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GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **CRR715**

Sheet 1 of 5

REFERENCE No **H12941**

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

LOCATION **Roma Street Station (QR land)/Station cavern**

COORDINATES **501843.0 E; 6962002.9 N**

PROJECT No **FG6470**

SURFACE RL **19.85m**

PLUNGE **90°**

DATE STARTED **11/10/2017**

GRID DATUM **MGA94**

JOB No

HEIGHT DATUM **AHD**

BEARING °

DATE COMPLETED **18/10/2017**

DRILLER **Geodrill**

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 J VL EL		EC VC C M W VW EW		
	19.35				Silty SAND (Topsoil) Brown, moist. Fine to medium grained gravel, low plasticity fines. Trace organics (roots).		(SM)				
1					Clayey GRAVEL (Fill) Pale brown, dry, medium dense to dense. Fine to medium grained gravel, angular, low plasticity clay.		(GC)				
	18.45			A	Sandy CLAY (Residual) Red brown and dark brown, moist, firm. Fine to coarse grained sand. High plasticity.					8, 3, 3 N=6	SPT
2											
				B	From 3.0m: Becoming stiff.		CH			2, 4, 5 N=9 LL=51% PI= 37% LS= 10% <75µm= 56%	SPT
3											
	15.35			C	Silty Sandy GRAVEL (Residual) Grey mottled orange brown, moist, dense. Fine to medium grained.					8, 12, 19 N=31 LL=32% PI= 14% LS= 8% <75µm= 24%	SPT
5											
				D	From 6.0m: Becoming very dense.		GM			23, 30/135mm hb	SPT
6											
	12.85			E	Clayey Gravelly SAND (Residual) Grey brown, moist, hard. Fine grained gravel, fine to coarse grained sand.					24, 30/60mm hb LL=30% PI= 12% LS= 5% <75µm= 38%	SPT
8							SC				
	10.80			F	ARGILLITE (DCf) HW: Orange brown grey, fine grained, foliated, low to medium strength. With quartz veins. (See over)		HW			30/50mm hb	SPT
9			(0)								
	9.85		100 (0)							Is(50)=0.21 MPa Is(50)=1.20 MPa	A (9.59m) D (9.63m)

Continued on next sheet

REMARKS: DCf - Neranleigh Fernvale Beds

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GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **CRR715**

Sheet 2 of 5

REFERENCE No **H12941**

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

LOCATION **Roma Street Station (QR land)/Station cavern**

COORDINATES **501843.0 E; 6962002.9 N**

PROJECT No **FG6470**

SURFACE RL **19.85m**

PLUNGE **90°**

DATE STARTED **11/10/2017**

GRID DATUM **MGA94**

JOB No

HEIGHT DATUM **AHD**

BEARING °

DATE COMPLETED **18/10/2017**

DRILLER **Geodrill**

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	LVH	H	M	J	VL	EL	EC	VC	C				M	W	VW	EW	
11	8.65				ARGILLITE (DCf) HW: Cont'd. -Js: 20°-30° (11/m), Pl-Un/Ro, OP, Cn-FeSt		HW								LM	VC							Is(50)=0.28 MPa Is(50)=0.47 MPa	A (10.17m) D (10.19m)	
	8.05				CORE LOSS		XW																		
12			73 (0)		ARGILLITE (DCf) MW: Grey and brown, fine to coarse grained, foliated, low strength. -Js: 0°-35° (13/m), Pl-Un/Sm-Ro, TI-OP-FL, FeSt / Cly Ct		HW XW																		
13	6.72		100 (0)		-FP: 30°-90° (5/m), Un/Ro, CD-OP, Cn-FeSt		MW																	Is(50)=0.18 MPa Is(50)=0.11 MPa	D (12.70m) A (12.86m)
14			100 (0)		ARGILLITE (DCf) XW: Recovered as Gravelly CLAY (Cl). Dark grey brown, moist, extremely low strength. Medium plasticity. Fine to coarse grained angular gravel.		XW																		
15	5.35		100 (52)		ARGILLITE (DCf) HW: Grey brown and dark grey, fine grained, foliated, very low strength. -FP: 0°-35° (9/m), Un/Sm-Ro, CL-OP, FeSt-Cly Vr		HW								VL	VC								Is(50)=0.08 MPa	D (15.24m)
16	3.70		100 (31)																						
17	2.50		100 (0)		ARGILLITE (DCf) XW: Recovered as Gravelly CLAY (CH). Dark grey and grey, moist, extremely low strength. High plasticity. Fine to coarse grained angular gravel. Shear zone.		XW																		
18	1.85		51 (0)		CORE LOSS																				
19	0.75		100 (0)		ARGILLITE (DCf) XW: Recovered as Gravelly CLAY (CH). Dark grey and grey, moist, extremely low strength. High plasticity. Fine to coarse grained angular gravel. Shear zone.		XW																		
	-0.15		100 (0)		ARGILLITE (DCf) HW: Grey dark grey, fine grained, foliated, low strength.		HW																	Is(50)=0.04 MPa Is(50)=0.08 MPa	A (19.20m) D (19.31m)
			100		Shear zone.																			Is(50)=0.05 MPa Is(50)=0.32 MPa	A (19.87m) D (19.90m)

