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PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation
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LOCATION	Brisbane Grammar School
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COORDINATES 501574.1 E; 6962746.1 N

PROJECT No	FG6470
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SURFACE RL 33.00m

PLUNGE 90°

DATE STARTED 26/09/2017

GRID DATUM MGA94

JOB No

HEIGHT DATUM AHD

BEARING °

DATE COMPLETED 29/09/2017

DRILLER Hinterland

REMARKS: CAI = Average Cerchar abrasivity index (HRC=55). Dcf - Neranleigh Fernvale Beds.
Standpipe piezometer installed.

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REVIEWED BY

MH

S. Foley



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GEOTECHNICAL
BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND
SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR722**

Sheet 2 of 4

REFERENCE No **H12948**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation		
LOCATION	Brisbane Grammar School	COORDINATES 501574.1 E; 6962746.1 N	
PROJECT No	FG6470	SURFACE RL 33.00m	PLUNGE 90°
		DATE STARTED 26/09/2017	GRID DATUM MGA94
JOB No		HEIGHT DATUM AHD	BEARING °
		DATE COMPLETED 29/09/2017	DRILLER Hinterland

DEPTH (m)	R.L. (m)	AUGER CASING	WASHBORING	CORE DRILLING	RQD (%) CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USCS WEATHERING	INTACT STRENGTH							DEFECT SPACING					ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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	22.60				100 (82)		SW: Pale grey and orange brown, fine grained, foliated, high strength. With some quartz bands <10mm, generally parallel to foliation. -FP: 45°-60° (4/m), Pl/Sm-Ro, TI, Cn or FeSt		SW										C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

Continued on next sheet		
REMARKS: CAI = Average Cerchar abrasivity index (HRC=55). DCf - Neranleigh Fernvale Beds. Standpipe piezometer installed.	LOGGED BY	REVIEWED BY
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GEOTECHNICAL BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND
SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR722**

Sheet 3 of 4

REFERENCE No **H12948**

PROJECT **Cross River Rail CRR2017 - Additional Geotechnical Investigation**

LOCATION **Brisbane Grammar School**

COORDINATES **501574.1 E; 6962746.1 N**

PROJECT No **FG6470**

SURFACE RL **33.00m**

PLUNGE **90°**

DATE STARTED **26/09/2017**

GRID DATUM **MGA94**

JOB No

HEIGHT DATUM **AHD**

BEARING °

DATE COMPLETED **29/09/2017**

DRILLER **Hinterland**

DEPTH (m)	R.L. (m)	AUGER CASING WASHBORING CORE DRILLING	RQD (%)	CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USCS WEATHERING	INTACT STRENGTH					DEFECT SPACING					ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS			
									EH _VH	H _M	M _L	VL _EL	EC _VC	C _M	M _W	VW _EW							
21	11.25		100 (91)			ARGILLITE (DCf) FR: Cont'd. With interbedded Metagreywacke layers between 50mm-200mm. Frequent quartz bands <5mm parallel to foliation. Some crosscutting quartz veinlets <3mm, 20°-50°		FR	H-VH										UCS=6.10 MPa E=3.07 GPa v= 0.018 Is(50)=1.90 MPa Is(50)=2.10 MPa Is(50)=0.85 MPa	(20.16m) D (20.33m) A (20.41m) A (20.82m)			
																				Is(50)=1.10 MPa	D (21.20m)		
22		100 (87)			METAGREYWACKE (DCf) FR: Pale blue grey, fine to medium grained, foliated, high to very high strength.															Is(50)=4.30 MPa Is(50)=3.50 MPa	D (21.80m) A (21.92m)		
23		100 (79)			Interbedded Argillite layers up to 250mm thick. Frequent quartz bands <5mm parallel to foliation. Some crosscutting quartz veinlets <5mm, 20°-60° -FP: 45°-60° (4/m), Pl/Sm, TI-OP, Cn															Is(50)=4.80 MPa Is(50)=3.80 MPa Is(50)=3.10 MPa	D (22.83m) A (22.88m) D (23.19m) A (23.32m)		
24		100 (50)																			23.80m: CAI=1.49 24.00m-24.70m: 700mm highly siliceous zone. 24.40m: Slake Durability Index Test 24.45m-25.25m: 80mm quartz vein, extremely high strength.	Is(50)=2.00 MPa Is(50)=4.10 MPa	D (24.14m) A (24.30m)
25		100 (38)																					
		100 (58)																					
26		100 (84)																			25.60m: CAI=2.07 25.89m: Brazilian Tensile Strength = 5.06MPa 26.08m: CAI=2.14		
27		100 (72)									HW										26.96m-27.07m: HW	UCS=26.50 MPa E=21.9 GPa v= 0.045 Is(50)=2.30 MPa Is(50)=1.80 MPa	(26.40m) D (26.59m) A (26.68m)
28				100 (93)							FR											Is(50)=3.60 MPa Is(50)=3.50 MPa	D (27.75m) A (27.83m)
29	100 (56)																		Is(50)=3.20 MPa Is(50)=3.70 MPa	A (28.59m) D (28.64m)			
	3.00																		Is(50)=0.64 MPa Is(50)=0.56 MPa	D (29.26m) A (29.27m)			

Continued on next sheet

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Standpipe piezometer installed.

