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ENGINEERING BODEHOI E

BOREHOLE No	BH19
SHEET	<u>1of13_</u>
REFERENCE No	<u>H9568</u>

Department of FOR GEOTECHNICAL TERMS AND Main Roads SYMBOLS REFER FORM FIGEOT 017/2-2004		SHEET1_ of	
Main Roads SYMBOLS REFER FORM F:GEOT 017/2-2004		REFERENCE NoH956	<u>8</u>
ROJECT GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION	N INVESTI	GATION	
CATION PIER 7 - NORTHERN FACE OF PILE CAP-UPSTREAM/LEFT HAND SIDE		ORDINATES 10188.6 E; 167948.3	N
ROJECT No FG5388 SURFACE R.L. -3.35 DATE STARTED		DATUM SETP	
DATE COMPLETED		DRILLER <u>CAIRNS DR</u>	
R.L. RQD INTACT DEF	ECT		
(m) 92 ()% MATERIAL 5 9 STRENGTH SPAC		ADDITIONAL DATA	
Implementation Implementatio	[[]	AND	S
RL RQD (m) 92 (j)% MATERIAL (m) 92 (j)% MATERIAL (m) 92 (k) 02 (m) 92 (k) 02 (m) 02 (k) 02 (m) 02 (k) 02 (m) 02 <td< td=""><td>CEAPHIC LOG</td><td>TEST RESULTS</td><td>SAMPLES</td></td<>	CEAPHIC LOG	TEST RESULTS	SAMPLES
ESTUARINE SILTY CLAY			
Dark grey to black, mainly wet, very soft to soft.			
High plasticity; high content of partly			
decomposed plant materials.			
		No recovery.	(Ters)
		RW,-,-	SPT
	:.	N<1	CH 1
			(Committy)
			ł
ОН			
	.		
			Standar
		RW,- N<1	SPT
		N<1	OF 1
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REMARKS SPT N values in gravel can everestimate density due to influence of coarser size gravel particles. This borelog should be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a horizontal plane.

LOGGED BY A. DISSANAYAKE (DISS)

RW,-,-N<1

SPT

BOREHOLE WITH I

-8.35



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ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

BOREHOLE No	<u>BH19</u>
SHEET	_2_ of _13_
REFERENCE No	<u>H9568</u>

A. DISSANAYAKE (DISS)

JOB Ho DATUM AHD DATE COMPLETED DEFECT DEFECT Image: State of the state of th	PROJECT	GAT	<u>EWAY (</u>	JPG	RADE PROJECT - GATEWAY BRIDGE DU			N FOUND	ATION IN	/ES]	
JOB No DATUM _AHD DATE COMPLETED _000002. DRILLER _GATINO DOLLING. Image: Comp of the complexity of the	LOCATION										
JOB Ho DATUM AHD DATE COMPLETED DEFECT DEFECT Image: State of the state of th	PROJECT N	10_F <u>G5</u>	● <u>FG5388</u> SURFACE R.L. <u>3.35</u> DATE STARTED								DATUM SETP
Image: Bit Description I	JOB No				DATUMAHD		DAT	E COMPLET	ED 06/08	<u>05</u>	
	(m) 문	CASING CASING WASH BORING CORE DRILLING	()% CORE	SAMPLE		гітногоду	프	STRENGTH	SPACING (mm)	GRAPHIC LOG	
-3.85 -3.85 -3.85 -3.85 -5 -5 -5 -6 -11.35 -7 -7 -7 -7 -7 -7 -7 -7 -7 -7	-					522		_ <u></u>	<u> </u>		
-11.35 -11.35 ALLUVIAL SILTY CLAY Pale grey brown to brown, moist, stiff Ct- Ct-		6 1 1			ESTUARINE SILTY SAND/SAND		он				
Pale grey brown to brown, moist, stiff becoming firm with depth. Medium to high plasticity; some incipient lateritic features; slightly dessicated in some areas.	- 6				Very fine to fine grained sand with partly decomposed shell fragments.						
ALLUVIAL SILTY CLAY Pale grey brown to brown, moist, stiff becoming firm with depth. Medium to high plasticity; some incipient lateritic features; slightly dessicated in some areas.	- 7						SC- SM				
-9 -9 -10 -13.35		<u>5</u>			Pale grey brown to brown, moist, stiff becoming firm with depth. Medium to high plasticity; some incipient lateritic features; slightly dessicated in						
							Cŀ- CH				2,5,7 N=12 SPT
REMARKS SPT N values in gravel can everestimate density due to influence of coarser size gravel particles. This borelog should LOGGED BY											

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be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a

horizontal plane.



ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERM	S AND
SYMBOLS REFER FORM F:GEOT	017/2-2004

BOREHOLE No	<u>BH19</u>
SHEET	<u>3</u> of <u>13</u>
REFERENCE No	<u>H9568</u>

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION PROJECT

LOCATION _PIER 7 - NORTHERN FACE OF PILE CAP- UPSTREAM/LEFT HAND SIDE _____ COORDINATES _10188.6 E; 167948.3 N

JOB No

PROJECT No FG5388 ____ SURFACE R.L. _-3.35 __

DATE STARTED _27/04/05_ DATUM _AHD ____ DATE COMPLETED _____ D6/05/05 ____ DRILLER _____ CAIRNS DRILLING _____

DATUM SETP

DEPTH (m)	R.L (m) -13.35	CASING WASH BORING CORE DRILLING	RQD ()% CORE REC%	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH むちェミュラゼ	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
					ALLUVIAL SILTY CLAY (As above).							
· 11									• • • •		4,4,5 N=9	SPT
									-			
• 12	1100										RW,3,4 N=7	SPT
							Cŀ- CH				N=7	and the second
 - 13												
											2,3,5 N=8	SPT
- 14	0.000											
15	-18.35											

REMARKS SPT N values in gravel can overestimate density due to influence of coarser size gravel particles. This borelog should be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a

LOGGED BY A. DISSANAYAKE (DISS)



ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

BOREHOLE No	<u>BH19</u>
SHEET	<u>4</u> of <u>13</u>
REFERENCE No	<u>H9568</u>

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION PROJECT LOCATION _PIER 7 - NORTHERN FACE OF PILE CAP- UPSTREAM/LEFT HAND SIDE _____ COORDINATES _____ 10188.6 E; 167948.3 N

PROJECT No FG5388 JOB No

_____.

SURFACE R.L. __-<u>3.35</u> ___ DATUM <u>AHD</u>.

DATE STARTED _27/04/05 DATE COMPLETED _06/05/05

DATUM SETP DRILLER CAIRNS DRILLING

		RL.		RQD	ĺ			\square	INTACT	DEFECT			
	ê	(m)		()%		MATERIAL	~	0 Z	STRENGTH	SPACING	g	ADDITIONAL DATA	ļ
	DEPTH (m)		DRO		щ		90	Ë		()11(1)	IC L	AND	ŝ
ĺ		R L. (m) -18.35	ASH ASH DRE	CORE	SAMPLE	DESCRIPTION	ггтногосу	S T	รารยายาม มีรับราวรีซ		GRAPHIC LOG	TEST RESULTS	SAMPLES
	15	-18.35	ŭ≩ŭ	REC %	Ś		5	SŠ	<u> </u>		Б		SAI
-						ALLUVIAL SILTY CLAY (As above).	\mathbb{N}						
ł									-			1,2,4	COT
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Ĩ							N		-	•			
20%			31						-	- · · ·			
13	16												
Ы	10								-				
8										- <u>·</u>			
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影							\mathbb{N}		l <u>.</u>	_ ·			
8-			No. of Concession, Name						• -				
М.							\checkmark					1,2,4 N≍6	SPT
삙									·	:		N=6	
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ģ		1								L · ·		1,4,6 N=10	SPT
BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT GPJ ENGINEERING BOREHOLE 09 04.GDT 31/08/05								1		Į .	l		No.
ЯĽ	20	-23.35		})			ł					100000
	RE	MARKS				avel cor overestimate density due to influence of coa							
			be re	<u>ad in con</u>	junct	ion with the appropriate Defect Description Sheets.	Defe	ect an	gles were me	asured with	n resp	pect to a A. DISSANAYAKE (I	DISS)



