mm	291.5	
	Diameter	mm	193.8	
	Bulk Density*	Mg/m ³	1.97	
After test	Water Content*	%	28.3	
	Dry density*	Mg/m ³	1.56	
	Bulk Density*	Mg/m ³	2.01	
	Water Content*	%	24.0	
Dry density*	Mg/m ³	1.62		

Soil Description	Firm brownish grey slightly sandy CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details	Method of Saturation	
	Increments of cell pressure on y	
Cell pressure increments	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	210
Final pore water pressure	kPa	
Final B Value		1.00

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions	From radial boundary and one end			
		Specimen No.	1	2	3
Cell Pressure applied			1280		kPa
Back Pressure applied			300		kPa
Effective Pressure			980		kPa
Pore pressure at start of consolidation			265		kPa
Pore pressure at end of consolidation			300		kPa
Pore pressure dissipation at end of consolidation			100		%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	C _v	4.42			m ² /year
Coefficient of Compressibility	M _v	0.10			m ² /kN
Coefficient of Permeability (calculated)	k _v	1.3E-10			m/s

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Figure

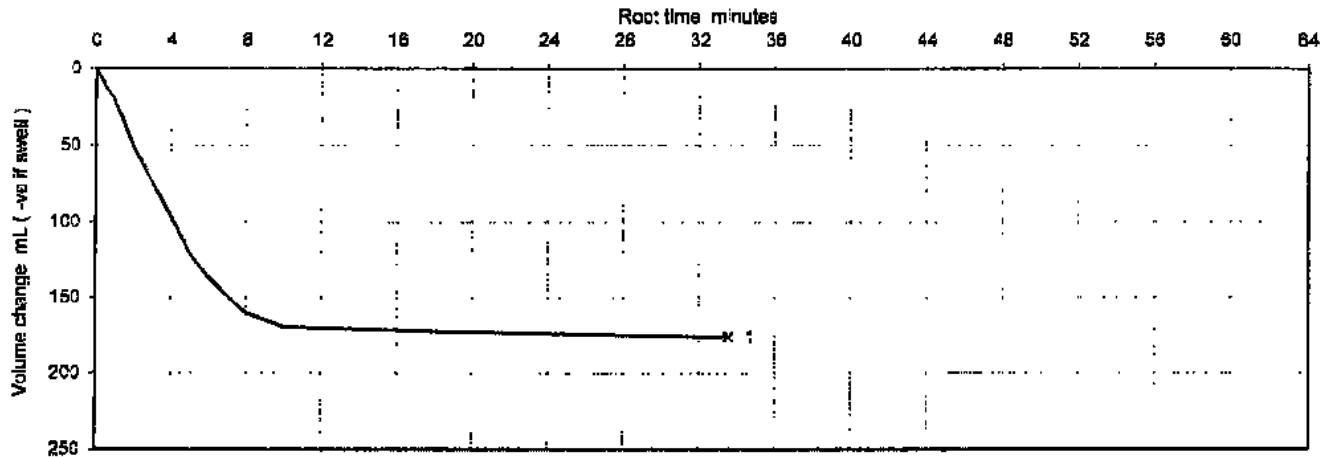
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sheet 1 of 3

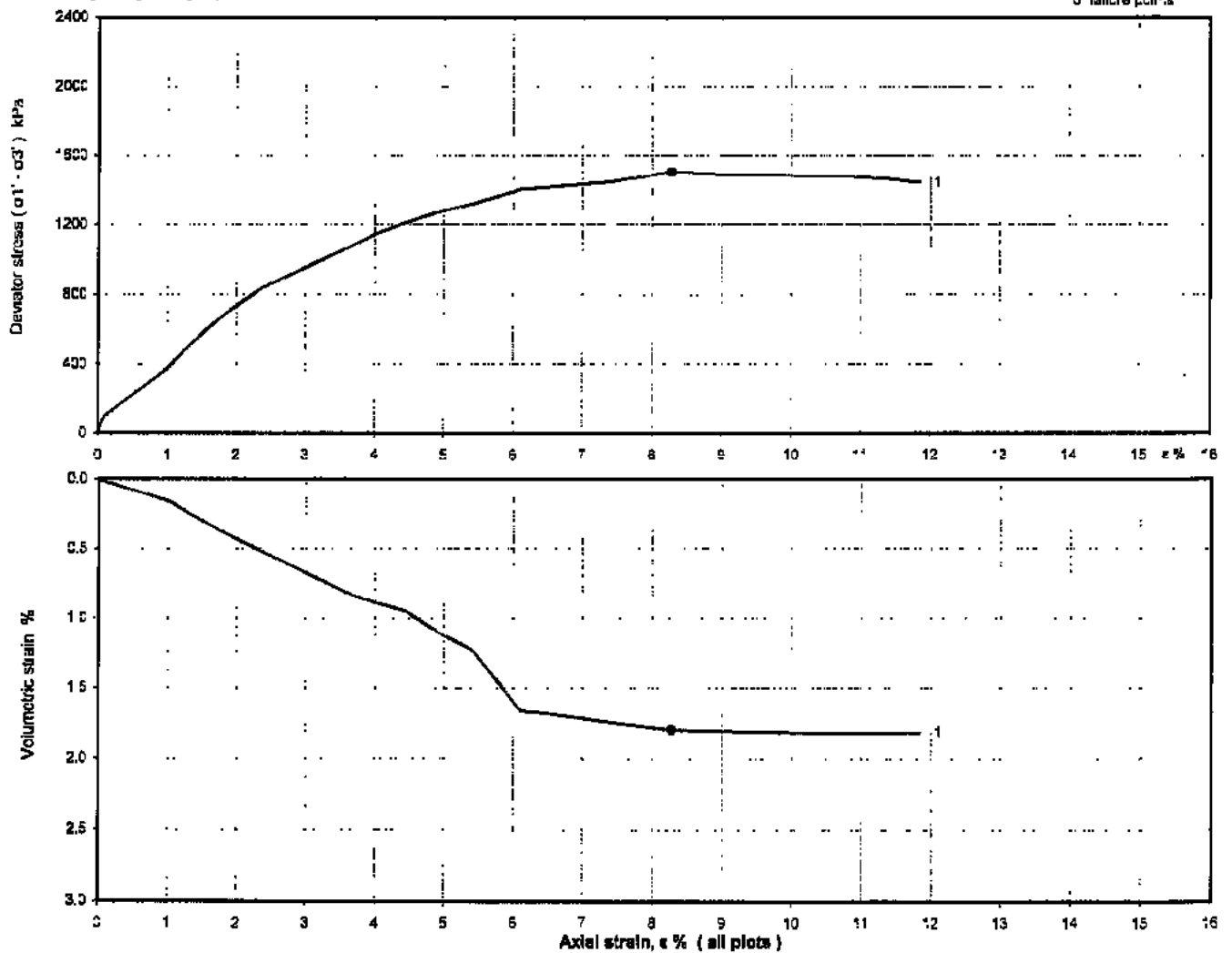
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)		61.32-61.72	
			No	126	Type	CS
			ID			
			Spec Ref			

Consolidation



Shearing stages - graphical data



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Figure

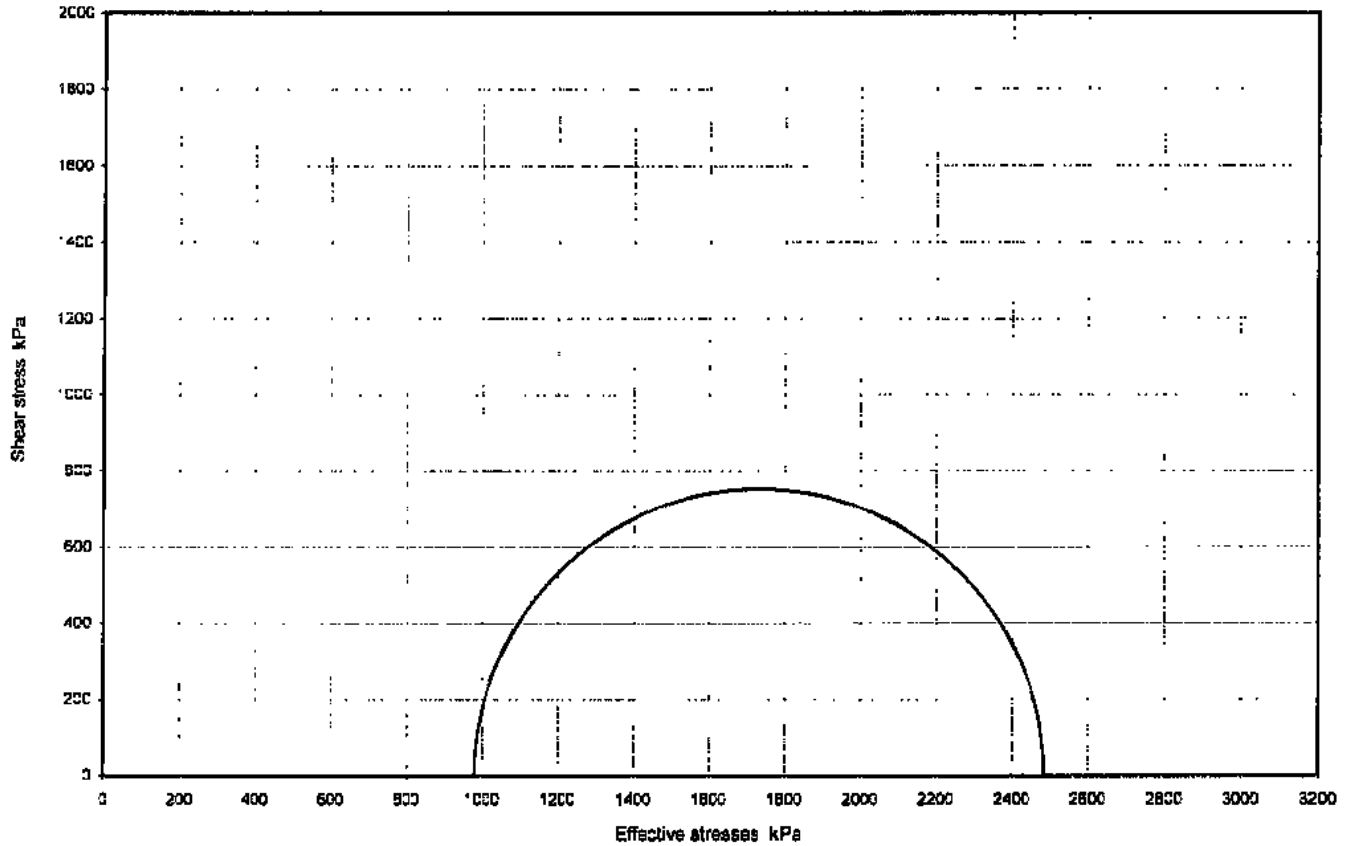
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**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	61.32-61.72		
			No	126	Type	CS
			ID			
			Spec Ref			

Mohr Circles



Compression stages

Specimen	4	
Cell pressure	280	kPa
Initial pwp	300	kPa
Initial σ'_1	980	kPa
Rate of strain	0.38	%/hr

Shear Strength Parameters

Linear regression			
c	kPa	0.0	
ϕ'	degrees	25.7	
Manual re-assessment			
c'	kPa	-	
ϕ'	degrees	-	

Failure conditions

Criterion	Maximum deviator stress	
Axial strain	8.28	%
$(\sigma'_1 - \sigma'_3)$	1524.3	kPa
Volumetric strain	1.83	%
σ'_3	980	kPa
σ'_1	2484	kPa
Time to failure	21.8	hrs

Notes :

Deviator stresses corrected for area change, vertical side drains and 0.45 mm thick rubber membrane(s)

Mode of failure



1 2 3

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Figure

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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

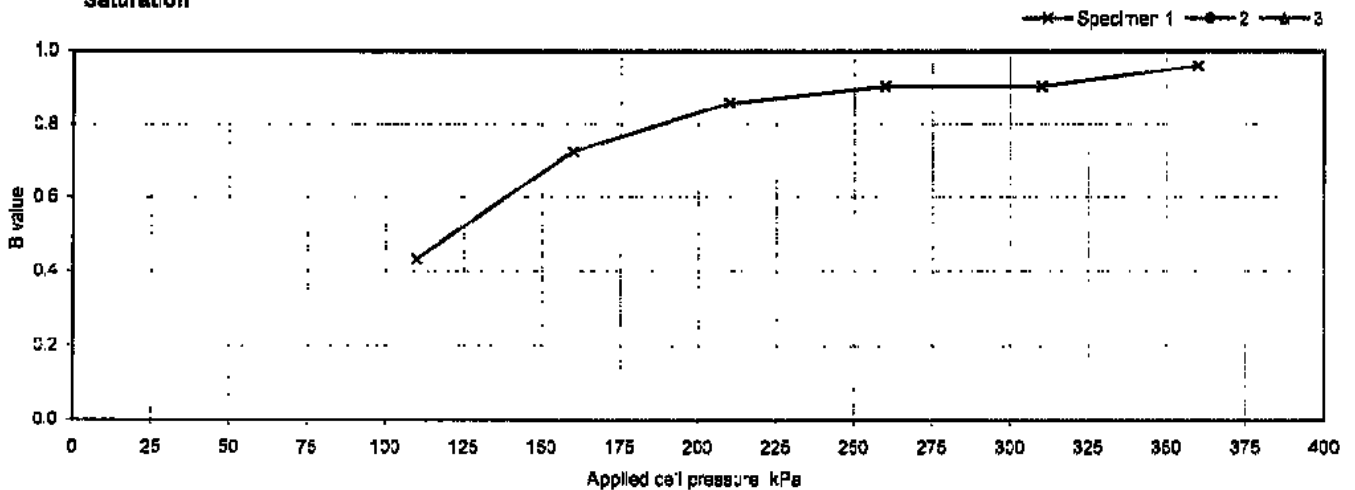
Project No	A0012-10	Sample Details:	Hole No	CBH2009_8U		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	84.12-84.60		
			No	133	Type	CS
			ID			
			Spec Ref			

Specimen Details		1	2	3
Initial	Length	mm	193.3	
	Diameter	mm	65.2	
	Bulk Density	Mg/m ³	1.93	
	Water Content	%	31.7	
	Dry density	Mg/m ³	1.48	
After consolidation	Length	mm	192.7	
	Diameter	mm	64.6	
	Bulk Density*	Mg/m ³	1.92	
	Water Content*	%	30.0	
After test	Dry density*	Mg/m ³	1.48	
	Bulk Density*	Mg/m ³	1.93	
	Water Content*	%	29.5	
	Dry density*	Mg/m ³	1.48	

Soil Description	Very stiff greyish brown CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details	Method of Saturation	
	Increments of cell and back pressure	
Cell pressure increments	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	380
Final pore water pressure	kPa	300
Final B Value		0.88

Saturation



Consolidation Details <small>see sheet 2 for data</small>	Drainage Conditions	From radial boundary and one end		
	Specimen No	1	2	3
Cell Pressure applied		*850		
Back Pressure applied		300		
Effective Pressure		1350		
Pore pressure at start of consolidation		1584		
Pore pressure at end of consolidation		350		
Pore pressure dissipation at end of consolidation		98		
Consolidation parameters <small>(see note to BS1377 pt 8. clause 6.3.4)</small>	Coefficient of Consolidation	C _v	0.17	m ² /year
	Coefficient of Compressibility	M _v	0.04	m ² /MN
	Coefficient of Permeability (calculated)	k _v	2.1E-12	m/s

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Figure

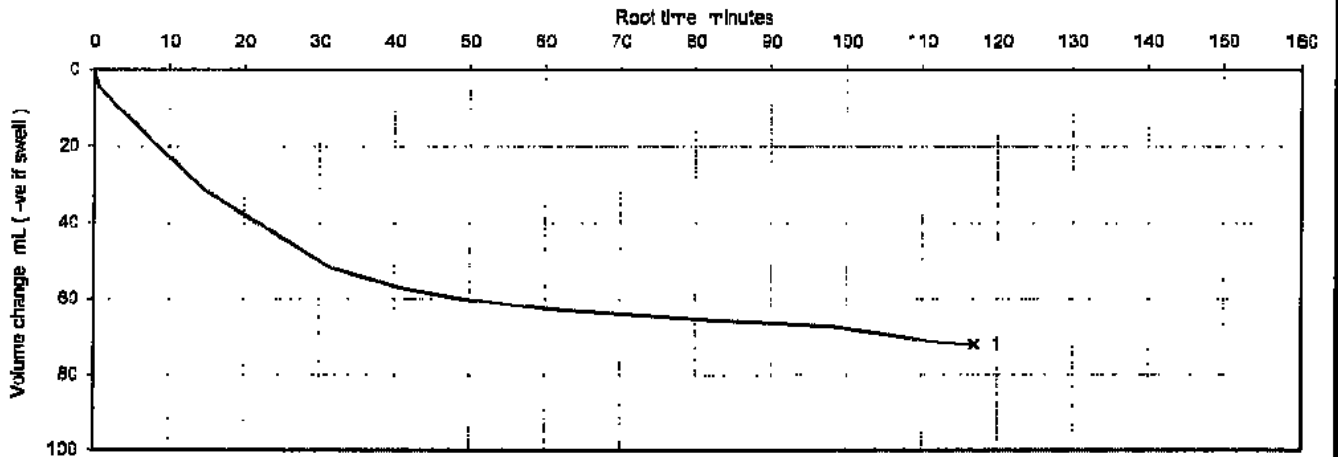
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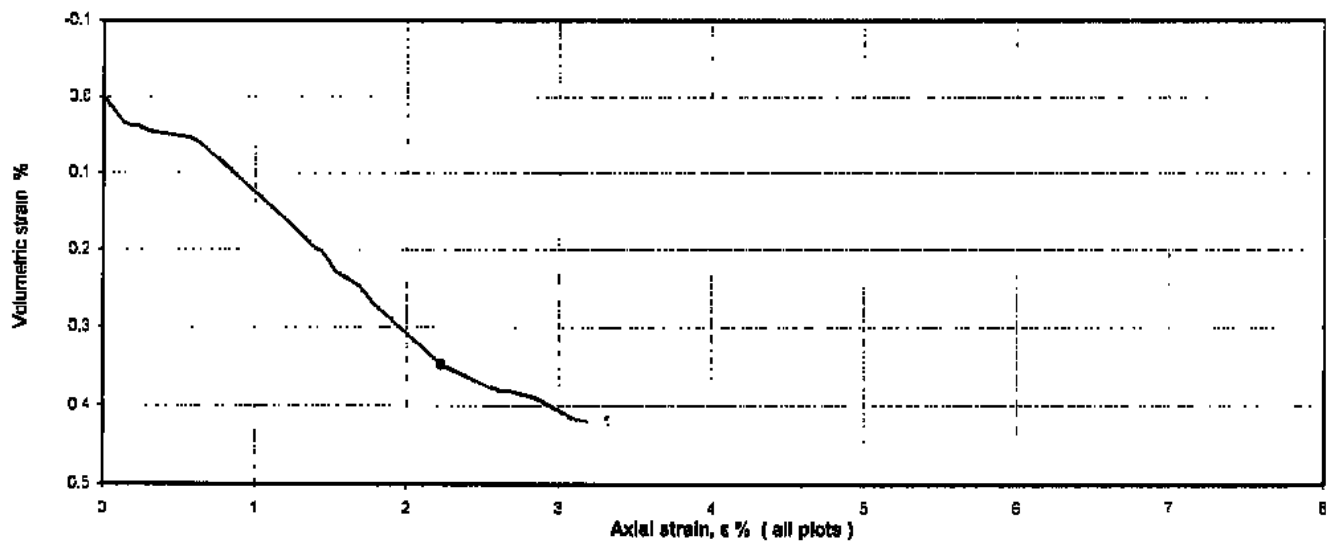
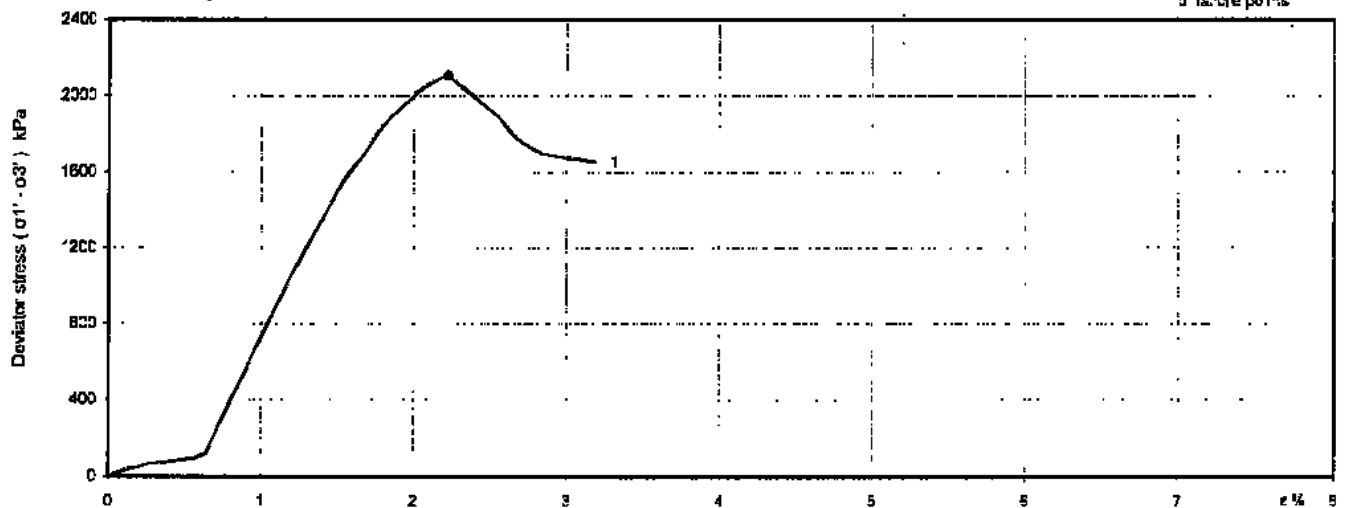
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH2009_8U	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	84.12-84.60	
		No	133	Type	CS
		ID			
		Spec Ref			

Consolidation



Shearing stages - graphical data



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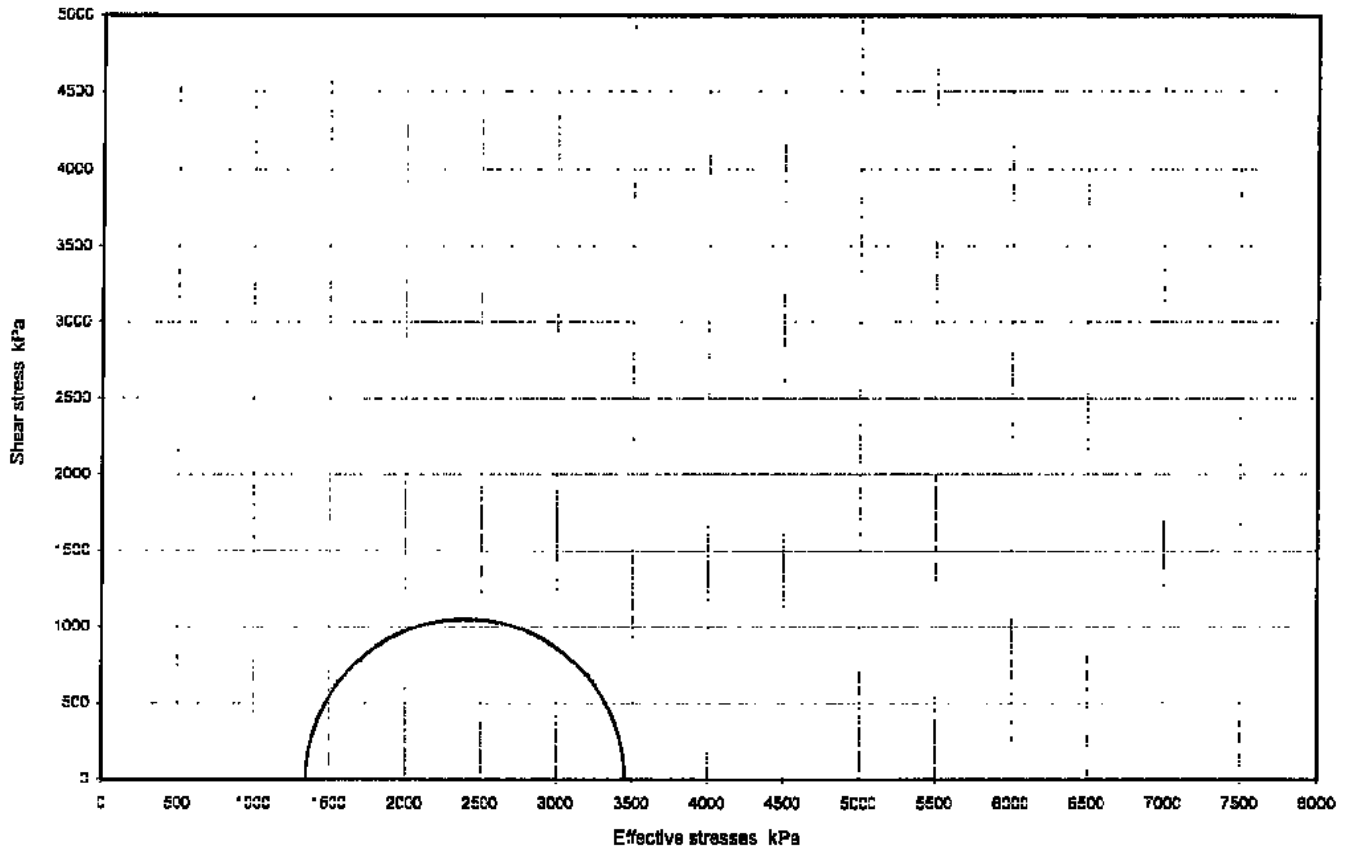
Figure

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sheet 2 of 3

**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH2009_BU		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	84.12-84.60		
		No	133	Type	CS	
		ID				
		Spec Ref				

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	1650	kPa
Initial pwp	300	kPa
Initial σ_3'	1350	kPa
Rate of strain	0.02	%/hr

Shear Strength Parameters

Linear regression		
c'	kPa	not assessed
ϕ'	degrees	not assessed
Manual re-assessment		
c'	kPa	
ϕ'	degrees	

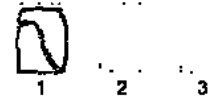
Failure conditions

Criterion	Maximum deviator stress	
Axial strain	2.22	%
$(\sigma_1 - \sigma_3)'$	2104.2	kPa
Volume change strain	0.35	%
σ_2'	1350	kPa
σ_1'	3454	kPa
Time to failure	111.0	hrs

Notes :

Deviator stresses corrected for area change, vertical side drains and 0.46 mm thick rubber membrane(s)

Mode of failure



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Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

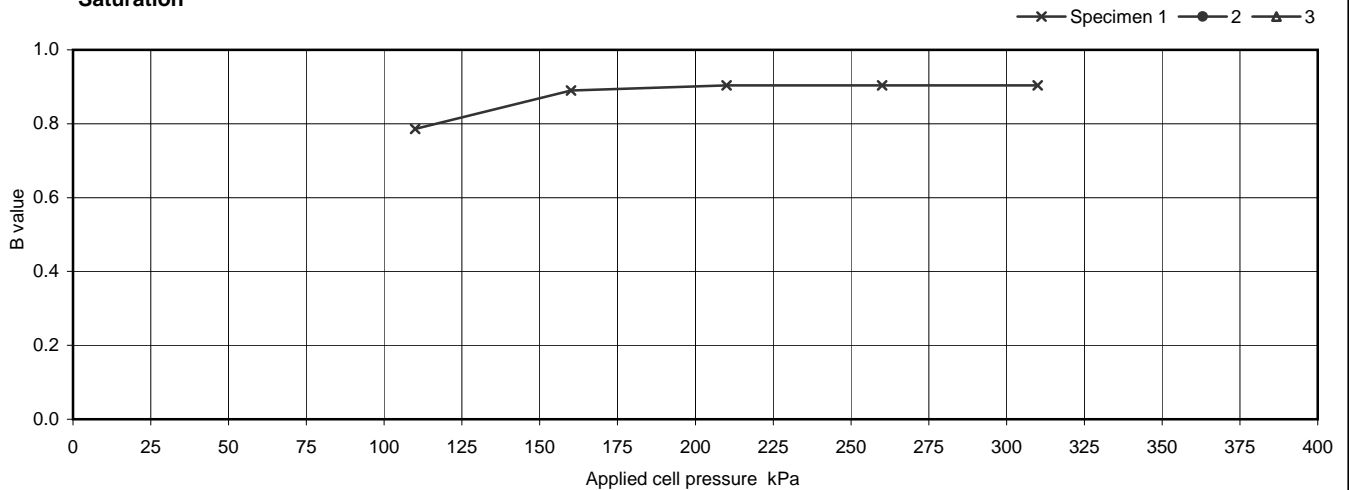
Project No	A0012-10	Sample Details:	Hole No	CBH 2009_10		
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	50.45-50.90		
			No	20	Type	CS
			ID			
		Spec Ref				

Specimen Details		1	2	3
Initial	Length	mm	203.9	
	Diameter	mm	106.8	
	Bulk Density	Mg/m ³	1.79	
	Water Content	%	45.7	
	Dry density	Mg/m ³	1.23	
After consolidation	Length	mm	204.0	
	Diameter	mm	106.9	
	Bulk Density*	Mg/m ³	1.77	
	Water Content*	%	44.3	
	Dry density*	Mg/m ³	1.23	
After test	Bulk Density*	Mg/m ³	1.78	
	Water Content*	%	43.2	
	Dry density*	Mg/m ³	1.25	

Soil Description	Stiff to very stiff brownish grey slightly sandy CLAY.
Specimen Type /Preparation	UNDISTURBED

Saturation Details		Method of Saturation		
		Increments of cell and back pressure		
Cell pressure increments	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	310		
Final pore water pressure	kPa	250		
Final B Value		0.90		

Saturation



Consolidation Details <small>see sheet 2 for plots</small>	Drainage Conditions		From radial boundary and one end			
	Specimen No.		1	2	3	
	Cell Pressure applied		500			kPa
	Back Pressure applied		300			kPa
	Effective Pressure		200			kPa
	Pore pressure at start of consolidation		479			kPa
	Pore pressure at end of consolidation		302			kPa
	Pore pressure dissipation at end of consolidation		99			%
Consolidation parameters <small>(see note to BS1377 : pt 8, clause 6.3.4)</small>	Coefficient of Consolidation	C _{vi}	1.40		m ² /year	
	Coefficient of Compressibility	M _{vi}	0.15		m ² /MN	
	Coefficient of Permeability (calculated)	k _{vi}	6.3E-11		m/s	

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Figure

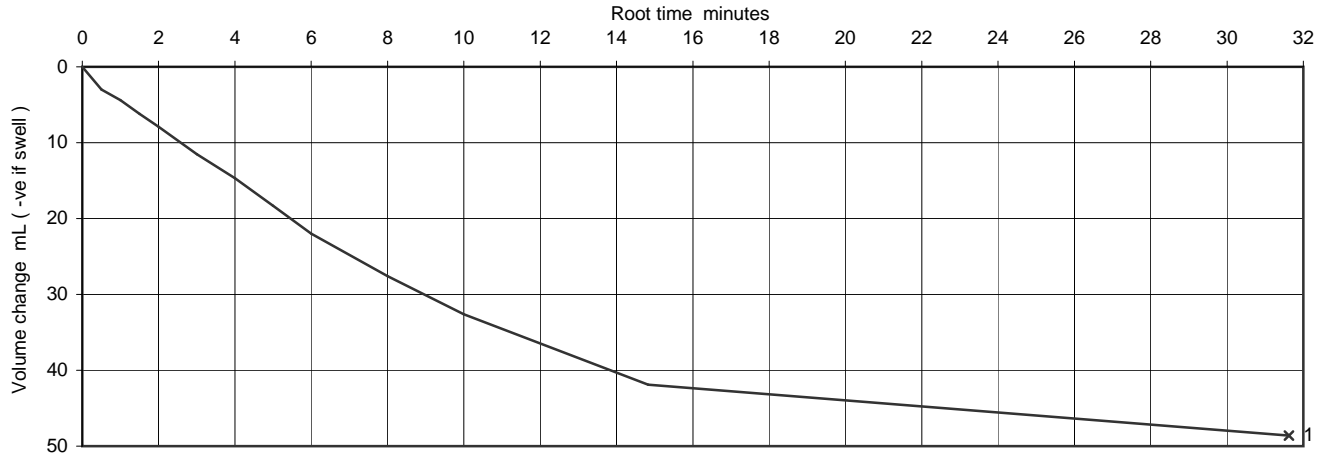
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sheet 1 of 3

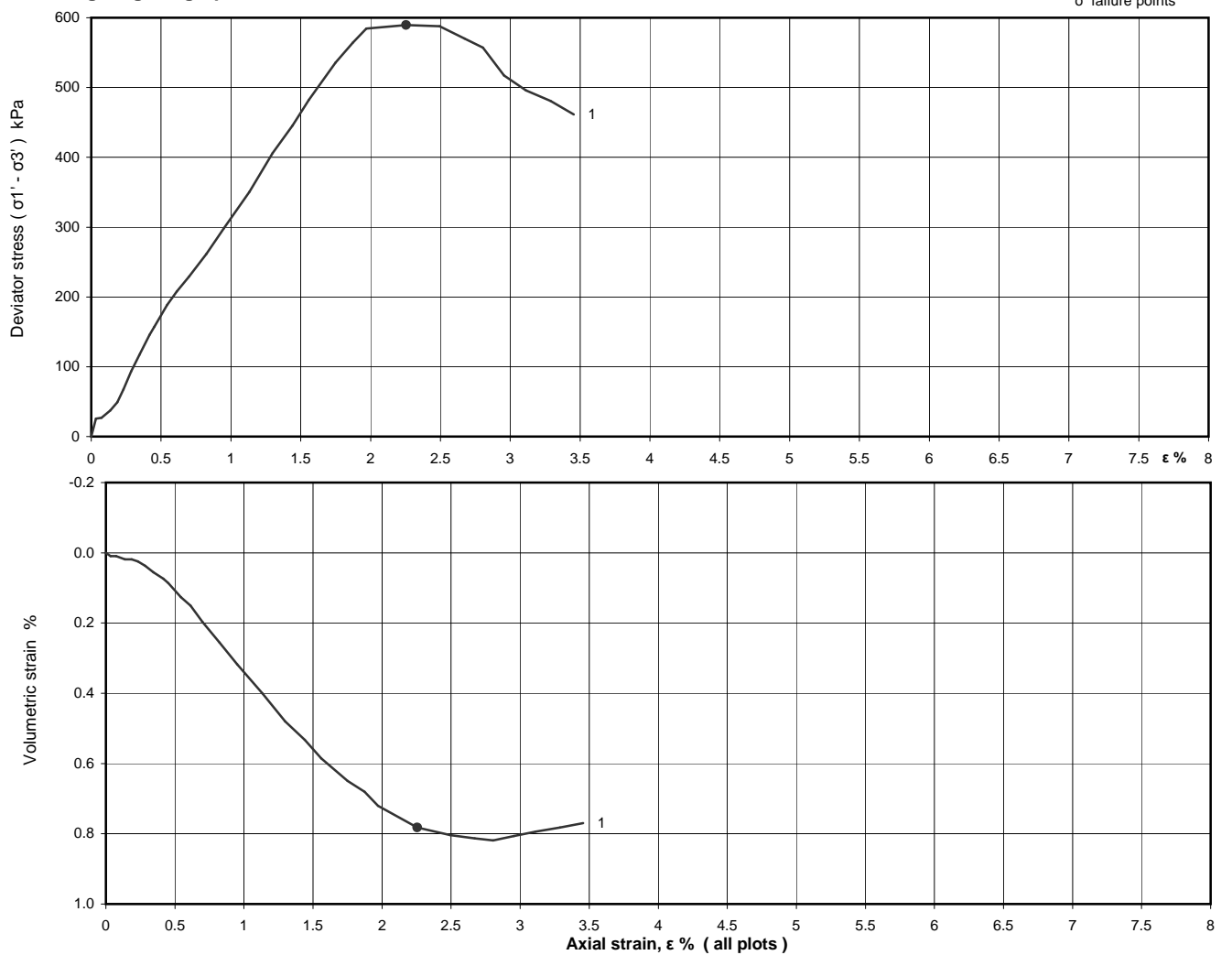
Consolidated Drained Triaxial Compression test with Measurement of Volume Change (BS1377 : Part 8 : 1990)

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_10			
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	50.45-50.90			
			No	20	Type	CS	
			ID				
			Spec Ref				

Consolidation



Shearing stages - graphical data



Ref

SLR8.2
Rev 85
Jan 10



Printed: 18/02/2011 09:01

Figure

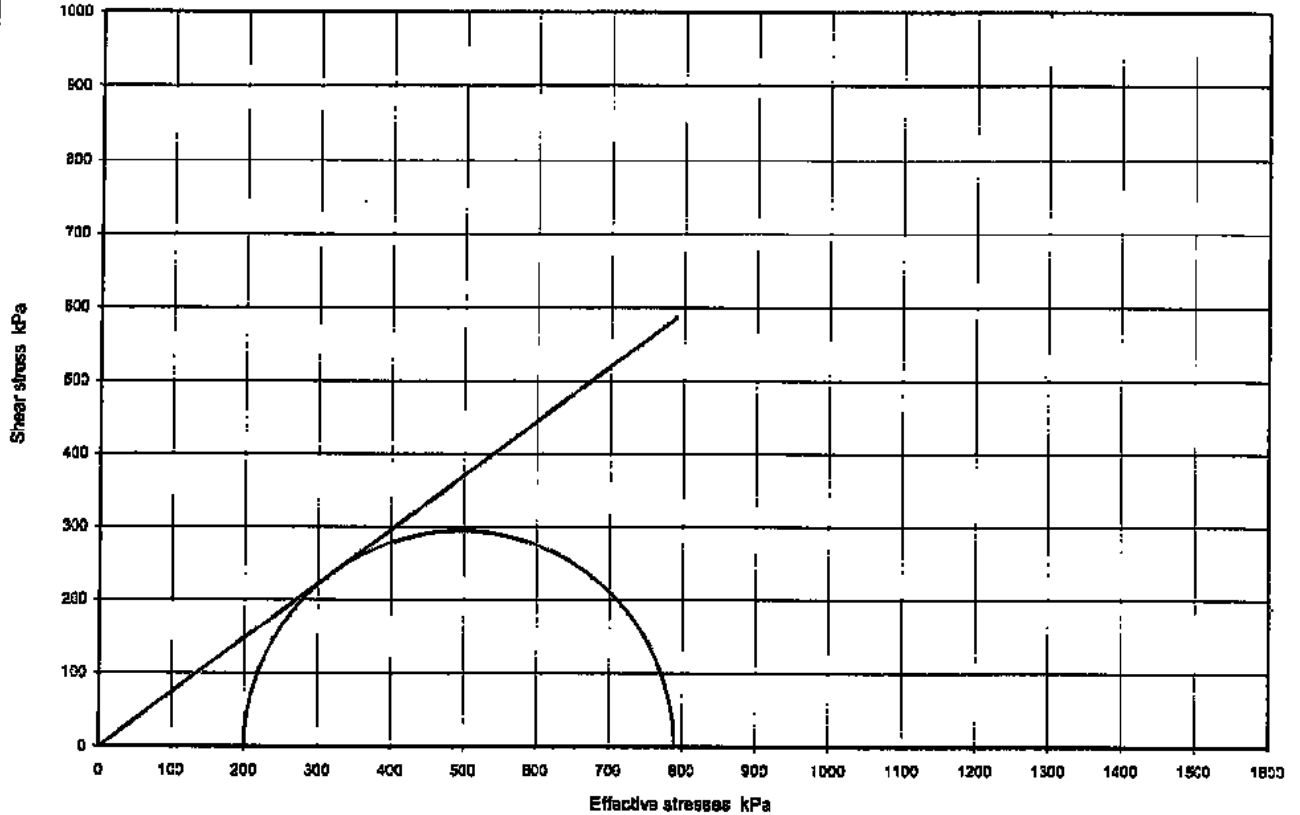
CD 16

sheet 2 of 3

**Consolidated Drained Triaxial Compression test with Measurement of Volume Change
(BS1377 : Part 8 : 1990)**

Project No	A0012-10	Sample Details:	Hole No	CBH 2009_10	
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BGL)	50.45-50.90	
		No	20	Type	CS
		ID			
		Spec Ref			

Mohr Circles



Compression stages

Specimen	1	
Cell pressure	500	kPa
Initial pwp	300	kPa
Initial σ_3'	200	kPa
Rate of strain	0.36	%/hr

Shear Strength Parameters

Linear regression

c'	kPa	0.0
ϕ'	degrees	36.6

Manual re-assessment

c'	kPa	-
ϕ'	degrees	-

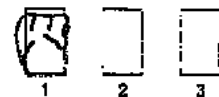
Failure conditions

Criterion	Maximum deviator stress	
Axial strain	2.25	%
$(\sigma_1' - \sigma_3')_f$	589.3	kPa
Volume strain	0.78	%
$\sigma_3'_f$	200	kPa
$\sigma_1'_f$	788	kPa
Time to failure	6.3	hrs

Notes :

Deviator stresses corrected for area change, vertical side drains and 0.45 mm thick rubber membrane(s)

Mode of failure



Ref

SLR8.2
Rev 85
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Figure

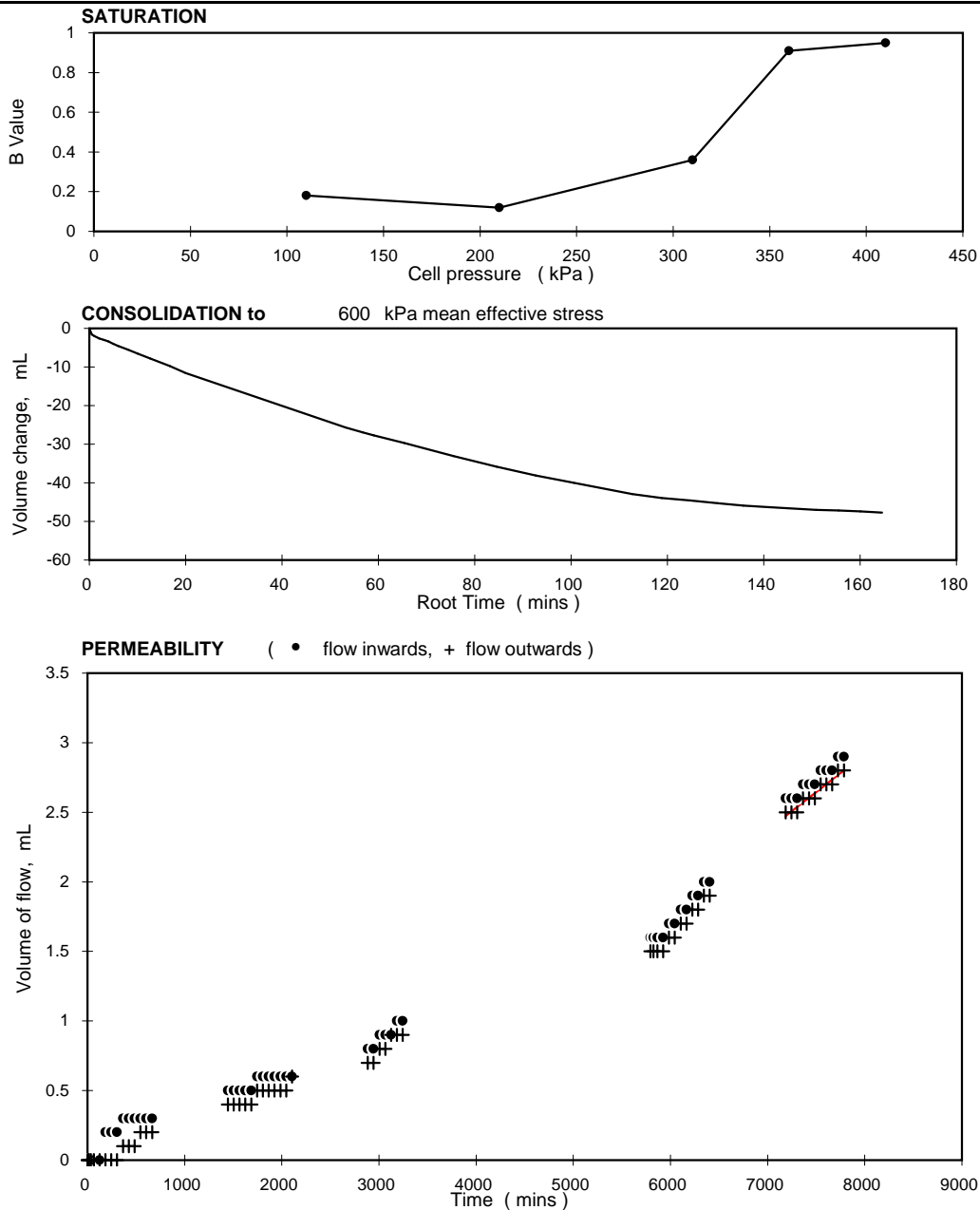
CD 16

sheet 3 of 3

FALLING HEAD PERMEABILITY TEST - SUMMARY OF RESULTS

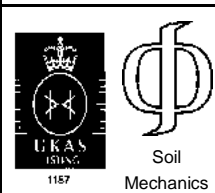
Project No	Project Name								
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE								
Hole No.	Sample				Soil Description	Initial Specimen details		Falling Head Permeability m/s	Remarks Preparation details
	No.	Depth (m)		type		Moisture Content %	Bulk density Mg/m ³		
		from	to						
CBH2009_1UA	31	11.50	11.95	U	Greyish brown SAND with rare shell fragments.	16	1.90	8.3E-05	
CBH2009_1UA	103	40.20	40.65	U	Grey SAND with rare shell fragments.	22	1.97	3.2E-05	
CBH2009_2UA	37	15.00	15.45	U	Dark grey silty SAND with rare shell fragments.	20	1.99	4.4E-05	
CBH2009_2UA	98	40.20	40.65	U	Dark grey silty SAND with rare shell fragments.	19	2.01	1.1E-04	
CBH2009_4U	73	22.65	23.10	U	Greyish brown SAND with rare shell fragments.	17	2.04	8.8E-05	
CBH2009_5UB	73	25.80	26.25	U	Grey SAND with frequent shell fragments.	16	1.97	9.5E-05	
CBH2009_6U	84	29.20	29.65	U	Grey SAND with rare shell fragments.	18	2.16	8.7E-05	
CBH2009_7U	95	32.70	33.15	U	Dark grey silty SAND with rare to frequent shell fragments.	18	2.00	1.0E-04	
CBH2009_8U	97	36.05	36.50	U	Greyish brown SAND with frequent shell fragments.	15	2.05	2.6E-05	
CBH2009_8U	130	74.60	75.22	CS	Stiff dark grey fissured CLAY.	41	1.93	1.5E-09	

Notes : Test Specification :
 In house method IHM 1 based on K.H. Head "Manual of soil laboratory testing" volume 2 section 10
 Permeabilities lower than 1.0E-10 m/s or greater than 1.0E-04 m/s may be outside the appropriate range for this testing method.

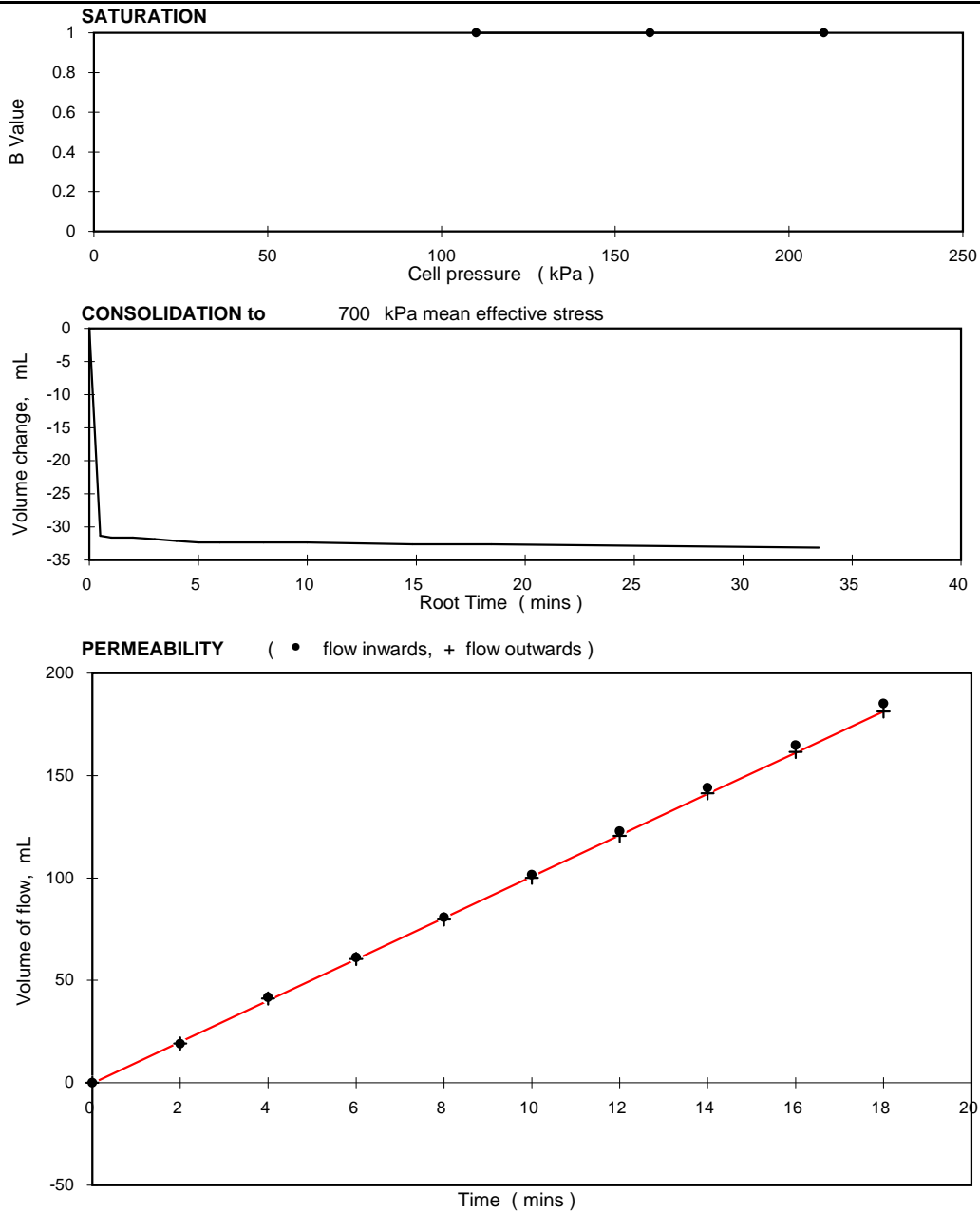


SAMPLE DETAILS			PERMEABILITY STAGE	
Soil description Stiff bronwish grey very thinly laminated CLAY with silt partings on laminae.			Cell Pressure	955 kPa
Diameter	Initial	Final	Top Pressure	295 kPa
	100.57	- mm	Base Pressure	415 kPa
Length	100.50	- mm	Mean Effective Stress	600 kPa
Bulk density	2.06	2.09 Mg/m ³	Differential Pressure	120 kPa
Moisture content	24.2	22.2 %	Mean rate of flow	0.0005 ml/min
Dry Density	1.66	1.71 Mg/m ³	Temperature during test	22 °C
			PERMEABILITY , kv	-12
			(at 20°C)	9.0 x 10 m/s

- Notes :
- 1 UNDISTURBED specimen used.
 - 2 Specimen saturated by incremental back pressure. Final B value =0.95.
 - 3 Differential pressure increased to 120kPa after 5925 minutes due to insufficient flow.

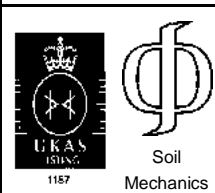


DETERMINATION OF PERMEABILITY IN A TRIAXIAL CELL (BS1377:Part 6, 1990, Test 6 - Constant Head test)		Borehole No. CBH 2009-2
Location		Sample No. CS21
		Depth 61.75-62.15 m
		Loc. No. A0012-10
		Fig.No. TXLP 1

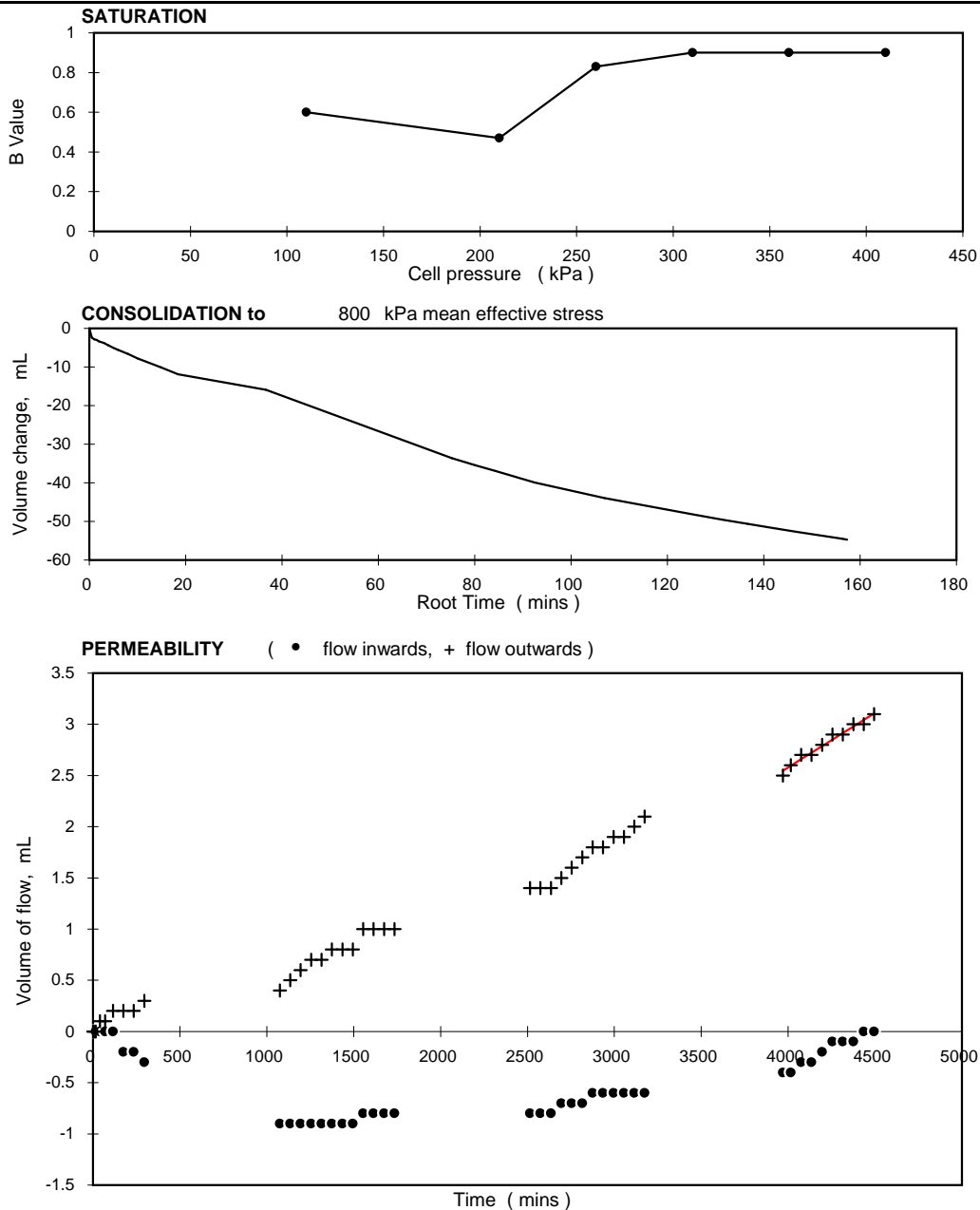


SAMPLE DETAILS				PERMEABILITY STAGE	
Soil description Light greyish brown SAND.				Cell Pressure	1005 kPa
Diameter				Top Pressure	300 kPa
	Initial	Final		Base Pressure	310 kPa
Length	99.81	-	mm	Mean Effective Stress	700 kPa
Bulk density	1.97	2.01	Mg/m ³	Differential Pressure	10 kPa
Moisture content	26.4	23.5	%	Mean rate of flow	10.09 ml/min
Dry Density	1.56	1.63	Mg/m ³	Temperature during test	22 °C
				PERMEABILITY, kv	-6
				(at 20°C)	2.0 x 10 m/s

- Notes :
- UNDISTURBED specimen used.
 - Specimen saturated at constant moisture content. Final B value =1.00.

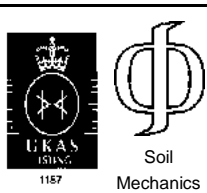


DETERMINATION OF PERMEABILITY IN A TRIAXIAL CELL (BS1377:Part 6, 1990, Test 6 - Constant Head test)		Borehole No. CBH 2009-2
Location		Sample No. CS23
ONSHORE INVESTIGATION PHASE 1 FOR SIZEWELL SITE		Depth 70.90-71.30 m
		Loc. No. A0012-10
		Fig.No. TXLP 2



SAMPLE DETAILS			PERMEABILITY STAGE	
Soil description			Cell Pressure	1155 kPa
Stiff to very stiff brownish grey slightly sandy CLAY.			Top Pressure	295 kPa
	Initial	Final	Base Pressure	415 kPa
Diameter	102.74	- mm	Mean Effective Stress	800 kPa
Length	101.38	- mm	Differential Pressure	120 kPa
Bulk density	1.81	1.82 Mg/m ³	Mean rate of flow	0.0011 ml/min
Moisture content	43.6	39.7 %	Temperature during test	22 °C
Dry Density	1.26	1.30 Mg/m ³	PERMEABILITY, kv	-11
			(at 20°C)	1.7 x 10 m/s

- Notes :
- 1 UNDISTURBED specimen used.
 - 2 Specimen saturated by incremental back pressure. Final B value =0.96.
 - 3 Differential pressure increased to 160kPa after 3970 minutes due to insufficient flow.

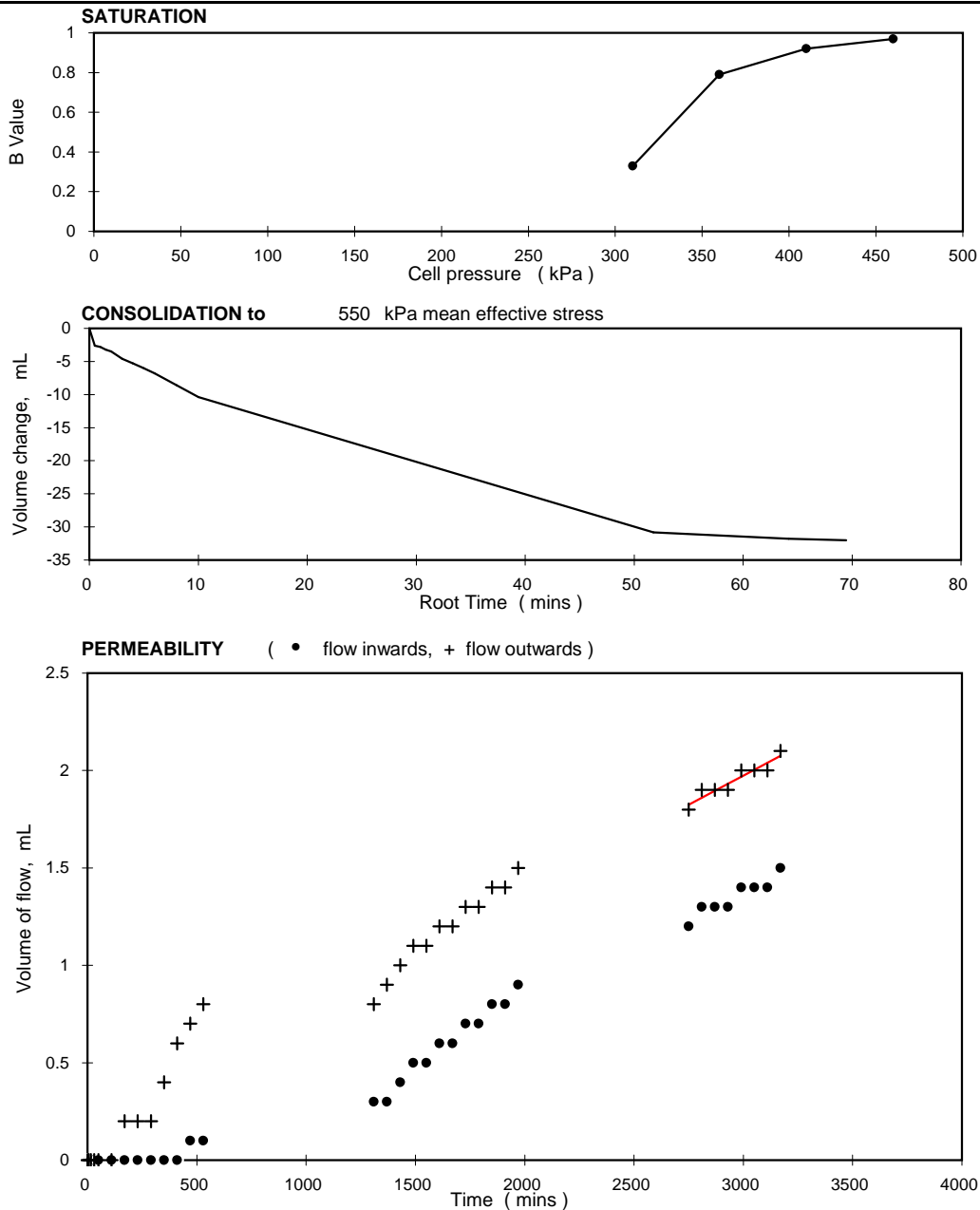


**DETERMINATION OF PERMEABILITY
IN A TRIAXIAL CELL**
(BS1377:Part 6, 1990, Test 6 - Constant Head test)

Location
ONSHORE INVESTIGATION PHASE 1 FOR SIZEWELL SITE

Borehole No. **CBH 2009-8U**
 Sample No. **CS132**
 Depth **81.12-81.60 m**

Loc. No. **A0012-10** Fig.No. **TXLP 4**



CHEMICAL TESTS - SUMMARY OF RESULTS

Project No	Project Name
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE

Hole No.	Sample				Soil Description	Org %	LOI %	pH	Sulphate as SO ₄			SD1 options		CO ₂ %	Chloride, Cl		<2 mm %	Remarks	
	No.	Depth (m)		type					Preparation/test *	2:1 water sol. g/L	ground water g/L	acid sol. %	TS %		Mg NO ₃ mg/L NH ₄	water sol. %			acid sol. %
		from	to																
CBH 2009_1UA	3	1.20	1.65	U	Black brown and grey silty SAND with occasional shell fragments.	0.3											96		
CBH 2009_1UA	15	5.90	6.35	U	Soft to firm brownish grey slightly organic slightly sandy fibrous CLAY.	22.8											100		
CBH 2009_1UA	25	9.40	9.85	U	Greyish black peaty gravelly SAND.	4.6		5.7	1+3	0.56			0.35				97		
CBH 2009_1UA	27	10.10	10.55	U	Grey slightly gravelly SAND with occasional clay pockets.			6.9	1+3	0.24			1.2				97		
CBH 2009_1UA	114	45.10	45.55	U	Soft to firm greyish brown very sandy CLAY with rare shell fragments.			7.6	1+3	0.68			8.1				100		
CBH 2009_2U	7	1.90	2.53	U	Greyish brown slightly clayey gravelly SAND with 1 cobble.	0.3		7.8	1+3	0.13			1.2				82		
CBH 2009_2UA	8	5.00	5.45	U	Firm grey CLAY with organic fibrous clay partings.	18.7											100		
CBH 2009_2UA	12	6.40	6.85	U	Black clayey PEAT.												100	Material out of range for organic test..	
CBH 2009_2UA	51	19.90	20.35	U	Grey and light grey slightly gravelly SAND with occasional shell			7.6	1+3	0.05			0.82				98		
CBH 2009_2UA	69	28.30	28.75	U	Grey SAND with shell fragments.			7.7	1+3	0.07			1.9				97		
CBH 2009_4U	10	3.15	3.60	U	Orangish brown slightly gravelly SAND with occasional shell fragments	0.1											97		
CBH 2009_4U	14	4.45	4.90	U	Orangish brown gravelly SAND.	0.4											89		
CBH 2009_4U	18	5.40	5.85	U	Firm black spongy fibrous PEAT.												100	Material out of range for organic test.	
CBH 2009_5UA	5	1.80	2.25	U	Brownish grey slightly gravelly silty SAND.	0.4											96		
CBH 2009_5UB	5	2.70	3.15	U	Firm to stiff brownish grey slightly sandy very gravelly CLAY with	1.8											92		
CBH 2009_5UB	7	3.40	3.85	U	Brownish grey organic SAND with frequent rootlets.	1.2											97		
CBH 2009_5UB	10	4.10	4.55	U	Soft brownish grey slightly organic slightly sandy CLAY.	6.0		7.2	1+3	1.13			3.3				100		
CBH 2009_5UB	42	14.60	15.05	U	Greyish brown SAND with shell fragments.			7.3	1+3	0.06			1.5				97		
CBH 2009_5UB	103	40.30	40.75	U	Grey SAND with occasional shell fragments.			7.3	1+3	0.31			11				95		

BS 1377 : definitive method unless stated : Org Organic matter content (s-sulphides, c-chlorides identified) LOI Mass loss on ignition at 440°C CO ₂ Carbonate content (rapid titration) Cl Chloride content	* Sulphate tests preparation / test methods : 1. BS 1377:Part 3:1990:clause 5.3 2. BS 1377:Part 3:1990:clause 5.4 3. BS 1377:Part 3:1990:clause 5.5 < 2mm material passing 2mm sieve	BRE Special Digest SD1, dependent options : TS Total Sulphur to BR279 / EN ISO15178 Mg Soluble Magnesium to BR279, colorimetric NO3 Soluble Nitrate to BR279, colorimetric NH ₄ qualitative
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QA Ref		Printed:02/03/2011 13:58	Table CHEM 1
SLR 3 Rev 91 Jan 09			

CHEMICAL TESTS - SUMMARY OF RESULTS

Project No	Project Name
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE

Hole No.	Sample				Soil Description	Org %	LOI %	pH	Sulphate as SO ₄			SD1 options		CO ₂ %	Chloride, Cl		<2 mm %	Remarks	
	No.	Depth (m)		type					Preparation/test *	2:1 water sol. g/L	ground water g/L	acid sol. %	TS %		Mg NO ₃ mg/L NH ₄	water sol. %			acid sol. %
		from	to																
CBH 2009_6U	8	2.60	3.05	U	Greyish brown silty gravelly SAND.	0.1											95		
CBH 2009_6U	10	3.30	3.75	U	Light yellowish brown slightly gravelly SAND with occasional pockets of	0.1											99		
CBH 2009_6U	12	4.00	4.45	U	Yellowish brown silty SAND.			7.0	1+3	0.20			0.18				99		
CBH 2009_6U	20	6.80	7.25	U	Firm brownish grey clayey fibrous PEAT.	22.0											100		
CBH 2009_6U	22	7.50	7.95	U	Dark brown and dark grey peaty CLAY with abundant plant remains.	27.3											100		
CBH 2009_6U	69	23.60	24.05	U	Grey SAND with occasional silt pockets and shell fragments.			7.1	1+3	0.13			1.7				93		
CBH 2009_7U	10	3.30	3.75	U	Greyish brown slightly organic slightly gravelly SAND with rare rootlets.	0.3											98		
CBH 2009_7U	16	5.40	5.85	U	Greyish brown slightly gravelly SAND with occasional clay pockets	0.3											95		
CBH 2009_7U	24	8.20	8.65	U	Firm pseudo fibrous PEAT.	27.7											100		
CBH 2009_7U	99	34.10	34.55	U	Grey SAND with occasional shell fragments.			7.5	1+3	0.16			4				96		
CBH 2009_8U	4	2.80	3.25	U	Light brownish grey slightly gravelly SAND.	0.1											87		
CBH 2009_8U	9	6.20	6.65	U	Soft to firm greyish brown slightly organic CLAY with occasional rootlets.	8.2											100		
CBH 2009_8U	10	6.65	7.10	U	Soft grey slightly organic slightly sandy CLAY with occasional rootlets.	6.0		6.7	1+3	2.26			1.8				100		
CBH 2009_8U	17	8.20	8.65	U	Soft to firm grey slightly sandy CLAY.	3.3											100		
CBH 2009_8U	21	9.35	9.80	U	Soft grey slightly organic CLAY.	5.2											100		
CBH 2009_8U	25	10.55	11.00	U	Soft to firm greyish brown slightly organic CLAY.	9.2											100		
CBH 2009_8U	27	11.10	11.55	U	Soft to firm dark grey slightly sandy organic CLAY with rare plant	5.2											100		
CBH 2009_8U	33	12.75	13.20	U	Brownish grey slightly organic SAND.	0.4											100		
CBH 2009_8U	35	13.00	13.45	U	Light grey slightly organic SAND.	1.1											100		

BS 1377 : definitive method unless stated :	* Sulphate tests preparation / test methods :	BRE Special Digest SD1, dependent options :
Org Organic matter content (s-sulphides, c-chlorides identified)	1. BS 1377:Part 3:1990:clause 5.3	TS Total Sulphur to BR279 / EN ISO15178
LOI Mass loss on ignition at 440°C	2. BS 1377:Part 3:1990:clause 5.4	Mg Soluble Magnesium to BR279, colorimetric
CO ₂ Carbonate content (rapid titration)	3. BS 1377:Part 3:1990:clause 5.5	NO ₃ Soluble Nitrate to BR279, colorimetric
Cl Chloride content	4. TRL447 - 1 water soluble sulphate	NH ₄ qualitative
	5. TRL447 - 2 acid soluble sulphate	
	6. BR279 - groundwater sulphate	
	< 2mm material passing 2mm sieve	

QA Ref		Printed:02/03/2011 13:58	Table CHEM 2
SLR 3 Rev 91 Jan 09			

CHEMICAL TESTS - SUMMARY OF RESULTS

Project No	Project Name
A0012-10	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE

Hole No.	Sample				Soil Description	Org %	LOI %	pH	Sulphate as SO ₄			SD1 options		CO ₂ %	Chloride, Cl		<2 mm %	Remarks	
	No.	Depth (m)		type					Preparation/test *	2:1 water sol. g/L	ground water g/L	acid sol. %	TS %		Mg NO ₃ NH ₄ mg/L	water sol. %			acid sol. %
		from	to																
CBH 2009_8U	113	43.55	44.00	U	Grey SAND with shell fragments.			7.0	1+3	0.26				8.2			91		
CBH 2009_8U	128	67.41	67.69	CS	Brownish grey clayey SAND.			8.4	1+3	0.30				2.1			100		
CBH 2009_8U	131	78.05	78.50	CS	Stiff brownish grey slightly sandy CLAY.			8.3	1+3	0.41				2.1			100		
CBH 2009_9U	44	14.15	14.60	U	Light brown SAND with shell fragments.			6.9	1+3	0.04				1.2			94		
CBH 2009_9U	130	54.55	55.00	U	Firm to stiff grey silty CLAY.			6.7	1+3	1.27				3			100		
CBH 2009_10	20	50.45	50.90	CS	Very stiff brownish grey slightly sandy CLAY.			7.0	1+3	2.04				2.1			100		

BS 1377 : definitive method unless stated : Org Organic matter content (s-sulphides, c-chlorides identified) LOI Mass loss on ignition at 440°C CO ₂ Carbonate content (rapid titration) Cl Chloride content	* Sulphate tests preparation / test methods : 1. BS 1377:Part 3:1990:clause 5.3 2. BS 1377:Part 3:1990:clause 5.4 3. BS 1377:Part 3:1990:clause 5.5 < 2mm material passing 2mm sieve	BRE Special Digest SD1, dependent options : TS Total Sulphur to BR279 / EN ISO15178 Mg Soluble Magnesium to BR279, colorimetric NO3 Soluble Nitrate to BR279, colorimetric NH ₄ qualitative
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QA Ref		Printed:02/03/2011 13:58	Table CHEM 3
SLR 3 Rev 91 Jan 09			

Methylene Blue Value Results



Soil Mechanics

Hole ID	Sample No	Sample Type	Sample Top Depth	Sample Base Depth	Methylene blue value, g/kg
CBH 2009_1	9	CS	47.10	47.50	87.95
CBH 2009_1	15	CS	68.75	69.20	49.67
CBH 2009_1	18	CS	84.35	84.75	108.55
CBH 2009_1UA	15	U	5.90	6.35	31.46
CBH 2009_1UA	25	U	9.40	9.85	31.46
CBH 2009_1UA	114	U	45.10	45.55	78.69
CBH 2009_1UA	118	U	46.50	46.95	70.49
CBH 2009_2	16	CS	49.75	50.15	79.47
CBH 2009_2	18	CS	54.80	55.20	59.2
CBH 2009_2	20	CS	58.50	58.90	24.27
CBH 2009_2	21	CS	61.75	62.15	31.46
CBH 2009_2	22	CS	65.10	65.50	2.68
CBH 2009_2	23	CS	70.90	71.30	1.69
CBH 2009_2	24	CS	74.00	74.40	69.08
CBH 2009_2	25	CS	77.10	77.50	99.34
CBH 2009_2	26	CS	80.20	80.60	88.52
CBH 2009_2UA	8	U	5.00	5.45	40.13
CBH 2009_4	8	CS	44.15	44.50	65.79
CBH 2009_4	11	CS	48.00	48.20	31.46
CBH 2009_4	13	CS	53.50	53.90	74.26
CBH 2009_5	14	CS	49.70	50.10	76.16
CBH 2009_5UB	10	U	4.10	4.55	44.56
CBH 2009_6	12	CS	52.70	53.09	72.37
CBH 2009_6U	20	U	6.80	7.25	39.87
CBH 2009_7	15	CS	48.40	48.80	74.75
CBH 2009_7	16	CS	51.60	51.95	71.2
CBH 2009_7U	24	U	8.20	8.65	19
CBH 2009_8U	10	U	6.65	7.10	39.47
CBH 2009_8U	17	U	8.20	8.65	36.07
CBH 2009_8U	27	U	11.10	11.55	45.9
CBH 2009_8U	33	U	12.75	13.20	2.49
CBH 2009_8U	122	CS	51.36	51.56	70.49
CBH 2009_8U	123	CS	51.69	51.81	10.69
CBH 2009_8U	125	CS	58.23	58.72	57.95
CBH 2009_8U	128	CS	67.41	67.69	8.5
CBH 2009_8U	129	CS	72.00	72.10	23.33
CBH 2009_8U	130	CS	74.60	75.22	103.33
CBH 2009_8U	131	CS	78.05	78.50	116.13
CBH 2009_8U	132	CS	81.12	81.60	65.36
CBH 2009_8U	133	CS	84.12	84.60	81.97

Notes:

Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE
Project No. A0012-10
Carried out for NNB Generation Company Limited

Table

1

ANALYTICAL SERVICES LABORATORY

University of Greenwich
School of Science
Central Avenue, Chatham Maritime
Kent ME4 4TB



DOCUMENT:	asl/work/49b
DOCUMENT TITLE:	TEST REPORT
ISSUE DATE:	28 MAY 08
ISSUE NO.:	01
ISSUED BY:	DSW

Customer:
Environmental Scientifics Group
ESG House, Bretby Business Park, Ashby Road, Burton Upon Trent, DE15
0YZ.

Report Number:
ESG11-001
Page 1 of 3

COVER SHEET

Material	Date received:	Project No.
Natural materials (10): chalks, sands, clays	Date of test:	Q11003
Analysis required	Test method(s) / procedure(s) used	
Mineral identification and quantification	XRD	

Abnormalities or departures from standard conditions
None

Additional information

Report released by: Print Name: Dr Ian Slipper

Position:

Report Issue Date:

ANALYTICAL SERVICES LABORATORY

University of Greenwich
School of Science
Central Avenue, Chatham Maritime
Kent ME4 4TB



DOCUMENT:	asl/work/49b
DOCUMENT TITLE:	TEST REPORT
ISSUE DATE:	28 MAY 08
ISSUE NO.:	01
ISSUED BY:	DSW

Customer:
Environmental Scientifics Group
ESG House, Bretby Business Park, Ashby Road, Burton Upon Trent, DE15
0YZ.

Report Number:
ESG11-001
Page 2 of 3

ANALYTICAL RESULTS

Instrumentation

All samples were analyzed on a Bruker AXS D8 Advance X-ray diffractometer using 2.2kW Cu anode X-ray tube producing Cu K alpha radiation at 40kV and 40mA. A Goebel mirror was used to produce a parallel beam of X-rays and remove Cu K beta radiation. A fast position sensitive LynxEye detector was used with a 3 degree opening, Lynx Iris at 6.5mm and a counting time of 0.4 seconds per 0.02 degree step. A knife edge was used to remove high backgrounds at low 2-theta values. All samples were rotated at 15 rev/min for increased homogeneity and peak resolution.

Sample Preparation

Subsamples were taken for clay separation (<2µm fraction) by centrifugation and oriented tile preparation.

Four sample preparations were used to determine the clay species: 1) air dried, 2) glycolated (overnight at 60°C in a desiccator containing ethylene glycol, 3) heated to 400°C for 4 hours, 4) heated to 550°C for 4 hours. Each oriented clay tile preparation was run from 2-40 degrees 2-theta with a 0.6mm exit slit.

Subsamples were taken were for random powder whole rock preparation. Oven dried at 60°C, crushed, subsampled, and finely ground before placing into specimen holders.

Random powder whole rock samples were run from 2-70 degrees 2-theta with a 0.2mm exit slit.

Interpretation

Qualitative interpretation was carried out Bruker AXS EVA v.16 software and the ICDD (International Centre for Diffraction Data) PDF-2 (Powder Diffraction File) release 2008 database. Quantitative assessment of random powder whole rock samples was carried out using Bruker AXS Topas v.4 software, a Rietveld refinement method. Semi-Quantitative assessment of the <2µm clay fraction was carried out using a modified version of the USGS (United States Geological Survey) Open File Report 01-041 method of integrating areas under the glycolated curve.

Results

Whole rock diffractograms with qualitative interpretations are given in Appendix A. Where necessary an increased scaling is given in a separate diffractogram to show smaller peaks.

Clay fraction oriented mount diffractograms are given in Appendix B with interpretive annotations.

ANALYTICAL SERVICES LABORATORY

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DOCUMENT:	asl/work/49b
DOCUMENT TITLE:	TEST REPORT
ISSUE DATE:	28 MAY 08
ISSUE NO.:	01
ISSUED BY:	DSW

Customer:
Environmental Scientifics Group
ESG House, Bretby Business Park, Ashby Road, Burton Upon Trent, DE15
0YZ.

Report Number:
ESG11-001
Page 3 of 3

A quantitative assessment of the <2um clay fraction proportions is given in Appendix C.

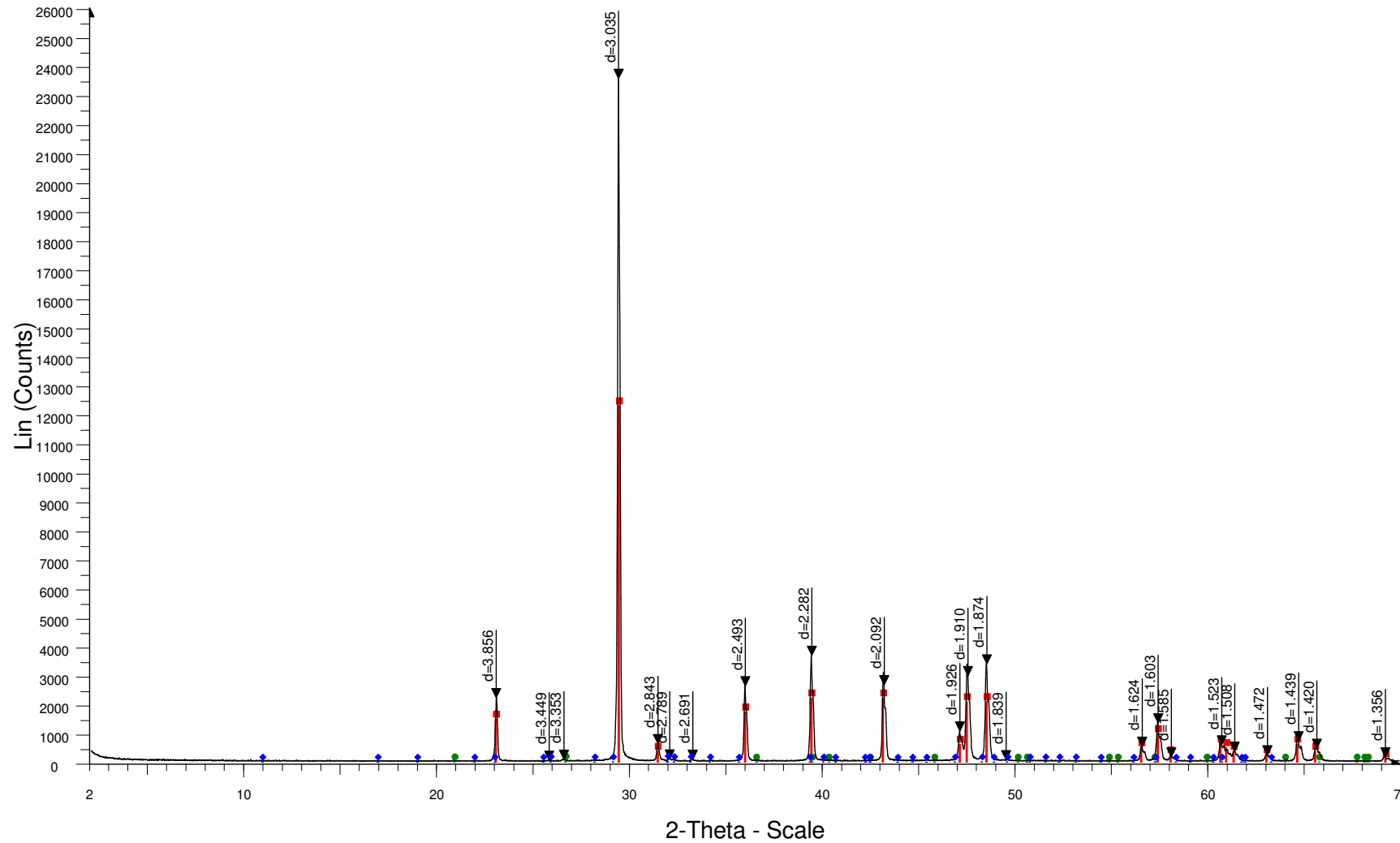
A quantitative table is given in Appendix D that combines the Rietveld analysis of all phases identified together with the clay proportion data.

Attached:

- Appendix - A-whole rock qualitative.doc
- Appendix - B-oriented Clay fraction.doc
- Appendix - C-clay fraction quantitative.doc
- Appendix - D-synoptic data table.doc

End of Report

CBM2009-2 CS29 93.35-93.65 whole rock

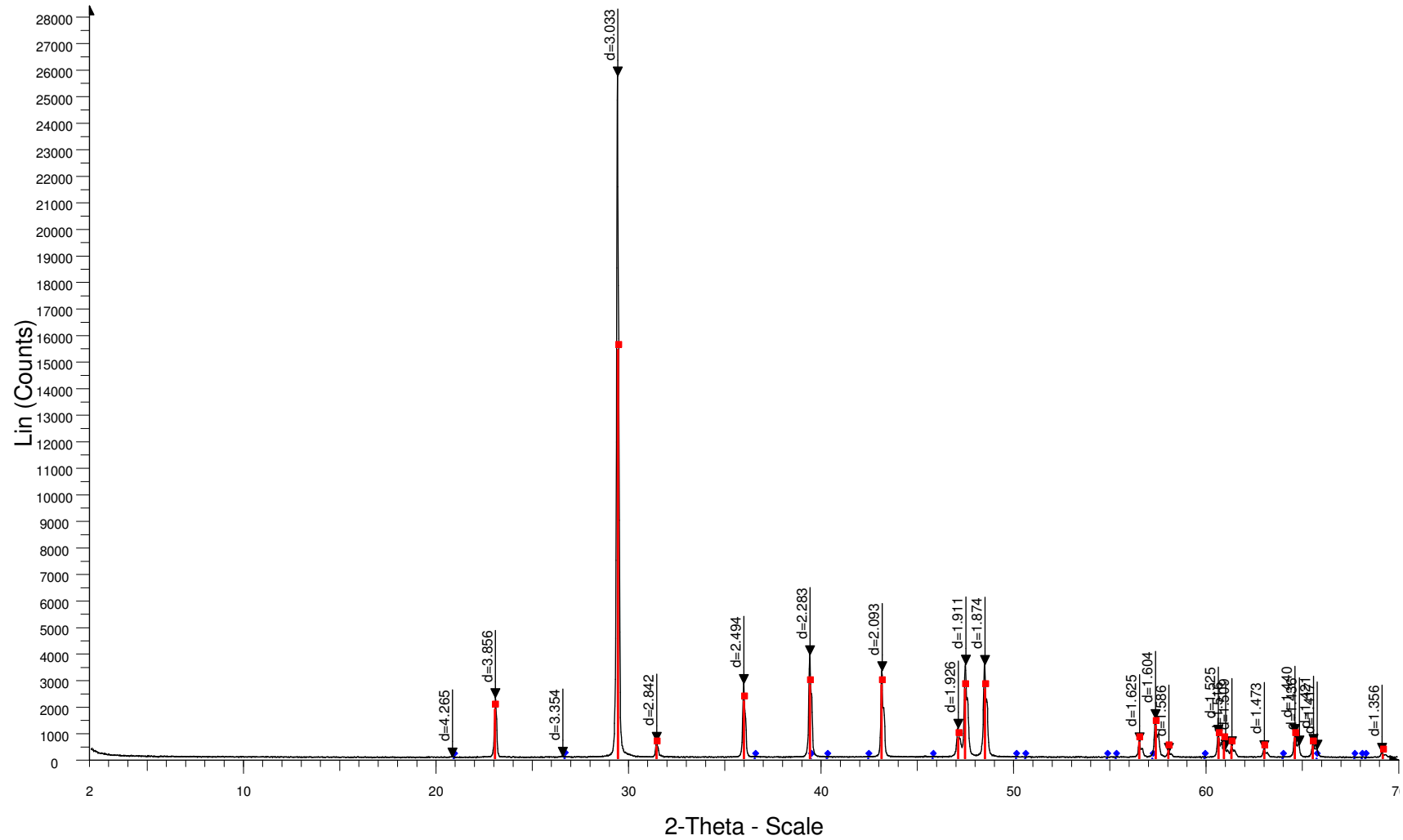


P11 014 11 0255 wr - Step: 0.02 ° - Step time: 70.4 s

Operations: Import

- Calcite, syn - CaCO₃ - Rhombo.H.axes - a 4.98900 - b 4.98900 - c 17.06200 - alpha 90.000 - beta 90.000 - gamma 120.000
- ◆ Fluorapatite, syn - Ca₅(PO₄)₃F - Hexagonal - a 9.36840 - b 9.36840 - c 6.88410 - alpha 90.000 - beta 90.000 - gamma 120.000
- Quartz, syn - SiO₂ - Hexagonal - a 4.91344 - b 4.91344 - c 5.40524 - alpha 90.000 - beta 90.000 - gamma 120.000

CBM2009-2 CS34 110.50-110.90 whole rock



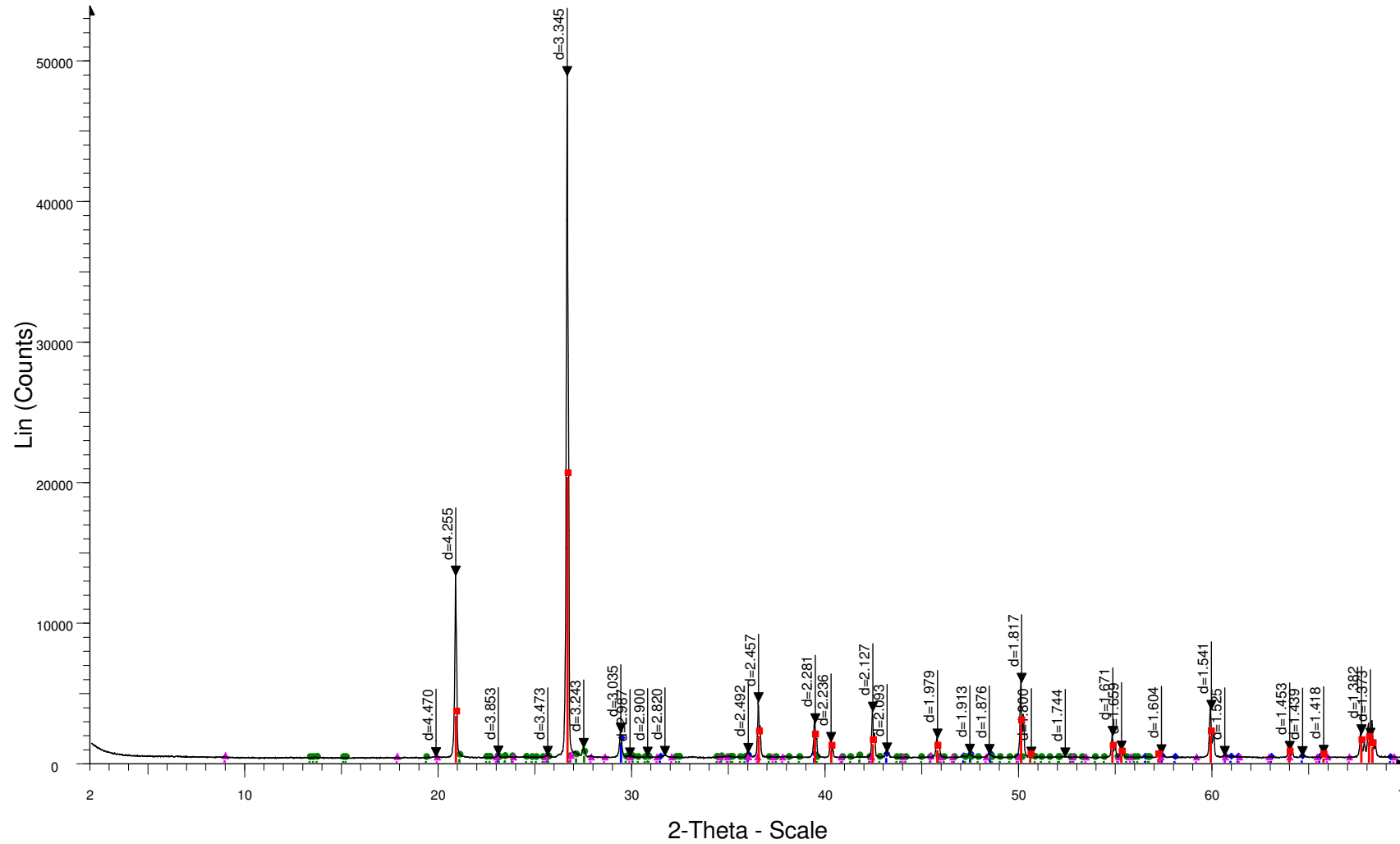
P11 014 11 0256 wr - Step: 0.02 ° - Step time: 70.4 s

Operations: Import

■ Calcite, syn - CaCO₃ - Rhombo.H.axes - a 4.98900 - b 4.98900 - c 17.06200 - alpha 90.000 - beta 90.000 - gamma 120.000

◆ Quartz, syn - SiO₂ - Hexagonal - a 4.91344 - b 4.91344 - c 5.40524 - alpha 90.000 - beta 90.000 - gamma 120.000

CBH2009-5UB U5 2.70-3.15

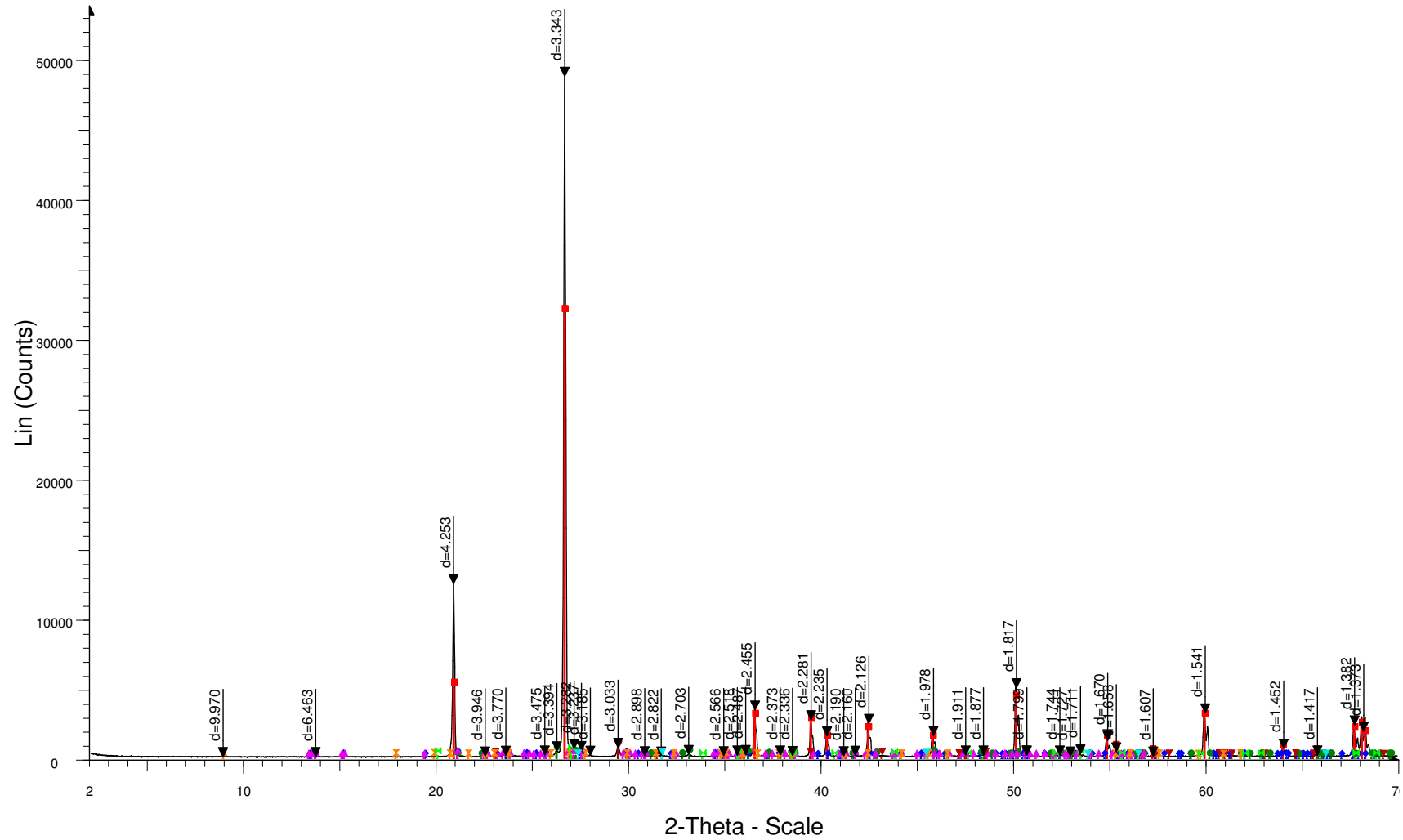


P11 014 11 0257 wr - Step: 0.02 ° - Step time: 70.4 s

Operations: Import

- Quartz, syn - SiO₂ - Hexagonal - a 4.91344 - b 4.91344 - c 5.40524 - alpha 90.000 - beta 90.000 - gamma 120.000
- ◆ Calcite, syn - CaCO₃ - Rhombo.H.axes - a 4.98900 - b 4.98900 - c 17.06200 - alpha 90.000 - beta 90.000 - gamma 120.000
- Microcline, intermediate - KAlSi₃O₈ - Triclinic - a 8.56000 - b 12.97000 - c 7.21000 - alpha 90.300 - beta 116.100 - gamma 89.000
- ▲ Muscovite-2M1 - KAl₂(Si,Al)₄O₁₀(OH)₂ - Monoclinic - a 5.20260 - b 9.04180 - c 20.05890 - alpha 90.000 - beta 95.831 - gamma 90.000

CBH2009-2UA U51 19.9-20.35



▲ P11 014 11 0258 wr - Step: 0.02 ° - Step time: 70.4 s

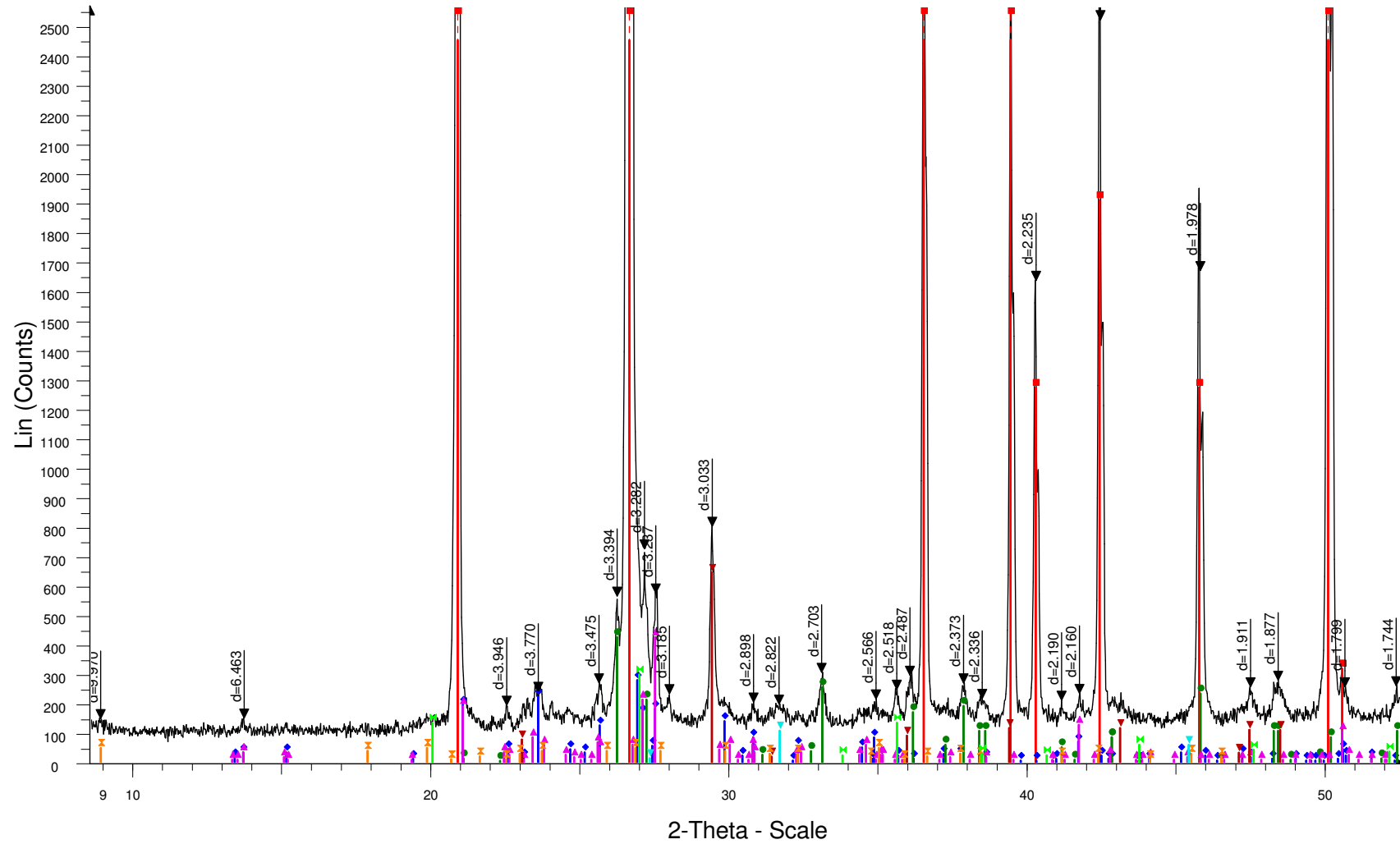
Operations: Import

- Quartz, syn - SiO₂ - Hexagonal - a 4.91344 - b 4.91344 - c 5.40524 - alpha 90.000 - beta 90.000 - gamma 120.000
- ◆ Orthoclase - KAlSi₃O₈ - Monoclinic - a 8.55600 - b 12.98000 - c 7.20500 - alpha 90.000 - beta 110.000 - gamma 90.000
- Aragonite - CaCO₃ - Orthorhombic - a 4.96230 - b 7.96800 - c 5.74390 - alpha 90.000 - beta 90.000 - gamma 90.000
- ▲ Microcline, intermediate - KAlSi₃O₈ - Triclinic - a 8.56000 - b 12.97000 - c 7.21000 - alpha 90.300 - beta 105.000 - gamma 105.000
- ▼ Calcite, syn - CaCO₃ - Rhombo.H.axes - a 4.98900 - b 4.98900 - c 17.06200 - alpha 90.000 - beta 90.000 - gamma 120.000
- ⊠ Illite - KAl₂Si₃AlO₁₀(OH)₂ - Monoclinic - a 5.18000 - b 9.02000 - c 20.04000 - alpha 90.000 - beta 105.000 - gamma 90.000

■ Zircon - ZrSiO₄ - Tetragonal - a 6.60400 - b 6.60400 - c 5.97900 - alpha 90.000 - beta 90.000 - gamma 90.000

▼ Halite, syn - NaCl - Cubic - a 5.64020 - b 5.64020 - c 5.64020 - alpha 90.000 - beta 90.000 - gamma 90.000

