FINAL 02/03/2018

Queensland Government

GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **CRR714**

Sheet 1 of 4

REFERENCE No **H12940**

PROJECT Cross River Rail CRR2017 - Additional Geotechnical Investigation

LOCATION Roma Street Station — COORDINATES 501907.7 E; 6961881.9 N

PROJECT No FG6470 — SURFACE RL 13.22m — PLUNGE 90° — DATE STARTED 25/10/2017 — GRID DATUM MGA94

JOB No — HEIGHT DATUM AHD — BEARING ° — DATE COMPLETED 05/11/2017 — DRILLER Schneider

DEPTH (m)	R.L. (m)	AUGER / CASING / WASH BORING / CORE DRILLING	RQD ( ) % / CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USCS WEATHERING	INTACT STRENGTH (EH VH H M I VL EL)	DEFECT SPACING (EC VC C M W VW EW)	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
0	12.92				ASPHALT (Fill)					0.00m-1.90m: Non destructive drilling.	
					Silty CLAY (Fill) Trace cobbles.						
1	12.12				Silty CLAY (Residual) Brown mottled red grey, moist, very stiff. High plasticity.		(CH)				
2	11.22				ARGILLITE (DCf) XW: Recovered as Gravelly SAND (SW); orange yellow, moist, very dense. Fine to coarse grained, angular sand. Fine to coarse grained angular gravel.		XW			30/100mm hb	SPT
3	10.13		(0)	A	ARGILLITE (DCf) HW: Pale orange brown, fine grained, foliated, mainly medium strength. Highly fractured throughout. With some quartz bands parallel to foliation <5mm thick.		HW	M	EC VC		
4			100 (0) 100					M		Is(50)=0.04 MPa Is(50)=0.03 MPa	D (4.17m) A (4.19m)
5	8.23		(55)				MW	M	C	4.95m-4.96m: Clay seam	
			100 (16)		ARGILLITE (DCf) MW: Orange brown with grey, fine grained, foliated, medium strength. Frequent quartz bands parallel to foliation, and quartz veins/veinlets at 20°-40°, <12mm thick. -Js: 20°-50° (4/m), Pl-Un/Sm-Ro, TI-CD, FeSt -FP: 40°-50° (4/m), Pl/Sm, TI, FeSt			M	VC	Is(50)=0.13 MPa Is(50)=0.00 MPa 5.50m-5.53m: Clay seam	D (5.25m) A (5.27m)
6			100 (43)						C	UCS=5.39 MPa E=2.84 GPa v= 0.053	(6.28m)
7								M		Is(50)=1.10 MPa Is(50)=0.47 MPa	D (6.67m) A (6.69m)
							MW		C	Is(50)=0.22 MPa Is(50)=0.37 MPa	D (7.53m) A (7.54m)
8			100 (82)							Is(50)=0.11 MPa Is(50)=1.40 MPa	D (8.64m) A (8.65m)
9			100 (53)						VC	9.05m-9.10m: HFZ, XW 9.18m-9.19m: Clay seam	
	3.22								C M	9.50m: J: 70°, Pl/Ro, TI-OP, some FeSt	
								M		Is(50)=0.18 MPa Is(50)=0.29 MPa	D (9.82m) A (9.83m)

Continued on next sheet

REMARKS: DCf - Neranleigh Fernvale Beds. Standpipe piezometer installed.

