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GEOTECHNICAL LOG OF NON-CORE DRILLHOLE

Borehole No: BH203

Sheet No: 1 OF 2

Project No: 3003659

Client: QDTMR

Project: Smith Olsen Detailed Design Geotech Investigation Co-ordinates System: UTM Zone 56

Feature: Easting: 536049.7m E

Location: Refer Location Plan Northing: 6906765.5m S

Surface RL (m): 27.03

Angle from Horz: 90

Direction: n/a

DRILLING						TESTING					SUBSTANCE					
Method	Support	Rate			Water	Sample	Depth (m)	Depth/RL	Type	Sample or Field Test	Graphic Log	USC Symbol	Description	Moisture	Consistency/ Density	Other Observations
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
ATC	WD						27.03		S	5,8,5 N=13		ML	ASPHALT	D	St	
							26.88						SILT: Stiff, low plasticity, pale orange-yellow, rare gravels (pale orange HW SILTSTONE), dry, fill.			
							0.60						Trace of orange-brown clay fines.			
							26.43									
							1.50						Stiff to very stiff, traces of tree bark, occasional fine to medium gravels, (HW SILTSTONE), moist, fill.			
							25.53									
							2.50						Silty CLAY: Stiff to very stiff, low plasticity, pale grey-brown and pale orange, some fine to medium gravels (HW, MS SILTSTONE), slight organic odour, moist, fill.			
							24.53									
							4.00						Silty CLAY: Stiff to very stiff, high plasticity, dark brown some green-grey-brown, some fine metasiltstone gravels, trace of tree roots, trace of carbonaceous material, moist, natural.			
							23.03									
WD									S	5,7,8 N=15		CH	M	St VSt		
WD									S	4,6,8 N=14				St	SPT Hammer Bouncing	
WD									S	4,H,B						
WD									S							
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Notes (Instrumentation etc):

Refer to Geotechnical Log of Cored Drillhole

Contractor: GeoDrill

Commenced: 04/10/11

Logged By: ME/BD

Equipment: Hydropower Scout

Completed: 04/10/11

Checked By: AR

Basis of description and details of abbreviations are given on explanatory notes



GEOTECHNICAL INVESTIGATIONS LOG

Borehole No: BH203

Sheet No: 2 OF 2

Project No: 3003659

Client: QDTMR

Project: Smith Olsen Detailed Design Geotech Investigation Co-ordinates System: UTM Zone 56

Feature: E: 536049.7

Location: Refer Location Plan N: 6906765.5

Surface RL (m): 26.94

Angle from Horiz: 90

Direction: n/a

DRILLING					SUBSTANCE															TEST		DEFECTS							
Method	Water	TCR %	RQD %	Lift	Depth (m)	Depth/RL	Graphic Log	Description ROCK TYPE, mineralogy, grain size, colour, fabric, etc.	Weathering					Estimated Strength					Type	Result	Fracture Spacing (mm)			Description					
									EW	HW	MM	SW	FS	FR	EL	VL	L	M			H	VH	EH	20	40	300	1000	Depth	Type, Orientation, Spacing, Infilling, Coating, Planarity, Roughness, Thickness.
1	2	3	4	5	6	7	8	Start Coring at 10.00m											10	11	12	13	14			15	16		
NMLC		100	0		10.3	10.00		METASILTSTONE: Pale grey with some iron staining, highly fractured, low strength, highly weathered.																				10.05	J, 40, St, Fe, Pl, Ro, <1mm
						10.30																						10.10	CZ, Cl, Cy
						16.64		Fractured, medium strength, highly weathered.																			10.20	J, 50, St, Fe, Pl, Sm, <1mm	
		100	0																								10.21	J, 60, St, Fe, Pl, Sm, <1mm	
						10.70																						10.30	CZ, Cl, Cy
		100	0		10.8	10.80		Fragmented.																				10.40	J, 40, In, Cy, Pl, Sm, <1mm
						16.14		Highly fractured.																				10.51	J, 85, Vn, Cy, Pl, Sm, <1mm
						11.10																						10.55	J, 40, Vn, Cy, Pl, Sm, <1mm
		100	20			11.3	11.30		Yellow grey, some sand grains, fractured, low strength.																			10.60	J, 50, Cl, Cy, Pl, Sm, <1mm
						15.64																						10.70	CZ, In, Cy, <50mm
					11.50			Pale grey, no sand grains, highly fractured.																			10.73	J, 55, Cl, Cy, Pl, Sm, <1mm	
	100	33			11.6	11.60		Medium strength, moderately weathered.																			10.74	CZ, In, Cy, <50mm	
					11.8	15.44																					10.80	CZ, In, Cy, <100mm	
																											10.90	J, 30, Vn, Cy, St, Ro, <1mm	
																											11.10	J, 85, Vn, Cy, Ir, Ro, <1mm	
																											11.15	J, 50, Vn, Cy, Ir, Ro, <1mm	
																											11.16	J, 85, Vn, Cy, Pl, Sm, <1mm	
																											11.25	J, 40, Vn, Cy, <1mm	
																											11.30	CZ, In, Cy, <50mm	
																											11.45	J, 20, Vn, Cy, St, <1mm	
																											11.50	J, 50, In, Cy, Pl, Sm, <20mm	
																											11.55	J, 40, Vn, Cy, Pl, Sm, <1mm	
																											11.70	CZ, St, Fe, <100mm	
																											11.90	J, 50, St, Fe, Pl, Sm, <1mm	
																											11.95	J, 50, St, Fe, Pl, Sm, <1mm	
																											12.00	J, 30, Cl, Pl, Sm, <1mm	
																											12.20	J, 40, Vn, Cy, Pl, Sm, <1mm	
																											12.25	J, 40, Vn, Cy, Ir, Ro, <1mm	
																											12.40	J, 60, St, Fe, Pl, Sm, <1mm	
																											12.50	J, 85, St, Fe, Ir, Ro, <1mm	
Hole discontinued at 12.60m																													
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Notes (Instrumentation etc):

