

APPENDIX G2

Macquarie Geotechnical— Laboratory Results

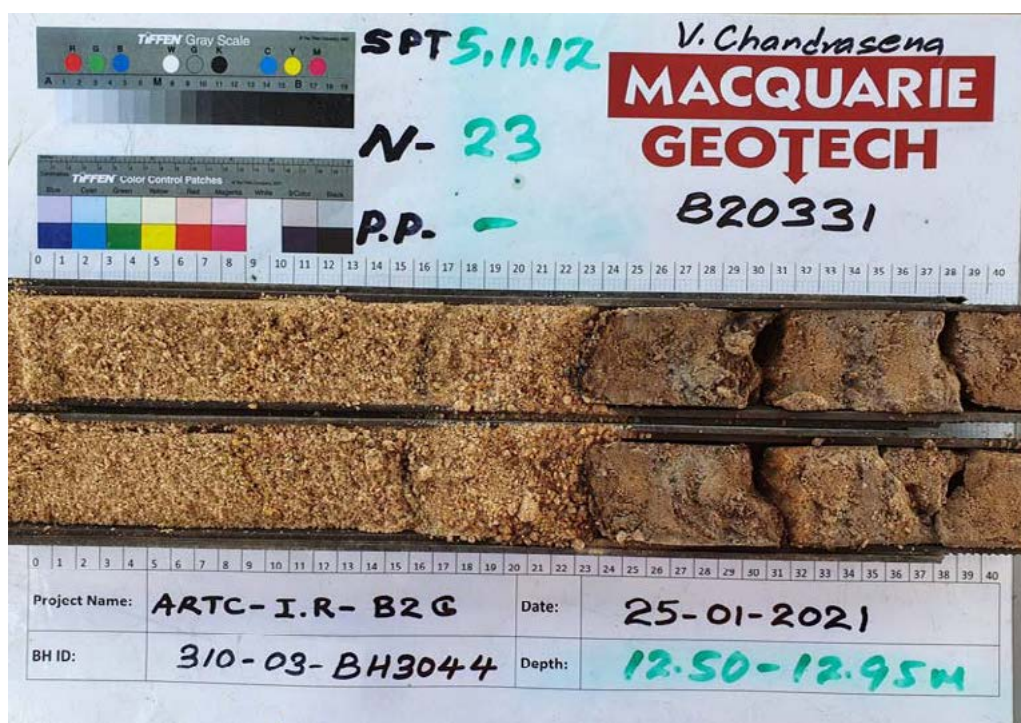
Part 2 of 3

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT

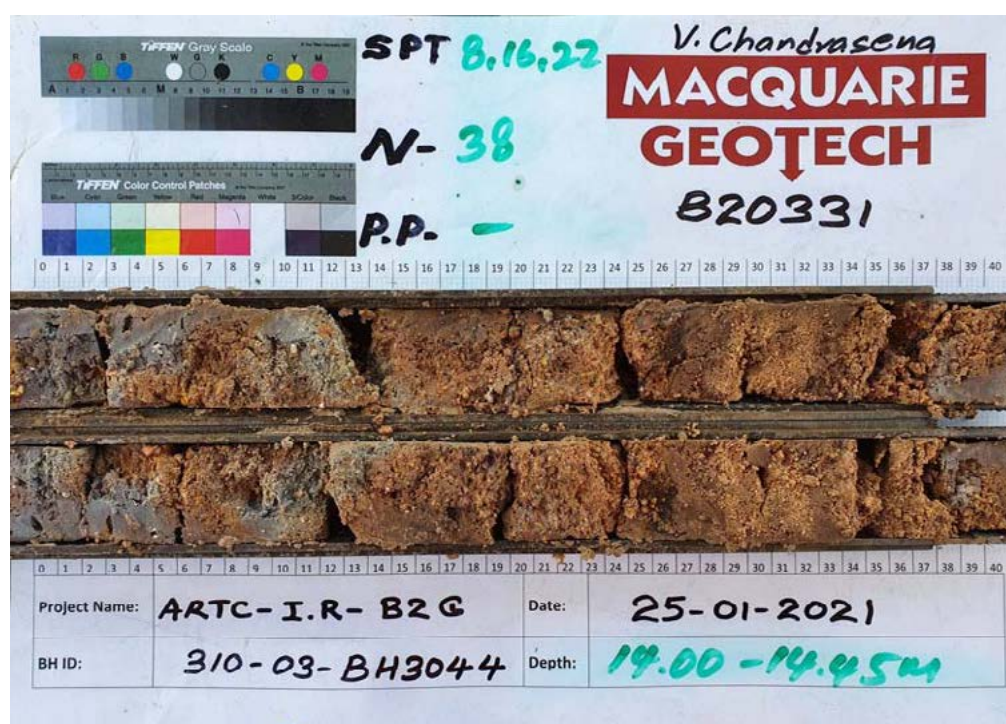
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH144029 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341251.0 m E 6922928.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	379.50 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3044 Depth Range: 12.50 - 12.95 m



310-03-BH3044 Depth Range: 14.00 - 14.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH144029 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341251.0 m E 6922928.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	379.50 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3044 Depth Range: 15.50 - 15.95 m



310-03-BH3044 Depth Range: 17.00 - 17.45 m

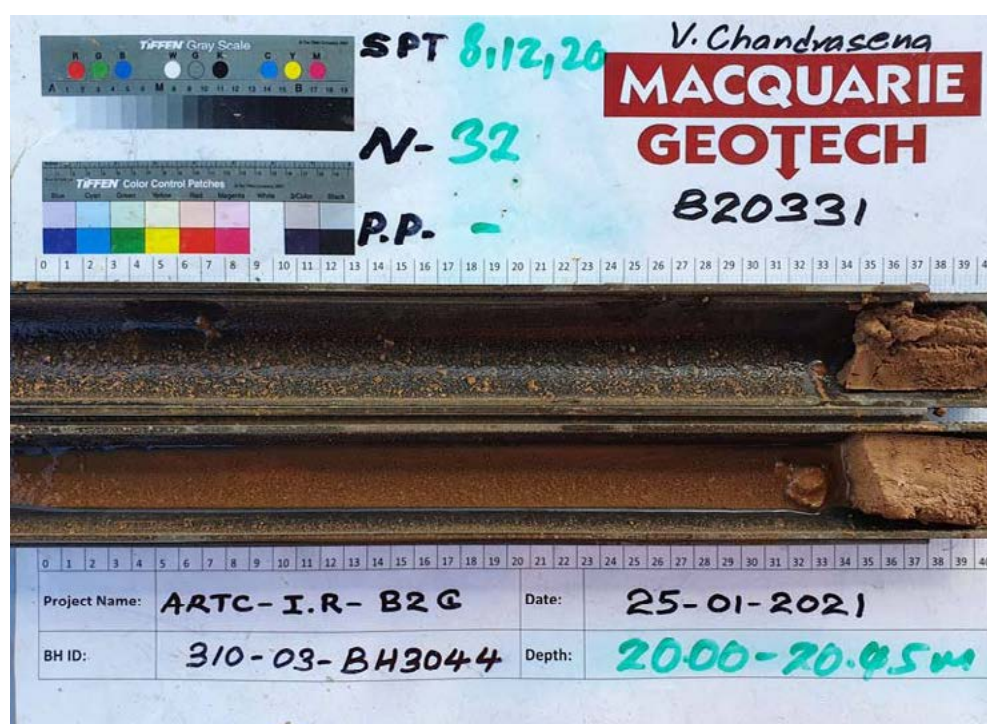
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH144029 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341251.0 m E 6922928.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	379.50 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3044 Depth Range: 18.50 - 18.95 m

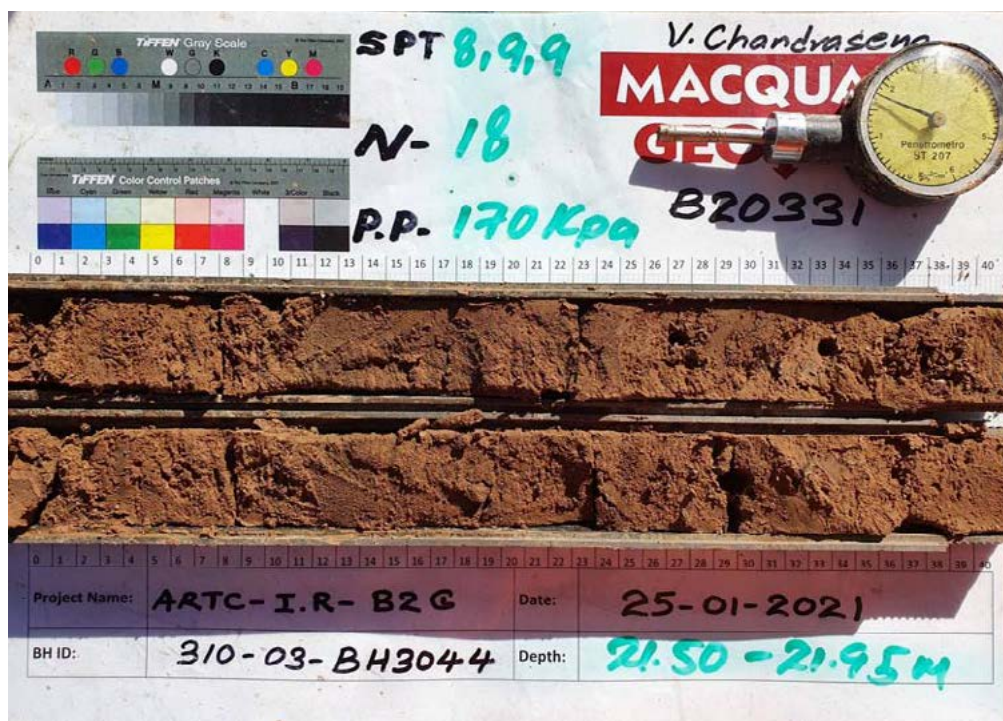


310-03-BH3044 Depth Range: 20.00 - 20.45 m

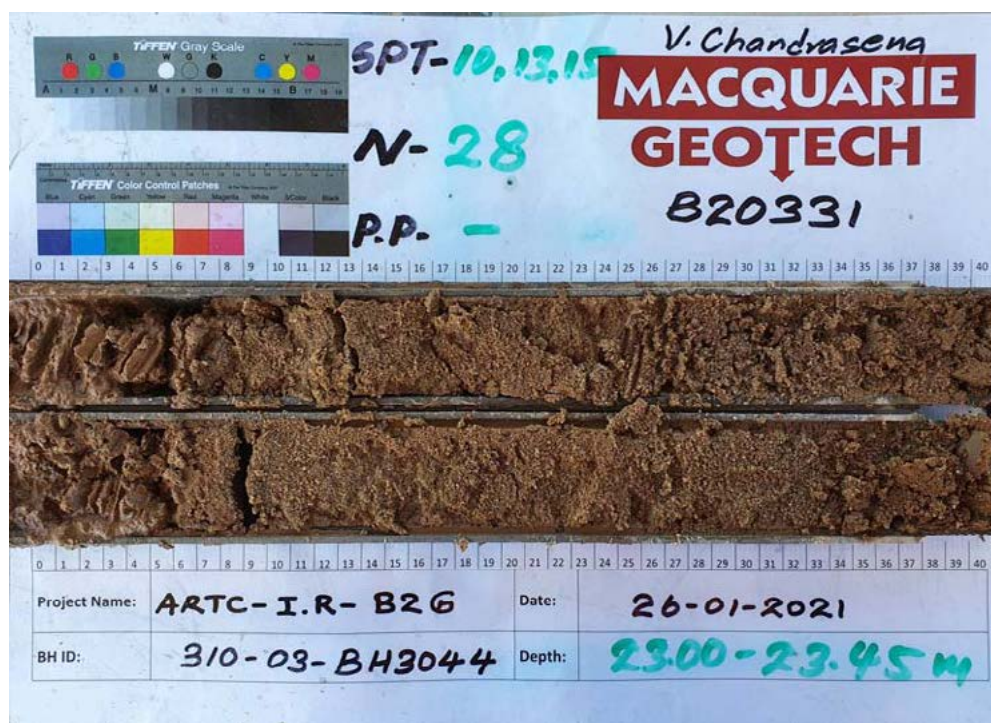
Engineering Log - Borehole

Project No.: B20331

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Hole Location:	Approx. CH144029 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341251.0 m E 6922928.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	379.50 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3044 Depth Range: 21.50 - 21.95 m

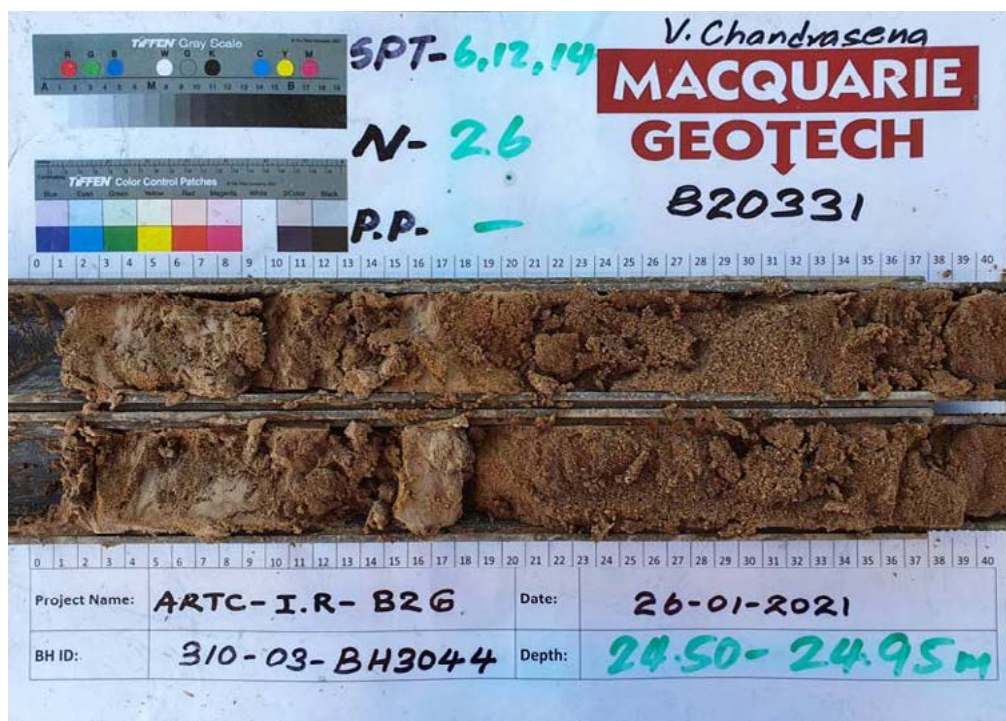


310-03-BH3044 Depth Range: 23.00 - 23.45 m

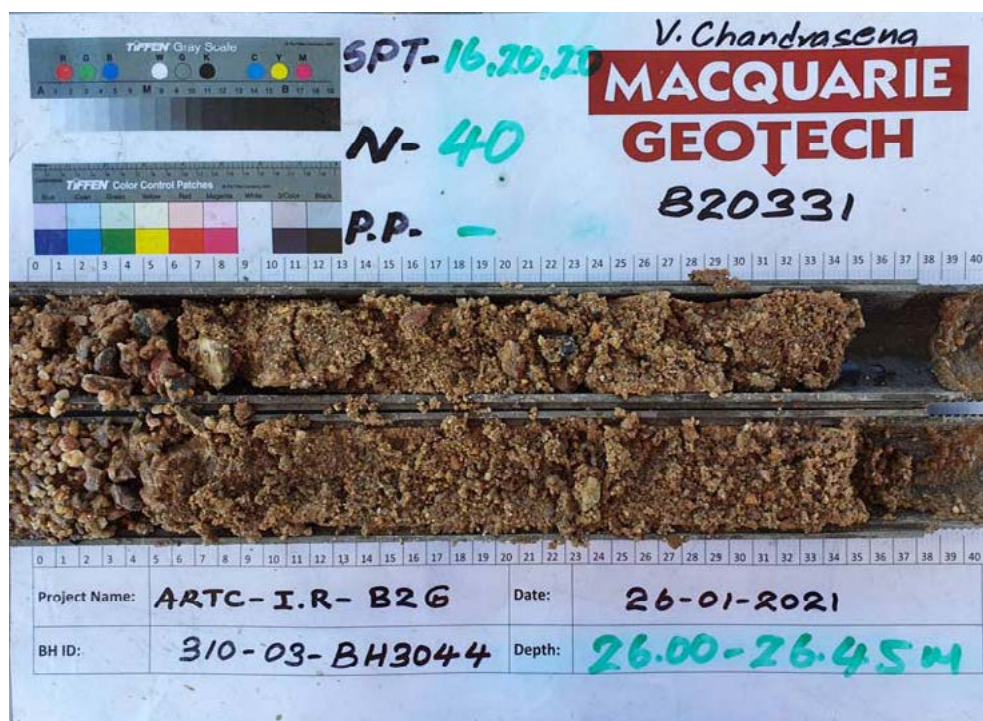
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH144029 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341251.0 m E 6922928.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	379.50 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3044 Depth Range: 24.50 - 24.95 m



310-03-BH3044 Depth Range: 26.00 - 26.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH144029 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341251.0 m E 6922928.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	379.50 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3044 Depth Range: 27.50 - 27.95 m



310-03-BH3044 Depth Range: 29.00 - 29.45 m

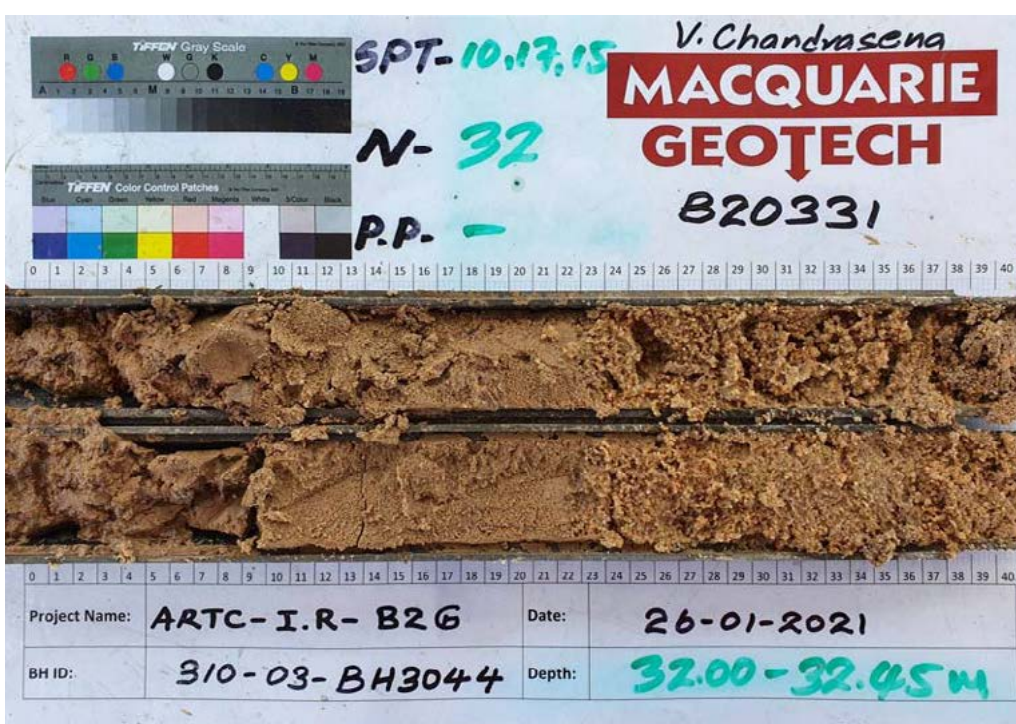
Engineering Log - Borehole

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Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH144029 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341251.0 m E 6922928.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	379.50 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3044 Depth Range: 30.50 - 30.95 m



