BOREHOLE ENGINEERING LOG

BOREHOLE NO.

RTBH21

SHEET 1 OF 4

Client:	Department of Transport and Main Roads	Date Commenced:	24/2/10
Project:	Gold Coast Rapid Transit	Date Completed:	26/2/10
Borehole Location:	Gold Coast Highway, Ch: 25209.8	Recorded By:	NG
Project Number:	2161016A	Log Checked By:	LMcL

Drill Model/Mounting:	Drillpower Hydrapower Scout	Hole Angle:	90°	Surface RL:	1.16 m AHD*
Borehole Diameter:	75 mm	Bearing:	---	Co-ords:	E 85460.3 N 60124.24 GCCC Grid*

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) AHD* / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
RAB	C	NOT OBSERVED	1 / 0.15					**CONCRETE:**				PAVEMENT MATERIALS
								FILL (Cobble with SAND): cobbles of indurated meta-sediment <300 mm, medium grained sand.				FILL
			0 / 1.30									
TC							SW	**SAND:** fine to medium grained, trace of shell material, pale grey to pale brown.	W			ESTUARINE SEDIMENTS
												SPT: not taken until 5 m due to hole collapse.
			1									
			0									
			-1									
			-2									
			-3									
			-4	SPT 6,5,7 N=12	SPT							
			-5									
			-6	SPT 18,21,19 N=40	SPT							
			-7	SPT 10,14,17 N=31	SPT							
			-8									
				SPT 11,13,17 N=30	SPT			... 9.6 m: increasing quantities of shell fragments.				

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

Parsons Brinckerhoff Australia Pty Ltd. Version 5.1 ENGINEERING BOREHOLE LOG GCRT_BOREHOLES.GPJ GEOTECH_24-2-2006.GDT 25/5/10

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

RTBH21

Client:	**Department of Transport and Main Roads**	Date Commenced:	**24/2/10**
Project:	**Gold Coast Rapid Transit**	Date Completed:	**26/2/10**
Borehole Location:	**Gold Coast Highway, Ch: 25209.8**	Recorded By:	**NG**
Project Number:	**2161016A**	Log Checked By:	LMK

Drill Model/Mounting:	**Drillpower Hydrapower Scout**	Hole Angle:	**90°**	Surface RL:	**1.16 m AHD***
Borehole Diameter:	**75 mm**	Bearing:	**---**	Co-ords:	**E 85460.3 N 60124.24 GCCC Grid***

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) AHD* / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY (VS FB, S VL, F L, ST MD, VST D, H VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
TC			-9				SW	**SAND:** fine to medium grained, trace of shell material, pale grey to pale brown. *(continued)*	W			
			11 / -10									
			11.50				SC	**CLAY & Clayey SAND:** fine to medium grained sand, high plasticity fines, pale green to grey.	MC~PL			RESIDUAL SOIL
			12 / -11									
			12.50	SPT 1,4,5 N=9	SPT		CH	**Sandy CLAY:** high plasticity, pale green to grey.				SPT: Some rock fabric noted.
			13 / -12									
			13.40					**META-GREYWACKE:** fine grained, pale green to grey, extremely to highly weathered, extremely low to very low strength.				WEATHERED ROCK Increasing TC resistance
			14 / -13					REFER TO CORED BOREHOLE LOG				
			15 / -14									
			16 / -15									
			17 / -16									
			18 / -17									
			19 / -18									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

Parsons Brinckerhoff Australia Pty Ltd. Version 5.1 ENGINEERING BOREHOLE LOG GCRT_BOREHOLES.GPJ GEOTECH_24-2-2006.GDT 25/5/10

CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

RTBH21

Client:	Department of Transport and Main Roads	Date Commenced:	24/2/10
Project:	Gold Coast Rapid Transit	Date Completed:	26/2/10
Borehole Location:	Gold Coast Highway, Ch: 25209.8	Recorded By:	NG
Project Number:	2161016A	Log Checked By:	LMYL

Drill Model/Mounting:	Drillpower Hydrapower Scout	Hole Angle:	90°	Surface RL:	1.16 m AHD*
Borehole Diameter:	75 mm	Bearing:	---	Co-ords:	E 85460.3 N 60124.24 GCCC Grid*

