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

BOREHOLE No	BH15
SHEET	1 of13
REFERENCE No	H9564

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION PROJECT PIER 7 - SOUTHERN FACE OF PILE CAP- DOWNSTREAM RIGHT HAND SIDE LOCATION COORDINATES 10230.6 E; 167936.4 N PROJECT No FG5388 DATE STARTED \_11/04/05\_ SURFACE R.L. \_-2.70 DATUM SETP JOB No DATE COMPLETED \_14/04/05\_ DATUM \_AHD \_\_ DRILLER CAIRNS DRILLING R.L. ROD INTACT DEFECT BORING (m) ()% STRENGTH SPACING ADDITIONAL DATA HERING S DEPTH (m) **MATERIAL** (mm) LITHOLOGY AND GRAPHIC SAMPLES DESCRIPTION SAMPL TESTS CORE UN 2888888 ₽<< 288888 ₽<</td> TEST RESULTS REC % 0 ESTUARINE SILTY CLAY Dark grey to pale grey brown, mainly wet, very soft to soft. High plasticity. Minor sand towards bottom. 31/08/05 OH - 1 MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09 04.GDT RW,-,-SPT -4.60 POSSIBLE SAND -2 No recovery with SPT. sc SM -3 Driller's record only HW,-,-N<1 SPT -6.20 ESTUARINE SILTY CLAY Dark grey to black, mainly moist to slightly wet, very soft to soft. High plasticity, high organic content; occasional partly decomposed plant - 4 fragments. BOREHOLE WITH LITHOLOGY OH RW SPT N<1

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>BH15</u>\_\_\_\_ \_2\_ of \_13\_ SHEET \_\_<u>H9564</u>\_\_ REFERENCE No

	JECT ATION												
			388		IERN FACE OF PILE CAP- DOWNSTREAM SURFACE R.L2.70						DORDINATES 10230.6 E; 167936.4	<u> </u>	
JOB		<u> </u>						ATE START					
				DATUM _AHD DATE COMPLETED _14/04/05_							DRILLER CAIRNS DRILLIN		
	R.L. (m)	υŽ	RQD ()%						DEFECT				
DEPTH (m)		NG BORING DRILLING			MATERIAL	5	RING	GIRCHOIN	(mm)	100			
Lang		ST N N N N N N N N N N N N N N N N N N N	CORE	SAMPLE	DESCRIPTION	LITHOLOGY	ITE		0.08	GRAPHIC	AND	SAMPLES TÉSTS	
5	-7.70	SAS	REC %	SAN		E	USC WE	2278729	88888	GRA	TEST RESULTS	SAMPL	
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+ )					wet, very soft to soft.				-				
				l	High plasticity, high organic content;		1	{	-				
					occasional partly decomposed plant fragments.	EX.		1	-				
				l	nagments.				-			-	
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	1					The second secon			-				
2) 2) -7	-9.70	R				E Contraction			-			-	
3					ESTUARINE SILTY SAND	21			- 	Ì			
					Green grey to grey, wet, very loose.				- :				
					Fine grained sand.			· · ·					
			1						-	l		-	
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AYU							sc-		- , '		RW,-,-	SPT	
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49 29	-11.20		l									-	
			l		ESTUARINE SILTY CLAY Dark grey to black, mainly moist to slightly					]			
황		3			wet, very soft to soft.	E C	j	-	-				
				ļ	High plasticity, high organic content;	33	1	· -		ļ			
-9 -9			1		occasional partly decomposed shell fragments.	***	1		- : _	l			
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BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT GPJ ENGINEERING BOREHOLE 09.04.GDT 31/08/05			1			₩.							
	-12.70					×			.:			-	

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)



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horizontat plane.

# ENGINEERING BOREHOLE

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

BOREHOLE No	BH15
SHEET	<u>3</u> of <u>13</u>
REFERENCE No	<u>H9564</u>

COORDINATES 10230.6 E; 167936.4 N

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION PROJECT LOCATION PIER 7 - SOUTHERN FACE OF PILE CAP- DOWNSTREAM RIGHT HAND SIDE

JOB No

PROJECT No \_FG5388 \_\_\_\_

SURFACE R.L. \_-2.70 \_\_\_ DATUM \_\_AHD \_\_\_

DATE STARTED \_11/04/05\_ DATE COMPLETED 14/04/05

DATUM SETP DRILLER CAIRNS DRILLING

	R.L.	(0)	RQD					INTACT	DEFECT			
Ê	R.L. (m) -12.70	UNN NO	()%				0	STRENGTH มีรั±≲รี⊒ _!_!_	SPACING	U	ADDITIONAL DATA	ĺ
DEPTH (m)		RL			MATERIAL	5	RIN I		(mm)	GRAPHIC LOG		
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		VAS	CORE	SAMPLE		LITHOLOGY	SE	민준지의 역의	88888	Å,	TEST RESULTS	SAMPLES TESTS
10	-12.70	050	REC %	S			Ξļ≥			ð		SA
					ESTUARINE SILTY CLAY (As above).	33						
_					(As above).	33	ЮH					-
	-13.00							1	•		l I	-
					ALLUVIAL SILTY CLAY			. 1	•			-
ſ					Pale grey to grey brown, moist, stiff			1	· · ·			-
-					becoming firm with depth.			:-	-			The Party of the P
		59			Minor organic collection in the fact that with	$\backslash$		{				THE REAL
-					Minor orange yellow incipient lateritic features; slightly dessicated in some				.		258	THINK .
w-				]	places; medium to high plasticity.				. 1		2,5,8 N=13	SPT
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R	EMARKS	SPT	V values i	in gra	avel can overestimate density due to influence of coa	arser	size	gravel particle	es. This bo	reloa	should LOGGED BY	
					on with the appropriate Defect Description Sheets.							ISS)



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

BOREHOLE No	BH15
SHEET	of13
REFERENCE No	H9564

PROJECT GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION LOCATION PIER 7 - SOUTHERN FACE OF PILE CAP- DOWNSTREAM RIGHT HAND SIDE COORDINATES 10230.6 E; 167936.4 N PROJECT No FG5388 \_\_\_\_ SURFACE R.L. \_\_-2.70 \_\_\_ DATE STARTED 11/04/05 DATUM <u>SETP</u> JOB No DATUM AHD DATE COMPLETED \_14/04/05\_ DRILLER CAIRNS DRILLING RI. ROD INTACT DEFECT ASING ASH BORING DRE DRILLING (m) ()% STRENGTH SPACING ADDITIONAL DATA 00 DEPTH (m) MATERIAL (mm) LITHOLOGY AND GRAPHIC SAMPLES SAMPLE DESCRIPTION WASH CORE TESTS CORE TEST RESULTS REC % 15 -17.70 311111 ALLUVIAL SILTY CLAY Pale grey to grey brown, moist, stiff to vey stiff becoming firm with depth. 3,5,7 N=12 SPT Minor orange yellow incipient lateritic features; slightly dessicated in some places; medium to high plasticity. BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09\_04.GDT 31/08/05 1,2,3 N=5 SPT Cl-CH RW,3, SPT N=7 19 1,2,5 N=7 997

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

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horizontal plane.