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ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

___<u>BH19</u>___ BOREHOLE No <u>5</u> of <u>13</u> SHEET __<u>H9568</u>___ REFERENCE No

PROJECT		SRADE PROJECT - GATEWAY BRIDGE DUI						
LOCATION		HERN FACE OF PILE CAP- UPSTREAM/LEF		AND	SIDE		C	OORDINATES 10188.6 E; 167948.3 N
	o_F <u>G5388</u>			C	ATE START	ED <u>27/04</u>	/05	DATUM <u>SETP</u>
JOB No		DATUMAHD		DAT	E COMPLET	ED <u>06/05</u>	5/05	DRILLER CAIRNS DRILLING
(m) (m) (m) (m) (m) (m) (m) (m) (m) (m)	CORE AMPLE SAMPLE SAMPLE	MATERIAL DESCRIPTION	гітногосу	USC WEATHERING	INTACT STRENGTH ボディをユラゼ	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS
-		ALLUVIAL SILTY CLAY						
		(As Above). ALLUVIAL SILTY SAND/SAND Pale brown to brown, moist to mainly wet, medium dense to dense. Very fine to fine grained silty sand becoming sandy with depth; minor silt content.		CI- CH		- · · · · · · · · · · · · · · · · · · ·		
104.65 104.05								6,8,18 N=26 SPT
				SC- SM				
								7,14,18 N=32 SPT
- 23 - 23 - 26 - 26 - 28.00 - 20 - 28.00 - 29.00 - 20.00 - 20.		ALLUVIAL GRAVELLY SAND Pale grey brown to brown, wet, dense. Medium to coarse grained sand with some gravel.						
10000000000000000000000000000000000000				sw				7,13,18 N=31 SPT
		ravel can overestimate density due to influence of co		:	anavel an fai			

be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a horizontal plane. (c) State of Queensland (Department of Transport and Main Roads) 2020, CC BY 4.0. Please note copyright and limitation of liability notices on attached cover page.

A. DISSANAYAKE (DISS)



ENGINEERING BOREHOLE

BOREHOLE No	<u>BH19</u>
SHEET	6 of1 <u>3</u>
REFERENCE No	<u>H9568</u>

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

GALE	<u>WAY U</u>	<u>IPG</u>	RADE PROJECT - GATEWAY BRIDGE DUP	LIC	ATIO	<u>N FO</u>	<u>UNDA</u>	TION INV	/ <u>ES1</u>		
											N
10_F <u>G53</u> 8	SURFACE R.L <u>3.35</u>		D	ATE S	TARTE	D _27/04	/05	DATUM SETP			
			DATUM <u>AHD</u>		DAT	E CON	1PLETE	D 06/05	<u>/05</u>	DRILLER CAIRNS DRIL	LING
CASING WASH BORIN CORE DRILLI	RQD ()% CORE REC%	SAMPLE		ПТНОГОСУ	_	STRE	NGTH ธเม	DEFECT SPACING (mm) 0000000000000000000000000000000000	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
5				ō \}]	sw	:	ł			Large gravel at 25.1m	
			Pale brown to pale grey brown, wet, very dense. Poorly sorted sand and gravel; trace amount of silty clay; particle size increaes with depth; subangular to subrounded lithic and quartzitic fragments sizing up to 40mm.			-		- · · ·		12,23,30/110 N>50	SPT
5	(50)				GP- GM					10,23,30/125 N>50	SPT
		「「「「「「「「「」」」」」」」」」」」」」」」」」」」」」」」」」」」」」	LOW GRADE COAL FINE GRAINED MAINLY DULL TO SLIGHTLY VITREOUS THINLY LAMINATED FRAGILE CARBONACEOUS SEDIMENTARY ROCK MW: Dark grey to black, fine gravel thinly laminated, fine grained, low to medium strength with occasional high strength sandstone interbeds. Highly fractured, weathered and altered seams throughout; frequent siltstone interbeds. Defects : - Numerous lamination/bedding partings<**deg - Fractured, weathered & altered seams<**		MW					 Is(50)=0.53 MPa Is(50)=0.19 MPa Is(50)=0.48 MPa Is(50)=0.27 MPa Is(50)=0.08 MPa Is(50)=0.05 MPa Is(50)=0.09 MPa Is(50)=0.12 MPa Is(50)=0.69 MPa Is(50)=0.52 MPa 	
		PIER 7 - NOF	PIER 7 - NORTH	PIER 7- NORTHERN FACE OF PILE CAP-UPSTREAMLEE No FG5388 SURFACE R.L. -3.35 DATUM _AHD DATUM _AHD CORE Y DESCRIPTION ALLUVIAL GRAVELLY SAND As Above ALLUVIAL SAND AND GRAVEL Pair be frown to pale grey brown, wet, very dense. Poorly sorted sand and gravel; trace amount of silty clay; particle size increaes with depth; subsmould think and quartzilic fragments sizing up to 40mm. S (50) LOW GRADE COAL Fine GRAINED MAINLY DULL TO SLIGHTLY VIEW TO ADMINIC TRACE Siltightly VIEW TO STREAMENT ARY ROCK MW: Dark grey to black, fine gravel thinly laminated, fine grained, low to medium strength with occasional high strength sandstone interbeds. Highly fractured, weathered and altered seam strice of the seam strite of the seam strice of the seam strice of	PIER 7- NORTHERN FACE OF PILE CAP- UPSTREAM/LEFT HAR No FG5388 SURFACE R.L3.35 DATUM _AHD DATUM _AHD DATUM _AHD DESCRIPTION GOOD GONE ALLUVIAL GRAVELLY SAND As Above ALLUVIAL SAND AND GRAVEL Pale brown to pale grey brown, wet, very dense. Poorly sorted sand and gravel; trace and out of silly claricy, particle size increases with depth; subangular to subrounded lithic and quartzilic fragments sizing up to 40mm. S (50)	PIER 7- NORTHERN FACE OF PILE CAP-UPSTREAMLEET HAND. No FG5388 SURFACE R.L335 D DATUM _AHD	PIER 7- NORTHERN FACE OF PILE CAP- UPSTREAM/LEET HAND SIDE No F95388 SURFACE RL3.35 DATE COM DATUM _AMD DATE COM ON F95386 DESCRIPTION ON F95386 DESCRIPTION ON F95386 ALLUVIAL GRAVELLY SAND As Above ALLUVIAL SAND AND GRAVEL Pale brown to pale grey brown, wet, very dense. Pale brown to pale grey brown, wet, very dense. DOTY sorted sand and gravel; trace amount of silly clay, particle size increase amount of silly clay, market size increase amount of silly clay, particle size increase amount of silly	PJER 7 NORTHEEN FACE OF PILE CAP-UPSTREAMLEFT HAND SIDE No _GS388	PER 7NORTHERN FACE OF PILE GAP-UPSTREAMLEFT HAND SIDE	PER 7- NORTHERN FACE OF PILE CAP-UPSTREAMLEFT HAND SIDE October 1 %	No. F2G388