CBH2009-2UA U51 19.9-20.35

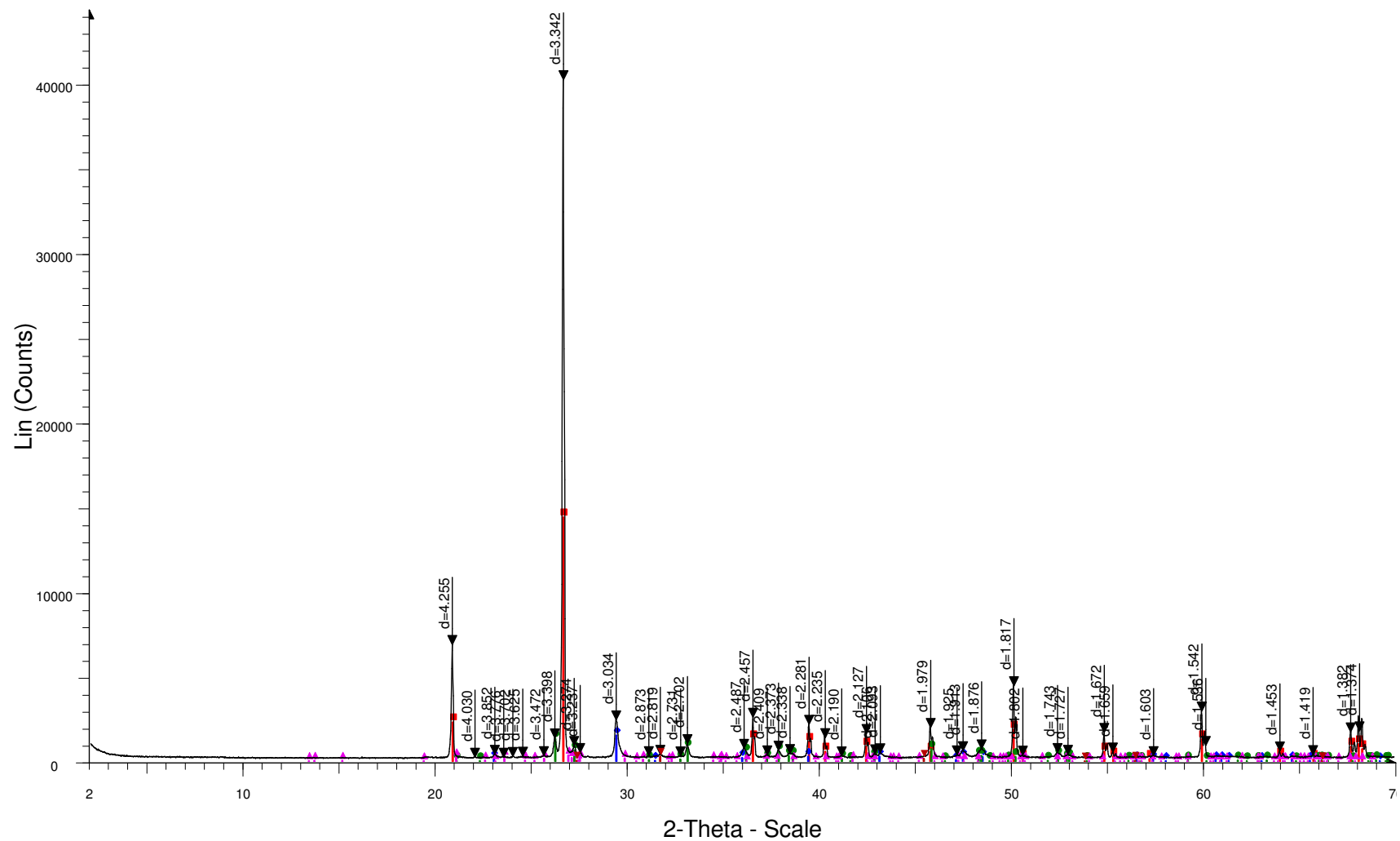


P11 014 11 0258 wr - Step: 0.02 ° - Step time: 70.4 s
 Operations: Import

- Quartz, syn - SiO₂ - Hexagonal - a 4.91344 - b 4.91344 - c 5.40524 - alpha 90.000 - beta 90.000 -
- Orthoclase - KAlSi₃O₈ - Monoclinic - a 8.55600 - b 12.98000 - c 7.20500 - alpha 90.000 - beta 11
- Aragonite - CaCO₃ - Orthorhombic - a 4.96230 - b 7.96800 - c 5.74390 - alpha 90.000 - beta 90.0
- Microcline, intermediate - KAlSi₃O₈ - Triclinic - a 8.56000 - b 12.97000 - c 7.21000 - alpha 90.300
- Calcite, syn - CaCO₃ - Rhombo.H.axes - a 4.98900 - b 4.98900 - c 17.06200 - alpha 90.000 - beta
- Illite - KAl₂Si₃AlO₁₀(OH)₂ - Monoclinic - a 5.18000 - b 9.02000 - c 20.04000 - alpha 90.000 - beta

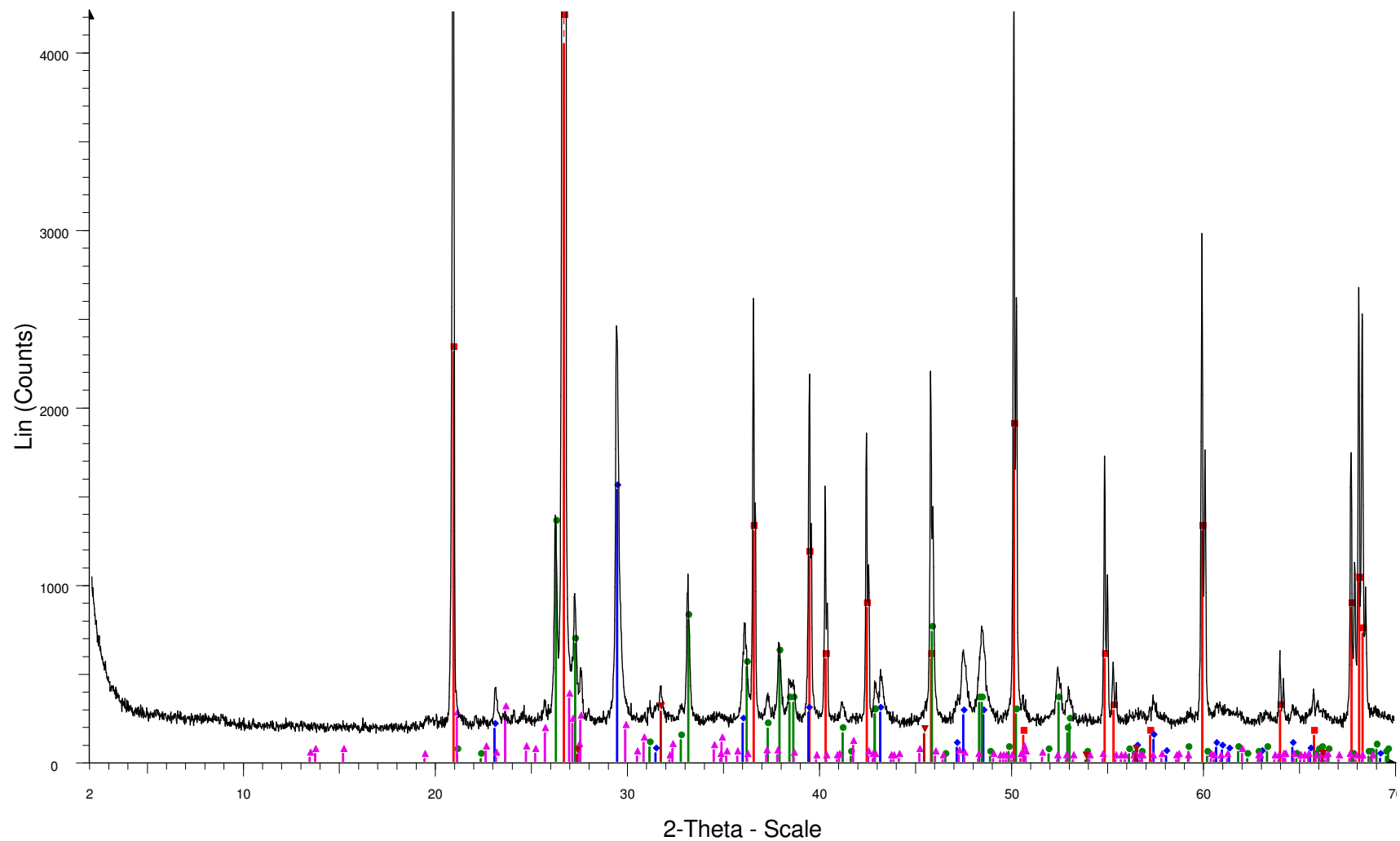
- Zircon - ZrSiO₄ - Tetragonal - a 6.60400 - b 6.60400 - c 5.97900 - alpha 90.000 - beta 90.000 - ga
- Halite, syn - NaCl - Cubic - a 5.64020 - b 5.64020 - c 5.64020 - alpha 90.000 - beta 90.000 - gam

CBH2009-7U U99 34.1-34.55



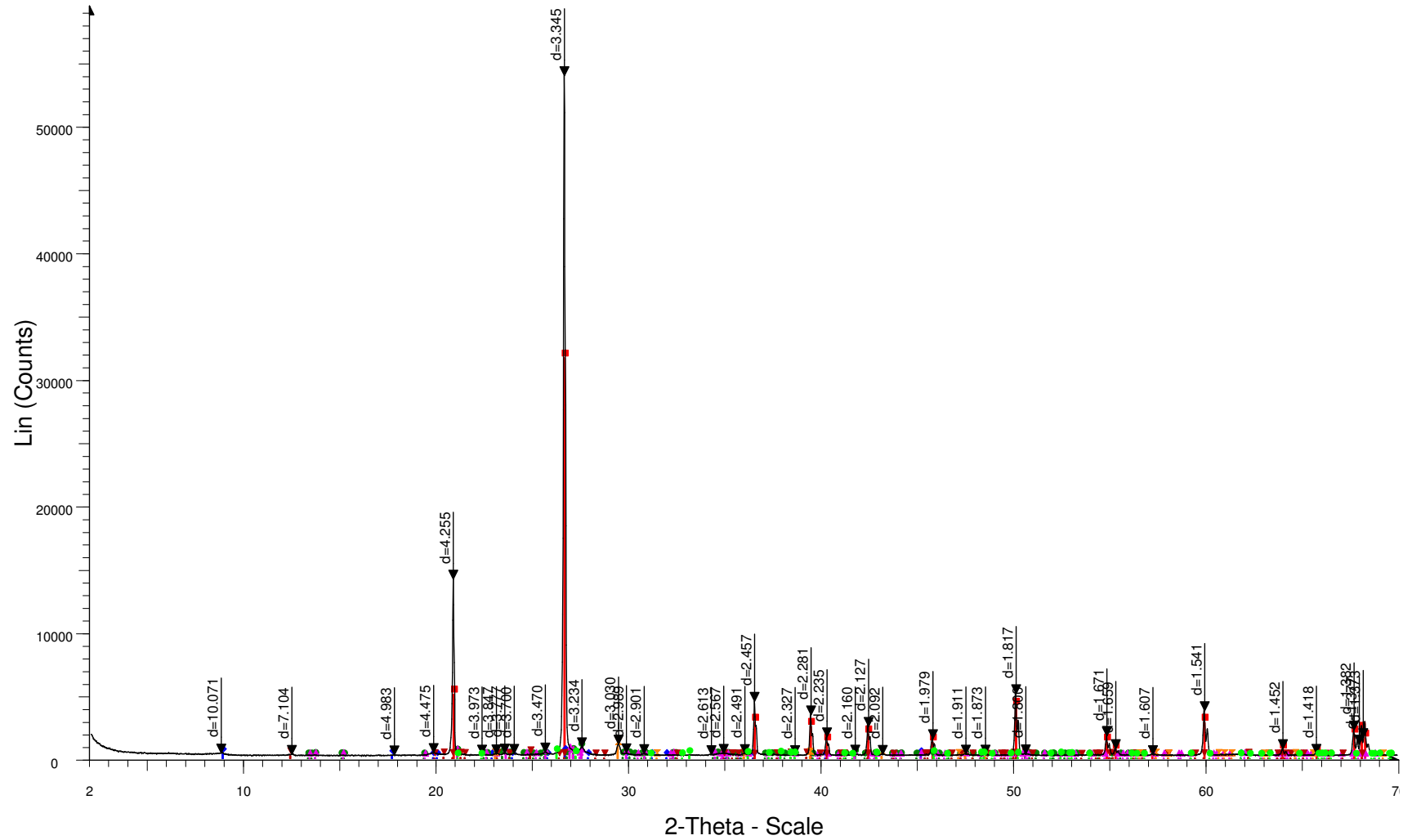
- ▲ P11 014 11 0259 wr - Step: 0.02 ° - Step time: 70.4 s
■ Quartz, syn - SiO₂ - Hexagonal
◆ Calcite, syn - CaCO₃ - Rhombo.H.axes
● Aragonite - CaCO₃ - Orthorhombic
▲ Orthoclase - KAISi₃O₈ - Monoclinic
▼ Halite, syn - NaCl - Cubic

CBH2009-7U U99 34.1-34.55



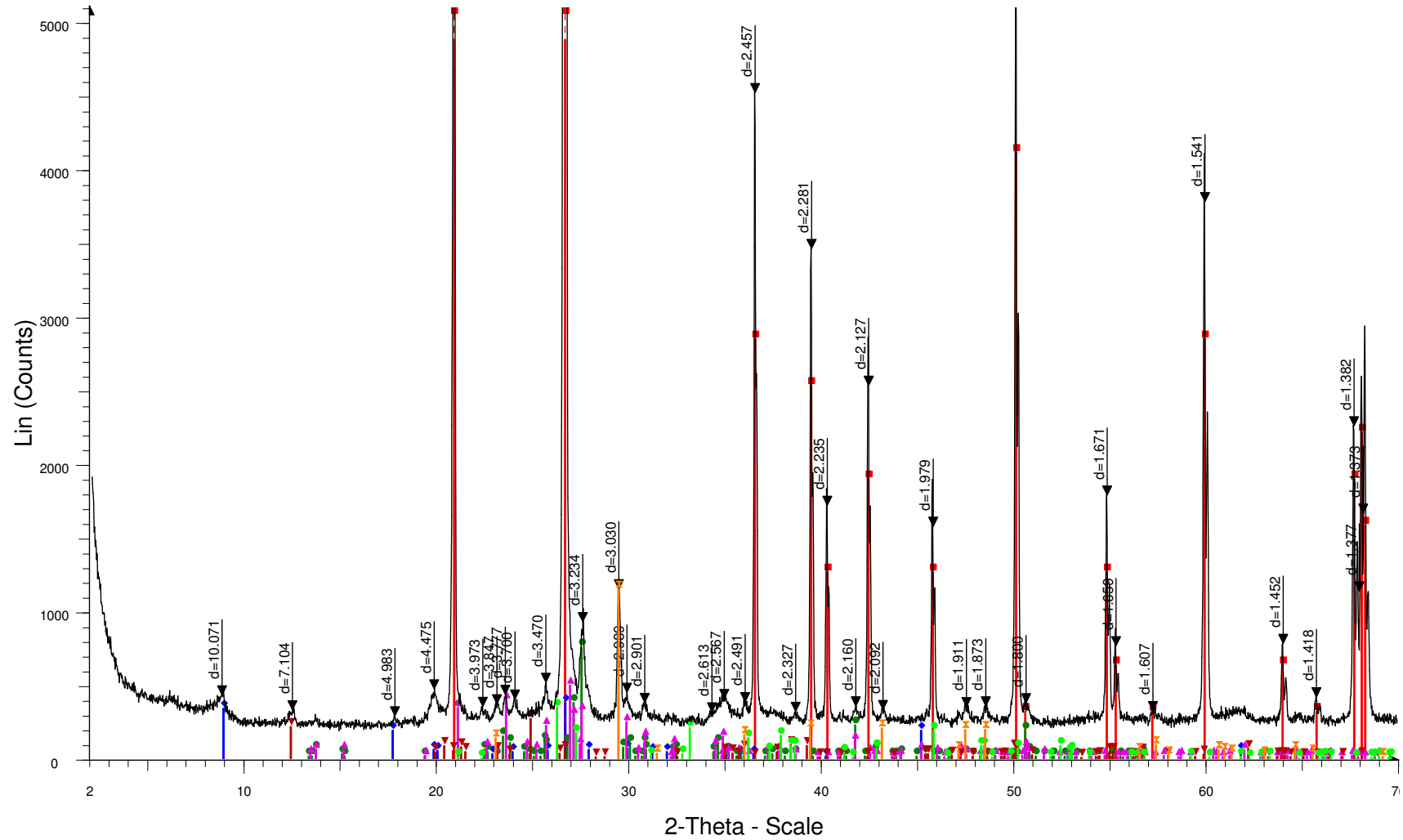
- ▮ P11 014 11 0259 wr - Step: 0.02 ° - Step time: 70.4 s
- ▣ Quartz, syn - SiO₂ - Hexagonal
- ▤ Calcite, syn - CaCO₃ - Rhombo.H.axes
- Aragonite - CaCO₃ - Orthorhombic
- ▴ Orthoclase - KAISi₃O₈ - Monoclinic
- ▾ Halite, syn - NaCl - Cubic

CBH2009-8U CS128 67.41-67.69



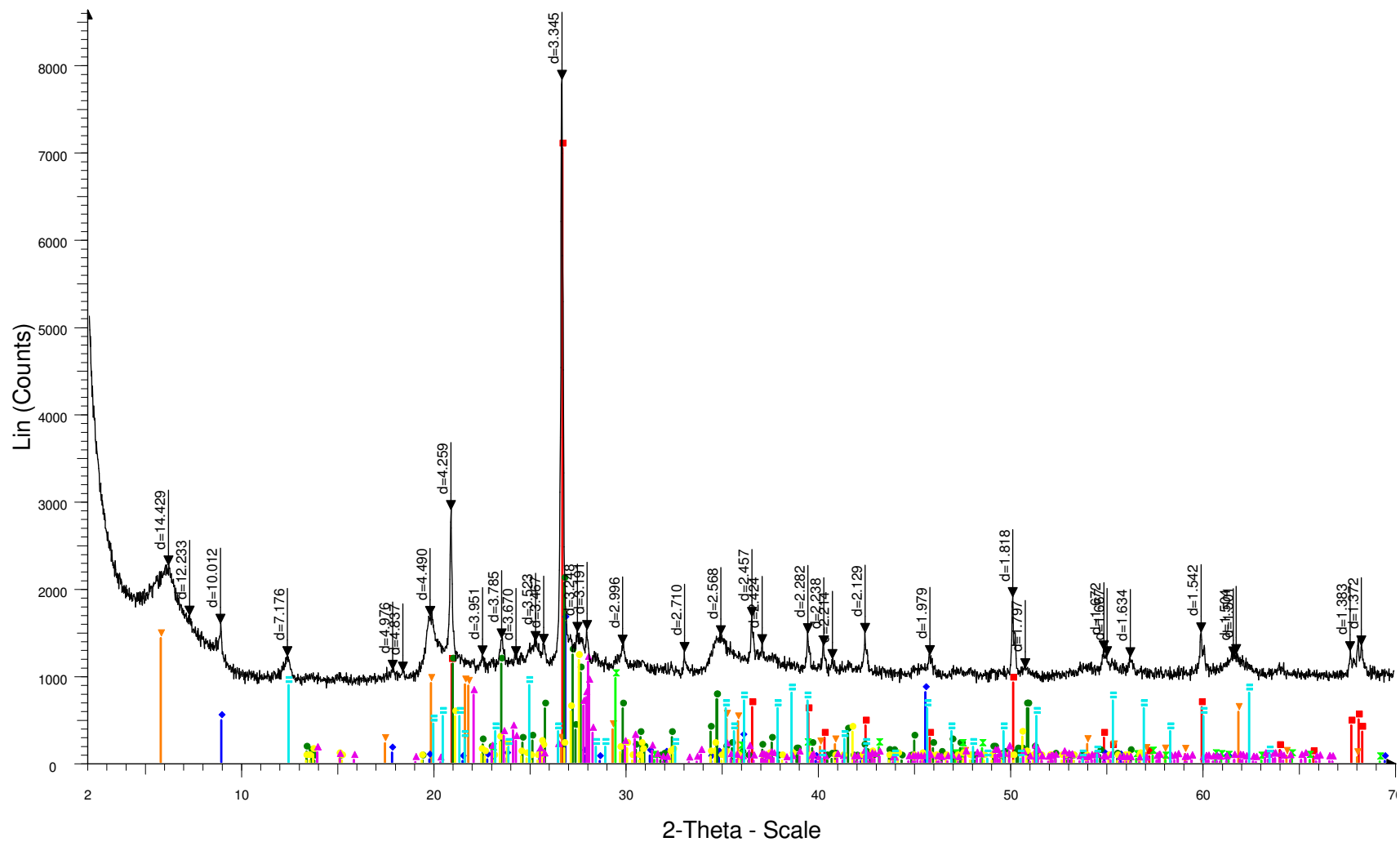
- ▲ P11 014 11 0260 wr - Step: 0.02 ° - Step time: 70.4 s
- Quartz, syn - SiO₂ - Hexagonal
- ◆ Illite-2M1 (NR) - (K,H₃O)Al₂Si₃AlO₁₀(OH)₂ - Monoclinic
- Microcline, intermediate - KAlSi₃O₈ - Triclinic
- ▲ Orthoclase - KAlSi₃O₈ - Monoclinic
- ▼ Kaolinite-1A - Al₂Si₂O₅(OH)₄ - Triclinic
- ⊠ Calcite, syn - CaCO₃ - Rhombo.H.axes
- Araconite - CaCO₃ - Orthorhombic

CBH2009-8U CS128 67.41-67.69



- ▲ P11 014 11 0260 wr - Step: 0.02 ° - Step time: 70.4 s
- Quartz, syn - SiO₂ - Hexagonal
- ◆ Illite-2M1 (NR) - (K,H₃O)Al₂Si₃AlO₁₀(OH)₂ - Monoclinic
- Microcline, intermediate - KAISi₃O₈ - Triclinic
- ▲ Orthoclase - KAISi₃O₈ - Monoclinic
- ▼ Kaolinite-1A - Al₂Si₂O₅(OH)₄ - Triclinic
- ⊠ Calcite, syn - CaCO₃ - Rhombo.H.axes
- Araconite - CaCO₃ - Orthorhombic

CBH2009-11U U128 56.10-56.50



▲ P11 014 11 0261 wr - Step: 0.02 ° - Step time: 70.4 s

■ Quartz, syn - SiO₂ - Hexagonal

▼ Montmorillonite, calcian - (Ca,Na)_{0.3}Al₂(Si,Al)₄O₁₀(OH)₂·xH₂O - Monoclinic

◆ Muscovite-2M1, vanadian barian - (K,Ba,Na)_{0.75}(Al,Mg,Cr,V)₂(Si,Al,V)₄O₁₀(OH)₂ - Monoclinic

□ Kaolinite - Al₂Si₂O₅(OH)₄ - Triclinic

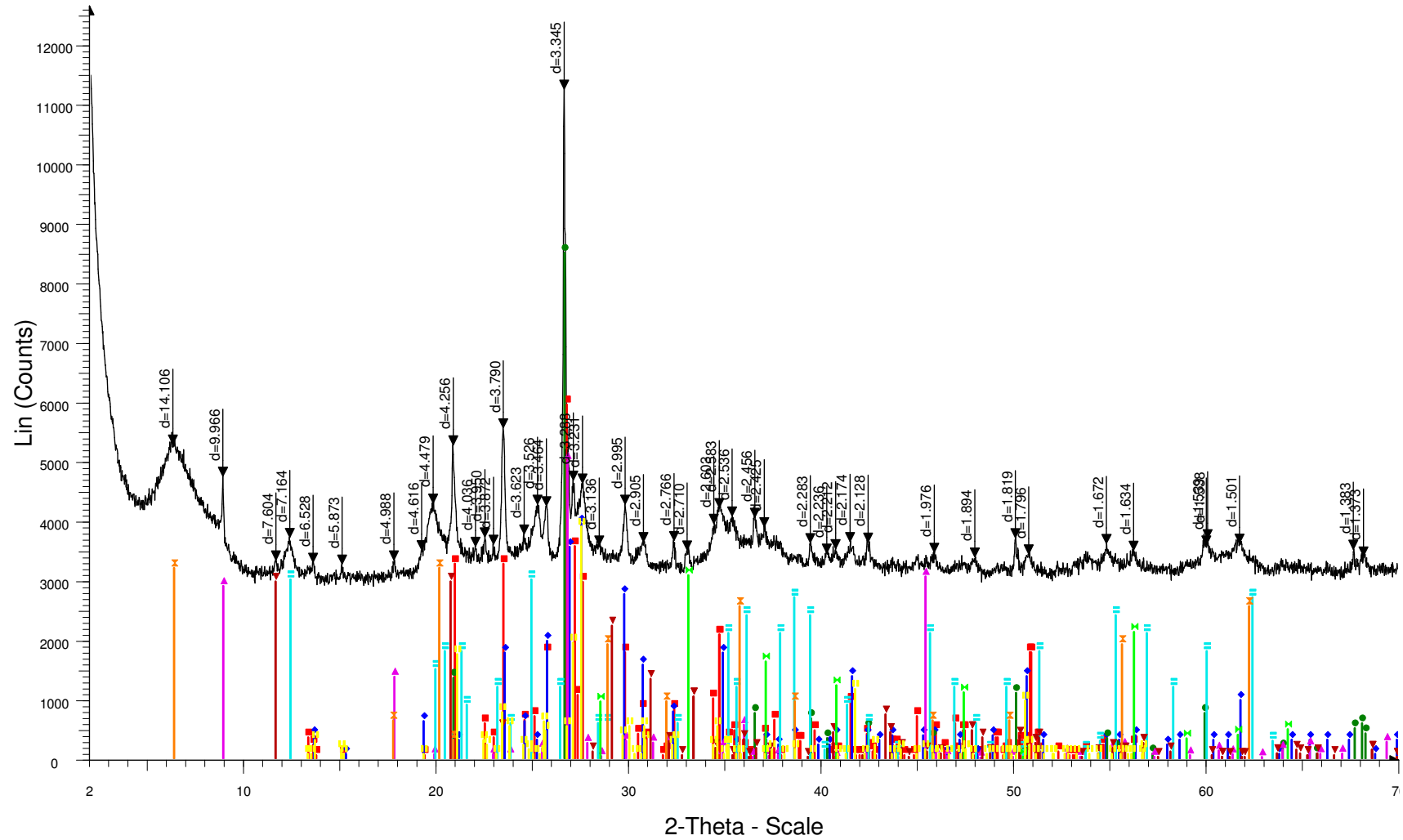
● Sanidine, disordered - K(Si₃Al)O₈ - Monoclinic

⊠ Calcite, syn - CaCO₃ - Rhombo.H.axes

● Microcline, intermediate - KAIS₃O₈ - Triclinic

▲ Albite, calcian - (Na_{0.84}Ca_{0.16})Al_{1.16}Si_{2.84}O₈ - Triclinic

CBH2009-8U CS121 48.77-49.32



P11 014 11 0262 wr - 1sec - Step: 0.02 ° - Step time: 176. s

Sanidine, disordered - $K(Si_3Al)O_8$ - Monoclinic

Orthoclase, barian - $(K,Ba,Na)(Si,Al)_4O_8$ - Monoclinic

Quartz, syn - SiO_2 - Hexagonal

Muscovite-2M1 - $KAl_2(Si,Al)_4O_{10}(OH)_2$ - Monoclinic

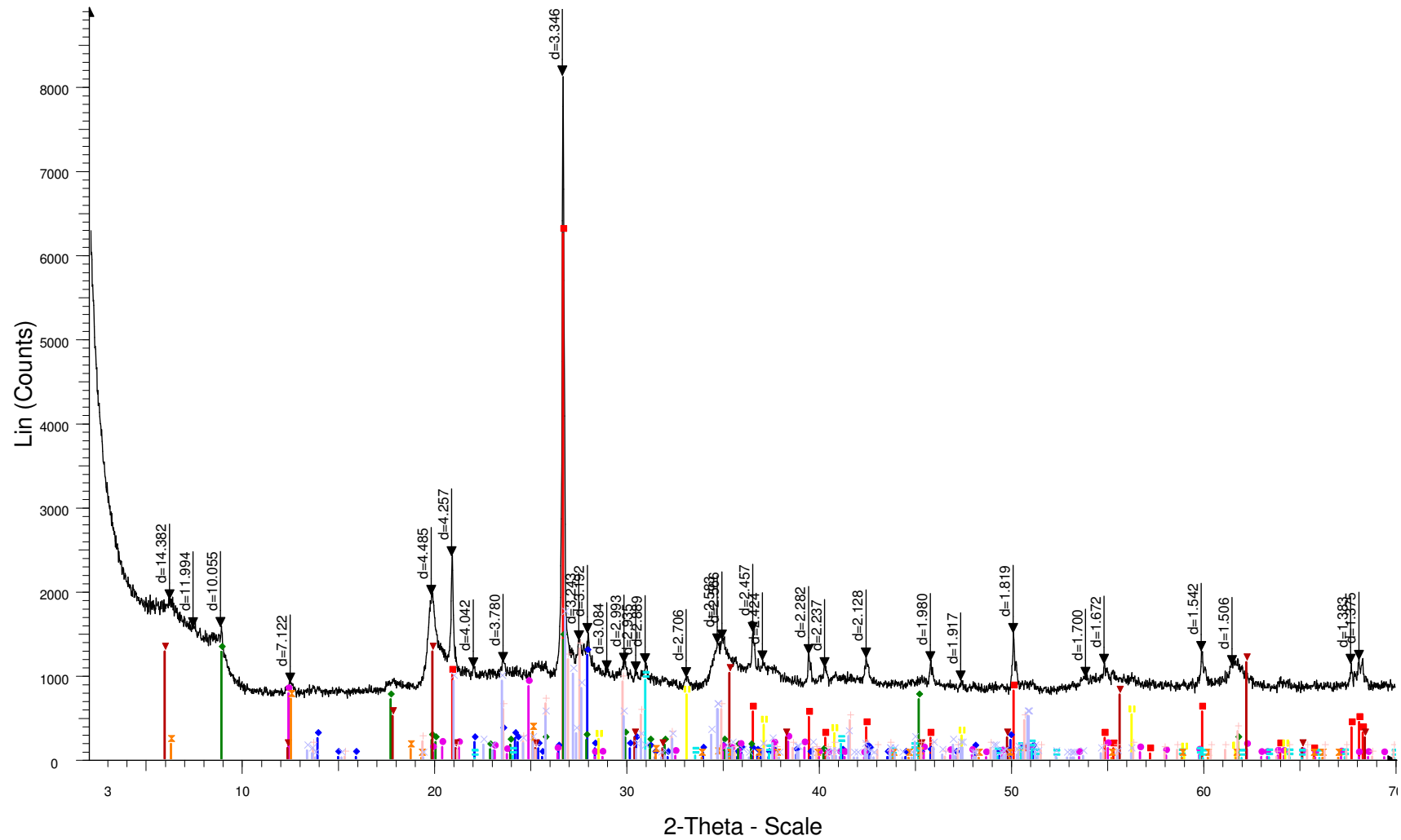
Kaolinite - $Al_2Si_2O_5(OH)_4$ - Triclinic

Montmorillonite, syn - $Al_2O_3 \cdot 4SiO_2 \cdot xH_2O$ -

Gypsum, syn - $CaSO_4 \cdot 2H_2O$ - Monoclinic

Pyrite - FeS_2 - Cubic

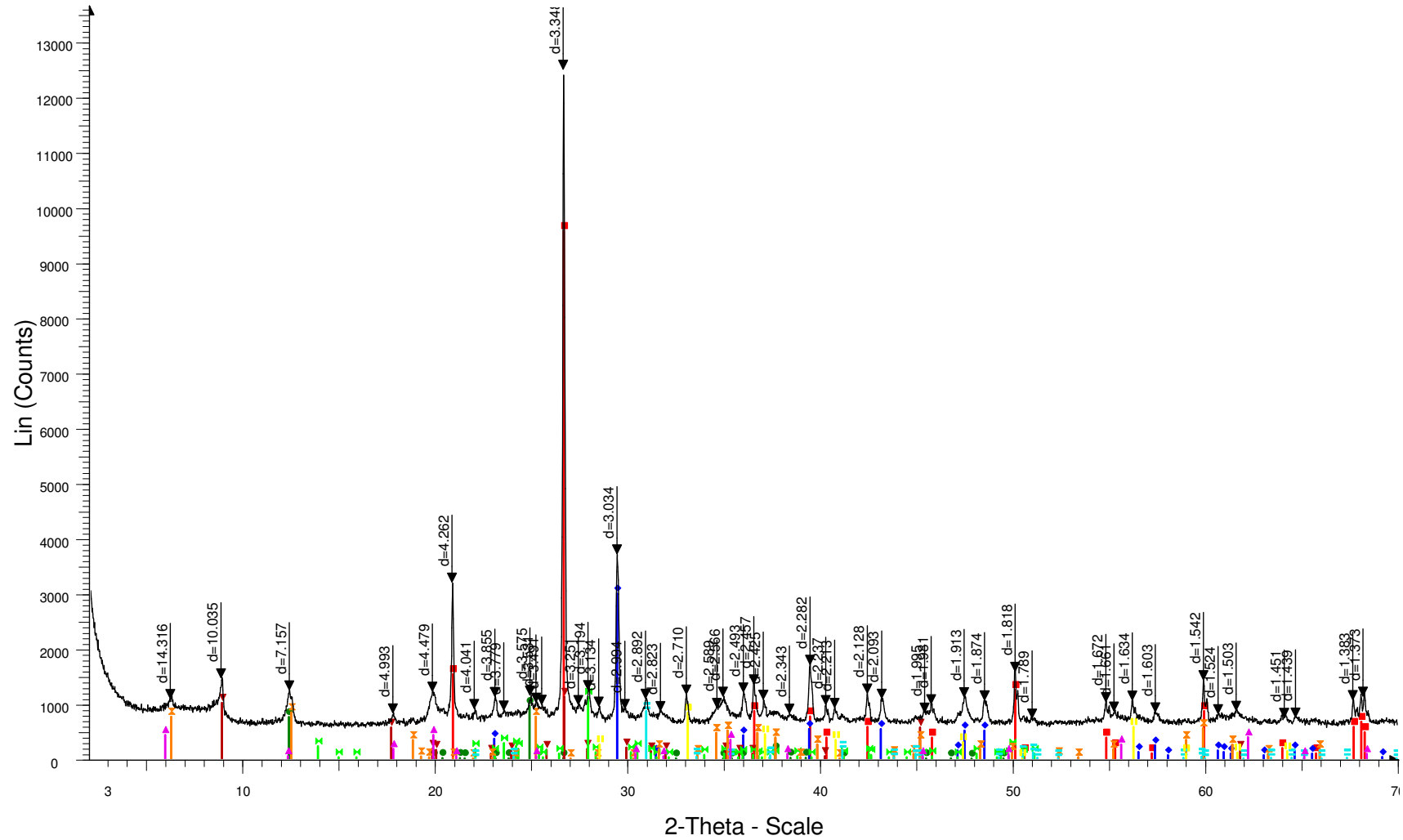
Microcline, intermediate - $KAlSi_3O_8$ - Triclinic



▲ P11 014 11 0263 wr - Step: 0.02 ° - Step time: 70.4 s
 ■ Quartz, syn - SiO₂ - Hexagonal
 ◆ Albite, ordered - NaAlSi₃O₈ - Triclinic
 ◆ Illite-2M1 (NR) - (K,H₃O)Al₂Si₃AlO₁₀(OH)₂ - Monoclinic
 ◆ Kaolinite-1A - Al₂Si₂O₅(OH)₄ - Triclinic
 ▼ Montmorillonite - MgO·Al₂O₃·5SiO₂·xH₂O -
 ■ Pyrite - FeS₂ - Cubic
 ■ Dolomite - CaMg(CO₃)₂ - Rhombo.H.axes

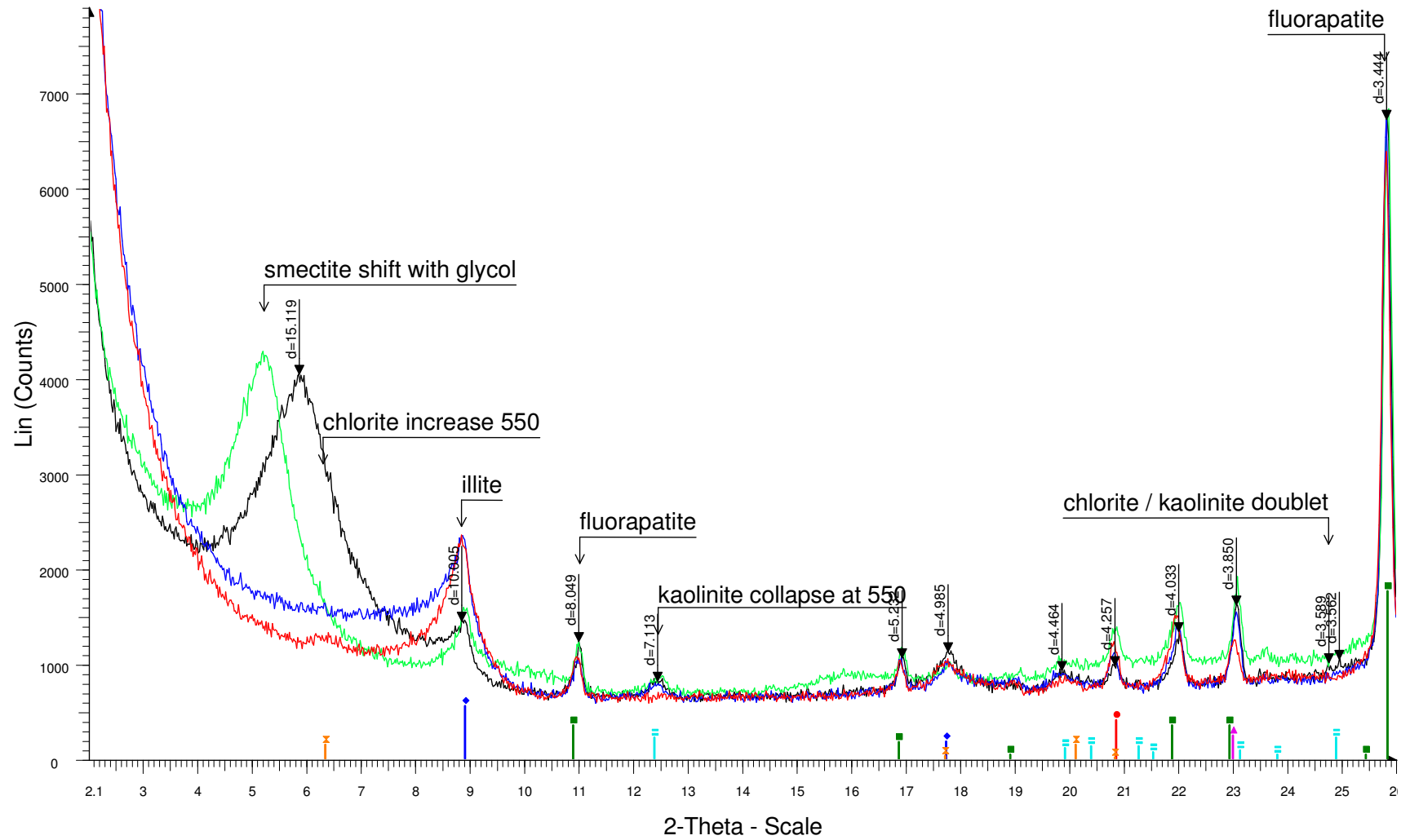
■ Nimitite-1MIIb - (Ni,Mg,Al)₆(Si,Al)₄O₁₀(OH)₈ - Monoclinic
 ■ Orthoclase, barian - (K,Ba,Na)(Si,Al)₄O₈ - Monoclinic
 ■ Sanidine, disordered - K(Si₃Al)O₈ - Monoclinic

CBH2009-U8 U17 8.20-8.65



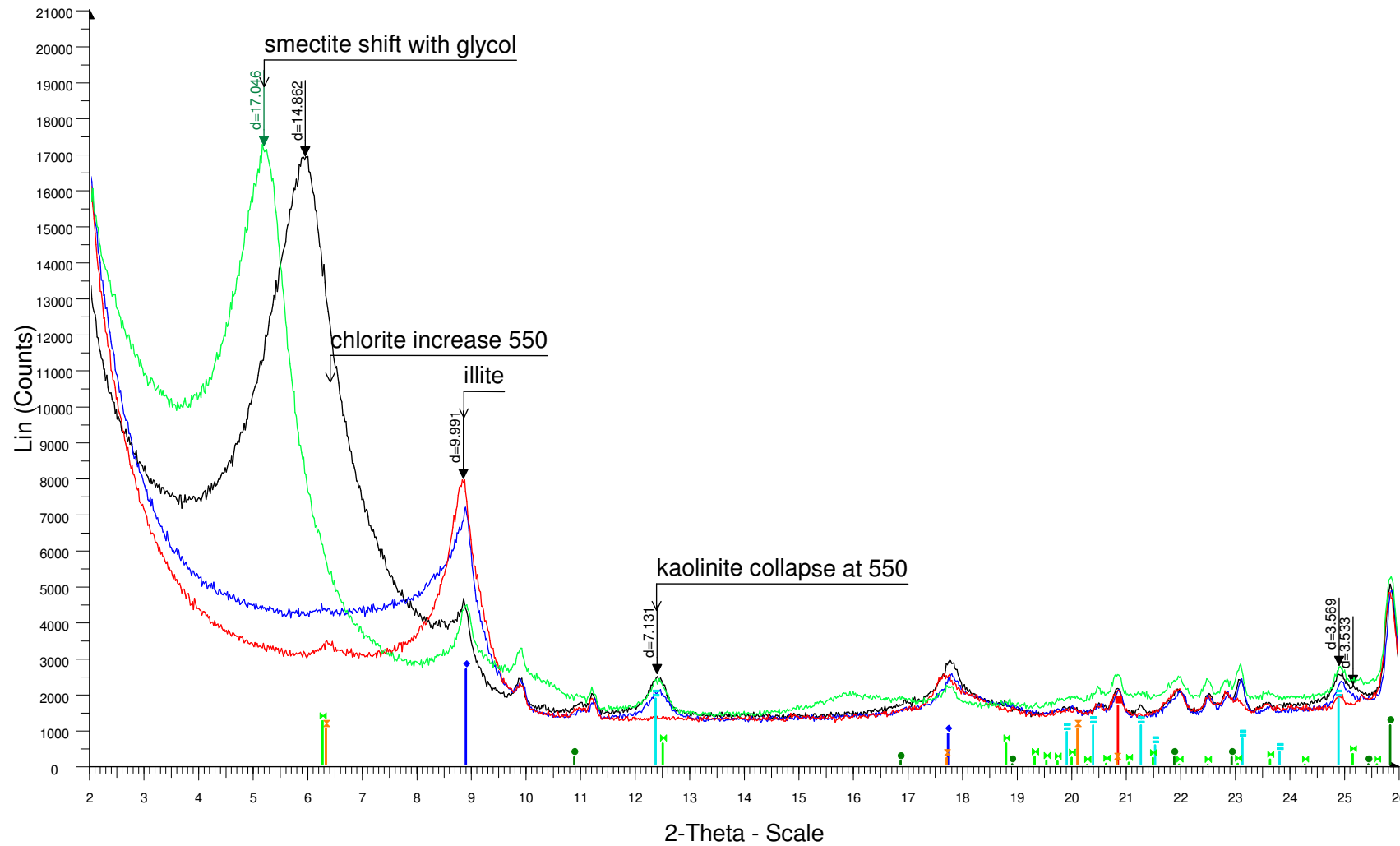
- ▲ P11 014 11 0264 wr - Step: 0.02 ° - Step time: 70.4 s
■ Quartz, syn - SiO₂ - Hexagonal
◆ Calcite, syn - CaCO₃ - Rhombo.H.axes
● Kaolinite-1A - Al₂Si₂O₅(OH)₄ - Triclinic
▼ Illite-2M1 (NR) - (K,H₃O)Al₂Si₃AlO₁₀(OH)₂ - Monoclinic
× Albite, ordered - NaAlSi₃O₈ - Triclinic
□ Clinocllore-1MIIb - (Mg,Al,Fe)₆(Si,Al)₄O₁₀(OH)₈ - Monoclinic
□ Dolomite - CaMg(CO₃)₂ - Rhombo.H.axes
■ Pyrite - FeS₂ - Cubic
▲ Montmorillonite - MgO·Al₂O₃·5SiO₂·xH₂O -

CBM2009-2 CS29 93.35-93.65



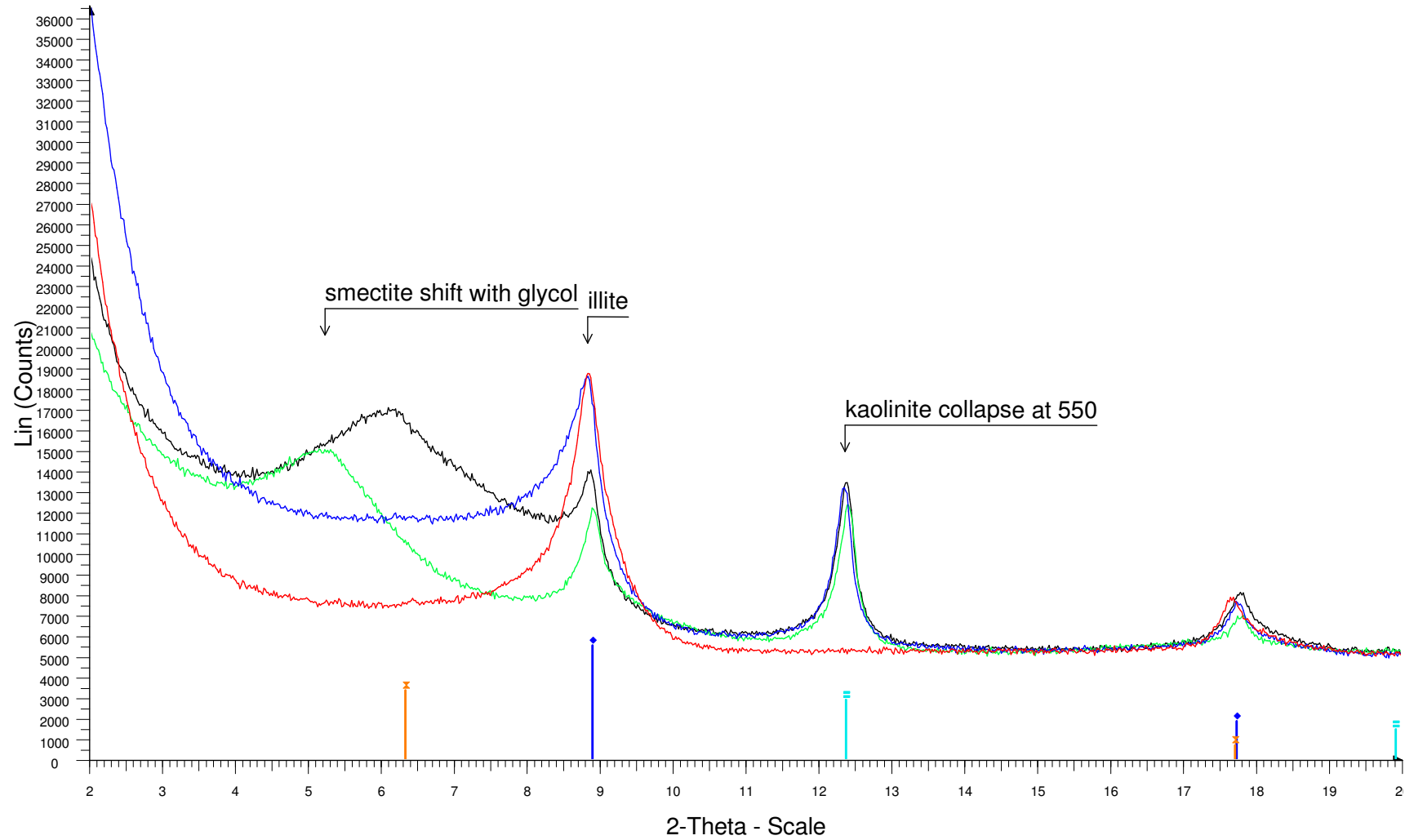
- ▲ 0255A - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0255 gly - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0255 400 - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0255 550 - Step: 0.02 ° - Step time: 70.4 s
- ◆ Illite-2M2, glycolated - (K,H3)Al2(Si3Al)O10(OH)2·xH2O - Monoclinic
- Quartz, syn - SiO2 - Hexagonal
- ▲ Calcite, syn - CaCO3 - Rhombo.H.axes
- Fluorapatite, syn - Ca5(PO4)3F - Hexagonal
- × Montmorillonite, syn - Al2O3·4SiO2·xH2O -
- Kaolinite - Al2Si2O5(OH)4 - Triclinic

CBM2009-2 CS34 110.50-110.90



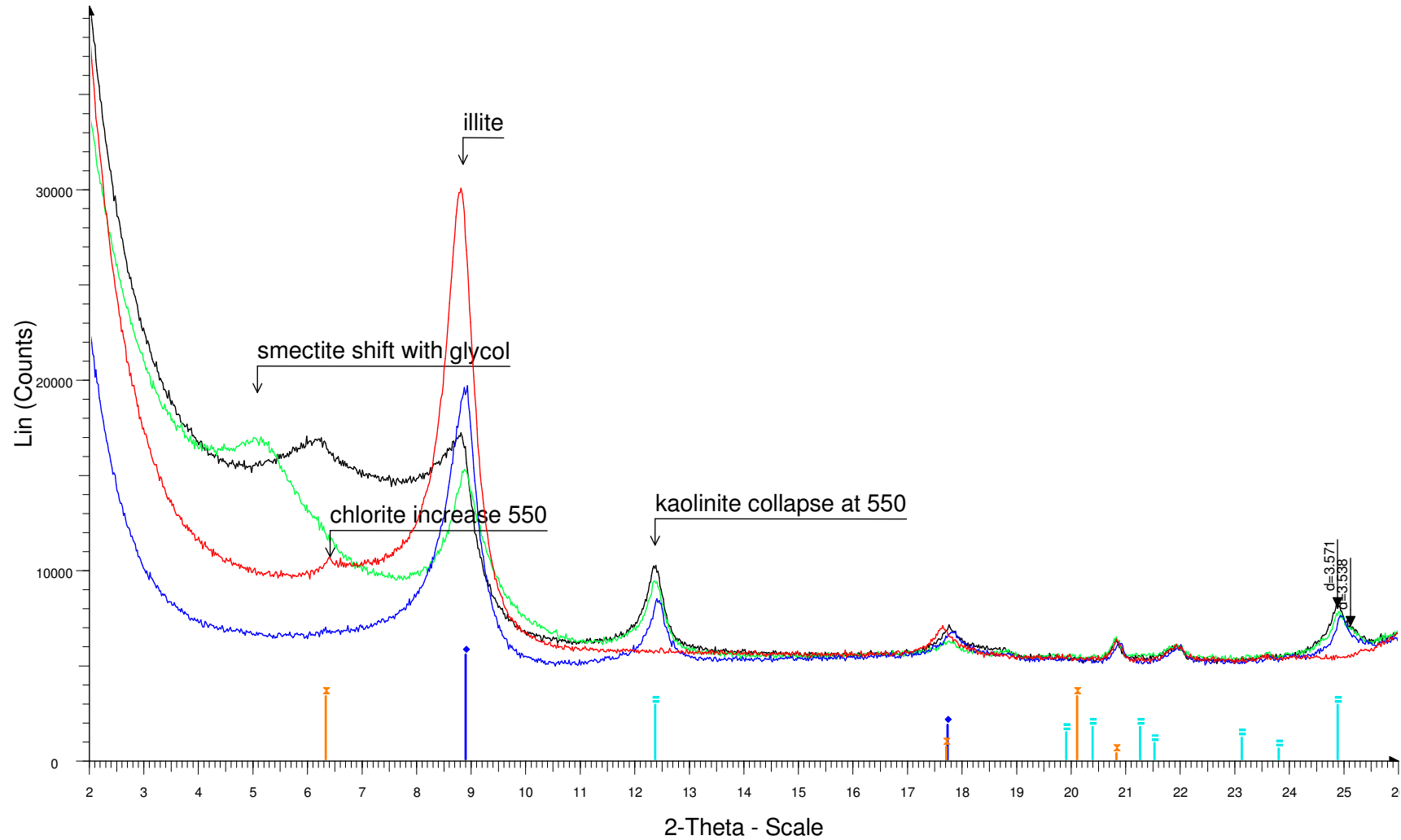
- ▲ P11 014 11 0256 air - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0256 gly - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0256 400 - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0256 550 - Step: 0.02 ° - Step time: 70.4 s
- Quartz, syn - SiO₂ - Hexagonal
- Illite-2M2, glycolated - (K,H₃)Al₂(Si₃Al)O₁₀(OH)₂·xH₂O - Monoclinic
- Fluorapatite, syn - Ca₅(PO₄)₃F - Hexagonal
- Montmorillonite, syn - Al₂O₃·4SiO₂·xH₂O -
- Kaolinite - Al₂Si₂O₅(OH)₄ - Triclinic
- Clinocllore - Al₂Mg₅Si₃O₁₀(OH)₈ - Monoclinic

CBH2009-5UB U5 2.70-3.15



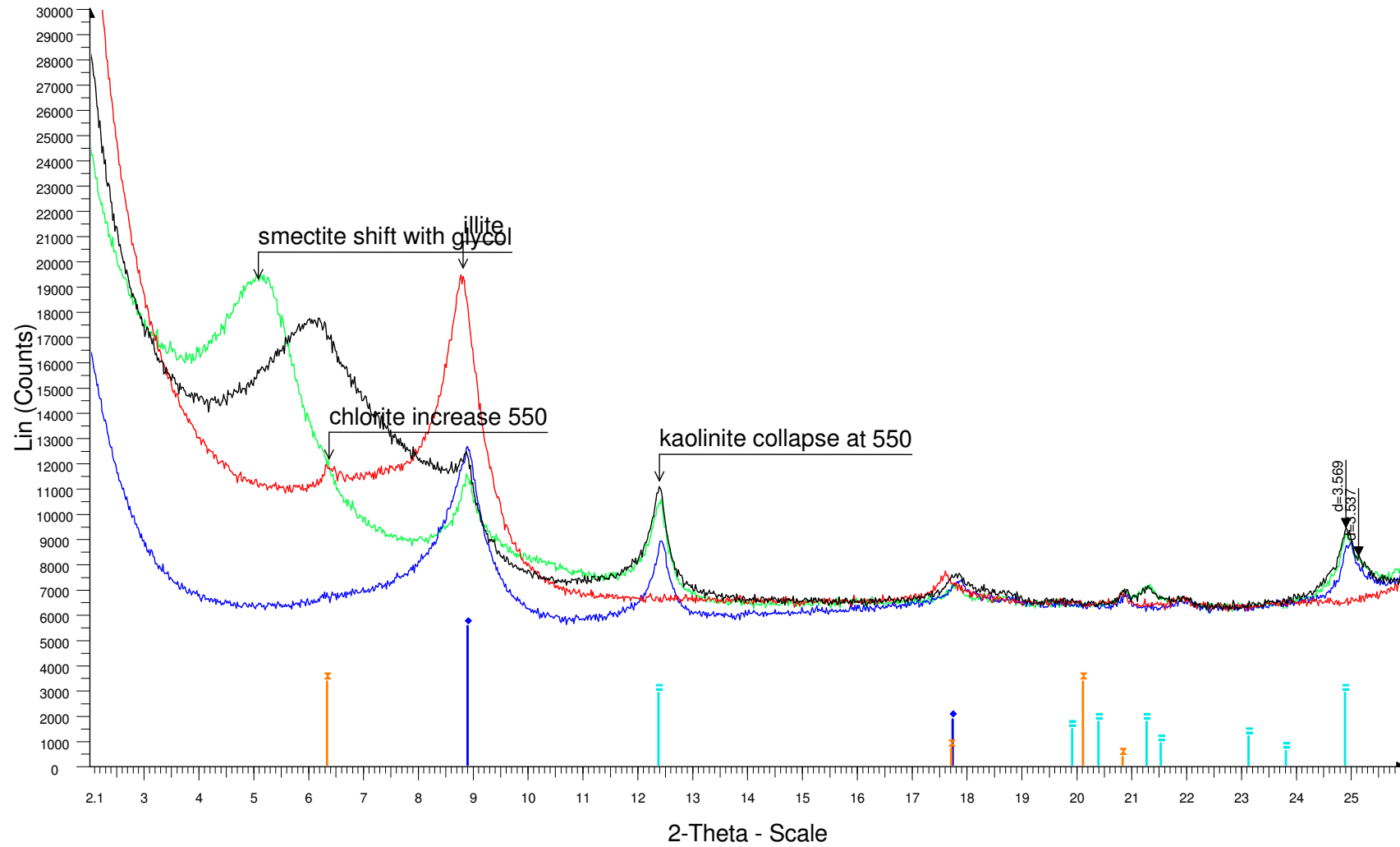
- ▲ P11 014 11 0257 air - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0257 gly - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0257 400 - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0257 550 - Step: 0.02 ° - Step time: 70.4 s
- ◆ Illite-2M2, glycolated - $(K,H_3O)Al_2(Si_3Al)O_{10}(OH)_2 \cdot xH_2O$ - Monoclinic
- ✕ Montmorillonite, syn - $Al_2O_3 \cdot 4SiO_2 \cdot xH_2O$ -
- ▬ Kaolinite - $Al_2Si_2O_5(OH)_4$ - Triclinic

CBH2009-2UA U51 19.9-20.35



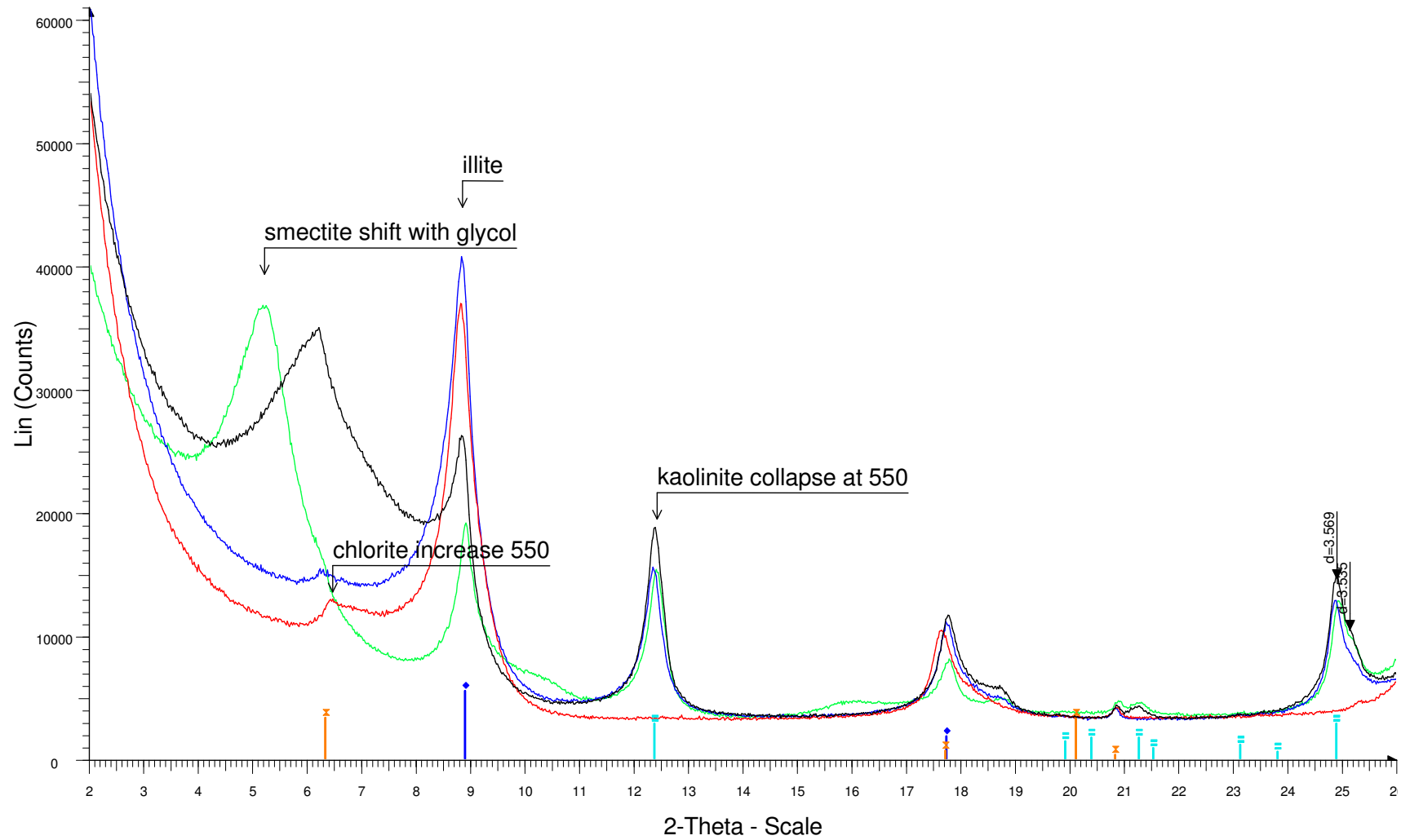
- ▲ P11 014 11 0258 air - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0258 gly - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0258 400 - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0258 550 - Step: 0.02 ° - Step time: 70.4 s
- ◆ Illite-2M2, glycolated - (K,H3O)Al₂(Si₃Al)O₁₀(OH)₂·xH₂O - Monoclinic
- × Montmorillonite, syn - Al₂O₃·4SiO₂·xH₂O -
- Kaolinite - Al₂Si₂O₅(OH)₄ - Triclinic

CBH2009-7U U99 34.1-34.55



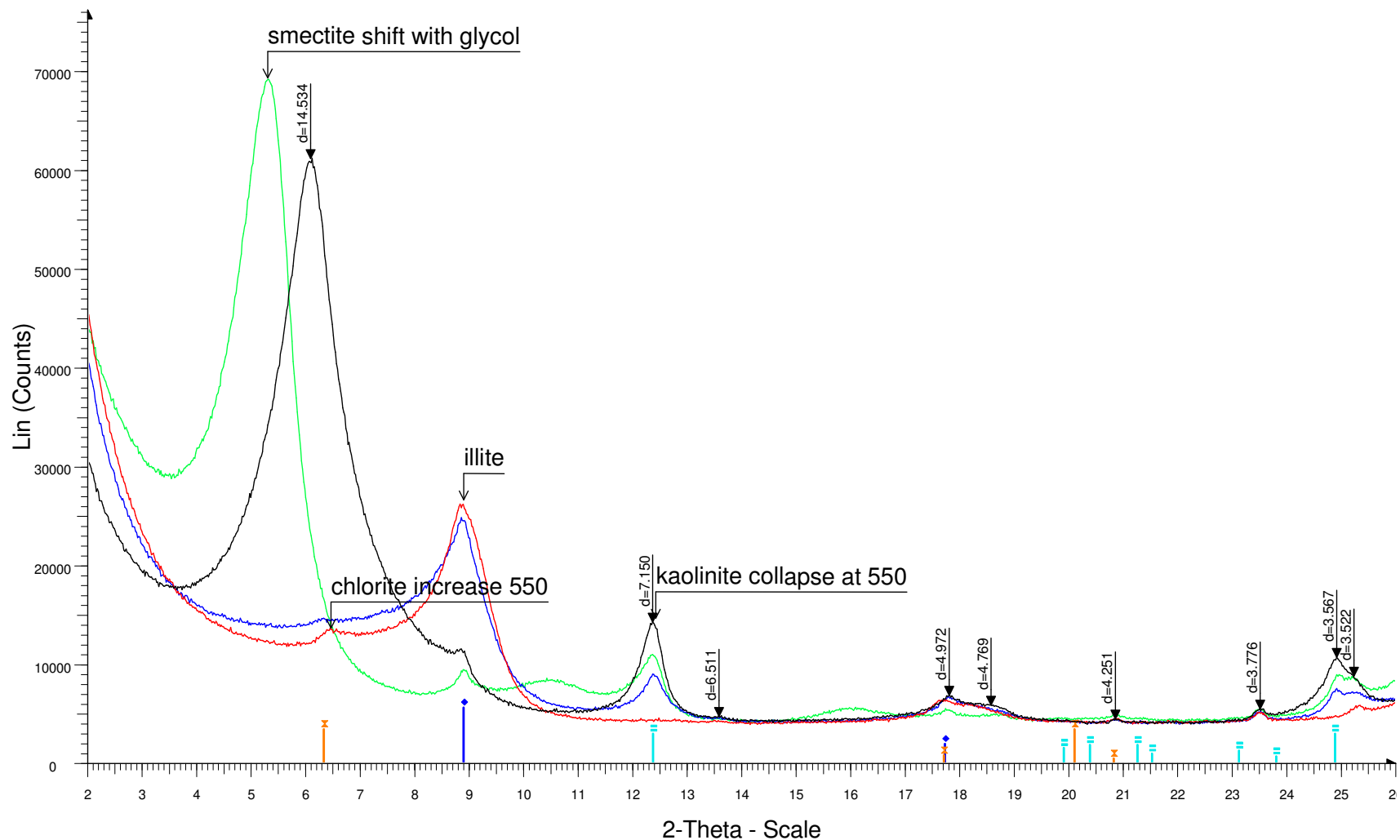
- ▲ P11 014 11 0259 air - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0259 glycol - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0259 400 - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0259 550 - Step: 0.02 ° - Step time: 70.4 s
- ◆ Illite-2M2, glycolated - (K,H3)Al2(Si3Al)O10(OH)2·xH2O - Monoclinic
- ⊠ Montmorillonite, syn - Al2O3·4SiO2·xH2O -
- ▢ Kaolinite - Al2Si2O5(OH)4 - Triclinic

CBH2009-8U CS128 67.41-67.69



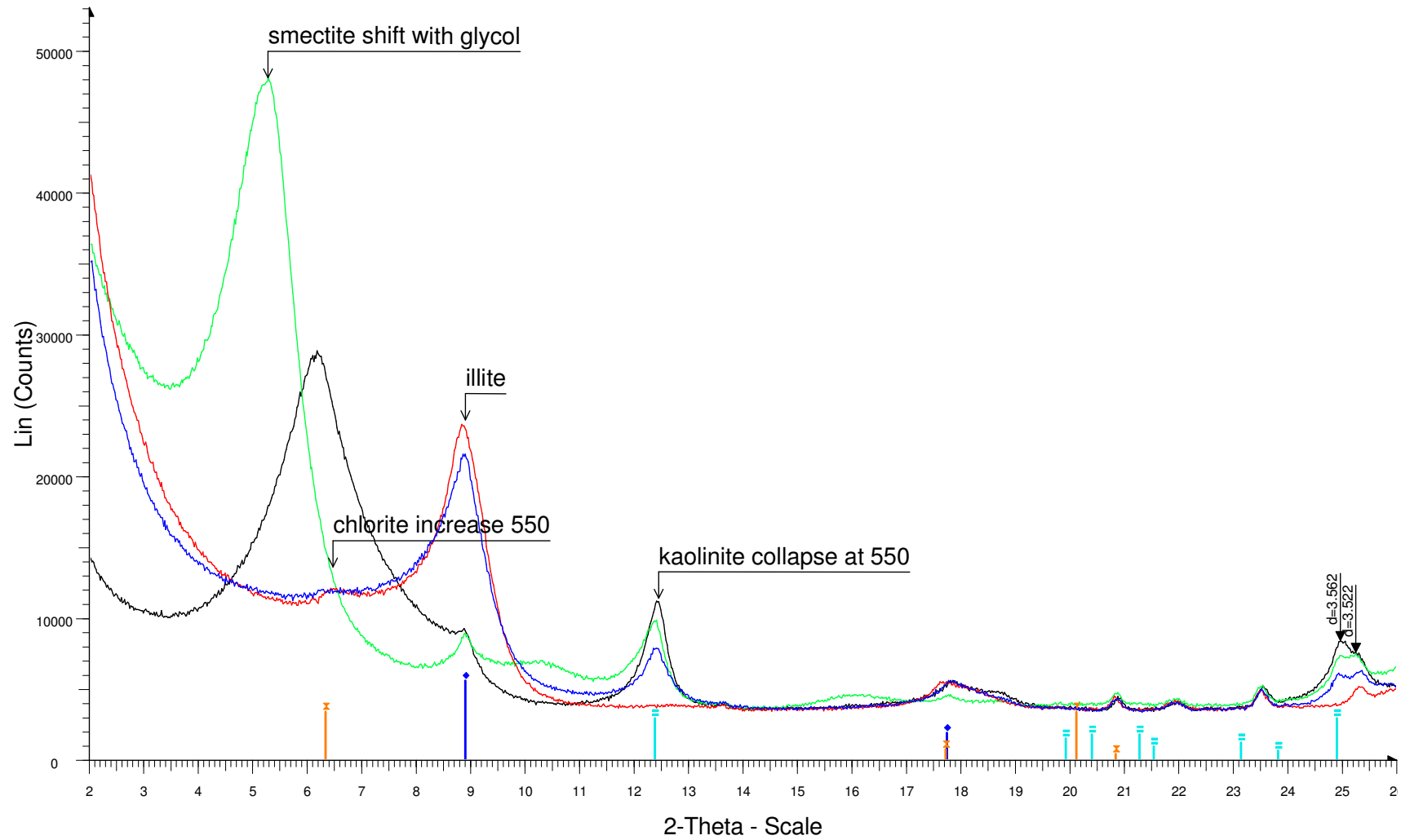
- ▲ P11 014 11 0260 air - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0260 glycol - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0261 400 - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0261 550 - Step: 0.02 ° - Step time: 70.4 s
- ◆ Illite-2M2, glycolated - (K,H3)Al₂(Si₃Al)O₁₀(OH)₂·xH₂O - Monoclinic
- ⊠ Montmorillonite, syn - Al₂O₃·4SiO₂·xH₂O -
- ⊞ Kaolinite - Al₂Si₂O₅(OH)₄ - Triclinic

CBH2009-11U U128 56.10-56.50

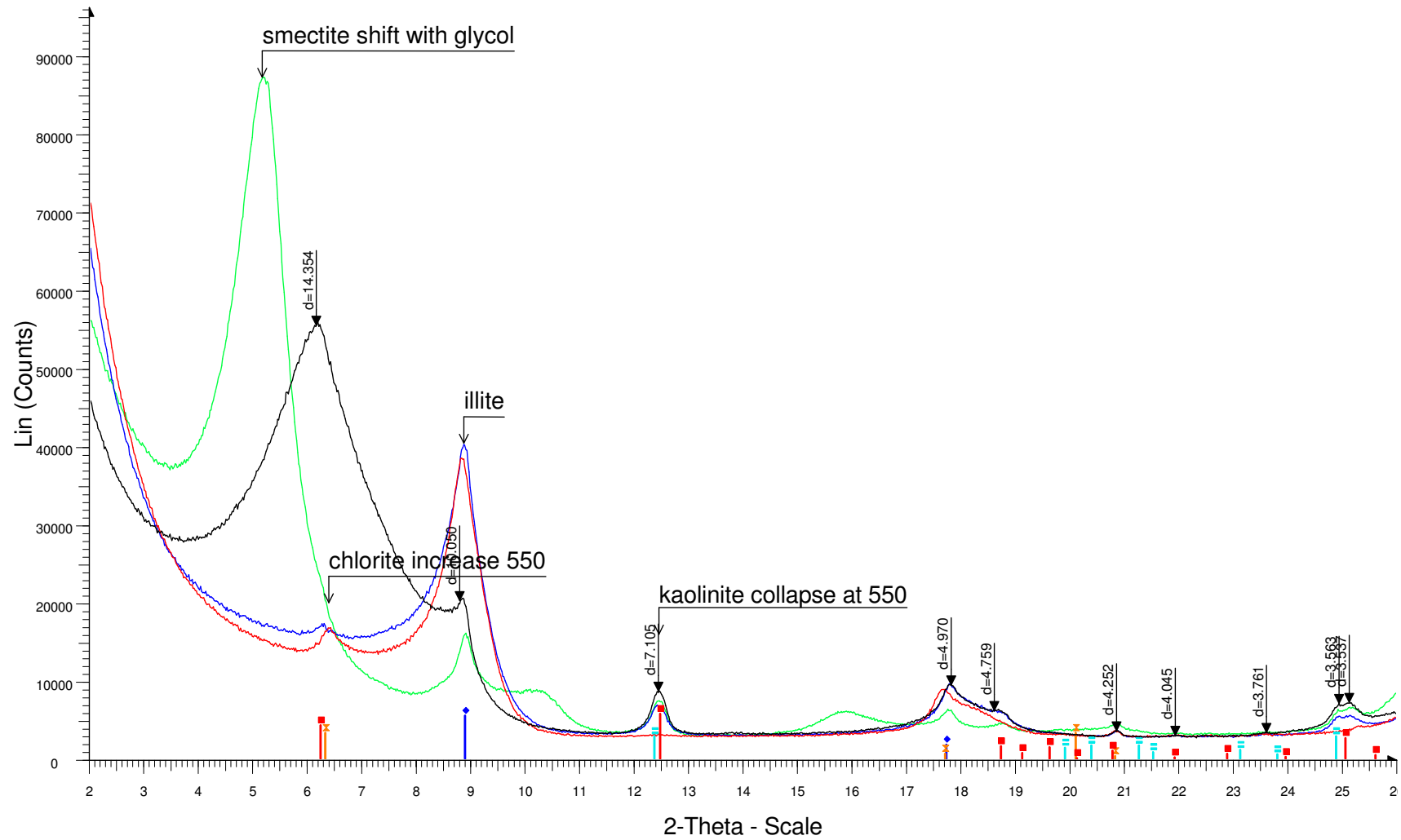


- ▲ P11 014 11 0261 air - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0261 glycol - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0261 400 - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0261 550 - Step: 0.02 ° - Step time: 70.4 s
- ◆ Illite-2M2, glycolated - (K,H3O)Al2(Si3Al)O10(OH)2·xH2O - Monoclinic
- ⊠ Montmorillonite, syn - Al2O3·4SiO2·xH2O -
- ⊞ Kaolinite - Al2Si2O5(OH)4 - Triclinic

CBH2009-8U CS121 48.77-49.32

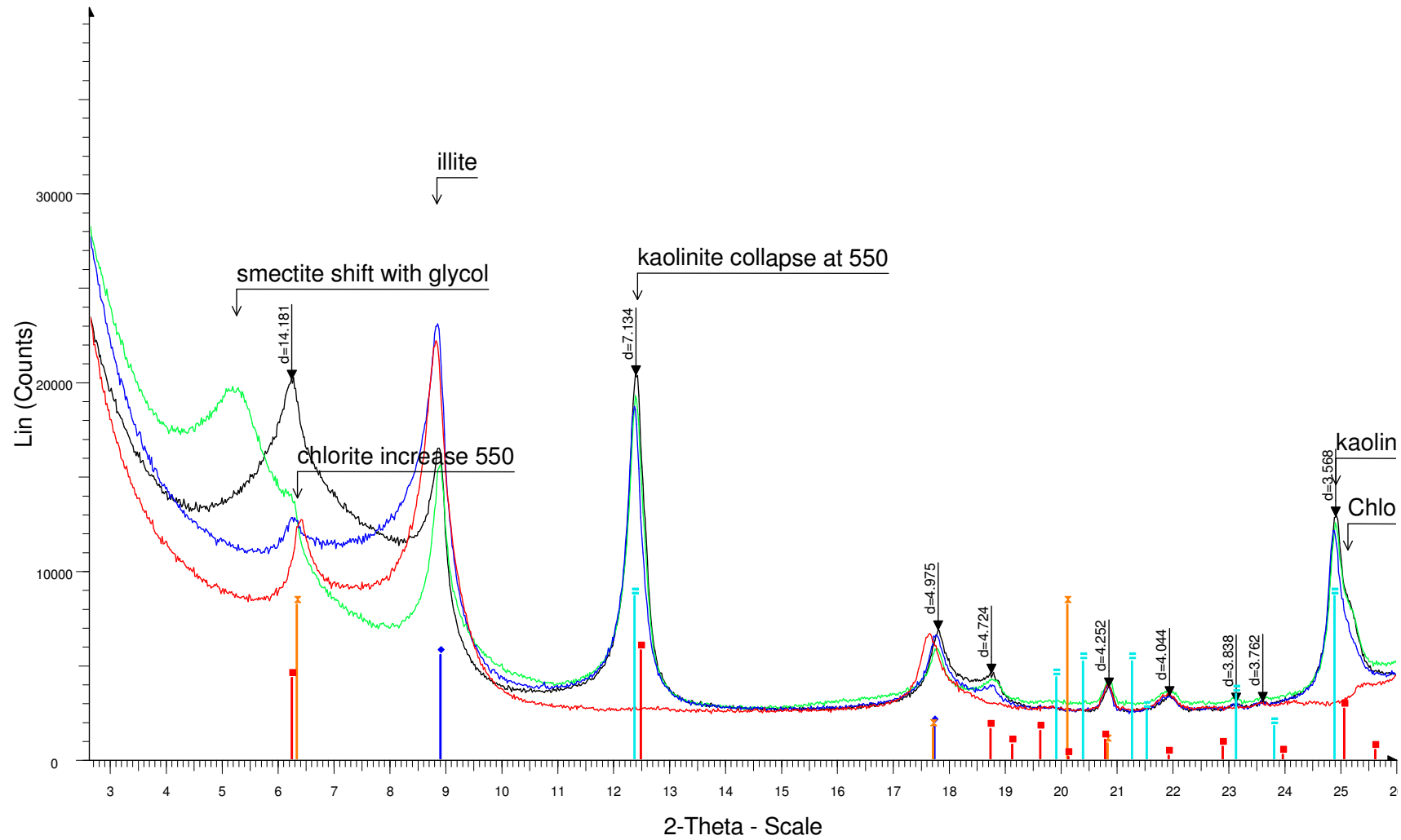


CBH2009-8U CS131 78.05-78.50



- ▲ P11 014 11 0263 air - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0263 glycol - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0263 400 - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0263 550 - Step: 0.02 ° - Step time: 70.4 s
- ◆ Illite-2M2, glycolated - (K,H3O)Al2(Si3Al)O10(OH)2·xH2O - Monoclinic
- ⊠ Montmorillonite, syn - Al2O3·4SiO2·xH2O -
- ⊠ Kaolinite - Al2Si2O5(OH)4 - Triclinic
- Clinocllore - (Ma2.96Fe1.55Fe.136Al1.275)(Si2.622Al1.376O10)(OH)8 - Monoclinic

A0012-10 CBH2009-U8 U17



- ▲ P11 014 11 0264 air - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0264 glycol - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0264 400 - Step: 0.02 ° - Step time: 70.4 s
- ▲ P11 014 11 0264 550 - Step: 0.02 ° - Step time: 70.4 s
- ◆ Illite-2M2, glycolated - (K,H3O)Al2(Si3Al)O10(OH)2·xH2O - Monoclinic
- ⊠ Montmorillonite, syn - Al2O3·4SiO2·xH2O -
- ⊞ Kaolinite - Al2Si2O5(OH)4 - Triclinic
- Clinocllore - (Ma2.96Fe1.55Fe.136Al1.275)(Si2.622Al1.376O10)(OH)8 - Monoclinic

Clay Fraction proportions

	Sample Name	d (Obs. Max) Angstrom	Net Area Cps x 2-Theta °			normalised	
smectite 001	P11 014 11 0255 gly	17.005	49.03	smectite peak area	49.03	75	% smectite
illite 001	P11 014 11 0255 gly	9.936	3.602	4x illite peak area	14.408	22	% illite
kaolinite 001	P11 014 11 0255 gly	7.074	0.973	2x kaolinite peak area	1.946	3	% kaolinite
kaolinite 002	not measurable		0				
chlorite 004	not measurable		0				
				total	65.384		

	Sample Name	d (Obs. Max) Angstrom	Net Area Cps x 2-Theta °			normalised	
smectite 001	P11 014 11 0256 gly	17.017	240.9	smectite peak area	240.9	82	% smectite
illite 001	P11 014 11 0256 gly	9.935	10.6	4x illite peak area	42.4	15	% illite
kaolinite 001	P11 014 11 0256 gly	7.122	4.487	2x kaolinite peak area	8.974	3	(chlorite/kaolinite)
kaolinite 002	P11 014 11 0256 gly	3.567	1.643		0.78	2	% kaolinite
chlorite 004	P11 014 11 0256 gly	3.531	0.451		0.22	1	% chlorite
			2.094	total	292.274		

	Sample Name	d (Obs. Max) Angstrom	Net Area Cps x 2-Theta °			normalised	
smectite 001	P11 014 11 0257 gly	16.813	94.85	smectite peak area	94.85	27	% smectite
illite 001	P11 014 11 0257 gly	9.928	45.12	4x illite peak area	180.48	51	% illite
kaolinite 001	P11 014 11 0257 gly	7.131	40.91	2x kaolinite peak area	81.82	23	% kaolinite
				total	357.15		
kaolinite 002							
chlorite 004	not measurable						

Sample Name		d (Obs. Max) Angstrom	Net Area Cps x 2-Theta °	normalised		
smectite 001	P11 014 11 0258 gly	16.763	98.3	smectite peak area	98.3	20 % smectite
illite 001	P11 014 11 0258 gly	9.948	87.92	4x illite peak area	351.68	70 % illite
kaolinite 001	P11 014 11 0258 gly	7.144	26.85	2x kaolinite peak area	53.7	11 (chlorite/kaolinite)
	d value		Intensity	total	503.68	
	Angstrom		Count			
kaolinite 002		3.567	1781		0.70	8 % kaolinite
chlorite 004		3.53	746		0.30	3 % chlorite
			2527			

Sample Name		d (Obs. Max) Angstrom	Net Area Cps x 2-Theta °	normalised		
smectite 001	P11 014 11 0259 glycol	16.825	173.7	smectite peak area	173.7	53 % smectite
illite 001	P11 014 11 0259 glycol	9.948	24.34	4x illite peak area	97.36	30 % illite
kaolinite 001	P11 014 11 0259 glycol	7.138	27.19	2x kaolinite peak area	54.38	17 (chlorite/kaolinite)
	d value		Intensity	total	325.44	
	Angstrom		Count			
kaolinite 002		3.567	2375		0.70	12 % kaolinite
chlorite 004		3.53	998		0.30	5 % chlorite
			3373			

Sample Name		d (Obs. Max) Angstrom	Net Area Cps x 2-Theta °	normalised		
smectite 001	P11 014 11 0260 glycol	16.984	410.3	smectite peak area	410.3	45 % smectite
illite 001	P11 014 11 0260 glycol	9.929	87.62	4x illite peak area	350.48	39 % illite
kaolinite 001	P11 014 11 0260 glycol	7.124	73.89	2x kaolinite peak area	147.78	16 (chlorite/kaolinite)
	d value		Intensity	total	908.56	
	Angstrom		Count			
kaolinite 002		3.567	7938		0.64	10 % kaolinite
chlorite 004		3.53	4458		0.36	6 % chlorite
			12396			

	Sample Name	d (Obs. Max) Angstrom	Net Area Cps x 2-Theta °			normalised
smectite 001	P11 014 11 0261 glycol	16.721	962.1	smectite peak area	962.1	87 % smectite
illite 001	P11 014 11 0261 glycol	9.933	13.39	4x illite peak area	53.56	5 % illite
kaolinite 001	P11 014 11 0261 glycol	7.153	43.74	2x kaolinite peak area	87.48	8 (chlorite/kaolinite)
		d value Angstrom	Intensity Count		total	1103.14
kaolinite 002		3.567	3326		0.57	5 % kaolinite
chlorite 004		3.53	2479		0.43	3 % chlorite
			5805			

	Sample Name	d (Obs. Max) Angstrom	Net Area Cps x 2-Theta °			normalised
smectite 001	P11 014 11 0262 glycol	16.763	708.3	smectite peak area	708.3	80 % smectite
illite 001	P11 014 11 0262 glycol	9.945	21.95	4x illite peak area	87.8	10 % illite
kaolinite 001	P11 014 11 0262 glycol	7.129	45.78	2x kaolinite peak area	91.56	10 (chlorite/kaolinite)
		d value Angstrom	Intensity Count		total	887.66
kaolinite 002		3.562	2510		0.53	5 % kaolinite
chlorite 004		3.529	2203		0.47	5 % chlorite
			4713			

.79

	Sample Name	d (Obs. Max) Angstrom	Net Area Cps x 2-Theta °			normalised
smectite 001	P11 014 11 0263 glycol	17.066	1205.9	smectite peak area	1205.9	79 % smectite
illite 001	P11 014 11 0263 glycol	9.932	65.7	4x illite peak area	262.8	17 % illite
kaolinite 001	P11 014 11 0263 glycol	7.097	24.35	2x kaolinite peak area	48.7	3 (chlorite/kaolinite)
		d value Angstrom	Intensity Count		total	1517.4
kaolinite 002		3.563	1789		0.50	2 % kaolinite
chlorite 004		3.533	1789		0.50	2 % chlorite

	Sample Name	d (Obs. Max) Angstrom	Net Area Cps x 2-Theta °		normalised	
smectite 001	P11 014 11 0264 glycol	16.519	152.6	smectite peak area	152.6	23 % smectite
illite 001	P11 014 11 0264 glycol	9.951	74.52	4x illite peak area	298.08	45 % illite
kaolinite 001	P11 014 11 0264 glycol	7.134	106.5	2x kaolinite peak area	213	32 (chlorite/kaolinite)
		d value Angstrom	Intensity Count	total	663.68	
kaolinite 002		3.563	8785	0.64		20 % kaolinite
chlorite 004		3.533	4970	0.36		12 % chlorite
			13755			

Mineral %

our number	sample number	quartz	calcite	aragonite	microcline	orthoclase	sanidine	albite	zircon	halite	fluorapatite	pyrite	gypsum	dolomite	smectite	illite	kaolinite	chlorite
P11 014 11 0255	CBM2009-2 CS29 93.35-93.65	<1	99								<1				<1	<1	<1	
P11 014 11 0256	CBM2009-2 CS34 110.50-110.90	<1	99								<1				<1	<1	<1	<1
P11 014 11 0257	CBH2009-5UB U5 2.70-3.15	86	6		6										<1	2	<1	
P11 014 11 0258	CBH2009-2UA U51 19.9-20.35	89	2	3	2	3			<1	<1					<1	<1	<1	
P11 014 11 0259	CBH2009-7U U99 34.1-34.55	71	11	15		2				<1					<1	<1	<1	<1
P11 014 11 0260	CBH2009-8U CS128 67.41-67.69	83	2	1	7	1									2	2	<1	<1
P11 014 11 0261	CBH2009-11U U128 56.10-56.50	16	<1		2	3	5	5							60	4	4	<1
P11 014 11 0262	CBH2009-8U CS121 48.77-49.32	8			10	2	3					<1	3		58	7	4	4
P11 014 11 0263	CBH2009-8U CS131 78.05-78.50	10				12	2	1				<1		3	57	12	1	1
P11 014 11 0264	A0012-10 CBH2009-U8 U17	20	10					3				2		1	15	29	12	7

CONSOLIDATED CYCLIC TRIAXIAL TEST (STRAIN CONTROLLED)**GENERAL**

Consolidated cyclic triaxial tests with pore water pressure measurement are typically performed on specimens with a height to diameter ratio of approximately 2:1. Where possible, specimens are tested at full size. The test is undertaken to investigate the effect of cyclic loading on the shear behaviour of the soil. Cyclic loading may be applied under drained or undrained conditions. Tests are performed to an in-house method, based closely on the procedures given in ASTM D 3999-91 and ASTM D 5311-92.

The specimen set-up and testing procedures are essentially similar to the static triaxial test, except that the axial strain is applied cyclically, generally at a frequency of between 0.1 and 1.0 Hertz. Typically, the number of cycles to failure is determined for an applied cyclic strain amplitude.

The following is a brief outline of the procedures employed for strain controlled consolidated cyclic triaxial tests on undisturbed or re-compacted soil specimens.

Pre-test triaxial cell checks, including flushing of the drainage and pore pressure measurement systems, are undertaken in accordance with Fugro GeoConsulting Testing Procedure L-T-023.

TEST PROCEDURE

- (i) **Specimen Preparation, Saturation and Consolidation** – For an anisotropically consolidated cyclic triaxial test the specimen is mounted, saturated and consolidated as for a standard consolidated triaxial test, according to the procedures given in Fugro GeoConsulting Test Method L-M-302 (for an undisturbed specimen) or L-M-302a (for a reconstituted specimen). For an isotropically consolidated cyclic triaxial test the same procedures are followed, except that no anisotropic consolidation stage is required.

Where measurement of axial and/or radial strain using local transducers is required, these are mounted on the test specimen according to the procedures described in Fugro GeoConsulting Test Method L-M-127.

- (ii) **Cyclic Pre-Shearing Stage (drained)** – Where cyclic pre-shearing of a reconstituted specimen is required to model densification under small magnitude cyclic loading, this is applied to the specimen after completion of the consolidation stage. The drainage lines are left open and a small cyclic shear stress (τ_{cy}) is applied to the specimen for up to 200 loading cycles. Measurements of load, volume change and axial displacement are recorded automatically throughout pre-shearing via the logging system.
- (iii) **Cyclic Loading Stage (undrained)** – On completion of the consolidation (or pre-shearing) stage, the drainage lines are closed and a combination of initial average shear stress (τ_{av}) and cyclic shear strain (γ_{cy}) is applied to the specimen.

Where required, a static axial stress (τ_{av}) is applied to the specimen prior to the application of cyclic strain. This average axial stress is applied undrained and left to equalise for a period of time

representative of the in-situ loading conditions (nominally 1 hour), as defined by Andersen et al. (1988).

A sinusoidal cyclic shear strain (γ_{cy}) of specified amplitude is then applied to the specimen. The cyclic loading is normally applied at a frequency of 0.1 Hz (a load period of 10 seconds) unless otherwise specified. Frequencies ranging from 0.01 to 2 Hz are available (load periods from 100 to 0.2 seconds).

Measurements of load, pore-water pressure and displacement are recorded automatically throughout the test via the logging system. Cyclic loading is typically ceased when one of several agreed failure criteria are reached.

- (iv) **Undrained Shearing** – Following termination of the cyclic loading stage the specimen may be sheared statically to determine the post-cyclic undrained shear strength as indicated in Figure 1. The cyclic stage is stopped at the initial shear stress (τ_0) and the specimen is sheared at an appropriate strain rate, in the range 0.001 – 10 %/hour, such as to allow an equalised pore-water pressure response throughout the specimen.

Measurements of load, pore-water pressure, volume change (drained test) and displacement are recorded automatically throughout the test via the logging system. Manual checks are also made by technicians. The test is normally terminated when an axial strain of 20% has been reached.

- (v) **End of Test** – On completion of the cyclic loading or shearing stage (where required) the confining pressure is reduced to atmospheric pressure and the cell fluid is drained. The specimen is removed from the cell and a sketch of the failure shape is made. The specimen is then photographed, split and described and weighed and dried so that the final moisture content and bulk and dry densities may be determined. Any unusual specimen conditions potentially affecting interpretation of the test data are carefully noted.

DEFINITIONS

The initial shear stress after consolidation (τ_0). is defined as:

$$\tau_0 = \frac{\sigma'_{ac} - \sigma'_{rc}}{2} \quad (1)$$

where, σ'_{ac} and σ'_{rc} are the axial and radial effective consolidation stresses, respectively.

The average shear stress (τ_a) is the value about which the cyclic shear stress is applied and is defined as:

$$\tau_a = \tau_0 + \Delta\tau_a \quad (2)$$

where, $\Delta\tau_a$ is the undrained static increase in shear stress applied to the specimen prior to the application of cyclic stress.

The cyclic shear stress (τ_{cy}) or cyclic shear strain (γ_{cy}) are defined as one half of the amplitude of the total change over one load cycle.

The maximum shear stress during cycling (τ_{max}) is defined as:

$$\tau_{max} = \tau_a + \tau_{cv} \quad (3)$$

The minimum shear stress during cycling (τ_{min}) is defined as:

$$\tau_{min} = \tau_a - \tau_{cv} \quad (4)$$

PRESENTATION OF RESULTS

The test data is processed using in-house developed software in general accordance with the specifications given in ASTM D 3999-91 and ASTM D 5311-92. The following results may be presented, depending on project requirements:

Consolidation Phase:

Graph of root time ($\text{mins}^{0.5}$) versus consolidated volume change (%)

Cyclic Shearing Phase:

Any of the following graphs are available for presentation:

Graph of number of loading cycles (N) versus deviator stress (kPa)

Graph of number of loading cycles (N) versus pore-water pressure ratio (%)

Graph of number of loading cycles (N) versus excess pore-water pressure (kPa)

Graph of number of loading cycles (N) versus axial or shear strain (%)

Graph of axial strain (%) versus deviator stress (kPa)

Graph of p' (kPa) versus q (kPa) or s' (kPa) versus t (kPa)

Graph of σ_r' (kPa) versus shear stress (kPa)

Graph of G (MPa) versus shear strain (%)

Graph of λ (%) versus shear strain (%)

Post-Cyclic Static Shearing Phase:

Graph of axial strain (%) versus deviator stress (kPa)

Graph of axial strain (%) versus excess pore-water pressure (kPa)

Graph of p' (kPa) versus q (kPa) or s' (kPa) versus t (kPa)

where:

σ_v'	=	effective axial stress
σ_r'	=	effective radial stress
q	=	deviator stress = $(\sigma_v' - \sigma_r')$
t	=	shear stress = $0.5(\sigma_v' - \sigma_r')$

p'	=	effective mean normal stress (triaxial) = $\frac{1}{3}(\sigma_v' + 2\sigma_r')$
s'	=	effective mean normal stress (plane-strain) = $0.5(\sigma_v' + \sigma_r')$
G	=	undrained shear modulus
λ	=	undrained damping ratio

ACCURACY OF MEASUREMENTS

Pore-water pressure	± 1 kPa
Displacement	± 0.01 mm
Load	± 1.0 N
Volume change	± 0.05 ml
Weight	± 0.01 g
Dimensions	± 0.01 mm
Time	± 0.5 s

REFERENCES

ANDERSEN, K.H., KLEVEN, A. and HEIEN, D., 1988. Cyclic soil data for design of gravity structures. *American Society of Civil Engineers, Proceedings*, **114** (5), May 1988, pp. 517-539.

ASTM D 3999-91, 2003. *Standard Test Method for the Determination of the Modulus and Damping Properties of Soils Using the Cyclic Triaxial Apparatus*. American Society for the Testing of Materials.

ASTM D 5311-92, 2004. *Standard Test Method for Load Controlled Cyclic Triaxial Strength of Soil*. American Society for the Testing of Materials.

Cyclic Triaxial Method Statement



Consolidated Undrained Triaxial Compression Test with Cyclic loading

Tests were carried out on six samples of rotary core from borehole CBH2009_8U, three from the London Clay between 56 m and 60 m and three from the Lower London Tertiaries Clay between 83 m and 84 m. The tests were performed by Fugro GeoConsulting Ltd in accordance with their Method Statement reference L-M-306a using parameters specified by Ceidre. The selected samples were re-cored to produce test specimens 70 mm diameter and 140 mm long in order to optimise the amount of intact material available.

It should be noted that the parameters defined for cyclic strain and the resultant stresses are at the limits of measurement uncertainty for the equipment. Despite modifications to alleviate this, a number of difficulties were encountered mostly relating to the post cyclic phase. These are described below and the reports have been annotated accordingly.

In order to measure very small strains it is necessary to attach the internal precision transducers using pins through the rubber membrane which are then sealed with a rubber compound. These seals are difficult to maintain as the callipers move at higher post cyclic strains especially at relatively high cell pressure. Leakage of water from the triaxial cell into the sample was observed in the two tests at 83.38 m and 83.90 m resulting in early termination of the post cyclic phase.

In an attempt to improve the resolution of stress measurement and control of the cyclic excitation, the standard 10kN load cell was replaced with a 1kN load cell for the test on the specimen from 83.71 m. Unfortunately the subsequent deviator stress exceeded the capacity of the load cell and failure could not be achieved in the post cyclic phase.

During the cyclic phase of the test on the specimen from 56.32 m the suction top cap (essential for negative stress/strain cycles) apparently lost adhesion with the sample, resulting in a significant bedding error which invalidated the data retrieved for the cyclic part of the test. Unfortunately this was not visible during testing and could only be diagnosed after completion of the test.

By assuming the material to be elastic and isotropic (as indicated by Ceidre) the Young's Modulus, E , values derived from the cyclic phase of the tests have been converted to Shear Modulus, G , using the relationship $G = E / 2(1 + \nu)$ in which Poisson's Ratio, ν , is assumed to be 0.3. These moduli are presented in Figure 24 of the interpretative report together with those obtained from the Resonant Column and In situ test.

Notes:

Project	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZWELL SITE
Project No.	A0012-10
Carried out for	NNB Generation Company Limited

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

VISUAL DESCRIPTION	
Very hard dark brown very sandy CLAY with fine to coarse gravel.	

GENERAL	
Date test started	07/04/2011
Type of sample	Undisturbed
Specimen orientation	Vertical
Type of drains fitted	Radial & one end

INITIAL		
Diameter	(mm)	70.1
Length	(mm)	142.2
Moisture content	(%)	43.4
Bulk density	(Mg/m ³)	1.79
Dry density	(Mg/m ³)	1.25
Voids ratio		1.169
Degree of saturation	(%)	100

SATURATION		
Pressure increments applied	(kPa)	100
Differential pressure used	(kPa)	N/A
Pore pressure on completion	(kPa)	869
Cell pressure on completion	(kPa)	1062
B value achieved		1.00
Initial effective stress	(kPa)	193

TESTING PROCEDURES USED	
Specimen Set-up	As per test specification FUGRO in-house testing procedure
Saturation	As per test specification FUGRO in-house testing procedure
Consolidation - Isotropic	As per test specification
Consolidation - Anisotropic	FUGRO in-house testing procedure
Shearing	As per test specification FUGRO in-house testing procedure
Note: FUGRO in-house testing procedures are available on request	

LOCAL GAUGES USED	
	Local Axial LVDT (x2)

Borehole	CBH2009-8U
Sample	C5135
Depth (m)	56.15

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

CONSOLIDATION : ISOTROPIC		
Cell pressure	(kPa)	1062
Back pressure	(kPa)	500
Effective radial pressure	(kPa)	562
Pore pressure on completion	(kPa)	508
Pore pressure dissipation	(%)	98
Moisture content	(%)	41.9
Bulk density	(Mg/m ³)	1.80
Dry density	(Mg/m ³)	1.27
Voids ratio		1.129
Degree of saturation	(%)	100
Volumetric strain (from water flow)	(%)	1.84
Local volumetric strain	(%)	0.77
Cvi	(m ² /year)	-
Mvi	(m ² /MN)	-
Permeability	(m/s)	-

CYCLIC SUMMARY			
Frequency	(Hz)	0.1	
No. applied cycles	(-)	13	
At Cycle 10		EXTERNAL	LOCAL
Strain	(%)	0.0198	0.0099
Young's Modulus, E	(MPa)	217	405
Damping ratio, D	(%)	0.7	12.0

Borehole	CBH2009-8U
Sample	C5135
Depth (m)	56.15

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

SHEARING		
Initial pore pressure	(kPa)	509
Initial effective stress p_0'	(kPa)	53
Rate of strain	(%/hour)	0.20
Initial deviator stress	(kPa)	0
At peak deviator stress		
Deviator stress	(kPa)	794
Undrained shear strength	(kPa)	397
Membrane correction applied	(kPa)	0
Drain correction applied	(kPa)	0
External axial strain	(%)	1.33
Local axial strain	(%)	0.92
Excess pore pressure (mid-height)	(kPa)	340
Horizontal effective stress	(kPa)	-287
Vertical effective stress	(kPa)	507
Principal effective stress ratio		-1.8

LOCAL STRAIN PARAMETERS		
At 0.01% local axial strain		
Deviator stress		38
External axial strain		0.02
Excess pore pressure (mid-height)		10
Principal effective stress ratio		1.9
Local Secant modulus $E_{u(local)}$	(MPa)	349.8
normalised w.r.t p_0'		6564.1
normalised w.r.t c_u		880.9
At 0.1% local axial strain		
Deviator stress		192
External axial strain		0.13
Excess pore pressure (mid-height)		83
Principal effective stress ratio		-5.5
Local Secant modulus $E_{u(local)}$	(MPa)	194.5
normalised w.r.t p_0'		3650.1
normalised w.r.t c_u		489.9
Degree of non-linearity during shear L		0.56

FINAL CONDITIONS		
Moisture content	(%)	41.9
Bulk density	(Mg/m ³)	1.80
Dry density	(Mg/m ³)	1.27

Borehole	CBH2009-8U
Sample	C5135
Depth (m)	56.15

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

VISUAL DESCRIPTION

Very hard dark brown very sandy CLAY with fine to coarse gravel.

