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Bore No: SB22
Client: Costco Wholesale (Australia) Pty Ltd
Project: Phase I and II Site Investigations
Box 1 of 1
Depth: 5.4 - 10.0 m
Date: 31 May 2009





Cored Borehole

BOREHOLE SB22

Sheet 1 of 1

URS Australia PTY LTD

Phone:
Fax:Project Reference: **Preliminary
Geotechnical
Assessment**Client: **Costco Wholesale (Australia) Pty Ltd**Drilling Contractor: **Macquarie Pty Ltd**Project No.: **43217997**Location: **17-21 Parramatta Road, Lidcombe**Logged By: **J Kor**
Checked By: **V Tandjiria**
Date Started: **31-5-09**
Date Finished: **31-5-09**Bore Size: **100mm mm**
Casing Size: **mm**
Total Depth: **8.40 m**
Borehole Inclination and
Bearing: **90° from horizontal
at ° True North**Relative Level: **mRL**
Coordinates: **6252928.00 mN
319646.00 mE**
Permit No:Drill Type: **NMLC - Diamond Impreg. Bit**
Drill Model: **Truck Mounted Rig**
Drill Fluid: **Water**

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								
		5.4				Continues from non-cored log at 5.40m SHALE, extremely low to very low strength, extremely weathered, dark grey, thinly laminated, fragmented to highly fractured	XW		5.4			5.56m to 5.68m, Fractured
				6								5.95m to 6.00m, Fractured
												6.50m to 7.00m, Fractured
		86%		7		SHALE, medium strength, slightly weathered, dark grey, thinly laminated, slightly fractured Point Load Test at 7.08m A=0.60, D=0.73	SW		46			7.74, BG, 0°-5°, Pl, S, KL
				8		Point Load Test at 8.05m A=0.49, D=0.51						7.98, BG, 5°-10°, Pl, S, KL
						Discontinued at 8.40m, target depth reached						
				9								
				10								

Remarks: Point Load Strength results displayed as Is50 (MPa), D=Diametral, A=Axial



Non-cored Hole

BOREHOLE MW1D

URS Australia Pty Ltd Lvl 3, 116 Miller Street, North Sydney NSW 2060		Phone: +61.2.8925 5500 Fax: +61.2.8925 5555	Project Reference: Preliminary Geotechnical Assessment Project No.: 43217997	Client: Costco Wholesale (Australia) Pty Ltd
Drilling Contractor: Terratest Pty Ltd				Location: 17-21 Parramatta Rd, Lidcombe
Logged By: J Kor	Bore Size: 100mm mm	Relative Level: mRL	Drill Type: SFA "V" Bit, Hand Augering	
Checked By: V Tandjiria	Total Depth: 15.00 m	Coordinates: 6253000.00 mN 319614.00 mE		
Date Started: 25-7-09	Casing Size: mm	Permit No:	Drill Model: EDSON 3000	Drill Fluid: N/A
Date Finished: 25-7-09				

SAMPLE TYPE	RUN (m)	FIELD SHEAR STRENGTH (kPa)	PENETROMETER BLOWS (N)	SAMPLING AND OTHER TESTING	GROUND WATER DATA AND COMMENTS	DEPTH (m)	GRAPHIC LOG	DESCRIPTION OF STRATA	MOISTURE CONDITION	USCS	CONSISTENCY/DENSITY	GEOLOGICAL DESCRIPTION
<div><div>DS</div><div>DS</div><div>SPT</div><div>SPT</div><div>SPT</div><div>SPT</div><div>UD Failed</div></div>	V Bit					0	<div><div></div><div></div></div>	Bitumen (50mm thick) Road Base				FILL
							<div><div></div><div></div></div>	FILL, sand, uniformly graded, fine to medium grained, brown, dry to moist, dense			D	
						1	<div><div></div><div></div></div>					
							<div><div></div><div></div></div>					
							<div><div></div><div></div></div>					
							<div><div></div><div></div></div>					
							<div><div></div><div></div></div>					
							<div><div></div><div></div></div>					
							<div><div></div><div></div></div>					
							<div><div></div><div></div></div>					
						2	<div><div></div><div></div></div>	Medium dense at 2m	D/M		MD	ALLUVIUM
							<div><div></div><div></div></div>					
							<div><div></div><div></div></div>					
							<div><div></div><div></div></div>					
						3	<div><div></div><div></div></div>	Very loose at 3m (at boundary with silty clay below)			VL	ALLUVIUM
							<div><div></div><div></div></div>					
							<div><div></div><div></div></div>					
						4	<div><div></div><div></div></div>	Silty CLAY, medium to high plasticity, dark grey, moist to wet, soft	M/W		S	ALLUVIUM
							<div><div></div><div></div></div>	Silty CLAY, low to medium plasticity, dark grey, with a trace of organic fragments and marine odour, wet	W		VS	
							<div><div></div><div></div></div>	Gravelly CLAY, low plasticity, mottled red-brownish grey, with a trace of ironstone fragments, moist to wet	M/W			