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GEOTECHNICAL
BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND
SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR722**

Sheet 4 of 4

REFERENCE No **H12948**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation		
LOCATION	Brisbane Grammar School		COORDINATES 501574.1 E; 6962746.1 N
PROJECT No	FG6470	SURFACE RL 33.00m	PLUNGE 90°
			DATE STARTED 26/09/2017
			GRID DATUM MGA94
JOB No		HEIGHT DATUM AHD	BEARING °
			DATE COMPLETED 29/09/2017
			DRILLER Hinterland

DEPTH (m)	R.L. (m)	AUGER CASING WASHBORING CORE DRILLING	RQD (%) CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USCS WEATHERING	INTACT STRENGTH					DEFECT SPACING					ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS		
								EH	VH	H	M	L	VL	EL	EC	VC	C			M	W
31	1.40		100 (67)		METAGREYWACKE (DCf) FR: Cont'd.		FR							31.55m-31.60m: Possible fault/ shear zone, 50mm crushed argillite, very low strength.	Is(50)=1.60 MPa Is(50)=1.40 MPa	D (30.84m) A (30.97m)					
32	0.70		100 (0)	ARGILLITE (DCf) SW: Dark grey, fine grained, foliated, medium to high strength. -FP: 30°-40° (7-8/m), Pl/Sm, TI, Cn or Cly Vr.	SW																
33			100 (58)		METAGREYWACKE (DCf) SW: Grey, fine to medium grained, foliated, high to very high strength. Frequent quartz bands <5mm parallel to foliation. Some crosscutting quartz veinlets <3mm, 20°-50°		SW							Is(50)=0.66 MPa Is(50)=2.70 MPa	D (33.25m) A (33.26m)						
34	-1.10		100 (100)	-FP: 45°-60° (4/m), Pl/Sm, TI, Cn																	
					Borehole completed at 34.10m																
35																					
36																					
37																					
38																					
39																					

REMARKS: CAI = Average Cerchar abrasivity index (HRC=55). DCf - Neranleigh Fernvale Beds. Standpipe piezometer installed.	LOGGED BY	REVIEWED BY
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STANDPIPE INSTALLATION LOG

FOR GEOTECHNICAL TERMS AND
SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR722**

Sheet 1 of 4

PIEZOMETER No **CRR722**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation					
LOCATION	Brisbane Grammar School			COORDINATES 501574.1 E; 6962746.1 N		
PROJECT No	FG6470	SURFACE RL	33.00m	PLUNGE	90°	DATE STARTED 26/09/2017
JOB No		HEIGHT DATUM	AHD	BEARING	°	DATE COMPLETED 29/09/2017
						GRID DATUM MGA94
						DRILLER Hinterland

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Standpipe Construction Details		
				Depth (m) / RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.00m	Backfill Details
32.92			Asphalt(Fill)			
			Clayey GRAVEL(Fill)			
			Grey, dry, loose. Fine to medium grained, sub angular. Medium plasticity clay.			
1						
31.50			ARGILLITE			
			Grey, orange brown, foliated, extremely low to very low strength. Recovered as Clayey Sandy SILT.			
2			From 2.2m: Low strength			
30.40						
30.20			CORE LOSS 0.2m			
3			METAGREYWACKE			
			Pale grey, fine grained, foliated, mainly medium strength.			
			-Js: 45°-60° (2/m), Pl/Sm, FeSt			
			-FP: 20°-40° (5-10/m), Pl/Sm, TI, FeSt.			
29.10						
4			CORE LOSS 0.55m			
28.55						
28.00			METAGREYWACKE			
			Pale grey, and orange brown, fine grained, foliated, high strength.			
5			Highly fractured throughout.			
			-Js: 45° (10-15/m), Pl/Sm-Ro, FeSt			
			-FP: 45°-60° (5-10/m), Pl/Sm, FeSt			
27.40						
6			CORE LOSS 0.6m			
			METAGREYWACKE			
			Pale grey and orange brown, fine grained, foliated, medium to high strength.			
			-Js: 30°-45° (5-6/m), Pl-Un/Sm, TI, FeSt			
			-FP: 45°-60° (3-4/m), Pl/Sm, TI, FeSt			
7						
8						
24.10						
9			ARGILLITE			
			Blue grey, fine grained, foliated, medium to high strength.			
23.65						
			-FP: 50°-60° (3/m), Pl/Sm-Ro, TI-OP, Cn or some FeSt			
			METAGREYWACKE			
			Pale grey and orange brown, fine grained, foliated,			

29/09/2017

Continued on next sheet

REMARKS: CAI = Average Cerchar abrasivity index (HRC=55). DCF - Neranleigh Fernvale Beds. Standpipe piezometer installed.

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STANDPIPE
INSTALLATION LOG

FOR GEOTECHNICAL TERMS AND
SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR722**

Sheet 2 of 4

PIEZOMETER No **CRR722**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation						
LOCATION	Brisbane Grammar School				COORDINATES 501574.1 E; 6962746.1 N		
PROJECT No	FG6470	SURFACE RL	33.00m	PLUNGE	90°	DATE STARTED	26/09/2017
						GRID DATUM	MGA94
JOB No		HEIGHT DATUM	AHD	BEARING	°	DATE COMPLETED	29/09/2017
						DRILLER	Hinterland

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Standpipe Construction Details		
				Depth (m) / RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.00m	Backfill Details
22.60			high strength. With some quartz bands <10mm, generally parallel to foliation. -FP: 45°-60° (4/m), Pl/Sm-Ro, TI, Cn or FeSt			
22.10			ARGILLITE Blue grey to dark grey and orange brown, fine grained, foliated, high strength. With quartz bands generally <6mm, parallel to foliation.			
11			METAGREYWACKE Pale blue grey, fine to medium grained, foliated, high strength. Frequent quartz bands <5mm parallel to foliation. Some crosscutting quartz veinlets <3mm, 20°-50° Interbedded Argillite layers up to 400mm thick. -FP: 45°-60° (4/m), Pl/Sm, TI, Cn -Js: 10°-30° (1-3/m), Pl/Ro, TI-OP, some FeSt.			
12						
13						
14						
15						Grout: Cement / Bentonite mix
16						
17						
18						
19						
13.70						
13.00			ARGILLITE Blue grey and dark grey, foliated, high strength.			