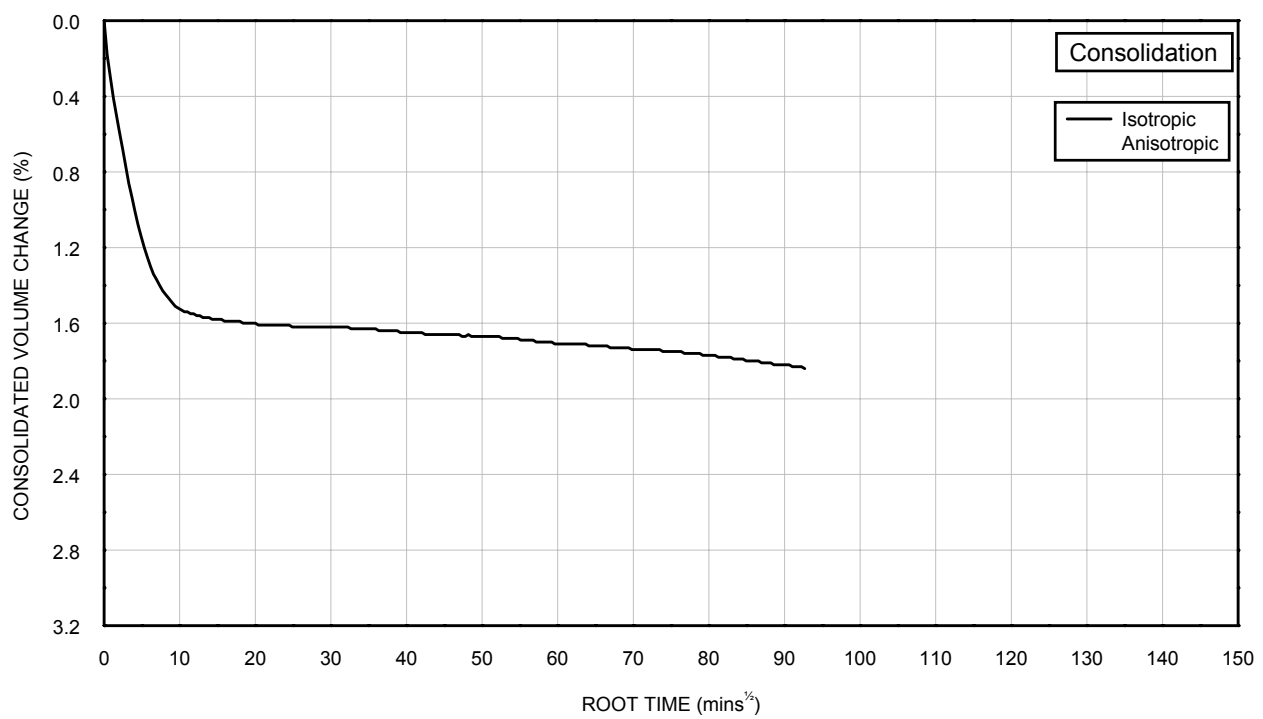
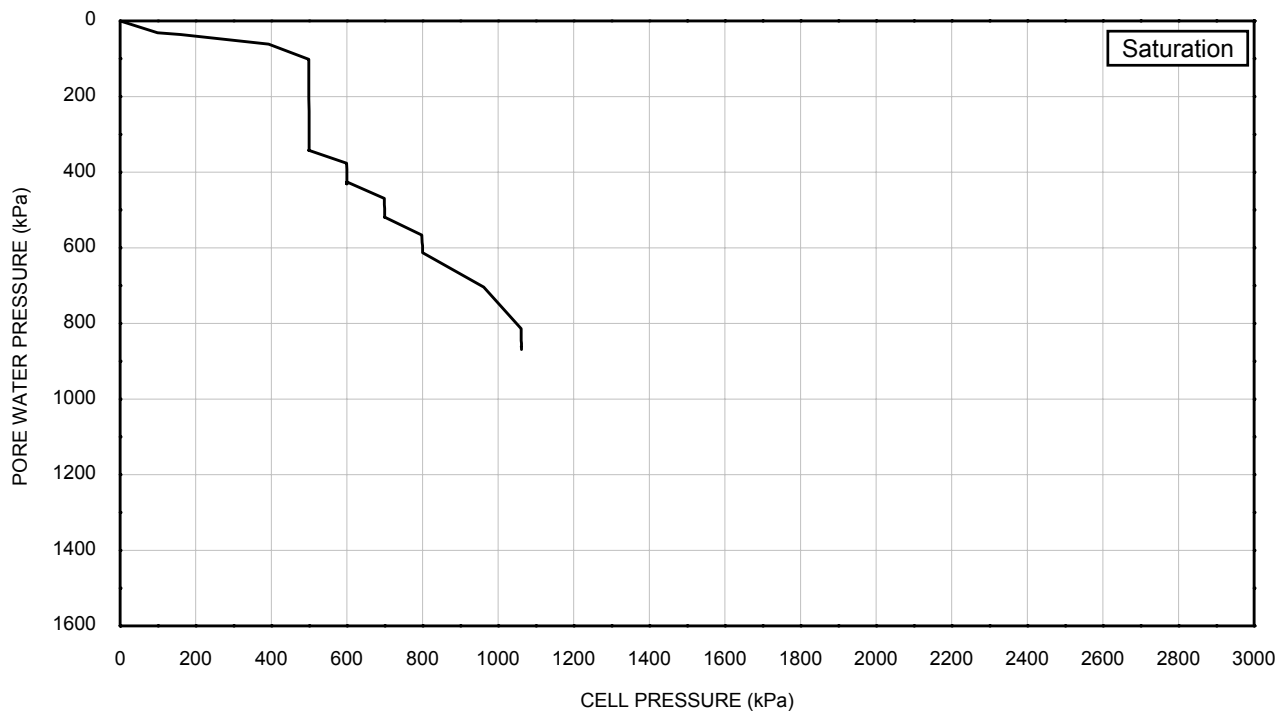
SPECIMEN PHOTOGRAPHS



Borehole
 Sample
 Depth (m)

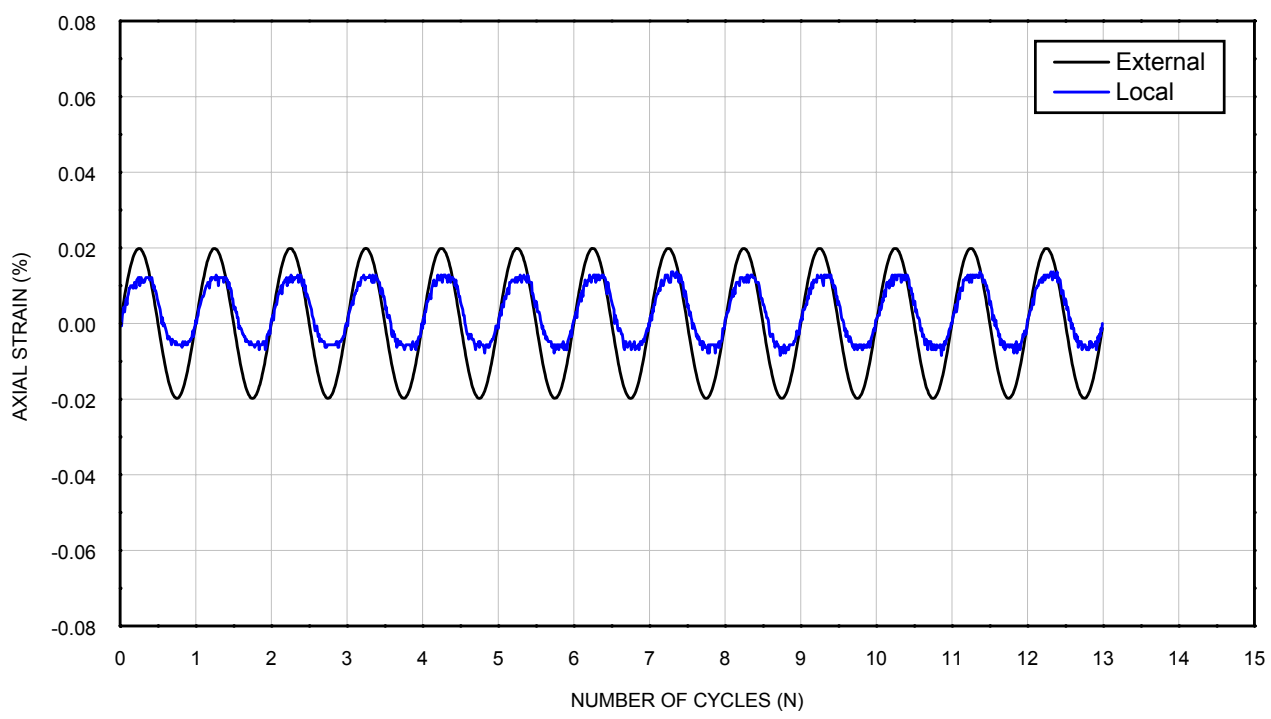
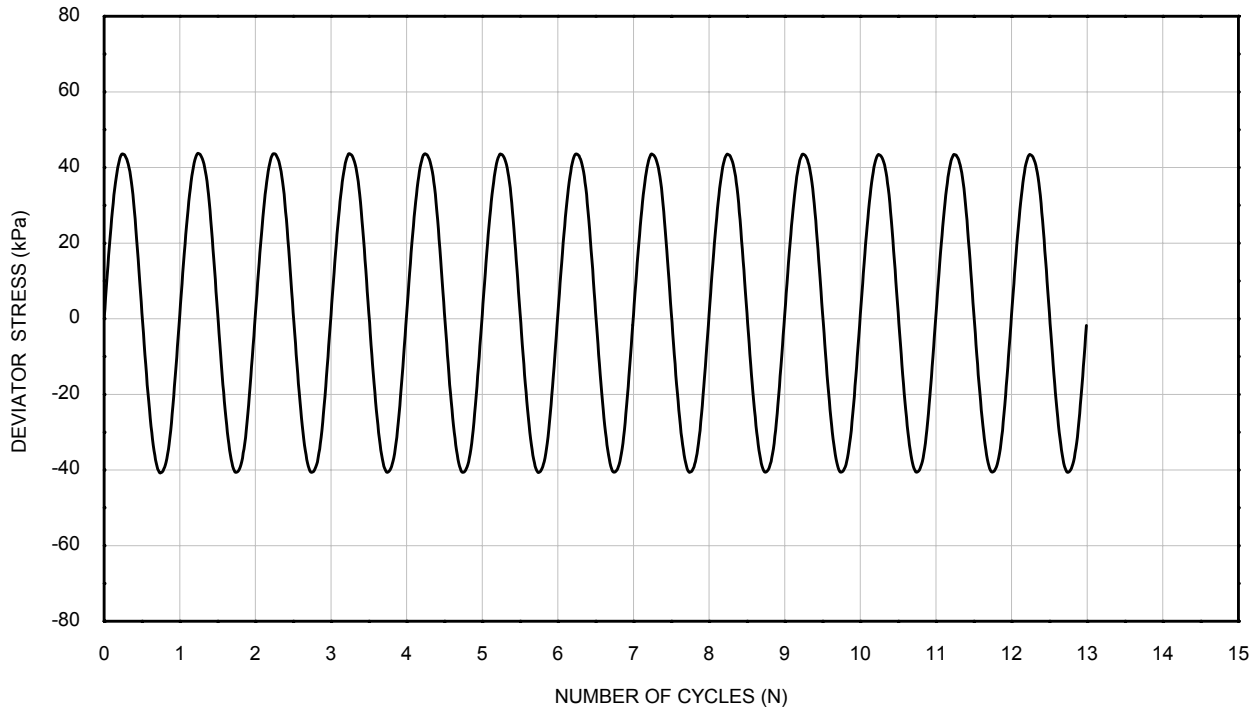
CBH2009-8U
 C5135
 56.15

**ISOTROPICALLY CONSOLIDATED UNDRAINED
 CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**



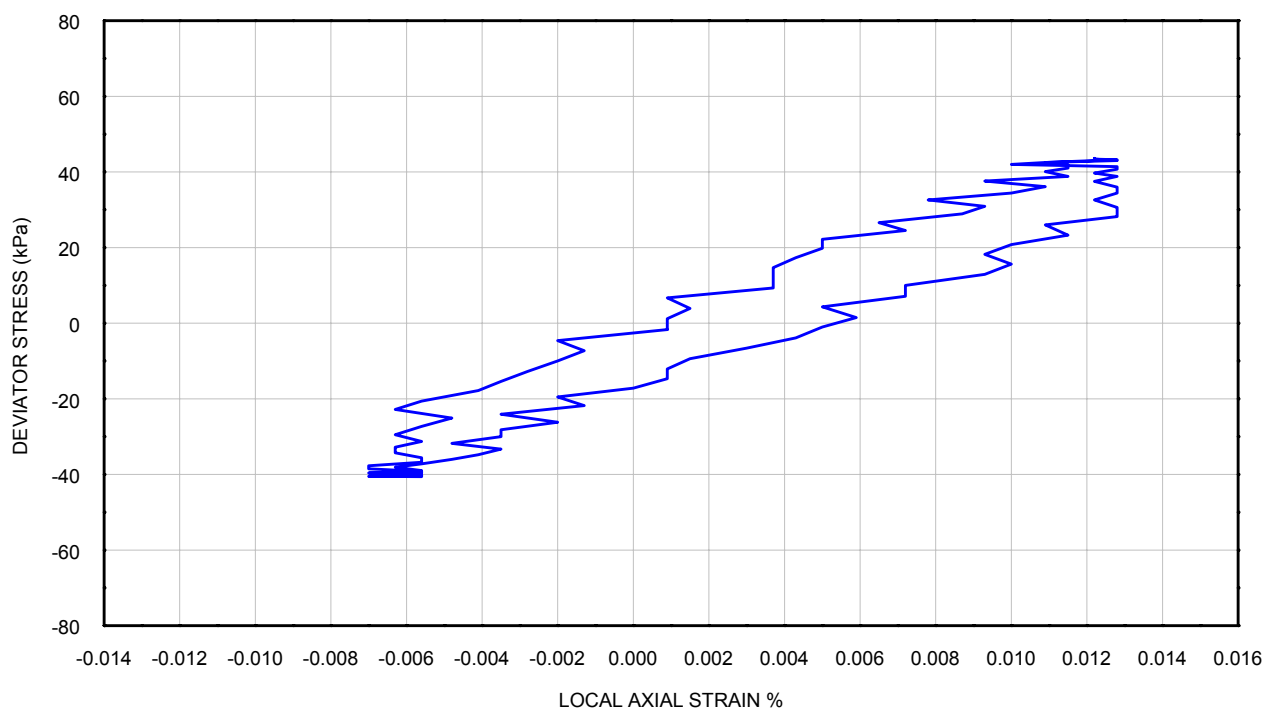
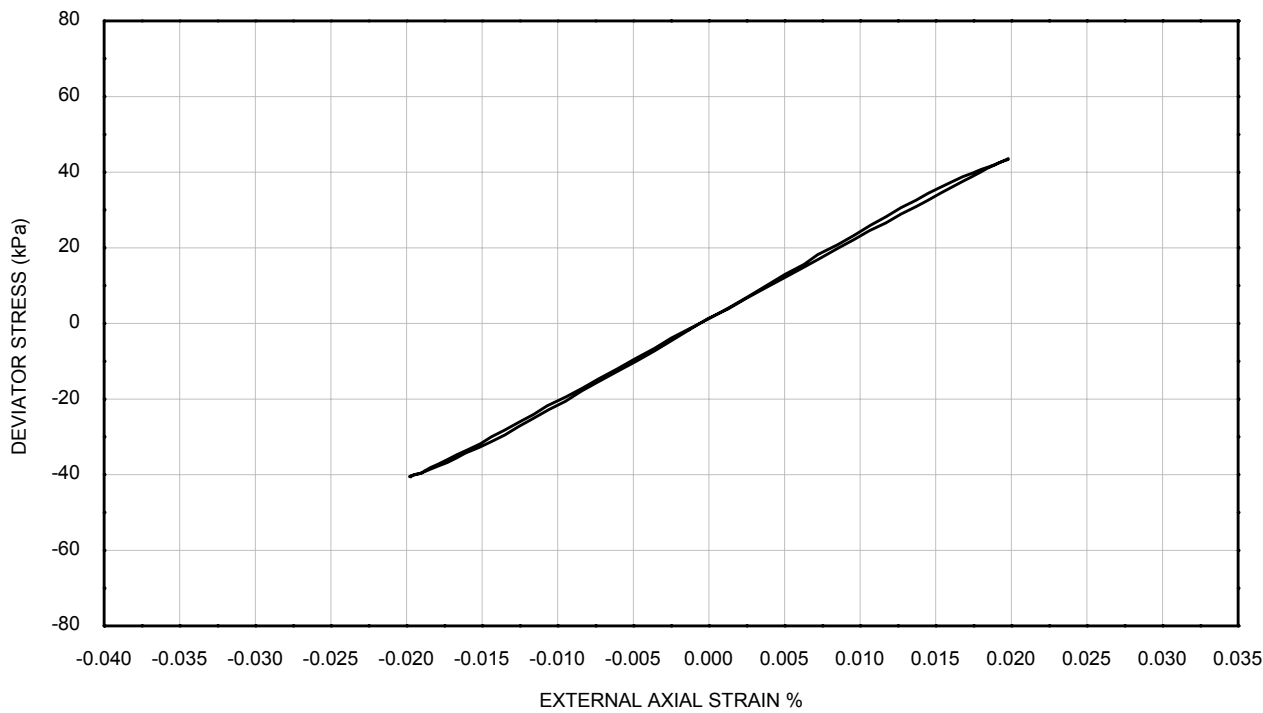
σ'_{rc}	: 562 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 562 kPa	Sample	: C5135
Nominal τ_{av}	: -- kPa	Depth (m)	: 56.15
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
SATURATION AND CONSOLIDATION**



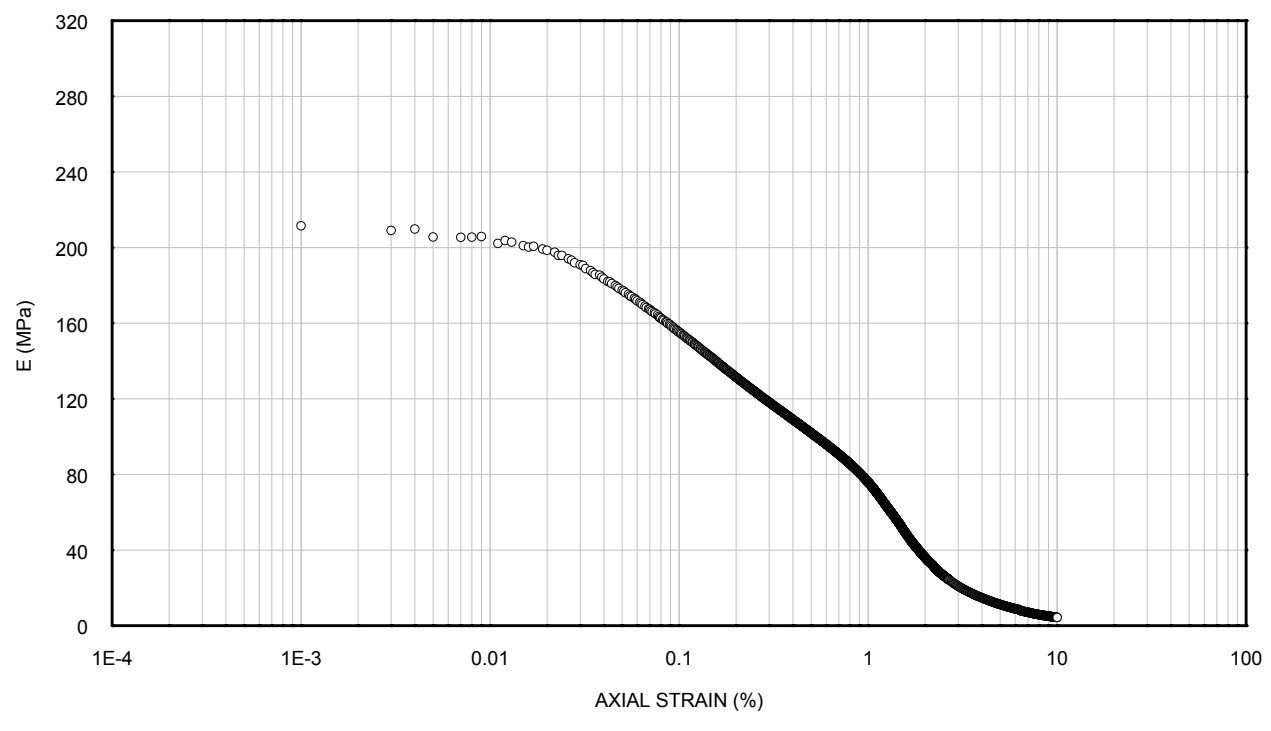
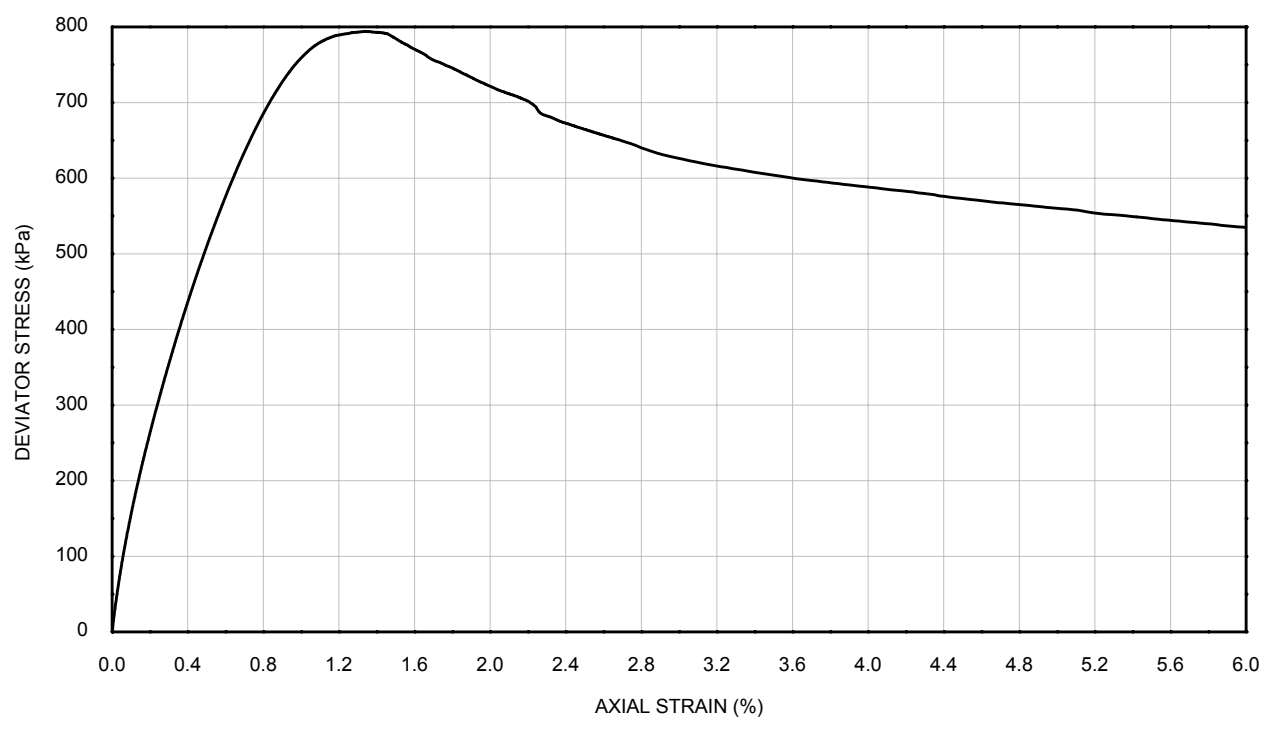
σ_{rc}'	: 562 kPa	Borehole	: CBH2009-8U
σ_{vc}'	: 562 kPa	Sample	: C5135
Nominal τ_{av}	: -- kPa	Depth (m)	: 56.15
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ'_{rc}	: 562 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 562 kPa	Sample	: C5135
Nominal τ_{av}	: -- kPa	Depth (m)	: 56.15
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ_{rc}'	: 562 kPa	Borehole	: CBH2009-8U
σ_{vc}'	: 562 kPa	Sample	: C5135
Nominal τ_{av}	: -- kPa	Depth (m)	: 56.15
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
POST CYCLIC STATIC LOADING STAGE**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

VISUAL DESCRIPTION

Hard dark brownish grey fissured CLAY (Fissures are vertical and angular)

GENERAL

Date test started	11/04/2011
Type of sample	Undisturbed
Specimen orientation	Vertical
Type of drains fitted	Radial & one end

INITIAL

Diameter	(mm)	70.3
Length	(mm)	142.1
Moisture content	(%)	28.5
Bulk density	(Mg/m ³)	1.93
Dry density	(Mg/m ³)	1.50
Voids ratio		0.798
Degree of saturation	(%)	96

SATURATION

Pressure increments applied	(kPa)	100
Differential pressure used	(kPa)	N/A
Pore pressure on completion	(kPa)	1437
Cell pressure on completion	(kPa)	1637
B value achieved		1.00
Initial effective stress	(kPa)	200

TESTING PROCEDURES USED

Specimen Set-up	As per test specification FUGRO in-house testing procedure
Saturation	As per test specification FUGRO in-house testing procedure
Consolidation - Isotropic	As per test specification
Consolidation - Anisotropic	FUGRO in-house testing procedure
Shearing	As per test specification FUGRO in-house testing procedure

Note: FUGRO in-house testing procedures are available on request

LOCAL GAUGES USED

Local Axial LVDT (x2)

Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.71

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

CONSOLIDATION : ISOTROPIC		
Cell pressure	(kPa)	1637
Back pressure	(kPa)	800
Effective radial pressure	(kPa)	837
Pore pressure on completion	(kPa)	803
Pore pressure dissipation	(%)	100
Moisture content	(%)	26.1
Bulk density	(Mg/m ³)	1.96
Dry density	(Mg/m ³)	1.56
Voids ratio		0.734
Degree of saturation	(%)	96
Volumetric strain (from water flow)	(%)	3.60
Local volumetric strain	(%)	0.92
Cvi	(m ² /year)	-
Mvi	(m ² /MN)	-
Permeability	(m/s)	-

CYCLIC SUMMARY			
Frequency	(Hz)	0.1	
No. applied cycles	(-)	13	
At Cycle 10		EXTERNAL	LOCAL
Strain	(%)	0.0095	0.0052
Young's Modulus, E	(MPa)	329	608
Damping ratio, D	(%)	1.0	2.7

Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.71

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

SHEARING*		
Initial pore pressure	(kPa)	806
Initial effective stress p_0'	(kPa)	31
Rate of strain	(%/hour)	0.20
Initial deviator stress	(kPa)	0
At peak deviator stress		
Deviator stress	(kPa)	390
Undrained shear strength	(kPa)	195
Membrane correction applied	(kPa)	0.0
Drain correction applied	(kPa)	0
External axial strain	(%)	0.18
Local axial strain	(%)	0.12
Excess pore pressure (mid-height)	(kPa)	176
Horizontal effective stress	(kPa)	-146
Vertical effective stress	(kPa)	245
Principal effective stress ratio		-1.7

LOCAL STRAIN PARAMETERS		
At 0.01% local axial strain		
Deviator stress		93
External axial strain		0.03
Excess pore pressure (mid-height)		28
Principal effective stress ratio		39.9
Local Secant modulus $E_{u(local)}$	(MPa)	912.1
normalised w.r.t p_0'		29856.6
normalised w.r.t c_u		4673.6
At 0.1% local axial strain		
Deviator stress		351
External axial strain		0.16
Excess pore pressure (mid-height)		155
Principal effective stress ratio		-1.8
Local Secant modulus $E_{u(local)}$	(MPa)	352.2
normalised w.r.t p_0'		11529.5
normalised w.r.t c_u		1804.8
Degree of non-linearity during shear L		0.39

* Maximum capacity of the load cell was reached. Shear stage terminated.

FINAL CONDITIONS		
Moisture content	(%)	26.1
Bulk density	(Mg/m ³)	1.96
Dry density	(Mg/m ³)	1.56

Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.71

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

VISUAL DESCRIPTION

Hard dark brownish grey fissured CLAY (Fissures are vertical and angular)

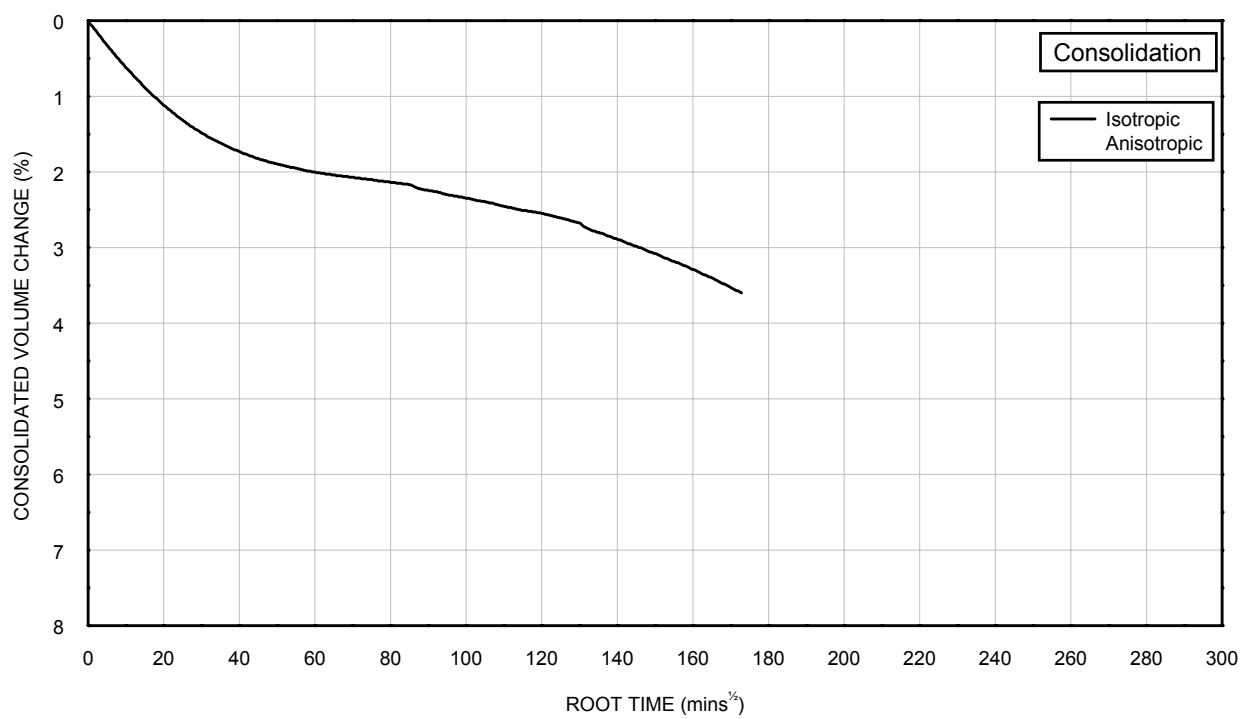
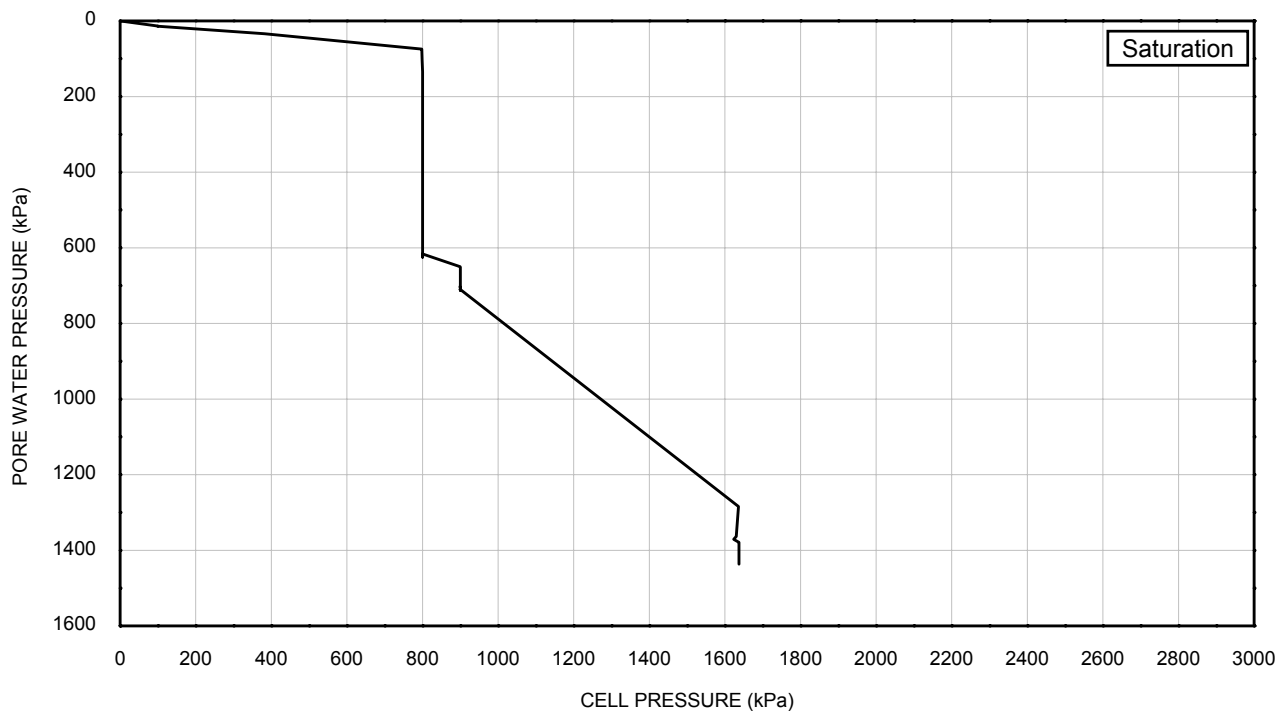
SPECIMEN PHOTOGRAPHS

Post test photograph was not possible.

Borehole
Sample
Depth (m)

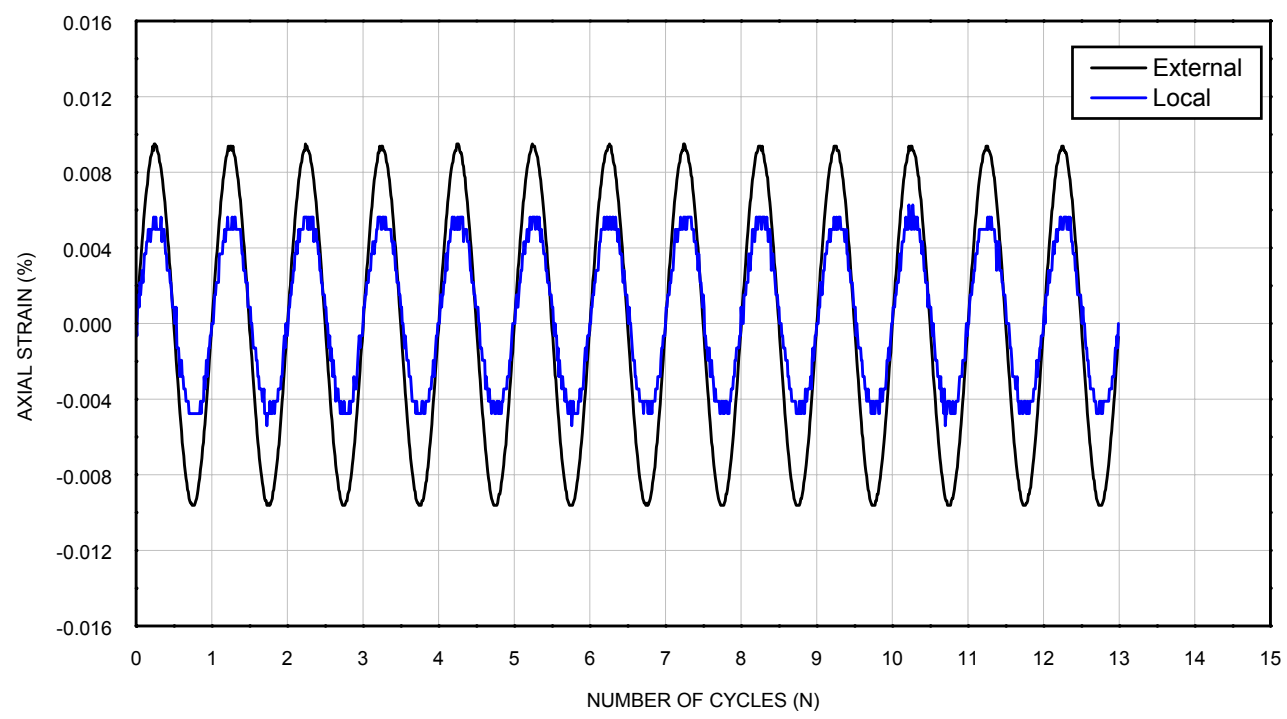
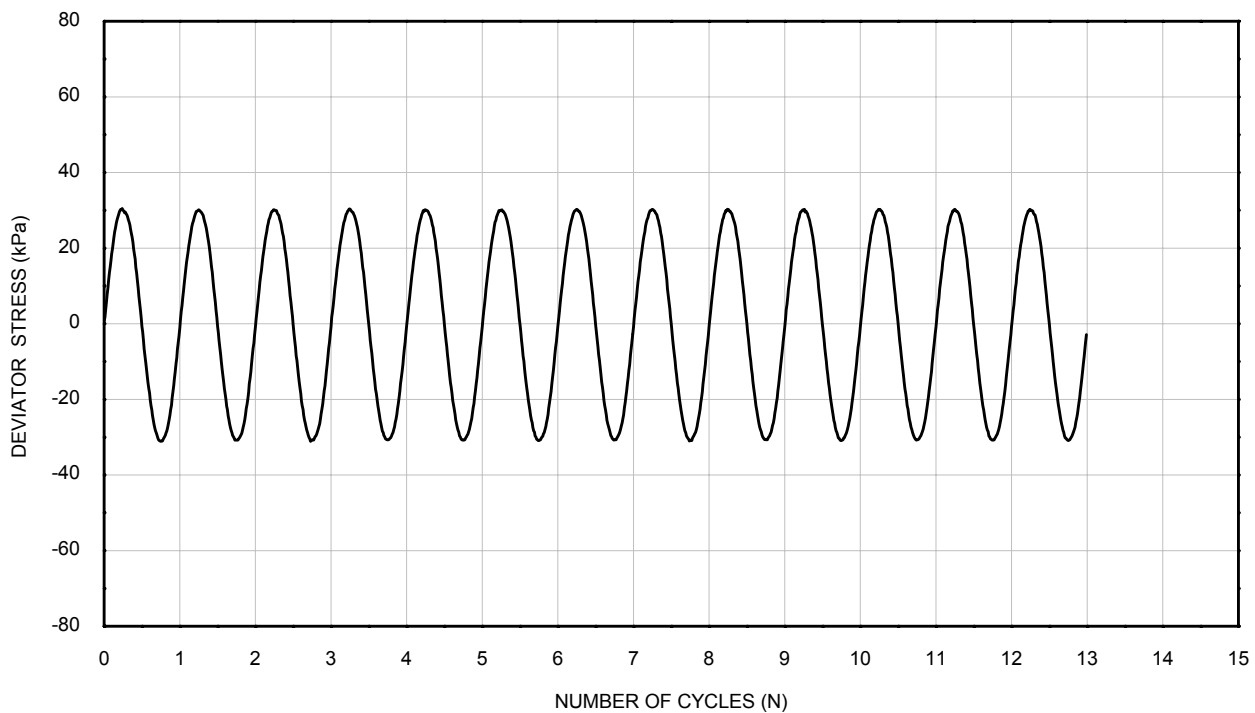
CBH2009-8U
C5140
83.71

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**



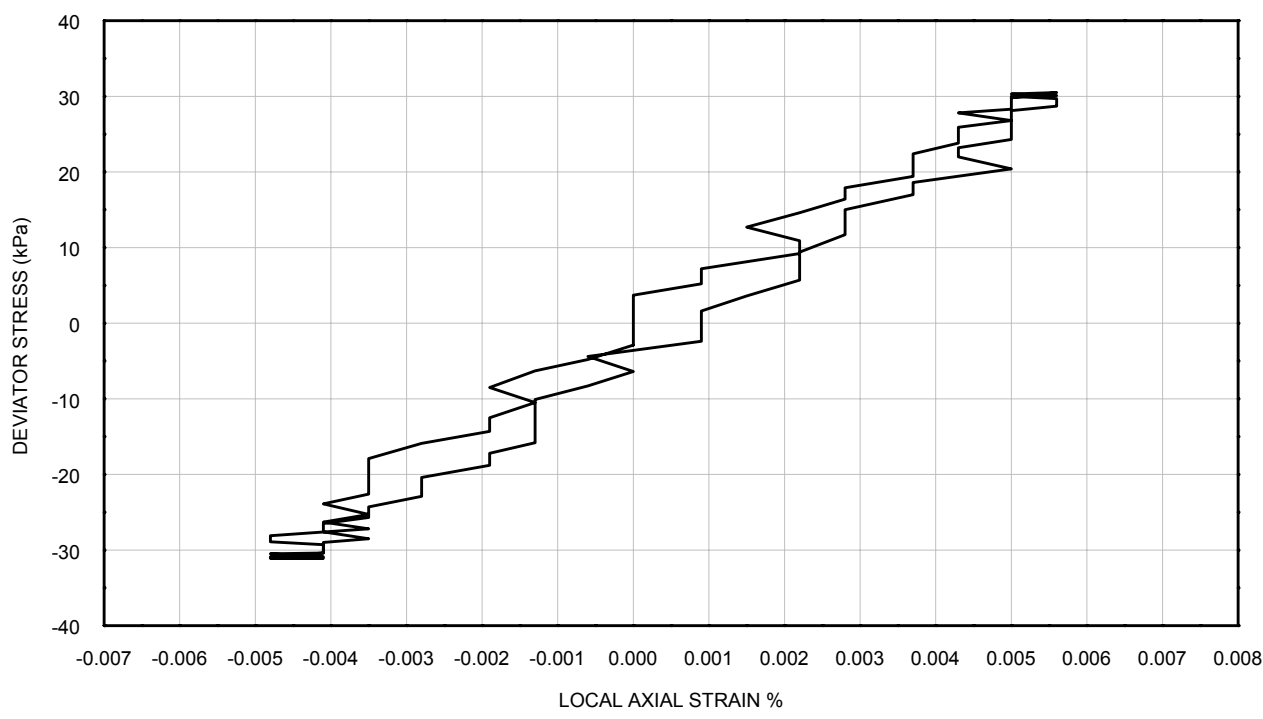
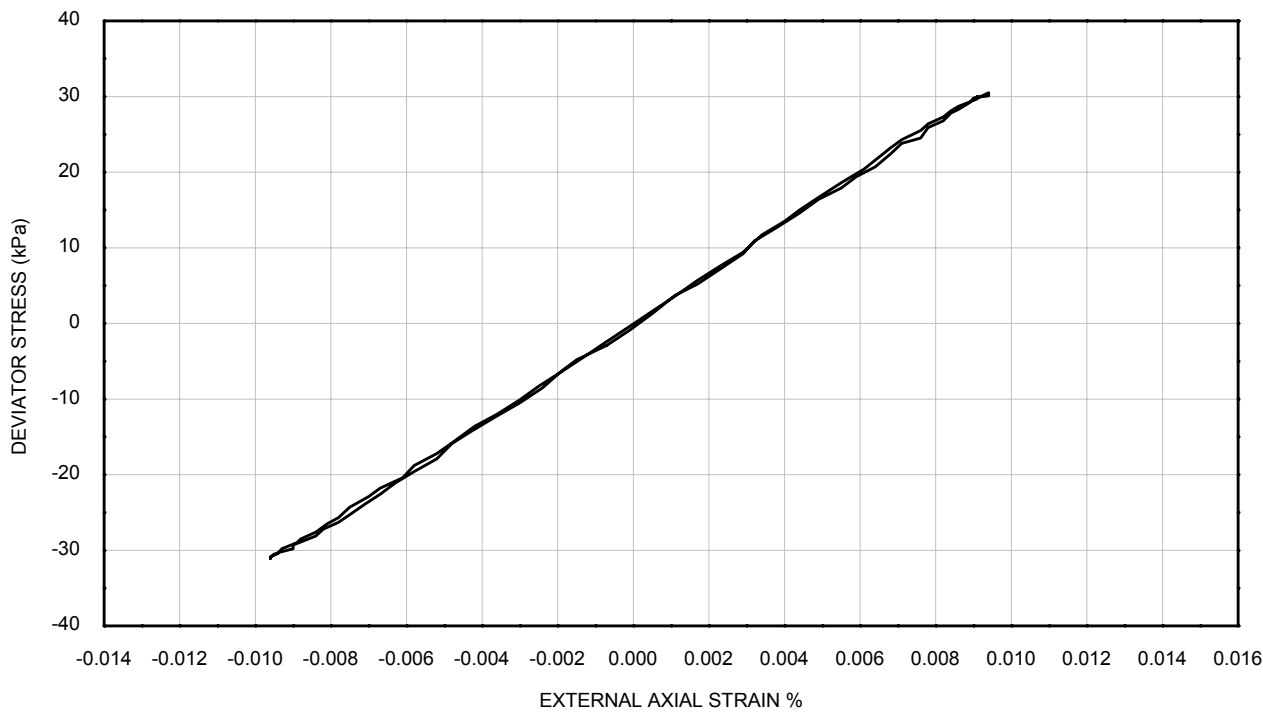
σ'_{rc}	: 837 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 837 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.71
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
SATURATION AND CONSOLIDATION**



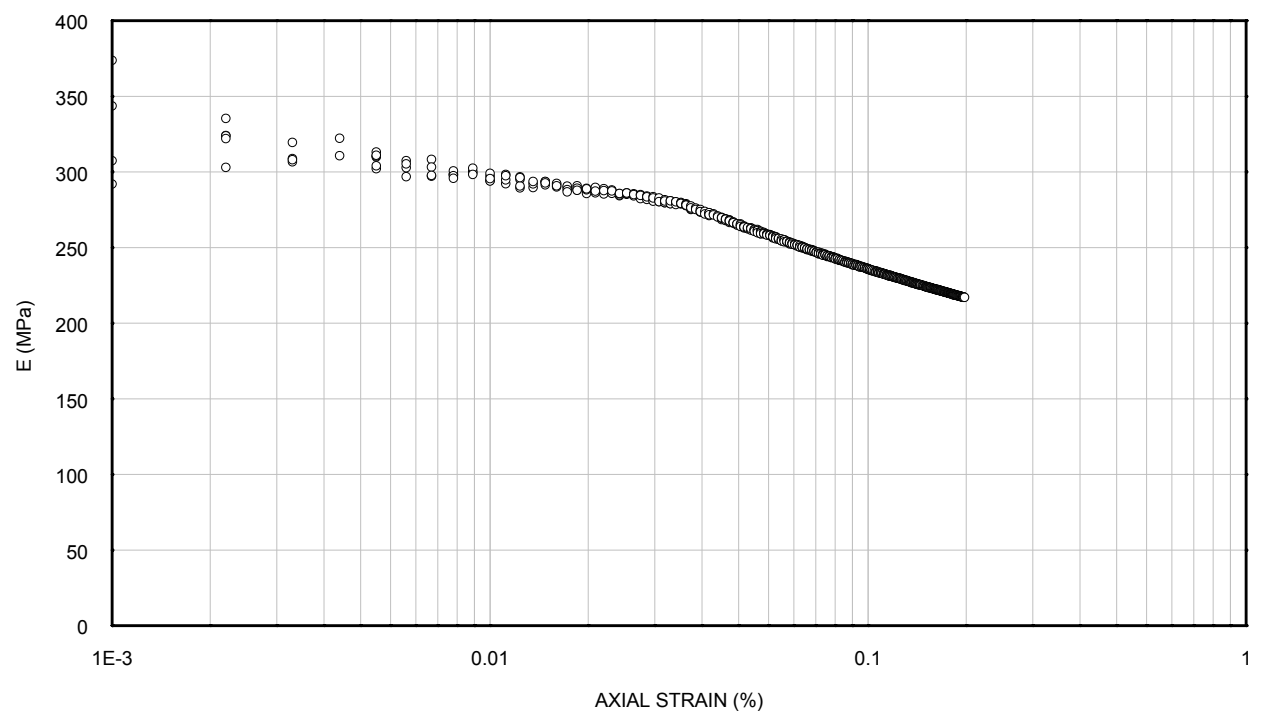
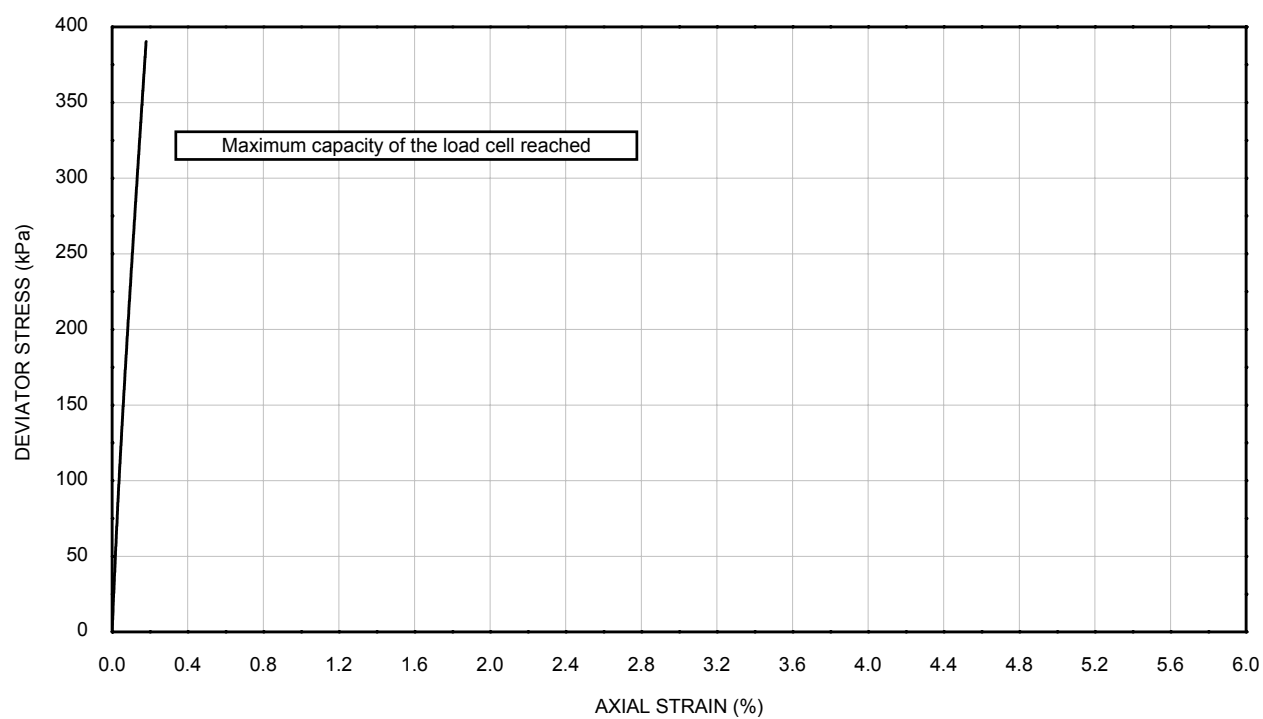
σ_{rc}'	: 837 kPa	Borehole	: CBH2009-8U
σ_{vc}'	: 837 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.71
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ'_{rc}	: 837 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 837 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.71
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ'_{rc}	: 837 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 837 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.71
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
POST CYCLIC STATIC LOADING STAGE**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

VISUAL DESCRIPTION

Very stiff dark greyish brown fissured CLAY, with traces of light brown silt lenses.

GENERAL

Date test started	07/04/2011
Type of sample	Undisturbed
Specimen orientation	Vertical
Type of drains fitted	Radial & one end

INITIAL

Diameter	(mm)	70.4
Length	(mm)	142.1
Moisture content	(%)	28
Bulk density	(Mg/m ³)	1.96
Dry density	(Mg/m ³)	1.53
Voids ratio		0.765
Degree of saturation	(%)	99

SATURATION

Pressure increments applied	(kPa)	100
Differential pressure used	(kPa)	N/A
Pore pressure on completion	(kPa)	1027
Cell pressure on completion	(kPa)	1396
B value achieved		1
Initial effective stress	(kPa)	369

TESTING PROCEDURES USED

Specimen Set-up	As per test specification FUGRO in-house testing procedure
Saturation	As per test specification FUGRO in-house testing procedure
Consolidation - Isotropic	As per test specification
Consolidation - Anisotropic	FUGRO in-house testing procedure
Shearing	As per test specification FUGRO in-house testing procedure

Note: FUGRO in-house testing procedures are available on request

LOCAL GAUGES USED

Local Axial LVDT (x2)

Borehole	CBH2009-8U
Sample	C5138
Depth (m)	59.55

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

CONSOLIDATION : ISOTROPIC		
Cell pressure	(kPa)	1396
Back pressure	(kPa)	800
Effective radial pressure	(kPa)	596
Pore pressure on completion	(kPa)	803
Pore pressure dissipation	(%)	99
Moisture content	(%)	27
Bulk density	(Mg/m ³)	1.97
Dry density	(Mg/m ³)	1.55
Voids ratio		0.743
Degree of saturation	(%)	99
Volumetric strain (from water flow)	(%)	1.21
Local volumetric strain	(%)	0.50
Cvi	(m ² /year)	-
Mvi	(m ² /MN)	-
Permeability	(m/s)	-

CYCLIC SUMMARY			
Frequency	(Hz)	0.1	
No. applied cycles	(-)	13	
At Cycle 10		EXTERNAL	LOCAL
Strain	(%)	0.0057	0.0038
Young's Modulus, E	(MPa)	156	232
Damping ratio, D	(%)	4.9	1.4

Borehole	CBH2009-8U
Sample	C5138
Depth (m)	59.55

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

SHEARING		
Initial pore pressure	(kPa)	806
Initial effective stress p_0'	(kPa)	-210
Rate of strain	(%/hour)	0.20
Initial deviator stress	(kPa)	0
At peak deviator stress		
Deviator stress	(kPa)	375
Undrained shear strength	(kPa)	187
Membrane correction applied	(kPa)	0
Drain correction applied	(kPa)	0
External axial strain	(%)	2.30
Local axial strain	(%)	1.83
Excess pore pressure (mid-height)	(kPa)	210
Horizontal effective stress	(kPa)	-419
Vertical effective stress	(kPa)	-45
Principal effective stress ratio		0.1

LOCAL STRAIN PARAMETERS		
At 0.01% local axial strain		
Deviator stress		33
External axial strain		0.02
Excess pore pressure (mid-height)		12
Principal effective stress ratio		0.9
Local Secant modulus $E_{u(local)}$	(MPa)	318.7
normalised w.r.t p_0'		-1520.7
normalised w.r.t c_u		1700.8
At 0.1% local axial strain		
Deviator stress		106
External axial strain		0.13
Excess pore pressure (mid-height)		59
Principal effective stress ratio		0.6
Local Secant modulus $E_{u(local)}$	(MPa)	106.0
normalised w.r.t p_0'		-505.8
normalised w.r.t c_u		565.7
Degree of non-linearity during shear L		0.33

FINAL CONDITIONS		
Moisture content	(%)	27.2
Bulk density	(Mg/m ³)	1.97
Dry density	(Mg/m ³)	1.55

Borehole	CBH2009-8U
Sample	C5138
Depth (m)	59.55

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

VISUAL DESCRIPTION

Very stiff dark greyish brown fissured CLAY, with traces of light brown silt lenses.

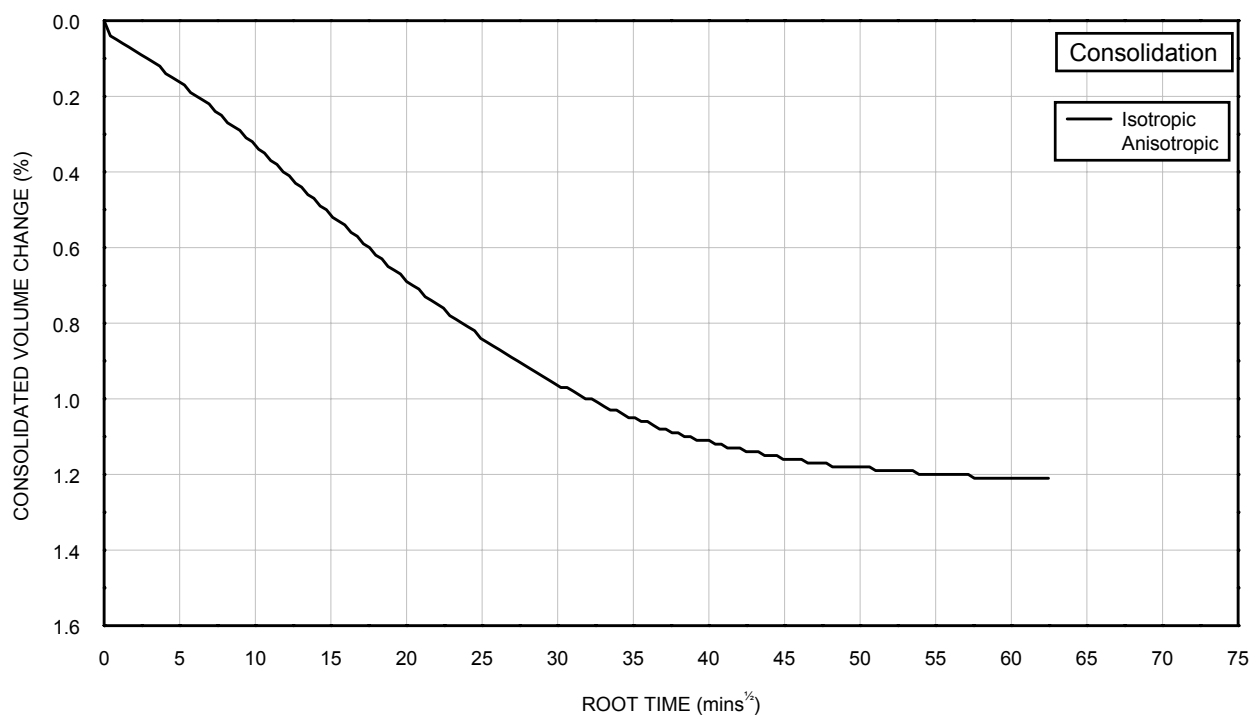
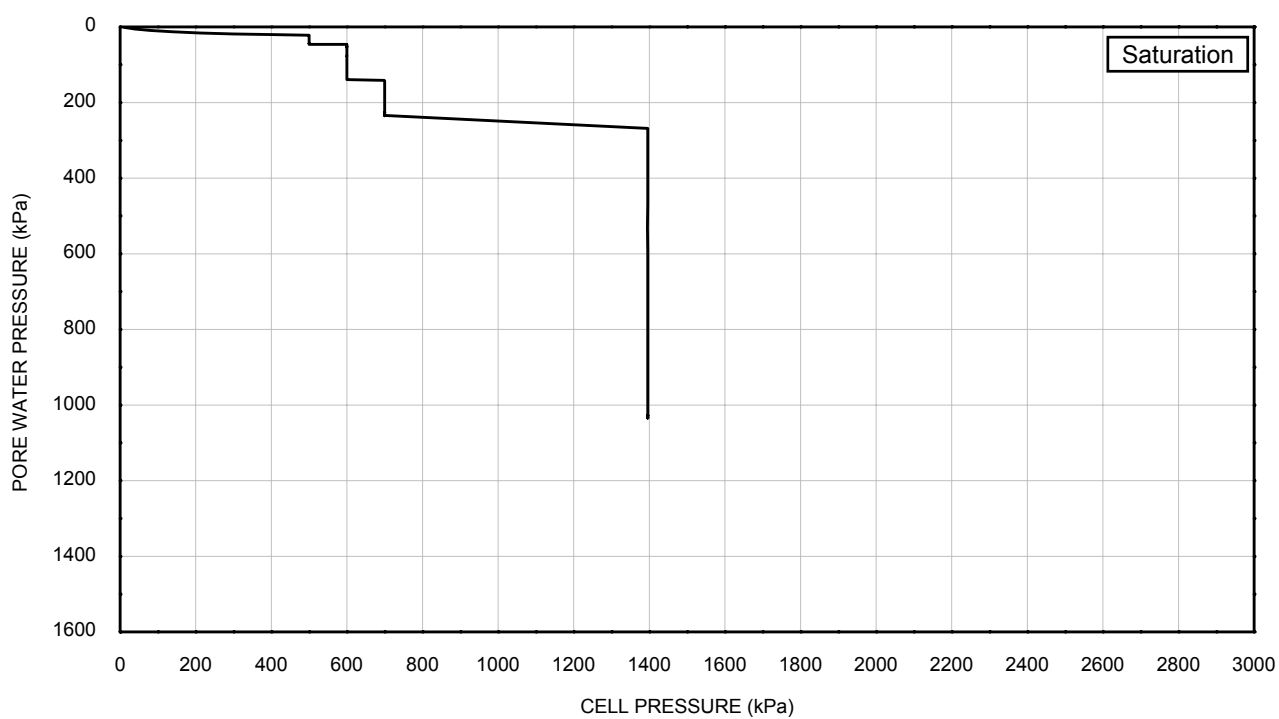
SPECIMEN PHOTOGRAPHS



Borehole
Sample
Depth (m)

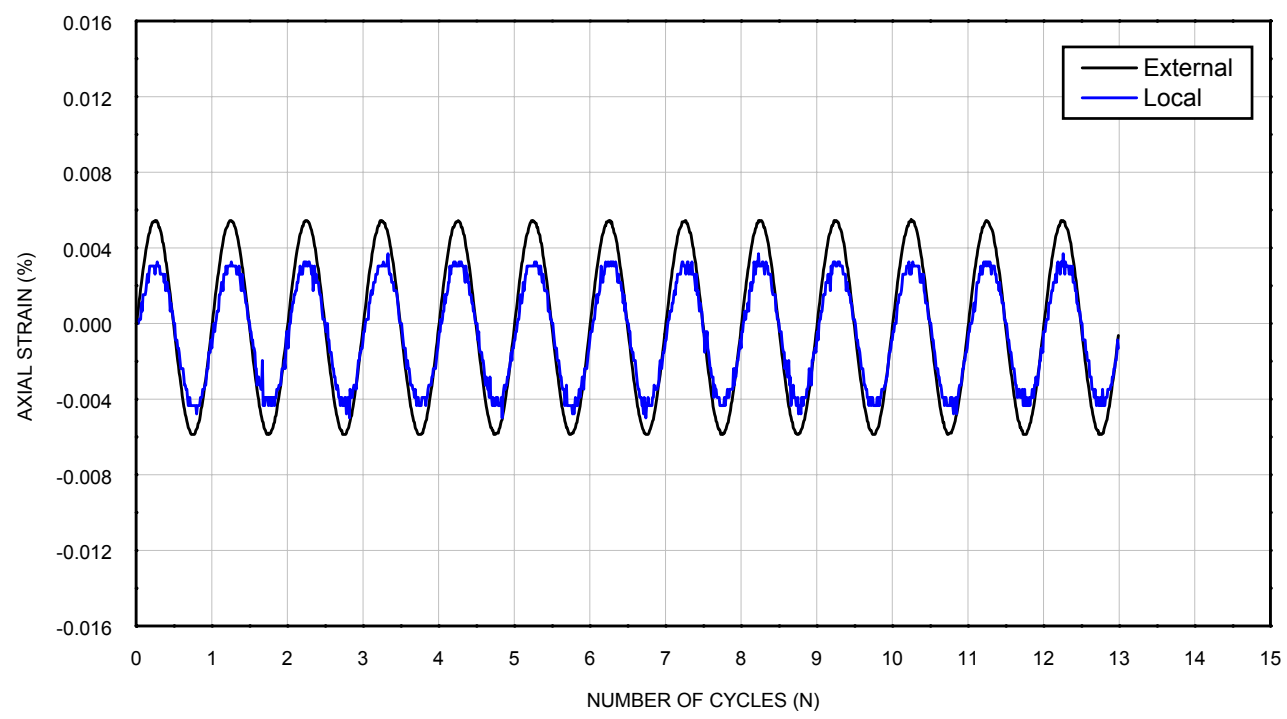
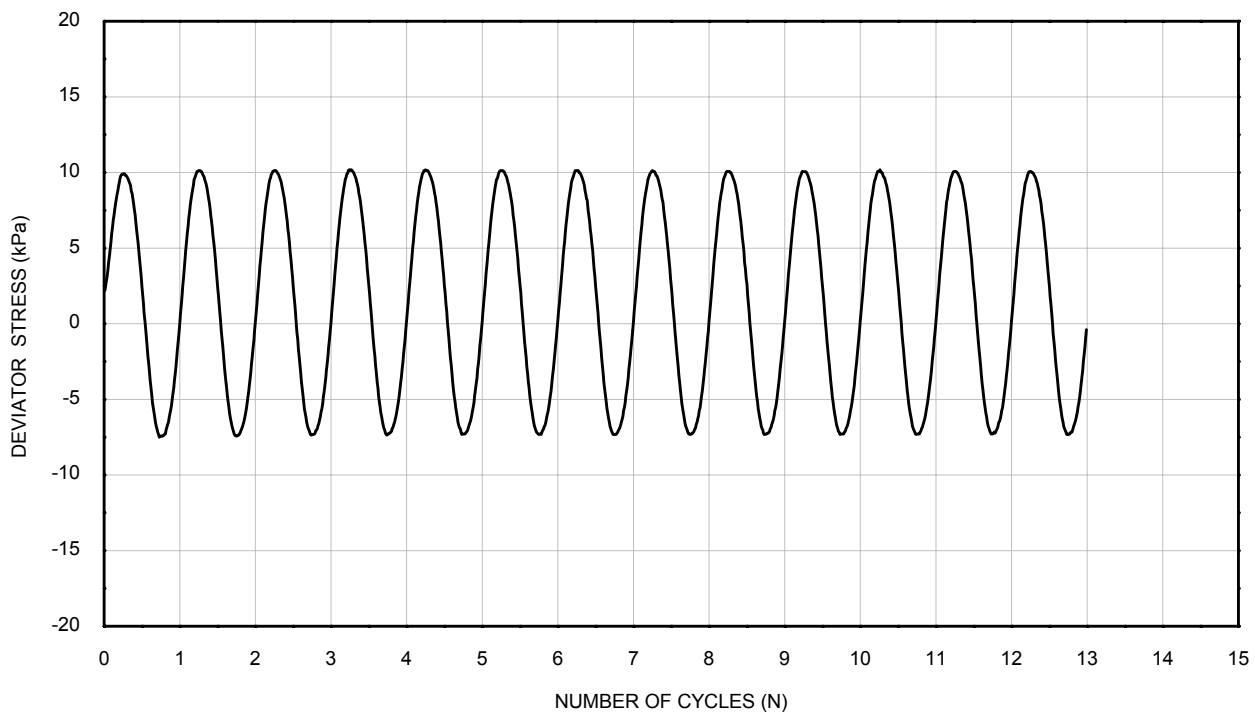
CBH209-8U
C5138
59.55

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**



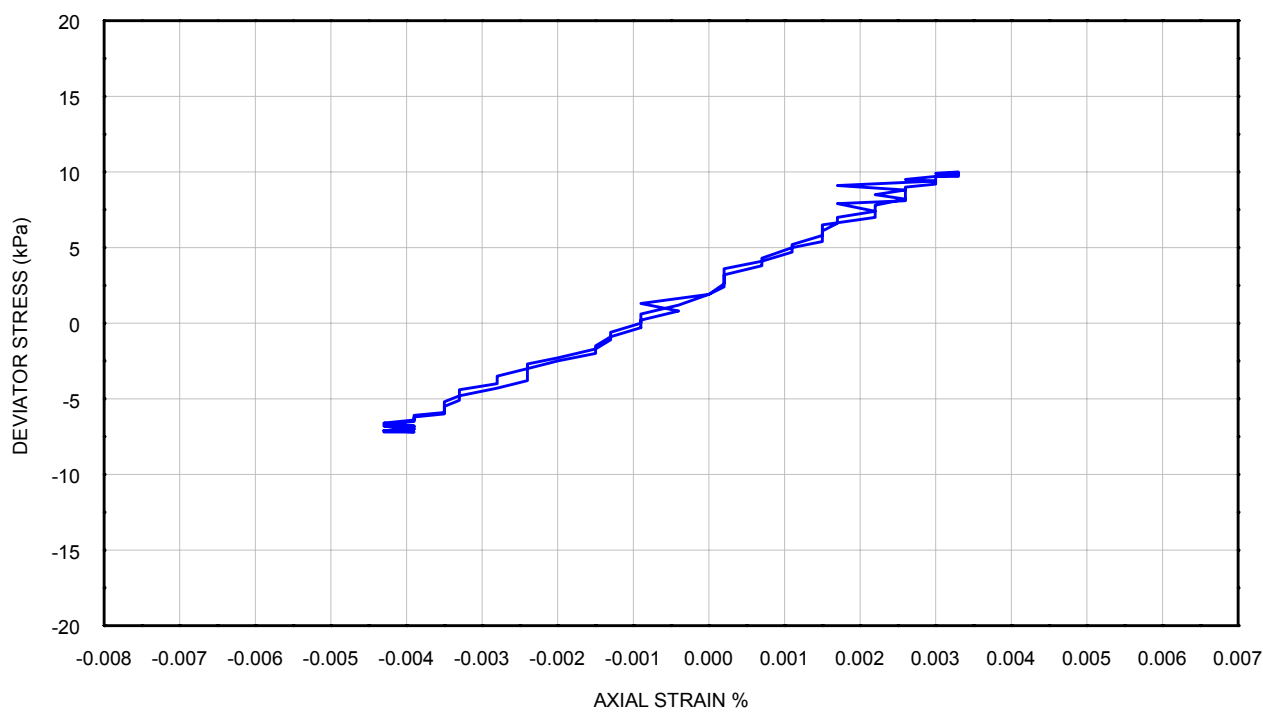
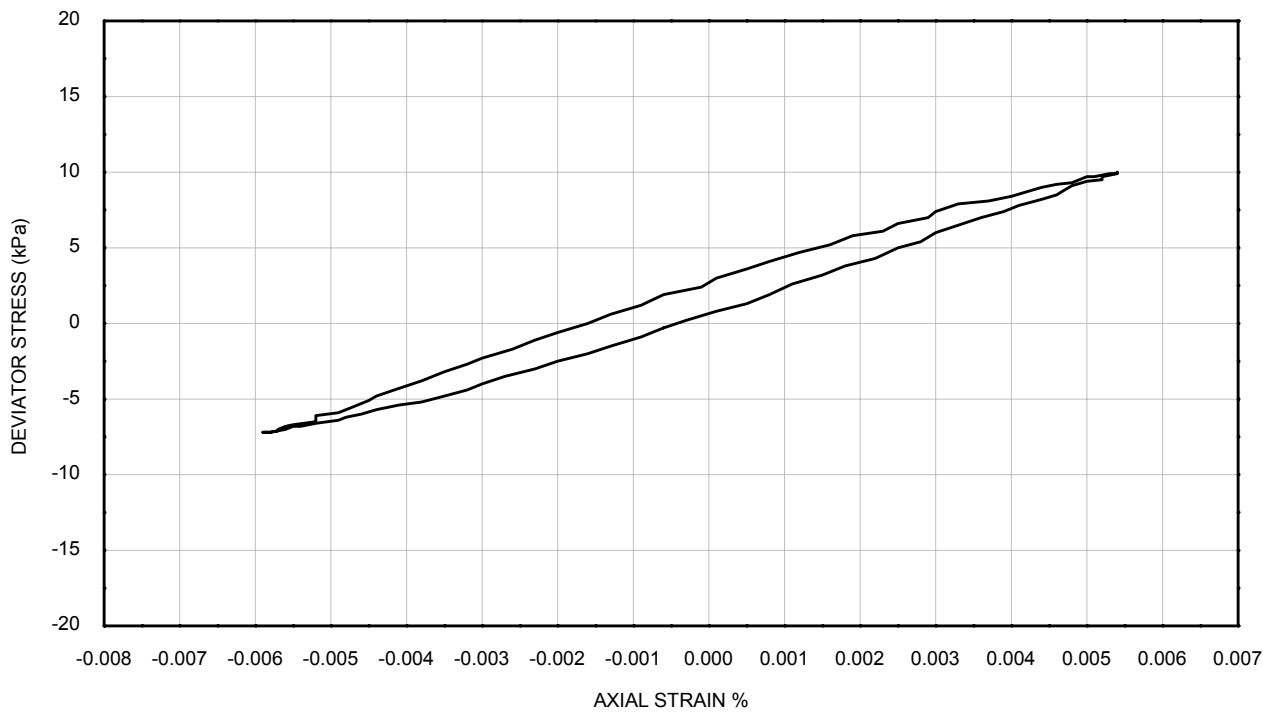
σ'_{rc}	: 596 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 596 kPa	Sample	: C5138
Nominal τ_{av}	: -- kPa	Depth (m)	: 59.55
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
SATURATION AND CONSOLIDATION**



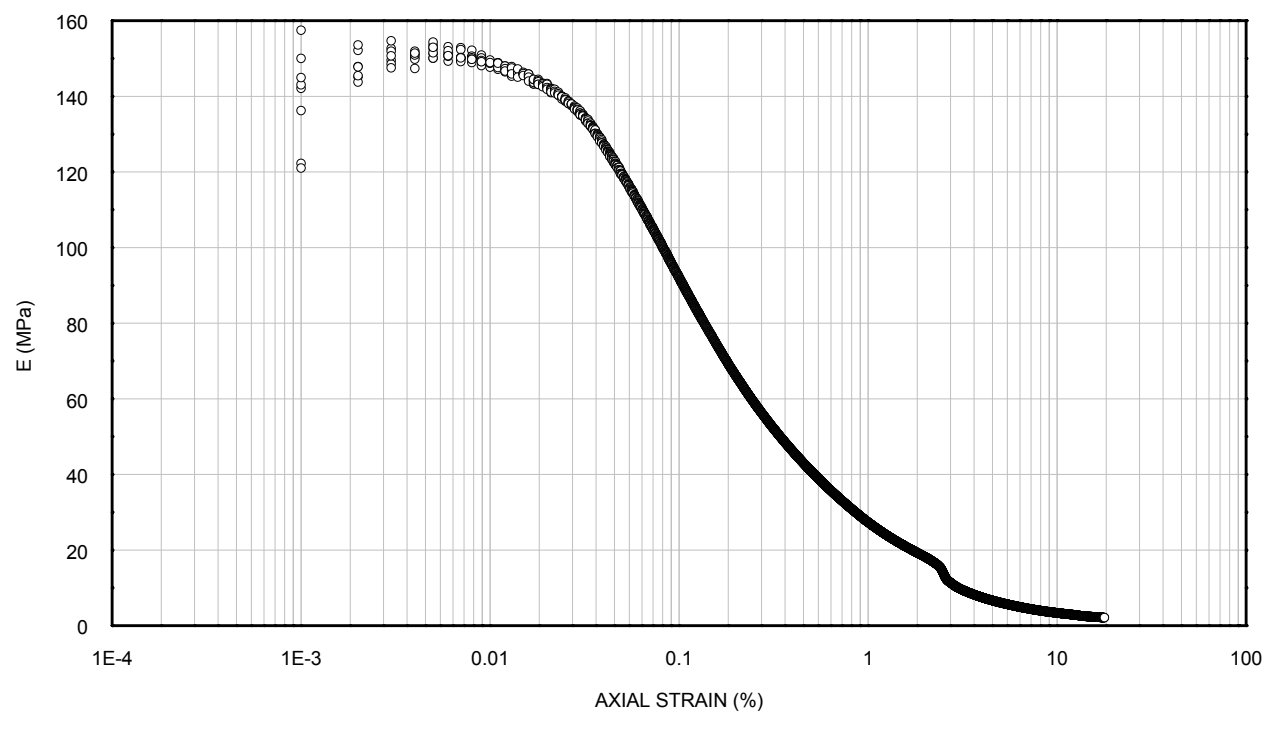
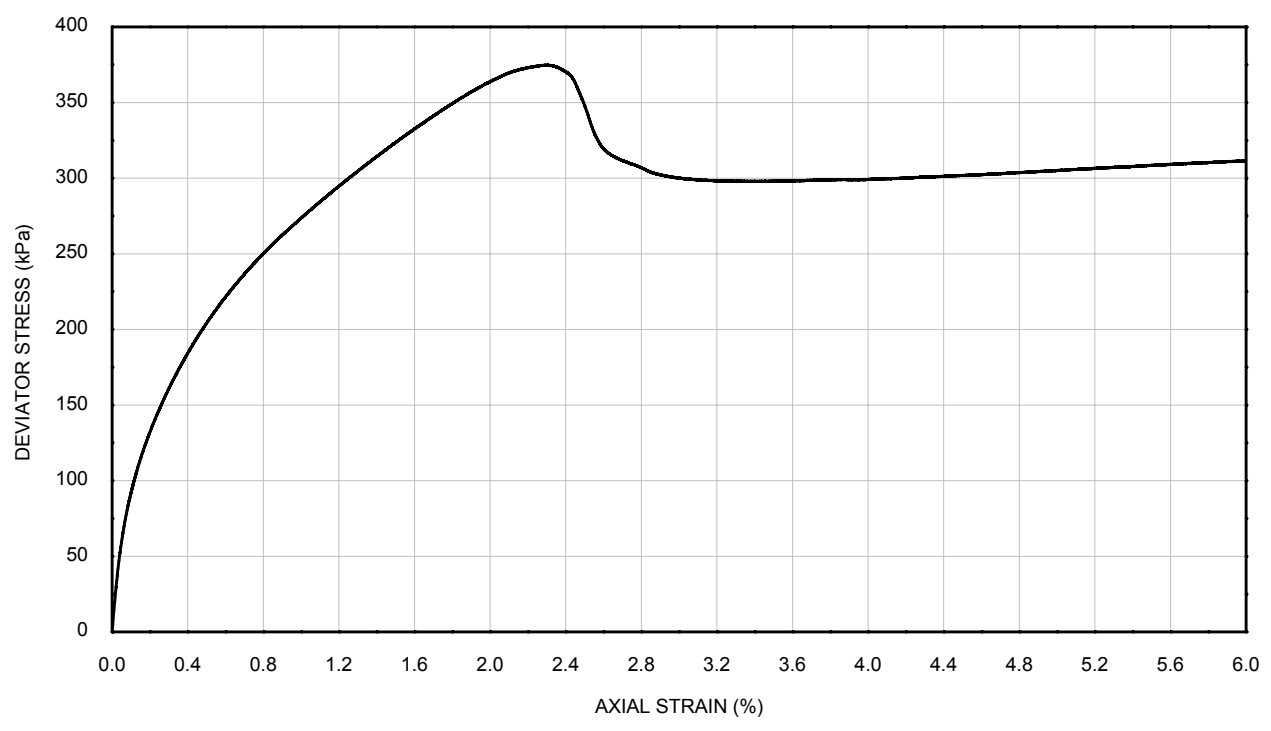
σ'_{rc}	: 596 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 596 kPa	Sample	: C5138
Nominal τ_{av}	: -- kPa	Depth (m)	: 59.55
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ'_{rc}	: 596 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 596 kPa	Sample	: C5138
Nominal τ_{av}	: -- kPa	Depth (m)	: 59.55
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ'_{rc}	: 596 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 596 kPa	Sample	: C5138
Nominal τ_{av}	: -- kPa	Depth (m)	: 59.55
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
POST CYCLIC STATIC LOADING STAGE**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

VISUAL DESCRIPTION

Hard dark brownish grey fissured silty CLAY with brown staining along fissures, and black staining occurring uniformly (fissures are both vertical and angular).

GENERAL

Date test started	05/05/2011
Type of sample	Undisturbed
Specimen orientation	Vertical
Type of drains fitted	Radial & one end

INITIAL

Diameter	(mm)	70.4
Length	(mm)	142.1
Moisture content	(%)	54
Bulk density	(Mg/m ³)	1.79
Dry density	(Mg/m ³)	1.16
Voids ratio		1.326
Degree of saturation	(%)	100

SATURATION

Pressure increments applied	(kPa)	100
Differential pressure used	(kPa)	N/A
Pore pressure on completion	(kPa)	974
Cell pressure on completion	(kPa)	1063
B value achieved		0.99
Initial effective stress	(kPa)	89

TESTING PROCEDURES USED

Specimen Set-up	As per test specification FUGRO in-house testing procedure
Saturation	As per test specification FUGRO in-house testing procedure
Consolidation - Isotropic	As per test specification
Consolidation - Anisotropic	FUGRO in-house testing procedure
Shearing	As per test specification FUGRO in-house testing procedure

Note: FUGRO in-house testing procedures are available on request

LOCAL GAUGES USED

Local Axial LVDT (x2)

Borehole	CBH2009-8U
Sample	C5135
Depth (m)	56.32

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

CONSOLIDATION : ISOTROPIC		
Cell pressure	(kPa)	1063
Back pressure	(kPa)	500
Effective radial pressure	(kPa)	563
Pore pressure on completion	(kPa)	504
Pore pressure dissipation	(%)	99
Moisture content	(%)	51
Bulk density	(Mg/m ³)	1.81
Dry density	(Mg/m ³)	1.20
Voids ratio		1.245
Degree of saturation	(%)	100
Volumetric strain (from water flow)	(%)	3.50
Local volumetric strain	(%)	0.94
Cvi	(m ² /year)	-
Mvi	(m ² /MN)	-
Permeability	(m/s)	-

CYCLIC SUMMARY*			
Frequency	(Hz)	0.1	
No. applied cycles	(-)	13	
At Cycle 10		EXTERNAL	LOCAL
Strain	(%)	-	-
Young's Modulus, E	(MPa)	-	-
Damping ratio, D	(%)	-	-

* Suction type top cap uncoupled during cyclic loading.

Borehole	CBH2009-8U
Sample	C5135
Depth (m)	56.32

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Checked by:

Date:

Approved by:

SHEARING #		
Initial pore pressure	(kPa)	506
Initial effective stress p_0'	(kPa)	57
Rate of strain	(%/hour)	0.20
Initial deviator stress	(kPa)	0
At peak deviator stress		
Deviator stress	(kPa)	865
Undrained shear strength	(kPa)	432
Membrane correction applied	(kPa)	0
Drain correction applied	(kPa)	0
External axial strain	(%)	1.48
Local axial strain	(%)	0.87
Excess pore pressure (mid-height)	(kPa)	355
Horizontal effective stress	(kPa)	-299
Vertical effective stress	(kPa)	566
Principal effective stress ratio		-1.9

LOCAL STRAIN PARAMETERS		
At 0.01% local axial strain		
Deviator stress		62
External axial strain		0.24
Excess pore pressure (mid-height)		33
Principal effective stress ratio		3.6
Local Secant modulus $E_{u(local)}$	(MPa)	601.5
normalised w.r.t p_0'		10644.7
normalised w.r.t c_u		1391.4
At 0.1% local axial strain		
Deviator stress		270
External axial strain		0.57
Excess pore pressure (mid-height)		140
Principal effective stress ratio		-2.2
Local Secant modulus $E_{u(local)}$	(MPa)	270.9
normalised w.r.t p_0'		4794.5
normalised w.r.t c_u		626.7
Degree of non-linearity during shear L		0.45

Suction type top cap uncoupled during cyclic loading. Bedding error evident during shear stage.

FINAL CONDITIONS		
Moisture content	(%)	50.9
Bulk density	(Mg/m ³)	1.81
Dry density	(Mg/m ³)	1.20

Borehole	CBH2009-8U
Sample	C5135
Depth (m)	56.32

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

VISUAL DESCRIPTION

Hard dark brownish grey fissured silty CLAY with brown staining along fissures, and black staining occurring uniformly (fissures are both vertical and angular).

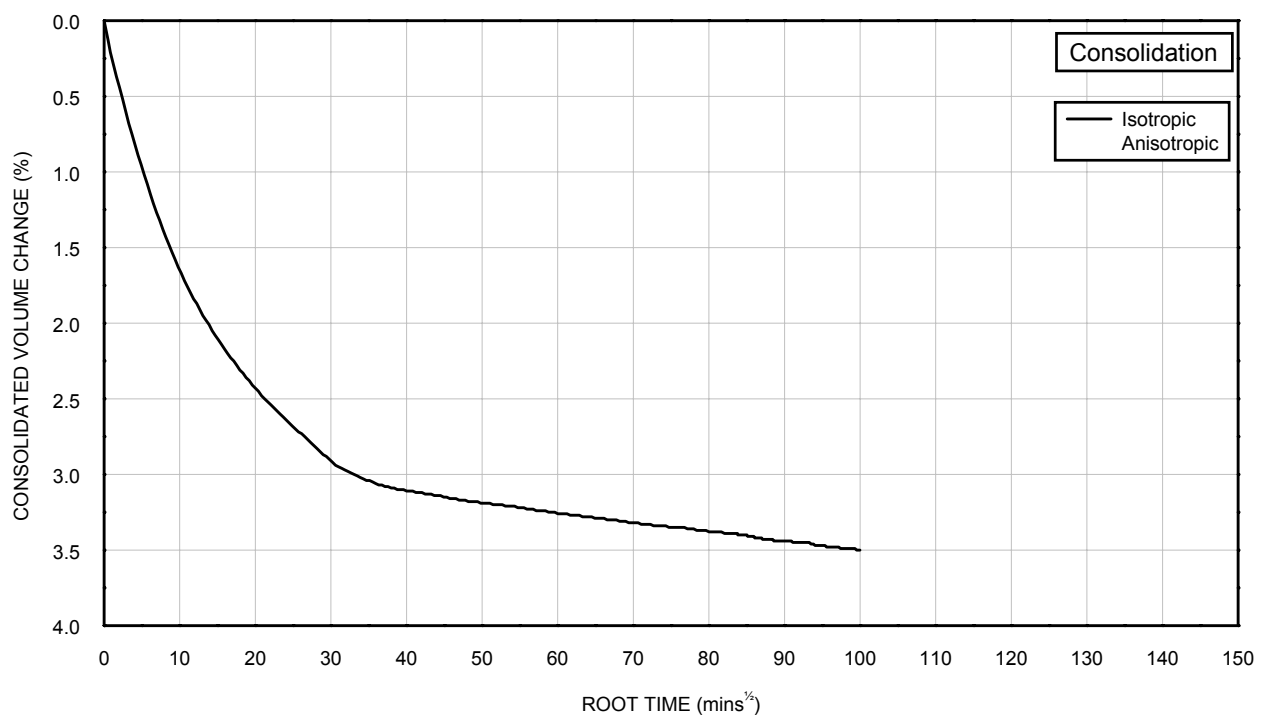
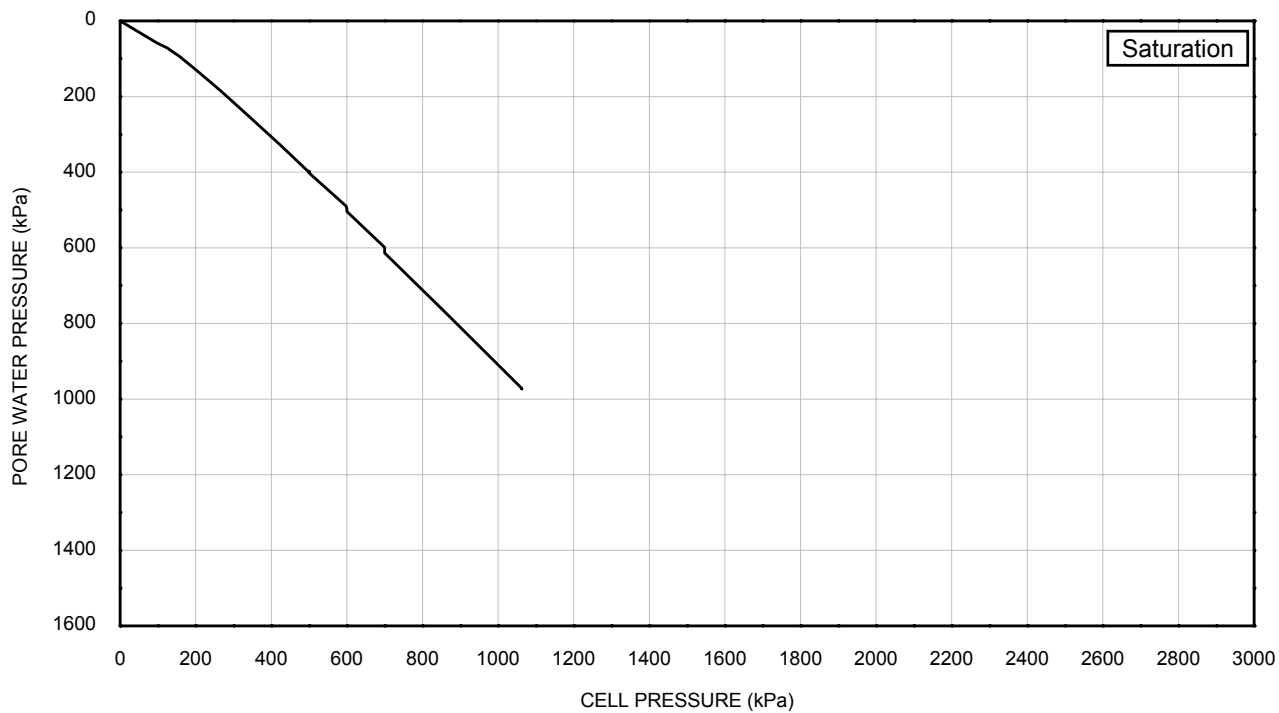
SPECIMEN PHOTOGRAPHS

Post test photograph was not possible.

Borehole
Sample
Depth (m)

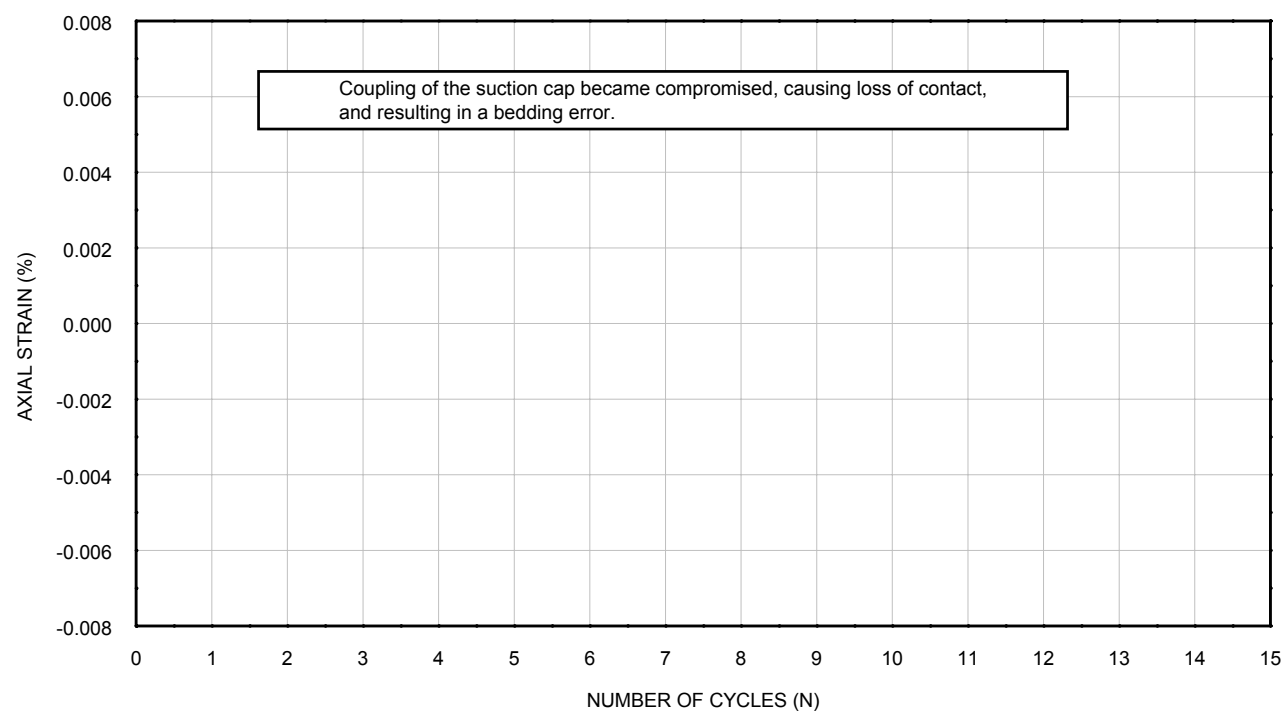
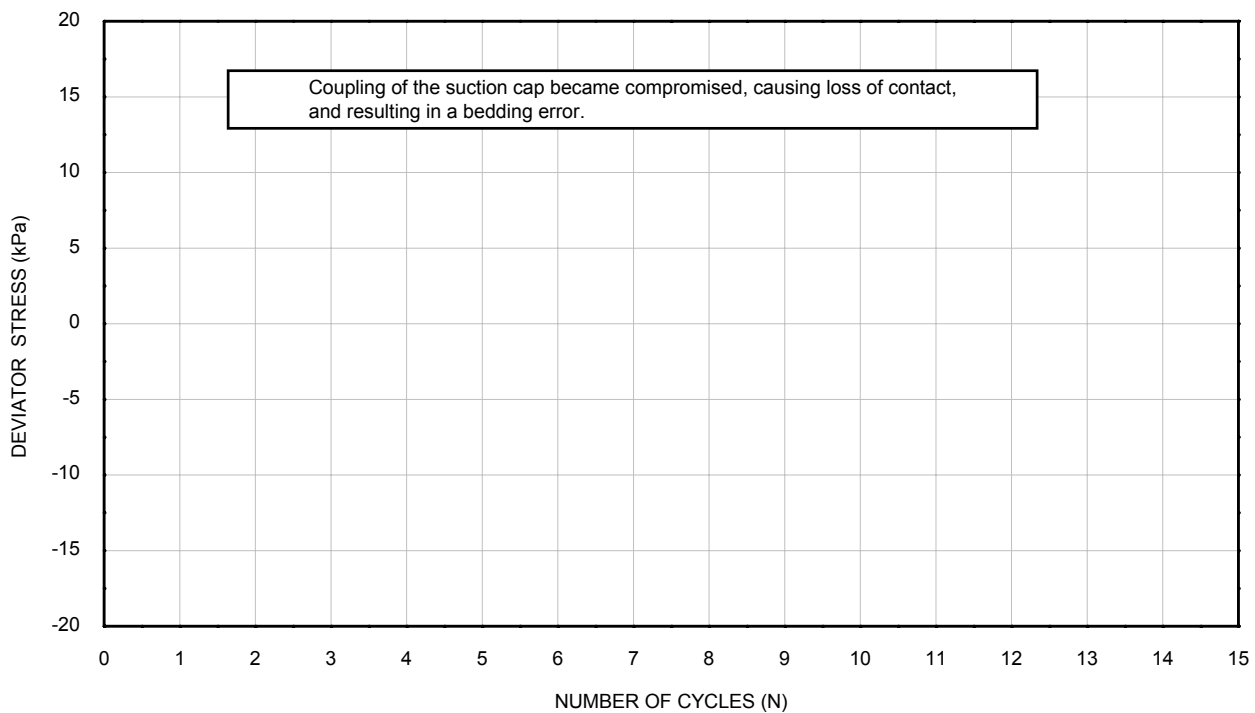
CBH2009-8U
C5135
56.32

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**



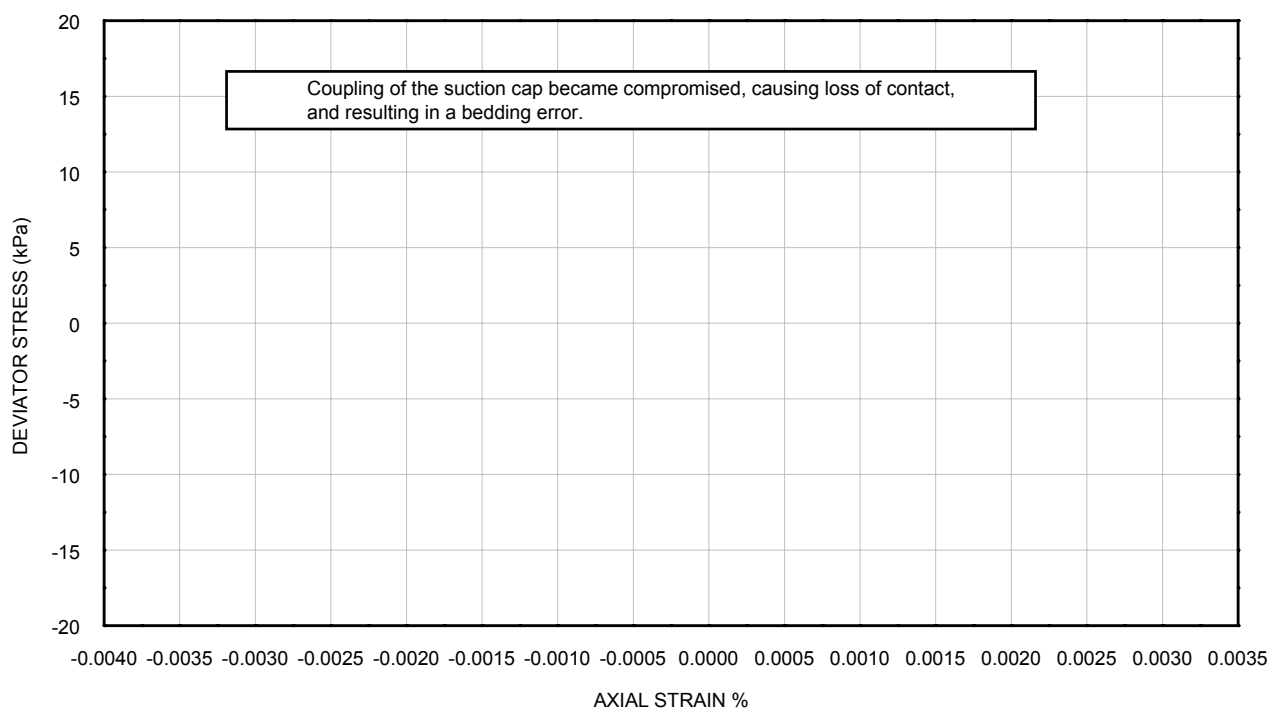
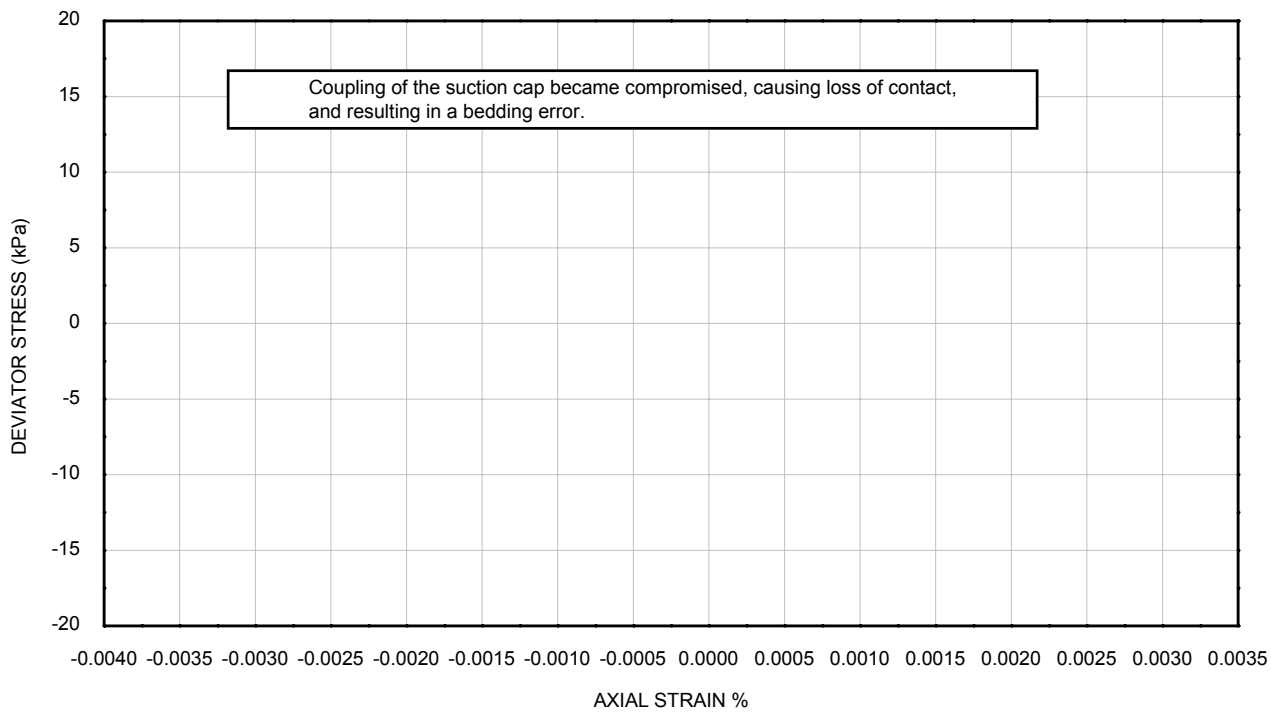
σ'_{rc}	: 563 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 563 kPa	Sample	: C5135
Nominal τ_{av}	: -- kPa	Depth (m)	: 56.32
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
SATURATION AND CONSOLIDATION**



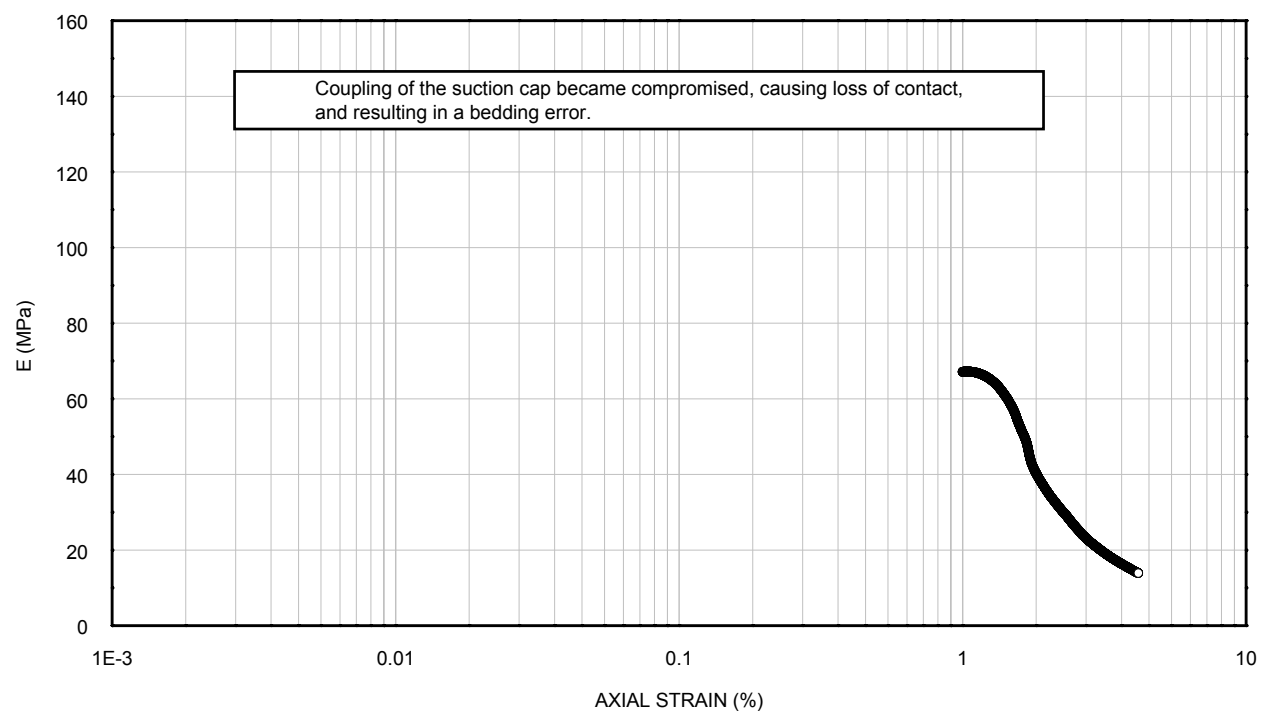
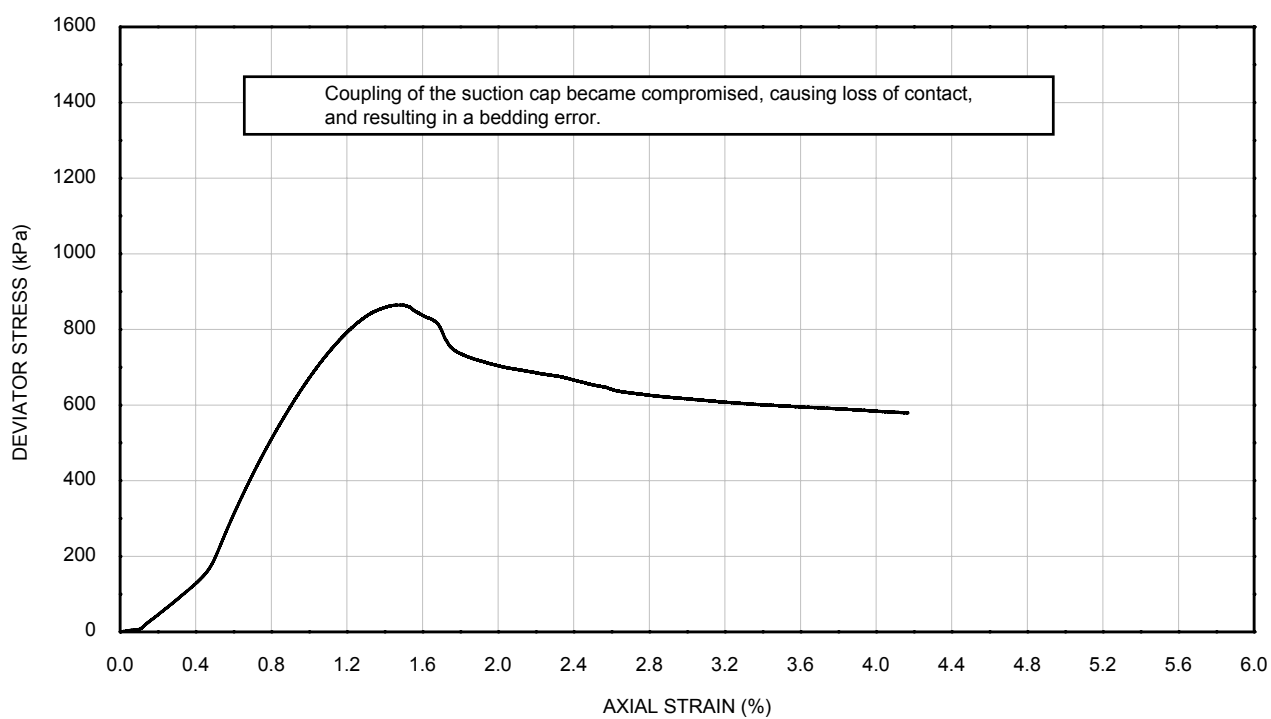
σ'_{rc}	: 563 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 563 kPa	Sample	: C5135
Nominal τ_{av}	: -- kPa	Depth (m)	: 56.32
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ_{rc}'	: 563 kPa	Borehole	: CBH2009-8U
σ_{vc}'	: 563 kPa	Sample	: C5135
Nominal τ_{av}	: -- kPa	Depth (m)	: 56.32
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ'_{rc}	: 563 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 563 kPa	Sample	: C5135
Nominal τ_{av}	: -- kPa	Depth (m)	: 56.32
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
POST CYCLIC STATIC LOADING STAGE**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

VISUAL DESCRIPTION

Hard dark brownish grey fissured CLAY (fissures are angular and vertical)

GENERAL

Date test started	10/05/2011
Type of sample	Undisturbed
Specimen orientation	Vertical
Type of drains fitted	Radial & one end

INITIAL

Diameter	(mm)	71.2
Length	(mm)	139.7
Moisture content	(%)	31.3
Bulk density	(Mg/m ³)	1.90
Dry density	(Mg/m ³)	1.45
Voids ratio		0.865
Degree of saturation	(%)	98

SATURATION

Pressure increments applied	(kPa)	100
Differential pressure used	(kPa)	N/A
Pore pressure on completion	(kPa)	1203
Cell pressure on completion	(kPa)	1639
B value achieved		1.00
Initial effective stress	(kPa)	436

TESTING PROCEDURES USED

Specimen Set-up	As per test specification FUGRO in-house testing procedure
Saturation	As per test specification FUGRO in-house testing procedure
Consolidation - Isotropic	As per test specification
Consolidation - Anisotropic	FUGRO in-house testing procedure
Shearing	As per test specification FUGRO in-house testing procedure

Note: FUGRO in-house testing procedures are available on request

LOCAL GAUGES USED

Local Axial LVDT (x2)

Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.90

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

CONSOLIDATION : ISOTROPIC		
Cell pressure	(kPa)	1639
Back pressure	(kPa)	800
Effective radial pressure	(kPa)	839
Pore pressure on completion	(kPa)	810
Pore pressure dissipation	(%)	98
Moisture content	(%)	30.3
Bulk density	(Mg/m ³)	1.91
Dry density	(Mg/m ³)	1.47
Voids ratio		0.839
Degree of saturation	(%)	97
Volumetric strain (from water flow)	(%)	1.42
Local volumetric strain	(%)	0.40
Cvi	(m ² /year)	-
Mvi	(m ² /MN)	-
Permeability	(m/s)	-

CYCLIC SUMMARY			
Frequency	(Hz)	0.1	
No. applied cycles	(-)	13	
At Cycle 10		EXTERNAL	LOCAL
Strain	(%)	0.0231	0.0149
Young's Modulus, E	(MPa)	289	439
Damping ratio, D	(%)	1.1	1.6

Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.90

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

SHEARING*		
Initial pore pressure	(kPa)	812
Initial effective stress p_0'	(kPa)	27
Rate of strain	(%/hour)	0.20
Initial deviator stress	(kPa)	0
At peak deviator stress		
Deviator stress	(kPa)	1134
Undrained shear strength	(kPa)	567
Membrane correction applied	(kPa)	0.1
Drain correction applied	(kPa)	0
External axial strain	(%)	0.74
Local axial strain	(%)	
Excess pore pressure (mid-height)	(kPa)	515
Horizontal effective stress	(kPa)	-488
Vertical effective stress	(kPa)	646
Principal effective stress ratio		-1.3

LOCAL STRAIN PARAMETERS		
At 0.01% local axial strain		
Deviator stress		51
External axial strain		0.02
Excess pore pressure (mid-height)		21
Principal effective stress ratio		8.9
Local Secant modulus $E_{u(local)}$	(MPa)	489.0
normalised w.r.t p_0'		18075.0
normalised w.r.t c_u		862.6
At 0.1% local axial strain		
Deviator stress		343
External axial strain		0.16
Excess pore pressure (mid-height)		175
Principal effective stress ratio		-1.3
Local Secant modulus $E_{u(local)}$	(MPa)	347.7
normalised w.r.t p_0'		12849.4
normalised w.r.t c_u		613.2
Degree of non-linearity during shear L		0.71

* System error caused an early termination of the static shear stage.

