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Retrieved from the Queensland Geotechnical Database <http://qgd.org.au/>



Easting: 503249 Northing: 6960895 RL: -9.05 m
Logger: CS/DT Operator: SO Machine: Scout 2

Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	FR	NMLC									
				0.00		SAND (SP) Loose, fine to medium grained.						
				1.0								
				2.0								
				3.0								
				4.0								
				5.0								
				6.0								
				7.0								
				7.70								
				8.0		Sandy GRAVEL (GP) Dense, fine to coarse grained, grey brown and red.						
				9.0								
				10.0								

SOIL SURVEYS 00:LIBRARY 2012:05:G.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:32 8.30.002 Developed by Dajgei

Comments:
1) Drilled from floating barge - all depths measured from river bed level. 2) Note: the coring method used was NQ3 not NMLC. 3) Borehole grouted on completion.

Defects - 1.54m : F,60° P,R,O,C

Depth (m)	Type	Dip (Deg)	Planarity	Roughness	Aperture	Width
	B - Bedding		C - Curvilinear	L - Slickensides	C - Closed	C - Clay
	C - Clay seam		D - Discontinuous	P - Polished	F - Filled	F - Iron Oxide
	F - Foliation		P - Planar	R - Rough	N - Clean	K - Kaolinite
	H - Schistosity		S - Subplanar	S - Smooth	O - Open	L - Limonite
	J - Joint		T - Stepped	V - Very rough	S - Stain	Q - Quartz
	L - Cleavage		U - Undulating			S - Secondary mineral
	R - Fracture					U - Unidentified mineral
	S - Shear zone					W - Weathered rock
	T - Contact					X - Carbonaceous
	V - Vein					Z - Clean
	Z - Decomposed Zone					
	DI - Drilling induced break					

Weathering Grades

RS - Residual Soil
XW - Extremely weathered
DW - Distinctly weathered
SW - Slightly weathered
FR - Fresh

Rock Strength

VW - Very weak
W - Weak
MS - Medium strong
S - Strong
VS - Very strong
ES - Extremely strong

Samples

U50
SPT
Disturbed Sample

Approved: _____
Date: _____



Easting: 503249 Northing: 6960895 RL: -9.05 m
Logger: CS/DT Operator: SO Machine: Scout 2

Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	FR	NMLC									
				11.0		Sandy GRAVEL (GC) Dense, fine to coarse size, grey brown and red black.						
				12.0		12.00	Sandy GRAVEL (GP) Loose, fine to coarse grained, grey brown black and red.					
				13.0								
				14.0								
				15.0								
				16.0								
				16.0	16.20	Qz Q	QUARTZITE					
				17.0		Sandy GRAVEL (GP) Dense, fine to coarse size, grey and brown, fine to coarse grained sand.						
				18.0								
				19.0								
				19.50								
				20.0		CONGLOMERATE (DW) Weak, light grey and grey.						

SOIL SURVEYS 00: LIBRARY 2012:05:G.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:32 8.30.002 Developed by Datigel

Comments:
1) Drilled from floating barge - all depths measured from river bed level. 2) Note: the coring method used was NQ3 not NMLC. 3) Borehole grouted on completion.

Defects - 1.54m : F,60° P,R,O,C

Depth (m)	Type	Dip (Deg)	Planarity	Roughness	Aperture	Width
	B - Bedding		C - Curvilinear	L - Slickensides	C - Closed	C - Clay
	C - Clay seam		D - Discontinuous	P - Polished	F - Filled	F - Iron Oxide
	F - Foliation		P - Planar	R - Rough	N - Clean	K - Kaolinite
	H - Schistosity		S - Subplanar	S - Smooth	O - Open	L - Limonite
	J - Joint		T - Stepped	V - Very rough	S - Stain	Q - Quartz
	L - Cleavage		U - Undulating			S - Secondary mineral
	R - Fracture					U - Unidentified mineral
	S - Shear zone					W - Weathered rock
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	V - Vein					Z - Clean
	Z - Decomposed Zone					
	DI - Drilling induced break					

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SPT

Disturbed Sample

Approved: _____
Date: _____



Easting: 503249 Northing: 6960895 RL: -9.05 m
Logger: CS/DT Operator: SO Machine: Scout 2

Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	FR	NM/LC									
				20.60		CONGLOMERATE (DW) Weak, light grey and grey. (continued)						
				20.82		Sandy CONGLOMERATE, coarse grained, pale grey white speckled dark grey, granular, medium bedded, very closely spaced fractures. Clasts are fine size gravel, sub-rounded of phyllite, sandstone and quartz. Clast supported.	SW			88	0	20.68 m; J, 65°, C, R, O, Z
				21.0						109	97	21.08 m; DI, 1°, P, R, O, Z 21.28 m; Is50 = 1.59 MPa 21.22 m; J, 30°, P, R, O, Z 21.38 m; DI, 5°, U, R, O, Z
				22.0		CONGLOMERATE, coarse grained, pale grey white speckled dark grey, granular, very thickly bedded, closely to widely spaced fractures. Clasts are medium size gravel, sub-rounded of siltstone, phyllite, sandstone and quartz. Clast supported with fine sandstone lenses from 23.25m to 23.29m.	SW - FR			100	100	21.66 m; DI, 5°, U, R, O, Z
				23.0								22.435m; Is50 = 2.82 MPa 22.73 m; DI, 20°, T, R, O, Z
				24.0		CONGLOMERATE, coarse grained, pale grey white speckled dark grey, granular, very thickly bedded, moderately widely spaced fractures. Clasts are fine size gravel, sub-rounded of siltstone, phyllite, sandstone and quartz. Clast supported, with medium size gravel lenses from 25.05m to 25.30m.						23.13 m; J, 10°, P, R, O, Z 23.26 m; Is50 = 0.77 MPa 23.27 m; B, 15°, P, S, O, Z
				24.61								24.35m; Is50 = 0.67 MPa 24.41 m; DI, 10°, S, R, O, Z
				25.0		CONGLOMERATE, coarse grained, pale grey white speckled dark grey, granular, very thickly bedded, widely spaced fractures. Clasts are medium size gravel, sub-rounded of siltstone, phyllite, sandstone and quartz. Clast supported.	FR					25.19 m; J, 13°, S, R, O, Z 25.35m; Is50 = 1.57 MPa
				25.80								99
				26.0		CONGLOMERATE, coarse grained, pale grey white speckled dark grey, granular, very thickly bedded, closely spaced fractures. Clasts are coarse size gravel, sub-rounded of siltstone, phyllite, sandstone and quartz. Clast supported.						26.90 m; DI, 15°, P, R, O, Z 27.10 m; J, 50°, S, R, O, Z 27.34m; Is50 = 2.75 MPa 27.48m; Is50 = 1.92 MPa 27.41 m; DI, 45°, C, R, O, Z
				26.75								100
				27.0		SANDSTONE, medium grained, pale grey, granular, medium bedded, moderately widely spaced fractures, with trace medium size gravel clasts.						28.47 m; DI, 5°, S, R, O, Z
				27.77								29.14 m; DI, 7°, U, R, O, Z 29.48 m; J, 10°, P, R, O, Z 29.68m; Is50 = 0.57 MPa
				28.0		CONGLOMERATE, coarse grained, pale grey white speckled dark grey, granular, very thickly bedded, moderately widely spaced fractures. Clasts are medium size gravel, sub-rounded of siltstone, phyllite, sandstone and quartz. Clast supported.						29.86 m; DI, 7°, U, R, O, Z
				29.20								

Comments:
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Water First Noted Water Steady Level

Defects - 1.54m : F,60°,P,R,O,C

Depth (m)	Type	Dip (Deg)	Polarity	Roughness	Appearance	Notes
	B - Bedding	C - Curvilinear	L - Slickensides	C - Closed	Cl - Clay	
	C - Clay seam	D - Discontinuous	P - Polished	F - Filled	F - Iron Oxide	
	F - Foliation	P - Planar	R - Rough	N - Clean	K - Calcite	
	H - Schistosity	S - Subplanar	S - Smooth	O - Open	L - Limonite	
	J - Joint	T - Stepped	V - Very rough	S - Stain	Q - Quartz	
	L - Cleavage	R - Fracture	S - Secondary mineral	U - Unidentified mineral	W - Weathered rock	
	R - Fracture	S - Shear zone	X - Carbonaceous	Z - Clean		
	S - Shear zone	T - Contact				
	T - Contact	V - Vein				
	V - Vein	Z - Decomposed Zone				
	Z - Decomposed Zone	DI - Drilling induced break				

