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BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH14B

SHEET 1 OF 5

Client:	QUEENSLAND DEPARTNENT OF MAIN ROADS	Date Commenced:	26/1/02
Project:	TUGUN BYPASS GEOTECHNICAL INVESTIGATION	Date Completed:	30/1/02
Borehole Location:	TUGUN	Recorded By:	MCM
Project Number:	2134070A	Log Checked By:	DAW

Drill Model/Mounting:		Hole Angle:	90°	Surface RL:	0.89 m AHD
Borehole Diameter:	120 mm	Bearing:	---	Co-ords:	E 50631 N 86880 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 (VS S FB F St VSt H; VL L MD D VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
WB	Nil		0 / 1	2,3,3 N=6	SPT		SP	**SAND:** fine to medium grained, grey to dark grey, contains some brown and black organic material with a trace of silt.	W			ESTUARINE/ FLOODPLAIN/TIDAL DELTA DEPOSITS
			-1 / 2									
			-2 / 3									
			-3 / 4									
			-4 / 5	0	SPT							N = own weight
			-5 / 6									
			-6 / 7					... contains small black wood fragments.				
			-7 / 8	1,2,4 N=6	SPT			... becoming dark grey to black, medium bedded with some silt.				
			-8 / 9.00				SM	**Silty SAND:** medium grained, grey, dark grey and brown, thinly bedded (0-5°).				
			-9 / 10									
			-10 / 11	7,8,7 N=15	SPT							
			-11 / 12									
			-12 / 13									
			13.50									
			-13 / 14	6,12,15 N=27	SPT		SP	**SAND:** fine to medium grained, yellow to pale brown.	M			
			-14									

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

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BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH14B

SHEET 2 OF 5

Client:	QUEENSLAND DEPARTNENT OF MAIN ROADS	Date Commenced:	26/1/02
Project:	TUGUN BYPASS GEOTECHNICAL INVESTIGATION	Date Completed:	30/1/02
Borehole Location:	TUGUN	Recorded By:	MCM
Project Number:	2134070A	Log Checked By:	DAW

Drill Model/Mounting:		Hole Angle:	90°	Surface RL:	0.89 m AHD
Borehole Diameter:	120 mm	Bearing:	---	Co-ords:	E 50631 N 86880 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 (VS FB, S F, F VL, ST L, VST MD, H D, VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
WB			15 / 16				SP	**SAND:** fine to medium grained, yellow to pale brown. *(continued)*	M			
			16 / 17	11,19,29 N=48	SPT							
			17 / 18									
			18 / 19									
			19 / 20	8,5,7 N=12	SPT			... becoming dark grey, contains some clay.				
			20 / 21									
			21 / 22									
			22.50 / 22 / 23	0	SPT		CH	**CLAY:** dark grey with black and brown flecks, some silt.				N = own weight
			23 / 24									
			24 / 25									
			25.75 / 25 / 26	5,8,11 N=19	SPT		SM	**Silty SAND:** fine to medium grained, dark grey, contains wood fragments >30mm, oxidised after contact with atmosphere.				
			26 / 27									
			27 / 28									
			28.50 / 28 / 29	9,9,6 N=15	SPT		SC	**Sandy CLAY:** dark grey. containing quartz and jasper coarse grained gravel, interbedded sandy and clayey units.				
			29									

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

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BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH14B

SHEET 3 OF 5

Client:	QUEENSLAND DEPARTNENT OF MAIN ROADS	Date Commenced:	26/1/02
Project:	TUGUN BYPASS GEOTECHNICAL INVESTIGATION	Date Completed:	30/1/02
Borehole Location:	TUGUN	Recorded By:	MCM
Project Number:	2134070A	Log Checked By:	DAW