FINAL CONDITIONS		
Moisture content	(%)	30.3
Bulk density	(Mg/m ³)	1.91
Dry density	(Mg/m ³)	1.47

Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.90

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

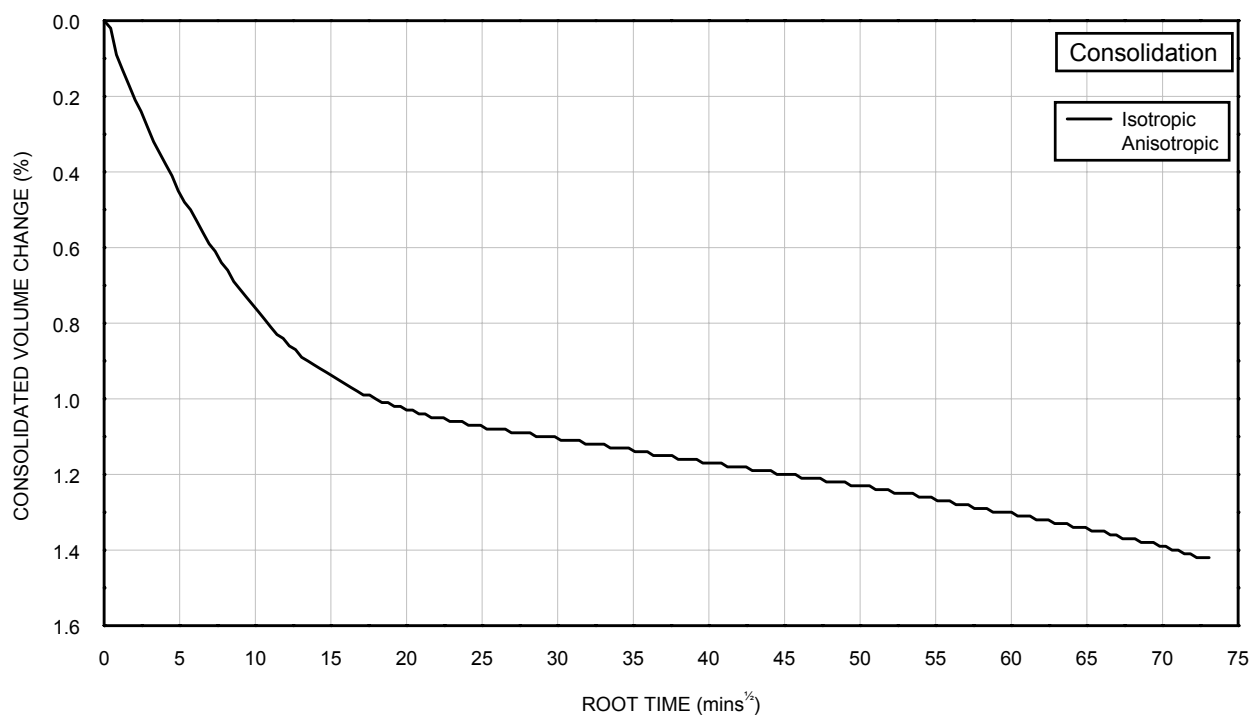
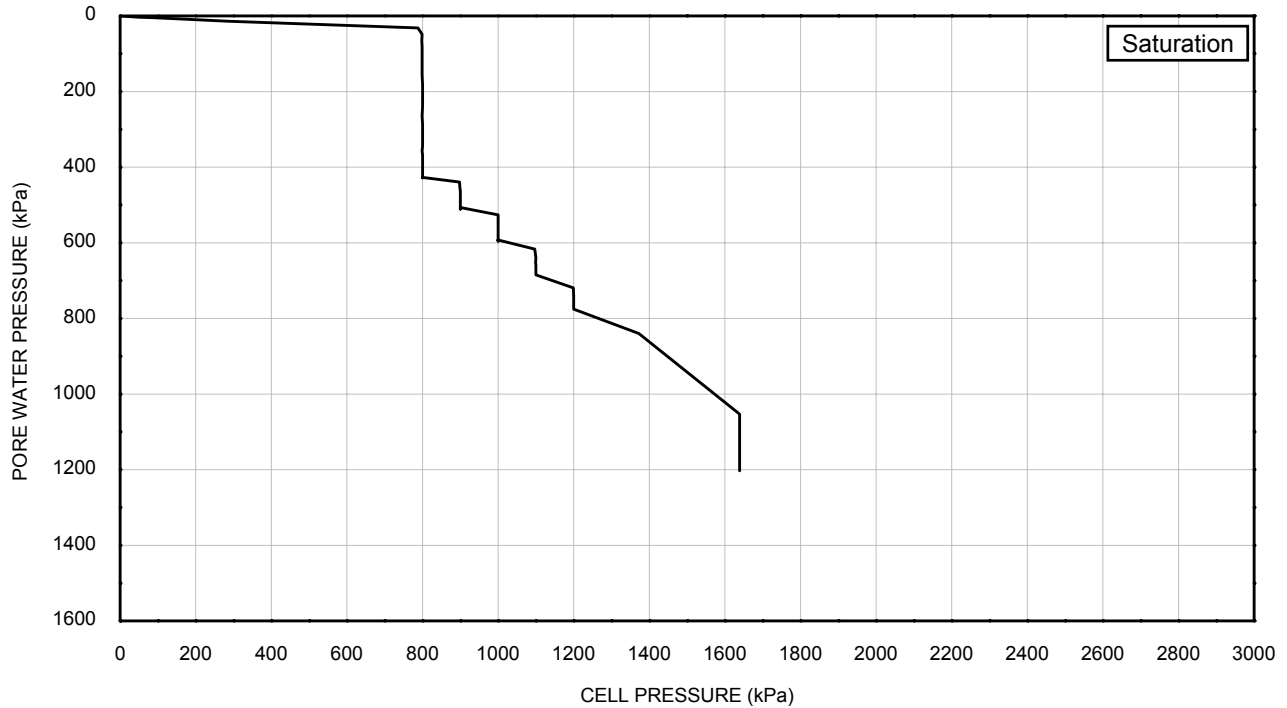
Approved by:

VISUAL DESCRIPTION
Hard dark brownish grey fissured CLAY (fissures are angular and vertical)

SPECIMEN PHOTOGRAPHS
Post test photograph was not possible.

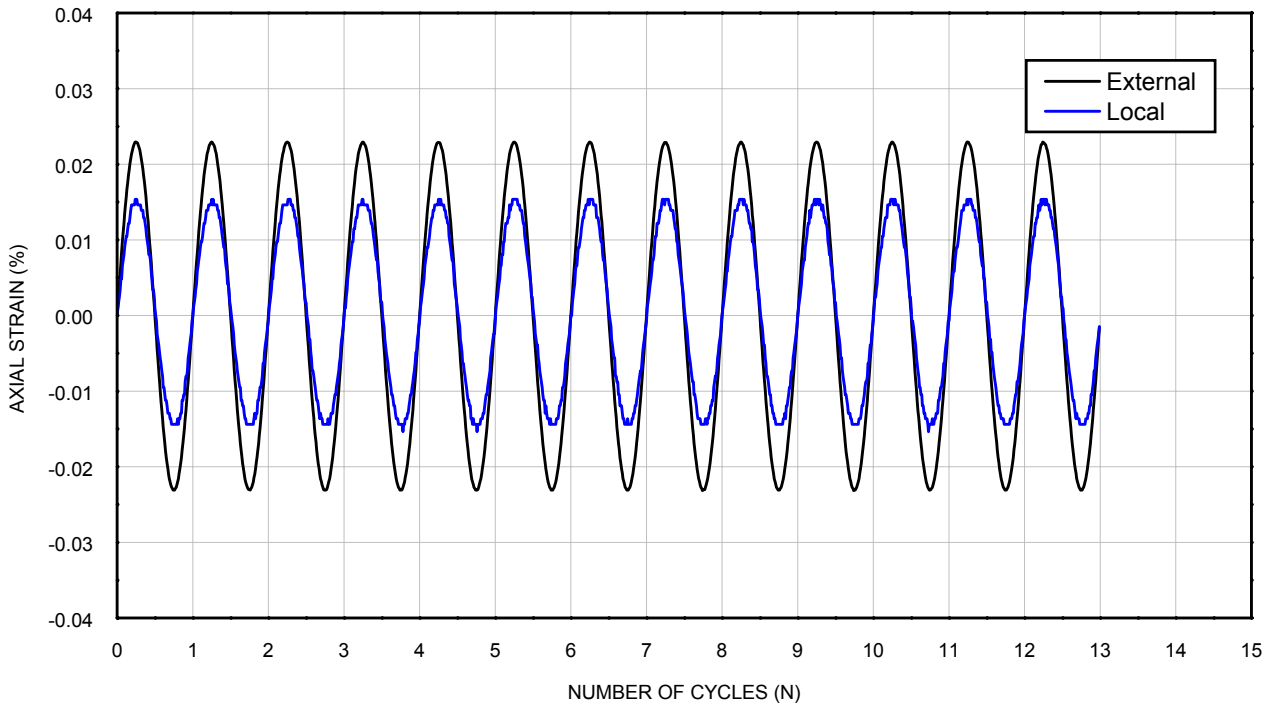
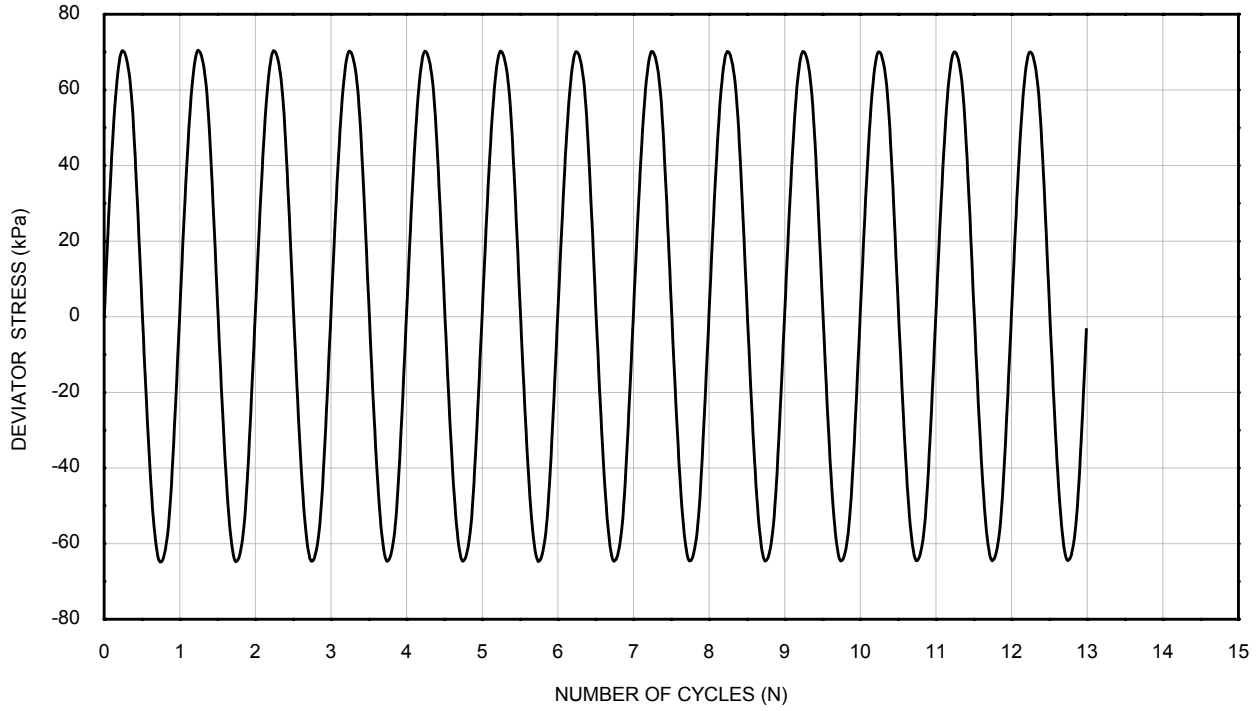
Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.90

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**



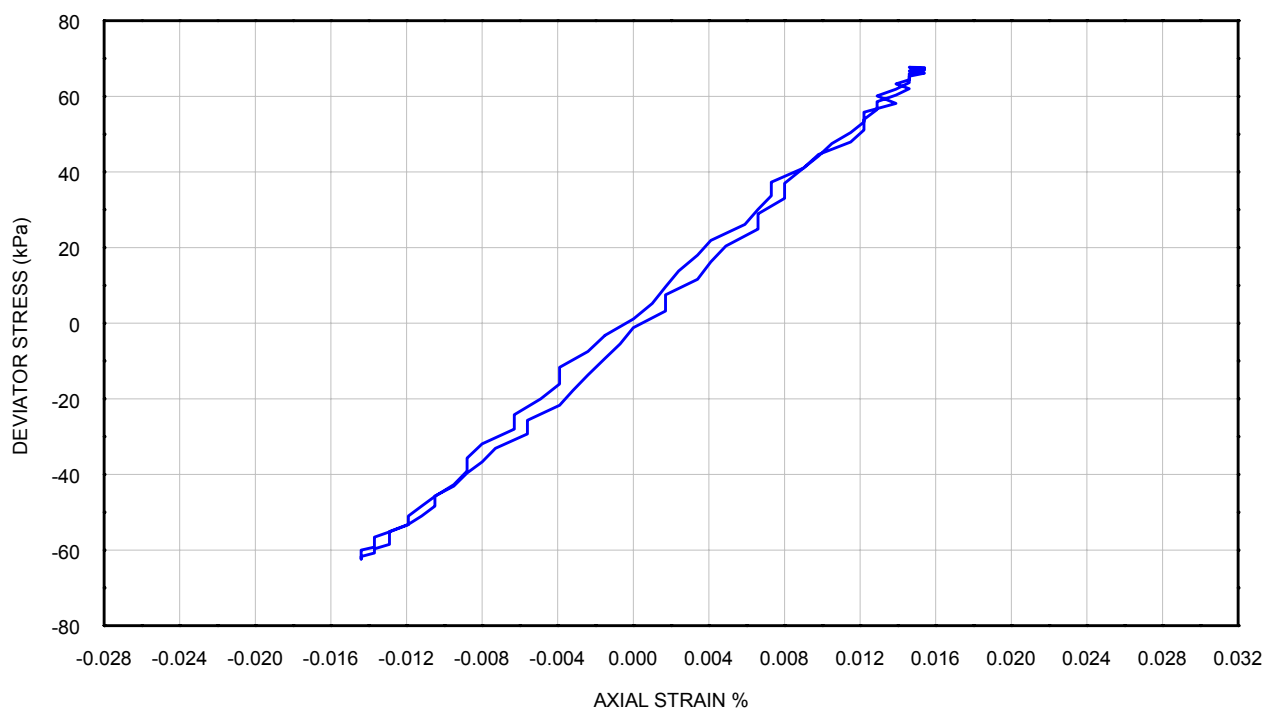
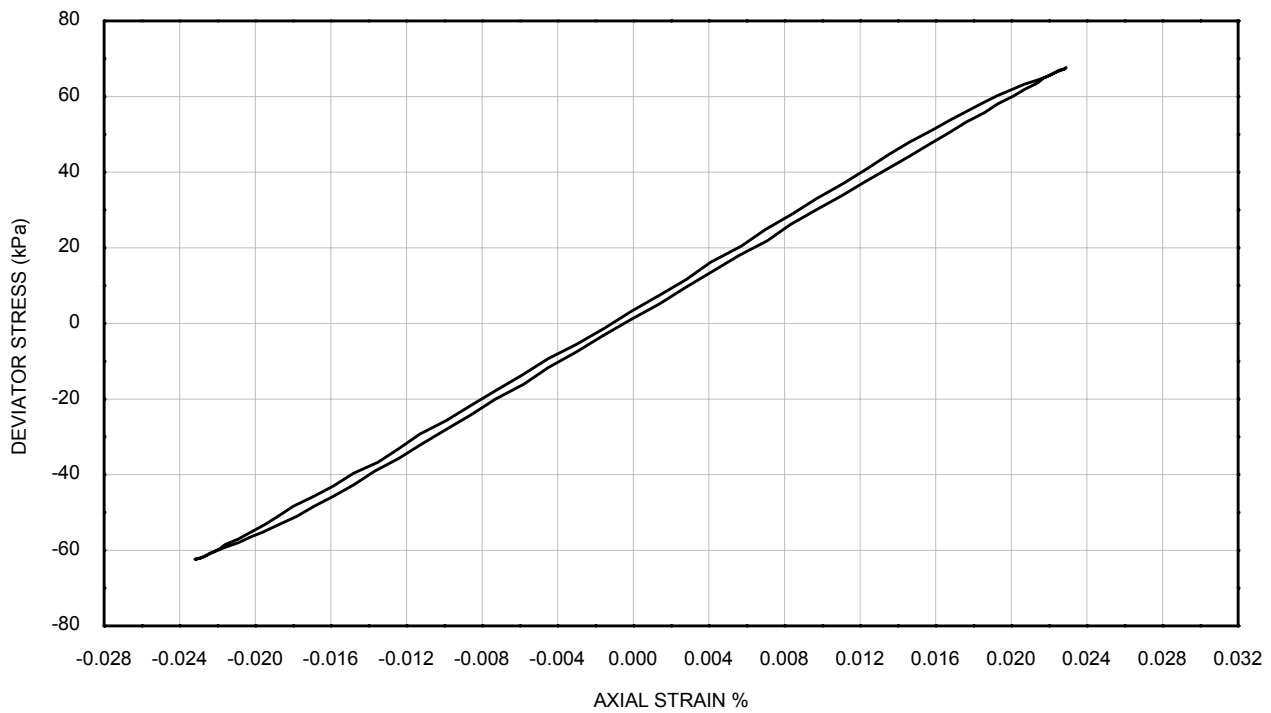
σ'_{rc}	: 839 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 839 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.90
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
SATURATION AND CONSOLIDATION**



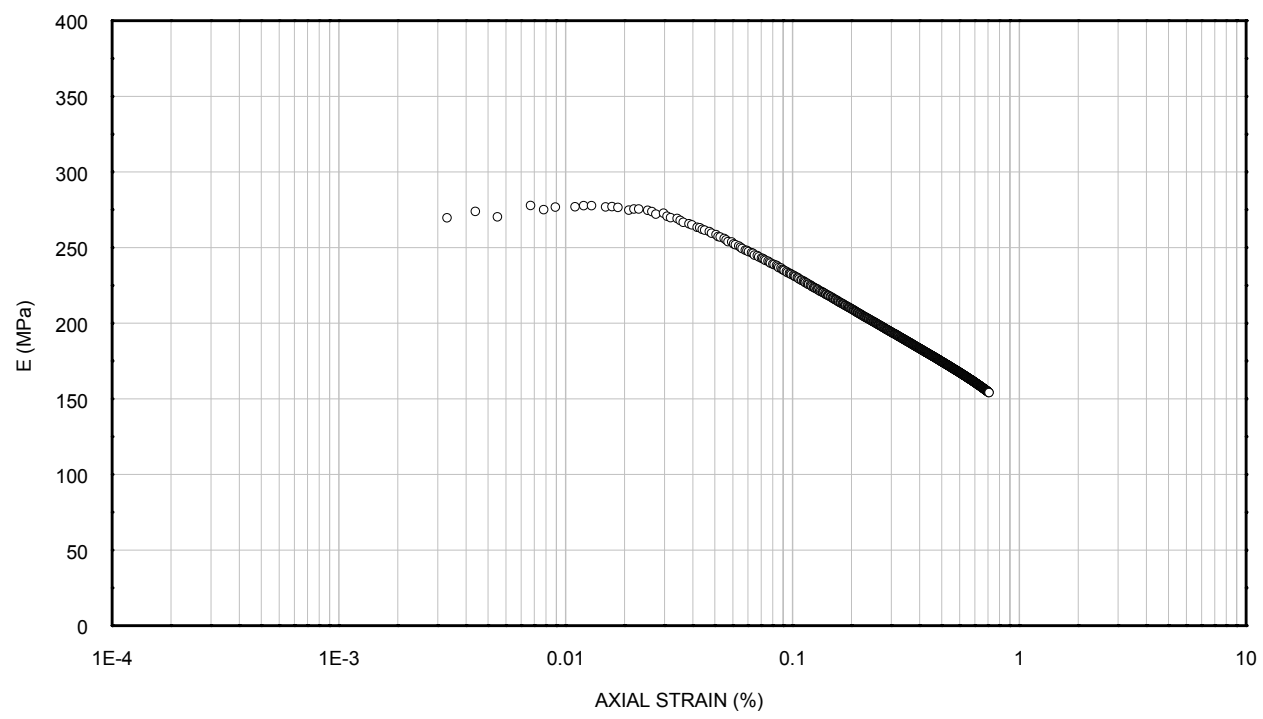
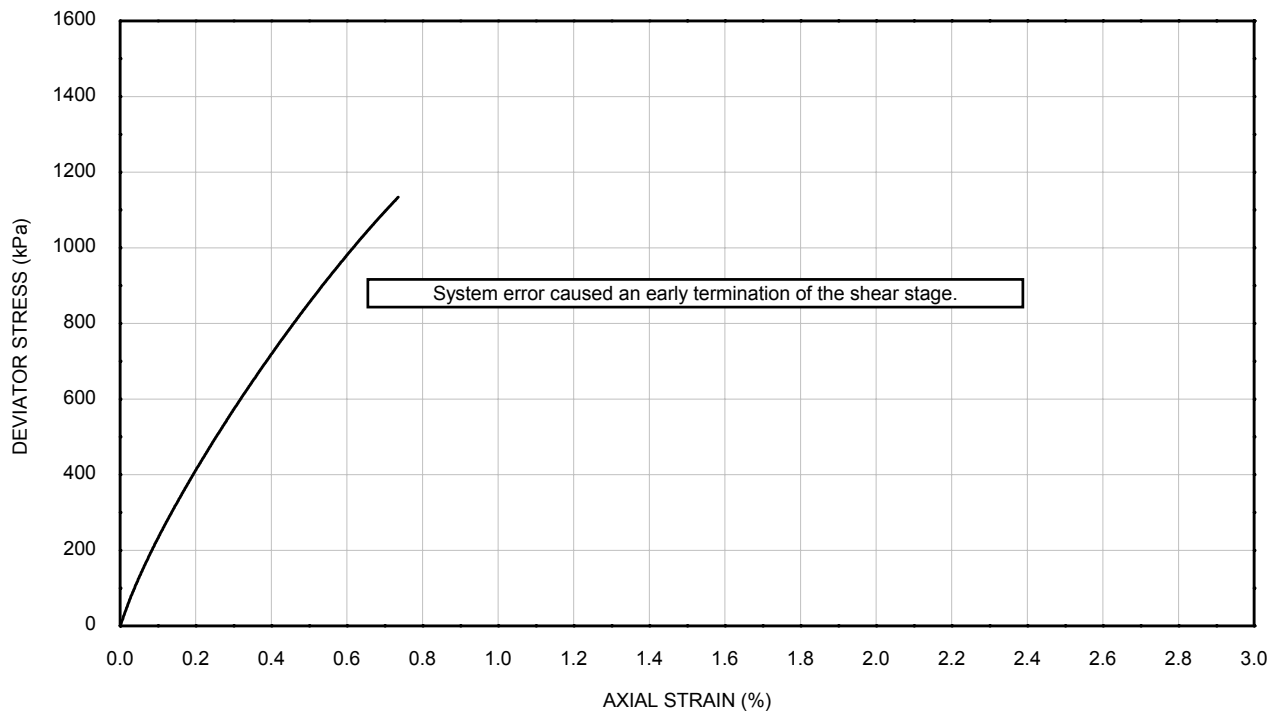
σ'_{rc}	: 839 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 839 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.90
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ'_{rc}	: 839 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 839 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.90
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ'_{rc}	: 839 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 839 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.90
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
POST CYCLIC STATIC LOADING STAGE**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

VISUAL DESCRIPTION

Very hard fissured dark greyish brown mottled dark green CLAY.

GENERAL

Date test started	27/05/2011
Type of sample	Undisturbed
Specimen orientation	Vertical
Type of drains fitted	Radial & one end

INITIAL

Diameter	(mm)	71.1
Length	(mm)	139.8
Moisture content	(%)	27.1
Bulk density	(Mg/m ³)	1.89
Dry density	(Mg/m ³)	1.49
Voids ratio		0.815
Degree of saturation	(%)	90

SATURATION

Pressure increments applied	(kPa)	100
Differential pressure used	(kPa)	N/A
Pore pressure on completion	(kPa)	1339
Cell pressure on completion	(kPa)	1634
B value achieved		1.00
Initial effective stress	(kPa)	295

TESTING PROCEDURES USED

Specimen Set-up	As per test specification FUGRO in-house testing procedure
Saturation	As per test specification FUGRO in-house testing procedure
Consolidation - Isotropic	As per test specification
Consolidation - Anisotropic	FUGRO in-house testing procedure
Shearing	As per test specification FUGRO in-house testing procedure

Note: FUGRO in-house testing procedures are available on request

LOCAL GAUGES USED

	Local Axial LVDT (x2)
--	-----------------------

Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.38

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

CONSOLIDATION : ISOTROPIC		
Cell pressure	(kPa)	1634
Back pressure	(kPa)	800
Effective radial pressure	(kPa)	834
Pore pressure on completion	(kPa)	801
Pore pressure dissipation	(%)	100
Moisture content	(%)	25.9
Bulk density	(Mg/m ³)	1.91
Dry density	(Mg/m ³)	1.52
Voids ratio		0.782
Degree of saturation	(%)	89
Volumetric strain (from water flow)	(%)	1.83
Local volumetric strain	(%)	0.83
Cvi	(m ² /year)	-
Mvi	(m ² /MN)	-
Permeability	(m/s)	-

CYCLIC SUMMARY			
Frequency	(Hz)	0.1	
No. applied cycles	(-)	13	
At Cycle 10		EXTERNAL	LOCAL
Strain	(%)	0.0029	0.0015
Young's Modulus, E	(MPa)	236	557
Damping ratio, D	(%)	4.5	3.3

Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.38

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

Approved by:

SHEARING*		
Initial pore pressure	(kPa)	815
Initial effective stress p_0'	(kPa)	19
Rate of strain	(%/hour)	0.20
Initial deviator stress	(kPa)	0
At peak deviator stress		
Deviator stress	(kPa)	145
Undrained shear strength	(kPa)	72
Membrane correction applied	(kPa)	0
Drain correction applied	(kPa)	0
External axial strain	(%)	0.05
Local axial strain	(%)	
Excess pore pressure (mid-height)	(kPa)	84
Horizontal effective stress	(kPa)	-65
Vertical effective stress	(kPa)	80
Principal effective stress ratio		-1.2

LOCAL STRAIN PARAMETERS		
At 0.01% local axial strain		
Deviator stress		53
External axial strain		0.02
Excess pore pressure (mid-height)		28
Principal effective stress ratio		-5.0
Local Secant modulus $E_{u(local)}$	(MPa)	500.4
normalised w.r.t p_0'		25715.9
normalised w.r.t c_u		6922.4
At 0.1% local axial strain		
Deviator stress		145
External axial strain		0.05
Excess pore pressure (mid-height)		84
Principal effective stress ratio		-1.2
Local Secant modulus $E_{u(local)}$	(MPa)	441.5
normalised w.r.t p_0'		22692.1
normalised w.r.t c_u		6108.4
Degree of non-linearity during shear L		0.88

* System error caused an early termination of the static shear stage.

FINAL CONDITIONS		
Moisture content	(%)	25.9
Bulk density	(Mg/m ³)	1.91
Dry density	(Mg/m ³)	1.52

Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.38

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**

Date: 00/01/1900

Drawn by: 0

Template Issue: WAL_ADV_CAU_i1

Date:

Date:

Checked by:

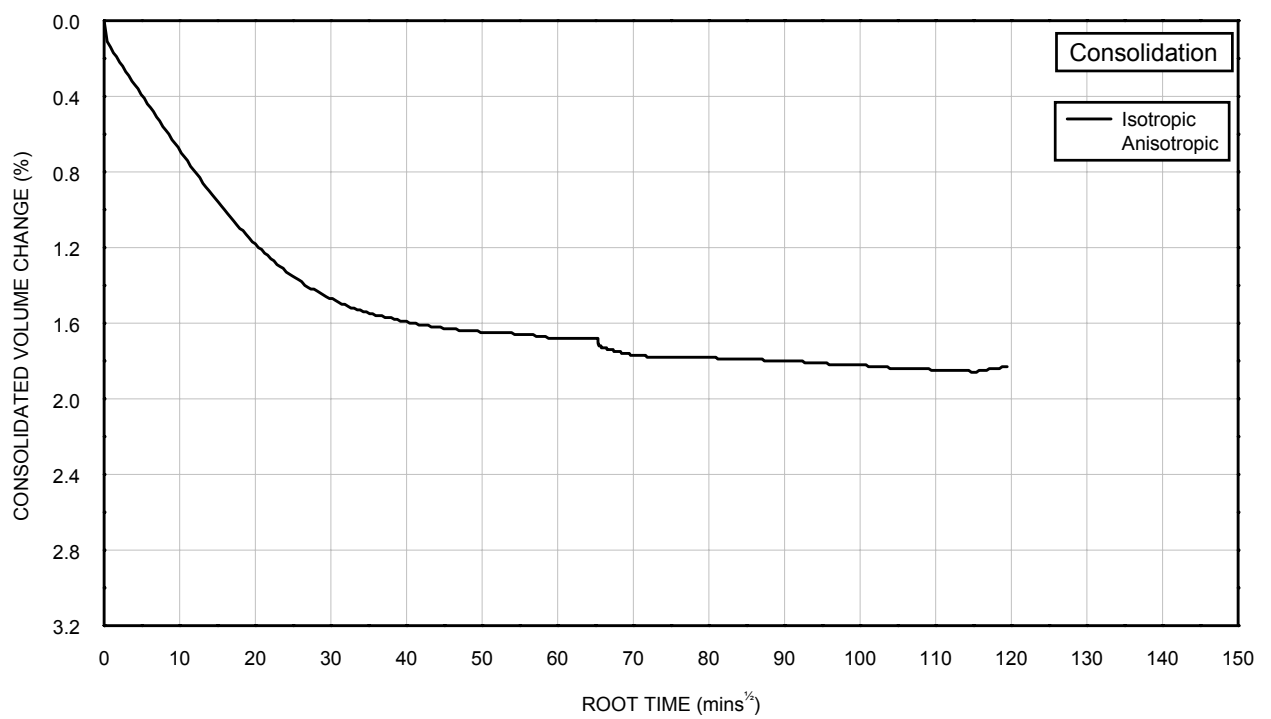
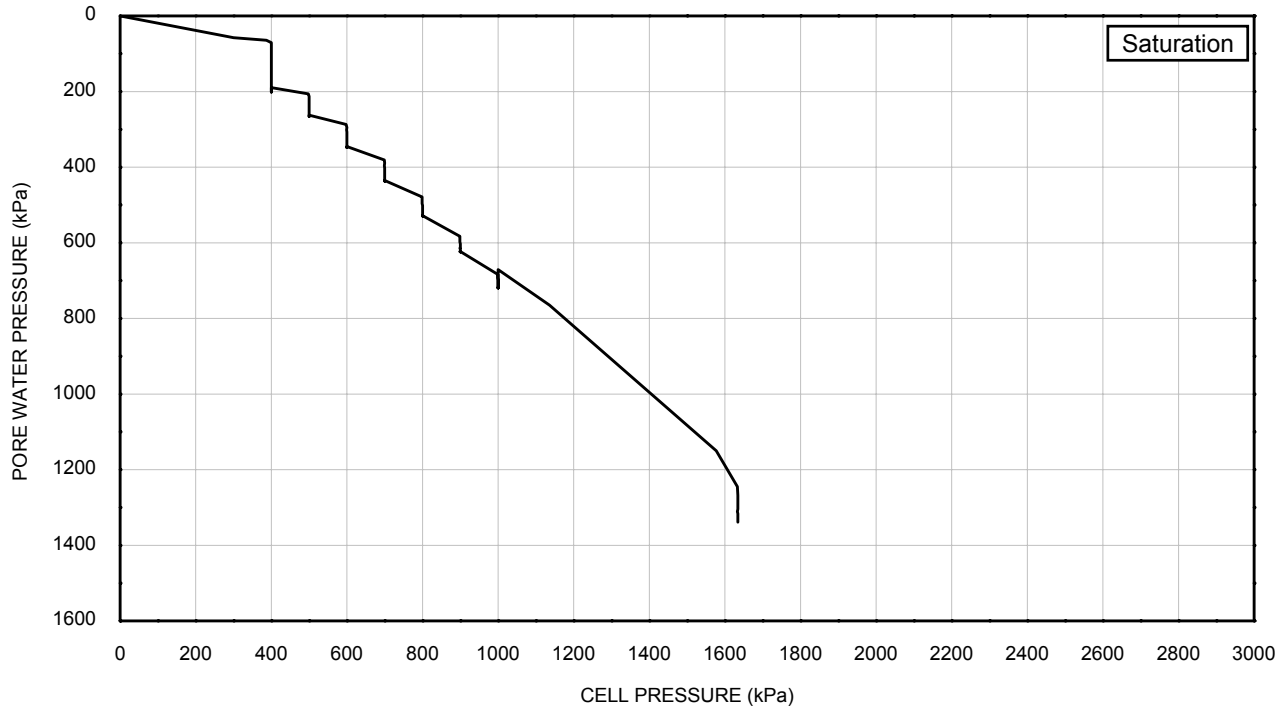
Approved by:

VISUAL DESCRIPTION
Very hard fissured dark greyish brown mottled dark green CLAY.

SPECIMEN PHOTOGRAPHS
Post test photograph was not possible.

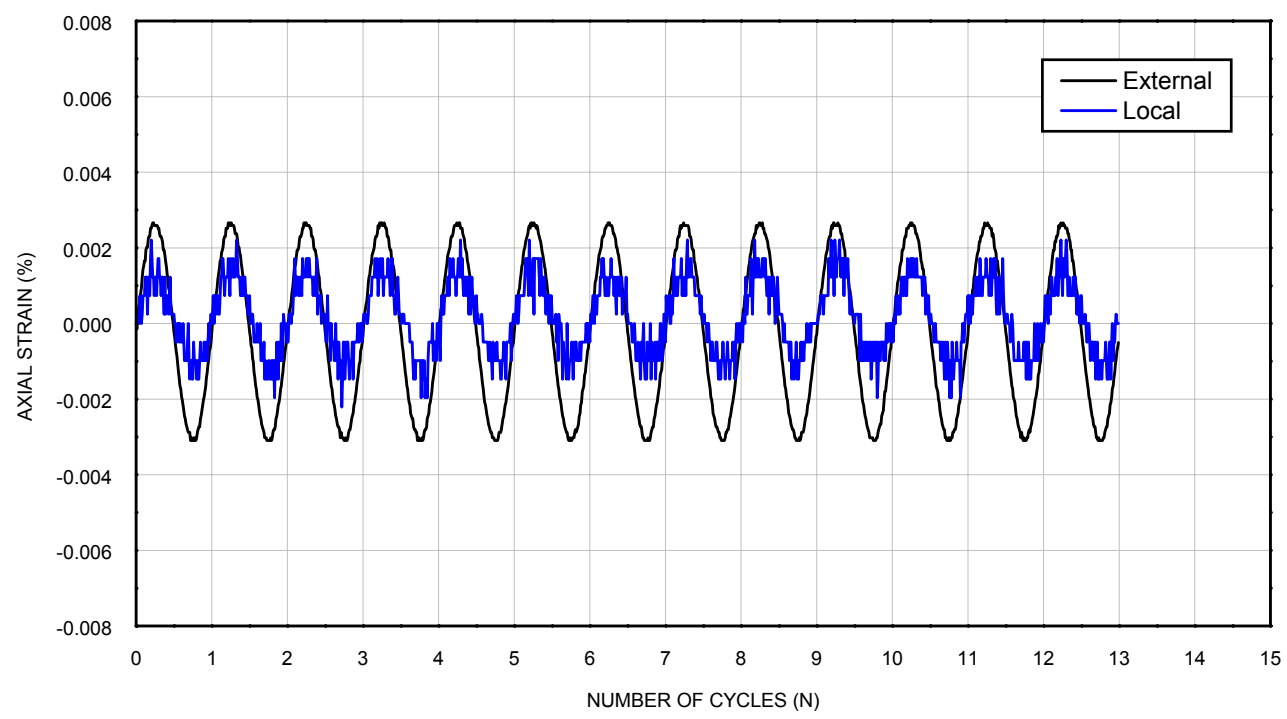
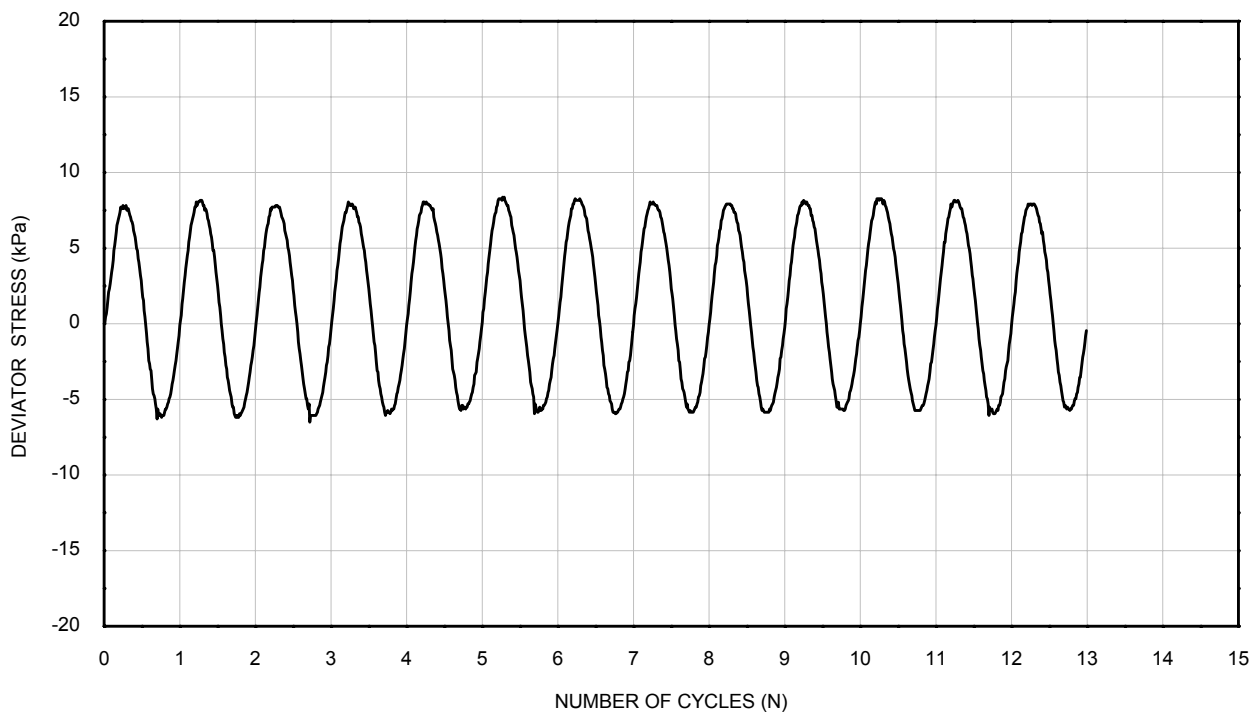
Borehole	CBH2009-8U
Sample	C5140
Depth (m)	83.38

**ISOTROPICALLY CONSOLIDATED UNDRAINED
CYCLIC TRIAXIAL TEST : SINGLE SPECIMEN**



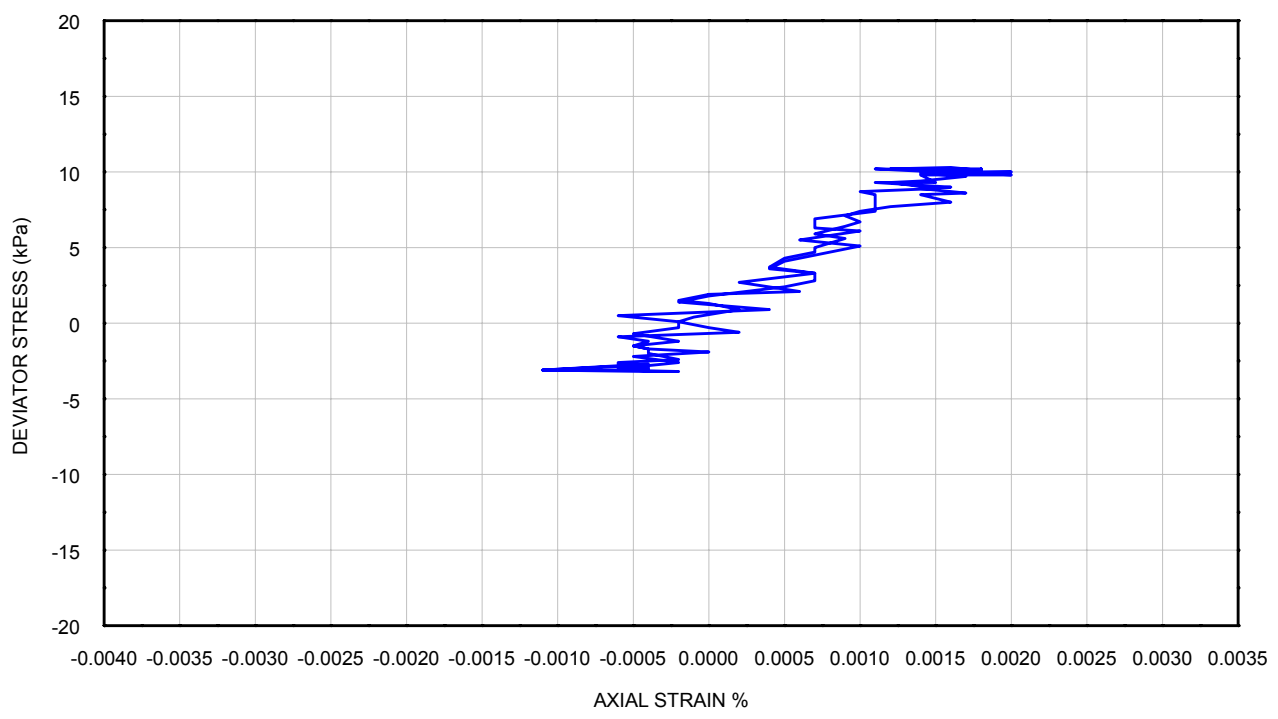
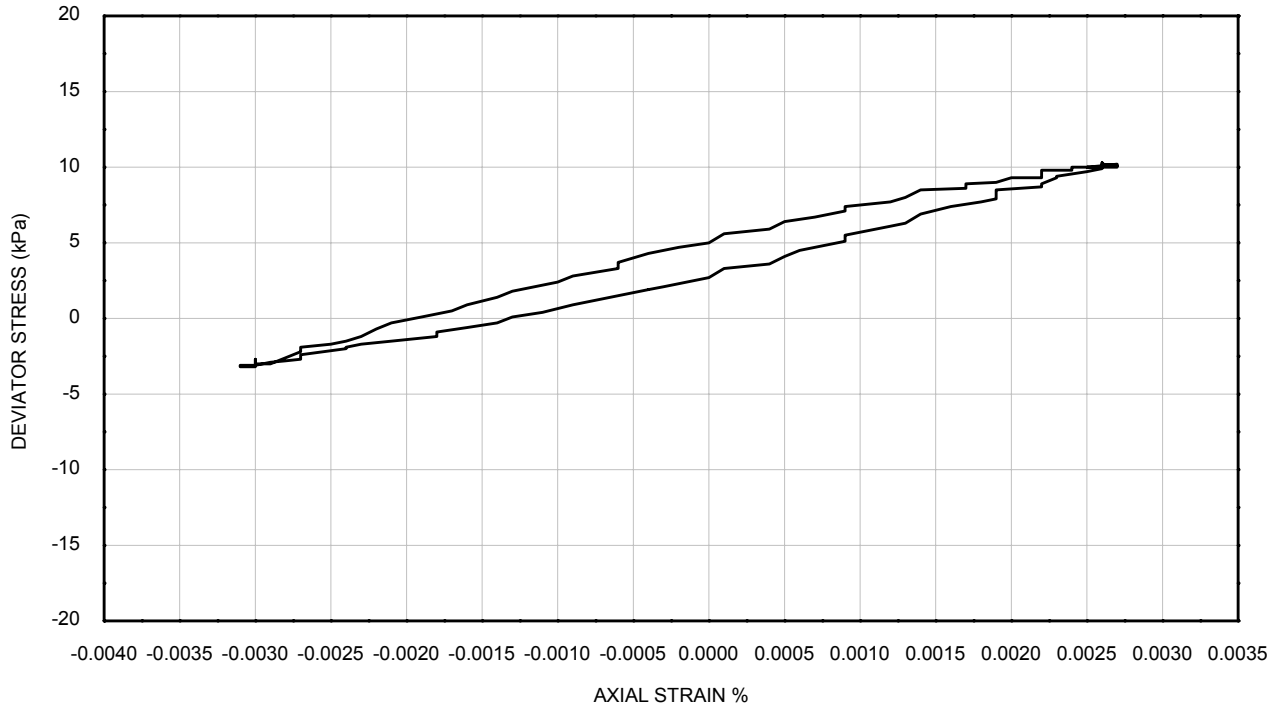
σ'_{rc}	: 834 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 834 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.38
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
SATURATION AND CONSOLIDATION**



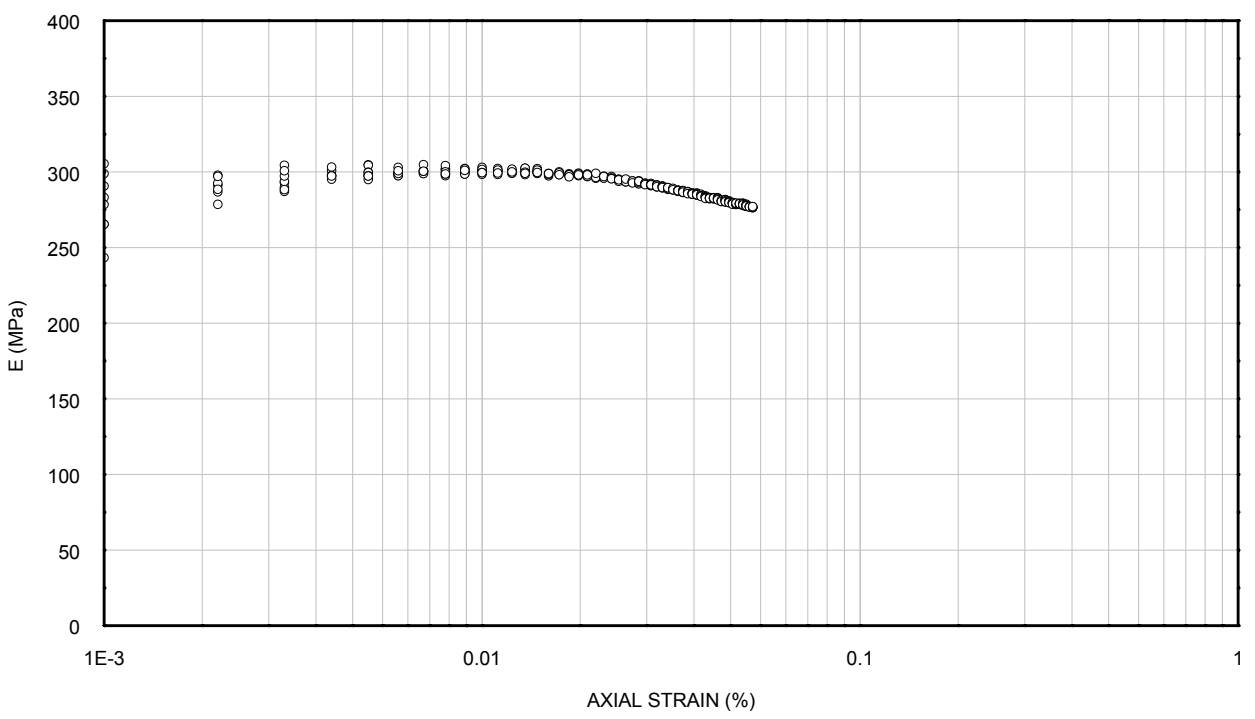
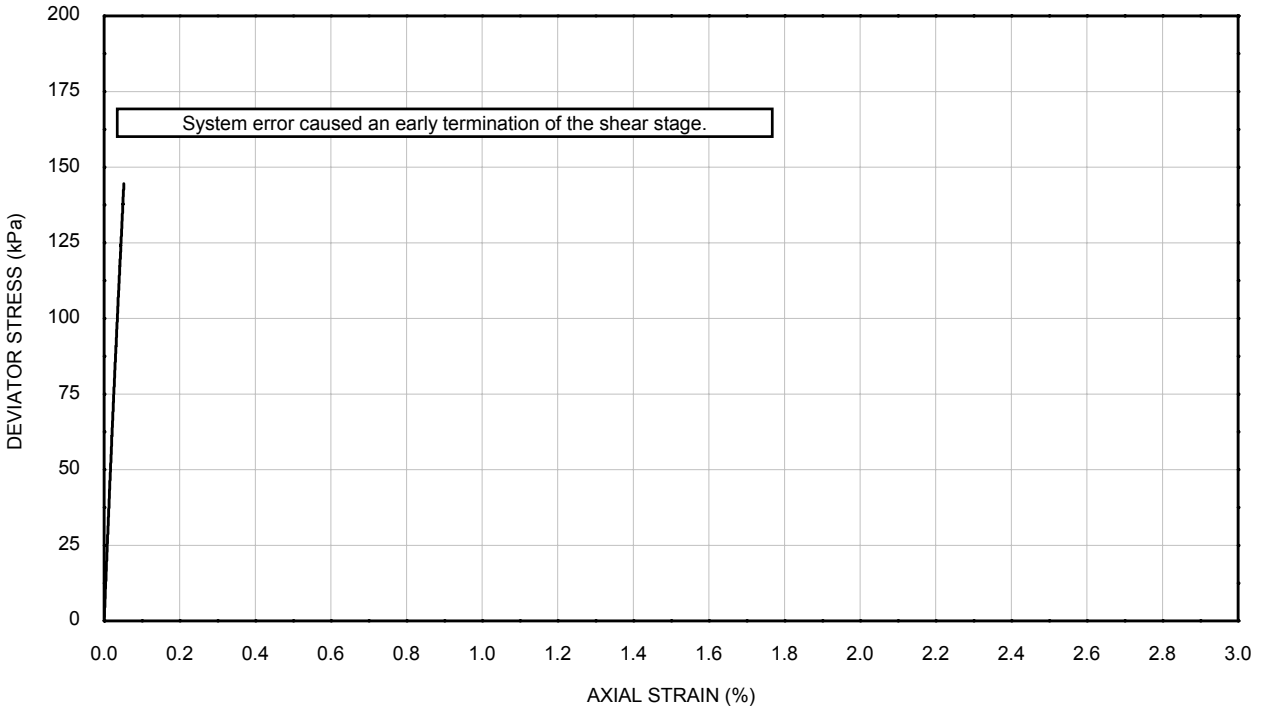
σ_{rc}'	: 834 kPa	Borehole	: CBH2009-8U
σ_{vc}'	: 834 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.38
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



σ'_{rc}	: 834 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 834 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.38
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

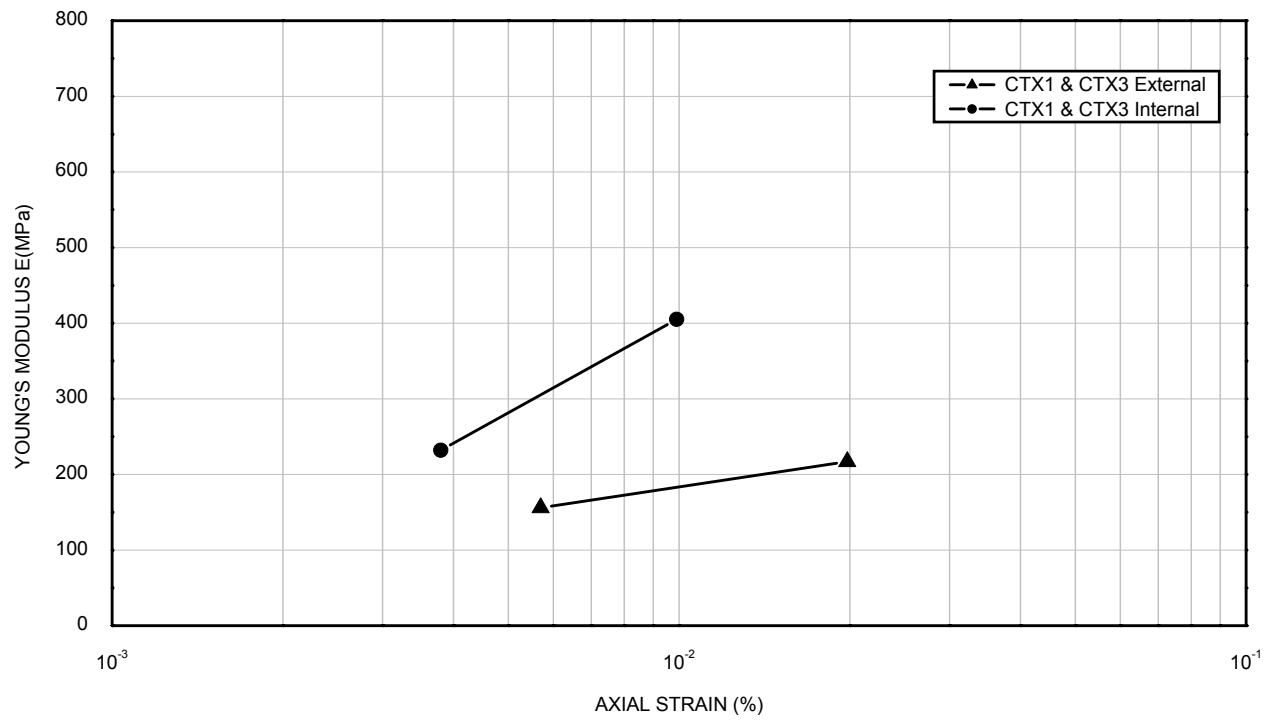
**CYCLIC TRIAXIAL TEST
CYCLIC LOADING STAGE**



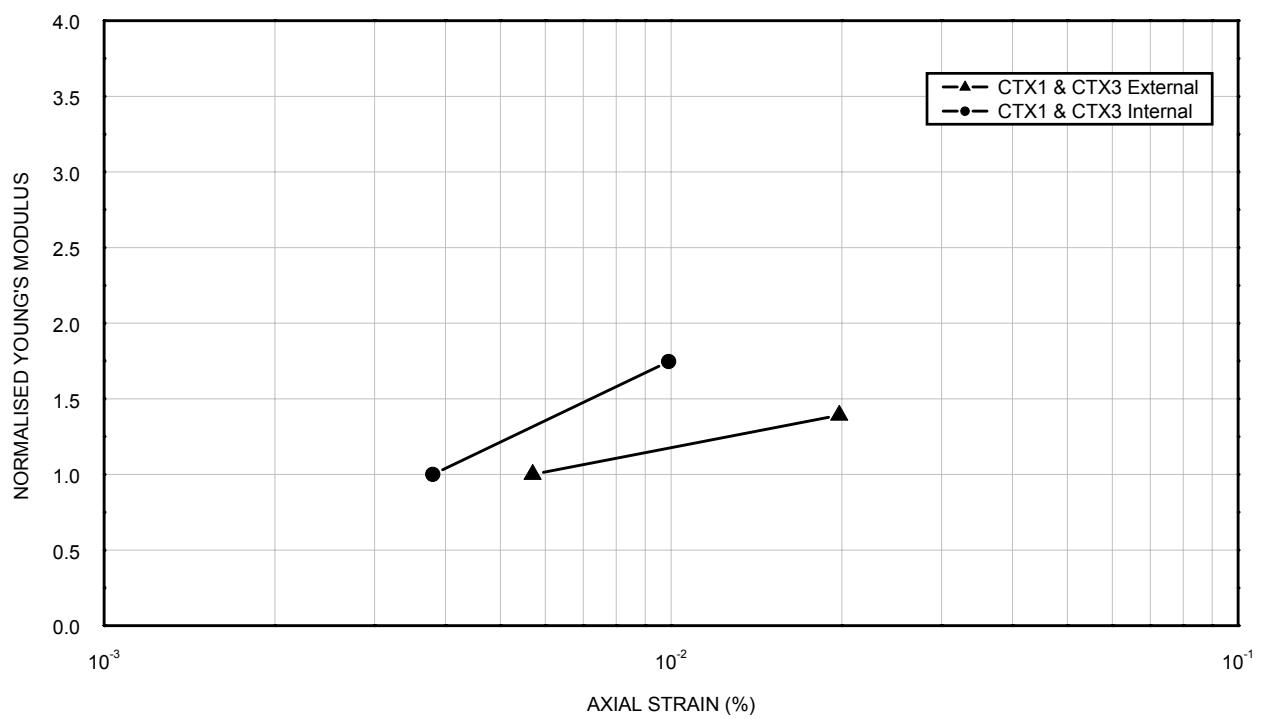
σ'_{rc}	: 834 kPa	Borehole	: CBH2009-8U
σ'_{vc}	: 834 kPa	Sample	: C5140
Nominal τ_{av}	: -- kPa	Depth (m)	: 83.38
Nominal τ_{cy}	: -- kPa		
Frequency	: 0.1 Hz		

**CYCLIC TRIAXIAL TEST
POST CYCLIC STATIC LOADING STAGE**

Date:
Drawn by:



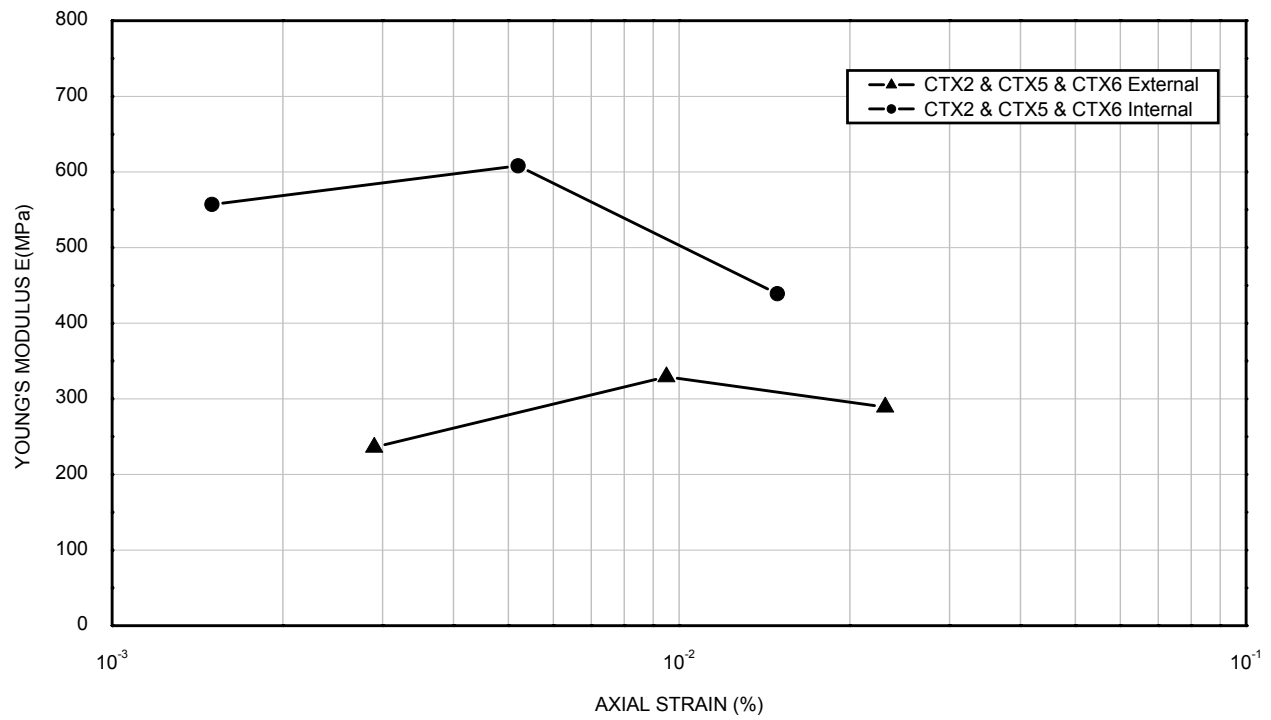
Template Issue: 2
File Name : / .OPJ



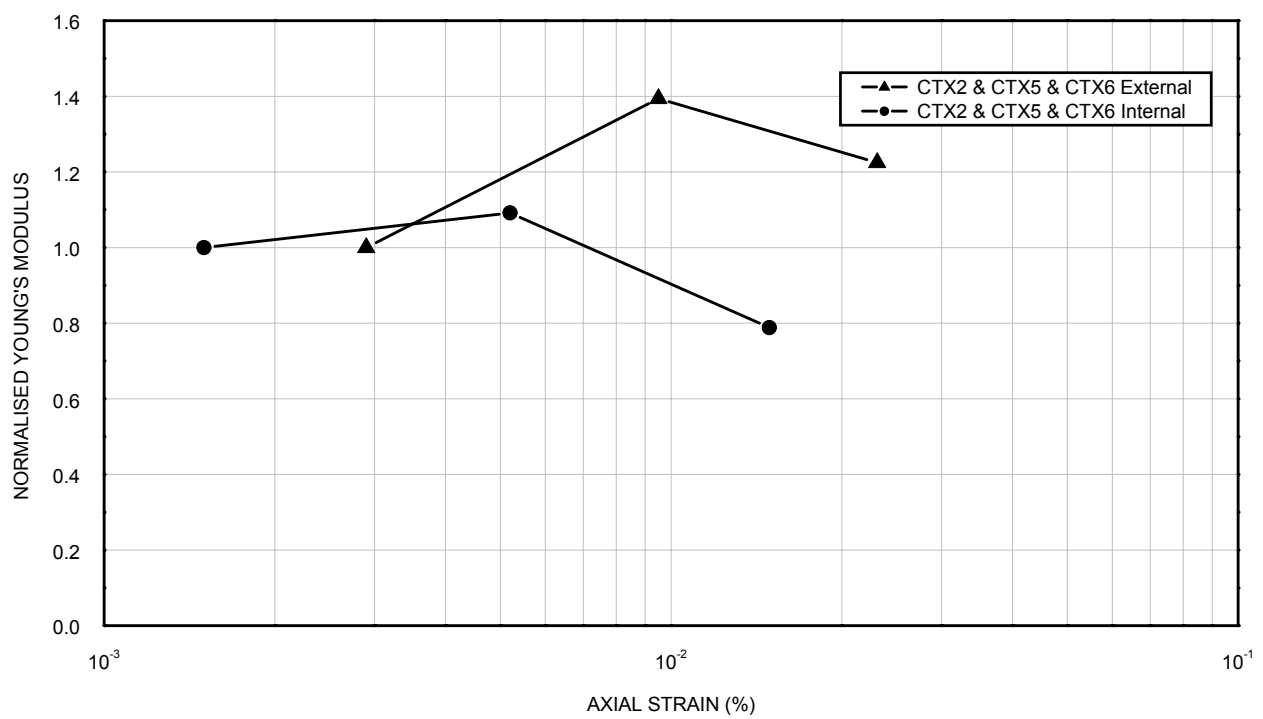
Date:
Date:
Checked by:
Approved by:

Test Number	: CTX1	CTX3	CTX4
Borehole	: CBH2009_8U	CBH2009_8U	CBH2009_8U
Sample	: C5135	C5138	C5135
Depth (m)	: 56.15	59.55	56.32

Date:
Drawn by:



Template Issue: 2
File Name : / .OPJ



Date:
Date:
Checked by:
Approved by:

Test Number	: CTX2	CTX5	CTX6
Borehole	: CBH2009_8U	CBH2009_8U	CBH2009_8U
Sample	: C5140	C5140	C5139
Depth (m)	: 83.71	83.90	83.38

RESONANT COLUMN TEST

GENERAL

Resonant column (RC) tests are carried out using "GDS" commercial equipment. This apparatus incorporates a "fixed free" torsional resonant column device. The specimen is fully fixed at the bottom and an electrical or electromagnetic oscillator applies torsional motion to the top. This in-house method is based closely on the procedures given in ASTM D 4015-07, coupled with innovative modifications to the apparatus.

The test allows determination of shear modulus and damping ratio at small shear strain values in solid cylindrical soil specimens by torsional or flexural vibration. A generic outline of the test procedure is presented here.

TEST PROCEDURE

RC tests are typically carried out on undisturbed specimens prepared to a height to diameter ratio of 2:1, in accordance with the procedures given in ASTM D 4015-07, except as described in the following methodology. Pre-test triaxial cell checks are undertaken in accordance with standard procedures.

Specimen Preparation

(1) Cohesive Specimens:

The specimen is extruded from the sample tube and carefully trimmed to a height to diameter ratio of approximately 2:1 in accordance with BS1377:1990. The specimen is weighed and measured to determine the bulk density and a moisture content determination is carried out on a portion of soil representative of the soil to be tested. This allows an estimate to be made of the initial air-voids in the specimen.

(2) Cohesionless Specimens:

The specimen is reconstituted by compaction in a mould, to a specified density using the general method proposed by Ladd (1978) modified in accordance with specification requirements and/or standard procedures. Typically the soil is tamped into the mould in eight layers. The initial layers are compacted to a lower relative density than the target density in order to account for the additional compaction caused by subsequent layers, and so achieve a final uniform dry density across the whole specimen.

After preparation the specimen is placed on a base platen mounted inside a triaxial cell, with allocation for pore water pressure measurement and drainage from the specimen. The specimen is then enclosed within a rubber membrane which is sealed to the base platen with rubber O rings. The triaxial cell arrangement incorporates a top mounted actuator to allow full control of the vertical movement of the vibration excitation device and top platen assembly during placement of the specimen. The top (active-end) platen is connected to the vibration excitation device and seated onto the upper end of the soil specimen under a small vertical seating stress. The membrane is then sealed to the top platen with a rubber O ring.

Both the upper and lower platens incorporate a fully fixed, fully rigid sintered bronze disc, sufficiently roughened to provide an efficient interface with each end of the specimen. Several roughness profiles are available allowing for the optimum coupling to be selected for a range of soil types. For testing of hard cohesive or semi rock specimens where the interface disc alone may not provide an adequate connection, a fully fixed coupling may be achieved using a thin layer of dental plaster or other suitable semi-permanent fixative at the platen specimen interface.

Vibration Excitation Device

The vibration excitation device consists of either an electrical servo motor or a Sokoe type electromagnetic arrangement, each capable of applying a sinusoidal torsional vibration to the active-end platen. These oscillators each comply with the specifications given in ASTM D 4015-07. The coupling between the oscillator and the platen is fully rigid.

Apparatus Assembly

The oscillator, rotational proximator and accelerometer are connected to the digital control and acquisition system. The cell wall is lowered into place and securely fixed in position at the cell top. The external LVDT, used to measure vertical displacement during consolidation and shear is connected to the specimen cap.

Saturation

After assembly the cell is partially filled with either de-aired water or silicon oil until the fluid level is above that of the entire membrane. Cell pressure is then applied to the specimen via the air-liquid interface using a regulated air pressure line.

An initial pore-water pressure reading is taken and an increment of cell pressure is applied, whilst noting the corresponding increase in pore-water pressure measured in the specimen. If the increase in pore-water pressure is less than 0.95 of the increase in cell pressure a further increase in cell pressure is applied and the initial process repeated. Where it is not possible to fully saturate the specimen under constant moisture content, the standard procedure for using a back pressure may be employed.

It should be noted that during back pressure saturation the specimen is typically allowed to uptake an amount of water approximately equal to the estimated air-voids before a further increment of cell pressure is applied. Pore-water pressure is normally measured at the base of the specimen and drainage/back pressure is applied to the top of the specimen.

Isotropic Consolidation

The specimen is typically isotropically consolidated to the required effective principle stress.

The required effective stress is applied to the specimen via the cell pressure, with a minimum back pressure of 300 kPa being used to maintain specimen saturation. An initial reading is taken on the volume change indicator and the drainage line is opened to the drained face (top) of the specimen, with readings of volume change and time being logged automatically via the control software. Pore-water pressure dissipation is recorded on the undrained face (base) of the specimen. Consolidation is considered to be complete when the excess pore-water pressure is less than 5% of the effective stress and there is no significant volume change for a period of one hour.

At the end of the consolidation stages the consolidated cross sectional area and length of the specimen are calculated using conventional assumptions, based on the volume changes during the saturation and the consolidation phases.

Torsional Vibration

The following steps are automatically performed by the digital control system in order to establish the resonant frequency, strain amplitude and system damping at each torque increment:

- (i) A nominal torque is applied and the frequency of excitation increased until the applied current and the acceleration of the top platen are in phase (i.e the fundamental system resonance frequency is obtained). This is the starting point for the resonant phase.
- (ii) Readings of torque input, proximator displacement, acceleration and frequency are continually logged during resonance and strain amplitude calculated.
- (iii) At each strain amplitude a value of damping is measured using the free-vibration amplitude decay method, see below.
- (iv) The torque reading is increased and steps (i) through (iii) are repeated. At intervals, the torque level is reduced to the initial level and an additional set of readings is taken. The results of this test are compared to the results of the first and will indicate any changes in the specimen due to vibration at higher strain levels.
- (v) Steps (i) through (iv) are repeated, increasing the power until there is no defined peak in the frequency response curve or a specified maximum strain amplitude is reached.

Following completion of the torsional vibration stage the specimen may be consolidated or swelled to a different effective stress state and the vibration testing repeated.

Calibration

The mass polar moment of inertia of the resonant column drive system (I_0) is derived experimentally according to the procedures defined in ASTM D 4015-07. Tests are performed to compute the resonant frequency of the system in torsion using a range of calibration rods.

Free-vibration Damping Ratio

When performing damping ratio, the apparatus is designed to minimise the influence of equipment damping. Historically, during free vibration decay (after the power is normally shut off at resonance) 'back' EMF is usually generated in the coils by the movement of the magnets, causing large equipment damping errors. In the Soil Mechanics resonant column the software switches the hardware to provide an 'open circuit' through the coils during free vibration decay, which prevents 'back' EMF generation.

PRESENTATION OF RESULTS

The results of the tests are presented in accordance with ASTM D 4015-07. Depending on project requirements, the following plots may be presented:

- (i) Root time versus vertical strain during consolidation.
- (ii) Shear strain (%) versus shear modulus (MPa).
- (iii) Shear strain (%) versus free-vibration damping ratio.

ACCURACY OF MEASUREMENTS

Horizontal stress	± 1 kPa
Vertical stress	± 1 kPa
Deformation	± 0.01 mm

REFERENCES

ASTM D 6528-07 (2007) "Standard Test Methods for Modulus and Damping of Soils by Resonant-Column" American Society for the Testing of Materials.

Ladd, R. S. "Preparing Test Specimens Using Undercompaction", Geochemical Testing Journal, GTJODJ, Vol. 1, No. 1, March 1978, pp 16-23.

Available specimen sizes (dxh)

- 50mm x 100mm ✓
- 70mm x 140mm ✓
- Custom ✓

Power amplifier

- Current driven ✓

Software

- Fully automated ✓

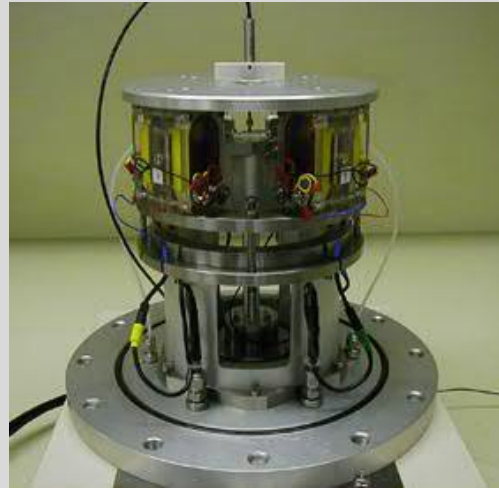
Available tests

- Torsion ✓
- Flexure ✓
- Damping ✓

Optional tests

- Torsional shear ✓

Resonant Column Apparatus (RCA)



What is it?

The GDS Resonant Column Apparatus (RCA) is used to excite one end of a confined solid or hollow cylindrical soil specimen. The specimen is excited in torsion or flexure (bending) by means of an electromagnetic drive system. Once the fundamental resonant frequency is established from measuring the motion of the free end, the velocity of the propagating wave and the degree of material damping are derived. The shear modulus (torsion) or Young's modulus (flexure) is then obtained from the derived velocity and the density of the sample.

Features

GDS RCA software (see Fig. 1) is used for control and data acquisition of the RCA apparatus. The software allows testing to occur via a simple, user-friendly interface. The tests that may be performed using the GDS RCA software are as follows:

- Resonance in torsion.
- Resonance in flexure.
- Damping Ratio in torsion.
- Damping Ratio in flexure.
- Slow speed (<2Hz) torsional shear.

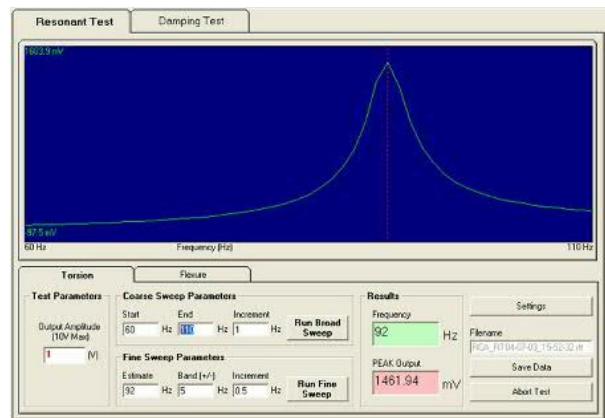


Fig. 1 GDS RCA software resonance test data

Technical Specifications

- Standard cell capable of 1MPa gaseous cell pressure (other cells available up to 25MPa)
- Electromagnetic drive system incorporating precision wound coils and composite sintered neodymium iron boron (NdReB) "rare-earth" magnets
- Transconductance current driven amplifier
- Inner cell for silicon oil (to aid membrane sealing)
- Energisation mode of coils is switchable by software to provide torsional and bending (longitudinal) tests
- Internal LVDT for measurement of sample deformation
- Internally mounted, counter-balanced accelerometer
- 1 off transconductance current driven drive amplifier
- 1 off high-speed 16-bit data acquisition/control card with associated GDS RCA control box/interface panel
- 3 off calibration weights and calibration bars provided of differing stiffness to enable calibration of system Io value
- 1 off computer controlled proportional gas valve to control cell pressure from software
- Back pressure by GDS Standard pressure/volume controller (STDDPC)
- Options for environmental temperature chamber (-20 degs C to +40 degs C) and an axial loading actuator and frame
- Standard specimen sizes: 50mm x 100mm and 70mm x 140mm (diameter x height) - other sizes available on request

Damping by free vibration

When performing damping ratio tests (see Fig. 2), the apparatus is designed to minimise the influence of equipment damping. During free vibration decay (after the power is normally shut off at resonance) 'back' EMF is usually generated in the coils by the movement of the magnets. This causes large equipment damping errors. In the GDS resonant column the software switches the hardware to provide an 'open circuit' through the coils during free vibration decay, which prevents 'back' EMF generation.

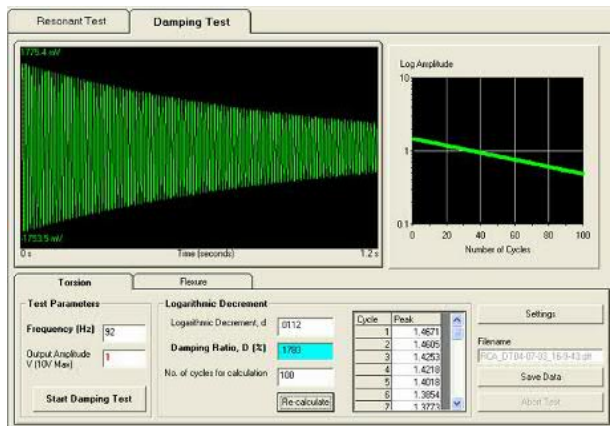


Fig.2 GDS RCA software damping test data

A software video CD is available which demonstrates the use of the GDS RCA software. This CD as with other GDS software and hardware demonstration CDs are available by request on-line at www.gdsinstruments.com

Torsional / flexural vibrations

During torsional tests, four pairs of coils are connected in series so that a net torque is applied to the sample. To apply flexural vibrations, the coils are switched (automatically) so that only two magnets are used applying a horizontal force to the specimen hence inducing flexural excitation. This allows the same coil and magnet arrangement to be used in both flexural and torsional vibration (see Fig. 3).

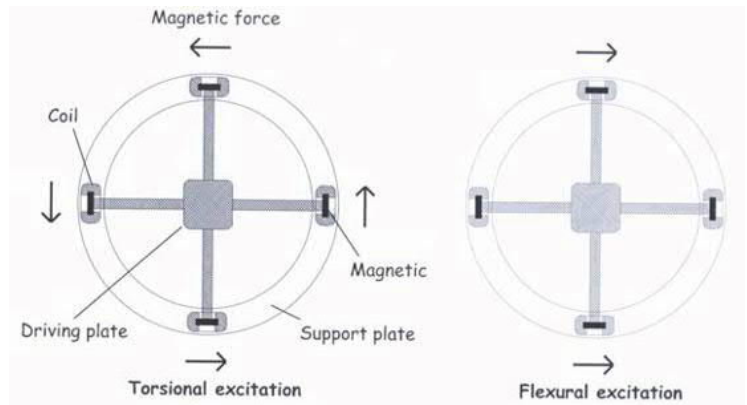


Fig. 3 Drive schematic for torsional and flexural excitation

State-of-the-art current-driven amplifier

RCA systems that GDS supplies are current driven using a transconductance power amplifier. This is due to the fact that the impedance of the RCA system changes with frequency. At higher frequencies, using a constant voltage, the current will be seen to reduce. As the torque is directly proportional to current, the torque will also reduce. This change to using a current driven power amplifier reflects the current thinking in the state-of-the-art resonant column testing throughout the world.

Calibration equipment

To derive I_o and I_y experimentally, a test is performed on a calibration bar to compute its resonant frequency in torsion and flexure respectively. This is achieved by calibrating the apparatus by substituting metal calibration bars in place of the specimen whose mechanical properties are known.

The GDS RCA provides 3 calibration weights and 3 calibration bars of differing stiffness in order for I_o and I_y to be calibrated by the end user (see Fig. 4).



Fig. 4 Calibration bars and weights

Why buy a GDS RCA?

- Designed to provide maximum rigidity, providing minimum losses and a more consistent I_o v frequency.
- Minimum equipment damping by shutting off coils to reduce 'back EMF' during damping tests.
- Flexural tests equally as simple as Torsional tests.
- Upgrade to torsional shear tests available.
- Complete turn-key system i.e. 'works out the box'.
- Latest RCA developments as standard (i.e. current driven amplifier).
- Easy to use software which gives the user 'hands-on' appreciation of how the RCA test.
- Technical support from GDS staff familiar with RCA testing.

Due to continued development specifications may change without notice

ISOTROPICALLY CONSOLIDATED UNDRAINED RESONANT COLUMN TEST
In house method based on ASTM D4015

Project No	A0012-10	Sample Details:	Hole No.	CBH2009-7
Project	ONSHORE INVESTIGATION PHASE 1 FOR SIZEWELL SITE		Sample No	17
			Depth (m)	54.35-54.75
			Type	CS

Soil Description Soft brownish grey CLAY.

Preparation Undisturbed

Sample details

Particle Density 2.65 Mg/m³ Assumed

SPECIMEN DETAILS

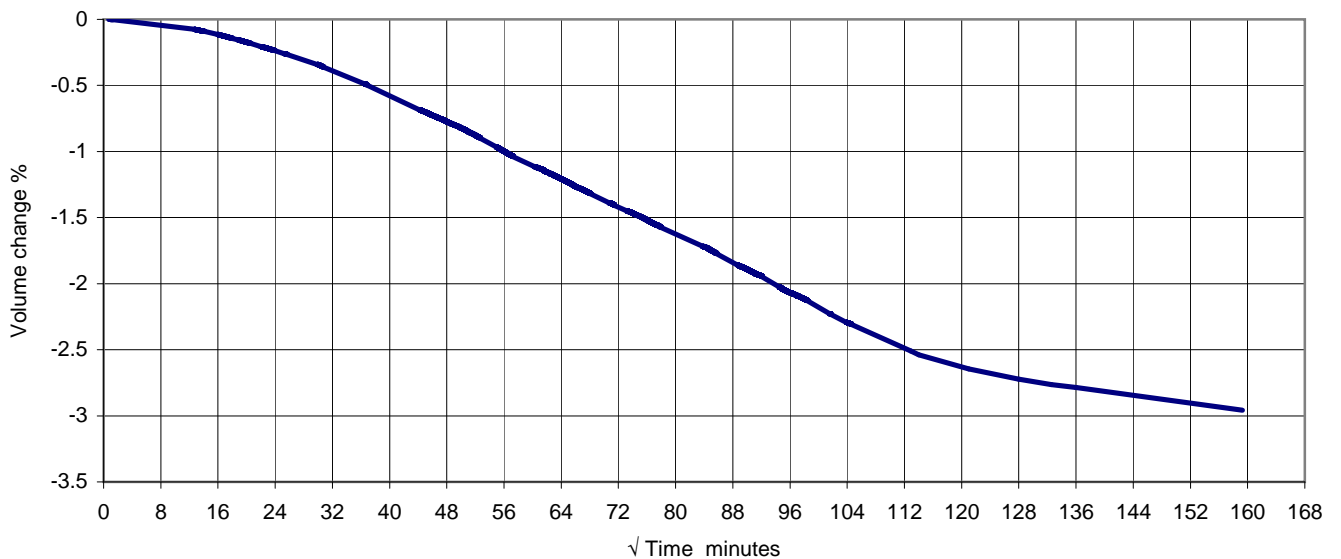
Initial	Diameter	72.20	mm
	Height	140.52	mm
	Volume	575.31	mL
	Mass of specimen	1071.80	g
	Bulk density	1.86	Mg/m ³
	Moisture content	34.7	%
	Dry density	1.38	Mg/m ³
	Voids ratio	0.92	
	Initial saturation	100	%

TEST CONDITIONS

Saturation Specimen saturated by application of cell pressure only.

Final back pressure 0 kPa
 Final B value 0.96

Isotropic Consolidation Cell pressure applied 650 kPa
 Effective stress 550 kPa



Ref

SM RCA
Rev 0
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Soil Mechanics

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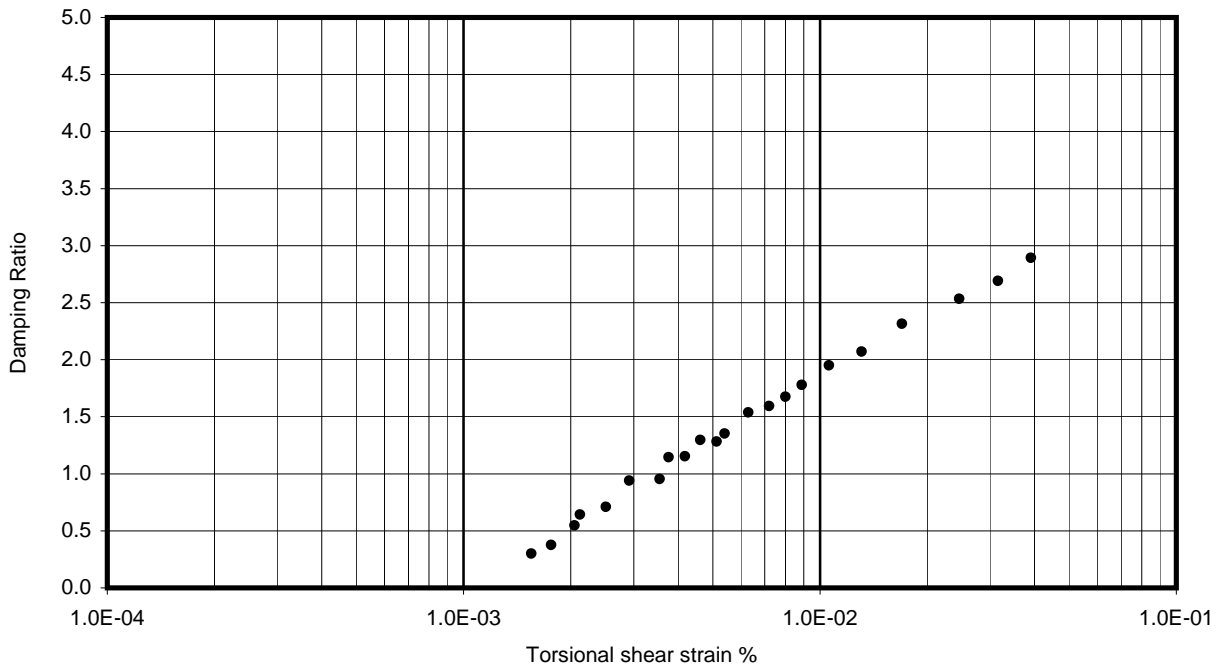
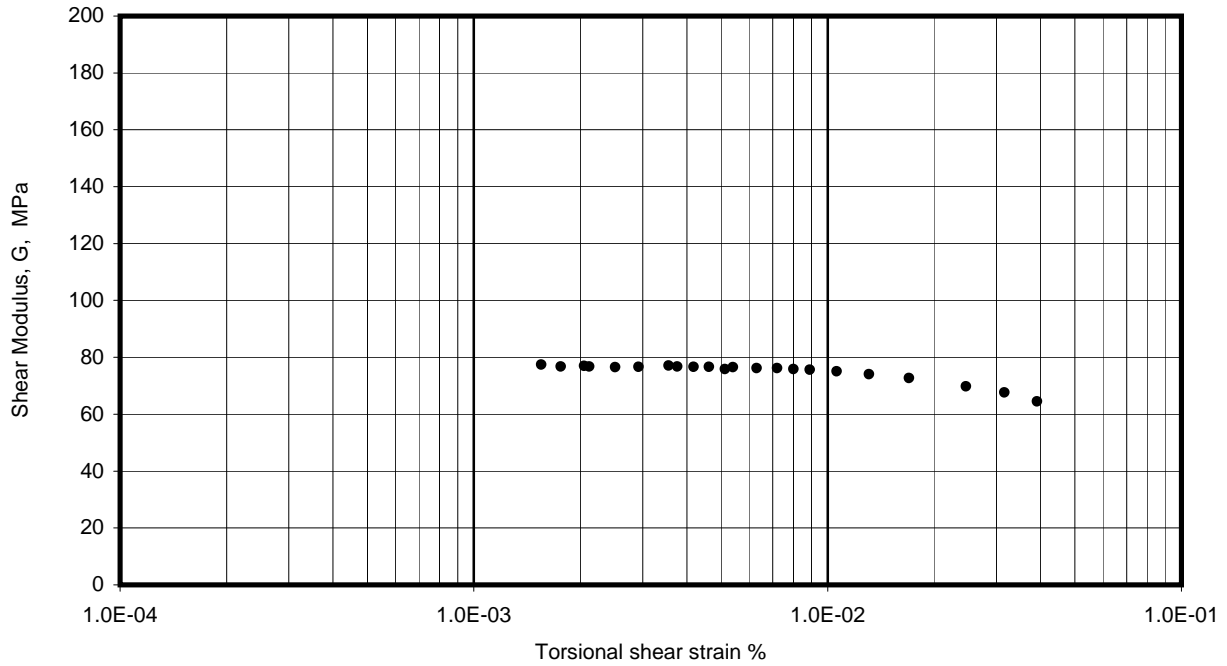
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Figure
RCA 1
sheet 1 of 4

ISOTROPICALLY CONSOLIDATED UNDRAINED RESONANT COLUMN TEST
In house method based on ASTM D4015

Project No	A0012-10	Sample Details:	Hole No.	CBH2009-7
Project	ONSHORE INVESTIGATION PHASE 1 FOR SIZEWELL SITE		Sample No	17
			Depth (m)	54.35-54.75
			Type	CS

PARAMETER PLOTS



Ref

SM RCA
Rev 0
Feb 11



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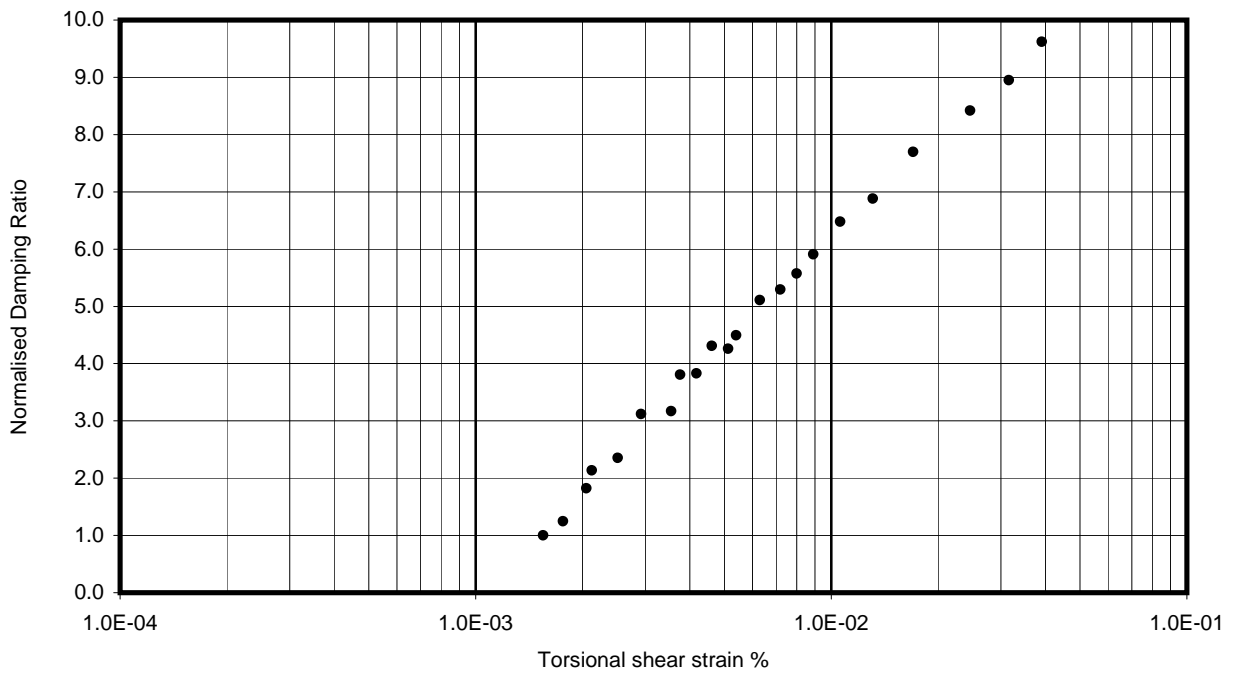
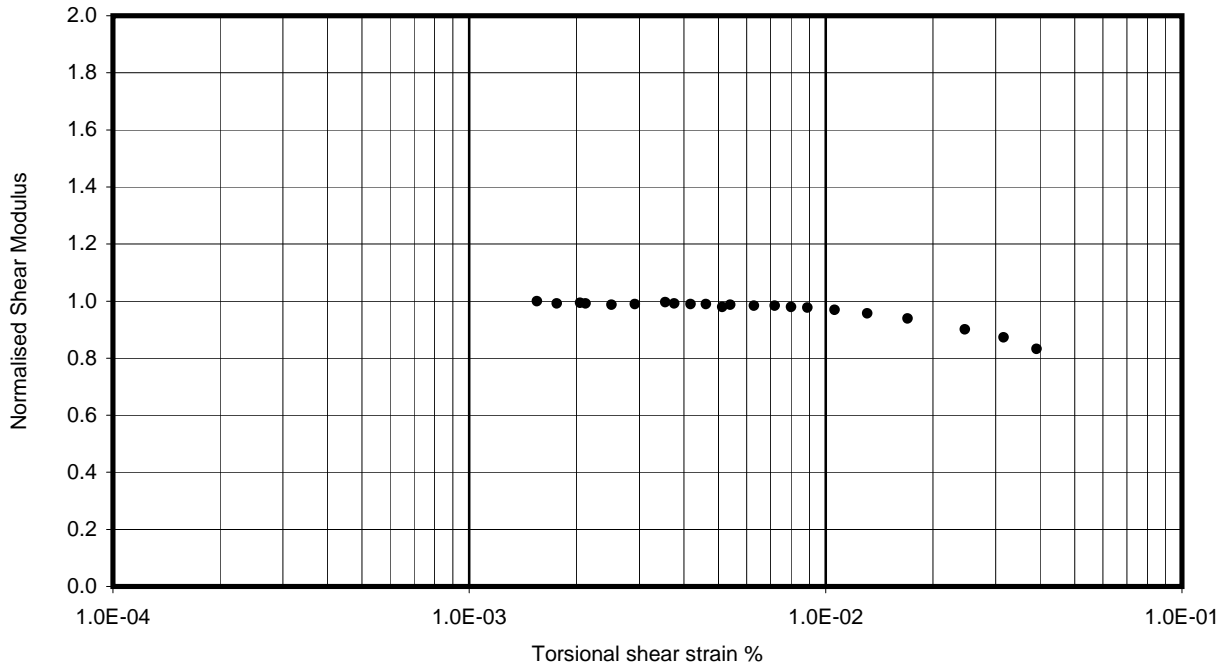
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Figure
RCA 1
sheet 3 of 4

ISOTROPICALLY CONSOLIDATED UNDRAINED RESONANT COLUMN TEST
In house method based on ASTM D4015

Project No	A0012-10	Sample Details:	Hole No.	CBH2009-7
Project	ONSHORE INVESTIGATION PHASE 1 FOR SIZEWELL SITE		Sample No	17
			Depth (m)	54.35-54.75
			Type	CS

NORMALISED PLOTS



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SM RCA
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Figure
RCA 1
sheet 4 of 4

ISOTROPICALLY CONSOLIDATED UNDRAINED RESONANT COLUMN TEST
In house method based on ASTM D4015

Project No	A0012-10	Sample Details:	Hole No.	CBH2009-8U
Project	ONSHORE INVESTIGATION PHASE 1 FOR SIZEWELL SITE		Sample No	132
			Depth (m)	81.12-81.60
			Type	CS

Soil Description Very stiff grey slightly sandy silty fissured CLAY.

Preparation Undisturbed

Sample details

Particle Density 2.65 Mg/m³ Assumed

SPECIMEN DETAILS

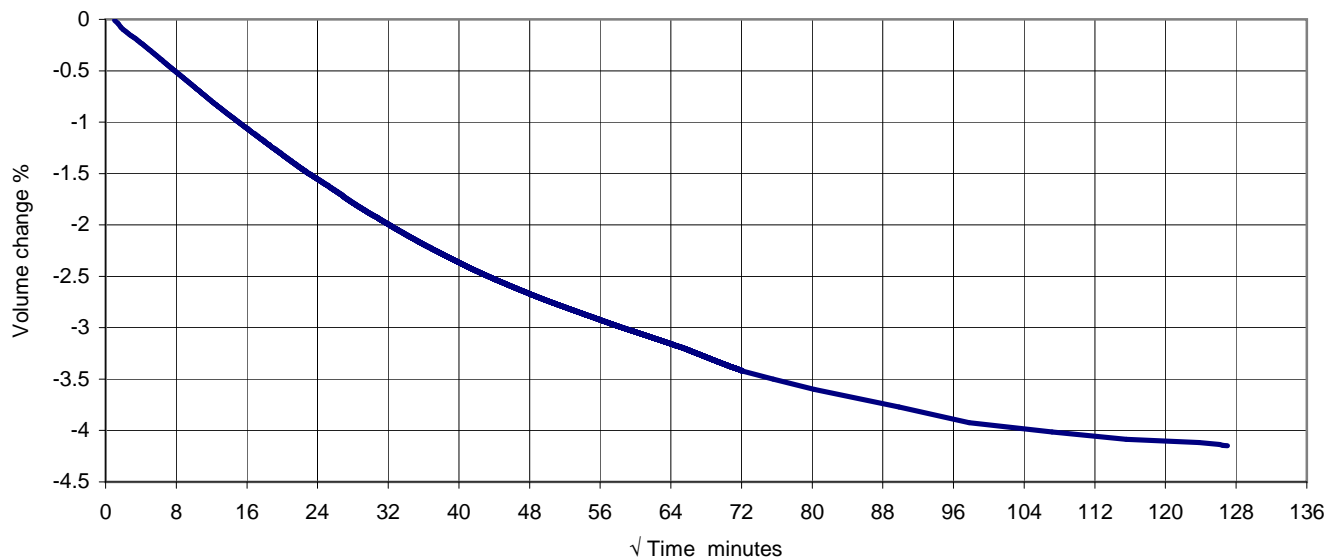
Initial	Diameter	72.20	mm
	Height	140.52	mm
	Volume	575.31	mL
	Mass of specimen	1037.19	g
	Bulk density	1.80	Mg/m ³
	Moisture content	38.0	%
	Dry density	1.31	Mg/m ³
	Voids ratio	1.03	
	Initial saturation	98	%

TEST CONDITIONS

Saturation Specimen saturated by application of cell pressure only.

