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REPORT OF BOREHOLE: BH204

SHEET: 1 OF 4

DRILL RIG: Hydrapower Scout

CONTRACTOR: GeoDrill Pty Ltd

LOGGED: BT DATE: 15/9/11

CHECKED: NK DATE: 26/9/11

CLIENT: McConnell Dowell Constructors (Aust) P/L COORDS: 81929.4 m E 61608.9 m N GCCC
PROJECT: Gold Coast Rapid Transit SURFACE RL: 13.91 m DATUM: AHD
LOCATION: Zone 2 INCLINATION: -90°
JOB NO: 117632047 HOLE DEPTH: 22.90 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	L		0	13.91					FILL: Clayey SAND fine to coarse grained, sub-rounded to sub-angular, brown, low plasticity clay	D		Grass at surface. Roots
	M-H			13.71					FILL: Sandy GRAVEL fine to medium grained, sub-rounded to sub-angular, pale blue grey, fine to coarse grained sand, trace low plasticity fines			Inferred 20 mm quarry product
			0.65	13.26					FILL: Sandy CLAY high plasticity, orange brown with white and red lenses, fine to coarse grained sand			Inferred subgrade
			1		SPT 1.00-1.45 m 3, 5, 3 N=8					M (PL		
			2									
	L-M				SPT 2.50-2.95 m 3, 4, 5 N=9							
			2.70	11.21				CH	Sandy CLAY high plasticity, orange brown, fine to coarse grained sand		F	
			3		U50 3.10-3.55 m PP =500 kPa						H	
			3.90	10.01				CH	CLAY high plasticity, orange brown with dark red and dark grey pockets			
			4		SPT 3.90-4.35 m 3, 5, 6 N=11							
RD			5									
					SPT 5.40-5.85 m 5, 6, 10 N=16							
	M		6							M - W		
			6.80	7.11					becoming white, with some fine quartz gravel		F	
	M-H		7	7.20	SPT 6.90-7.35 m 6, 7, 11 N=18				fine to medium, sub-rounded to sub-angular, with some fine quartz gravel, white with pale orange brown staining, high plasticity			
			6.71		U50 7.40-7.90 m PP =200 kPa							
			8									
			8.50	5.41				CH	CLAY high plasticity, white, some rock structure evident			
	M		9		SPT 8.50-8.95 m 3, 5, 8 N=13							
			10								H	

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GAP gINT FN. F01a
RL3



REPORT OF BOREHOLE: BH204

SHEET: 2 OF 4

CLIENT: McConnell Dowell Constructors (Aust) P/L COORDS: 81929.4 m E 61608.9 m N GCCC
PROJECT: Gold Coast Rapid Transit SURFACE RL: 13.91 m DATUM: AHD
LOCATION: Zone 2 INCLINATION: -90°
JOB NO: 117632047 HOLE DEPTH: 22.90 m

DRILL RIG: Hydrapower Scout
CONTRACTOR: GeoDrill Pty Ltd
LOGGED: BT DATE: 15/9/11
CHECKED: NK DATE: 26/9/11

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	STRUCTURE AND ADDITIONAL OBSERVATIONS
RT	M	Groundwater not observed	10		SPT 9.90-9.99 m 30/90 mm		CH	CLAY high plasticity, white, some rock structure evident		M - W	H
	H		11		SPT 11.50-11.71 m 15, 30/60 mm N>30						
			12					For Continuation Refer to Sheet 3			
			13								
			14								
			15								
			16								
			17								
			18								
			19								
			20								

