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Queensland Government

GEOTECHNICAL BOREHOLE LOG

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

FINAL 11/12/2018

BOREHOLE No CRR926

Sheet 1 of 3

EFERENCE No H13051

all max	T FIDELIS				SYI	MBOLS	REFER FORM F:GE	OT 017/8-2014		REFERENCE NO		13031
ROJECT	OJECT Cross River Rail (CRR) Project - Additional Geotechnical Investigation											
OCATION	AQ N	∕layne Y	/ard							COORDINATES 50373	3.9 E; 69649	77.8 N
ROJECT No	FG6	470		SURFACE RL 3.48m	PLU	INGE 9	0°	DATE STARTED 18/05/2018 GRID DATUM MGA94				
OB No				HEIGHT DATUM AHD	BEA	RING _		DATE COMPLET	TED 22/05/201	8 DRILL	ER Geodrill	
(m) R.L. (m)	AUGER CASING WASH BORING CORE DRILLING	RQD ()% CORE REC%	SAMPLE	MATERIAL DESCRIPTION	ПТНОСОБУ	USCS WEATHERING	INTACT STRENGTH	DEFECT SPACING		ADDITIONAL DATA AND TEST RESULTS		SAMPLES TESTS
- 1 - 1 - 2 1.28 - 3 - 0.02 - 4 - 0.52 - 5 - 6 - 7 - 8 - 9				Asphalt Sandy GRAVEL with Silt (Fill) Brown and grey brown, dry to moist, loose to medium dense, fine sub-angular to sub-rounded gravel. Fine to coarse grained sand. Some low plasticity fines. Trace boulders and cobbles. Silty CLAY (Alluvium) Brown and grey brown, moist, soft to firm, high plasticity, at 2.5m: becoming brown with some orange brown mottling. Trace of rootlets. CLAY (Alluvium) (Q) Brown grey and yellow brown, moist, soft to firm, high plasticity. Trace of fine sub-rounded gravel. Silty CLAY (Alluvium) Grey, trace yellow brown mottling, moist, very soft, high plasticity. at 7.0m: becoming grey, orange, and red brown. Some wood fragments.		(CH)			8.00m-8.45m: UU	N	1, 4, 1 N=5 3, 2, 1 N=3 LL=60% PI= 35% IC=36.7% LS= 16% DD= 1.29 f/m WD= 1.77 f/m WD= 1.77 f/m ILL=71% PI= 49% IC=53.5% LS= 23% <75μm= 92% MC=79.9% DD= 0.97 f/m WD= 1.63 f/m WD= 1.63 f/m N×, hw, hw, hw, hw, hw, hw, hw, hw, hw	SPT SPT U50 SPT U50 U50
-6.52				Continued on part cheet	<u>×</u> _		_	_				_
REMAR	KS: I	Rif - Br	isb	Continued on next sheet Tane Tuff. Standpipe piezometo	er in:	stalle	ed.			LOGGED BY		EWED BY Foley