310-03-BH3044 Depth Range: 32.00 - 32.45 m

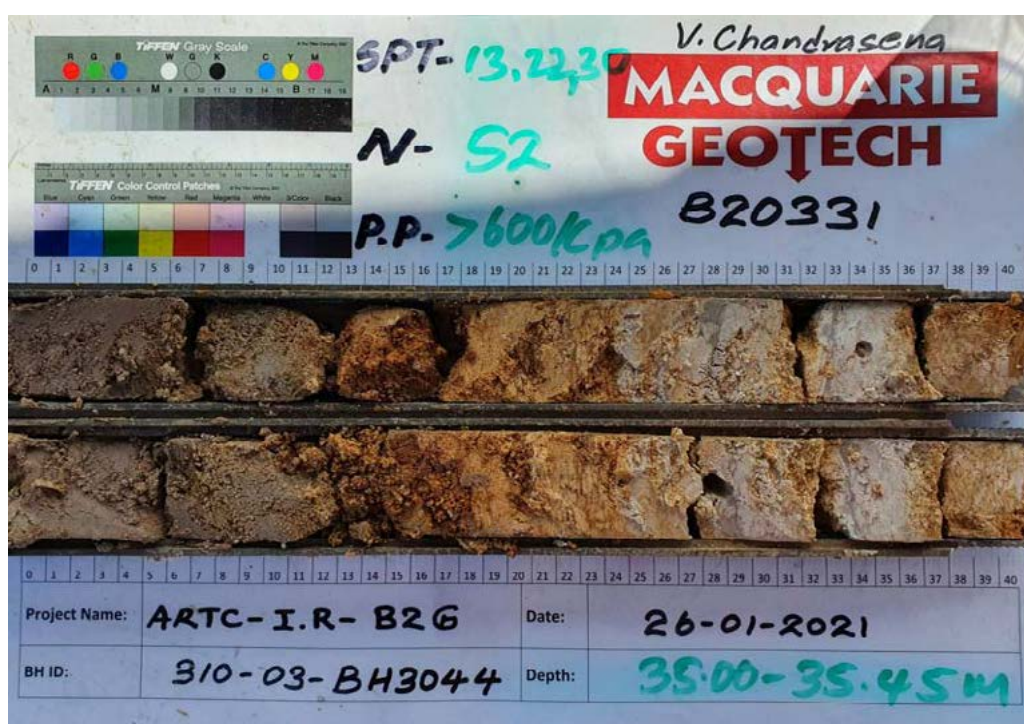
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH144029 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341251.0 m E 6922928.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	379.50 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3044 Depth Range: 33.50 - 33.95 m



310-03-BH3044 Depth Range: 35.00 - 35.45 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 13/01/2021																																																	
Project Name: Inland Rail B2G										Completed: 24/01/2021																																																	
Hole Location: Approx. CH144253 - Pampas										Logged By: V. Chandrasena																																																	
Hole Coordinates: 341424.5 m E 6923073.6 m N MGA94 Zone 56										Checked By: J.Boyle																																																	
Drill Model and Mounting: Comacchio 305/Track										Inclination: -90°																																																	
Hole Diameter: 115 mm										RL Surface: 380.15 m																																																	
										Bearing: AHD																																																	
										Operator: J. Komung																																																	
Drilling Information										Soil Description										Observations																																							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																																												
AD/T				J00020 0.20-0.30 m PID 0.20 m 0.1 ppm J00050 0.50-0.60 m S00050 SPT 0.50-0.95 m 2,3,4 N=7 PID 0.50 m 0.2 ppm PP 0.80 m =270 kPa J00100 1.00-1.10 m U00100 1.00-1.45 m PID 1.00 m 0.1 ppm D00150 1.50-2.00 m S00200 SPT 2.00-2.45 m 6,9,11 N=20 PP 2.40 m =420 kPa D00300 3.00-3.50 m S00350 SPT 3.50-3.95 m 3,4,7 N=11 PP 3.70 m =230 kPa D00450 4.50-5.00 m S00500 SPT 5.00-5.45 m 4,8,12 N=20 PP 5.35 m =340 kPa D00600 6.00-6.50 m S00650 SPT 6.50-6.95 m 11,22,21 N=43 D00750 7.50-8.00 m		379.1	1		CH	FILL: Silty CLAY trace sand, high plasticity, black, fine to medium grained sand, trace rootlets. Silty CLAY: high plasticity, black.	M (<PL) to M (~PL)	F					REWORKED TOPSOIL																																										
						378.1	2		CI-CH	Silty CLAY trace sand: medium to high plasticity, black brown, fine to coarse grained sand.						ALLUVIAL SOIL																																											
						377.1	3			At 3.50m: trace fine sub-angular gravel.	M (<PL)	VSt																																															
						376.1	4																																																				
						375.1	5																																																				
						374.1	6		SC	Clayey SAND trace gravel: fine to coarse grained, black brown, medium to high plasticity clay, fine to medium sub-angular gravel.						ALLUVIAL SOIL																																											
									CI-CH	Silty CLAY with sand and gravel: medium to high plasticity, black brown, fine to coarse grained sand, fine to medium sub-angular gravel.																																																	
									GP	Sandy GRAVEL with clay: fine to medium sub-angular, grey brown, fine to coarse grained sand, medium to high plasticity clay.	M																																																
									CI	Silty CLAY trace sand: medium plasticity, dark brown, fine to medium grained sand.	M (<PL)	VSt																																															
Method AS - Auger Screwing RR - Rock Roller WB - Washbore										Penetration No resistance ranging to refusal										Water Level (Date) Inflow Partial Loss Complete Loss										Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test										Moisture Condition D - Dry M - Moist W - Wet										Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense									
Support C - Casing										Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss										Classification Symbols and Soil Descriptions Based on Unified Soil Classification System										Plastic Limit < PL = PL < PL																													

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH144253 - Pampas
Hole Coordinates: 341424.5 m E 6923073.6 m N MGA94 Zone 56

Commenced: 13/01/2021
Completed: 24/01/2021
Logged By: V. Chandrasena
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 380.15 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Soil Description						Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/T				S00800 SPT 8.00-8.45 m 7,9,10 N=19 PP 8.30 m =230 kPa		371.1	9		CI	Silty CLAY trace sand: medium plasticity, dark brown, fine to medium grained sand. (continued) Below 8.00m: brown, fine grained sand.	M ((<PL)	VSt		x	ALLUVIAL SOIL	
				D00900 9.00-9.50 m												
				S00950 SPT 9.50-9.95 m 5,10,16 N=26												
				D01050 10.50-11.00 m												
				S01100 SPT 11.00-11.45 m 9,17,17 N=34												
				D01200 12.00-12.50 m												
				S01250 SPT 12.50-12.95 m 8,9,12 N=21												
				D01350 13.50-14.00 m												
				S01400 SPT 14.00-14.45 m 7,11,22 N=33												
				D01550 SPT 15.50-15.95 m 13,12,11												
WB						366.1	14		SC	Clayey SAND trace gravel: fine to medium grained, yellow brown mottled grey, medium plasticity clay, fine to medium sub-rounded to sub-angular gravel.	M to W	D			Standing Water Level - 24/01/2021	
Method		Penetration		Water		Samples and Tests		Moisture Condition		Consistency/Relative Density						
AS - Auger Screwing RR - Rock Roller WB- Washbore		 No resistance ranging to refusal		 Level (Date)  Inflow  Partial Loss  Complete Loss		U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense						
Support		Graphic Log/Core Loss				Classification Symbols and Soil Descriptions		Plastic Limit								
C - Casing		 Core recovered (hatching indicates material)  Core loss				Based on Unified Soil Classification System		< PL = PL < PL								

Engineering Log - Borehole

Project No.: B20331

Client: ARTC		Commenced: 13/01/2021													
Project Name: Inland Rail B2G		Completed: 24/01/2021													
Hole Location: Approx. CH144253 - Pampas		Logged By: V. Chandrasena													
Hole Coordinates: 341424.5 m E 6923073.6 m N MGA94 Zone 56		Checked By: J.Boyle													
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 380.15 m												
Hole Diameter: 115 mm		Bearing:	Datum: AHD Operator: J. Komung												
Drilling Information				Soil Description				Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB				N=23					SM	Silty SAND trace clay: fine grained, brown, low plasticity clay. (continued)		MD			ALLUVIAL SOIL
				S01700 SPT 17.00-17.45 m N=29		363.1	17				M to W	D			
						362.1	18								
				S01850 SPT 18.50-18.95 m N=21 PP 18.80 m =260 kPa		361.1	19		CI	Sandy silty CLAY trace gravel: medium plasticity, brown, fine to medium grained sand, fine sub-rounded gravel.					
						360.1	20				M (>PL)	VSt			
				S02000 SPT 20.00-20.45 m N=21		359.1	21								
						358.1	22		SM	Silty SAND trace clay and gravel: fine to coarse grained, black, low to medium plasticity clay, fine to medium sub-angular gravel.					
				S02150 SPT 21.50-21.95 m N=48							M to W	D			
						357.1	23			Below 23.00m: with gravel.					
				S02300 SPT 23.00-23.45 m N=40											
Method AS - Auger Screwing RR - Rock Roller WB- Washbore		Penetration No resistance ranging to refusal		Water Level (Date) Inflow Partial Loss Complete Loss		Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		Moisture Condition D - Dry M - Moist W - Wet		Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense					
Support C - Casing		Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System		Plastic Limit < PL = PL < PL									

MG 4.02 LBLB Log MG BOREHOLE EXCL DCP MG 4.02 GPJ <<DrawingFile>> 30/04/2021 07:56 10.0000 Dugail Lab and In Situ Tool - DGD | UIC DGDTP 4.01.2.dpt 3.04 2019-07-02 Pjt DGDTP 4.00.6 2017-11-25

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

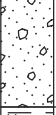
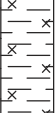
Plastic Limit
< PL
= PL
< PL

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Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.15 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	J. Komung

Drilling Information							Soil Description						Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
WB				S02450 SPT 24.50-24.95 m 13,20,25 N=45		355.1	25		SM	Silty SAND trace clay and gravel: fine to coarse grained, black, low to medium plasticity clay, fine to medium sub-angular gravel. (continued)	M to W	D				ALLUVIAL SOIL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
							26		SP	Gravelly SAND trace clay: fine to coarse grained, pale brown, fine to medium sub-angular gravel, low to medium plasticity clay.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
							27		CI	Silty CLAY trace sand and gravel: medium plasticity, brown mottled grey, fine to coarse grained sand, fine to medium sub-angular gravel.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
							28			At 27.50m: high plasticity clay.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
							29			Below 29.00m: brown, no gravel.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
							30			Below 30.50m: brown mottled black, with fine to coarse grained sand, trace fine to medium sub-angular gravel.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
				S02600 SPT 26.00-26.45 m 11,36,14 N=50 PP 26.40 m =330 kPa		354.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											</

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 13/01/2021											
Project Name: Inland Rail B2G										Completed: 24/01/2021											
Hole Location: Approx. CH144253 - Pampas										Logged By: V. Chandrasena											
Hole Coordinates: 341424.5 m E 6923073.6 m N MGA94 Zone 56										Checked By: J.Boyle											
Drill Model and Mounting: Comacchio 305/Track					Inclination: -90°					RL Surface: 380.15 m											
Hole Diameter: 115 mm					Bearing:					Datum: AHD					Operator: J. Komung						
Drilling Information							Soil Description										Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations						
WB				S03200 SPT 32.00-32.45 m 12,15,16 N=31 PP 32.40 m =380 kPa		347.1	33		CI	Silty CLAY trace sand and gravel: medium plasticity, brown mottled grey, fine to coarse grained sand, fine to medium sub-angular gravel. (continued)	M (~PL to M (>PL))	H									
				S03350 SPT 33.50-33.95 m 18,16,16 N=32		346.1	34		SP	SAND: fine to medium grained, yellow.	W	D			RESIDUAL SOIL						
				S03500 SPT 35.00-35.45 m 8,10,12 N=22 PP 35.35 m =270 kPa		345.1	35		CI-CH	Silty CLAY with sand: medium to high plasticity, grey mottled yellow brown, fine to coarse grained sand.	M (>PL)	VSt									
						344.1	36			Hole Terminated at 35.45 m Target depth Hole grouted to surface.											
						343.1	37														
						342.1	38														
						341.1	39														
Method AS - Auger Screwing RR - Rock Roller WB- Washbore				Penetration No resistance ranging to refusal		Water Level (Date) Inflow Partial Loss Complete Loss				Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test				Moisture Condition D - Dry M - Moist W - Wet		Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense					
Support C - Casing				Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System				Plastic Limit < PL = PL < PL											

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.15 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: J. Komung



310-03-BH3045 Depth Range: 0.50 - 0.95 m



310-03-BH3045 Depth Range: 2.00 - 2.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	380.15 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3045 Depth Range: 3.50 - 3.95 m



310-03-BH3045 Depth Range: 5.00 - 5.45 m

Engineering Log - Borehole

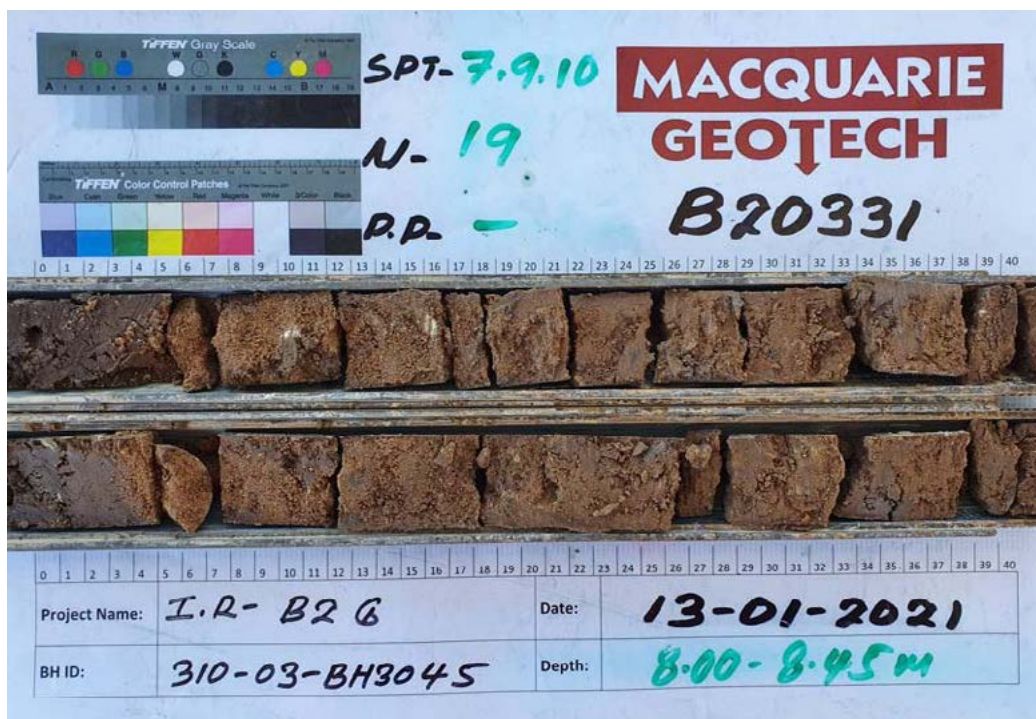
Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.15 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: J. Komung



310-03-BH3045 Depth Range: 6.50 - 6.95 m



310-03-BH3045 Depth Range: 8.00 - 8.45 m

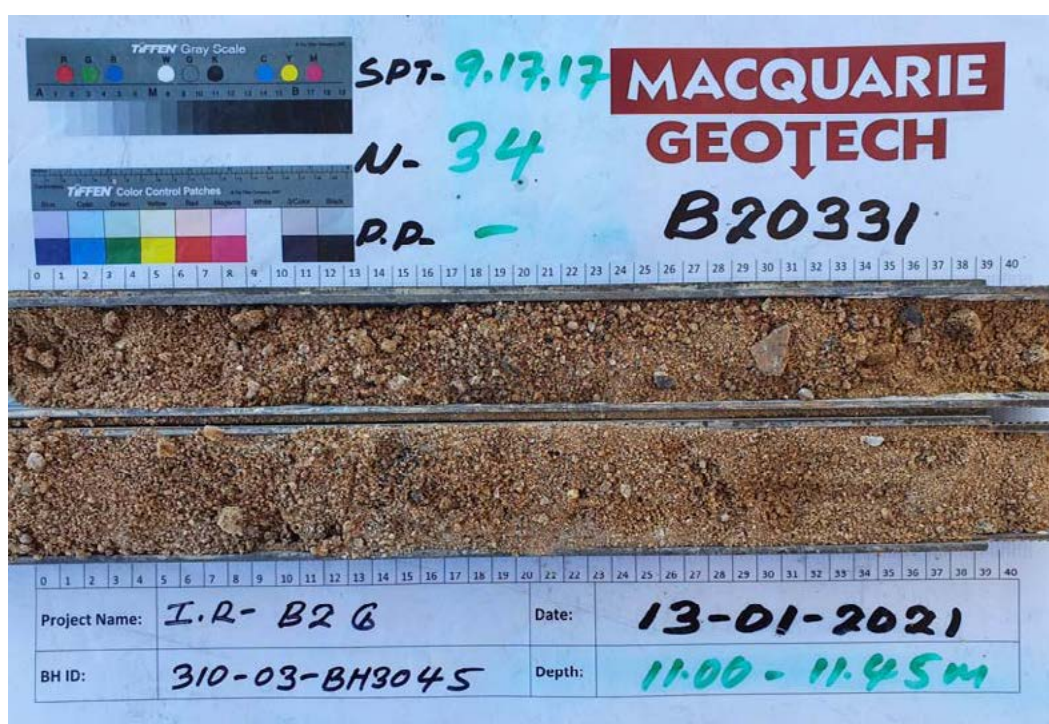
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.15 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3045 Depth Range: 9.50 - 9.95 m

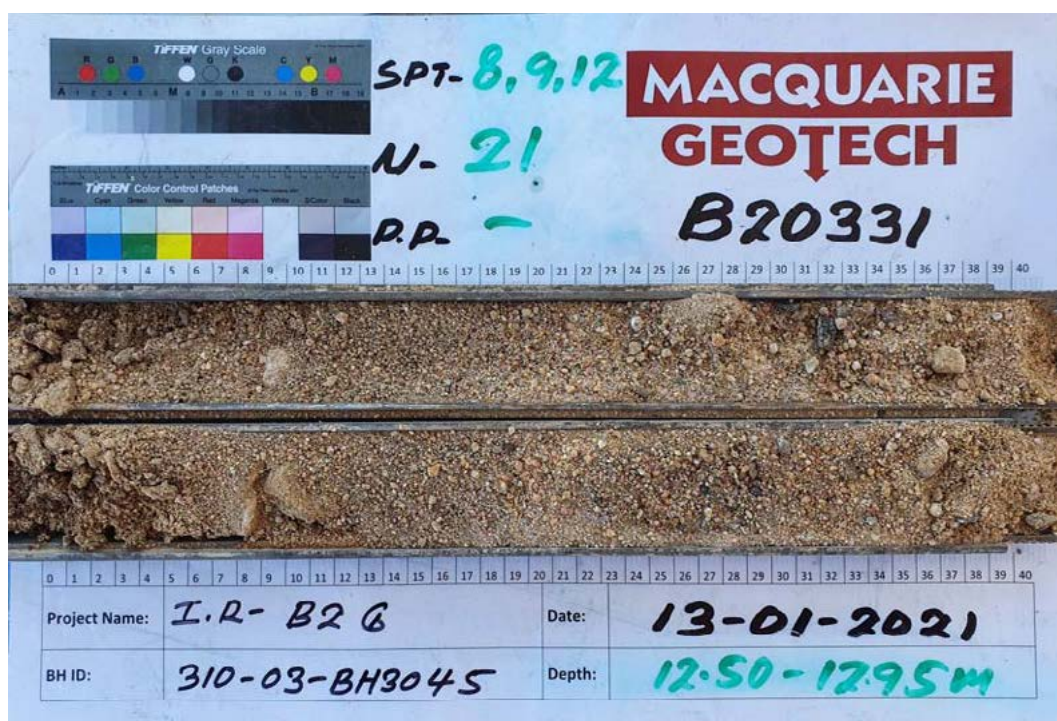


310-03-BH3045 Depth Range: 11.00 - 11.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.15 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3045 Depth Range: 12.50 - 12.95 m

