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ENGINEERING BOREHOLE

FOR GEOTECHNICAL TERMS AND

BH11 BOREHOLE No _1_ of _6_ SHEET

> LOGGED BY A. DISSANAYAKE (DISS)

			v	Main F	load	ls	SYMBOLS REFE	R FO	RM F:	GEOT 017/2-	2004		REFERENCE No	H956	0
	PRO	JECT	GAT		JPG	RADE PROJECT - GA	TEWAY BRIDGE DL		ATIC	N FOUNDA		/EST			
	LOC					ERN FACE OF THE P							ORDINATES 10316.4	4 E; 167691.5	<u>-</u> N
	PRO	JECT No	<u>FG53</u>	88				DATE STARTED _10/3/05							
	JOB	No				DAT	UM <u>AHD</u> .		DAT	E COMPLETE	ED <u>11/3/</u>	05		CAIRNS DRI	
	DEPTH (m)	R.L (m)	DRILLING	RQD ()%	щ		TÉRIAL	OGY	HERING	INTACT STRENGTH	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL C	ATA	<u>8</u>
	Ш П	- <u>1.84</u>		CORE	SAMPLE	DESC	RIPTION	гітногобу	EATH	유도~~ '극막	00000	HU	TEST RESUL	TS	SAMPLES TESTS
	-	<u>-1.84</u> C	0>0	REC %	S.	ESTUARINE SANDY S Dark grey to black, mo soft.	SILTY CLAY bist, wet, very soft to		S) N	╓╤┎奚┰╤╨ ╍┼╵╵╵╵╵╵╵		ß			SA.
	-					Becoming more organ depth; some partly deo fragments.	ic silty clay with composed shell				-				-
31/8/05	-		the second second							-	- 				-
E 09_04.GDT :	-										- - 				-
ING BOREHOL	-										- -			DW.	
PJ ENGINEER	- 2										-			RW, N<1	SPT
E PROJECT.G	-	-							ОН						
WAY UPGRAD											· ·				-
IDGE - GATE	-3														-
GATEWAY BR	-		i											RW,-,- N<1	SPT
BOREHOLES-	-										-				-
EERA PIER 6	-4										- : - :				
BOREHOLE WITH LITHOLOGY MEERA PIER 6 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ. ENGINEERING BOREHOLE 09_04.GDT 31/8/05	-	-6.04				LOW GRADE COAL FINE GRAINED MAINI VITREOUS THINLY L/ FRAGILE CARBONAC SEDIMENTARY ROCK	AMINATED EOUS				- - -		Used roller bit below 4.2	m.	-
BOREHOLE WITI		-6.84	The second second			XW : Generally exhibi properties of black, m	ls engineering		XW		-			0,2,18 N=20	SPT

REMARKS This borelog should be read in conjunction with the appropriate Defect Description Sheets. Defect angles have been measured with respect to a horizontal plane. _ _ _ _ _ _ _

	Queensland Government						ENGINEERING BOREHOLE							BOREHOLE No SHEET		
		50	Bepartm Main				FOR GEOT SYMBOLS REFE	ECHN R FO	ICAL RM F:	TERMS GEOT (AND 017/2-2	2004		REFERENCE No	<u>H956</u>	
LOCATION _PIER 6 - SOUTHERN FACE OF TH							ACE R.L1.84 DATE STARTED10/3				CC /05	ORDINATES 10316. DATUM	4 E; 167691.5 SETP _CAIRNS DRI			
(m) OFPTH (m)	R.L. (m)		RQD ()% CORE REC %	SAMPLE	LOW GRADE CO XW : (As above)			ГІТНОГОЄУ		NTA STREA	иGTH	DEFECT SPACING (mm)	HIC LO	ADDITIONAL AND TEST RESU	DATA	SAMPLES TESTS
DT 31/8/05	-7.3				HW Black moist to m gravel gradually low strength coa	grading in	to very low to		XW							
PGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09 04.GDT									нw						17,30/120 N>50 30/120 N>50	SPT
BOREHOLE WITH LITHOLOGY MEERA PIER 6 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT GPJ	-10.1		(22) 57 (0) 100 (23)		MW: Mainly black to g dull to occasiona strength. Frequent very lo and weathered s interbeds. Defects : Mainly partings <20° (5)	ally vitreou w strengtt seams; so laminatio	is, low to mediur h highly broken me siltstone		MW					Is Raoken siltstone interbe Is Is	30/80 N>50 (50)=0.13 MPa (50)=0.30 MPa ad (50)=0.23 MPa (50)=0.07 MPa	SPT × × ×
BOREH	10 -11.8	4	50	\mathbb{N}								- 		Coreloss		

