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Easting: 501472 Northing: 6955641 RL: 15.08 m
Logger: JI/CB Operator: PD Machine: MC450

Drilling Method		Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks	
TC	WB										RR
		0.10		FILL Clayey SAND (SC) Medium dense, fine to coarse grained, dark brown, moist.							
		0.50		FILL Sandy GRAVEL (GP) Medium dense, fine to coarse size, brown, fine to coarse grained sand, pockets of gravelly clay, moist.							
		1.0		NATURAL Sandy CLAY (CI) Very stiff, medium plasticity, light brown mottled grey and red, fine to medium grained sand, moist.							
		2.0								SPT 6, 9, 11 N=20	
		3.0									
		3.60									
		3.90		SILTSTONE (XW) Very weak, light brown.						SPT 6, 7, 8 N=15	
		4.0		Silty CLAY (CH) Very stiff, high plasticity, dark brown, trace of organics and coal, moist.							
		4.30		Silty CLAY (CI) Hard, medium plasticity, dark brown with light grey and brown bands, with some thin bands of Siltstone, trace of coal.							
		5.0								SPT 8, 13, 18 N=31	
		6.0									
		7.0									
		7.90		SILTSTONE (XW-DW) Very weak, dark grey, with some clay bands.						SPT 7, 11, 15 N=26	
		8.0									
		9.0									
		9.50									
		9.80		CLAY (CH) Very stiff to hard, high plasticity, light brown and grey, trace of fine grained sand, with a coal band from 9.50m to 9.57m.					49	0	SPT 30/120mm N=R
		10.0									

Comments:
1) Groundwater not observed. 2) Monitoring well installed to 25m on completion.

Defects - 1.54m : F,60° P,R,O,C

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	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: _____

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 Dajgel



Easting: 501472 Northing: 6955641 RL: 15.08 m

Logger: JI/CB Operator: PD Machine: MC450

Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	FR	NW/LC									
				10.45	X	CORE LOSS 0.65m (9.80-10.45) (continued)						
				11.0		CLAY (CH) Very stiff to hard, high plasticity, light brown and grey, trace of fine grained sand, with coal bands from 10.45m to 10.55m and 10.60m to 10.70m.				49	0	
				11.00		CORE LOSS 0.10m (10.90-11.00)	XW					
				12.0		Interbedded SILTSTONE and COAL, fine grained, alternating light brown and black, thinly bedded, fragmented.						
				12.00		CORE LOSS 0.25m (12.00-12.25)	XW			70	0	
				12.25		Interbedded SILTSTONE and COAL, fine grained, alternating light brown and black, thinly bedded, fragmented.						
				12.70		CORE LOSS 0.10m (12.70-12.80)	XW - DW					
				12.80		Interbedded SILTSTONE and COAL, fine grained, alternating light brown and black, thinly bedded, fragmented.						
				13.0			RS					
				14.0			XW - DW					
				14.80		CORE LOSS 0.50m (14.80-15.30)						
				15.0								
				15.30		SILTSTONE, fine grained, dark grey, thinly laminated, with closely spaced fractures.	XW - DW			71	26	15.16 m; J, 70°, P, 15.26 m; J, 10°, U, 15.50 m; J, 4°, P,
				16.0								
				16.52								
				16.70		CORE LOSS 0.18m (16.52-16.70)						
				17.0		SILTSTONE, fine grained, dark grey with light brown laminations, with closely spaced fractures.	XW - DW			85	8	16.05-16.52 m; B, 3°, P,
				17.40			RS					
				18.0		Interlaminated SILTSTONE and SANDSTONE, fine to medium grained, light brown with dark brown laminations, with closely spaced fractures, trace of organics, with some 10-50 mm sized coal bands from 18.63m.	DW - SW					
				19.0								
				20.0			DW - SW					
				20.00								

Comments:
1) Groundwater not observed. 2) Monitoring well installed to 25m on completion.