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
DW - Distinctly weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
VW - Very weak
W - Weak
MS - Medium strong
S - Strong
VS - Very strong
ES - Extremely strong

Samples
U50
SPT
Disturbed Sample

Approved: _____
Date: _____

SOIL SURVEYS 00: LIBRARY 2012:05:G.L.B. Log, SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:32 8.30.002 Developed by Datigel



Easting: 503249 Northing: 6960895 RL: -9.05 m
Logger: CS/DT Operator: SO Machine: Scout 2

Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks	
TC	WB	FR	NMLC										
				31.0		CONGLOMERATE, coarse grained, pale grey speckled dark grey, granular, very thickly bedded, moderately widely spaced fractures. Clasts are medium to coarse size gravel, sub-rounded of siltstone, sandstone and quartz. Clast supported, fine gravel lenses from 30.5m to 30.65m. (continued)	FR			100	91	30.08 m; J, 15°, S, R, O, Z 30.15 m; DI, 45°, T, V, O, Z 30.23 m; J, 60°, C, R, O, Z 30.36 m; DI, 15°, T, R, O, Z 30.46 m; J, 30°, P, R, O, Z 30.84 m; DI, 15°, P, R, O, Z 30.86 m; J, 30°, P, R, O, C 30.94 m; J, 25°, T, V, O, Z 31.12 m; DI, 10°, S, V, O, Z	
				32.0		CONGLOMERATE, coarse grained, pale grey speckled dark grey, granular, very thickly bedded, moderately widely spaced fractures. Clasts are coarse size gravel, sub-rounded of siltstone, sandstone and quartz. Clast supported with some fine size gravel from 32.1m to 32.64m.				100	86	31.49m, Is50 = 0.43 MPa 31.56 m; J, 15°, D, R, O, Z 31.80 m; J, 22°, C, R, O, Z 32.03 m; J, 12°, S, S, O, Z 32.33 m; B, 25°, P, R, C, Z 32.44 m; DI, 6°, S, R, O, Z 32.58m, Is50 = 0.51 MPa 32.64 m; J, 14°, U, R, O, Z 32.66 m; T, 50°, P, R, C, Z	
				33.0		SANDSTONE, medium grained, pale grey, granular, medium bedded, moderately widely spaced fractures, some siltstone laminae, coal stringers at 32.85m.							
				34.0		Interlaminated SILTSTONE and SANDSTONE, fine grained, alternating pale grey and dark grey, granular, thinly laminated, moderately widely spaced fractures, trace of coal stringers.							33.42 m; J, 10°, P, R, O, Z 33.85 m; V, 5°, P, R, C, Coal 33.86 m; T, 6°, U, R, O, Z 34.21 m; B, 3°, P, S, O, Z
				35.0		Interlaminated MUDSTONE and SILTSTONE, fine grained, alternating pale grey and darker grey, thinly laminated, very closely spaced to widely spaced fractures. Some fine sandstone laminae present and trace of thin calcite veins.				100	100		34.49 m; B, 4°, P, S, O, Z 34.58 m; J, 60°, P, S, O, K 34.87 m; B, 3°, P, S, O, Z
				36.0									35.32 m; B, 4°, P, S, O, Z 35.67 m; B, 5°, P, S, O, Z 36.32m, Is50 = 0.79 MPa 36.25 m; J, 10°, T, R, O, Z
				37.0									36.76 m; B, 6°, P, S, O, Z 36.92 m; B, 6°, P, S, O, Z 37.55 m; B, 3°, P, S, O, Z 37.7m, Is50 = 0.99 MPa 37.83 m; DI, 0°, S, R, O, Z 38.06 m; B, 5°, P, S, O, Z
				38.0									38.7m, Is50 = 1.93 MPa 38.63 m; DI, 10°, P, R, O, Z
				39.0									39.00 m; DI, 50°, C, R, O, Z 39.14 m; J, 45°, P, S, O, Z 39.22 m; V, 30°, P, S, C, Z 39.29 m; J, 20°, S, P, O, Z 39.31 m; V, 70°, P, S, C, K 39.38 m; B, 32°, P, S, O, Z 39.51 m; J, 15°, P, S, O, Z 39.56 m; J, 90°, C, R, O, Z 39.66 m; B, 20°, P, P, O, Z 39.84 m; B, 15°, P, P, O, Z
				40.0						99	43		

Comments:
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Defects - 1.54m : F, 60°, P, R, O, C