## ENGINEERING BOREHOLE

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

BOREHOLE No \_\_\_\_BH15\_\_\_\_ SHEET \_<u>5</u>\_ of \_<u>13</u>\_ REFERENCE No \_\_\_\_H9564

LOATION FIET - SOUTHERN FACE C PLE CAP DOWNSTREAM RIGHT HAND SIDECOMPARTIES _ 1020.4E_ INTER. PROJECT NO _ FOSSE DATUM _ AND DATE STARTED _ 110.402 DATUM _ SETE DATUM _ AND DESCRIPTION SUBJECT _ 120.20 & SUBJECT _ 120.20 &SUBJECT &SUBJECT _ 120.20 &SUBJECT _	PROJECT	_GATEWAY UPO	GRADE PROJECT - GATEWAY BRIDGE DUP			N FOUNDA	TIONIN	VES	TIGATION			
JOB No     DATUM     AHD     DATE COMPLETED     14/04/05     DRILLER     CAIRNS DRIL       Image: Stress of the stress												
R.L.     RQD (1)%     MATERIAL     DESCRIPTION     INTACT     DEFECT STRENGTH     OFFECT SPACING (mm)     ADDITIONAL DATA       20     -22.70     -22.70     ALLUVIAL SILTY CLAY (As above).     ALLUVIAL SILTY CLAY     Image: Construction of the second of the sec	PROJECT No	_FG5388	SURFACE R.L <u>2,70</u>		D	ATE START	ED <u>11/04</u>	<u>4/05</u>				
(m)     0000 WHTH WHTH WHTH WHTH WHTH WHTH WHTH	JOB No		DATUM <u>AHD</u> DATE COMPLETED <u>14/04/05</u>				1/05	DRILLER CAIRNS DRIL	LING			
ALLUVIAL SILTY CLAY (As above).	(m) H	%() %() Stricting		LITHOLOGY	USC WEATHERING			GRAPHIC LOG	AND	SAMPLES TESTS		
	-					╵╴╴	<u></u> .					
-22       -24.70       ALLUVIAL SILTY SAND         Pale brown to brown, wet, medium dense.       Fine grained sand.         -23       SM       4.8,13         -23       -26.20       ALLUVIAL SAND AND GRAVEL         Pale brown to prey brown, wet, very dense.       SC         Pale brown to gravel sizing up to 40mm, subrounded to subangularithic and quartitic fragments.       SG         Sec       SM       SC         Sec       SM       SM         -24       SM       SM      <			(As above).	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					RW,4,5 N=9	SPT		
-26.20     ALLUVIAL SAND AND GRAVEL       Pale brown to grey brown, wet, very dense.       Poorly sorted coarse sand and gravel       sizing up to 40mm; subrounded to       subangularlithic and quartzitic fragments.       (Sand fraction       (Sand fraction       9,26,30/130       N>50	-22 -24.70		Pale brown to brown, wet, medium dense.	minimum	SM				4,8,13 N=21	SPT -		
	-23		ALLUVIAL SAND AND GRAVEL Pale brown to grey brown, wet, very dense. Poorly sorted coarse sand and gravel sizing up to 40mm; subrounded to subangularlithic and quartzitic fragments. (Sand fraction <gravel fraction)<="" td=""><td></td><td>GP- GM</td><td></td><td></td><td></td><td>9,26,30/130 N&gt;50</td><td>SP1</td></gravel>		GP- GM				9,26,30/130 N>50	SP1		

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

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

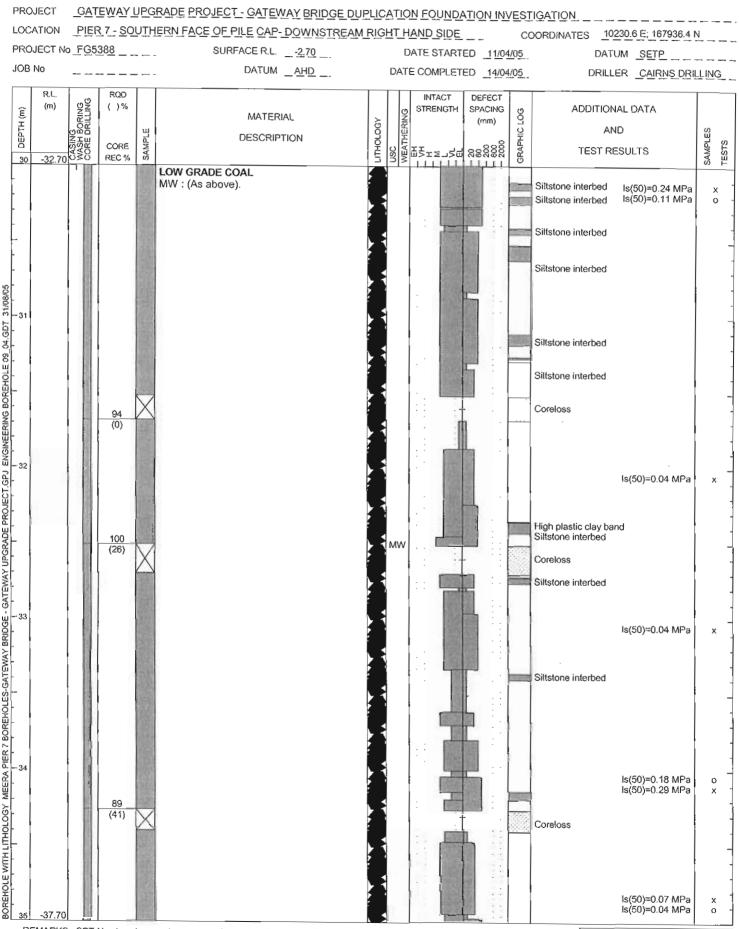
PRO	JECT	<u>_GA</u> Ţ	<u>EWAY l</u>	JPG	RADE PROJECT - GATEWAY BRIDGE DU									
					ERN FACE OF PILE CAP- DOWNSTREAM	RIG	<u>H</u> T H	AND SIDE		0	OORDINATES 10	230.6 E; 167936.4	N	
PRO	JECT No	_FG5	388		SURFACE R.L2.70		D	ATE STAR	red <u>11/</u>	04/05	DAT	UM _SETP		
JOB	No				DATUM <u>AHD</u>		DAT	E COMPLE	TED <u>14/(</u>	04/05	DRILLER <u>CAIRNS DRILLING</u>			
25 DEPTH (m)	R.L. (m) -27.70	CORE DRILLING	RQD ()% CORE REC%	SAMPLE	MATERIAL DESCRIPTION	ПТНОГОСҮ	USC WEATHERING	INTACT STRENGTH ゴンエミンジ	DEFECT SPACING (mm) ປີ ຄຸຍຄູ່ຄູ່ອີຊີ		ADDITION AN TEST R	1D	SAMPLES TESTS	
		1			ALLUVIAL SAND AND GRAVEL	b Y		┞╌┋╶╄═┻╴╹╴┠═┇	<u>↓ I Ind I</u> I				4 (0	
- 26					Pale brown to grey brown, wet, very dense. As Above	26000000000000000000000000000000000000	GP-	-				8,10,6 N=16	SPT	
						6	GM	-	 +					
-						ŝ			<u> </u>					
- 27						00000000000000000000000000000000000000								
						0000000							-	
	<u>-30,10</u>	Junio a			POSSIBLE LOW GRADE COAL HW : (Drillers record only)		нw							
-28	30.70		(55)		LOW GRADE COAL				- - -	2				
- 28 -				日本の	MW : Black mainly dull to occasionally vitreous, fine grained, thinly laminated, mainly low to medium strength.						Siltstone interbed	ls(50)=0.08 MPa ls(50)=0.23 MPa	x o	
-		and the second		の一部であ	Highly fractured, weathered and altered seams throughout; frequent siltstone interbeds. Defects :			:			Silfstone interbed	ls(50)=0.13 MPa ls(50)=0.41 MPa	×	
			100	No. of Street,	- Numerous lamination/bedding partings<**deg - Fractured, weathered & altered seams<**						Siltstone interbed	ls(50)=0.44 MPa ls(50)=0.18 MPa ls(50)=0.24 MPa	o X O	
-29			(10)	122			мw		1		Siltstone interbed		-	
				000						Carter of the	Silltstone interbed			
-	l			State of							Siltstone interbed			
-29	-32.70			A CALCULATION OF							Siltstone interbed Siltstone interbed	ls(50)=0.12 MPa ls(50)≃1.08 MPa	x o	

