Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE

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

BOREHOLE No BH17
SHEET 1 of 14
REFERENCE No H9566

PROJECT GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION
LOCATION PIER 7 - CENTRE OF PILE CAP
COORDINATES 10209.3 E; 167940.6 N
PROJECT No FG5388
SURFACE R.L. -2.18
DATE STARTED 08/05/05
DATUM SETP
JOB No
DATUM AHD
DATE COMPLETED 13/05/05
DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
0	-2.18				**ESTUARINE SILTY CLAY** Dark grey to black, moist to mainly wet, very soft to soft. High plasticity, minor amout of partly decomposed plant materials; some shell fragments.		OH					RW,-,- N<1	SPT
1													
2													
3												RW,-,- N<1	SPT
4													
5	-7.18											RW,-,- N<1	SPT

BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09_04.GDT 31/08/05

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)

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BOREHOLE No BH17
SHEET 2 of 14
REFERENCE No H9566

PROJECT GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION
LOCATION PIER 7 - CENTRE OF PILE CAP
COORDINATES 10209.3 E; 167940.6 N
PROJECT No FG5388
SURFACE R.L. -2.18
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DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
5	-7.18				**ESTUARINE SILTY CLAY** (As above). Very high amout of partly decomposed plant materials at 6.0m; becoming slightly sandy with depth.		OH						
6												RW,-,- N<1	SPT
7	-9.18				**ESTUARINE SILTY SAND / SAND** Dark grey , wet, very loose to loose. Very fine grained silty sand becoming sand with depth.		SC-SM					RW,-,- N<1	SPT
8													
9												RW,-,-	SPT
10	-12.18												

BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09_04.GDT 31/08/05

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BOREHOLE No BH17
SHEET 3 of 14
REFERENCE No H9566

PROJECT GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION
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COORDINATES 10209.3 E, 167940.6 N
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SURFACE R.L. -2.18
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DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES / TESTS
10	-12.18				**ALLUVIAL SILTY CLAY** Pale green grey to grey brown, moist, stiff becoming firm with depth. Medium to high plasticity; exhibits some fissuring and cubic structures with excessive drying; some incipient lateritic features.							1,5,8 N=13	SPT
11													
12							CI-CH					4,6,7 N=13	SPT
13													
14												1,2,4 N=6	SPT
15	-17.18												

BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09_04.GDT 31/08/05

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BOREHOLE No BH17
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DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% / CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES / TESTS
15	-17.18				**ALLUVIAL SILTY CLAY** (As above).		CL-CH					2,3,6 N=9	SPT
16												1,3,4 N=7	SPT
17													
18												RW,3,3 N=6	SPT
19													
20	-22.18											1,2,4 N=6	SPT

BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09_04.GDT 31/08/05

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LOCATION PIER 7 - CENTRE OF PILE CAP COORDINATES 10209.3 E; 167940.6 N
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JOB No DATUM AHD DATE COMPLETED 13/05/05 DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
20	-22.18				**ALLUVIAL SILTY CLAY** (As above).		CI-CH							
22	-24.18				**ALLUVIAL SILTY SAND / SAND** Pale brown to brown, moist to mainly wet, medium dense. Fine grained silty sand becoming sand with depth.		CI-CH					2,6,9 N=15		SPT
24												5,7,9 N=16		SPT
26	-27.18													

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PROJECT GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION
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DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES / TESTS
25	-27.18				**ALLUVIAL SAND AND GRAVEL** Pale brown to pale grey brown, wet, medium dense becoming dense with depth. Poorly sorted coarse sand and gravel sizing up to 40mm; subrounded to subangular lithic and quartzitic fragments; minor silt fraction. Gravel size increases with depth.		SM-SP					7,11,13 N=24	SPT
26													
27												16,27,30/50 N>50 N>50	SPT
28	-30.38				**LOW GRADE COAL FINE GRAINED MAINLY DULL TO SLIGHTLY VITREOUS THINLY LAMINATED FRAGILE CARBONACEOUS SEDIMENTARY ROCK** HW (?): Drillers record only.		HW						
	-30.68		(17)		MW : Black mainly dull to occasionally vitreous, fine grained, thinly laminated, mainly low to medium strength. Highly fractured, weathered and altered seams throughout; frequent siltstone interbeds. Defects : - Numerous lamination/bedding partings<**deg - Fractured, weathered & altered seams<**							Is(50)=0.13 MPa Is(50)=0.04 MPa	o x
29							MW					Is(50)=0.68 MPa	o
			100 (55)										
30	-32.18												

BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09_04.GDT 31/08/05

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DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
30	-32.18				**LOW GRADE COAL** MW : (As above)							Is(50)=0.09 MPa		x
												Is(50)=0.03 MPa		x
												Is(50)=0.02 MPa		o
												Is(50)=0.20 MPa		o
31												Is(50)=0.28 MPa		x
												Is(50)=0.48 MPa		o
												Is(50)=0.12 MPa		x
												Is(50)=0.26 MPa		o
												Is(50)=0.06 MPa		x
32												Is(50)=0.09 MPa		o
												Is(50)=0.25 MPa		x
												Is(50)=0.11 MPa		o
								MW			Coreloss			
33														
												Is(50)=0.09 MPa		x
												Is(50)=0.19 MPa		o
34			85 (70)									Is(50)=0.06 MPa		x
												Is(50)=0.12 MPa		o
												Is(50)=0.65 MPa		o
35	-37.18													