REMARKS SPT N values in gravel can overestimate density due to influence of coarser size gravel particles. This borelog should be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a

LOGGED BY A. DISSANAYAKE (DISS)

	G	R		ent of	nment		FOR GEOTE	RE	HC	DLE				BORE	HOLE No	<u>BH1</u>	_13 _
			Main I				YMBOLS REFER	RFOR	M F:0	GEOT	017/2-2				RENCE No	<u>H956</u>	8
	OJECT CATION				RADE PROJECT											.6 E; 167948.3	
							-3.35							ORDINAT		SETP	
JO	B No						AHD					D 06/0				CAIRNS DRI	
(m) H	R.L. (m)	H BORING E DRILLING	RQD ()%			MATERIAL		7	PHERING	INT/ STREE		DEFECT SPACING (mm)		A	ADDITIONAL	DATA	
DEPTH (m)		CASING WASH BC CORE DF	CORE REC %	SAMPLE		DESCRIPTIC	۶N	LTHOLOGY	ISC VEATHEF	± T T T T T T T T T T T T T T T T T T T	티옥피	2000000 200000000000000000000000000000	GRAPHIC LOG		AND TEST RESI	JLTS	SAMPLES TESTS
3	-33.35		REC %	0)	LOW GRADE CO MW : (As above				⊃I≥	. <u> _</u>			0			1-12-	S/S
		And Annal Con-		活動に	. (As above					-						s(50)=0.13 MPa s(50)=0.10 MPa	× -
-		and the second second	100												ls Is	s(50)=0.36 MPa s(50)=0.11 MPa	x
-3	i		(07)	M							+			Coreloss			
				\wedge							+						
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- 3	2									-					fs	;(50)=0.08 MPa	× .
		a solution of		の人間になって					мw						ſs	s(50)=0.30 MPa	× -
- 3	3			の記念											ls {s	(50)=0.24 MPa (50)=0.24 MPa (50)=0.13 MPa (50)=0.35 MPa	x - 0 - X _ 0
				and a							Carlos and a second						-
1 				語の						-					ls Is	s(50)=0.17 MPa s(50)=0.14 MPa	0 -
				ATTER OF											ls	s(50)=0.08 MPa	0 -
-			<u>83</u> (46)								Ser and						-
-3	4	1000		The second								- -				s(50)=0.79 MPa s(50)=0.16 MPa	× -
				1 Contraction						•							-
-		100		a post						- 1							
3				No. of Street,	SANDY SILTST			1 -	MW-						ន	6(50)=0.28 MPa 6(50)=0.23 MPa	X O

be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a horizontal plane.

A. DISSANAYAKE (DISS)

				er	nsland nment		REH	0	LE			BOREHOLE N SHEET	o <u>BH19</u>		
		$2 \wedge$	Main			FOR GEOTE SYMBOLS REFER	CHNICA	L TE F:G&	ERMS AND EOT 017/2-2	2004		REFERENCE	No	8	
PROJEC LOCATI PROJEC JOB No	ION _ CT No _	PIEF FG5	<u>87-NO</u>	RTH	IERN FACE OF F	- GATEWAY BRIDGE DUE PILE CAP- UPSTREAM/LEE FACE R.L <u>3.35</u> DATUMAHD		<u>D S</u> I DA		 D _27/4	CO / <u>05_</u>	ORDINATES <u>1</u> DA	0188.6 E; 167948.3 I TUM <u>SETP</u> LER <u>CAIRNS DRI</u>		
() () ()	R.L. (m) 38.35	WASH BORING CORE DRILLING	RQD ()% CORE REC %	SAMPLE		MATERIAL DESCRIPTION	E S	WEATHERING EH	INTACT STRENGTH デェミュラゴ	DEFECT SPACING (mm)	101	A	NAL DATA ND RESULTS	SAMPLES TESTS	
-	38.86		<u>93</u> (23)	XX	thinly laminated, strength. Defects : Nil. LOW GRADE CO FINE GRAINED SLIGHTLY VITR LAMINATED FR CARBONACEOU ROCK MW : Black main vitreous, fine gra mainly low to me Highly fractured, seams througho Defects : - Numerous lam <20°	rey to grey, fine grained, mainly medium to high DAL MAINLY DULL TO EOUS THINLY AGILE JS SEDIMENTARY hly dull to occasionally ained, thinly faminated, adium strength.	SV MV	₩ .				Coreloss	Is(50)=0.59 MPa Is(50)=2.24 MPa Is(50)=4.06 MPa Is(50)=0.33 MPa Is(50)=0.25 MPa	x o x x	
- 37	<u>40.51</u> <u>40.90</u> <u>41.25</u>		73 (70)	X	laminated, medi LOW GRADE CC HW-MW: Highly very low to low s SILTSTONE MW-SW : Pale g	fractured and altered with strength.	SV XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX					Coreloss XW band	ls(50)=3.90 MPa	x	
-				A State of the sta	mainly medium : Defects : Generation	ally rare. ing induced lamination	××××××××××××××××××××××××××××××××××××××						ls(50)=1.10 MPa	0	
- 39	43.20						××××××××××××××××××××××××××××××××××××××					Pressuremeter Test 5 @39.6m UCS=25MPa MC=2.51% WD=2520N/m ²	is(50)=0.42 MPa is(50)=0.42 MPa is(50)=0.96 MPa	o x o	
40 -	43.35				See below	·	X X	w							
		SPT	N values	in gr	avel can overestima	ate density due to influence of co	parser siz	ze gr	avel particle	es. This t	orelog		LOGGED BY DISSANAYAKE (I	I	

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horizontal plane.

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(MX	Government
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ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

BOREHOLE No	BH19
SHEET	_9_ of _13_
REFERENCE No	H9568

9_of_13_ ___H9568___

PRO	JECT	_ <u>GA</u> T	EWAY	JP <u>G</u>	RADE PROJECT - GATEWAY BRIDGE DU	PLICATION FOUNDATION INVESTIGATION								
		RTH	ERN FACE OF PILE CAP-UPSTREAM/LEF	T <u>H</u>		SIDE	_	С	DORDINATES 10188.6 E; 167948.3 N					
PRO	JECT NO	<u>FG5</u>	388		SURFACE R.L <u>3,35</u>		C	DATE STARTED	27/4/0	5	DATUM SETP			
JØB	No				DATUMAHD		DATE COMPLETED _6/5/05				DRILL	ER CAIRNS DRI	LING	
BEPTH (m)	R.L. (m) -43.35	ROD ROD SANAL SANAL CASSING CASSIN CASSING CASSING CASSING CASSING CASSINO		SAMPLE	MATERIAL DESCRIPTION		AI	ADDITIONAL DATA AND TEST RESULTS						
40	-40.00	1			INTERBEDDED SANDSTONE AND				<u></u>				SAMPLES TESTS	
- - - - - - - - - -			95 (78)		/MUDSTONE (SHEARED) MW - SW : Pale grey to dark grey, fine grained, thinly laminated and interbedded, low to mainly medium with some high strength bands. Faulted, contorted and sheared throughout with some clayey and rehealed zones. Rockmass appears to be erodable in most places.		мw sw мw					Is(50)=0.14 MPa	×	
-41	-44.50				SANDSTONE FINE TO MEDIUM GRAINED, LAMINATED TO MASSIVE SEDIMENTARY ROCK SW : Grey to white grey, taminated to massive, medium to mainly high strength. Occasional thin mudstone interbeds. Defects : Generally rare. - Occasional drilling induced lamination partings <10°-15° (1/-2/m). - Joints @ 55° (1/2m)						Pressuremeter Test 4 @ 41.5m UCS=39MPa MC=3.27% WD=2560N/m ² Pressuremeter Test 3 @ 42.1m	Is(50)=2.79 MPa Is(50)=2.71 MPa Is(50)=0.90 MPa Is(50)=2.56 MPa Is(50)=0.72 MPa Is(50)=1.75 MPa	x o x o x o x o	
			<u>100</u> (63)	Superior with the state			sw				UCS=42MPa MC=2.91% WD=2540N/m ²	Is(50)=0.37 MPa Is(50)=1.49 MPa Is(50)=1.30 MPa Is(50)=2.58 MPa Is(50)=0.99 MPa Is(50)=0.79 MPa	x - x - x - x - x -	
- 43	-47.35			and the second second								ls(50)=0.21 MPa is(50)=1.08 MPa	0 X	
45	-48.35				INTERBEDED MUDSTONE AND SANDSTONE SW : Pale grey to black, fine grained, thinly laminated, mainly medium to high strength. Minor faulting and shearing features throughout. Defects : - Lamination partings <15° (1-3/m) - Broken zones <150mm.		sw							

