

□

Bore No: MW4D  
Client: Costco Wholesale (Australia) Pty Ltd  
Project: Phase I and II Site Investigations  
Box 1 of 2  
Depth: 6.34 - 10.0 m  
Date: 1-2 August 2009



Bore No: MW4D  
Client: Costco Wholesale (Australia) Pty Ltd  
Project: Phase I and II Site Investigations  
Box 2 of 2  
Depth: 10.0 - 13.8 m  
Date: 1-2 August 2009





# Cored Borehole

# BOREHOLE MW4D

Sheet 1 of 2

URS Australia PTY LTD

Phone:  
Fax:Project Reference: **Preliminary  
Geotechnical  
Assessment**Client: **Costco Wholesale (Australia) Pty Ltd**Drilling Contractor: **Terratest Pty Ltd**Project No.: **43217997**Location: **17-21 Parramatta Road, Lidcombe**Logged By: **J Kor**Bore Size: **100mm mm**Relative Level: **mRL**Drill Type: **HQ triple tube, wire line coring**Checked By: **V Tandjiria**Casing Size: **mm**Coordinates: **6252971.00 mN**Drill Model: **EDSON 3000 & Scout (Hydra Power)**Date Started: **1-8-09**Total Depth: **13.80 m****319673.00 mE**Drill Fluid: **Water**Date Finished: **2-8-09**  
Borehole Inclination and Bearing: **90° from horizontal at ° True North**

Permit No:

## DRILLING

## MATERIAL DESCRIPTION

## DISCONTINUITY DESCRIPTION

METHOD	WATER	RUN/RECOVERY	FIELD TESTS/ SAMPLING	DEPTH (m)	GRAPHIC LOG	DESCRIPTION OF STRATA (Rock type, strength, Weathering, color, fabric, grain size, inclusions, degree of fracturing)	WEATHERING	STRENGTH Is (50) MPa	RQD (%)	DEFECT SPACING (mm)	DEFECT LOG	DEFECT DESCRIPTION (Defect type, inclination, shape, roughness, infill, thickness)
				5				EL -0.03 VL -0.1 M -0.3 H -1 VH -3 EH -10		0-19 20-49 50-99 100-199 200-599 >600		
				6								
		6.34				Start coring at 6.34m						
						SHALE, extremely low to very low strength, residual soil (6.34m to 6.8m) extremely weathered to distinctly weathered, brownish grey, thinly laminated, fragmented to highly fractured	RS					
							XW					BG, Ir, Sr, Z BG, 5°-10°, Pl, S, Z Highly fractured (7.07m to 7.24m) BG, 0°-5°, Pl, S, KL Highly fractured (7.33m to 7.44m) BG, 0°-5°, Pl, S, KL BG, 5°-10°, Pl, S, KL BG, 5°-10°, Pl, S, KL Highly fractured (7.58m to 7.65m) JN, 90°, Wa, Sr, KL JN, St, Sr, KL JN, 55°-60°, Pl, S, KL JN, St, Ir, Z JN, 5°-10°, Pl, S, KL JN, 75°-80°, Pl, S, KL BG, 5°-10°, Pl, S, KL Fragmented (8.70m to 8.81m) BG, 0°-5°, Pl, S, KL JN, 40°-45°, Pl, S, KL JN, 5°-10°, Pl, S, KL JN, 70°-75°, Pl, S, KL BG, 0°-5°, Pl, S, KL BG, 0°-5°, Pl, S, KL JN, 70°-75°, Pl, S, KL Highly fractured (9.44m to 9.58m) BG, 0°-5°, Pl, S, KL BG, 0°-5°, Pl, S, KL BG, 0°-5°, Pl, S, KL BG, 0°-5°, Pl, S, KL
				7					46			
				8								
		8.34				SHALE, very low to medium strength, distinctly weathered, grey, thinly laminated, highly fractured to fractured						
						Point Load Test (Is50) at 9.21m A=0.09, D=0.03						
				9								
						Point Load Test (Is50) at 9.88m	DW		12			



Cored Borehole

BOREHOLE MW4D

URS Australia PTY LTD

Phone: Project No.: 43217997  
Fax:

Project Reference: Preliminary Geotechnical Assessment

DRILLING				MATERIAL DESCRIPTION				DISCONTINUITY DESCRIPTION				
METHOD	WATER	RUN/RECOVERY	FIELD TESTS/ SAMPLING	DEPTH (m)	GRAPHIC LOG	DESCRIPTION OF STRATA	WEATHERING	STRENGTH	RQD (%)	DEFECT	DEFECT LOG	DEFECT DESCRIPTION
						(Rock type, strength, Weathering, color, fabric, grain size, inclusions, degree of fracturing)		Is (50) MPa		SPACING (mm)		(Defect type, inclination, shape, roughness, infill, thickness)
HQ - DIAMOND IMPREGNATED BIT				10		A=0.69, D=0.36		EL 0.03 VL 0.1 ML 0.3 HT 1 VH 3 VEH 10		0-19 20-49 50-99 100-199 200-599 >600		Fragmented (10.0m to 10.07m)
												BG, 0°-5°, Pl, S, KL JN, 90°, Wa, Sr, KL
		11.19		11		SHALE, medium strength, distinctly weathered to slightly weathered, grey, thinly laminated, slightly fractured						BG, 0°-5°, Pl, S, KL JN, 5°-10°, Pl, S, KL
												JN, 75°-80°, Wa, Sr, KL
						Point Load Test (Is50) at 11.62m A=0.83, D=0.59						BG, 0°-5°, Pl, S, KL BG, 5°-10°, Pl, S, KL BG, 5°-10°, Pl, S, KL
				12								
		100%							89			BG, 5°-10°, Pl, S, KL BG, 5°-10°, Pl, S, KL
				13								BG, 5°-10°, Pl, S, KL
						Coring ended at 13.8m, target depth reached						
				14								
				15								

# **Appendix C**

## **Logs and Well Construction Details**

### **C2. Monitoring Well Construction Details**

## MONITORING WELL MW01D

URS Australia Pty. Ltd.  
Level 3, 116 Miller Street, North Sydney

Phone: 02 8925 5500  
Fax: 02 8925 5555

Project Reference: **Preliminary Geotechnical Assessment**

Client: **Costco Wholesale (Australia) Pty Ltd**

Drilling Contractor: **Terratest Pty Ltd**

Project No.: **43217997**

Location: **17-21 Parramatta Rd, Lidcombe**

Logged By: **J Kor**  
Checked By: **V Tandjiria**  
Date Started: **25-7-09**  
Date Finished: **25-7-09**