Depth (m)	Type	Dip (Deg)	Polarity	Roughness	Aperture	Width
	B - Bedding		C - Curvilinear	L - Slickensides	C - Closed	C - Clay
	C - Clay seam		D - Discontinuous	P - Polished	F - Filled	F - Iron Oxide
	F - Foliation		P - Planar	R - Rough	N - Clean	K - Calcite
	H - Schistosity		S - Subplanar	S - Smooth	O - Open	L - Limonite
	J - Joint		T - Stepped	V - Very rough	S - Stain	Q - Quartz
	L - Cleavage		R - Fracture			S - Secondary mineral
	R - Fracture		S - Shear zone			U - Unidentified mineral
	T - Contact		V - Vein			W - Weathered rock
	Z - Decomposed Zone		DI - Drilling induced break			X - Carbonaceous
						Z - Clean

Weathering Grades

RS - Residual Soil
XW - Extremely weathered
DW - Distinctly weathered
SW - Slightly weathered

FR - Fresh

Rock Strength

VW - Very weak
W - Weak
MS - Medium strong
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VS - Very strong
ES - Extremely strong

Samples

U50

SPT

Disturbed Sample

Approved: _____
Date: _____

SOIL SURVEYS 00: LIBRARY 2012:05:GLB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:32 8.30.002 Developed by Datigel



Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	FR	NMLC									
				41.0		Interlaminated MUDSTONE and SILTSTONE, fine grained, alternating pale grey and darker grey, thinly laminated, very closely spaced to widely spaced fractures. Some fine sandstone laminae present and trace of thin calcite veins. (continued)	FR			99	43	40.02 m; J, 15°, C, R, O, Z 40.2m, Is50 = 1.2 MPa 40.13 m; B, 5°, P, S, O, Z 40.30 m; B, 5°, P, S, O, Z 40.35 m; V, 70°, C, S, C, K 40.65 m; B, 5°, P, S, O, Z 40.70 m; J, 80°, D, P, O, Z 40.72 m; B, 5°, P, S, O, Z 40.88 m; B, 6°, P, S, O, Z 41.23 m; B, 6°, P, S, O, Z 41.31 m; J, 15°, P, S, O, Z 41.40 m; V, 80°, S, R, O, K 41.45 m; J, 70°, S, R, O, Z 41.52 m; B, 10°, U, S, O, Z
				41.64		BOREHOLE BH 309 TERMINATED AT 41.64 m						
				42.0								
				43.0								
				44.0								
				45.0								
				46.0								
				47.0								
				48.0								
				49.0								
				50.0								

Comments:
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Defects - 1.54m : F,60°,P,R,O,C

Depth (m)	Type	Dip (Deg)	Planarity	Roughness	Aperture	Fill
	B - Bedding		C - Curvilinear	L - Slickensides	C - Closed	Cl - Clay
	C - Clay seam		D - Discontinuous	P - Polished	F - Filled	Fe - Iron Oxide
	F - Foliation		P - Planar	R - Rough	N - Clean	K - Calcite
	H - Schistosity		S - Subplanar	S - Smooth	O - Open	L - Limonite
	J - Joint		T - Stepped	V - Very rough	S - Stain	Q - Quartz
	L - Cleavage		U - Undulating			S - Secondary mineral
	R - Fracture					U - Unidentified mineral
	S - Shear zone					W - Weathered rock
	T - Contact					X - Carbonaceous
	V - Vein					Z - Clean
	Z - Decomposed Zone					
	DI - Drilling induced break					

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SOIL_SURVEYS_00_LIBRARY.GLB Grcfbl DG PHOTO CORE PHOTO 4 PER PAGE 111-12936 NEW.GPJ <<DrawingFile>> 26/04/2012 14:47 8.2.856 Developed by Datgel



	TITLE AECOM Brisbane Cross River Rail Core Photo - BH 309	DRAWN DT	DATE 26/04/2012	
		CHECKED CB	DATE 26/04/2012	
		SCALE Not To Scale		A4
		PROJECT No 110-12936	FIGURE No 1/1	

IN-SITU PACKER PERMEABILITY TEST RESULT

PROJECT: **CRR**
PROJECT No.: **110-12936**

BH No.: **309**
Test No.: **1**
Date: **3/12/2011**

Packer type: Single
Packer pressure: 2000kPa
Gauge pressures measured in: kPa
Tested by: JI

