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BOREHOLE ENGINEERING LOG

HOLE NO : CURVE 22_BH01

CLIENT : TRANSPORT AND MAIN ROADS	POSITION : E: 359398, N: 8137552 (56 MGA94)	PAGE : 1 OF 2
PROJECT : BLACK SPOT PROJECT	SURFACE ELEVATION : 112.3 (AHD)	DATE DRILLED : 7/8/13 TO 7/8/13
JOB NO : CB24735.04	DIP / AZIMUTH : 90°	LOGGED BY : JP
LOCATION : KENNEDY HWY (CAIRNS - MAREEBA)		CHECKED BY : AJ

DRILLING | MATERIAL

PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY	STRUCTURE & Other Observations
		VH			112.3	0.0			0.10m ASPHALT: 0.10m.			FILL
AD/T		F	NOT OBSERVED	0.20m B					SILTY GRAVEL (GM): Brown, grey brown, fine to medium gravel, angular, with some fine to coarse grained sand.	D		0.20: Moisture Content (%) = 3.8, Liquid Limit (%) = 25, Plastic Limit (%) = 17, Plasticity Index (%) = 8, Linear Shrinkage (%) = 1.5, % Passing 37.5mm: 100, % Passing 2.36mm: 53, % Passing 0.425mm: 36, % Passing 0.075mm: 25, % Passing 0.002mm: 4, Max. Dry Density (t/m^3) = 2.1, OMC (%) = 8.5
		H							From 0.70 m to 1.00 m with cobbles			
				1.00m SPT 13, 14, 17 N=31	111.3	1.0		GM				
		F		1.45m								
				2.00m	110.3	2.0			From 2.00 m trace of rootlets			
				2.50m					2.50m			
				SPT 3, 6, 7 N=13					SILTY GRAVEL (GM): Mottled brown, grey brown, red brown, fine to medium gravel, sub-angular, comprising high to very high strength quartzite, fine to coarse grained sand, with fine to coarse grained sand.			COLLUVIUM?
WB				2.95m	109.3	3.0		GM				
				4.00m	108.3	4.0			4.00m			
		H		SPT 7, 7, 9 N=16					SILTY GRAVEL (GM): Brown, red brown, fine to medium gravel, angular, comprising low to high strength quartzite, fine grained sand, with fine to coarse grained sand.		MD	RESIDUAL SOIL 4.00: Moisture Content (%) = 13.7, Liquid Limit (%) = 27, Plastic Limit (%) = 20, Plasticity Index (%) = 7, Linear Shrinkage (%) = 5, % Passing 37.5mm: 100, % Passing 2.36mm: 66, % Passing 0.425mm: 53, % Passing 0.075mm: 38, % Passing 0.002mm: 7
				4.45m								
					107.3	5.0		GM				
				5.50m SPT 14, 14, 12 N=26								
				5.95m								
					106.3	6.0						

DRILLING

HA	Hand Auger	RR	Rock Rolling
AS	Auger Screw	AT	Air Track
AD/T	Auger Drill TC-bit	HQ	HQ Coring
AD/V	Auger Drill V-bit	NQ	NQ Coring
WB	Washbore	NMLC	NMLC Coring

DRILLING PENETRATION

VE	Very Easy	F	Firm
E	Easy	H	Hard
		VH	Very Hard

GROUNDWATER SYMBOLS

▼ = Water level (static)

▽ = Water level (during drilling)

SAMPLES & FIELD TESTS

DS	Disturbed Sample	SPT	Standard Penetration Test
ES	Env Soil Sample	U	Undisturbed Tube Sample
EW	Env Water Sample	W	Water Sample

HP Hand Penetrometer
HV Hand Vane Shear
(P: Peak Su R: Residual Su)
N SPT blows per 300mm
HW SPT penetration by hammer weight
RW SPT penetration by rod weight

MOISTURE CONDITION
D = Dry M = Moist W = Wet

DENSITY (SPT N-value)

VL	Very Loose	0 - 4
L	Loose	4 - 10
MD	Medium Dense	10 - 30
D	Dense	30 - 50
VD	Very Dense	50 - 100
CO	Compact	>50/150mm

CONSISTENCY (Su) {N-value}

VS	Very Soft	< 12 kPa	{0-2}
S	Soft	12 - 25	{2-4}
F	Firm	25 - 50	{4-8}
St	Stiff	50 - 100	{8-15}
VSt	Very Stiff	100 - 200	{15-30}
H	Hard	> 200 kPa	{>30}

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		H			106.3	6.0		GM	SILTY GRAVEL (GM): Brown, red brown, fine to medium gravel, angular, comprising low to high strength quartzite, fine grained sand, with fine to coarse grained sand. *(continued)*			RESIDUAL SOIL RESIDUAL SOIL RESIDUAL SOIL
									6.55m			
		VH		7.00m SPT 9, 8, 6 N=14 7.45m	105.3	7.0			GNEISS: Orange brown, pale brown, extremely weathered, extremely low strength, appears as SANDY GRAVEL (GM), fine to medium grained angular gravel, fine to coarse grained sand, with fines.		MD	EXTREMELY TO HIGHLY WEATHERED ROCK 7.00: Moisture Content (%) = 12.5, Liquid Limit (%) = 26, Plastic Limit (%) = 19, Plasticity Index (%) = 7, Linear Shrinkage (%) = 5, % Passing 2.36mm: 68, % Passing 0.425mm: 49, % Passing 0.075mm: 34, % Passing 0.002mm: 7
									8.00m			
		F	NOT OBSERVED	8.50m SPT 2, 4, 4 N=8 8.95m	104.3	8.0			GNEISS: Orange brown, extremely weathered, extremely low to very low strength, appears as SANDY SILT (ML), low plasticity, fine to medium grained sand, with fine to medium grained angular gravel.		L - MD	EXTREMELY WEATHERED ROCK
					103.3	9.0			9.10m			
		H							GNEISS: Grey brown, grey red brown, extremely to highly weathered, very low to low strength, appears as GRAVELLY SAND (GM), fine to medium grained angular gravel, fine to medium grained sand, trace of fines , fine to coarse grained sand, fine to medium grained angular gravel, with fines (Phyllite).			EXTREMELY TO HIGHLY WEATHERED ROCK
		F										
		H		10.00m SPT 5, 16, 21 N=37	102.3	10.0					D	
				10.45m					10.35m			
		VH							GNEISS: Grey, dark grey, orange brown, highly weathered, low to medium strength.			HIGHLY WEATHERED ROCK
					101.3	11.0			11.25m			
					100.3	12.0			Terminated Drill Hole at 11.25 m refusal on estimated medium to high strength material			

WB

DRILLING

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AS	Auger Screw	AT	Air Track
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