FINAL 27/09/2018

Queensland Government

GEOTECHNICAL BOREHOLE LOG

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

BOREHOLE No **CRR929**

Sheet 1 of 2

REFERENCE No **H13049**

PROJECT Cross River Rail (CRR) Project - Additional Geotechnical Investigation

LOCATION QR Mayne Yard

COORDINATES 503928.4 E; 6965448.0 N

PROJECT No FG6470 | SURFACE RL 4.35m | PLUNGE 90° | DATE STARTED 16/05/2018 | GRID DATUM MGA94

JOB No | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 17/05/2018 | DRILLER Geodrill

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 L VL EL)	DEFECT SPACING (EC VC C M W VW EW)	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
0	4.30				Ashphalt					0.00m-2.10m: NDD to 2.1m	
1					GRAVEL with sand and silt (Fill) Dark grey, black, moist, very loose to loose, fine to coarse, angular to sub-angular. Some fine to medium grained sand. Some low plasticity fines. Broken brick, metal pieces within the material.						
2				A			(GP-GM)			1, 1, 2 N=3	SPT
3				B						1, hw, hw N<1	SPT
	1.00				CLAY (Alluvium) Dark brown, moist, very soft, high plasticity.						
4				C	at 4.0m: becoming dark grey		(CH)			hw, hw, hw N<1	SPT
5											
6				D						5.50m-6.00m: UU Triaxial Test MC=62.6% Oedometer DD= 0.94 t/m3 WD= 1.53 t/m3	U50
	-1.65				Sandy SILT (Alluvium) Dark grey, moist, very soft, high plasticity. Fine grained, sub-rounded, well graded sand. Some high plasticity clay.						
7				E	at 7.35m: becoming dark grey mottled pale brown					hw, hw, 1 N=1	SPT
8							MH				
9				F	at 8.5m: Stiff.					3, 5, 6 N=11 LL=56% PI= 18% MC=23.6% LS= 26% <75µm= 81%	SPT
	-5.65										

Continued on next sheet

REMARKS: Rif - Brisbane Tuff

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ND	S.Foley

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LOCATION QR Mayne Yard — COORDINATES 503928.4 E; 6965448.0 N

PROJECT No FG6470 — SURFACE RL 4.35m — PLUNGE 90° — DATE STARTED 16/05/2018 — GRID DATUM MGA94

JOB No — HEIGHT DATUM AHD — BEARING ° — DATE COMPLETED 17/05/2018 — DRILLER Geodrill

DEPTH (m)	R.L. (m)	RQD ( ) % / CORE REC %	SAMPLE	MATERIAL DESCRIPTION	USCS WEATHERING	ADDITIONAL DATA AND TEST RESULTS	SAMPLES TESTS
11			G	Sandy SILT (Alluvium) Cont'd	MH	3, 6, 7 N=13	SPT
12			H			5, 6, 9 N=15 LL=61% PI= 42% MC=24.3% LS= 25%	SPT
13	-8.65	(68)		TUFF (Rif) MW: Pale brown and grey with some pale red bands, fine grained matrix with fine to medium sub-angular to sub-rounded gravel sized clasts, massive, high strength. Js 10°-30° (4-5/m) Pl-Un/Ro-Sm, Tl-OP, St-Cn	MW	5/0mm hb	SPT
14		100 (67)		Js 60°-80° (2-3/m) Un, heeled, CD, Cn		14.35m-14.55m: Qz Vn, 10mm thick; 14.78m-14.88m: BZ; Is(50)=1.50 MPa Is(50)=3.10 MPa	D (13.45m) A (13.46m)
15	-10.93			TUFF (Rif) SW: Pale brown and grey with some pale red bands, fine grained matrix with fine to medium sub-angular to sub-rounded gravel sized clasts, massive, high to very high strength. Js 10°-30° (4-5/m) Pl-Un/Ro-Sm, Tl-OP, St-Cn, some Vr	SW	Is(50)=0.62 MPa Is(50)=2.80 MPa	D (15.34m) A (15.35m)
16						UCS=56.20 MPa E=13.4 GPa	(16.11m)
17		100 (90)		Js 60°-80° (2/m) Un, Sm, CD, Cn		Is(50)=3.90 MPa Is(50)=5.80 MPa	D (16.45m) A (16.46m)
18					MW	Is(50)=3.80 MPa Is(50)=5.40 MPa	D (17.20m) A (17.21m)
19	-14.59	100		Borehole completed at 18.94m	SW	Is(50)=1.50 MPa Is(50)=6.10 MPa UCS=118.00 MPa E=17.3 GPa	D (18.40m) A (18.41m) (18.48m)