Continued on next sheet

REMARKS: DCf - Neranleigh Fernvale Beds

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GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **CRR715**

Sheet 3 of 5

REFERENCE No **H12941**

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

LOCATION **Roma Street Station (QR land)/Station cavern**

COORDINATES **501843.0 E; 6962002.9 N**

PROJECT No **FG6470**

SURFACE RL **19.85m**

PLUNGE **90°**

DATE STARTED **11/10/2017**

GRID DATUM **MGA94**

JOB No

HEIGHT DATUM **AHD**

BEARING °

DATE COMPLETED **18/10/2017**

DRILLER **Geodrill**

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 LVH H M J VL EL	EC VC C M W VW EW		
21	-1.75		(0)	92	ARGILLITE (DCf) HW: Cont'd.		HW		L C		
			(0)	100							
22			(0)	100	ARGILLITE (DCf) XW: Recovered as Gravelly CLAY (CH). Dark grey and grey, moist, extremely low strength. High plasticity. Fine to coarse grained angular gravel. Shear Zone.		XW				
23	-3.70		(0)	100							
24	-4.15		(0)	10	CORE LOSS						
			(0)	100	ARGILLITE (DCf) HW: Dark grey and pale grey, fine grained, foliated, low strength. With frequent quartz veins and fine quartz gravel fragments.		XW			24.26m-24.42m: Brazilian Tensile Strength = 0.550 MPa	
25	-5.25		(0)	100			HW		L		
			(0)	100	ARGILLITE (DCf) XW: Recovered as Gravelly CLAY (CI-CH). Dark grey and grey, moist, extremely low strength. Medium to high plasticity. Fine to coarse grained angular gravel. Shear zone.		XW			Is(50)=0.06 MPa Is(50)=0.02 MPa UCS=0.54 MPa E=0.377 GPa v= 0.018	D (25.61m) A (25.80m) (26.31m)
26			(0)	100							
27			(0)	60							
			(0)	100							
28	-8.35		(0)	100							
			(0)	100	ARGILLITE (DCf) FR: Dark grey and pale grey, fine grained, foliated, mainly high strength. Frequent crenulated quartz bands parallel to foliation <12mm thick, and cross cutting quartz veins/veinlets <100mm thick.		FR			Is(50)=0.31 MPa Is(50)=0.78 MPa	D (28.20m) A (28.21m)
29	-10.15		(0)	100						29.78m-29.90m: CAI=1.17	



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BOREHOLE LOG

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

BOREHOLE No **CRR715**

Sheet 4 of 5

REFERENCE No **H12941**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation				
LOCATION	Roma Street Station (QR land)/Station cavern			COORDINATES 501843.0 E; 6962002.9 N	
PROJECT No	FG6470	SURFACE RL	19.85m	PLUNGE	90°
				DATE STARTED	11/10/2017
				GRID DATUM	MGA94
JOB No		HEIGHT DATUM	AHD	BEARING	°
				DATE COMPLETED	18/10/2017
				DRILLER	Geodrill

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	VW	EW																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
31					100 (8)		ARGILLITE (DCf) FR: Cont'd. -Js: 20°-45° (5-7/m), Pl-Un-Stp/Ro, OP, Cn-Ct -FP: 45°-60° (3/m), Un/Ro, OP, Cn -Js: 60°-90° (<1/m), Un/Ro, OP, St																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

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REMARKS: DCf - Neranleigh Fernvale Beds	LOGGED BY	REVIEWED BY
	SB	S. Foley



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GEOTECHNICAL
BOREHOLE LOG

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

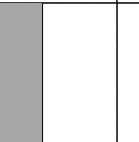
BOREHOLE No **CRR715**
Sheet 5 of 5
REFERENCE No **H12941**

