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GEOTECHNICAL LOG OF NON-CORE DRILLHOLE

Borehole No: BH201
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:** 534907.5m E

Location: Refer Location Plan **Northings:** 6907013.3m S

Surface RL (m): 35.51

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	HW Casing					SPT	35.51				OL		Gravelly SILT: Firm, low plasticity, grey-brown, fine to medium gravel (LS-MS SILTSTONE), some organic material, moist, fill.				
							0.30										
							35.21										
							0.70				GM		Silty GRAVEL: Medium dense, fine to medium grained (LS, HW SILTSTONE), brown-grey, residual.	M	MD		
							34.81	S	16,30/ 120mm N ^w = 75				METASILTSTONE: Extremely low strength, extremely weathered, pale grey-brown, some dark grey lamination, some iron staining.				
							1.00						Refer to Geotechnical Log of Cored Drillhole				
							1										
							2										
							3										
							4										
							5										
							6										
							7										
							8										
							9										

Notes (Instrumentation etc): Offset 9.7m N of GPS marker, 14m N of Existing noise barrier, 3.6m vertically lower than GPS marker. 5.3m vertically lower than existing noise barrier.

Contractor: GeoDrill **Commenced:** 14/10/11 **Logged By:** ME/BD
Equipment: Hydropower Scout **Completed:** 14/10/11 **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_231111



GEOTECHNICAL INVESTIGATIONS LOG

Borehole No: BH201

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:** 534907.5

Location: Refer Location Plan **N:** 6907013.3

Surface RL (m): 35.51

Angle from Horz: 90

Direction: n/a

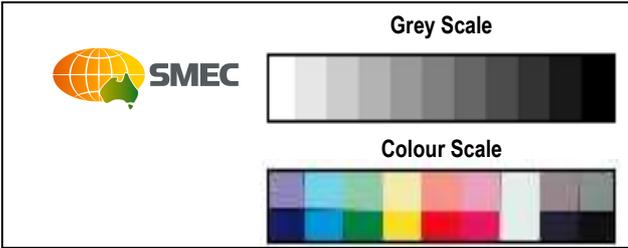
SMEC GOLD COAST BOREHOLE LOG I:\PROJECTS\3003659\005_OPERATIONS\DD\15_GEOTECHNICAL\INVESTIGATIONS\GINT FILES\SMITH - OLSEN BOREHOLES (CURRENT).GPJ 18/11/11

DRILLING					SUBSTANCE							TEST		DEFECTS																								
Method	Water	TCR %	RQD %	Lift	Depth (m)	Depth/RL	Graphic Log	Description	Weathering			Estimated Strength				Type	Result	Fracture Spacing (mm)		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	300	100	1000	12	13	14	15	16							
								Refer to Geotechnical log of Non-cored Drillhole																														
						1.00		Start Coring at 1.00m																														
						34.51		METASILTSTONE: Dark grey with clay infill joints, fractured, high strength, moderately weathered to highly weathered.																														
		40	0			1.30		Fragmented, high strength, highly weathered.																														
						34.21		Fragmented, high strength, highly weathered.																														
						1.60		CORE LOSS (1.60m to 1.80m)																														
						33.91		Fragmented, high strength, highly weathered.																														
						1.80		Fragmented, high strength, highly weathered.																														
						33.71		Clay infilled joints, iron stained, highly fractured, moderately weathered.																														
						2.00		Slightly fractured.																														
						33.51		Highly fractured, low strength to medium strength, highly weathered.																														
						2.40		Slightly fractured, high strength, moderateley weathered.																														
						33.11		Fragmented in a matrix of pale brown Silty CLAY seams, low strength to medium strength, highly weathered to extremely weathered.																														
						3.00		CORE LOSS (3.80m to 5.00m)																														
						32.79		Fragmented, medium strength, highly weathered.																														
						32.36		Fragmented, medium strength, highly weathered.																														
						3.50		Fragmented, medium strength, highly weathered.																														
						32.01		Fragmented, medium strength, highly weathered.																														
						3.80		CORE LOSS (5.10m to 5.50m)																														
						31.71		Fragmented, medium strength, highly weathered.																														
						5.00		Fragmented, medium strength, highly weathered.																														
						5.10		CORE LOSS (5.10m to 5.50m)																														
						5.50		Fragmented, medium strength, highly weathered.																														
						5.70		Fragmented, medium strength, highly weathered.																														
						5.80		Fragmented, medium strength, highly weathered.																														
						5.81		Dark grey and grey, laminated, slightly fractured, occasional iron staining in joints, high strength, slightly weathered.																														
						6.10		Fragmented, medium strength, highly weathered.																														
						6.11		Fragmented, medium strength, highly weathered.																														
						6.25		Fragmented, medium strength, highly weathered.																														
						6.35		Fragmented, medium strength, highly weathered.																														
						6.45		Fragmented, medium strength, highly weathered.																														
						6.60		Fragmented, medium strength, highly weathered.																														
						6.61		Fragmented, medium strength, highly weathered.																														
						6.70		Fragmented, medium strength, highly weathered.																														
						6.71		Fragmented, medium strength, highly weathered.																														
						6.72		Fragmented, medium strength, highly weathered.																														
						6.73		Fragmented, medium strength, highly weathered.																														
						6.90		Fragmented, medium strength, highly weathered.																														
						6.95		Fragmented, medium strength, highly weathered.																														
						7.45		Fragmented, medium strength, highly weathered.																														
						7.70		Fragmented, medium strength, highly weathered.																														
						7.80		Fragmented, medium strength, highly weathered.																														
						7.81		Fragmented, medium strength, highly weathered.																														
						8.25		Fragmented, medium strength, highly weathered.																														
						8.30		Fragmented, medium strength, highly weathered.																														
						8.45		Fragmented, medium strength, highly weathered.																														
						8.46		Fragmented, medium strength, highly weathered.																														
						8.60		Fragmented, medium strength, highly weathered.																														
						8.70		Fragmented, medium strength, highly weathered.																														
						9.00		Fragmented, medium strength, highly weathered.																														
						9.20		Hole discontinued at 9.20m																														

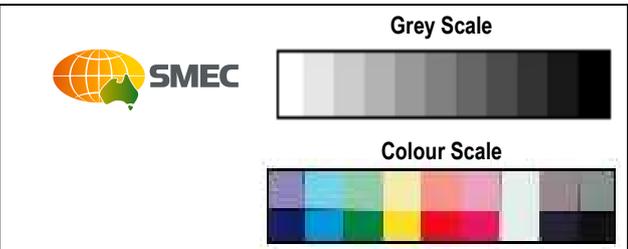
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Basis of description and details of abbreviations are given on explanatory notes



Borehole Number		BH201	
Box	1	of	2
Depth	1.00m	to	7.00m
Project	Smith St & Olsen Av		
Number	3003659		
Client	QDTMR		



Borehole Number		BH201	
Box	2	of	2
Depth	7.00m	to	9.20m
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.