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**GEOTECHNICAL
BOREHOLE LOG**

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

BOREHOLE No **CRR716**

Sheet 1 of 4

REFERENCE No **H12942**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation		
LOCATION	Roma Street Station (QR land)/Station Cavern	COORDINATES 501720.0 E; 6962038.0 N	
PROJECT No	FG6470	SURFACE RL 18.91m	PLUNGE 90°
			DATE STARTED 29/09/2017
			GRID DATUM MGA94
JOB No		HEIGHT DATUM AHD	BEARING °
			DATE COMPLETED 10/10/2017
			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
18.51						Sandy SILT (Topsoil) Brown, dry, soft. Low plasticity. Fine to medium grained sand, trace roots.	(ML)						
17.21					A	Sandy CLAY (Fill) Brown, moist, stiff to very stiff. Medium plasticity. Fine to coarse grained sand, angular.	(CI)					6, 8, 12 N=20 SPT	
					B	Clayey SAND (Residual) Brown mottled red, moist, medium dense. Low plasticity clay; fine to medium grained sand.	SC					14, 30/125mm LL=27% Pl= 10% MC=5.9% LS= 4% <75µm= 49% SPT	
14.71					(0)	ARGILLITE (DCf) MW: Orange brown, fine grained, foliated, medium to high strength. Iron staining throughout, -FP: 30°-50° (<1/m), Un-Pl/Ro, OP, Fe St -Js: 20°-50° (<1/m), Pl/Ro, OP, Fe St	MW					D (5.17m) A (5.35m)	
			100 (0)										
			100 (0)										
			100 (31)									D (6.89m) A (7.05m)	
			100 (15)										
			100 (0)										
			100 (0)										
			100 (0)										
			100 (0)										
8.91													

Continued on next sheet

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

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SB	S. Foley



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**GEOTECHNICAL
BOREHOLE LOG**

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

BOREHOLE No **CRR716**

Sheet 2 of 4

REFERENCE No **H12942**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation		
LOCATION	Roma Street Station (QR land)/Station Cavern	COORDINATES 501720.0 E; 6962038.0 N	
PROJECT No	FG6470	SURFACE RL 18.91m	PLUNGE 90°
			DATE STARTED 29/09/2017
			GRID DATUM MGA94
JOB No		HEIGHT DATUM AHD	BEARING °
			DATE COMPLETED 10/10/2017
			DRILLER Geodrill

DEPTH (m)	R.L. (m)	FAUGER 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
8.11			100 (48)			ARGILLITE (DCf) MW: Cont'd.		MW	H L M				
11						ARGILLITE (DCf) SW: Grey minor orange-brown, fine grained, foliated, high to very high strength. Occasional crosscutting quartz veins <5mm, 30°-50°. - Js: 10°-30° (3/m) Pl/Ro, TI, Fe St - Js: 40°-50° (<1/m) Pl/Ro, TI, Fe St		SW MW		C C	Is(50)=3.80 MPa Is(50)=4.30 MPa Is(50)=3.10 MPa Is(50)=2.30 MPa	D (10.83m) A (10.96m) A (11.00m) D (11.13m)	
12			100 (87)								Is(50)=1.50 MPa Is(50)=2.90 MPa Is(50)=1.50 MPa Is(50)=2.50 MPa	A (12.05m) D (12.17m) A (12.34m) D (12.57m)	
13.35m-15.47m: Altered Zone, Qz 13.40m-14.00m: HFZ			100 (74)										
14.81						ARGILLITE (DCf) FR: Grey and dark grey, fine grained, foliated, high to very high strength. - FP: 40°-50° (<1/m) Pl/Sm, TI, Cn - Js: 5°-20° (3-4/m) Pl/Sm-Ro, TI-OP, Cn - Js: 60°-70° (<1/m) Pl/Sm-Ro, TI-OP, Fe St		FR		M	Is(50)=6.30 MPa Is(50)=6.90 MPa Is(50)=4.50 MPa Is(50)=6.90 MPa Is(50)=5.70 MPa Is(50)=7.80 MPa	D (14.67m) A (14.81m) A (15.29m) D (15.35m) A (15.86m) D (15.90m)	
17			100 (57)					SW		C			
18			100 (96)								Is(50)=6.10 MPa Is(50)=2.90 MPa	A (18.14m) D (18.24m)	
19			100 (92)					FR			Is(50)=3.70 MPa Is(50)=5.20 MPa	A (18.89m) D (18.94m)	
-1.09													