REMARKS This borelog should be read an conjunction with the appropriate Defect Description Sheets. Defect angles have been measured with respect to a horizontal plane. -----

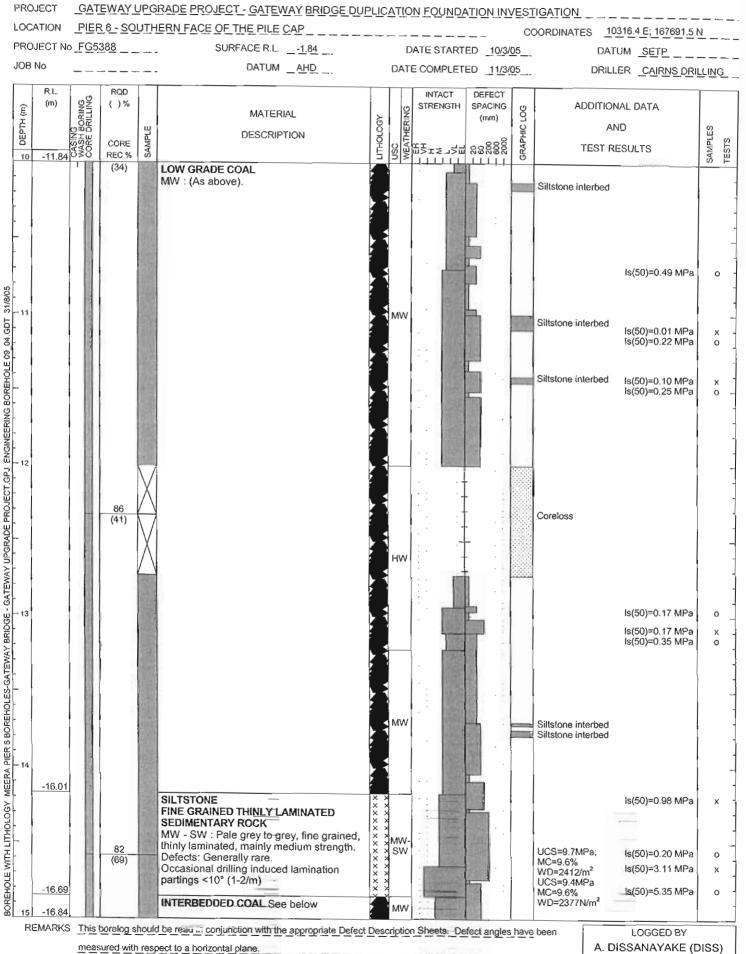
LOGGED BY A. DISSANAYAKE (DISS)