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

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	Queensland Government
COUL.	Department of Main Roads

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



REMARKS SPT N values in gravel can be reading to ensity 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

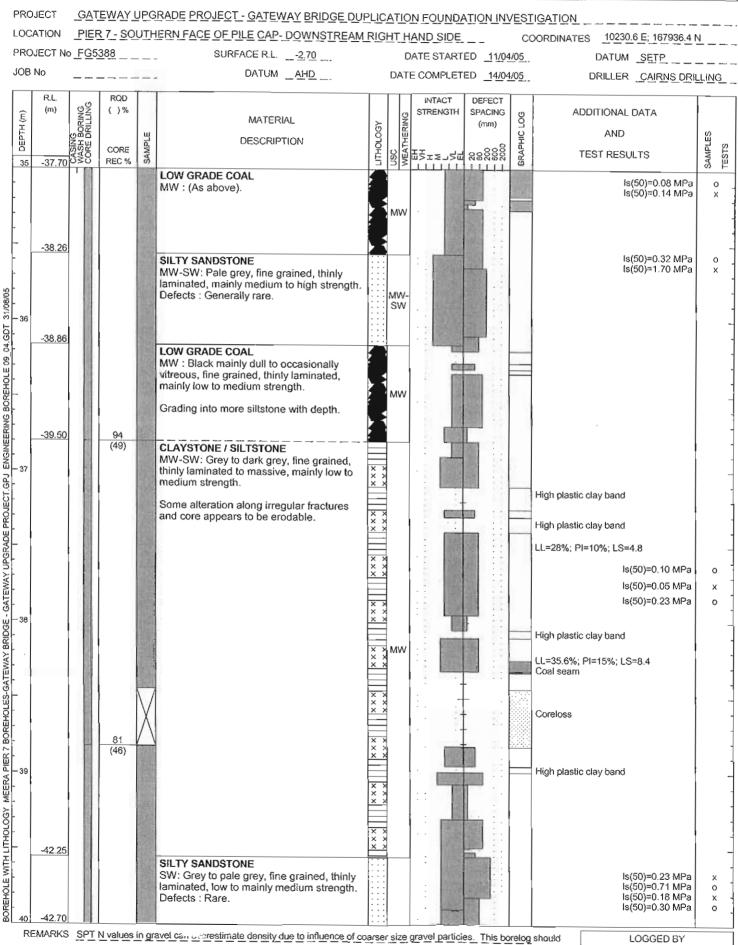
LOGGED BY A. DISSANAYAKE (DISS)



FOR GEOTECHN/CAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004 
 BOREHOLE No
 BH15

 SHEET
 \_8\_ of \_13

 REFERENCE No
 \_H9564



be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a
A. DISSANAYAKE (DISS)

ENGINEERING BOREHOLE							
FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004							
C 1/4/05_	T - GATEWAY BRIDGE DUPLICATION FOUNDATION INVES PILE CAP- DOWNSTREAM RIGHT HAND SIDE C FACE R.L2.70 DATE STARTED11/4/05 DATUM DATE COMPLETED14/4/05						
	INTACT DEFEC STRENGTH SPACI (mm)	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS				
		Is(50)=0.35 MF is(50)=0.20 MF	a x				
		Coreloss	-				
100		MW siltstone interbed. Is(50)=0.02 MP	1				
		UCS=42.5MPa Is(50)=0.71 MP MC=3.6% WD=2375N/m <sup>2</sup> Is(50)=0.58 MP	a x				
		UCS=30MPa MC=2.65% WD=2660N/m <sup>2</sup>	a x a o -				
		Is(50)=0.74 MP Is(50)=1.45 MP UCS=38.9MPa					
		MC=3.2% Is(50)=0.66 MP WD=2482N/m <sup>2</sup> Is(50)=0.83 MP	a x_ a o				
		UCS28.8MPa MC=3.2% WD=2436N/m <sup>2</sup> Is(50)=1.21 MP Is(50)=0.50 MP					
		Pressuremeter Is(50)=0.34 MP Test 4 @ 43.0m Is(50)=1.26 MP					
		UCS=28.4MPa MC=3.1% WD=2470N/m <sup>2</sup> Is(50)=1.04 MP Is(50)=1.46 MP					
-		Is(50)=0.14 MP is(50)=1.25 MP Is(50)≕0.56 MP	a o a x				
			MC=3.1% IS(50)=1.46 MP3				