PROJECT Cross River Rail CRR2017 - Additional Geotechnical Investigation

LOCATION Roma Street Station (QR land)/Station cavern COORDINATES 501843.0 E; 6962002.9 N

PROJECT No FG6470 SURFACE RL 19.85m PLUNGE 90° DATE STARTED 11/10/2017 GRID DATUM MGA94

JOB No HEIGHT DATUM AHD BEARING ° DATE COMPLETED 18/10/2017 DRILLER Geodrill

DEPTH (m)	R.L. (m)	AUGER CASING	WASHBORING	CORE DRILLING	RQD () %	MATERIAL DESCRIPTION	LITHOLOGY	USCS WEATHERING	INTACT STRENGTH					DEFECT SPACING					ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
					CORE REC %				EH	VH	H	M	L	VL	EL	EC	VC	C		
					100	ARGILLITE (DCf)		FR											Is(50)=3.40 MPa Is(50)=0.63 MPa	D (40.15m) A (40.17m)
				(100)	FR: Cont'd.															
				(100)	Core sample collected by Sigra for Insitu Stress testing.															
41	-21.15				100	Borehole completed at 41.00m														
42																				
43																				
44																				
45																				
46																				
47																				
48																				
49																				

REMARKS: <u>DCf - Neranleigh Fernvale Beds</u>	LOGGED BY	REVIEWED BY
	<u>SB</u>	<u>S. Foley</u>

CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	18/10/2017
Borehole No.	CRR715	Reference No.	H12941
Location	Roma Street Station	Start Depth (m)	9.05
Submitted By	M. de Gee	Finish Depth (m)	41.0



CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	18/10/2017
Borehole No.	CRR715	Reference No.	H12941
Location	Roma Street Station	Start Depth (m)	9.05
Submitted By	M. de Gee	Finish Depth (m)	41.0



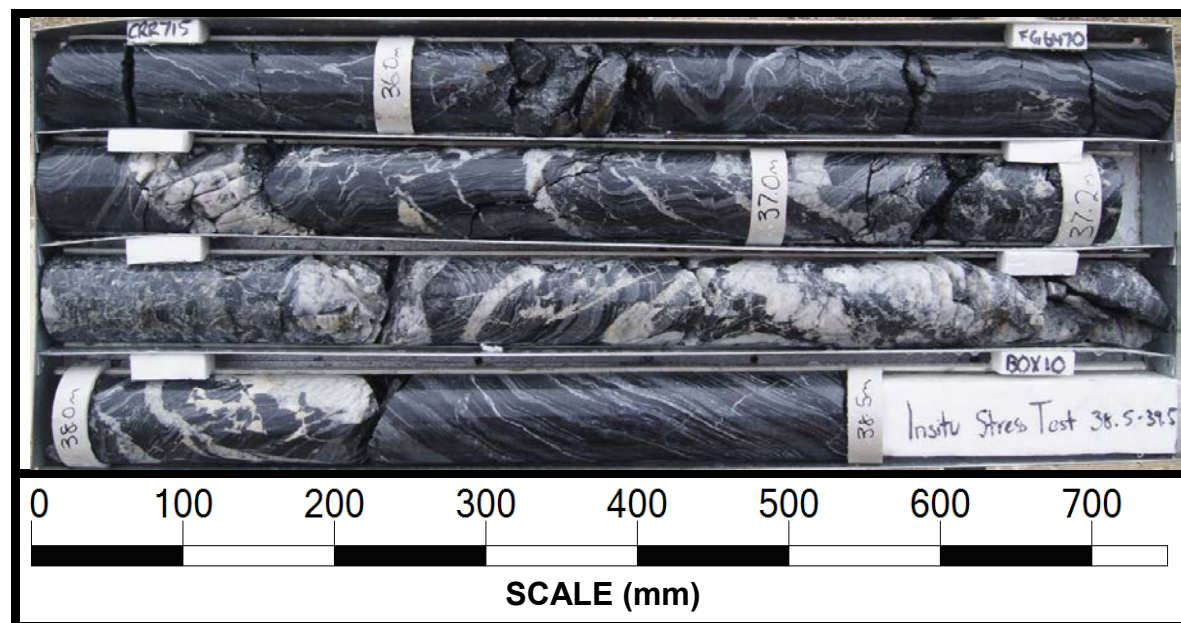
CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	18/10/2017
Borehole No.	CRR715	Reference No.	H12941
Location	Roma Street Station	Start Depth (m)	9.05
Submitted By	M. de Gee	Finish Depth (m)	41.0



CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	18/10/2017
Borehole No.	CRR715	Reference No.	H12941
Location	Roma Street Station	Start Depth (m)	9.05
Submitted By	M. de Gee	Finish Depth (m)	41.0



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.		CRR715				Surface RL		19.00	
Geologist		S.B.				Date		11/10/2017	
						Page		1	of 5
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
9.05 - 9.30								HFZ	
9.30	J	50	Stp	Ro	I	OP	St		
9.35	J	0	Un	Ro	IV	OP	Ct	CZ	
9.41 - 9.44								AZ	
9.46	J	20	Stp	Ro	I	OP	Cn		
9.53	FP	60	Un	Ro		CD	Vr		8mm Qz
9.66	J	20	Stp	Ro	I	OP	Cn		
9.67	J	20	Un	Ro	IV	OP	Cn		
9.70 - 9.76								HFZ	
9.76	J	40	Stp	Ro	I	OP	St		
9.76 - 9.90	FP	90	Un	Ro	IV	OP	Ct	Clay infill 10mm	
9.84	J	0	Un	Ro	IV	OP	Ct	Clay infill 1mm	
10.03	J	30	Stp	Ro	I	OP	St		
10.08 - 10.12							HFZ		
10.16	FP	70	Pl	Ro	VII	OP	Cn		
10.20	J	30	Pl	Ro	VII	OP	Cn		
10.27	J	25	Pl	Ro	VII	OP	Cn		
10.29	J	30	Pl	Ro	VII	OP	Cn		
10.31 - 10.34	J	20	Un	Ro	IV	CD	Vr	Quartz 20mm + CZ	
10.46	J	20	Pl	Ro	VII	OP	Cn		
10.48	J	20	Un	Ro	IV	OP	Cn		
10.50 - 10.55	Grinding induced fractures								
10.48 - 10.73	FP	80	Pl	Ro	VII	OP	St		
10.61	J	10	Stp	Ro	I	OP	Cn		
10.80	J	15	Un	Ro	IV	OP	Cn		
10.78 - 11.08	J	90	Un	Ro	IV	OP	Cn		
11.04	J	0	Un	Ro	IV	OP/CD			
11.10 - 11.16							Ct	AZ	Qz zone
11.80 - 11.95							HFZ		
12.02	J	20	Un	Ro	IV	OP	Ct		Cly
12.09	J	40	Un	Ro	IV	CD	-		

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

F:GEOT 533/9 – 2014

Detailed Discontinuity Description Log

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Project Name		Cross River Rail				Project No.	FG6470		
Site ID / Borehole No.		CRR715				Surface RL	19.00		
Geologist		S.B.				Date	11/10/2017		
						Page	2	of	5
Traverse Chainage; or Down hole depth (rock core)	Type	Dip ° / Dip Direction °;	Planarity	Roughness	Roughness Class	Aperture	Infilling	Zones ¹	Other
	LP /	or				CD /	Cn /	SZ /	
	BP /	Angle ° from	Stp /	Ro /	I to IX	OP /	St /	CZ /	
	FP /	horizontal	Un /	Sm /		FL /	Vr /	HFZ /	
	J etc.	(rock core)	PI	SI		TI	Ct ¹	AZ	
12.12	J	30	Un	Ro	IV	OP	Cn		
12.18	FP	30	PI	Ro	VII	OP	St		
12.24	J	30	Un	Ro	IV	OP	St		
12.28	J	0	Stp	Ro	I	OP	St		
12.32	J	0	Un	Ro	IV	CD			
12.33	J	60	Un	Ro	IV	CD	Vr		Qz (10mm)
12.38	J	30	PI	Ro	VII	OP	St		
12.36 - 12.46	J	80	Un	Ro	IV	OP	St		
12.48	J	0	Un	Ro	IV	OP	St		
12.50	J	50	Un	Ro	IV	CD	Ct		Qz (2mm)
12.57	J	30	Un	Ro	IV	OP/CD			
12.62 - 12.64	J	0	Un	Ro	IV	OP	Ct	CZ	
12.98	J	30	Un	Ro	IV	OP	Cn		
13.06	J	0	Un	Ro	IV	OP	Cn		
13.15	J	30	Un	Ro	IV	OP	Ct		Cly
14.97	Packing Break								
14.57	J	30	Un	Ro	IV	OP	Cn		
14.66	J	0	Un	Ro	IV	OP	Cn		
14.87 - 14.91	J	30	Un	Ro	IV	OP	Ct	CZ	40mm
15.09	J	20	Un	Ro	IV	CD			
15.15	FP	60	Un	Ro	IV	CD			
15.32	FP	60	PI	Ro	VII	OP	St		
15.41	FP	60	PI	Ro	VII	OP	Ct	CZ	
15.53	FP	60	Un	Ro	IV	CD	Ct		Cly
15.56 - 15.60								HFZ	
15.75	J	30	Un	Ro	IV	OP	Ct		Cly
XW/RS zone									
28.09	J	45	PI	Ro	VII	OP	Vr		Qz (15mm)
28.20	J	30	PI	Ro	VII	OP	Cn		
28.36	J	60	Un	Ro	IV	OP	Cn		
28.2 - 28.36	J	90	St	Ro	I	OP	Cn		