REMARKS: Rif - Brisbane Tuff

LOGGED BY	REVIEWED BY
ND	S.Foley

TMR GEOTECHNICAL BOREHOLE LOG - CREATED WITH HOLEBASE SI

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 - Stage 2**	**Project No.**	**FG6470**		
Site ID / Borehole No.	**CRR929**	**Surface RL**	**4.354**		
Geologist	**Nick Dewar**	**Date**	**16/05/2018**		
		Page	**1**	**of**	**2**

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
13.11	J	5	Pl	Sm	VIII	OP	Cn		
13.31	J	0	Un	Sm	V	OP	Cn		
13.53	J	20	Pl	Sm	VIII	OP	Cn		
13.63	J	65	Un	Sm	V	OP	Cn		
13.75	J	10	Un	Sm	V	OP	Cn		
13.80	J	10	Un	Sm	V	OP	Cn		
13.92	Vn	65	Un			CD	Vr	Fe, Vn: 13.92-14m	
13.96	Vn	65	Un			CD	Vr	Fe, Vn: 13.96-14.02	
14.04	Vn	80	Un	Sm	V	Tl/CD	Vr	Fe, Vn: 14.04-14.19m	
14.09	J	0	Un	Sm	V	OP	Cn		
14.36	J	20	Pl	Sm	VIII	OP	Cn		
14.39	Vn	40	Un			CD	Vr		Qz
14.40	J	20	Un	Sm	V	OP	Cn		
14.43	Vn	30	Un			CD	Ct		Qz
14.45	Vn	10	Un			CD	Ct		Qz
14.48	Vn	50	Un			CD	Ct		Qz
14.50	J	90	Un			Tl/CD	Vr		Fe
14.63	Vn	30	Un			CD	Ct		Qz
14.63	J	60	Pl			CD	St	Fe, J: 14.63-14.69m	
14.65	J	70	Un			CD	St	Fe, 14.65-14.78m	
14.78						OP	Cn	CZ	14.78-14.88m
15.02	J	20	Un	Sm	V	OP	Cn		
15.18	J	20	Un			CD	Vr		Fe
15.22	J	10	Un	Sm	V	OP	Cn		
15.24	J	10	Un	Sm	V	OP	Cn		
15.30	J	30	Un	Sm	V	OP	Cn		
15.53	J	20	Stp	Sm	II	OP	Cn		
15.64	J	10	Un			CD	St		Fe
15.70	J	80	Un	Sm	V	Tl	St	Fe, J: 15.7-16.15m	
15.70	J	80	Un	Sm	V	Tl	St	J: 15.7-15.91m	
15.75	J	20	Un	Sm	V	OP	Cn		

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 - Stage 2**	**Project No.**	**FG6470**		
Site ID / Borehole No.	**CRR929**	**Surface RL**	**4.354**		
Geologist	**Nick Dewar**	**Date**	**16/05/2018**		
		Page	**2**	**of**	**2**

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
16.09	J	5	Un	Sm	V	OP	Cn		
16.35	J	0	Un	Sm	V	Tl/CD	Cn		
16.36	J	5	Pl	Sm	VIII	OP	St		Fe
16.49	J	0	Un	Sm	V	OP	Cn		
16.50	J	20	Un	Sm	V	OP	Cn		
16.65	J	5	Stp	Sm	II	OP	Cn		
17.58	J	0	Un	Sm	V	OP	Cn		
17.88	J	30	Un	Sm	V	OP	Cn		
18.15	J	10	Un	Sm	V	OP	Cn		
18.25	J	0	Un	Sm	V	OP	Cn		
18.25	J	80	Un	Sm	V	Tl	Ct	Fe, J:18.25-18.33m	
18.32	J	0	Pl	Sm	VIII	OP	Cn		
18.46	J	0	Pl	Sm	VIII	OP	Cn		
18.73	J	0	Pl	Sm	VIII	OP	Cn		
18.74	J	60	Un	Sm	V	OP	Cn	18.74-18.8m	
18.76	J	5	Un	Sm	V	OP	Cn		

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

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STANDPIPE PIEZOMETER INSTALLATION LOG