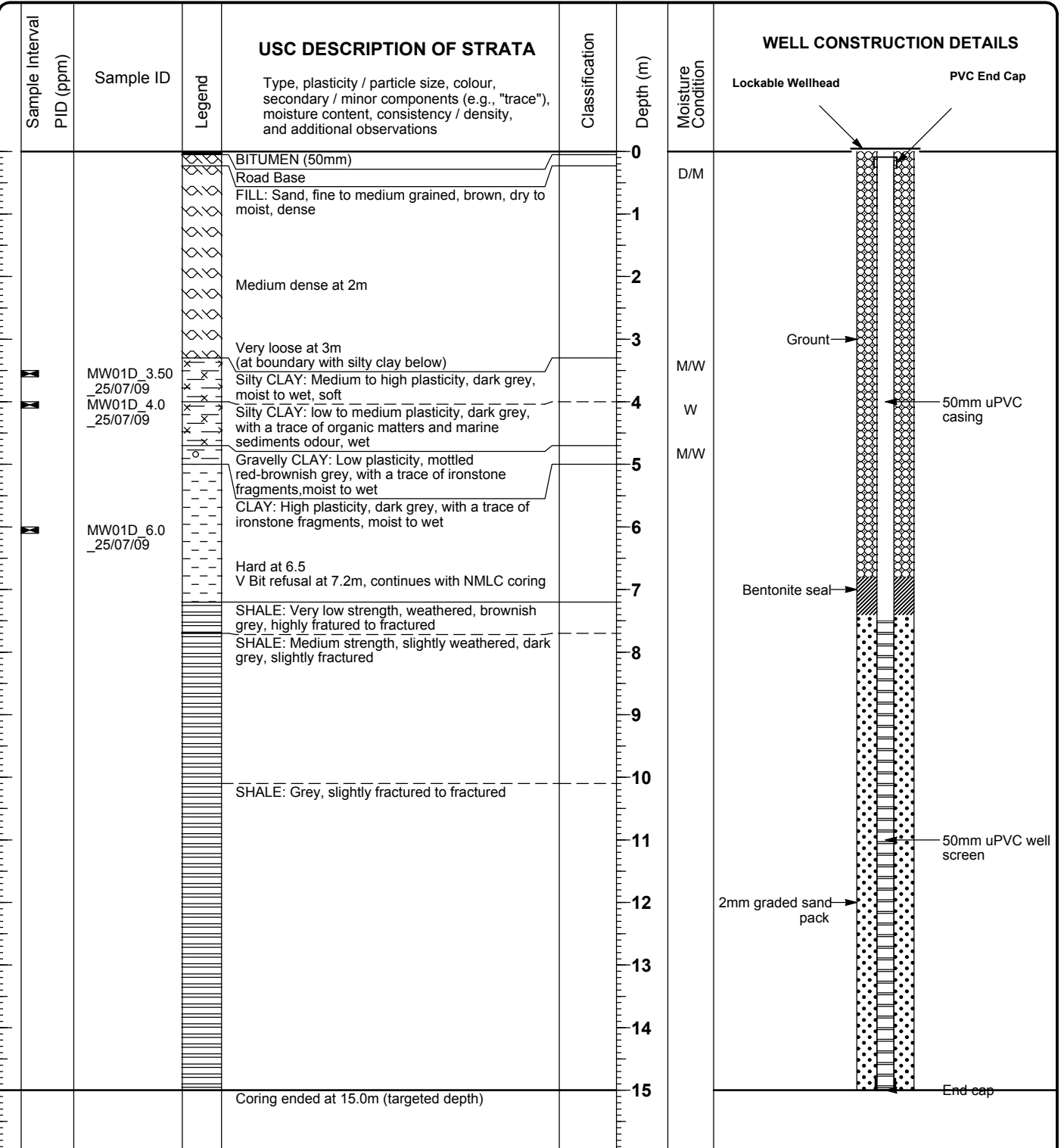
Bore Size: **100 mm**  
Total Depth: **15.00 m**  
Casing Size: **50 mm**

Relative Level: **mAHD**  
Coordinates: **319602.00 N**  
**6253023.00 E**

Permit No:

Drill Type: **SFA "V" Bit, Hand Augering**  
Drill Model: **EDSON 3000**  
Drill Fluid: **N/A**

WELL\_WITH\_MOIST\_CONDITION J:\JOBS\43217997\5 WORKS\ENVIRONMENTAL INVESTIGATION\LIDCOMBE MW LOGS.GPJ WCC\_AUS.GDT 7/9/09



## MONITORING WELL MW01S

URS Australia Pty. Ltd. Level 3, 116 Miller Street, North Sydney		Phone: 02 8925 5500 Fax: 02 8925 5555	Project Reference: <b>Preliminary Geotechnical Assessment</b>	Client: <b>Costco Wholesale (Australia) Pty Ltd</b>
Drilling Contractor: <b>Terratest Pty Ltd</b>			Project No.: <b>43217997</b>	Location: <b>17-21 Parramatta Rd, Lidcombe</b>
Logged By: <b>J Kor</b>	Bore Size: <b>100 mm</b>	Relative Level: <b>mAHD</b>	Drill Type: <b>SFA "V" Bit, Hand Augering</b>	
Checked By: <b>V Tandjiria</b>	Total Depth: <b>6.00 m</b>	Coordinates: <b>N</b>	Drill Model: <b>EDSON 3000</b>	
Date Started: <b>25-7-09</b>	Casing Size: <b>50 mm</b>	<b>E</b>	Drill Fluid: <b>N/A</b>	
Date Finished: <b>25-7-09</b>		Permit No:		

WELL\_WITH\_MOIST\_CONDITION J:\JOBS\43217997\5 WORKS\ENVIRONMENTAL INVESTIGATION\LIDCOMBE MW LOGS.GPJ WCC\_AUS.GDT 7/9/09

Sample Interval PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition	WELL CONSTRUCTION DETAILS
			BITUMEN (50mm) Road Base FILL: Sand, uniformly graded, fine to medium grained, brown, dry to moist, dense  Medium dense at 2m  Very loose at 3m (at boundary with silty clay below) Silty CLAY: Medium to high plasticity, dark grey, moist to wet, soft Silty CLAY: low to medium plasticity, dark grey, with a trace of organic matters and marine sediments odour, wet Gravelly CLAY: Low plasticity, mottled red-brownish grey, with a trace of ironstone fragments, moist to wet CLAY: High plasticity, dark grey, with a trace of ironstone and shell fragments, moist to wet End of hole at 6.0m		0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	D/M    M/W W M/W	