	Queensland
	Government
CIN	Department of Main Roads

ENGINEERING BOREHOLE

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

BOREHOLE No	<u>BH11</u>
SHEET	<u>3</u> of <u>6</u>
REFERENCE No	<u>H9560</u>



measured with respect to a horizontal plane. _____

		R		ent of				TERMS AN	D 2-2004		BOREHOL SHEET REFEREN	-	BH11 4 of H956	6
LOC	JECT No	_PIEF	<u>86-SO</u> 388				DA	DATE STAR	TED <u>10/3</u> TED <u>11/3</u>	CO 3/ <u>05</u> 3/ <u>05</u>	ORDINATES	_10316.4 E; DATUM _SE RILLER _C/	TP	
(m) 15	(m) -16.84	CASING WASH BORING CORE DRILLING	()% CORE REC%	SAMPLE	MATER		LITHOLOGY USC WEATHERING	STRENGT-	SPACING (mm)	GRAPHIC LOG		AND ST RESULTS		SAMPLES TESTS
BOREHOLE WITH LITHOLOGY MEERA PIER 6 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT GPJ ENGINEERING BOREHOLE 09 04.GDT 31/8/05	- 10.04		<u>82</u> (54)		INTERBEDDED LOW GRA SILTSTONE & SANDSTO GRADE COAL DOMINAN MW -SW: Pale grey to bla laminated/interbedded, m strength with some low an bnads Defects : Mainly laminatio (2-8/m) Becoming sandstone, don 15.5m and 16.25m; highly weathered along bedding, partings.	NE. LOW F ack, fine grained, ainly medium id high strength n partings <5° ninantes between raltered and	MW				Coreloss	Is(50): {s(50)= Is(50)=	=0.38 MPa =1.28 MPa =0.75 MPa =0.26 MPa =0.14 MPa	x - - - - - - - - - - - - - - - - - - -
EHOLES-GATEWAY BRIDGE	i	and the second second		のないのである			MW					ls(50)= ls(50)≍	:0.47 MPa :0.46 MPa	× · ·
57 MEERA PIER 6 808	-21.09		<u>89</u> (87)	A CONTRACTOR OF THE OWNER									=0.48 MPa ≡0.32 MPa	0 X -
BOREHOLE WITH LITHOLOG	-21.84		(07)		SILTSTONE FINE GRAIN LAMINATED SEDIMENTA SW : Pale grey to grey, fir laminated, mainly medium	RY ROCK te grained, thinly	S S XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX						€0.42 MPa €0.56 MPa	x - 0 -
RE	EMARKS				be read in conjunction with th bect to a horizontal plane.	e appropriate Defect I	Descriptio	on Sheets.	efect angle	s have		LOG A. DISSAN/	GED BY	0155)

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JOB No

ENGINEERING BOREHOLE

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

REFERENCE No	<u>H9560</u>					
SHEET	_ <u>5_</u> of <u>_6</u> _					
BOREHOLE No	<u>BH11</u>					

PROJECT	GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INV	ESTIGATION	
LOCATION	PIER 6 - SOUTHERN FACE OF THE PILE CAP	COORDINATES	10316.4 E; 167691.5 N

PROJECT No FG5388

SURFACE R.L. _______ DATE STARTED _________

DATUM SETP DATUM _AHD ____ DATE COMPLETED _11/3/05 ____ DRILLER _CAIRNS_DRILLING ____

DEPTH (m)	R.L. (m)	NG H BORING E DRILLING		RQD ()%	PLE	MATERIAL	ПТНОГОGY	THERING	INTACT STRENGTH มีระรวร่๗	DEFECT SPACING (mm)	GRAPHIC LOG	ADDITIONAL DATA AND	LES
20	-21.84	CASING	0 8	CORE REC %	SAMPLE		LITH	USC WFA	ᇁᆃᅚᄛᄀᆃᄪ	88888	GRAF	TEST RESULTS	SAMPLES TESTS
	-23.24					SILTSTONE SW : (As above). Defect : Generally rare. - Some infrequent HW-MW broken zones up to 70mm. Exhibits some sandstone properties with depth.	*************************************	1 1				Is(50)=0.43 MPa Is(50)=0.38 MPa	x 0
-21	20.21			<u>100</u> (66)		SANDSTONE FINE TO MEDIUM GRAINED, LAMINATED SEDIMENTARY ROCK MW - SW : Pale grey to grey, slightly massive to mainly laminated, low to mainly medium strength. Highly fractured and weathered in some areas; frequent concordant carbonaceous laminations and minor siltstone/mudstone interbeds. Defects : Drilling induced lamination partings<20° (3-4/m) Broken and weathered seams Irregular subvertical fractures.		SW SW				UCS=10.2MPa MC=4.0% WD=2445/m ² UCS=9.7MPa MC=4.0% WD=2428/m ²	
		A STATE		1								Carbonaceous laminations	
												Carbonaceous laminations Few low grade coal seams	
-24					States -			SW				ls(50)=0.57 MPa	×
- 25	-26.50											UCS=20.8MPa MC=4.0% WD=2470Nm ² Is(50)=0.53 MPa	0
	00.0	Contraction of the second			ell's to	MUDSTONE FINE GRAIINED THINLY LAMINATED SEDIMENTARY ROCK SW :See below		sw					
	<u>-26.84</u> MARK		s bo	relog s	houle	d be read in conjunction with the appropriate Defect	Des	= criptio	n Sheets. De	efect angle	s have	e been LOGGED BY	<u> </u>
						pect to a horizontal plane.						A. DISSANAYAKE (I	DISS)