Drill Model/Mounting:		Hole Angle:	90°	Surface RL:	0.89 m AHD
Borehole Diameter:	120 mm	Bearing:	---	Co-ords:	E 50631 N 86880 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 (VS S F St VSt H / FB VL L MD D VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
WB			30 / 31				SC	**Sandy CLAY:** dark grey, containing quartz and jasper coarse grained gravel, interbedded sandy and clayey units. *(continued)*	M			
			31.50	0	SPT		MH	**SILT:** pale grey, traces of clay.				N = own weight
			31 / 32									
			32 / 33									
			33 / 34					... becoming yellow-pale brown and pale grey.				
			34 / 35									
			35.50	R	SPT		CH	**CLAY:** mottled white, orange, green and dark grey, thinly bedded.				RESIDUAL SOIL N=>50 N=>50
			35 / 36									
			36 / 37									
			37 / 38									
			38.50	R	SPT			**ARGILLITE:** dark grey, extremely weathered, extremely low strength, remnant fabric visible.				WEATHERED ROCK
			38 / 39									
			39 / 40									
			40 / 41									
			41	R	SPT							N=R
			42									
			42 / 43									
			43 / 44									
			44	R	SPT							N=R

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BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH14B

SHEET 4 OF 5

Client:	QUEENSLAND DEPARTNENT OF MAIN ROADS	Date Commenced:	26/1/02
Project:	TUGUN BYPASS GEOTECHNICAL INVESTIGATION	Date Completed:	30/1/02
Borehole Location:	TUGUN	Recorded By:	MCM
Project Number:	2134070A	Log Checked By:	DAW

Drill Model/Mounting:		Hole Angle:	90°	Surface RL:	0.89 m AHD
Borehole Diameter:	120 mm	Bearing:	---	Co-ords:	E 50631 N 86880 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 (VS S F ST VST / L MD D VD H)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
WB			45 (46.00)					**ARGILLITE:** dark grey, extremely weathered, extremely low strength.	M			WEATHERED ROCK
			46 (47.00)					REFER TO CORED BOREHOLE LOG				

47 (48.00) 48 (49.00) 49 (50.00) 50 (51.00) 51 (52.00) 52 (53.00) 53 (54.00) 54 (55.00) 55 (56.00) 56 (57.00) 57 (58.00) 58 (59.00) 59

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CORED BOREHOLE ENGINEERING LOG

BOREHOLE NO. **BH14B**

SHEET 5 OF 5

Client:	QUEENSLAND DEPARTNENT OF MAIN ROADS	Date Commenced:	26/1/02
Project:	TUGUN BYPASS GEOTECHNICAL INVESTIGATION	Date Completed:	30/1/02
Borehole Location:	TUGUN	Recorded By:	MCM
Project Number:	2134070A	Log Checked By:	

