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GEOTECHNICAL BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/8-2014 FINAL 02/11/2017

BH01 BOREHOLE No

Sheet 1 of 4

H12902

REFERENCE No PROJECT Boyne River Bridge Repalcement COORDINATES 323493.5 E; 7159937.9 N Abutment A, LHS LOCATION SURFACE RL 125.56m FG6482 PLUNGE 90° DATE STARTED 10/07/2017 grid datum MGA Z56 PROJECT No DRILLER NorthCoast Drilling 249/435/375550 DATE COMPLETED 12/07/2017 JOB No HEIGHT DATUM AHD BEARING S RQD USCS WEATHERING ADDITIONAL DATA INTACT STRENGTH DEFECT SPACING SAMPLES TESTS Ξ LITHOLOGY AND TEST RESULTS DEPTH (RΙ SAMP MATERIAL DESCRIPTION CORE REC % ᇳᆃᆂᄝᅿᆿᇜᇬᇬᄝᇂᇂᇕ Sandy SILT (Alluvium) Dark brown, moist, stiff. Low plasticity. Fine grained sand. N=12 SPT (ML) N=10 SPT 122.86 Silty SAND (Alluvium) Grey brown, moist, medium dense. Fine grained sand. N=13 SPT 7, 7, 10 (SM) 4.00-4.35m: Sandy SILT, fine D grained sand. SPT 10, 11, 12 N=23 SPT 120.21 Sandy CLAY (Alluvium) Brown to grey, moist, very stiff to hard. (CL) Low plasticity. 13, 19, 19 Fine grained sand. SPT 119.26 SAND with Silt (Alluvium) Orange brown, moist, medium dense. Medium grained gravel. (SP-8, 12, 13 SM) N=25 SPT 117.86 Gravelly SAND with Silt (Alluvium) Grey brown, moist, dense to very 17, 26, 25 dense. SPT Medium to coarse grained sand. (SP Fine to medium grained gravel, sub SM) rounded. 16, 15, 20 SPT 116.26 Sandy CLAY (Alluvium) Grey brown, moist, very stiff to (CL) hard. Continued on next sheet REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed. **LOGGED BY REVIEWED BY** S. Foley J. Armstrong TMR GEOTECHNICAL BOREHOLE LOG - CREATED WITH HOLEBASE SI

GEOTECHNICAL BOREHOLE LOG

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

FINAL 02/11/2017

BOREHOLE No BH01

Sheet 2 of 4

REFERENCE No H12902

Boyne River Bridge Repalcement PROJECT COORDINATES 323493.5 E; 7159937.9 N Abutment A, LHS LOCATION SURFACE RL 125.56m GRID DATUM MGA Z56 FG6482 PLUNGE 90° DATE STARTED 10/07/2017 PROJECT No 249/435/375550 DRILLER NorthCoast Drilling DATE COMPLETED 12/07/2017 JOB No HEIGHT DATUM AHD BEARING S USCS WEATHERING RQD ADDITIONAL DATA INTACT DEFECT SPACING SAMPLES TESTS Ξ LITHOLOGY AND TEST RESULTS STRENGTH DEPTH (RΙ SAMP MATERIAL DESCRIPTION CORE REC % ᇳᆂᆂᄝᅿᅿᆿᆙᇬᇬᄝᇂᇂᇕ Sandy CLAY (Alluvium) SPT Cont'd. (CL) Low plasticity. 114.96 Fine grained sand. Gravelly SAND (Alluvium) Grey brown, moist, dense. N=33 Medium to coarse grained sand. SPT Fine grained gravel, sub rounded to (SP) sub angular. Trace Silt. 11.74m: Groundwater level 04/09/17 04/09/2017 15, 11, 20 N=31 113.26 SPT Silty CLAY (Alluvium) Pale grey mottled brown, moist, hard. Medium plasticity. 18, 25, 30/140mm Trace Sand. SPT (CI) 16, 30/140mm SPT 110.56 28, 30/110mm Sandy CLAY (Alluvium) SPT Grev brown, moist, hard. Medium to high plasticity. (CI) Fine grained sand. 109.56 24, 30/140mn Silty CLAY (Residual) SPT Pale grey mottled orange brown, moist, hard. Medium to high plasticity. Trace fine grained sand. Trace fine grained gravel, sub rounded. 22. 30/90mm Q SPT (CI) 15, 30/150mr R 15.30/100mm Continued on next sheet REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed. **LOGGED BY REVIEWED BY** S. Foley J. Armstrong TMR GEOTECHNICAL BOREHOLE LOG - CREATED WITH HOLEBASE SI