REMARKS SPT N values in gravel can overestimate density due to influence of coarser size gravel particles. This borelog should

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

din	Gover	nsland mment	ENGINEERING BOREHOLE							BOREHOLE N	lo <u>BH1</u>	
C'W.	Department of Main Roa		FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/2-2004						REFERENCE	No	4	
	7 - <u>SOUT</u> ł	<u>HERN FACE OF F</u>	- GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIG THE CAP-DOWNSTREAM RIGHT HAND SIDE COON FACE R.L2.70 DATE STARTED11/04/05 DATUMAHD DATE COMPLETED14/04/05							DORDINATES <u>1</u> DA	0230.6 E; 167936.4 ( TUM <u>SETP</u> LER <u>CAIRNS DRII</u>	
R.L. (m) DEBAL SWING SWI	RQD ()% CORE REC% Ø		MATERIAL DESCRIPTION	гітногову	USC WEATHERING	STRE	act NGTH ≊⊐>⊒	DEFECT SPACING (mm)	GRAPHIC LOG	ADD/TIO A	NAL DATA ND RESULTS	SAMPLES TESTS
43 -44.70 - - - - - - - - - - - - - - - - - - -		SANDSTONE FINE TO MEDIUI LAMINATED TO SEDIMENTARY SW : Grey to wh massive, mediur Defects : Genera - Occasional dril partings <15° (1	M GRAINED, MASSIVE ROCK ite grey, laminated to n to mainly high strength. ally rare. ling induced lamination		sw					SW siltstone inter UCS=34.8MPa MC=13.6% WD=2374N/m <sup>2</sup>	ls(50)=1.55 MPa ls(50)=0.27 MPa ls(50)=0.52 MPa ls(50)=0.09 MPa ls(50)=1.44 MPa ls(50)=0.34 MPa ls(50)=0.35 MPa ls(50)=1.38 MPa	
-47	100 (83)				sw					UCS=19.1MPa MC=4.4% WD=2402N/m <sup>2</sup> UCS=37MPa MC=2.54% WD=2540N/m <sup>2</sup> Pressuremeter Test 3 @ 47.4m UCS=36.4MPa MC=3.4% WD=2474N/m <sup>2</sup> UCS=38.2MPa MC=2.4% WD=2604N/m <sup>2</sup>	Is(50)=0.22 MPa Is(50)=0.58 MPa Is(50)=0.90 MPa Is(50)=1.15 MPa Is(50)=1.54 MPa Is(50)=1.54 MPa Is(50)=0.86 MPa Is(50)=1.20 MPa Is(50)=1.20 MPa Is(50)=0.66 MPa Is(50)=0.27 MPa Is(50)=2.47 MPa Is(50)=1.48 MPa	X - 0 - X
-49 -51.68 	100 (0) 37 (64)	SEDIMENTARY HW-MW: Pale g thinly laminated,	THINLY LAMINATED		HW- MW	gravel	partici-			Coreloss	LOGGED BY	-

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

		13	Gov	'er	n <b>sland</b> nment		NGIN BOR		RING DLE		BOREHOLE N	lo <b>BH1</b> <u>11</u> of	<b>5</b>
	C	30	Departm <b>Mai</b> n I			FOR ( SYMBOLS	GEOTECH REFER FO	NICAL DRM F	TERMS AND GEOT 017/2-2	004	REFERENCE		
LOC			<u>R 7 - SO</u>	UTH	IERN FACE OF F	- GATEWAY BRIDG PILE CAP- DOWNSTI FACE R.L2.70 DATUMAHD	REAM RI	<u>GHT ה</u> נ		C	OORDINATES 1	0230.6 E; 167936.4 TUM _SETP LER _CAIRNS DRI	
g DEPTH (m)	R L. (m) -52.70	CASING WASH BORING CORE DRILLING	RQD ()% CORE REC%	SAMPLE		MATERIAL			STRENCTL	DEFECT SPACING (mm) 50000 5424bHIC FOO 5000 5424bHIC FOO 5000 5424bHIC FOO 5000 5424bHIC FOO 5000 5424bHIC FOO 5000 5000 5000 5000 5000 5000 5000 5	ADDITIO	NAL DATA ND RESULTS	SAMPLES TESTS
SDT 31/8/05	-53.00		<u>100</u> (95)	States of the second second	HW-MW: Highly infilled in the up healed shearing <b>INTERBEDDED</b> <b>MUDSTONE.</b> 5/ SW : Pale grey t thinly laminated to mainly high st Some healed fau features through Defects : Genera	NDSTONE DOMINAL o dark grey, fine grain and interbedded, med rength. ulting and shearing out. ally rare. I lamination/bedding	NT.	HW			Healed crushed zo	ls(50)=0.83 MPa ls(50)=0.54 MPa ls(50)=2.54 MPa	x - 0
JECT.GPJ ENGINEERING BOREHOLE 09 04.GDT 31/8/05	-53.87			「「「「「「「」」」」	LAMINATED TO SEDIMENTARY SW: Pale grey g grained, thinly la strength. A low strength al between 51.17m Defects - Genera	rey white, fine to med minated, mainly high tered band at the dep and 51.41m.	lium oth	sw			UCS=40MPa MC=2.50% WD=2640N/m <sup>2</sup>	ls(50)=1.31 MPa ls(50)=1.68 MPa ls(50)=1.44 MPa ls(50)=4.12 MPa	x o x o
SE - GATEWAY UPGRADE PRO	-55.20			The second second second	SW : Pale grey t thinly laminated to mainly high st Some healed fau features.	NDSTONE DOMINAN o dark grey, fine grair and interbedded, meo rength. ulting and shearing	ned.	ISW			UCS=49.0MPa MC=2.2% WD=2902N/m <sup>2</sup> ?? Pressuremeter Test 2 @ 52.6m Healed sheared fa	ls(50)=1.12 MPa ls(50)=2.76 MPa	x -
BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PRO			<u>100</u> (98)		Defects - Genera - Drilling indcued (1/m)	ally rare. I lamination partings ·	<30°	SW			UCS=27.6MPa MC=3.2% WD=2434N/m <sup>2</sup> Pressuremeter Test 1 @ 53.6m	Is(50)=1.04 MPa Is(50)=1.90 MPa Is(50)=0.59 MPa Is(50)=0.59 MPa Is(50)=1.12 MPa Is(50)=1.12 MPa Is(50)=1.72 MPa Is(50)=0.67 MPa	x o
BOREHOLE WITH LITHOLOGY MEE	-57.20				SEDIMENTARY white grey, lamin	NE TO MEDIUM NATED TO MASSIVE ROCK SW : Grey to lated to massive, med rength. Defects gener	dium	HW- MW			Healed sheared fa zone infilled with contorted calcite vo	ult	×