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

F:GEOT 533/9 – 2014

Detailed Discontinuity Description Log

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Project Name		Cross River Rail				Project No.	FG6470		
Site ID / Borehole No.		CRR715				Surface RL	19.00		
Geologist		S.B.				Date	11/10/2017		
						Page	3	of	5
Traverse Chainage; or Down hole depth (rock core)	Type	Dip ° / Dip Direction °; or Angle ° from horizontal (rock core)	Planarity	Roughness	Roughness Class	Aperture	Infilling	Zones ¹	Other
	LP /					CD /	Cn /	SZ /	
	BP /		Stp /	Ro /	I to IX	OP /	St /	CZ /	
	FP /		Un /	Sm /		FL /	Vr /	HFZ /	
	J etc.		PI	SI		TI	Ct ¹	AZ	
28.62 - 28.87		HFZ						HFZ	
28.87 - 29.00	J	80	PI	Ro	VII	OP	Cn		
29.00	J	15	Un	Ro	IV	OP	Cn		
29.02 - 29.13	J	80	Un	Ro	IV	OP	St		
29.13	J	0	Un	Ro	IV	OP	Cn		
29.20 - 29.30	J	60	Un	Ro	IV	OP	St		
29.30 - 29.39	J	90	Un	Ro	IV	OP	St		
29.39 - 29.53	J	70	Un	Ro	IV	OP	St		
29.76	FP	30	PI	Ro	VII	OP	Cn		
29.81	J	30	St	Ro	I	OP	Cn		
30.27 - 30.45							Ct	HFZ	
30.45	J	30	Un	Ro	IV	OP	Ct	HFZ	
30.46 - 30.74	FP	90	Un	Ro	IV	OP	St		
30.58	J	60	Stp	Ro	I	OP	St		
30.61	J	25	Un	Ro	IV	OP	Cn		
30.82	FP	30	PI	Ro	VII	OP	Cn		
30.89	J	45	Stp	Ro	I	OP	Vr	Quartz/Rock seam	
30.99	J	0	PI	Ro	VII	OP	Cn		
30.99 - 31.12	J	80	PI	Ro	VII	OP	St		
31.12	J	20	Stp	Ro	I	OP	Vr		Qz
31.17	J	60	PI	Ro	VII	OP	St		
31.14	J	60	PI	Ro	VII	OP	Vr		Qz
31.28	J	45	Un	Ro	IV	OP	Cn		Int
31.38	FP	45	Un	Ro	IV	OP	Cn		
31.40	J	0/60	Un	Ro	IV	OP	Cn		Int
31.48	FP	45	PI	Ro	VII	OP	Cn		
31.52	FP	60	Un	Ro	IV	OP	Cn		
31.55	FP	60	Un	Ro	IV	OP	Cn		
31.60 - 31.69								AZ	
31.74	FP	60	Un	Ro	IV	OP	Cn		
31.86	FP	45	Un	Ro	IV	OP	Cn		