Final back pressure 0 kPa
 Final B value 0.96

Isotropic Consolidation Cell pressure applied 900 kPa
 Effective stress 800 kPa



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 Rev 0
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Soil Mechanics

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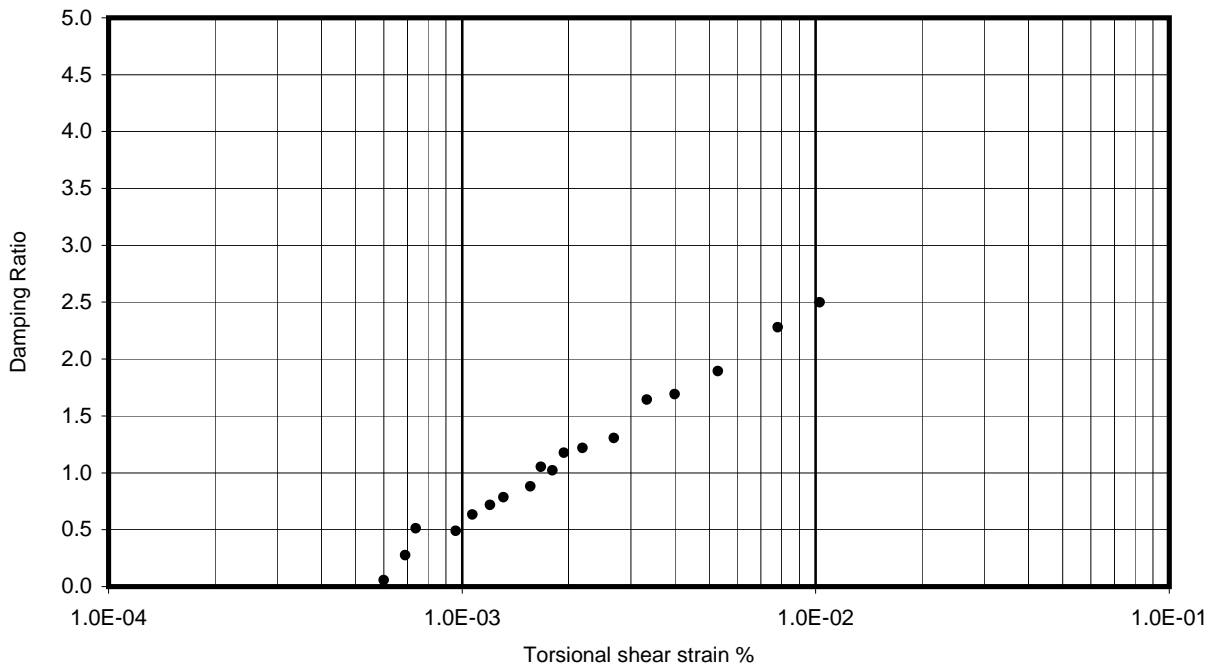
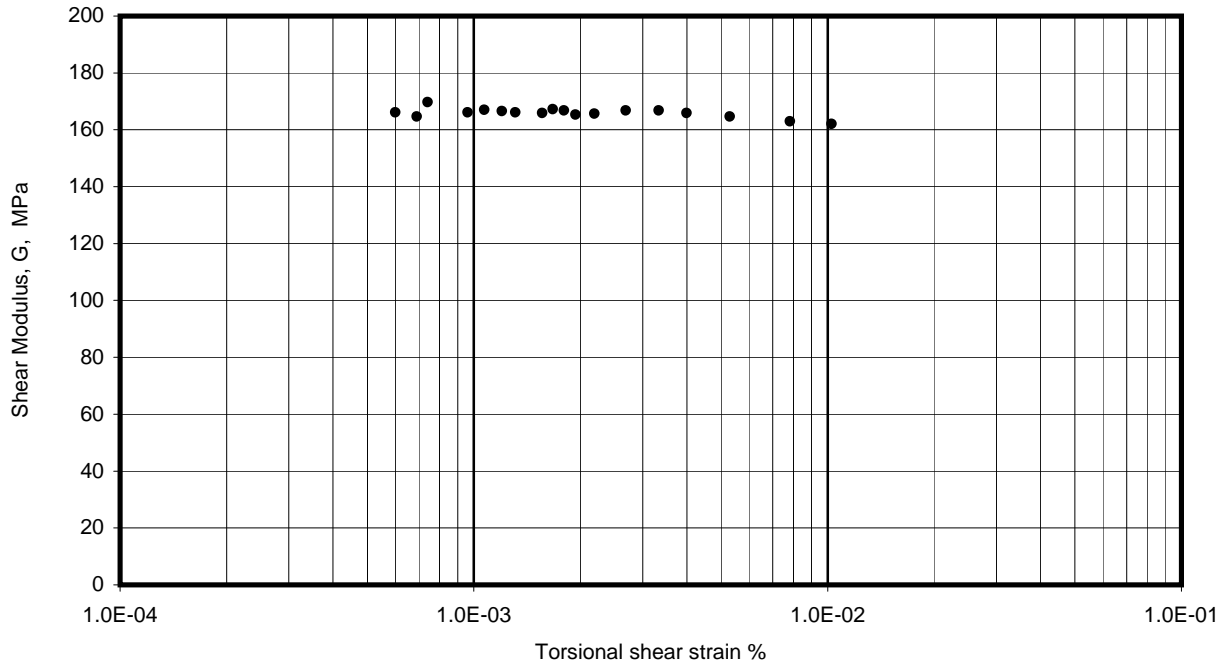
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Figure
 RCA 2
 sheet 1 of 4

ISOTROPICALLY CONSOLIDATED UNDRAINED RESONANT COLUMN TEST
In house method based on ASTM D4015

Project No	A0012-10	Sample Details:	Hole No.	CBH2009-8U
Project	ONSHORE INVESTIGATION PHASE 1 FOR SIZEWELL SITE		Sample No	17
			Depth (m)	81.12-81.60
			Type	CS

PARAMETER PLOTS



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SM RCA
Rev 0
Feb 11



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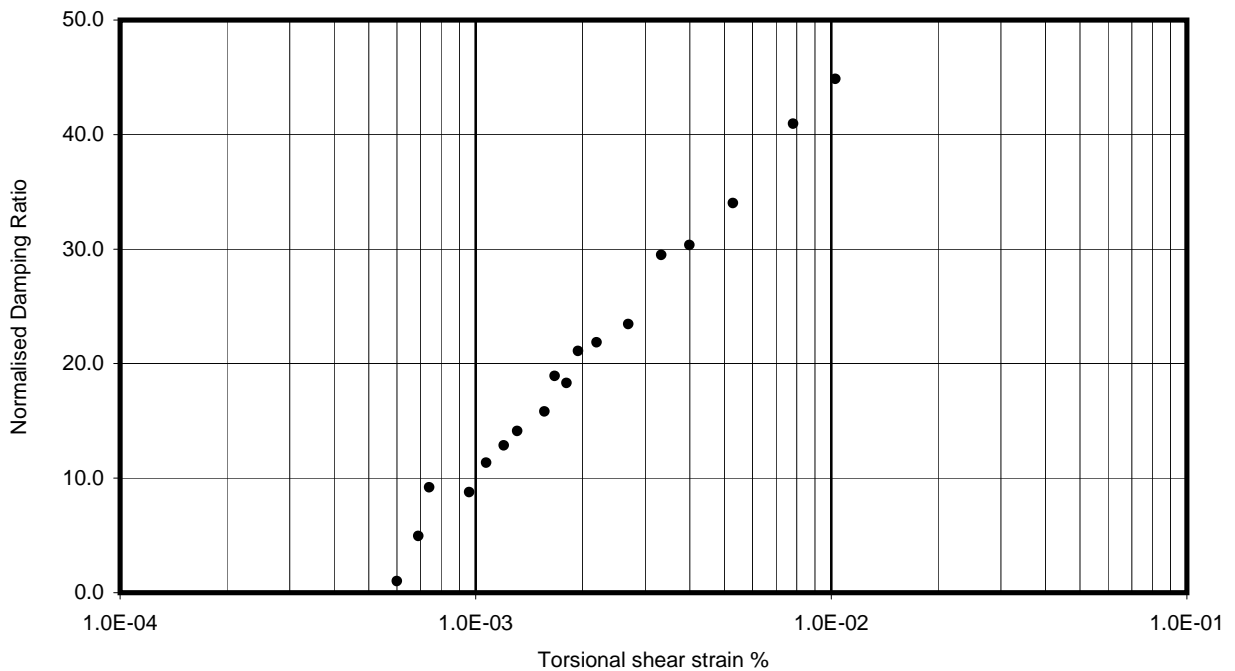
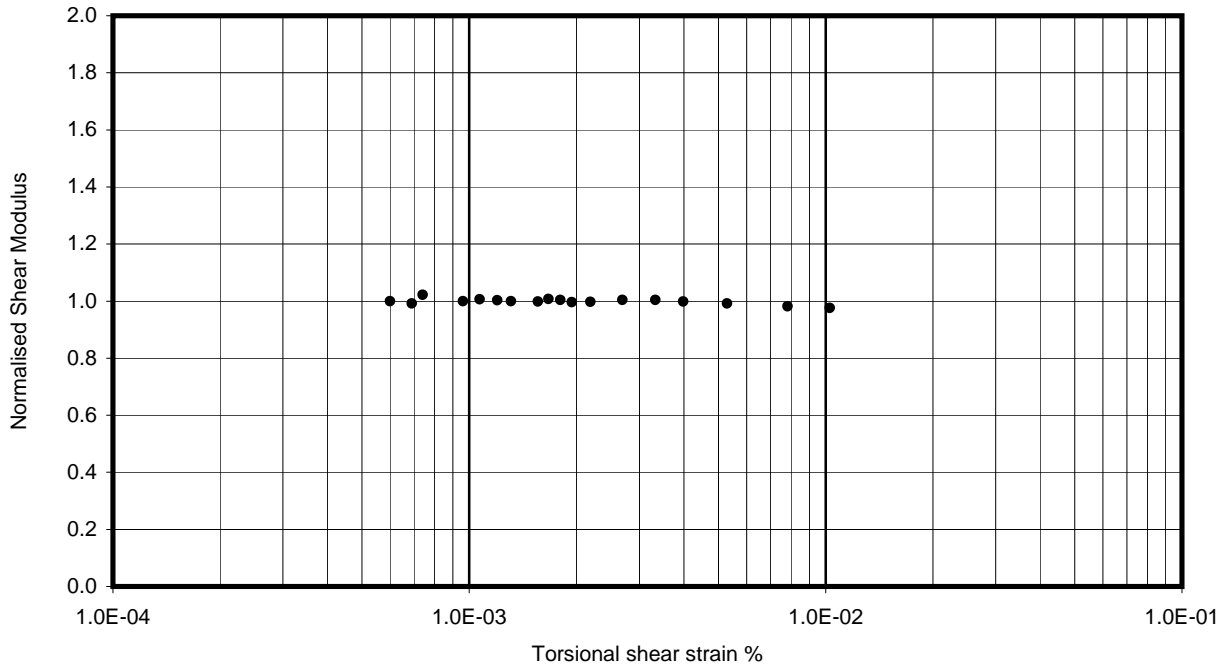
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Figure
RCA 2
sheet 3 of 4

ISOTROPICALLY CONSOLIDATED UNDRAINED RESONANT COLUMN TEST
In house method based on ASTM D4015

Project No	A0012-10	Sample Details:	Hole No.	CBH2009-8U
Project	ONSHORE INVESTIGATION PHASE 1 FOR SIZEWELL SITE		Sample No	17
			Depth (m)	81.12-81.60
			Type	CS

NORMALISED PLOTS



Ref

SM RCA
Rev 0
Feb 11



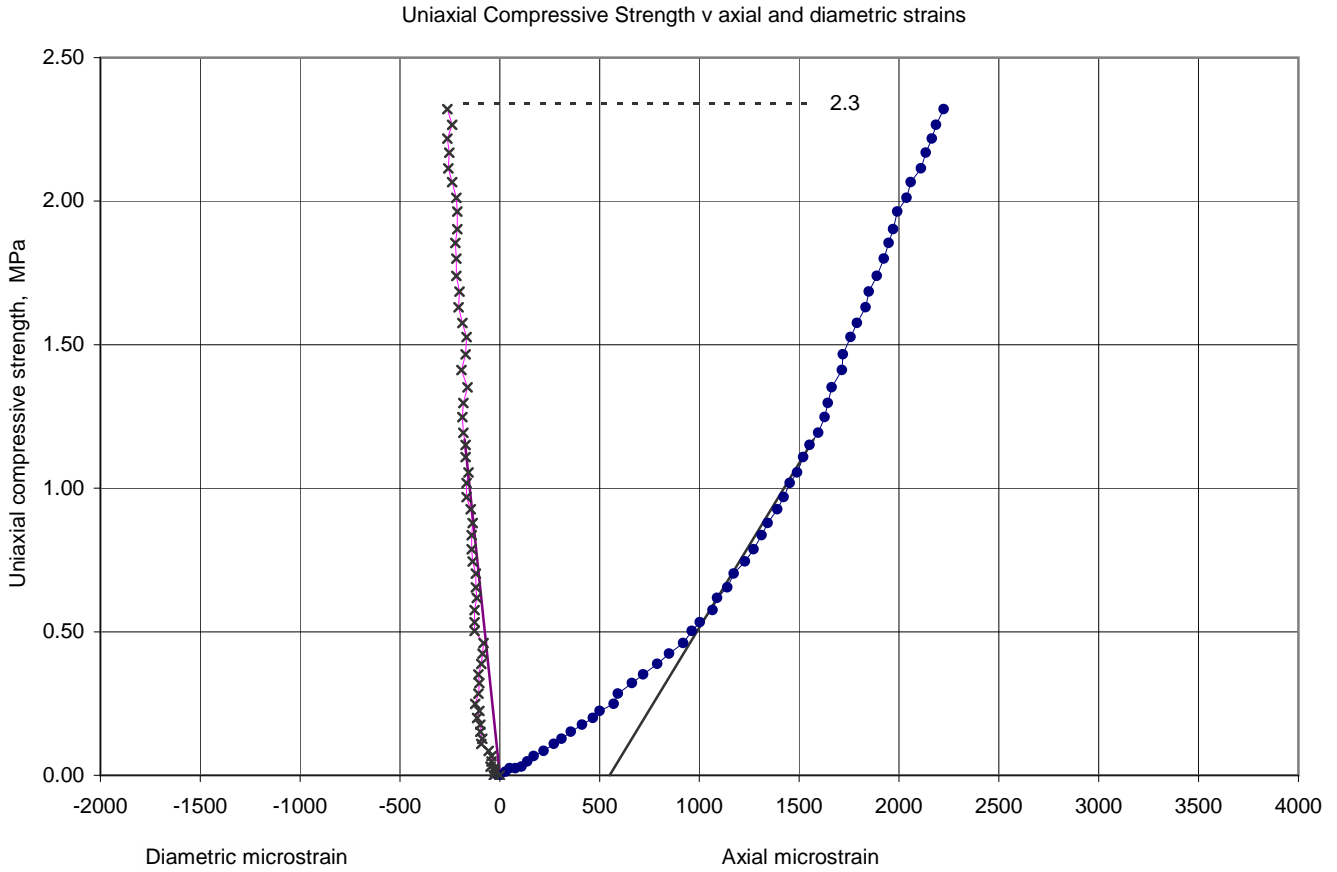
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Figure
RCA 2
sheet 4 of 4

UNIAXIAL COMPRESSIVE STRENGTH and DEFORMABILITY of ROCK

Project No.	A0012-10	Sample Details :	Hole No.	CBH2009-2
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BLG)	88.05 - 88.40
			No.	28
			Type	CS
			ID	



Rock type White blocky CHALK

Condition for test As received

Length, L 252.89 mm

Diameter, D 98.16 mm

L/D 2.58

Bulk density 1.95 Mg/m³

Dry density 1.50 Mg/m³

Moisture Content 29.7 %

Saturation 100 % (particle density assumed 2.70 Mg/m³)

Mode of failure : shear

Zero corrections applied prior to secant interpretation, microstrain Axial Diametral
550

Rate of loading	0.2	mm/min
Duration of test	386	seconds
Maximum Axial Load	17.7	kN
Maximum Uniaxial Compressive Strength, UCS	2.34	MPa
Young's Modulus of Elasticity (axial) Secant, 0-50% UCS	1145	MPa
Diametric slope Secant, 0-50% UCS	-6656	MPa
Poisson's Ratio	0.17	

Notes :

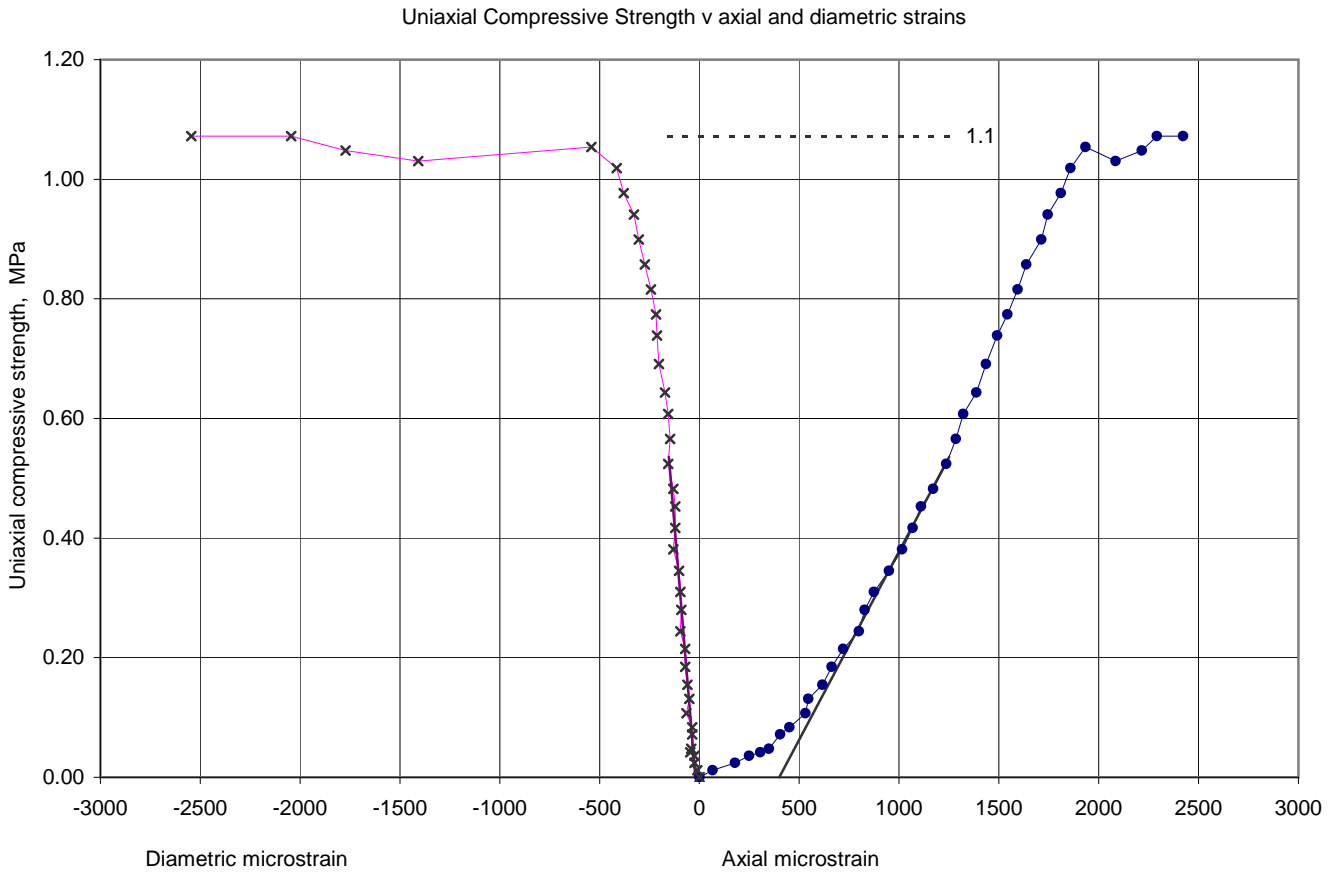
Test carried out in accordance with : Rock Characterization and Monitoring ISRM Suggested Methods p.114

Deformations measured by strain transducer with resolution of 0.001mm

Strain controlled test performed due to weakness of sample

UNIAXIAL COMPRESSIVE STRENGTH and DEFORMABILITY of ROCK

Project No.	A0012-10	Sample Details :	Hole No.	CBH2009-2
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BLG)	94.80-95.20
			No.	30
			Type	CS
			ID	



Rock type White blocky CHALK

Condition for test As received

Length, L 212.57 mm

Diameter, D 99.01 mm

L/D 2.15 * outside specification for ISRM

Bulk density 1.94 Mg/m³

Dry density 1.50 Mg/m³

Moisture Content 29.2 %

Saturation 98.8 % (particle density assumed 2.70 Mg/m³)

Mode of failure : shear

Zero corrections applied prior to secant interpretation, microstrain Axial Diametral
400 -20

Rate of loading	0.2	mm/min
Duration of test	390	seconds
Maximum Axial Load	8.25	kN
Maximum Uniaxial Compressive Strength, UCS	1.07	MPa
Young's Modulus of Elasticity (axial) Secant, 0-50% UCS	630	MPa
Diametric slope Secant, 0-50% UCS	-4007	MPa
Poisson's Ratio	0.16	

Notes :

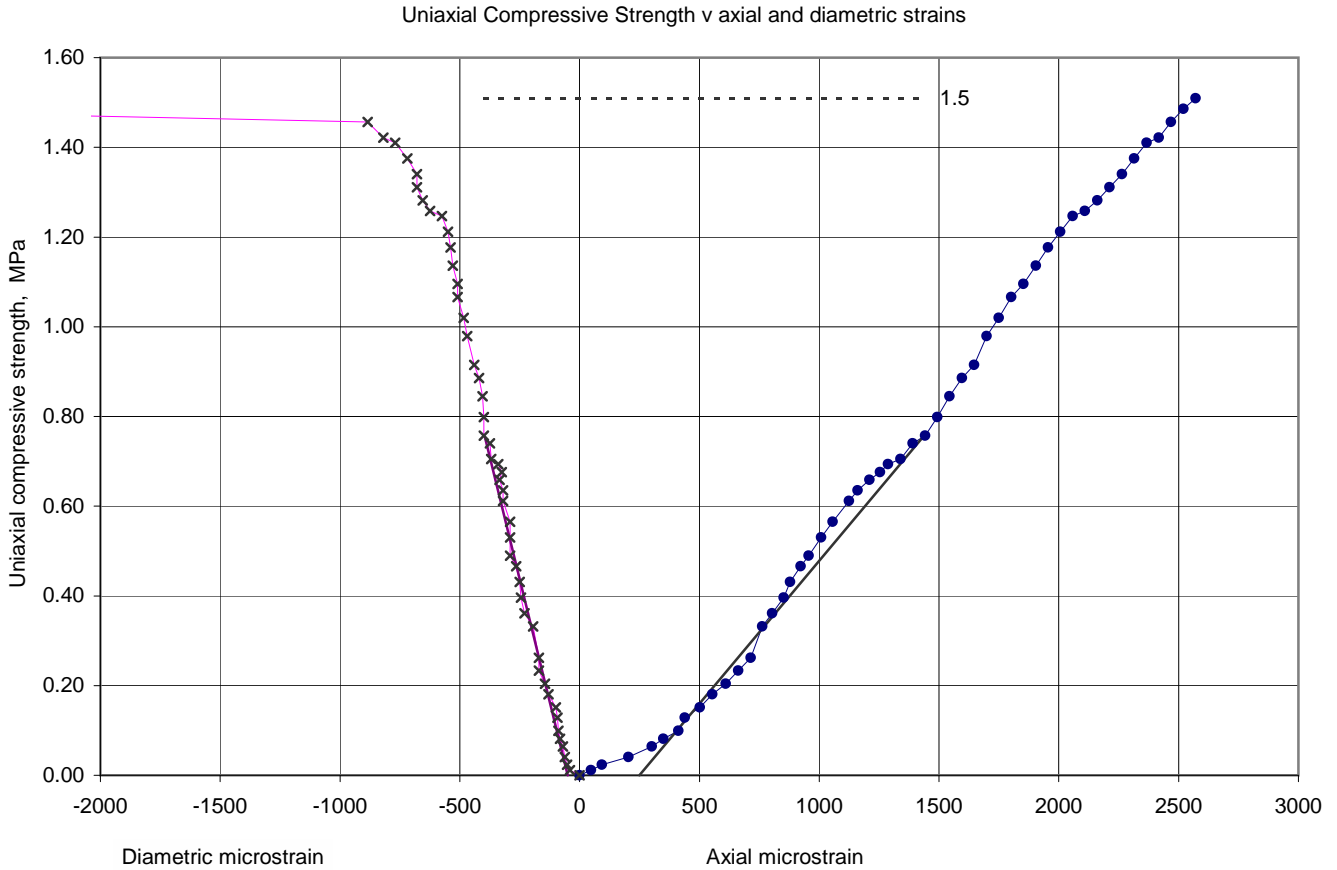
Test carried out in accordance with : Rock Characterization and Monitoring ISRM Suggested Methods p.114

Deformations measured by strain transducer with resolution of 0.001mm

Strain controlled test performed due to weakness of sample

UNIAXIAL COMPRESSIVE STRENGTH and DEFORMABILITY of ROCK

Project No.	A0012-10	Sample Details :	Hole No.	CBH2009-2
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BLG)	103.54 - 103.95
			No.	32
			Type	CS
			ID	



Rock type White blocky CHALK

Condition for test As received

Length, L 268.70 mm

Diameter, D 100.10 mm

L/D 2.68

Bulk density 1.97 Mg/m³

Dry density 1.54 Mg/m³

Moisture Content 27.7 %

Saturation 99.7 % (particle density assumed 2.70 Mg/m³)

Mode of failure : multiple shear

Zero corrections applied prior to secant interpretation, microstrain Axial Diametral
250 -50

Rate of loading	0.2	mm/min
Duration of test	606	seconds
Maximum Axial Load	11.88	kN
Maximum Uniaxial Compressive Strength, UCS	1.51	MPa
Young's Modulus of Elasticity (axial) Secant, 0-50% UCS	637	MPa
Diametric slope Secant, 0-50% UCS	-2184	MPa
Poisson's Ratio	0.29	

Notes :

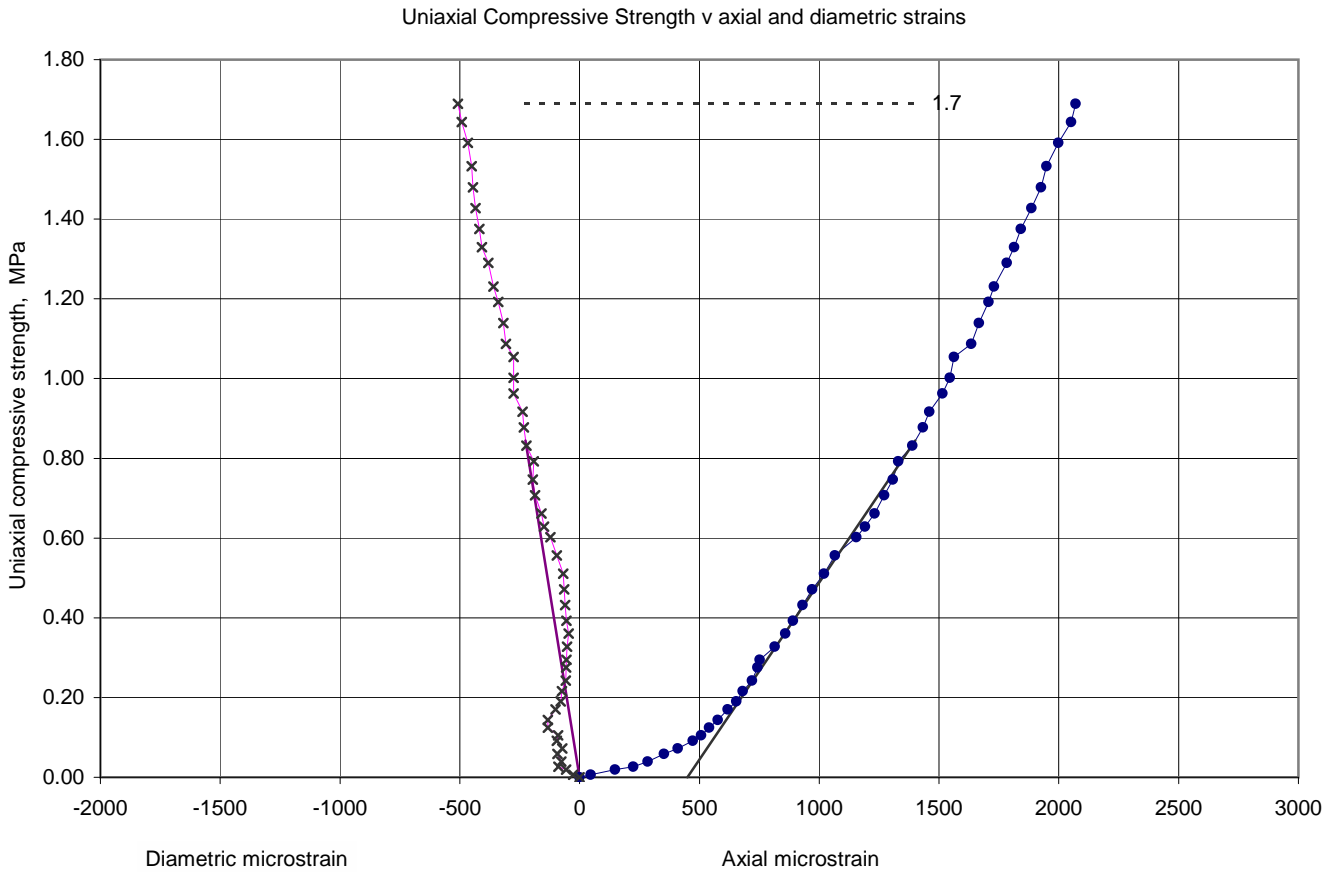
Test carried out in accordance with : Rock Characterization and Monitoring ISRM Suggested Methods p.114

Deformations measured by strain transducer with resolution of 0.001mm

Strain controlled test performed due to weakness of sample

UNIAXIAL COMPRESSIVE STRENGTH and DEFORMABILITY of ROCK

Project No.	A0012-10	Sample Details :	Hole No.	CBH2009-2
Project Name	ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE		Depth (m BLG)	110.50 - 110.90
			No.	34
			Type	CS
			ID	



Rock type White blocky CHALK

Condition for test As received

Length, L 223.00 mm

Diameter, D 94.42 mm

L/D 2.36 * outside specification for ISRM

Bulk density 1.92 Mg/m³

Dry density 1.49 Mg/m³

Moisture Content 29.0 %

Saturation 95.7 % (particle density assumed 2.70 Mg/m³)

Mode of failure : multiple shear

Zero corrections applied prior to secant interpretation, microstrain Axial Diametral
450 0

Rate of loading	0.2	mm/min
Duration of test	258	seconds
Maximum Axial Load	11.83	kN
Maximum Uniaxial Compressive Strength, UCS	1.69	MPa
Young's Modulus of Elasticity (axial) Secant, 0-50% UCS	888	MPa
Diametric slope Secant, 0-50% UCS	-3747	MPa
Poisson's Ratio	0.24	

Notes :

Test carried out in accordance with : Rock Characterization and Monitoring ISRM Suggested Methods p.114

Deformations measured by strain transducer with resolution of 0.001mm

Strain controlled test performed due to weakness of sample

Report No A0012-10/5

ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE

FACTUAL REPORT ON GROUND INVESTIGATION

VOLUME 5 : PHOTOGRAPHS

Carried out for: NNB Generation Company Limited

August 2011



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Soil Mechanics part of Environmental Scientifics Group

**ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE
FACTUAL REPORT ON GROUND INVESTIGATION**

VOLUME 5 : PHOTOGRAPHS

**Report No: A0012-10/5
Date: August 2011**

Employer:

**NNB Generation Company Limited
40 Grosvenor Place
Victoria
London
SW1X 7EN**

Issue No	Date	Details
1	August 2011	Report as submitted

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REPORT STRUCTURE

VOLUME NO	TITLE	REPORT NO
1	TEXT, MONITORING AND DRAWINGS	A0012-10/1
2A	EXPLORATORY HOLE RECORDS: 1:25 SCALE BOREHOLE LOGS	A0012-10/2A
2B	EXPLORATORY HOLE RECORDS: 1:25 SCALE BOREHOLE AND TRIAL PIT LOGS 1:100 SCALE BOREHOLE LOGS SPLIT TUBE SAMPLE DESCRIPTIONS DISCONTINUITY LOGS	A0012-10/2B
3A	IN SITU TESTING: DRILLING PARAMETER RESULTS MENARD PRESSUREMETER TESTING	A0012-10/3A
3B	IN SITU TESTING: CONE PENETRATION TESTING GEOPHYSICAL TESTING PUMPING TEST	A0012-10/3B
3C	IN SITU TESTING: SELF BORING PRESSUREMETER TESTING	A0012-10/3C
4	GEOTECHNICAL LABORATORY TESTING	A0012-10/4
5	PHOTOGRAPHS	A0012-10/5
6	COMPREHENSIVE AND DATA INTEGRATION REPORT	A0012-10/6

CONTENTS

ENCLOSURES

- A ROTARY CORE PHOTOGRAPHS
- B U100 SAMPLE PHOTOGRAPHS
- C TRIAL PIT PHOTOGRAPHS

ENCLOSURE A
ROTARY CORE PHOTOGRAPHS

Rotary Cores

Plate 1 to 141

Photographs



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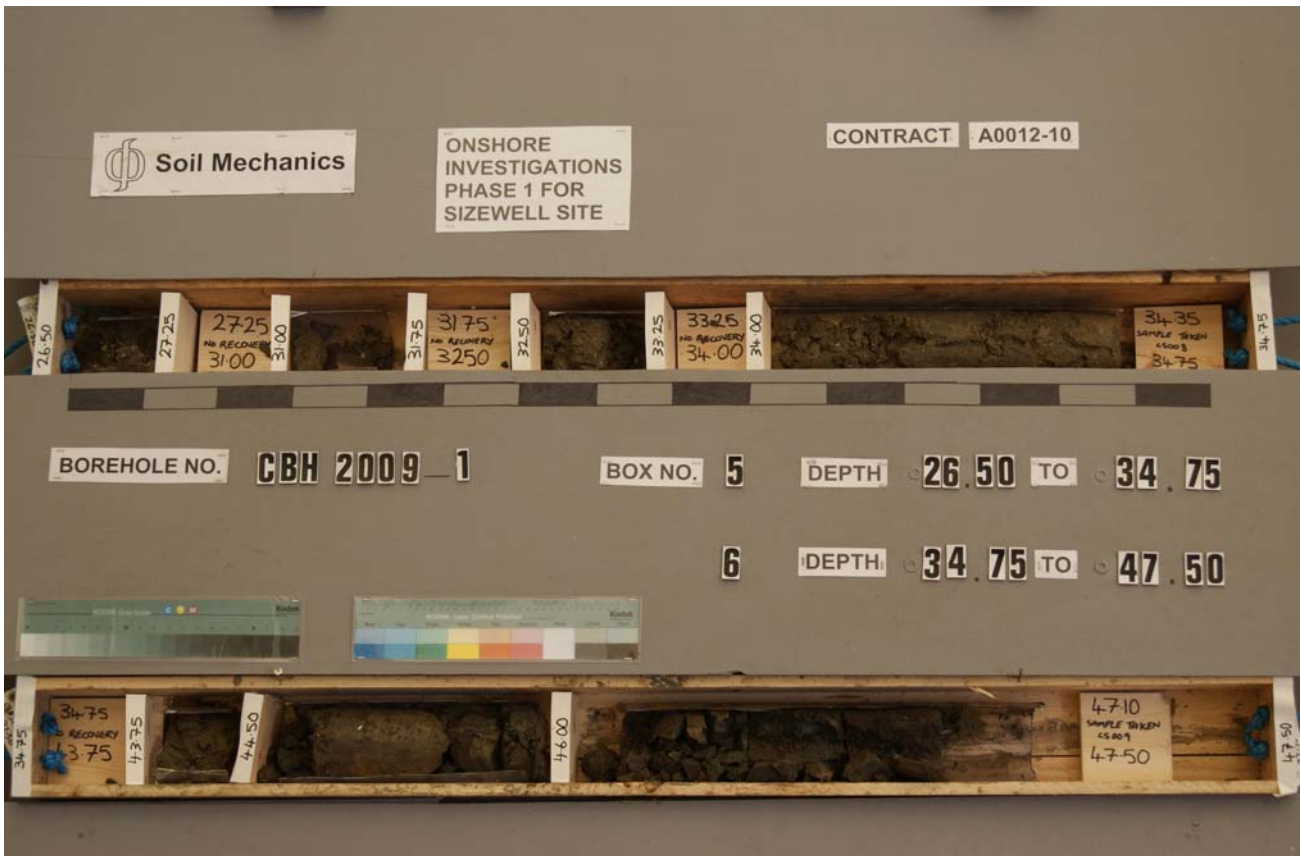


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 1</p>
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Photographs



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Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 2</p>
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Photographs



Soil Mechanics

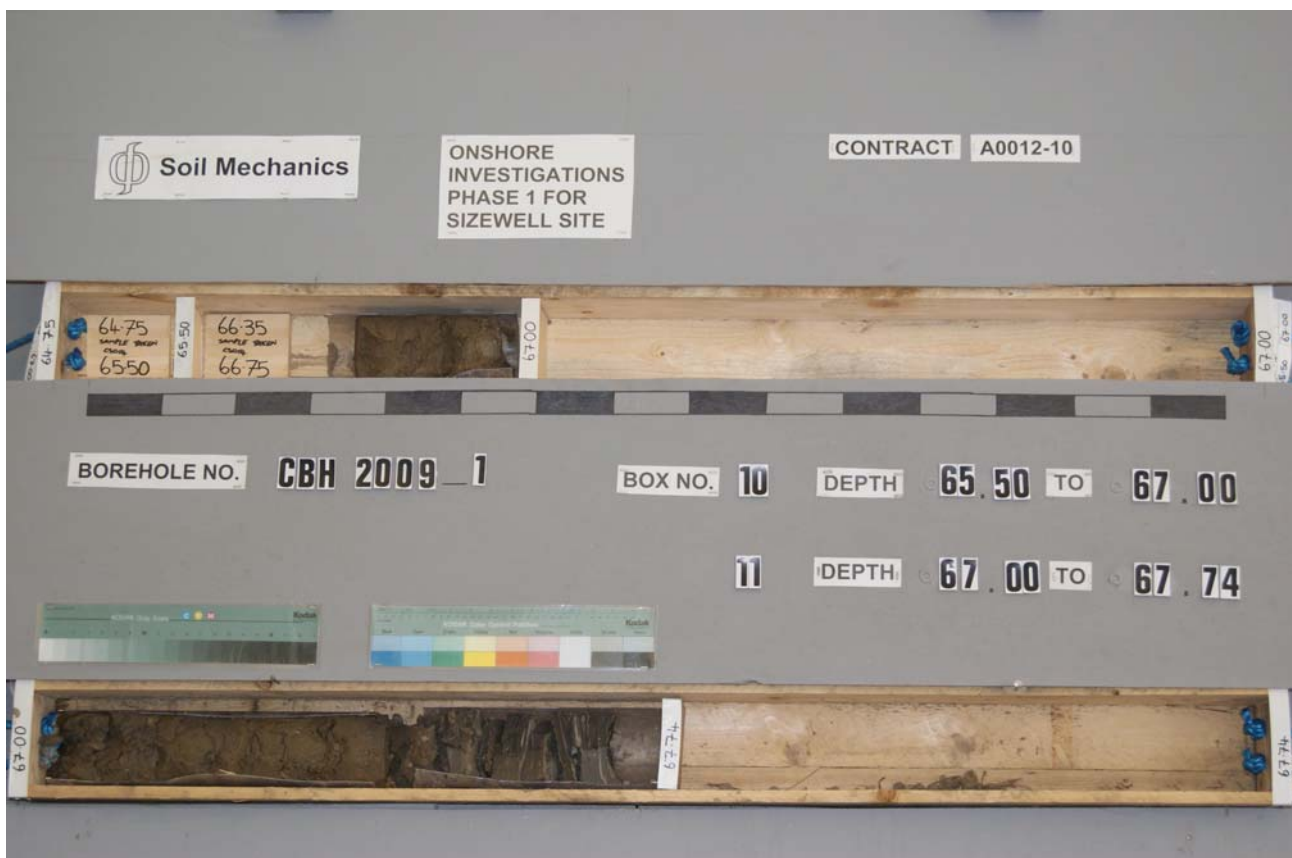


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Photographs



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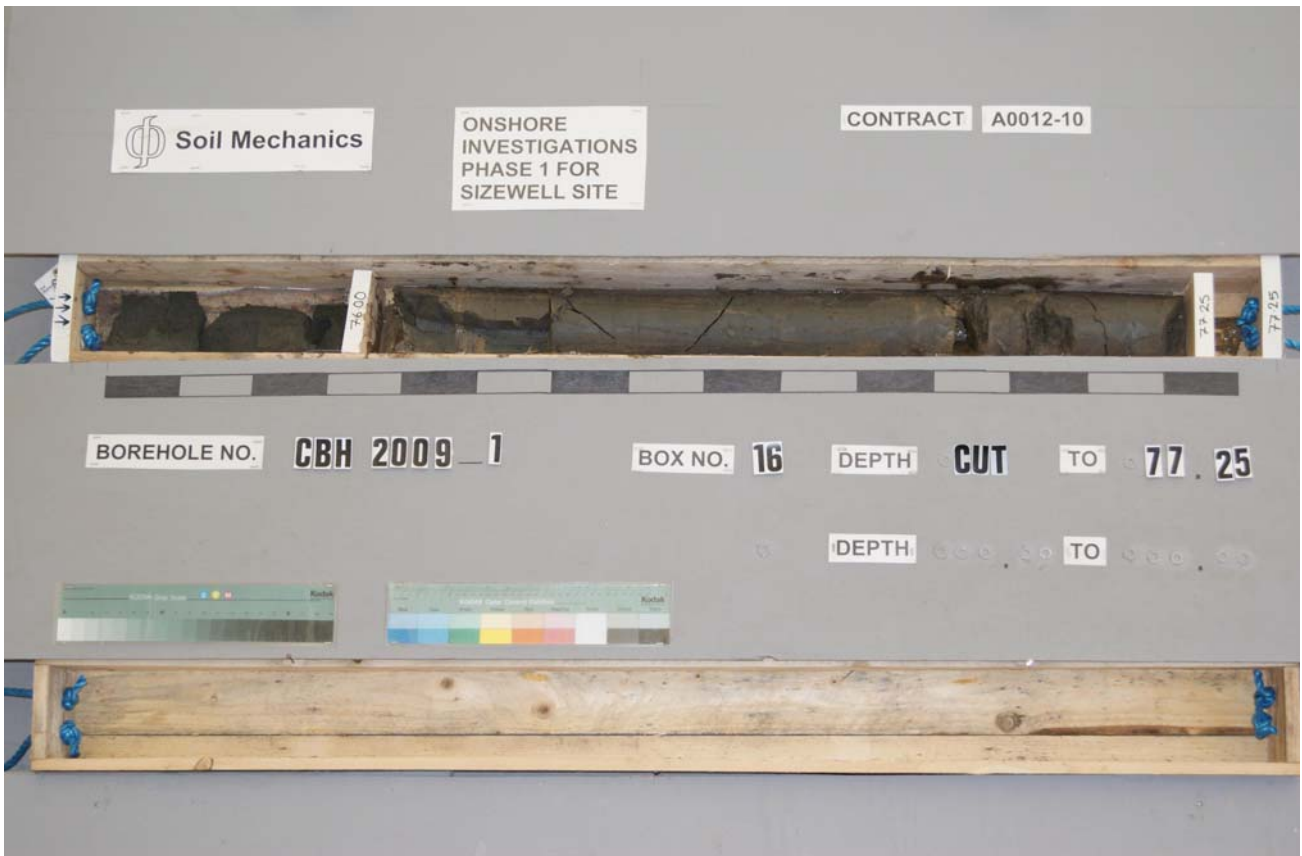
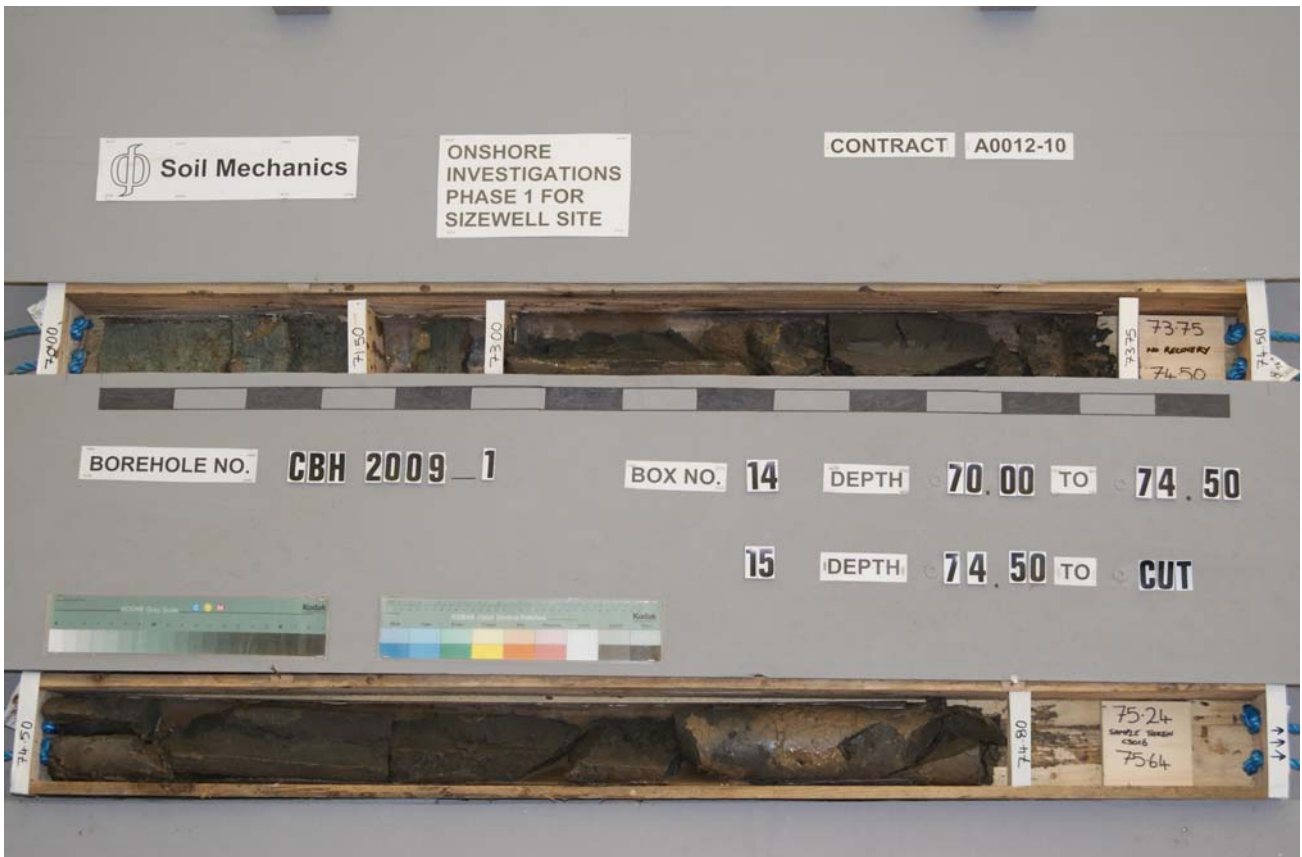


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Photographs



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Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 5</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 6</p>
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Photographs



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Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 7</p>
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Photographs



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Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 8
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Photographs



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BOREHOLE NO. **CBH 2009_2** BOX NO. **7** DEPTH **29.15** TO **31.40**
8 DEPTH **31.40** TO **35.15**



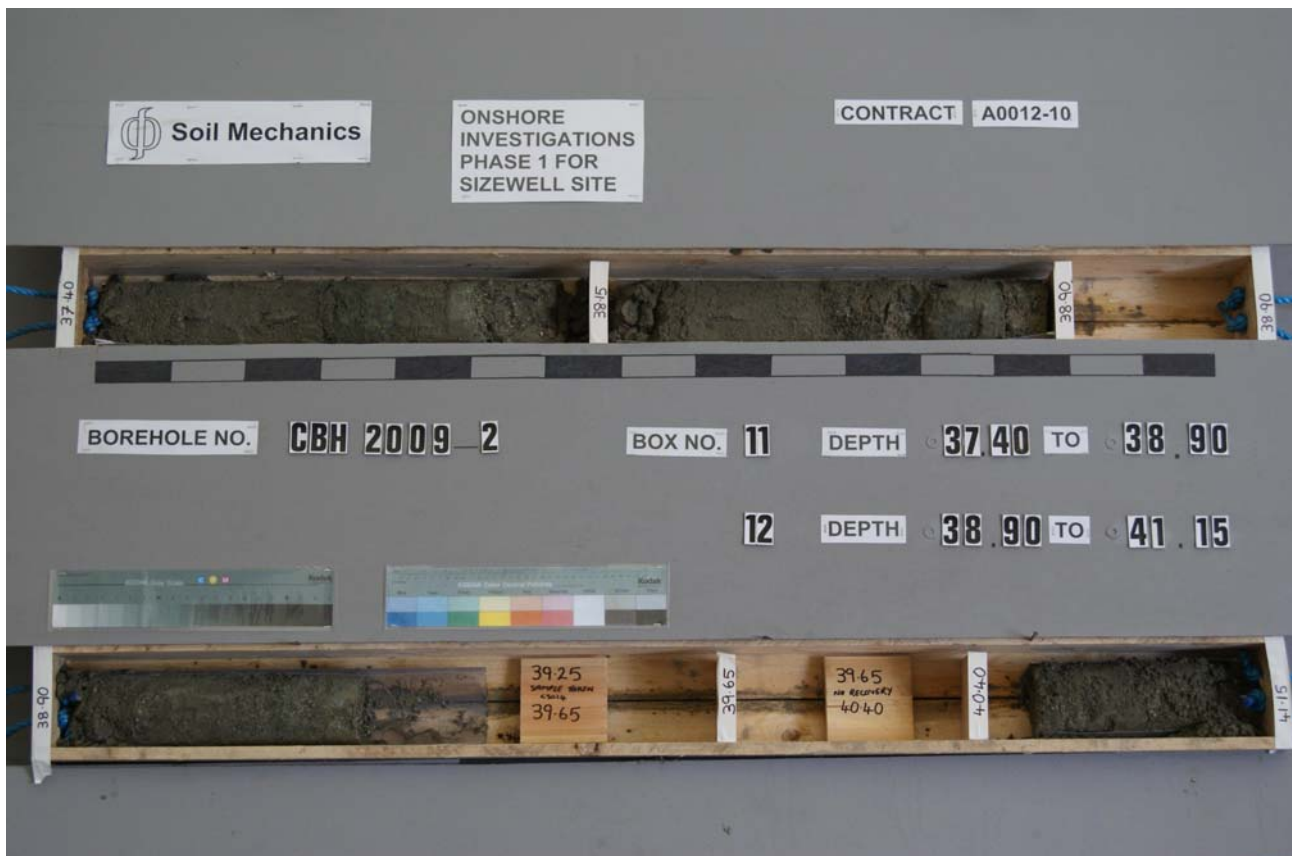
BOREHOLE NO. **CBH 2009_2** BOX NO. **9** DEPTH **35.15** TO **36.65**
10 DEPTH **36.65** TO **37.40**

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 9
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Photographs



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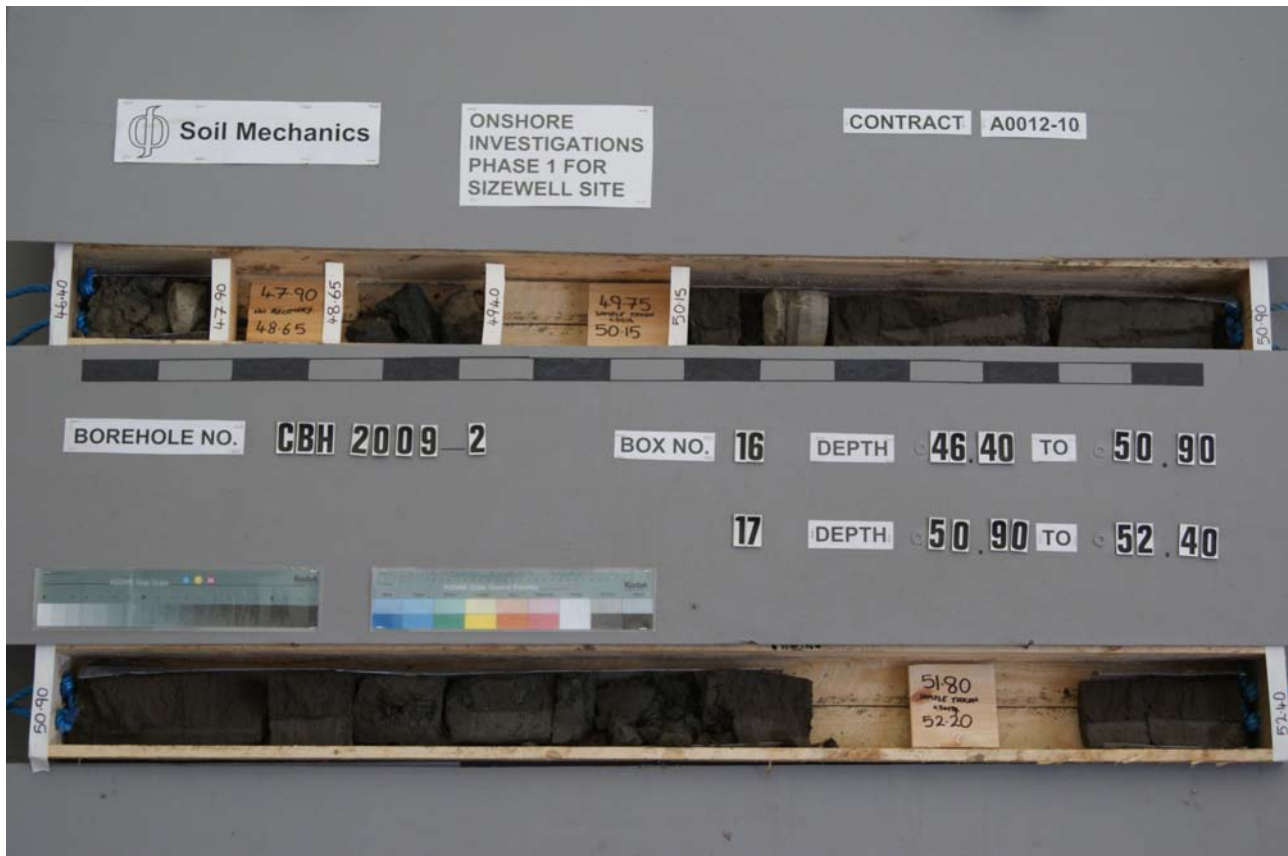
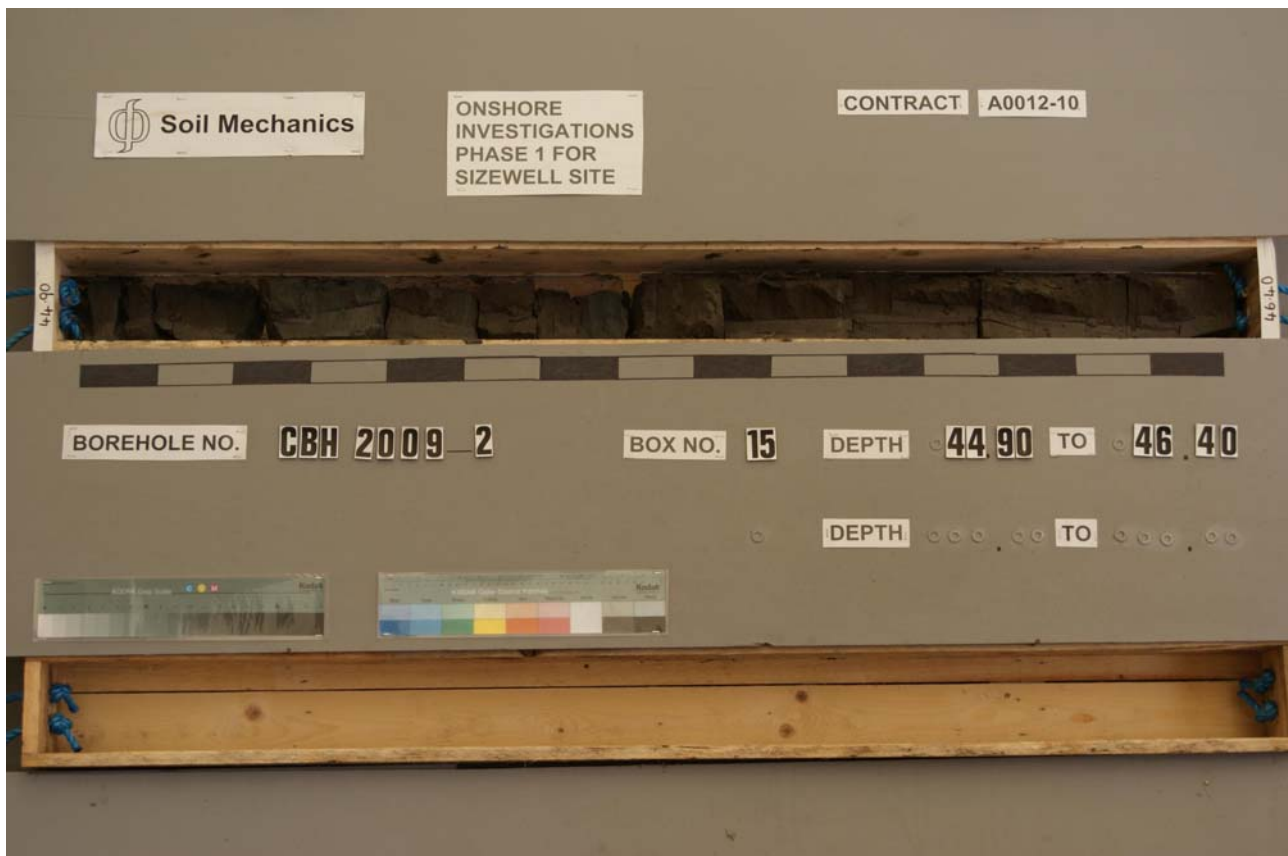


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 10
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Photographs



Soil Mechanics

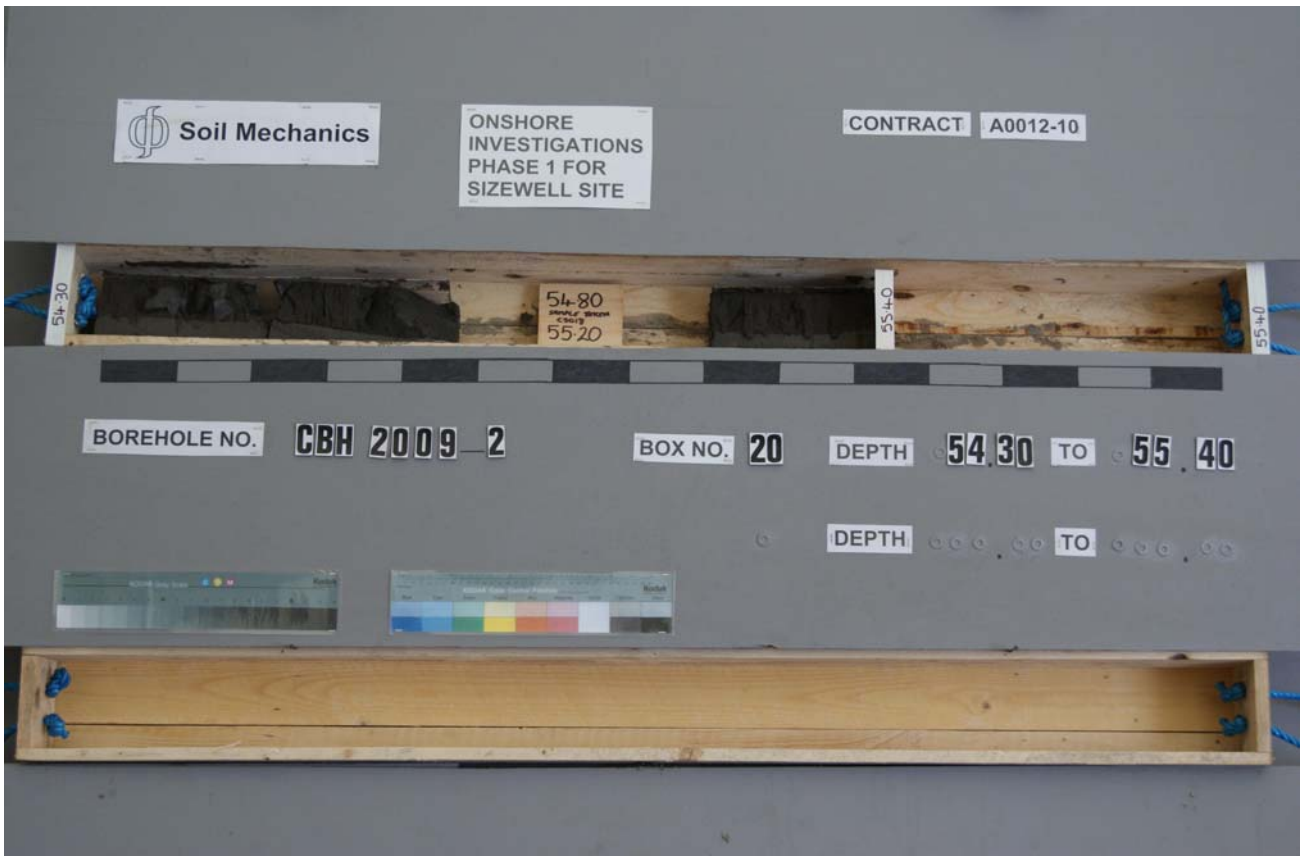


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 11</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 12</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 13</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 14</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 15</p>
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Photographs



Soil Mechanics

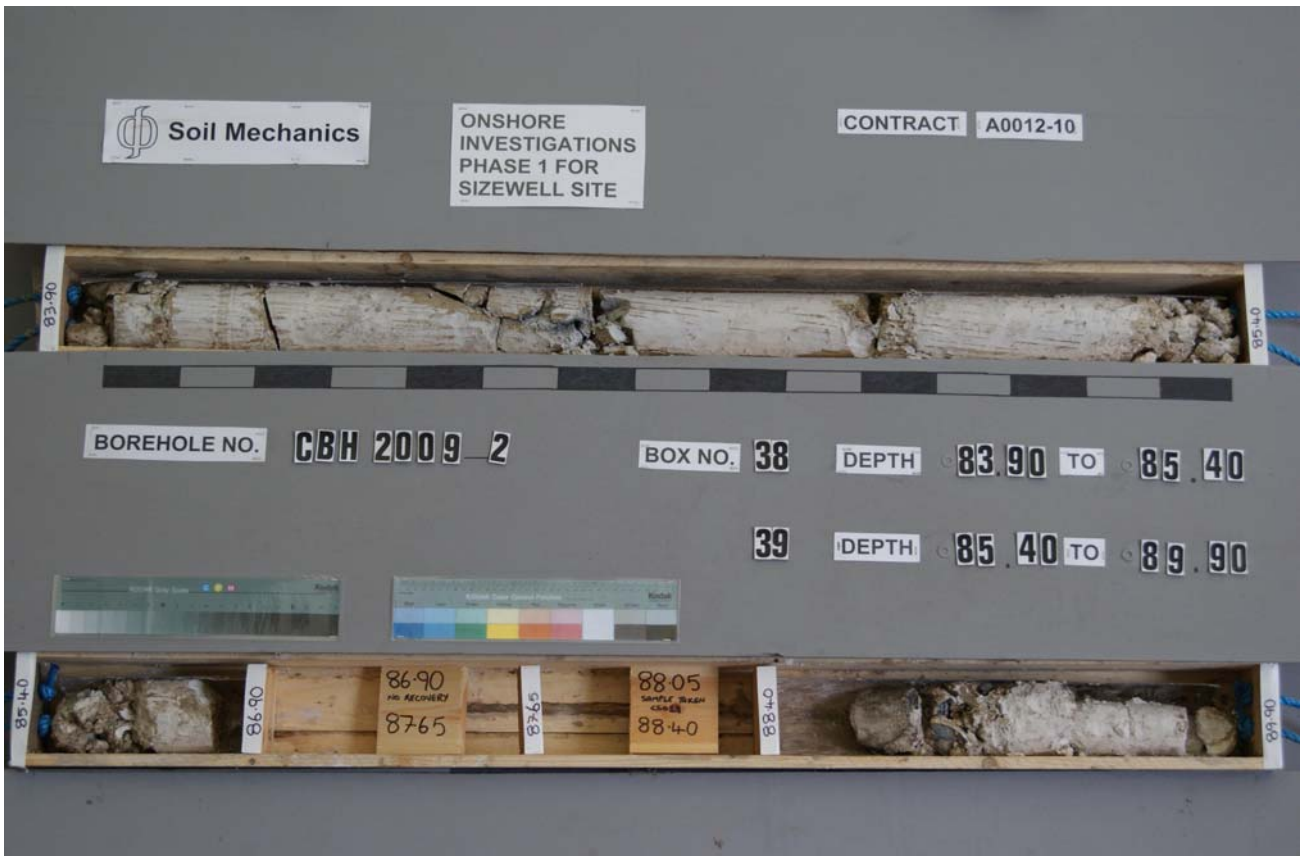
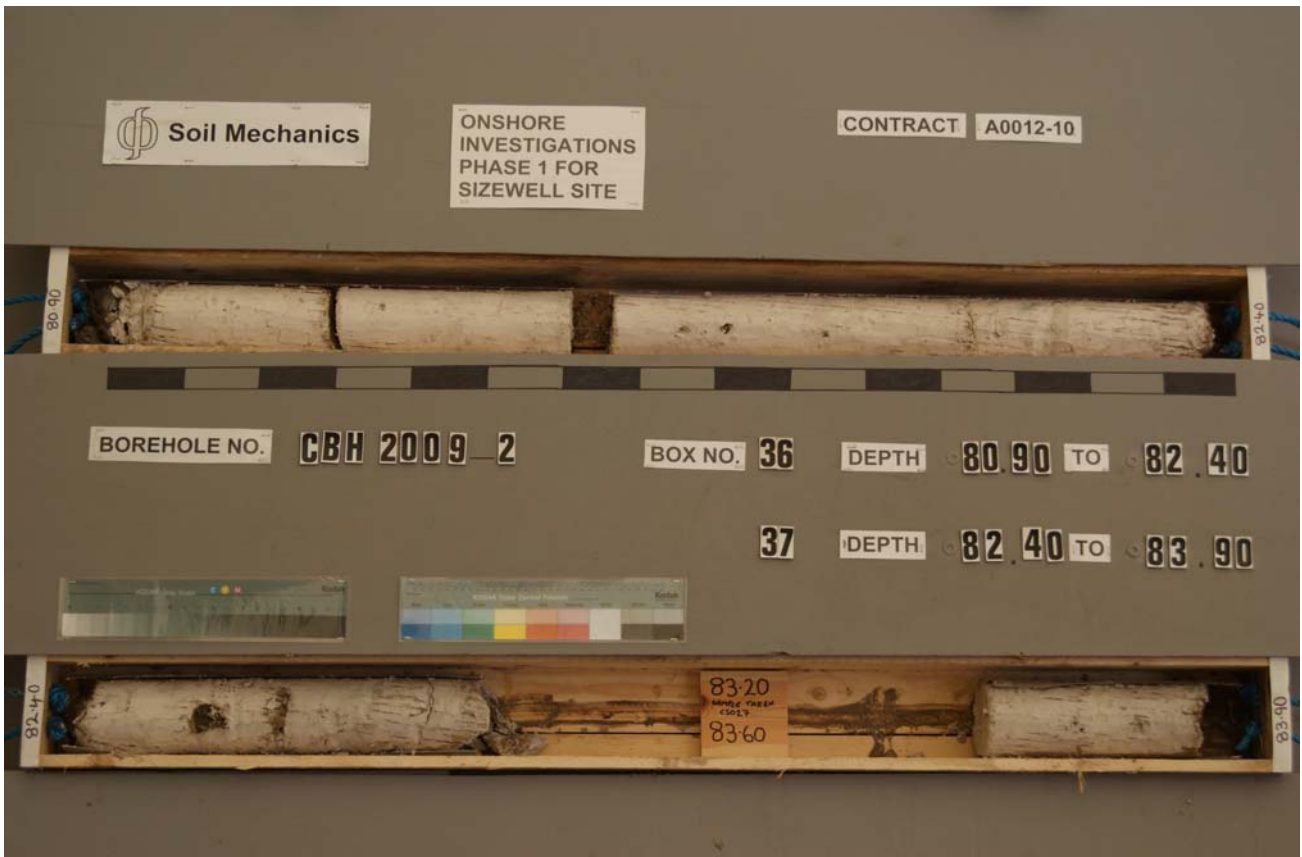


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 16</p>
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Photographs



Soil Mechanics

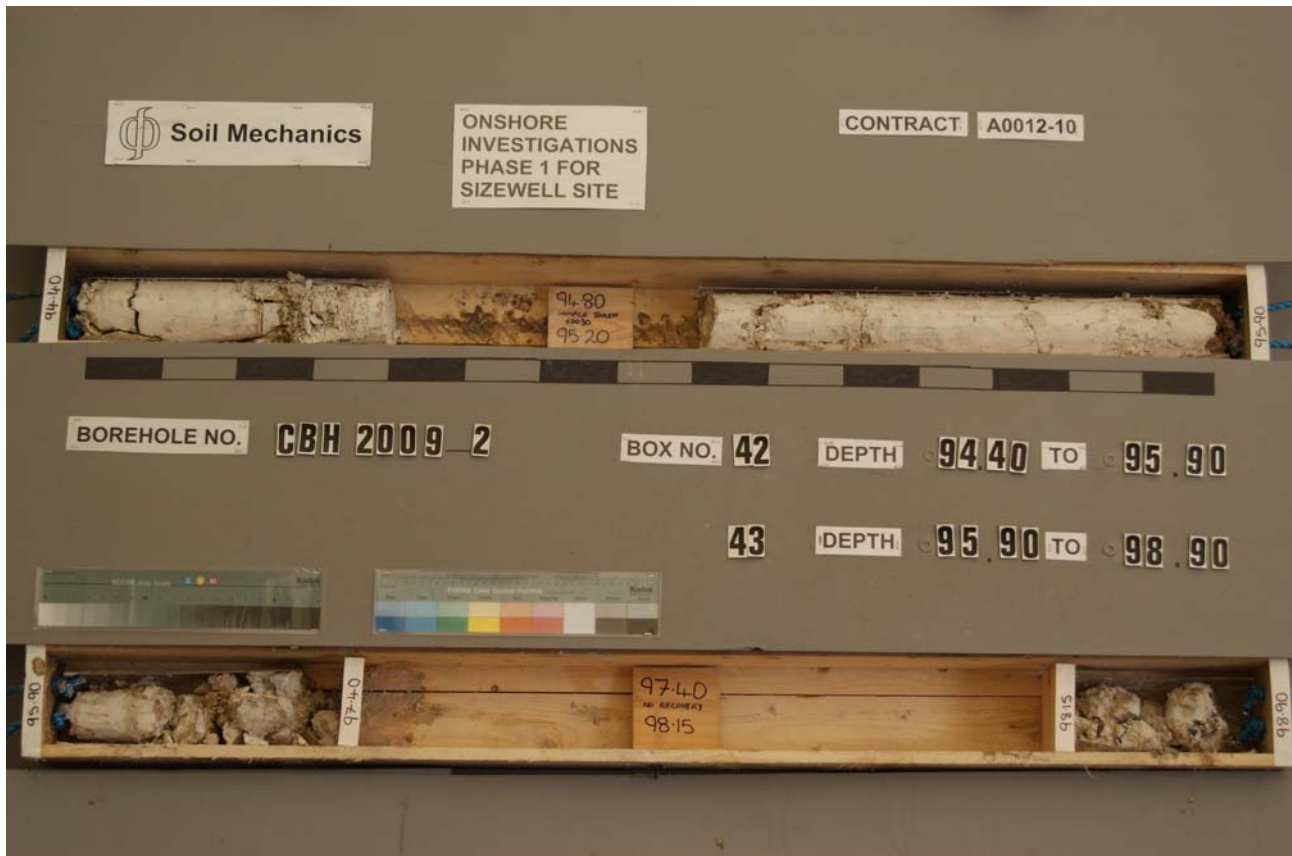
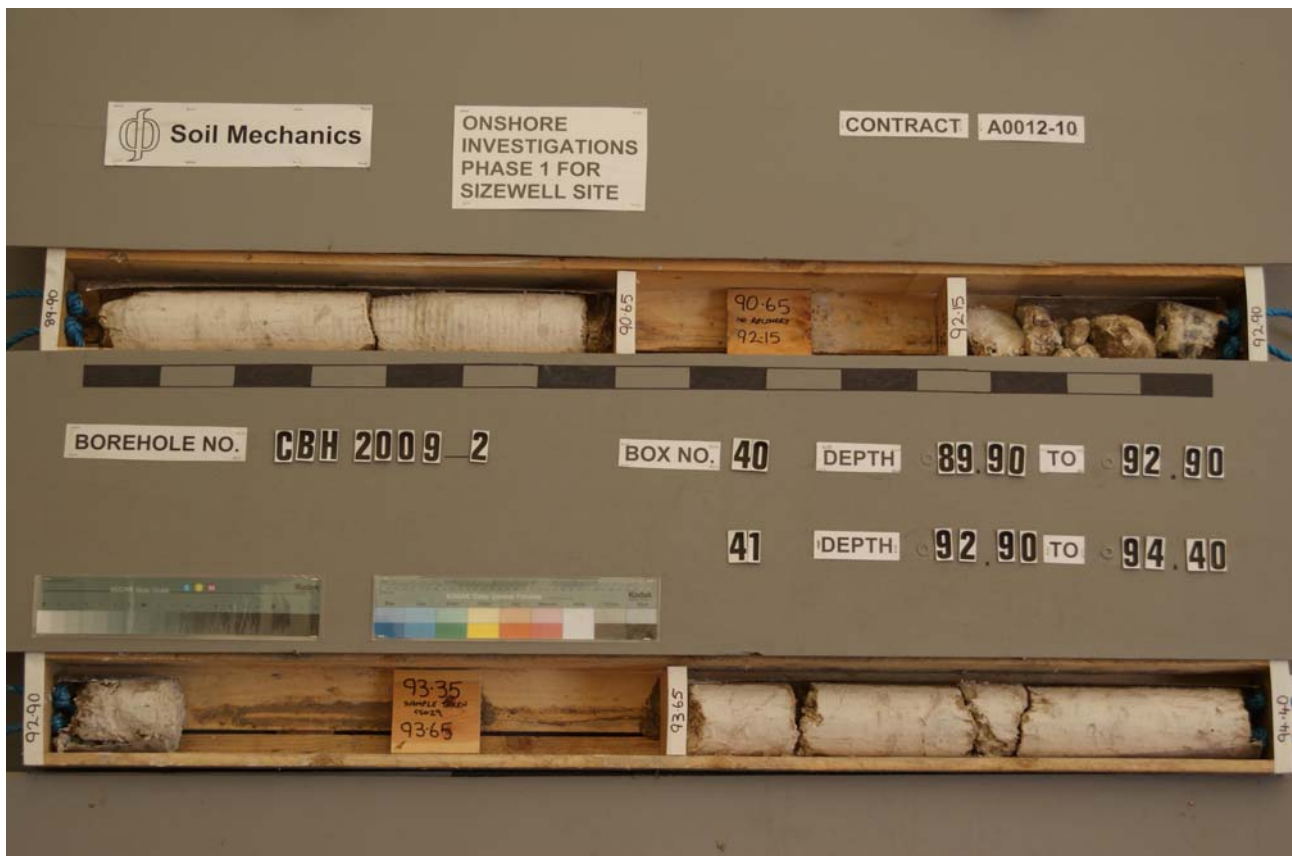


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 17</p>
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Photographs



Soil Mechanics

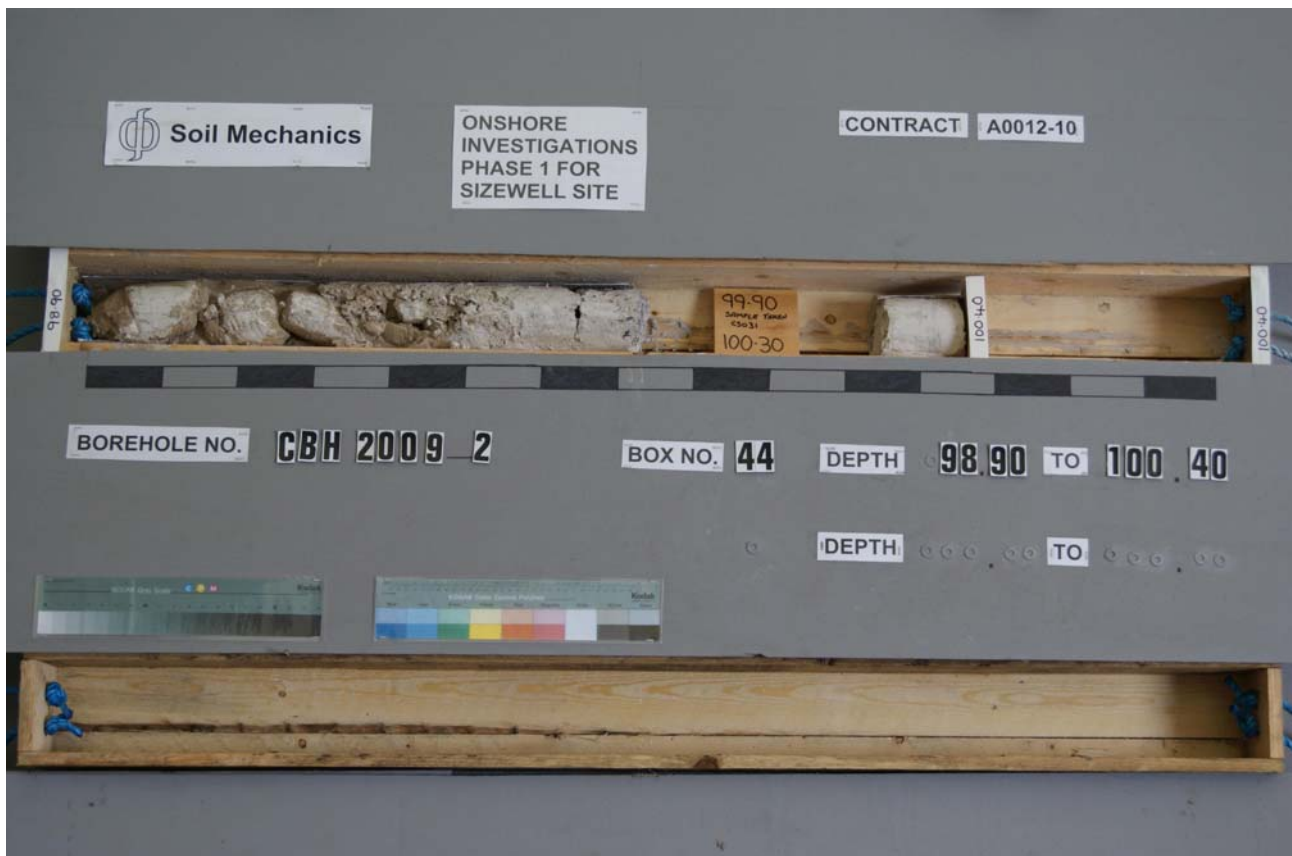


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 18</p>
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Photographs



Soil Mechanics

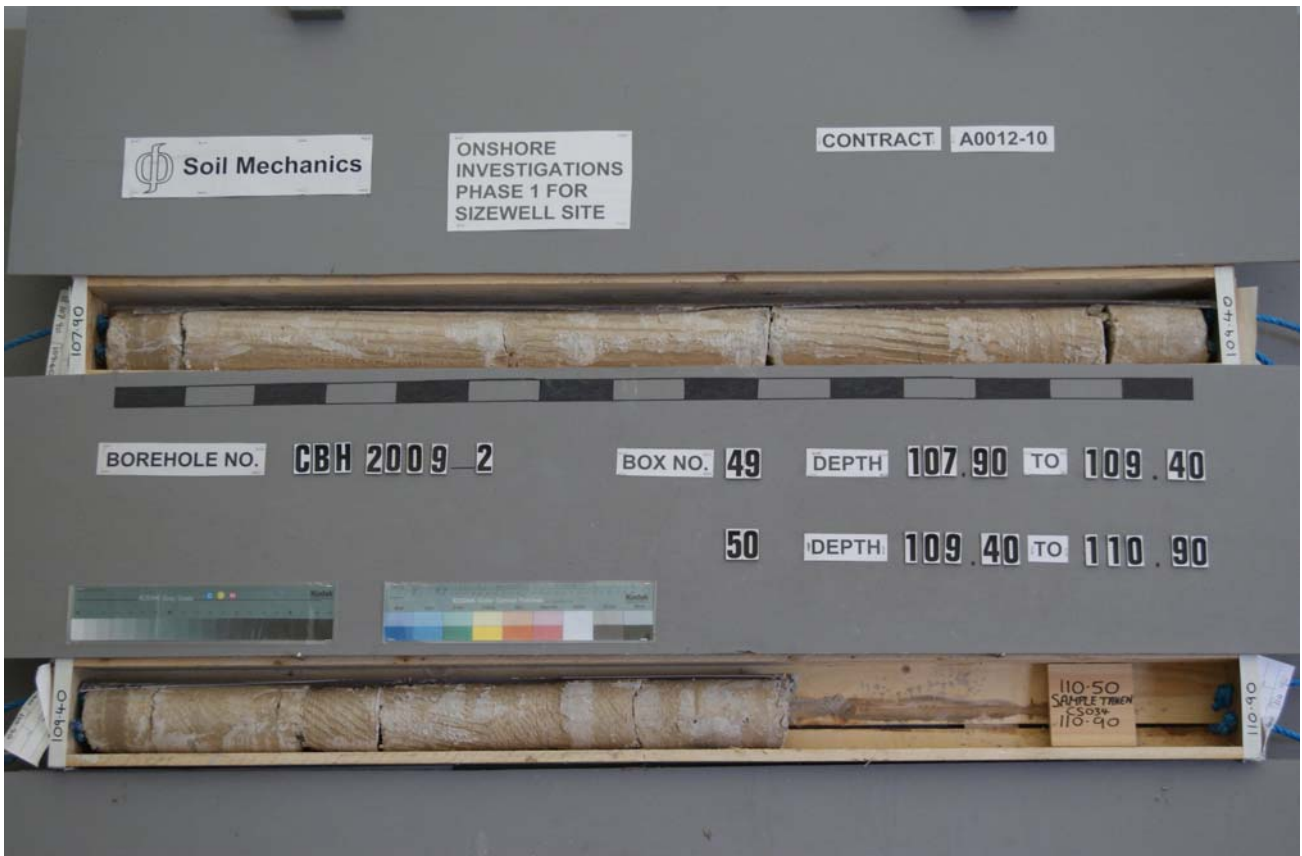


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 19</p>
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Photographs



Soil Mechanics

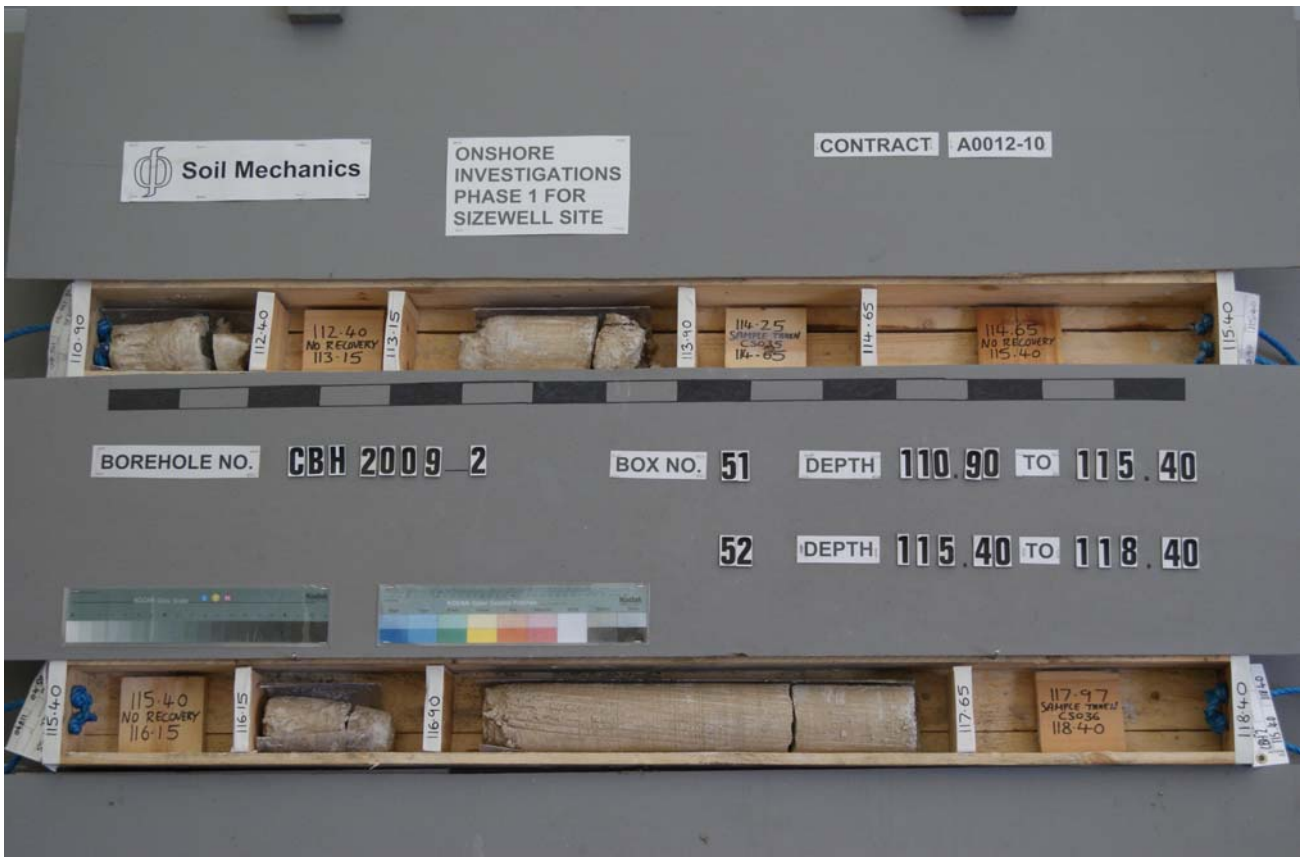


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 20</p>
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Photographs



Soil Mechanics

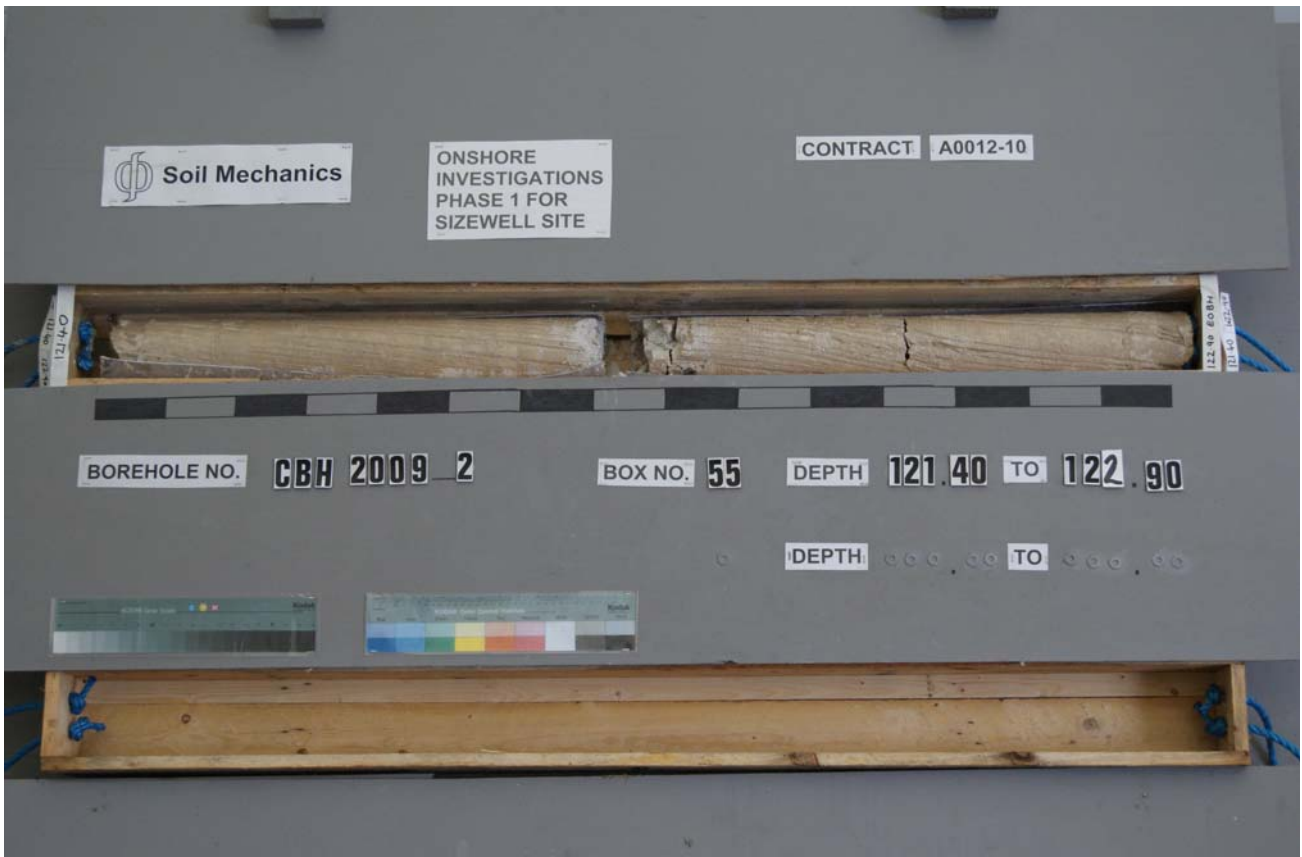


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 21</p>
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Photographs



Soil Mechanics

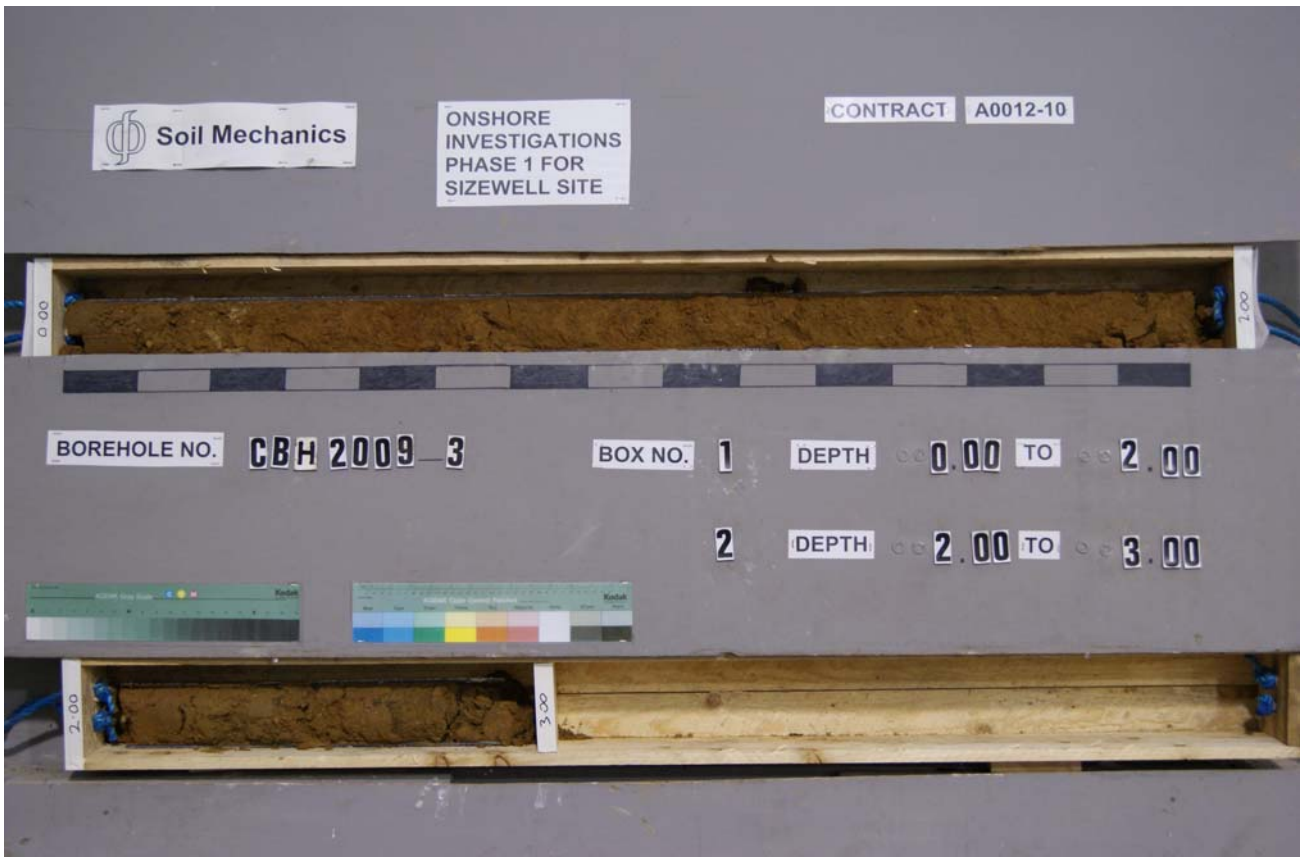


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 22
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Photographs



Soil Mechanics

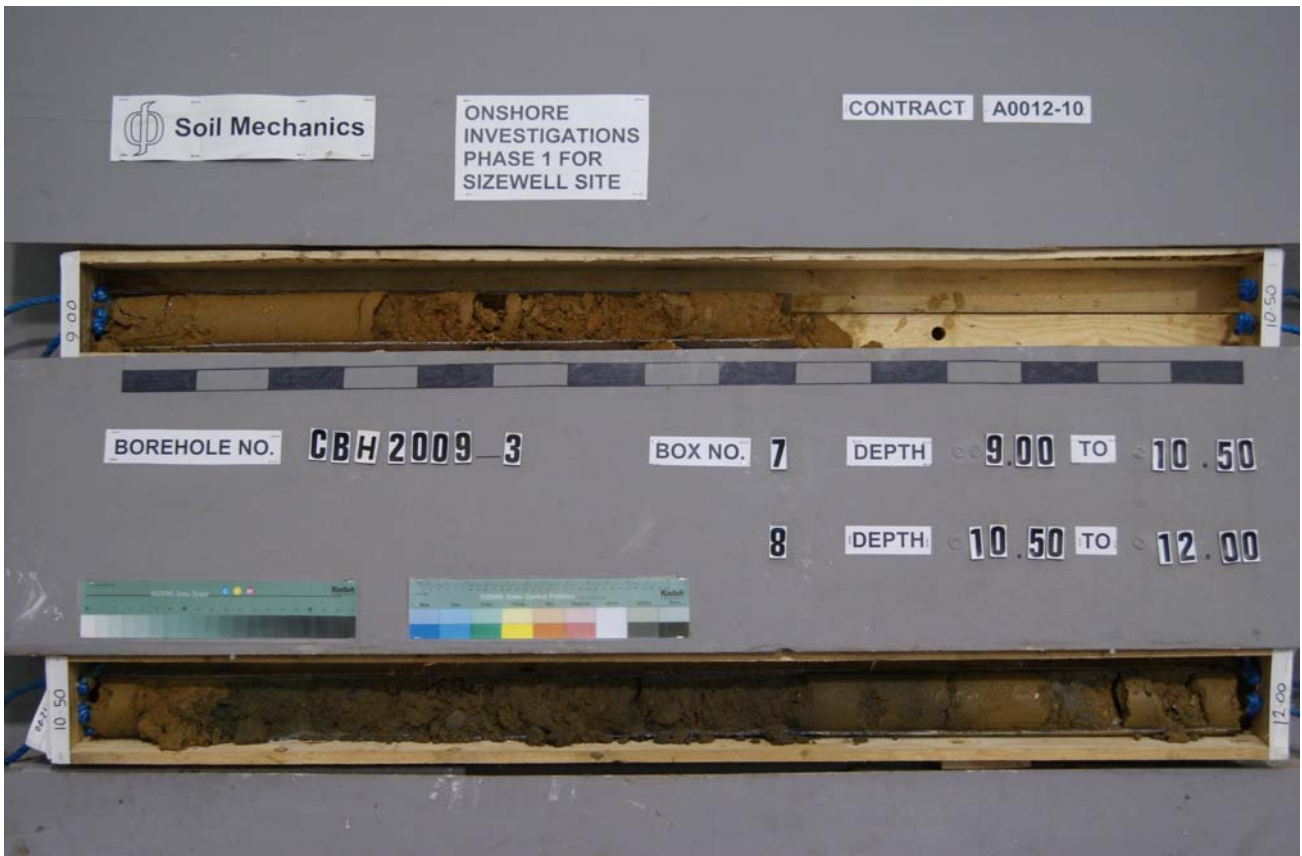


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 23</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 24</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 25</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 26</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate <p style="text-align: right;">27</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 28</p>
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Photographs



Soil Mechanics

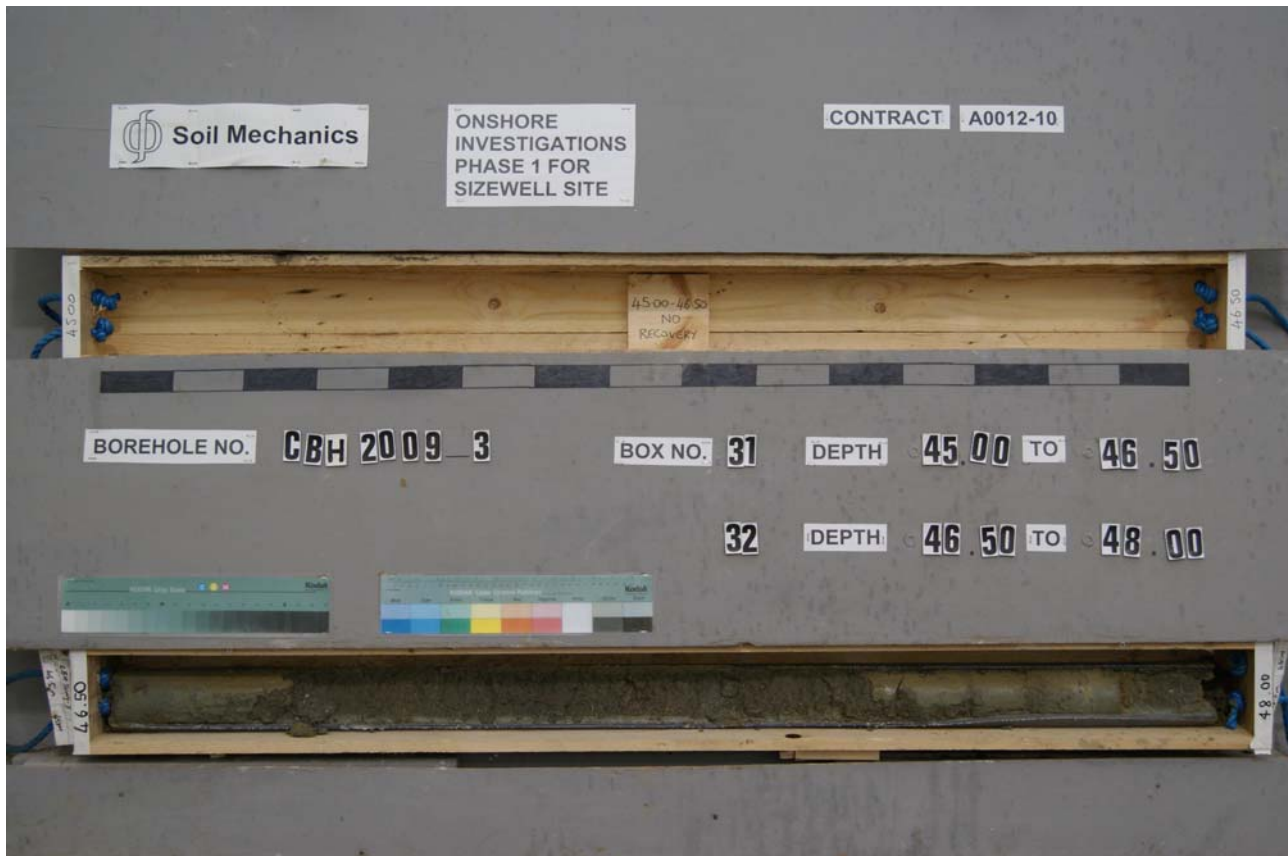


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 29</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 30
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Photographs