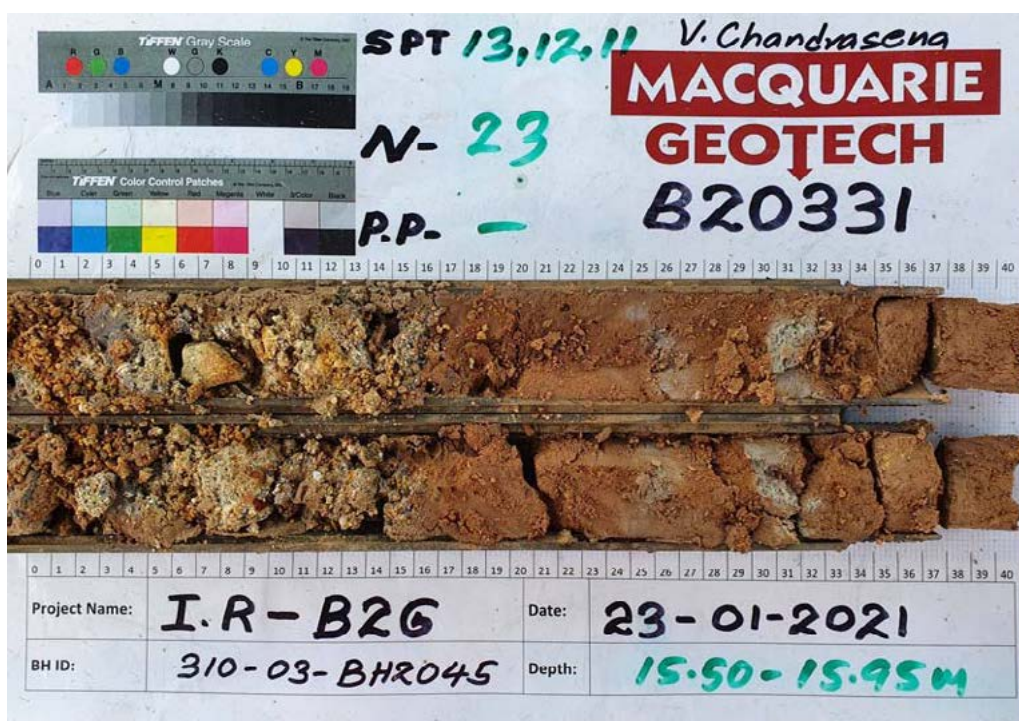


310-03-BH3045 Depth Range: 14.00 - 14.45 m

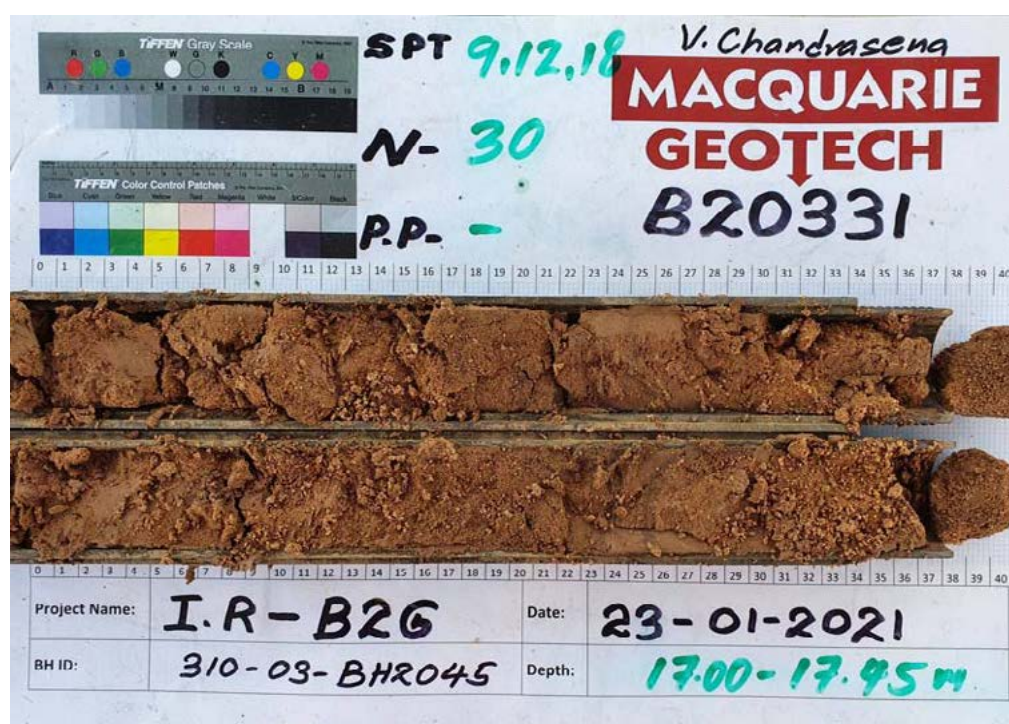
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	380.15 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3045 Depth Range: 15.50 - 15.95 m

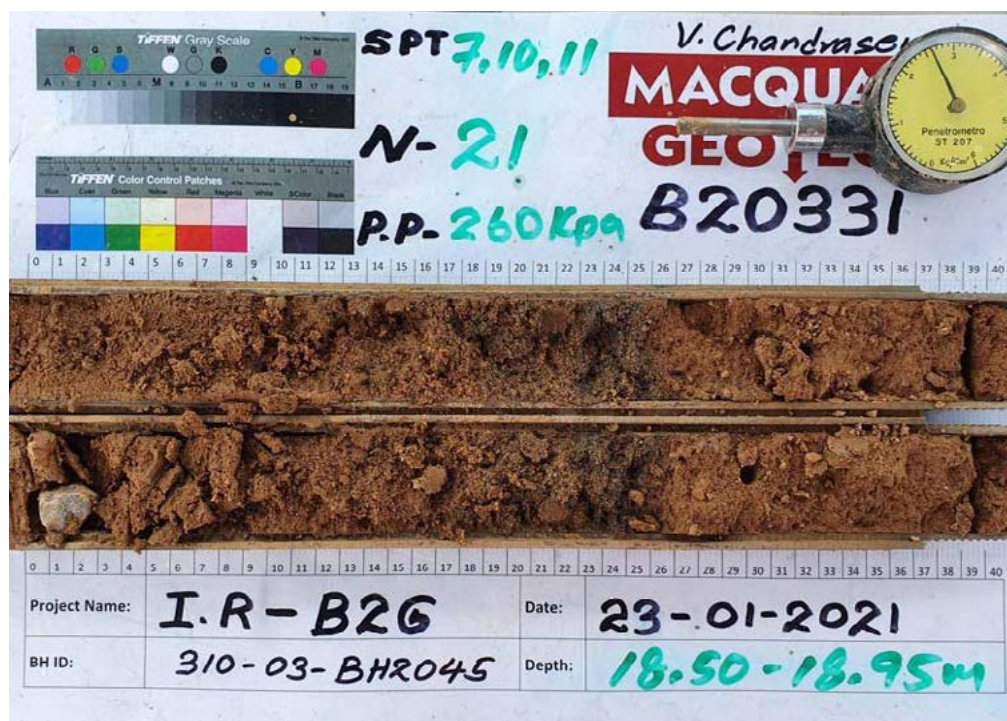


310-03-BH3045 Depth Range: 17.00 - 17.45 m

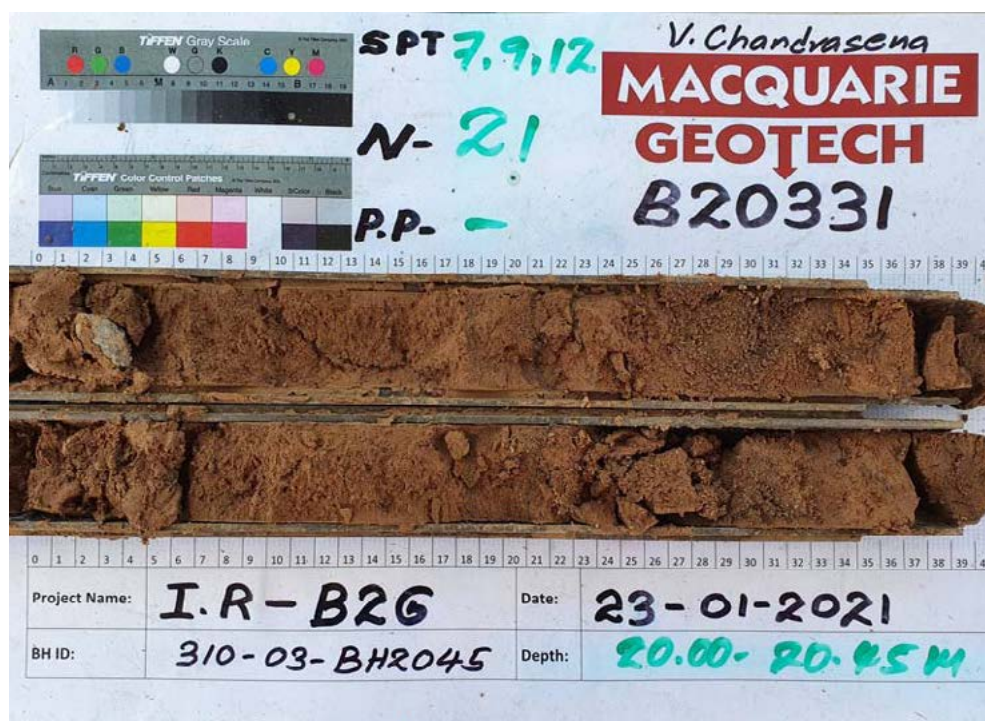
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.15 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3045 Depth Range: 18.50 - 18.95 m

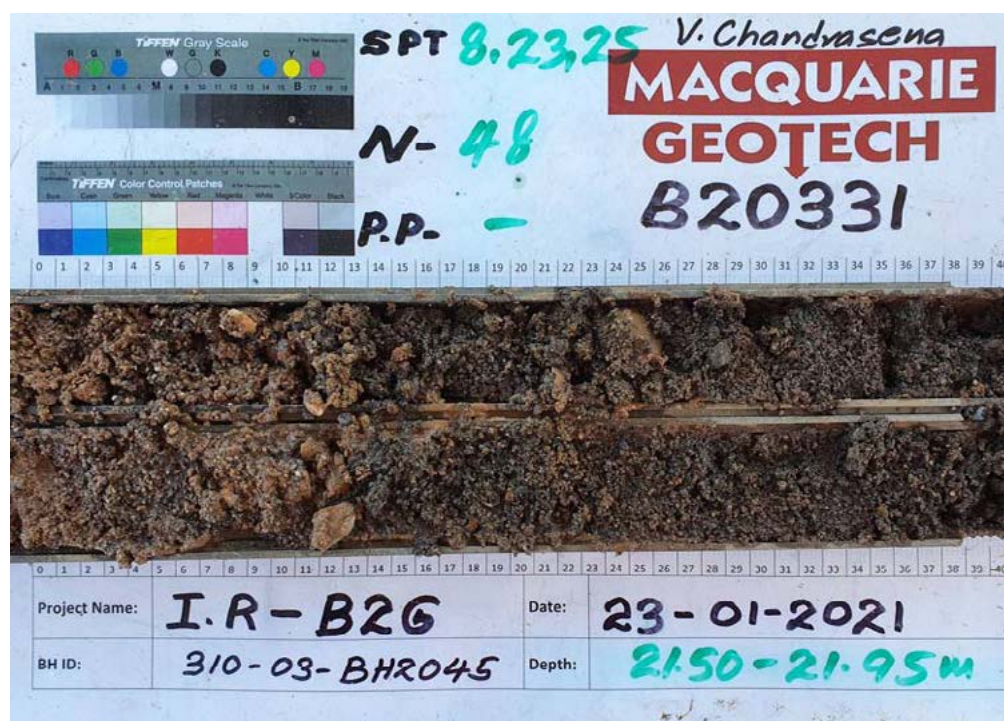


310-03-BH3045 Depth Range: 20.00 - 20.45 m

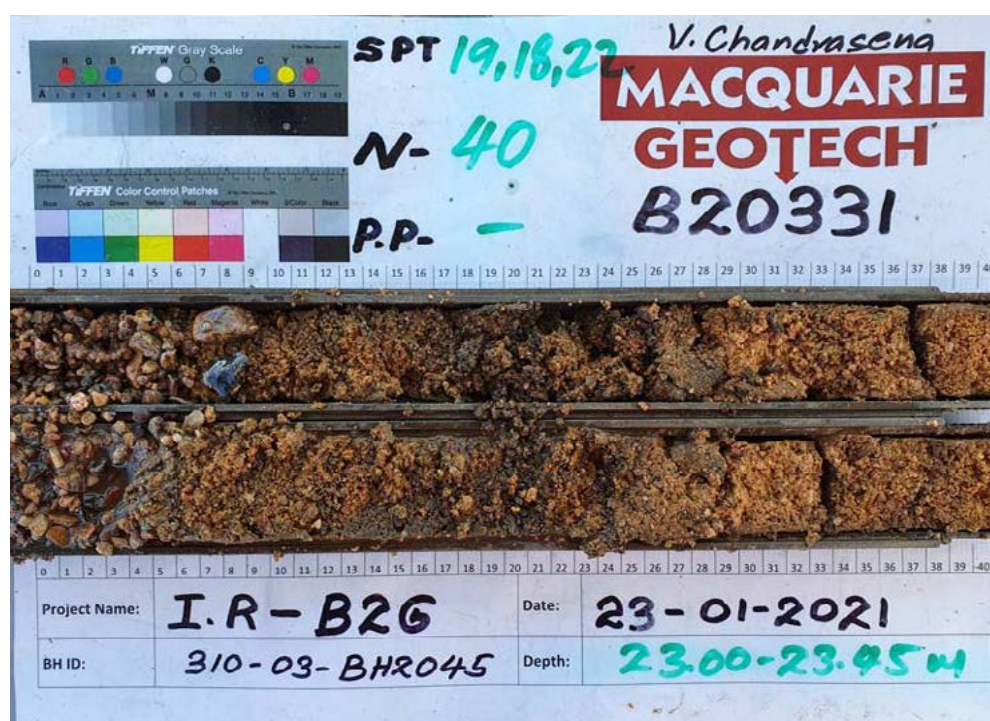
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.15 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3045 Depth Range: 21.50 - 21.95 m

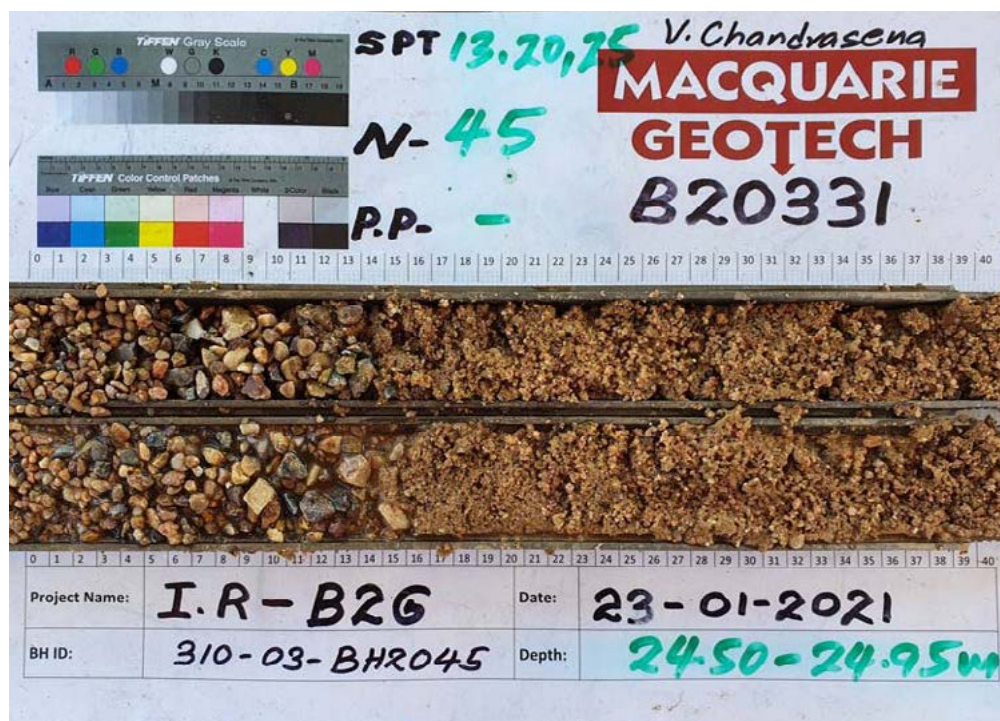


310-03-BH3045 Depth Range: 23.00 - 23.45 m

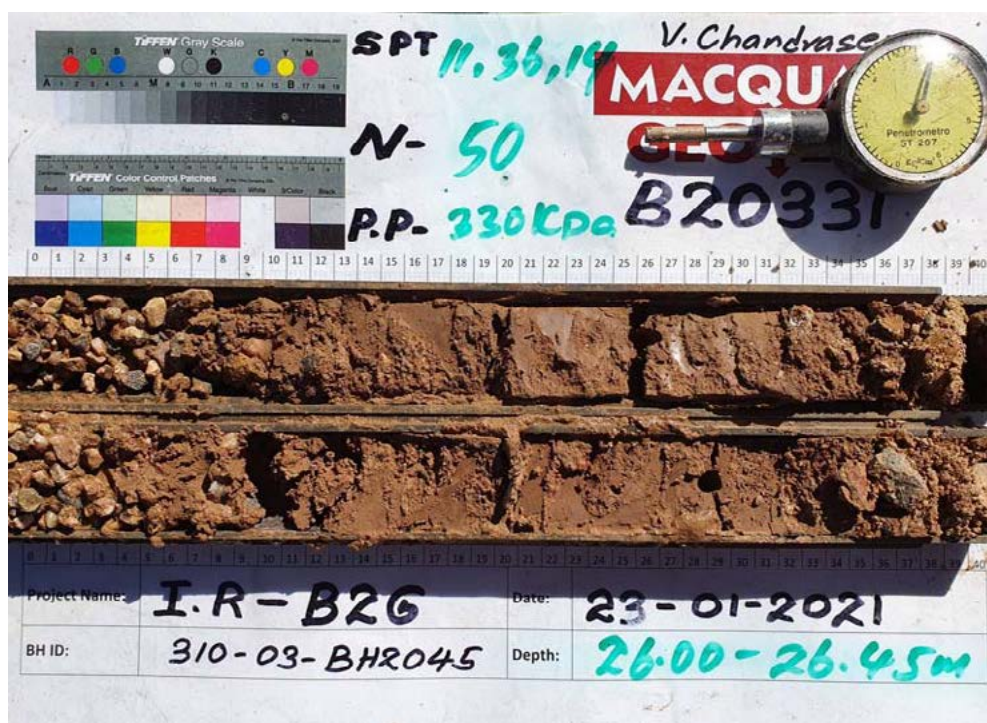
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.15 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3045 Depth Range: 24.50 - 24.95 m



310-03-BH3045 Depth Range: 26.00 - 26.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.15 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3045 Depth Range: 27.50 - 27.95 m



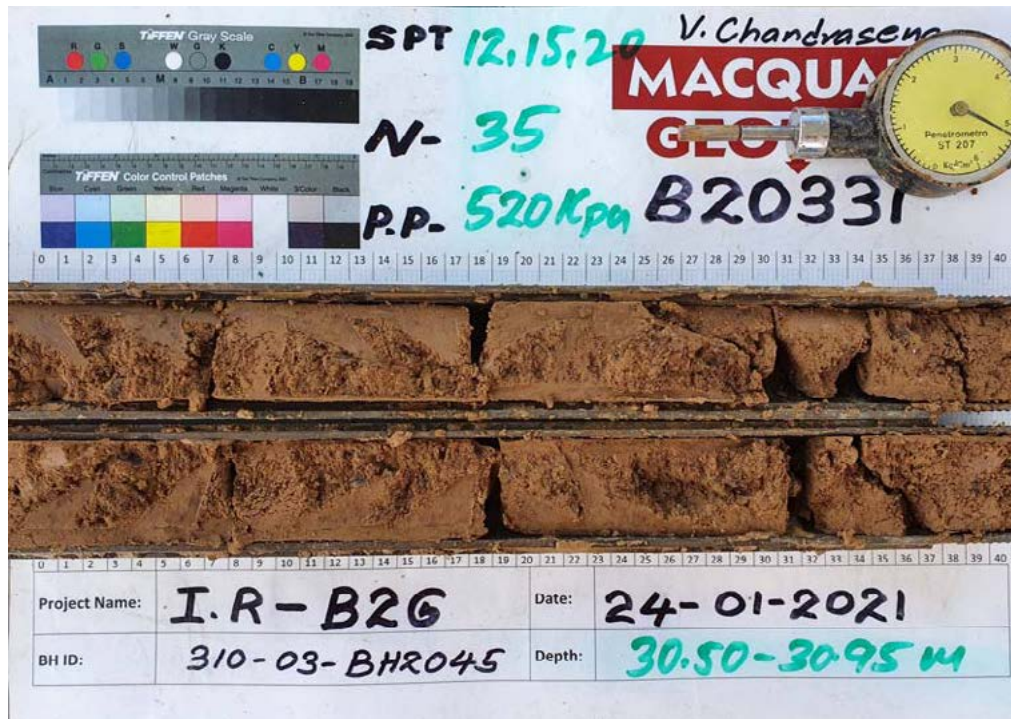
310-03-BH3045 Depth Range: 29.00 - 29.45 m