Vertical depth to:
(below river bed)

Top of test section (m):	30.60
Base of test section (m):	35.60
Centre of test section(m):	33.10
Base of casing (m):	29.60
Ground water (m)	TIDAL

Depth of centre of test section (m):	33.10
Length of test section (m):	5.00

Gauge Height above ground level (m):	
Hole Diameter in test section (mm)	75

1st period	Time (mins)	0	5	10	15	Average
Gauge Pressure 100	Flow reading	436.0	436.5	436.5	436.5	Flow (l/min)
	Water Take	0.00	0.50	0.00	0.00	0.033
2nd period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 200	Flow reading	438.5	439.5	439.5	440.0
Water Take		0.00	1.00	0.00	0.50	0.100
3rd period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 400	Flow reading	441.5	441.6	441.8	442.1
Water Take		0.00	0.10	0.20	0.30	0.040
4th period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 200	Flow reading				
Water Take		0.00	0.00	0.00	0.00	0.000
5th period	Time (mins)	0	5	10	15	Average
	Gauge Pressure	Flow reading				
Water Take		0.00	0.00	0.00	0.00	0.000

Period	Flow (q) (l/min)	Gauge Press (kPa)	Gauge Press (m of water)	Friction Loss (m)*		Total Head (m)	Lugeon Value	Perm. (m/s)
				Basic	In extra rods			
1st	0.033	100.00	10.220	0.000	0.000	43.320	0.016	1.99E-09
2nd	0.100	200.00	20.440	0.000	0.000	53.540	0.038	4.84E-09
3rd	0.040	400.00	40.880	0.000	0.000	73.980	0.011	1.40E-09
4th	0.000	200.00	20.440	0.000	0.000	53.540	0.000	0.00E+00
5th	0.000	0.00	0.000	0.000	0.000	33.100	0.000	0.00E+00

*Where friction loss is assumed to be negligible.

N.B. Pressure Conversion: 1 bar = 100 kPa = 14.503 psi

Note - backflow between period 3 & 4 - test ended

IN-SITU PACKER PERMEABILITY TEST RESULT

PROJECT: **CRR**
PROJECT No.: **110-12936**

BH No.: **309**
Test No.: **2**
Date: **3/12/2011**

Packer type: Single
Packer pressure: 2000kPa
Gauge pressures measured in: kPa
Tested by: JI

Vertical depth to:
(below river bed)

Top of test section (m):	24.00
Base of test section (m):	27.00
Centre of test section(m):	25.50
Base of casing (m):	24.00
Ground water (m)	TIDAL

Depth of centre of test section (m):	25.50
Length of test section (m):	3.00

Gauge Height above ground level (m):	
Hole Diameter in test section (mm)	75

1st period	Time (mins)	0	5	10	15	Average
Gauge Pressure 100	Flow reading	442.5	443.0	443.0	443.2	Flow (l/min)
	Water Take	0.00	0.50	0.00	0.20	0.047
2nd period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 200	Flow reading	444.0	444.6	445.0	445.2
Water Take		0.00	0.60	0.40	0.20	0.080
3rd period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 300	Flow reading	446.5	447.0	447.6	448.5
Water Take		0.00	0.50	0.60	0.90	0.133
4th period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 200	Flow reading	448.0	448.2	448.2	448.2
Water Take		0.00	0.20	0.00	0.00	0.013
5th period	Time (mins)	0	5	10	15	Average
	Gauge Pressure	Flow reading	448.0	448.0	448.0	448.0
Water Take		0.00	0.00	0.00	0.00	0.000

Period	Flow (q) (l/min)	Gauge Press (kPa)	Gauge Press (m of water)	Friction Loss (m)*		Total Head (m)	Lugeon Value	Perm. (m/s)
				Basic	In extra rods			
1st	0.047	100.00	10.220	0.000	0.000	35.720	0.044	5.06E-09
2nd	0.080	200.00	20.440	0.000	0.000	45.940	0.059	6.74E-09
3rd	0.133	300.00	30.660	0.000	0.000	56.160	0.081	9.19E-09
4th	0.013	200.00	20.440	0.000	0.000	45.940	0.010	1.12E-09
5th	0.000	0.00	0.000	0.000	0.000	25.500	0.000	0.00E+00

*Where friction loss is assumed to be negligible.

N.B. Pressure Conversion: 1 bar = 100 kPa = 14.503 psi