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REPORT OF BOREHOLE: BH220

SHEET: 1 OF 5

DRILL RIG: FD500

CONTRACTOR: Foundril Pty Ltd

LOGGED: CA DATE: 24/8/11

CHECKED: NK DATE: 26/9/11

CLIENT: McConnell Dowell Constructors (Aust) P/L COORDS: 82144.7 m E 61332.7 m N GCCC

PROJECT: Gold Coast Rapid Transit SURFACE RL: 24.26 m DATUM: AHD

LOCATION: Zone 2 INCLINATION: -90°

JOB NO: 117632047 HOLE DEPTH: 32.90 m

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	0.10 24.16					ASPHALT			ROAD SURFACE
								FILL recovered sand and gravel sized fragments in a clay matrix; gravel sized fragments of rock, concrete, brick; recovered with timber, plastic, metal				
			1		SPT 1.00-1.45 m 2, 2, 2 N=4							
			2									
					SPT 2.50-2.95 m 14, 7, 8 N=15							
			3									
			4		SPT 4.00-4.45 m 3, 5, 8 N=13							
			5	5.00 19.26				FILL recovered sand and gravel fragments in clay matrix; gravel fragments of concrete, rock, brick; variable throughout; colour predominantly dark grey; recovered with fragments of timber, carpet, metal wire, plastics			SPT refusal on timber	
					SPT 5.50-5.90 m 5, 2, 30/100 mm N>32							
			6									
L-M			7		SPT 7.00-7.45 m 3, 2, 3 N=5						From 7.0 m difficult progress due to obstructions in hole; timber, metal dragging bit and difficulty with progressing casing through landfill	
			8	8.00 16.26				hydrocarbon odour from below 8.0 m depth				
					SPT 8.50-8.95 m 5, 9, 25 N=34							
			9									
RT			10									

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GAP gINT FN. F01a
RL3



REPORT OF BOREHOLE: BH220

SHEET: 2 OF 5

DRILL RIG: FD500

CONTRACTOR: Foundril Pty Ltd

LOGGED: CA DATE: 24/8/11

CHECKED: NK DATE: 26/9/11

CLIENT: McConnell Dowell Constructors (Aust) P/L COORDS: 82144.7 m E 61332.7 m N GCCC

PROJECT: Gold Coast Rapid Transit SURFACE RL: 24.26 m DATUM: AHD

LOCATION: Zone 2 INCLINATION: -90°

JOB NO: 117632047 HOLE DEPTH: 32.90 m

Drilling				Sampling		Field Material Description													
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS							
RT	L-M	Groundwater not observed	10		SPT 10.00-10.45 m 9, 6, 7 N=13				FILL recovered sand and gravel fragments in clay matrix; gravel fragments of concrete, rock, brick; variable throughout; colour predominantly dark grey; recovered with fragments of timber, carpet, metal wire, plastics										
			11																
	M-H		12		SPT 11.50-11.95 m 6, 3, 5 N=8														
			13	13.00 11.26	SPT 13.00-13.45 m 9, 18, 4 N=22									heat radiating from borehole with strong odour					
	L		14	14.50 9.76	SPT 14.50-14.95 m 5, 8, 4 N=12									cuttings consists of wood and string			Casing installed to 14.5 m with difficulty, high resistance		
			15	15.00 9.26										100% water loss between 15.0 m and 19.5 m					
	M		16		SPT 16.00-16.45 m 7, 5, 6 N=11 PP =500 kPa														
			17																
	L		18	17.70 6.56	SPT 17.50-17.95 m 30, 17, 7 N=24 PP =400 kPa								CL	Sandy CLAY low plasticity, grey and yellow brown, fine to medium grained sand		St	PP causes brittle failure		
			19	18.30 5.96									CI	Sandy CLAY medium plasticity, grey with yellow brown and red, fine to medium grained sand	M (<PL)	F - St	Water pressure in drill bit increases		
RD					SPT 19.00-19.45 m 1, 4, 4 N=8 PP =220 kPa														

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GAP gINT FN. F01a
RL3



REPORT OF BOREHOLE: BH220

SHEET: 3 OF 5

DRILL RIG: FD500

CONTRACTOR: Foundril Pty Ltd

LOGGED: CA DATE: 24/8/11

CHECKED: NK DATE: 26/9/11

CLIENT: McConnell Dowell Constructors (Aust) P/L COORDS: 82144.7 m E 61332.7 m N GCCC
PROJECT: Gold Coast Rapid Transit SURFACE RL: 24.26 m DATUM: AHD
LOCATION: Zone 2 INCLINATION: -90°
JOB NO: 117632047 HOLE DEPTH: 32.90 m

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L	Groundwater not observed	20		U50 20.50-20.95 m			CI	Sandy CLAY medium plasticity, grey with yellow brown and red, fine to medium grained sand	M (<PL)	F - St	NW casing installed to 20.0 m depth, possible geofabric pieces returned in cuttings	
			20.50										
			3.76				SC	Clayey SAND fine to medium grained, pale grey, inferred loose to medium dense		L - MD			
			21		SPT 22.00-22.45 m 14, 20, 17 N=37			GC	Clayey GRAVEL fine to medium grained, sub-angular to angular, pale grey, gravel appears to be quartz	M	D		
			22										
			23										
			23.30										
			0.96		SPT 23.50-23.95 m 11, 24, 30 N=54			CL	SILT (EW Argillite) low plasticity, pale grey and orange	M (<PL)	H		
			24										
			25		SPT 25.00-25.08 m 30/80 mm			ARGILLITE fine grained, yellow and orange grey, low strength, extremely weathered					
26													
26.50		SPT 26.50-26.63 m 30/130 mm			grey and yellow brown, very low strength								
-2.24													
27													
28			28.00		SPT 28.00-28.03 m 30/30 mm				grey and orange brown, medium strength For Continuation Refer to Sheet 4			NW casing installed to 28.0 m depth prior to coring	
29													
30													