REMARKS SPT N values in gravel can greestimate density due to influence of coarser size gravel particles. This borelog should be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a

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horizontal plane.

(J.	R		ent of		FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004						BOREHOLE NO SHEET REFERENCE N	<u>10</u> of	_13_
PROJE LOCATI PROJE	ION CT No	_PIEF	<u>R7-NO</u>	RTH	IERN FACE OF F	I - GATEWAY BRIDGE DUPLICATION FOUNDATION PILE CAP- UPSTREAM/LEFT HAND SIDE FACE R.L. -3.35 DATE STARTED 27 DATUM AHD					COORDINATES _10188.6 E; 16			
TH (m)	R.L. (m) 48.35	CASING WASH BORING CORE DRILLING	RQD ()% CORE REC% 100 (73)	SAMPLE	INTERBEDED M SANDSTONE SW : (As above)		ГІТНОГОСҮ	HERING	INTACT STRENGTH モデェミュラロ	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIO A	NAL DATA	SAMPLES
	48.97	and a Manufacture of the			MW-SW : Pale g laminated, mainl with some very k clayey bands. Frequent mudsto	DIMENTARY ROCK prey to grey, fine grained, y medium to high strength ow to low strength HW one interbeds up to pulting and shearing		sw MW SW					Is(50)=0.60 MPa	X
				State of the second state	Defects : Genera - Drilling induced (*/m)			HW- MW				Clay band. Clay band.	ls(50)=0.08 MPa	0
		a Tanga	100	And a second									ls(50)=0.22 MPa ls(50)=0.71 MPa ls(50)=0.81 MPa	0
48			(85)					sw				Pressuremeter Test 2 @48.0m	is(50)=1.04 MPa Is(50)=1.05 MPa Is(50)=0.97 MPa Is(50)=0.24 MPa	
	52.60			and the second second									ls(50)=0.25 MPa ls(50)=0.03 MPa	x
	53.35	SPT	Nyaluon	in cr	laminated, medi	UDSTONE.		sw					LOGGED BY	

Ϊ.

be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a

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ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

BOREHOLE No	BH19
SHEET	_ <u>11</u> _ of <u>13</u> _
REFERENCE No	<u>H9568</u>

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION PROJECT LOCATION PIER 7 - NORTHERN FACE OF PILE CAP- UPSTREAM/LEFT HAND SIDE COORDINATES 10188.6 E; 167948.3 N PROJECT No FG5388 SURFACE R.L. _-3.35 ___ DATE STARTED _27/4/05 DATUM SETP JOB No DATUM _AHD __ DATE COMPLETED _6/5/05 DRILLER CAIRNS DRILLING RĹ ROD INTACT DEFECT BORING (m) ()% STRENGTH ADDITIONAL DATA SPACING DEPTH (m) 00 MATERIAL (നന) LITHOLOGY AND GRAPHIC SAMPLES Щ DESCRIPTION VASH CORE I SAMPI TESTS CORE TEST RESULTS REC % 50 -53.35 111811 1 INTERBEDED MUDSTONE AND ls(50)=0.37 MPa 0 SANDSTONE, MUDSTONE. Is(50)=0.27 MPa SANDSTONE х SW SW: (As above). -53.80 Is(50)=0.26 MPa MUDSTONE х HW-SW: Dark grey to black, fine grained, thinly laminated, medium to high strength fractured core with very low to low strength sheared and brecciated zones. UCS=37MPa MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT. GPJ ENGINEERING BOREHOLE 09. 04. GDT 31/8/05 MC=3.26% WD=2490N/m² 100 ls(50)=0.48 MPa Defects: х - 51 (65)ls(50)=1.81 MPa 0 - Drilling induced laminattion partings SW - Highly fractured sheared and brecciated Pressuremeter zones <1500mm. Test 1 @51.1m ls(50)=0.91 MPa 0 HW Brecciated zone -52 Is(50)=0.15 MPa x SW 53 ls(50)=0.28 MPa х Brecciated zone. нw 100 (100) -54 BOREHOLE WITH LITHOLOGY Is(50)=0.37 MPa o SW -58.35

REMARKS SPT N values in gravel can overestimate density due to influence of coarser size gravel particles. This borelog should be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a horizontal plane.

LOGGED BY A. DISSANAYAKE (DISS)



horizontal plane.

ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004

BOREHOLE No	<u>BH19</u>
SHEET	12 of13_
REFERENCE No	<u>H9568</u>

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION PROJECT LOCATION _PIER 7 - NORTHERN FACE OF PILE CAP- UPSTREAM/LEFT HAND SIDE _____ COORDINATES _10188.6 E; 167948.3 N

PROJECT No_FG5388

JOB No

DATE STARTED _ 27/04/05 DATUM __AHD ___ DATE COMPLETED __06/05/05

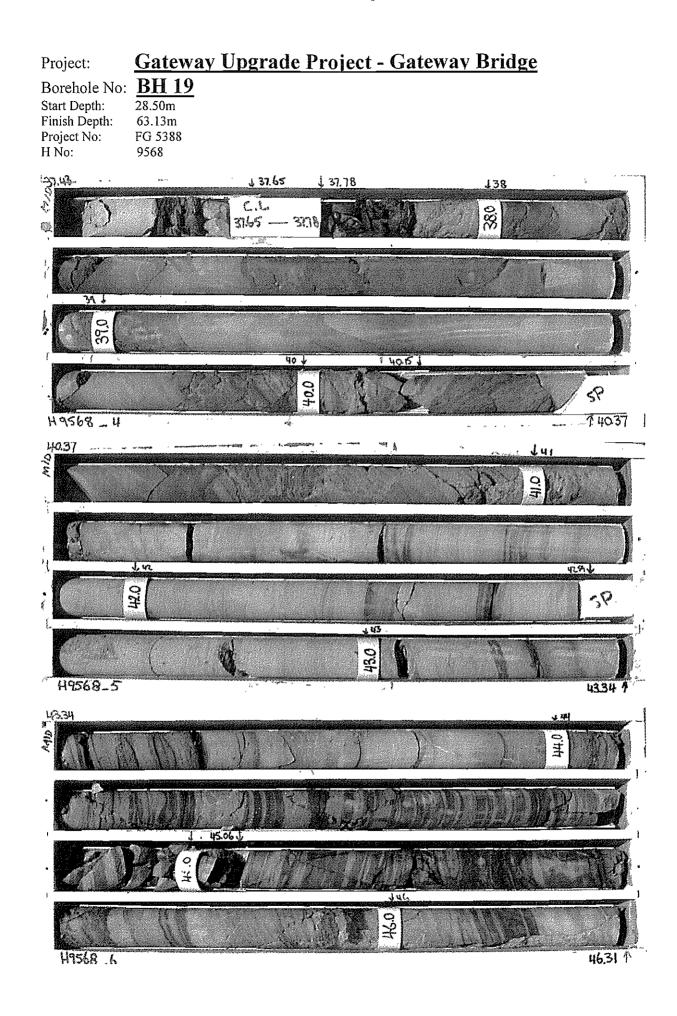
DATUM SETP DRILLER <u>CAIRNS DRILLING</u>

