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GEOTECHNICAL LOG OF NON-CORE DRILLHOLE

Borehole No: BH113

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:** 536362.2m E

Location: Refer Location Plan **Northing:** 6906761.3m S

Surface RL (m): 17.85

Angle from Horz: 90

Direction: n/a

DRILLING							TESTING				SUBSTANCE					
Method	Support	Rate Fast Medium Slow	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
								17.85			CL					
								0.90			CL					
								16.95	UC	639 kPa	CH					
								1.50			CL					
								16.35			CL					
								1.70		5, 8, 13 N=21						
								16.15	S		CL					
								2			CL					
								2.50			CL					
								15.35	S	8, 18, 30/ 128mm N*=53	CL					
								3			CL					
								3.20			CL					
								4								
								5								
								6								
								7								
								8								
								9								

Notes (Instrumentation etc):

Contractor: GeoDrill

Commenced: 10/08/11

Logged By: ME/BD

Equipment: Hydropower Scout

Completed: 10/08/11

Checked By: AR

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

SMEC GOLD COAST BOREHOLE NON CORE LOG I:\PROJECTS\3003659\005_OPERATIONS\DD15_GEOTECHNICAL\INVESTIGATIONS\GINT FILES\SMITH - OLSEN BOREHOLES (CURRENT) GPJ_ 23/11/11



GEOTECHNICAL INVESTIGATIONS LOG

Borehole No: BH113

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:** 536362.2

Location: Refer Location Plan **N:** 6906761.3

Surface RL (m): 17.85

Angle from Horz: 90

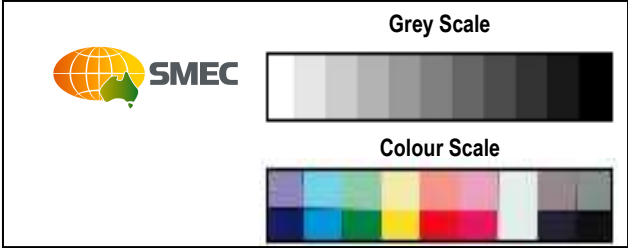
Direction: n/a

DRILLING					SUBSTANCE							TEST		DEFECTS																						
Method	Water	TCR %	RQD %	Lift	Depth (m)	Depth/RL	Graphic Log	Description	Weathering				Estimated Strength			Type	Result	Fracture Spacing (mm)	Depth	Description																
1	2	3	4	5	6	7	8	ROCK TYPE, mineralogy, grain size, colour, fabric, etc.	EW	HW	MW	SW	FS	FR	EL	VL	L	M	H	VH	EH	20	40	100	300	1000	12	13	14	15	16					
								Refer to Geotechnical log of Non-cored Drillhole																												
						3.20		Start Coring at 3.20m																												
	100	0			3.4	14.65		METASILTSTONE: pale orange brown, extremely low strength to very low strength, extremely weathered (remoulds to Silty CLAY).																									3.44	Be, 55, Vn, Cl, Pl, Ro		
						3.40																										3.48	J, 75, Vn, Cl, Un, Sm			
	100	0				4.20		Foliated, low strength, highly fractured, highly weathered.																									3.80	Be, 60, Vn, Cl, Pl, Sm		
					4.2	4.20																											3.98	Be, 55, St, Fe, Pl, Sm		
						4.20		Slightly fractured.																								4.06	Be, 40, St, Fe, St, Sm			
						4.20																											4.28	Be, 40, Vn, Cy, Dis, Sm		
	52	18				4.65																														
						4.65		CORE LOSS (4.65m to 5.05m)																												
						5.05																														
						5.05		Slightly fractured.																										5.33	Be, 50, Ct, Cy, Un, Sm	
	100	43				5.60		Medium strength, moderately weathered.																									5.52	J, 60, Vn, Cl, Un, Sm		
						5.60																											5.60	J, 40, Vn, Cl, Un, Ro		
						6.00																												5.83	J, 30, Vn, Cy, Pl, Sm	
						6.00		ARGILLITE: Predominately dark grey with pale grey-brown laminations, slightly fractured, medium strength to low strength, moderately weathered to slightly weathered.																										5.94	J, 30, In, Cy, Pl, Sm	
						6.2																												5.98	J, 30, In, Cy, Pl, Sm	
						6.2																												6.04	J, 30, Vn, Cl, Cu, Ro	
						6.2																												6.18	J, 50, St, Fe, Pl, Sm	
						6.2																												6.48	Be, 40, St, Fe, Pl, Sm	
	100	43				7.70		Medium strength.																										6.77	Be, 40, St, Fe, Pl, Sm	
						7.70																												6.86	Be, 40, St, Fe, Pl, Sm	
						7.70																												6.98	J, 45, Vn, Cl, Pl, Sm	
						7.7																												7.23	Be, 45, St, Fe, Pl, Sm	
						7.7																												7.38	J, 45, Ct, Cy, Pl, Ro	
						7.7																												7.49-7.55	FZ, In, Cy	
						7.7																												7.68	J, 40, St, Cl, St, Sm	
						7.7																												7.70	Be, 45, St, Fe, Pl, Sm	
	100	69				9.0		Hole discontinued at 9.00m																										8.05	Be, 50, St, Fe, Pl, Sm	
						9.0																												8.60	Be, 45, St, Fe, Pl, Sm	
						9.0																													8.95	Be, 45, St, Fe, Cu, Sm
						9.0																												8.96-9.00	CZ	

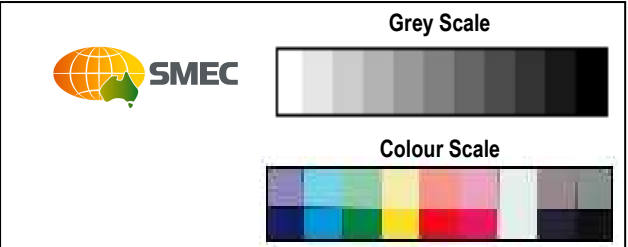
Notes (Instrumentation etc):

Contractor: GeoDrill **Commenced:** 10/08/11 **Logged By:** ME/BD
Equipment: Hydropower Scout **Completed:** 10/08/11 **Checked By:** AR

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



Borehole Number		BH113	
Box	1	of	2
Depth	3.20m	to	8.60m
Project	Smith St & Olsen Av		
Number	3003659		
Client	QDTMR		



Borehole Number		BH113	
Box	2	of	2
Depth	8.60m	to	9.00m
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.