Continued on next sheet

REMARKS: CAI = Average Cerchar abrasivity index (HRC=55). DCF - Neranleigh Fernvale Beds. Standpipe piezometer installed.

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STANDPIPE INSTALLATION LOG

FOR GEOTECHNICAL TERMS AND
SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR722**

Sheet 3 of 4

PIEZOMETER No **CRR722**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation						
LOCATION	Brisbane Grammar School				COORDINATES 501574.1 E; 6962746.1 N		
PROJECT No	FG6470	SURFACE RL	33.00m	PLUNGE	90°	DATE STARTED	26/09/2017
JOB No		HEIGHT DATUM	AHD	BEARING	°	DATE COMPLETED	29/09/2017
						GRID DATUM	MGA94
						DRILLER	Hinterland

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Standpipe Construction Details		
				Depth (m) / RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.00m	Backfill Details
21			ARGILLITE Cont'd. With interbedded Metagreywacke layers between 50mm-200mm. Frequent quartz bands <5mm parallel to foliation. Some crosscutting quartz veinlets <3mm, 20°-50° -FP: 45°-60° (4/m), Pl/Sm, TI, some FeSt or Cn			
11.25						
22			METAGREYWACKE Pale blue grey, fine to medium grained, foliated, high to very high strength. Interbedded Argillite layers up to 250mm thick. Frequent quartz bands <5mm parallel to foliation. Some crosscutting quartz veinlets <5mm, 20°-60° -FP: 45°-60° (4/m), Pl/Sm, TI-OP, Cn			
23						
24				24.50m / 8.50 AHD		
25						
26				26.50m / 6.50 AHD		Bentonite Seal
27						
28				28.00m / 5.00 AHD		Top of Slotted Pipe
29						
3.00						

Continued on next sheet

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STANDPIPE INSTALLATION LOG

FOR GEOTECHNICAL TERMS AND
SYMBOLS REFER FORM F:GEOT 017/8-2014

BOREHOLE No **CRR722**

Sheet 4 of 4

PIEZOMETER No **CRR722**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation					
LOCATION	Brisbane Grammar School			COORDINATES 501574.1 E; 6962746.1 N		
PROJECT No	FG6470	SURFACE RL	33.00m	PLUNGE	90°	DATE STARTED 26/09/2017
JOB No		HEIGHT DATUM	AHD	BEARING	°	DATE COMPLETED 29/09/2017
						GRID DATUM MGA94
						DRILLER Hinterland

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Standpipe Construction Details		
				Depth (m) / RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.00m	Backfill Details
31	1.40		METAGREYWACKE Cont'd.			
32	0.70		ARGILLITE Dark grey, fine grained, foliated, medium to high strength. -FP: 30°-40° (7-8/m), Pl/Sm, TI, Cn or Cly Vr.			
33			METAGREYWACKE Grey, fine to medium grained, foliated, high to very high strength. Frequent quartz bands <5mm parallel to foliation. Some crosscutting quartz veinlets <3mm, 20°-50° -FP: 45°-60° (4/m), Pl/Sm, TI, Cn			
34	-1.10			34.10m / -1.10 AHD		Filter: Washed / Graded Sand
Borehole completed at 34.10m						
35						
36						
37						
38						
39						

REMARKS: CAI = Average Cerchar abrasivity index (HRC=55). DCF - Neranleigh Fernvale Beds. Standpipe piezometer installed.

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CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	29/09/2017
Borehole No.	CRR722	Reference No.	H12948
Location	Brisbane Grammar School	Start Depth (m)	2.60
Submitted By	M. de Gee	Finish Depth (m)	34.10



CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	29/09/2017
Borehole No.	CRR722	Reference No.	H12948
Location	Brisbane Grammar School	Start Depth (m)	2.60
Submitted By	M. de Gee	Finish Depth (m)	34.10