Soil Mechanics

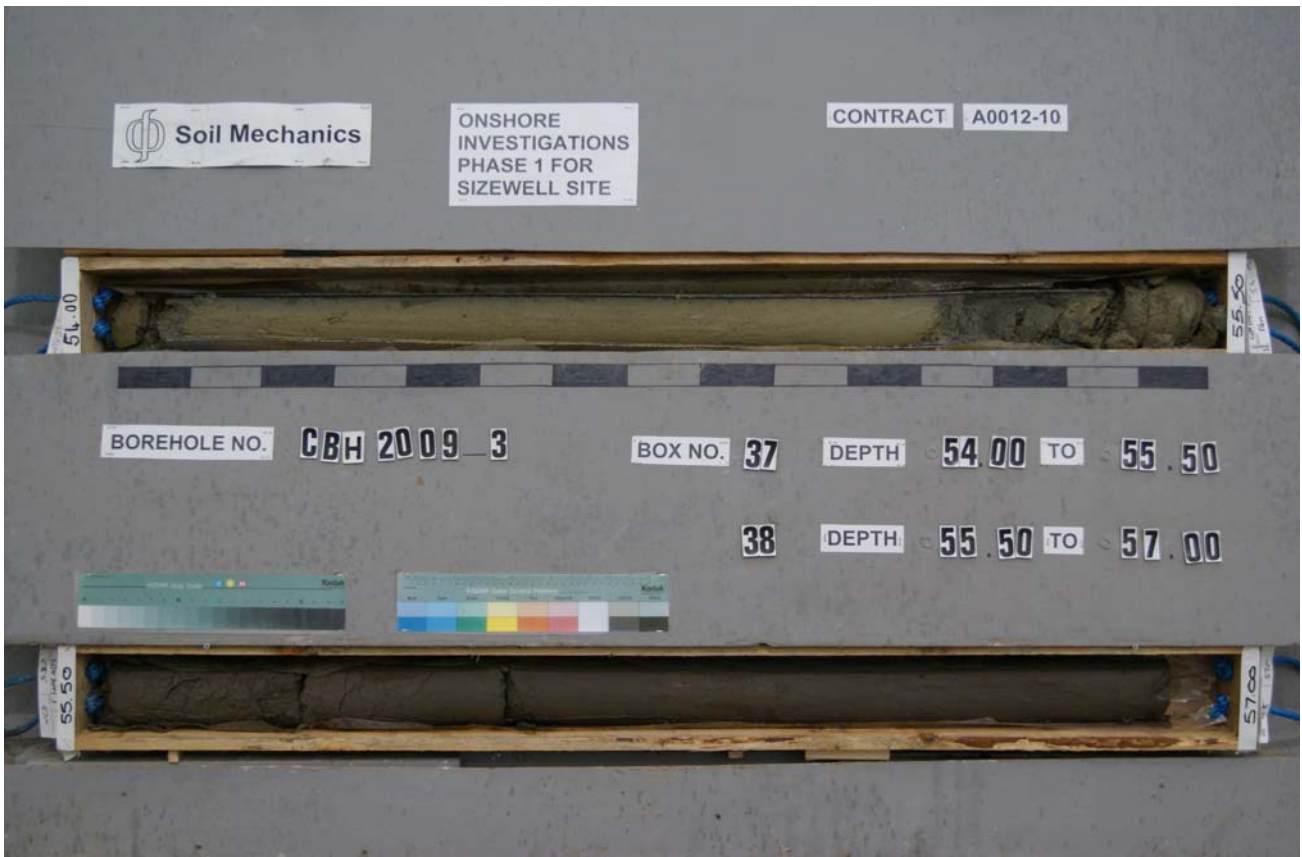


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 31
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 32</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 33
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Photographs



Soil Mechanics

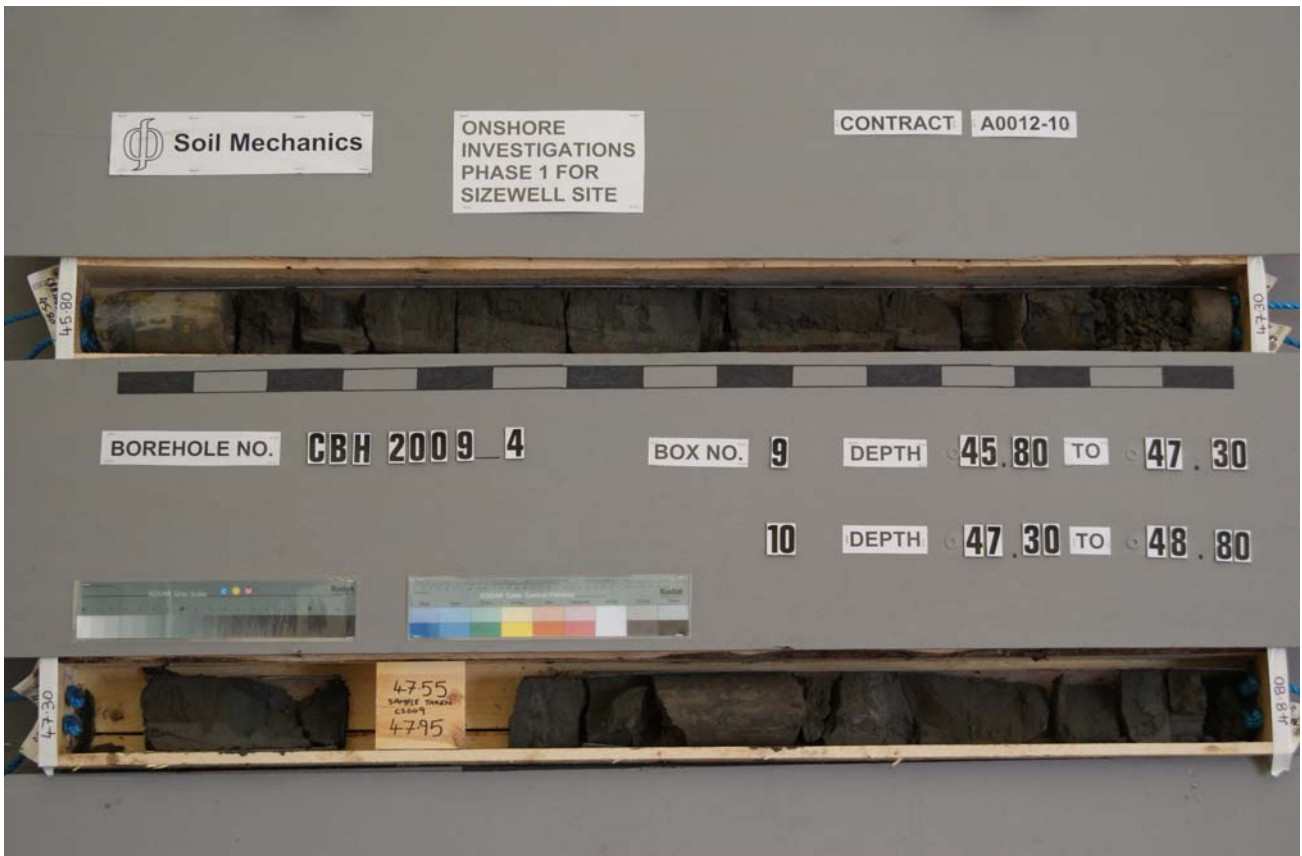
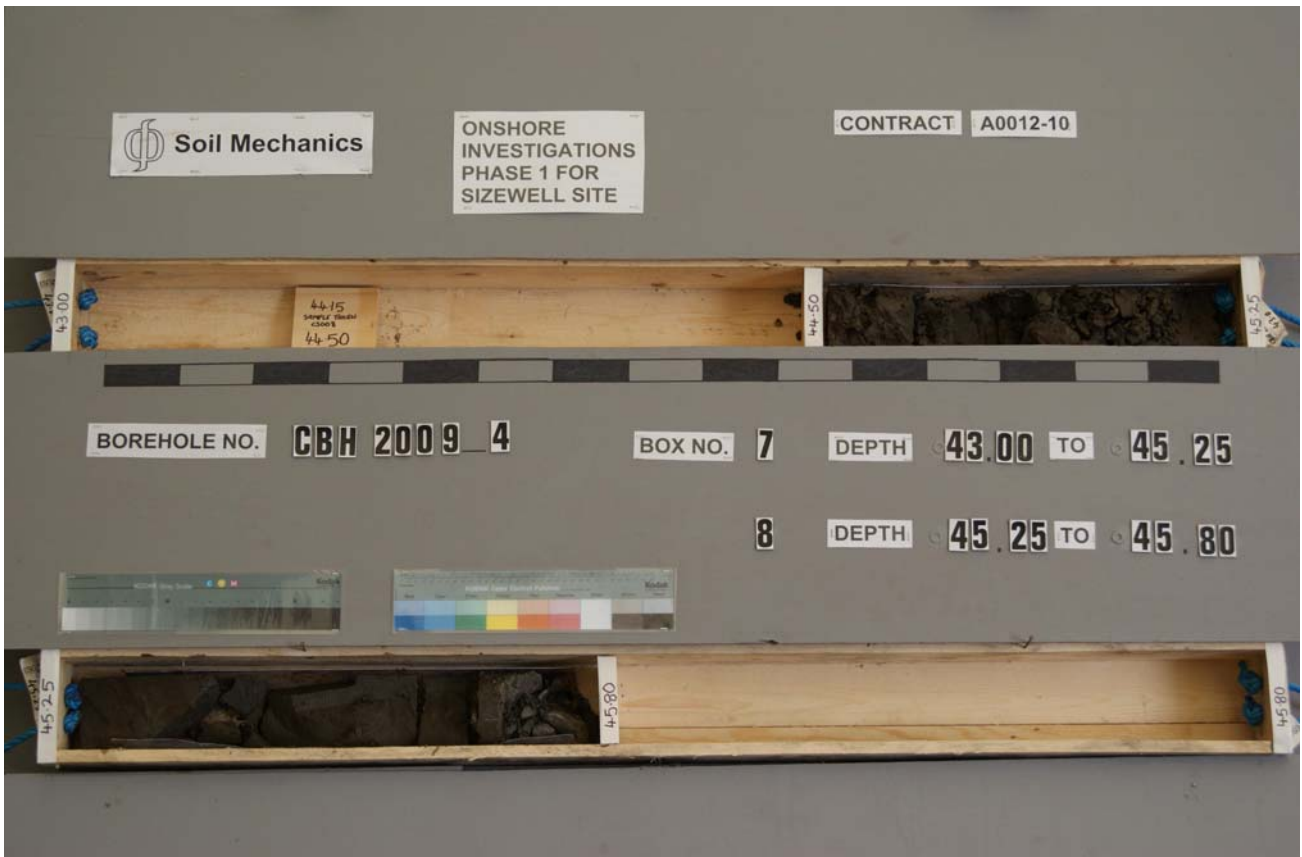


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 34</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 35</p>
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Photographs



Soil Mechanics

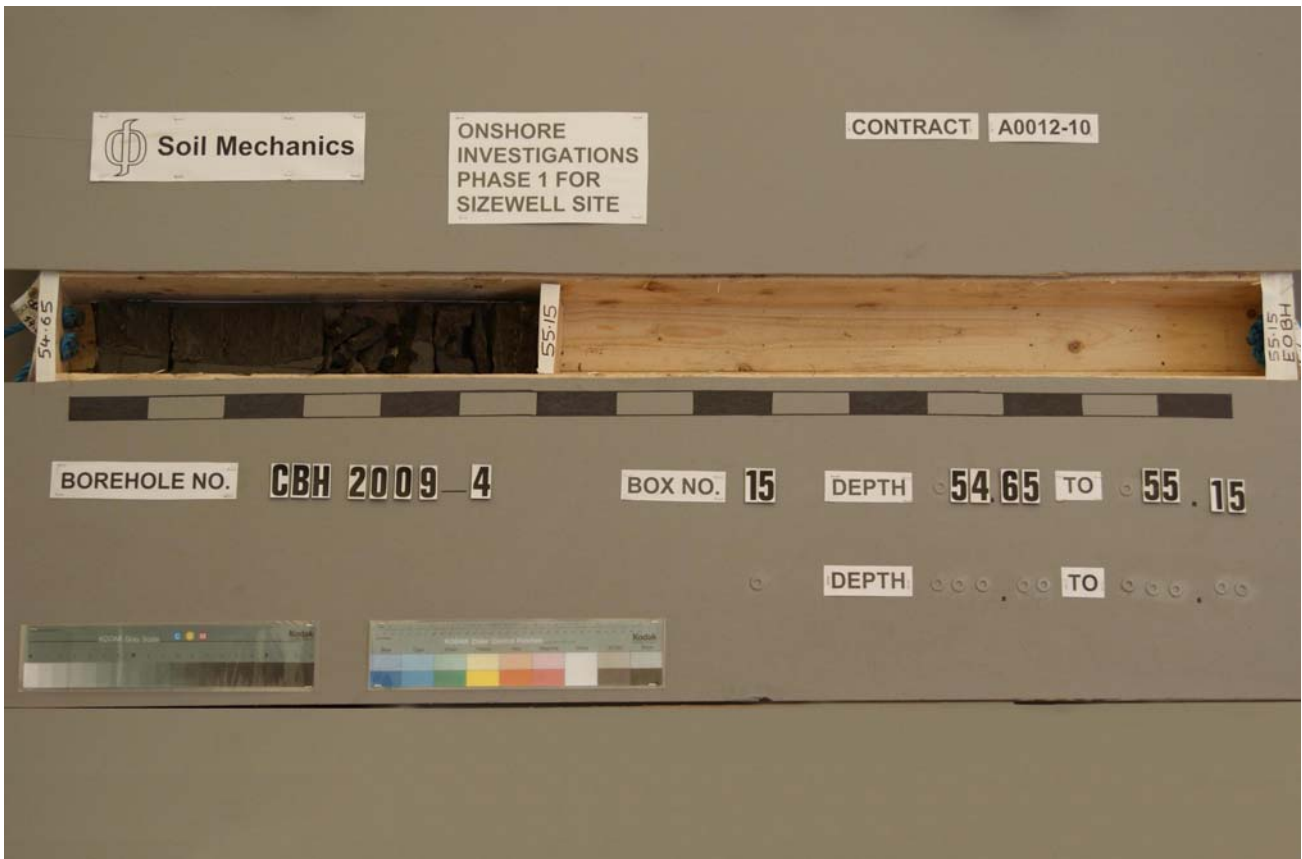


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 36</p>
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Photographs



Soil Mechanics

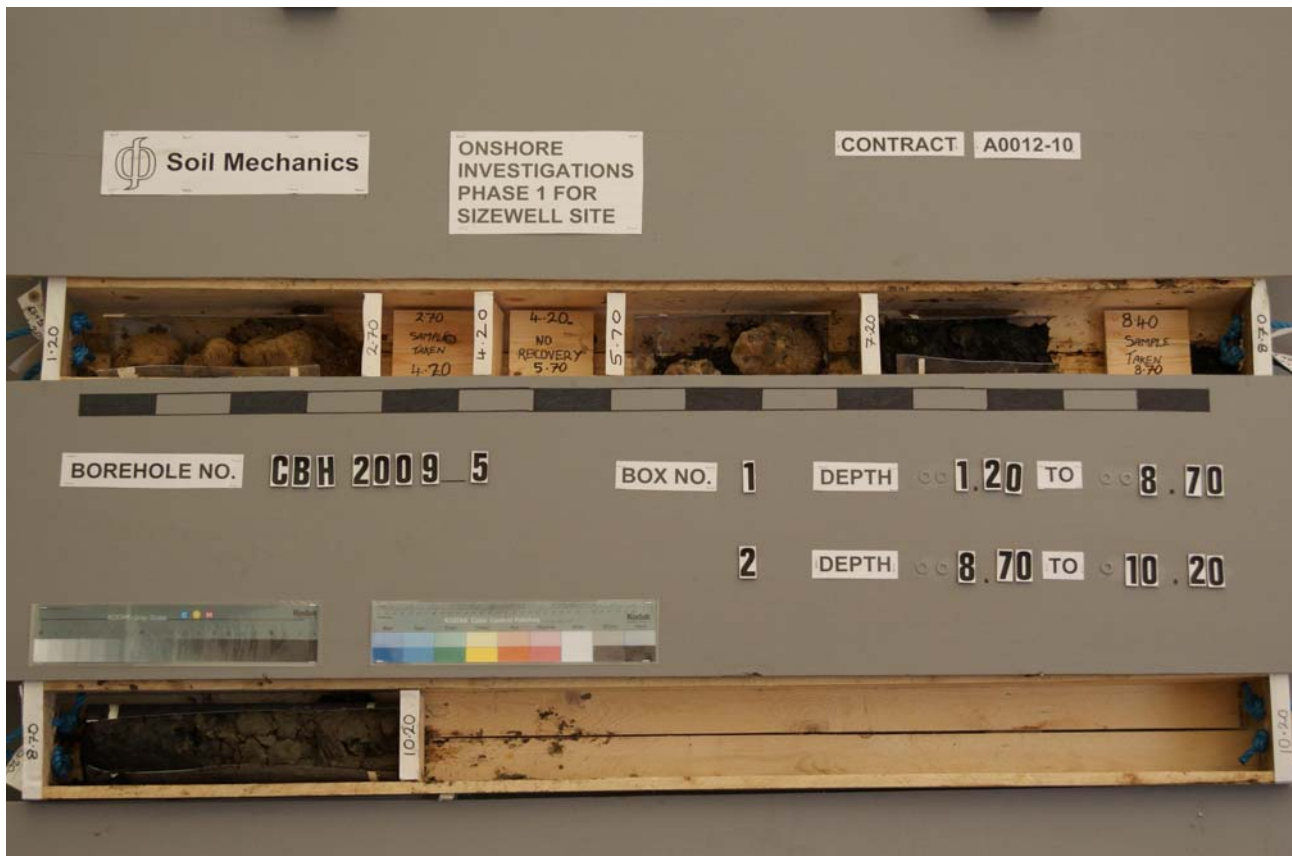


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 37
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Photographs



Soil Mechanics

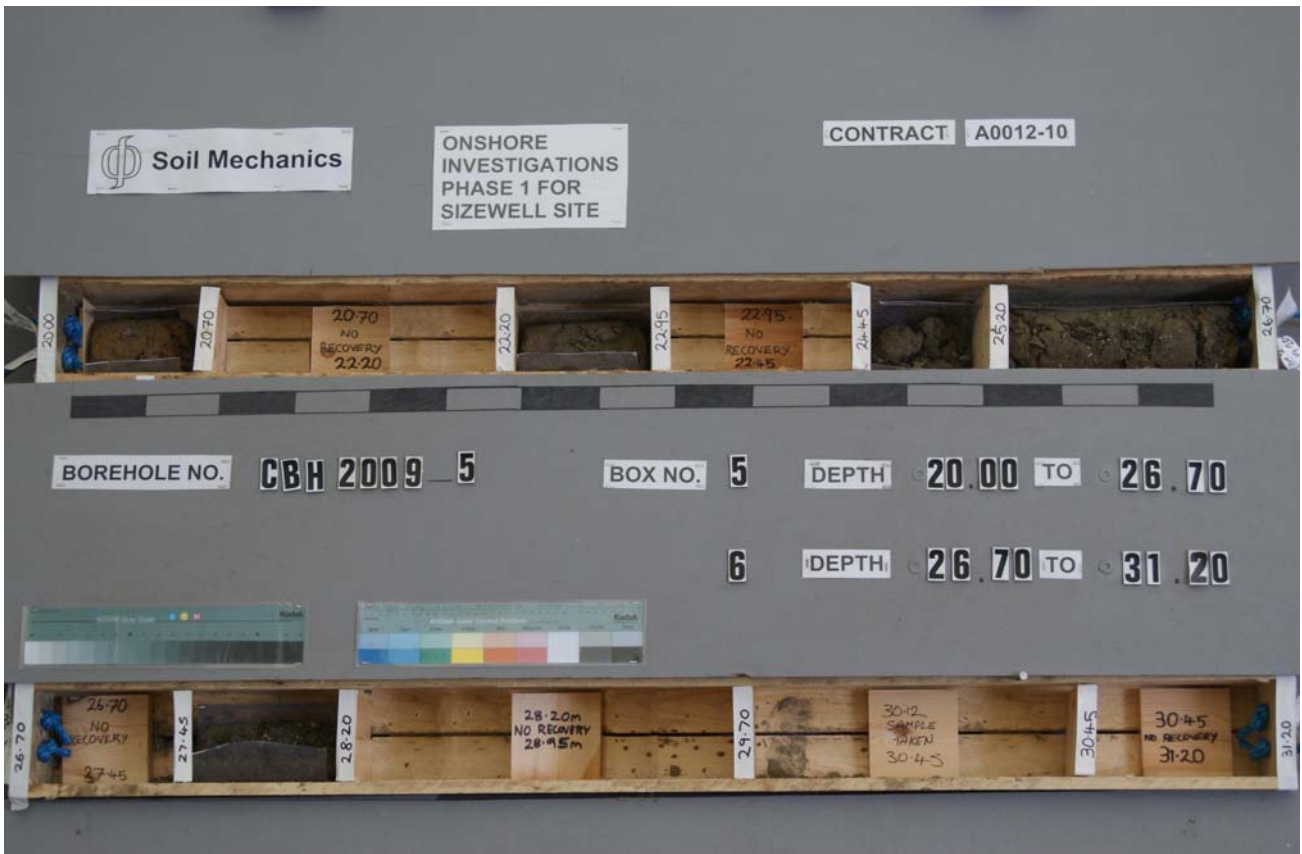


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 38
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Photographs



Soil Mechanics

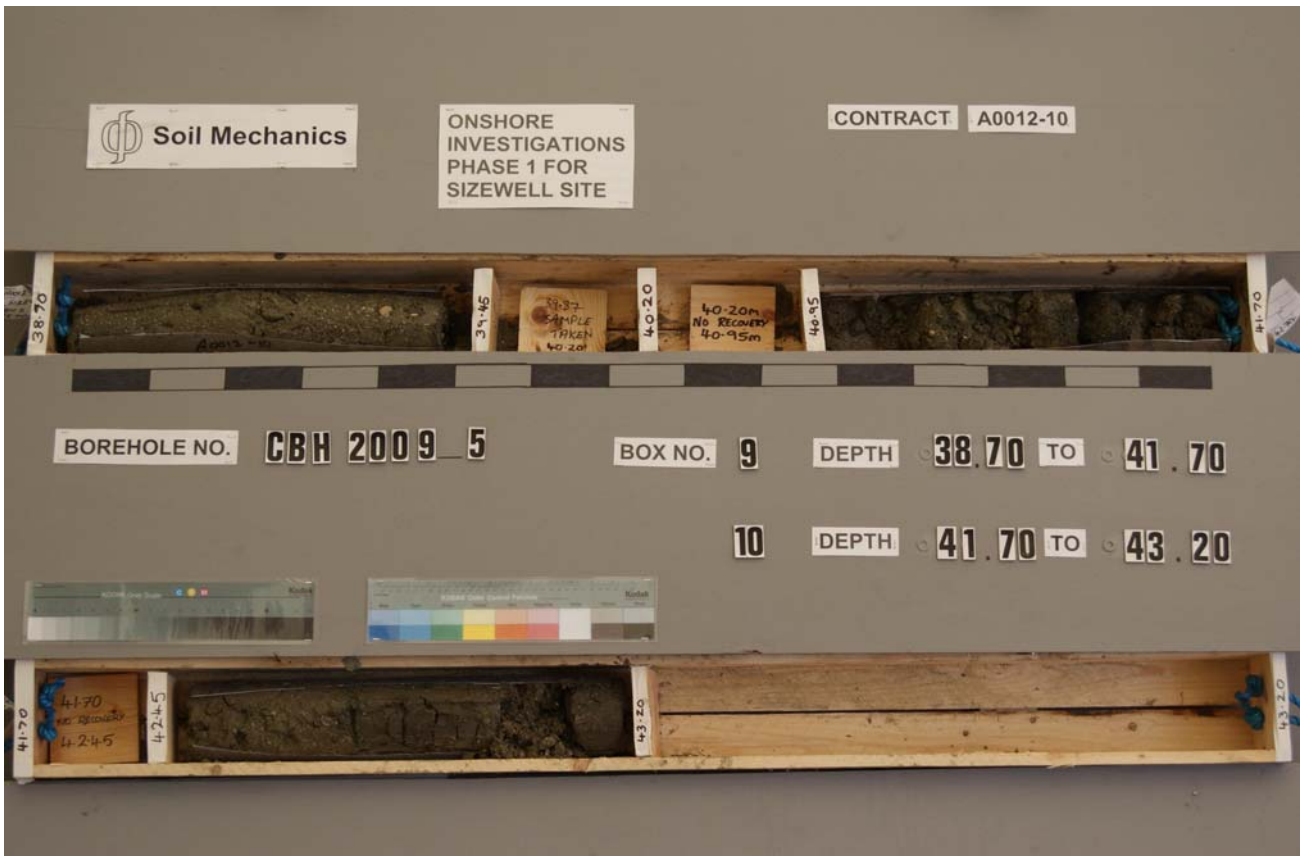


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 39</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 40</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 41</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 42</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 43
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 44</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 45</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 46</p>
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Photographs



Soil Mechanics

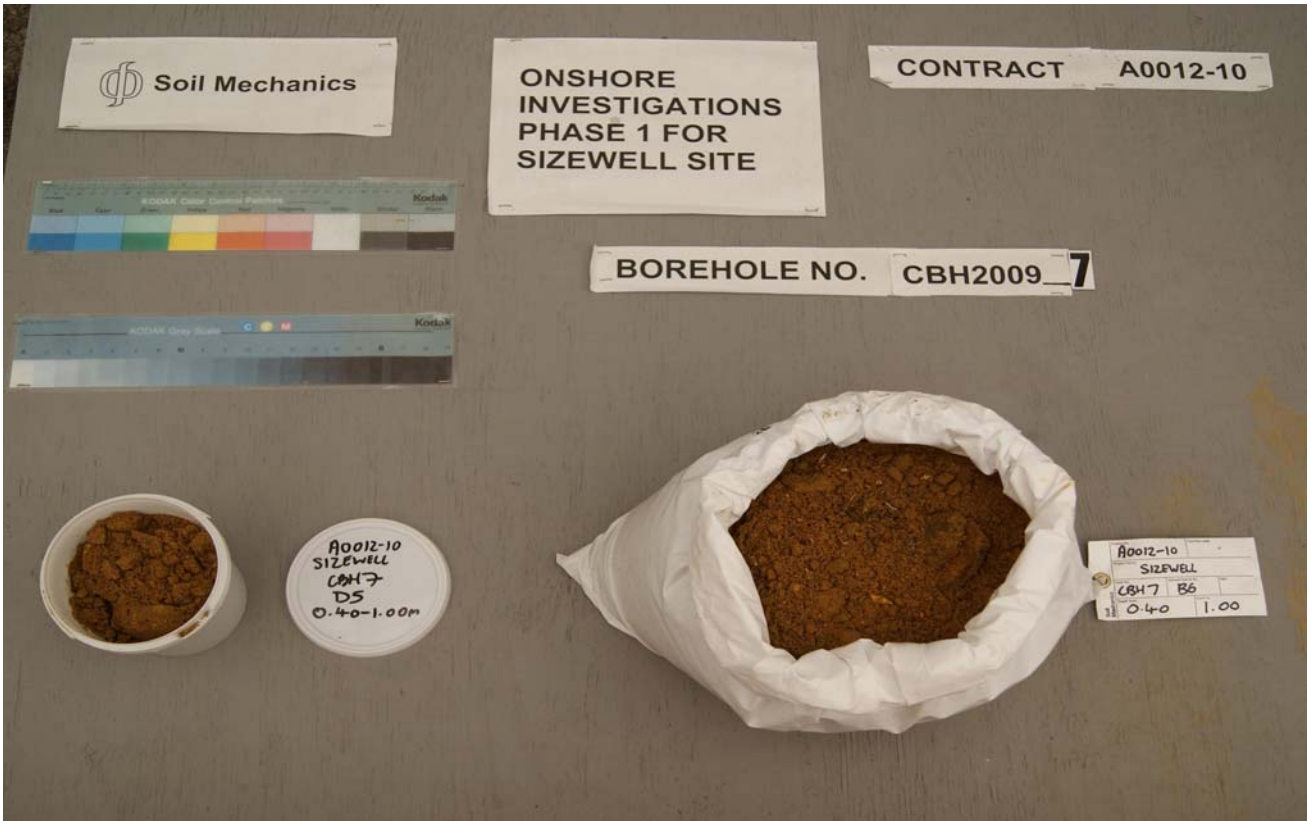


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 47
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Photographs



Soil Mechanics



Notes:

Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE
Project No. A0012-10
Carried out for NNB Generation Company Limited

Plate

48

Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 49</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 50</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 51</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 52
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 53</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 54
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 55
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Photographs



Soil Mechanics

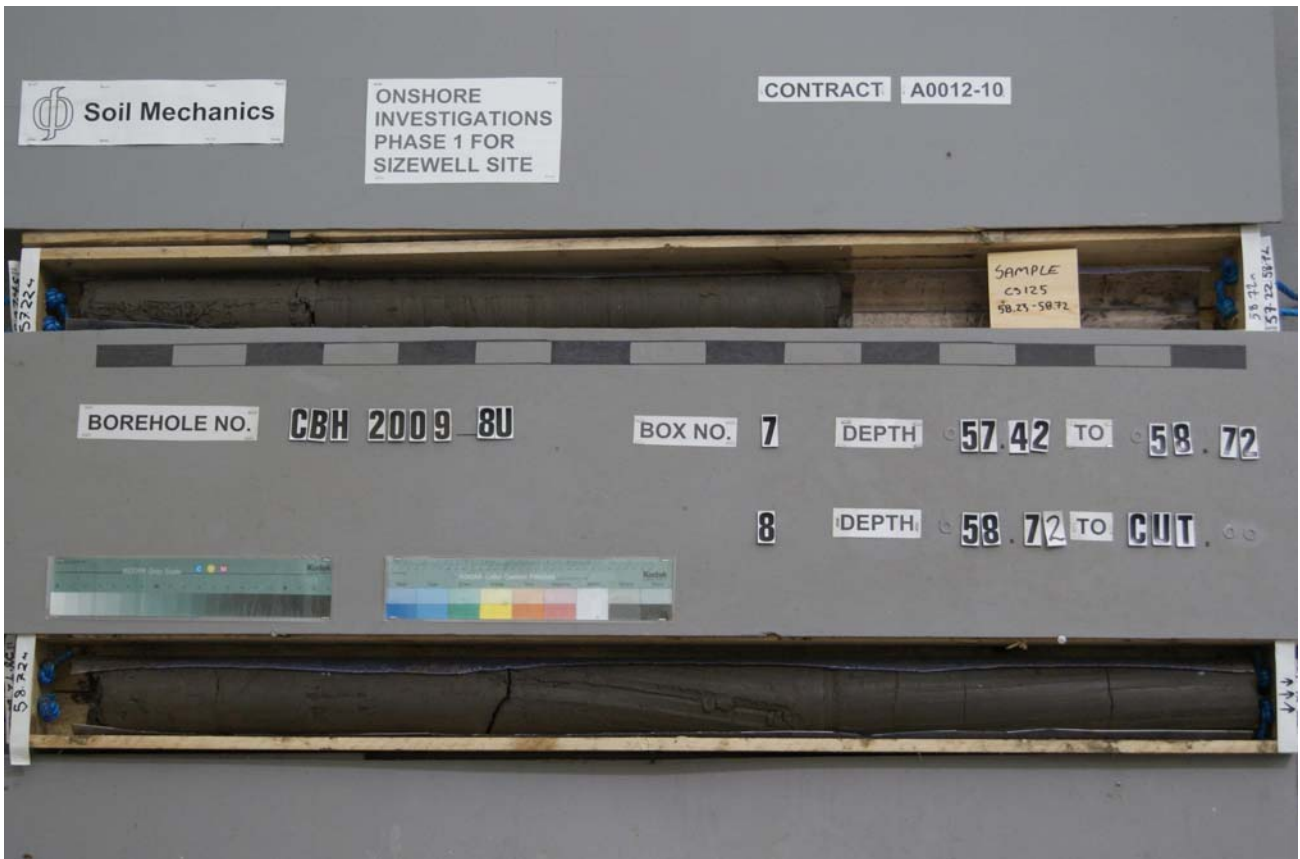


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 56</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 57</p>
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Photographs



Soil Mechanics

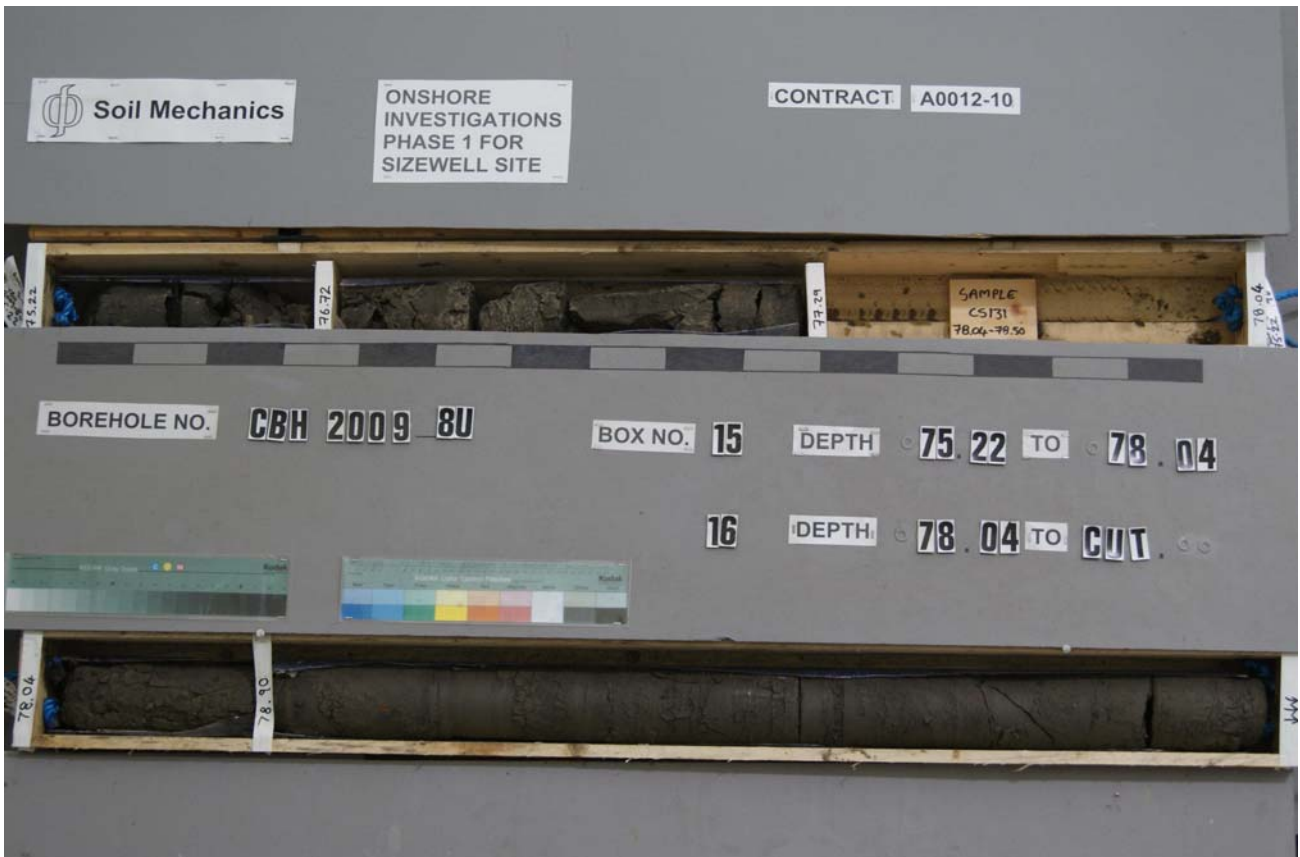


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 58</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 59</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 60
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 61</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 62
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 63</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 64</p>
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Photographs



Soil Mechanics

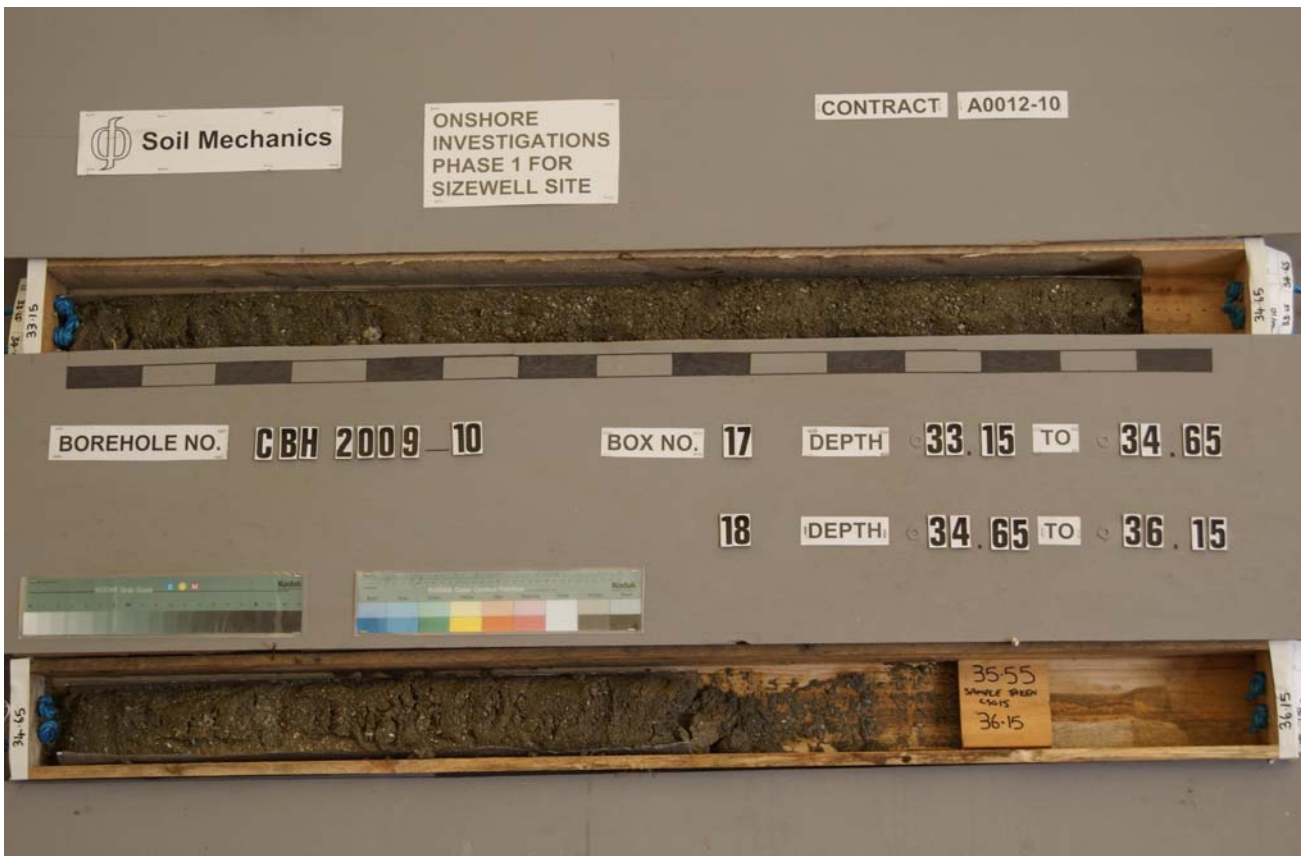


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 65</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 66</p>
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Photographs



Soil Mechanics

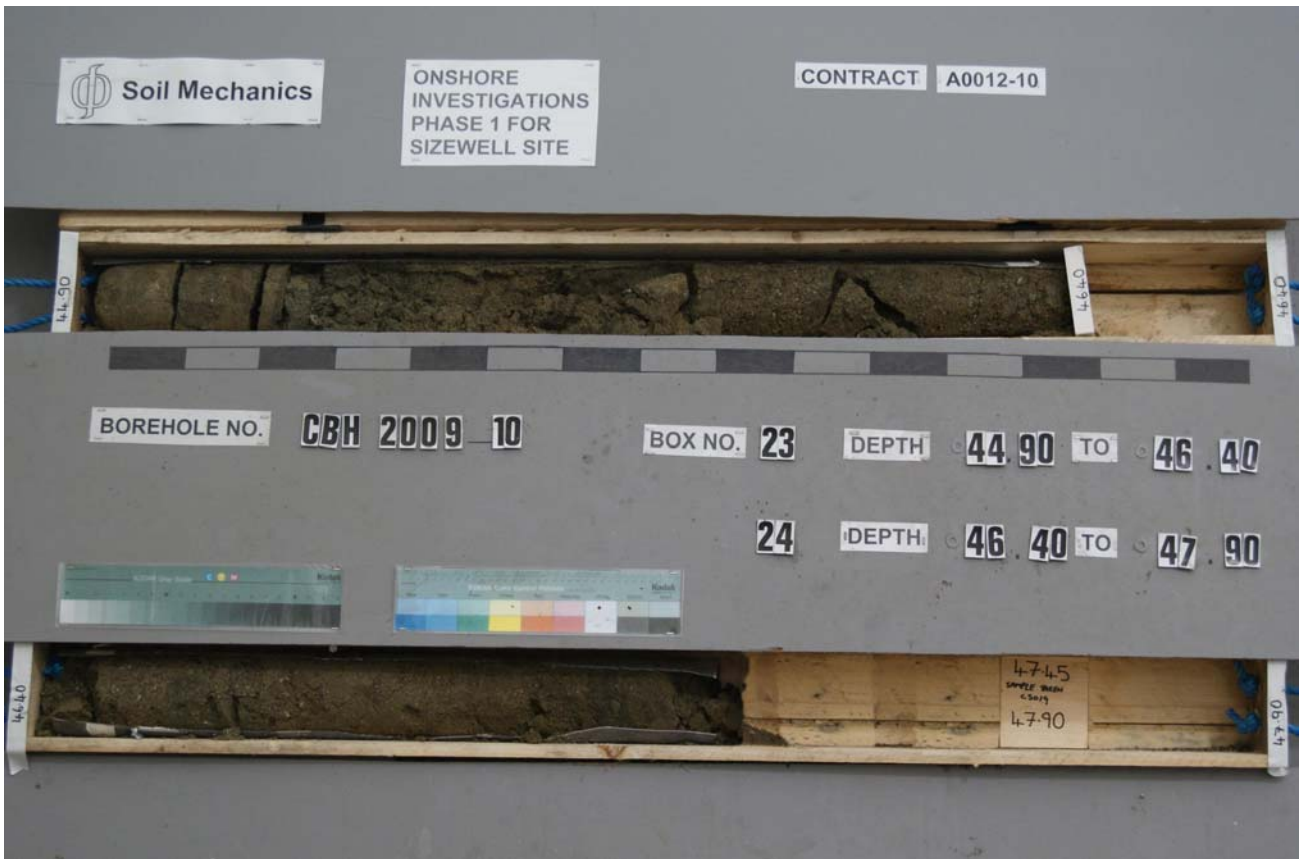


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 67
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 68</p>
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Photographs



Soil Mechanics

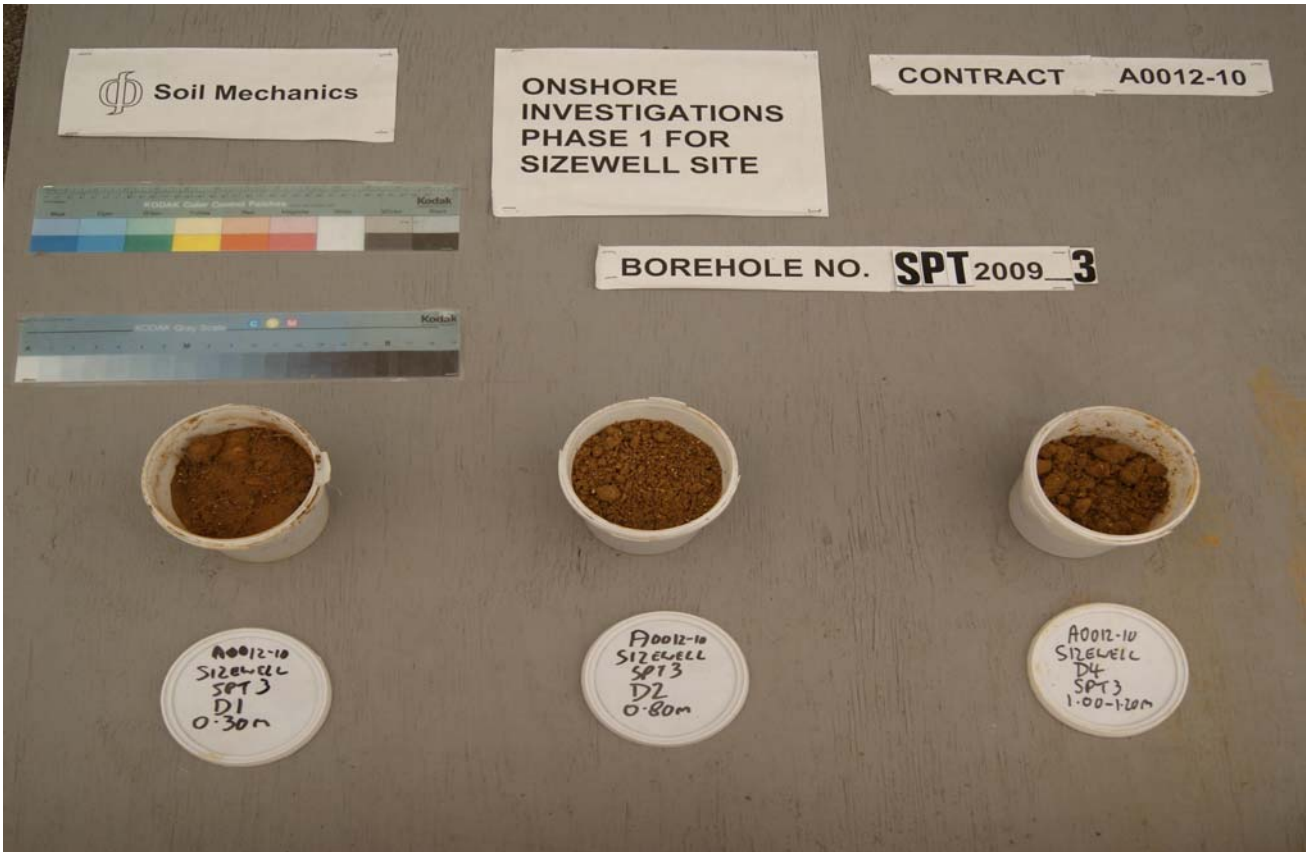


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 69</p>
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Photographs



Soil Mechanics

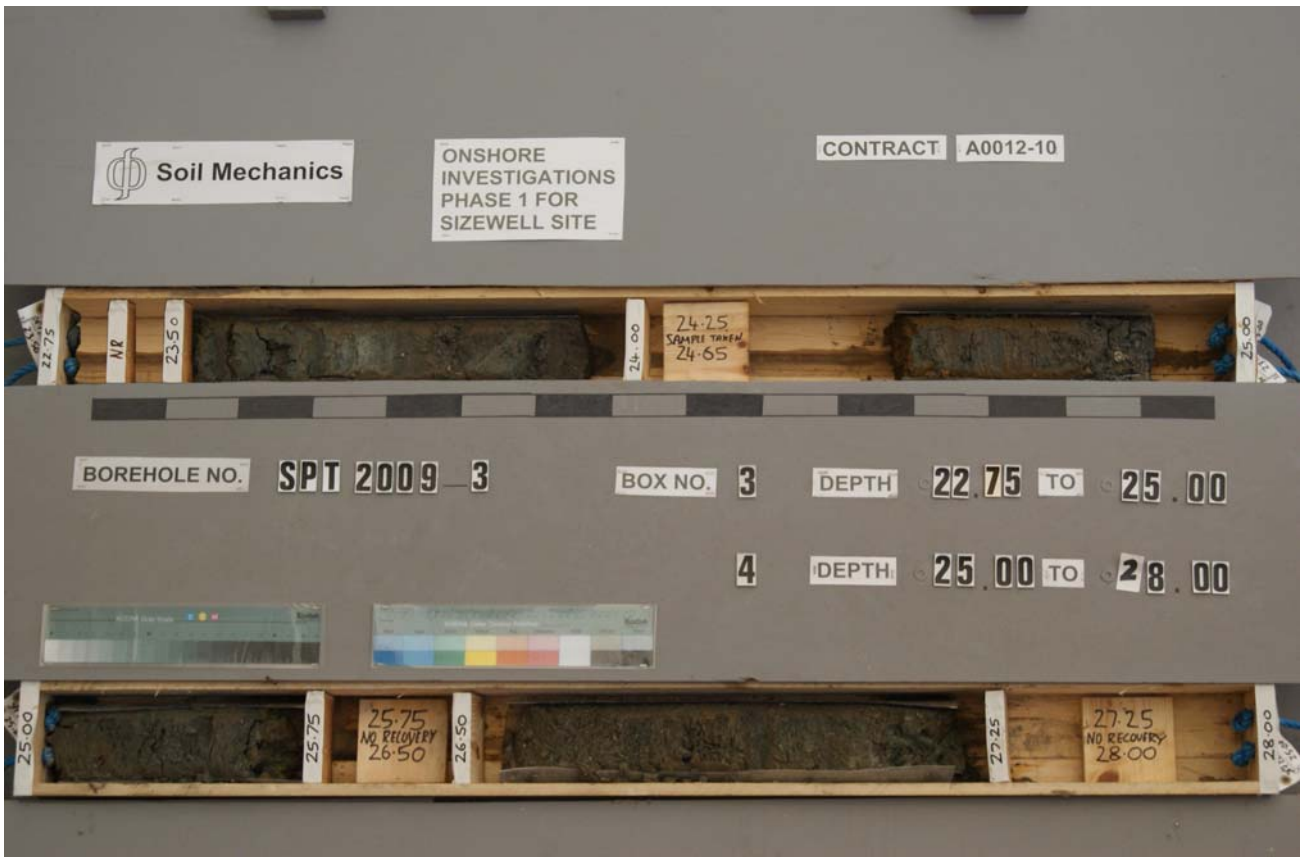


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 70
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 71
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Photographs



Soil Mechanics

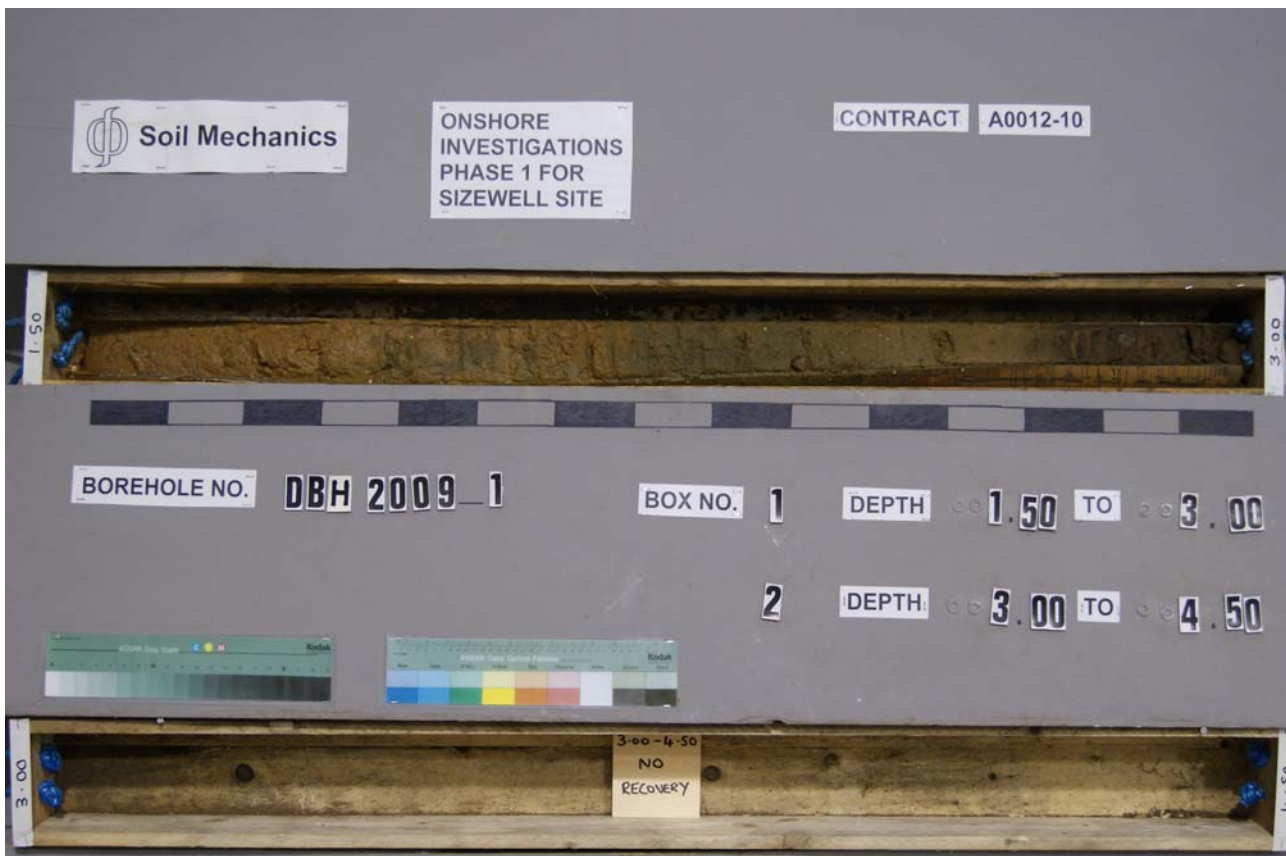


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 72
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Photographs



Soil Mechanics

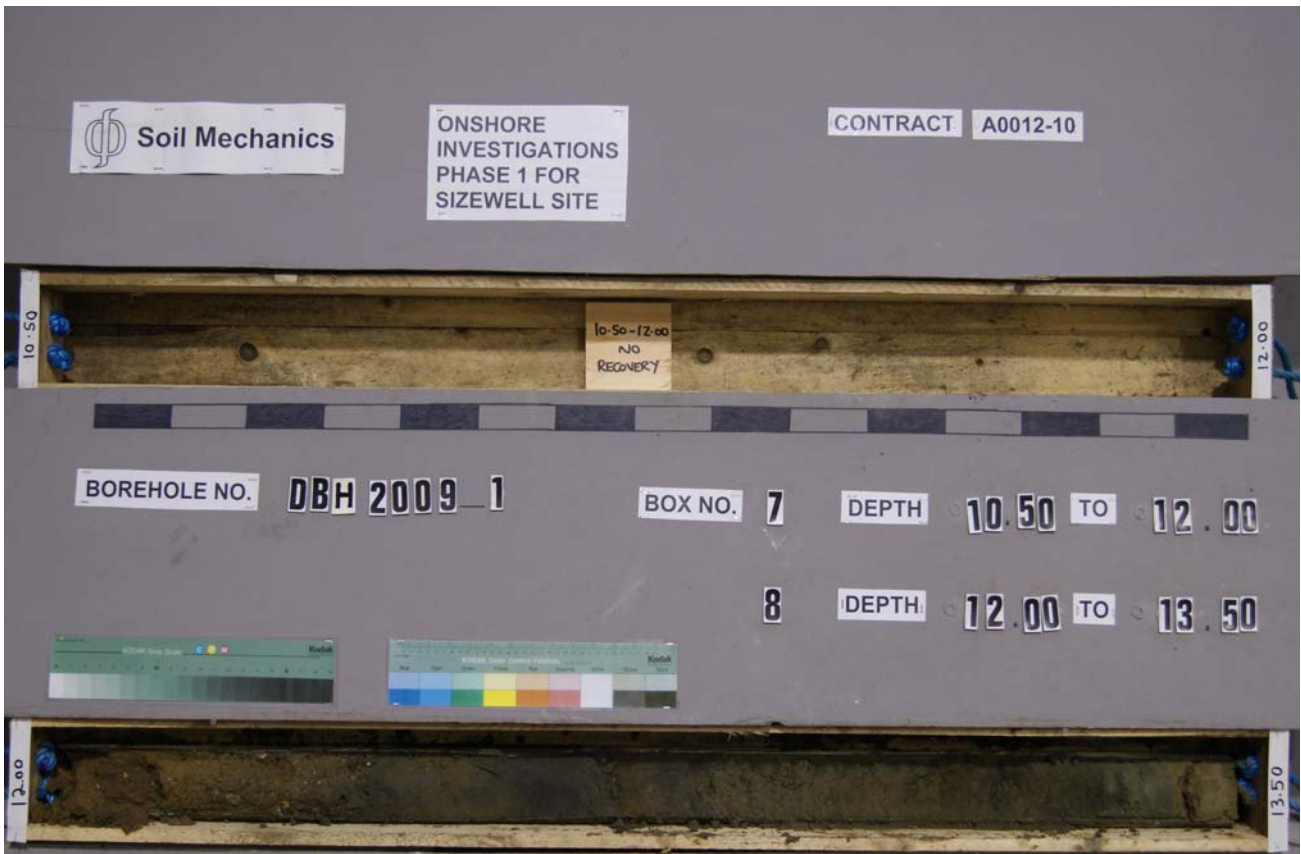
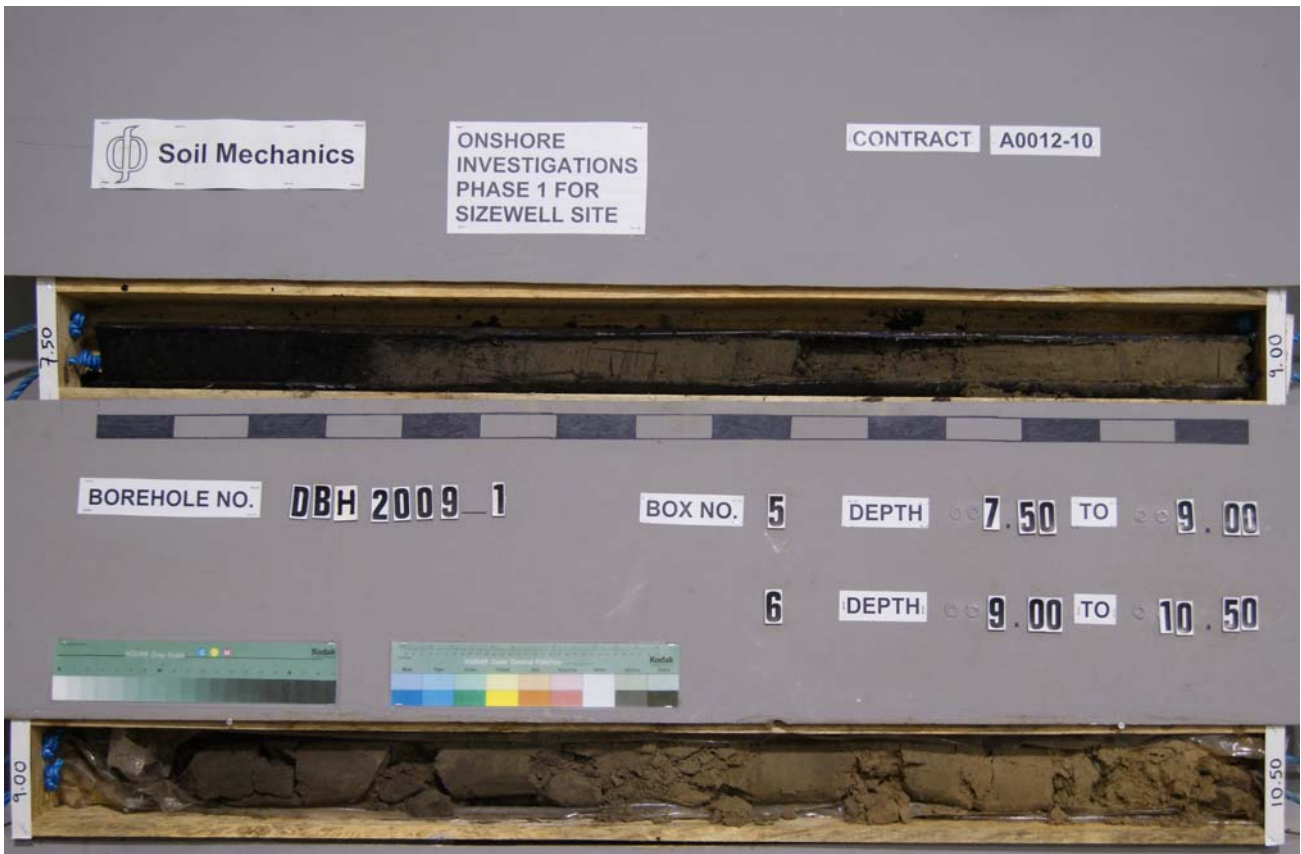


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 73
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Photographs



Soil Mechanics

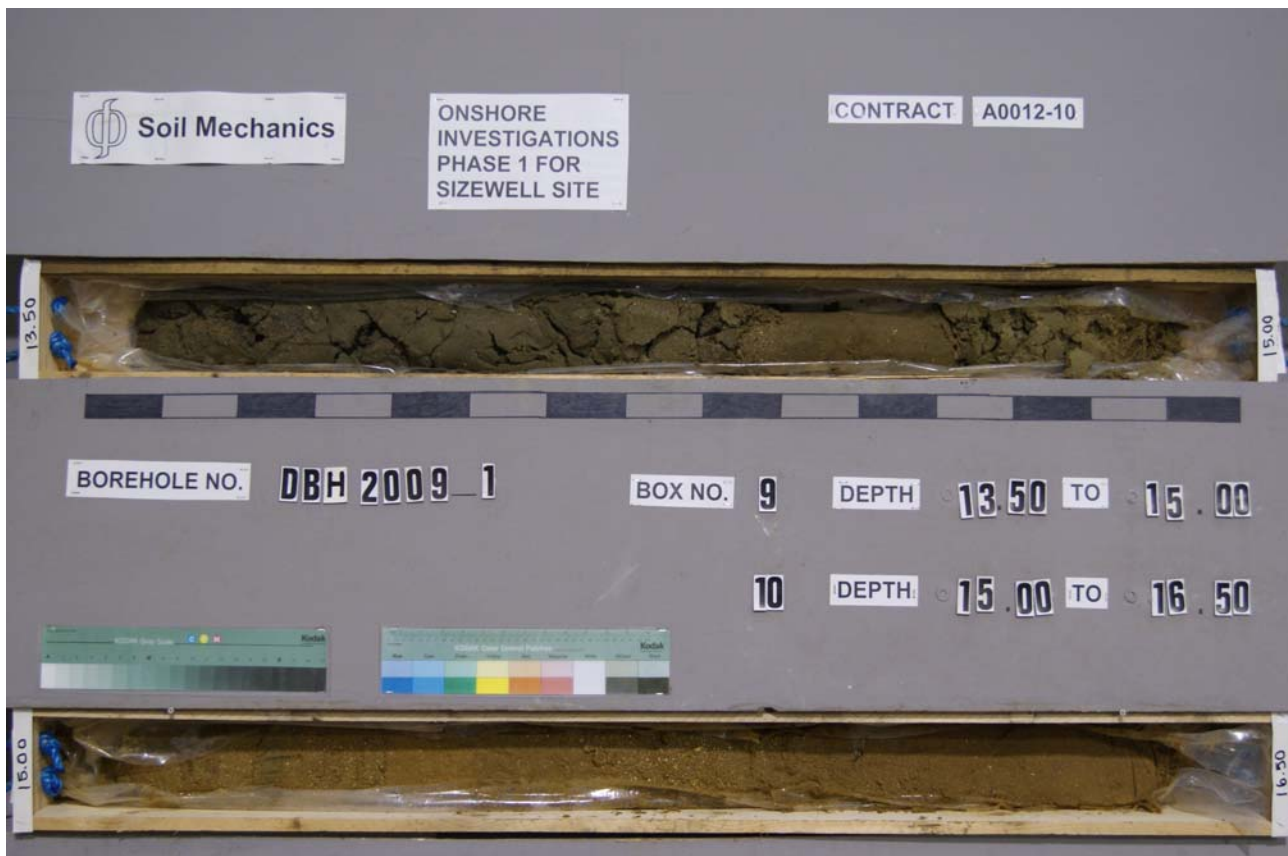


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 74</p>
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Photographs



Soil Mechanics

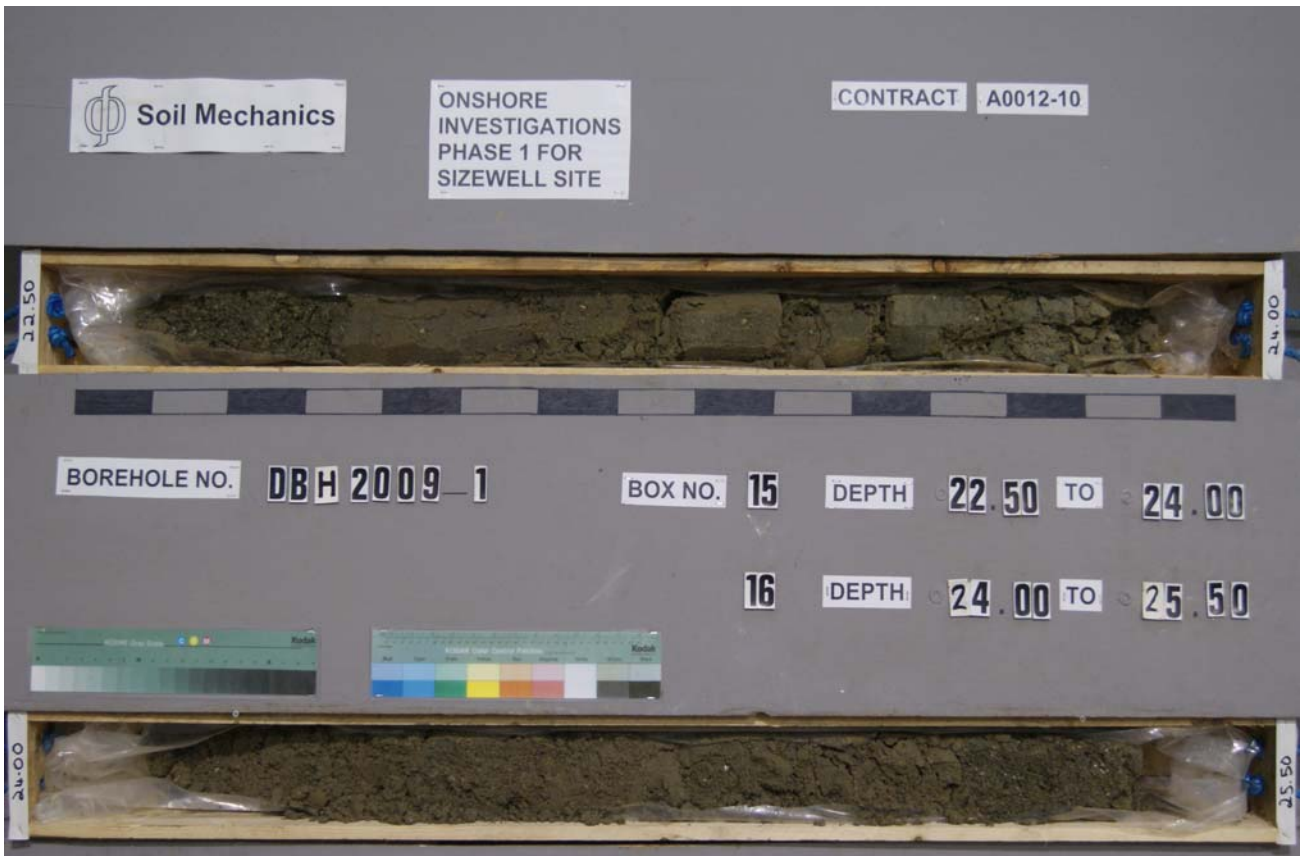


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 75</p>
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Photographs



Soil Mechanics

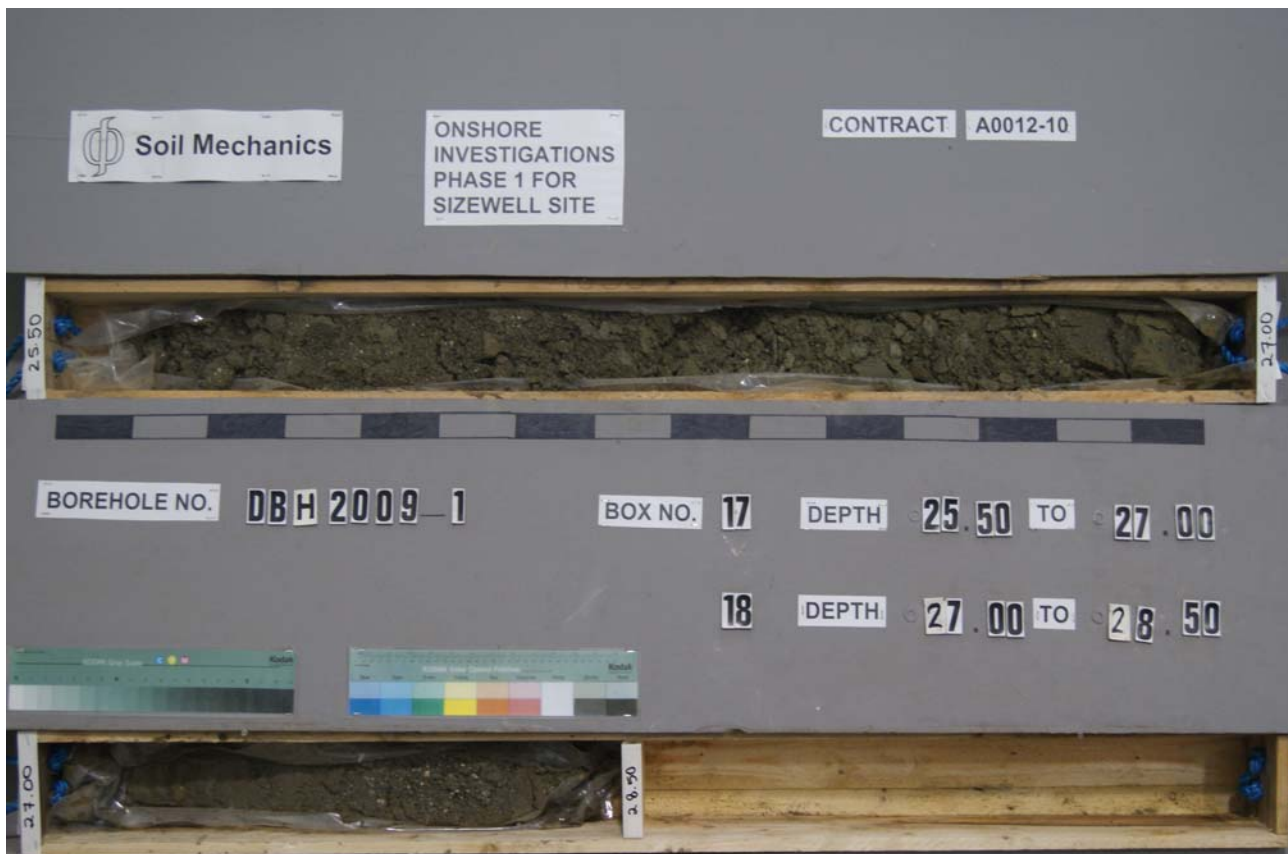


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate</p> <p style="text-align: right;">76</p>
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Photographs



Soil Mechanics

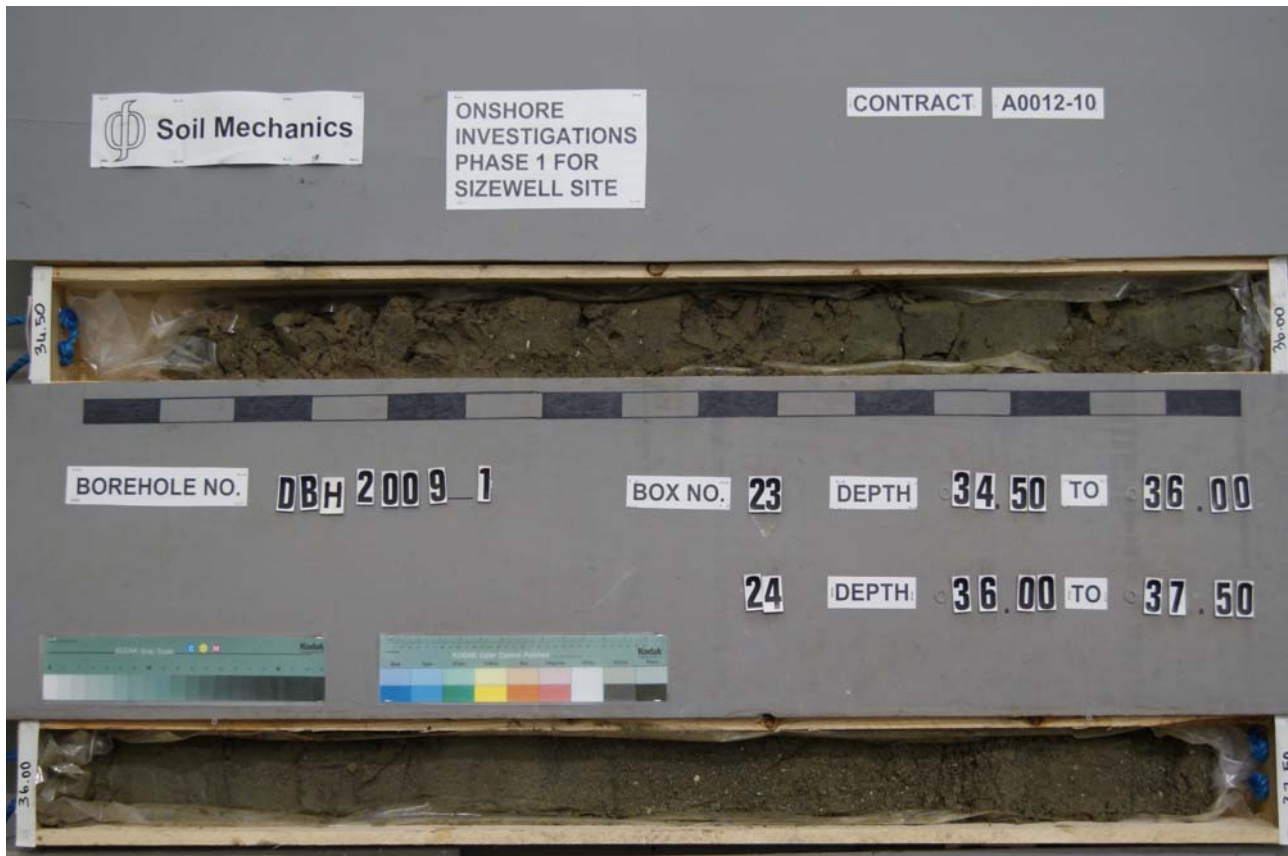


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 77
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 78
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Photographs



Soil Mechanics

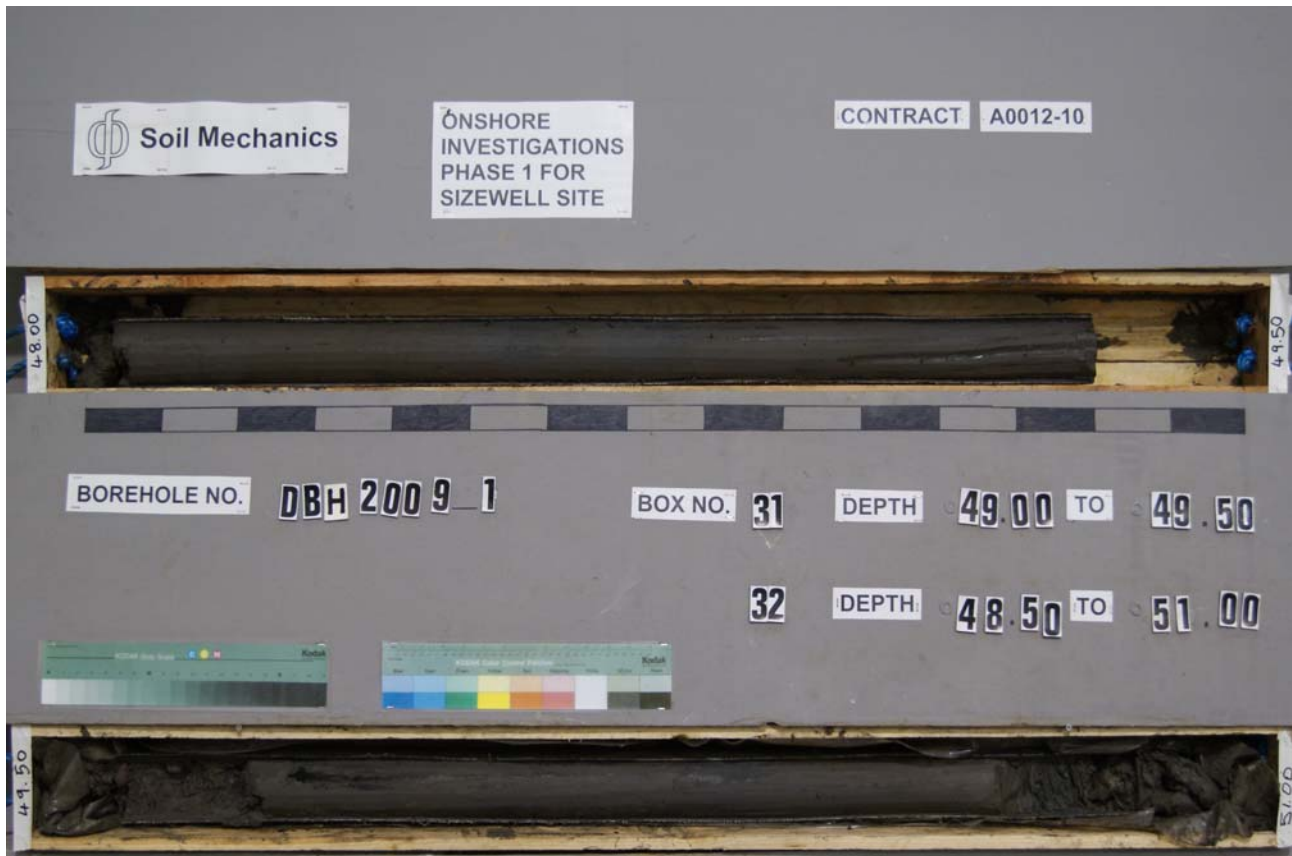
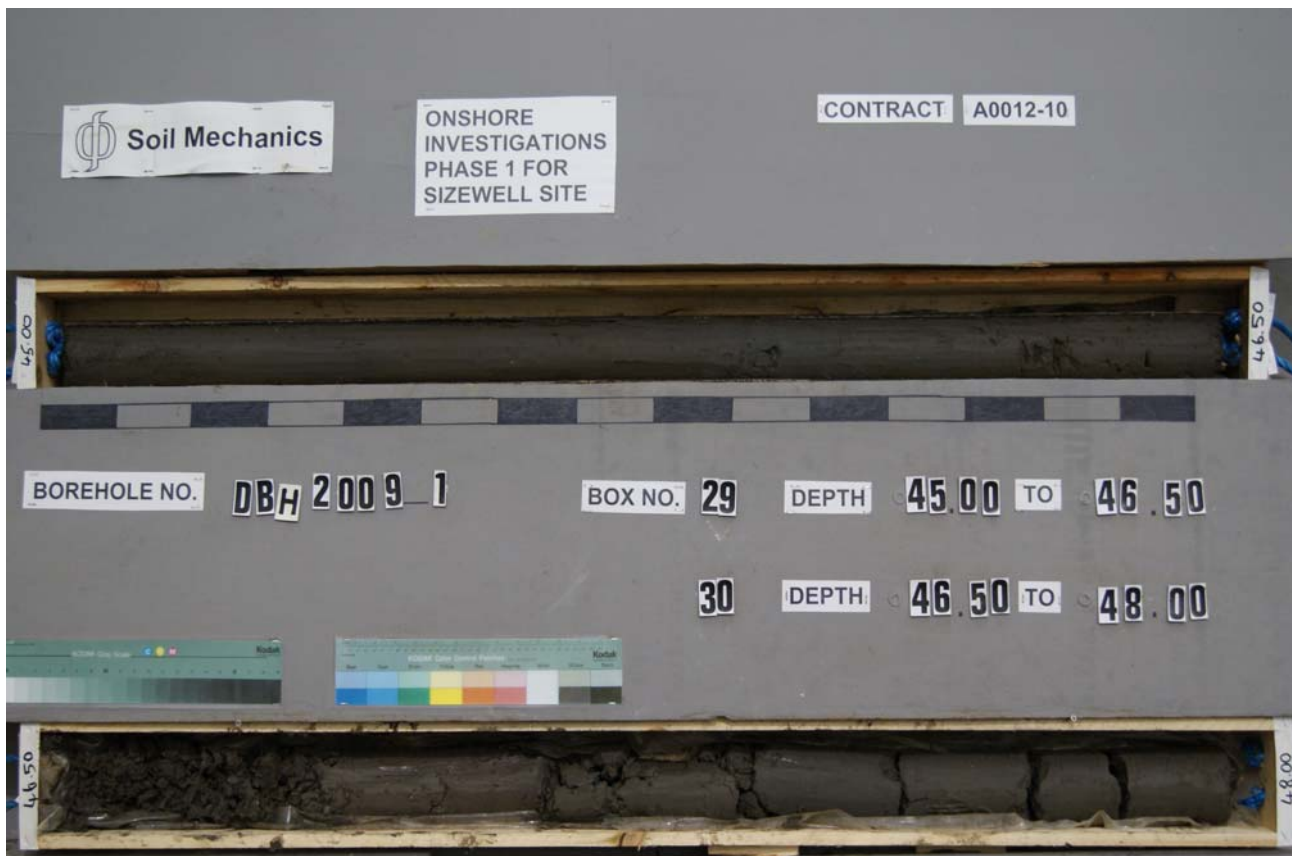


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 79
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Photographs



Soil Mechanics

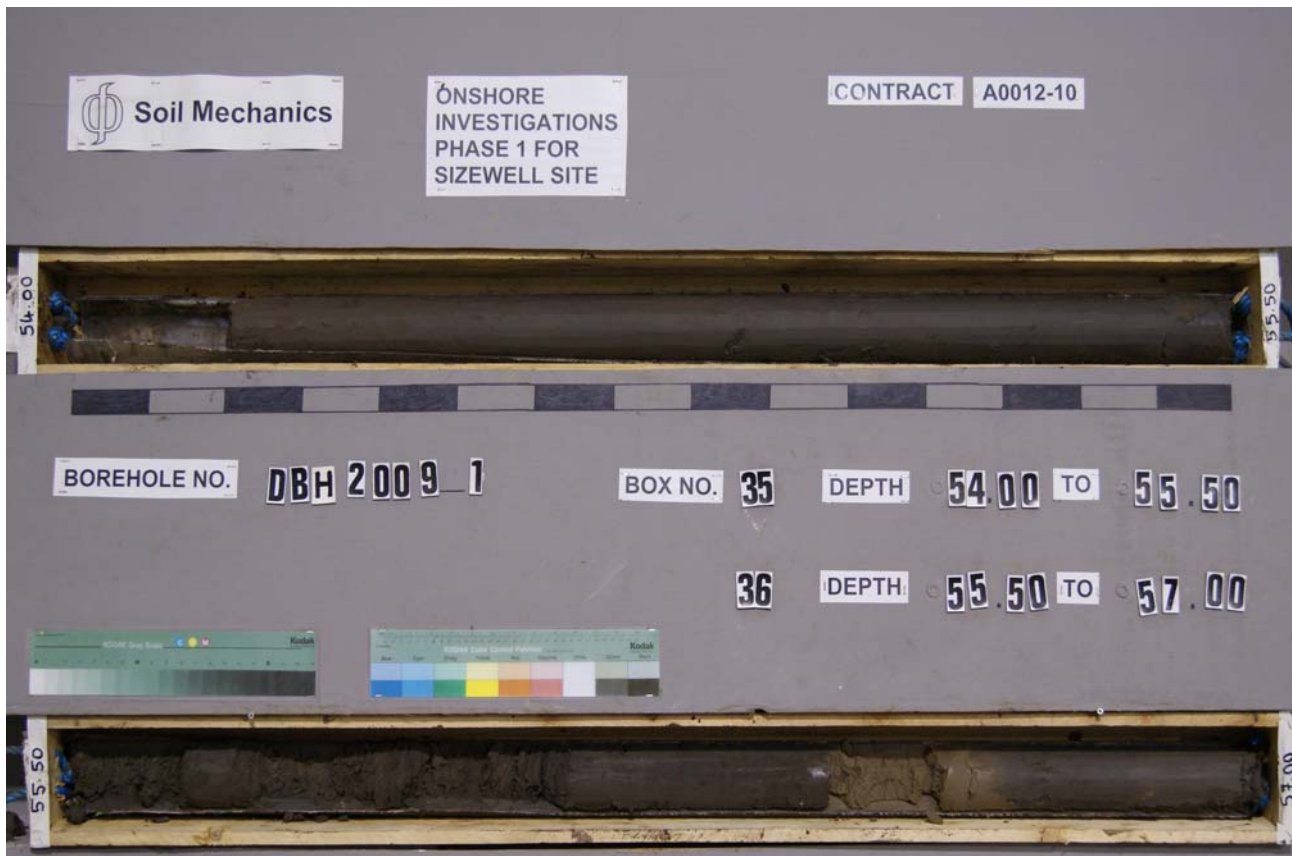


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 80
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Photographs



Soil Mechanics

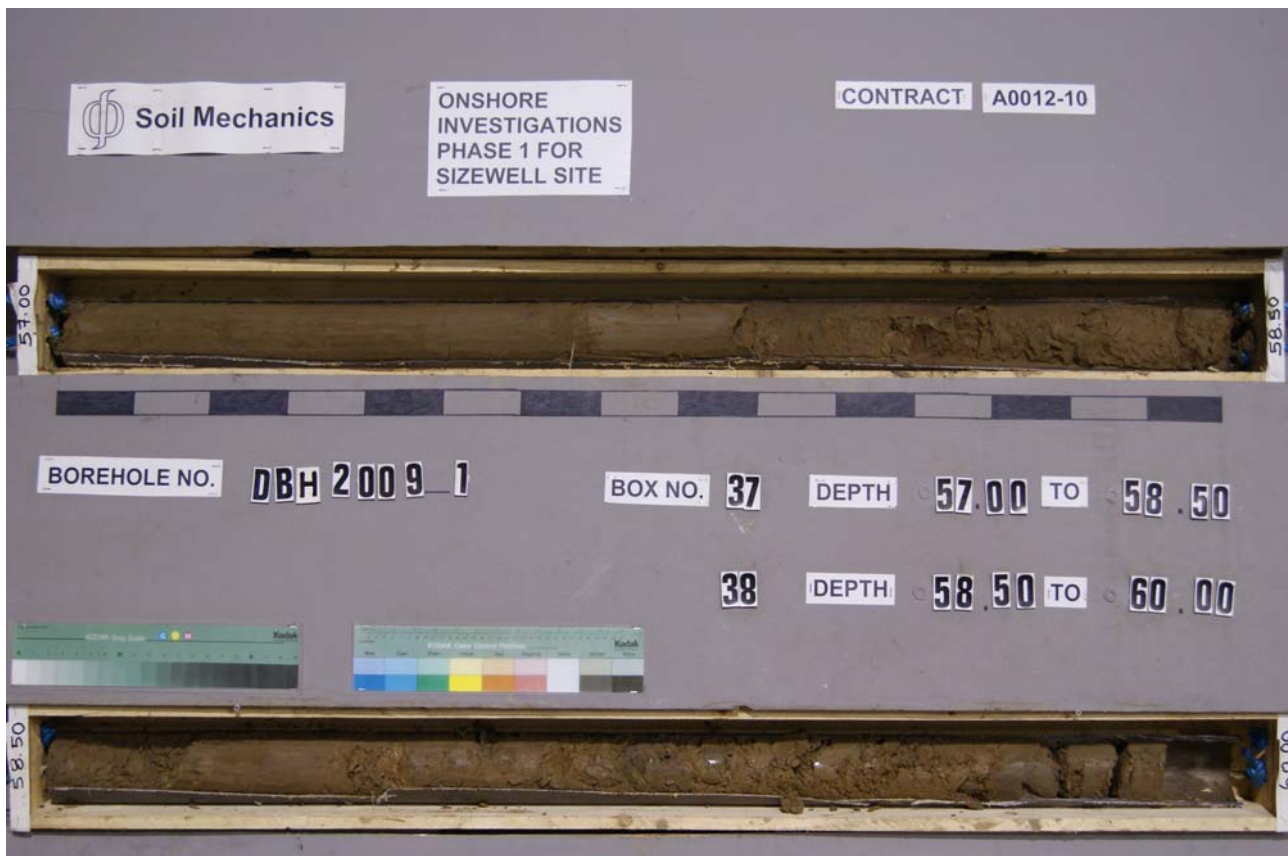


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 81</p>
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Photographs



Soil Mechanics

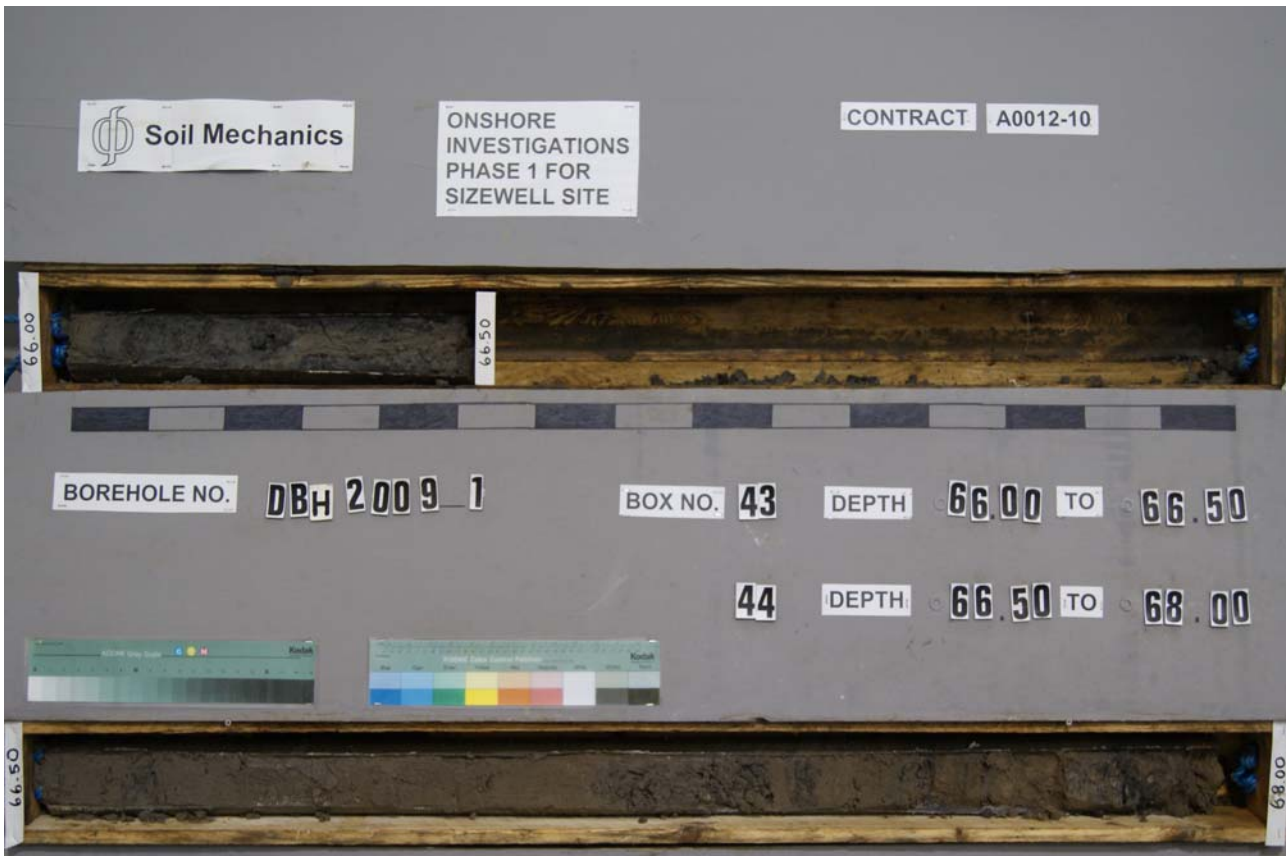
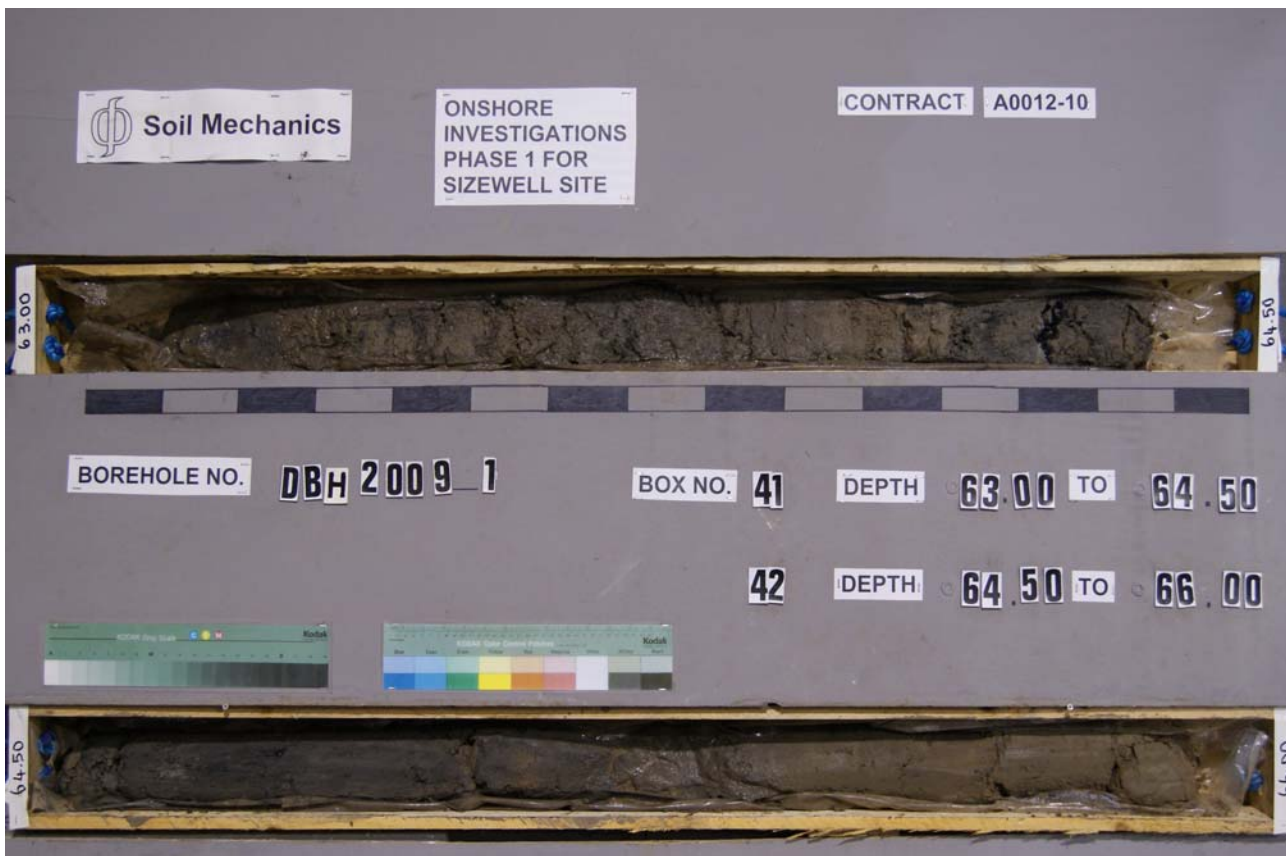


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 82</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 83</p>
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Photographs



Soil Mechanics

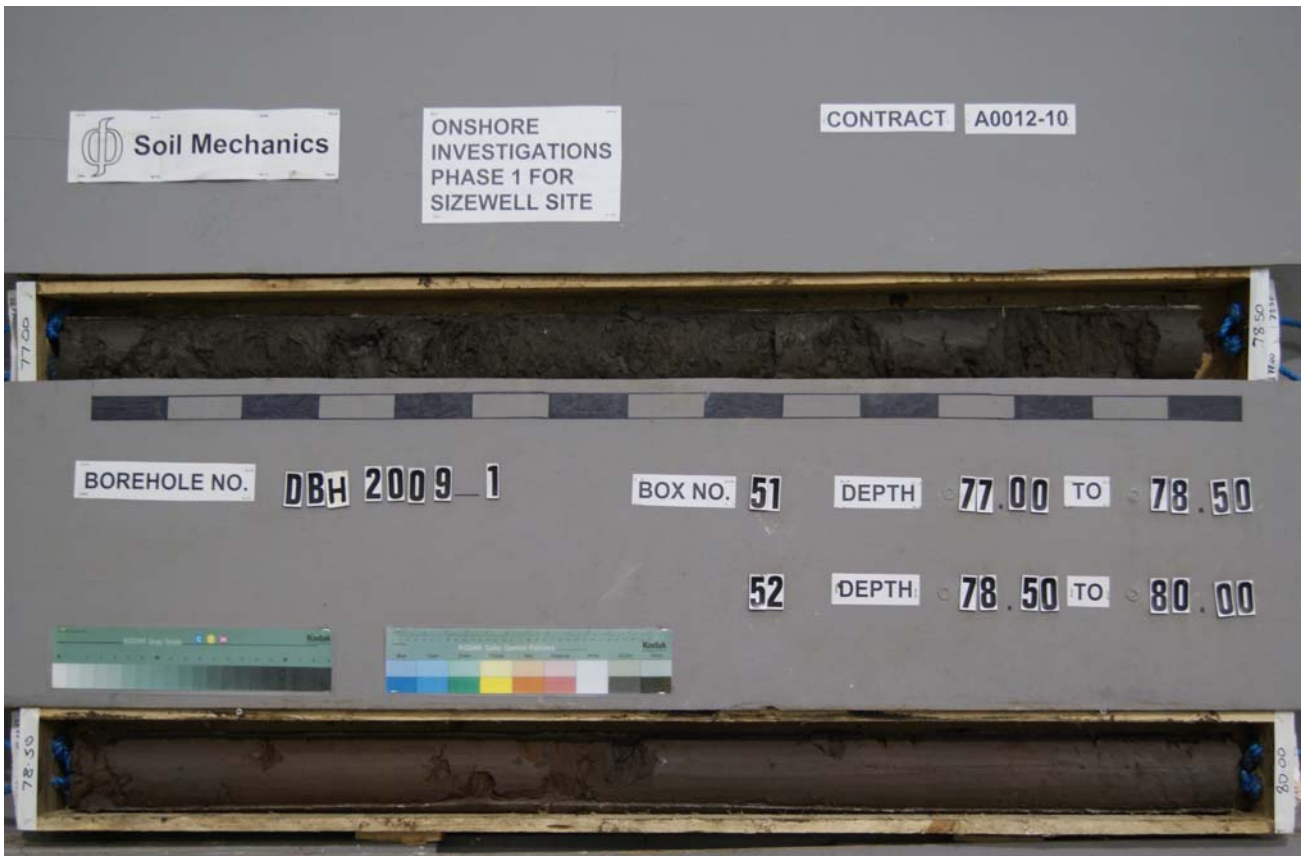
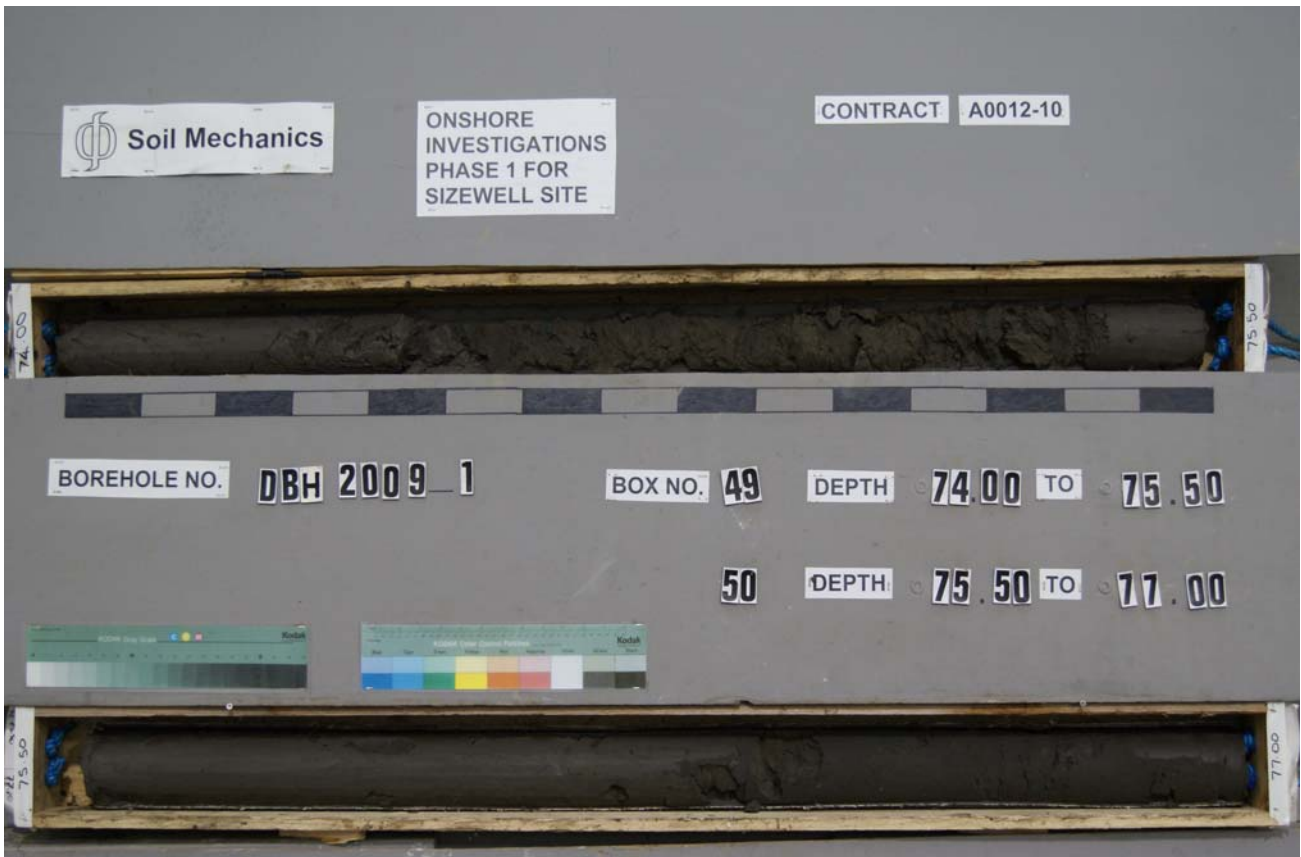


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 84</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 85</p>
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Photographs