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BOREHOLE No BH17
SHEET 8 of 14
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DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
35	-37.18				**SANDY SILTSTONE** SW: Pale grey to white, fine grained, thinly laminated, mainly medium to high strength. Defects : Generally rare. Occasional drilling induced lamination partings <10° (1-2/0.5m)			SW				Is(50)=0.15 MPa Is(50)=0.55 MPa	x o	
	-37.83				**LOW GRADE COAL FINE GRAINED MAINLY DULL TO SLIGHTLY VITREOUS THINLY LAMINATED FRAGILE CARBONACEOUS SEDIMENTARY ROCK** MW : Black mainly dull to occasionally vitreous, fine grained, thinly laminated, mainly low to medium strength with high strength sandstone interbeds. Highly fractured, weathered and altered seams throughout.			MW				Is(50)=1.75 MPa	x	
36			100 (72)		Defects : - Numerous lamination/bedding partings <15° - Fractured, weathered & altered seams <200mm							XW Siltstone interbed. Coreloss		
37	-39.26				**SILTY SANDSTONE** SW: Pale grey to white, fine to medium grained, laminated, medium to high strength. Defects : Generally rare.			SW				Is(50)=0.27 MPa Is(50)=0.78 MPa Is(50)=1.47 MPa	o o o	
38	-40.33				**LOW GRADE COAL FINE GRAINED MAINLY DULL TO SLIGHTLY VITREOUS THINLY LAMINATED FRAGILE CARBONACEOUS SEDIMENTARY ROCK** MW : Black mainly dull to occasionally vitreous, fine grained, thinly laminated, mainly low to medium strength.			MW				Is(50)=0.50 MPa Is(50)=1.06 MPa Is(50)=0.80 MPa Is(50)=0.09 MPa	x o o x	
	-41.06		97 (93)									Is(50)=0.41 MPa Is(50)=0.03 MPa	o x	
39					**SANDY SILTSTONE** SW: Pale grey to white, fine to medium, laminated, medium to mainly high strength. Defects : Nil			SW				Is(50)=1.23 MPa Is(50)=0.83 MPa Is(50)=0.88 MPa Is(50)=1.51 MPa Is(50)=0.84 MPa Is(50)=1.52 MPa	o x x o x o	
	-42.08											Pressuremeter Test 7 @ 39.3m UCS=27MPa MC=2.70% WD=2510N/m^2 UCS=29MPa MC=2.76% WD=2500N/m^2		
40	-42.18				see next page			SW						

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BOREHOLE No BH17
SHEET 9 of 14
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DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
40	-42.18				**INTERBEDDED SANDSTONE & SILTSTONE. SANDSTONE DOMINANT** SW : Pale grey to grey, fine grained, thinly laminated, medium to high strength. Defects : Generally rare. Occasional drilling induced lamination partings <10° - 35° (1/m)							Is(50)=1.28 MPa Is(50)=0.70 MPa **Pressuremeter Test 6 @ 40.2m** Is(50)=0.39 MPa Is(50)=1.96 MPa Is(50)=0.41 MPa Is(50)=1.14 MPa Is(50)=0.66 MPa Is(50)=1.11 MPa	o x x o x o x o	
41								SW				Is(50)=3.63 MPa Is(50)=5.32 MPa Is(50)=3.93 MPa Is(50)=1.66 MPa Is(50)=1.85 MPa Is(50)=2.80 MPa Is(50)=0.84 MPa Is(50)=0.25 MPa Is(50)=1.03 MPa Is(50)=3.09 MPa	x o o x x o o x x o	
42			100 (94)											
	-44.78											UCS=33MPa MC=3.88% WD=2500N/m^2		
43					**INTERBEDDED SANDSTONE & MUDSTONE. SANDSTONE DOMINANT** SW : Pale grey to dark grey, fine grained, thinly laminated and interbedded, medium to high strength. Defects : Generally rare. Occasional drilling induced lamination partings <10°(1/m)			SW				Is(50)=0.24 MPa Is(50)=1.08 MPa **Pressuremeter Test 5 @ 42.9m** Is(50)=0.88 MPa Is(50)=0.39 MPa Is(50)=0.36 MPa Is(50)=1.05 MPa	x o o x x o	
	-45.68													
44					**SANDSTONE FINE TO MEDIUM GRAINED, LAMINATED TO MASSIVE SEDIMENTARY ROCK** SW : Grey to white grey, laminated to massive, medium to mainly high strength. Defects : Generally rare. Occasional drilling induced lamination partings <10° (1/2m). Occasional coal seams <40mm.			SW				Is(50)=0.87 MPa Is(50)=0.45 MPa **Pressuremeter Test 4 @44.2m** Is(50)=0.56 MPa Is(50)=0.91 MPa UCS=40MPa MC=3.50% WD=2510N/m^2 Is(50)=0.31 MPa Is(50)=0.57 MPa Is(50)=0.15 MPa Is(50)=1.34 MPa	o x x o x o x o	
45	-47.18		100 (98)											