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ENGINEERING BOREHOLE

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

BOREHOLE No	<u>BH11</u>
SHEET	<u>6</u> of
REFERENCE No	H9560

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION PROJECT LOCATION _PIER 6 - SOUTHERN FACE OF THE PILE CAP

PROJECT No _FG5388 _____

COORDINATES 10316.4 E; 167691.5 N

JOB No

DATUM _AHD ____ DATE COMPLETED _11/3/05___

DATUM SETP DRILLER CAIRNS DRILLING

A. DISSANAYAKE (DISS)

6___

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DEPTH (m)		1.100	RQD ()% CORE REC%	SAMPLE	MATERIAL DESCRIPTION MUDSTONE	ПТНОГОСУ	% USC & WEATHERING	INTACT STRENGTH	DEFECT SPACING (mm) 8888888	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
					SW : Dark grey to black, fine grained, thinly laminated, low to mainly medium strength. Defects : Generally rare. Occasional drilling induced lamination partings <10° (1/m) and irregular fractures. Borehole terminated at 25.15m							
	7											
	6											
	Ð											
		This I	orelog sl	nould	be reading conjunction with the appropriate Defect	Desc	riotion		fect and les	have	been LOGGED BY	- - -

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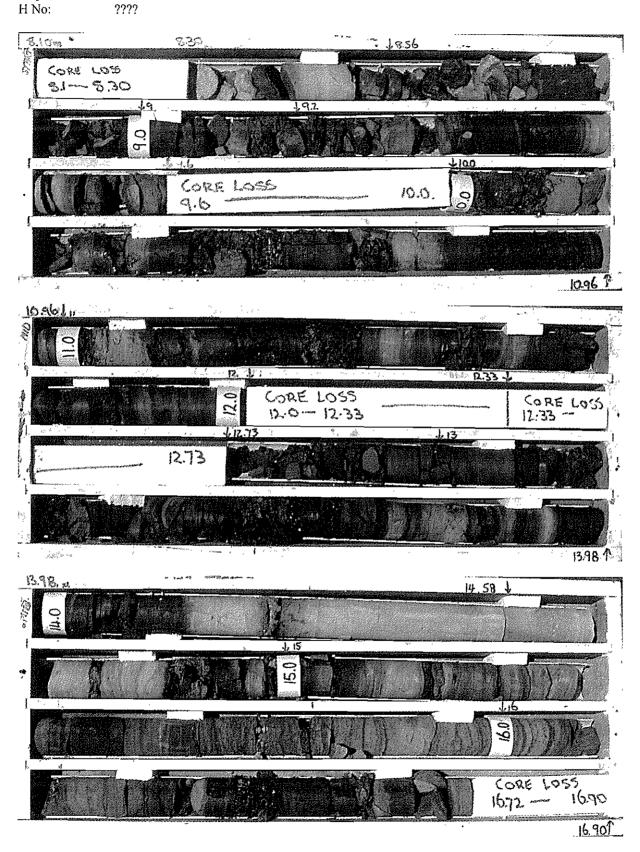
measured with respect to a horizontal plane.