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GEOTECHNICAL BOREHOLE LOG

FINAL 11/12/2018

BOREHOLE No **CRR926**

Sheet 2 of 3

	(3)	الرح	1	GU	ve	eniment	SY		GEOTECHNICAL TE REFER FORM F:GE			REFERENCE No	н	13051
PROJE	СТ	Cr	oss	River	Rail	(CRR) Project - Additional Geotechn	ical Ir	nvesti	gation					
LOCAT	ION	A	Q N	1ayne `	Yard							COORDINATES 503733.	9 E; 69649	77.8 N
PROJE	CT No	F	G64	170		SURFACE RL 3.48m	PLU	JNGE S	90°	DATE STAR	RTED 18/05/2018	GRID DATUM	MGA94	
JOB N	0					HEIGHT DATUM AHD	BEA	RING °		DATE COMPLE	22/05/2018	3 DRILLER	Geodrill	
DEPTH (m)	R.L. (m)	AUGER CASING	SORE DRILLING	RQD ()%	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USCS WEATHERING	INTACT STRENGTH	DEFECT SPACING		ADDITIONAL DATA AND TEST RESULTS		SAMPLES TESTS
-		R D S	. 0		Н	Silty CLAY (Alluvium)	×_		-	_			.8% Oedometer DD= 0.9 t/m3	
-		Ш				Cont'd	×_		=	_			WD= 1.55 t/m3	
-		Ш					×-		=					-
- 11 -		Ш					×_			_				
-		Ш					×_		=					=
-		Ш			1		×_						hw, hw, hw N<1	
- - - 12		Ш					<u>×</u>	-	_					
-		Ш							=					-
- - -		Ш					×_		_					_
- - - 13		Ш					×_	(CH)					MC=90.5%	
-		Ш			J		×_	(CH)	=				DD= 0.62 t/m3 WD= 1.19 t/m3	
-		Ш					×-		=	_				-
- -		Ш					×_		=					-
— 14 - -		Ш					×_		<u> </u>					
-		Ш					×_		_				MC=29.4%	_
-		Ш			K		×-		=				DD= 1.51 t/m3 WD= 1.96 t/m3	
— 15 -		Ш				at 14.95m: becoming firm, with trace of fine gravel and fine grained	×_							-
		Ш				sand.	×_	-	=					=
-		Ш					×_		=					-
- 16 -	-12.62						×_			_			23, 30/110mm	SPT
-	-12.80	4		(73)		TUFF (Rif) XW: Recovered as Gravelly CLAY.	9	XW	_	vc				-
-						Brown, pale red, mottled pale grey, moist, hard, high plasticity. Fine to			н	M			s(50)=3.40 MPa s(50)=1.00 MPa	, ,-
- - - 17						coarse sub-angular gravel. Trace fin	e	SW		м			UCS=30.00 MPa E=24.1 GPa	A (16.65m) ⁻ (16.84m)—
-	44.00					to coarse grained sand. TUFF (Rif)	.0		н					
- - -	-14.02					SW: Pale grey with orange-brown staining, high strength.			-	vc				-
- - - 18						TUFF (Rif) MW: Pale grey with orange-brown	9			M	□ 17.84m-17.88m: XV	V Band		
·						staining, high strength.				С				-
- - -						- Js: 40-50° (1-3/m) Pl-Un/Sm-Ro, CD-OP, Fe St, Cly Vr			н	С			s(50)=3.60 MPa s(50)=3.00 MPa	
-			-	100 (75)		- Js: 0-10° (2-4/m) Pl/Sm, CD-OP, Fe St, Cly Vr		MW		м				-
— 19 - -				. ,		- Js: 60-75° (1-3/m) Un/Sm-Ro, CD, Fe St, Cly Vr					19.14m-19.16m: Jo FL,XW ,Cly	int 45° Pl, SM,		-
-							9		М		19.27m-19.29m: XV	l:	s(50)=0.97 MPa s(50)=0.62 MPa	,
-	10.50									М		i.	.,, 0.02 Wil'd	A (19.46m)
	-16.52					Continued on next sheet	***	1			<u> </u>			
R	EMAF	RKS:	R	lif - Bı	risb	ane Tuff. Standpipe piezomete	er in	stalle	ed.			LOGGED BY	REVI	EWED BY
												МН	S.	Foley
						TMR	GEOTEC	HNICAL B	OREHOLE LOG - CREATED \	WITH HOLEBASE SI		-	L	

