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**Location Number: BH 335**

**Project Number: 110-12936**

**Project Name: Cross River Rail**

**Location: Brisbane**

**Client: AECOM**

**Date: 01/02/2012**

Easting: 503296    Northing: 6960871    RL: -10.22 m  
Logger: CS/DT    Operator: SO    Machine: Scout 2

Page: 1 OF 5

Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	FR	NMLC									
				0.0 - 5.40		Silty SAND (SM) Loose, black and brown, with glass and timber fragments.						
				5.40 - 10.0		GRAVEL (GP) Medium dense, medium to coarse size, grey black and yellow.						

SOIL SURVEYS 00:LIBRARY 2012:05:G.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:35 8.30.002 Developed by Dargei

**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: \_\_\_\_\_



Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	FR	NMLC									
				11.0		GRAVEL (GP) Medium dense, medium to coarse size, grey black and yellow. (continued)						
				11.50								
				11.85		TUFF, fine grained, white grey and stained orange, granular, medium bedded, closely spaced fractures.	SW - FR					11.84 m; J, 50°, P, R, O, Z
				12.00		GRAVEL, medium size, dark grey.						12.00-12.48 m; J, 66 - 70°, S, V, O, Z
				12.50		CONGLOMERATE, coarse grained, speckled dark grey and light grey, granular, fragmented. Clasts are fine gravel sized, subrounded, quartz, sandstone and siltstone. Trace of iron staining. Clast supported.						
				13.0		CORE LOSS 1.10m (12.50-13.60) (Sandy SILTSTONE, fine grained, pale grey, granular, thinly laminated, fragmented)				64	15	
				13.60		Sandy SILTSTONE, fine grained, pale grey, granular, thinly laminated, closely spaced fractures.	FR					
				13.94		SANDSTONE, medium grained, pale greenish grey, granular, thinly bedded, closely spaced to moderately widely spaced fractures, some coarse grains.						14.31 m; J, 25°, P, R, O, Z 13.05-15.66 m; B, 0 - 5°, P, R, O, Z 14.55m, Is50 = 1.16 MPa 14.7m, Is50 = 1.09 MPa
				15.0		CONGLOMERATE, coarse grained, speckled dark grey and light grey, granular, medium bedded, closely spaced fractures. Clasts are fine gravel sized, subrounded, quartz, sandstone and siltstone. Trace of iron staining, clast supported.						15.22m, Is50 = 2.26 MPa
				15.36								15.50 m; J, 15°, P, R, O, Z
				15.68		SANDSTONE, medium grained, pale greenish grey, granular, thinly bedded, closely spaced fractures, some coarse grains.						15.73-16.04 m; J, 60 - 80°, S, V, O, Z
				16.0		CONGLOMERATE, coarse grained, speckled dark grey and light grey, granular, medium bedded, extremely closely spaced fractures. Clasts are medium gravel sized, subrounded, quartz, sandstone and siltstone. Supported by a matrix of coarse grained sand.						16.91m, Is50 = 2.26 MPa
				17.0								16.10-18.04 m; DI, 6 - 10°, S, V, O, Z
				17.40		Interbedded SILTSTONE and SANDSTONE, fine grained, pale grey, granular, thinly laminated, close to moderately widely spaced fractures. Trace of coal and calcite.						18.25 m; J, 35°, P, S, O, Z 18.05-18.57 m; DI, 5°, P, S, O, Z
				18.0								
				18.60		CONGLOMERATE, coarse grained, speckled dark grey and light grey, granular, medium bedded, extremely closely spaced fractures. Clasts are medium gravel sized, subrounded, quartz, sandstone and siltstone, some lenses of fine to coarse size gravel.						18.88m, Is50 = 2.02 MPa
				19.0								19.22 m; DI, 2°, U, V, O, Z
				20.0								19.88 m; J, 20°, T, V, O, Z