LOGGED BY	REVIEWED BY
ZC	S. Foley

Queensland Government

GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **CRR714**

Sheet 2 of 4

REFERENCE No **H12940**

PROJECT Cross River Rail CRR2017 - Additional Geotechnical Investigation

LOCATION Roma Street Station — COORDINATES 501907.7 E; 6961881.9 N

PROJECT No FG6470 — SURFACE RL 13.22m — PLUNGE 90° — DATE STARTED 25/10/2017 — GRID DATUM MGA94

JOB No — HEIGHT DATUM AHD — BEARING ° — DATE COMPLETED 05/11/2017 — DRILLER Schneider

DEPTH (m)	R.L. (m)	RQD ( ) % / CORE REC %	SAMPLE	MATERIAL DESCRIPTION	USCS WEATHERING	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
11		100 (0)	CORE LOSS	ARGILLITE (DCf) MW: Cont'd.	MW	10.91m-10.94m: HFZ, XW 11.52m-11.60m: HFZ, HW	Is(50)=0.37 MPa D (10.55m) Is(50)=0.40 MPa A (10.56m)
12		38 (30) 100 (53)			MW		Is(50)=0.03 MPa D (12.13m)
13		100 (85)					Is(50)=0.23 MPa D (13.40m)
	-0.47						
14		100 (100)		ARGILLITE (DCf) SW: Dark Grey and grey, fine grained, foliated, high strength. Frequent quartz bands parallel to foliation <5mm thick. -Js: 0°-30° (2/m), Pl-Un/Sm-Ro, FeSt -Js: 40°-50° (<1/m), Pl/Ro, Tl-OP, some FeSt. -FP: 20°-50° (2/m), Pl/Sm, Tl, FeSt			Is(50)=0.14 MPa D (13.75m) Is(50)=0.15 MPa A (13.77m)
15		100 (90)					Is(50)=0.30 MPa D (14.94m) Is(50)=0.10 MPa A (14.95m) UCS=4.56 MPa (15.32m) E=9.83 GPa v= 0.08 D (15.55m) Is(50)=0.36 MPa A (15.56m) Is(50)=0.17 MPa
16		100 (40)					
17		100 (91)			SW		Is(50)=0.69 MPa D (16.65m) Is(50)=0.19 MPa A (16.67m)
18							Is(50)=0.59 MPa D (17.95m) Is(50)=0.43 MPa A (17.97m)
19		100 (30)				18.60m-18.80m: Brazilian Tensile Strength = 2.79 MPa	Is(50)=0.26 MPa D (19.20m) Is(50)=0.03 MPa A (19.31m)
	-6.78						Is(50)=0.74 MPa D (19.92m) Is(50)=0.21 MPa A (19.93m)

Continued on next sheet

REMARKS: 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 **CRR714**

Sheet 3 of 4

REFERENCE No **H12940**

PROJECT Cross River Rail CRR2017 - Additional Geotechnical Investigation

LOCATION Roma Street Station — COORDINATES 501907.7 E; 6961881.9 N

PROJECT No FG6470 — SURFACE RL 13.22m — PLUNGE 90° — DATE STARTED 25/10/2017 — GRID DATUM MGA94

JOB No — HEIGHT DATUM AHD — BEARING ° — DATE COMPLETED 05/11/2017 — DRILLER Schneider

DEPTH (m)	R.L. (m)	RQD ( ) % / CORE REC %	SAMPLE	MATERIAL DESCRIPTION	USCS WEATHERING	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
21	-8.08			ARGILLITE (DCf) SW: Cont'd.	SW HW XW	20.29m-20.36m: HFZ, XW 20.75m-20.76m: HW, VL 20.87m-21.04m: HW 21.00m-22.85m: SZ 21.04m-21.30m: Recovered as firm to stiff silty clay with quartz gravel.	
	-8.78	23	CORE LOSS	CORE LOSS			
22		(0)		ARGILLITE (DCf) XW: Dark Grey and grey, fine grained, foliated, varies from extremely low to high strength. Occasional quartz veins <150mm. Minor iron staining. -Js: 0°-30° (2/m), Pl-Un/Sm-Ro, FeSt -FP: 20°-50° (2/m), Pl/Sm, FeSt	XW MW XW SW	22.00m-22.31m: XW, recovered as gravelly clay. 22.31m-22.65m: HFZ, MW 22.65m-22.85m: HFZ, XW, recovered as gravelly silty clay with fine to coarse grained sub rounded quartz gravel.	
	-9.63	100 (0)					
23		100 (84)				Is(50)=0.87 MPa Is(50)=0.23 MPa	D (23.35m) A (23.36m)
				ARGILLITE (DCf) FR: Dark grey, some pale grey, fine grained, foliated, generally medium strength. Frequent quartz bands parallel to foliation <5mm thick. -Js: 0°-40° (2/m), Pl-Un/Sm-Ro, Tl-OP, Cn -FP: 40°-75° (2/m), Pl/Sm, Tl, Cn		Is(50)=0.37 MPa Is(50)=0.69 MPa Is(50)=0.37 MPa	D (23.70m) A (23.72m) D (23.96m)
24						23.79m-23.91m: CAI=0.64 24.00m-24.11m: Slake Durability Index Test	
						UCS=18.90 MPa E=7.9 GPa v= 0.146	(24.23m)
25		100 (88)			FR		
26		100 (39)					
27					HW	Is(50)=0.23 MPa Is(50)=0.21 MPa Is(50)=0.06 MPa Is(50)=0.20 MPa	D (26.96m) A (26.97m) D (27.20m) A (27.21m)
	-14.48						
28		100 (90)		ARGILLITE (DCf) XW: Dark grey and grey, fine grained, foliated, mainly extremely low to very low strength. Quartz bands throughout <10mm thick.	XW HW	27.70m-32.30m: SZ Is(50)=0.01 MPa	D (28.09m)
		100 (0)				28.54m-29.15m: No core recovered from Sigra test.	
29		100 (0)				29.15m-32.30m: XW, Recovered as clayey gravel.	
		100 (0)			XW		
	-16.78						

Continued on next sheet

REMARKS: DCf - Neranleigh Fernvale Beds. Standpipe piezometer installed.