CORE PHOTO LOG

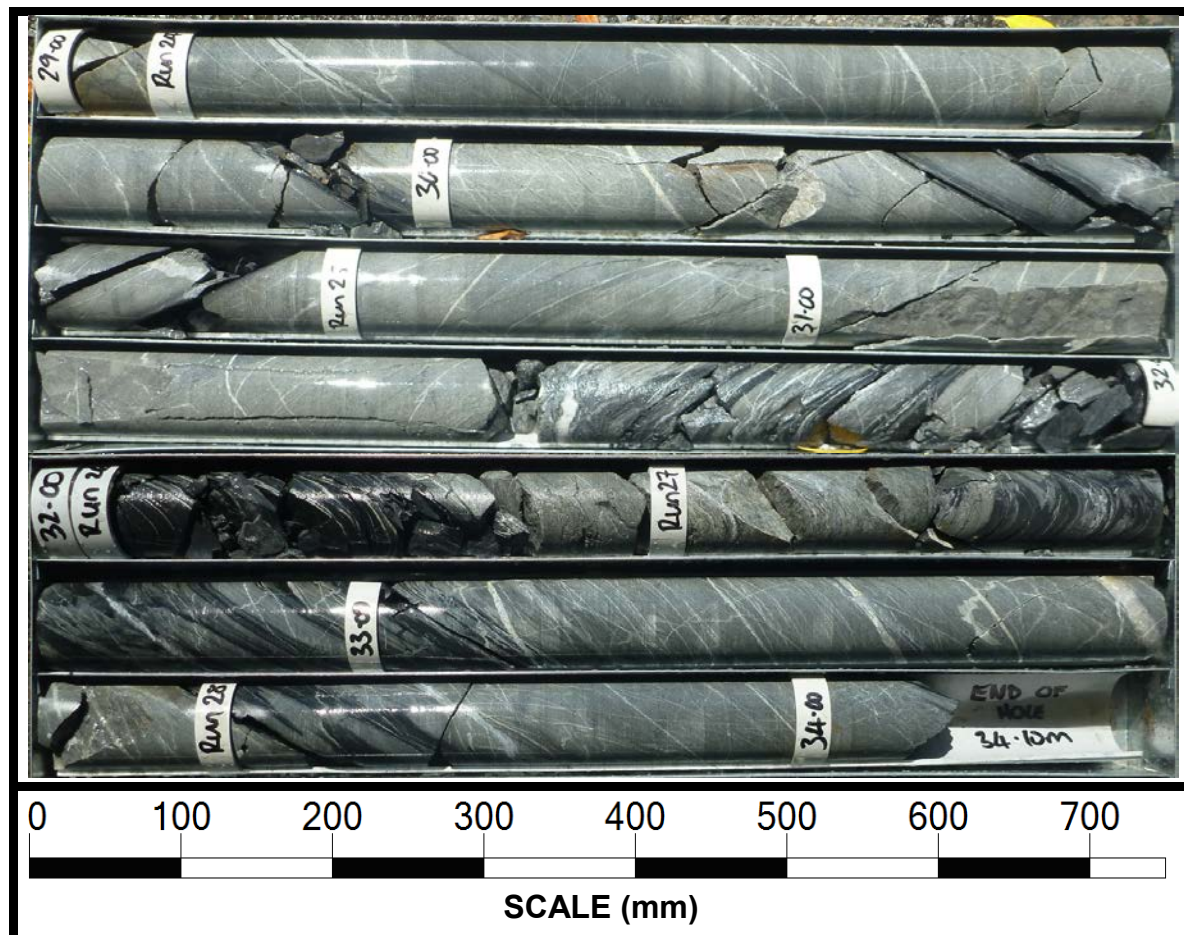
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	29/09/2017
Borehole No.	CRR722	Reference No.	H12948
Location	Brisbane Grammar School	Start Depth (m)	2.60
Submitted By	M. de Gee	Finish Depth (m)	34.10



CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	29/09/2017
Borehole No.	CRR722	Reference No.	H12948
Location	Brisbane Grammar School	Start Depth (m)	2.60
Submitted By	M. de Gee	Finish Depth (m)	34.10



Detailed Discontinuity Description Log

This form is intended for the detailed description of discontinuities and defects as measured in outcrop by line mapping, or as they occur downhole in drilled rock core. The descriptions and abbreviations used shall be in accordance with Australian Standard AS1726-1993 Geotechnical site investigations and TMR Geotechnical Terms and Symbols Form F:GEOT017/8.

Project Name		Cross River Rail				Project No.		FG6470	
Site ID / Borehole No.		CRR722				Surface RL		32.91	
Geologist		M.H.				Date		26/09/2017	
						Page		1	of 8
Traverse Chainage; or Down hole depth (rock core)	Type LP / BP / FP / J etc.	Dip ° / Dip Direction °; or Angle ° from horizontal (rock core)	Planarity Stp / Un / Pl	Roughness Ro / Sm / Sl	Roughness Class I to IX	Aperture CD / OP / FL / TI	Infilling Cn / St / Vr / Ct ¹	Zones ¹ SZ / CZ / HFZ / AZ	Other
2.80									60mm BZ
2.86	J	40	Un	Ro	IV	OP	Cn		
2.90	FP / J	60	Pl	Sm	VIII	OP	Cn		BZ 60mm
3.02	FP	45	Pl	Sm	VIII	OP	Cn		
3.06	FP	45	Pl	Sm	VIII	CD	Ct		Clay 3mm
3.09	J	75	Pl	Sm	VIII	CD	Cn		
3.13	J	30	Pl	Sm	VIII	CD	Ct		Clay 3mm
3.28	J	60	Pl	Sm	VIII	CD	Cn		
3.36	J	60	Pl	Sm	VIII	CD	Vr		Clay
3.40	J	45	Pl	Sm	VIII	CD	St		Fe
3.45	J	30	Pl	Sm	VIII	CD	Ct		Clay 2mm
3.50	J	30	Pl	Sm	VIII	CD	St		Fe
3.53	J	30	Pl	Sm	VIII	CD	St		Fe
3.62	J	30	Un	Sm	V	CD	St		Fe
3.65	J	45	Pl	Sm	VIII	CD	Vr		Clay
3.68	J	50	Pl	Sm	VIII	CD	Vr		Clay
3.72	J	45	Stp	Sm	II	OP			
3.73	170mm of extremely weathered and high strength fragmented rock.								
4.25	J	45	Pl	Sm	VIII	OP	St		Fe
4.29	FP	60	Pl	Sm	VIII	CD	St		Fe
4.32	FP	60	Pl	Sm	VIII	CD	Vr		Clay
4.33	J	45	Pl	Sm	VIII	CD	St		Fe
4.37	J	45	Pl	Sm	VIII	CD	St		Fe
4.64	J	45	Pl	Sm	VIII	OP	Vr		Clay
4.70	J	50	Pl	Sm	VIII	CD	St		Fe
4.73	J	45	Pl	Sm	VIII	CD	St		Fe
4.78	FP	55	Pl	Sm	VIII	OP	Vr		Clay
4.79	J	45	Pl	Sm	VIII	CD	St		Fe
4.83	FP	60	Pl	Sm	VIII	CD	St		Fe
4.85	50mm Extremely low strength sandy clayey silt band.								
4.90								BZ 100mm	