Continued on next sheet

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

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SB	S. Foley



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**GEOTECHNICAL
BOREHOLE LOG**

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

BOREHOLE No **CRR716**

Sheet 3 of 4

REFERENCE No **H12942**

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

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

COORDINATES **501720.0 E; 6962038.0 N**

PROJECT No **FG6470**

SURFACE RL **18.91m**

PLUNGE **90°**

DATE STARTED **29/09/2017**

GRID DATUM **MGA94**

JOB No

HEIGHT DATUM **AHD**

BEARING °

DATE COMPLETED **10/10/2017**

DRILLER **Geodrill**

DEPTH (m)	R.L. (m)	FOUGER CASING WASHBORING CONE DRILLING	RQD (%)	CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USCS WEATHERING	INTACT STRENGTH	DEFECT SPACING	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS		
													EH	VH
21						ARGILLITE (Dcf) FR: Cont'd.					Is(50)=7.70 MPa Is(50)=5.30 MPa	D (20.43m) A (20.51m)		
22											Is(50)=4.70 MPa Is(50)=5.00 MPa	D (22.04m) A (22.12m)		
23			100 (97)											
24											Is(50)=6.00 MPa Is(50)=5.20 MPa	D (23.48m) A (23.50m)		
25							FR		H-VH	M				
26			100 (92)								Is(50)=4.30 MPa Is(50)=1.60 MPa	D (25.66m) A (25.74m)		
27											Is(50)=3.40 MPa Is(50)=5.60 MPa UCS=57.80 MPa E=62.4 GPa v= 0.113	A (27.07m) D (27.12m) (27.22m)		
28											Is(50)=2.60 MPa Is(50)=2.60 MPa	D (27.93m) A (27.97m)		
29			100 (95)								Is(50)=2.00 MPa Is(50)=3.60 MPa	A (28.62m) D (28.65m)		
-11.09											28.80m: Brazilian Tensile Strength = 0.113MPa 29.13m: CAI=2.03 29.88m: Slake Durability Index Test	(29.33m)		

Continued on next sheet

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

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**GEOTECHNICAL
BOREHOLE LOG**

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

BOREHOLE No **CRR716**

Sheet 4 of 4

REFERENCE No **H12942**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation		
LOCATION	Roma Street Station (QR land)/Station Cavern	COORDINATES 501720.0 E; 6962038.0 N	
PROJECT No	FG6470	SURFACE RL 18.91m	PLUNGE 90°
			DATE STARTED 29/09/2017
			GRID DATUM MGA94
JOB No		HEIGHT DATUM AHD	BEARING °
			DATE COMPLETED 10/10/2017
			DRILLER Geodrill

