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BOREHOLE ENGINEERING LOG

HOLE NO : CURVE 22_BH04

CLIENT : TRANSPORT AND MAIN ROADS	POSITION : E: 359389, N: 8137542 (56 MGA94)	PAGE : 1 OF 3
PROJECT : BLACK SPOT PROJECT	SURFACE ELEVATION : 112.6 (AHD)	DATE DRILLED : 6/8/13 TO 6/8/13
JOB NO : CB24735.04	DIP / AZIMUTH : 90°	LOGGED BY : JP
LOCATION : KENNEDY HWY (CAIRNS - MAREEBA)		CHECKED BY : AJ

DRILLING				MATERIAL			
DRILLING & CASING	WATER	DRILLING PENETRATION	SAMPLES & FIELD TESTS	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	STRUCTURE & Other Observations
ADIT WB HOLE NO : CURVE 22_BH04		VH		112.6	0.0	0.10m ASPHALT: 0.10 m.	FILL
				111.6	1.0	GRAVELLY SILT (ML): Brown, red brown, low plasticity, fine to medium, sub-angular gravel, with fine to coarse grained sand and clay. From 1.00 m trace of cobbles comprising of high strength angular quartzite	D
				110.6	2.0		
			F	2.50m SPT 8, 7, 5 N=12	2.50	GRAVELLY SILT (ML): Orange brown, red brown, low plasticity, fine to medium grained angular gravel comprising quartzite with fine to medium grained sand.	RESIDUAL SOIL
				2.95m	3.0		
				4.00m SPT 10, 15, 20 N=35	4.00	GNEISS: Red brown, extremely weathered, extremely low strength, appears as SILTY GRAVEL (GM), fine to medium grained angular gravel, fine to coarse grained sand, with clay.	D
			4.45m	5.0			
		H		107.6	5.0		
			5.50m SPT 15, 23, 38 N=61	5.50	GNEISS: Grey, orange, brown, grey brown, extremely to highly weathered extremely low to low strength, appearing as SILTY GRAVEL (GM), fine to medium grained angular gravel, fine to coarse grained sand.	HIGHLY WEATHERED ROCK	
			5.95m	6.0			
		VH		106.6	6.0		5.50: Moisture Content (%) = 10.3, Liquid Limit (%) = 25, Plastic Limit (%) = 21, Plasticity Index (%) = 4, Linear Shrinkage (%) = 1.5, % Passing 2.36mm: 54, % Passing 0.425mm: 32, % Passing 0.075mm: 20, % Passing 0.002mm: 2

DRILLING			SAMPLES & FIELD TESTS			DENSITY (SPT N-value)		CONSISTENCY (Su) {N-value}	
HA Hand Auger	RR Rock Rolling	DS Disturbed Sample	SPT Standard Penetration Test	VL Very Loose	0 - 4	VS Very Soft	< 12 kPa {0-2}		
AS Auger Screw	AT Air Track	ES Env Soil Sample	U Undisturbed Tube Sample	L Loose	4 - 10	S Soft	12 - 25 {2-4}		
AD/T Auger Drill TC-bit	HQ HQ Coring	EW Env Water Sample	W Water Sample	MD Medium Dense	10 - 30	F Firm	25 - 50 {4-8}		
AD/V Auger Drill V-bit	NQ NQ Coring			D Dense	30 - 50	St Stiff	50 - 100 {8-15}		
WB Washbore	NMLC NMLC Coring			VD Very Dense	50 - 100	VSt Very Stiff	100 - 200 {15-30}		
		HP Hand Penetrometer	MOISTURE CONDITION	CO Compact	>50/150mm	H Hard	> 200 kPa {>30}		
		HV Hand Vane Shear	D = Dry M = Moist W = Wet						
VE Very Easy	F Firm								
E Easy	H Hard								
DRILLING PENETRATION GROUNDWATER SYMBOLS ▼ = Water level (static) ▼ = Water level (during drilling)			N SPT blows per 300mm HW SPT penetration by hammer weight RW SPT penetration by rod weight						



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DRILLING					MATERIAL							
DRILLING & CASING	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
WB		VH			106.6	6.0			GNEISS: Grey, orange, brown, grey brown, extremely to highly weathered extremely low to low strength, appearing as SILTY GRAVEL (GM), fine to medium grained angular gravel, fine to coarse grained sand. (continued)		VD	HIGHLY WEATHERED ROCK HIGHLY WEATHERED ROCK
								6.70m	Continued as Cored Drill Hole			
					105.6	7.0						
					104.6	8.0						
					103.6	9.0						
					102.6	10.0						
					101.6	11.0						
					100.6	12.0						