GEOTECHNICAL BOREHOLE LOG

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

FINAL 02/11/2017

BOREHOLE No BH01

Sheet 3 of 4

REFERENCE No H12902

PROJECT Boyne River Bridge Repalcement Abutment A, LHS COORDINATES 323493.5 E; 7159937.9 N LOCATION SURFACE RL 125.56m FG6482 PLUNGE 90° DATE STARTED 10/07/2017 $\mathsf{GRID}\,\mathsf{DATUM}\,\,\mathsf{MGA}\,\mathsf{Z56}$ PROJECT No DRILLER NorthCoast Drilling 249/435/375550 DATE COMPLETED 12/07/2017 JOB No HEIGHT DATUM AHD BEARING RQD USCS WEATHERING ADDITIONAL DATA INTACT DEFECT SPACING SAMPLES TESTS Ξ ()% LITHOLOGY AND TEST RESULTS STRENGTH RΙ DEPTH SAMP MATERIAL DESCRIPTION CORE REC % ᇳᆂᆂᄝᅿᅿᆿᆙᇬᇬᄝᇂᇂᇕ Silty CLAY (Residual) 24, 30/100mm SPT (CI) Cont'd. 105.16 SILTSTONE (Je1) XW: Recovered as Gravelly CLAY with Sand. Pale grey mottled brown, moist, ht Medium plasticity. Angular gravel, very low strength. 10, 18, 30/100mm SPT 23 26, 30/70mn 23.00m: Becoming medium SPT XW plasticity. 30/120mm 25 99.56 26 30/140mm Z SANDSTONE (Je1) hb XW: Recovered as Sandy CLAY. Pale grey mottled brown, moist, XW hard. Medium plasticity. 98.56 Fine grained sand. Fine to medium 30/0mm (50) D (27.10m) grained gravel, very low strength. A (27.11m) SANDSTONE (Je1) HW: Pale grey mottled brown, fine HW to medium grained, medium Is(50)=0.78 MPa Is(50)=0.26 MPa bedded, very low to low strength. ⇒ 28.02m-28.05m: XW □ 28.10m-28.17m: XW, Recovered as BP: 30° to 50° (<1/m); PI/Sm; TI-XW Is(50)=0.40 MPa D (28.20m) CD; Fe St; some Cly Vr Clayey SAND 28.28m-28.30m: BZ, DI 100 Is(50)=0.26 MPa A (28.21m) - Js: 10° to 30° (3-5/m); PI/Sm; TI-(78)CD; Fe St 28.70m-28.75m: XW, Cly - Js: 70° to 90° (<1/m); Un/Ro-Sm; HW TI-CD; Fe St 29 29.53m-29.55m: XW, Cly MW Is(50)=1.00 MPa Is(50)=0.61 MPa D (29.70m) HW A (29.71m) Continued on next sheet REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed. **LOGGED BY REVIEWED BY** S. Foley J. Armstrong TMR GEOTECHNICAL BOREHOLE LOG - CREATED WITH HOLEBASE SI