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ZC	S. Foley

FINAL 02/03/2018

Queensland Government

GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **CRR714**

Sheet 4 of 4

REFERENCE No **H12940**

PROJECT Cross River Rail CRR2017 - Additional Geotechnical Investigation

LOCATION Roma Street Station COORDINATES 501907.7 E; 6961881.9 N

PROJECT No FG6470 SURFACE RL 13.22m PLUNGE 90° DATE STARTED 25/10/2017 GRID DATUM MGA94

JOB No HEIGHT DATUM AHD BEARING ° DATE COMPLETED 05/11/2017 DRILLER Schneider

DEPTH (m)	R.L. (m)	RQD ( ) % / CORE REC %	MATERIAL DESCRIPTION	USCS WEATHERING	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
31		100 (0) 100 (0) 100	ARGILLITE (DCf) XW: Cont'd.	XW	Is(50)=0.09 MPa Is(50)=0.04 MPa	D (30.10m) A (30.11m)
31				XW	Is(50)=0.09 MPa Is(50)=0.04 MPa	D (31.25m) A (31.26m)
32	-19.08	(100) 100 (67) 100 (46) 100	ARGILLITE (DCf) FR: Dark grey, some pale grey, fine grained, foliated, high strength. Frequent quartz veins <200mm thick. -Js: 5°-30° (1-2/m), Pl-Un/Sm-Ro, Tl, Cn -FP: 10°-30° (1/m), Pl/Sm, Tl, Cn	FR	33.18m-33.24m: HFZ 33.45m-33.64m: HFZ 33.79m-33.82m: HFZ	
33				FR	Is(50)=0.59 MPa Is(50)=2.40 MPa UCS=17.80 MPa E=43.3 GPa v= 0.015 Is(50)=0.74 MPa Is(50)=0.85 MPa	D (32.95m) A (32.96m) (33.10m) D (33.43m) A (33.44m)
34	-20.90		Borehole completed at 34.12m			

REMARKS: DCf - Neranleigh Fernvale Beds. Standpipe piezometer installed.

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ZC	S. Foley

TMR GEOTECHNICAL BOREHOLE LOG - CREATED WITH HOLEBASE SI

FINAL 06/03/2018

Queensland Government

STANDPIPE INSTALLATION LOG

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

BOREHOLE No **CRR714**

Sheet 1 of 4

PIEZOMETER No **CRR714**

PROJECT Cross River Rail CRR2017 - Additional Geotechnical Investigation

LOCATION Roma Street Station

COORDINATES 501907.7 E; 6961881.9 N

PROJECT No FG6470 | SURFACE RL 13.22m | PLUNGE 90° | DATE STARTED 25/10/2017 | GRID DATUM MGA94

JOB No | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 05/11/2017 | DRILLER Schneider

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION
	12.92		ASPHALT(Fill)
1	12.12		Silty CLAY(Fill) Trace cobbles.
	11.22		Silty CLAY(Residual) Brown mottled red grey, moist, very stiff. High plasticity.
2			ARGILLITE Recovered as Gravelly SAND (SW); orange yellow, moist, very dense. Fine to coarse grained, angular sand. Fine to coarse grained angular gravel.
3	10.13		ARGILLITE Pale orange brown, fine grained, foliated, mainly medium strength. Highly fractured throughout. With some quartz bands parallel to foliation <5mm thick.
4			
5	8.23		ARGILLITE Orange brown with grey, fine grained, foliated, medium strength. Frequent quartz bands parallel to foliation, and quartz veins/veinlets at 20°-40°, <12mm thick. -Js: 20°-50° (4/m), Pl-Un/Sm-Ro, Tl-CD, FeSt -FP: 40°-50° (4/m), Pl/Sm, Tl, FeSt
6			
7			
8			
9			
	3.22		

Standpipe Construction Details

Depth (m) /RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.00m	Backfill Details

Continued on next sheet

REMARKS: DCf - Neranleigh Fernvale Beds. Standpipe piezometer installed.