## MONITORING WELL MW02D

URS Australia Pty. Ltd.  
Level 3, 116 Miller Street, North Sydney

Phone: 02 8925 5500  
Fax: 02 8925 5555

Project Reference: **Preliminary Geotechnical Assessment**

Client: **Costco Wholesale (Australia) Pty Ltd**

Drilling Contractor: **Terratest Pty Ltd**

Project No.: **43217997**

Location: **17-21 Parramatta Rd, Lidcombe**

Logged By: **J Kor**

Bore Size: **100 mm**

Relative Level: **mAHD**

Drill Type: **SFA "V" Bit, Hand Augering**

Checked By: **V Tandjiria**

Total Depth: **15.00 m**

Coordinates: **319485.00 N**

Drill Model: **EDSON 3000**

Date Started: **26-7-09**

Casing Size: **50 mm**

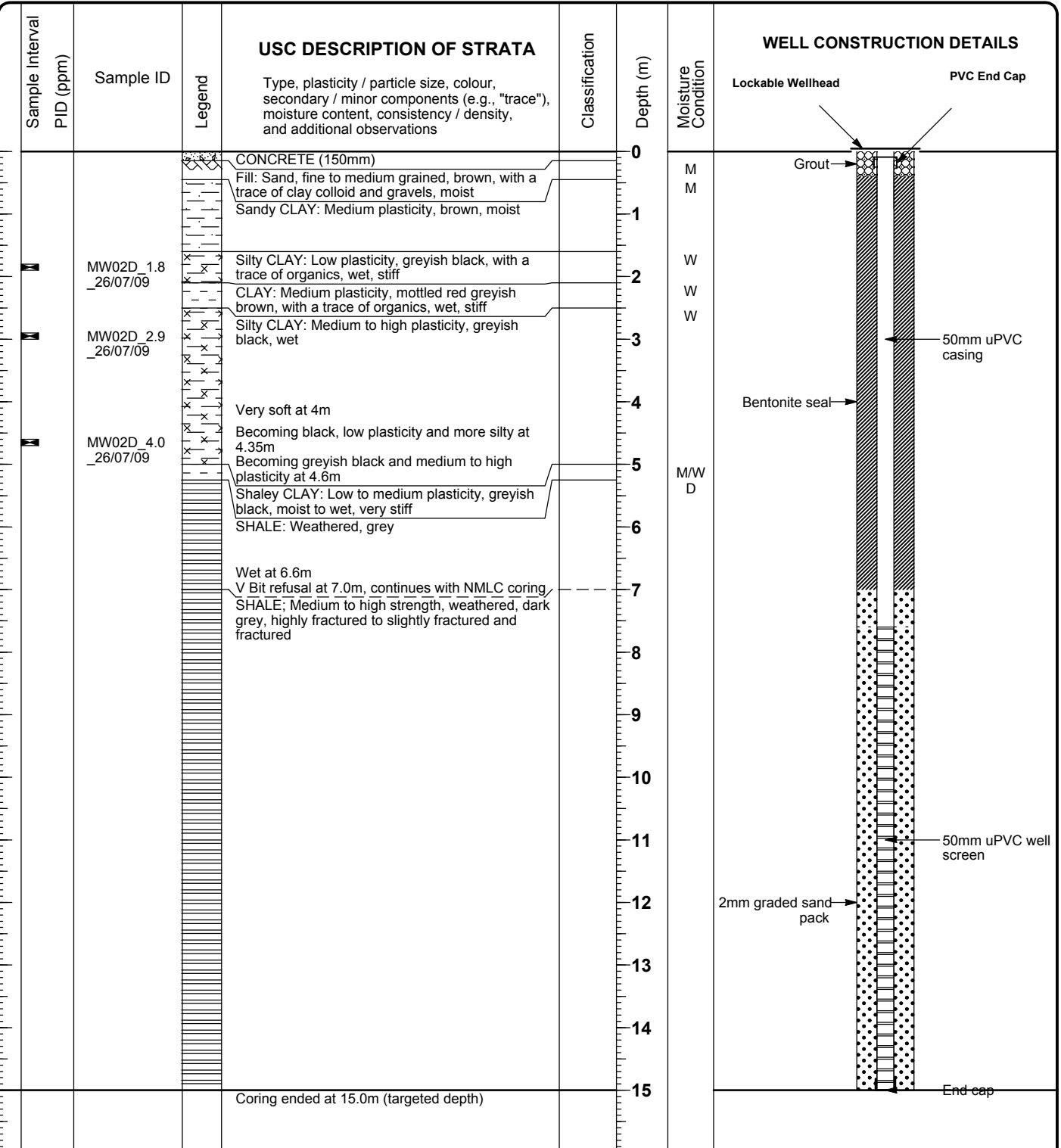
**6252973.00 E**

Drill Fluid: **N/A**

Date Finished: **26-7-09**

Permit No:

WELL\_WITH\_MOIST\_CONDITION J:\JOBS\43217997\5 WORKS\ENVIRONMENTAL INVESTIGATION\LIDCOMBE MW LOGS.GPJ WCC\_AUS.GDT 7/9/09





## MONITORING WELL MW02S

URS Australia Pty. Ltd.  
Level 3, 116 Miller Street, North Sydney

Phone: 02 8925 5500  
Fax: 02 8925 5555

Project Reference: **Preliminary Geotechnical Assessment**

Client: **Costco Wholesale (Australia) Pty Ltd**

Drilling Contractor: **Terratest Pty Ltd**

Project No.: **43217997**

Location: **17-21 Parramatta Rd, Lidcombe**

Logged By: **J Kor**  
Checked By: **V Tandjiria**  
Date Started: **26-7-09**  
Date Finished: **26-7-09**

Bore Size: **100 mm**  
Total Depth: **6.10 m**  
Casing Size: **50 mm**

Relative Level: **mAHD**  
Coordinates: **N E**  
Permit No:

Drill Type: **SFA "V" Bit, Hand Augering**  
Drill Model: **EDSON 3000**  
Drill Fluid: **N/A**

WELL\_WITH\_MOIST\_CONDITION J:\JOBS\43217997\5 WORKS\ENVIRONMENTAL INVESTIGATION\LIDCOMBE MW LOGS.GPJ WCC\_AUS.GDT 7/9/09