Borehole Information						Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12
METHOD	SUPPORT	WATER	CORE RECOVERY	RQD	RL(m) AHD* / DEPTH(m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH Is(50) MPa: 0.03 EL, 0.1 VL, 0.3 L, 1 M, 3 H, 10 VH, EH	AVERAGE DEFECT SPACING mm: 10, 30, 100, 300, 1000, 3000	STRUCTURE AND ADDITIONAL OBSERVATIONS
					-9 / 11						
					-10 / 12						
					-11 / 13						
					-12 / 14		COMMENCE CORING AT 14 m				
			70	0	13		**META-GREYWACKE:** fine grained, pale green to grey.	XW-HW			14.0 m - 14.5 m: Non intact, rock fragments in clay matrix
					14.50 / 14.60		**CORE LOSS**				
			90	0	14 / 15		**META-GREYWACKE:** fine grained, pale green to grey.	XW-HW			14.6 m - 15.0 m: Non intact, rock fragments in clay matrix
					15.20 / 15.30		**META-SILTSTONE:** grey.	XW-HW			
			90	0	15.35		**CORE LOSS**	HW-MW			Bedding lamination dip 10°-20° to end of hole
							META-SILTSTONE: grey, laminated dark and pale grey.				15.3 m - 16.8 m: Non intact core
			90	0	16.00 / 15		**META-GREYWACKE:** fine grained, pale green to grey.	FR / XW-HW			
			100	62	16.40		**META-SILTSTONE:** grey, laminated dark and pale grey.	FR			16.9 m: J, 45°, P, R, clay veneer
					16 / 17						17.35 m -17.45 m: J x 3, 30°, P, R, clean
								MW / FR			17.5 m - 17.6 m: Non intact core
			100	65	17 / 18						18.45 m: J, 50°, P, R, clay coating
											18.7 m: J, 70°, P, R, clean
											18.9 m: J x 2, 45°, P, R, clean
					18 / 19			MW			19.05 m - 19.55 m: Non intact core
			100	0							19.1 m: Driller reported loss of circulation
								FR			

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

RTBH21

SHEET 4 OF 4

Client:	**Department of Transport and Main Roads**	Date Commenced:	**24/2/10**
Project:	**Gold Coast Rapid Transit**	Date Completed:	**26/2/10**
Borehole Location:	**Gold Coast Highway, Ch: 25209.8**	Recorded By:	**NG**
Project Number:	**2161016A**	Log Checked By:	LMK

Drill Model/Mounting:	**Drillpower Hydrapower Scout**	Hole Angle:	**90°**	Surface RL:	**1.16 m AHD***
Borehole Diameter:	**75 mm**	Bearing:	**---**	Co-ords:	**E 85460.3 N 60124.24 GCCC Grid***

Borehole Information						Field Material Description					
1	2	3	4	5	6	7	8	9	10	11	12
METHOD	SUPPORT	WATER	CORE RECOVERY	RQD	RL(m) AHD* / DEPTH(m)	GRAPHIC LOG	SOIL/ROCK MATERIAL FIELD DESCRIPTION	WEATHERING	INFERRED STRENGTH Is(50) MPa: 0.03, 0.1, 0.3, 1, 3, 10 / EL, VL, L, M, H, VH, EH	AVERAGE DEFECT SPACING mm: 10, 30, 100, 300, 1000, 3000	STRUCTURE AND ADDITIONAL OBSERVATIONS
			95	80	19		**META-SILTSTONE:** grey, laminated dark and pale grey. *(continued)*	FR			19.95 m: J x 2, 30°, P, R, clean 20.1 m - 20.7 m: Appears to be silicfied 20.2 m: J, 80°, P, R, clean 20.45 m: J, 45°, P, R, clean 20.5 m: J x 2, 60°, P, R, Clay veneer 20.7 m: J, 45°, P, R, clean 20.9 m: J, 45°, P, R, clean
					21		END OF BOREHOLE AT 21.00 m				Limit of Investigation * Horizontal and vertical data determined by Ground Survey

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

Parsons Brinckerhoff Australia Pty Ltd Version 5.1 ENGINEERING CORED BOREHOLE LOG GCRT_BOREHOLES.GPJ GEOTECH_24-2-2006.GDT 25/5/10

REPORT OF PHOTOGRAPHS

PB PARSONS BRINCKERHOFF

Borehole number: RTBH21

Sheet 1 of 1

Client:	**Department of Transport and Main Roads**	Coordinates:	**E 85460.30 N 60124.24**	Depth range:	**14.0 m – 21.0 m**
Project:	**Gold Coast Rapid Transit**	Surface RL:	**1.16 m AHD**	Inclined length:	**–**
Borehole location:	**Ch: 25204.6**	Hole angle:	**90 °**	Drill model/mounting:	**Hydrapower Scout**
Project number:	**2161016A**	Bearing:	**–**	Borehole diameter:	**75 mm**