Contractor: GeoDrill

Commenced: 04/10/11

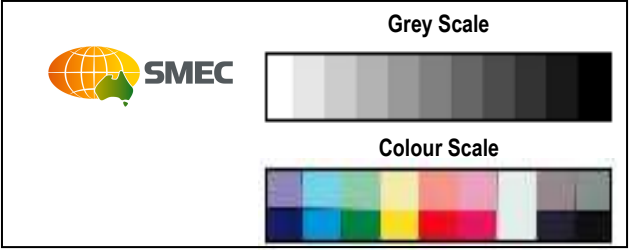
Logged By: ME/BD

Equipment: Hydropower Scout

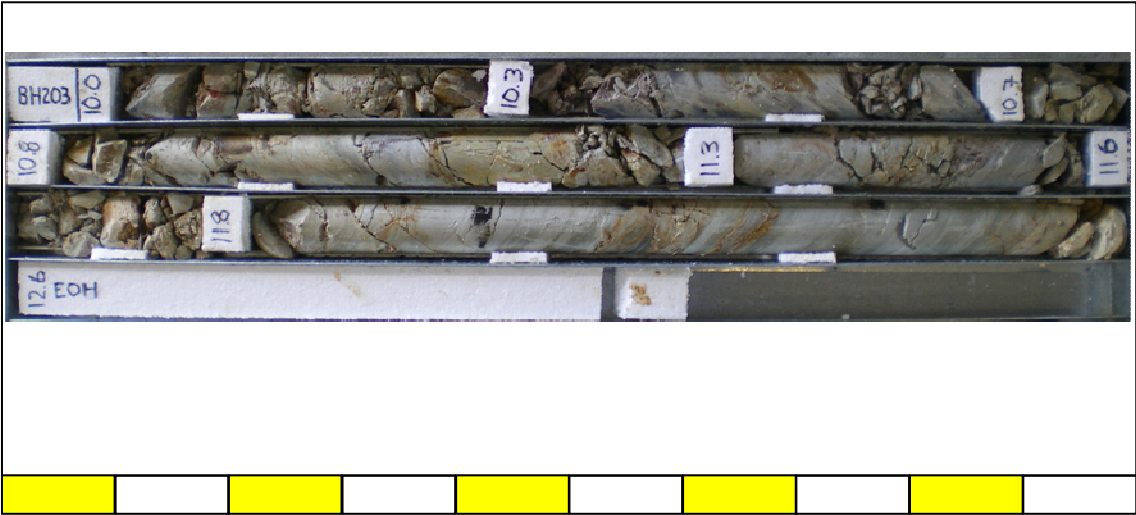
Completed: 04/10/11

Checked By: AR

Basis of description and details of abbreviations are given on explanatory notes



Borehole Number		BH203	
Box	1	of	1
Depth	10.00m	to	12.60m
Project	Smith St & Olsen Av		
Number	3003659		
Client	QDTMR		



NOTES RELATING TO GEOTECHNICAL REPORTS AND SITE INVESTIGATION LOGS

GEOTECHNICAL REPORTS AND SITE INVESTIGATION LOGS

Geotechnical reports/logs are prepared by qualified personnel on the information supplied or obtained and are based on current engineering standards of interpretation and analysis.

Information may be gained from limited subsurface testing, surface observations, previous work, and is supplemented by knowledge of the local geology and experience of the range of properties that may exhibited by the materials present. For this reason, geotechnical reports should be regarded as interpretative rather than factual documents, limited to some extent by the scope of information on which they rely.

Where the report/log has been prepared for a specific purpose (e.g. design of a three-storey building), the information and interpretation may not be appropriate if the design is changed (e.g. a twenty-storey building). In such cases, the report/log and the sufficiency of the existing work should be reviewed by SMEC in the light of the new proposal.

Every care is taken with the report/log content; however, it is not always possible to anticipate or assume responsibility for the following conditions:

- Unexpected variations in ground conditions. The potential for this depends on the amount of investigative work undertaken.
- Changes in policy or interpretation by statutory authorities
- The actions of contractors responding to commercial pressures

If these occur, SMEC would be pleased to resolve the matter through further investigation, analysis or advice.

UNFORESEEN CONDITIONS

Should conditions encountered on site differ markedly from those anticipated from the information contained in the report/log, SMEC should be notified immediately. Early identification of site anomalies generally results in any problems being more readily resolved and allows re-interpretation and assessment of the implications for future work.

SUBSURFACE INFORMATION

Logs of a borehole, recovered core, test pit, excavated face, or cone penetration test are an engineering and/or geological interpretation of the subsurface conditions. The reliability of the logged information depends on the drilling/testing method, sampling/observation spacing's and the ground conditions. It is not always possible or economic to obtain continuous high-quality data. It should also be recognised that the volume of material observed or tested is only a fraction of the total subsurface profile.

Interpretation of subsurface information and application to design and construction must take into consideration the spacing of the test locations, the frequency of observations and testing, and the possibility that geological boundaries may vary between observation points.

Groundwater observations and measurements outside of specially designed and constructed piezometers should be treated with care for the following reasons:

- In low permeability soils groundwater may not seep into an excavation or bore in the short time it is left open.
- A localised perched water table may not represent the true water table.
- Groundwater levels vary according to rainfall events or season.
- Some drilling and testing procedures mask or prevent groundwater inflow.

The installation of piezometers and long-term monitoring of groundwater levels may be required to adequately identify groundwater conditions.