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GAP gINT FN. F01a
RL3



REPORT OF BOREHOLE: BH204

SHEET: 3 OF 4

DRILL RIG: Hydrapower Scout

CONTRACTOR: GeoDrill Pty Ltd

LOGGED: BT DATE: 15/9/11

CHECKED: NK DATE: 26/9/11

CLIENT: McConnell Dowell Constructors (Aust) P/L COORDS: 81929.4 m E 61608.9 m N GCCC
PROJECT: Gold Coast Rapid Transit SURFACE RL: 13.91 m DATUM: AHD
LOCATION: Zone 2 INCLINATION: -90°
JOB NO: 117632047 HOLE DEPTH: 22.90 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 Is(50) MPa	DEFECT DESCRIPTION & Additional Observations			AVERAGE DEFECT SPACING (mm)	
				10										
				11										
					11.75		Continuation of Sheet 2							
				12	2.16		ARGILLACEOUS MUDSTONE fine grained, pale grey orange white dark red staining	EW		11.75-12.38 m: extremely weathered zone, friable				
			70		12.48		CORE LOSS			12.39-12.48 m: HB, core plugged in catcher				
					1.43									
				13	12.80		ARGILLACEOUS MUDSTONE fine grained, pale grey orange with dark red staining, massive, bedding not distinct except for joint orientation mostly around 40° dip angle	HW - MW		12.85 m: J, 40°, Pl, healed 12.97-13.00 m: DB 13.06 m: J, 40°, Un, Ro, Ct, 5 mm, white clay 13.15 m: J, 40°, Un, Ro, Ct, 1 mm, clay 13.20 m: J, 40°, Pl, closed 13.29-13.90 m: IS, 40°, white quartz crystals 13.31 m: J, 40°, Pl, Ro, 1 mm 13.38-13.46 m: CZ 13.50 m: J, 40°, Pl, Ro, 1 mm 13.62 m: J, 40°, closed 13.72 m: J, 40°, Pl, Sm, Sn, 2 mm, iron oxide, with conjugate joint at same location 13.81 m: J, 40°, Un, Sm, Sn, 1 mm, iron oxide 13.85-13.90 m: CZ 14.07-14.20 m: DB 14.30-14.39 m: DB 14.42 m: IS, 30°, 5 mm, quartz crystals 14.48-14.55 m: CZ, partially fractured 14.66 m: J, 40°, Pl, Sm, Sn, 2 mm, iron oxide 14.84-15.00 m: CZ, inferred fractures from drilling				
			100	37	1.11									
				14										
				15										
			100	73				MW		15.47 m: J, 40°, Un, Sm, Sn, 1 mm, iron oxide 15.50 m: J, 40°, Un, Ro, Sn, 1 mm, iron oxide 15.64 m: J, 10°, Un, Sm, Sn, 2 mm, iron oxide 15.76-15.82 m: CZ 15.83-15.90 m: J, 70°, Un, Ro, Sn, 1 mm, iron oxide 15.96 m: HB 16.04 m: J, 40°, healed 16.06 m: J, 40°, healed 16.10 m: J, 40°, Un, Sm, Sn, 1 mm, iron oxide 16.15 m: J, 60°, Un, Ro, Sn, 1 mm, iron oxide 16.23-16.48 m: J, 60°, Un, Sn, sp = 30 mm, closed, iron oxide 16.50-16.60 m: HB 16.60-16.65 m: DB 16.65 m: J, 40°, Un, Sn, closed, iron oxide 16.68 m: J, 40°, Pl, Sn, closed, iron oxide 16.85-17.00 m: DB 17.01-17.11 m: HB, iron oxide staining 17.17 m: J, Un, Sn, 2 mm, subhorizontal, iron oxide 17.20 m: J, Un, Sn, 3 mm, subhorizontal, iron oxide 17.25 m: J, 20°, Un, Ro, Sn, 1 mm, iron oxide 17.34 m: J, 20°, Un, Sm, Sn, 1 mm, iron oxide 17.48 m: J, 40°, Pl, Sn, closed, iron oxide 17.64 m: J, Un, Ro, Vr, subhorizontal, clay 18.00-18.05 m: HB 18.25 m: J, Un, Ro, Sn, subhorizontal, iron oxide 18.39 m: J, 60°, Un, Ro, Sn-Ct, 3 mm, iron oxide 18.50 m: J, 60°, Pl, Ro, Sn, 3 mm, iron oxide 18.70 m: J, 40°, Un, Sm, Cn, 5 mm 18.85 m: J, 40°, Un, Sm, Sn, 3 mm, iron oxide 19.03 m: J, 40°, Un, Ro, Cn, 1 mm 19.16 m: J, 40°, closed, filled with quartz crystals 19.33-19.45 m: J, 70°, Pl, closed 19.47 m: J, 30°, closed 19.57-19.64 m: CZ 19.70-19.80 m: CZ				
				16										
				17										
				18										
				19										
			100	90	17.30		grey, less iron oxide staining on outside of rock, mainly confined to joints, quartz veins up to 10 mm thick	MW - SW						
					-3.39									
				20										
			100	93										