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

-57.70

LOGGED BY A. DISSANAYAKE (DISS)

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

BOREHOLE No \_12 of \_13 SHEET \_\_\_\_<u>H9564</u>\_\_\_ REFERENCE No

		RADE PROJECT - GATEWAY BRIDGE DU							
	FG5388	ERN FACE OF PILE CAP- DOWNSTREAM							1
					ATE START				
				DAS		EU <u>14/</u> 0	4/05	DRILLER CAIRNS DRIL	
55 - <u>57.70</u>	ODA ASSH BORING ()% ()% SAMPLE SAMPLE SAMPLE	MATERIAL DESCRIPTION	ГІТНОГОСУ	USC WEATHERING	INTACT STRENGTH 逝芳ェミッラゴ	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
		SANDSTONE SW : (As Above). Drilling induced lamination partings <30° (1/m). INTERBEDDED MUDSTONE & SANDSTONE MUDSTONE DOMINANT SW : Pale grey to dark grey, fine grained, thinly laminated and interbedded, medium to mainly high strength. Some rehealed faulting and shearing features throughout.		sw					
- 56 - - - 	<u>100</u> (20)	MUDSTONE FINE GRAINED THINLY LAMINATED		sw				ls(50)=0.10 MPa ls(50)=0.12 MPa	x
- 57		SEDIMENTARY ROCK SW: Grey to dark grey, highly fractured, brecciated in most places, mainly very low to low strength. Rehealed brecciated rock fragments, some areas, matrix is high plastic clay and some feldspathic matrix. Defects: - Lamination partings <30° (1/m).		500				Brecciated zone in high plastic clayey matrix.	0
- 58	<u>100</u> (38)	<ul> <li>Lamination partings &lt;30° (1/m).</li> <li>Irregular numarous mutidirctional joints in non breciccated areas.</li> </ul>		HW- MW				Is(50)=0.03 MPa Is(50)=0.07 MPa	X
				sw				ls(50)=0.32 MPa	x
- 59								Is(50)=0.07 MPa Is(50)=0.25 MPa Is(50)=0.49 MPa	0 X 0
				HW				Is(50)=0.08 MPa Is(50)=0.03 MPa S(50)=0.03 MPa areas infilled brecciated zone. Some areas infilled with high plastic clay. Is(50)=0.08 MPa Is(50)=0.09 MPa	x o x o
REMARKS	SPT N values in g	ravel comparestimate density due to influence of c	oarse	r <u>size</u>	gravel particl	es. This b	oralo	g should LOGGED BY	
	be read in conjunc	tion with the appropriate Defect Description Sheets.	. Def	ect ar	gles were me	asured wi	th res	pect to a A. DISSANAYAKE (D	DISS)



# **ENGINEERING** BOREHOLE

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

BOREHOLE No	<u>BH15</u>				
SHEET	<u>13</u> of <u>13</u>				
REFERENCE No	H9564				

PROJECT				RADE PROJECT - GATEWAY BRIDGE DUP					VEST	
LOCATION									OORDINATES 10230.6 E; 167936.4 N	
	o_F <u>G</u> 53	388					ATE STAR			
JOB No				DATUM AHD		DAT	E COMPLE	TED <u>14/0</u> 4	4/05	DRILLER CAIRNS DRILLING
(m) (m) (m) (m) (m) (m) (m) (m) (m) (m)	CASING WASH BORING CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS
-		100		MUDSTONE SW: (As above).		HW- MW				Partly helaed Is(50)=0.14 MPa brecciated zone. Is(50)=0.09 MPa sone infilled with Is(50)=0.11 MPa bigh plastic clay. Is(50)=0.07 MPa bigh plastic clay.
- <u>-63.45</u>		100	1220	Borehole terminated at 60.75m		-		ļ	10005	<u></u>
- 63										
65								+		
	S SPTI	N values	in an	avel can averestimate density due to influence of co	1 Darse	r cize	aravel partir	les This h	oreloo	g should LOGGED BY

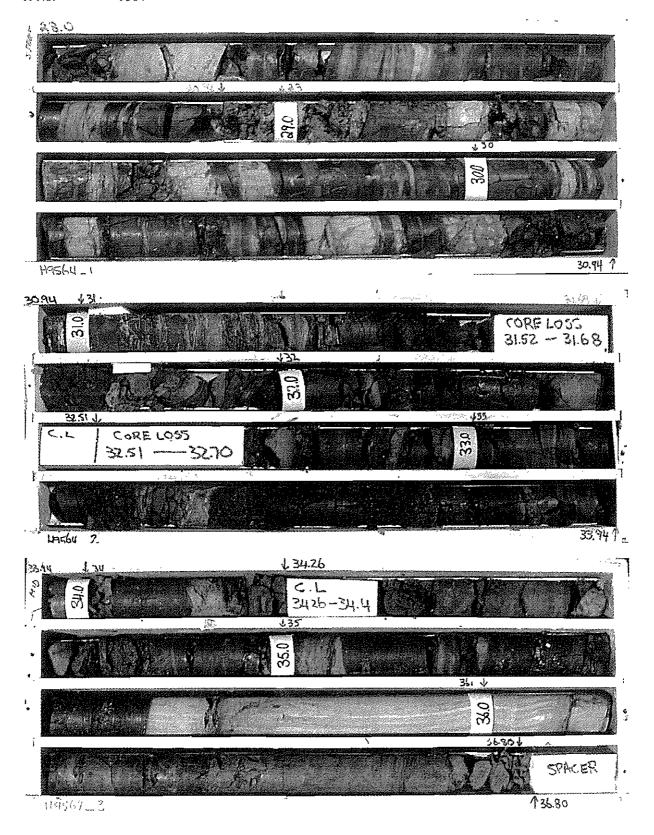
be read in conjunction with the appropriate Defect Description Sheets. Defect angles were measured with respect to a