Soil Mechanics

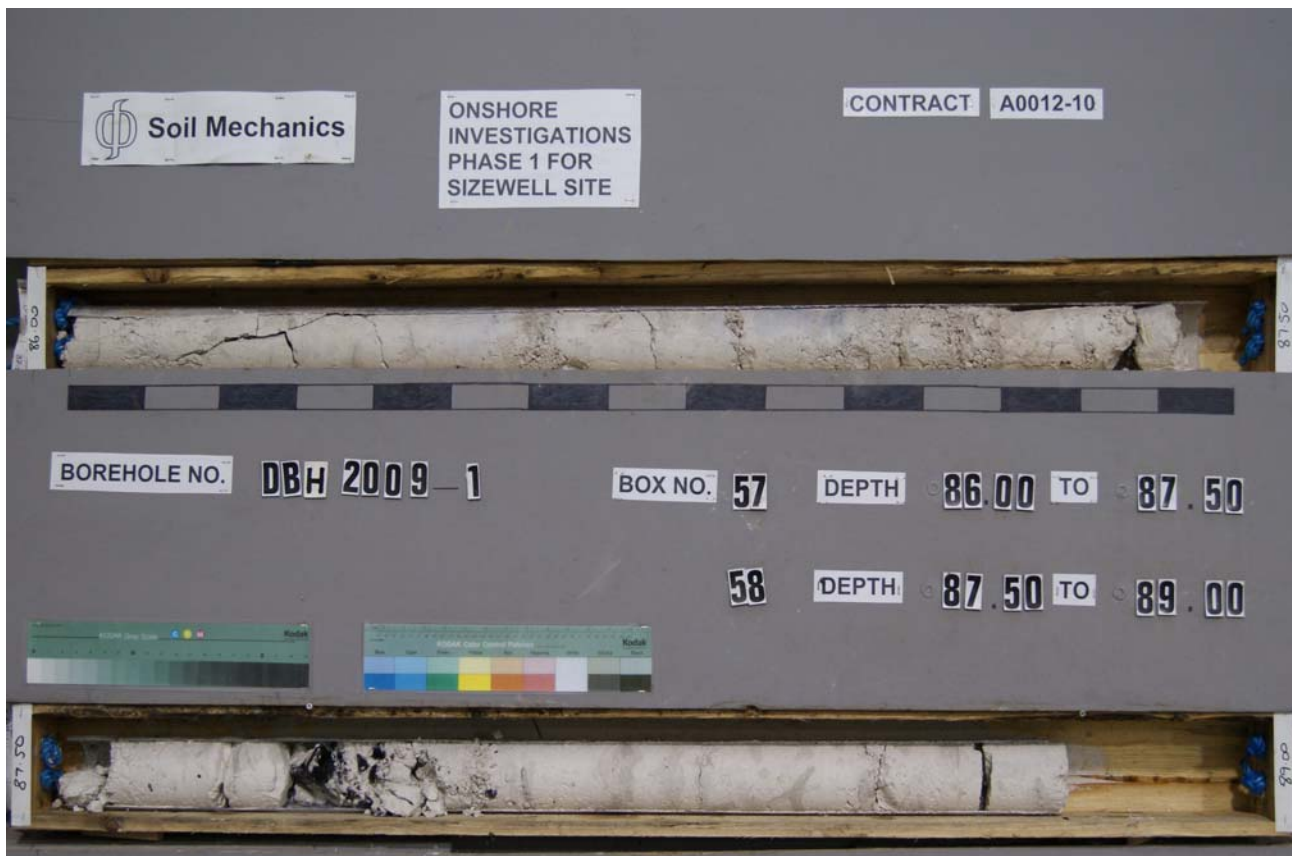


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 86</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 87
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 88</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 89
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 90
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Photographs



Soil Mechanics

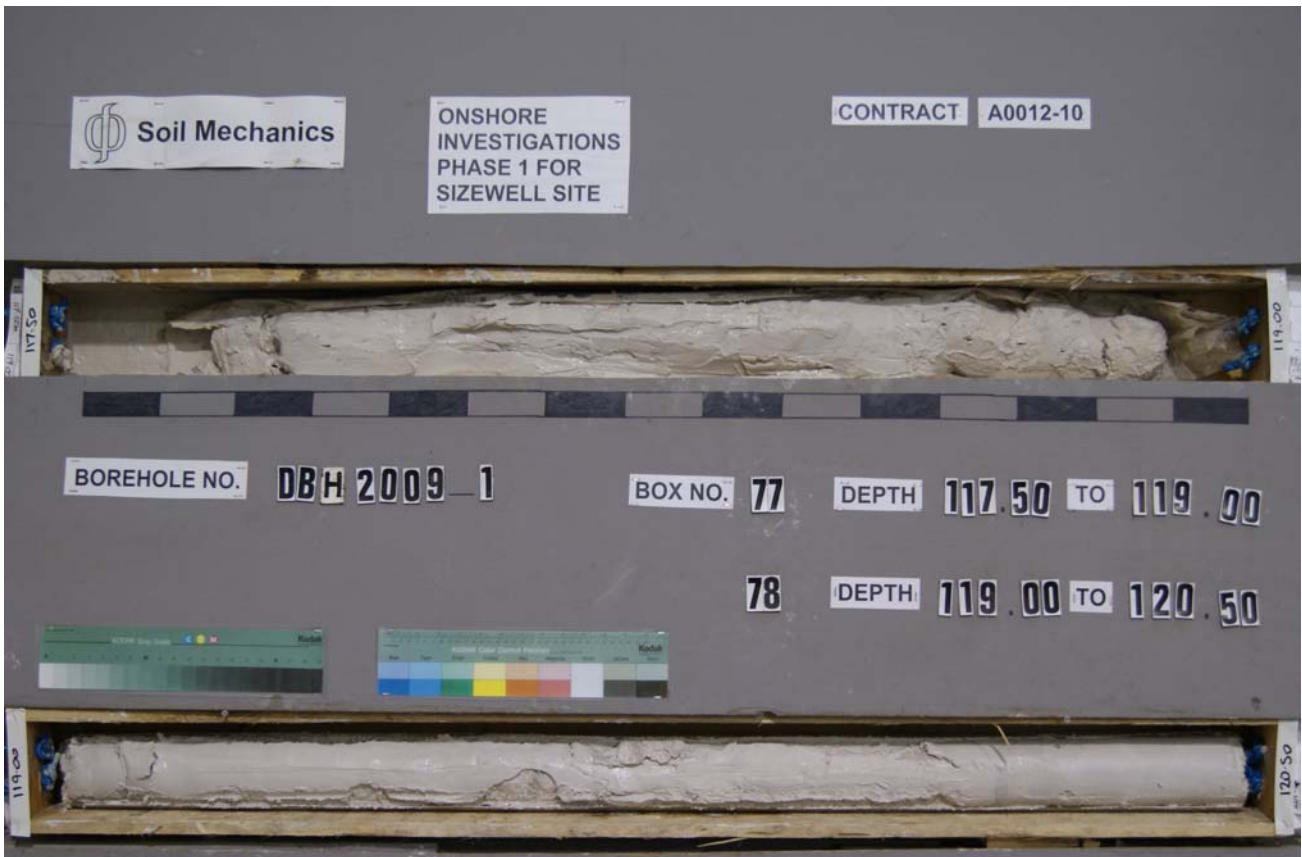


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 91
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 92
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 93</p>
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Photographs



Soil Mechanics

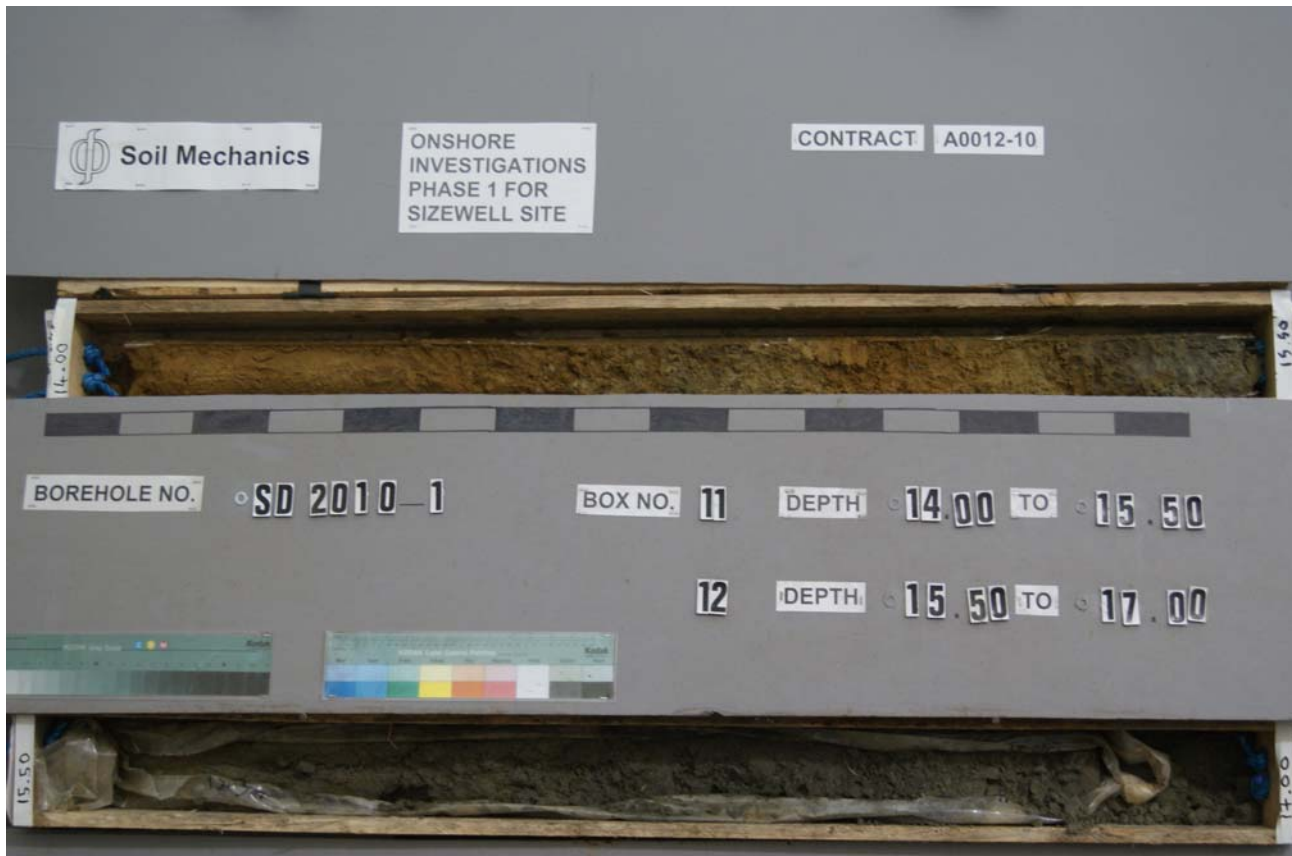


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 94</p>
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Photographs



Soil Mechanics

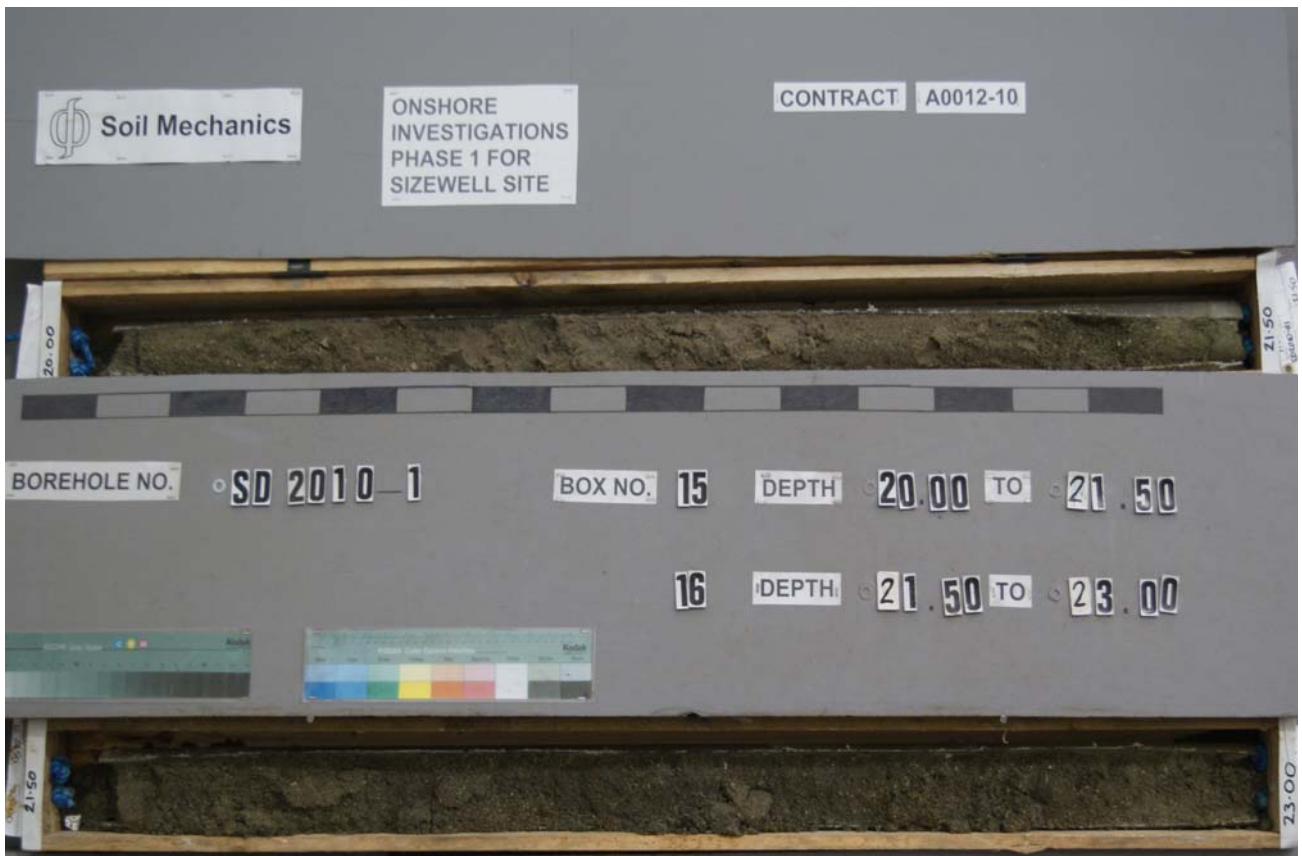


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 95
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Photographs



Soil Mechanics

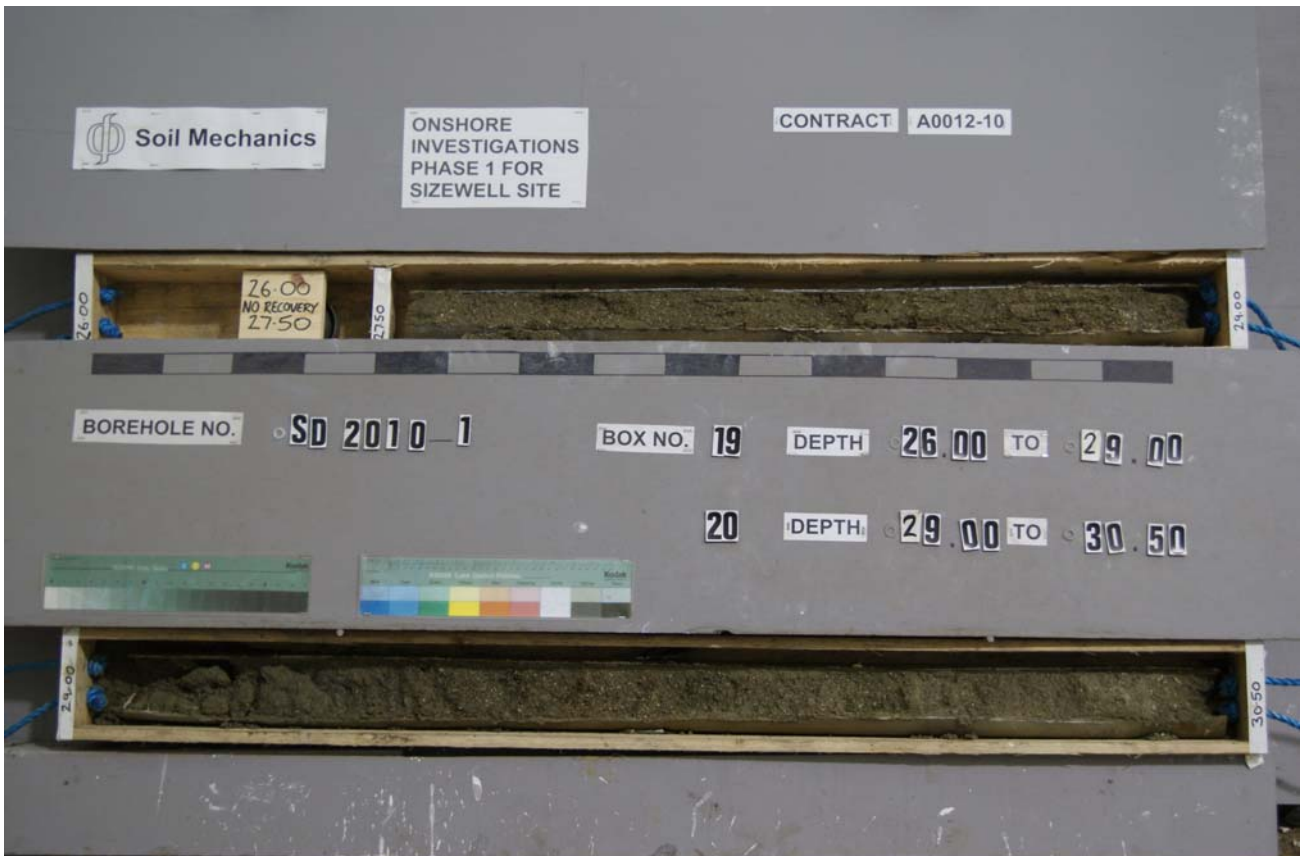


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 96</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 97</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 98
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 99</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 100
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Photographs



Soil Mechanics

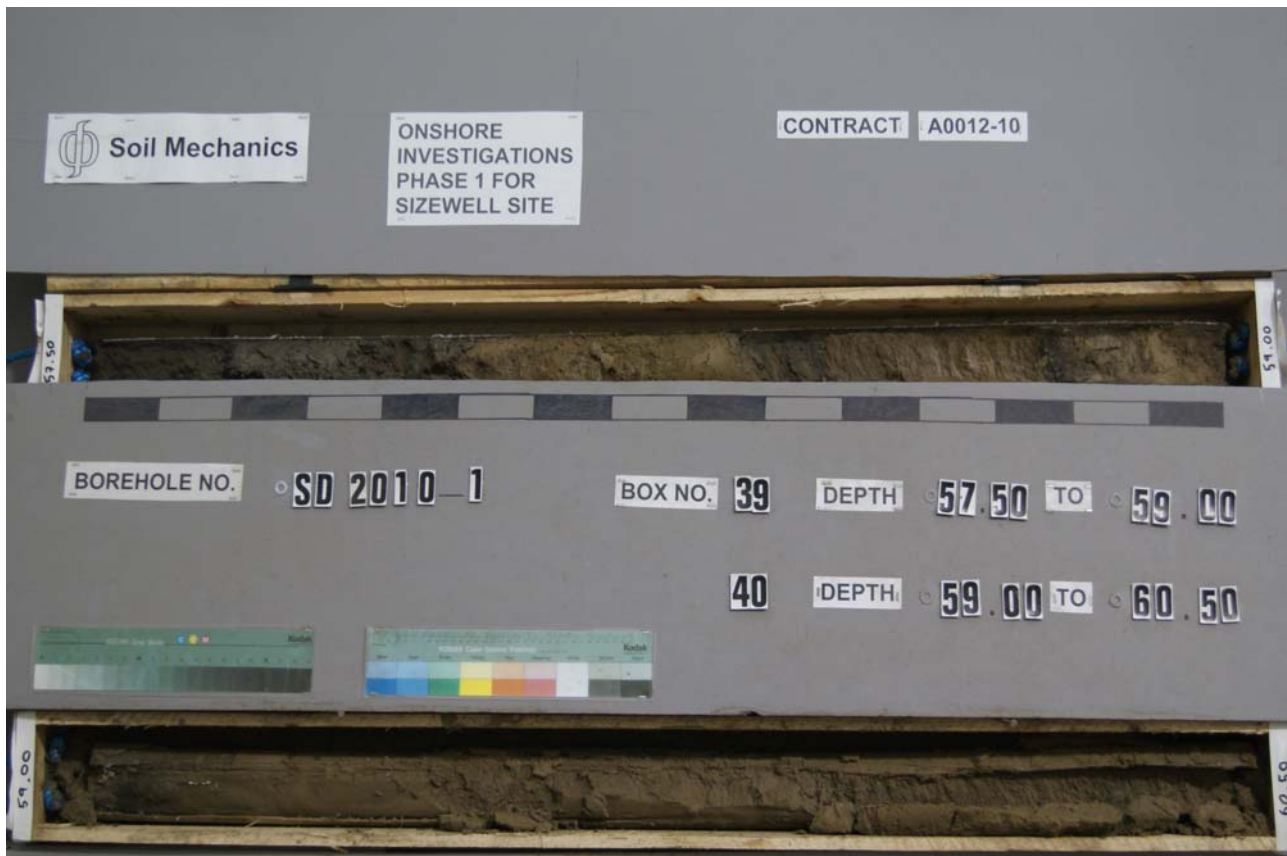


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 101</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate <p style="text-align: right;">102</p>
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Photographs



Soil Mechanics

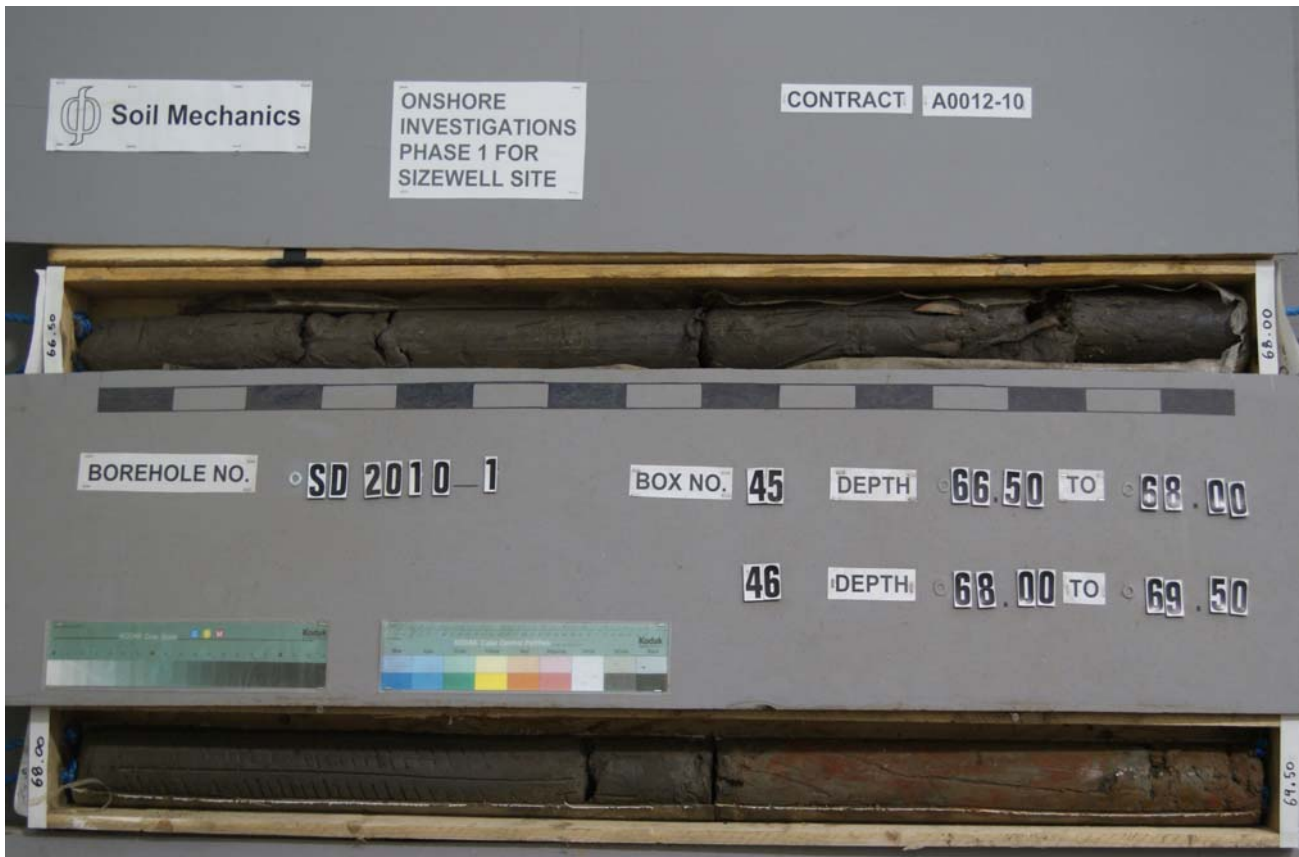


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 103</p>
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Photographs



Soil Mechanics

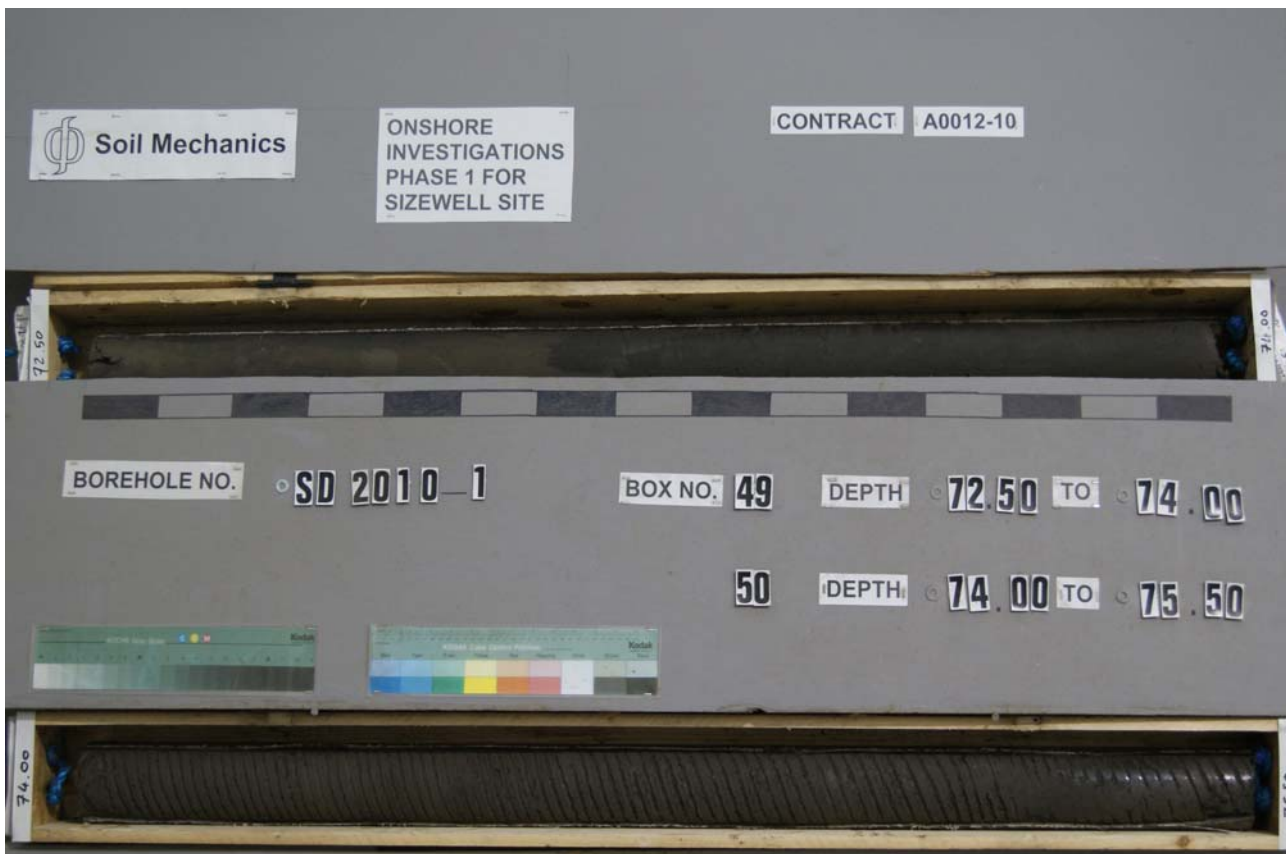


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate</p> <p style="text-align: right;">104</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 105
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 106
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 107
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Photographs



Soil Mechanics

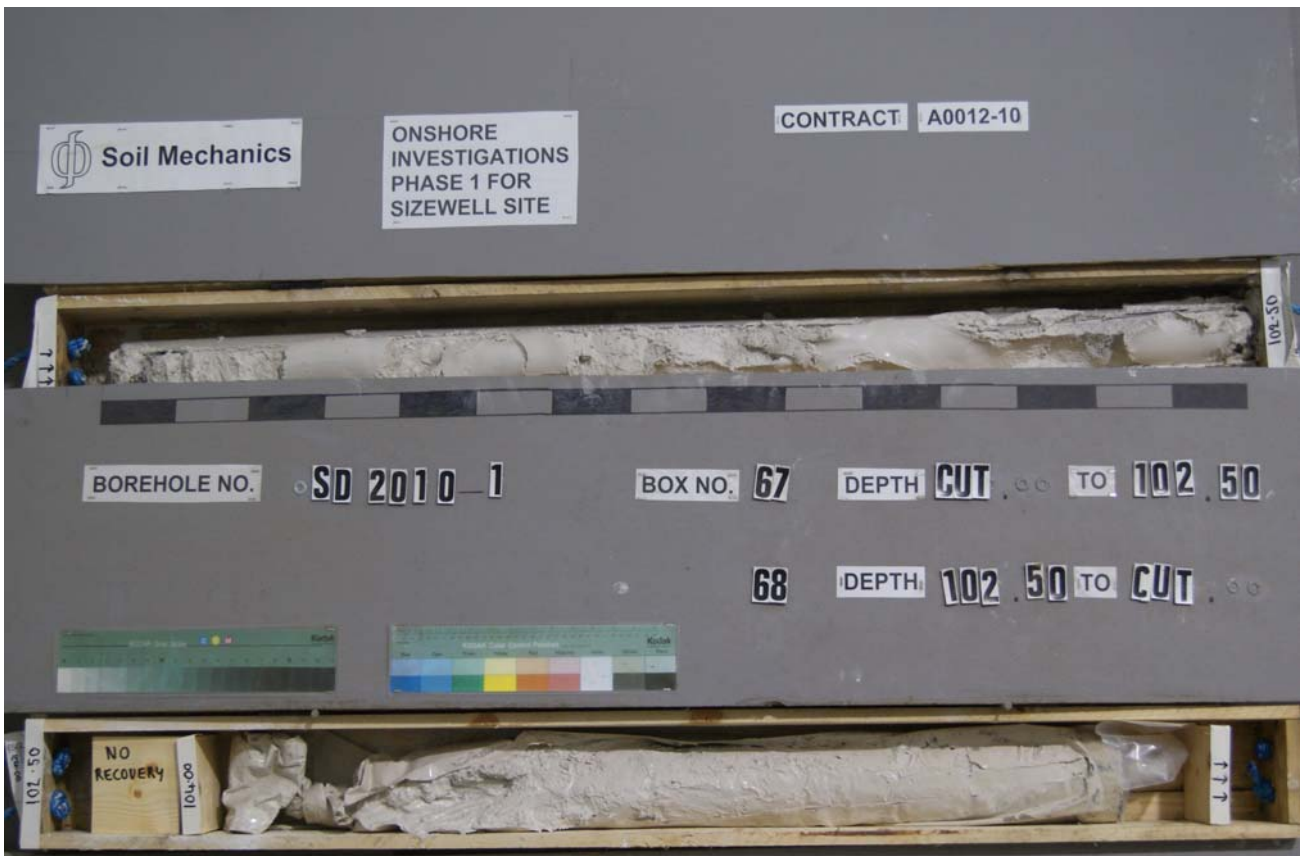


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 108
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 109
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 110
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 111
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 112
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Photographs



Soil Mechanics

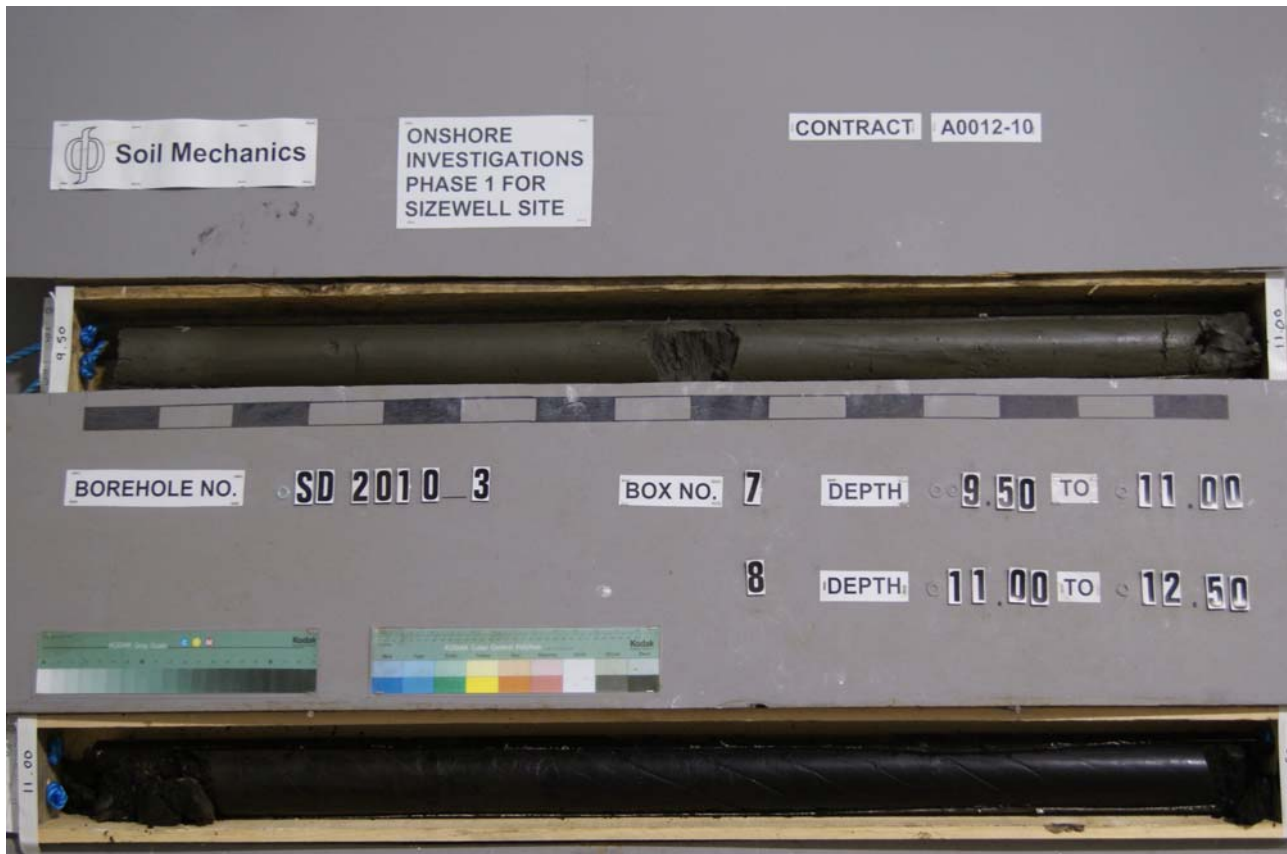
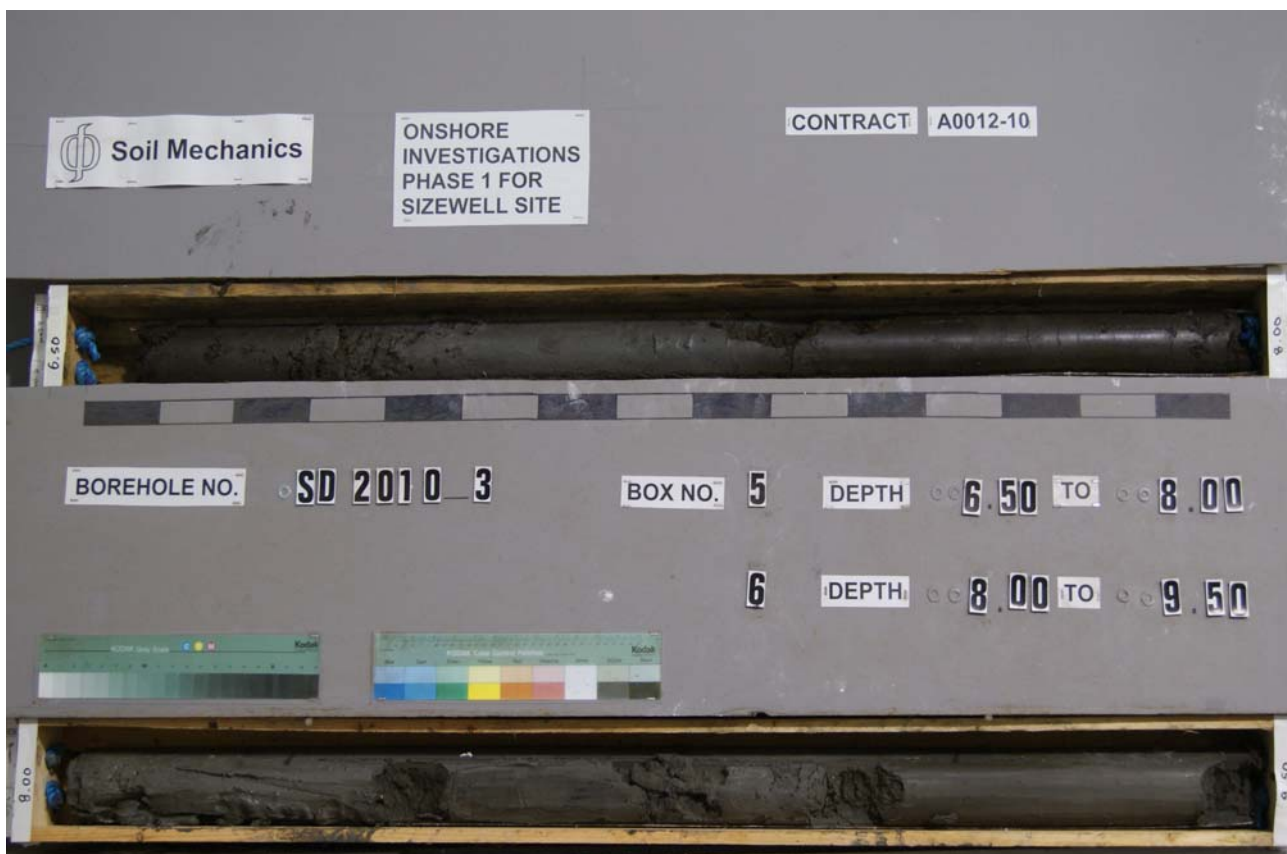


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate <p style="text-align: right;">113</p>
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Photographs



Soil Mechanics

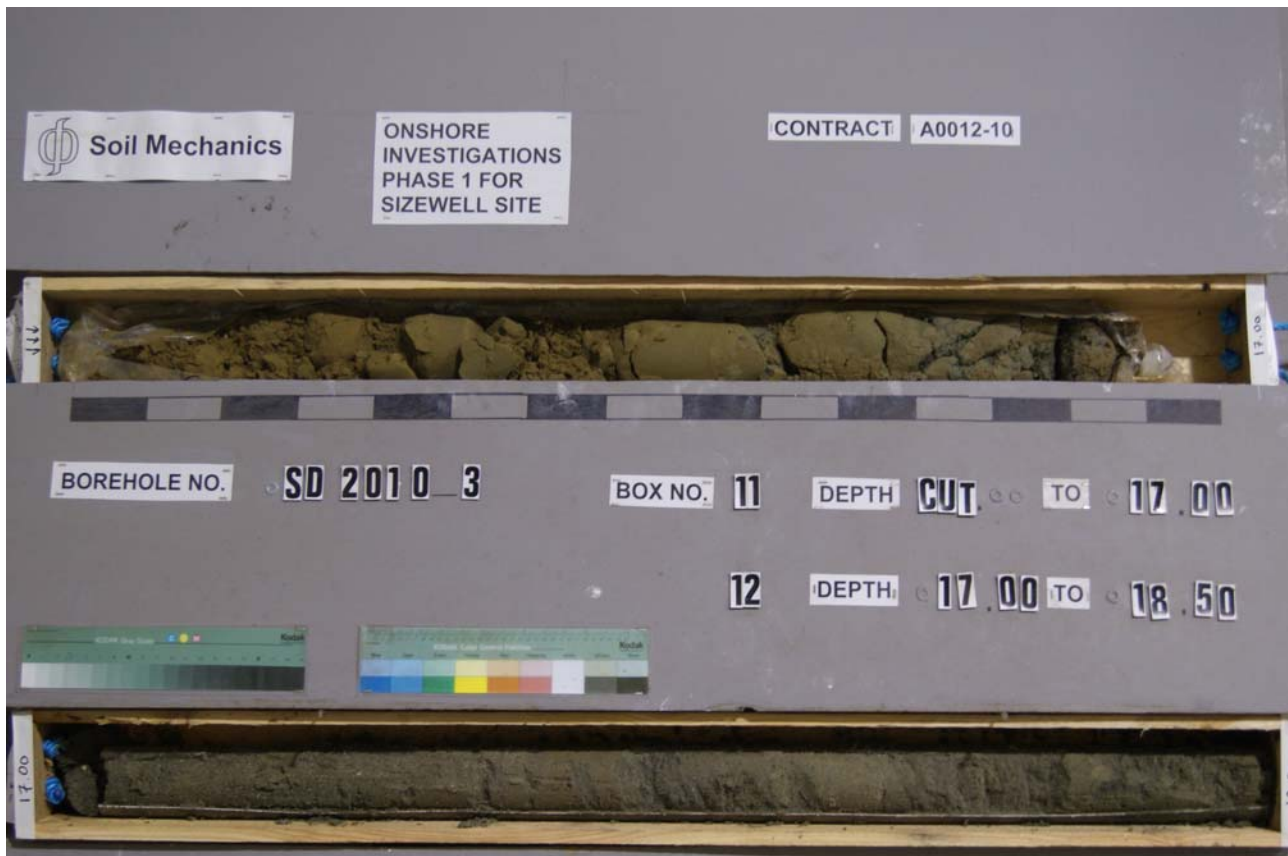


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 114
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 115
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Photographs



Soil Mechanics

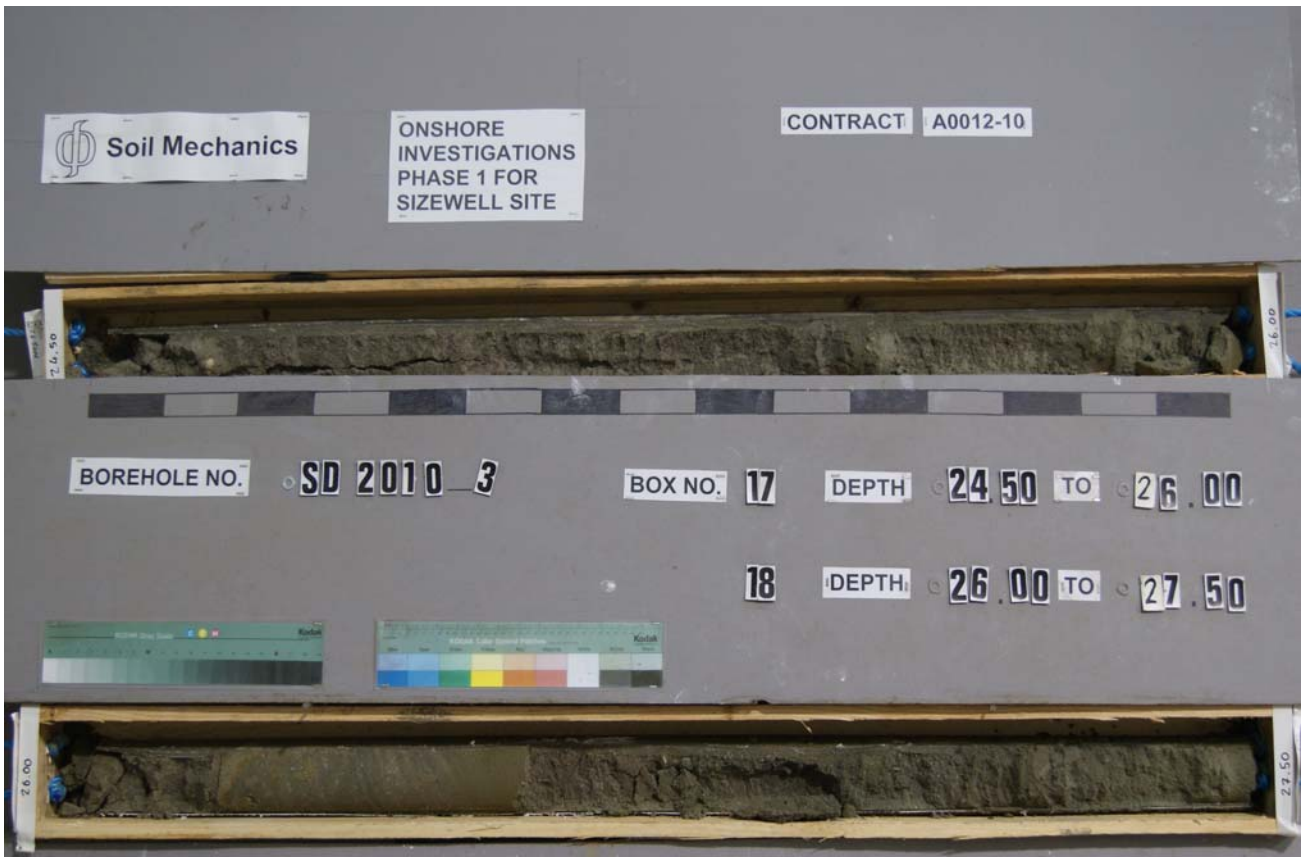


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 116</p>
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Photographs



Soil Mechanics

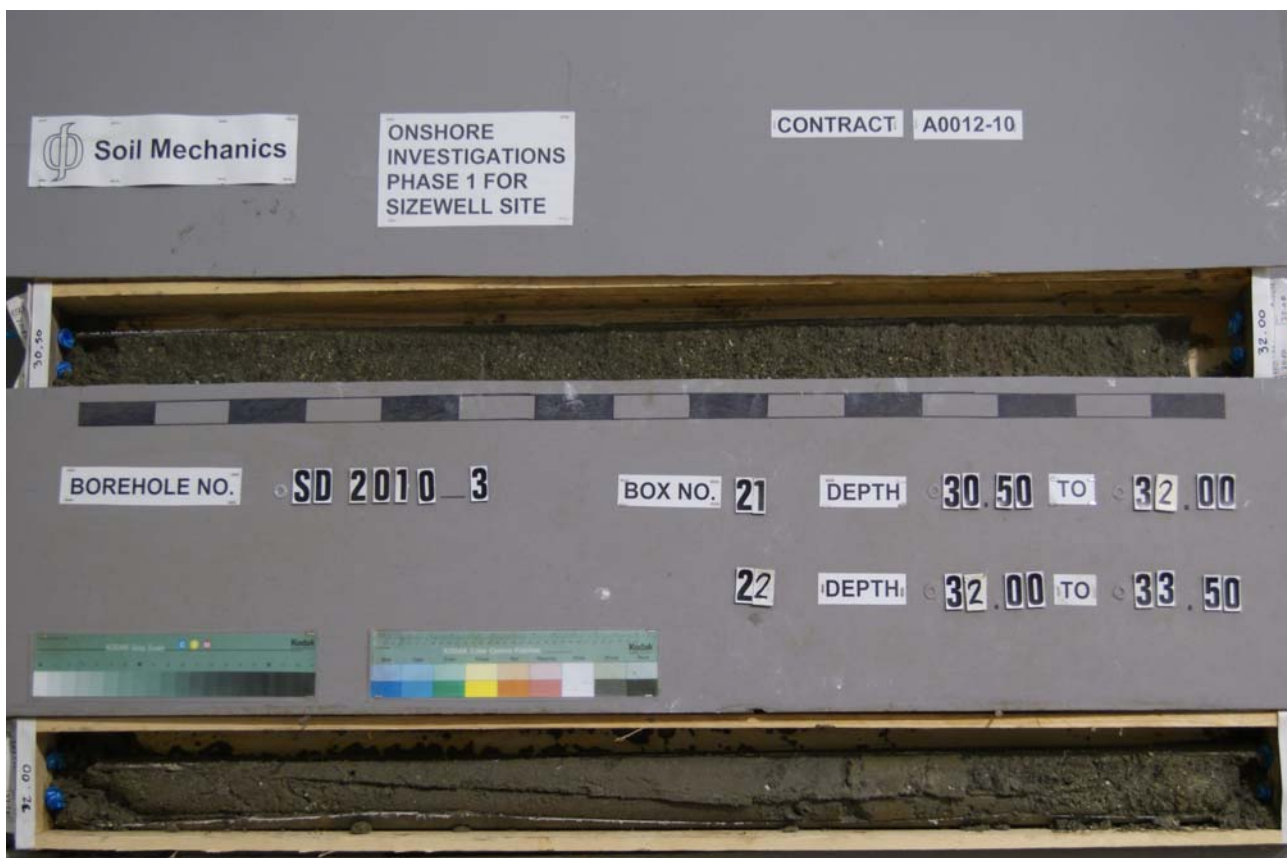


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 117</p>
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Photographs



Soil Mechanics

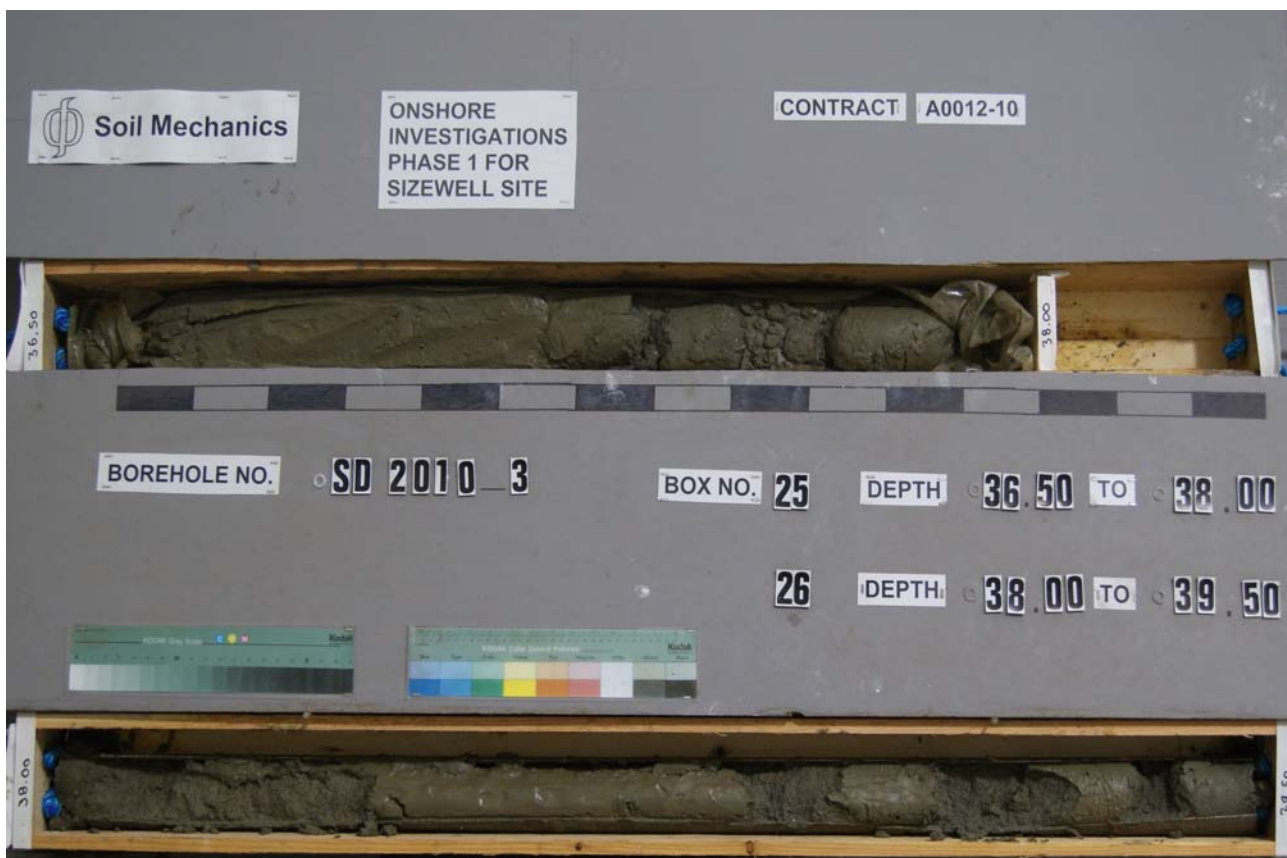


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 118
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Photographs



Soil Mechanics

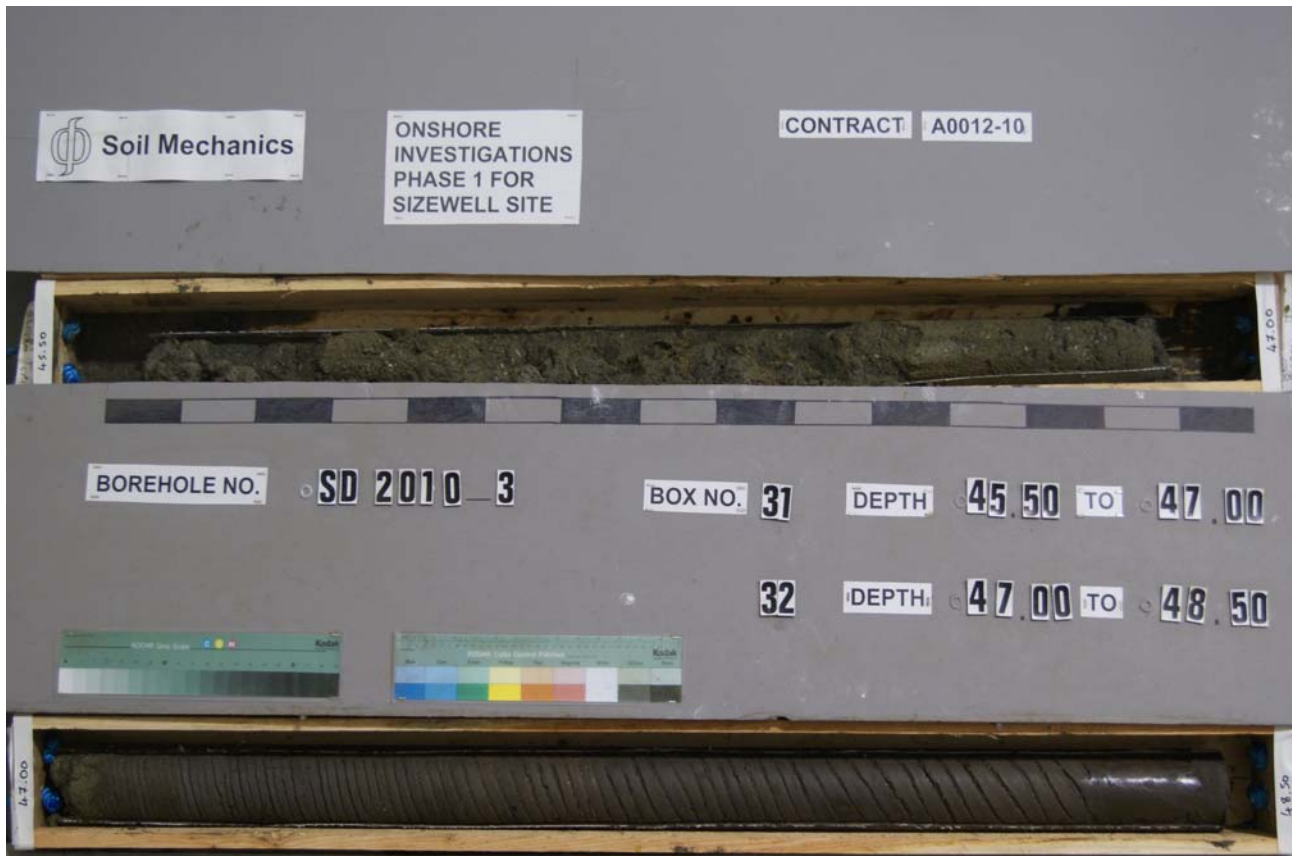
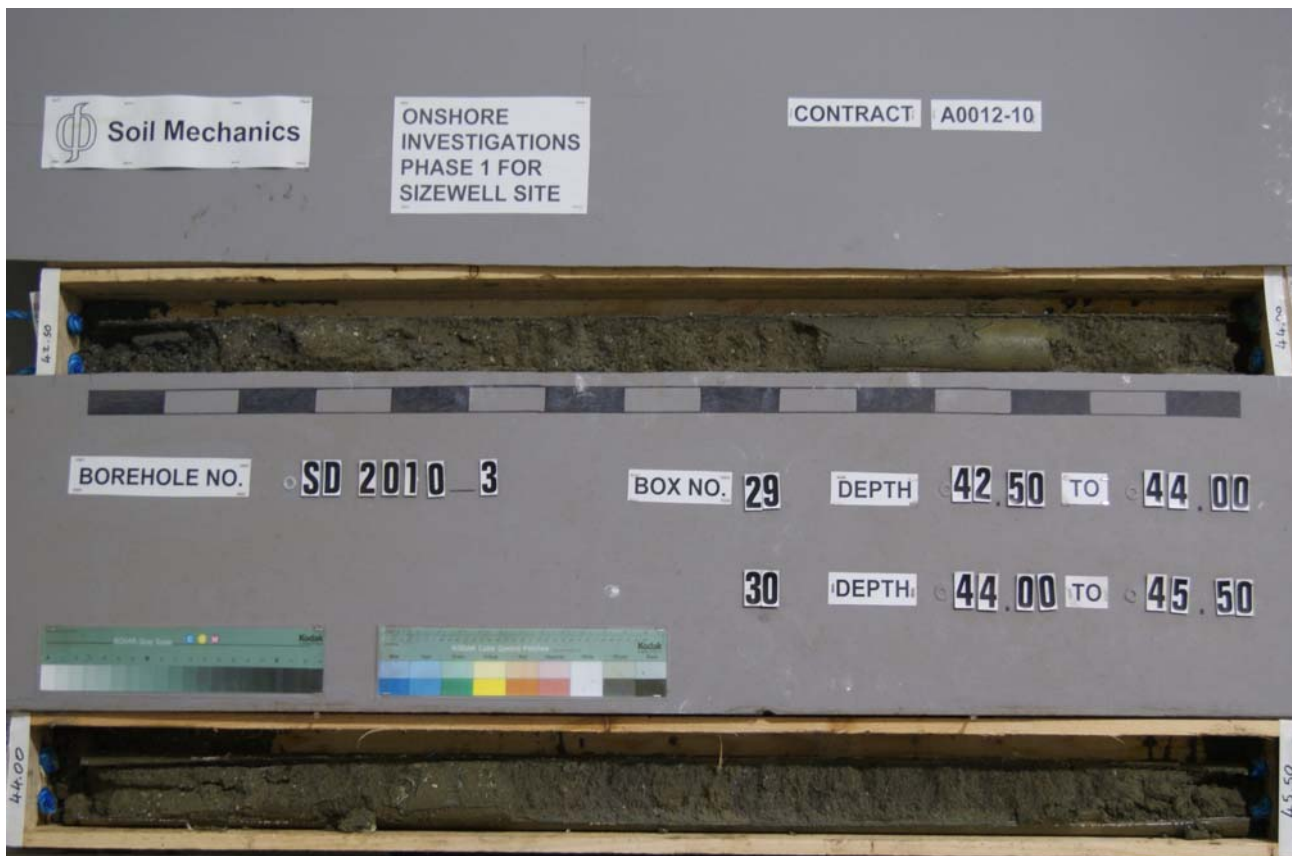


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 119</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 120
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Photographs



Soil Mechanics

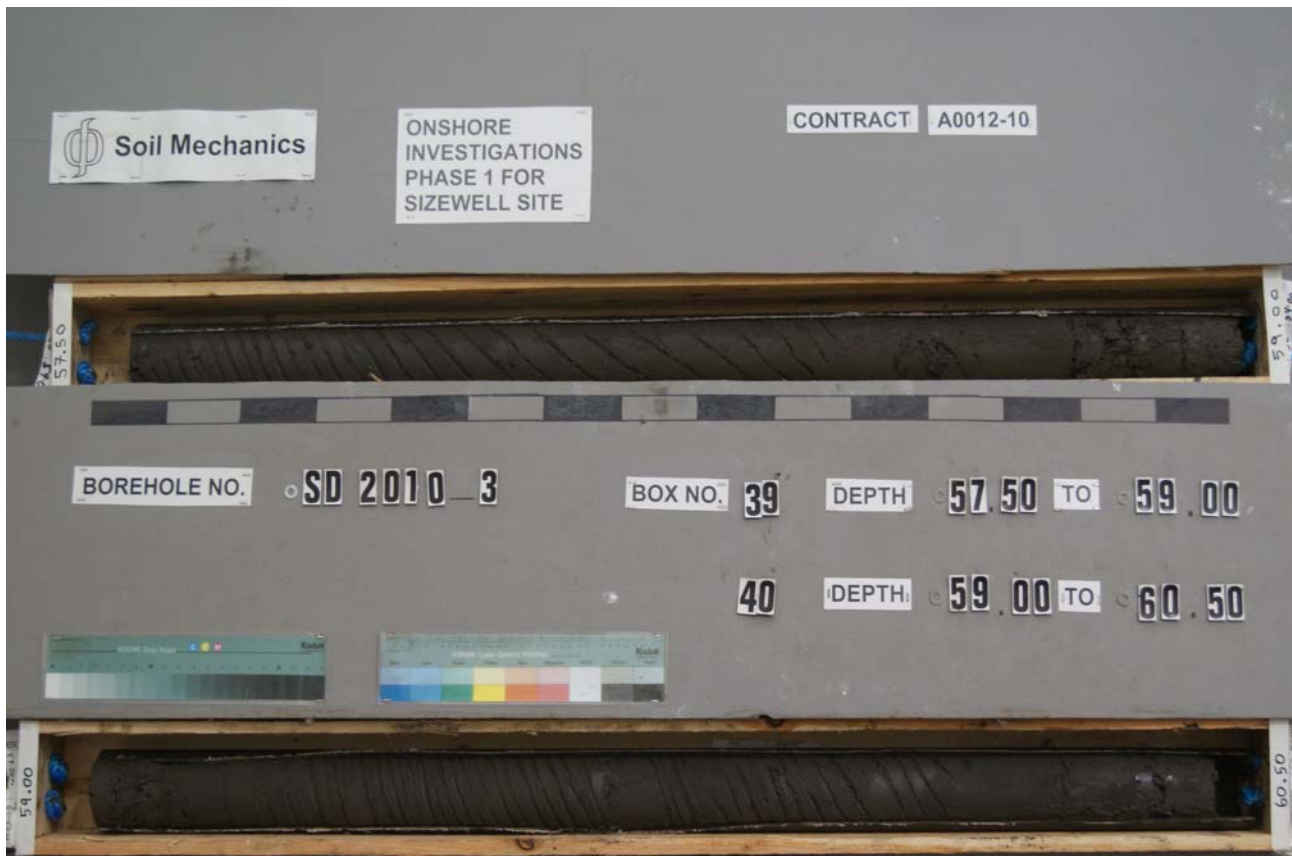


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 121
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 122
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 123</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 124</p>
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Photographs



Soil Mechanics

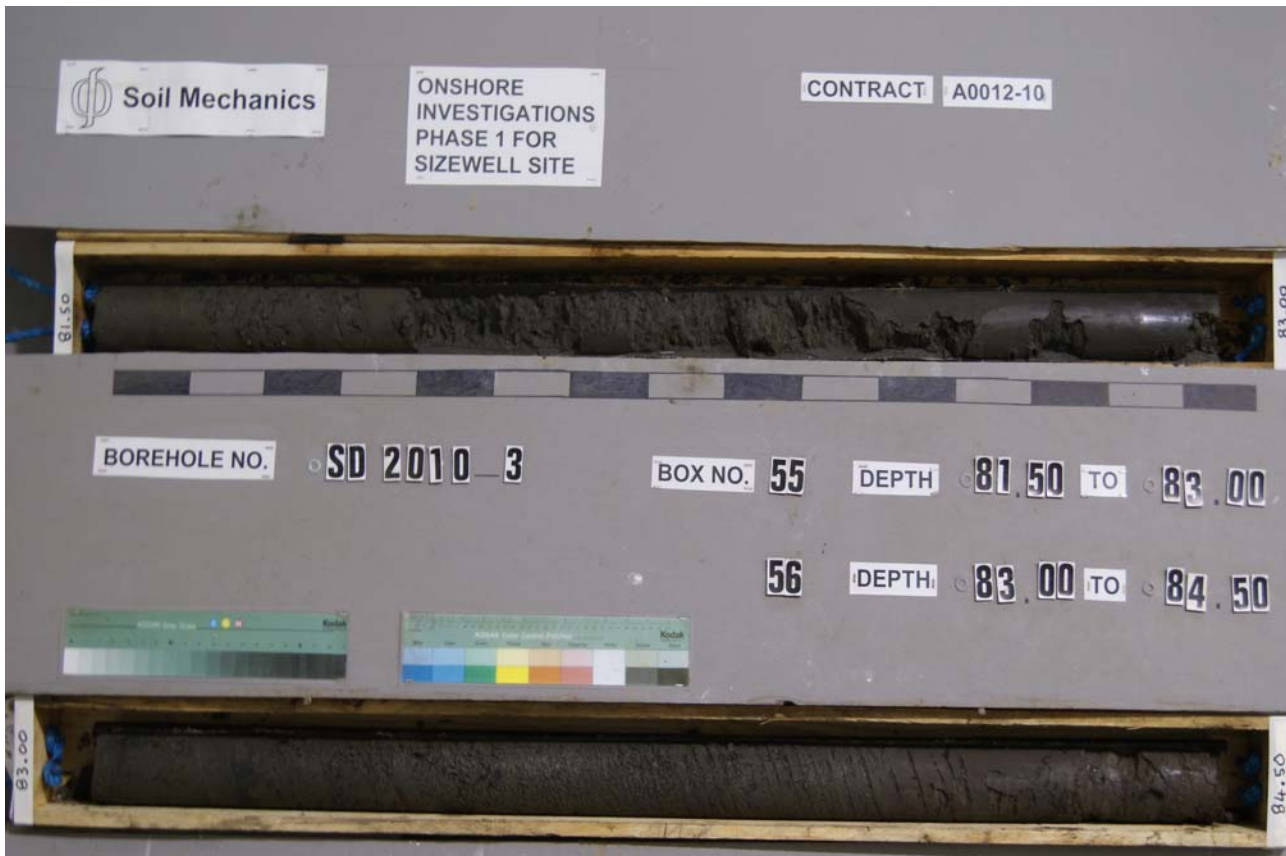
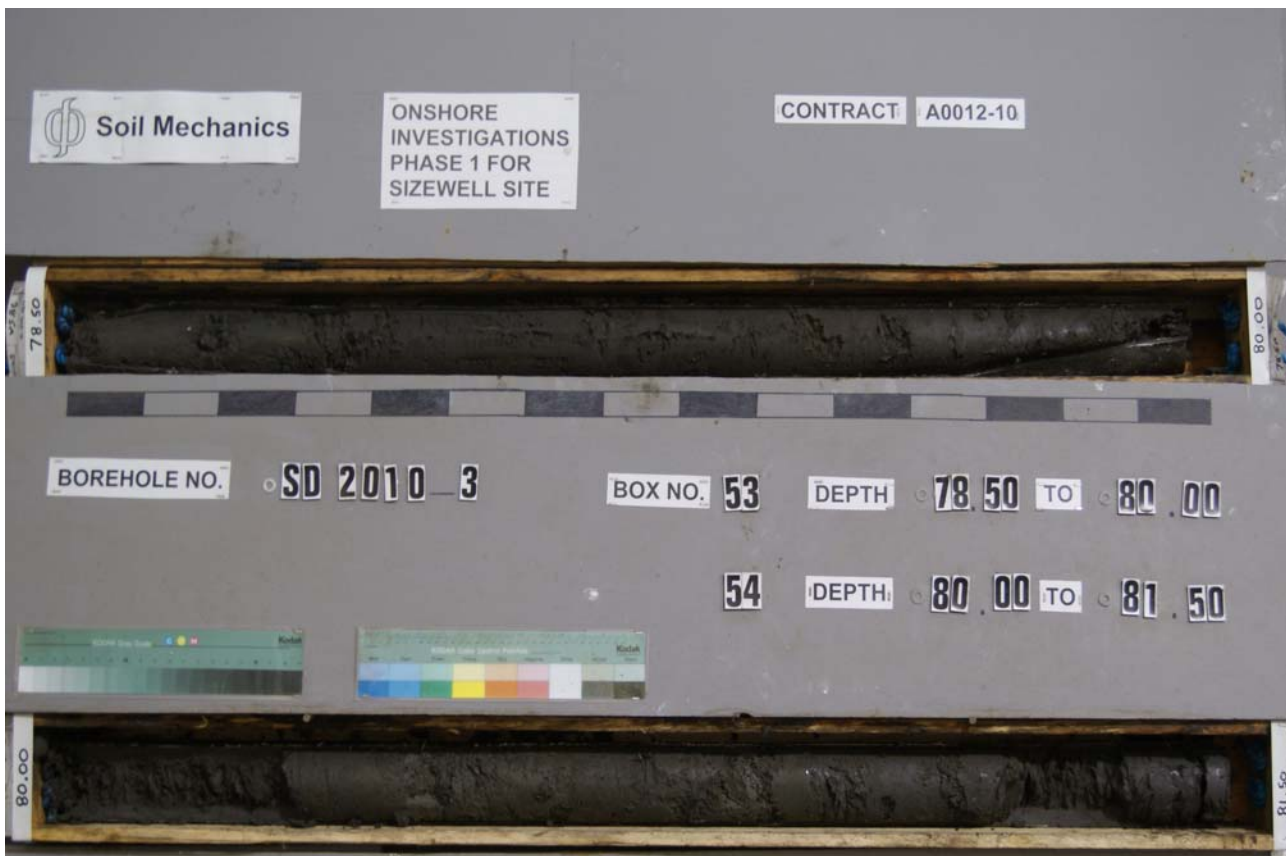


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 125</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate <p style="text-align: right;">126</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 127
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 128
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Photographs



Soil Mechanics

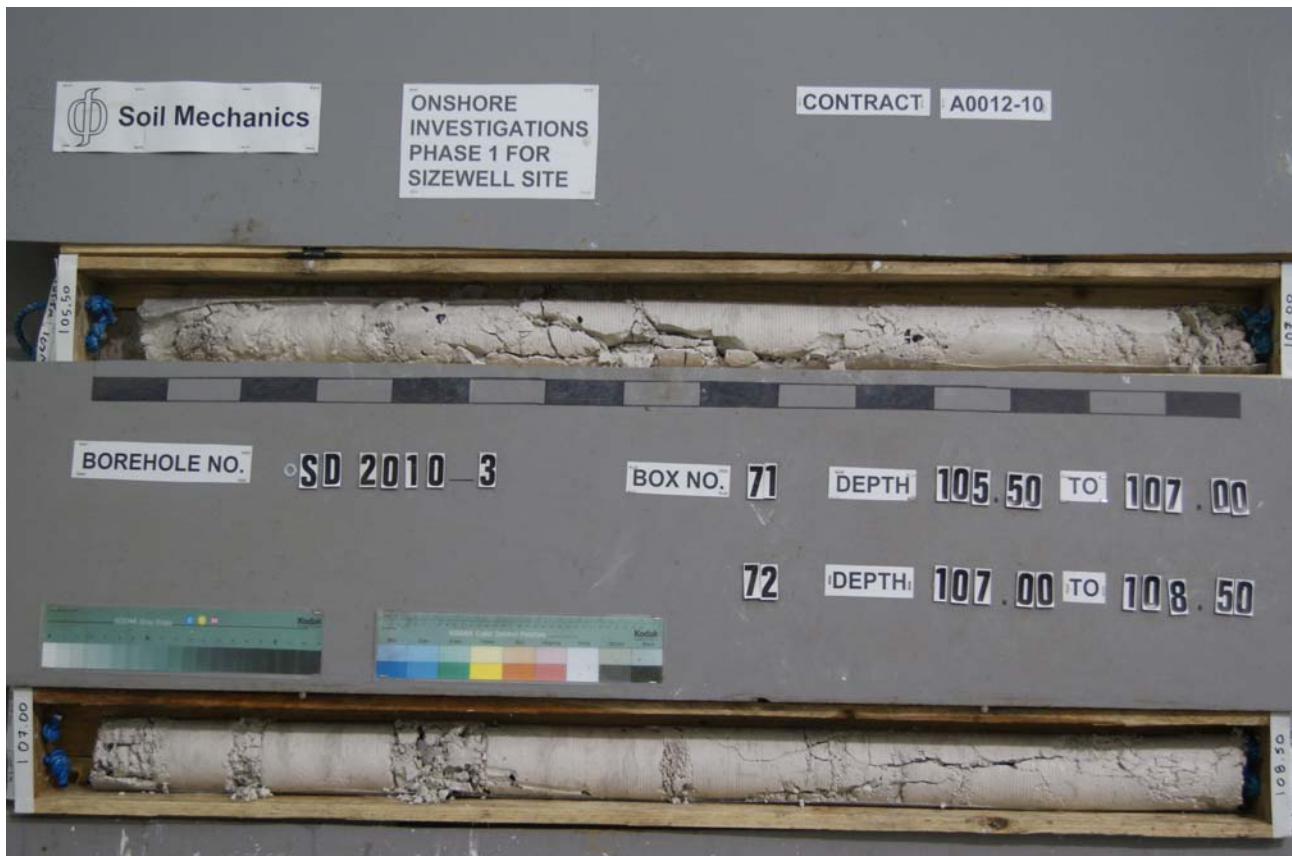


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 129</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 130
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 131
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 132</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 133
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 134</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 135
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 136</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 137</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 138
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 139</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate</p> <p style="text-align: right;">140</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 141
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ENCLOSURE B
U100 SAMPLE PHOTOGRAPHS

U100 Samples

Plate 1 to 50

Photographs



Soil Mechanics

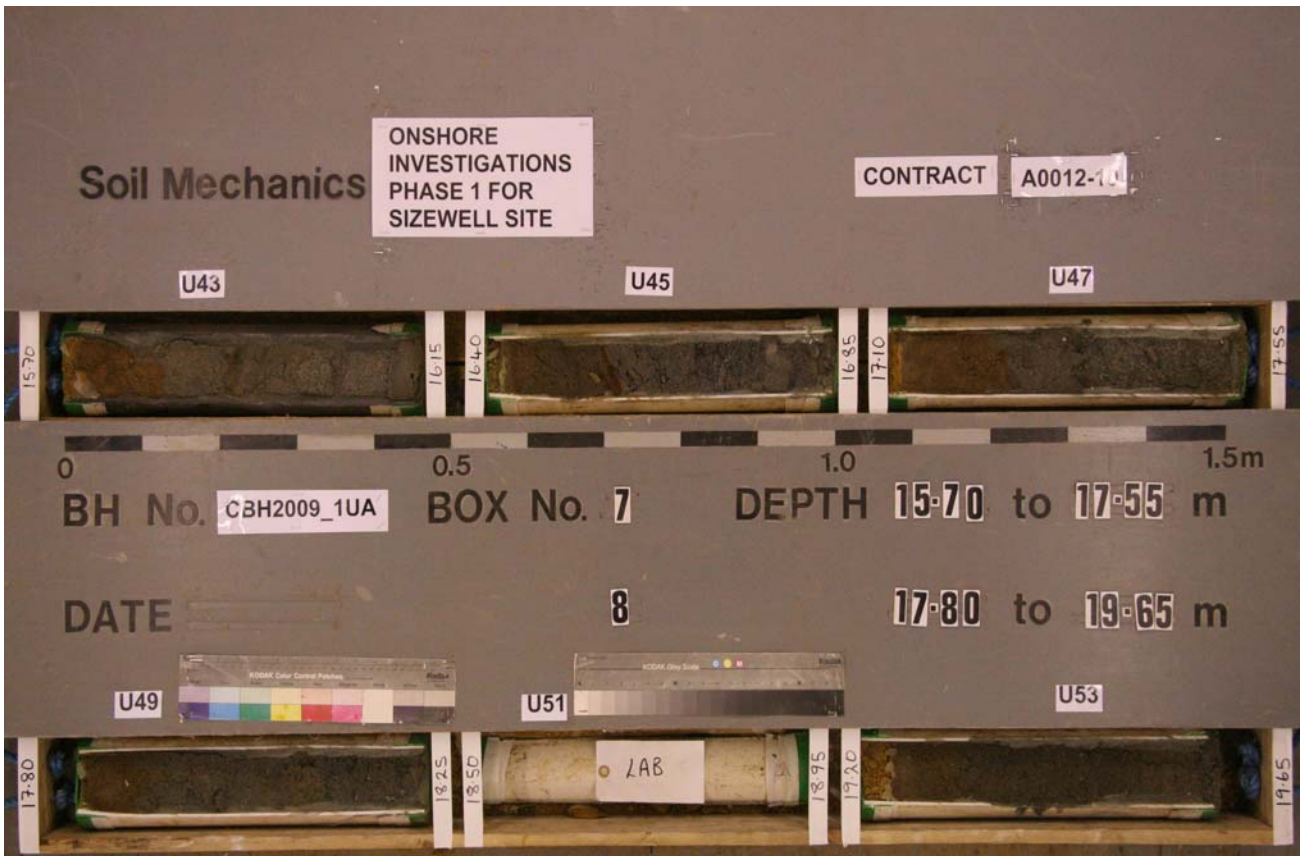


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 1
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Photographs



Soil Mechanics

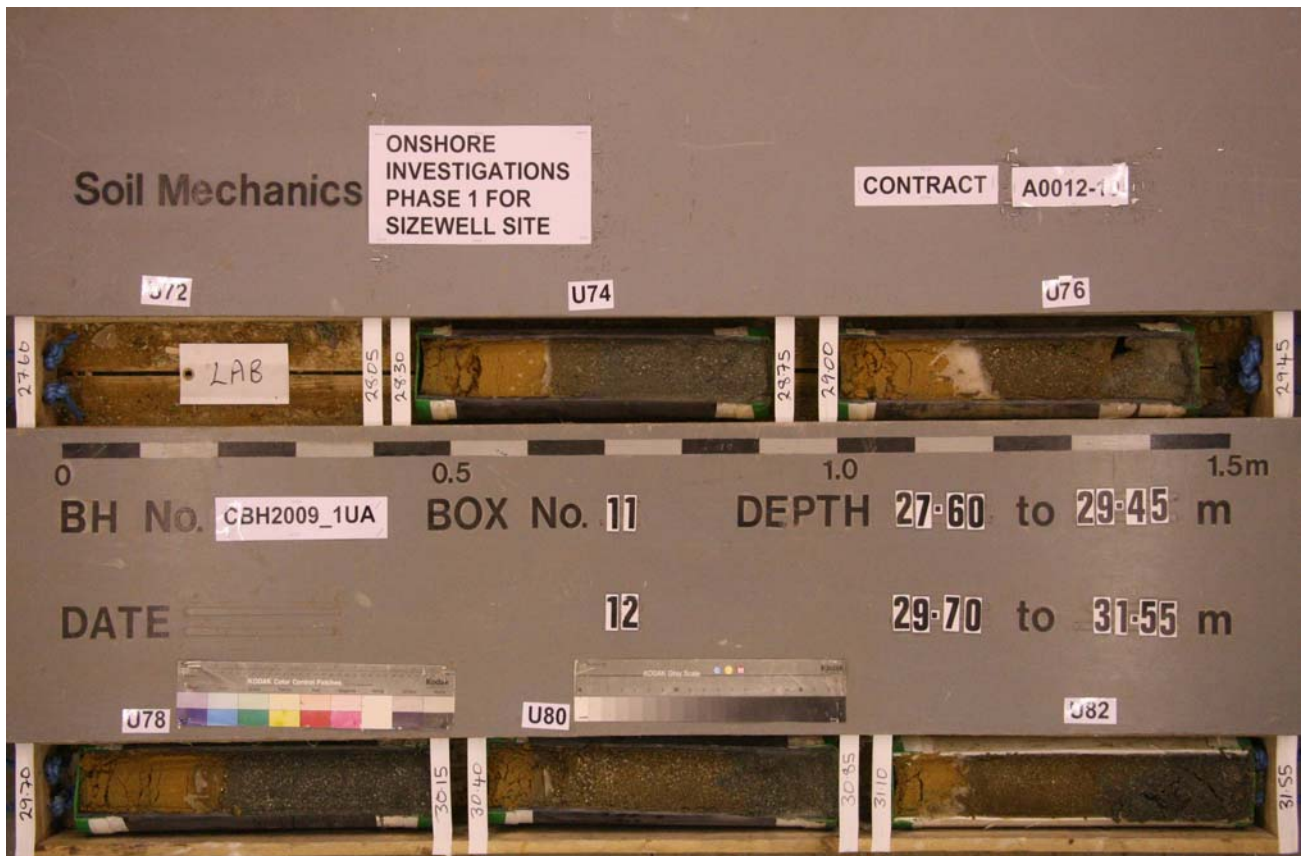


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 2</p>
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Photographs



Soil Mechanics

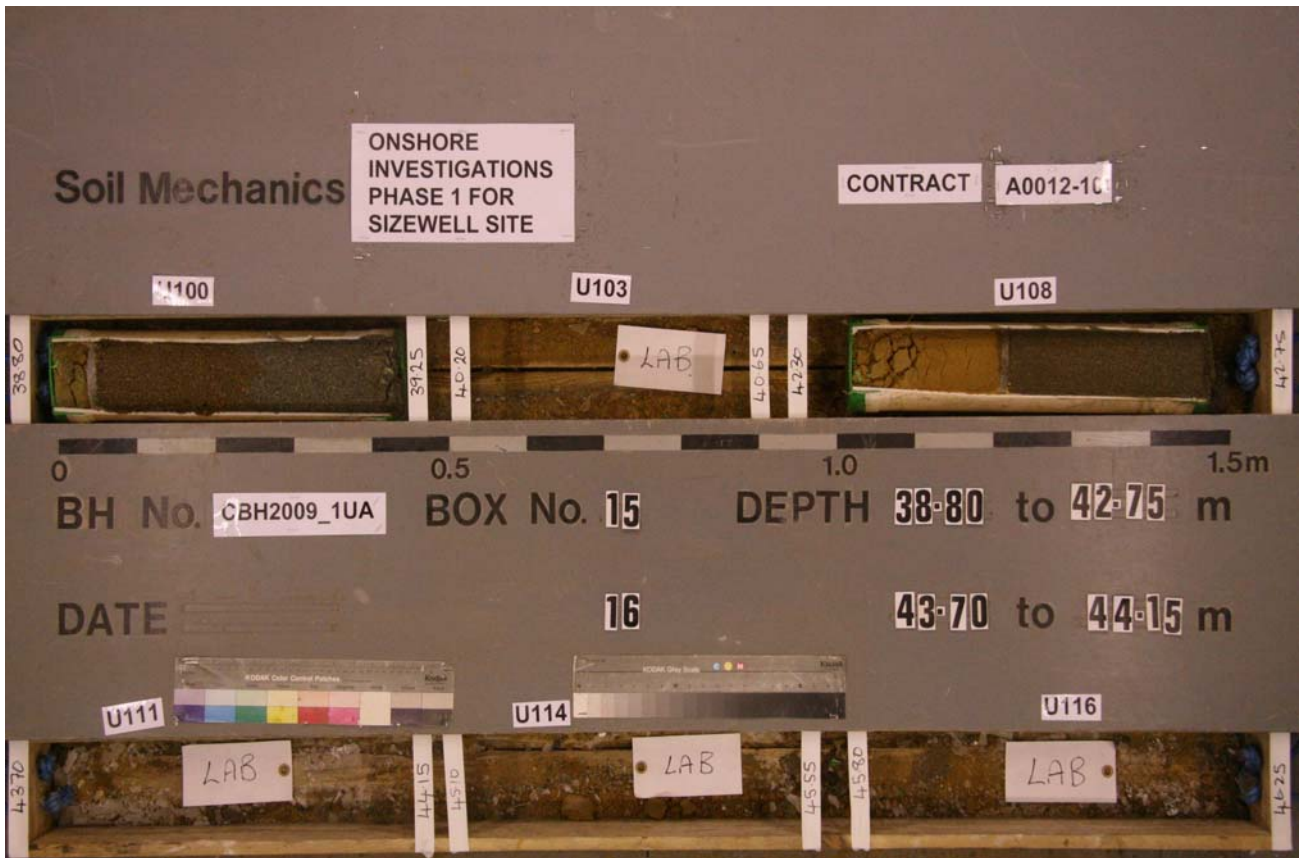


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 3</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 4
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 5
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Photographs



Soil Mechanics

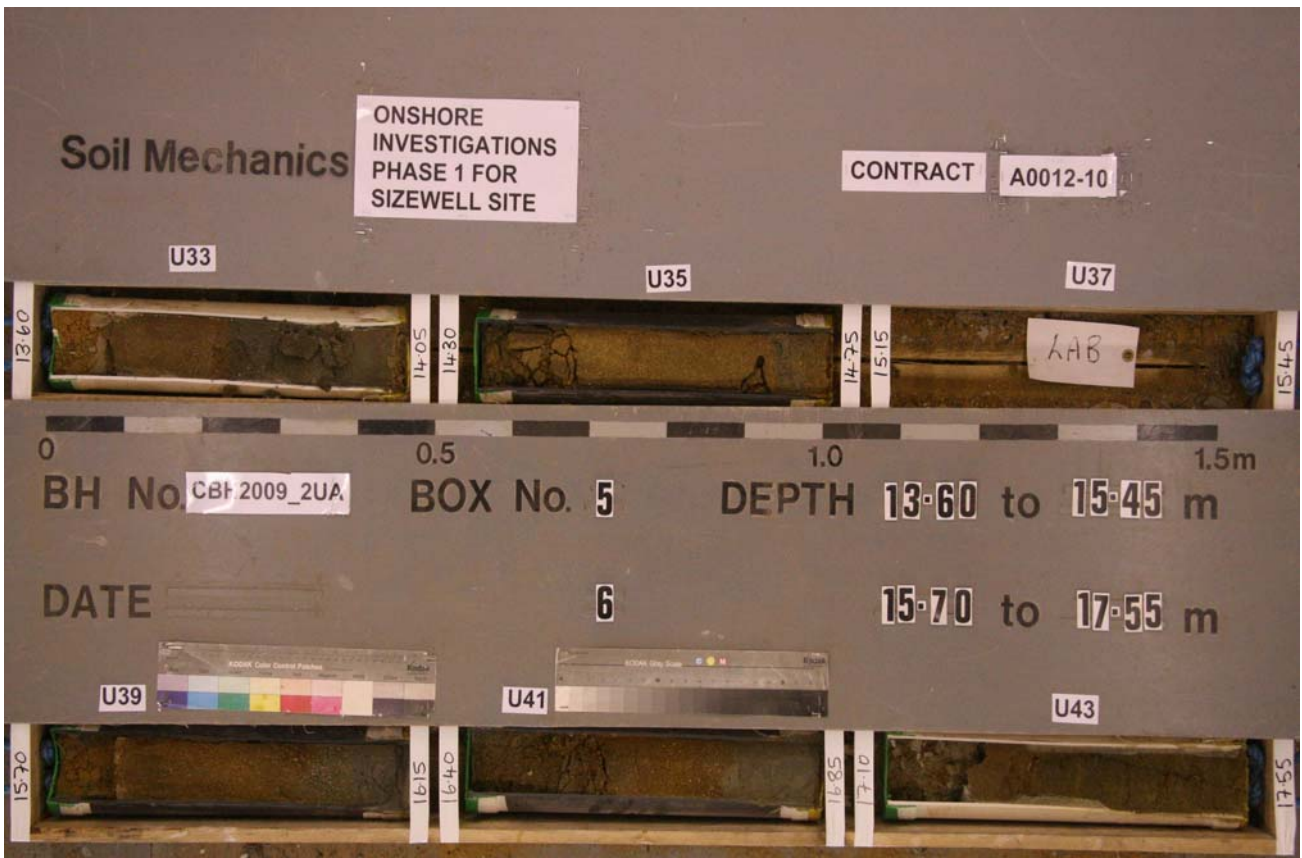


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 6
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 7
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 8
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Photographs



Soil Mechanics

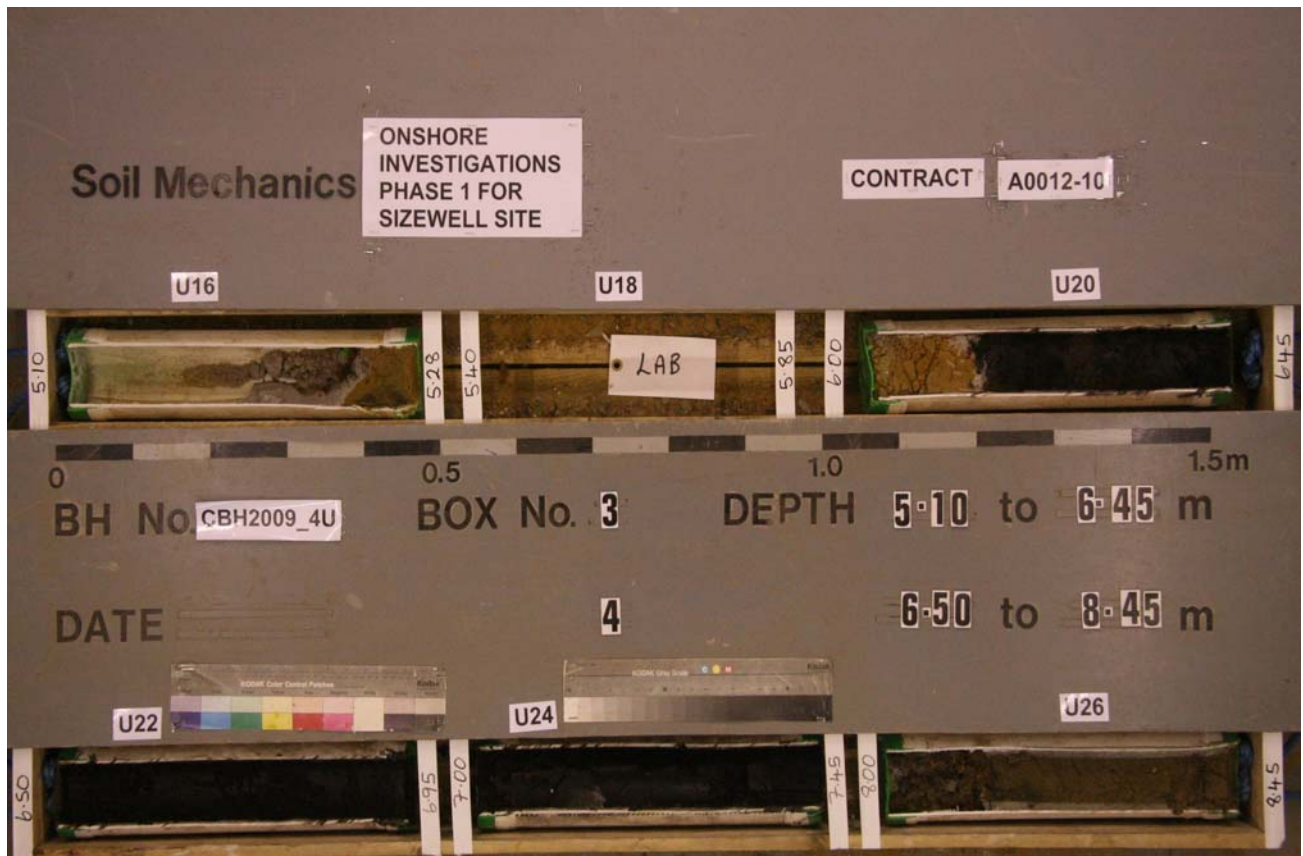
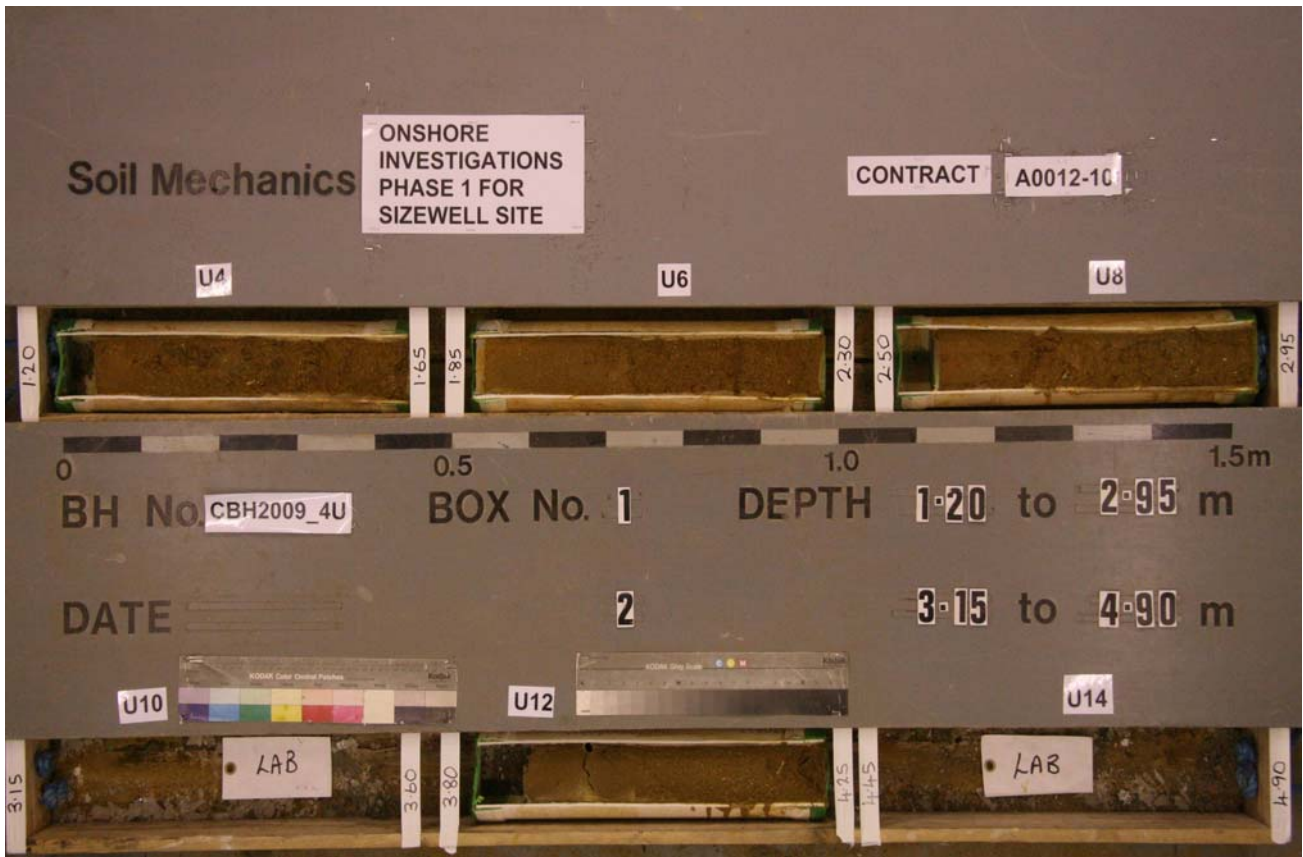


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 9
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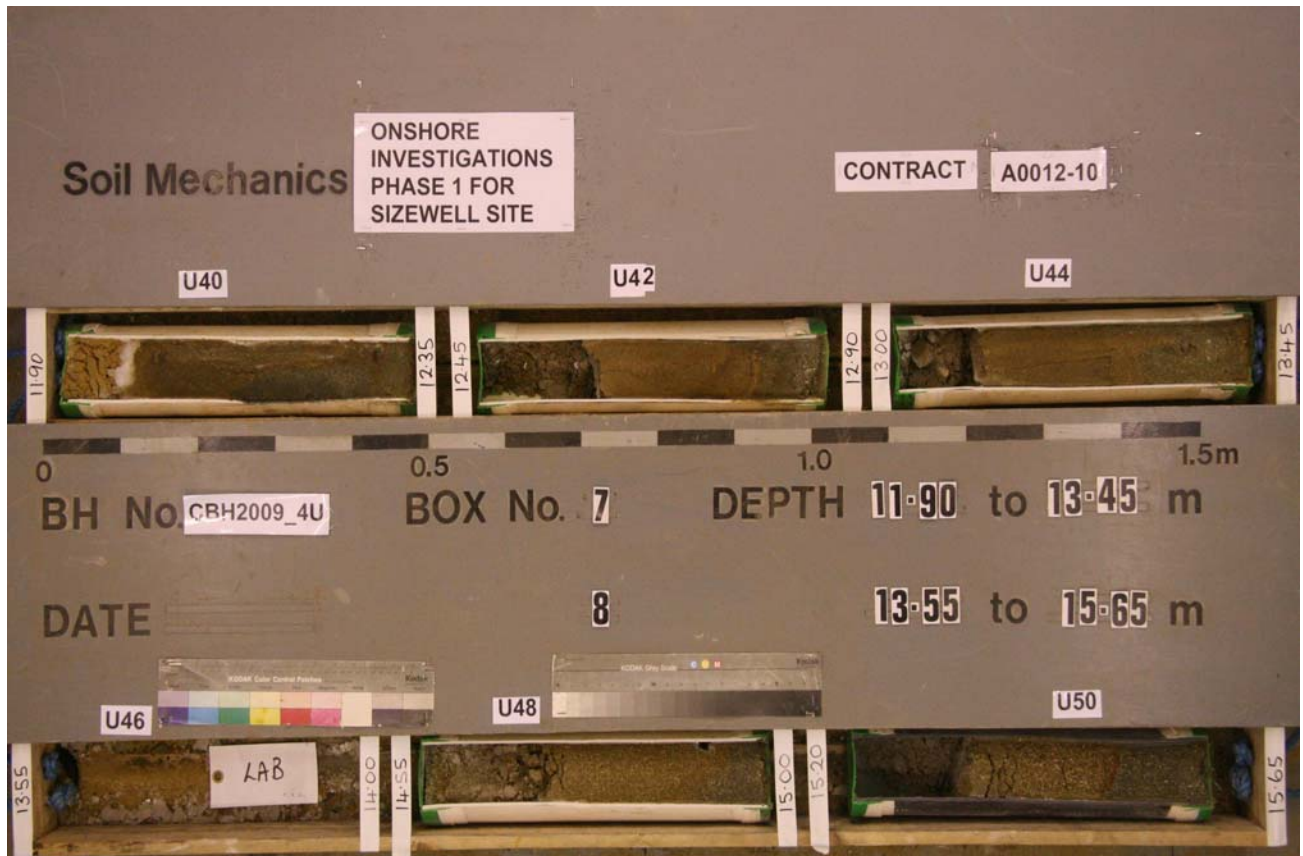
Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 10</p>
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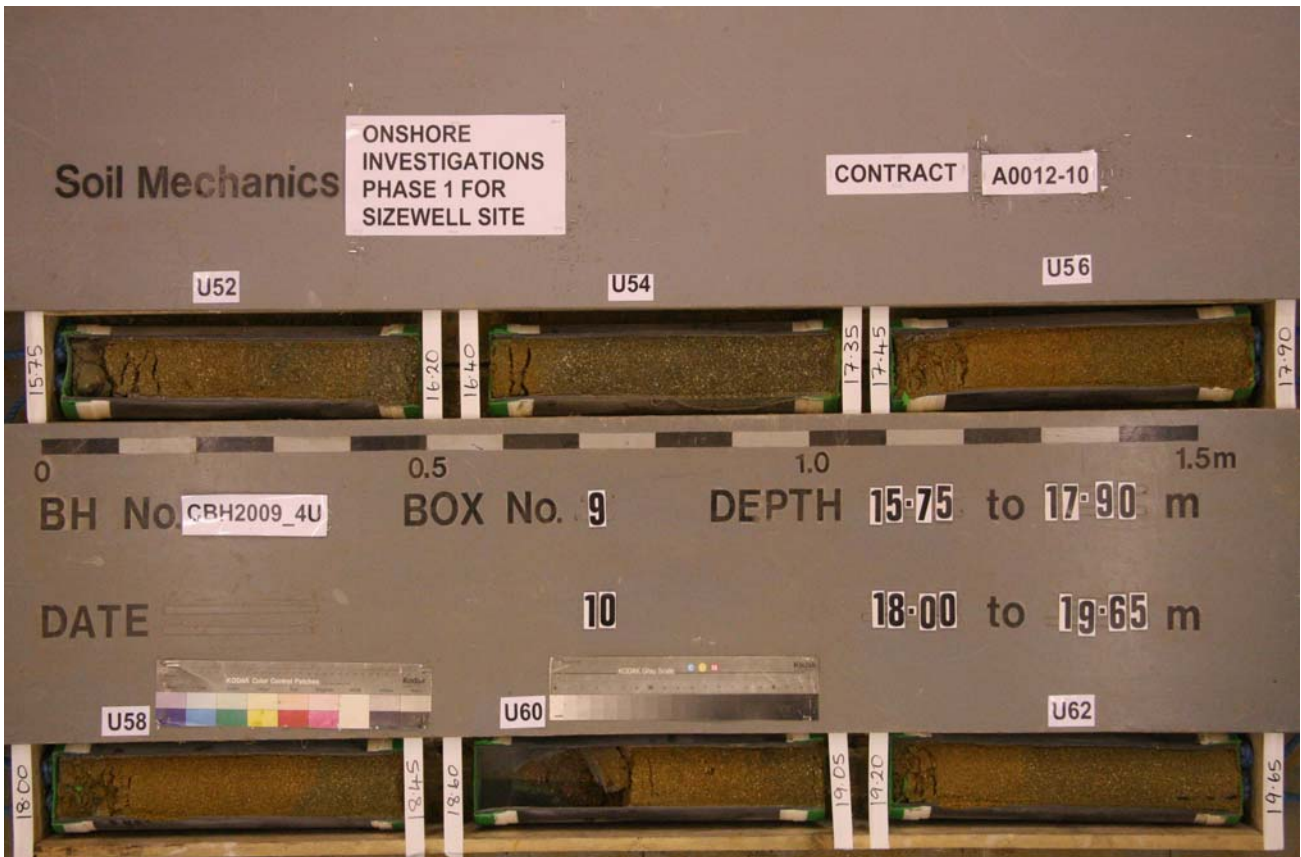


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 11
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Photographs