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 - 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
	S - Shear zone		T - Contact			W - Weathered rock
	T - Contact		V - Vein			X - Carbonaceous
	V - Vein		Z - Decomposed Zone			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  
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:GLB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:35 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		CONGLOMERATE, coarse grained, speckled dark grey and light grey, granular, medium bedded, extremely closely spaced fractures. Clasts are medium gravel sized, subrounded, quartz, sandstone and siltstone, some lenses of fine to coarse size gravel. (continued)	FR			97	90	20.23 m; DI, 5°, U, R, O, Z 20.35m, Is50 = 0.43 MPa 20.41 m; J, 5°, S, V, O, Z
				22.0								21.33 m; DI, 5°, U, R, O, Z 21.57 m; DI, 10°, S, R, O, Z 21.85m, Is50 = 0.92 MPa
				23.0						100	91	22.23 m; J, 40°, T, R, O, Z 22.30 m; J, 10°, S, S, O, Z 22.45 m; J, 12°, T, R, O, Z 22.70 m; DI, 5°, U, R, O, Z
				24.0								23.46 m; DI, 5°, U, V, O, Z 23.8m, Is50 = 1.35 MPa
				24.53		Interbedded SILTSTONE and CONGLOMERATE, fine and coarse grained respectively, alternating pale grey and dark grey, granular, thinly bedded, closely to moderately widely spaced fractures.						24.19 m; J, 15°, T, R, O, Z
				24.70		SANDSTONE, coarse grained, pale grey, granular, thinly bedded, moderately widely spaced fractures.						24.38 m; J, 40°, S, S, O, Z 24.6m, Is50 = 2.01 MPa
				25.0								
				25.60		CONGLOMERATE, coarse grained, speckled dark grey and light grey, granular, medium bedded, extremely closely spaced fractures. Clasts are medium gravel sized, subrounded, quartz, sandstone and siltstone.						25.52 m; J, 10°, U, S, O, Z 25.69 m; DI, 5°, U, R, O, Z
				26.0								25.84 m; J, 5°, P, R, O, Z 25.95 m; J, 32°, P, R, O, Z 26.13m, Is50 = 0.95 MPa
				26.39		CONGLOMERATE, coarse grained, speckled dark grey and light grey, granular, medium bedded, extremely closely spaced fractures. Clasts are coarse gravel sized, subrounded, quartz, sandstone and siltstone. Clast supported.						26.20 m; DI, 10°, U, S, O, Z 26.33 m; DI, 5°, U, R, O, Z
				26.72								
				27.0		CONGLOMERATE, coarse grained, speckled dark grey and light grey, granular, medium bedded, extremely closely spaced fractures. Clasts are fine gravel sized, subrounded, quartz, sandstone and siltstone. Clast supported.						26.71 m; DI, 20°, T, R, O, Z 26.75 m; J, 20°, P, S, O, Z
				27.05								27.21 m; J, 30°, P, S, O, Z
				27.56		Interbedded SILTSTONE and CONGLOMERATE, fine and coarse grained respectively, alternating pale grey and dark grey, granular, thinly bedded, closely to moderately widely spaced fractures.						27.93m, Is50 = 1.58 MPa 27.83 m; DI, 2°, P, R, O, Z
				28.0								
				28.21		CONGLOMERATE, coarse grained, speckled dark grey and light grey, granular, medium bedded, extremely closely spaced fractures. Clasts are fine gravel sized, subrounded, quartz, sandstone and siltstone. Clast supported.						28.28 m; J, 20°, P, R, O, Coal 28.40 m; J, 10°, P, S, O, Z
				28.55								28.56 m; J, 11°, P, S, O, Z
				29.0								
				29.18		SANDSTONE, medium grained, pale grey, granular, thinly bedded, moderately widely spaced fractures. Trace of siltstone laminae.						29.1m, Is50 = 1.68 MPa
				30.0		Interbedded SANDSTONE and SILTSTONE, fine to medium grained, alternating pale grey and dark grey, laminated, closely spaced fractures. Fine						29.67m, Is50 = 1.92 MPa 29.20-30.00 m; DI, 80°, P, S, O, Z

**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	Appearance	Notes
	B - Bedding		C - Curvilinear	L - Slickensides	C - Closed	
	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		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
<b>Rock Strength</b>
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.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:35 8.30.002 Developed by Dajgei

Water First Noted Water Steady Level



Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	RR	NM/LC									
				31.0		gravel lenses at 28.57m. SANDSTONE, medium grained, pale grey, granular, thinly bedded, moderately widely spaced fractures. Trace of siltstone laminae. Interlaminated MUDSTONE and SILTSTONE, fine grained, alternating, dark grey and pale grey, granular, thinly laminated, extremely closely spaced to moderately widely spaced fractures. Some fine sandstone laminae. (continued)	FR			100	89	
				32.0						100	98	30.65-32.72 m; DI, 5°, P, S, O, Z
				33.0								32.65m, Is50 = 1.78 MPa
				34.0								33.50 m; V, 70°, C, S
				35.0						100	86	33.75-35.00 m; DI, 5°, P, S, O, Z
				36.0								35.21 m; B, 2°, P, R, O, Z
				37.0								35.56m, Is50 = 0.59 MPa 35.49 m; DI, 2°, P, S, O, Z
				38.0						100	66	36.86 m; B, 2°, P, S, O, Z
				39.0		Interbedded SILTSTONE and CONGLOMERATE, fine and coarse grained respectively, alternating pale grey and dark grey, granular, thinly bedded, closely to moderately widely spaced fractures.						37.30 m; B, 2°, P, S, O, Z
				39.04								37.52 m; DI, 2°, P, R, O, Z
				39.25		Interlaminated MUDSTONE and SILTSTONE, fine grained, alternating, dark grey and pale grey, granular, thinly laminated, extremely closely spaced to moderately widely spaced fractures.						37.75 m; J, 80°, P, R, O, Z
				40.0						100	12	38.00-38.70 m; DI, 2°, P, S, O, Z
												38.78 m; DI, 5°, S, R, O, Z 38.81 m; J, 10°, S, S, O, Z