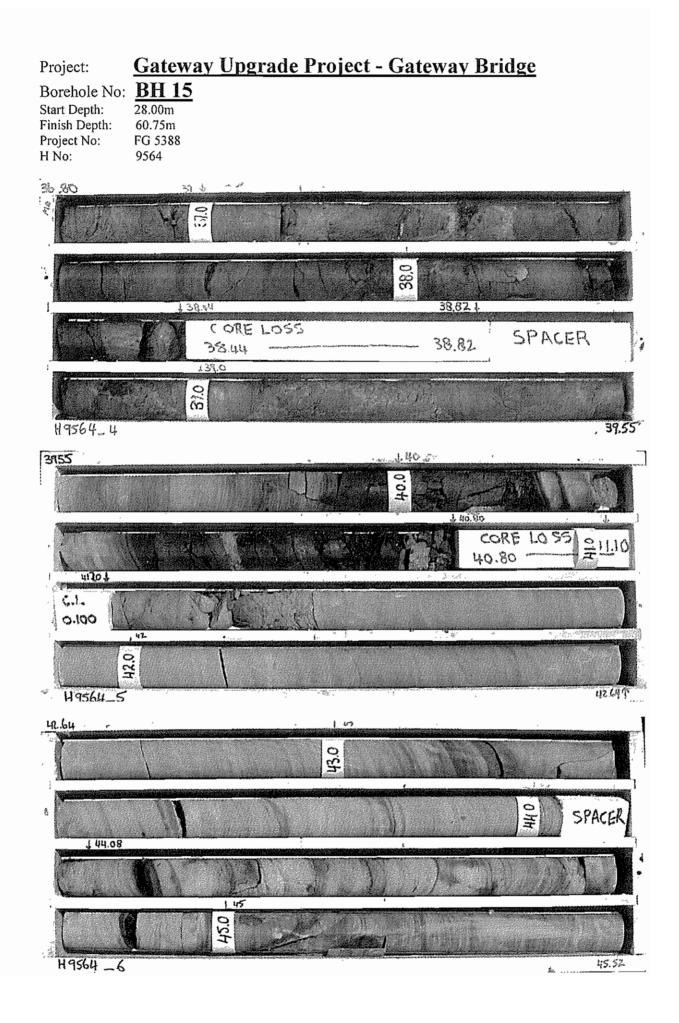
LOGGED BY A. DISSANAYAKE (DISS)

# Project: Gateway Upgrade Project - Gateway Bridge

### Borehole No: BH 15 Start Depth: 28.00m

Start Depth:	28.00m
Finish Depth:	60.75m
Project No:	FG 5388
H No:	9564



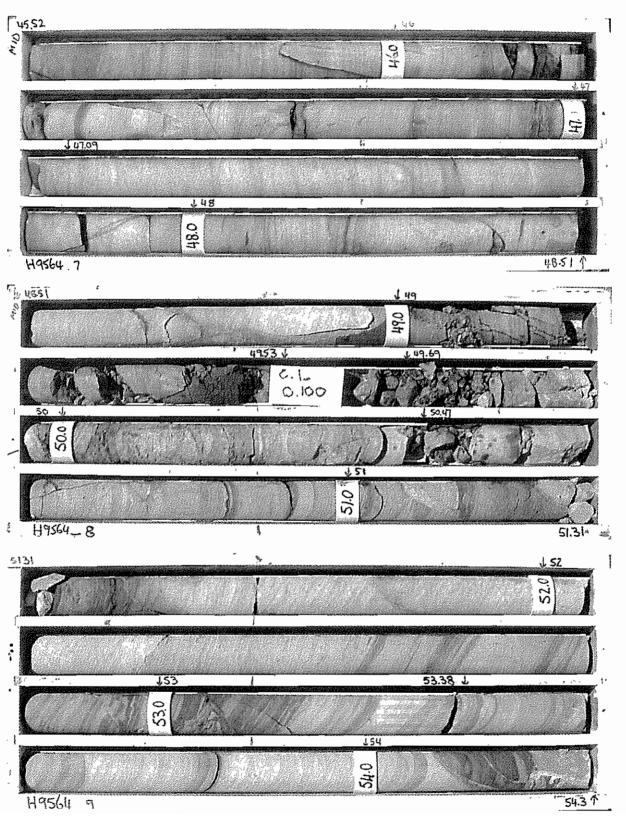


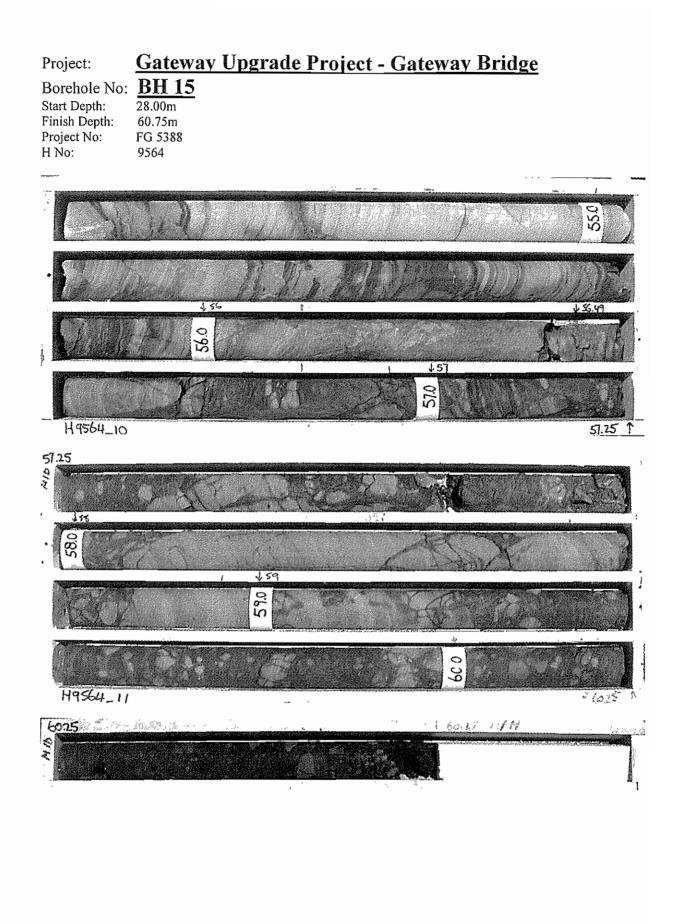
ŝ,

# Project: Gateway Upgrade Project - Gateway Bridge Borehole No: BH 15

Borehole No:
Start Depth:
Finish Depth:
Project No:
H No:

28.00m 60.75m FG 5388 9564





10



Department of Main Roads

DEFECT DESCRIPTIONS

BOREHOLE NO	: BH15	
SHEET	: 1 of 7	
REFERENCE NO	: H9564	

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

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION

PROJECT :	INVESTIGATIO		-GAIEWAY BR		
LOCATION :	PIER 7 – SOUTH	IERN FACE OF P	ILE CAP – DOWN	STREAM/RIGHT H	HAND SIDE
PROJECT NO :	FG5388	SURFACE R.L	: -2.70	DRILLER	: CAIRNS DRILLING PTY LTD
JOB NO		DATUM	: AHD	DATE DRILLED	: 11-14/4/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
28.00-28.10	BZ		-	-	0	Cn	
28.17	LP	25°	CHR	5	С	Cn	
28.25-28.30	BZ	-	-	-	0		Parallel to LP
28.33	LP	10°	St	R	0	Cn	
28.37	LP	15°	Р	S	0	Cn	
28.58	LP	10°	Р	S	0	Cn	
28.87	LP	<10°	Р	S	0	Cn	
28.92-28.97	WS	-	-	-	0	w	
28.05-29.11	CZ				0	W	Parallel to LP
29.20	LP	<10°	Р	S	С	Cn	_
29.25	LP	<10°	Р	S	0	Cn	
29.27-29.31	BZ	-			0	Cn	
29.30	Fr	80° -90°	Cu	_	С		U]
29.56-29.61	WS					W	
29.74	LP	<15°	Р	S	С	Cn	DĬ
29.77	LP	<15°	Р	S	С		DI
30.28-30.29	WS	-	-	-	0		CI
30.39.30.43	BZ	-	-	-	0	Cn	Parallel to LP
30.50	LP	10°	Р	S	S C Cn		DI
30.53	LP	10°	Р	S	S C Cn		DI
30.66	LP	10°	Р	S	C	C Cn	
30.69	LP	10°	Р	S	С	Cn	DI

### 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	ln	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	T	Tight	BZ	Broken Zone	Cn	Clean
ŀ	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.

3



Department of Main Roads

DEFECT DESCRIPTIONS

REFERENCE NO:	H9564
SHEET :	2 of 7
BOREHOLE NO :	BHID

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

GATEWAY UPGRADE PROJECT – GATEWAY BRIDGE DUPLICATION FOUNDATION

PROJECT : UNVESTIGATION

# : PIER 7 – SOUTHERN FACE OF PILE CAP – DOWNSTREA/ RIGHT HAND SIDE

Doomion :	1101(1 000)	meret inter of		DOWNOTION ROUTIN	
PROJECT NO :	FG5388	SURFACE R.I	2 : -2.70	DRILLER	: CAIRNS DRILLING PTY LTD
JOB NO :		DATUM	: AHD	DATE DRILLED	: 11-14/4/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
30.78	J	30°	Р	S	С	Cn	
30.80	LP	<10°	Р	_	-	-	
30.83-30.87	BZ	-	-	-			DI, parallel to LP
31.10	LP	<10°	Р	S	С	Cn	DI
31.23	LP	<10°	Р	S	С	Cn	DI
31.30-31.33	BZ	-	-	-	0		Parallel to LP
31.40-31.52	BZ	-	-	-	0		
31.52-31.68							Coreloss
31.68-31.80	WS	-	-		-	W	Parallel to LP
32.08-32.24	BZ	-		-	2		
32.51-32.70							Coreloss
32.70-32.95	BZ	-	-	-	0	-	
33.33-33.67	WS	~	~	-	-	W	
34.00-34.26	WS	-	-	~	-	W	
34.26-34.4	-	-	-	_	-	-	Coreloss
34.40-34.47	WS					W	1
34.50	LP		St	R	0.000	Cn	DI
34.57	LP	20°	Р	S	С	Cn	
34.72	LP	<10°	Р	R	С	Cn	DI
34.76	LP	<10°	Р	R	С	Cn	DI
34.80	LP	<10°	Р	R	0	Cn	
34.88	LP	<10°	Р	R	0	Cn	

### Abbreviations

	ROUGHNESS		WALL ALTERATIONS		TYPE	OTHER		
R	Rough	FeSt	Iron Stained	1	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	1		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.

30

LOCATION

1



**Department of Main Roads** 

## DEFECT DESCRIPTIONS

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	BOKEHOLF NO	) :	BHID	
	SHEET	:	3 of 7	
	REFERENCE 1	: 0/	H9564	
••	TEATER	TON	т	

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

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION

PROJECT INVESTIGATION

#### FIER 7 - SOUTHERN FACE OF PILE CAP - DOWNSTREAM/RIGHT HAND SIDE LOCATION

PROJECT NO :	FG5388	SURFACE R.L	-2.70	DRILLER	: CAIRNS DRILLING PTY LTD
JOB NO :		DATUM	AHD	DATE DRILLED	: 11-14/4/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
34.95-34.98	BZ	-	-	-	0		
35.20	LP	<5°	Р	S	С	Cn	DI
35.23-35.26	WS	-	-		0	W	
35.35	LP	<00°	Р	R	-	Cn	
35.40-35.43	WS	-	-	-	0	W	
35.50	LP	20°	Р	S	С	Cn	DI
35.57	BP	20°	P	S	Т	Cn	DI
35.65	LP	<20°	Р	R	0	W	
36.12	LP	<20°	Un	R	С	Cn	DI
36.95	LP	<5°	Р	S	Т	U I	-
37.10-37.25	CB						
37.24	LP	<10°	Un		T		Со
37.27	LP	<10°					Co
37.30-37.40	CB		-		-		
37.47	LP	<20°	Р		_		
37.75	LP	<20°	Un	S	-		DI
37.90-38.05	WS	_	-	-	Т	-	-
38.05-38.10	CB	_	~	-	يب	-	
38.12-38.44	CB	-	-	-		-	
38.44-38.82	-	-	-	-	-	-	Coreloss
38.95-38.99	CB	60°	Р	-	Т		
39.07-39.30	CS	-	-	-	0	-	CI

**Abbreviations** 

	ROUGHNESS	8	WALL ALTERATIONS		Түре		OTHER
R	Rough	FeSt	Iron Stained	J	Joint	P	Paniy
Sm	Smooth	W	Weathered	В	Bedding	CL	Carbonaceous lamination
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam
				FP	Foliation Parting	ĺn	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	Cu	Clean
Խ	brregular			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

SHEET : 4 of 7 **REFERENCE NO: H9564** 

BOREHOLE NO : BH15

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

PROJECT :	GATEWAY U INVESTIGATI	DN FOUNDATION			
LOCATION :	PIER 7 - SOUT	THERN FACE OF P	ILE CAP – DOV	VNSTREAM/RIGHT H	IAND SIDE
PROJECT NO :	FG5388	SURFACE R.L	-2.70	DRILLER	: CAIRNS DRILLING PTY LTD
JOB NO :		DATUM	AHD	DATE DRILLED	: 11-14/4/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
39.49-39.52	CB	70°	Un	-	Т	-	-
36.20-36.28	CB	0°	-			-	
36.32-36.35	CB	0°	-	-	14	-	
36.70-36.80	WS	-	-	-	-		
39.90	BP	15°	Р	S	С		DI
39.90	J	60°		R	С		DI
40.00-40.05	WS	-	Ir	-		W	
40.14-40.18	BZ	-	-		0		_
40.38	BP	20°	-	S	C		DI
40.35-40.50	WS/BZ		Р	-	0	W	
40.80-41.10						4	Coreloss
41.35-44.46	WS/BZ		-	-		W	
42.0	LP	10°	-	R	С		DI
42.74	LP	20°	Р	S	С		DI
43.2	LP	30°	Р	S	С		DI
43.55	LP	30°	Р	S	C		
44.15	LP	25°	Р	S	C		
44.30	FR	45°	Ir	R			DI
44.37	LP	25°	P	R			DI
44.44	LP	25°	Р	-	Т		
44.72	LP	<10°	St	R	C		

### Abbreviations

	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		
				CB	Clay Band	In	Incipient		
	PLANARITY		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	T	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.