GEOTECHNICAL BOREHOLE LOG

FINAL 02/11/2017

BH01

Sheet 4 of 4

BOREHOLE No

FOR GEOTECHNICAL TERMS AND H12902 REFERENCE No SYMBOLS REFER FORM F:GEOT 017/8-2014 Boyne River Bridge Repalcement PROJECT COORDINATES 323493.5 E; 7159937.9 N Abutment A, LHS LOCATION SURFACE RL 125.56m DATE STARTED 10/07/2017 FG6482 PLUNGE 90° grid datum MGA Z56 PROJECT No DRILLER NorthCoast Drilling 249/435/375550 DATE COMPLETED 12/07/2017 JOB No HEIGHT DATUM AHD BEARING S USCS WEATHERING RQD ADDITIONAL DATA INTACT STRENGTH DEFECT SPACING SAMPLES TESTS Ξ LITHOLOGY AND TEST RESULTS ()% SAMPLE DEPTH (RΙ MATERIAL DESCRIPTION CORE REC % SANDSTONE (Je1) 100 HW: Cont'd. UCS=5.13 MPa (30.30m) 30.50m: Petrographic Report Is(50)=0.29 MPa D (30.50m) Is(50)=0.05 MPa A (30.52m) Is(50)=0.13 MPa Is(50)=0.09 MPa D (31.85m) A (31.87m)_ 33 100 (89) UCS=0.45 MPa (33.25m) Is(50)=0.05 MPa Is(50)=0.04 MPa D (33.40m) A (33.42m)-HW Is(50)=0.04 MPa D (34.90m) 35 Is(50)=0.03 MPa A (34.92m)-Is(50)=0.07 MPa Is(50)=0.04 MPa D (35.65m)_ A (35.67m)_ 100 (93) Is(50)=0.06 MPa D (36.27m)-A (36.29m) 37 Is(50)=0.05 MPa D (37.90m) Is(50)=0.05 MPa A (37.92m)_ 86.56 100 (38.92m)_ Borehole completed at 39.00m REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed. **LOGGED BY REVIEWED BY** S. Foley J. Armstrong TMR GEOTECHNICAL BOREHOLE LOG - CREATED WITH HOLEBASE SI

STANDPIPE PIEZOMETER INSTALLATION LOG

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

BH01 BOREHOLE No Sheet 1 of 4

FINAL 02/11/2017

REVIEWED BY

S. Foley

LOGGED BY J. Armstrong

BH01 PIEZOMETER No Boyne River Bridge Repalcement PROJECT Abutment A, LHS COORDINATES 323493.5 E; 7159937.9 N LOCATION DATE STARTED 10/07/2017 SURFACE RL 125.56m plunge 90° GRID DATUM MGA Z56 FG6482 PROJECT No

No	2	49/435/375550 HEIGHT DATUM AHD	BEARING	DATE COMPLETED 2	12/07/2017	DRILLER NorthCoast Drilling
	⊱		S	tandpipe Piezo	meter Constr	uction Details
R.L. (m)	LITHOLOGY	MATERIAL DESCRIPTION	Depth (m) /RL (AHD)			Backfill Details
		Sandy SILT (Alluvium)	0.20m / 125.36 AHD			Rapid-set concrete
122.86		Dark brown, moist, stiff. Low plasticity. Fine grained sand. Silty SAND (Alluvium)				Grout
		Silty SAND (Alluvium) Grey brown, moist, medium dense.	3.00m / 122.56 AHD			
	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Fine grained sand. 4.00-4.35m: Sandy SILT, fine grained sand.	5.00m / 120.56 AHD			Bentonite Seal
120.21	Ŷ.					
119.26		Sandy CLAY (Alluvium) Brown to grey, moist, very stiff to hard. Low plasticity. Fine grained sand. SAND with Silt (Alluvium) Orange brown, moist, medium dense. Medium grained gravel.				
117.86						
117.86		Gravelly SAND with Silt (Alluvium) Grey brown, moist, dense to very dense. Medium to coarse grained sand. Fine to medium grained gravel, sub rounded.				
		Sandy CLAY (Alluvium) Grey brown, moist, very stiff to hard.				
		oney brown, moist, very still to lidiu.				
115.56	<u> </u>	Continued on next sheet				

REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed.