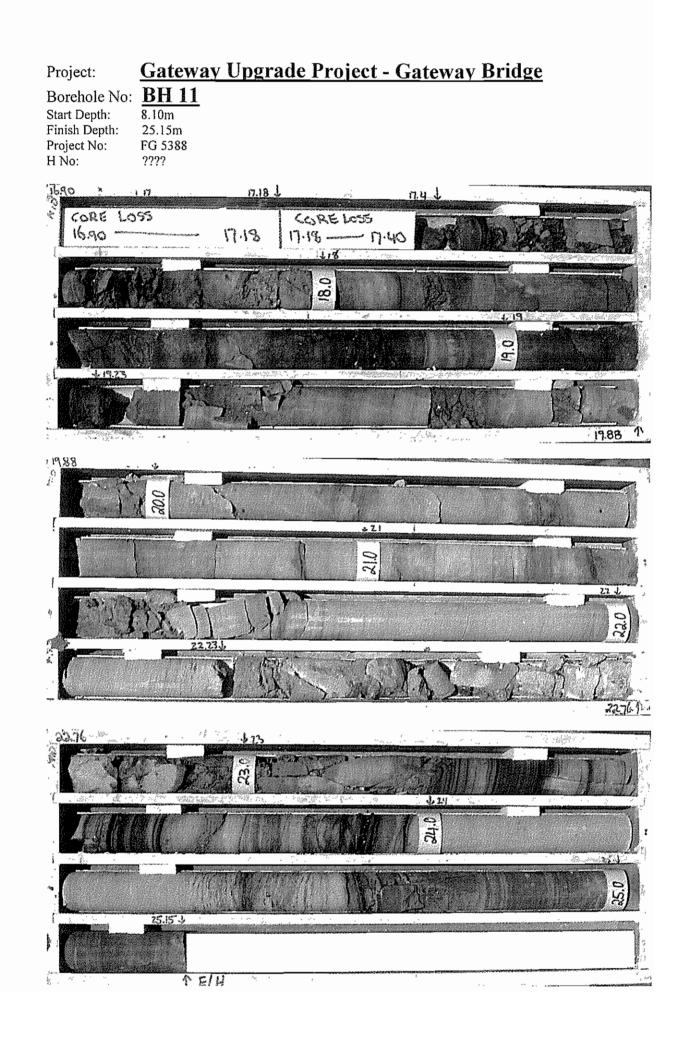
Project: <u>Gateway Upgrade Project - Gateway Bridge</u>

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

BH 11 8.10m 25.15m FG 5388

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Department of Main Roads

DEFECT DESCRIPTIONS

BOREHOLE NO : BH11 SHEET : 1 of 5 OF ENGINEERING BORELOGS

REFERENCE NO: H9560

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

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION PROJECT INVESTIGATION

LOCATION :	PIER 6 - SOUTH	ERN FACE OF THE PILE CAP		
PROJECT NO :	FG5388	SURFACE R.L : -1.84	DRILLER	CAIRNS DRILLING PTY LTD
JOB NO :		DATUM : AHD	DATE DRILLED	: 10-11/03/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
8.1-8.3	-	-	-	-	-		Core loss
8.3-8.39	BZ		-	-	-	Cn	BP
8.39	BP	20°	Р	S	0	Cn	Polished
8.50-8.75	WS	121	-	-	-	W	Gravely clay
8.86-8.87	WS/BZ	-	-			W	-
9.05-9.33	WS/BZ	-	-		-	W	BP
9.38	LP	<10°	Р	S	0	Cn	(H)
9.39-9.44	WS/BZ	<10°	Р	S	С	W	-
9.40-9.47	WS/BZ	-	-		-	W	
9.44	LP	<10°	P	S	0	Cn	-
9.49	LP	<10°	Р	S	С	Cn	LP
9.52	LP	<10°	Р	S	С	Cn	
9.56	LP	<10°	P	S	С	Cn	-
9.6-10.0		***	-	-	-	-	Core loss
10.0-10.06	WS/BZ	-		-		W	-
10.0-10.12	WS/BZ	-	-	-	-	W	
10.21-10.24	WS	-	~	-	-	W	BP
10.30-10.32	WS	-	-	-	-	₩	-
10.35-10.37	WS	-	-		-	W	-
10.40-10.54	WS	_	-	-	-	W	BP
10.61	LP	-	P	S	0	Cn	-
10.61-10.69	WS	-	-	-	-	W	BP

Abbreviations

ROUGHNESS			WALL ALTERATIONS		TYPE	OTHER	
R	Rough	FeSt	Iron Stained	Ĵ	Joint	DI	Drilling Induced
S	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
Р	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		

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



DEFECT DESCRIPTIONS

OF ENGINEERING BORELOGS

[CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH ISRM SUGGESTED METHODS (1981)] BOREHOLE NO : BH11 SHEET : 2 of 5 REFERENCE NO : H9560

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION PROJECT INVESTIGATION LOCATION PIER 6 - SOUTHERN FACE OF THE PILE CAP FG5388 SURFACE R.L : -1.84 DRILLER : CAIRNS DRILLING PTY LTD PROJECT NO : JOB NO DATUM DATE DRILLED : 10-11/3/05 : AHD DEFECT WALL DEPTH ROUGHNESS APERTURE DIP PLANARITY OTHER TYPE ALTERATION -100 5 10 70 -~ -