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DEPTH (m)	R.L (m)	MATERIAL DESCRIPTION	USC	WEATHERING	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES / TESTS
45	-47.18	**SANDSTONE** SW :(As above)		SW		Is(50)=1.47 MPa Is(50)=4.47 MPa Is(50)=2.42 MPa Is(50)=3.46 MPa	x o x o
46	-48.45	**MUDSTONE** **FINE GRAINED THINLY LAMINATED SEDIMENTARY ROCK** SW: Dark grey to black, fine grained, thinly laminated, medium to mainly high strength with some very high strength areas. Defects : Generally rare. Occasional drilling induced lamination partings <10° (1/1.5m) - Joints @ 60°-70° (1/1.5m)		SW		Is(50)=0.88 MPa Is(50)=1.89 MPa Is(50)=2.76 MPa Is(50)=2.69 MPa **Pressuremeter Test 3 @ 46.5m** UCS=51MPa MC=2.87% WD=2500N/m² Is(50)=0.42 MPa Is(50)=1.84 MPa Is(50)=3.37 MPa Is(50)=0.54 MPa Is(50)=0.73 MPa Is(50)=3.31 MPa	x o x o x o o x x o
47	-49.72	**INTERBEDDED MUDSTONE AND SANDSTONE (SHEARED).** **SANDSTONE DOMINANT** HW -MW : Pale grey to black, fine grained, thinly laminated and interbedded, very low to 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.		HW-MW SW MW		UCS=59MPa MC=2.64% WD=2530N/m² **Pressuremeter Test 2 @ 47.3m** HW -MW rock Is(50)=1.46 MPa Is(50)=3.83 MPa Is(50)=3.62 MPa Is(50)=0.85 MPa Is(50)=0.07 MPa Is(50)=0.50 MPa	x o x o x o
48		100 (49)					
49	-51.18	**SANDSTONE** **FINE TO MEDIUM GRAINED, LAMINATED TO MASSIVE SEDIMENTARY ROCK** XW-SW : Grey to white grey, fine grained, laminated, mainly medium to high strength becoming low to medium strength with depth. Defects : Generally rare. Occasional drilling induced lamination partings <10° (1/m). A weathered clayey seam <300mm .		SW XW-MW		**Pressuremeter Test 1 @ 49.3m** UCS=34MPa MC=4.24% WD=2530N/m² Stiff clay (?) Is(50)=0.65 MPa Is(50)=0.96 MPa Is(50)=0.44 MPa Is(50)=0.49 MPa Is(50)=0.78 MPa Is(50)=0.83 MPa Is(50)=0.46 MPa Is(50)=1.25 MPa Is(50)=0.54 MPa	o x x o x o x o x
50	-51.98 -52.18	See below.		SW			

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REFERENCE No H9566

PROJECT GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION
LOCATION PIER 7 - CENTRE OF PILE CAP COORDINATES 10209.3 E; 167940.6 N
PROJECT No FG5388 SURFACE R.L. -2.18 DATE STARTED 08/05/05 DATUM SETP
JOB No DATUM AHD DATE COMPLETED 13/05/05 DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
50	-52.18				**INTERBEDDED MUDSTONE AND SANDSTONE (SHEARED). MUDSTONE DOMINANT** SW : Pale grey to black, fine grained, thinly laminated and interbedded, medium to mainly high strength. Faulted, sheared and healed area with occasional calcite veins especialy below 50.80m. Defects : Lamination partings <15 °(3-4//m) Weathered seams <**mm								
			100 (37)				SW						
51											Stiff clay (?)		
	-53.63				**MUDSTONE** **FINE GRAINED THINLY LAMINATED SEDIMENTARY ROCK** HW - SW : Dark grey to black, fine grained, thinly laminated medium to high strength with very low to medium strength brecciated zones. Highly fractured throughout with some clay infilled brecciated zones. Defects : - Fractured and brecciated zones<**mm. - Mutidirectional joints @ ********. - Frequent brecciated zones<**mm.								
52													
							SW				Is(50)=1.15 MPa		o
53											Is(50)=0.85 MPa Is(50)=0.52 MPa		o x
			100 (24)								Is(50)=0.05 MPa		o
54											Is(50)=0.03 MPa Is(50)=0.02 MPa		x o
							HW-MW				Brecciated zone		
55	-57.18												

BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09_04.GDT 31/08/05

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)

Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE

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

BOREHOLE No BH17
SHEET 12 of 14
REFERENCE No H9566

PROJECT GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION
LOCATION PIER 7 - CENTRE OF PILE CAP COORDINATES 10209.3 E; 167940.6 N
PROJECT No FG5388 SURFACE R.L. -2.18 DATE STARTED 08/05/05 DATUM SETP
JOB No DATUM AHD DATE COMPLETED 13/05/05 DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH EH VH H M L VL EL	DEFECT SPACING (mm) 20 60 200 600 2000	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
55	-57.18				**MUDSTONE** HW - SW: (As above).			HW				Brecciated zone		
			100 (42)					HW-MW				Brecciated zone		
56								SW				Is(50)=0.26 MPa Is(50)=0.08 MPa Is(50)=0.44 MPa	x o o	
								HW-MW				Brecciated zone		
57								SW				Is(50)=0.47 MPa Is(50)=0.49 MPa	x o	
												Is(50)=0.46 MPa Is(50)=0.02 MPa	x o	
58												Brecciated zone		
								HW-MW				Brecciated zone		
			100 (38)					SW						
59												Brecciated zone		
								HW-MW						
60	-62.18							SW						

BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09_04.GDT 31/08/05

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.