Queensland Government

GEOTECHNICAL BOREHOLE LOG

FINAL 11/12/2018

BOREHOLE No CRR926

Sheet 3 of 3

		%	P.	Go	VE	ernment	SY		GEOTECHNICAL TE REFER FORM F:GE			REFERENCE No	н:	13051
PROJE	СТ	С	ross	River	Rail	(CRR) Project - Additional Geotechn	ical Ir	nvesti	gation		`			
LOCAT	ION	A	Q N	1ayne Y	/ard							COORDINATES 503733.	9 E; 69649	77.8 N
PROJE	CT No	F	G64	170		SURFACE RL 3.48m	PLL	JNGE S	0°	DATE START	TED 18/05/201	8 GRID DATUM	MGA94	
IOB No	0	_				HEIGHT DATUM AHD	BEA	RING _		DATE COMPLET	TED 22/05/201	8 DRILLER	Geodrill	
DEPTH (m)	R.L. (m)	AUGER CASING	WASH BORING CORE DRILLING	RQD ()% CORE REC%	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USCS WEATHERING	INTACT STRENGTH	DEFECT SPACING		ADDITIONAL DATA AND TEST RESULTS		SAMPLES TESTS
— 21 — 22 — 23 — 24 — 25 — 27	-18.12		WAY COD	100		TUFF (Rif) MW: Cont'd TUFF (Rif) SW: Pale grey with orange-brown staining, high strength Js: 40-50° (1-3/m) PI-Un/Sm-Ro, CD-OP, Fe St, Cly Vr - Js: 0-10° (2-4/m) PI/Sm, CD-OP, Fe St, Cly Vr \(\text{Js: 60-75° (1-3/m) Un/Sm-Ro, CD, Fe St, Cly Vr} \) Borehole completed at 21.60m		SW	# # # # # # # # # # # # # # # # # # #	M		l: L	s(50)=3.30 MPa s(50)=1.30 MPa UCS=36.90 MPa E=17.6 GPa s(50)=2.40 MPa	A (20.91m) (21.25m)
									=					
	<u> </u>							1						
RI	EMAR	KS:	R	if - Br	isb	ane Tuff. Standpipe piezomet	er in	stalle	ed.			LOGGED BY	REVIE	WED BY
												MH	S.	Foley
						TM	R GEOTEC	HNICAL B	OREHOLE LOG - CREATED \	VITH HOLEBASE SI		_1		

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 Nar	ne	Cross Rive	r Hall - Staç	ge 2		Project No. FG6470					
Site ID / Bo	rehole No.	CRR926				Surface RL 3.484					
Geologist		Mark Hayes	3			Date					
						Page	1	of			
Traverse	Туре	Dip ° / Dip	Planarity	Roughness	Roughness	Aperture	Infilling	Zones ¹	Other		
Chainage;		Direction °;			Class						
or	LP/	or				CD/	Cn /	SZ /			
Down hole	BP/	Angle ° from	Stp /	Ro/	I to IX	OP /	St /	CZ/			
depth	FP/	horizontal	Un /	Sm /		FL/	Vr/	HFZ /			
(rock core)	J etc.	(rock core)	PI	SI		TI	Ct 1	AZ			
16.33	J	60	Pl	Sm	VIII	CD	Vr		Cly		
16.35	J	30	Stp	Sm	II	OP	Cn				
16.36	J	50	Pl	Sm	VIII	OP	Vr		Cly		
16.57	J	5	Un	Sm	V	OP	Vr	BZ	Cly(20mm)		
16.80	J	45	Pl	Sm	VIII	CD	St		Fe		
16.81	J	45	Un	Sm	V	CD	St		Fe		
17.30	J	10	Pl	Sm	VIII	CD	St		Fe		
17.46	J	10	Pl	Ro	VII	OP	St		Fe		
17.47	J	10	Un	Ro	IV	CD	St		Fe		
17.52	J	10	PI	Sm	VIII	OP	Ct		Cly(3-5mm		
17.72	J	15	PI	Sm	VIII	CD	St		Fe		
17.83	J	35	PI	Sm	VIII	OP	Ct	BZ	Cly, BZ(40m		
18.05	J	20	PI	Sm	VIII	CD	St		Fe		
18.15	J	65	PI	Sm	VIII	OP	Vr		Cly		
18.18	J	10	Pl	Sm	VIII	CD	St		Fe		
18.31	J	45	Stp	Ro	I	CD	St		Fe		
18.51	J	10	PI	Sm	VIII	CD	St		Fe		
18.68	J	70	Un	Sm	V	OP	Vr	BZ	Cly, BZ(10mi		
19.13	J	10	PI	Sm	VIII	CD	St		Fe		
19.15	J	0	PI	Sm	VIII	FL/OP	Ct	BZ	Cly(20mm)		
19.24	J	0	PI	Sm	VIII	CD	St		Fe		
19.27	J	45	Un	Sm	٧	FL/OP	Ct		Cly(20mm)		
19.41	J	10	PI	Sm	VIII	CD	St		Fe		
19.73	J	20	Stp	Sm	II	OP	St		Fe		
19.97	J	75	Un	Ro	IV	OP	St		Fe		
20.07	J	45	Un	Sm	V	CD	St		Fe		
20.17	J	70	Un	Ro	IV	CD	St		Fe		
20.69	J	5	Un	Sm	V	CD	St		Fe		
21.22	J	10	Un	Sm	V	CD	Cn				
									1		

