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



Easting: 501715 Northing: 6956309 RL: 12.24 m
Logger: SO/CB Operator: SO Machine: Scout 2

Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	RR	NMLC									
				0.80	[Cross-hatched]	FILL Clayey SAND (SC) Medium dense, fine to medium grained, brown, low to medium plasticity fines, moist.						
				1.0	[Vertical lines]	NATURAL Sandy CLAY (CH) Stiff to very stiff, high plasticity, brown orange and grey, fine grained sand, moist.						
				1.70	[Vertical lines]							
				2.00	[Diagonal lines]	Clayey SAND (SC) Dense, fine to medium grained, brown, low plasticity fines, moist.						U50 PP=SAND
				2.00	[Vertical lines]	CLAY (CH) Hard, high plasticity, brown grey, moist.						
				3.0	[Vertical lines]							
				5.00	[Vertical lines]							SPT 7, 10, 12 N=22
				5.00	[Diagonal lines]	Clayey SAND (SC) Medium dense, fine to medium grained, grey and orange, moist.						SPT 5, 9, 10 N=19
				6.0	[Diagonal lines]							
				8.0	[Diagonal lines]							SPT 8, 12, 15 N=27
				8.50	[Diagonal lines]							
				9.0	[Diagonal lines]	Clayey SAND (SC) Dense to very dense, fine to medium grained, grey and orange, moist.						SPT 10, 12, 13 N=25
				9.80	[Diagonal lines]							SPT 13, 30/90mm
				10.0	[Diagonal lines]							

Comments:
1) Groundwater not observed. 2) Coring method used was NQ3 from 23.73m not NMLC. 3) Monitoring well installed to 8.5m 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 - Faultion		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					

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 [Bar]

SPT [Bar]

Disturbed Sample [Bar]

Approved: _____
Date: _____

SOIL SURVEYS 00:LIBRARY 2012:05:G.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:33 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									
				10.60		SANDSTONE (XW-DW) Very weak, grey brown and orange, fine to medium grained. (continued)						
				11.0		MUDSTONE, fine grained, dark grey and light brown, cryptocrystalline, thinly laminated, closely spaced fractures, with some sandstone laminae.	DW			100	47	SPT 30/120mm
				11.78		Interlaminated SILTSTONE and SANDSTONE, alternating dark grey and light brown, cryptocrystalline, thinly laminated, closely spaced fractures.	SW					10.60-12.82 m; DI, 5°, P, S, O, Z
				12.0								
				12.82		SANDSTONE, fine to medium grained, light grey, granular, moderately widely spaced fractures, with trace carbonaceous laminae.	FR			100	89	14.14 m; J, 21°, P, R, O, X 14.21 m; DI, 2°, P, R, O, X 14.37 m; J, 10°, T, S, O, X 14.72 m; J, 20°, P, R, O, X 15.08 m; DI, 3°, P, S, O, X 15.17 m; J, 5°, P, R, O, X 15.75 m; J, 75°, S, V, O, Z 15.90 m; DI, 2°, P, R, O, X 16.71 m; DI, 2°, P, R, O, Z 16.82 m; DI, 2°, S, R, O, Z 18.07 m; J, 20°, U, R, O, X 18.42 m; J, 10°, P, R, O, X 19.13 m; DI, 3°, P, R, O, Z 19.22 m; DI, 5°, P, R, O, Z 19.45 m; DI, 5°, P, R, O, Z
				13.0		SANDSTONE, fine to medium grained, light grey, granular, moderately widely to widely spaced fractures, with trace fine to medium size gravel and carbonaceous lenses, coarse sandstone bands from 16.77m to 17.0m and 20.71m to 20.84m, with trace fine sized cobbles from 21.58m.						
				14.0								
				15.0								
				16.0								
				16.14						100	72	
				17.0								
				18.0								
				19.0								
				20.0								

Comments:
1) Groundwater not observed. 2) Coring method used was NQ3 from 23.73m not NMLC. 3) Monitoring well installed to 8.5m on completion.

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	C - Clay
	F - Foliation		D - Discontinuous	P - Polished	F - Filled	F - Iron Oxide
	H - Schistosity		P - Planar	R - Rough	N - Clean	K - Calcite
	J - Joint		S - Subplanar	S - Smooth	O - Open	L - Limonite
	L - Cleavage		T - Stepped	V - Very rough	S - Stain	Q - Quartz
	R - Fracture		U - Undulating			S - Secondary mineral
	S - Shear zone					U - Unidentified mineral
	T - Contact					W - Weathered rock
	V - Vein					X - Carbonaceous
	Z - Decomposed Zone					Z - Clean
	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
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Samples

U50
SPT
Disturbed Sample

Approved: _____
Date: _____

SOIL SURVEYS 00:LIBRARY 2012:05:G.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <-DrawingFiles> 21/05/2012 14:33 8.30.002 Developed by Datigel



Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	RR	NMLC									
				21.0		SANDSTONE, fine to medium grained, light grey, granular, moderately widely to widely spaced fractures, with trace fine to medium size gravel and carbonaceous lenses, coarse sandstone bands from 16.77m to 17.0m and 20.71m to 20.84m, with trace fine sized cobbles from 21.58m. (continued)	FR			100	100	20.33 m; J, 15°, P, R, O, Z
				22.0		SANDSTONE, fine to medium grained, with some coarse grains, light grey, granular, widely spaced fractures, with trace fine to medium size gravel and trace carbonaceous lenses, with a coarse sandstone band from 23.73m to 24.33m, with some coal stringers and closely spaced fractures from 26.23m to 26.81m.				100	100	21.43 m; DI, 5°, P, R, O, Z
				22.00								21.61 m; DI, 20°, U, R, O, Z
				23.0						100	100	25.20 m; J, 2°, P, R, O, X
				24.0								
				25.0						100	95	26.25 m; J, 40°, P, R, O, Coal
				26.0								26.51 m; J, 30°, P, R, O, Coal
				27.0						100	100	26.57 m; J, 5°, S, R, O, Coal
				27.0								26.69 m; J, 5°, S, R, O, Coal
				28.0						100	100	26.75 m; J, 5°, S, R, O, Coal
				28.0								27.82 m; J, 10°, P, R, O, Z
				29.0						100	100	28.21 m; J, 5°, P, R, O, X
				29.0								28.40 m; J, 5°, P, R, O, X
				29.25		SANDSTONE, fine to coarse grained, light grey, granular, widely spaced fractures, with trace fine to medium size gravel and trace carbonaceous lenses.				100	100	28.83 m; J, 10°, S, R, O, Coal
				30.0								29.19 m; J, 5°, P, R, O, X

Comments:
1) Groundwater not observed. 2) Coring method used was NQ3 from 23.73m not NMLC. 3) Monitoring well installed to 8.5m on completion.

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	C - Clay
	C - Clay seam		D - Discontinuous	P - Polished	F - Filled	F - Iron Oxide
	F - Fault		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					

Weathering Grades

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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:GUB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:33 8.30.002 Developed by Dajgei



Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	RR	NMLC									
				30.25		SANDSTONE, fine to medium grained, with some coarse grains, light grey, granular, widely spaced fractures, with 50mm fine to coarse gravel band, trace carbonaceous lenses, trace of cobbles at 33.56m.	FR			100	100	
				31.0								30.88 m; J, 5°, S, R, O, Z
				32.0								31.41 m; J, 12°, P, R, O, Z
				33.0						100	97	32.73 m; J, 12°, S, R, O, X
				34.0								33.32 m; J, 25°, T, S, O, Coal 33.49 m; J, 20°, T, S, O, Coal 33.58 m; DI, 10°, U, R, O, Z
				34.30		CONGLOMERATE, coarse grained, light grey, massively bedded, widely spaced fractures, clasts comprise, sandstone, siltstone and mudstone, clast supported, some sandstone and siltstone bands from 35.27m.						34.42 m; J, 10°, U, V, O, X
				35.0								35.27 m; J, 20°, S, S, O, X 35.42 m; DI, 5°, P, R, O, Z 35.59 m; DI, 5°, P, R, O, Z
				35.61		SILTSTONE, fine grained, dark grey, cryptocrystalline, thinly laminated, moderately widely to closely spaced fractures, with trace coal stringers.	FR			93	70	
				36.0								35.73-36.64 m; DI, 5°, P, S, O, Z
				36.20		CORE LOSS 0.20m (36.20-36.40)						
				36.40		SILTSTONE, fine grained, dark grey, cryptocrystalline, thinly laminated, moderately widely to closely spaced fractures, with trace coal stringers, with some sandstone laminae.	SW - FR					37.20 m; J, 70°, P, S, O, Z
				37.0								
				37.50		Interlaminated SANDSTONE, and SILTSTONE, fine grained, alternating dark grey and light brown, granular, laminated, moderately widely spaced fractures.						
				38.0		SILTSTONE, fine grained, grey with some dark grey bands, thinly laminated, moderately widely spaced fractures.				100	77	37.96-39.00 m; DI, 5°, P, S, O, Z
				39.0								
				39.00		BOREHOLE BH 318 TERMINATED AT 39.00 m						
				40.0								

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	C - Clay
	C - Clay seam		D - Discontinuous	P - Polished	F - Filled	P - 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					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

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Rock Strength

VW - Very weak
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Samples

U50
SPT
Disturbed Sample

Approved: _____
Date: _____

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SOIL_SURVEYS_00.LIBRARY.GLB.Grtctbl.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 318