Defects - 1.54m : F,60° P,R,O,C

Type	Dip (deg)	Planarity	Roughness	Aperture	Fill
B - Bedding	C - Curvilinear	L - Slickensides	C - Closed	C - Clay	
D - Discontinuous	P - Polished	F - Filled	F - Iron Oxide	F - Iron Oxide	
H - Schistosity	S - Subplanar	S - Smooth	O - Open	K - Calcite	
J - Joint	T - Stepped	V - Very rough	S - Stain	L - Limonite	
L - Cleavage	U - Undulating			Q - Quartz	
R - Fracture				S - Secondary mineral	
S - Shear zone				U - Undifferentiated 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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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 Dajgeel



Easting: 501472 Northing: 6955641 RL: 15.08 m
Logger: JI/CB Operator: PD Machine: MC450

Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	RR	NM/LC									
				21.0		SILTSTONE, fine grained, dark grey with light brown, bands of Silty Clay, closely spaced fractures.	RS DW - SW			97	51	
				22.0		Interlaminated SILTSTONE and SANDSTONE, fine grained, grey and light brown, laminated, with moderately widely spaced fractures.	RS			95	71	21.00-21.10 m; B, 2°, P.
				23.0			SW				100	81
				24.0								
				25.0								
				26.0			DW SW			100	88	25.80 m; J, 65°, P.
				26.30		BOREHOLE BH 316 TERMINATED AT 26.30 m						
				27.0								
				28.0								
				29.0								
				30.0								

Comments:
1) Groundwater not observed. 2) Monitoring well installed to 25m 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
	F - Fault		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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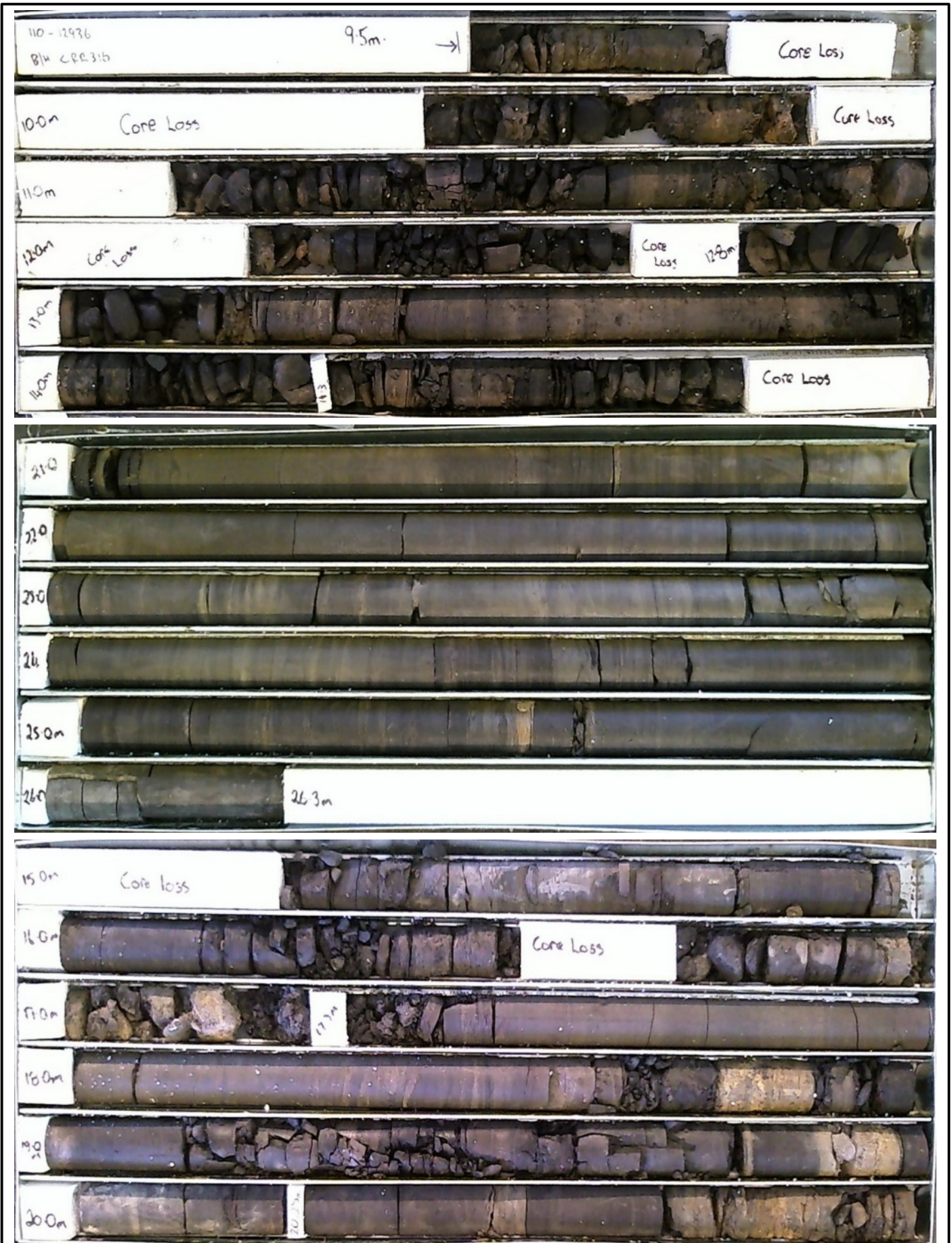
Samples