Soil Mechanics

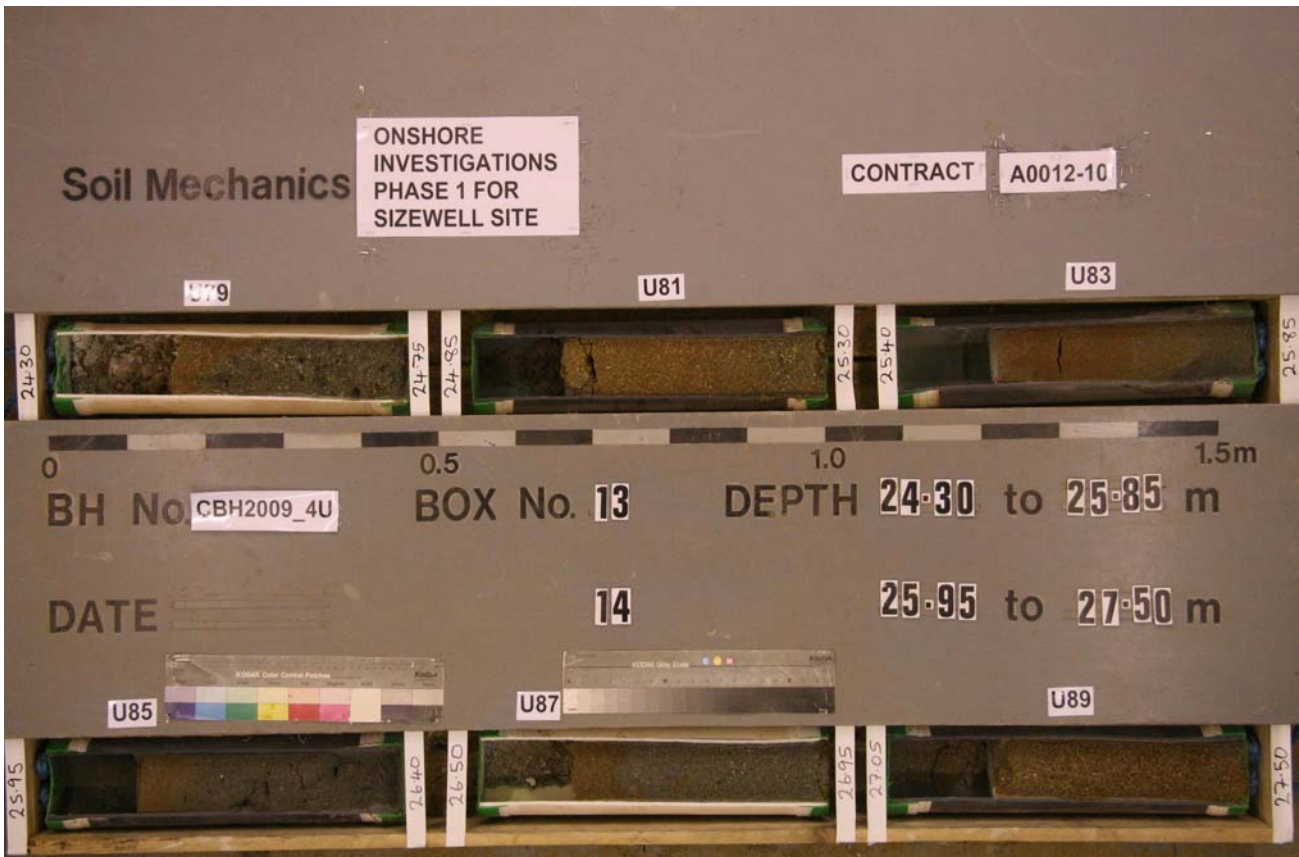


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 12
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 13</p>
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Photographs



Soil Mechanics

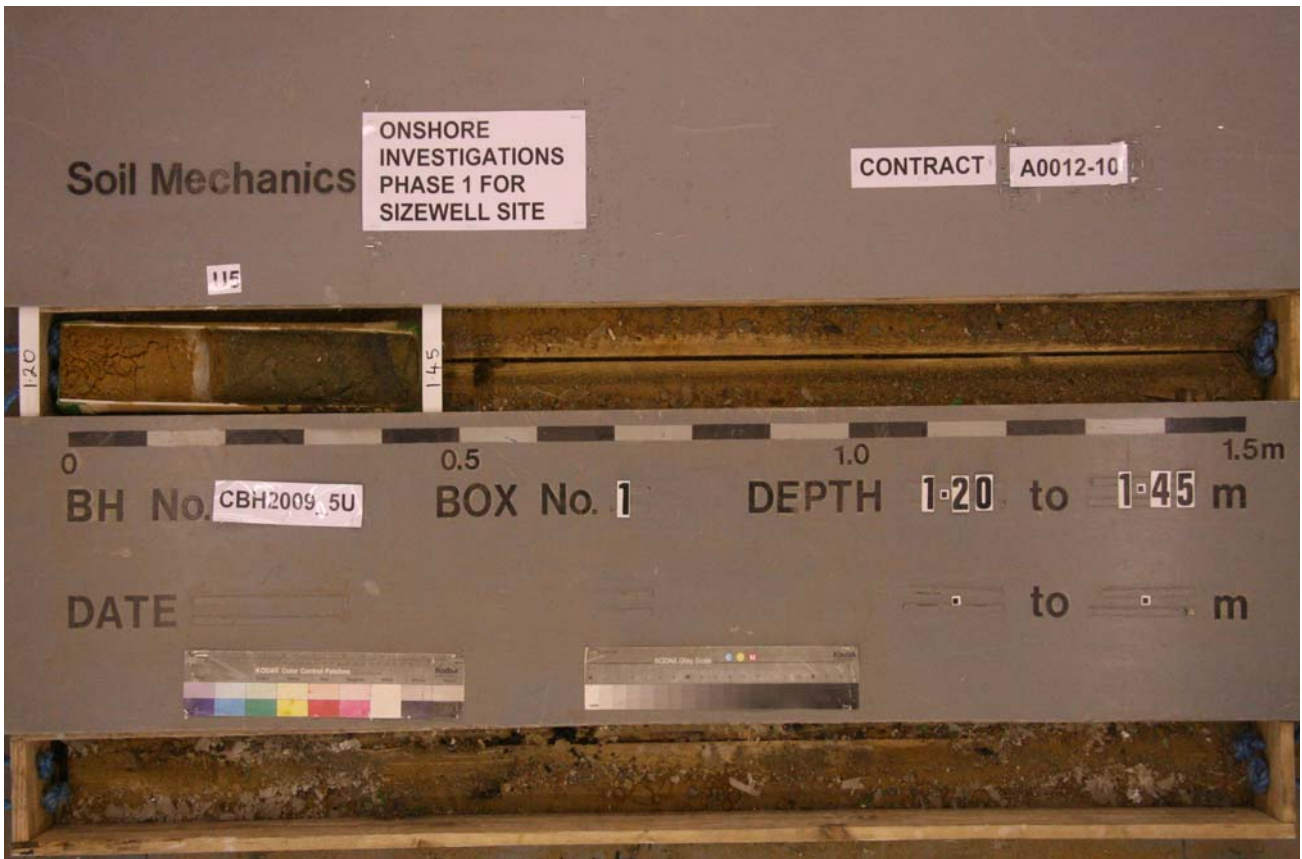


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 14
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Photographs



Soil Mechanics

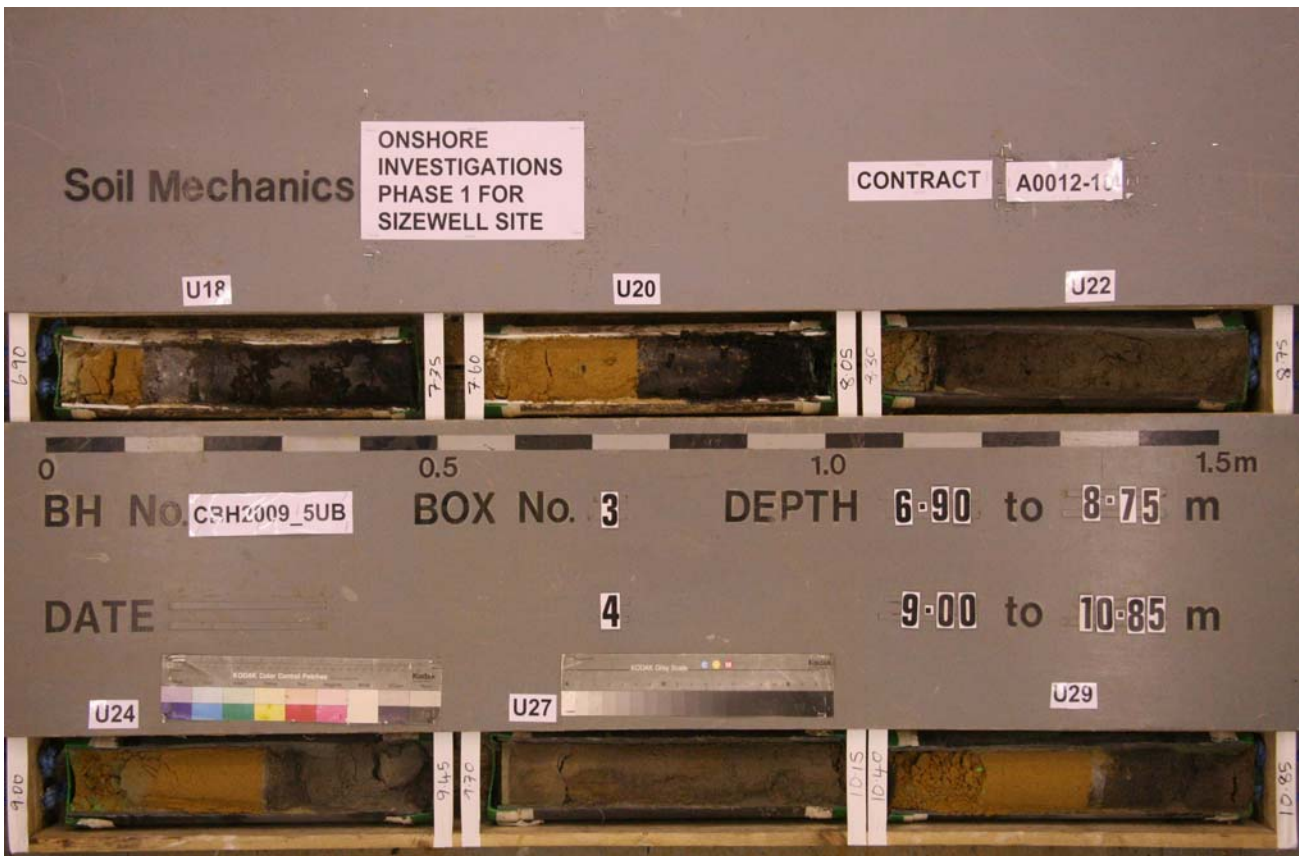
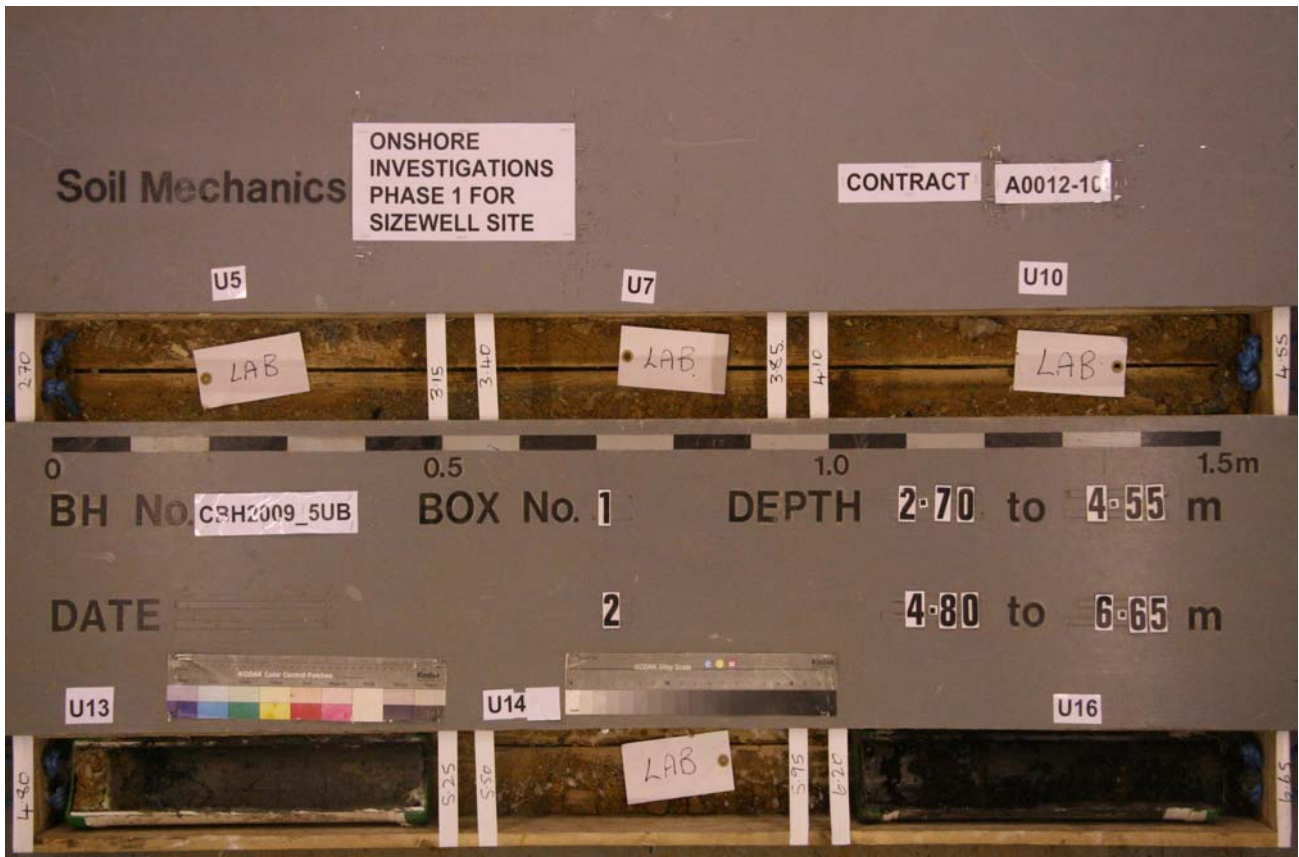


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 15
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Photographs



Soil Mechanics

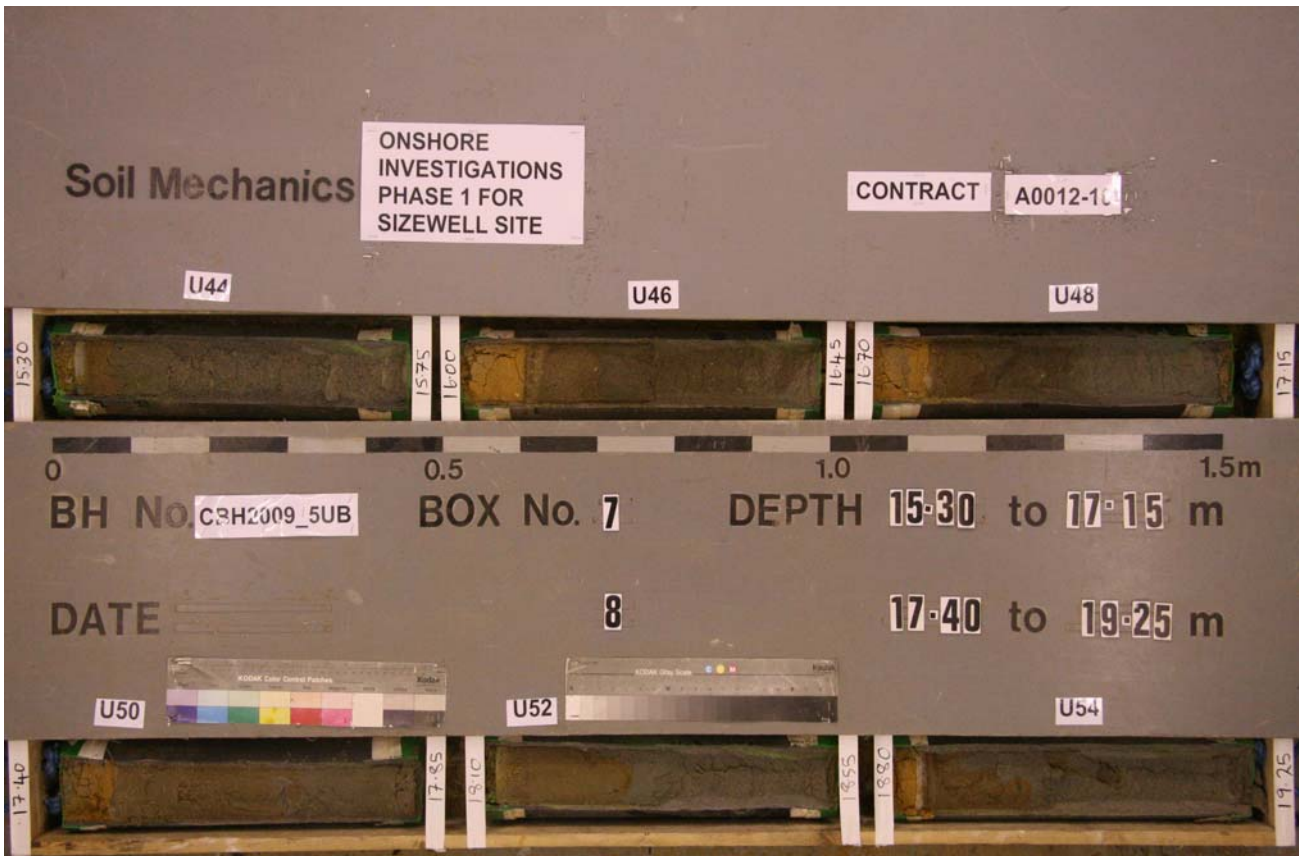


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 16</p>
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 17
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 18</p>
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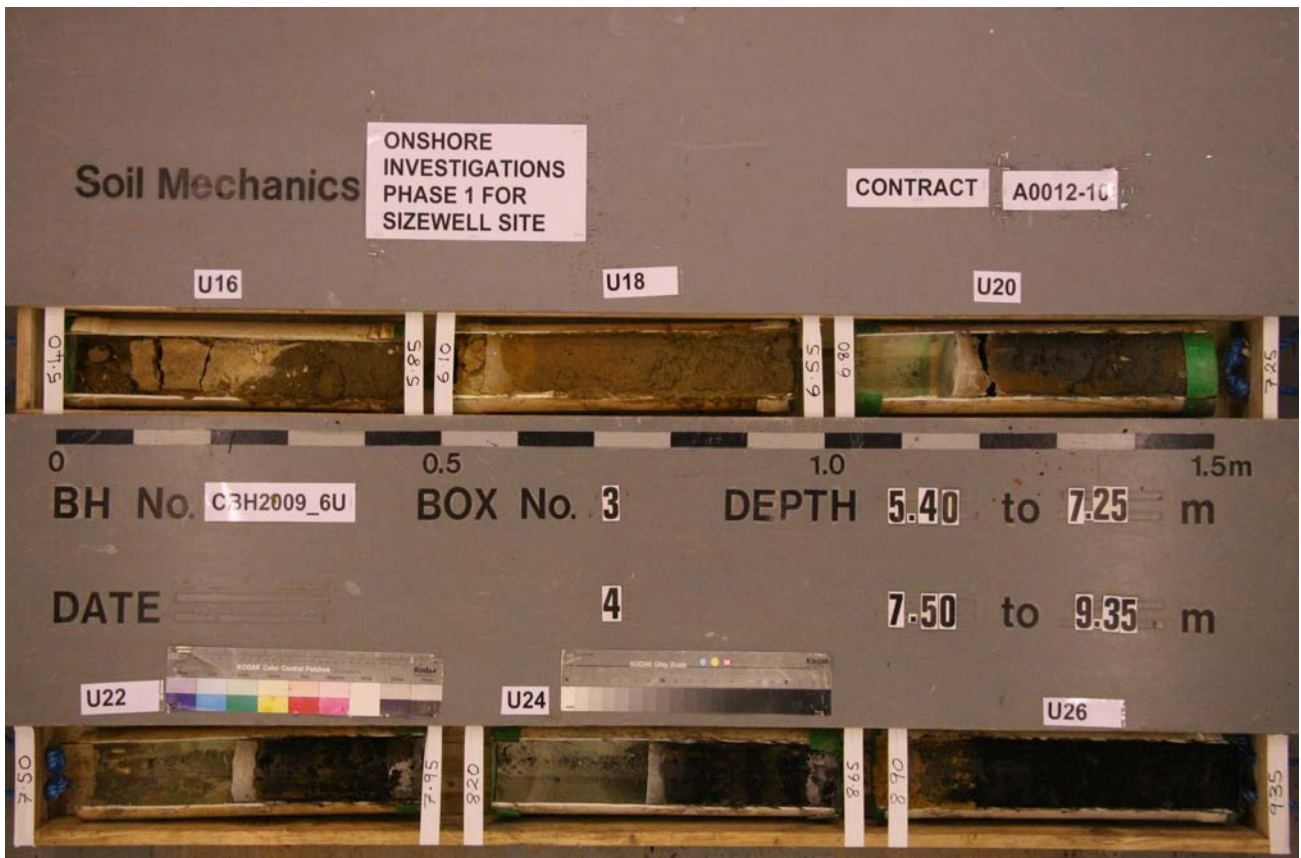


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 19</p>
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Photographs



Soil Mechanics

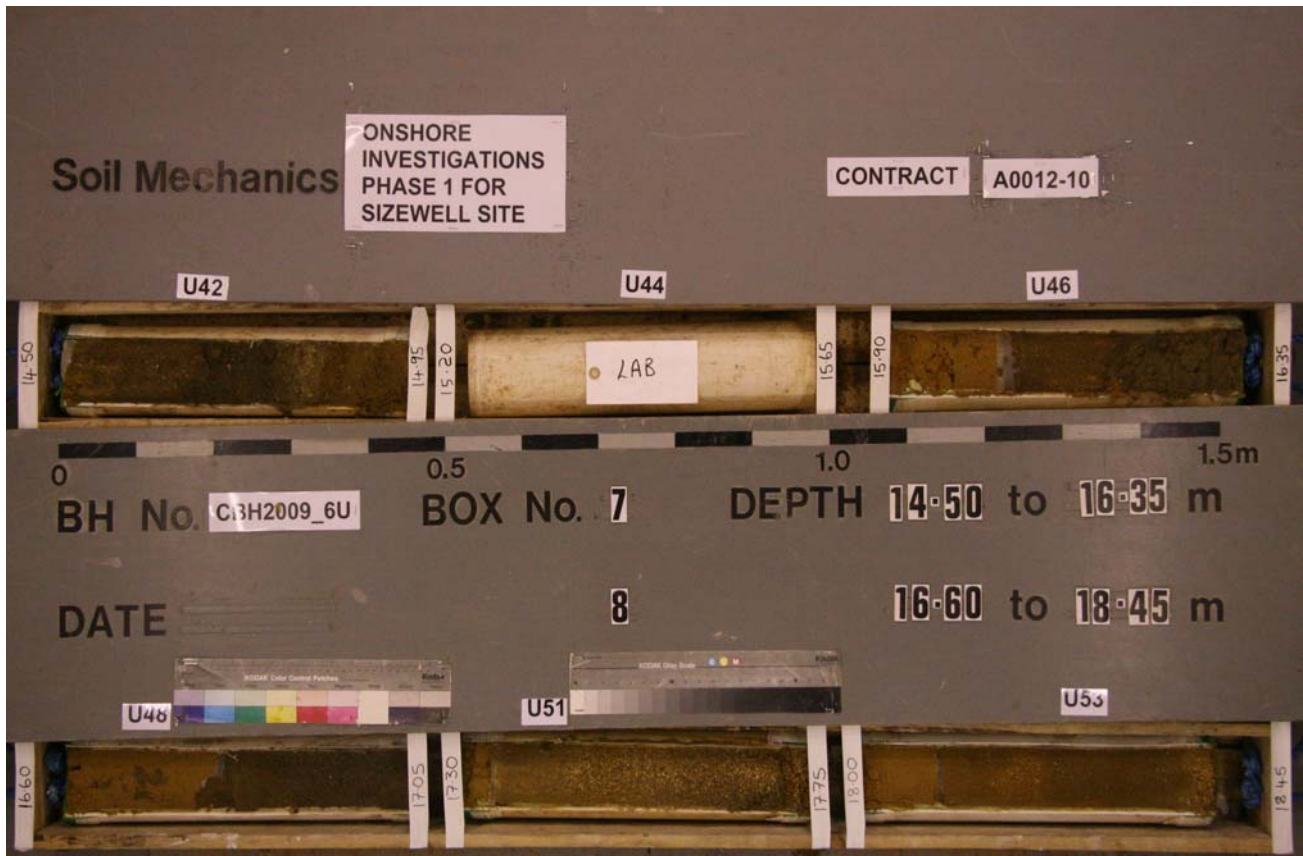
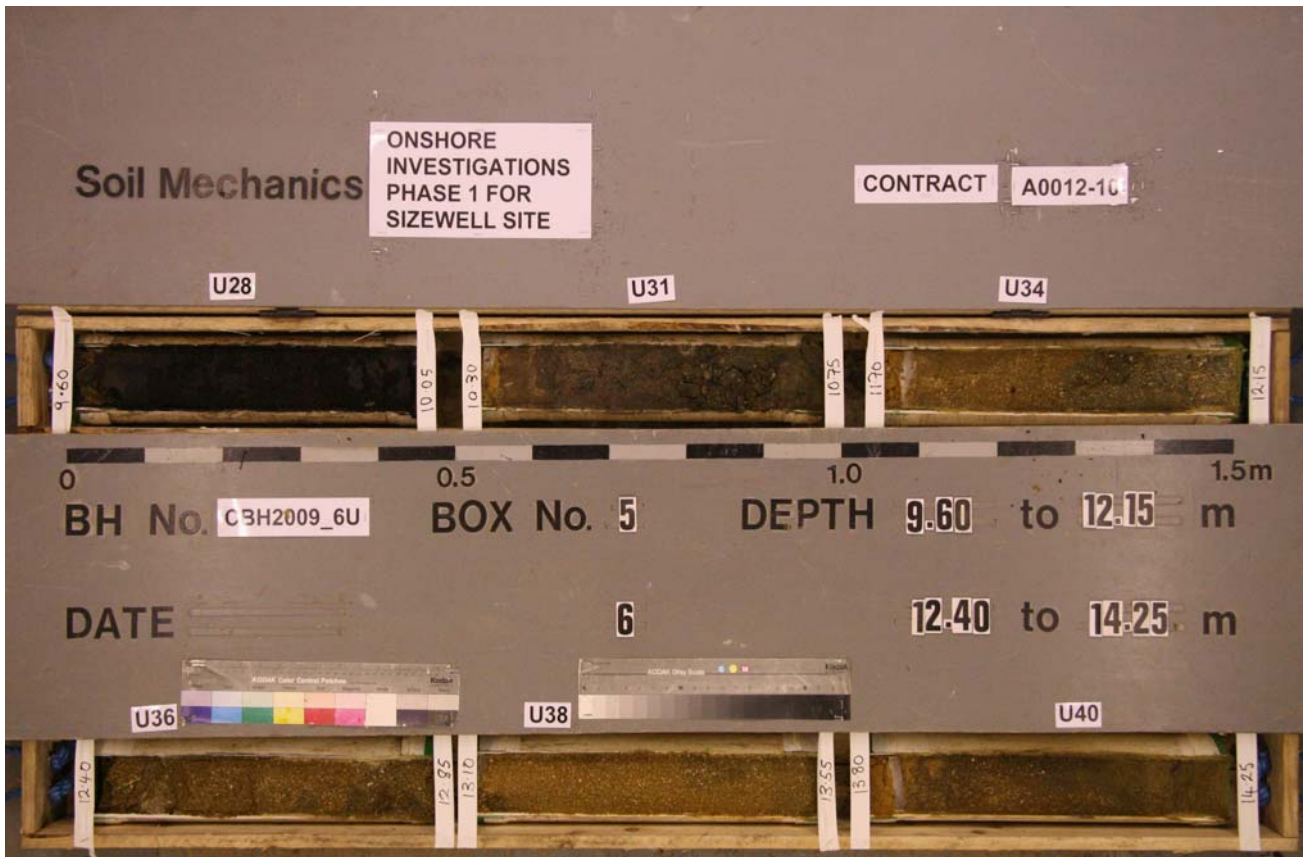


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 20
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Photographs



Soil Mechanics

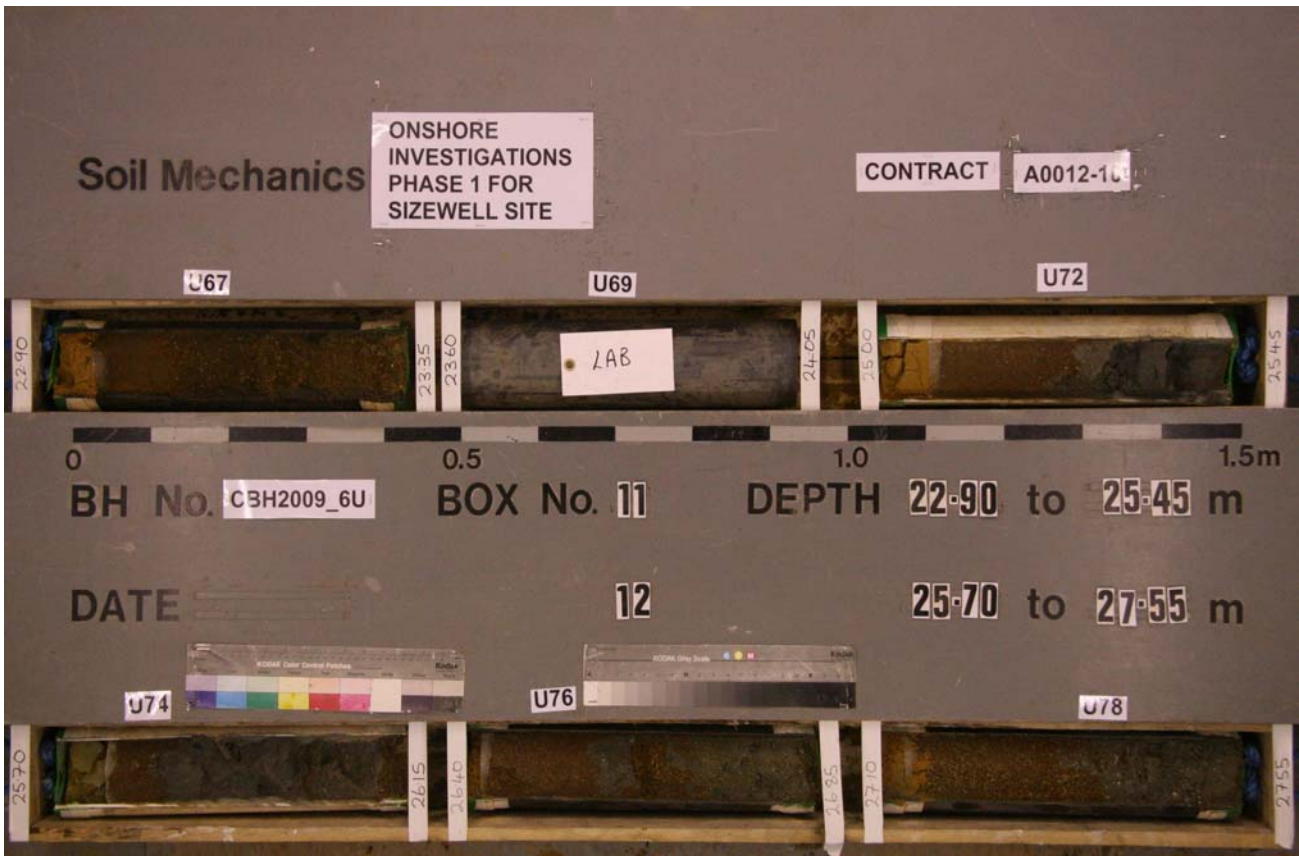
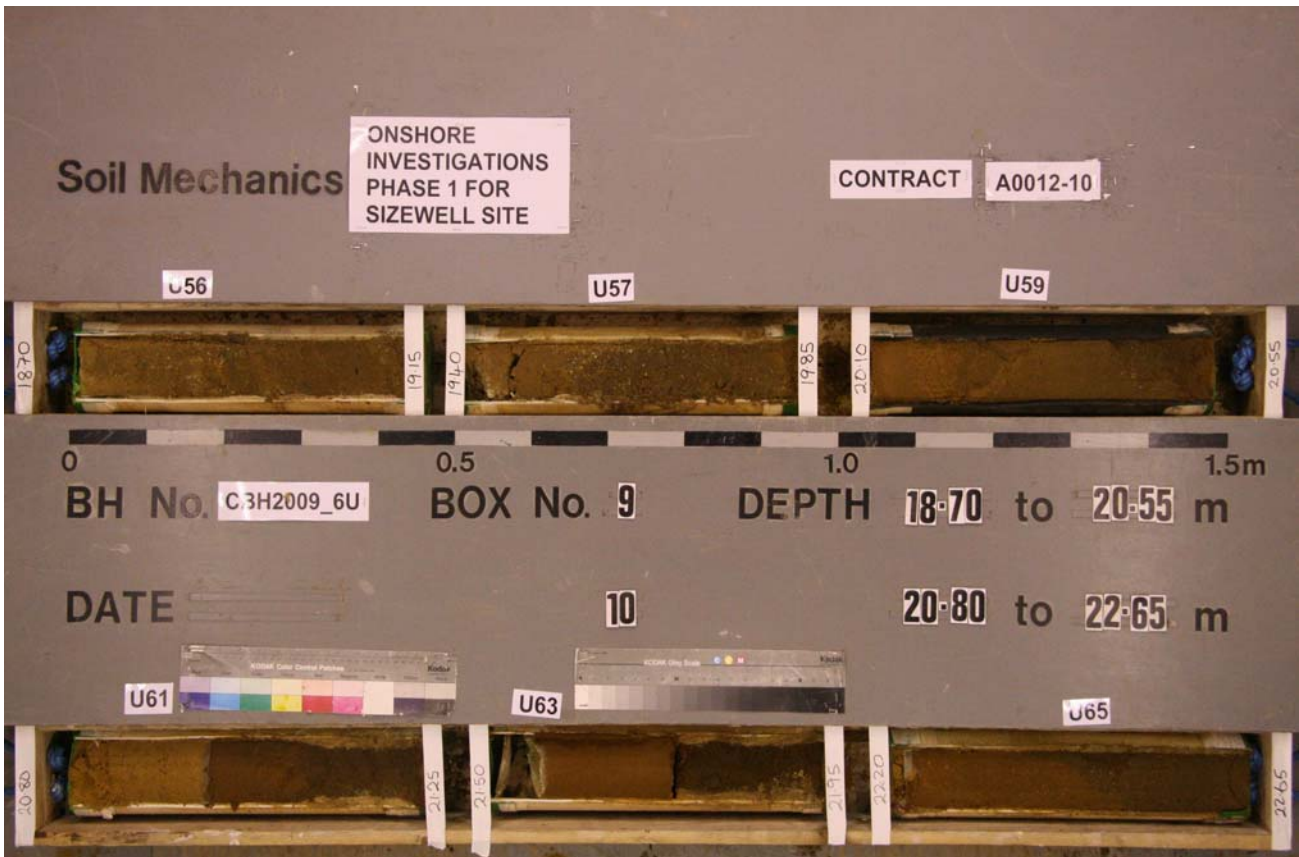


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 21</p>
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Photographs



Soil Mechanics

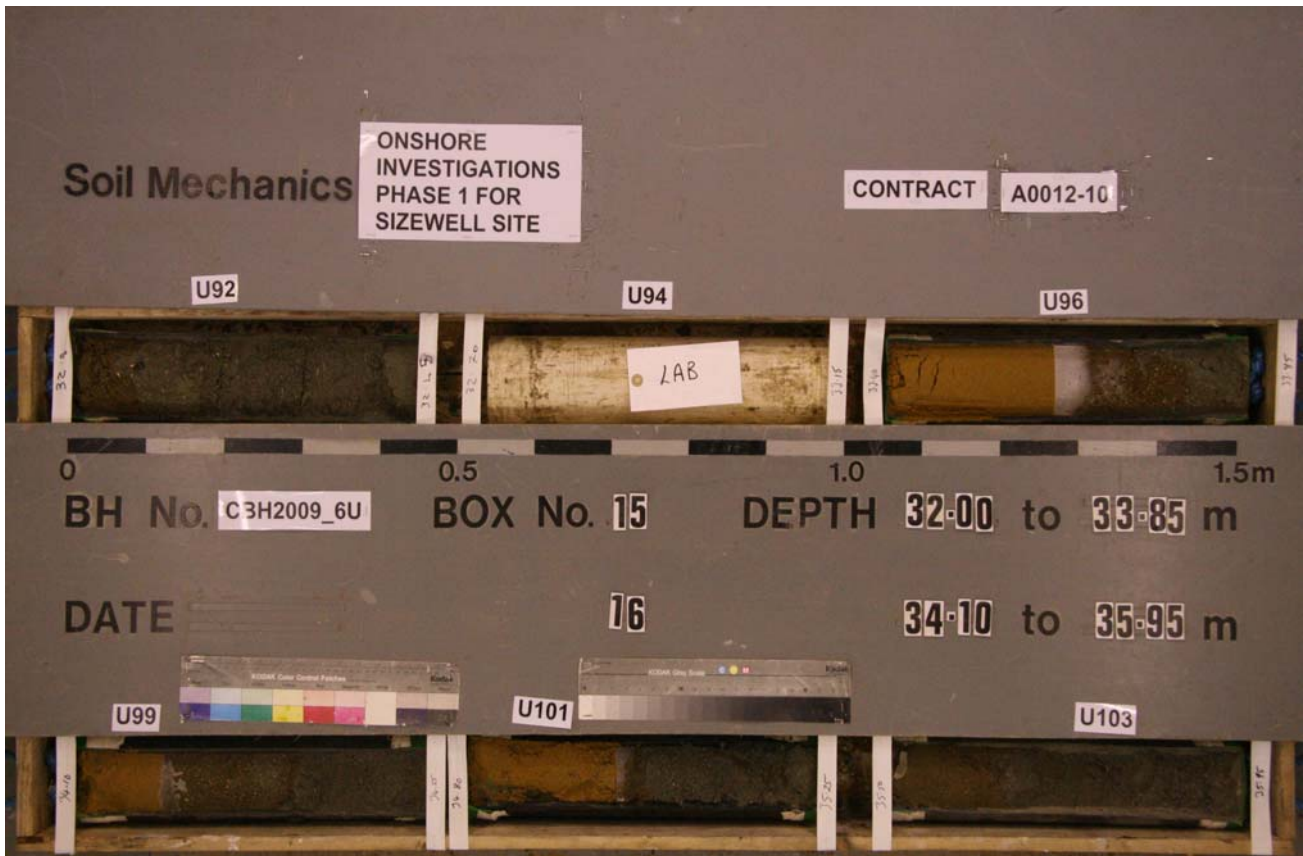


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 22
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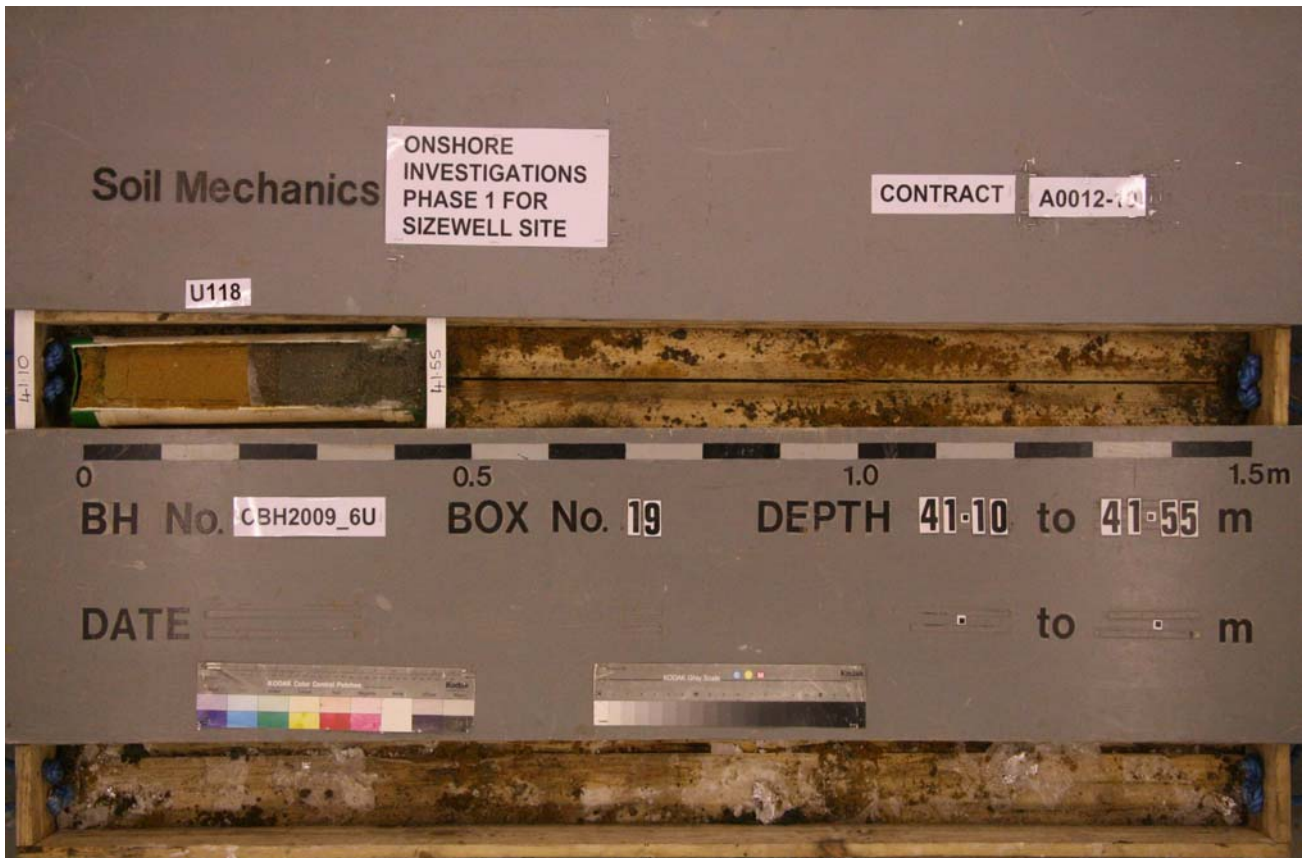
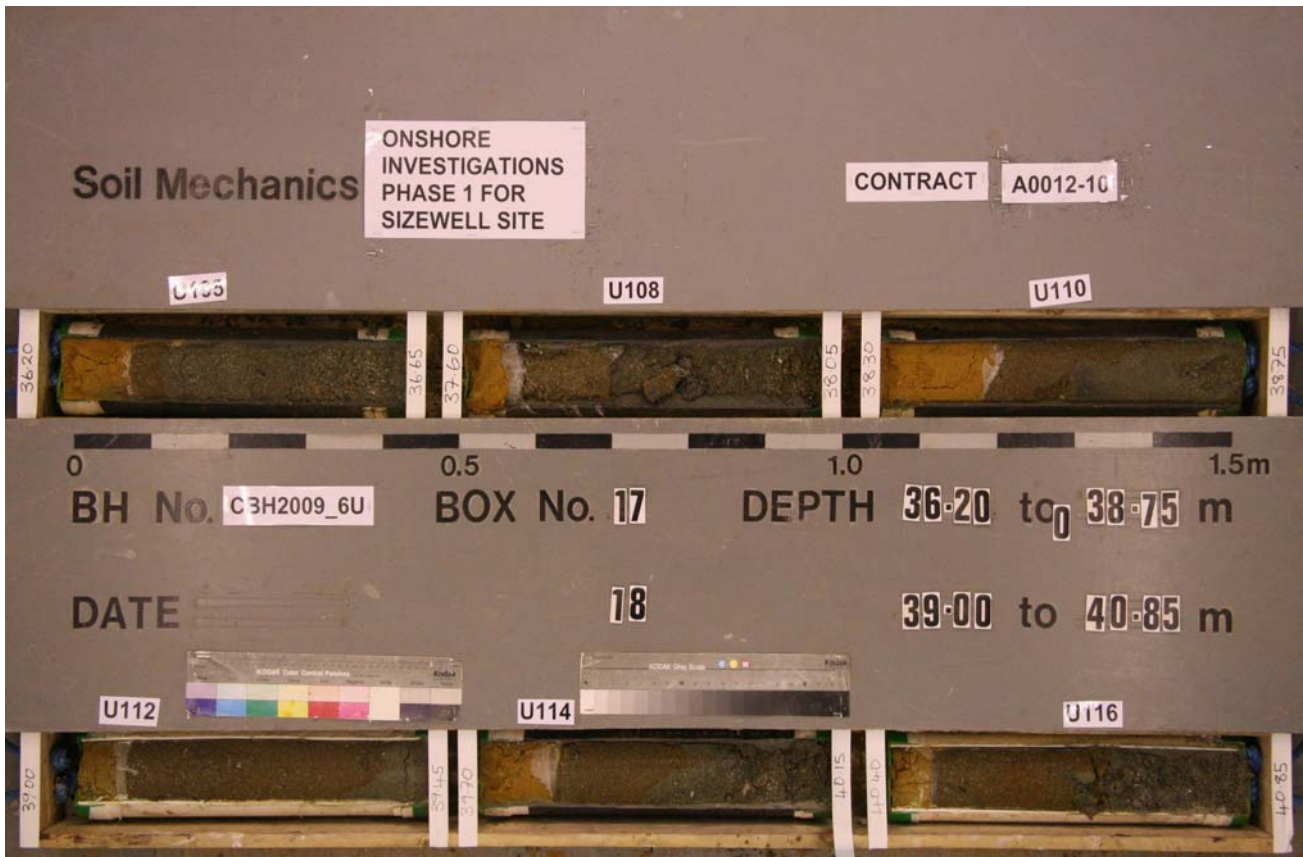
Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 23
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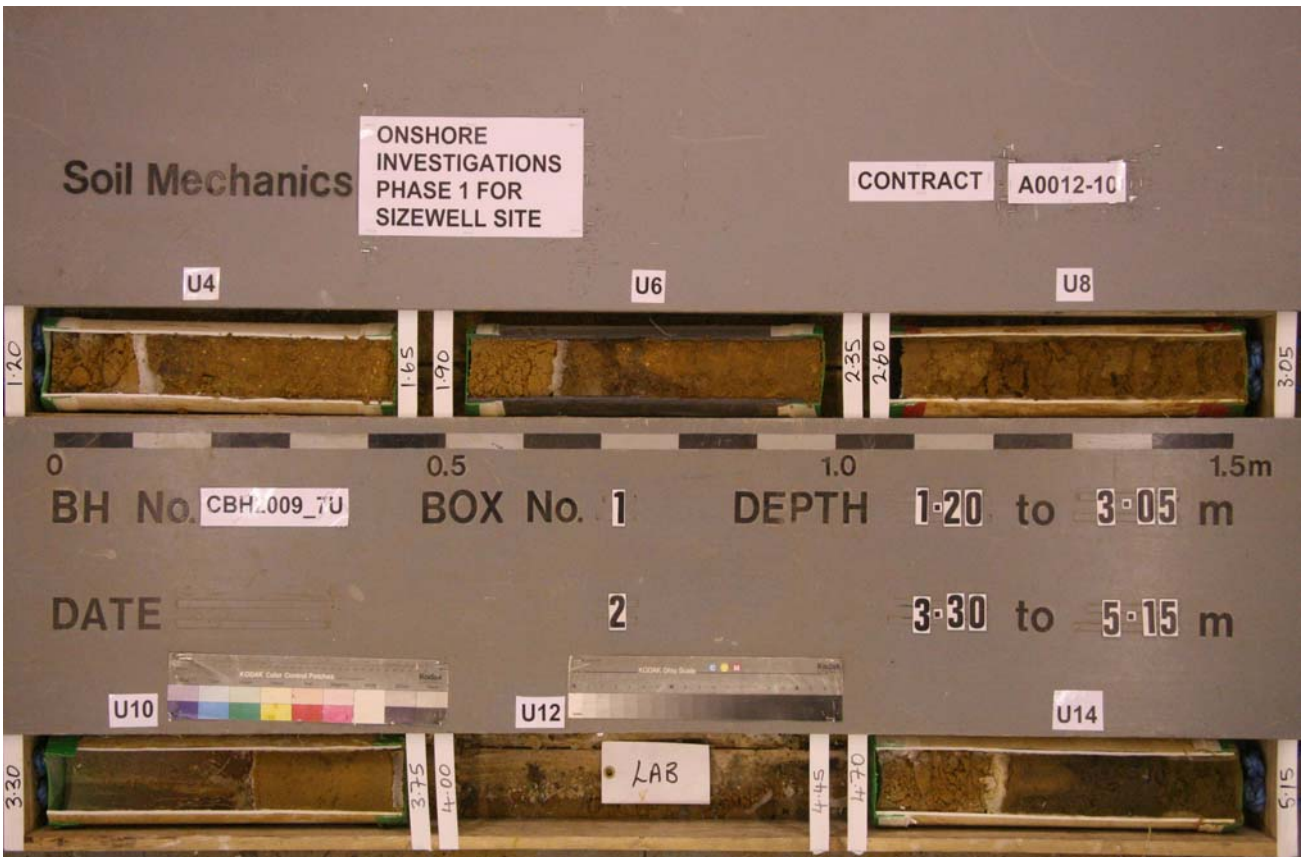


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 24
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Photographs



Soil Mechanics

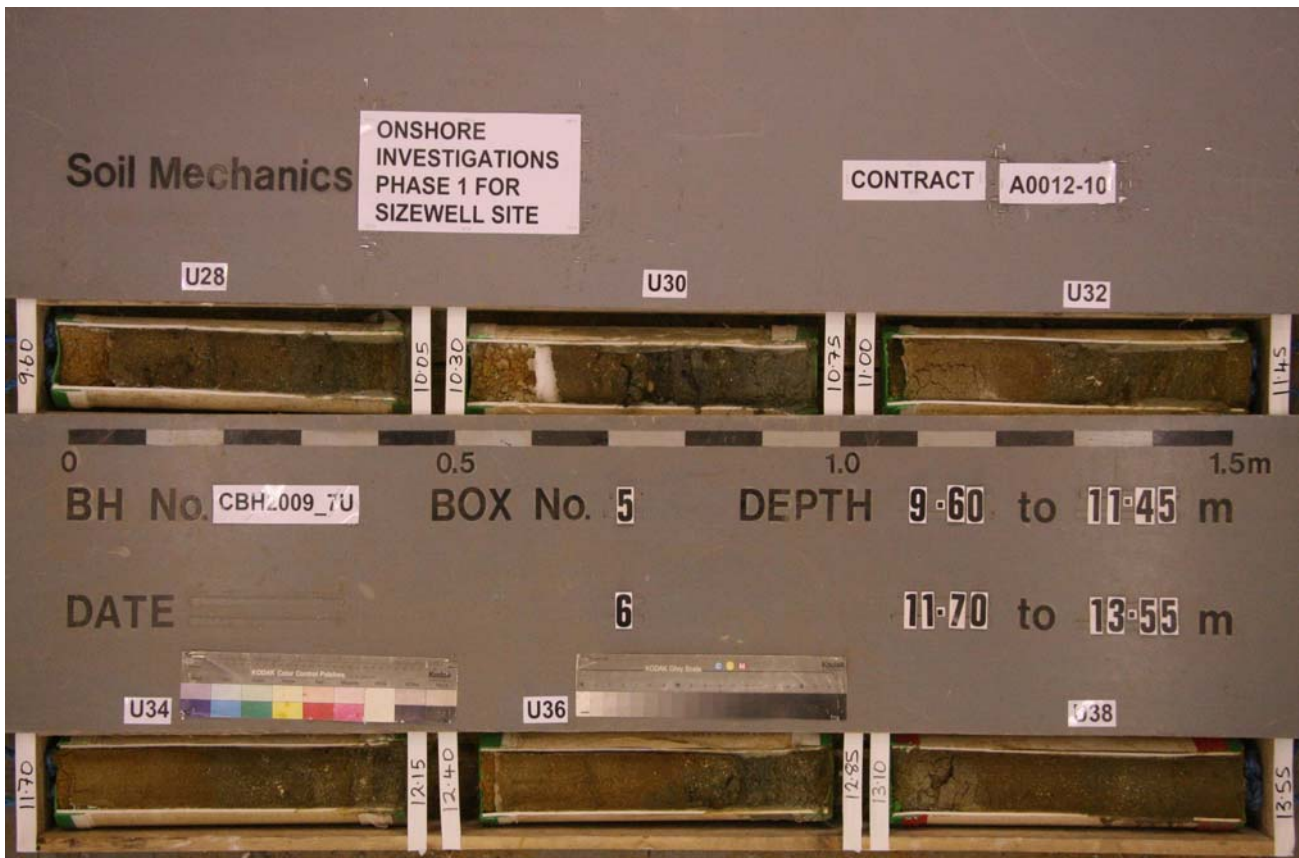


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 25
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 26
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 27</p>
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 28</p>
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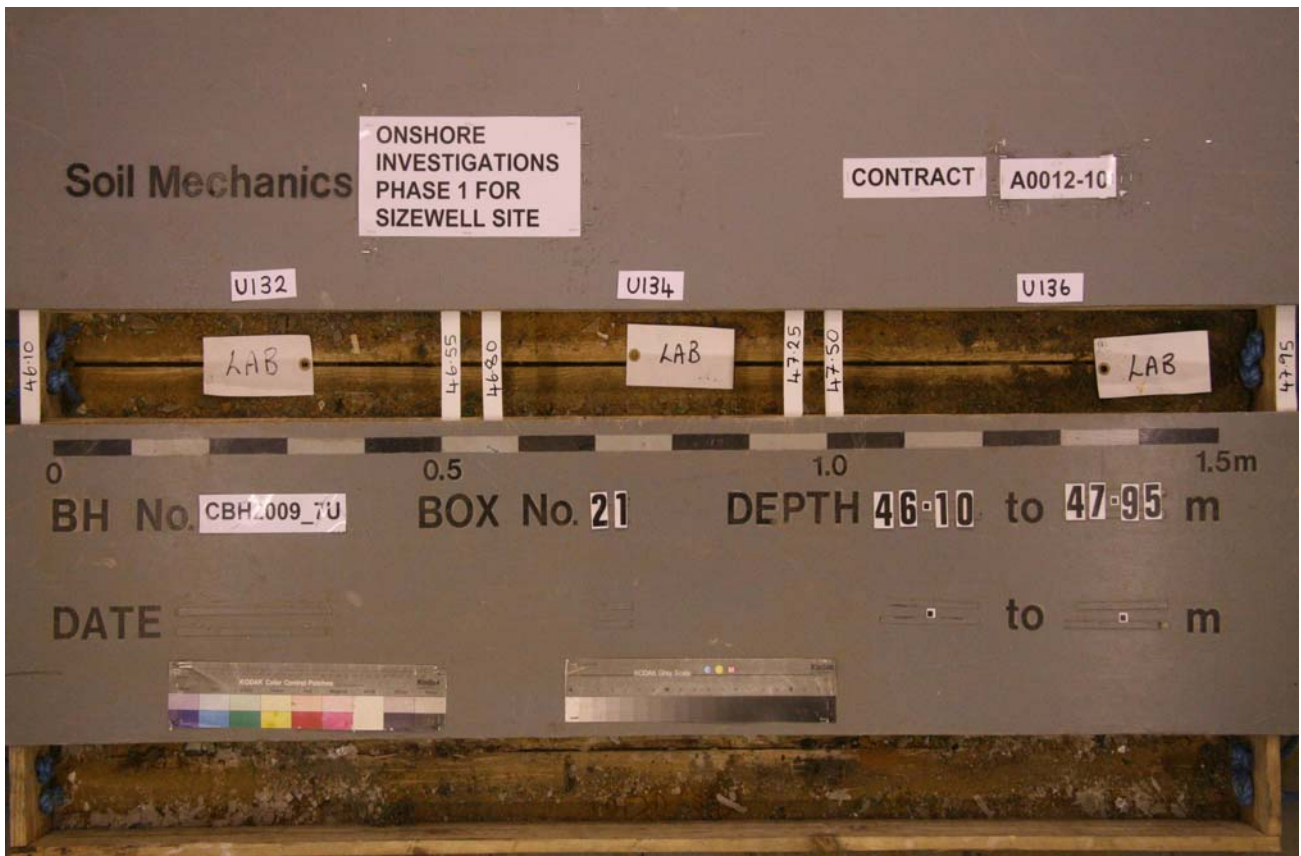
Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 29
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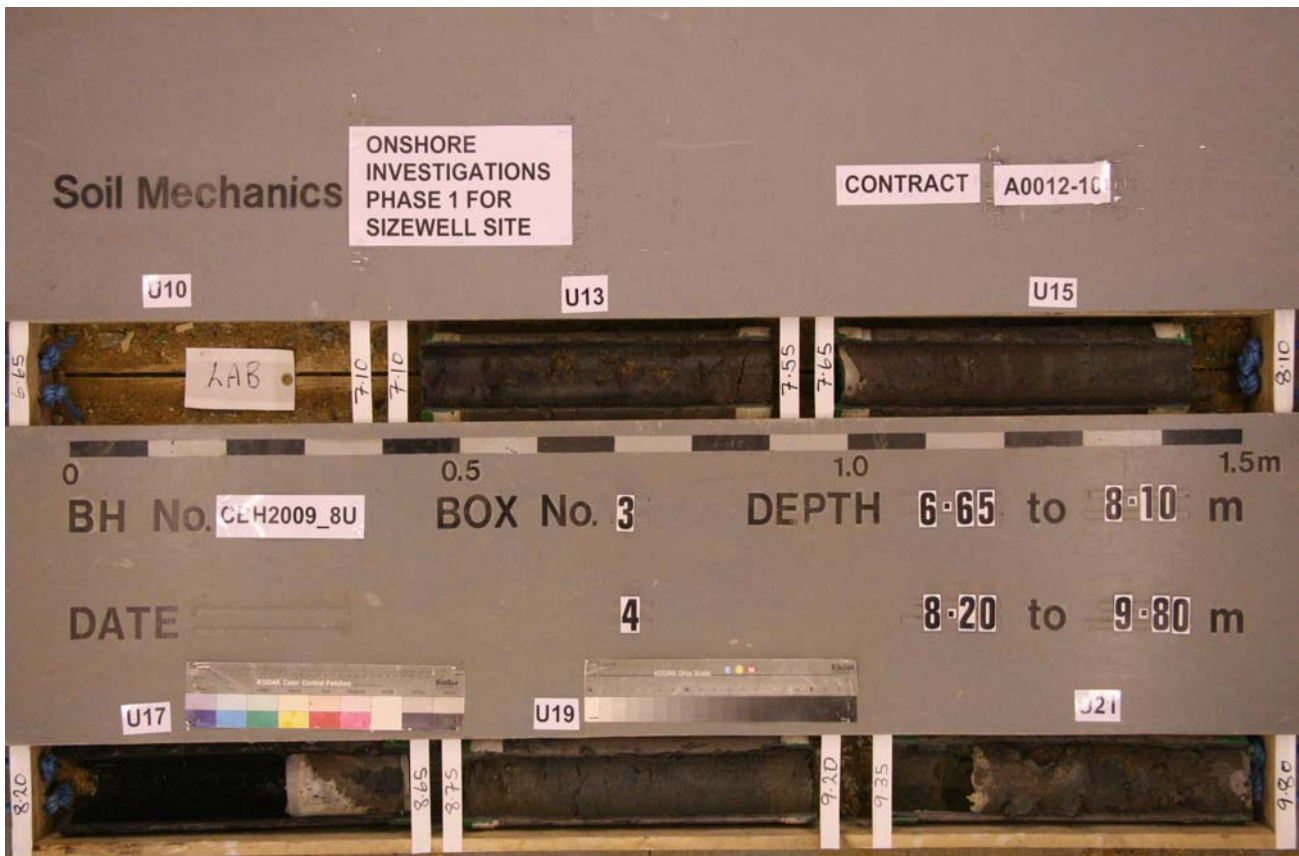
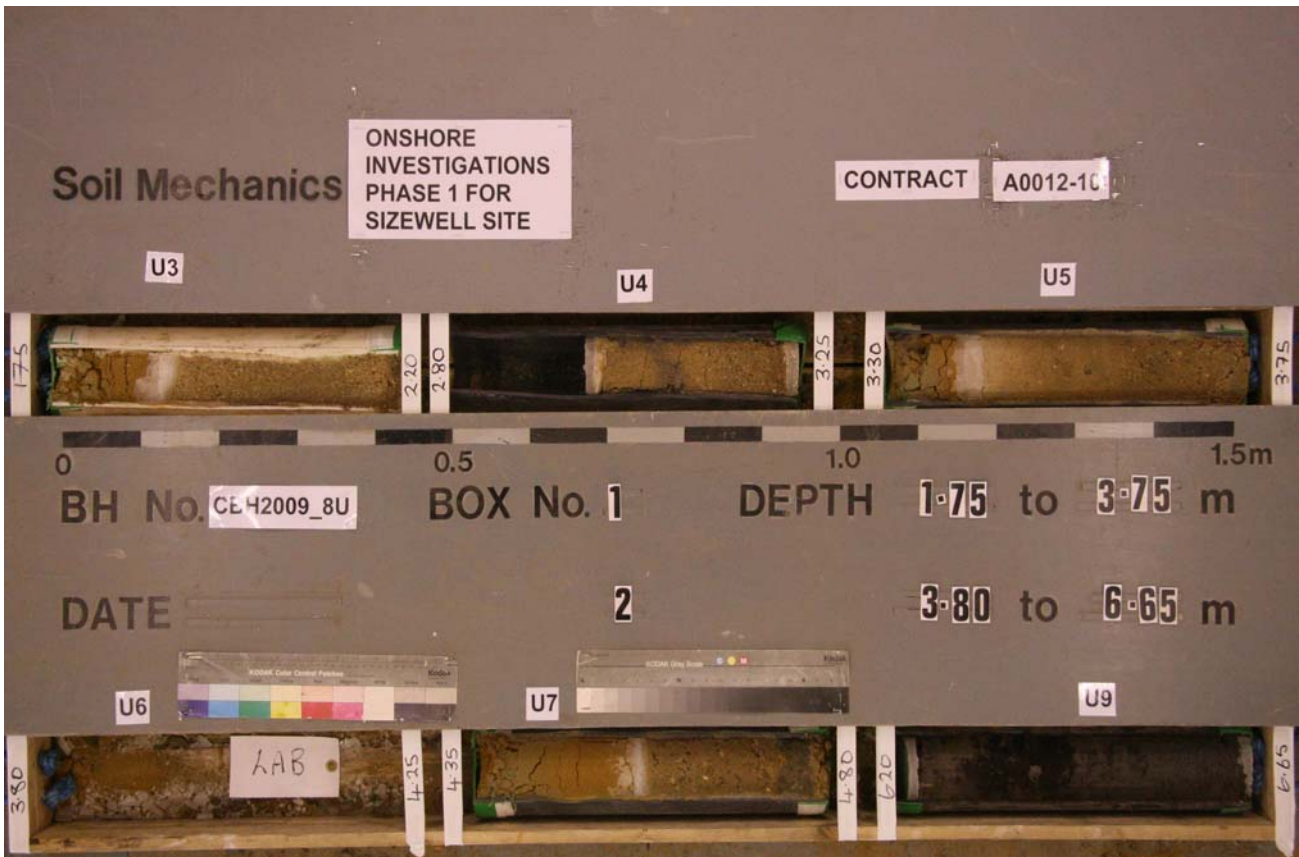


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 30
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Photographs



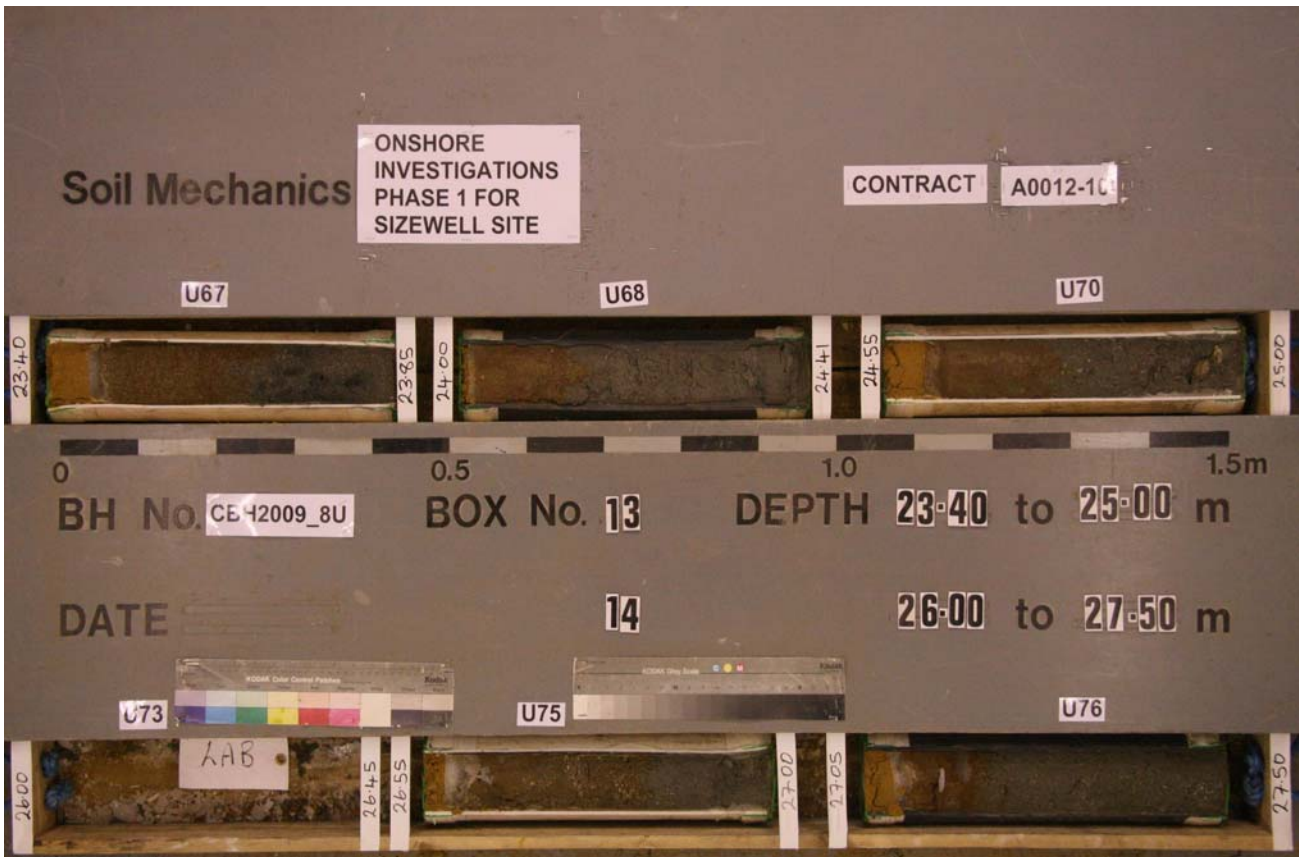
Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 31
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Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 32
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Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 34
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Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 35
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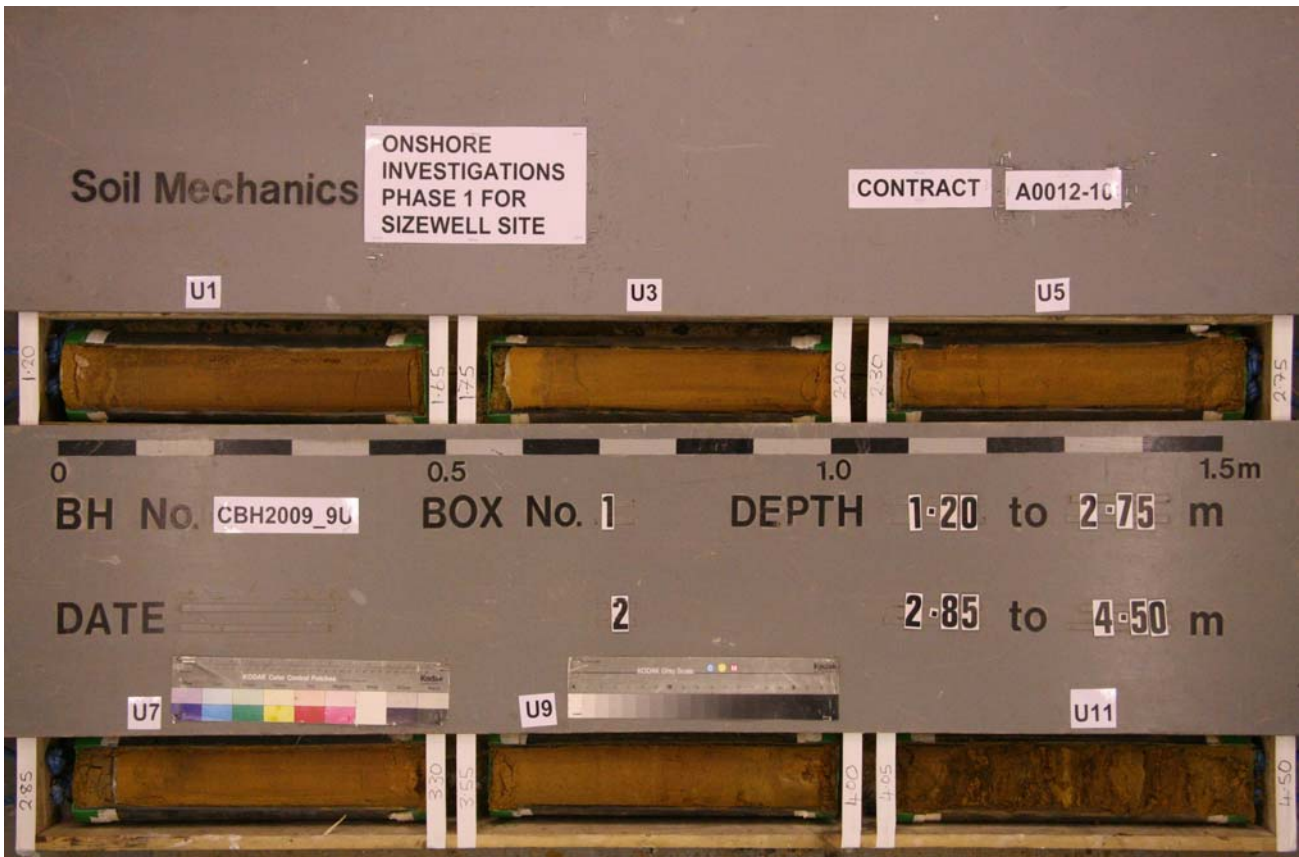


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 36
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 37</p>
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Photographs



Soil Mechanics

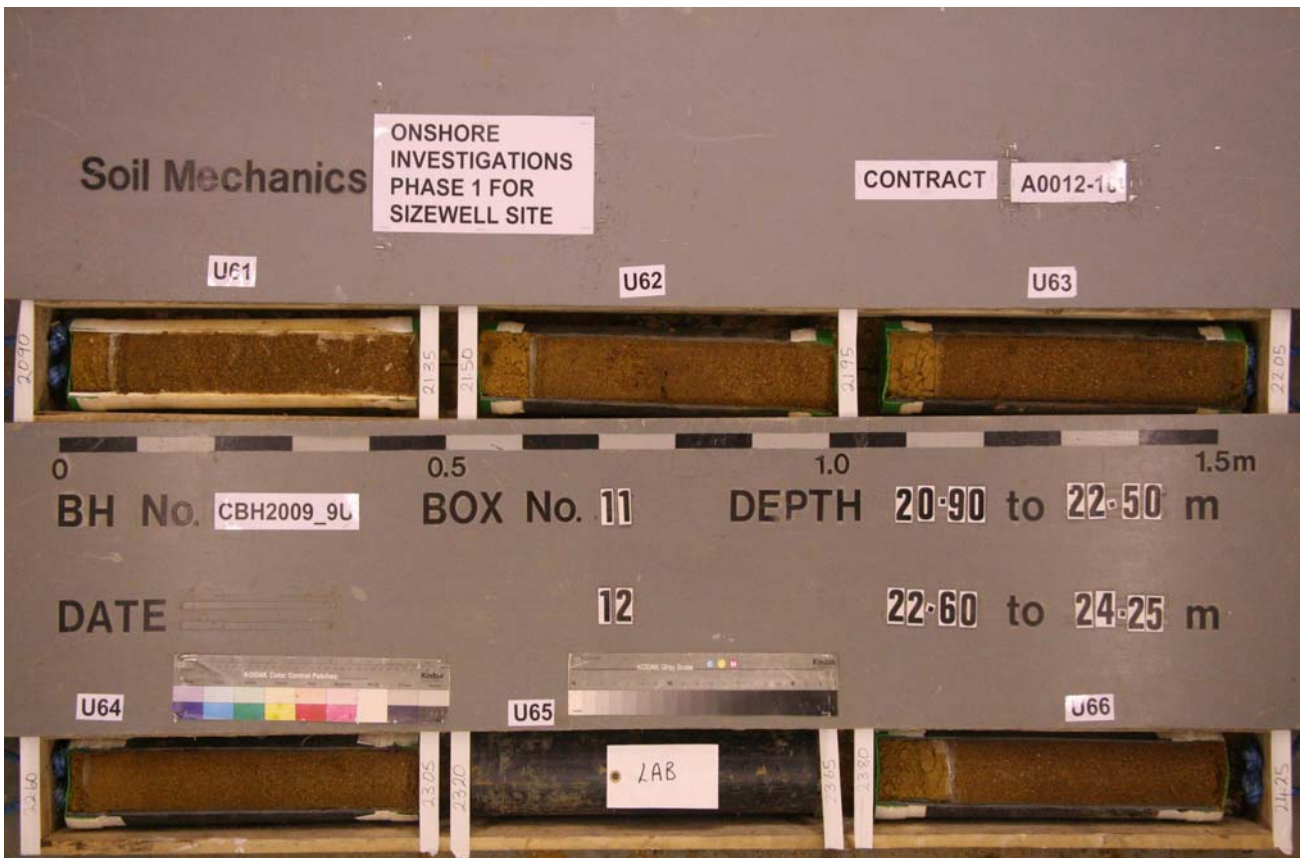
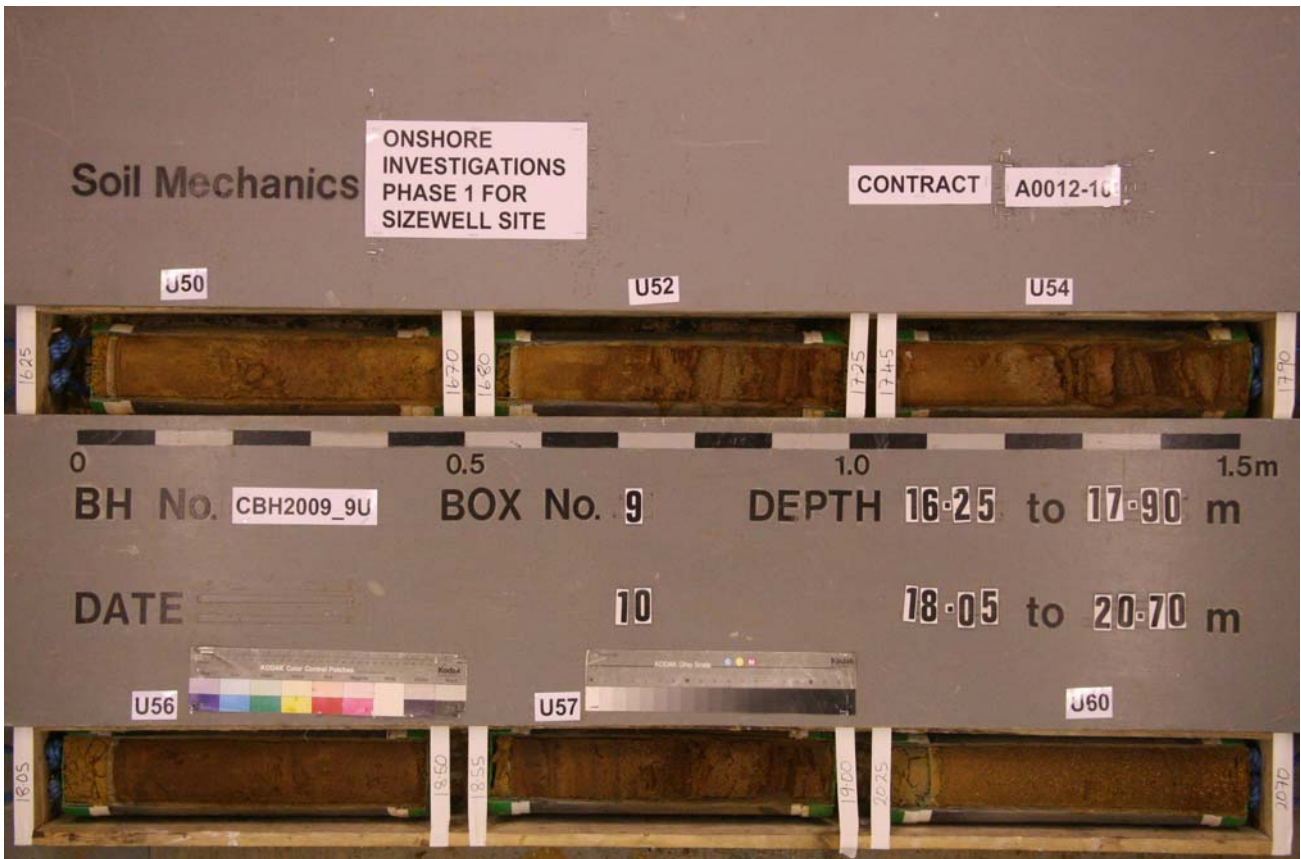


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 38
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Photographs



Soil Mechanics

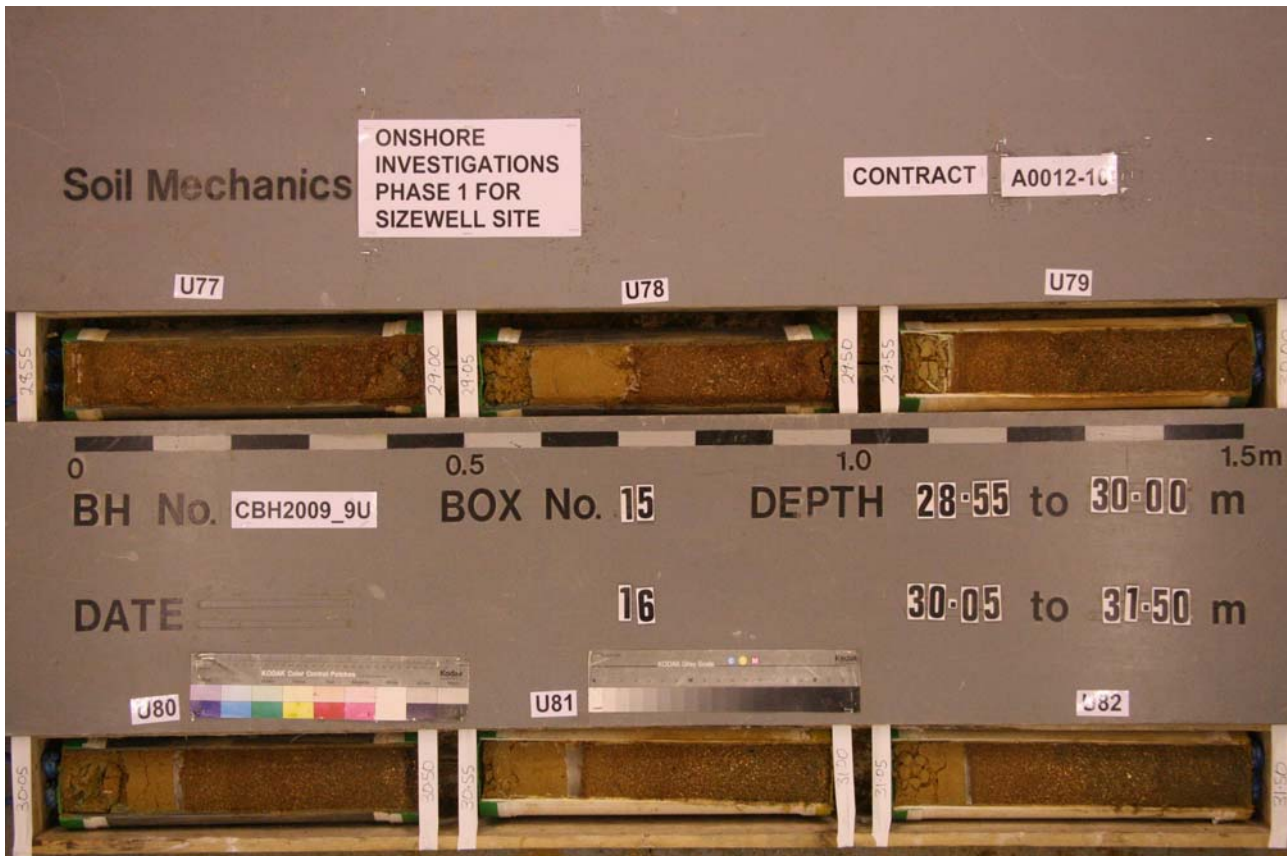


Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 39</p>
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Photographs



Soil Mechanics

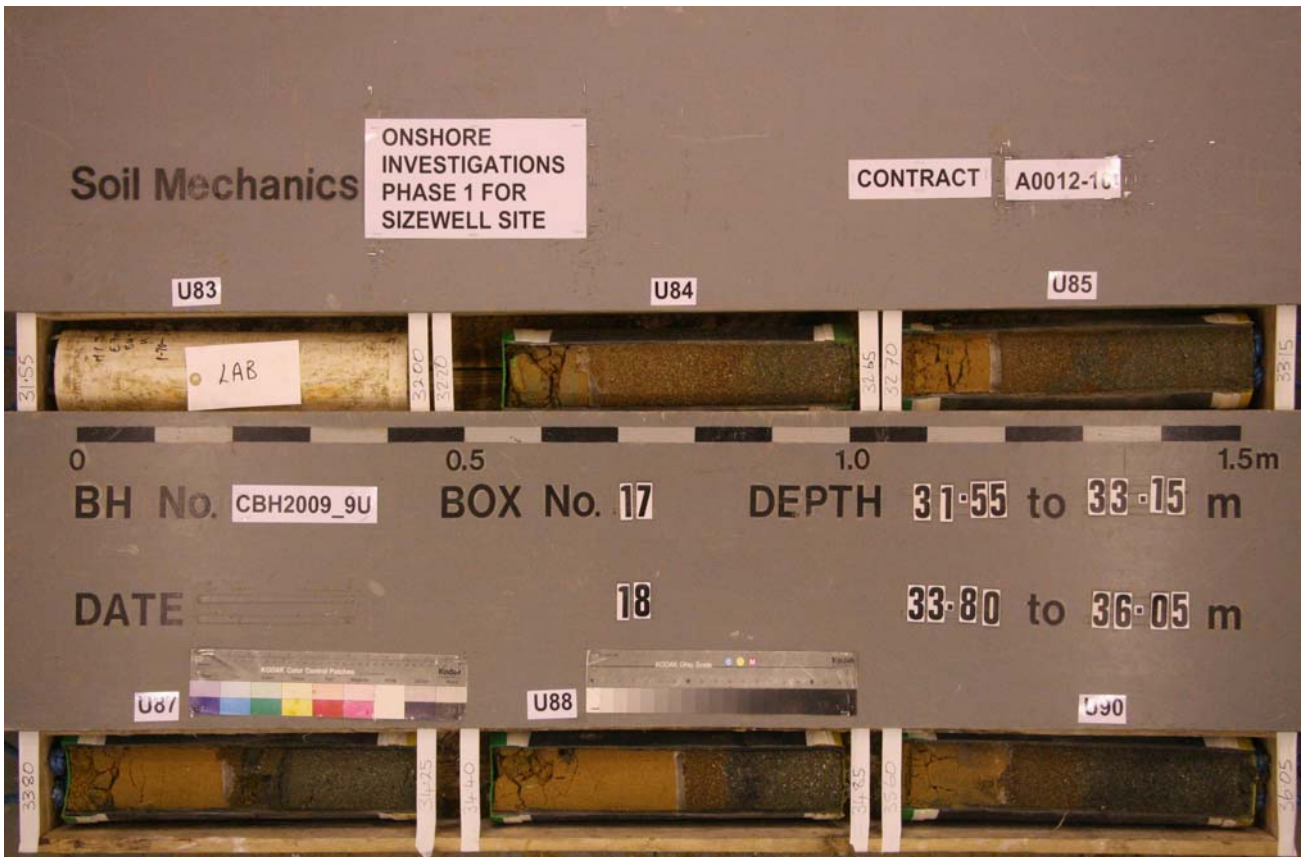


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 40
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 41</p>
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Photographs



Soil Mechanics

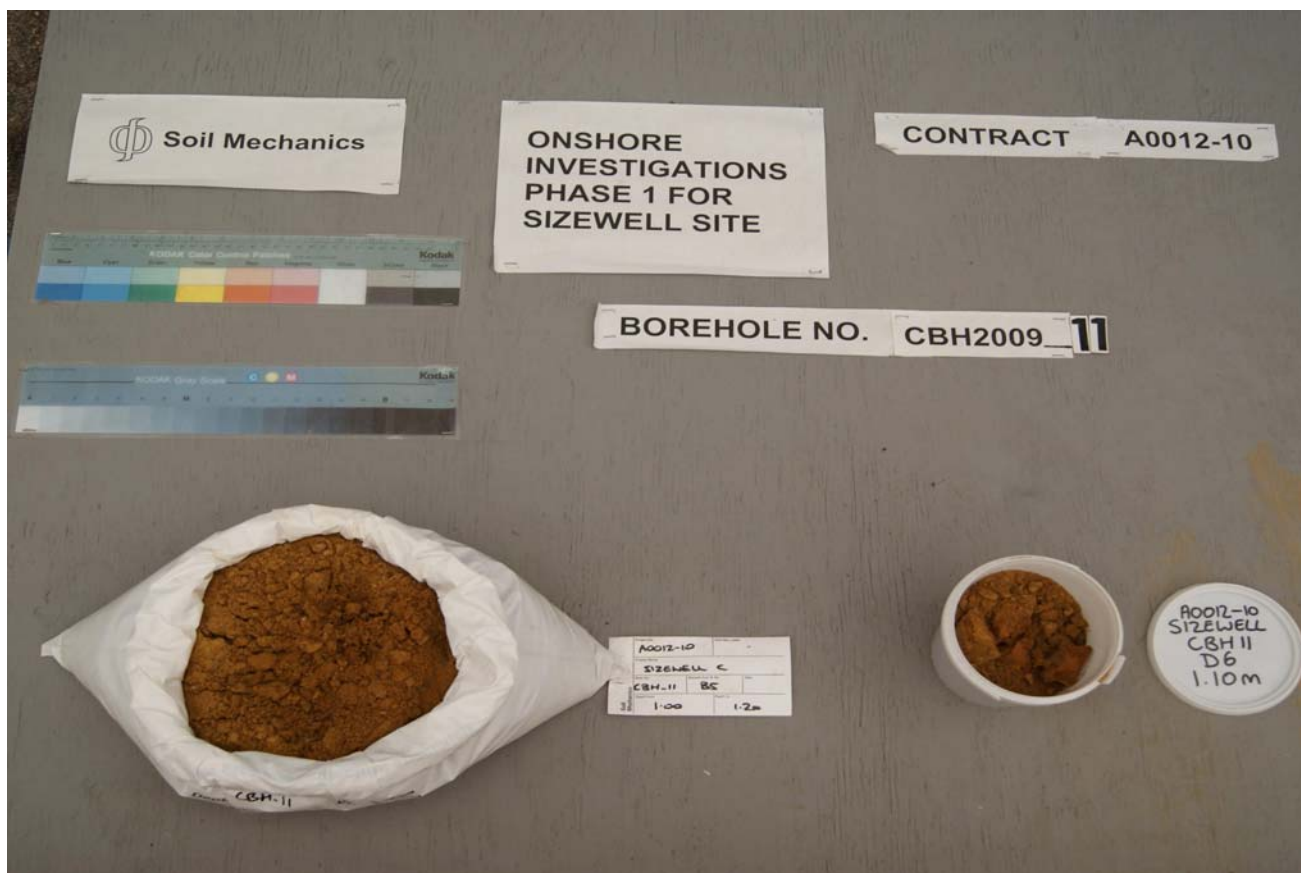


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 42
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 43
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Photographs



Soil Mechanics

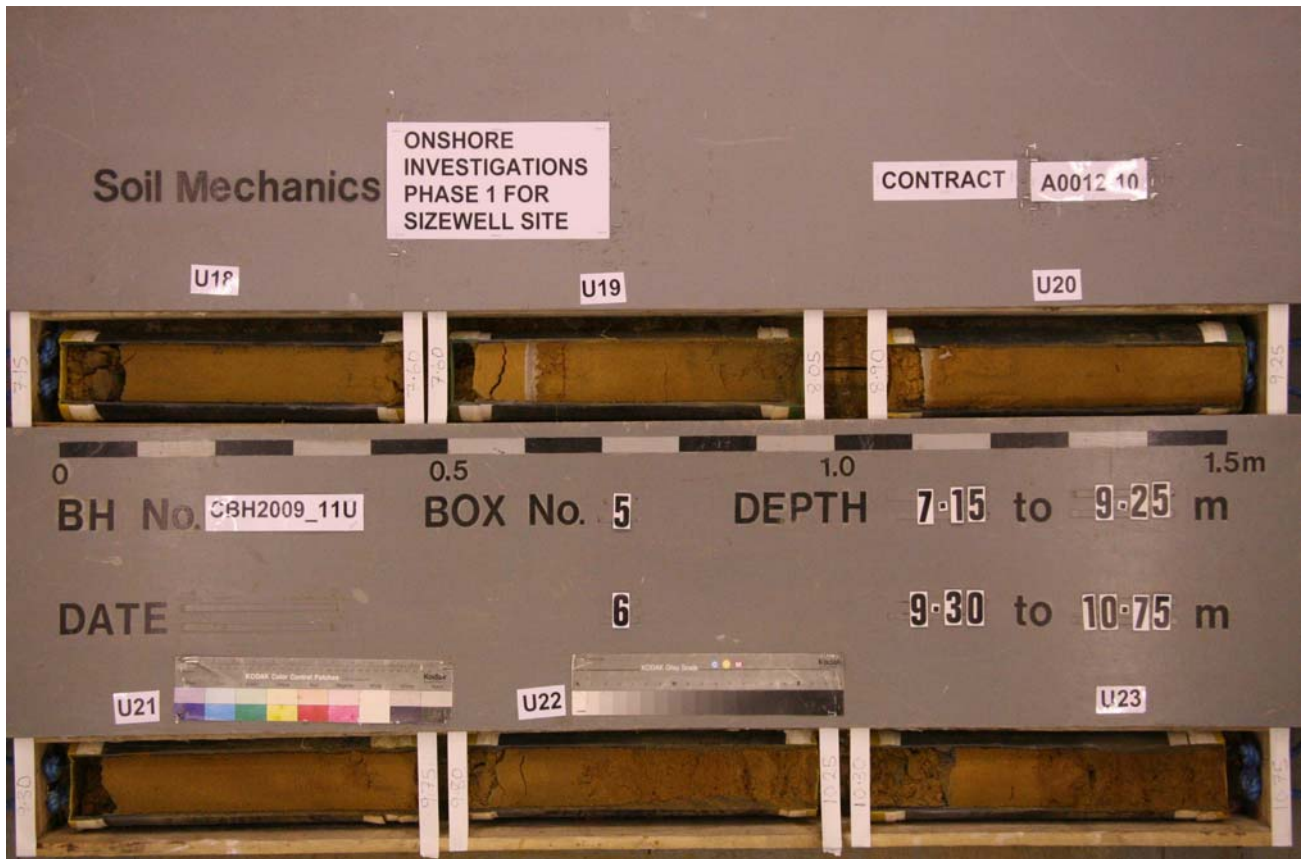


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 44
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Photographs



Soil Mechanics

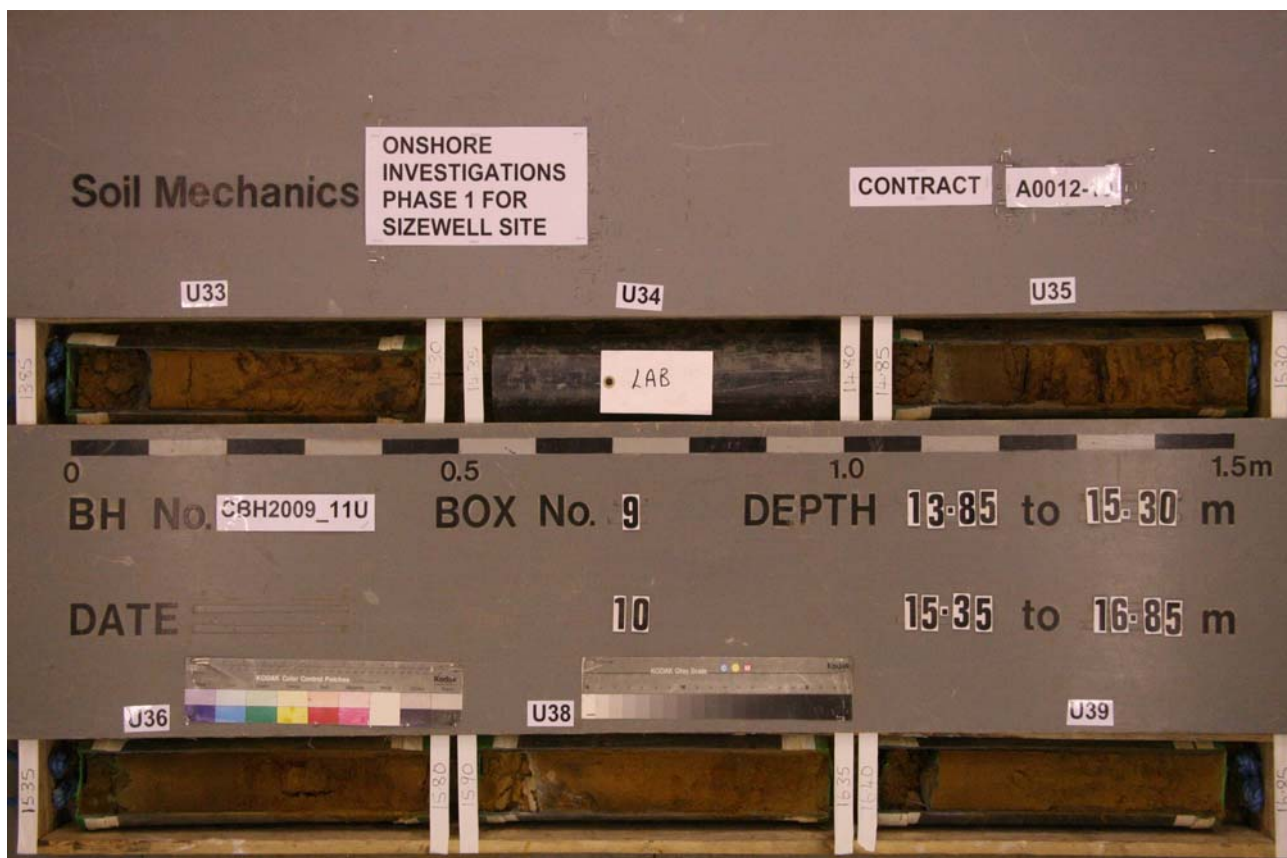


Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 45
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Photographs



Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 46</p>
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Photographs



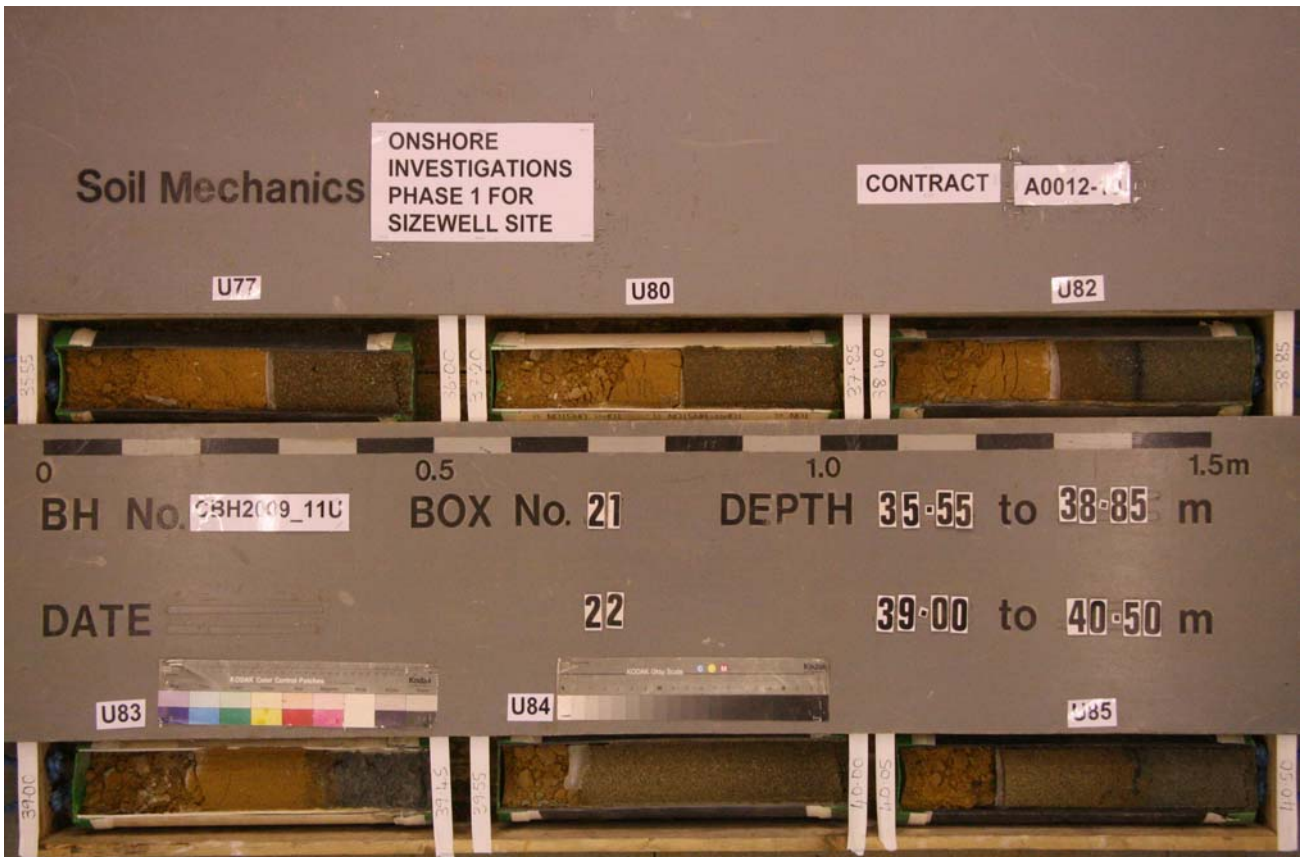
Soil Mechanics



Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 47</p>
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Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 48
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Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 49
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Photographs



Soil Mechanics



Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 50
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ENCLOSURE C
TRIAL PIT PHOTOGRAPHS

Trail Pits

Plate 1 to 123



Trial Pit 1 Face A



Trial Pit 1 Spoil

Notes:

Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE
 Project No. A0012-10
 Carried out for NNB Generation Company Limited

Plate

1

Photographs



Soil Mechanics



Trial Pit 2 Face D



Trial Pit 2 Spoil

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 2
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Photographs



Soil Mechanics



Trial Pit 3 Face A



Trial Pit 3 Face D

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 3
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Photographs



Soil Mechanics



Trial Pit 3 Spoil

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 4
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Photographs



Soil Mechanics



Trial Pit 4 Face A



Trial Pit 4 Spoil

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 5
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Photographs



Soil Mechanics



Trial Pit 6 Face A



Trial Pit 6 Face D

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 6
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Trial Pit 6 Spoil

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 7
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Trial Pit 7 Face D



Trial Pit 7 Spoil

<p>Notes:</p>	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited</p>	<p>Plate 8</p>
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Photographs



Soil Mechanics



Trial Pit 8 Face A



Trial Pit 8 Face D

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 9
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Trial Pit 8 Spoil

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 10
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Trial Pit 9 Face A



Trial Pit 9 Face D

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 11
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Trial Pit 9 Spoil

Notes:

Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE
Project No. A0012-10
Carried out for NNB Generation Company Limited

Plate

12



Trial Pit 11 Face A



Trial Pit 11 Face D

Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 13</p>
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Photographs



Soil Mechanics



Trial Pit 11 Spoil

Notes:

Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE
Project No. A0012-10
Carried out for NNB Generation Company Limited

Plate

14

Photographs



Trial Pit 12 Face A



Trial Pit 12 Face D

Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 15</p>
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Trial Pit 12 Spoil

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 16
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Photographs



Soil Mechanics



Trial Pit 13 Face A



Trial Pit 13 Face D

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 17
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Trial Pit 13 Spoil

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 18
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Photographs



Trial Pit 14 Face D



Trial Pit 14 Spoil

Notes:

Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE
 Project No. A0012-10
 Carried out for NNB Generation Company Limited

Plate

19



Trial Pit 15 Face A



Trial Pit 15 Face D

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 20
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Trial Pit 17 Face A



Trial Pit 17 Face D

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 21
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Trial Pit 17 Spoil

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 22
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Photographs



Trial Pit 18 Face A



Trial Pit 18 Face D

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 23
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Trial Pit 18 Spoil

Notes:

Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE
Project No. A0012-10
Carried out for NNB Generation Company Limited

Plate

24

Photographs



Soil Mechanics



Trial Pit 19 Face A



Trial Pit 19 Face D

Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate 25</p>
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Photographs



Trial Pit 19 Spoil

Notes:	<p>Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE</p> <p>Project No. A0012-10</p> <p>Carried out for NNB Generation Company Limited</p>	<p>Plate</p> <p>26</p>
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Photographs



Soil Mechanics



Trial Pit 20 Face A



Trial Pit 20 Face D

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate <p style="text-align: right;">27</p>
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Photographs



Trial Pit 20 Spoil

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 28
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Photographs



Soil Mechanics



Trial Pit 21 Face A



Trial Pit 21 Face D

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 29
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Trial Pit 21 Spoil

Notes:	Project ONSHORE INVESTIGATIONS PHASE 1 FOR SIZEWELL SITE Project No. A0012-10 Carried out for NNB Generation Company Limited	Plate 30
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