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GAP gINT FN. F02a
RL3



REPORT OF BOREHOLE: BH204

SHEET: 4 OF 4

DRILL RIG: Hydrapower Scout

CONTRACTOR: GeoDrill Pty Ltd

LOGGED: BT DATE: 15/9/11

CHECKED: NK DATE: 26/9/11

CLIENT: McConnell Dowell Constructors (Aust) P/L COORDS: 81929.4 m E 61608.9 m N GCCC

PROJECT: Gold Coast Rapid Transit SURFACE RL: 13.91 m DATUM: AHD

LOCATION: Zone 2 INCLINATION: -90°

JOB NO: 117632047 HOLE DEPTH: 22.90 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 Is(50) MPa	DEFECT DESCRIPTION & Additional Observations			AVERAGE DEFECT SPACING (mm)	
NMLC	Groundwater not observed	100	93	20			ARGILLACEOUS MUDSTONE fine grained, pale grey orange with dark red staining, massive, bedding not distinct except for joint orientation mostly around 40° dip angle	SW		20.34-20.36 m: CZ 20.44 m: J, 30°, Un, Cn, closed				
				21						20.87-21.10 m: HB				
				22						21.31 m: J, 10°, Un, Ro, Cn, 10 mm 21.61 m: J, 40°, Pl, Ro, Cn, 1 mm 21.80 m: J, 40°, Pl, Sm, Cn, 1 mm 21.93 m: J, 10°, Un, Sm, Cn, 2 mm 22.00-22.10 m: HB 22.11-22.29 m: J, subvertical, closed				
				22.90	-8.99		END OF BOREHOLE @ 22.90 m TARGET DEPTH GROUNDWATER NOT OBSERVED Plugged at surface with rapid set concrete			22.55-22.66 m: J, 70°, Un, Ro, Cn, 1 mm 22.80-22.90 m: HB				
				23										
				24										
				25										
				26										
				27										
				28										
				29										
				30										

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GAP gINT FN. F02a
RL3

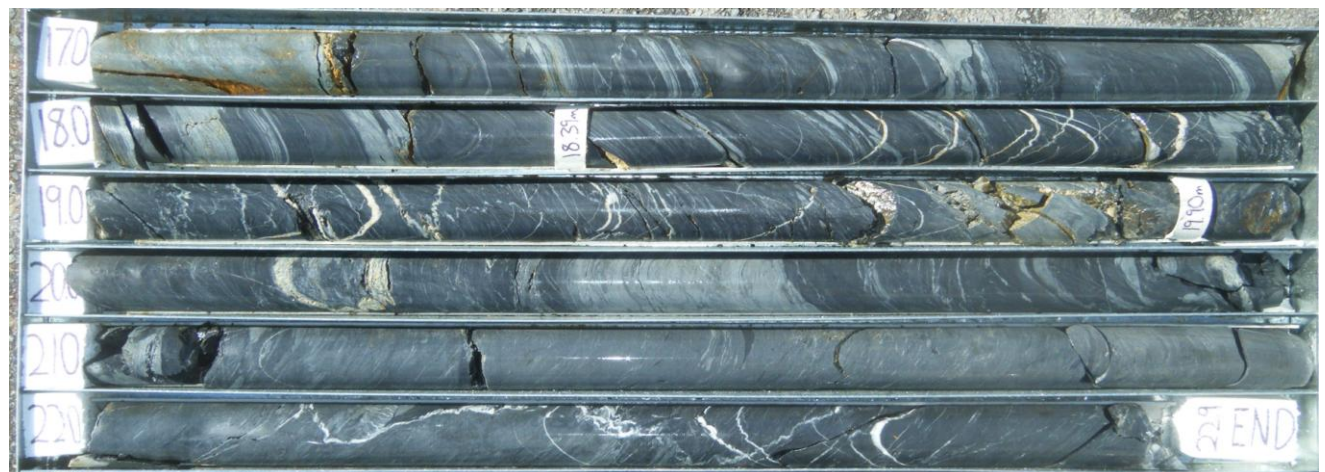


REPORT OF CORE PHOTOGRAPHS: BH204

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

COORDS: 81929.4 m E, 61608.9 m N
SURFACE RL: 13.91 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 22.90 m

DEPTH RANGE: 11.75 – 22.90 m
DRILL RIG: Hydropower Scout
DRILLER: Geodrill Pty Ltd
LOGGED: BT DATE: 15/09/11
CHECKED: NK DATE: 26/09/11



11.75 – 22.90 m