Sample Interval PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition	WELL CONSTRUCTION DETAILS
			CONCRETE (150mm) Fill: Sand, uniformly graded, fine to medium grained, brown, with a trace of clay colloid and gravels, moist Sandy CLAY: Medium plasticity, brown, moist		0	M M	Lockable Wellhead PVC End Cap
			Silty CLAY: Low plasticity, greyish black, with a trace of organics, wet, stiff CLAY: Medium plasticity, mottled red greyish brown, with a trace of organics, wet, stiff Silty CLAY: Medium to high plasticity, greyish black, wet		1	W W W	Grout Bentonite seal 50mm uPVC casing
			Very soft at 4m Becoming black, low plasticity and more silty at 4.35m Becoming greyish black and medium to high plasticity at 4.6m Shaley CLAY: Low to medium plasticity, greyish black, moist to wet, very stiff SHALE: Weathered, dark grey		2		50mm uPVC well screen
			End of hole at 6.1m		3	M/W D	2mm graded sand pack End cap
					4		
					5		
					6		
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		



## MONITORING WELL MW03D

URS Australia Pty. Ltd. Level 3, 116 Miller Street, North Sydney	Phone: 02 8925 5500 Fax: 02 8925 5555	Project Reference: <b>Preliminary Geotechnical Assessment</b>	Client: <b>Costco Wholesale (Australia) Pty Ltd</b>
Drilling Contractor: <b>Terratest Pty Ltd</b>		Project No.: <b>43217997</b>	Location: <b>17-21 Parramatta Rd, Lidcombe</b>
Logged By: <b>J Kor</b>	Bore Size: <b>100 mm</b>	Relative Level: <b>mAHD</b>	Drill Type: <b>SFA "V" Bit, Hand Augering</b>
Checked By: <b>V Tandjiria</b>	Total Depth: <b>13.00 m</b>	Coordinates: <b>319631.00 N</b>	Drill Model: <b>EDSON 3000</b>
Date Started: <b>1-8-09</b>	Casing Size: <b>50 mm</b>	<b>6252885.00 E</b>	Drill Fluid: <b>N/A</b>
Date Finished: <b>1-8-09</b>		Permit No:	

WELL\_WITH\_MOIST\_CONDITION J:\JOBS\43217997\5 WORKS\ENVIRONMENTAL INVESTIGATION\LIDCOMBE MW LOGS.GPJ WCC\_AUS.GDT 7/9/09

Sample Interval PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition	WELL CONSTRUCTION DETAILS
			CONCRETE (140mm)		0	D/M	Lockable Wellhead
			Fill: Sand, fine grained, brown, with a trace of clay colloid, dry to moist		1	D/M	PVC End Cap
			CLAY: High plasticity, greyish red, with a trace of sand, moist to dry		2		Grout
			CLAY: Stiff, with a trace of ironstone (1m to 1.45m) and dry at 1m		3		50mm uPVC casing
			Very stiff and becoming brownish grey at 2m		4		
			Hard and shaley at 3m		5		Bentonite seal
			V Bit refusal at 5.6m, continues with NMLC coring		6		
			SHALE: Weathered, brownish grey, thinly laminated, iron staining, fractured to slightly fractured. Ironstone bands present		7		
					8		50mm uPVC well screen
			SHALE: Slightly weathered, grey, thinly laminated, becoming slightly fractured to fractured		9		2mm graded sand pack
					10		
					11		
					12		
					13		Well collapsed
			Coring ended at 13.0m (target depth)		14		End cap
					15		

## MONITORING WELL MW03S

URS Australia Pty. Ltd.  
Level 3, 116 Miller Street, North Sydney

Phone: 02 8925 5500  
Fax: 02 8925 5555

Project Reference: **Preliminary Geotechnical Assessment**

Client: **Costco Wholesale (Australia) Pty Ltd**

Drilling Contractor: **Terratest Pty Ltd**

Project No.: **43217997**

Location: **17-21 Parramatta Rd, Lidcombe**

Logged By: **J Kor**

Bore Size: **100 mm**

Relative Level: **mAHD**

Drill Type: **SFA "V" Bit, Hand Augering**

Checked By: **V Tandjiria**

Total Depth: **5.50 m**

Coordinates: **N**

Drill Model: **EDSON 3000**

Date Started: **1-8-09**

Casing Size: **50 mm**

**E**

Drill Fluid: **N/A**

Date Finished: **1-8-09**

Permit No:

WELL\_WITH\_MOIST\_CONDITION J:\JOBS\43217997\5 WORKS\ENVIRONMENTAL INVESTIGATION\LIDCOMBE MW LOGS.GPJ WCC\_AUS.GDT 7/9/09

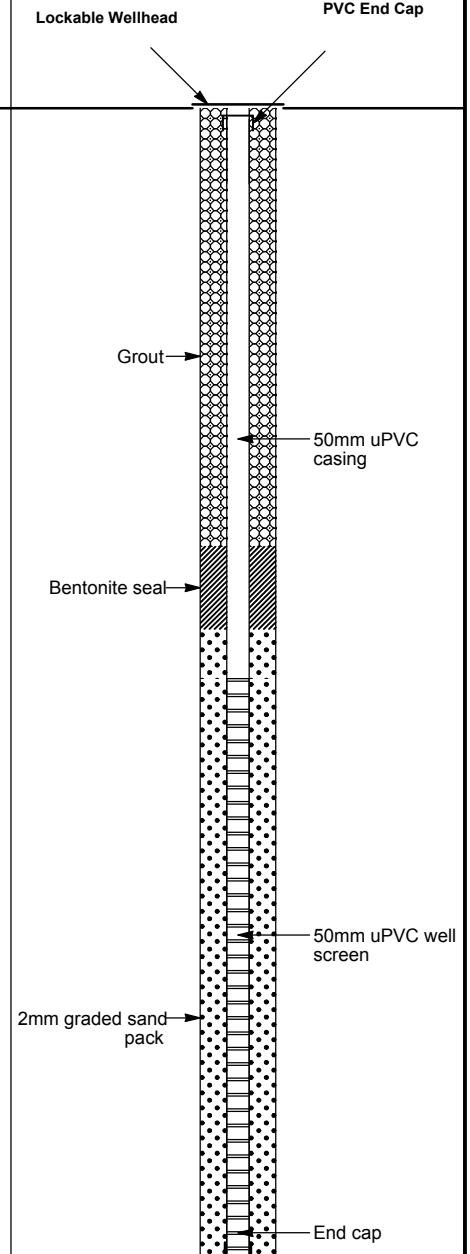
Sample Interval PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition	WELL CONSTRUCTION DETAILS
			<p>CONCRETE (140mm)</p> <p>Fill: Sand, fine grained, brown, with a trace of clay colloid, dry to moist</p> <p>CLAY: High plasticity, greyish red, with a trace of sand, moist to dry</p> <p>Stiff, with a trace of ironstone (1m to 1.45m) and dry at 1m</p> <p>Very stiff and becoming brownish grey at 2m</p> <p>Hard and shaley at 3m</p>		0 1 2 3 4 5	D/M D/M	<p>Lockable Wellhead</p> <p>PVC End Cap</p> <p>Grout</p> <p>Bentonite seal</p> <p>50mm uPVC casing</p> <p>50mm uPVC well screen</p> <p>2mm graded sand pack</p> <p>End cap</p>
			End of hole at 5.5m		6 7 8 9 10 11 12 13 14 15		