Note: 1. Describe zones and coatings in terms of composition and thickness (mm)

F:GEOT 533/9 – 2014

Detailed Discontinuity Description Log

This form is intended for the detailed description of discontinuities and defects as measured in outcrop by line mapping, or as they occur downhole in drilled rock core. The descriptions and abbreviations used shall be in accordance with Australian Standard AS1726-1993 Geotechnical site investigations and TMR Geotechnical Terms and Symbols Form F:GEOT017/8.

Project Name		Cross River Rail				Project No.		FG6470	
Site ID / Borehole No.		CRR722				Surface RL		32.91	
Geologist		M.H.				Date		26/09/2017	
						Page		2 of 8	
Traverse Chainage; or Down hole depth (rock core)	Type LP / BP / FP / J etc.	Dip ° / Dip Direction °; or Angle ° from horizontal (rock core)	Planarity Stp / Un / Pl	Roughness Ro / Sm / SI	Roughness Class I to IX	Aperture CD / OP / FL / TI	Infilling Cn / St / Vr / Ct ¹	Zones ¹ SZ / CZ / HFZ / AZ	Other
5.60									BZ 200mm
5.87	J	30	Pl	Sm	VIII	OP	Cn		
5.90	J	30	Pl	Sm	VIII	OP	Cn		
5.97	J	45	Pl	Sm	VIII	OP	Cn		
6.07	J	30	Pl	Sm	VIII	OP	Vr		Clay
6.20	FP	45	Un	Sm	V	OP	Vr		Clay
6.30	J	65	Pl	Sm	VIII	CD	St		Fe
6.31	FP	55	Pl	Sm	VIII	CD	Cn		
6.36	J	35	Pl	Sm	VIII	OP	Vr		Clay
6.47	FP	50	Pl	Sm	VIII	OP	Cn		
6.62	J	20	Stp	Ro	I	CD	Cn		
6.66	J	30	Un	Sm	V	OP	Cn		
6.90	J	45	Pl	Sm	VIII	OP	St		Fe
6.95	J	30	Pl	Sm	VIII	OP	St		Fe
7.20	J	85	Un	Ro	IV	OP	St		Fe, *
* Start 7.20m End 7.50m									
7.21	J	30	Pl	Sm	VIII	CD	St		Fe
7.22	J	45	Pl	Sm	VIII	CD	St		Fe
7.26	J	20	Pl	Sm	VIII	OP	St		Fe
7.29	J	20	Pl	Sm	VIII	OP	St		Fe
7.33	J	45	Pl	Sm	VIII	CD	St		Fe
7.44	J	10	Pl	Sm	VIII	CD	St		Fe
7.52	J	20	Pl	Sm	VIII	CD	St		Fe
7.53	J	10	Pl	Sm	VIII	CD	St		Fe
7.56	J	60	Pl	Sm	VIII	OP	St		Fe
7.59	J	20	Pl	Sm	VIII	OP	Vr		Clay
7.62	J	25	Pl	Sm	VIII	CD	St		Fe
7.66	J	20	Pl	Sm	VIII	OP	St		Fe
7.72	J	20	Pl	Sm	VIII	OP	St		Fe
7.75	J	45	Pl	Sm	VIII	OP	St		Fe
7.79	J	10	Un	Sm	V	OP	St		Fe

Note: 1. Describe zones and coatings in terms of composition and thickness (mm)

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Detailed Discontinuity Description Log