TMR STANDPIPE PIEZOMETER INSTALLATION LOG - CREATED WITH HOLEBASE SI

STANDPIPE PIEZOMETER INSTALLATION LOG

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

BOREHOLE No BH01

FINAL 02/11/2017

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PIEZOMETER No BH01

Boyne River Bridge Repalcement PROJECT Abutment A, LHS COORDINATES 323493.5 E; 7159937.9 N LOCATION SURFACE RL 125.56m plunge 90° grid datum MGA Z56 FG6482 DATE STARTED 10/07/2017 PROJECT No DATE COMPLETED 12/07/2017 249/435/375550 $_{\rm BEARING}~^{\circ}$ DRILLER NorthCoast Drilling HEIGHT DATUM AHD JOB No

JOB NO			HEIGHT DATOM ATTO	PARING DATE COMPLETED 12/07/2017 DMILLER NOT CHOOSE D			
<u></u>	2 3			-	Standpipe Piezometer Construction Details		
DEРТН (m)	R.L. (m)	ПТНОГОБУ	MATERIAL DESCRIPTION	Depth (m) /RL (AHD)		Backfill Details	
11	114.96		Sandy CLAY (Alluvium) Cont'd. Low plasticity. Fine grained sand. Gravelly SAND (Alluvium) Grey brown, moist, dense. Medium to coarse grained sand. Fine grained gravel, sub rounded to sub angular. Trace Silt.	04/09/201 7			
13	113.26		Silty CLAY (Alluvium) Pale grey mottled brown, moist, hard. Medium plasticity. Trace Sand.				
15	110.56		Sandy CLAY (Alluvium) Grey brown, moist, hard. Medium to high plasticity. Fine grained sand.				
16	109.56	 	Silty CLAY (Residual) Pale grey mottled orange brown, moist, hard. Medium to high plasticity. Trace fine grained sand. Trace fine grained gravel, sub rounded.				
18							
-	105.56	×_ ×_ ×_ ×_	Continued on next sheet				

REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed.

LOGGED BY

REVIEWED BY

J. Armstrong
S. Foley

STANDPIPE PIEZOMETER **INSTALLATION LOG**

BH01 BOREHOLE No

FINAL 02/11/2017

Sheet 3 of 4

Government FOR GEOTECHNICAL TERMS AND **BH01** PIEZOMETER No SYMBOLS REFER FORM F:GEOT 017/8-2014 Boyne River Bridge Repalcement PROJECT COORDINATES 323493.5 E; 7159937.9 N Abutment A, LHS LOCATION GRID DATUM MGA Z56 FG6482 SURFACE RL 125.56m PLUNGE 90° DATE STARTED 10/07/2017 PROJECT No 249/435/375550 DATE COMPLETED 12/07/2017 DRILLER NorthCoast Drilling HEIGHT DATUM AHD BEARING ° JOB No **Standpipe Piezometer Construction Details** Ξ LITHOLOGY R.L. DEPTH (MATERIAL DESCRIPTION Depth (m) /RL (m) **Backfill Details** (AHD) Silty CLAY (Residual) Cont'd. 105.16 SILTSTONE (Je1) XW: Recovered as Gravelly CLAY with Sand. Pale grey mottled brown, moist, hard. 21.00m / 104.56 AHD Top of slotted pipe 21 Medium plasticity. Angular gravel, very low strength. 22 23 23.00m: Becoming medium plasticity. Graded Sand 25 99.56 26 SANDSTONE (Je1) XW: Recovered as Sandy CLAY. Pale grey mottled brown, moist, hard. Medium plasticity. Fine grained sand. Fine to medium grained gravel, 98.56 very low strength. 27 SANDSTONE (Je1) HW: Pale grey mottled brown, fine to medium grained, medium bedded, very low to low strength. BP: 30° to 50° (<1/m); PI/Sm; TI-CD; Fe St; some Cly Vr 28 - Js: 10° to 30° (3-5/m); PI/Sm; TI-CD; Fe St - Js: 70° to 90° (<1/m); Un/Ro-Sm; TI-CD; Fe St 29 Continued on next sheet REMARKS: Je1 - Evergreen Formation. Standpipe piezometer installed. **LOGGED BY REVIEWED BY** S. Foley J. Armstrong TMR STANDPIPE PIEZOMETER INSTALLATION LOG - CREATED WITH HOLEBASE SI