## MONITORING WELL MW04D

URS Australia Pty. Ltd. Level 3, 116 Miller Street, North Sydney		Phone: 02 8925 5500 Fax: 02 8925 5555	Project Reference: <b>Preliminary Geotechnical Assessment</b>	Client: <b>Costco Wholesale (Australia) Pty Ltd</b>
Drilling Contractor: <b>Terratest Pty Ltd</b>			Project No.: <b>43217997</b>	Location: <b>17-21 Parramatta Rd, Lidcombe</b>
Logged By: <b>J Kor</b>	Bore Size: <b>100 mm</b>	Relative Level: <b>mAHD</b>	Drill Type: <b>SFA "V" Bit, Hand Augering</b>	
Checked By: <b>V Tandjiria</b>	Total Depth: <b>13.90 m</b>	Coordinates: <b>319630.00 N</b>	Drill Model: <b>EDSON 3000</b>	
Date Started: <b>1-8-09</b>	Casing Size: <b>50 mm</b>	<b>6252888.00 E</b>	Drill Fluid: <b>N/A</b>	
Date Finished: <b>2-8-09</b>		Permit No:		

WELL\_WITH\_MOIST\_CONDITION J:\JOBS\43217997\5 WORKS\ENVIRONMENTAL INVESTIGATION\LIDCOMBE MW LOGS.GPJ WCC\_AUS.GDT 7/9/09

Sample Interval PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition	WELL CONSTRUCTION DETAILS
			CONCRETE (140mm)		0	D/M	Lockable Wellhead
			FILL: Clayey sand, fine grained, dark brown, with a trace of glass, dry to moist		1	D/M	PVC End Cap
			CLAY: Medium to high plasticity, dark brown, with a trace of sand, dry to moist, soft		2		
			Becoming reddish brown at 1.5m		3		
			Very stiff, with iron staining, becoming mottled reddish brown, and dry at 2m		4		
			Hard, shaley, brownish grey, and with some ironstone fragments at 3m		5		
			Hard and shaley at 4m		6		
			SHALE: Weathered, grey, with iron staining		7		
			V Bit refusal at 6.45m, continues with coring		8		
			SHALE: Weathered, brownish grey, thinly laminated, highly fractured to fractured		9		
					10		
			SHALE: slightly weathered to fresh, grey, thinly laminated, slightly fractured		11		
					12		
					13		
			Coring ended at 13.9m (targeted depth)		14		
					15		



## MONITORING WELL MW04S

URS Australia Pty. Ltd.  
Level 3, 116 Miller Street, North Sydney

Phone: 02 8925 5500  
Fax: 02 8925 5555

Project Reference: **Preliminary Geotechnical Assessment**

Client: **Costco Wholesale (Australia) Pty Ltd**

Drilling Contractor: **Terratest Pty Ltd**

Project No.: **43217997**

Location: **17-21 Parramatta Rd, Lidcombe**

Logged By: **J Kor**

Bore Size: **100 mm**

Relative Level: **mAHD**

Drill Type: **SFA "V" Bit, Hand Augering**

Checked By: **V Tandjiria**

Total Depth: **6.10 m**

Coordinates: **N**

Drill Model: **EDSON 3000**

Date Started: **1-8-09**

Casing Size: **50 mm**

**E**

Drill Fluid: **N/A**

Date Finished: **2-8-09**

Permit No:

WELL\_WITH\_MOIST\_CONDITION J:\JOBS\43217997\5 WORKS\ENVIRONMENTAL INVESTIGATION\LIDCOMBE MW LOGS.GPJ WCC\_AUS.GDT 7/9/09

Sample Interval PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition	WELL CONSTRUCTION DETAILS
			CONCRETE (140mm)		0	D/M	Lockable Wellhead
			FILL: Clayey sand, uniformly graded, fine grained, dark brown, with glass fragments, dry to moist		1	D/M	PVC End Cap
			CLAY: Medium to high plasticity, dark brown, with a trace of sand, dry to moist, soft		2		Grout
			Becoming reddish brown at 1.5m		3		Bentonite seal
			Very stiff, with iron staining, becoming mottled reddish brown, and dry at 2m		4		50mm uPVC casing
			Hard, shaley, brownish grey, and with some ironstone fragments at 3m		5		50mm uPVC well screen
			Hard and shaley at 4m		6		2mm graded sand pack
			SHALE: Weathered, grey, with iron staining		7		End cap
			End of hole at 6.1m		8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		



## Appendix D Laboratory Test Results

0295973442



# AUSTRALIAN SOIL TESTING PTY LTD.

A.B.N. 79 003 493 623

24 Bermill Street, Rockdale, NSW, 2216 P.O. Box 2014, Rockdale D.C. NSW 2216

Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## SOIL CLASSIFICATION TEST DATA

**CLIENT:** URS Australia  
Level 3: 116 Miller St, North Sydney NSW 2060

**PROJECT:** 43217997

LAB. NO.	SAMPLE SOURCE	SAMPLE DESCRIPTION	MOISTURE CONTENT (%) 1	DRY DENSITY (t/m <sup>3</sup> )	LIQUID LIMIT 2	PLASTIC INDEX 3	LINEAR SHRINKAGE (%) 4
52825	BH 7 3.5 to 3.9m	SILTY CLAY:mottled yellow-brown & grey,medium plasticity,with fine to coarse sand.	19.5		36	18	
52826	BH12 3.4 to 3.8m	SILTY CLAY:mottled grey & dark grey,low plasticity, with fine sand.	18.0		26	15	
52827	BH14 5.0 to 5.4m	SILTY CLAY:mottled yellow-brown & grey, medium plasticity,with fine to coarse sand.	18.8		38	21	

### NOTES TO TESTING

- Test Method: AS 1289 2.1.1
- Test Method: AS 1289 3.1.2  
Preparation: Natural state with no sieving  
Sample History: Natural state as received
- Test Method: AS 1289 3.2.1, 3.3.1  
Preparation: Natural state with no sieving  
Sample History: Natural state as received