Engineering Log - Borehole

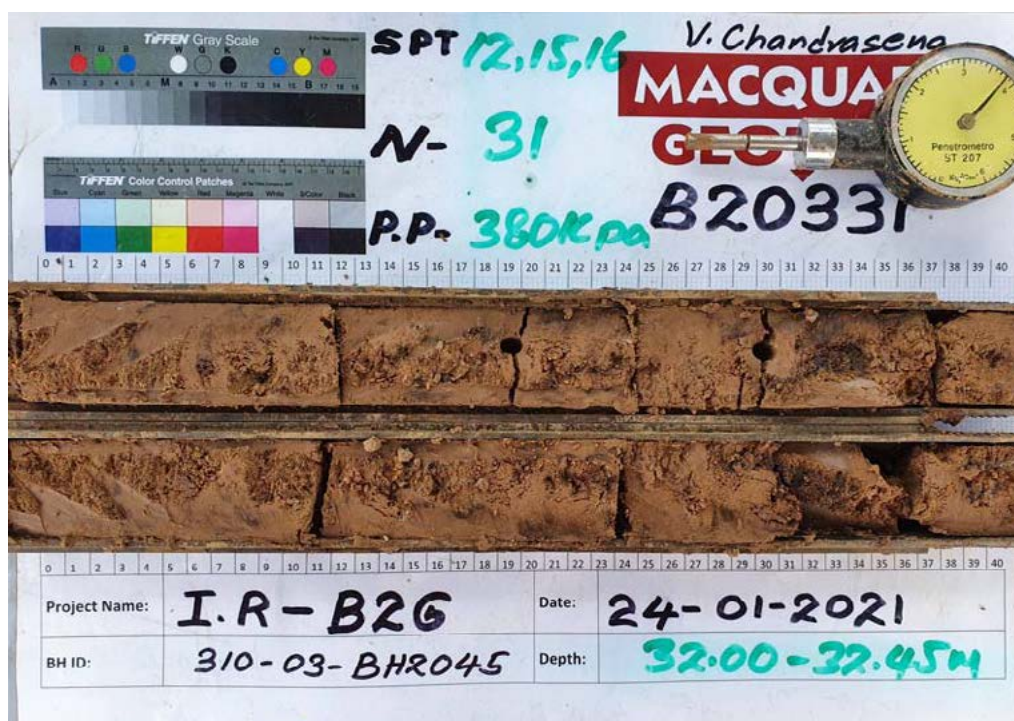
Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.15 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: J. Komung



310-03-BH3045 Depth Range: 30.50 - 30.95 m

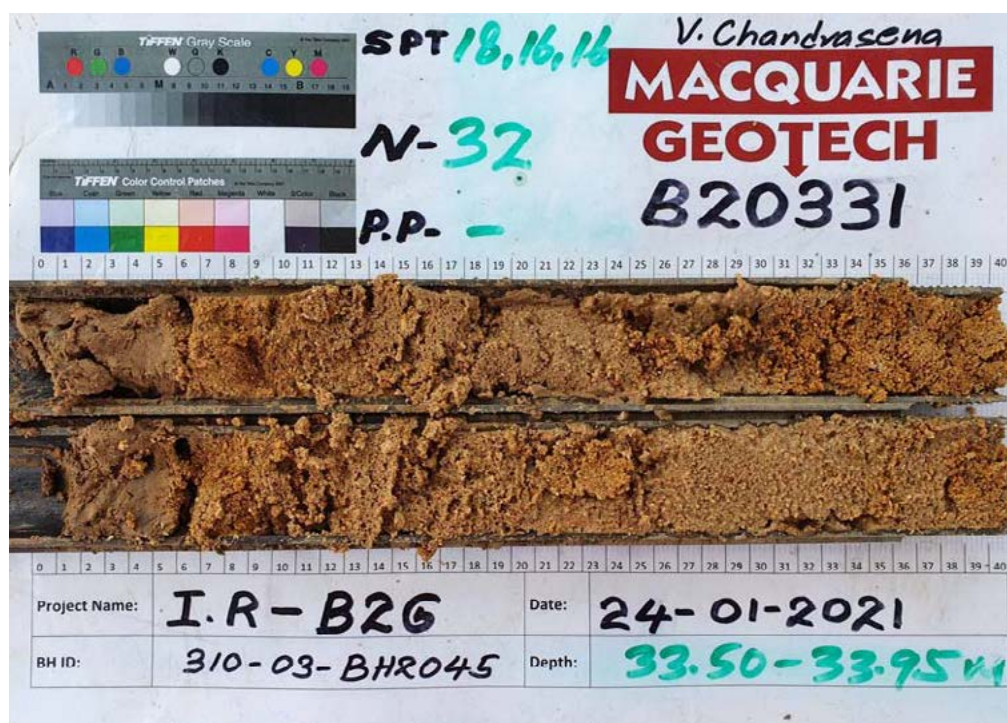


310-03-BH3045 Depth Range: 32.00 - 32.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	24/01/2021
Hole Location:	Approx. CH144253 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	341424.5 m E 6923073.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	380.15 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3045 Depth Range: 33.50 - 33.95 m



310-03-BH3045 Depth Range: 35.00 - 35.45 m

MG 4.02 LIB.GLB Log MG BOREHOLE EXCL. DCP MG 4.02.GPJ <DrawingFile>> 30/04/2021 07:59 10.0.0.000 Datacel Lab and In Situ Tool - DGD | Lib: DGD.T-P 4.01.2.dpl 3.04 2018-07-02 Pri: DGD.T-P 4.00.6 2017-11-25

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 13/01/2021																																																	
Project Name: Inland Rail B2G										Completed: 22/01/2021																																																	
Hole Location: Approx. CH144541 - Pampas										Logged By: A. Sharma																																																	
Hole Coordinates: 341646.9 m E 6923263.9 m N MGA94 Zone 56										Checked By: J.Boyle																																																	
Drill Model and Mounting: Comacchio 305/Track										Inclination: -90°																																																	
Hole Diameter: 114 mm										RL Surface: 380.39 m																																																	
										Bearing: Datum: AHD Operator: M.Boga																																																	
Drilling Information										Soil Description										Observations																																							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																																												
AD/T				S00800 SPT 8.00-8.45 m 5,6,10 N=16 PP 8.27 m =300 kPa		371.4	9		CI-CH	Silty CLAY trace sand and gravel; medium to high plasticity, light brown, fine to medium grained sand, fine to medium rounded to sub-rounded gravel. (continued)	M (<PL)	VSt		100 200 300 400 500	ALLUVIAL SOIL																																												
				D00900 D 9.00-9.50 m		370.4	10		SC	Gravelly SAND with clay; fine to coarse grained, yellow brown, fine to coarse rounded to sub-angular gravel, low to medium plasticity clay, clay lenses up to 100mm.																																																	
				S00950 SPT 9.50-9.95 m 7,9,18 N=27		370.4	10																																																				
				D01050 D 10.50-11.00 m		369.4	11																																																				
				S01100 SPT 11.00-11.45 m 8,11,15 N=26		368.4	12																																																				
				D01200 D 12.00-12.50 m		367.4	13																																																				
				S01250 SPT 12.50-12.95 m 8,14,16 N=30		366.4	14																																																				
				D01350 D 13.50-14.00 m		366.4	14																																																				
				S01400 SPT 14.00-14.45 m 19,25,24 N=49		365.4	15																																																				
				S01550					GM	Silty GRAVEL: fine to coarse grained, dark brown.	M (<PL) to M (~PL)	D																																															
Method AS - Auger Screwing RR - Rock Roller WB - Washbore										Penetration No resistance ranging to refusal										Water Level (Date) Inflow Partial Loss Complete Loss										Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test										Moisture Condition D - Dry M - Moist W - Wet										Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense									
Support C - Casing										Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss										Classification Symbols and Soil Descriptions Based on Unified Soil Classification System										Plastic Limit < PL = PL < PL																													

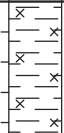
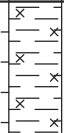
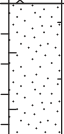
Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH144541 - Pampas
Hole Coordinates: 341646.9 m E 6923263.9 m N MGA94 Zone 56

Commenced: 13/01/2021
Completed: 22/01/2021
Logged By: A. Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 380.39 m
Hole Diameter: 114 mm Bearing: Datum: AHD Operator: M.Boga

Drilling Information							Soil Description							Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations				
AD/T				D01650 D 16.50-17.00		363.4	17		CI	Silty CLAY trace sand; medium plasticity, brown, fine to medium grained sand.	M (<PL) to M (~PL)	VSt			ALLUVIAL SOIL				
				1 S01700 SPT 17.00-17.45 5,7,9 N=16															
				D01800 D 18.00-18.50											362.4	18		Below 18.00m : with sand	ALLUVIAL SOIL
				2 S01850 SPT 18.50-18.95 6,8,11 N=19 PP 18.50 m =180 kPa D01950 D 19.50-20.00															
				3 S02000 SPT 20.00-20.45 5,10,17 N=27															
4 S02150 SPT 21.50-21.95 10,15,20 N=35																			
5 S02300 SPT 23.00-23.45 14,14,18 N=32		357.4	23		SP	SAND with gravel trace clay; fine to coarse grained, yellow orange brown, fine to medium sub-rounded gravel, low to medium plasticity clay.	M to W												

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB- Washbore	 No resistance ranging to refusal	 Level (Date)  Inflow  Partial Loss  Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT- Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	 Core recovered (hatching indicates material)  Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

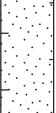
Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	22/01/2021
Hole Location:	Approx. CH144541 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341646.9 m E 6923263.9 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.39 m		
Hole Diameter:	114 mm	Bearing:		Datum:	AHD	Operator:	M.Boga

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB				6 S02450 SPT 24.50-24.95 13,16,16 N=32		355.4	25		SP	SAND with gravel trace clay; fine to coarse grained, yellow orange brown, fine to medium sub-rounded gravel, low to medium plasticity clay. (continued)	M to W	D			ALLUVIAL SOIL
				7 S02600 SPT 26.00-26.45 5,6,10 N=16 PP 26.00 m =400 kPa		354.4	26		CH	Silty CLAY trace sand; high plasticity, green grey mottled brown, fine grained sand, trace rootlets.				x	
				8 S02750 SPT 27.50-27.95 8,11,15 N=26 PP 28.00 m =400 kPa		352.4	28				M (>PL) to M (~PL)	VSt		x	
				9 S02900 SPT 29.00-29.45 9,10,14 N=24		351.4	29								
				10 S03050 SPT 30.50-30.95 8,10,14 N=24		349.4	31		SC	Clayey SAND trace fine gravel; medium plasticity, orange brown, fine grained sand.	M to W	MD			

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client: ARTC Project Name: Inland Rail B2G Hole Location: Approx. CH144541 - Pampas Hole Coordinates: 341646.9 m E 6923263.9 m N MGA94 Zone 56										Commenced: 13/01/2021 Completed: 22/01/2021 Logged By: A. Sharma Checked By: J.Boyle																			
Drill Model and Mounting: Comacchio 305/Track Hole Diameter: 114 mm										Inclination: -90° Bearing:										RL Surface: 380.39 m Datum: AHD Operator: M.Boga									
Drilling Information										Soil Description										Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations														
WB				11 S03200 SPT 32.00-32.45 9,13,15 N=28		347.4	33		SC	Clayey SAND trace fine gravel; medium plasticity, orange brown, fine grained sand. (continued) Below 32.00m : green grey mottled orange brown, no trace gravel.	M to W	MD			ALLUVIAL SOIL ALLUVIAL SOIL ALLUVIAL SOIL ALLUVIAL SOIL														
				12 S03350 SPT 33.50-33.95 15,17,20 N=37		346.4	34		Below 33.00m : trace silty clay.																				
				13 S03500 SPT 35.00-35.45 21,26,30 N=56		345.4	35	GP		Gravelly SAND trace clay; fine to coarse grained, green grey mottled orange brown, fine to medium grained gravel, medium plasticity clay.																			
						344.4	36			Hole Terminated at 35.45 m Target depth Hole grouted to surface.																			
						343.4	37																						
						342.4	38																						
						341.4	39																						

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Support

C - Casing

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Plastic Limit

< PL
= PL
> PL

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Engineering Log - Borehole

Project No.: B20331

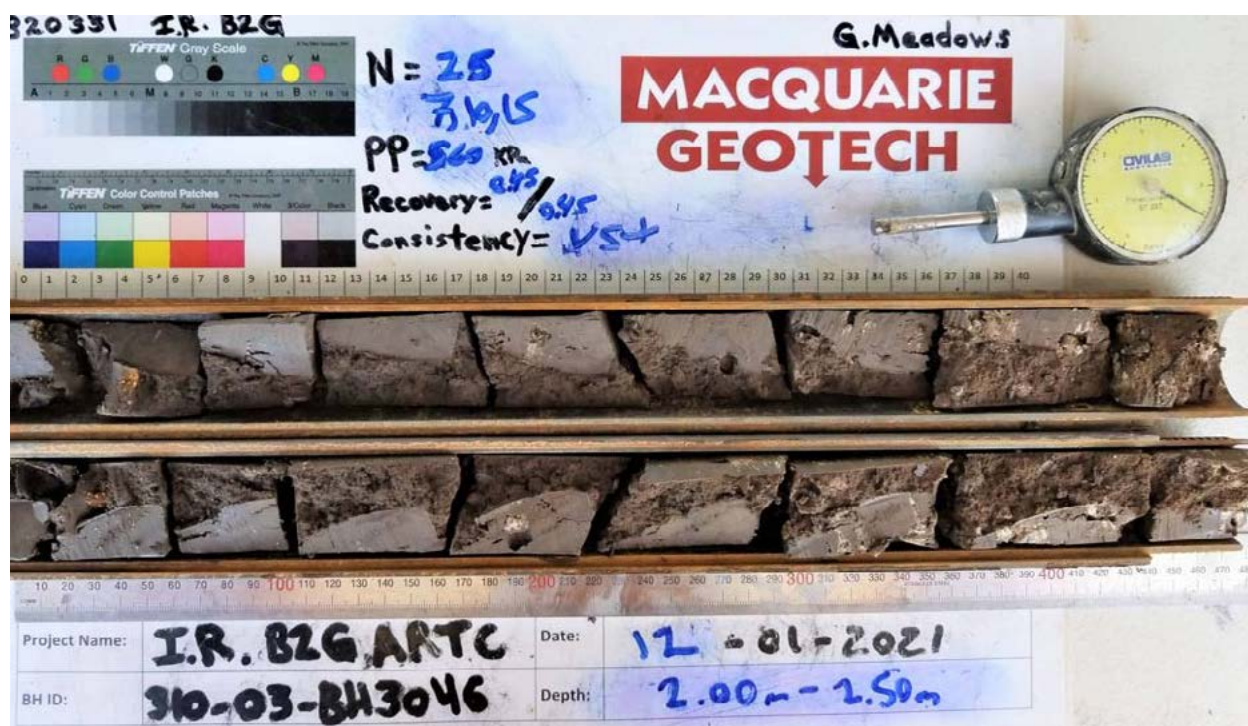
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH144541 - Pampas
Hole Coordinates: 341646.9 m E 6923263.9 m N MGA94 Zone 56

Commenced: 13/01/2021
Completed: 22/01/2021
Logged By: A. Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 380.39 m
Hole Diameter: 114 mm Bearing: Datum: AHD Operator: M.Boga



310-03-BH3046 Depth Range: 0.50 - 0.95 m



310-03-BH3046 Depth Range: 2.00 - 2.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	22/01/2021
Hole Location:	Approx. CH144541 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341646.9 m E 6923263.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	114 mm	RL Surface:	380.39 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH144541 - Pampas
Hole Coordinates: 341646.9 m E 6923263.9 m N MGA94 Zone 56

Commenced: 13/01/2021
Completed: 22/01/2021
Logged By: A. Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclusion: -90° RL Surface: 380.39 m
Hole Diameter: 114 mm Bearing: Datum: AHD Operator: M.Boga



310-03-BH3046 Depth Range: 6.50 - 6.95 m

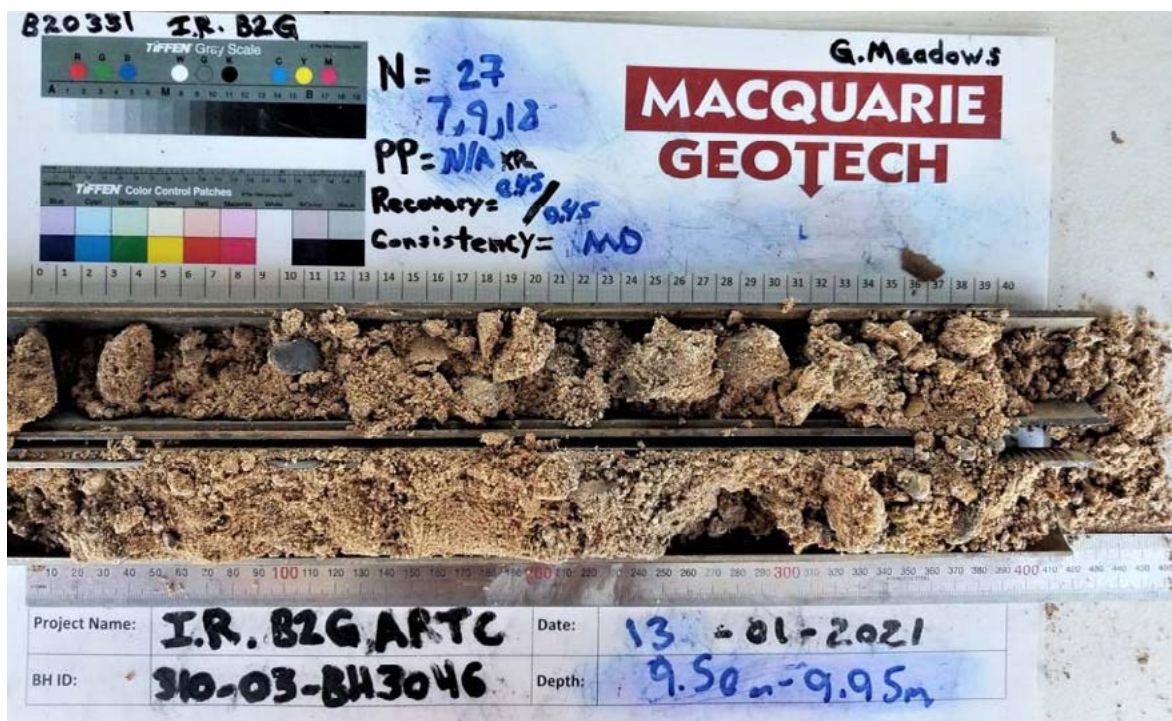


310-03-BH3046 Depth Range: 8.00 - 8.45 m

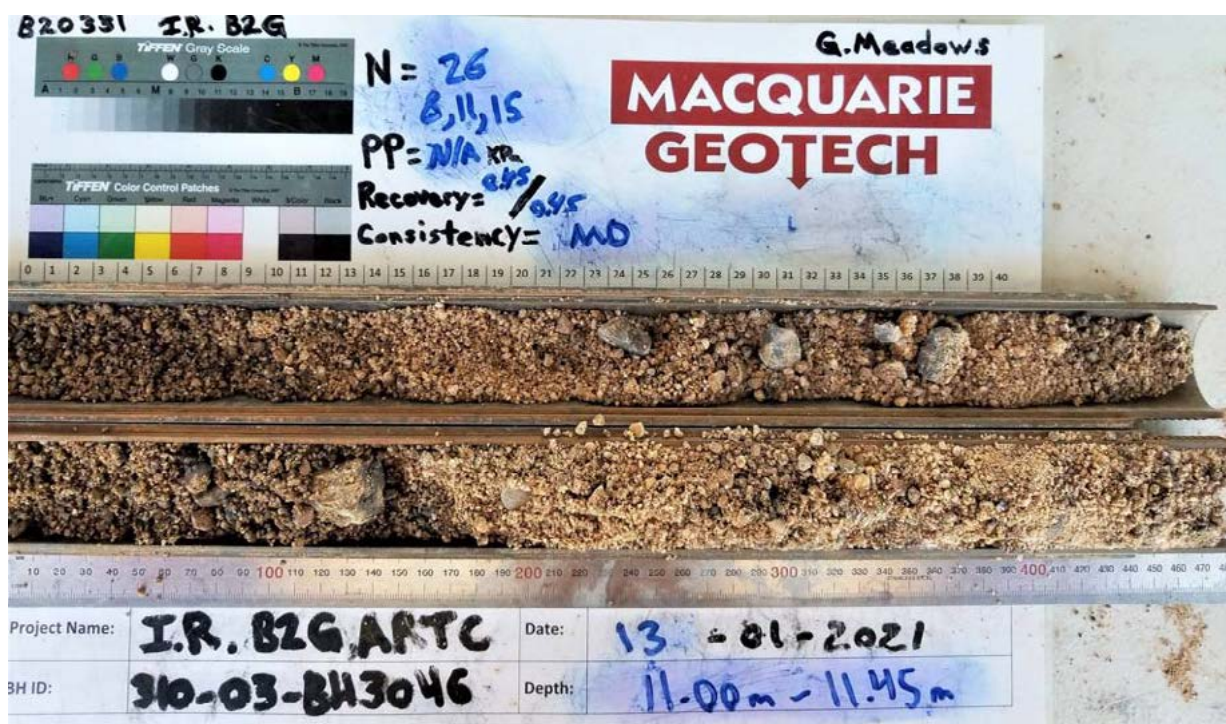
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	22/01/2021
Hole Location:	Approx. CH144541 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341646.9 m E 6923263.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	114 mm	RL Surface:	380.39 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3046 Depth Range: 9.50 - 9.95 m