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Queensland Government

STANDPIPE INSTALLATION LOG

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

BOREHOLE No **CRR714**

Sheet 2 of 4

PIEZOMETER No **CRR714**

PROJECT Cross River Rail CRR2017 - Additional Geotechnical Investigation

LOCATION Roma Street Station

COORDINATES 501907.7 E; 6961881.9 N

PROJECT No FG6470 | SURFACE RL 13.22m | PLUNGE 90° | DATE STARTED 25/10/2017 | GRID DATUM MGA94

JOB No | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 05/11/2017 | DRILLER Schneider

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION
11			ARGILLITE Cont'd.
12			
13			
	-0.47		
14			ARGILLITE Dark Grey and grey, fine grained, foliated, high strength. Frequent quartz bands parallel to foliation <5mm thick. -Js: 0°-30° (2/m), Pl-Un/Sm-Ro, FeSt -Js: 40°-50° (<1/m), Pl/Ro, Tl-OP, some FeSt. -FP: 20°-50° (2/m), Pl/Sm, Tl, FeSt
15			
16			
17			
18			
19			
	-6.78		

Standpipe Construction Details

Depth (m) /RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.00m	Backfill Details
		Grout: Cement / Bentonite mix

Continued on next sheet

REMARKS: 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 **CRR714**

Sheet 3 of 4

PIEZOMETER No **CRR714**

PROJECT Cross River Rail CRR2017 - Additional Geotechnical Investigation

LOCATION Roma Street Station COORDINATES 501907.7 E; 6961881.9 N

PROJECT No FG6470 SURFACE RL 13.22m PLUNGE 90° DATE STARTED 25/10/2017 GRID DATUM MGA94

JOB No HEIGHT DATUM AHD BEARING ° DATE COMPLETED 05/11/2017 DRILLER Schneider

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION
21			ARGILLITE Cont'd.
	-8.08		
			CORE LOSS
	-8.78		
22			ARGILLITE Dark Grey and grey, fine grained, foliated, varies from extremely low to high strength. Occasional quartz veins <150mm. Minor iron staining. -Js: 0°-30° (2/m), Pl-Un/Sm-Ro, FeSt -FP: 20°-50° (2/m), Pl/Sm, FeSt
	-9.63		
23			ARGILLITE Dark grey, some pale grey, fine grained, foliated, generally medium strength. Frequent quartz bands parallel to foliation <5mm thick. -Js: 0°-40° (2/m), Pl-Un/Sm-Ro, Tl-OP, Cn -FP: 40°-75° (2/m), Pl/Sm, Tl, Cn
24			
25			
26			
27			
	-14.48		
28			ARGILLITE Dark grey and grey, fine grained, foliated, mainly extremely low to very low strength. Quartz bands throughout <10mm thick.
29			
	-16.78		

Standpipe Construction Details

Depth (m) /RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.00m	Backfill Details
26.12m / -12.90 AHD		
27.12m / -13.90 AHD		Bentonite Seal
28.12m / -14.90 AHD		Top of Slotted Pipe

Continued on next sheet

REMARKS: DCf - Neranleigh Fernvale Beds. Standpipe piezometer installed.

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ZC	S. Foley

FINAL 06/03/2018

Queensland Government

STANDPIPE INSTALLATION LOG

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

BOREHOLE No **CRR714**

Sheet 4 of 4

PIEZOMETER No **CRR714**

PROJECT Cross River Rail CRR2017 - Additional Geotechnical Investigation

LOCATION Roma Street Station

COORDINATES 501907.7 E; 6961881.9 N

PROJECT No FG6470 | SURFACE RL 13.22m | PLUNGE 90° | DATE STARTED 25/10/2017 | GRID DATUM MGA94

JOB No | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 05/11/2017 | DRILLER Schneider

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION
31			ARGILLITE Cont'd.
32	-19.08		
33			ARGILLITE Dark grey, some pale grey, fine grained, foliated, high strength. Frequent quartz veins <200mm thick. -Js: 5°-30° (1-2/m), Pl-Un/Sm-Ro, Tl, Cn -FP: 10°-30° (1/m), Pl/Sm, Tl, Cn
34	-20.90		Borehole completed at 34.12m
35			
36			
37			
38			
39			

Standpipe Construction Details

Depth (m) /RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.00m	Backfill Details
34.12m / -20.90 AHD		Filter: Washed / Graded Sand

REMARKS: DCf - Neranleigh Fernvale Beds. Standpipe piezometer installed.