**Comments:**

1) Drilled from floating barge - all depths measured from river bed level. 2) Note: the coring method used was NQC3 not NM/LC. 3) Borehole grouted 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**

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<b>Rock Strength</b>
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**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 14:35 8.30.002 Developed by Dafgei



Easting: 503296      Northing: 6960871      RL: -10.22 m  
Logger: CS/DT      Operator: SO      Machine: Scout 2

SOIL SURVEYS 00:LIBRARY 2012:05:G.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:35 8.30.002 Developed by Dargel

Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	FR	NM/LC									
				40.10		Some fine sandstone laminae. MUDSTONE, fine grained, pale white grey, granular, thinly laminated, fragmented to closely spaced fractures. (continued) BOREHOLE BH 335 TERMINATED AT 40.10 m				100	12	
				41.0								
				42.0								
				43.0								
				44.0								
				45.0								
				46.0								
				47.0								
				48.0								
				49.0								
				50.0								

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

**Defects - 1.54m : F,60°,P,R,O,C**

Depth (m)	Type	Dip (deg)	Planarity	Roughness	Aperture	Wt%
	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 - Dievage		U - Undulating			S - Secondary mineral
	R - Fracture					U - Undifferentiated 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**

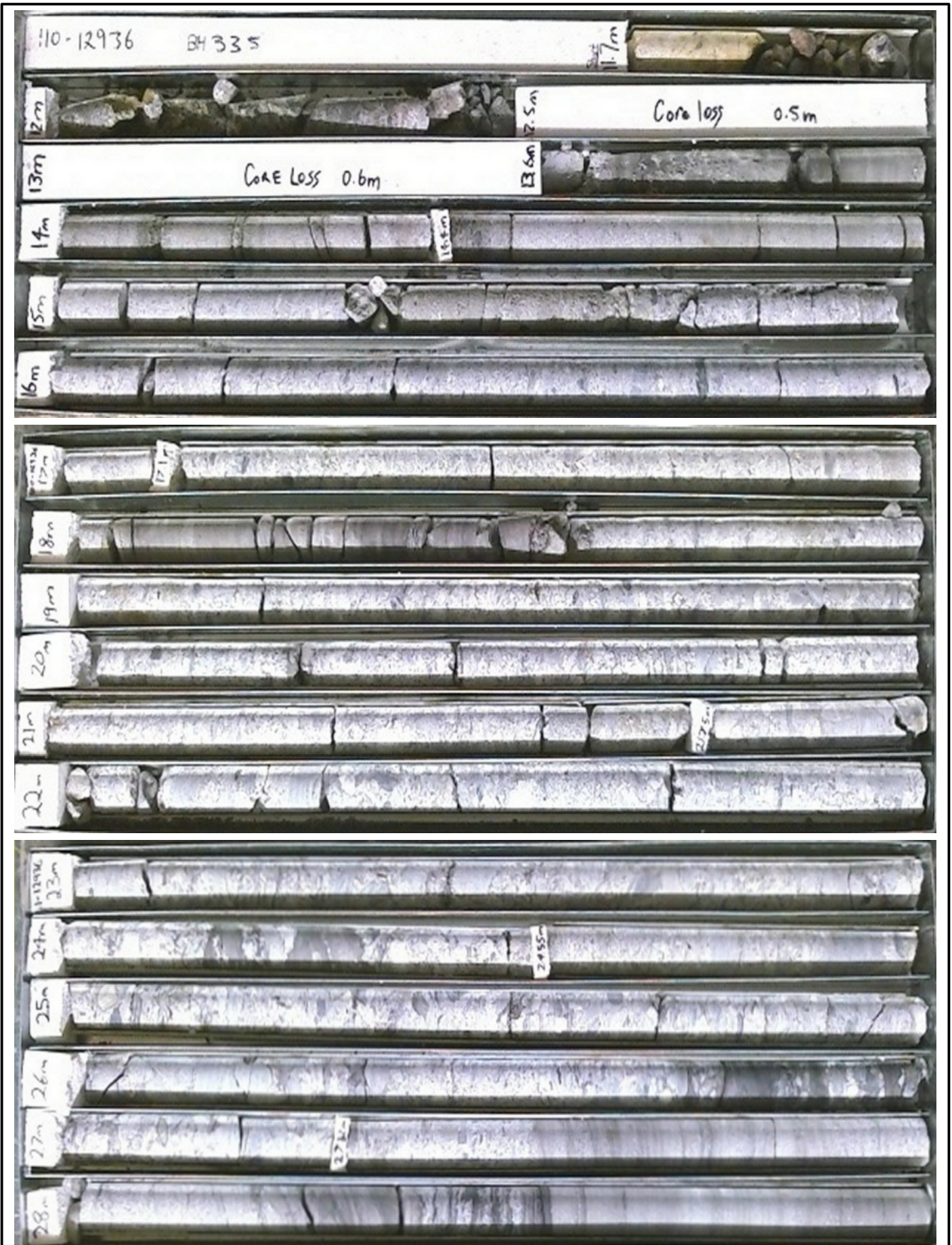
VW - Very weak  
W - Weak  
MS - Medium strong  
S - Strong  
VS - Very strong  
ES - Extremely strong