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ENGINEERING BOREHOLE

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

BOREHOLE No BH17
SHEET 13 of 14
REFERENCE No H9566

PROJECT GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION
LOCATION PIER 7 - CENTRE OF PILE CAP
COORDINATES 10209.3 E; 167940.6 N
PROJECT No FG5388
SURFACE R.L. -2.18
DATE STARTED 08/05/05
DATUM SETP
JOB No
DATUM AHD
DATE COMPLETED 13/05/05
DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% / CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
60	-62.18	1			**MUDSTONE** HW - SW : (As above).		SW							
							HW-MW					Brecciated zone		
												Is(50)=0.41 MPa		x
61			100 (44)									Is(50)=0.60 MPa Is(50)=0.19 MPa		x o
							SW					Is(50)=0.86 MPa		o
62														
												Brecciated zone		
	-65.13											Is(50)=0.27 MPa		x
63					**SILTSTONE** **FINE GRAINED THINLY LAMINATED SEDIMENTARY ROCK** MW - SW : Pale grey to grey, fine grained thinly laminated, medium to high strength.		MW-SW					Is(50)=0.48 MPa		x
	-65.58													
					MUDSTONE **FINE GRAINED THINLY LAMINATED SEDIMENTARY ROCK**							Brecciated zone		
			100 (23)		HW - SW : Dark grey to black, fine grained, thinly laminated medium to high strength with very low to medium strength brecciated zones.		HW							
64					Highly fractured throughout with some clay infilled brecciated zones.		MW-SW					Is(50)=1.56 MPa Is(50)=0.32 MPa		o x
							HW							
												Brecciated zone		
65	-67.18						HW-MW							

BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09_04.GDT 31/08/05

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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ENGINEERING BOREHOLE

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

BOREHOLE No BH17
SHEET 14 of 14
REFERENCE No H9566

PROJECT GATEWAY UPGRADE PROJECT - GATEWAY BRIDGE DUPLICATION FOUNDATION INVESTIGATION
LOCATION PIER 7 - CENTRE OF PILE CAP
COORDINATES 10209.3 E; 167940.6 N
PROJECT No FG5388
SURFACE R.L. -2.18
DATE STARTED 08/05/05
DATUM SETP
JOB No
DATUM AHD
DATE COMPLETED 13/05/05
DRILLER CAIRNS DRILLING

DEPTH (m)	R.L. (m)	CASING / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
65	-67.18													
					MUDSTONE MW - MW : (As above).		HW-MW					Brecciated zone		
	-67.68		100 (23)		**SILTSTONE** MW-SW : Pale grey to grey, fine grained thinly lamianed, medium to high strength.		MW-SW					Is(50)=0.21 MPa		x
	-67.93				**MUDSTONE (SHEARED)** **FINE GRAINED THINLY LAMINATED SEDIMENTARY ROCK** HW -SW : Dark grey to black, mainly very low strength, highly fractured throughout with clay infilled brecciated zones. Exhibits engineering properties of clayey rockfill.		SW					Is(50)=0.88 MPa		x
66												Is(50)=0.51 MPa		x
67							HW					Brecciated zone		
	-70.08		100											
68					Borehole terminated at 67.9m									
69														
70														

BOREHOLE WITH LITHOLOGY MEERA PIER 7 BOREHOLES-GATEWAY BRIDGE - GATEWAY UPGRADE PROJECT.GPJ ENGINEERING BOREHOLE 09_04.GDT 31/08/05

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)

Project: **Gateway Upgrade Project - Gateway Bridge**

Borehole No: **BH 17**

Start Depth: 28.50m
Finish Depth: 67.90m
Project No: FG 5388
H No: 9566

Project: **Gateway Upgrade Project - Gateway Bridge**

Borehole No: **BH 17**

Start Depth: 28.50m
Finish Depth: 67.90m
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Project: **Gateway Upgrade Project - Gateway Bridge**

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Project: **Gateway Upgrade Project - Gateway Bridge**

Borehole No: **BH 17**

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Finish Depth: 67.90m
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Project: **Gateway Upgrade Project - Gateway Bridge**