DEPTH (m)	R.L. (m)	FAUGER 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
30.03m-30.11m						ARGILLITE (DCf) FR: Cont'd.					HW, HFZ		
30.32m											Brazilian Tensile Strength = 0.142MPa	Is(50)=2.10 MPa Is(50)=2.00 MPa	D (30.22m) A (30.44m)
30.86m											CAI=1.71		
31.40m											CAI=1.73		
31.40m			100 (93)									Is(50)=5.80 MPa Is(50)=4.20 MPa	D (31.55m) A (31.64m)
32.25m												Is(50)=3.80 MPa Is(50)=3.90 MPa	A (32.25m) D (32.33m)
32.83m												UCS=61.20 MPa E=26.6 GPa v= 0.164	(32.83m) D (32.97m)
33.11m-33.21m											HFZ	Is(50)=1.20 MPa Is(50)=0.08 MPa Is(50)=3.70 MPa Is(50)=3.40 MPa	A (33.00m) A (33.46m) D (33.55m)
33.72m												UCS=34.60 MPa E=36.4 GPa v= 0.182	(33.72m) D (33.94m)
34.15m			100 (90)									Is(50)=6.40 MPa Is(50)=4.90 MPa	A (34.15m)
35.05m							FR					Is(50)=2.90 MPa Is(50)=4.60 MPa	A (35.05m) D (35.13m)
36.64m												Is(50)=3.80 MPa Is(50)=1.90 MPa	D (36.64m) A (36.70m)
37.15m-37.24m													
37.15m-37.24m													
37.15m-37.24m			100 (100)										
37.15m-37.24m			100 (100)										
38.82m												Is(50)=6.70 MPa Is(50)=3.90 MPa	D (38.82m) A (38.85m)
40.00m	-21.09		100										

Borehole completed at 40.00m

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 **CRR716**

Sheet 1 of 4

PIEZOMETER No **CRR716**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation		
LOCATION	Roma Street Station (QR land)/Station Cavern	COORDINATES	501720.0 E; 6962038.0 N
PROJECT No	FG6470	SURFACE RL	18.91m
		PLUNGE	90°
		DATE STARTED	29/09/2017
		GRID DATUM	MGA94
JOB No		HEIGHT DATUM	AHD
		BEARING	°
		DATE COMPLETED	10/10/2017
		DRILLER	Geodrill

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Standpipe Construction Details		
				Depth (m) /RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.60m	Backfill Details
18.51			Sandy SILT(Topsoil) Brown, dry, soft. Low plasticity. Fine to medium grained sand, trace roots.			
17.21			Sandy CLAY(Fill) Brown, moist, stiff to very stiff. Medium plasticity. Fine to coarse grained sand, angular.			
14.71			Clayey SAND(Residual) Brown mottled red, moist, medium dense. Low plasticity clay; fine to medium grained sand. At 3.0m: becoming white mottled brown and red, very dense.			
8.91			ARGILLITE Orange brown, fine grained, foliated, medium to high strength. Iron staining throughout, -FP: 30°-50° (<1/m), Un-Pl/Ro, OP, Fe St -Js: 20°-50° (<1/m), Pl/Ro, OP, Fe St			

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 **CRR716**

Sheet 2 of 4

PIEZOMETER No **CRR716**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation		
LOCATION	Roma Street Station (QR land)/Station Cavern	COORDINATES	501720.0 E; 6962038.0 N
PROJECT No	FG6470	SURFACE RL	18.91m
		PLUNGE	90°
		DATE STARTED	29/09/2017
		GRID DATUM	MGA94
JOB No		HEIGHT DATUM	AHD
		BEARING	°
		DATE COMPLETED	10/10/2017
		DRILLER	Geodrill

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Standpipe Construction Details		
				Depth (m) /RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.60m	Backfill Details
8.11		ARGILLITE	Cont'd.			
11		ARGILLITE	Grey minor orange-brown, fine grained, foliated, high to very high strength. Occasional crosscutting quartz veins <5mm, 30°-50°. - Js: 10°-30° (3/m) Pl/Ro, TI, Fe St - Js: 40°-50° (<1/m) Pl/Ro, TI, Fe St			
14	4.81	ARGILLITE	Grey and dark grey, fine grained, foliated, high to very high strength. - FP: 40°-50° (<1/m) Pl/Sm, TI, Cn - Js: 5°-20° (3-4/m) Pl/Sm-Ro, TI-OP, Cn - Js: 60°-70° (<1/m) Pl/Sm-Ro, TI-OP, Fe St			Grout: Cement / Bentonite mix
19	-1.09					