310-03-BH3046 Depth Range: 11.50 - 11.45 m

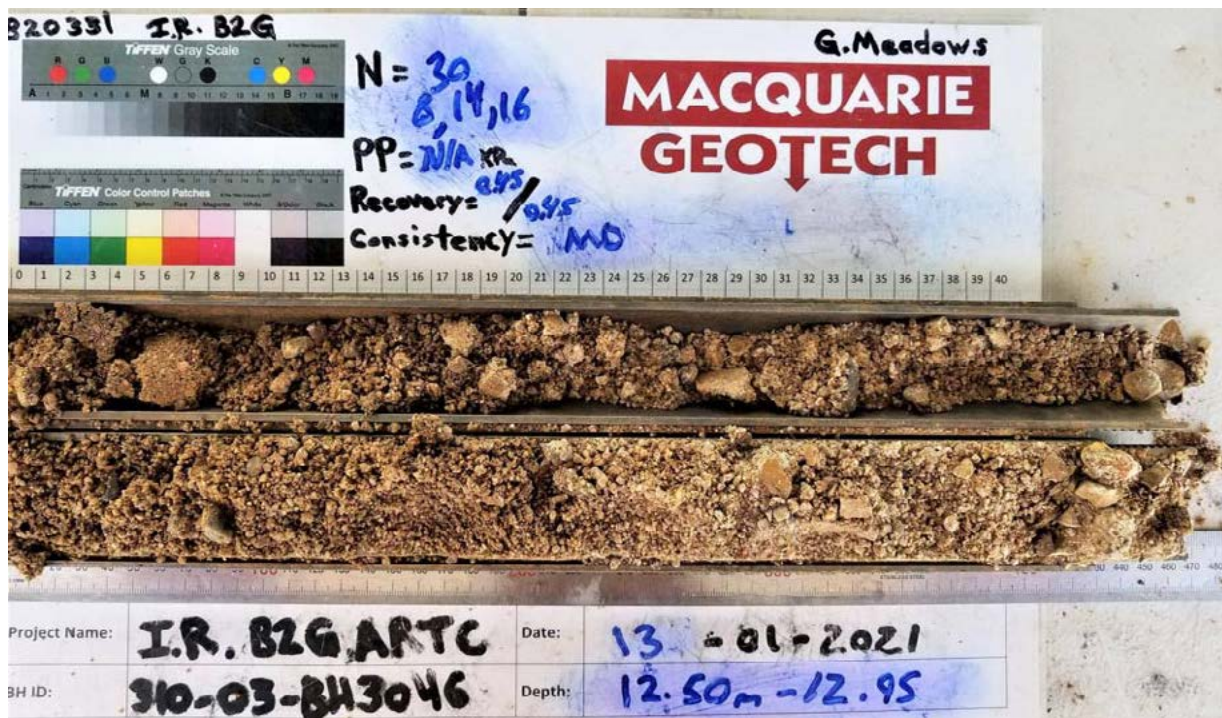
Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH144541 - Pampas
Hole Coordinates: 341646.9 m E 6923263.9 m N MGA94 Zone 56

Commenced: 13/01/2021
Completed: 22/01/2021
Logged By: A. Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclusion: -90° RL Surface: 380.39 m
Hole Diameter: 114 mm Bearing: Datum: AHD Operator: M.Boga



310-03-BH3046 Depth Range: 12.50 - 12.95 m

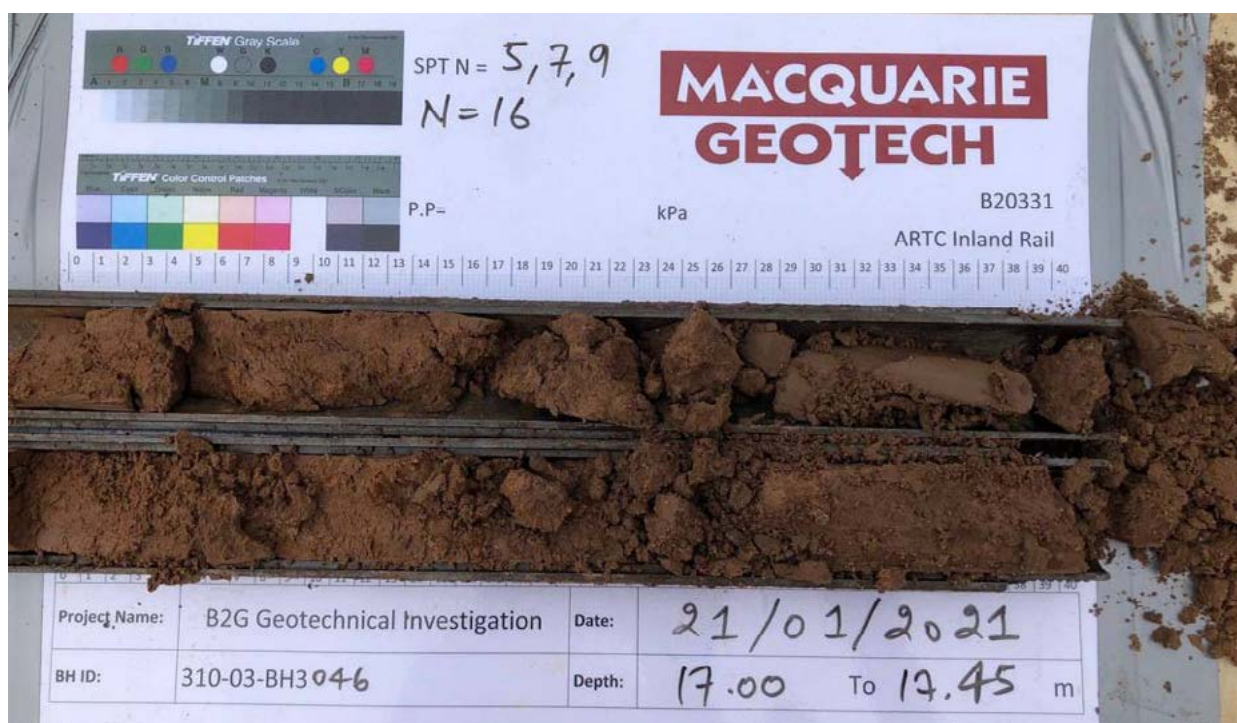


310-03-BH3046 Depth Range: 14.00 - 14.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	22/01/2021
Hole Location:	Approx. CH144541 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341646.9 m E 6923263.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	114 mm	Bearing:	
		RL Surface:	380.39 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3046 Depth Range: 17.00 - 17.45 m



310-03-BH3046 Depth Range: 18.50 - 18.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	22/01/2021
Hole Location:	Approx. CH144541 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341646.9 m E 6923263.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	114 mm	Bearing:	
		RL Surface:	380.39 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3046 Depth Range: 20.00 - 20.45 m



310-03-BH3046 Depth Range: 21.50 - 21.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	22/01/2021
Hole Location:	Approx. CH144541 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341646.9 m E 6923263.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	114 mm	Bearing:	
		RL Surface:	380.39 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3046 Depth Range: 23.00 - 23.45 m



310-03-BH3046 Depth Range: 24.50 - 24.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	22/01/2021
Hole Location:	Approx. CH144541 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341646.9 m E 6923263.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	114 mm	RL Surface:	380.39 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3046 Depth Range: 26.00 - 26.45 m

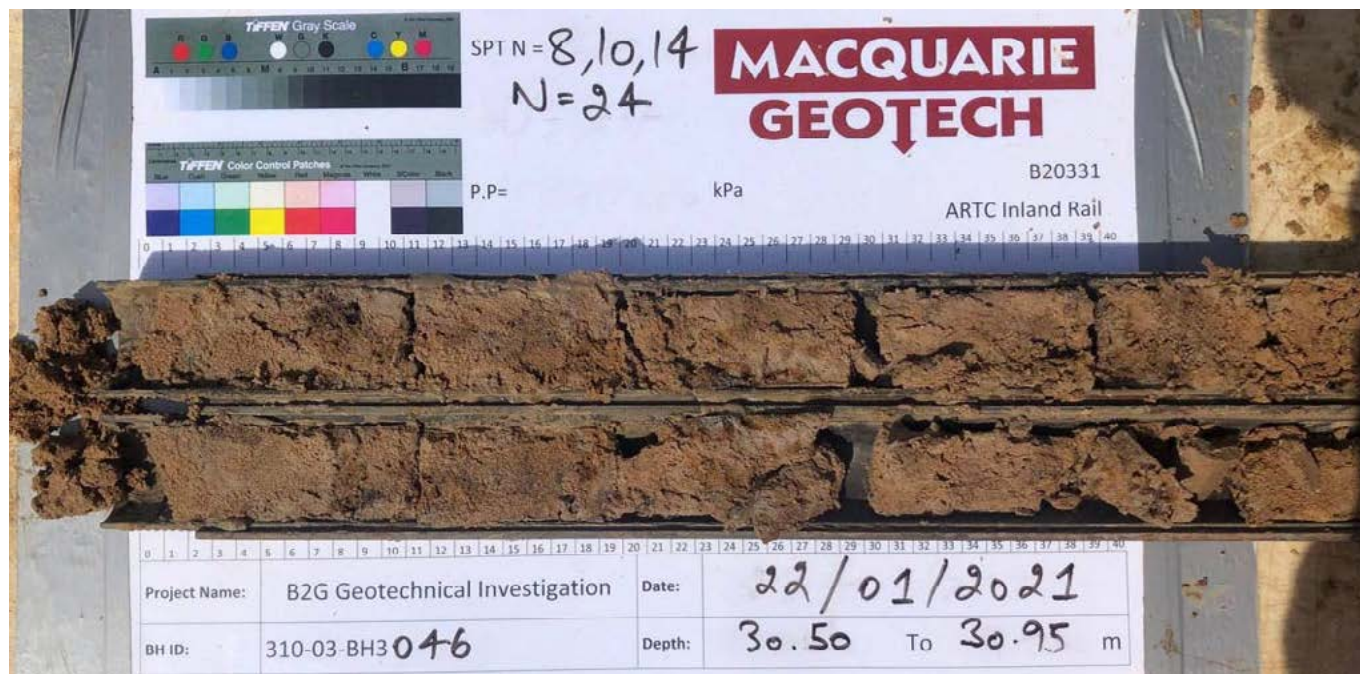


310-03-BH3046 Depth Range: 27.50 - 27.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	13/01/2021
Project Name:	Inland Rail B2G	Completed:	22/01/2021
Hole Location:	Approx. CH144541 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341646.9 m E 6923263.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	114 mm	RL Surface:	380.39 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3046 Depth Range: 30.50 - 30.95 m



310-03-BH3046 Depth Range: 32.00 - 32.45 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH144541 - Pampas
Hole Coordinates: 341646.9 m E 6923263.9 m N MGA94 Zone 56

Commenced: 13/01/2021
Completed: 22/01/2021
Logged By: A. Sharma
Checked By: J.Boyle

Drill Model and Mounting:	Comacchio 305/Track
Hole Diameter:	114 mm

Inclination: -90°
Bearing:

RL Surface: 380.39 m
Datum: AHD

Operator: M.Boga



310-03-BH3046 Depth Range: 33.50 - 33.95 m



310-03-BH3046 Depth Range: 35.00 - 35.45 m

Client: ARTC										Commenced: 23/01/2021																	
Project Name: Inland Rail B2G										Completed: 25/01/2021																	
Hole Location: Approx. CH144767 - Pampas										Logged By: A. Sharma																	
Hole Coordinates: 341815.5 m E 6923404.7 m N MGA94 Zone 56										Checked By: J.Boyle																	
Drill Model and Mounting: Comacchio 305					Inclination: -90°					RL Surface: 380.29 m																	
Hole Diameter: 115 mm					Bearing:					Datum: AHD					Operator: M.Boga												
Drilling Information										Soil Description										Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations												
AD/T				D00000 0.00-0.50 m J00015 0.15-0.20 m J00045 0.45-0.50 m D00050 0.50-1.00 m J00095 0.95-1.00 m		379.3	1			FILL Silty CLAY with gravel: high plasticity, black, fine to medium sub-angular gravel.				100 200 300 400 500	REWORKED TOPSOIL												
				S00150 SPT 1.50-1.95 m 4,8,11 N=19 D00195 1.95-3.00 m		378.3	2	CH	CLAY trace sand: high plasticity, black brown, fine grained sand.	VSt				ALLUVIAL SOIL													
				S00300 SPT 3.00-3.45 m 11,13,20 N=33		377.3	3			M (<PL)		H															
				D00395 3.95-4.50 m		376.3	4		becoming medium to high plasticity clay.																		
				S00450 SPT 4.50-4.95 m 11,13,19 N=32 D00500 5.00-6.00 m		375.3	5	SC	Clayey SAND trace silt: fine grained, dark brown, medium plasticity clay.	D D					ALLUVIAL SOIL												
				S00600 SPT 6.00-6.45 m 7,9,14 N=23		374.3	6	CI-CH	Gravelly CLAY: medium to high plasticity, dark brown and black, medium to coarse sub-rounded gravel.	M (<PL) VSt																	
				D00700 7.00-7.50 m		373.3	7																				
				S00750 SPT 7.50-7.95 m 6,8,11																							
<table><tr><td>Method AS - Auger Screwing RR - Rock Roller WB- Washbore</td><td>Penetration No resistance ranging to refusal</td><td>Water Level (Date) Inflow Partial Loss Complete Loss</td><td>Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test</td><td>Moisture Condition D - Dry M - Moist W - Wet</td><td>Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense</td></tr><tr><td>Support C - Casing</td><td>Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss</td><td>Classification Symbols and Soil Descriptions Based on Unified Soil Classification System</td><td>Plastic Limit < PL = PL > PL</td><td></td><td></td></tr></table>																Method AS - Auger Screwing RR - Rock Roller WB- Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense	Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL		
Method AS - Auger Screwing RR - Rock Roller WB- Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense																						
Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL																								

Engineering Log - Borehole

Project No.: B20331

Client: ARTC Project Name: Inland Rail B2G Hole Location: Approx. CH144767 - Pampas Hole Coordinates: 341815.5 m E 6923404.7 m N MGA94 Zone 56										Commenced: 23/01/2021 Completed: 25/01/2021 Logged By: A. Sharma Checked By: J.Boyle											
Drill Model and Mounting: Comacchio 305 Hole Diameter: 115 mm					Inclination: -90° Bearing:					RL Surface: 380.29 m Datum: AHD Operator: M.Boga											
Drilling Information							Soil Description										Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations						
AD/T				N=19 D00800 8.00-9.00 m					CI-CH	Gravelly CLAY: medium to high plasticity, dark brown and black, medium to coarse sub-rounded gravel. (continued)	M (<PL)	VSt			ALLUVIAL SOIL						
				D00900 9.00-9.50 m S00900 SPT 9.00-9.32 m 12,31,30/20mm N=61/170mm D00950 9.50-10.50 m		371.3	9		GP	Sandy GRAVEL: fine to coarse sub-rounded, orange and off-white, fine to coarse grained sand.	D	VD									
				S01050 SPT 10.50-10.95 m 21,21,21 N=42 D01100 11.00-12.00 m		370.3	10		CI	CLAY trace silt: medium plasticity, dark brown and grey.		H									
				S01200 SPT 12.00-12.45 m 11,15,15 N=30 D01250 12.50-13.50 m		369.3	11		CI	Sandy CLAY trace gravel: medium plasticity, dark brown orange, fine to medium grained sand, fine to medium sub-rounded gravel.		VSt									
				S01350 SPT 13.50-13.70 m 30,30/50mm N=30/50mm D01400 14.00-15.00 m		368.3	12		CI-CH	Gravelly CLAY trace silt: medium to high plasticity, dark brown orange, fine to coarse sub-rounded gravel.	M (<PL)										
				S01500 SPT 15.00-15.45 m 16,20,17 N=37 D01550 15.50-16.50 m		367.3	13		CI-CH	Sandy Gravelly CLAY: medium to high plasticity, dark brown orange, fine to coarse sub-rounded gravel, fine to coarse grained sand.		H									
Method AS - Auger Screwing RR - Rock Roller WB - Washbore			Penetration No resistance ranging to refusal			Water Level (Date) Inflow Partial Loss Complete Loss			Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test			Moisture Condition D - Dry M - Moist W - Wet			Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense						
Support C - Casing			Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss			Classification Symbols and Soil Descriptions Based on Unified Soil Classification System			Plastic Limit < PL = PL < PL												

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021
Project Name:	Inland Rail B2G	Completed:	25/01/2021
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.29 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	M.Boga

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T			IK	D01550 15.50-16.50 m		363.3	17		CI-CH	Sandy Gravelly CLAY: medium to high plasticity, dark brown orange, fine to coarse sub-rounded gravel, fine to coarse grained sand. (continued)	H	St	M (<PL)	100 200 300 400 500	ALLUVIAL SOIL
				S01650 SPT 16.50-16.95 m 4,5,7 N=12 PP 16.70 m =350 kPa					CI	CLAY with gravel trace sand: medium plasticity, dark brown orange, fine to medium sub-angular gravel, fine grained sand.					
				S01800 SPT 18.00-18.45 m 6,8,14 N=22 D01850 18.50-19.50 m					CI	Gravelly CLAY trace silt: medium plasticity, dark brown, fine sub-rounded gravel.					
				S01950 SPT 19.50-19.95 m 8,10,10 N=20					GP	Gravelly SAND with silt: fine to coarse grained, dark brown, fine to coarse sub-rounded to sub-angular gravel.					
				S02100 SPT 21.00-21.45 m 13,14,18 N=32					SP	Gravelly SAND trace clay: fine to coarse grained, black brown orange, fine to coarse sub-rounded to sub-angular gravel, high plasticity clay.					
WB				S02250 SPT 22.50-22.95 m 16,24,24 N=48		357.3	23		SP	Gravelly SAND with silt: fine to coarse grained, dark brown, fine to coarse sub-rounded to sub-angular gravel.	W	D		Standing Water Level - 25/01/2021	

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	 No resistance ranging to refusal	 Level (Date)  Inflow  Partial Loss  Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	 Core recovered (hatching indicates material)  Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client: ARTC		Commenced: 23/01/2021													
Project Name: Inland Rail B2G		Completed: 25/01/2021													
Hole Location: Approx. CH144767 - Pampas		Logged By: A. Sharma													
Hole Coordinates: 341815.5 m E 6923404.7 m N MGA94 Zone 56		Checked By: J.Boyle													
Drill Model and Mounting: Comacchio 305		Inclination: -90°	RL Surface: 380.29 m												
Hole Diameter: 115 mm		Bearing:	Datum: AHD Operator: M.Boga												
Drilling Information				Soil Description				Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB				S02400 SPT 24.00-24.45 m 12,12,15 N=27		355.3	25		SM	Silty SAND trace gravel: fine to coarse grained, orange brown, fine to coarse sub-rounded gravel.	W	MD			ALLUVIAL SOIL
				S02550 SPT 25.50-25.95 m 7,6,7 N=13 PP 25.70 m =200 kPa		354.3	26		CI	CLAY trace sand: medium plasticity, dark brown, fine grained sand.		St		x	
				S02700 SPT 27.00-27.45 m 5,7,9 N=16 PP 27.30 m =300 kPa		353.3	27		CH	Silty CLAY with gravel: high plasticity, grey and brown orange, fine to coarse sub-angular gravel.		VSt		x	
				S02850 SPT 28.50-28.95 m 11,15,19 N=34		351.3	29		CI-CH	Silty CLAY trace gravel: medium to high plasticity, black brown, fine to medium sub-angular gravel.	M (>PL)	H			
				S03000 SPT 30.00-30.45 m 11,12,18 N=30 PP 30.20 m =350 kPa		350.3	30		CI-CH	Sandy CLAY trace silt: medium to high plasticity, pale brown and grey, fine grained sand.		VSt		x	
				S03150 SPT 31.50-31.95 m 8,11,13		349.3	31		CI-CH	Sandy CLAY trace gravel: medium to high plasticity, grey, fine grained sand, fine sub-rounded gravel.		VSt			
Method AS - Auger Screwing RR - Rock Roller WB- Washbore		Penetration No resistance ranging to refusal		Water Level (Date) Inflow Partial Loss Complete Loss		Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		Moisture Condition D - Dry M - Moist W - Wet		Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense		Plastic Limit < PL = PL > PL			
Support C - Casing		Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System											

