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GEOTECHNICAL LOG OF NON-CORE DRILLHOLE

Borehole No: BH205

Sheet No: 1 OF 2

Project No: 3003659

Client: QDTMR

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

Feature: **Eastings:** 537719.3m E

Location: Refer Location Plan **Northings:** 6906604.8m S

Surface RL (m): 18.26

Angle from Horz: 90

Direction: n/a

DRILLING						TESTING				SUBSTANCE						
Method	Support	Rate	Rate	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
							18.26	18.11			[Cross-hatch pattern]	GM	ASPHALT			
							0.50	17.66			[Dotted pattern]		Silty GRAVEL: Dense, fine to medium gravel, grey, dry, road base.	D	D	
						SPT	0.95	17.31	S	6,11,14 N=25			Gravelly SILT: Very stiff, pale orange-brown, some fine to medium gravel (EW SILTSTONE), dry to moist, possible residual.	D	VSt	
							1.95	16.31					METASANDSTONE: Extremely low strength, extremely low strength, fine grained, trace of pale grey (remoulds to low plasticity Sandy CLAY).			
						SPT	2.95	15.31	S	10,8,22 N=30			Pale grey yellow-brown some red-brown, trace of fine gravel sized quartz fragments.			
							5.95	12.31					Pale grey-brown and pale orange, some fine gravel sized quartz fragments.			
						SPT	7.45	10.81	S	5,13,21 N=34			Extremely low strength some very low strength, pale grey-green, thinly laminated, some iron staining.			
						U50										
							8.95	9.31					Pale grey stained orange.			
						SPT			S	25,30/ 95mm N*=95						
						SPT			S	9,16,19 N=35			METASILTSTONE: Extremely low strength, extremely weathered, pale grey, some thin grey-brown laminations (remoulds to medium plasticity Silty CLAY)			
						SPT			S	11,19,25 N=44			Iron staining more frequent in laminations.			

Notes (Instrumentation etc):

Contractor: GeoDrill

Commenced: 06/10/11

Logged By: ME/BD

Equipment: Hydropower Scout

Completed: 07/10/11

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)\GP_21/11/11



GEOTECHNICAL LOG OF NON-CORE DRILLHOLE

Borehole No: BH205
Sheet No: 2 OF 2
Project No: 3003659

Client: QDTMR
Project: Smith Olsen Detailed Design Geotech Investigation **Co-ordinates System:** UTM Zone 56
Feature: **Easting:** 537719.3m E
Location: Refer Location Plan **Northing:** 6906604.8m S

Surface RL (m): 18.26
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
						SPT	10.45 7.81	S	25,30/ 120mm N*=75			Iron staining more frequent in laminations. <i>(continued)</i>				
							11					Pale grey-brown thinly laminated, orange and dark orange staining in laminations.				
						SPT	11.95 6.31	S	13,17,19 N=36			Pale grey, some thin grey laminations some iron bleaching.				
							13									
						SPT	13.45 4.81	S	30/ 100mm N*=90			Pale grey-green, thinly laminated some, iron staining in healed fractures.				
							14									
						SPT		S	30/ 140mm N*=64							
							15									
						SPT		S	29,30/ 115mm N*=78							
							16									
							17					Borehole discontinued at 16.45m				
							18									
							19									

Notes (Instrumentation etc):

Contractor: GeoDrill **Commenced:** 06/10/11 **Logged By:** ME/BD
Equipment: Hydropower Scout **Completed:** 07/10/11 **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 18/11/11

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.