	R.L.		RQD					INTACT	DEFECT	1			
Ê	(m)	I BORING DRILLING	()%		MATERIAL		g	STRENGTH	SPACING	g	A	DDITIONAL DATA	
DEPTH (m)		DRIL		ω		Š	ERIN		(mm)	GRAPHIC LOG		AND	ι Ω
Ш Ш	-58.35	ASH ASH ORE 1	CORE	SAMPLE	DESCRIPTION	LITHOLOGY	ATH	XX	~~888	APHI		TEST RESULTS	SAMPLES TESTS
55	-58,35	080	REC %	AS .		5	S⊔N	∭∑r∑¬≥∭		GR		TEST RESULTS	SAMPL
	-58.35	080	100 (46)	ð	MUDSTONE HW-SW: (As above)		SW	STRENGTH		G		Is(50)=0.05 MPa	SAT TES
BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT GPJ ENGINE BOREHOLE 09 04.GDT 31/08/05			<u>100</u> (47)				HW				Highly fract	ls(50)=0.19 MPa ured zone.	X
BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES.GATI	-63.35		<u>100</u> (37)				HW				Highly fract	ls(50)=0.32 MPa ls(50)=0.29 MPa ured and slightly	x
	MARKS	SPTI	N values	in ar	avei can overestimate density due to influence of co	arser	size	aravel particlo	s This h		should	LOGGED BY	
					on with the appropriate Defect Description Sheets.							A. DISSANAYAKE (D	uss)
				<u></u>		Dele		Alga Mere III65	sprea Mi	resp	ect to a		

	Queensland Government Department of	8	GINEERING BOREHOLE	SHEET _	BH19
	Main Roads	SYMBOLS R	EFER FORM F:GEOT 017/2-2004	REFERENCE No	<u>H9568</u>
LOCATION PROJECT No JOB No	PIER 7 - NORTHERN FACE O			COORDINATES 10188.6 E; 05. DATUM SE	167948.3 N TP JRNS DRILLING
(m) HLAJO 60 -63.35	%() %	MATERIAL	STRENGTH SPACING	ADDITIONAL DAT.	A SAMPLES TESTS
	338 REC % 3 MUDSTONE HW-SW: (As 100 (48)	above)		Highly fractured and slightly brecciated zone. Brecciated zone. (s(50)= (s(50)=	-
-66.53)	Borehole terr	ninated at 63.18m			
- 64 - 64 	SPT N values in gravel can overes	imate density due to influence	of coarser size gravel particles. This bo	relog should	GED BY

horizontał plane.

Project: Borehole No: Start Depth: Finish Depth: Project No: H No:		pgrade Proje	<u>ect - Gatewa</u>	<u>y Bridge</u>	
			129 0: 8		30L
	Car D.				30.0
	30.28,4/	4 1			
H9568_1		30.88 0	CORE LO		31.40
340	MZ AR			432 330 320	ł.
·	(() () () () () () () () () (1. Mar. 7			
	n.cc		a oraș a cara		()
H9568_Z	33.89 1	340 ⁶		1. A. B.	55 134.35
34.35				82 82 82 82 82 82 82 82 82 82 82 82 82 8	
	36 J.	36.164	7	Rearies → elus Vestas	
	S 300	55 . 36.16 36.16	COKE [18 55	36.56	
-19548-3		SI.0		11	



Project: Gateway Upgrade Project - Gateway Bridge

Borehole No:	BH	19
DOI 011010 1 101	ALC: 10. 10.	-

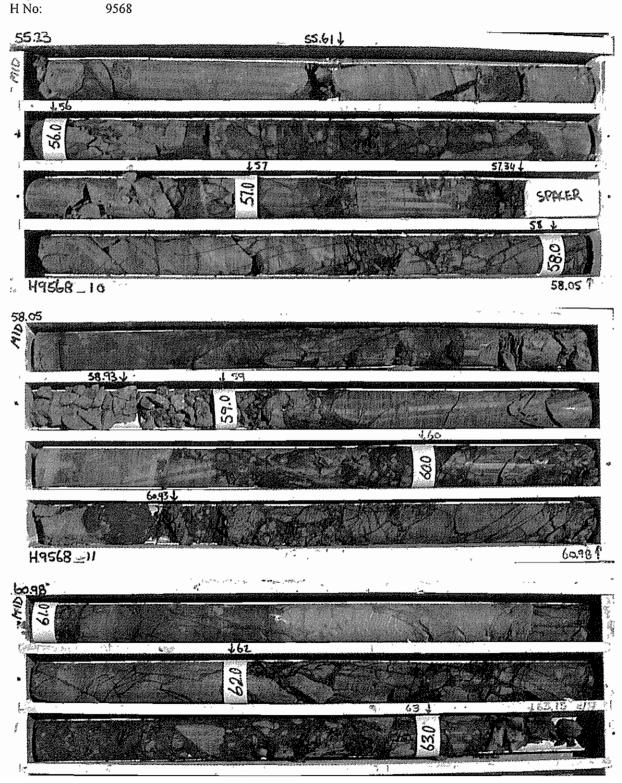
Start Depth:	28.50m
Finish Depth:	63.13m
Project No:	FG 5388
H No:	9568



Project: Gateway Upgrade Project - Gateway Bridge

Borehole No:	BH	19	

Start Depth:	28.50m
Finish Depth:	63.13m
Project No:	FG 5388
H No:	9568





Department of Main Roads

BOREHOLE NO : BH19 SHEET : 1 of 8 OF ENGINEERING BORELOGS [CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH ISRM SUGGESTED METHODS (1981)] REFERENCE NO: H9568

D

PROJECT	GATEWAY BR	GATEWAY BRIDGE FOUNDATION INVESTIGATION – GATEWAY UPGRADE PROJECT							
LOCATION	PIER 7 NORTH	ERN FACE OF PILE	CAP – UPSTRI	EAM / LEFT HAND	SIDE				
PROJECT NO	FG5388	SURFACE R.L :	-3.35	DRILLER	: CAIRNS DRILLING PTY LT				
JOB NO		DATUM :	AHD / SETP	DATE DRILLED	: 27/4/05 - 06/05/05				

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
28.50-28.55	BZ	<10°	21	-	0	Cn	Parallel to LP
28.62	LP	<15°	Р	S	0	Cn	-
28.65-28.71	WS	-	-		0	W	-
28.75-28.53	BZ	-			0	Cn	5
28.92	LP	<10°	Р	S	C	Cn	DI
28.93	LP	<10°	P	S	С	Cn	DI
29.05	LP/BP	<10°	Р	S	С	Cn	DI
29.20	LP	<10°	Р	S	С	Cn	DI
29.27	LP	<10°	Ĭr	R	С	Cn	DI
29.44-29.49	WS	-	-	-	С	Cn	Parallel to LP
29.57	BP	<15°	Р	S	С	Cn	DI
29.69	BP	<15°	Ir	R	С	Cn	DI
29.82	LP	25°	Р	S	С	Cn	DI
29.88	LP	<10°	Р	S	С	Cn	DI
30.08-30.23	WS	_	-	м	0	W	CI
30.30-30.48	BZ		-	_	0	-	PCI
30.50	LP	<15°	Р	S	C	Cn	
30.57-30.79	BZ	-	Р	S	0	Cn	Parallel to LP
30.38-31.40	Coreloss	-0.				Cn	
31.40-31.62	BZ	_	-	-	0	· W	Siltstone Interbed
31.69	LP	<10°	Р	S	С	Cn	DI
31.74	LP	<10°	Ir	S	С	Çn	DI
31.82-31.90	WS	-	Ir	S	0	W	Parallel to LP