<div> <div>URS</div> <div>Non-cored Hole</div> </div>		<div>BOREHOLE MW1D</div>	
<div> <div>URS Australia Pty Ltd</div> <div>Lvl 3, 116 Miller Street, North Sydney NSW 2060</div> </div>		<div> <div> <div>Phone: +61.2.8925 5500</div> <div>Fax: +61.2.8925 5555</div> </div> <div> <div>Project No.: 43217997</div> <div>Project Reference: Preliminary Geotechnical Assessment</div> </div> </div>	

SAMPLE TYPE	RUN (m)	FIELD SHEAR STRENGTH (kPa)	PENETROMETER BLOWS (N)	SAMPLING AND OTHER TESTING	GROUND WATER DATA AND COMMENTS	DEPTH (m)	GRAPHIC LOG	DESCRIPTION OF STRATA	MOISTURE CONDITION	USCS	CONSISTENCY/ DENSITY	GEOLOGICAL DESCRIPTION
UD Failed				DS Taken		5		CLAY, high plasticity, dark grey, with a trace of ironstone and shell fragments, moist to wet				
UD Failed				DS Taken		6						
SPT			N=92	SPT@6.5m 16,30,62		7		Hard at 6.5			H	RESIDUAL
						8		V Bit refusal at 7.2m, continues with NMLC coring				
						9						
						10						

Remarks: DS in "SAMPLE TYPE" column represents Disturbed Sample
 UD in "SAMPLE TYPE" column represents Undisturbed Sample
 UD failed due to timber blocking/too soft

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Bore No: MW1D
Client: Costco Wholesale (Australia) Pty Ltd
Project: Phase I and II Site Investigations
Box 1 of 2
Depth: 7.2 - 11.0 m
Date: 25 July 2009



Bore No: MW1D
Client: Costco Wholesale (Australia) Pty Ltd
Project: Phase I and II Site Investigations
Box 2 of 2
Depth: 11.0 - 15.0 m
Date: 25 July 2009





Cored Borehole

BOREHOLE MW1D

Sheet 1 of 2

URS Australia PTY LTD	Phone:	Project Reference:	Client:
	Fax:	Preliminary Geotechnical Assessment	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: 6253000.00 mN	Drill Model: EDSON 3000
Date Started: 25-7-09	Total Depth: 15.00 m	319614.00 mE	Drill Fluid: Water
Date Finished: 25-7-09	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 EI - 0.03 VL - 0.1 LM - 0.3 MT - 3 HT - 10	RQD (%)	DEFECT SPACING (mm) 0-19 20-49 50-99 100-199 200-599 ≥600	DEFECT LOG	DEFECT DESCRIPTION (Defect type, inclination, shape, roughness, infill, thickness)		
				5										
											</			