Borehole No: **BH 17**

Start Depth: 28.50m
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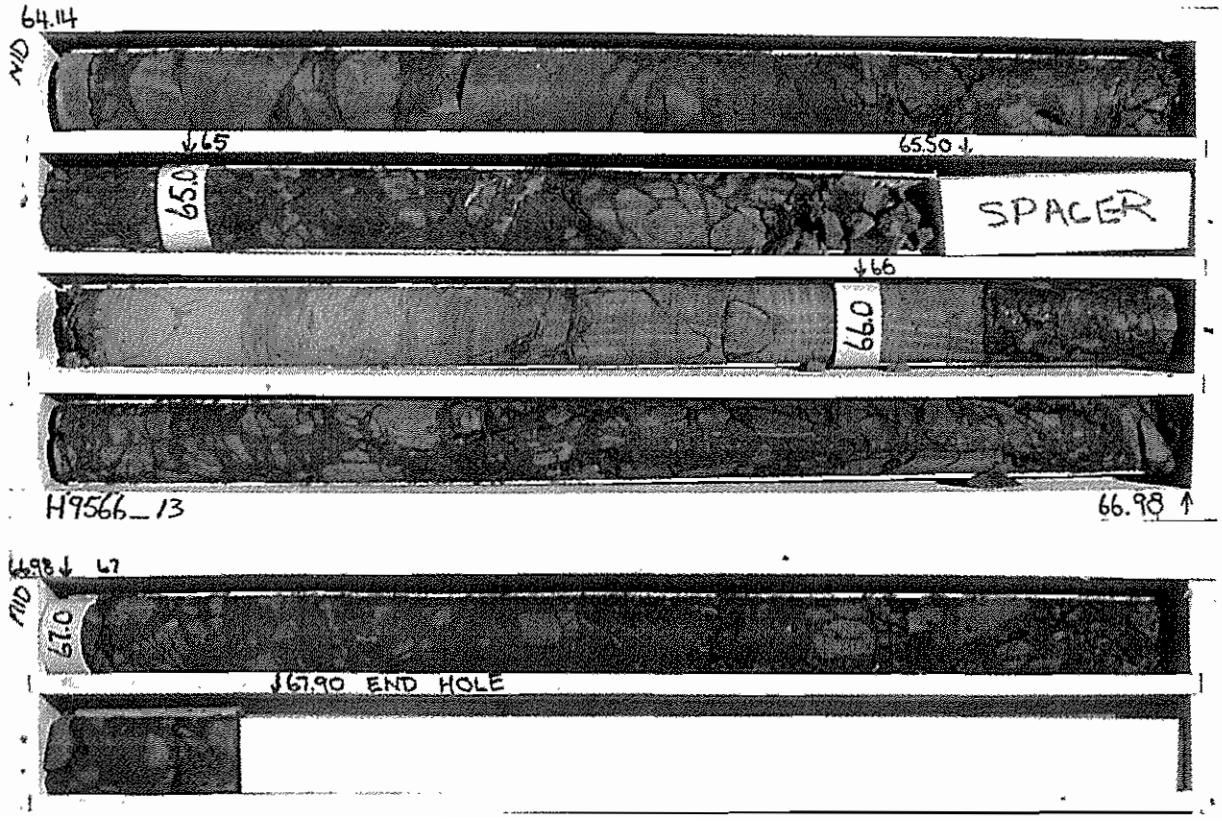
Project No: FG 5388
H No: 9566



ROAD SYSTEM AND ENGINEERING
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Queensland Government
Department of Main Roads

DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

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

BOREHOLE NO	: BH17
SHEET	: 1 of 8
REFERENCE NO	: H9566

PROJECT : GATEWAY BRIDGE FOUNDATION INVESTIGATION – GATEWAY UPGRADE PROJECT

LOCATION : PIER 7 – CENTRE OF PIER

PROJECT NO : FG5388 SURFACE R.L : -2.18 DRILLER : CAIRNS DRILLING PTY LTD

JOB NO : DATUM : AHD / SETP DATE DRILLED : 08/05/05 – 13/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
28.5 - 28.57	BZ/WS	-	-	-	O	W	-
28.60	LP	<16°	P	5	O	-	-
28.64-28.67	BZ/WS	-	-	-	O	W	Parallel to LP
28.80-29.07	BZ/WS	-	-	-	O	W	-
29.12	LP	<20°	P	S	O	-	-
29.21	LP	<20°	P	S	O	-	DI
29.26	LP	<5°	P	S	C		DI
29.30-29.34	BZ/WS	-	-	-	O	W	-
29.40	LP	<10°	P	S	C	-	-
29.45-29.55	BZ/WS	<10°	P	S	O	W	Parallel to LP
29.60	BP/LP	<10°	P	S	T	-	DI
29.62-29.71	BZ/WS	<15°	-	-	O	W	
29.85-30.00	BZ/WS	-	-	-	O	W	-
30.12	LP	<10°	P	S	C	-	DI
30.16-36.40	BZ/WS	-	-	-	O	W	-
30.57	LP	<10°	P	S	C	-	-
31.15-31.20	BZ/WS	-	-	-	O	W	CI
31.22	LP	<10°	P	S	C	-	-
31.27-31.62	BZ/WS	-	-	-	O	W	-
31.68	BP/LP	<10°	P	S	O	-	-
31.76	BP	-	-	-	O	-	Parallel to LP
31.89-31.91	BZ	-	-	-	O	-	Parallel to LP
32.08-32.16	BZ/WS	-	-	-	O	W	Parallel to LP

Abbreviations

ROUGHNESS		WALL ALTERATIONS		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	BP	Bedding Parting	Co	Coal seam
				FP	Foliation Parting	In	Incipient
PLANARITY		**APERTURE**		LP	Lamination Parting	SI	Sand Infill
Pl	Planar	C	Closed	SZ	Sheared Zone	H	Horizontal
St	Stepped	O	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
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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DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