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 **CRR716**

Sheet 3 of 4

PIEZOMETER No **CRR716**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation		
LOCATION	Roma Street Station (QR land)/Station Cavern	COORDINATES 501720.0 E; 6962038.0 N	
PROJECT No	FG6470	SURFACE RL 18.91m	PLUNGE 90°
			DATE STARTED 29/09/2017
			GRID DATUM MGA94
JOB No		HEIGHT DATUM AHD	BEARING °
			DATE COMPLETED 10/10/2017
			DRILLER Geodrill

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Standpipe Construction Details		
				Depth (m) /RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.60m	Backfill Details
21			ARGILLITE Cont'd.			
22						
23						
24						
25						
26				26.00m / -7.09 AHD		
27				27.00m / -8.09 AHD		Bentonite Seal Top of Slotted Pipe
28						
29						
-11.09						

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 **CRR716**

Sheet 4 of 4

PIEZOMETER No **CRR716**

PROJECT	Cross River Rail CRR2017 - Additional Geotechnical Investigation		
LOCATION	Roma Street Station (QR land)/Station Cavern	COORDINATES 501720.0 E; 6962038.0 N	
PROJECT No	FG6470	SURFACE RL 18.91m	PLUNGE 90°
			DATE STARTED 29/09/2017
			GRID DATUM MGA94
JOB No		HEIGHT DATUM AHD	BEARING °
			DATE COMPLETED 10/10/2017
			DRILLER Geodrill

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Standpipe Construction Details		
				Depth (m) / RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.60m	Backfill Details
31			ARGILLITE Cont'd.			
32						
33						
34						
35						Filter: Washed / Graded Sand
36						
37						
38						
39				39.00m / -20.09 AHD		
						Drill Cuttings
	-21.09			40.00m / -21.09 AHD		

Borehole completed at 40.00m

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

LOGGED BY	REVIEWED BY
SB	S. Foley

Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	10/10/2017
Borehole No.	CRR716	Reference No.	H12942
Location	Roma Street Station	Start Depth (m)	4.20
Submitted By	M. de Gee	Finish Depth (m)	40.0



Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	10/10/2017
Borehole No.	CRR716	Reference No.	H12942
Location	Roma Street Station	Start Depth (m)	4.20
Submitted By	M. de Gee	Finish Depth (m)	40.0



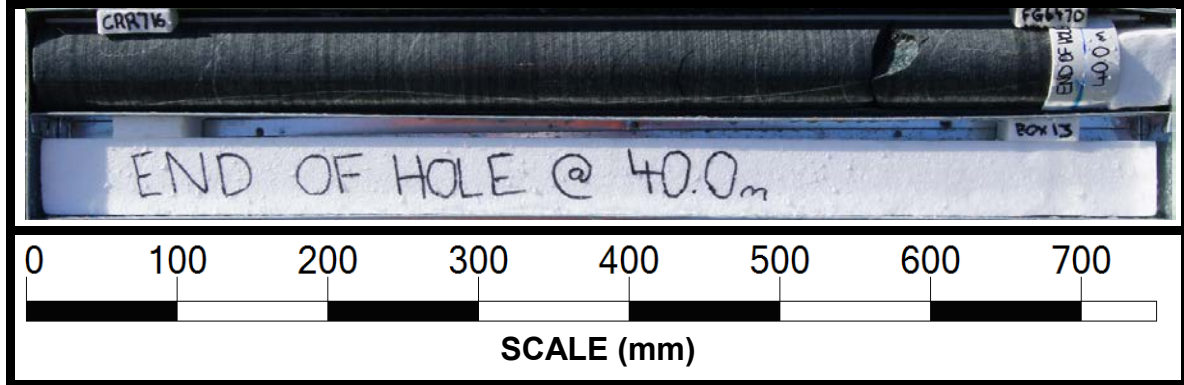
Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	10/10/2017
Borehole No.	CRR716	Reference No.	H12942
Location	Roma Street Station	Start Depth (m)	4.20
Submitted By	M. de Gee	Finish Depth (m)	40.0



Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	10/10/2017
Borehole No.	CRR716	Reference No.	H12942
Location	Roma Street Station	Start Depth (m)	4.20
Submitted By	M. de Gee	Finish Depth (m)	40.0



Project Name	Cross River Rail CRR2017 – Geotechnical Investigation		
Project No.	FG6470	Date	10/10/2017
Borehole No.	CRR716	Reference No.	H12942
Location	Roma Street Station	Start Depth (m)	4.20
Submitted By	M. de Gee	Finish Depth (m)	40.0



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.		CRR716				Surface RL		19.12	
Geologist		S.B.				Date		3/10/2017	
						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
4.23	J	40	Pl	Ro	VII	OP	St		
4.26	J	40	Pl	Ro	VII	OP	St, Ct		Cly
4.33	J	90	Un	Ro	IV	CD			
4.34 - 4.49								HFZ	
4.49 - 4.65	J	10	Un	Ro	IV	CD	St		
4.51	FP	60	Un	Ro	IV	CD	St		
4.525	FP	60	Un	Ro	IV	CD	St		
4.61	FP	60	Un	Ro	IV	OP	St		
4.65 - 4.85	Clay zone								
4.72	FP	40	Pl	Ro	VII	OP	St		
4.78	FP	50	Pl	Ro	VII	OP	St		
4.82 - 4.86								HFZ	
4.95	FP	40	Un	Ro	IV	CD	Ct		Qz 20mm
4.995	J	30	Un	Ro	IV	OP	St		
5.015	J	30	Pl	Ro	VII	OP	Vr		Qz 5mm
5.02 - 5.10								HFZ	
5.14	FP	30	Un	Ro	IV	OP	St		
5.21	FP	50	Un	Ro	IV	OP	St		
5.28	FP	30	Pl	Ro	VII	OP	Cn		
5.37 - 5.44								HFZ	
5.42 - 5.46	J	70	Pl	Ro	VII	OP			
5.54	FP	70	Pl	Ro	VII	OP	St		
5.58	FP	40	Pl	Ro	VII	OP	St		
5.60	FP	50	Pl	Ro	VII	OP	St		
5.64 - 5.71	FP	70	Un	Ro	IV	CD	St		
5.72	J	0	Un	Ro	IV	CD	Ct	CZ	
5.76	FP	70	Un	Ro	IV	CD			
5.80 - 5.95								HFZ	
6.05 - 6.14								HFZ	
6.18	J	70	Pl	Ro	VII	OP	St		
6.24	J	50	Pl	Ro	VII	OP	St		

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.		CRR716				Surface RL		19.12	
Geologist		S.B.				Date		3/10/2017	
						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 / Sl	Roughness Class I to IX	Aperture CD / OP / FL / TI	Infilling Cn / St / Vr / Ct ¹	Zones ¹ SZ / CZ / HFZ / AZ	Other
6.25	J	50	Pl	Ro	VII	OP	St		
6.29	FP	60	Pl	Ro	VII	CD	Ct		
6.34 - 6.36	FP	70	Un	Ro	IV	OP	Ct	CZ 20mm	
6.28 - 6.51	J	10	Un	Ro	IV	OP	St		
6.56	J	50	Pl	Ro	VII	OP	St		
6.66	J	60	Un	Ro	IV	OP	St		
6.67 - 6.86								HFZ	
6.94	FP	80	Un	Ro	IV	OP	St		
7.03	DI	70	Un	Ro	IV	OP	St		
7.12	J	60	Un	Ro	IV	OP	St		
7.13	J	60	Un	Ro	IV	OP	St		
7.14	J	60	Un	Ro	IV	OP	St		
7.26	J	90	Un	Ro	IV	OP	St		
7.45 - 7.47								CZ	
7.52	FP	60	Un	Ro	IV	CD			
7.55 - 7.59		90				OP	St	HFZ	
7.68	J	40	Un	Ro	IV	OP	St		
7.72	J	40	Un	Ro	IV	OP	St		
7.74	J	90	Pl	Ro	VII	OP	St		
7.86	J	30	Un	Ro	IV	OP	St		
7.97	FP	60	Un	Ro	IV	OP	St		
8.03	FP	60	Un	Ro	IV	OP	St		
8.06 - 8.08	J	70	Pl	Ro	VII	OP	Ct		QZ 20mm
8.115 - 8.13	J	20	Un	Ro	IV	OP	Ct		QZ 15mm
8.23	FP	30	Un	Ro	IV	OP	St		
8.28	J	20	Un	Ro	IV	OP	St		
8.31 - 8.36								HFZ	
8.40	J	40	Pl	Ro	VII	OP	Cn		
8.40 - 8.45	Handling break								
8.50	FP	50	Un	Ro	IV	OP	Ct		Qz
8.54 - 8.56								HFZ	