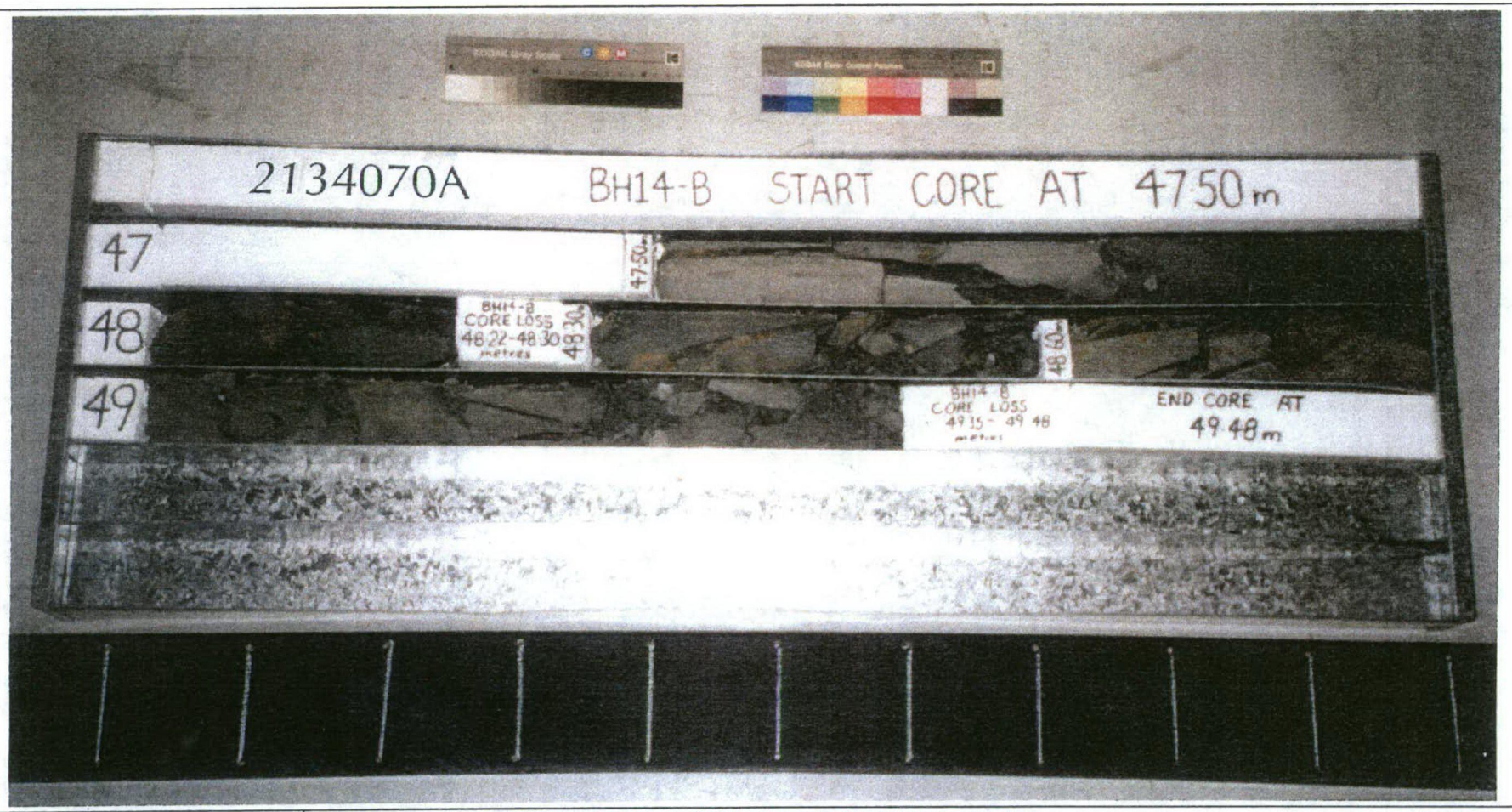
Drill Model/Mounting:		Hole Angle:	90°	Surface RL:	0.89 m AHD
Borehole Diameter:	120 mm	Bearing:	---	Co-ords:	E 50631 N 86880 PMG

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: EL 0.03, VL 0.1, L 0.3, M 1, H 3, VH 10, EH	AVERAGE DEFECT SPACING mm: 30, 100, 300, 1000, 3000	STRUCTURE AND ADDITIONAL OBSERVATIONS
					45 / 46						
					46 / 47						
							COMMENCE CORING AT 47.5 m				
NMLC	Nil		90	0	47 / 48		ARGILLITE: grey to dark grey, moderately weathered, low strength.	MW			WEATHERED ROCK Numerous high angle joints (45-80°), iron staining and clay smear infilling of joints.
			100	0	48.22 / 48.30		CORE LOSS				
			85	0	48 / 49		ARGILLITE: grey to dark grey, moderately weathered, low strength.	MW			
					49.35		CORE LOSS				
							END OF BOREHOLE AT 49.48 m				
					49 / 50						
					50 / 51						
					51 / 52						
					52 / 53						
					53 / 54						
					54 / 55						
					55 / 56						
					56 / 57						
					57 / 58						
					58 / 59						
					59						

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Project	:	Tugun Bypass Project – Supplementary Geotechnical Investigation
Job Number	:	2134070A
Location	:	Borehole 14 - B
Depth	:	47.50 – 49.48 m
Date Drilled	:	26 – 30 January 2002