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

BOREHOLE No **CRR929**

Sheet 1 of 2

PIEZOMETER No **CRR929**

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JOB No | HEIGHT DATUM AHD | BEARING ° | DATE COMPLETED 17/05/2018 | DRILLER Geodrill

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION
0	4.30		Ashphalt
			GRAVEL with sand and silt (Fill) Dark grey, black, moist, very loose to loose, fine to coarse, angular to sub-angular. Some fine to medium grained sand. Some low plasticity fines. Broken brick, metal pieces within the material.
3	1.00		CLAY (Alluvium) Dark brown, moist, very soft, high plasticity.
4			at 4.0m: becoming dark grey
6	-1.65		Sandy SILT (Alluvium) Dark grey, moist, very soft, high plasticity. Fine grained, sub-rounded, well graded sand. Some high plasticity clay.
7			at 7.35m: becoming dark grey mottled pale brown
8			at 8.5m: Stiff.
9	-5.65		

Standpipe Piezometer Construction Details

Depth (m) /RL (AHD)	50mm PVC Class No. 18 Stick Up = 0.00m	Backfill Details
		Grout: Bentonite / Cement Mix
6.30m / -1.95 AHD		
7.30m / -2.95 AHD		Bentonite Pellet Seal

Continued on next sheet

REMARKS: Rif - Brisbane Tuff

LOGGED BY	REVIEWED BY
ND	S.Foley

TMR STANDPIPE PIEZOMETER INSTALLATION LOG - CREATED WITH HOLEBASE SI

FINAL 27/09/2018

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STANDPIPE PIEZOMETER INSTALLATION LOG

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

BOREHOLE No **CRR929**

Sheet 2 of 2

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LOCATION QR Mayne Yard COORDINATES 503928.4 E; 6965448.0 N

PROJECT No FG6470 SURFACE RL 4.35m PLUNGE 90° DATE STARTED 16/05/2018 GRID DATUM MGA94

JOB No HEIGHT DATUM AHD BEARING ° DATE COMPLETED 17/05/2018 DRILLER Geodrill

DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Standpipe Piezometer Construction Details: Depth (m) /RL (AHD) / 50mm PVC Class No. 18 Stick Up = 0.00m / Backfill Details
11			Sandy SILT (Alluvium) Cont'd	
12				
13	-8.65		TUFF (Rif) MW: Pale brown and grey with some pale red bands, fine grained matrix with fine to medium sub-angular to sub-rounded gravel sized clasts, massive, high strength. Js 10°-30° (4-5/m) Pl-Un/Ro-Sm, Tl-OP, St-Cn Js 60°-80° (2-3/m) Un, heeled, CD, Cn	
14				Filter: Washed / Graded Sand
15	-10.93		TUFF (Rif) SW: Pale brown and grey with some pale red bands, fine grained matrix with fine to medium sub-angular to sub-rounded gravel sized clasts, massive, high to very high strength. Js 10°-30° (4-5/m) Pl-Un/Ro-Sm, Tl-OP, St-Cn, some Vr Js 60°-80° (2/m) Un, Sm, CD, Cn	16.00m / -11.65 AHD Top of Slotted Pipe
16				
17				
18				
19	-14.59		Borehole completed at 18.94m	19.00m / -14.65 AHD

REMARKS: Rif - Brisbane Tuff

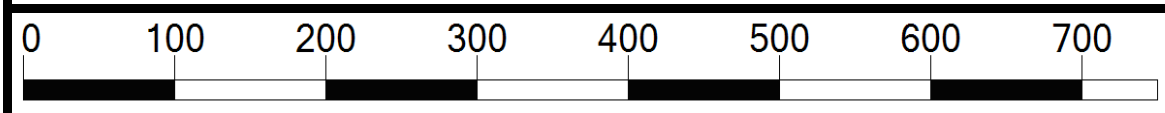
LOGGED BY	REVIEWED BY
ND	S.Foley

TMR STANDPIPE PIEZOMETER INSTALLATION LOG - CREATED WITH HOLEBASE SI

CORE PHOTO LOG
DEPARTMENT OF TRANSPORT AND MAIN ROADS
GEOTECHNICAL SECTION

Queensland Government

Project Name	**Cross River Rail CRR 2018 – Geotechnical Investigation**		
Project No.	FG6470	Date	16-17/5/18
Borehole No.	CRR929	Reference No.	H13049
Location	QR Mayne yard	Start Depth (m)	13.00
Submitted By	J. Armstrong	Finish Depth (m)	18.94



SCALE (mm)