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Project Name		Cross River Rail				Project No.		FG6470	
Site ID / Borehole No.		CRR722				Surface RL		32.91	
Geologist		M.H.				Date		26/09/2017	
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Traverse Chainage; or Down hole depth (rock core)	Type LP / BP / FP / J etc.	Dip ° / Dip Direction °; or Angle ° from horizontal (rock core)	Planarity Stp / Un / Pl	Roughness Ro / Sm / Sl	Roughness Class I to IX	Aperture CD / OP / FL / TI	Infilling Cn / St / Vr / Ct ¹	Zones ¹ SZ / CZ / HFZ / AZ	Other
7.84	J	10	Pl	Sm	VIII	OP	St		Fe
7.87	J	70	Pl	Sm	VIII	CD	St		Fe
7.89	J	10	Pl	Sm	VIII	OP	St		Fe
7.95	J	50	Stp	Sm	II	OP	St		Fe
8.00	J	30	Pl	Sm	VIII	OP	Cn		
8.03	J	70	Pl	Sm	VIII	OP	St		Fe
8.05	FP	45	Pl	Sm	VIII	OP	St		Fe
8.36	J	30	Pl	Sm	VIII	OP	St		Fe
8.42	J	30	Pl	Sm	VIII	OP	St		Fe
8.43	FP	45	Pl	Sm	VIII	CD	St		Fe
8.54	FP	45	Pl	Sl	IX	OP	St		Fe
8.73	J	20	Pl	Ro	VII	CD	Cn		
8.93	J	20	Pl	Sm	VIII	CD	Cn		
8.95	FP	45	Pl	Sl	IX	CD	St		Fe
9.17	J	35	Pl	Sm	VIII	CD	Cn		
9.32	FP	60	Pl	Sl	IX	OP	St		Fe
9.45	J	30	Pl	Sm	VIII	OP	St		Fe
9.48	J	30	Un	Sm	V	OP	Cn		
9.63	J	30	Pl	Sm	VIII	CD	Cn		
9.78	FP	45	Pl	Sm	VIII	CD	Cn		
9.88	J	20	Pl	Sm	VIII	CD	St		Fe
9.97	J	30	Pl	Sm	VIII	CD	St		Fe
10.06	FP	50	Pl	Sm	VIII	CD	Cn		
10.16	FP	60	Pl	Sm	VIII	CD	Cn		
10.25	FP	50	Pl	Sm	VIII	CD	Cn	BZ 150mm to 10.4m	
10.40	FP	50	Pl	Sm	VIII	CD	Cn		
10.43	FP	60	Pl	Sm	VIII	CD	Cn		
10.65	J	45	Pl	Sm	VIII	CD	St		Fe
10.70	J	35	Pl	Sm	VIII	OP	Cn		
10.84	J	30	Un	Ro	I	CD	Cn		
10.97	J	10	Pl	Sm	VIII	CD	St		Fe

Note: 1. Describe zones and coatings in terms of composition and thickness (mm)

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Detailed Discontinuity Description Log

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Project Name		Cross River Rail				Project No.		FG6470	
Site ID / Borehole No.		CRR722				Surface RL		32.91	
Geologist		M.H.				Date		26/09/2017	
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Traverse Chainage; or Down hole depth (rock core)	Type LP / BP / FP / J etc.	Dip ° / Dip Direction °; or Angle ° from horizontal (rock core)	Planarity Stp / Un / Pl	Roughness Ro / Sm / Sl	Roughness Class I to IX	Aperture CD / OP / FL / TI	Infilling Cn / St / Vr / Ct ¹	Zones ¹ SZ / CZ / HFZ / AZ	Other
11.08	J	0	Un	Sm	V	OP	St		Fe
11.25	J	70	Un			TI			
11.53	J	45	Pl	Sm	VIII	OP	St		Fe
11.55	J	35	Un	Sm	V	OP	St		Fe
11.64	J	30	Pl	Sm	VIII	CD	St		Fe
11.73	J	35	Pl	Sm	VIII	CD	St		Fe
11.87	J	45	Pl	Sl	IX	CD	St		Fe
11.98	FP	45	Un	Sm	V	CD	St		Fe
12.18	J	5	Un	Ro	IV	OP	St		Fe
12.30	J	5	Un	Ro	IV	OP	St		Fe
12.75	FP	50	Pl	Sm	VIII	CD	Cn		
12.85	FP	60	Pl	Sm	VIII	CD	Cn		
12.94	FP	60	Pl	Sm	VIII	CD	Cn		
13.10	FP	65	Pl	Sm	VIII	CD	Cn		
13.36	J	5	Un	Sm	V	CD	Cn		
13.46	J	40	Pl	Sm	VIII	CD	Cn		
13.83	J	60	Stp	Sm	II	OP	St		Fe
14.02	J	20	Pl	Sm	VIII	OP	Cn		
14.13	FP	60	Un	Sm	V	OP	Cn		
14.17	J	20	Pl	Sm	VIII	OP	St		Fe
14.30	FP	60	Pl	Sm	VIII	OP	St		Fe
14.43	J	5	Un	Sm	V	OP	St		Fe
14.76	J	30	Pl	Sm	VIII	CD	St		Fe
14.81	J	30	Pl	Sm	VIII	OP	St		Fe
14.93	FP	50	Pl	Sm	VIII	CD	Cn		
14.96	J	30	Pl	Sm	VIII	OP	St		Fe
14.97	J	30	Pl	Sm	VIII	OP	St		Fe
15.08	J	30	Pl			TI			
15.18	J	30	Pl			TI			
15.26	J	35	Pl	Sm	VIII	OP	Cn		
15.65	J	50	Pl	Sm	VIII	OP	Cn		

Note: 1. Describe zones and coatings in terms of composition and thickness (mm)

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Detailed Discontinuity Description Log