**Samples**

U50  
SPT  
Disturbed Sample

Approved: \_\_\_\_\_  
Date: \_\_\_\_\_

SOIL\_SURVEYS\_00.LIBRARY.GLB Gricibi DG PHOTO CORE PHOTO 4 PER PAGE 111-12936 NEW.GPJ <<DrawingFile>> 26/04/2012 14:48 8.2.856 Developed by Datgel



TITLE

AECOM  
Brisbane  
Cross River Rail  
Core Photo - BH 335

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

SOIL\_SURVEYS.00.LIBRARY.GLB.Grfctbl.DG.PHOTO.CORE.PHOTO.4.PER.PAGE.111-12936.NEW.GPJ <<DrawingFile>> 26/04/2012 14:48 8.2.856 Developed by Datgel



TITLE

AECOM  
Brisbane  
Cross River Rail  
Core Photo - BH 335

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.:** 335  
**Test No.:** 1  
**Date:** 23/01/2012

Packer type: Double  
Packer pressure: 2000kPa  
Gauge pressures measured in: kPa  
Tested by: CS

Vertical depth to:  
(below river bed)

Top of test section (m):	30.00
Base of test section (m):	32.00
Centre of test section(m):	31.00
Base of casing (m):	29.00
Ground water (m)	TIDAL

Depth of centre of test section (m):	31.00
Length of test section (m):	2.00

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	1043.8	1043.8	1043.9	1044.0	Flow (l/min)
	Water Take	0.00	0.00	0.10	0.10	0.013
2nd period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 200	Flow reading	1046.2	1046.5	1047.1	1047.3
	Water Take	0.00	0.30	0.60	0.20	0.073
3rd period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 300	Flow reading	1047.9	1047.9	1048.2	1048.3
	Water Take	0.00	0.00	0.30	0.10	0.027
4th period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 200	Flow reading	1047.6	1047.6	1047.8	1047.9
	Water Take	0.00	0.00	0.20	0.10	0.020
5th period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 100	Flow reading	1047.0	1047.0	1047.2	1047.5
	Water Take	0.00	0.00	0.20	0.30	0.033

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	100.00	10.220	0.000	0.000	41.220	0.017	1.70E-09
2nd	0.073	200.00	20.440	0.000	0.000	51.440	0.073	7.51E-09
3rd	0.027	300.00	30.660	0.000	0.000	61.660	0.022	2.28E-09
4th	0.020	200.00	20.440	0.000	0.000	51.440	0.020	2.05E-09
5th	0.033	100.00	10.220	0.000	0.000	41.220	0.041	4.26E-09

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

**BH No.:** 335  
**Test No.:** 2  
**Date:** 23/01/2012

Packer type: Double  
Packer pressure: 2000kPa  
Gauge pressures measured in: kPa  
Tested by: CS

Vertical depth to:  
(below river bed)

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)	TIDAL

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

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	1050.0	1050.2	1050.5	1050.5	Flow (l/min)
	Water Take	0.00	0.20	0.30	0.00	0.033
2nd period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 200	Flow reading	1052.5	1052.7	1053.5	1053.8
	Water Take	0.00	0.20	0.80	0.30	0.087
3rd period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 300	Flow reading	1055.5	1055.7	1056.1	1056.6
	Water Take	0.00	0.20	0.40	0.50	0.073
4th period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 200	Flow reading	1055.5	1055.5	1055.5	1055.5
	Water Take	0.00	0.00	0.00	0.00	0.000
5th period	Time (mins)	0	5	10	15	Average
	Gauge Pressure 100	Flow reading	1053.8	1053.8	1053.8	1053.8
	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	30.470	0.045	4.87E-09
2nd	0.087	200.00	20.440	0.000	0.000	40.690	0.087	9.48E-09
3rd	0.073	300.00	30.660	0.000	0.000	50.910	0.059	6.41E-09
4th	0.000	200.00	20.440	0.000	0.000	40.690	0.000	0.00E+00
5th	0.000	100.00	10.220	0.000	0.000	30.470	0.000	0.00E+00

\*Where friction loss is assumed to be negligible.

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