LOGGED BY	REVIEWED BY
ZC	S. Foley

TMR STANDPIPE INSTALLATION LOG - CREATED WITH HOLEBASE SI

CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Queensland Government

Project Name	**Cross River Rail CRR2017 – Geotechnical Investigation**		
Project No.	FG6470	Date	05/11/2017
Borehole No.	CRR714	Reference No.	H12940
Location	Roma Street Station	Start Depth (m)	3.09
Submitted By	M. de Gee	Finish Depth (m)	34.12

CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Queensland Government

Project Name	**Cross River Rail CRR2017 – Geotechnical Investigation**		
Project No.	FG6470	Date	05/11/2017
Borehole No.	CRR714	Reference No.	H12940
Location	Roma Street Station	Start Depth (m)	3.09
Submitted By	M. de Gee	Finish Depth (m)	34.12

CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

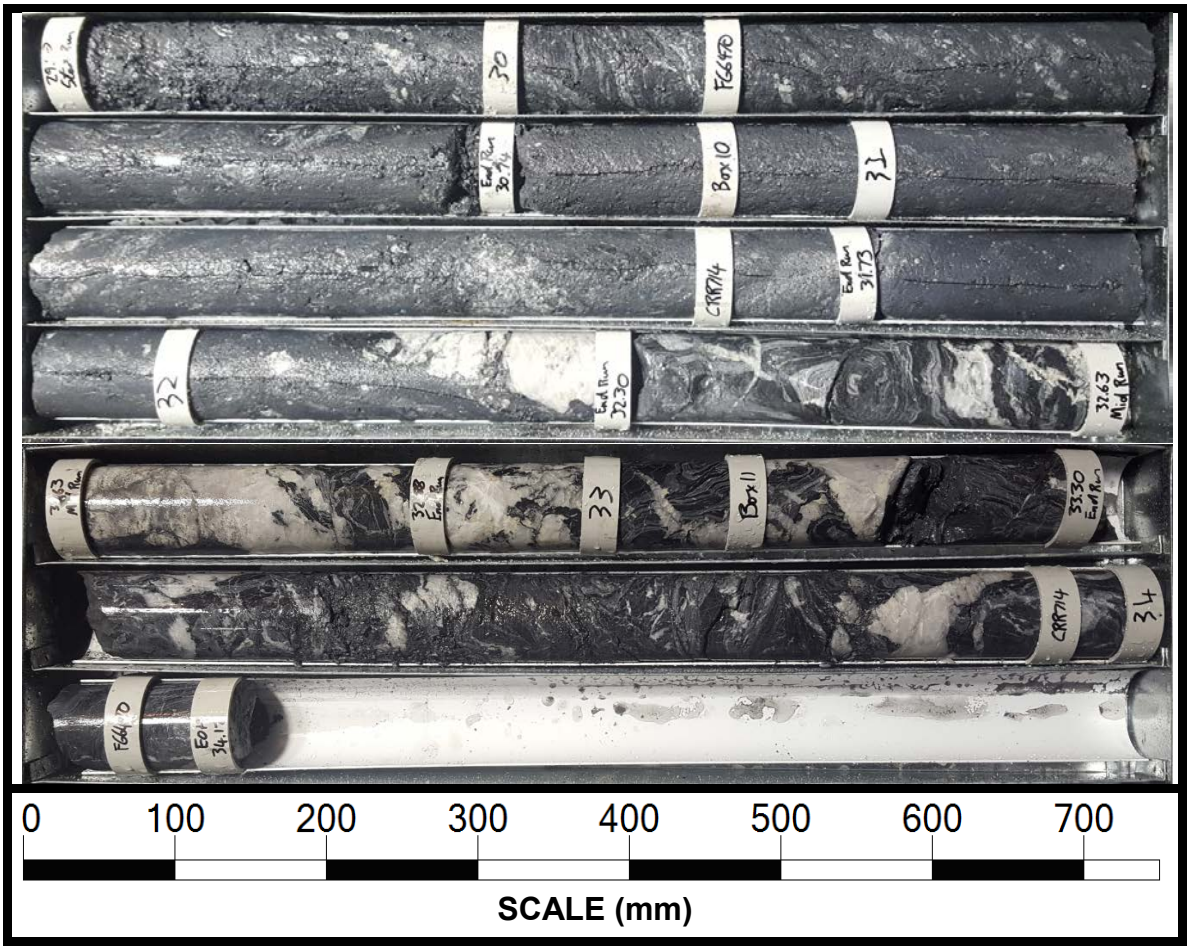
Queensland Government

Project Name	**Cross River Rail CRR2017 – Geotechnical Investigation**		
Project No.	FG6470	Date	05/11/2017
Borehole No.	CRR714	Reference No.	H12940
Location	Roma Street Station	Start Depth (m)	3.09
Submitted By	M. de Gee	Finish Depth (m)	34.12

CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Queensland Government

Project Name	**Cross River Rail CRR2017 – Geotechnical Investigation**		
Project No.	FG6470	Date	05/11/2017
Borehole No.	CRR714	Reference No.	H12940
Location	Roma Street Station	Start Depth (m)	3.09
Submitted By	M. de Gee	Finish Depth (m)	34.12



Detailed Discontinuity Description Log

Queensland Government

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.	**CRR714**					**Surface RL**	**13.32**		
Geologist	**Z.C.**					**Date**	**25/10/2017**		
						Page	**1**	**of**	**6**

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 / Tl	Infilling Cn / St / Vr / Ct [1]	Zones [1] SZ / CZ / HFZ / AZ	Other
3.09								HFZ	to 4.87
4.87	J	5	Pl	Sm	VIII	OP	ST		Fe
4.94									Clay 10mm
5.16	J	40	Un	Ro	IV	OP	ST		Fe
5.32	FP	30	Pl	Sm	VIII	Tl	St		Fe
5.35	J	20	Pl	Ro	VII	Tl	St		Fe
5.39	J	5	Pl	Ro	VII	Tl	St		Fe
5.43	J	20	Pl	Sm	VIII	CD	St		Fe
5.50	Seam, 30mm, Clay								
5.56	FP	20	Pl	Sm	VIII	Tl	St		Fe
5.63	J	60	Pl	Sm	VIII	Tl	St		Fe
5.69	FP	50	Pl	Sm	VIII	Tl	St		Fe
5.75	FP	40	Pl	Sm	VIII	Tl	St		Fe
5.87	J	20	Pl	Sm	VIII	Tl	St		Fe
5.90	J	20	Un	Ro	IV	Tl	St		Fe
5.95	J	30	Un	Ro	IV	OP	St		Fe
6.10	J	30	Pl	Sm	VIII	Tl	St		Fe
6.15	J	30	Pl	Sm	VIII	Tl	St		Clay
6.40	FP	70	Pl	Sm	VIII	Tl	St		Fe
6.56	J	0	Pl	Sm	VIII	Tl	St		Clay
6.60	J	40	Pl	Sm	VIII	Tl	St		Fe
6.88	J	5	Pl	Sm	VIII	Tl	St		Fe
7.19	FP	15	Pl	Sm	VIII	Tl	St		Fe
7.25	Seam, 10mm, Clay								
7.29	FP	70	Pl	Sm	VIII	Tl	St		Fe
7.50	J	50	Pl	Sm	VIII	Tl	St		Fe
7.68	J	20	Un	Ro	VII	Tl	St		Quartz
7.77	FP	30	Pl	Sm	VIII	Tl	St		Fe
7.88	J	40	Pl	Sm	VIII	Tl	St		Fe
8.17	J	80	Pl	Sm	VIII	Tl	St		Fe,140mm
8.37	J	70	Un	Ro	VII	Tl	St		Fe

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

Detailed Discontinuity Description Log

Queensland Government

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.	**CRR714**					**Surface RL**	**13.32**		
Geologist	**Z.C.**					**Date**	**25/10/2017**		
						Page	**2**	**of**	**6**

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 / Tl	Infilling Cn / St / Vr / Ct [1]	Zones [1] SZ / CZ / HFZ / AZ	Other
8.46	J	30	Un	Ro	VII	Tl	St		Fe
8.67	FP	50	Pl	Sm	VIII	Tl	St		Fe
8.84	J	10	Pl	Sm	VIII	Tl	St		Fe
8.94	J	20	Pl	Sm	VIII	Tl	St		Fe
9.05								HFZ	50mm
9.10	FP	25	Pl	Ro	VII	Tl	St		Fe
9.18	Seam, 10mm, Clay								
9.21	J	20	Pl	Sm	VIII	Tl	St		Fe
9.28	FP	30	Pl	Sm	VIII	Tl	St		Fe
9.50	J	80	Pl	Sm	VIII	Tl	St		Fe
9.96	J	5	Pl	Sm	VIII	Tl	St		Fe
10.12	FP	35	Pl	Sm	VIII	Tl	St		Fe
10.23	Fp	65	Pl	Sm	VIII	Tl	St		Fe
10.53	J	30	Pl	Sm	VIII	Tl	St		Fe
10.84	J	10	Pl	Sm	VIII	Tl	St		Fe
10.91								HFZ	30mm
11.06	J	30	Pl	Sm	VIII	Tl	St		Fe
11.06	J	40	Pl	Sm	VIII	Tl	St		Fe
11.19	J	15	Pl	Sm	VIII	Tl	St		Fe
11.52								HFZ	80mm
11.60	Core Loss								300mm
11.90								HFZ	500mm
12.40	J	5	Un	Ro	IV	Tl	St		Fe
12.51	J	10	Un	Ro	IV	Tl	St		Fe
12.61	J	10	Un	Ro	IV	Tl	St		Fe
12.67	FP	5	Pl	Sm	VIII	Tl	St		Fe
12.78	FP	5	Pl	Sm	VIII	Tl	St		Fe
12.80	J	10	Un	Ro	IV	Tl	St		Fe
13.04	J	10	Un	Ro	IV	Tl	St		Fe
13.15								HFZ	90mm
13.24	J	20	Un	Ro	IV	Tl	St		Fe