Engineering Log - Borehole

Project No.: B20331

Client: ARTC Project Name: Inland Rail B2G Hole Location: Approx. CH144767 - Pampas Hole Coordinates: 341815.5 m E 6923404.7 m N MGA94 Zone 56										Commenced: 23/01/2021 Completed: 25/01/2021 Logged By: A. Sharma Checked By: J.Boyle																			
Drill Model and Mounting: Comacchio 305					Inclination: -90°					RL Surface: 380.29 m					Hole Diameter: 115 mm					Bearing: AHD					Operator: M.Boga				
Drilling Information										Soil Description										Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations														
WB				N=24					CI-CH	Sandy CLAY trace gravel: medium to high plasticity, grey, fine grained sand, fine sub-rounded gravel. (continued)	M (>PL)	VSt				ALLUVIAL SOIL													
				S03300 SPT 33.00-33.45 m N=26 PP 33.20 m =500 kPa		347.3	33		CH	Sandy CLAY trace silt: high plasticity, green grey yellow, fine grained sand.							x	RESIDUAL SOIL											
						346.3	34		CH	Sandy CLAY: high plasticity, orange grey and pale brown, fine grained sand.																			
				S03500 SPT 35.00-35.45 m N=29		345.3	35																						
						344.3	36			Hole Terminated at 35.45 m Target depth Hole grouted to surface.																			
						343.3	37																						
						342.3	38																						
						341.3	39																						

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT- Standard Penetration Test

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

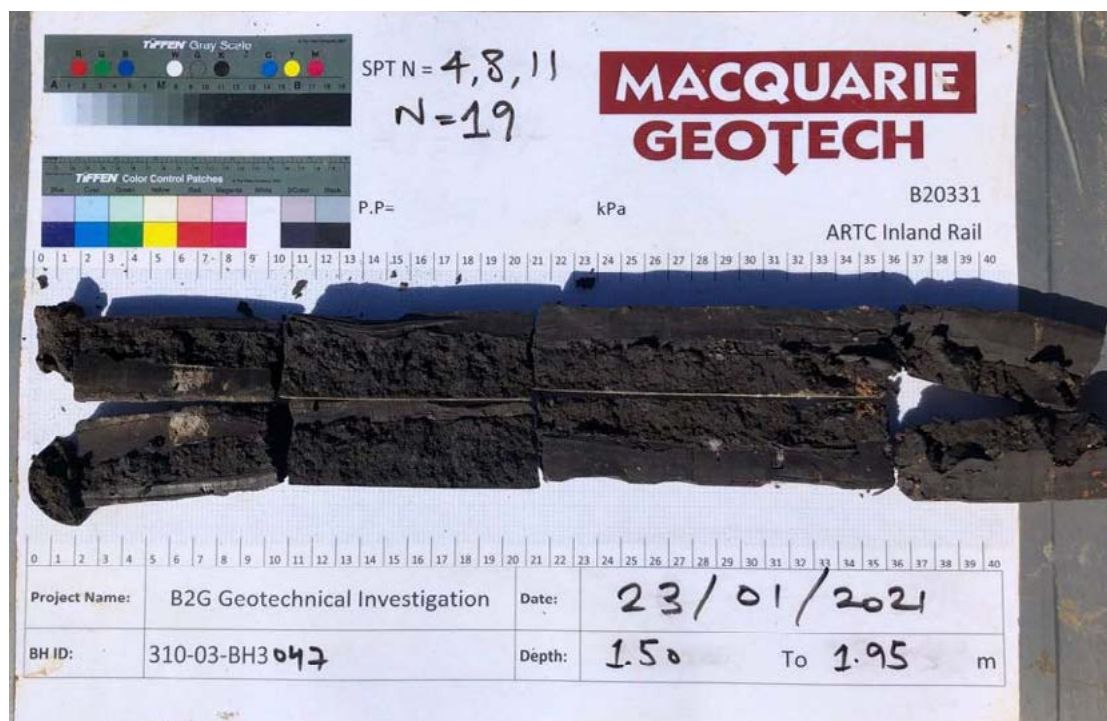
Plastic Limit

< PL
= PL
< PL

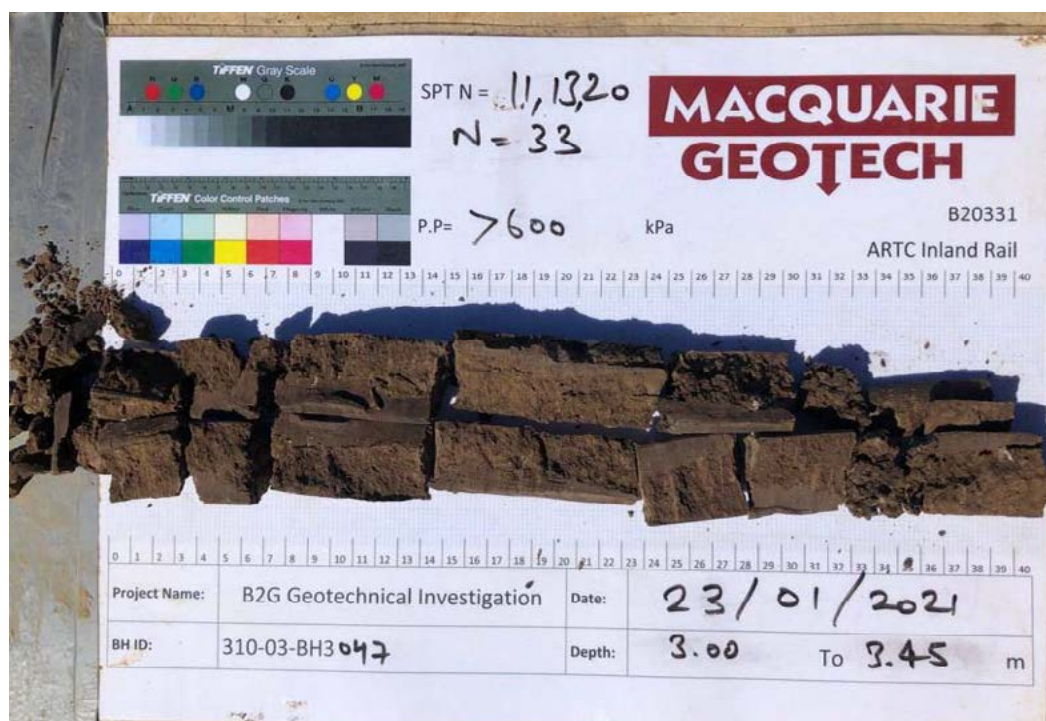
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021				
Project Name:	Inland Rail B2G	Completed:	25/01/2021				
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma				
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle				
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.29 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	M.Boga



310-03-BH3047 Depth Range: 1.50 - 1.95 m



310-03-BH3047 Depth Range: 3.00 - 3.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021
Project Name:	Inland Rail B2G	Completed:	25/01/2021
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.29 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	M.Boga



310-03-BH3047 Depth Range: 4.50 - 4.95 m



310-03-BH3047 Depth Range: 6.00 - 6.45 m

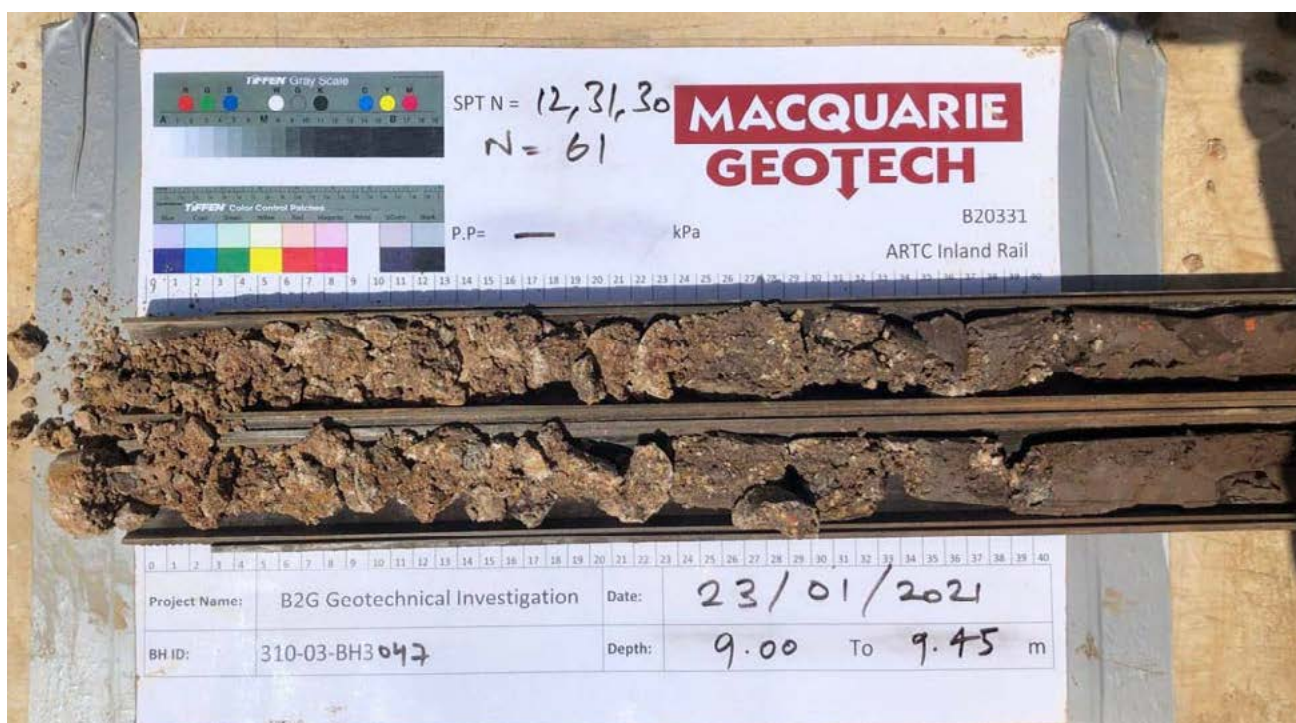
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC			Commenced:	23/01/2021	
Project Name:	Inland Rail B2G			Completed:	25/01/2021	
Hole Location:	Approx. CH144767 - Pampas			Logged By:	A. Sharma	
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56			Checked By:	J.Boyle	
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.29 m	
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator: M.Boga



310-03-BH3047 Depth Range: 7.50 - 7.95 m

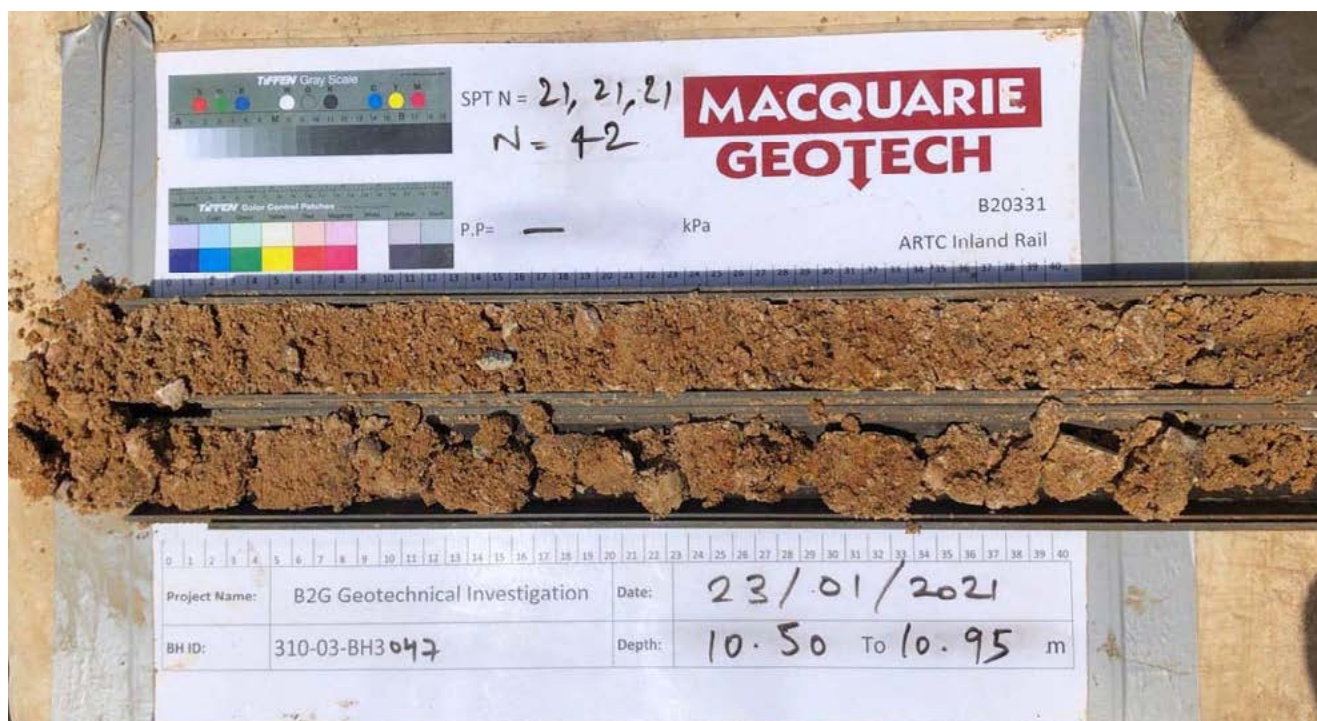


310-03-BH3047 Depth Range: 9.00 - 9.45 m

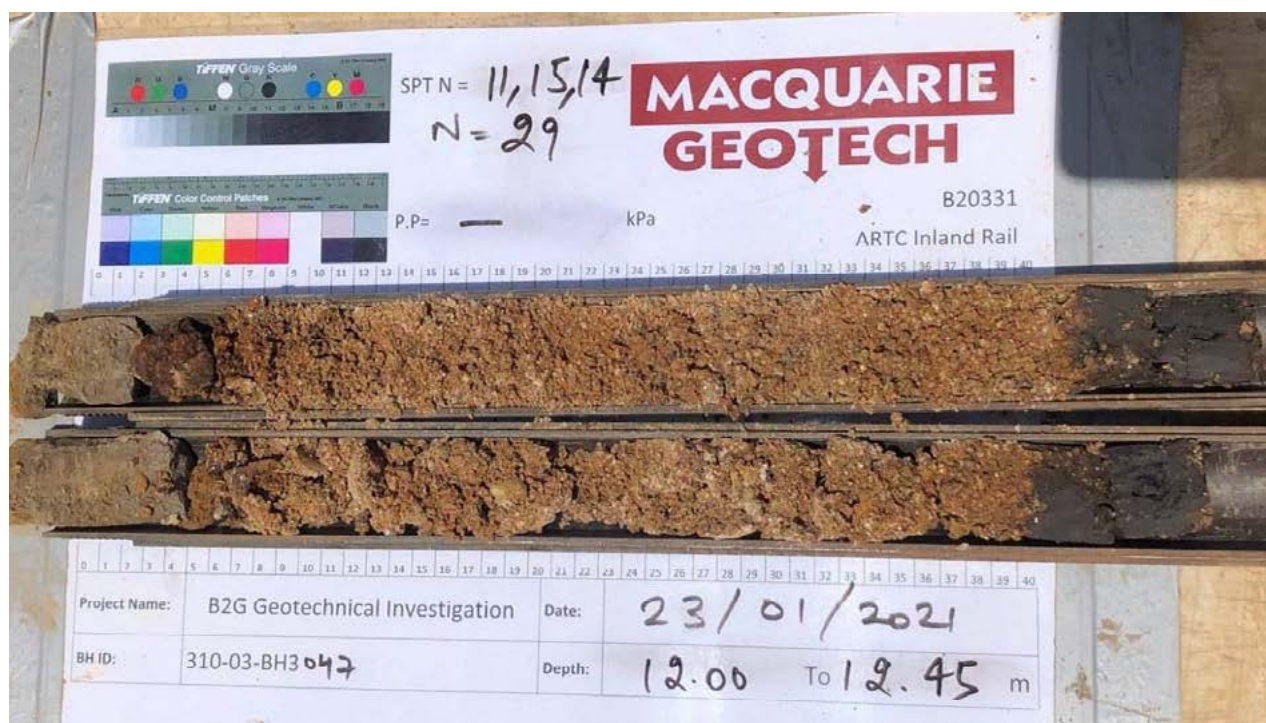
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021				
Project Name:	Inland Rail B2G	Completed:	25/01/2021				
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma				
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle				
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.29 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	M.Boga



310-03-BH3047 Depth Range: 10.50 - 10.95 m

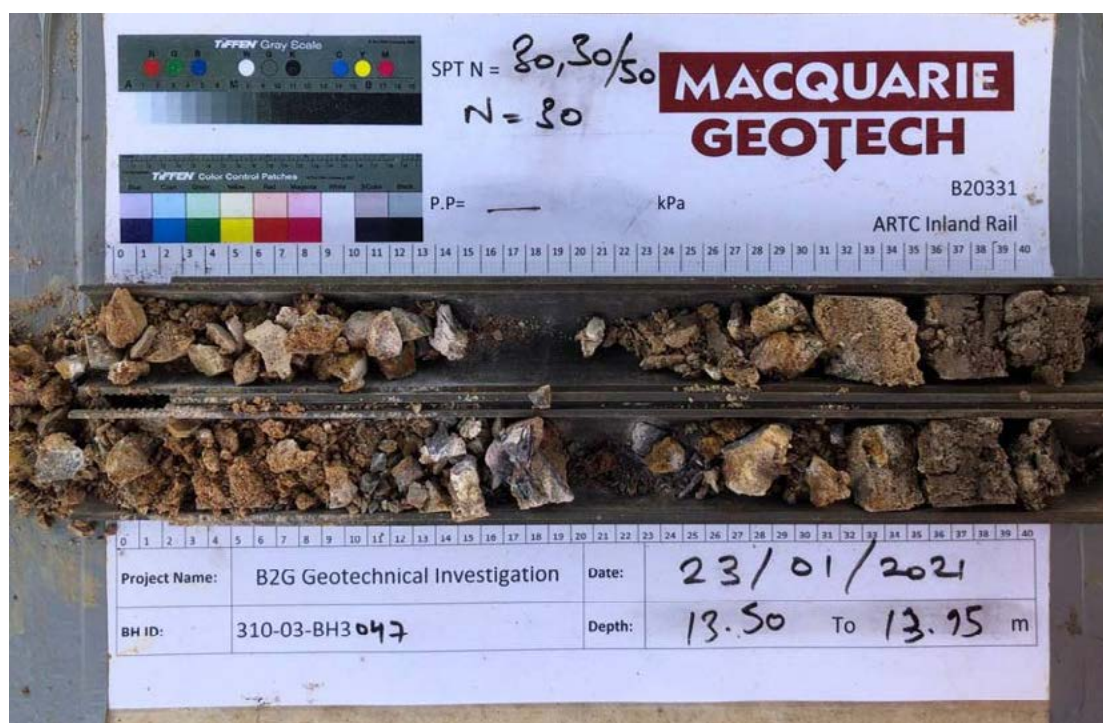


310-03-BH3047 Depth Range: 12.00 - 12.45 m

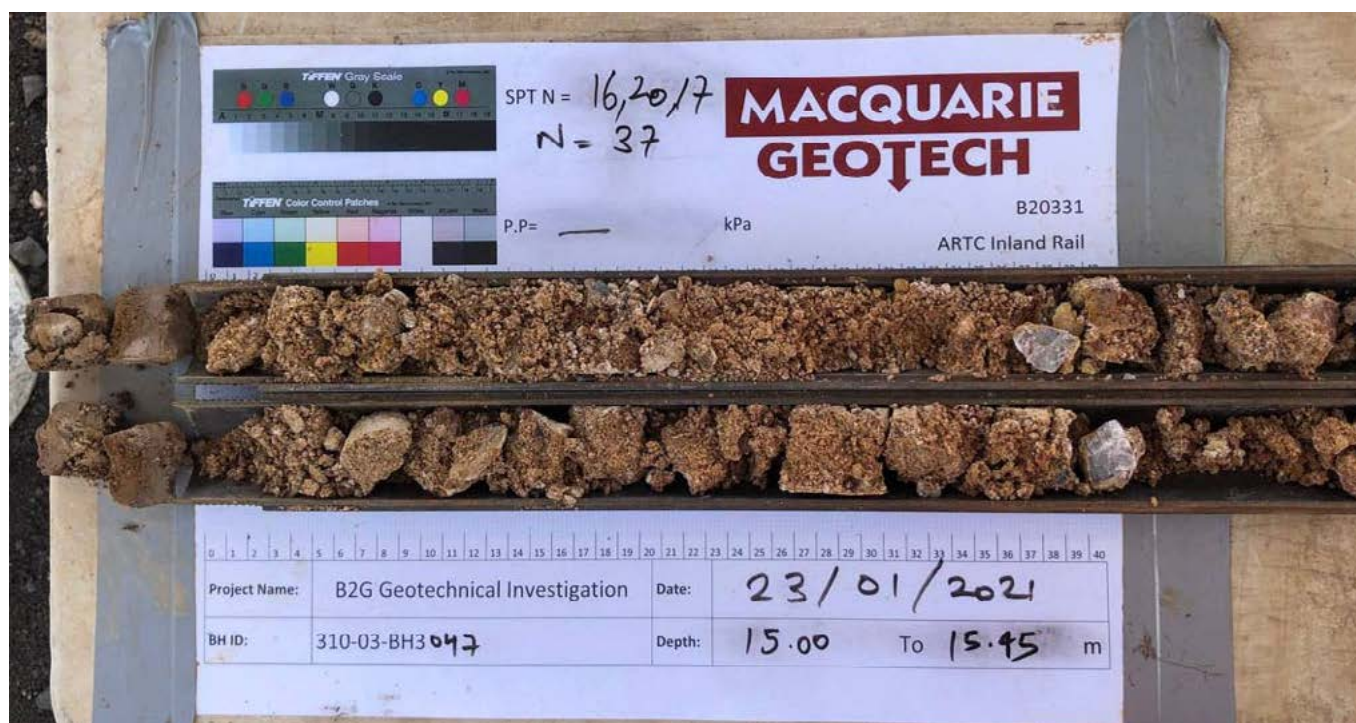
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021				
Project Name:	Inland Rail B2G	Completed:	25/01/2021				
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma				
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle				
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.29 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	M.Boga