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

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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.		CRR715				Surface RL	19.00		
Geologist		S.B.				Date	11/10/2017		
						Page	4	of	5
Traverse Chainage; or Down hole depth (rock core)	Type	Dip ° / Dip Direction °;	Planarity	Roughness	Roughness Class	Aperture	Infilling	Zones ¹	Other
	LP /	or				CD /	Cn /	SZ /	
	BP /	Angle ° from	Stp /	Ro /	I to IX	OP /	St /	CZ /	
	FP /	horizontal	Un /	Sm /		FL /	Vr /	HFZ /	
(rock core)	J etc.	(rock core)	PI	SI		TI	Ct ¹	AZ	
31.91	FP	65	Un	Ro	IV	OP	Cn		
31.99	J	0	Un	Ro	IV	OP	Cn		
32.05	J	30	Un	Ro	IV	OP	Cn		
32.05 - 32.10								HFZ (clay washout?)	
32.20	J	45	Stp	Ro	I	OP	Cn		
32.36	J	0	Stp	Ro	I	OP	Cn		
32.43	J	20	PI	Ro	IV	OP	Cn		
32.50	OB								
32.58	J	30	Stp	Ro	I	OP	Cn		
32.75	J	30	Un	Ro	IV	OP	Cn		
33.00	OI								
33.09	J	30	Un	Ro	IV	OP			
33.11	J	0	Un	Ro	IV	OP			
33.19	J	20	St	Ro	I	OP			
33.54	J	0	Un	Ro	IV	OP			
33.85	J	5	St	Ro	IV	OP			
34.21 - 34.31	J	60	Stp	Ro	I	OP	Cn		
34.40	FP	45	PI	Ro	VII	OP	Cn		Int
34.42	FP	45	PI	Ro	VII	OP	Cn		Int
34.70 - 34.73								HFZ	
34.83	J	45	Un	Ro	IV	OP	Cn		
34.83 - 34.91								HFZ	
34.97	FP	60	Un	Ro	IV	OP	Ct		Fractured top
34.97	J	0	St	Ro	I	OP	Cn		
35.07	J	20	PI	Ro	V	OP	Cn		
35.07 - 35.10								HFZ	
35.10	J	20	PI	Ro	VII	OP	Cn		
35.20	J	20	Un	Ro	IV	OP	Cn		
35.26	J	5	Un	Ro	IV	OP	Vr		Qz interface
35.26	J	90	PI	Ro	VII	OP	Cn		
35.32	J	45	PI	Ro	VII	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.		CRR715				Surface RL	19.00		
Geologist		S.B.				Date	11/10/2017		
						Page	5	of	5
Traverse Chainage; or Down hole depth (rock core)	Type	Dip ° / Dip Direction °;	Planarity	Roughness	Roughness Class	Aperture	Infilling	Zones ¹	Other
	LP /	or				CD /	Cn /	SZ /	
	BP /	Angle ° from	Stp /	Ro /	I to IX	OP /	St /	CZ /	
	FP /	horizontal	Un /	Sm /		FL /	Vr /	HFZ /	
J etc.	(rock core)	PI	SI			TI	Ct ¹	AZ	
35.37	FP	70	PI	Ro	VII	OP	Cn		Int
35.37	J	10	Un	Ro	IV	OP	Cn	Fractured top, Int	
35.56	J	5	PI	Ro	VII	OP	Cn		
35.61 - 35.63	J	10	Un	Ro	IV	OP	Ct	HFZ	Z
35.82	J	0	Un	Ro	IV	OP	Cn		
35.91	J	20	PI	Ro	VII	OP	Cn		
36.00	J	30	PI	Ro	VII	OP	Cn		
36.07	J	30	Un	Ro	IV	OP	Ct	HFZ	Int
36.13	J	30	Un	Ro	IV	OP	Ct	HFZ	Int
36.16	J	30	Un	Ro	IV	OP	Ct	HFZ	Int
36.35	J	0	Un	Ro	IV	OP	Cn		
36.41	J	0	Un	Ro	IV	CD			
36.46	J	10	Un	Ro	IV	OP	Cn		
36.60	J	30	Un	Ro	IV	OP	Ct		Qz
36.60 - 36.68									Qz zone
36.68	J	50	PI	Ro	VII	OP	Ct		Qz
36.83	J	60	Stp	Ro	I	OP	Cn		
37.07	J	10	Stp	Ro	I	OP	Cn		
37.12	J	40	Un	Ro	IV	OP	Cn		
37.48	FP	60	Un	Ro	IV	OP	Cn		
37.68	FP	60	Un	Ro	IV	OP	Cn		
37.85	FP	45	Un	Ro	IV	OP	Cn		
37.89 - 37.95								HFZ	
37.95	J	60	Un	Ro	IV	OP	Cn		
38.19	J	30	Un	Ro	IV	OP	Cn		
38.72	J	30	Un	Ro	IV	OP	Cn		
38.88	J	30	Un	Ro	IV	OP	Cn		
39.09	J	30	Un	Ro	IV	OP	Cn		
40.30	Drilling induced								
40.30 - 40.40	J	60	PI	Ro	VII	OP	Ct	SZ	
40.87	J	25	Un	Ro	IV	OP	Cn		

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

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