Abbreviations

ROUGHNESS		ROUGHNESS WALL ALTERATIONS			ТУРЕ		OTHER	
R	Rough	FeSt	Iron Stained	J	Joint	Р	Partly	
Sm	Smooth	w	Weathered	В	Bedding	CL	Carbonaceous lamination	
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam	
				FP	Foliation Parting	ŀn	Incipient	
PLANARITY			APERTURE		Lamination Parting	SI	Sand Infill	
Pl	Planar	С	Closed	SZ	Sheared Zone	н	Horizontal	
Sι	Stepped	0	Open	CZ	Crushed Zone	V	Vertical	
Un	Undulating	F	Filled	WS	Weathered Seam	CI	Clay Infill	
Cu	Curved	Т	Tight	BZ	Broken Zone	Cn	Clean	
ſr	bregular			HFZ	Highly Fractured Zone	CS	Clay Seam	
				Fr	Fracture	DI	Drilling Induced	

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.

DEFECT DESCRIPTIONS



DEFECT DESCRIPTIONS OF ENGINEERING BORELOG

[CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH JSRM SUGGESTED METHODS (1981)]

S	SHEET	:	2 of 8
	REFERENCE	NO :	H9568

BOREHOLE NO : BH19

PROJECT :	GATEWAY BRI	ATEWAY BRIDGE FOUNDATION INVESTIGATION – GATEWAY UPGRADE PROJECT							
LOCATION :	PIER 7 NORTHE	IER 7 NORTHERN FACE OF PILE CAP – UPSTREAM / LEFT HAND SIDE							
PROJECT NO :	FG5388	SURFACE R.L :	-3.35	DRILLER	CAIRNS DRILLING PTY LTD				
JOB NO :		DATUM :	AHD / SETP	DATE DRILLED	: 27/4/05 - 06/05/05				

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
32.20	LP	<10°	Р	S	С	Cn	DI
32.23	LP	<10°	Р	S	С	Cn	DI
32.25	J	65°	Р	S	С	Cn	_
32.30	LP	<5°	Р	S	С	Cn	DI
32.47	LP	25°	Р	S	0	Cn	
32.58-32.64	WS	-	_		-	W	
32.66	LP	15°	Р	S	С	Cn	DI
33.03	BP	20 °	St	-	С	Cn	DI
33.08	BP	20 °	Un	S	С	Cn	DI
33.26	J	40 °	Р	S	С	Cn	-
31.57	BP	20 °	Р	S	С	Cn	DI
33.70-33.75	BZ	-	-	-	0	Cn	DI
34.00-34.22	BZ	-	-	-	0	Cn	Parallel to LP
34.22-34.31	WS	-	-	-	0	W	-
34.40-30.62	BZ	20°	Р	S	C?	Cn	Parallel to LP
34.71	LP	20°	Р	S	С	Cn	DI
34.80	LP	20 °	Р	S	Ĉ	Cn	DI
34.91	BP	20 °	Р	S	С	Cn	DI
35.47-36.00	WS	<10°	_	-		W	Some DI ?
36.00-36.56			-	-	-	Cn	Coreloss
36.56-36.76	BZ	<15°	-		0	Cn	LP
36.86-37.16	BZ	-	-	-	0	Cn	-

Abbreviations

	ROUGHNESS WALL ALTERATIONS TYPE			OTHER			
R	Rough	FeSt	Iron Stained	J	Joint	р	Partly
Sm	Smooth	W	Weathered	В	Bedding	CL	Carbonaceous lamination
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam
				FP	Foliation Parting	In	Incipient
PLANARITY AP		APERTURE	LP	Lamination Parting	SI	Sand Infill	
Pl	Planar	С	Closed	SZ	Sheared Zone	н	Horizontal
St	Stepped	0	Open	CZ	Crushed Zone	V	Vertical
Un	Undulating	F	Filled	WS	Weathered Seam	CI	Clay Infill
Cu	Curved	r	Tight	BZ	Broken Zone	Cn	Clean
ŀ	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam
				Fr	Fracture	DI	Drilling Induced

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.



Queensland Government

Department of Main Roads

BOREHOLE NO : BH19 SHEET : 3 of 8 REFERENCE NO : H9568

DEFECT DESCRIPTIONS

OF ENGINEERING BORELOGS [CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH ISRM SUGGESTED METHODS (1981)]

PROJECT :	GATEWAY BRI	GATEWAY BRIDGE FOUNDATION INVESTIGATION GATEWAY UPGRADE PROJECT						
LOCATION :	PIER 7 NORTHI	ERN FACE OF PILE CAP – UPSTR	REAM / LEFT HAND	SIDE				
PROJECT NO :	FG5388	SURFACE R.L : -3.35	DRILLER	: CAIRNS DRILLING PTY LTD				
JOB NO :		DATUM : AHD / SETP	DATE DRILLED	: 27/4/05 - 06/05/05				

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
37.20	LP	20 °	Р	S	С	Cn	DI
37.27	LP	20 °	Р	S	С	Cn	DI
37.32	ĹP	20°	Р	S	С	Cn	DI
37.55-37.65	WS	<5°		-	0	W	Parallel to LP
37.78-37.90	BZ	-	-	-	0	Cn	Parallel to LP
37.90-37.98	CS	-	-	-	-	Cn	XW Siltstone
37.65-37.78	Core1.50	-	-		-	Cn	
38.15-38.25	BZ	-	-	-	С	Cn	DI
38.25	J	45°	Р	S	Т	Cn	-
38.30	J	45 °	Р	-	Т	Cn	-
38.42	LP	35°	P	-	Т	Cn	DI
38.45-38.60	BZ		_	-	С	Cn	DI
38.70	LP	35°	Р	-	Т	Cn	DI
38.70	1	90°	Р	R	Т	Cn	DI
38.75	J	45 °	P	S	Т	Cn	DI
39.00	J	45°	Р	-	Т		CI
39.10	LP	35°	Р	S	Т	Cn	DI
39.35	l	75°	Ir	S	Т	Cn	-
39.85-40.15	WS/SZ		-	-	Т	W	healed
40.10	J	45 °	Р	S	Т	Cn	-
40.20	J	75°	Cu	S	Т	Cn	-
40.30	LP	35°	P	S	Т	Cn	DI
40.37	J	45 °	р	S	Т	Cn	

Abbreviations

	ROUGHNESS	WALL ALTERATIONS		түре		OTHER	
R	Rough	FeSt	Iron Stained	J	Joint	Р	Partly
Sm	Smooth	W	Weathered	В	Bedding	CL	Carbonaceous lamination
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam
				FP	Foliation Parting	In	Incipient
	PLANARITY		APERTURE		Lamination Parting	SI	Sand Infill
Pl	Planar	С	Closed	SZ	Sheared Zone	Н	Horizontal
St	Stepped	0	Open	CZ	Crushed Zone	v	Vertical
Un	Undulating	F	Filled	WS	Weathered Seam	CI	Clay Infill
Cu	Curved	Т	Tight	BZ	Broken Zone	Cn	Clean
lr	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam
				Fr	Fracture	DI	Drilling Induced

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.