DRAWN	DT	DATE	26/04/2012
CHECKED	CB	DATE	26/04/2012
SCALE	Not To Scale		A4
PROJECT No	110-12936	FIGURE No	1/2



TITLE

AECOM
Brisbane
Cross River Rail
Core Photo - BH 318

DRAWN	DT	DATE	26/04/2012
CHECKED	CB	DATE	26/04/2012
SCALE	Not To Scale		A4
PROJECT No	110-12936	FIGURE No	2/2

IN-SITU PACKER PERMEABILITY TEST RESULT

PROJECT: CRR
PROJECT No.: 110-12936

BH No.: 318
Test No.: 1
Date: 31/01/2012

Packer type: Double
Packer pressure: 2500kPa
Gauge pressures measured in: kPa
Tested by: CS

Vertical depth to:

Top of test section (m):	28.00
Base of test section (m):	30.50
Centre of test section(m):	29.25
Base of casing (m):	27.00
Ground water (m)	NR

Depth of centre of test section (m)	29.25
Length of test section (m):	2.50

Gauge Height above ground level	0.00
Hole Diameter in test section (mm)	75

1st period	Time (mins)	0	5	10	15	Average
Gauge Pressure 200	Flow reading	1505.5	1505.7	1505.7	1505.7	Flow (l/min)
	Water Take	0.00	0.20	0.00	0.00	0.013
2nd period	Time (mins)	0	5	10	15	Average
	Flow reading	1506.0	1506.0	1506.0	1506.0	Flow (l/min)
Gauge Pressure 250	Water Take	0.00	0.00	0.00	0.00	0.000
	Time (mins)	0	5	10	15	Average
Gauge Pressure 500	Flow reading	1506.3	1506.3	1506.3	1506.3	Flow (l/min)
	Water Take	0.00	0.00	0.00	0.00	0.000
4th period	Time (mins)	0	5	10	15	Average
	Flow reading	1505.5	1505.5	1505.5	1505.5	Flow (l/min)
Gauge Pressure 250	Water Take	0.00	0.00	0.00	0.00	0.000
	Time (mins)	0	5	10	15	Average
Gauge Pressure 150	Flow reading	1504.8	1504.8	1504.7	1504.7	Flow (l/min)
	Water Take	0.00	0.00	-0.10	0.00	-0.007

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	0.013	200.00	20.440	0.000	0.000	49.690	0.011	1.19E-09
2nd	0.000	250.00	25.550	0.000	0.000	54.800	0.000	0.00E+00
3rd	0.000	500.00	51.100	0.000	0.000	80.350	0.000	0.00E+00
4th	0.000	250.00	25.550	0.000	0.000	54.800	0.000	0.00E+00
5th	-0.007	150.00	15.330	0.000	0.000	44.580	-0.006	-6.65E-10

*Where friction loss is assumed to be negligible.

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

IN-SITU PACKER PERMEABILITY TEST RESULT

PROJECT: CRR **BH No.:** 318
PROJECT No.: 110-12936 **Test No.:** 2
Date: 31/01/2012

Packer type: Double
Packer pressure: 2500kPa
Gauge pressures measured in: kPa
Tested by: CS

Vertical depth to:

Top of test section (m):	19.00
Base of test section (m):	21.50
Centre of test section(m):	20.25
Base of casing (m):	18.00
Ground water (m)	NR

Depth of centre of test section (m)	20.25
Length of test section (m):	2.50

Gauge Height above ground level	0.00
Hole Diameter in test section (mm)	75

1st period	Time (mins)	0	5	10	15	Average
Gauge Pressure 200	Flow reading	1505.8	1507.5	1507.8	1507.9	Flow (l/min)
	Water Take	0.00	1.70	0.30	0.10	0.140
2nd period	Time (mins)	0	5	10	15	Average
Gauge Pressure 400	Flow reading	1509.0	1509.0	1509.0	1509.0	Flow (l/min)
	Water Take	0.00	0.00	0.00	0.00	0.000
3rd period	Time (mins)	0	5	10	15	Average
Gauge Pressure 600	Flow reading	1509.0	1509.0	1509.0	1509.0	Flow (l/min)
	Water Take	0.00	0.00	0.00	0.00	0.000
4th period	Time (mins)	0	5	10	15	Average
Gauge Pressure	Flow reading					Flow (l/min)
	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					Flow (l/min)
	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	0.140	200.00	20.440	0.000	0.000	40.690	0.141	1.53E-08
2nd	0.000	400.00	40.880	0.000	0.000	61.130	0.000	0.00E+00
3rd	0.000	600.00	61.320	0.000	0.000	81.570	0.000	0.00E+00
4th	0.000	0.00	0.000	0.000	0.000	20.250	0.000	0.00E+00
5th	0.000	0.00	0.000	0.000	0.000	20.250	0.000	0.00E+00

*Where friction loss is assumed to be negligible.

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Note - Zero flow periods 2 & 3 - test abandoned