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.		CRR716				Surface RL		19.12	
Geologist		S.B.				Date		3/10/2017	
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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 / PI	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
8.60	J	70	Un	Ro	IV	OP	St		
8.62	FP	50	Un	Ro	IV	OP	St		
8.67	J	60	Un	Ro	IV	OP	Cn		
8.72	FP	50	PI	Ro	IV	OP	St		
8.75 - 8.78								CZ	
8.82	J	40	Un	Ro	IV	OP	St		
8.92	J	50	Un	Ro	IV	OP	St		
8.90 - 8.96	FP	60	PI	Ro	VII	OP	Cn		
8.65	DI								
8.98	J	90	Un	Ro	IV	OP	St		
9.04	J	70	Stp	Ro	I	OP	St		
9.14	DI								
9.21	J	40	Stp	Ro	I	OP	St		
9.29	J	30	PI	Ro	VII	OP	Cn		
9.32 - 9.44							HFZ		
9.44 - 9.55	FP	0	PI	Ro	VII	OP	St		
9.55 - 9.62								CZ	Cly
9.62 - 9.70	DI								
9.75	FP	30	PI	Ro	VII	OP	St		
9.79	FP	30	PI	Ro	VII	OP	St		*
*Fractured further from drilling									
9.83	J	20	PI	Ro	VII	OP	St		
9.84	J	20	PI	Ro	VII	OP	St		
9.85	J	20	PI	Ro	VII	OP	St		
9.88	J	30	Un	Ro	IV	OP	Cn		
9.90 - 9.98	FP	70	PI	Ro	VII	OP	Cn		
9.99	J	10	Un	Ro	IV	OP	Cn		
10.02	J	50	Stp	Ro	I	OP	St		
10.04	J	20	PI	Ro	VII	OP	St		
10.07 - 10.16								AZ	
10.14	J	20	Un	Ro	IV	OP	St		

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

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Site ID / Borehole No.		CRR716				Surface RL		19.12	
Geologist		S.B.				Date		3/10/2017	
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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
10.22	FP	50	Un	Ro	IV	OP	St		
10.25	FP	30	Un	Ro	IV	OP	St		
10.33	J	30	Un	Ro	IV	OP	St		
10.37 - 10.39	J	90	Stp	Ro	I	OP	Ct		Cly 20mm
10.40	J	20	Un	Ro	IV	OP	Cn		
10.42	J	60	Stp	Ro	I	OP	St		
10.44	J	50	Pl	Ro	VII	OP	Cn		
10.47 - 10.58								HFZ	
10.65	J	90	Un	Ro	IV	OP	Ct	CZ	
10.71	FP	80	Un	Ro	IV	OP	St		
10.83	J	70	Pl	Ro	VII	CD			
11.12	FP	50	Pl	Ro	VII	CD			
11.13	J	60	Un	Ro	IV	OP	St		
11.32	J	70	Stp	Ro	I	OP	St		
11.38	J	10	Pl	Ro	VII	OP	St		
11.40	J	70	Pl	Ro	VII	OP	St		
11.42	J	70	Pl	Ro	VII	OP	St		
11.45	J	50	Un	Ro	IV	OP	Vr		Qz
11.49 - 11.55	J	50	Pl/Un	Ro	VII	OP	Ct	CZ	
11.67	J	60	Un	Ro	IV	OP	Cn		
11.77	J	30	Un	Ro	IV	OP	Vr		Qz
11.79 - 11.86	FP	60	Un	Ro	IV	CD	Cn		
11.89	FP	45	Un	Ro	IV	OP	St		
11.95	FP	40	Un	Ro	IV	OP	St		
12.65	FP	60	Stp	Ro	I	OP	Cn		
12.81	FP	40	Pl	Ro	VII	OP	Cn		
13.04	FP	70	Pl	Ro	VII	OP	Cn		
13.15	J	10	Pl	Ro	VII	OP	Cn		
13.30	FP	60	Un	Ro	IV	OP	Cn		
13.40 - 14.00								HFZ	
13.49	J	60	Pl	Ro	VII	OP	St		