310-03-BH3047 Depth Range: 13.50 - 13.95 m



310-03-BH3047 Depth Range: 15.00 - 15.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021
Project Name:	Inland Rail B2G	Completed:	25/01/2021
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.29 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3047 Depth Range: 16.50 - 16.95 m



310-03-BH3047 Depth Range: 18.00 - 18.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021
Project Name:	Inland Rail B2G	Completed:	25/01/2021
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.29 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3047 Depth Range: 21.00 - 21.45 m



310-03-BH3047 Depth Range: 22.50 - 22.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021
Project Name:	Inland Rail B2G	Completed:	25/01/2021
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.29 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: M.Boga



310-03-BH3047 Depth Range: 24.00 - 24.45 m



310-03-BH3047 Depth Range: 25.50 - 25.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021
Project Name:	Inland Rail B2G	Completed:	25/01/2021
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.29 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3047 Depth Range: 27.00 - 27.45 m



310-03-BH3047 Depth Range: 28.50 - 28.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021
Project Name:	Inland Rail B2G	Completed:	25/01/2021
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.29 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: M.Boga



310-03-BH3047 Depth Range: 30.00 - 30.45 m



310-03-BH3047 Depth Range: 31.50 - 31.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	23/01/2021
Project Name:	Inland Rail B2G	Completed:	25/01/2021
Hole Location:	Approx. CH144767 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341815.5 m E 6923404.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.29 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: M.Boga

310-03-BH3047 Depth Range: 35.00 - 35.45 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC		Commenced: 25/01/2021													
Project Name: Inland Rail B2G		Completed: 27/01/2021													
Hole Location: Approx. CH144985 - Pampas		Logged By: A. Sharma													
Hole Coordinates: 341981.2 m E 6923543.5 m N MGA94 Zone 56		Checked By: J.Boyle													
Drill Model and Mounting: Comacchio 305		Inclination: -90°	RL Surface: 380.67 m												
Hole Diameter: 96 - 115 mm		Bearing:	Datum: AHD Operator: M.Boga												
Drilling Information				Soil Description				Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T				J00015 ES 0.15-0.20 m		379.7	1			REWORKED TOPSOIL: Silty CLAY with gravel: high plasticity, black, fine to medium sub-angular gravel.	D	St			REWORKED TOPSOIL
				J00045 ES 0.45-0.50 m											
				D00050 D 0.50-1.00 m											
				J00095 ES 0.95-1.00 m											
				D00100 D 1.00-1.50 m											
				S00150 SPT 1.50-1.95 m											
				3,4,6 N=10											
				D00195 D 1.95-3.00 m											
				D00200 D 2.00-3.00 m											
				S00300 SPT 3.00-3.45 m											
6,8,12 N=20															
D00395 D 3.95-4.50 m															
D00400 D 4.00-4.50 m															
S00450 SPT 4.50-4.95 m															
6,8,11 N=19															
D00500 D 5.00-6.00 m															
S00600 SPT 6.00-6.45 m															
12,8,12 N=20															
D00700 7.00-7.50 m															
D00700 D 7.00-7.50 m															
S00750 SPT 7.50-7.95 m															
Method AS - Auger Screwing RR - Rock Roller WB - Washbore Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Support C - Casing Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Plastic Limit < PL = PL < PL															

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH144985 - Pampas
Hole Coordinates: 341981.2 m E 6923543.5 m N MGA94 Zone 56

Commenced: 25/01/2021
Completed: 27/01/2021
Logged By: A. Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 380.67 m
Hole Diameter: 96 - 115 mm Bearing: Datum: AHD Operator: M.Boga

Drilling Information							Soil Description							Observations															
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations														
AD/T				11,13,17 N=30 D00800 8.00-9.00 m D00800 D 8.00-9.00 m					CI	Sandy CLAY trace silt: medium plasticity, fine grained sand, dark-brown to black, grey lenses of clay. (continued) From 8.00m: medium to high plasticity clay.	M (<PL)	H																	
				D00900 D 9.00-9.50 m S00900 SPT 9.00-9.45 m 16,17,27 N=44 D00950 D 9.50-10.50 m D01000 D 10.00-10.50 m		371.7	9		GP	Sandy GRAVEL trace silt: fine to coarse, sub-rounded to sub-angular gravel, brown-orange to pale-yellow, fine sand		D			ALLUVIAL SOIL														
				S01050 SPT 10.50-10.95 m 5,9,9 N=18		370.7	10		SP	Gravelly SAND with clay: fine to coarse sand, pale-brown and orange, fine to medium sub-angular gravel, medium plasticity	M																		
				D01150 D 11.50-12.00 m		369.7	11					MD																	
				S01200 SPT 12.00-12.45 m 15,16,14 N=30 D01250 D 12.50-13.50 m		368.7	12		CL-CI	Sandy CLAY trace gravel: low to medium plasticity, fine to coarse grained sand, orange-yellow and pale-brown, fine to coarse sub-rounded gravel																			
						367.7	13		SC	SAND with clay trace gravel: fine to coarse grained, pale brown and orange, low to medium plasticity clay, fine to coarse sub-rounded gravel.		H																	
					S01350 SPT 13.50-13.95 m 12,13,14 N=27		366.7	14		CI	Sandy CLAY trace silt: medium plasticity, grey-orange and pale-brown, medium to coarse grained sand	M (<PL)	VSt																
				S01500 SPT 15.00-15.30 m 8,30 N=30/150mm		365.7	15					H																	
<table><tr><td>Method AS - Auger Screwing RR - Rock Roller WB- Washbore</td><td>Penetration No resistance ranging to refusal</td><td>Water Level (Date) Inflow Partial Loss Complete Loss</td><td>Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test</td><td>Moisture Condition D - Dry M - Moist W - Wet Plastic Limit < PL = PL < PL</td><td>Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense</td></tr><tr><td>Support C - Casing</td><td>Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss</td><td>Classification Symbols and Soil Descriptions Based on Unified Soil Classification System</td><td colspan="4"></td></tr></table>																	Method AS - Auger Screwing RR - Rock Roller WB- Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet Plastic Limit < PL = PL < PL	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense	Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System				
Method AS - Auger Screwing RR - Rock Roller WB- Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet Plastic Limit < PL = PL < PL	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense																								
Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System																											

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH144985 - Pampas
Hole Coordinates: 341981.2 m E 6923543.5 m N MGA94 Zone 56

Commenced: 25/01/2021
Completed: 27/01/2021
Logged By: A. Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclinometer: -90° RL Surface: 380.67 m
Hole Diameter: 96 - 115 mm Bearing: Datum: AHD Operator: M.Boga

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T 															

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client: ARTC				Commenced: 25/01/2021																			
Project Name: Inland Rail B2G				Completed: 27/01/2021																			
Hole Location: Approx. CH144985 - Pampas				Logged By: A. Sharma																			
Hole Coordinates: 341981.2 m E 6923543.5 m N MGA94 Zone 56				Checked By: J.Boyle																			
Drill Model and Mounting: Comacchio 305		Inclination: -90°		RL Surface: 380.67 m																			
Hole Diameter: 96 - 115 mm		Bearing:		Datum: AHD		Operator: M.Boga																	
Drilling Information				Soil Description				Observations															
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations								
WB				S02400 SPT 24.00-24.45 m 9,13,17 N=30 24.45 m		355.7	25		CH	Silty CLAY trace sand: high plasticity, brown to pale-brown, fine grained sand					Abundant Soil 24.00: PP Samp <450 kPa								
				S02550 SPT 25.50-25.95 m 11,16,19 N=35 25.95 m PP 25.70 m =200 kPa		354.7	26				M (<PL)	H		x	25.50: PP Samp <300 kPa								
				S02700 SPT 27.00-27.45 m 21,12,10 N=22 PP 27.30 m =300 kPa		353.7	27		GP	Sandy GRAVEL trace clay: fine to coarse sub-rounded to sub-angular gravel, green-grey to pale-brown, fine to medium grained sand, medium to high plasticity				x									
				S02850 SPT 28.50-28.95 m 9,11,14 N=25 28.95 m		351.7	29		CL-CI	Silty CLAY: low to medium plasticity, dark-brown to pale-brown				x	28.50: PP Samp <400 kPa								
				S03000 SPT 30.00-30.45 m 8,9,12 N=21 30.45 m PP 30.20 m =350 kPa		350.7	30			At 30.00m becoming dark brown mottled black.		M (-PL)	VSt	x	30.00: PP Samp <300 kPa								
				S03150 SPT 31.50-31.95 m 7,9,12		349.7	31							x	31.50: PP Samp <200 kPa								
Method AS - Auger Screwing RR - Rock Roller WB- Washbore				Penetration No resistance ranging to refusal				Water Level (Date) Inflow Partial Loss Complete Loss				Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test				Moisture Condition D - Dry M - Moist W - Wet				Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense			
Support C - Casing				Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss				Classification Symbols and Soil Descriptions Based on Unified Soil Classification System				Plastic Limit < PL = PL > PL											

MG 4.02 LUB.GLB Log MG BOREHOLE EXCL DCP MG 4.02 G.P. <<DrawingFile>> 30/04/2021 08:04 10.0.0000 Daugel Lab and In Situ Tool - DGD | ULR DGDTP 4.01.2.dpt 3.04 2019-07-02 P.H. DGDTP 4.00.6 2017-11-25

Engineering Log - Borehole

Project No.: B20331

Client: ARTC Project Name: Inland Rail B2G Hole Location: Approx. CH144985 - Pampas Hole Coordinates: 341981.2 m E 6923543.5 m N MGA94 Zone 56										Commenced: 25/01/2021 Completed: 27/01/2021 Logged By: A. Sharma Checked By: J.Boyle																			
Drill Model and Mounting: Comacchio 305					Inclination: -90°					RL Surface: 380.67 m					Hole Diameter: 96 - 115 mm					Bearing: AHD					Operator: M.Boga				
Drilling Information										Soil Description										Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations														
WB				N=21 31.95 m					CL-CI	Silty CLAY: low to medium plasticity, dark-brown to pale-brown (continued)					ALLUVIAL SOIL														
				S03300 SPT 33.00-33.45 m 7.8, 11 N=19 33.45 m PP 33.20 m =500 kPa		347.7	33							33.00: PP Samp <200 kPa															
						346.7	34																						
				S03500 SPT 35.00-35.45 m 8, 11, 16 N=27		345.7	35		SC	Clayey SAND: fine grained sand, grey with irregular brown, medium plasticity	W	MD			RESIDUAL SOIL														
										Hole Terminated at 35.45 m Target depth Hole grouted to surface.																			

MG 4.02 LBLB Log MG BOREHOLE EXCL DCP MG 4.02 GPJ <<DrawingFile>> 30/04/2021 08:04 10.0.0000 Dugout Lab and In Situ Tool - DGD | UIC DGDTP 4.01.2.dpt 3.04 2019-07-02 Pjt DGDTP 4.00.6 2017-11-25

Method
 AS - Auger Screwing
 RR - Rock Roller
 WB - Washbore

Penetration
 No resistance ranging to refusal

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Samples and Tests
 U - Undisturbed Sample
 D - Disturbed Sample
 SPT - Standard Penetration Test

Moisture Condition
 D - Dry
 M - Moist
 W - Wet

Consistency/Relative Density
 VS - Very Soft
 S - Soft
 F - Firm
 VSt - Very Stiff
 H - Hard
 VL - Very Loose
 L - Loose
 MD - Medium Dense
 D - Dense
 VD - Very Dense

Support
 C - Casing

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Classification Symbols and Soil Descriptions
 Based on Unified Soil Classification System

Plastic Limit
 < PL
 = PL
 > PL

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	96 - 115 mm	Bearing:	
		RL Surface:	380.67 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3048 Depth Range: 1.50 - 1.95 m



310-03-BH3048 Depth Range: 3.00 - 3.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	96 - 115 mm	RL Surface:	380.67 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3048 Depth Range: 4.50 - 4.95 m



310-03-BH3048 Depth Range: 6.00 - 6.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	96 - 115 mm	Bearing:	
		RL Surface:	380.67 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3048 Depth Range: 7.50 - 7.95 m



310-03-BH3048 Depth Range: 9.00 - 9.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.67 m
Hole Diameter:	96 - 115 mm	Bearing:		Datum:	AHD Operator: M.Boga



310-03-BH3048 Depth Range: 10.50 - 10.95 m



310-03-BH3048 Depth Range: 12.00 - 12.50 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.67 m
Hole Diameter:	96 - 115 mm	Bearing:		Datum:	AHD Operator: M.Boga



310-03-BH3048 Depth Range: 13.50 - 13.95 m

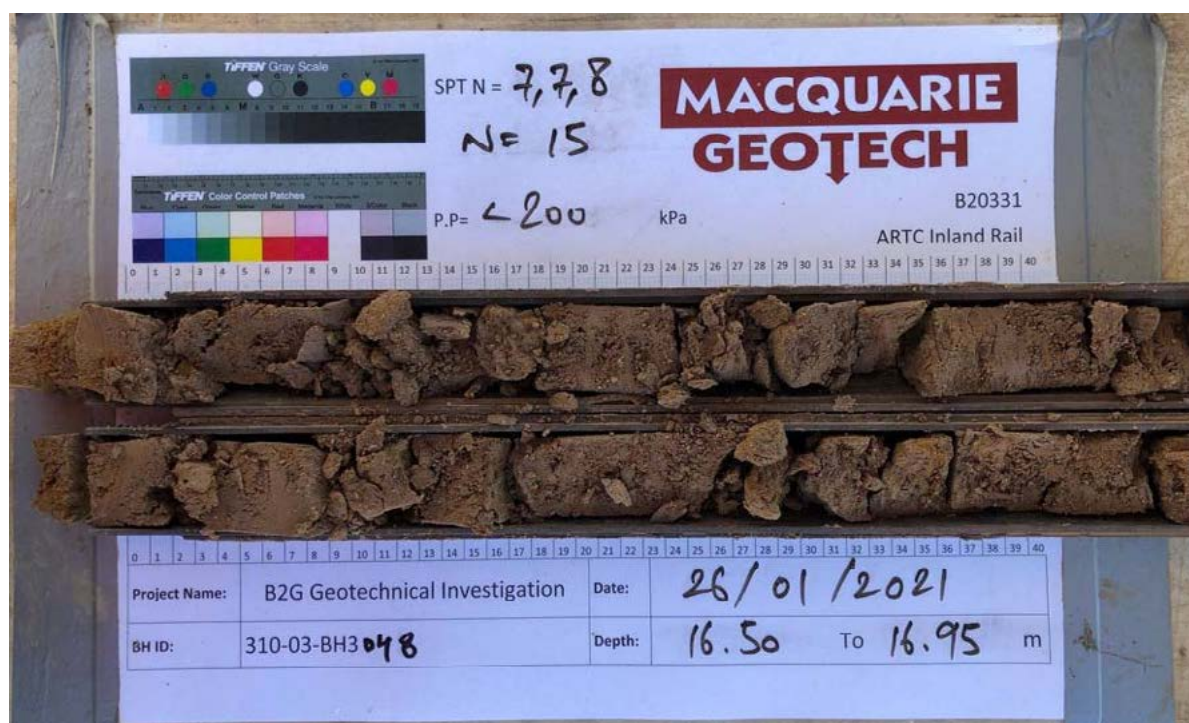


310-03-BH3048 Depth Range: 15.00 - 15.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	96 - 115 mm	RL Surface:	380.67 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3048 Depth Range: 16.50 - 16.95 m

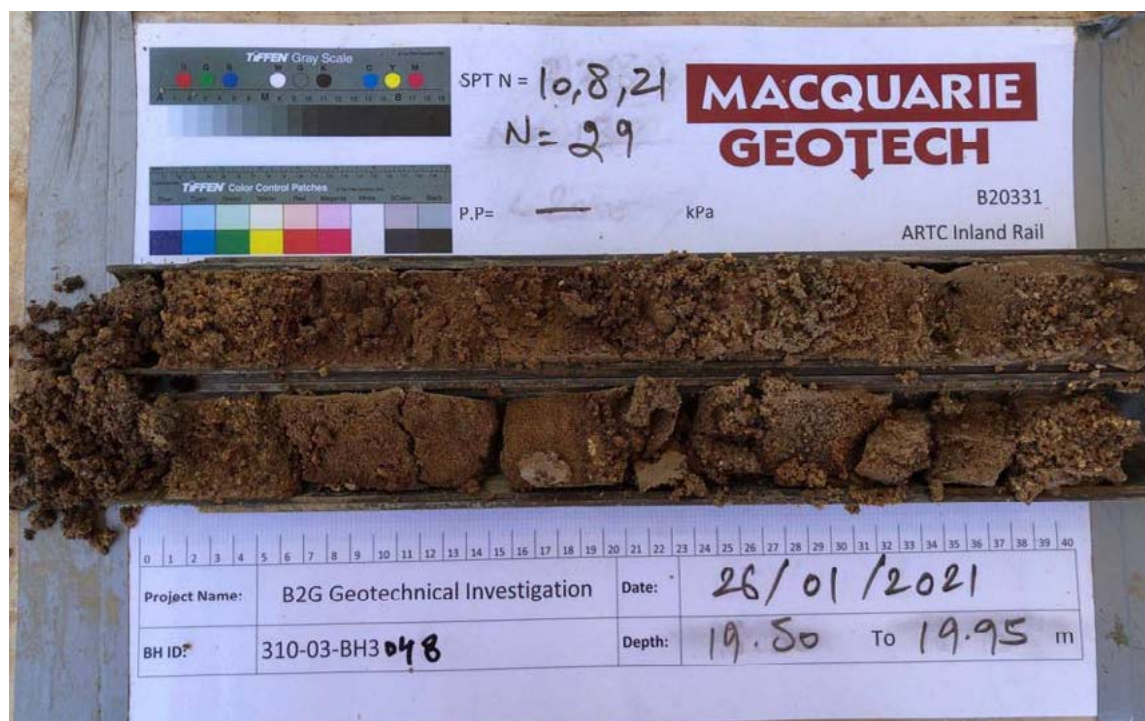


310-03-BH3048 Depth Range: 18.00 - 18.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	96 - 115 mm	RL Surface:	380.67 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3048 Depth Range: 19.50 - 19.95 m



310-03-BH3048 Depth Range: 21.00 - 21.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	96 - 115 mm	Bearing:	
		RL Surface:	380.67 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3048 Depth Range: 22.50 - 22.95 m