Sampled by: Client

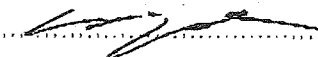

Job Number: 119-226

Date Tested: 18.06.09

Form C01 File C:\Excel Reports\C01 Classification Issue 5 February 2008 CL

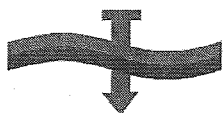


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Signed:   
Title: 

Name: C. Lloyd  
Date: 11/7/09





# AUSTRALIAN SOIL TESTING PTY LTD. A.B.N. 79 003 493 623

24 Bermill Street, Rockdale, NSW, 2216 P.O. Box 2014, Rockdale D.C. NSW 2216

Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## SOIL CLASSIFICATION TEST DATA

CLIENT: URS  
Level 3, 116 Miller Street North Sydney NSW 2060  
PROJECT: 43217997

LAB. NO.	SAMPLE SOURCE	SAMPLE DESCRIPTION	MOISTURE CONTENT (%) 1	DRY DENSITY (t/m <sup>3</sup> )	LIQUID LIMIT 2	PLASTIC INDEX 3	PREPAR- ATION & HISTORY 4	LINEAR SHRINK. (%)
53780	BHWW02D 3.0-3.5m	SILTY CLAY: mottled grey and yellow-brown, low plasticity, with fine to coarse sand (pockets of sandy clay), roots present.	-	-	30	18	N N	-

### NOTES TO TESTING

- 1 Test Method: AS 1289 2.1.1  
2 Test Method: AS 1289 3.1.2  
3 Test Method: AS 1289 3.2.1, 3.3.1  
4 Preparation: DS = Dry Sieved  
WS = Wet Sieved  
N = Natural State With No Sieving  
Sample History: AD = Air Dried  
OD = Oven Dried at 50°C  
N = Natural State As Received

Sampled by: URS  
Job Number: 119-226-2  
Date Tested: 5.8.09

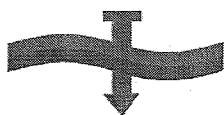
Form C01 File C:\Excel Reports\C01 Classification Issue 5 February 2008 CL



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Signed:   
Title: LM

Name: C. Lloyd  
Date: 10/8/09



# AUSTRALIAN SOIL TESTING PTY LTD. A.B.N. 79 003 493 623

24 Bermill Street, Rockdale, NSW, 2216 P.O. Box 2014, Rockdale D.C. NSW 2216

Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## SOIL CLASSIFICATION TEST DATA

**CLIENT:** URS Australia Pty Ltd  
Level 3, 116 Miller Street North Sydney NSW 2060

**PROJECT:** Project No: 43217997

LAB. NO.	SAMPLE SOURCE	SAMPLE DESCRIPTION	MOISTURE CONTENT (%) 1	DRY DENSITY (t/m <sup>3</sup> )	LIQUID LIMIT 2	PLASTIC INDEX 3	PREPAR- ATION & HISTORY 4	LINEAR SHRINK. (%) 5
53834	MW03D 3.0 - 3.45m	CLAYEY SILT: grey, low to medium plasticity, with fine sand.	14.8	-	-	-	N N	-
53835	MW04D 3.0 - 3.45m	SANDY CLAY: brown/grey, low to medium plasticity, with fine to coarse sand.	17.8	-	-	-	N N	-

### NOTES TO TESTING

1 Test Method: AS 1289 2.1.1

Sampled by: Client

Job Number: 119-226-3

Date Tested: 7.08.09

Sample History: AD = Air Dried  
OD = Oven Dried at 50°C  
N = Natural State As Received

5 Test Method: AS 1289 3.4.1

Mould Size: N/A

Dry State: N/A

Form C01 File C:\Excel Reports\CO1 Classification Issue 5 February 2008 CL



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Signed:   
Title: LM

Name: C. Lloyd  
Date: 10/8/09

0295973442

**AUSTRALIAN SOIL TESTING PTY LTD.**

A.B.N. 79 003 493 623

24 Bermill Street, Rockdale, NSW, 2216 P.O. Box 2014, Rockdale D.C. NSW 2216

Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

**UNCONFINED COMPRESSIVE STRENGTH OF A SOIL****CLIENT:****URS Australia****PROJECT:****43217997**

LAB. NO.	SAMPLE SOURCE	SAMPLE DESCRIPTION	MOISTURE CONTENT as received (%)	DRY DENSITY (t/m <sup>3</sup> )	UNCONFINED COMPRESSIVE STRENGTH (kPa)
52825	BH7 3.5 to 3.9m	SILTY CLAY:mottled light grey & red-brown,medium plasticity, with fine sand.	19.5	1.74	122
52827	BH14 5.0 to 5.4m	SILTY CLAY:mottled yellow-brown & grey, medium plasticity, with fine to coarse sand.	18.8	1.88	67

**NOTES TO TESTING**

Testing Device: Proving Ring

Sample History: U75 TW tube

Sampled by: Client

Job Number: 119-226

Date Tested: 12.06.09

Test method: ASTM D 2166

Form R01 excel issue 4 September 2001 CVS



**AUSTRALIAN SOIL TESTING PTY LTD.** A.B.N. 79 003 483 623

24 Bermill Street, Rockdale, NSW, 2216 P.O. Box 2014, Rockdale D.C. NSW 2216

Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

## EFFECTIVE STRESS TRIAXIAL TEST REPORT

**CLIENT:** URS  
Level 3, 116 Miller Street North Sydney NSW 2060  
**PROJECT:** 43217997

**Sample Source:** BH12 3.4-3.8m **Lab No:** 52826

**Sample Description:** SILTY CLAY: mottled grey/ dark-grey, low plasticity,  
with fine sand.

**Initial Moisture Content (%):** 18.0 **Dry Density ( $t/m^3$ ):** 1.81

**Sample Diameter (mm):** 70.5 **Sample Height (mm):** 150.8

**Coefficient of Consolidation ( $m^2/yr$ ):** 0.29 **Rate of Strain (mm):** 0.001

### Shear Details at Peak Stress Ratio

**Net Confining Pressure (kPa):** 50 100 200

**Deviator Stress (kPa):** 89 195 317

**Pore Water Pressure (kPa):** 36 45 85

**Strain At Failure (%):** 2.30 4.03 5.03

### From Mohr Circles

**Effective Cohesion (kPa):** 32

**Effective Angle Of Friction (degrees):** 18.0

**Date Tested:** 12.6.09

**Job Number:** 119-226

**Sampled By:** Client

**Tested By:** CS

**Test Type:** Backsaturated, consolidated, multistaged with pore water pressure measurement.

**Test procedure:** AS 1289 6.4.2 Determination of compressive strength of soil - Compressive strength of a saturated specimen tested in undrained triaxial compression with measurement of pore water pressure.