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

F:GEOT 533/9 - 2014

BOREHOLE No

FINAL 11/12/2018 **CRR926**

Queensland Government **INSTALLATION LOG** Sheet 1 of 3 FOR GEOTECHNICAL TERMS AND **CRR926** PIEZOMETER No SYMBOLS REFER FORM F:GEOT 017/8-2014 Cross River Rail (CRR) Project - Additional Geotechnical Investigation PROJECT COORDINATES 503733.9 E; 6964977.8 N AQ Mayne Yard LOCATION FG6470 SURFACE RL 3.48m PLUNGE 90° DATE STARTED 18/05/2018 grid datum MGA94 PROJECT No HEIGHT DATUM AHD BEARING ° DATE COMPLETED 22/05/2018 DRILLER Geodrill JOB No Standpipe Construction Details Ξ LITHOLOG R.L. DEPTH (MATERIAL DESCRIPTION (m) Depth (m) /RL 50mm PVC Class No. 18 **Backfill Details** (AHD) Stick Up = 0.00m Asphalt Sandy GRAVEL with Silt(Fill) Brown and grey brown, dry to moist, loose to medium dense, fine, sub-angular to sub-rounded gravel. Fine to coarse grained sand. Some low plasticity fines. Trace boulders and cobbles. 1.28 Silty CLAY(Alluvium) Brown and grey brown, moist, soft to firm, high Grout: Bentonite / Cement Mix plasticity. at 2.5m: becoming brown with some orange brown mottling. Trace of rootlets. -0.02 CLAY(Alluvium) Brown grey and yellow brown, moist, soft to firm, -0.52 high plasticity. Trace of fine sub-rounded gravel. Silty CLAY(Alluvium) Grey, trace yellow brown mottling, moist, very soft, high plasticity. 5.00m / -1.52 AHD Bentonite Pelle Seal at 7.0m: becoming grey, orange, and red brown. Some wood fragments. 7.20m / -3.72 AHD Continued on next sheet REMARKS: Rif - Brisbane Tuff. Standpipe piezometer installed. **LOGGED BY REVIEWED BY** MH S.Foley

TMR STANDPIPE INSTALLATION LOG - CREATED WITH HOLEBASE SI



STANDPIPE INSTALLATION LOG

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

BOREHOLE No CRR926

Sheet 2 of 3

PIEZOMETER No CRR926

Cross River Rail (CRR) Project - Additional Geotechnical Investigation PROJECT AQ Mayne Yard COORDINATES 503733.9 E; 6964977.8 N LOCATION FG6470 SURFACE RL 3.48m PLUNGE 90° DATE STARTED 18/05/2018 GRID DATUM MGA94 PROJECT No HEIGHT DATUM AHD BEARING ° DATE COMPLETED 22/05/2018 DRILLER Geodrill JOB No Standpipe Construction Details Ξ LITHOLOG R.L. DEPTH (MATERIAL DESCRIPTION (m) Depth (m) /RL 50mm PVC Class No. 18 **Backfill Details** (AHD) Stick Up = 0.00m Silty CLAY(Alluvium) Cont'd 13 Filter: Washed / Graded Sand 15 at 14.95m: becoming firm, with trace of fine gravel and fine grained sand 16 -12.62 -12.80 TUFF Recovered as Gravelly CLAY. Brown, pale red, mottled pale grey, moist, hard, high plasticity. Fine to coarse sub-angular gravel. Trace fine to coarse grained sand. 17 TUFF TUFF
Pale grey with orange-brown staining, high strength. TUFF
Pale grey with orange-brown staining, high strength.

40 50° (1-3/m) Pl-Un/Sm-Ro, CD-OP, Fe St, Cly - Js: 40-50° (1-3/m) Pl-Un/Sm-Ro, CD-OP, Fe St, Cly Vr - Js: 0-10° (2-4/m) Pl/Sm, CD-OP, Fe St, Cly Vr 18 - Js: 0-10° (2-4/m) PI/Sm, CD-OP, Fe St, Cly Vr 18.45m / -14.97 AHD Top of Slotted Pipe - Js: 60-75° (1-3/m) Un/Sm-Ro, CD, Fe St, Cly Vr 19 Continued on next sheet REMARKS: Rif - Brisbane Tuff. Standpipe piezometer installed. **LOGGED BY REVIEWED BY** МН S.Foley TMR STANDPIPE INSTALLATION LOG - CREATED WITH HOLEBASE SI