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Project Name		Cross River Rail				Project No.		FG6470	
Site ID / Borehole No.		CRR722				Surface RL		32.91	
Geologist		M.H.				Date		26/09/2017	
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Traverse Chainage; or Down hole depth (rock core)	Type LP / BP / FP / J etc.	Dip ° / Dip Direction °; or Angle ° from horizontal (rock core)	Planarity Stp / Un / Pl	Roughness Ro / Sm / Sl	Roughness Class I to IX	Aperture CD / OP / FL / TI	Infilling Cn / St / Vr / Ct ¹	Zones ¹ SZ / CZ / HFZ / AZ	Other
15.78	J	70	Pl	Sm	VIII	OP	St		Fe
15.92	J	70	Pl	Sm	VIII	OP-TI	St		Fe
15.94	J	30	Un	Sm	V	CD	St		Fe
16.10	J	35	Pl	Sm	VIII	OP	St		Fe
16.35	J	70	Un	Sm	V	OP	St		Fe
16.44	J	5	Un	Ro	IV	OP	St		Fe
16.73	J	20	Un	Sm	V	OP	St		Fe
17.23	FP	60	Pl	Sm	VIII	CD	Cn		
17.46	FP	60	Pl	Sm	VIII	CD	St		Fe
17.51	J	45	Pl	Sm	VIII	CD	St		Fe
17.70	J	0	Un	Ro	IV	OP	St		Fe
17.73	FP	60	Pl	Sm	VIII	CD	Cn		
17.83	J	25	St	Ro	I	OP	St		Fe
18.90	J	30	Pl	Sm	VIII	OP	Cn		
19.15	J	20	Pl	Sm	VIII	OP	Cn		
19.25	J	45	Pl	Sm	VIII	OP	Cn		
19.75	J	60	St	Ro	I	OP	Cn		
19.85	FP	60	Pl	Sm	VIII	CD	Cn		
20.53	J	45	Pl	Sm	VIII	OP	Cn		
20.93	FP	60	Pl	Sl	IX	CD	Cn		
21.09	FP	60	Pl	Sl	IX	CD	Cn		
21.10	J	50	Pl	Sm	VIII	OP	Cn		
21.33	FP	60	Pl	Sl	IX	CD		SZ	5mm
21.40	FP	60	Un	Sl	VI	CD	Cn		
21.68	FP	60	Pl	Sl	IX	CD			
21.70	FP	60	Pl	Sl	IX	CD			
21.94	J	40	Un	Sm	V	OP	Cn		
22.17	J	50	Pl	Ro	VII	CD	Cn		
22.22	J	30	Pl	Ro	VII	OP	Cn		
22.42	J	20	Stp	Ro	I	CD	Cn		
22.58	J	40	Pl	Sm	VIII	OP	Cn		

Note: 1. Describe zones and coatings in terms of composition and thickness (mm)

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Project Name		Cross River Rail				Project No.		FG6470	
Site ID / Borehole No.		CRR722				Surface RL		32.91	
Geologist		M.H.				Date		26/09/2017	
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Traverse Chainage; or Down hole depth (rock core)	Type LP / BP / FP / J etc.	Dip ° / Dip Direction °; or Angle ° from horizontal (rock core)	Planarity Stp / Un / Pl	Roughness Ro / Sm / Sl	Roughness Class I to IX	Aperture CD / OP / FL / TI	Infilling Cn / St / Vr / Ct ¹	Zones ¹ SZ / CZ / HFZ / AZ	Other
22.72	J	55	Pl	Sl	IX	CD	Cn		
23.35	J	10	Pl	Sl	IX	CD	Cn		
23.37	J	30	Pl	Sm	VIII	OP	Cn		
23.54	J	60	Pl	Sl	IX	CD	Vr		CA
23.86	J	20	Pl	Sm	VIII	OP	Cn		
23.92	FP	60	Pl	Sl	IX	CD	Cn		
24.00	FP	60	Pl	Sl	IX	CD	Cn		
24.26	J	10	Pl	Sm	VIII	OP	Cn		
24.34	J	30	Un	Sm	V	OP	Cn		
24.45	J	10	Un	Sm	V	OP	Cn		
24.48	J	45	Pl	Sm	VIII	OP	Ct		Clay 2mm-4mm
24.53	J	30	Stp	Ro	I	OP	Cn		BZ 6mm
24.63	J	30	Un	Ro	IV	OP	Vr		Clay
24.67	J	15	Un	Ro	IV	CD	Cn		
24.72	J	60	Un	Sm	V	OP	Cn		
24.77	FP	65	Pl	Sl	IX	OP	Ct	SZ	5mm
24.80	J	50	Pl	Sm	VIII	CD	Cn		
24.90	J	80	Pl	Sm	VIII	CD	Cn		
24.93	FP	60	Un	Sm	V	CD	Cn		
24.99	J	25	Pl	Sm	VIII	CD	Cn		
25.15	J	50	Pl	Sm	VIII	CD	Cn		
25.23	FP	60	Pl	Sl	IX	CD	Cn		
25.31	J	30	Un	Ro	IV	OP	Cn		
25.36	J	45	Stp	Ro	I	CD	Cn		
25.48	J	35	Pl	Sm	VIII	OP	Ct		10mm XW, Clay
25.50	J	35	Pl	Sm	VIII	OP	Cn		
25.71	J	45	Pl	Ro	VII	OP	Cn		
25.77	J	50	St	Ro	I	CD	Cn		
26.04	J	30	Pl	Sm	VIII	CD	Cn		
26.16	J	45	Pl	Sm	VIII	CD	Cn		
26.18	FP	60	Pl	Sm	VIII	CD	Cn		

Note: 1. Describe zones and coatings in terms of composition and thickness (mm)