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

BOREHOLE NO	: BH17
SHEET	: 2 of 8
REFERENCE NO	: H9566

PROJECT : GATEWAY BRIDGE FOUNDATION INVESTIGATION – GATEWAY UPGRADE PROJECT

LOCATION : PIER 7 – CENTRE OF PIER

PROJECT NO : FG5388 SURFACE R.L : -2.18 DRILLER : CAIRNS DRILLING PTY LTD

JOB NO : DATUM : AHD / SETP DATE DRILLED : 08/05/05 – 13/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
32.08-32.65	-	-	-	-	-	-	Coreloss
32.65-33.12	BZ/WS	-	-	-	O	W	Parallel to LP
33.25-33.41	BZ/WS	-	-	-	O	W	Parallel to LP
33.51	J	45°	P	S	C	-	-
33.52	LP	<10°	P	S	O	-	-
33.71	LP	<10°	P	S	C	-	-
34.19-34.35	BZ/WS	-	-	-	O	W	Parallel to LP
34.43	LP	<10°	P	S	C		DI
34.51	LP	<10°	P	S	C	-	DI
34.69-34.74	BZ	-	-	-	O	-	Parallel to LP
34.90	LP	<10°	P	S	C		DI
34.94-34.97	BZ/WS	-	-	-	O	W	-
35.10	BP/LP	<10°	P	S	C	-	-
35.30	J	65°	P	S	C		CI
35.41	LP	<10°	P	S	O	-	CI
35.58	LP	<5°	P	-	T		DI
36.20-36.30	BZ/WS	-	-	-	O	W	-
36.35	LP	<15°	P	5	C		DI
36.40-36.45	BZ/WS	-	-	-	O		-
36.57	LP/BP	<5°	P	-	T	W	DI
36.59-36.65	BZ/WS	-	-	-	O	W	PCI
36.65-36.72							Coreloss
36.72-37.98	BZ/WS	-	-	-	O	W	PCI

Abbreviations

ROUGHNESS		WALL ALTERATIONS		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	BP	Bedding Parting	Co	Coal seam
				FP	Foliation Parting	In	Incipient
PLANARITY		**APERTURE**		LP	Lamination Parting	SI	Sand Infill
Pl	Planar	C	Closed	SZ	Sheared Zone	H	Horizontal
St	Stepped	O	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
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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DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

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

BOREHOLE NO	: BH17
SHEET	: 3 of 8
REFERENCE NO	: H9566

PROJECT : GATEWAY BRIDGE FOUNDATION INVESTIGATION – GATEWAY UPGRADE PROJECT

LOCATION : PIER 7 – CENTRE OF PIER

PROJECT NO : FG5388 SURFACE R.L : -2.18 DRILLER : CAIRNS DRILLING PTY LTD

JOB NO : DATUM : AHD / SETP DATE DRILLED : 08/05/05 – 13/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
37.07	LP	<15°	St	S	O	-	-
37.45	J	60°-70°	Un	R	C	-	PCI
38.08	LP/BP	<15°	P	S	C	-	DI
38.25-38.29	BZ	-	-	-	C		DI
38.35	J	60°	St	-	T	-	Cv
38.45	LP/BP	15°	P	S	C		DI
38.51	LP	15°	P	S	C		DI
38.67-38.73	WS	-	-	-	O	W	-
39.05	LP	<10°	Ir	-	O	-	CI
40.31	LP/BP	<5°	P	S	T	-	DI
40.55	LP	15°	Un	R	C	-	DI
40.53	BP/LP	<15°	W	S	C	-	DI, Co
40.75	LP	<10°	P	S	C	-	DI
40.79	LP	<10°	P	S	C	-	DI
40.87	LP	<10°	P	S	C		DI
40.92	LP	20°	Ir	R	C		DI
40.96	LP	<5°	P	S	C		DI
41.90	LP/BP	<15°	P	R	C	-	DI
42.06	LP	35°	P	R	C	-	CI
42.19	LP	25°	Un	R	C	-	DI
42.29	LP	<10°	Ir	R	C	-	DI
42.45	LP	<5°	P	R	T	-	DI

Abbreviations

ROUGHNESS		WALL ALTERATIONS		TYPE		OTHER	
R	Rough	FeSt	Iron Stained	J	Joint	P	Partly
S	Smooth	W	Weathered	B	Bedding	CL	Carbonaceous lamination
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam
				FP	Foliation Parting	In	Incipient
PLANARITY		**APERTURE**		LP	Lamination Parting	SI	Sand Infill
Pl	Planar	C	Closed	SZ	Sheared Zone	H	Horizontal
St	Stepped	O	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
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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DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