DRILLING HA Hand Auger AS Auger Screw AD/T Auger Drill TC-bit AD/V Auger Drill V-bit WB Washbore RR Rock Rolling AT Air Track HQ HQ Coring NQ NQ Coring NMLC NMLC Coring DRILLING PENETRATION VE Very Easy E Easy F Firm H Hard VH Very Hard	SAMPLES & FIELD TESTS DS Disturbed Sample ES Env Soil Sample EW Env Water Sample SPT Standard Penetration Test U Undisturbed Tube 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	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}
GROUNDWATER SYMBOLS = Water level (static) = Water level (during drilling)	MOISTURE CONDITION D = Dry M = Moist W = Wet		



CORED BOREHOLE ENGINEERING LOG HOLE NO : CURVE 22_BH04


CLIENT : TRANSPORT AND MAIN ROADS	POSITION : E: 359389, N: 8137542 (56 MGA94)	PAGE : 3 OF 3
PROJECT : BLACK SPOT PROJECT	SURFACE ELEVATION : 112.6 (AHD)	DATE DRILLED : 6/8/13 TO 6/8/13
JOB NO : CB24735.04	DIP / AZIMUTH : 90°	LOGGED BY : JP
LOCATION : KENNEDY HWY (CAIRNS - MAREEBA)		CHECKED BY : AJ

DRILLING			MATERIAL				DEFECTS & COMMENTS			GENERAL	
DRILLING	WATER DETAIL	TCR/RQD	DEPTH (m)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50)	DEFECT SPACING (mm)	Description of joints, seams, defects, additional observations and comments	GENERAL	
			106.6	6.0							
					START CORING AT 6.70m						
		82% TCR 20% RQD	105.6	7.0	GNEISS: Grey brown, dark grey, distinctly foliated at 30° to 40°, schistose.	MW			6.73 SS 50° GC IR RF 90 mm 6.81 JT 50° CU RF 6.82 JT 90° CU RF 6.89 JT 70° ST RF 6.90 JT 80° IR RF 6.93 JT 70° IR RF 7.03 JT 60° IR RF 7.05 JT 70° IR RF 7.06 JT 90° IR RF 7.08 JT 60° IR RF 7.10 JT 50° CH IR RF 3 mm 7.13 JT 20° IR RF 7.14 JT 80° IR RF 7.27 SZ 70° UN VR 7.28 JT 70° IR VR 7.35 JT 40° UN VR 7.40 JT 80° IR RF 7.43 JT 80° UN RF 7.52 JT 80° IR RF 7.54 JT 80° IR RF 7.56 JT 0 - 30° CH UN RF 5 mm		
					CORE LOSS 0.14m (7.73-7.87)						
		100% TCR 70% RQD	104.6	8.0	GNEISS: Dark grey, grey, distinctly foliated at 40° to 50°, schistose.	MW			7.58 JT 60° IR RF 7.63 SS 70° IR VR 100 mm 8.00 JT 60° CH IR RF 8.19 JT 60° UN RF 8.28 JT 80° UN RF 8.52 VN 50° Qz IR RF 8.59 JT 40° PR RF 8.63 JT 40° UN RF 8.77 JT 90° IR RF 8.80 JT 80 - 90° IR RF 8.90 JT 70° PR RF 8.95 JT 20° CU RF 9.00 JT 90° IR RF	JT 30° - 90° IR RF 10 - 30 mm spacing	
			103.6	9.0	Terminated Cored Drill Hole at 9.10 m						
			102.6	10.0							
			101.6	11.0							
			100.6	12.0							

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DRILLING NMLC NMLC Coring NQ NQ Coring TCR % core run recovered RQD % core run > 100mm long (rock fraction only measured) GROUNDWATER SYMBOLS = Water level (static) = Water level (during drilling)	SAMPLES & FIELD TESTS D Disturbed Sample W Water Sample SPT SPT Sample U Undisturbed Tube Sample ES Env Soil Sample EW Env Water Sample	DEFECT ABBREVIATIONS CS Crushed Seam CZ Crushed Zone DB Drill Break FZ Fractured Zone JT Joint IS Infilled Seam SZ Shear Zone VN Vein CN Clean CT Coating SN Stain VR Veneer POL Polished RF Rough S Smooth SL Slicksided Cu Curved IR Irregular PR Planar ST Stepped Un Undulated	ROCK STRENGTH (Is50 MPa) 0-0.03 Extremely Low 0.03-0.1 Very Low 0.1-0.3 Low 0.3-1.0 Medium 1.0-3.0 High 3.0-10 Very High
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		Client: Transport and Main Roads	
		Project: Black Spot	
drawn	AJ	Core Photograph – Curve 22_BH04	
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scale	NTS		