Department of Main Roads

DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

BOREHOLE NO : BH19 SHEET : 4 of 8 REFERENCE NO: H9568

[CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH ISRM SUGGESTED METHODS (1981)]

PROJECT	:	GATEWAY BRIDGE FOUNDATION INVESTIGATION – GATEWAY UPGRADE PROJECT	
LOCATION	:	PIER 7 NORTHERN FACE OF PILE CAP – UPSTREAM / LEFT HAND SIDE	

PROJECT NO :	FG5388	SURFACE R.L :	-3.35	DRILLER	: CAIRNS DRILLING PTY LTD
JOB NO :		DATUM :	AHD / SETP	DATE DRILLED	: 27/4/05 – 06/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
40.50	J	45 °	Р	S	Т	Cn	-
40.60	J	45 °	Р	S	Т	Cn	-
40.60	LP	35°	Р	S	Т	Cn	DI
40.72	J	45 °	Р	S	Т	Cn	7
40.85	J	45 °	Р	S	Т	Cn	
40.87	LP	60 °	Р	S	С	Cn	DI
40.92	LP	60 °	Р	S	С	Cn	DI
41.15	J	45 °	Р	S	С	Cn	-
41.25	J	75°	Cln	R	С	Cn	-
41.29	LP	<5 °	Р	R	Т	Cn	DI
41.55	LP/BP	15°	Р	S	С	Cn	DI
42.36	LP	10 °	Р	S	С	Cn	DI
42.46	LP/BP	10 °	Р	S	С	Cn	DI
42.72	LP	15°	Р	-	Т	Cn	DI
42.82	LP	30°	Un	R	С	Cn	DI
43.05	LP	<15°		R	С	Cn	DI
43.22	LP/BP	<15°	Р	S	C	Cn	DI
43.37	LP/BP	<15°	Р	S	С	Cn	DI
43.43	LP/BP	<15°	Р	S	С	Cn	DI
43.47	LP/BP	<15°	Р	S	С	Cn	DI
43.48	LP/BP	<15°	Р	S	С	Cn	DI
43.52	LP/BP	<15°	Р	S	С	Cn	DI

Abbreviations

	ROUGHNESS WALL ALTERATIONS TYPE OTHER										
	ROUGHINESS		WALL ALTERATIONS				OTHER				
R	Rough	FeSt	Iron Stained	J	Joint	Р	Partly				
Sm	Smooth	W	Weathered	В	Bedding	CL	Carbonaceous lamination				
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam				
				FP	Foliation Parting	ľn	Incipient				
	PLANARITY		APERTURE		Lamination Parting	SI	Sand Infill				
P1	Planar	С	Closed	SZ	Sheared Zone	Н	Horizontal				
St	Stepped	0	Open	CZ	Crushed Zone	v	Vertical				
Un	Undulating	F	Filled	WS	Weathered Seam	CI	Clay Infill				
Cu	Curved	Τ	Tight	BZ	Broken Zone	Cn	Clean				
ľr	bregular			HFZ	Highly Fractured Zone	CS	Clay Seam				
				Fr	Fracture	DI	Drilling Induced				

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.



Department of Main Roads

DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

[CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH JSRM SUGGESTED METHODS (1981)]

BOREHOLE NO : BH19 SHEET : 5 of 8 **REFERENCE NO: H9568**

PROJECT GATEWAY BRIDGE FOUNDATION INVESTIGATION - GATEWAY UPGRADE PROJECT :

LOCATION :	PIER 7 NORTHE	ERN FACE OF PILE CAP – UPST	REAM / LEFT HAND	SIDE
PROJECT NO :	FG5388	SURFACE R.L : -3.35	DRILLER	CAIRNS DRILLING PTY LTD
JOB NO :		DATUM : AHD / SETP	DATE DRILLED	: 27/4/05 - 06/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
43.56	LP	20 °	Р	-	. C	Cn	DI
43.50	LP/BP	20 °	Р	S	С	Cn	DI
43.91	LP	20°	Р	S	С	Cn	DI
44.15	LP	20°	St	S	С	Cn	DI
44.27	LP	20 °	Р	-	Т	Cn	
44.45	J	60 °	Р	-	Т	Cn	
44.75-45.06	BZ	-		1-	С	Cn	DI
45.15	J	70 °	Р	S	Т	Cn	-
45.25-45.48	BZ	-	-	-	С	Cn	DI? parallel to LP
45.52-45.63	SZ.	-				W	
45.70	Fr	-	Ir	-	т	Cn	Di
45.85-46.07	SZ	-	-	-	Т	W	Healed
46.56-47.15	SZ	-	-	_		W	CS, healed
47.20	LP	35°	Р	-	Т	Cn	D1
47.35	J	75-90°	-	-	Т	Cn	-
47.62	LP/BP	30 °	Р	S	Т	Cn	D1
47.70	LP	30°	Р	S	Т	Cn	Di
47.75	LP	30 °	Р	S	Т	Cn	D1
47.97	LP	20 °	Un	S	С	Cn	DI
48.15	LP/BP	20°	Р	S	С	Cn	DI
48.25	J	75°	P	S	С	Cn	-

Abbreviations

	ROUGHNESS	WALL ALTERATIONS		ТҮРЕ		OTHER	
R	Rough	FeSt	Iron Stained	l	Joint	Р	Partly
Sm	Smooth	W	Weathered	В	Bedding	CL	Carbonaceous lamination
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam
					Foliation Parting	In	Incipient
	PLANARITY		APERTURE		Lamination Parting	SI	Sand Infill
Pl	Planar	С	Closed	SZ	Sheared Zone	н	Horizontal
St	Stepped	0	Open	CZ	Crushed Zone	v	Vertical
Un	Undulating	F	Filled	WS	Weathered Seam	CI	Clay Infill
Cu	Curved	Т	Tight	ΒZ	Broken Zone	Cn	Clean
Ir	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam
				Fr	Fracture	DI	Drilling Induced

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.

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Department of Main Roads

DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

BOREHOLE NO : BH19 SHEET : 6 of 8 REFERENCE NO: H9568

[CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH ISRM SUGGESTED METHODS (1981)] CATENIAN DRIVOR FOIRINATION RIVERTICATION O L DDIN L XZ

PROJECT	GATEWAY BR	IDGE FOUNDATION INVESTIGA	TION - GATEWAY U	PGRADE PROJECT
LOCATION :	PIER 7 NORTH	ERN FACE OF PILE CAP – UPSTR	EAM / LEFT HAND	SIDE
PROJECT NO :	FG5388	SURFACE R.L : -3.35	DRILLER	: CAIRNS DRILLING PTY LTD
JOB NO :		DATUM : AHD / SETP	DATE DRILLED	: 27/4/05 - 06/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
48.43	LP/BP	20°	P	S	С	Cn	DI
48.62	LP/BP	20 °	Р	S	С	Cn	DI
48.81	LP	20°	Р	S	C	Cn	DI
49.03	LP/BP	20 °	P	S	С	Cn	DI
49.10	LP/BP	20 °	Р	S	С	Cn	DI
48.35-49.00	Fr	75-90°	Р		С	Cn	
49.40-49.60	J	75-90°	Un	(R) 1 = 1	T	Cn	~
49.60	LP	20°	Un	S	T	Cn	DI
49.70	LP	20 °	Р	S	T	W	
49.85	J	75°	Р	S	С	W	
49.95	J	45 °	Р		Т	Cn	CV
50.15	LP	20 °	Р	S	Т	Cn	DI
50.35	LP	20 °	Р	S	T	Cn	DI
50.35	J		Р	S	Т	Cn	
50.50	J	60 °	Р	S	Т	Cn	
50.60	J	90°	St	-	C	Cn	DI
51.47	LP	<20 °	Р	S	С	Cn	DI
51.60	Fr	75-90°	Un	S	С	Cn	DI
51.85	LP	30°	Р		-	W	CI
51.75-51.58	SZ/BrZ			-	-	W	CI
52.40	LP	15 °	Р	S	С	Cn	DI
52.50-52.85	HFZ	_		-	-		MDJ