10



Department of Main Roads

### DEFECT DESCRIPTIONS

BOREHOLE NO	:	BH15
SHEET	:	5 of 7
REFERENCE NO	:	H9564

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

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION

PROJECT	:	INVESTIGATIO	ON				
LOCATION	:	PIER 7 - SOUT	HERN FACE OF P	ILI	E CAP – DOWNS	STREAM/RIGHT H	IAND SIDE
PROJECT NO	:	FG5388	SURFACE R.L	1	-2.70	DRILLER	: CAIRNS DRILLING PTY LTD
JOB NO	:		DATUM	:	AHD	DATE DRILLED	: 11-14/4/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
44.86	LP	15°	Р	S	С	_	DI
44.97	LP	20°	Р	S	С		DI
45.15	J	80°	р	R	С		
45.85-46.00	J	75°	Un	R	C		DI
46.12-46.30	BZ	-	-	-	С		DI
46.35	J	80°-90°	Un	R	С		DI
46.62	LP	<10°	Un	R	С		DI
46.78	LP	<10°	Р	S	Т		DI
46.94-46.97	WS	15°	-		С		
47.85	LP	25°	Р	S	С		
48.40	J	35°	Р	R	Т		DI
48.64	Fr	-	lr	-	T	-	DI
48.70	Fr	-	Ir	-	Т		DI
48.85-48.95	Fr	75°-90°		_	Т		DI
49.07-49.12	WS	-	-			W	Parallel to LH
49.12-49.30	BZ	-	-				DI
49.40-49.47	WS		-	-		W	-
49.53-49.85	WS/BZ	-	-	-	-	W	CI
49.97-49.98	CS						CI
50.03-50.30	SZ/BrZ	-	-	-		-	Healed
50.34-50.54	BZ	-		_	0	-	
50.60	LP	-	-	-			DI

### 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		
		1		BrZ	Brecciated Zone	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		
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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### BOREHOLE NO : BH15 : 6 of 7 SHEET

DEFECT DESCRIPTIONS

OF ENGINEERING BORELOGS

REFERENCE NO: H9564

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

#### GATEWAY UPGRADE PROJECT -- GATEWAY BRIDGE DUPLICATION FOUNDATION PROJECT INVESTIGATION

LOCATION :	PIER 7 – SOUTH	ERN FACE OF PILE	CAP - DOWNS	TREAM/RIGHT HA	ND SIDE
PROJECT NO :	FG5388	SURFACE R.L : -2	2.70	DRILLER :	CAIRNS DRILLING PTY LTD
JOB NO		DATUM : A	HD	DATE DRILLED :	11-14/4/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
50.65	J	70°	Р	R	С		DI
50.85	BP	30°	Р	S	С		DI
50.90	BP	30°	Р	S	С		DI
51.04	LP	30°	Р	R	С		DI
51.07-51.10	Fu	60°	Р		Т		
51.27	J	60°	Р	R	C		DI
51.31-51.35	BZ				T		DI
51.35-51.47	SZ		-	-	T		
51.47	J	45°	Р	R	Т		DI
51.62	Fr	<5°	P	R	Т		DI
51.80	J	60°	Р	-	С		
52.21	J	35°	р	-	Т		DI, Cv
52.50	вр	30°	Р	-	Т		DI
52.93	J/Fu	45°	Р	~	Ť	-	
53.09	J	45°	Р		Т		
53.13	J/Fu	45°	St	-	T		DI
53.38	Fr	<20°	St	R	С		DI
53.80	LP	35°	Р	S	Т		DI
54.10-54.45	SZ	-		-	Т		
54.60-54.62	SZ	50°	-	-	Т		
54.83	LP	30°	р	-	Т		DI
54.90	J	45°	Un	-	T		

#### Abbreviations

ROUGHNESS W.			WALL ALTERATIONS	Ì	TYPE		OTHER	
R	Rough	FeSt	Iron Stained	J	Joint	p	Partly	
Sm	Smooth	W	Weathered	B	Bedding	CL	Carbonaceous lamination	
SL	Slickensided	SM	Secondary Mineralisation	Fu	Fault	Cv	Calcite Vein	
				BrZ	Brecciated Zone	In	Incipient	
PLANARITY			APERTURE		Lamination Parting	SI	Sand Infill	
Pl	Planar	C	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	
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.

#### F:GEOT533/4



Department of Main Roads

# DEFECT DESCRIPTIONS

**OF ENGINEERING BORELOGS** 

BOREHOLE NO	: BH15
SHEET	: 7 of 7
REFERENCE N	o: H9564

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

PROJECT :	GATEWAY U INVESTIGAT	JPGRADE PROJECT – GATEWA TION	Y BRIDGE DUPLICATIC	IN FOUNDATION
LOCATION :	PIER 7 – SOU	THERN FACE OF PILE CAP – D	OWNSTREAM/RIGHT H	AND SIDE
PROJECT NO :	FG5388	SURFACE R.L : -2.70	DRILLER	: CAIRNS DRILLING PTY LTD
JOB NO :		DATUM : AHD	DATE DRILLED	: 11-14/4/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
55.05-55.65	BrZ		-		С		
55.49	CS		-	-	-	-	Parallel to LP
55.65-57.45	BrZ		-	-	O-C		Healed
57.69-58.10	BrZ	_	-	-	С		CI
58.35	J	60°	St	-	С		CI
58.45	J	40°	St	-	С		CI
58.46	J	40°	St	-	С		CI
58.55	J	80°-90°	р	R	С	NO.	
58.75-58.85	BrZ	-	-	-	С		CI
59.02	J	30°	St	-	Т	DI	
59.25-60.75	BrZ			-	С		
				L			

### Abbreviations

ROUGHNESS		WALL ALTERATIONS		1	TYPE		OTHER	
R	Rough	FeSt	Iron Stained	5	Joint	P	Partly	
Stn	Smooth	W	Weathered	В	Bedding	CL	Carbonaceous lamination	
SL Slickensided		SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam	
				BrZ	Brecciated Zone	In	Incipient	
FLANARITY			APERTURE		Lamination Parting	SI	Sand Infill	
PI	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	
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.