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BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH23

SHEET 1 OF 5

Client: QUEENSLAND DEPARTMENT OF MAIN ROADS
Project: TUGUN BYPASS GEOTECHNICAL INVESTIGATION
Borehole Location: TUGUN
Project Number: 2134070A

Date Commenced: 6/5/03
Date Completed: 8/5/03
Recorded By: RS
Log Checked By: *am*

Drill Model/Mounting: JACRO 500
Borehole Diameter: 100 mm
Hole Angle: 90°
Bearing: ---
Surface RL: 1.98 m AHD
Co-ords: E 50176 N 87181 PMG

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	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
VS	FB	VL	MD	VST	D	H						
TC	M		0.10				SM	SILTY SAND: fine to medium grained, pale grey, quartzose with silt.	M			TOPSOIL
				1	3, 4, 7 N=11	SPT		SAND: medium grained, grey-brown, brown and dark brown, quartz, some layering evident but largely obscured by weathering, traces of shell fragments and pebbles in some bands, littoral zone beach and dune ridge deposit, colour changes due to oxidation of heavy mineral bands.	W			ESTUARINE/ FLOODPLAIN/TIDAL DELTA DEPOSITS
WB								... thin black organic rich layers ± 200mm thick.				
				2								
				-1	1, 2, 1 N=3	SPT		... becoming brown.				
				-2								
				-3	13, 16, 12 N=28	SPT		... becoming dark brown (oxidised heavy minerals).				
				-4	7, 10, 15 N=25	SPT		... brown and dark brown bands.				Standpipe #3 (25mm dia) Sand filter 0-5.7m Tip at 5.7m
				-5								
				-6	9, 18, 25 N=43	SPT		... becoming brown, trace of weathered shell fragments.				
				-7	22, 30, R	SPT		... brown with dark brown bands.				

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



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH23

SHEET 2 OF 5

Client: QUEENSLAND DEPARTMENT OF MAIN ROADS
Project: TUGUN BYPASS GEOTECHNICAL INVESTIGATION
Borehole Location: TUGUN
Project Number: 2134070A

Date Commenced: 6/5/03
Date Completed: 8/5/03
Recorded By: RS
Log Checked By: DAW

Drill Model/Mounting: JACRO 500
Borehole Diameter: 100 mm

Hole Angle: 90°
Bearing: ---
Surface RL: 1.98 m AHD
Co-ords: E 50176 N 87181 PMG

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	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	HAND PENETROMETER (NPe)	STRUCTURE AND ADDITIONAL OBSERVATIONS	
VS	FB	VL	S	L	MD	VST	D						
WB	M						SP	SAND: medium grained, grey-brown, brown and dark brown, quartz, some layering evident but largely obscured by weathering, traces of shell fragments and pebbles in some bands, littoral zone beach and dune ridge deposit, colour changes due to oxidation of heavy mineral bands. (continued) ... at 10.2m - thin black organic layer with pebble band and trace of shell fragments	W				
				10.7,9 N=16	SPT								
				11									
				12	R 1/110mm	SPT		... becoming dark brown, slightly indurated, weathered heavy mineral bands.				30 blows/110mm; bouncing	
				13									
				14	14,24,23 N=47	SPT							
				15	R 1/90mm	SPT		... slightly indurated.				30 blows/90mm	
				16									
				17	R 1/120mm	SPT		... thin slightly indurated bands ± 1cm thick.				30 blows/120mm	
				18	12,19,27 N=46	SPT		... trace of weathered shell fragments and pebbles, brown muddy traces (bioturbation) beach/estuary deposit.				Standpipe #2 (50mm dia) Bentonite Seal 16.5-16.8m Tip at 18.7m	
				19								Slight change in deposition - evidence of estuarine sediments	
				19.35			CH	CLAY: high plasticity, grey with traces of sand.					
				7,10,12 N=22	SPT								

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BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH23

SHEET 3 OF 5

Client: QUEENSLAND DEPARTMENT OF MAIN ROADS
Project: TUGUN BYPASS GEOTECHNICAL INVESTIGATION
Borehole Location: TUGUN
Project Number: 2134070A

Date Commenced: 6/5/03
Date Completed: 8/5/03
Recorded By: RS
Log Checked By: *Daw*