10.75	LP	<10°	<10° P S C		Cn	-	
10.98	LP	15° P S		C	Cn	-	
11.0	LP	20°	20° P S		0	Cn	-
11.0	LP	15°	Р	S	С	Cn	
11.11	LP	20°	P	S	0	-	CI
11.14	LP	20°	Р	S	0	Cn	
11.21	LP	10°	Р	-	0	Cn	-
11.30-11.32	WS	-	-	-		W	1
11.35-11.37	WS	_	-	_	-	W	
11.51-11.54	BZ/WS	_	-	-	-	W	-
11.61	LP	15°	Р		-	Cn	-
11.79-11.96	BZ			-	-	Cn	-
11.98	LP	15°	Р	S	С	Cn	~
12.0-12.73	-	~	-		-	-	Coreloss
12.73-12.92	WS/BZ	-	-	-	-	W	
12.97-13.01	BZ	-	-	-	-	Cn	-
13.10-13.15	BZ/WS	-	-	~	_	W	-
13.5-13.70	BZ/WS	-	-	-		W	74
13.80	BP/LP	-	-	-	-	Cn	
13.81-13.85	WS/BZ	~	-	-	-	W	
14.05	LP	-	P	S	0	-	-

Abbreviations

ROUGHNESS			WALL ALTERATIONS		TYPE	OTHER	
R	Rough	FeSt	Iron Stained	1	Joint	DI	Drilling Induced
s	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 LP I		Lamination Parting	SI	Sand Infill	
Р	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		

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	
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BOREHOLE NO : BH11

SHEET : 3 of 5

REFERENCE NO: H9560

OF ENGINEERING BORELOGS

PROJECT : GATEWAY UPGRADE PROJECT – GATEWAY BRIDGE DUPLICATION FOUNDATION

LOCATION :	PIER 6 - SOUTH	HERN FACE OF TH	HE PILE CAP		
PROJECT NO :	FG5388	SURFACE R.L :	-1.84	DRILLER	: CAIRNS DRILLING PTY LTD
JOB NO :		DATUM :	AHD	DATE DRILLED	: 10-11/3/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
14.08-14.10	BZ/WS	-		-	-	W	-
14.28-14.29	BZ	-	-	-	-	-	Parallel to LP
14.60	LP	-	Р	S	Т	-	DI
14.74-14.75	CS	-	-	-			CI
14.82-15.05	BZ	-	-	-	н	~	Parallel to LP
15.18	LP	Р	S	5		Cn	
15.28	LP	Р	S	-	-	Cn	-
15.31	LP	Р	S	-	-	Cn	-
15.34	LP	р	S	-	-	Cn	-
15.5	LP	Р	S		-	Cn	-
15.6	LP	Р	S		ud.	Cn	-
15.68	LP	Р	S	-	~	W	_
15.76-15.78	BZ	-	-	-	-	Cn	Parallel to LP
15.91	LP	Р	S	0	-	Cn	-
16.27	LP	Р	S	0	· · ·	Cn	-
16.3-16.35	WS/BZ	-	1.57	-	_	W	Parallel to LP
16.41-16.48	WS/BZ	-	-	-	-	W	Parallel to LP
16.54-16.60	WS/BZ	-	~	-	-	W	Parallel to LP
16.65-16.70	BZ	-	-	_	-	Cn	-
16.72-17.40	-			-	-	-	Coreloss
17.40-17.50	BZ/WS	-	-	R	0	W	-
17.68-17.78	WS	-	-/	-	0	W	Parallel to LP

Abbreviations

ROUGHNESS			WALL ALTERATIONS		TYPE	OTHER	
R	Rough	FeSt	Iron Stained	1	Joint	זמ	Drilling Induced
S	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
р	Planar	С	Closed	SZ	Sheared Zone	H	Horizontal
St	Stepped	0	Open	CZ	Crushed Zone	V	Vertical
Un	Undulating	F	Filled	ws	Weathered Seam	CI	Clay Infill
Cu	Curved		Tight	BZ	Broken Zone	Cn	Clean
ŀ	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam
				Fr	Fracture		