Form TX02 CU Triaxial Issue 3 January 2008 CL

Page 1 of 4



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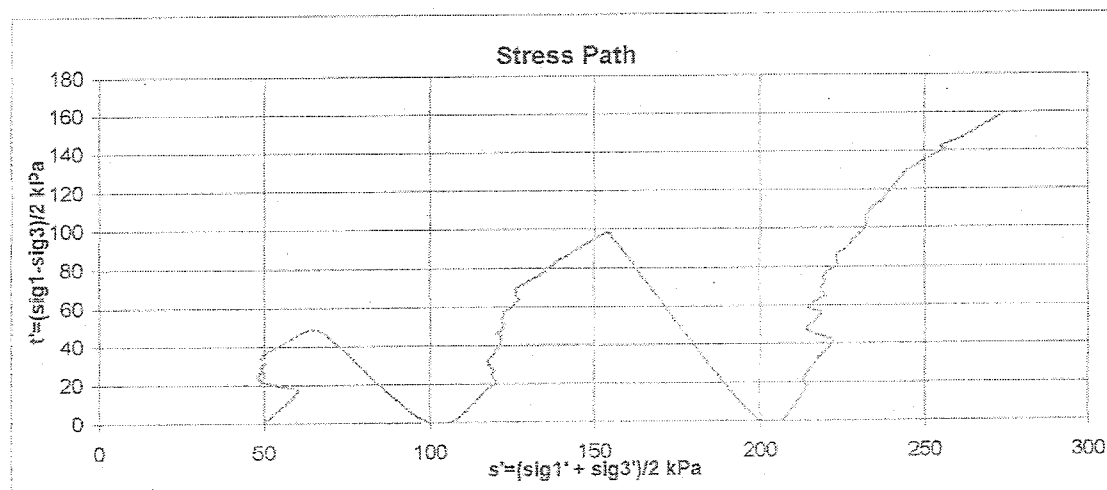
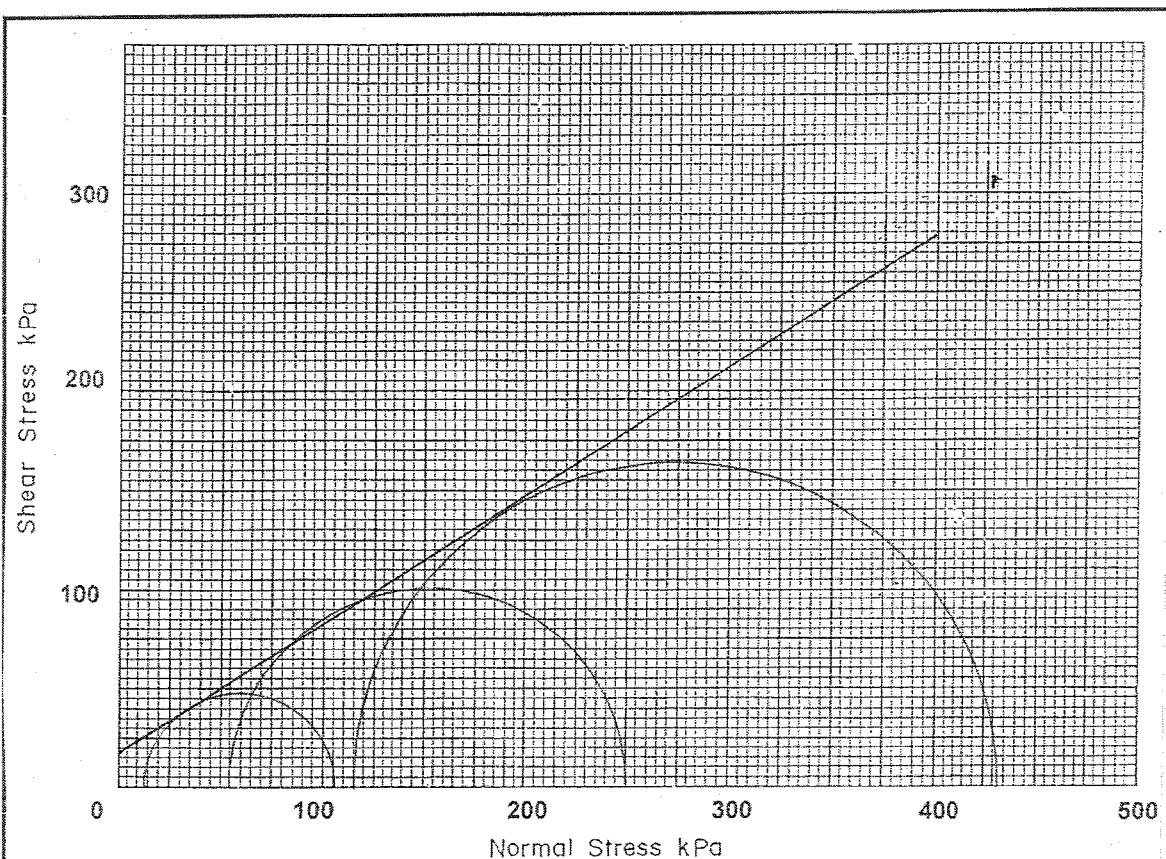
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# EFFECTIVE STRESS TRIAXIAL TEST REPORT

CLIENT: URS

Level 3, 116 Miller Street North Sydney NSW 2060

PROJECT: 43217997



Lab No: 52826

Sample Source: BH12 3.4-3.8m

Test procedure: AS 1289 6.4.2 Determination of compressive strength of soil - Compressive strength of a saturated specimen tested in undrained triaxial compression with measurement of pore water pressure.