Drill Model/Mounting: JACRO 500
Borehole Diameter: 100 mm

Hole Angle: 90°
Bearing: ---
Surface RL: 1.98 m AHD
Co-ords: E 50176 N 87181 PMG

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	STRUCTURE AND ADDITIONAL OBSERVATIONS
VS	FB	VL	ST	MD	VST	D	H	VD	HAND PENETROMETER (kPa)			
WB	M							CH	CLAY: high plasticity, grey with traces of sand. (continued)	W		Standpipe #1 (25mm dia) Bentonite Seal 20-20.2m Sand filter 20.2-22m Tip at 22m
			-19	21		U50						Recovery=310mm
			-21.45					CH/SP	SAND: fine to medium grained, pale grey, quartz, beach dune deposits INTERBEDDED with CLAY/SILT Highly plastic, grey estuarine deposits.			Aeolian beach dune ridge/estuarine deposits
			-20	22								
			-21	23	5,9,17 N=26	SPT						
			-22	24		U50						
			-23	25								
			-24	26	0,8,10 N=18	SPT						Recovery =210mm
			-25	27.027	5,10,11 N=21	SPT		CL	CLAY with SILT lenses: grey with brown-green (sulphurous staining sulphide minerals) and red (iron oxide staining) mottling, silty/sandy lenses and layers.			
			-26	28		U50						
			-27	29				CL	CLAY: yellow with pale yellow mottling and brown silty bands.			RESIDUAL SOIL Recovery =290mm

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BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH23

SHEET 4 OF 5

Client: QUEENSLAND DEPARTMENT OF MAIN ROADS
Project: TUGUN BYPASS GEOTECHNICAL INVESTIGATION
Borehole Location: TUGUN
Project Number: 2134070A

Date Commenced: 6/5/03
Date Completed: 8/5/03
Recorded By: RS
Log Checked By: DAW

Drill Model/Mounting: JACRO 500
Borehole Diameter: 100 mm

Hole Angle: 90° Surface RL: 1.98 m AHD
Bearing: --- Co-ords: E 50176 N 87181 PMG

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	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
WB	M		30.00			U50	CL	ARGILLITE: green and pale yellow-grey, streaked, extremely weathered, extremely low strength.	W	VS FB VL L MD ST D VST H		EXTREMELY WEATHERED ROCK
			29	31				... becoming green, pale brown, brown and white mottling and streaking.			>600	Recovery=170mm
			30	32	R /80mm	SPT						30 blows/80mm
	C		31	33	R /50mm	SPT		... colour change to dark grey, finely laminated.				30 blows/50mm
			32	34								30 blows/40mm
			33	35	R /40mm	SPT						30 blows/35mm
			34	36	R /35mm	SPT		... return water colour change to pale brown.				At 37.5m N=R; 30 blows/20mm
			35	37								
			36	38	R /20mm	SPT		REFER TO CORED BOREHOLE LOG				
			37	39								

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CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH23

SHEET 5 OF 5

Client:	QUEENSLAND DEPARTMENT OF MAIN ROADS	Date Commenced:	6/5/03
Project:	TUGUN BYPASS GEOTECHNICAL INVESTIGATION	Date Completed:	8/5/03
Borehole Location:	TUGUN	Recorded By:	RS
Project Number:	2134070A	Log Checked By:	DAW

Drill Model/Mounting:	JACRO 500	Hole Angle:	90°	Surface RL:	1.98 m AHD
Borehole Diameter:	100 mm	Bearing:	---	Co-ords:	E 50176 N 87181 PMG

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	AVERAGE DEFECT SPACING mm	STRUCTURE AND ADDITIONAL OBSERVATIONS
									EL 0.03 VL 0.1 VH 0.3 MH 1 H 3 EH 10			
						-29	31					
						-30	32					
						-31	33					
						-32	34					
						-33	35					
						-34	36					
						-35	37					
NMLC	M		100	66	37.61	-36	38	COMMENCE CORING AT 37.52 m GREYWACKE: very coarse grained, green-grey to pale yellow in bleached parts, moderately weathered, medium strength. GREYWACKE: medium grained, dark grey, slightly weathered, medium strength with fine grained SILTSTONE fragments. ... very fractured and broken. Iron oxide staining on fracture surface.	MW SW			Fractured 1-3mm wide quartz filled joints x cutting. Leaching and iron oxide staining on joints. Slightly fractured horizontal to steep orthogonal joint sets spacing 200-600mm. Iron oxide staining. Fragmented.
					-37	39		END OF BOREHOLE AT 38.95 m				
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