Abbreviations

					•			
	ROUGHNESS		WALL ALTERATIONS		ТҮРЕ		OTHER	
R	Rough	FeSt	Iron Stained	ý	Joint	P	Partly	
Sm	Smooth	W	Weathered	MDJ	Multidirectional Joints	CL	Carbonaceous lamination	
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam	
				BrZ	Brecciated Zone	In	Incipient	
	PLANARITY		APERTURE	Ĺ₽	Lamination Parting	SI	Sand Infill	
Pl	Planar	С	Closed	SZ	Sheared Zone	Н	Horizontal	
St	Stepped	0	Open	CŻ	Crushed Zone	Cv	Calcite Vein	
Un	Undulating	F	Filled	WS	Weathered Seam	CI	Clay Infill	
Cu	Curved	Т	Tight	BZ	Broken Zone	Cn	Clean	
lr	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam	
				Fr	Fracture	Di	Drilling Induced	

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.



Department of Main Roads

DEFECT DESCRIPTIONS

POPEHOLE NO DLI10

BOKEHOLE NO	;	BH19	
SHEET	:	7 of 8	
REFERENCE NO):	H9568	_

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OF ENGINEERING BORELOGS [CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH ISRM SUGGESTED METHODS (1981)]

PROJECT	;	GATEWAY	BRIDGE FOUNDAT	TION INVES	STIGATION – GATEWAY U	JPGRADE PROJECT	
LOCATION	:	PIER 7 NOR	THERN FACE OF P	ILE CAP - U	UPSTREAM / LEFT HAND	SIDE	
PROTECT NO		EG5388	SURFACERI	-335	DRILLER	CAIRNS DRULING P	T

11001001100	· 105500	DOIG HOL K.D	-3.35		
				—	
JOB NO		DATUM	AHD / SETP	DATE DRILLED	: 27/4/05 – 06/05/05
00210					

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
53.03-54.40	BrZ	-	-	-	-		CI healed in places
54.70-54.72	BrZ	70 °	Р	-	-		CI, healed
55.0	J	75-80°	Un	-	С	Cn	-
55.05	J	45 °	Р	E.	С	Cn	
55.15	J	70°	Р		С	Cn	
55.77	LP	20°	Р	S	С	Cn	DI
55.82	LP	20°	Р	S	С	Cn	DI
55.85	J	60 °	Un	S	С	Cn	
55.88	LP	20°	Р	S	С	Cn	-
56.00-57.00	BZ	-	-	-	-		CI
57.10	J	70 °	P	S	С		CI
57.12-57.15	BZ	-	-	-	С	W	CI
57.25-57.34	WS	-	-	-	-	Cn	
57.4	J :	55°	Р	S	С	Cn	-
57.6	J	50°	P	S	С	Cn	-
57.72-57.89	BZ	MDJ					CI
57.95	J	60 °	Р	S	С	Cn	-
57.97	J	60 °	P	S	С	Cn	-
58.35	J	80 °	P	S	С	Cn	-
58.45	J	80 °	Р	S	С	Cn	
58.52	J	80 °	Р	S	С	Cn	-
58.67	J	80 °	P	S	С	Cn	-
58.67-58.80	BZ	_	12	-	Т	Cn	DI

Abbreviations

ROUGHNESS			WALL ALTERATIONS		туре	OTHER		
R	Rough	FeSt	Iron Stained	J	Joint	р	Partly	
Sm	Smooth	W	Weathered	MDJ	Multidirectional Joints	CL	Carbonaceous lamination	
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam	
				BrZ	Brecciated Zone	In	Incipient	
PLANARITY			APERTURE		Lamination Parting	St	Sand Infill	
P1	Planar	С	Closed	SZ	Sheared Zone	Brz	Brecciated zone	
St	Stepped	0	Open	CZ	Crushed Zone	V	Vertical	
Un	Undulating	F	Filled	WS	Weathered Seam	CI	Clay Infill	
Cu	Curved	r	Tight	BZ	Broken Zone	Cn	Clean	
ŀ	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam	
				Fr	Fracture	DI	Drilling Induced	

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.



Queensland Government

Department of Main Roads

DEFECT DESCRIPTIONS

BOREHOLE NO : BH19 SHEET : 8 of 8 REFERENCE NO : H9568

OF ENGINEERING BORELOGS
(CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH
ISRM SUGGESTED METHODS (1981))

PROJECT	:	GATEWAY BRI	DGE FOUNDATION INVEST	IGATION – GATEWAY	Y UPGRADE PROJECT	
LOCATION	:	PIER 7 NORTHE	ERN FACE OF PILE CAP – UP	STREAM / LEFT HAN	ID SIDE	
PROJECT NO	PROJECT NO : FG5388 SURFACE R.L : -3.35 DRILLER : CAIRNS DRILLING PTY LTI					

				-	_	
JOB NO	:	DATUM	:	AHD / SETP	DATE DRILLED	: 27/4/05 - 06/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
58.80-59.05	BZ	-	-	-	0	Cn	-
59.07	J	60 °	Р	S	С	Cn	-
59.09	J	60°	Р	S	С	Cn	-
59.20	J	60 °	P	S	C	Cn	
59.45	J	60 °	P	S	С	Cn	_
59.72-60.10	HFZ	-	-	-	С	Cn	5
60.12	J	45°	Р	S	С	Cn	-
60.30-60.40	WS	CS	-	-	O(?)	W	CI
60.63	WS	-	-	-	-	W	CI
60.70-60.73	BrZ	-	-	-	C	Cn	-
60.82]	60 °	Р	S	С	Cn	-
60.85	J	60 °	Р	S	С	Cn	-
60.87	J	60 °	Р	S	C	Cn	i i i
60.89	J	60 °	Р	S	С	Cn	-
60.93	J	60 °	-	S	C	Cn	-
61.25-61.50	Fr	MDJ	-	-	-	Cn	Cv
61.60-61.64	CS	-	-	-	-	Cn	-
61.75	J	60 °	Р	S	С	Cn	-
61.80	J	60 °	Р	S	С	Cn	-
62.0-62.05	HFZ	-	_			Cn	-
62.25	LP	10 °	Р	S			CI
62.18-62.28	HFZ		-	-	С		-
62.75-63.18	HFZ	MDJ	-	-	-		CI

Abbreviations

ROUGHNESS			WALL ALTERATIONS		TYPE	OTHER		
R	Rough	FeSt	Iron Stained	J	Joint	P	Partly	
Sm	Smooth	W	Weathered	MDJ	Multidirectional Joints	CL	Carbonaceous lamination	
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam	
				BrZ	Brecciated Zone	In	Incipient	
PLANARITY			APERTURE		Lamination Parting	Sĩ	Sand Infill	
₽1	Planar	С	Closed	SZ	Sheared Zone	н	Horizontal	
St	Stepped	0	Open	CZ	Crushed Zone	V	Vertical	
Un	Undulating	F	Filled	WS	Weathered Seam	CI	Clay Infill	
Cu	Curved	Ť	Tight	BZ	Broken Zone	Cn	Clean	
Ir	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam	
				Fr	Fracture	DI	Drilling Induced	

NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.