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

BOREHOLE NO	: BH17
SHEET	: 4 of 8
REFERENCE NO	: H9566

PROJECT : GATEWAY BRIDGE FOUNDATION INVESTIGATION – GATEWAY UPGRADE PROJECT

LOCATION : PIER 7 – CENTRE OF PIER

PROJECT NO : FG5388 SURFACE R.L : -2.18 DRILLER : CAIRNS DRILLING PTY LTD

JOB NO : DATUM : AHD / SETP DATE DRILLED : 08/05/05 – 13/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
42.55	J	<5°	Un	R	T	-	DI
42.68	LP/BP	10°	P	S	T	-	DI
42.94	LP/BP	5°	P	S	T	-	DI
43.33	LP/BP	5°	P	S	C	-	DI
43.43	LP/BP	5°	P	S	C	-	Co
43.83	LP	15°	P	R	C	-	DI
43.97	LP	<5°	P	R	C	-	DI
44.32	LP	<10°	P	R	J	-	DI
44.60	LP	<10°	P	R	C	-	DI
45.35-45.39	BZ	-	-	-	O	-	Co
46.0	LP	<15°	P	R	C	-	DI
46.27	BP	<10°	PP	S	T	-	DI
46.50	LP	15°	P	S	C	-	DI
46.90	J	75°	P	S	C	-	DI
47.22	LP	10°	P	S	C	-	DI
47.30	LP	10°	P	S	C	-	DI
47.36	LP	15°	P	S	C	-	CI
47.54-48.10	SZ/BrZ	-	-	-	T		CI
48.20-49.00	SZ/HFZ	-	-	-	T		CI healed
52.45-52.55	BZ	10°	-	-	C	-	Parallel to LP
52.60	LP	15°	P	S	O	-	DI
52.61	J	45°	P	S	O	-	-
52.71	LP	15°	P	S	O	-	-

Abbreviations

ROUGHNESS		WALL ALTERATIONS		TYPE		OTHER	
R	Rough	FeSt	Iron Stained	J	Joint	P	Partly
S	Smooth	W	Weathered	B	Bedding	CL	Carbonaceous lamination
SL	Slickensided	SM	Secondary Mineralisation	BP	Bedding Parting	Co	Coal seam
				BrZ	Brecciated Zone	In	Incipient
PLANARITY		APERTURE		LP	Lamination Parting	SI	Sand Infill
Pl	Planar	C	Closed	SZ	Sheared Zone	H	Horizontal
St	Stepped	O	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
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

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DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

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

BOREHOLE NO	: BH17
SHEET	: 5 of 8
REFERENCE NO	: H9566

PROJECT : GATEWAY BRIDGE FOUNDATION INVESTIGATION – GATEWAY UPGRADE PROJECT

LOCATION : PIER 7 – CENTRE OF PIER

PROJECT NO : FG5388 SURFACE R.L : -2.18 DRILLER : CAIRNS DRILLING PTY LTD

JOB NO : DATUM : AHD / SETP DATE DRILLED : 08/05/05 – 13/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
52.75	J	70°	Un	S	T	-	-
52.80-52.87	WS	-	-	-	-	W	-
52.90	LP	15°	P	S	C	-	CI
52.98	LP	15-30°	Cn	-	C	-	CI
53.48-53.52	BZ	-	-	-	O	-	
53.55	J	60°	P	S	C	-	
53.87	LP	25°	P	S	C		DI
53.91-53.94	WS	10-20°	Un	-	O	W	CI
54.04-54.28	BZ	-	-	-	C	-	CI
54.38-54.50	BZ/WS	-	-	-	C	W	CI
54.78	LP	20°	P	S	C	-	D
54.88-55.88	BrZ	MDJ	-	-	C	W	CI
56.05	J	55°	P	S	C	-	CI
56.05	J	60°	P	S	C	-	CI
56.20-56.30	BrZ	MDJ	-	-	C	-	-
56.42	LP	30°	Un	S	C	-	DI
56.80-57.00	BrZ	-	-	-	C	-	CI
57.10-57.12	BrZ	-	-	S	C	-	CI
57.15	J	80°	P	-	C	-	-
57.20-57.23	BrZ	-	-	-	C	-	CI
57.25	J	70°	P	-	T	-	Cv
57.48	LP	<10°	P	-	T	-	Cv, DI
57.78	LP	30°	P-Ir	S	C	-	-

Abbreviations

ROUGHNESS		WALL ALTERATIONS		TYPE		OTHER	
R	Rough	FeSt	Iron Stained	J	Joint	P	Partly
S	Smooth	W	Weathered	MDJ	Multidirectional Joints	CL	Carbonaceous lamination
SL	Slickensided	SM	Secondary Mineralisation	BrZ	Brecciated Zones	Co	Coal seam
				FP	Foliation Parting	Cv	Calcite vein
PLANARITY		APERTURE		LP	Lamination Parting	SI	Sand Infill
Pl	Planar	C	Closed	SZ	Sheared Zone	H	Horizontal
St	Stepped	O	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
Ir	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam
				Fr	Fracture	DI	Drilling Induced

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ROAD SYSTEM AND ENGINEERING
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DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