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

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Site ID / Borehole No.		CRR716				Surface RL		19.12	
Geologist		S.B.				Date		3/10/2017	
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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 / PI	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
13.53	J	60	PI	Ro	VII	OP	St		
13.56	J	60	PI	Ro	VII	OP	St		
13.72	J	50	PI	Ro	VII	OP	St		
13.87	FP	60	PI	Ro	VII	OP	St		
13.96	J	30	PI	Ro	VII	OP	Cn		
13.96	J	50	PI	Ro	VII	OP	Cn		
14.12	J	70	Un	Ro	IV	OP	St		
14.34	FP	50	Un	Ro	IV	OP	Cn		
14.48	FP	60	Un	Ro	IV	OP	Cn		
14.82	J	70	Un	Ro	IV	OP	Cn		
15.17	J	50	Un	Ro	IV	OP	Cn		
15.41	J	40	Un	Ro	IV	OP	Cn		
15.43	J	50	Un	Ro	IV	OP	Cn		
16.18	J	20	Un	Ro	IV	OP	Cn		
16.23	J	50	Un	Ro	IV	OP	St		
16.29	FP	30	PI	Ro	VII	OP	St		
16.35	J	60	Un	Ro	IV	OP	St		
16.39	J	90	Stp	Ro	I	OP	St		
16.45	J	80	Un	Ro	IV	OP	Vr		Qz 10mm
16.49	FPI	50	Un	Ro	IV	OP	Cn		
16.60	DI								
16.62	J	90	Un	Ro	IV	OP	Cn		
16.66	J	80	Un	Ro	IV	OP	Ct		
16.71	J	20	Un	Ro	IV	OP	St		
16.78	J	40	Stp	Ro	I	OP	Cn		
16.82	FPI	60	PI	Ro	VII	OP	Cn/St		
16.87	J	50	Un	Ro	IV	OP	Ct	CZ	
16.96	J	30	Stp	Ro	I	OP	Cn		
17.05	J	30	Stp	Ro	I	OP	Cn		
17.15	J	30	Stp	Ro	I	OP	Cn		
17.29	FP	60	PI	Ro	VII	OP	St		