Form TX02 CU Triaxial Issue 3 January 2008 CL

Page 2 of 4

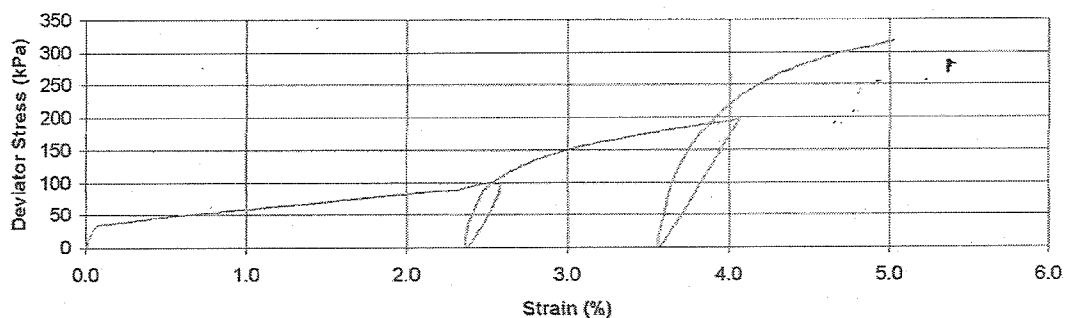
# EFFECTIVE STRESS TRIAXIAL TEST REPORT

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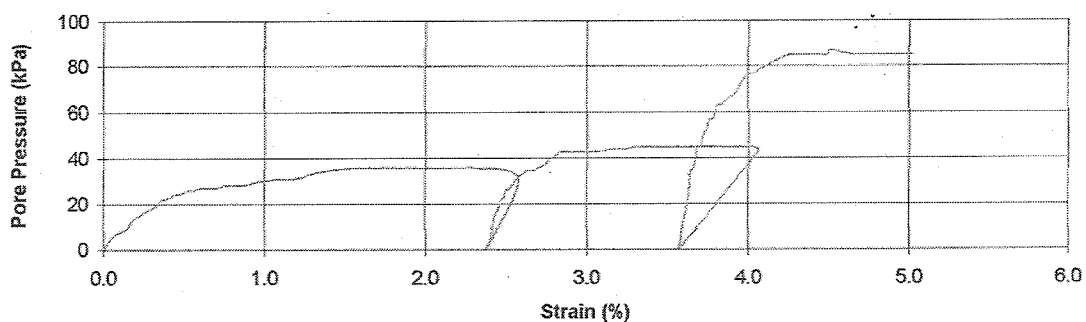
Level 3, 116 Miller Street North Sydney NSW 2060

PROJECT: 43217997

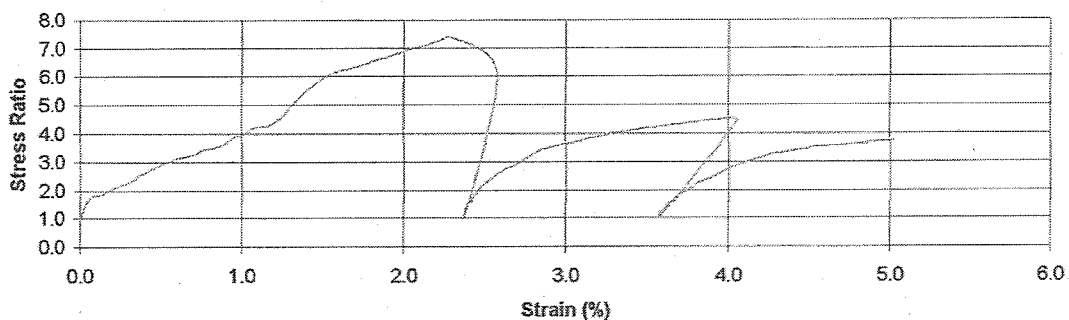
Deviator Stress Vs Strain



Pore Pressure Vs Strain



Stress Ratio Vs Strain



Lab No: 52826

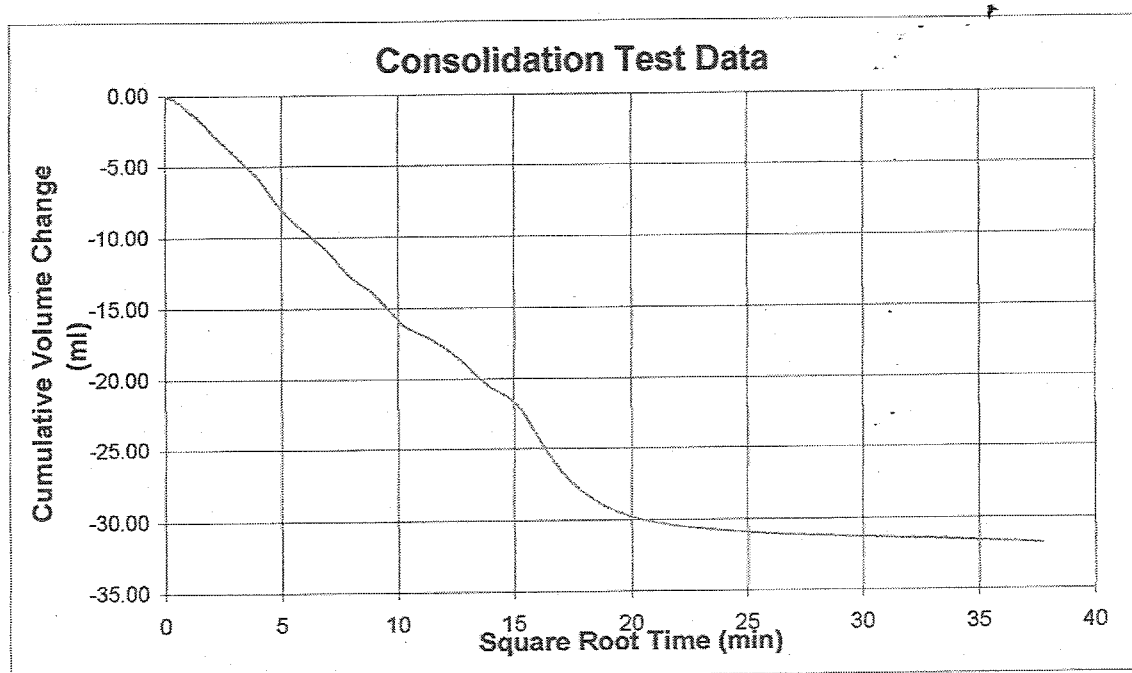
Sample Source:

BH12 3.4-3.8m

Test procedure: AS 1289 6.4.2 Determination of compressive strength of soil - Compressive strength of a saturated specimen tested in undrained triaxial compression with measurement of pore water pressure.

# EFFECTIVE STRESS TRIAXIAL TEST REPORT

**CLIENT:** URS  
Level 3, 116 Miller Street North Sydney NSW 2060  
**PROJECT:** 43217997



Sample Source: BH12 3.4-3.8m      Lab No: 52826

Drainage Conditions: Bottom, Side  
Stage 1

Net Cell Pressure (kPa): 50

Time for 100% Consolidation (min): 324

Coefficient of Consolidation ( $\text{m}^2/\text{yr}$ ): 0.29

B Bar Response: 1.00      Rate Of Strain (mm/min): 0.001

Test procedure: AS 1289 6.4.2 Determination of compressive strength of soil - Compressive strength of a saturated specimen tested in undrained triaxial compression with measurement of pore water pressure.