URS Australia PTY LTD

Phone: Project
Fax: No.: 43217997

Project Reference: Preliminary Geotechnical Assessment

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)		
HQ - DIAMOND IMPREGNATED BIT		100%		10		Fractured to highly fractured from 10.1m to 12.25m (A number of near vertical joints)	EL	0.03	60	0-19		JN, 50°-55°, Wa, Sr, KL JN, 40°-45°, Pl, S, KL		
							VL	0.1		20-49		BG, 5°-10°, St, S, KL JN, 75°-80°, Pl, S, KL BG, 5°-10°, Pl, S, KL JN, 55°-60°, Pl, S, KL		
							ML	0.3		50-99		BG, 10°-15°, Ir, S, KL JN, 80°-85°, Pl, S, KL		
							HL	1		100-199		BG, 0°-5°, Pl, S, KL Fractured (11.15m to 11.22m) JN, 50°-55°, Wa, Sr, KL JN, 40°-45°, S, Pl, KL JN, 90°, Pl, Sr, KL		
							VL	10		200-599		JN, 75°-80°, Pl, Sr, KL		
							ML					Fractured (12.04m to 12.25m)		
							HL					BG, 5°-10°, Pl, S, KL		
							EL							
							VL							
				11										
						Point Load Test (Is50) at 11.45m A=0.40, D=0.53								
				12					12.15					



Non-cored Hole

BOREHOLE MW2D

Sheet 1 of 2

URS Australia Pty Ltd Lvl 3, 116 Miller Street, North Sydney NSW 2060	Phone: +61.2.8925 5500 Fax: +61.2.8925 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: 100mm mm	Relative Level: mRL	Drill Type: SFA "V" Bit, Hand Augering
Checked By: V Tandjiria	Total Depth: 15.00 m	Coordinates: 6252973.00 mN	Drill Model: EDSON 3000
Date Started: 26-7-09	Casing Size: mm	319485.00 mE	Drill Fluid: N/A
Date Finished: 26-7-09		Permit No:	

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SAMPLE TYPE	RUN (m)	FIELD SHEAR STRENGTH (kPa)	PENETROMETER BLOWS (N)	SAMPLING AND OTHER TESTING	GROUND WATER DATA AND COMMENTS	DEPTH (m)	GRAPHIC LOG	DESCRIPTION OF STRATA	MOISTURE CONDITION	USCS	CONSISTENCY/DENSITY	GEOLOGICAL DESCRIPTION
DS Hand Auger	C					0		CONCRETE (150mm thick)				FILL
								Fill, sand uniformly graded, fine to medium grained, brown, with a trace of clay colloid and gravels, moist	M			
DS Hand Auger						1		Sandy CLAY, medium plasticity, brown, moist (purge water siting on 0.45m)	M			ALLUVIUM
						2		Silty CLAY, low plasticity, greyish black, with a trace of organics, wet, stiff	W		F/St	
SPT			N=9	SPT @ 2.0m 4,4,5				CLAY, medium plasticity, mottled red greyish brown, with a trace of organics, wet, stiff	W		F/St	
						3		Silty CLAY, medium to high plasticity, greyish black, wet				
UD								Very soft at 4m				VS
						4		Becoming black, low plasticity and more silty at 4.35m				
								Becoming greyish black and medium to high plasticity at 4.6m				

URS Australia Pty Ltd
Lvl 3, 116 Miller Street, North Sydney NSW 2060

Phone: +61.2.8925 5500
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Project No.: **43217997**

Project Reference: **Preliminary Geotechnical Assessment**

SAMPLE TYPE	RUN (m)	FIELD SHEAR STRENGTH (kPa)	PENETROMETER BLOWS (N)	SAMPLING AND OTHER TESTING	GROUND WATER DATA AND COMMENTS	DEPTH (m)	GRAPHIC LOG	DESCRIPTION OF STRATA	MOISTURE CONDITION	USCS	CONSISTENCY/DENSITY	GEOLOGICAL DESCRIPTION
SPT			N=19	SPT @ 5.0m 4,7,12		5		Shaley CLAY, low to medium plasticity, greyish black, moist to wet, very stiff SHALE, extremely weathered, extremely low strength	M/W		VSt	RESIDUAL
SPT			N=N/A	SPT@6m 19,78, 8/30mm		6			D			
						7		V Bit refusal at 7.0m, continues with NMLC coring				
						8						
						9						
						10						

Remarks: DS in "SAMPLE TYPE" column represents Disturbed Sample
UD in "SAMPLE TYPE" column represents Undisturbed Sample
C in "Run (m)" column represents Concrete Cutting