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

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Geologist		S.B.				Date		3/10/2017	
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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
17.58	FP	70	Un	Ro	IV	OP	Cn		
17.77	FP	60	Un	Ro	IV	CD	St		
17.79	FP	60	Un	Ro	IV	OP	St		
17.81	FP	70	Un	Ro	IV	OP	St		
17.92	J	30	Stp	Ro	I	OP	Cn		possible DI
17.95	J	60	Stp	Ro	I	OP	Cn		
18.18	FP	50	Pl	Ro	VII	OP	Cn		
18.34	FP	50	Pl	Ro	VII	OP	Cn		
18.53	FP	50	Pl	Ro	VII	OP	Cn		
18.77	FP	60	Un	Ro	IV	OP	Cn		
18.82	FP	70	Un	Ro	IV	OP	Cn		
18.84	FP	70	Un	Ro	IV	OP	Cn		
19.77	J	90	Un	Ro	IV	OP	Cn		
20.08	J	90	Un	Ro	IV	OP	Cn		
20.32	FP	30	Pl	Ro	VII	OP	Cn		
20.52	J	80	Un	Ro	IV	OP	Cn		
21.08	J	90	Pl	Ro	VII	OP	Cn		
21.53	J	70	Pl	Ro	VII	OP	Cn		
21.53 - 21.81	FP	10	Pl	Ro	VII	OP	Cn		
22.31	FP	40	Pl	Ro	VII	OP	Cn		
23.13	FP	30	Pl	Ro	VII	OP	Cn		
23.30	J	90	Pl	Ro	VII	OP	Cn		
23.66	FP	60	Pl	Ro	VII	OP	Cn		
23.93	FP	60	Pl	Ro	VII	OP	Cn		
23.95	J	90	Pl	Ro	VII	OP	Cn		
24.40	DI								
24.64	FP	70	Un	Ro	IV	OP	Cn		
25.10	Drilling break - lost down hole on run								
25.19 - 25.47	Redrill length - core warped								
25.48	DI								
26.33	FP	20	Pl	Ro	VII	OP	Cn		

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

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Geologist		S.B.				Date		3/10/2017	
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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 / PI	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
26.53	FP	60	PI	Ro	VII	OP	Cn		
26.66	FP	60	Un	Ro	VII	CD			
27.03	FP	50	Un	Ro	IV	OP	Cn		
27.48	FP	70	PI	Ro	VII	OP	Cn		
27.40 - 27.49	J	0	Un	Ro	IV	OP	Cn		
27.49 - 27.72	J	0	PI	Ro	VII	OP	Ct	SZ	
27.57	J	30	Un	Ro	IV	OP	Cn		Int
27.68	J	0	Un	Ro	IV	OP	Cn		Int
27.87	FP	40	Un	Ro	IV	OP	Cn		
28.17	J	50	Un	Ro	IV	OP	Cn		
28.43	J	0	Un	Ro	IV	OP	Cn		
28.54	J	0	Un	Ro	IV	OP	Cn		
29.00	J	0	Un	Ro	IV	OP	Cn		
29.66	J	0	Un	Ro	IV	OP	Cn		
30.00	J	60	Un	Ro	IV	OP	Cn		
30.04 - 30.12								CZ	
31.50	FP	60	Un	Ro	IV	OP	Cn		
32.10	J	50	Un	Ro	IV	OP	Cn		
32.93	FP	50	Stp	Ro	I	OP	Cn		
33.09 - 33.19								HFZ	
33.27	J	30	Un	Ro	IV	OP	Cn		
33.51	J	90	Un	Ro	IV	OP	Cn		
34.53	DI	60							
35.00	DI	30							
35.27	J	10	PI	Ro	VII	OP	Cn		
35.47	J	10	PI	Ro	VII	OP			
35.78	J	30	Un	Ro	IV	OP	Cn		
35.91	J	30	Stp	Ro	I	OP	Cn		
36.25	J	10	Stp	Ro	I	OP	Cn		
36.39 - 36.55	FP	20	Un	Ro	IV	OP	Cn		
36.48	J	90	Un	Ro	IV	OP	Cn		

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

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Site ID / Borehole No.		CRR716				Surface RL		19.12		
Geologist		S.B.				Date		3/10/2017		
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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		Other
								SZ / CZ / HFZ / AZ		
36.56	J	70	Un	Ro	IV	OP	Vr			QZ 20mm
36.81 - 36.86	J								HFZ	
36.95	J	60	Un	Ro	IV	OP	Cn			
37.22	J	30	Un	Ro	IV	OP	Vr			QZ
37.50	DI									
37.68	Possible DI									
38.05	DI									
38.36 - 38.52	FP	80	Un	Ro	IV	OP	Cn			
38.46	J	60	Un	Ro	IV	OP	Cn			
38.67	J	40	Un	Ro	IV	OP	Cn			
39.03	J	60	Un	Ro	IV	Ro	Cn			Int

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

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