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

Detailed Discontinuity Description Log

Queensland Government

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Project Name	**Cross River Rail**	**Project No.**	**FG6470**		
Site ID / Borehole No.	**CRR714**	**Surface RL**	**13.32**		
Geologist	**Z.C.**	**Date**	**25/10/2017**		
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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 / Tl	Infilling Cn / St / Vr / Ct [1]	Zones [1] SZ / CZ / HFZ / AZ	Other
13.38	J	45	Pl	Sm	VIII	Tl	St		Fe
13.39	J	50	Pl	Ro	VII	Tl	St		Fe
13.44	J	20	Un	Ro	IV	Tl	St		Fe
13.59	FP	25	Pl	Ro	VII	Tl	St		Fe
13.59	J	85	Pl	Sm	VIII	Tl	St		Fe
13.69	FP	25	Pl	Ro	VII	Tl	St		Fe
13.83	J	5	Un	Ro	IV	Tl	St		Fe
13.94	FP	25	Pl	Ro	VII	Tl	St		Fe
14.12	J	0	Pl	Sm	VIII	Tl	St		Fe
14.56	FP	60	Pl	Sm	VIII	Tl	St		Fe
15.09	J	5	Un	Ro	IV	Tl	St		Fe
15.66	FP	25	Pl	Sm	VIII	Tl	St		Fe
15.75	J	5	Pl	Sm	VIII	Tl	St		Fe
15.90	J	30	Pl	Sm	VIII	Tl	St		Fe
16.00	J	20	Un	Ro	IV	Tl	St		Fe
16.04	J	20	Un	Ro	IV	Tl	St		Fe
16.20	J	5	Un	Ro	IV	Tl	St		Fe
16.24	J	35	Pl	Ro	VII	Tl	St		Fe
16.32	FP	25	Pl	Sm	VIII	Tl	St		Fe
16.36	J	5	Un	Ro	IV	Tl	St		Fe
16.48	FP	30	Pl	Sm	VIII	Tl	St		Fe
16.55	Fp	20	Pl	Sm	VIII	Tl	Cn		
17.35	J	60	Pl	Ro	VII	Tl	St		Fe
17.51	FP	50	Pl	Sm	VIII	Tl	Cn		
17.89	J	30	Stp	Ro	I	Tl	St		Fe
18.04	J	30	Pl	Sm	VIII	Tl	St		Fe
18.32	J	10	Un	Ro	IV	Tl	St		Fe
18.58	FP	15	Un	Sm	IV	Tl	St		Fe
18.79	J	5	Un	Ro	IV	Tl	St		Fe
18.90	J	5	Un	Ro	IV	Tl	St		Fe
19.00	J	30	Un	Ro	IV	Tl	St		Fe