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

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BOREHOLE NO : BH11 SHEET : 4 of 5 REFERENCE NO : H9560

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

PROJECT : GATEWAY UPGRADE PROJECT – GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION

LOCATION :	PIER 6 - SOUTH	IERN FACE OF THE PILE	CAP	
PROJECT NO :	FG5388	SURFACE R.L : -1.84	DRILLER	: CAIRNS DRILLING PTY LTD
JOB NO :		DATUM : AHD	DATE DRILLED	: 10-11/3/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
17.83	LP	<5°	-		0	Cn	-
17.89-17.93	WS		-		0	W	
18.14-18.17	WS		-	-	-	W	4
18.38	LP	<5°	Cu	R	-	Cn	-
18.45-18.54	BZ			-	С	Cn	CS
18.61	BP	<5°	Р	S	С	Cn	LP
18.69-18.85	BZ	10°	P	-	С	Cn	-
19.25	LP	10°	Ir	R	-	W	_
19.29-19.33	BZ	-	-	-	0	Cn	Partly broken
19.61-19.68	WS	-		-	0	W	-
19.77-19.81	BZ	-	-	R	0	Cn	LP
19.96	Fr	-	Ir	-	С	Cn	Parallel to LP
20.08	J	35°	Un	R	0	Cn	DI
20.25	J	35°	P/Ir	R	T	Cn	DI
20.35	J	35°	. Ir	R	Т	Cn	DI
20.38	J	35°	Ir	R	Т	Cn	DI
20.50	LP	20°	Р	R	Т	Cn	DI
20.69	LP	<10°	Cu	R	Т	Cn	DI
20.79	LP	<10°	Cu	R	Т	Cn	DI
20.91	LP	<10°	Ir	R	Т	Cn	DI
21.20	LP	<5°	Р	R	Т	Cn	DI

Abbreviations

	ROUGHNESS		WALL ALTERATIONS		түре		OTHER	
R	Rough	FeSt	Iron Stained	J	Joint	DI	Drilling Induced	
S	Smooth	W	Weathered	В	Bedding	CL	Carbonaceous lamination	
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam	
				FP	Foliation Parting	In	Incipient	
	PLANABITY		APERTURE		Lamination Parting	SI	Sand Infill	
Р	Planar	С	Closed	SZ	Sheared Zone	H	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	bregular			HFZ	Highly Fractured Zone	CS	Clay Seam	
				Fr	Fracture			

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

: 5 of 5 SHEET

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

REFERENCE NO: H9560

BOREHOLE NO : BH11

GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION

PROJECT	:	INVESTIGATION		GATEWAY BRI	DGE DUPLICATIO	N FOUNDATION
LOCATION	:	PIER 6 - SOUTH	ERN FACE OF T	THE PILE CAP		
PROJECT NO	:	FG5388	SURFACE R.L	: -1.84	DRILLER	CAIRNS DRILLING PTY LTD
JOB NO	:		DATUM	: AHD	DATE DRILLED	: 10-11/3/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
21.30-21.60	BZ	-	-	-	-	Cn	Parallel to LP
21.50	J	45-50°	Un	R	0	Cn	-
22.23	Fr	<10°	Ir	R	0	Cn	Dl
22.28-22.92	BZ	-		-	-	-	CI
22.90-23.18	BZ	-	-	-	С	Cn	-
23.10-23.20	Fr	70°	St	R	С	Cn	-
23.14-23.19	SZ	45°	Ir	~	С	Cn	
23.30-23.60	Fr	60-90°	Ir	R	Т	Cn	DI?
23.65	LP	<10°	Р	S	C	Cn	CL
23.71	J	35°	Ir	R	-	Cn	?
23.76	LP	<10°	Р	S	C	Cn	-
23.85-23.96	BZ	-	-	-	-	Cn	Parallel to LP
24.51	LP	<10°	Р	R	С	Cn	-
24.64	BZ	-		-	C	Cn	Parallel to LP

Abbreviations										
ROUGHNESS			WALL ALTERATIONS		ТУРЕ		OTHER			
R	Rough	FeSt	Iron Stained	J	Joint	DI	Drilling Induced			
S	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		APERTURE	LP	Lamination Parting	SI	Sand Infill				
Р	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			
Īr	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam			
				Fr	Fracture					

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