Queensland

STANDPIPE INSTALLATION LOG

CRR926 BOREHOLE No

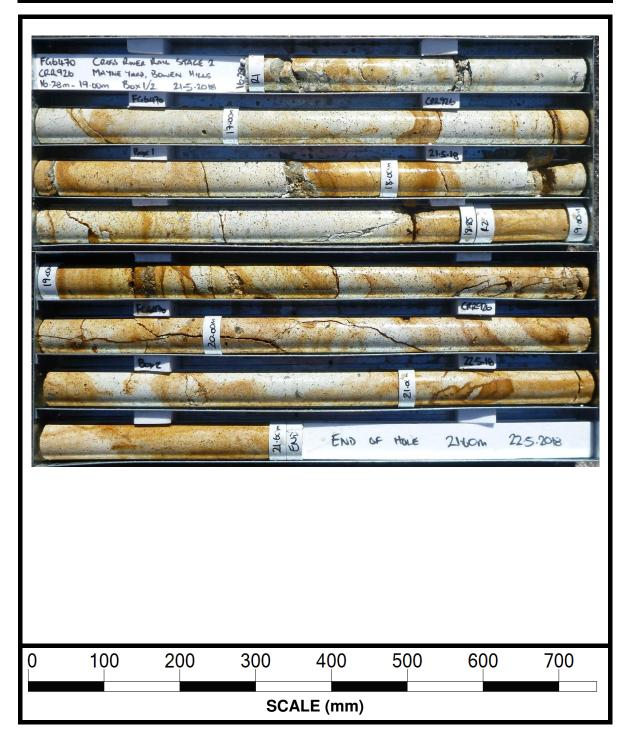
FINAL 11/12/2018

) XII	3(C		INSTALLATIC	IN LOG	.	Sheet 3	3 of 3
		₹	Government	FOR GEOTECHNICAL TI SYMBOLS REFER FORM F:GI			PIEZOMETER No	CRR926
ROJE	СТ	С	ross River Rail (CRR) Project - Additional Geotechnica	l Investigation				
OCAT	ION	Α	Q Mayne Yard				COORDINATES 503733.9	E; 6964977.8 N
ROJE	CT No	_F	-G6470 SURFACE RL 3.48m	PLUNGE 90°	DATE STARTED	18/05/201	.8 GRID DATUM N	1GA94
OB No	0	_	HEIGHT DATUM AHD B	EARING	DATE COMPLETED	22/05/201	DRILLER G	eodrill
E		д			Standpipe	e Constr	uction Details	
DEPTH (m)	R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Depth (m) /RL	50mm PVC Class	No. 18		
				(AHD)	Stick Up = 0.0		Backfill De	etails
	-16.62	9	TUFF Cont'd					
			cont'd TUFF Pale grey with orange-brown staining, high strength.					
			- Js: 40-50° (1-3/m) Pl-Un/Sm-Ro, CD-OP, Fe St, Cly					
- 21			Vr - Js: 0-10° (2-4/m) PI/Sm, CD-OP, Fe St, Cly Vr					
	-18.12		- Js: 60-75° (1-3/m) Un/Sm-Ro, CD, Fe St, Cly Vr	21.45m / -17.97 AHD				
			Borehole completed at 21.60m					
- 22								
- 23								
- 24								
- 25								
- 26								
- 27								
- 28								
- 29								
23								
RI	EMAR	KS:	Rif - Brisbane Tuff. Standpipe piezometer installed.				LOGGED BY	REVIEWED BY
				NIDDIDE INCTALL STORY	WELLIOLED		MH	S.Foley
			TMR STA	NDPIPE INSTALLATION LOG - CREATED \	VIIII NULEDADE DI			

CORE PHOTO LOG DEPARTMENT OF TRANSPORT AND MAIN ROADS GEOTECHNICAL SECTION



Project Name	Cross River Rail CRR 2018 – Geotechnical Investigation							
Project No.	FG6470	Date	18/05/2018					
Borehole No.	CRR926	Reference No.	H13051					
Location	QR Rail Corridor	Start Depth (m)	16.28					
Submitted By	J. Armstrong	Finish Depth (m)	21.60					



1