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.	**CRR714**	**Surface RL**	**13.32**		
Geologist	**Z.C.**	**Date**	**25/10/2017**		
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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 / Tl	Infilling Cn / St / Vr / Ct [1]	Zones [1] SZ / CZ / HFZ / AZ	Other
19.54	Fp	70	Pl	Sm	VIII	Tl	Cn		
19.59	J	10	Pl	Sm	VIII	Tl	Cn		
19.64	J	10	Pl	Sm	VIII	Tl	Cn		
19.69	J	10	Un	Sm	V	Tl	Cn		
19.78	J	20	Un	Sm	V	Tl	Cn		
19.93	FP	70	Pl	Sm	VIII	Tl	Cn		
20.30								HFZ	60mm
20.36	J	10	Un	Ro	IV	Tl	Cn		Clay, Gravel
20.48	FP	70	Pl	Sm	VIII	Tl	Cn		
20.55	J	5	Pl	Ro	VII	Tl	Cn		
20.59	J	5	Pl	Sm	VIII	Tl	Cn		
20.78	FP	70	Pl	Ro	VII	Tl	Cn		Clay
20.93	Fp	70	Pl	Ro	VII	Tl	Cn		
21.05								HFZ	250mm
21.30 - 22.00	No Core								
22.00								HFZ	850mm
22.85	FP	70	Pl	Ro	VII	Tl	Cn		
22.96	J	30	Un	Sm	V	CD	Cn		
23.05	J	85	Pl	Ro	VII	Tl	Cn		
23.21	FP	30	Un	Sm	V	Tl	Cn		
23.29	FP	30	Pl	Sm	VIII	Tl	Cn		
23.38	J	75	Pl	Sm	VIII	Tl	Cn		
23.55	FP	50	Un	Ro	IV	Tl	Cn		
23.60	FP	70	Un	Sm	V	Tl	Cn		
23.62	J	5	Pl	Sm	VIII	Tl	Cn		
23.98	J	20	Pl	Sm	VIII	Tl	Cn		
24.80	FP	50	Pl	Ro	VII	Tl	Cn		
25.00	J	5	Pl	Ro	VII	Tl	Cn		
25.53	J	20	Pl	Ro	VII	Tl	Cn		
25.57	FP	30	Pl	Sm	VIII	Tl	Cn		
25.66	FP	20	Pl	Sm	VIII	Tl	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.	**CRR714**					**Surface RL**	**13.32**		
Geologist	**Z.C.**					**Date**	**25/10/2017**		
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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 / Tl	Infilling Cn / St / Vr / Ct [1]	Zones [1] SZ / CZ / HFZ / AZ	Other
25.79	J	30	Un	Ro	IV	Tl	Cn		
25.97	J	10	Un	Ro	IV	Tl	Cn		
26.11	FP	40	Pl	Sm	VIII	Tl	Cn		
26.22	FP	20	Pl	Sm	VIII	Tl	Cn		
26.30	FP	10	Pl	Sm	VIII	Tl	Cn		
26.30	J	85	Un	Ro	IV	Tl	Cn		
26.40	FP	10	Pl	Sm	VIII	Tl	Cn		
26.53	J	15	Un	Ro	IV	Tl	Cn		
26.67	J	10	Un	Sm	VIII	Tl	Cn		
26.76	J	70	Un	Ro	IV	Tl	Cn		
27.77	j	90	Un	Sm	VIII	Tl	Cn		
27.09	J	10	Un	Ro	IV	Tl	Cn		
27.14	FP	10	Un	Ro	IV	Tl	Cn		
27.31	FP	10	Un	Ro	IV	Tl	Cn		
27.37								HFZ	90mm
27.47	J	50	Pl	Ro	VII	Tl	Cn		
27.68								HFZ	220mm
27.90	J	10	Un	Ro	IV	Tl	Cn		
28.01	FP	20	Pl	Sm	VIII	Tl	Cn		
28.12	FP	30	Pl	Sm	VIII	Tl	Cn		
28.23	FP	30	Pl	Sm	VIII	Tl	Cn		
28.26	FP	50	Pl	Sm	VIII	Tl	Cn		
28.47	J	40	Un	Ro	IV	Tl	Cn		
28.54 - 29.15	No core sigra test (core not competent for testing)								
29.15 - 32.30	Clayey gravel, brittle								
32.30	J	5	Un	Sm	V	Tl	Cn		
32.45	Fp	25	Pl	Sm	VIII	Tl	Cn		
32.88	J	10	Un	Ro	IV	Tl	Cn		
33.18								HFZ	60mm
33.24	J	5	Un	Sm	V	Tl	Cn		
33.30	J	30	Un	Sm	V	Tl	Cn		

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

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Site ID / Borehole No.	**CRR714**	**Surface RL**	**13.32**		
Geologist	**Z.C.**	**Date**	**25/10/2017**		
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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 / Tl	Infilling Cn / St / Vr / Ct [1]	Zones [1] SZ / CZ / HFZ / AZ	Other
33.45								SZ	190mm
33.64	J	30	Pl	Ro	VII	Tl	Cn		
33.69	J	15	Pl	Sm	VIII	Tl	Cn		
33.74	J	25	Pl	Ro	VII	Tl	Cn		
33.79								SZ	40mm
33.89	J	15	Un	Ro	IV	Tl	Cn		
34.10	J	30	Pl	Ro	VII	Tl	Cn		

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