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Project Name		Cross River Rail				Project No.		FG6470	
Site ID / Borehole No.		CRR722				Surface RL		32.91	
Geologist		M.H.				Date		26/09/2017	
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Traverse Chainage; or Down hole depth (rock core)	Type LP / BP / FP / J etc.	Dip ° / Dip Direction °; or Angle ° from horizontal (rock core)	Planarity Stp / Un / Pl	Roughness Ro / Sm / Sl	Roughness Class I to IX	Aperture CD / OP / FL / TI	Infilling Cn / St / Vr / Ct ¹	Zones ¹ SZ / CZ / HFZ / AZ	Other
26.27	J	40	Pl	Sm	VIII	CD	Cn		
26.53	J	25	Pl	Sm	VIII	OP	St		CA
26.65	J	30	Pl	Sm	VIII	OP	St		CA
26.78	J	10	Pl	Ro	VII	OP	Cn		
26.90	J	10	Pl	Ro	VII	OP	Cn		
26.97	J	10	Un	Ro	IV	OP	Ct		Clay 5mm
26.98	FP	60	Pl	Sm	VIII	OP	Ct		*
* 50mm XW / Clay BZ 100mm									
27.00									BZ 100mm
27.10	FP	60	Pl	Sl	IV	OP	Ct		5mm Clay
27.18	FP	60	Pl	Sl	IX	OP	Cn		
27.26	J	15	Pl	Ro	VII	OP	Cn		
27.37	J	65	Pl	Sm	VIII	OP	Cn		
27.66	J	30	Pl	Sm	VIII	OP	Cn		
28.00	J	40	Cn	Ro	IV	OP	Cn		
28.08	J	30	Pl	Ro	VII	OP	Cn		
28.20	FP	60	Pl	Sl	IX	OP	Cn		
28.23	J	30	Pl	Ro	VII	OP	Cn		
28.34	J	5	Un	Ro	IV	OP	Cn		
28.39	J	60	Pl	Sm	VIII	OP	Vr		CA
29.05	J	45	Pl	Ro	VII	OP	Cn		
29.68	J	25	Stp	Ro	I	OP	Cn		
29.83	J	20	Pl	Sm	VIII	OP	Cn		
29.92	J	25	Un	Sm	V	OP	Cn		
29.95	FP	50	Pl	Sl	IX	CD	Cn		
30.14	J	75	Stp	Ro	I	OP	Vr		CA
30.20	J	20	Stp	Ro	I	OP	Cn		
30.25	J	65	Pl	Sm	VIII	OP	Cn		
30.34	J	60	Pl	Sm	VIII	OP	Cn		
30.36	FP	60	Pl	Sl	IX	OP	Cn		
30.43	FP	60	Pl	Sl	IX	OP	Cn		

Note: 1. Describe zones and coatings in terms of composition and thickness (mm)

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Project Name		Cross River Rail				Project No.		FG6470	
Site ID / Borehole No.		CRR722				Surface RL		32.91	
Geologist		M.H.				Date		26/09/2017	
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Traverse Chainage; or Down hole depth (rock core)	Type LP / BP / FP / J etc.	Dip ° / Dip Direction °; or Angle ° from horizontal (rock core)	Planarity Stp / Un / Pl	Roughness Ro / Sm / Sl	Roughness Class I to IX	Aperture CD / OP / FL / TI	Infilling Cn / St / Vr / Ct ¹	Zones ¹ SZ / CZ / HFZ / AZ	Other
30.50	J	40	Pl	Sm	VIII	OP	Cn		
30.55	FP	60	Pl	Sl	IX	OP	Cn		
30.63	FP	60	Pl	Sl	IX	OP	Cn		
31.02	J	60	Pl	Ro	VII	CD	Cn		
31.06	FP	65	Pl	Sm	VIII	OP	Cn		
31.35	J	90	Pl	Sm	VIII	OP	Vr	* Clay 31.06m-31.55m	
31.55	J	30	Pl	Sm	VIII	OP	Ct		*
* 50mm VL strength argillite and fragmented rock.									
31.55	J	30	Pl	Sm	VIII	OP	Cn		
31.71	FP	60	Pl	Sm	VIII	OP	Vr		Clay
31.80	FP	50	Pl	Sm	VIII	OP	Cn		
31.85	J	30	Pl	Sm	VIII	CD	Cn		
31.90	J	40	Pl	Sm	VIII	OP	Cn		BZ 100mm
32.05	J	50	Stp	Sm	III	OP	Cn		
32.09	FP	60	Pl	Sm	IX	OP	Cn		
32.16	FP	60	Pl	Sm	IX	OP	Cn		
32.18	J	80	Stp	Ro	I	OP	Cn		31.9-33.2m
32.20	FP	60	Pl	Sl	IX	OP	Ct		Clay 2mm
32.30	FP	45	Pl	Sm	VIII	OP	Sm		
32.39	FP	45	Pl	Sm	VIII	OP	Cn		
32.48	FP	45	Pl	Sm	VIII	OP	Cn		
32.58	J	35	Pl	Sm	VIII	OP	Vr		Clay
32.60	J	60	Pl	Sm	VIII	OP	Vr		Clay
33.07	FP	60	Pl	Sl	IX	OP	Cn		
33.43	J	60	Stp	Sm	III	CD	Cn		
33.65	J	60	Pl	Sl	IX	OP	Cn		
33.77	J	30	Pl	Sm	VIII	OP	Cn		

Note: 1. Describe zones and coatings in terms of composition and thickness (mm)

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