U50
SPT
Disturbed Sample

Approved: _____
Date: _____

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TITLE

AECOM
Brisbane
Cross River Rail
Core Photo - BH 316

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	BH No.:	316	Packer type:	Double
PROJECT No.:	110-12936	Test No.:	1	Packer pressure:	2500kPa
		Date:	27/01/2012	Gauge pressures measured in:	kPa
				Tested by:	CS

Vertical depth to:	Top of test section (m):	16.00	Depth of centre of test section (m)	17.00
	Base of test section (m):	18.00	Length of test section (m):	2.00
	Centre of test section(m):	17.00		
	Base of casing (m):	15.00	Gauge Height above ground level	0.00
	Ground water (m)	17.00	Hole Diameter in test section (mm)	75

1st period	Time (mins)	0	5	10	15	Average
Gauge Pressure 100	Flow reading	1070.0	1084.0	1095.0	1101.0	Flow (l/min)
	Water Take	0.00	14.00	11.00	6.00	2.067
2nd period	Time (mins)	0	5	10	15	Average
Gauge Pressure 200	Flow reading	1110.0	1121.0	1143.0	1160.0	Flow (l/min)
	Water Take	0.00	11.00	22.00	17.00	3.333
3rd period	Time (mins)	0	5	10	15	Average
Gauge Pressure 300	Flow reading	1166.0	1198.0	1259.0	1331.0	Flow (l/min)
	Water Take	0.00	32.00	61.00	72.00	11.000
4th period	Time (mins)	0	5	10	15	Average
Gauge Pressure 200	Flow reading	1332.0	1365.0	1414.0	1456.0	Flow (l/min)
	Water Take	0.00	33.00	49.00	42.00	8.267
5th period	Time (mins)	0	5	10	15	Average
Gauge Pressure 100	Flow reading	1451.0	1468.0	1489.0	1507.0	Flow (l/min)
	Water Take	0.00	17.00	21.00	18.00	3.733

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	2.067	100.00	10.220	0.000	0.000	27.220	3.878	4.00E-07
2nd	3.333	200.00	20.440	0.000	0.000	37.440	4.548	4.69E-07
3rd	11.000	300.00	30.660	0.000	0.000	47.660	11.789	1.22E-06
4th	8.267	200.00	20.440	0.000	0.000	37.440	11.278	1.16E-06
5th	3.733	100.00	10.220	0.000	0.000	27.220	7.006	7.22E-07

*Where friction loss is assumed to be negligible.

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