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GAP gINT FN. F01a
RL3



REPORT OF BOREHOLE: BH220

SHEET: 4 OF 5

DRILL RIG: FD500

CONTRACTOR: Foundril Pty Ltd

LOGGED: CA

DATE: 24/8/11

CHECKED: NK

DATE: 26/9/11

CLIENT: McConnell Dowell Constructors (Aust) P/L COORDS: 82144.7 m E 61332.7 m N GCCC

PROJECT: Gold Coast Rapid Transit

SURFACE RL: 24.26 m DATUM: AHD

LOCATION: Zone 2

INCLINATION: -90°

JOB NO: 117632047

HOLE DEPTH: 32.90 m

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH $I_{s(50)}$ MPa	DEFECT DESCRIPTION & Additional Observations			AVERAGE DEFECT SPACING (mm)	
				20									10	
				21									20	
				22									300	
				23									1000	
				24									3000	
				25										
				26										
				27										
				28	28.05 -3.79		Continuation of Sheet 3							
			100	44			ARGILLACEOUS MUDSTONE fine grained, grey with orange brown staining, foliated at 50°	DW						
				29	29.18 -4.92		grey	SW						
			100	77										
				30										

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GAP gINT FN. F02a
RL3

GAP 8_03 LIB.GLB Log GAP CORED BOREHOLE 117632047BH.GPJ <<DrawingFile>> 25/10/2011 10:10 8.2.800



REPORT OF BOREHOLE: BH220

SHEET: 5 OF 5

DRILL RIG: FD500

CONTRACTOR: Foundril Pty Ltd

LOGGED: CA DATE: 24/8/11

CHECKED: NK DATE: 26/9/11

CLIENT: McConnell Dowell Constructors (Aust) P/L COORDS: 82144.7 m E 61332.7 m N GCCC

PROJECT: Gold Coast Rapid Transit SURFACE RL: 24.26 m DATUM: AHD

LOCATION: Zone 2 INCLINATION: -90°

JOB NO: 117632047 HOLE DEPTH: 32.90 m

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH $I_{s(50)}$ MPa		DEFECT DESCRIPTION & Additional Observations		AVERAGE DEFECT SPACING (mm)		
				30		ARGILLACEOUS MUDSTONE fine grained, grey with orange brown staining, foliated at 50°	SW			29.94 m: X, 50°, Pl, Sm, Sn, FeO 30.04 m: X, 50°, Pl, Sm, Sn, FeO 30.31 m: J, 70°, Un, Sm, Cn 30.54 m: X, 60°, Pl-Un, Sm, Cn-Sn, FeO 30.60 m: X, 60°, Pl, Sm, Cn 30.77 m: X, 50°, Pl, Sm, Cn 30.79 m: X, 50°, Pl, Sm, Sn, FeO 30.85 m: X, 50°, Pl, Sm, Sn, FeO 30.90 m: X, 50°, Pl, Sm, Cn 30.94 m: X, 50°, Pl, Sm, Cn 31.00 m: X, Pl, Sm, Sn, FeO 31.05 m: X, 50°, Pl, Sm, Sn, FeO 31.18 m: X, 40°, Pl, Sm, Sn, FeO 31.22 m: X, 40°, Pl, Sm, Sn, FeO 31.57 m: X, 40°, Un, Sm, Cn 31.60 m: X, 50°, Un, Ro, Sn, FeO 31.67 m: X, Pl, Sm, Cn 31.87 m: J, 60°, Un, Sm, Ct, clay and EL strength platy rock fragments 31.95 m: J, 60°, Un, Sm, Ct, EL strength platy rock fragments, iron stained 32.14 m: X, 60°, Pl, Sm, Sn, FeO 32.16 m: X, 50°, Pl, Sm, Sn, FeO 32.18 m: X, 50°, Pl, Sm, Cn 32.22 m: X, 40°, Un, Sm, Cn, FeO 32.25-32.40 m: CZ, 60°, Un, Sm, Sn, FeO, fine to medium gravel sized rock fragments 32.56 m: X, 50°, Pl, Sm, Sn, FeO 32.57-32.75 m: 90°, Un, Ro, Sn, FeO 32.73 m: X, 60°, Pl, Sm, Ct, VL strength platy rock fragments 32.87 m: X, 60°, Un, Sm, Cn				
				32.90		END OF BOREHOLE @ 32.90 m TARGET DEPTH GROUNDWATER NOT OBSERVED								
				33										
				34										
				35										
				36										
				37										
				38										
				39										
				40										

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GAP gINT FN. F02a
RL3



REPORT OF PHOTOGRAPHS: BH220

CLIENT: McConnell Dowell Constructors
PROJECT: Gold Coast Rapid Transit
LOCATION: Zone 2
JOB NO: 117632047

COORDS: 82144.7 m E, 61332.7 m N
SURFACE RL: 24.26 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 32.9 m

DEPTH RANGE: 28.05 – 32.90 m
DRILL RIG: FD500
DRILLER: Foundril Pty Ltd
LOGGED: CA DATE: 24/8/11
CHECKED: NK DATE: 26/9/11



28.05 – 32.90 m