Queensland

STANDPIPE PIEZOMETER INSTALLATION LOG

BOREHOLE No	BH01

FINAL 02/11/2017

Sheet 4 of 4

		1%	Gover	nment	FOR GEOTECHNICAL SYMBOLS REFER FORM F:		PIEZOMETER No	BH01
ROJE	СТ	E	Boyne River Bridge	e Repalcement				
OCAT	ION	A	Abutment A, LHS				COORDINATES 323493.5	E; 7159937.9 N
ROJE	CT No	_	FG6482	SURFACE RL 125.56m	PLUNGE 90°	DATE STARTED 10/07/2017	GRID DATUM	MGA Z56
OB N	0	2	49/435/375550	HEIGHT DATUM AHD	BEARING	DATE COMPLETED 12/07/2017	DRILLER	NorthCoast Drilling
_		>				Standpipe Piezometer Co	onstruction Deta	ils
DEPTH (m)	R.L. (m)	LITHOLOGY	M	ATERIAL DESCRIPTION	Depth (m) /RL (AHD)		Backfill	Details
- 31 - 32 - 33 - 34 - 35 - 36 - 37	86.56		SANDSTONE (Je1 HW: Cont'd.	ehole completed at 39.00m	39.00m / 86.56 AHI			
R	EMAF	RKS:	Je1 - Evergreer	n Formation. Standpipe piezome	eter installed.		LOGGED BY	REVIEWED BY
				TAMD CT	ANDPIPE PIEZOMETER INSTALLATION LOG - (CREATED WITH HOLEBASE SI	J. Armstrong	S. Foley
				TMRST	MIND IFE FIELOWIETER INSTALLATION LOG - (TICALLO WILL HOLEBASE SI		

CORE PHOTO LOGDEPARTMENT OF TRANSPORT AND MAIN ROADS GEOTECHNICAL SECTION



Project Name	Boyne River Bridge Replacement		
Project No.	FG6482	Date	12/07/2017
Borehole No.	BH01	Reference No.	H12902
Location	Abutment A, LHS	Start Depth (m)	27.00
Submitted By	S. Louei	Finish Depth (m)	39.00
	C. 2000.	Timeri Bepair (III)	00.00
Remarks	3.1.5. 3.1.0. 3.6.0.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0. 3.6.0.0. 3.6.0	35.0 ₀ . 35.0 ₀ . 22.0 ₀ . 24.0 ₀ . Run	33.00
		VIII	3.0
0 100	200 300 400 SCALE (mm)	500 600	700

Page 1 of 2

CORE PHOTO LOGDEPARTMENT OF TRANSPORT AND MAIN ROADS GEOTECHNICAL SECTION



Project Name Boyne River Bridge Replacement Project No. FG6482 Date 12/0 Borehole No. BH01 Reference No. H12 Location Abument A, LHS Start Depth (m) 27.0 Submitted By S. Louei Finish Depth (m) 39.0 Remarks Finish Depth (m) 39.0	1=					1
Borehole No. BH01 Reference No. H12 Location Abutment A, LHS Start Depth (m) 27.0 Submitted By Remarks Remarks			eplacement	Τ_		_
Location Abutment A, LHS Start Depth (m) 27.0 Submitted By S. Louei Finish Depth (m) 39.0 Remarks						7/2017
Submitted By Remarks S. Louei Finish Depth (m) 39.0						
Remarks 10 9 C 10 2 CE 10 2						
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	marks					
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SCALE (mm)			SCALE (mm)			