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

BOREHOLE NO	: BH17
SHEET	: 6 of 8
REFERENCE NO	: H9566

PROJECT : GATEWAY BRIDGE FOUNDATION INVESTIGATION – GATEWAY UPGRADE PROJECT

LOCATION : PIER 7 – CENTRE OF PIER

PROJECT NO : FG5388 SURFACE R.L : -2.18 DRILLER : CAIRNS DRILLING PTY LTD

JOB NO : DATUM : AHD / SETP DATE DRILLED : 08/05/05 – 13/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
57.85	LP/BP	35°	Ir	S	T	-	Cv, DI
58.05-58.65	BrZ	MDJ	-	-	C	-	CI
58.74	J	20-35°	Un	S	C	-	CI
58.92-59.20	BrZ	MDJ	-	-	-	-	CI
59.78-60.40	J	70-90°	Un	-	C	-	CI
60.15-60.32	SZ	-	-	-	-	-	-
60.44-60.65	BZ	MDJ	P	S	C	-	CI
60.90-60.95	BZ	70°	-	-	C	-	CI
61.10-61.18	BZ	MDJ	-	-	C?	-	CI
61.18-61.33	BZ	-	-	-	-	-	DI
61.45	J	65°	P	S	T	-	DI
61.55	J	45°	P	S	T	-	DI
61.60	J	60°	P	S	T	-	DI
61.62	J	70°	P	S	C	-	-
61.70-61.74	BZ/WS	-	-	-	O	W	CI
61.75	J	40°	P	S	T	-	DI
62.07	LP	25°	P	S	T	-	DI
62.18	J	45°	St	S	O	-	-
62.30	J	60°	P	S	O	-	-
62.40	LP	25°	P	S	T	-	DI
62.40	J	40°	P	S	T	-	DI
62.45	J	50°	P	S	T	-	-

Abbreviations

ROUGHNESS		WALL ALTERATIONS		TYPE		OTHER	
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S	Smooth	W	Weathered	MDJ	Multidirectional Joints	CL	Carbonaceous lamination
SL	Slickensided	SM	Secondary Mineralisation	BrZ	Brecciated Zones	Co	Coal seam
				FP	Foliation Parting	Cv	Calcite vein
PLANARITY		**APERTURE**		LP	Lamination Parting	SI	Sand Infill
Pl	Planar	C	Closed	SZ	Sheared Zone	H	Horizontal
St	Stepped	O	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
Ir	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam
				Fr	Fracture	DI	Drilling Induced

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DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

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BOREHOLE NO	: BH17
SHEET	: 7 of 8
REFERENCE NO	: H9566

PROJECT : GATEWAY BRIDGE FOUNDATION INVESTIGATION – GATEWAY UPGRADE PROJECT

LOCATION : PIER 7 – CENTRE OF PIER

PROJECT NO : FG5388 SURFACE R.L : -2.18 DRILLER : CAIRNS DRILLING PTY LTD

JOB NO : DATUM : AHD / SETP DATE DRILLED : 08/05/05 – 13/05/05

DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
62.56-62.62	FZ	MDJ	-	-	T	-	CI
62.65	J	80°	P	S	T	-	DI
62.65-62.98	BrZ	-	-	-	C	W	CI
63.15	J	75°	P	-	T	-	-
63.18-63.21	-	-	-	-	T	W	CS
63.21-63.40	BrZ	-	-	-	T	-	CI, Healed
63.40-63.71	BrZ	-	-	-	O	-	CI
63.75	J	75°	P	S	C	-	CI
63.84-64.10	BZ	-	-	-	O	-	CI
64.12	J	60°	P	S	T	-	DI
64.16	LP	<10°	P	S	C	-	DI
64.20	LP	<15°	Un	-	C	-	CI
64.22	LP	15°	P	S	-	-	CI
64.30	J	40°	P	S	C	-	CI
64.30	LP	35°	Un	-	C	-	CI
64.33	LP	15°	Ir	-	C	-	PCI
64.37	LP	20°	P	-	C	-	CI
64.42	LP	15°	P	S	C	-	-
64.50-64.65	SZ	65°	P	-	C-T	-	CI, Healed
64.65-65.25	HFZ	MDJ	-	-	O-C	-	CI
65.55	J	60°	P	S	T	-	
65.60	LP	<5°	P	-	T	-	

Abbreviations

ROUGHNESS		WALL ALTERATIONS		TYPE		OTHER	
R	Rough	FeSt	Iron Stained	J	Joint	P	Partly
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SL	Slickensided	SM	Secondary Mineralisation	BrZ	Brecciated Zones	Co	Coal seam
				FP	Foliation Parting	In	Incipient
PLANARITY		APERTURE		LP	Lamination Parting	SI	Sand Infill
Pl	Planar	C	Closed	SZ	Sheared Zone	H	Horizontal
St	Stepped	O	Open	CZ	Crushed Zone	V	Vertical
Un	Undulating	F	Filled	WS	Weathered Seam	Cl	Clay Infill
Cu	Curved	T	Tight	BZ	Broken Zone	Cn	Clean
Ir	Irregular			HFZ	Highly Fractured Zone	CS	Clay Seam
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BOREHOLE NO	: BH17
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DEPTH	DEFECT TYPE	DIP	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
65.75	J	60°	P	S	T	-	CI
65.78	J	60°	P	S	T	-	Cv
65.80	LP	10°	P	S	T	-	DI
65.90	LP	15°	P	S	C	-	-
66.07-67.90	BrZ	MDJ	-	-	C	-	CI

Abbreviations

ROUGHNESS		WALL ALTERATIONS		TYPE		OTHER	
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