310-03-BH3048 Depth Range: 24.00 - 24.45 m

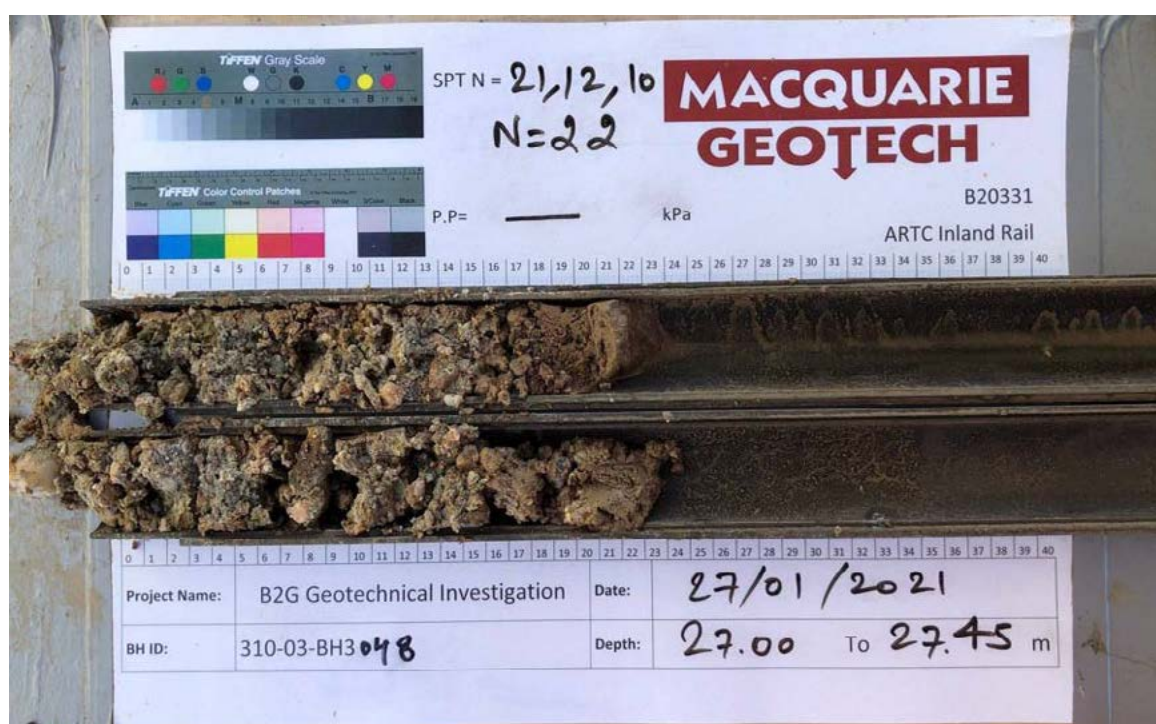
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	96 - 115 mm	RL Surface:	380.67 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3048 Depth Range: 25.50 - 25.95 m

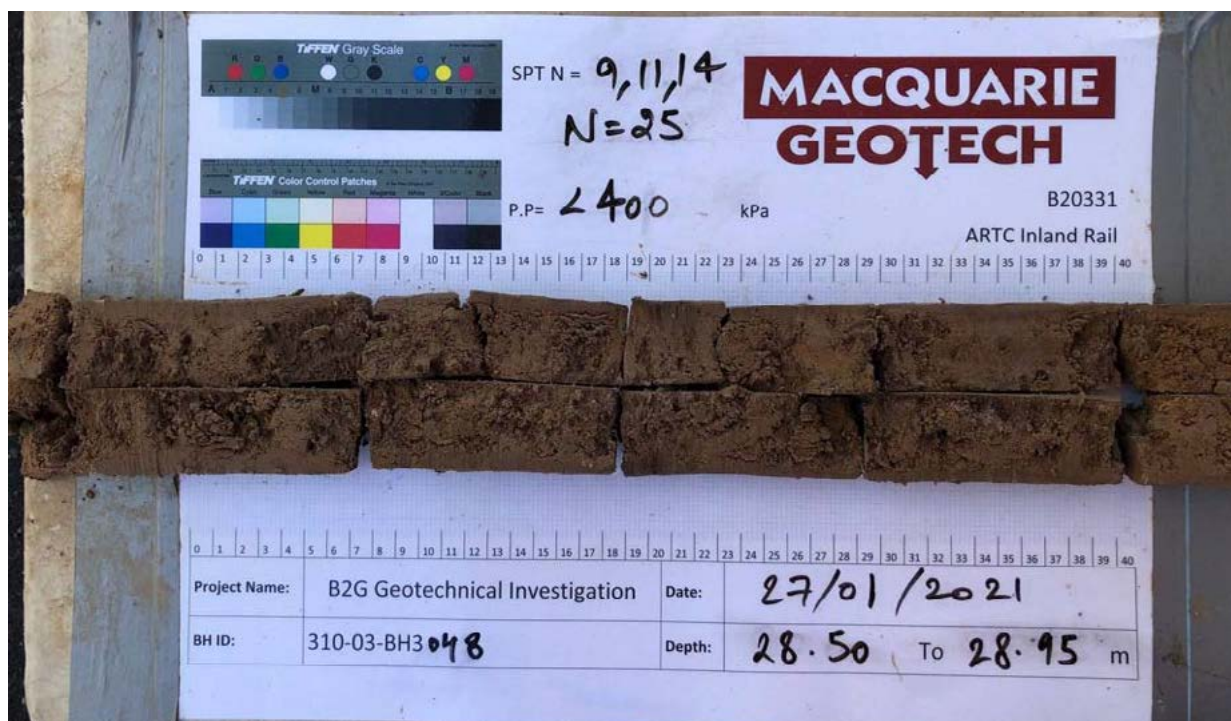


310-03-BH3048 Depth Range: 27.00 - 27.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	96 - 115 mm	Bearing:	
		RL Surface:	380.67 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3048 Depth Range: 28.50 - 28.95 m



310-03-BH3048 Depth Range: 30.00 - 30.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	96 - 115 mm	Bearing:	
		RL Surface:	380.67 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3048 Depth Range: 31.50 - 31.95 m



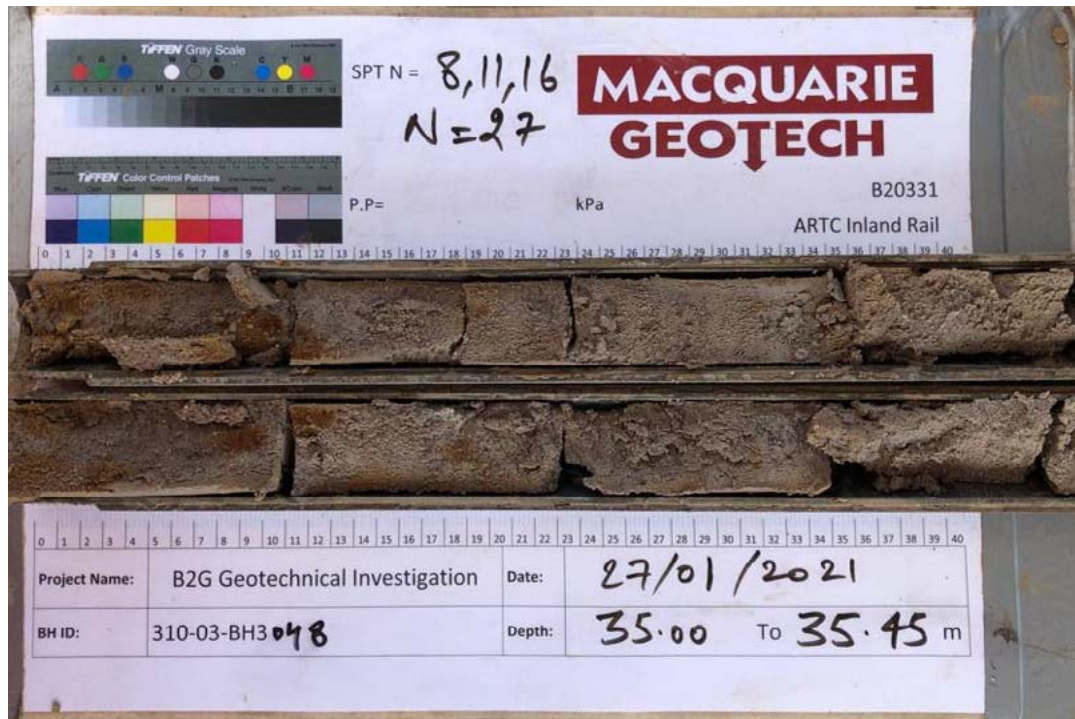
310-03-BH3048 Depth Range: 33.00 - 33.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	25/01/2021
Project Name:	Inland Rail B2G	Completed:	27/01/2021
Hole Location:	Approx. CH144985 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	341981.2 m E 6923543.5 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	380.67 m
Hole Diameter:	96 - 115 mm	Bearing:		Datum:	AHD Operator: M.Boga



310-03-BH3048 Depth Range: 35.00 - 35.45 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 02/02/2021																						
Project Name: Inland Rail B2G										Completed: 04/02/2021																						
Hole Location: Approx. CH145149 - Pampas										Logged By: A. Sharma																						
Hole Coordinates: 342107.1 m E 6923651.4 m N MGA94 Zone 56										Checked By: J.Boyle																						
Drill Model and Mounting: Comacchio 305/Track					Inclination: -90°					RL Surface: 380.89 m																						
Hole Diameter: 115 mm					Bearing:					Datum: AHD Operator: M.Boga																						
Drilling Information							Soil Description							Observations																		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																	
AD/T				J00020 0.20-0.30 m PID 0.20 m 0 ppm J00050 0.50-0.60 m S00050 SPT 0.50-0.95 m 1,3,4 N=7 PP 0.50 m <350 kPa PID 0.50 m		379.9	1		CH	FILL: CLAY; medium to high plasticity, black, trace rootlets. CLAY: high plasticity, black.	F					REWORKED TOPSOIL																
				0.1 ppm J00100 1.00-1.10 m U00100 U 1.00-1.45 m PID 1.00 m 0.1 ppm S00150 SPT 1.50-1.95 m 5,7,8 N=15 PP 1.50 m <300 kPa D00250 D 2.50-3.00 m S00300 SPT 3.00-3.45 m 5,7,8 N=15 PP 3.00 m <400 kPa D00400 D 4.00-4.50 m S00450 SPT 4.50-4.95 m 5,7,10 N=17 PP 4.50 m >500 kPa D00550 D 5.50-6.00 m S00600 SPT 6.00-6.45 m 6,7,9 N=16 PP 6.00 m <450 kPa D00700 D 7.00-7.50 m S00750 SPT 7.50-7.95 m 5,4,6		378.9	2		CI-CH	CLAY trace gravel: medium to high plasticity, dark brown, medium to coarse grained gravel.						M (>PL)	St to VSt			ALLUVIAL SOIL												
				377.9		3																										
				376.9		4																										
				375.9		5																										
				374.9		6																										
				373.9		7																										
				Below 7.70m: with lenses of Clayey SAND trace silt, medium to coarse grained, brown-orange to pale yellow.																												

Engineering Log - Borehole

Project No.: B20331

Client: ARTC	Commenced: 02/02/2021
Project Name: Inland Rail B2G	Completed: 04/02/2021
Hole Location: Approx. CH145149 - Pampas	Logged By: A. Sharma
Hole Coordinates: 342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 380.89 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: M.Boga

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/T				N=10 D00800 D 8.00-9.00 m					SP	SAND trace gravel, silt and clay: fine grained, brown-orange, fine sub-rounded to sub-angular gravel, low to medium plasticity clay.					ALLUVIAL SOIL	
				S00900 SPT 9.00-9.45 m 7.5,4 N=9		371.9	9		SP	Gravelly SAND trace clay: fine to coarse grained pale yellow to brown-orange, medium to coarse sub-rounded to sub-angular gravel, low plasticity.		L to MD				
				D01000 D 10.00-10.50 m		370.9	10									
				S01050 SPT 10.50-10.95 m 16,17,15 N=32		369.9	11		GP	Sandy GRAVEL trace silt, fine to coarse sub-angular to sub-rounded, pale-brown to pale-yellow, fine to coarse grained sand.	M					
				SPT 12.00-12.45 m 12,13,14 N=27 S01250		368.9	12		SP	Gravelly SAND trace clay: coarse grained, pale-yellow to brown, medium to coarse sub-rounded to sub-angular gravel, medium plasticity.		D				
				D01300 D 13.00-13.50 m		367.9	13									
				S01350 SPT 13.50-13.95 m 8,10,14 N=24 PP 13.50 m <360 kPa		366.9	14		CH	Silty CLAY: high plasticity, dark brown.		M (>PL)	VSt			
				D01450 D 14.50-15.00 m		365.9	15									
				S01500 SPT 15.00-15.45 m 16,28,18 N=46					GP	Sandy GRAVEL trace silt: fine to coarse sub-rounded to sub-angular, orange-brown, coarse grained sand. From 15.40m to 15.50m silty clay, medium plasticity, brown.	M	D				

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH145149 - Pampas
Hole Coordinates: 342107.1 m E 6923651.4 m N MGA94 Zone 56

Commenced: 02/02/2021
Completed: 04/02/2021
Logged By: A. Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 380.89 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: M.Boga

Drilling Information							Soil Description						Observations														
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations												
AD/T				D01600 D 16.00-16.50					GP	Sandy GRAVEL trace silt: fine to coarse sub-rounded to sub-angular, orange-brown, coarse grained sand. (continued)					ALLUVIAL SOIL												
				S01650 SPT 16.50-16.95 13,15,22 N=37		363.9	17		SP	Gravelly SAND: fine to coarse grained, pale-brown to brown, orange, medium to coarse sub-angular gravel.	M	D															
				D01750 D 17.50-18.00																							
				S01800 SPT 18.00-18.45 6,10,13 N=23 PP 18.00 m <350 kPa PP 18.80 m <300 kPa D01900 D 19.00-19.50		362.9	18		CL-CI	Silty CLAY with sand: low to medium plasticity, dark-brown, fine to coarse grained sand.	M (-PL)		x														
						361.9	19						x														
				S01950 SPT 19.50-19.95 8,8,14 N=22 PP 19.50 m <200 kPa PP 20.40 m <450 kPa		360.9	20		CI-CH	Sandy CLAY trace gravel: medium to high plasticity, dark-brown to pale-yellow, medium sub-rounded gravel.		VSt		x													
				S02100 SPT 21.00-21.45 6,8,10 N=18		359.9	21		CI	CLAY trace gravel: medium plasticity, dark-brown, fine sub-rounded gravel.	M (<PL)																
						358.9	22																				
WB				S02250 SPT 22.50-22.95 8,17,24 N=41 PP 22.50 m <500 kPa		357.9	23				M (-PL)	H		x	Standing Water Level - 03/02/2021												
<table><tr><td>Method AS - Auger Screwing RR - Rock Roller WB - Washbore</td><td>Penetration No resistance ranging to refusal</td><td>Water Level (Date) Inflow Partial Loss Complete Loss</td><td>Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test</td><td>Moisture Condition D - Dry M - Moist W - Wet</td><td>Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense</td></tr><tr><td>Support C - Casing</td><td>Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss</td><td>Classification Symbols and Soil Descriptions Based on Unified Soil Classification System</td><td>Plastic Limit < PL = PL > PL</td><td></td><td></td></tr></table>																Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense	Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL		
Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense																						
Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL																								

Engineering Log - Borehole

Project No.: B20331

Client: ARTC	Commenced: 02/02/2021
Project Name: Inland Rail B2G	Completed: 04/02/2021
Hole Location: Approx. CH145149 - Pampas	Logged By: A. Sharma
Hole Coordinates: 342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 380.89 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: M.Boga

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
WB				S02400 SPT 24.00-24.45 m 6,7,10 N=17 PP 24.00 m <300 kPa		355.9	25		CI-CH	CLAY trace silt: medium to high plasticity, dark-brown to brown.	M (<PL)	VSt			ALLUVIAL SOIL	
				D02500 D 25.00-25.50 m		354.9	26									
				S02550 SPT 25.50-25.95 m 9,12,18 N=30 PP 25.50 m <450 kPa		353.9	27									
				D02650 D 26.50-27.00 m		352.9	28		SP	SAND trace clay: fine to coarse grained, pale-brown to brown, low plasticity fines.	M	MD				
				S02700 SPT 27.00-27.45 m 9,13,14 N=27		351.9	29									
				D02850 D 28.00-28.50 m		350.9	30		CI-CH	Silty CLAY, medium to high plasticity, grey-mottled brown.	M (<PL)	VSt				
				S02850 SPT 28.50-28.95 m 7,9,13 N=22 PP 28.50 m >300 kPa		349.9	31									
				S03000 SPT 30.00-30.45 m 7,8,12 N=20												
				D03100 D 31.00-31.50 m												
				S03150 SPT 31.50-31.95 m 11,13,15												

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL		

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.89 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	M.Boga

Drilling Information							Soil Description							Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations			
WB				N=28					CI-CH	Silty CLAY, medium to high plasticity, grey-mottled brown. (continued)	M (<PL)	VSt			ALLUVIAL SOIL			
				D03250 D 32.50-33.00 m		347.9	33		CI	Silty CLAY: medium plasticity, black-brown mottled grey.							x	
				S03300 SPT 33.00-33.45 m 8,8,10 N=18 PP 33.00 m <350 kPa		346.9	34											
				D03400 D 34.00-35.00 m		345.9	35			Below 35.00 m colour change to grey mottled orange.								
				S03500 SPT 35.00-35.45 m 9,10,14 N=24 PP 35.00 m <400 kPa		344.9	36			Hole Terminated at 35.45 m Target depth Hole grouted to surface.								
						343.9	37											
						342.9	38											
						341.9	39											

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.89 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: M.Boga



310-03-BH3049 Depth Range: 0.50 - 0.95 m



310-03-BH3049 Depth Range: 2.00 - 2.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.89 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: M.Boga



310-03-BH3049 Depth Range: 3.50 - 3.95 m



310-03-BH3049 Depth Range: 4.50 - 4.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	380.89 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3049 Depth Range: 6.00 - 6.45 m



310-03-BH3049 Depth Range: 7.00 - 7.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.89 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: M.Boga



310-03-BH3049 Depth Range: 9.00 - 9.45 m



310-03-BH3049 Depth Range: 10.50 - 10.95 m

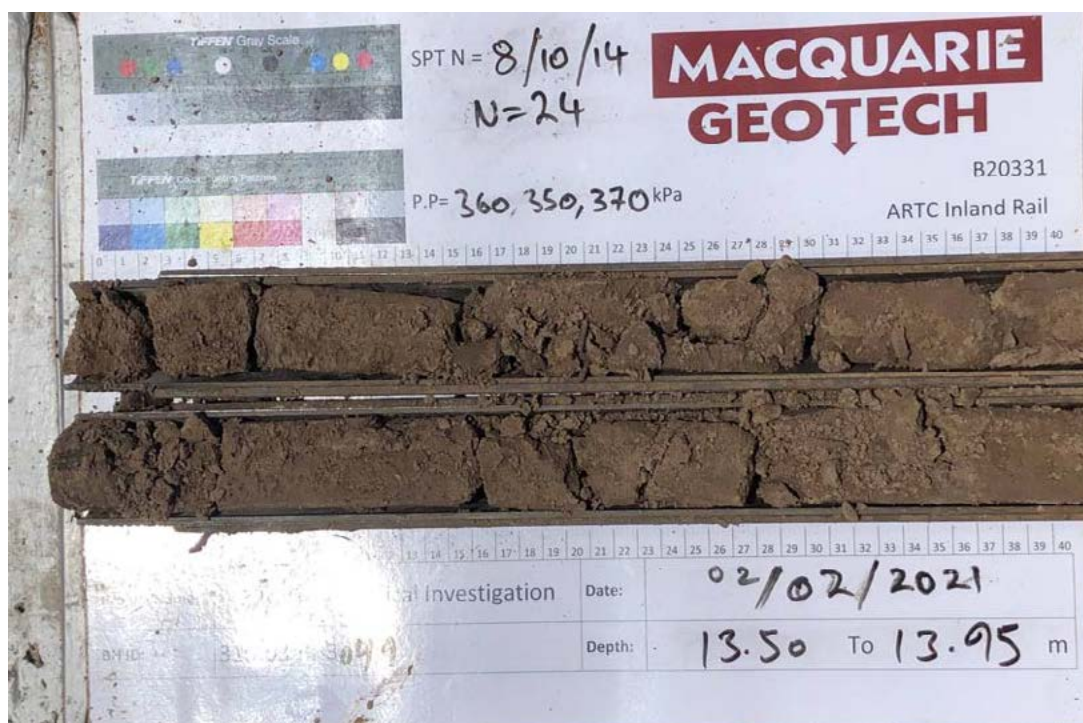
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.89 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3049 Depth Range: 12.00 - 12.45 m



310-03-BH3049 Depth Range: 13.50 - 13.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	380.89 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3049 Depth Range: 15.00 - 15.45 m



310-03-BH3049 Depth Range: 16.50 - 16.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.89 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: M.Boga



310-03-BH3049 Depth Range: 18.00 - 18.45 m

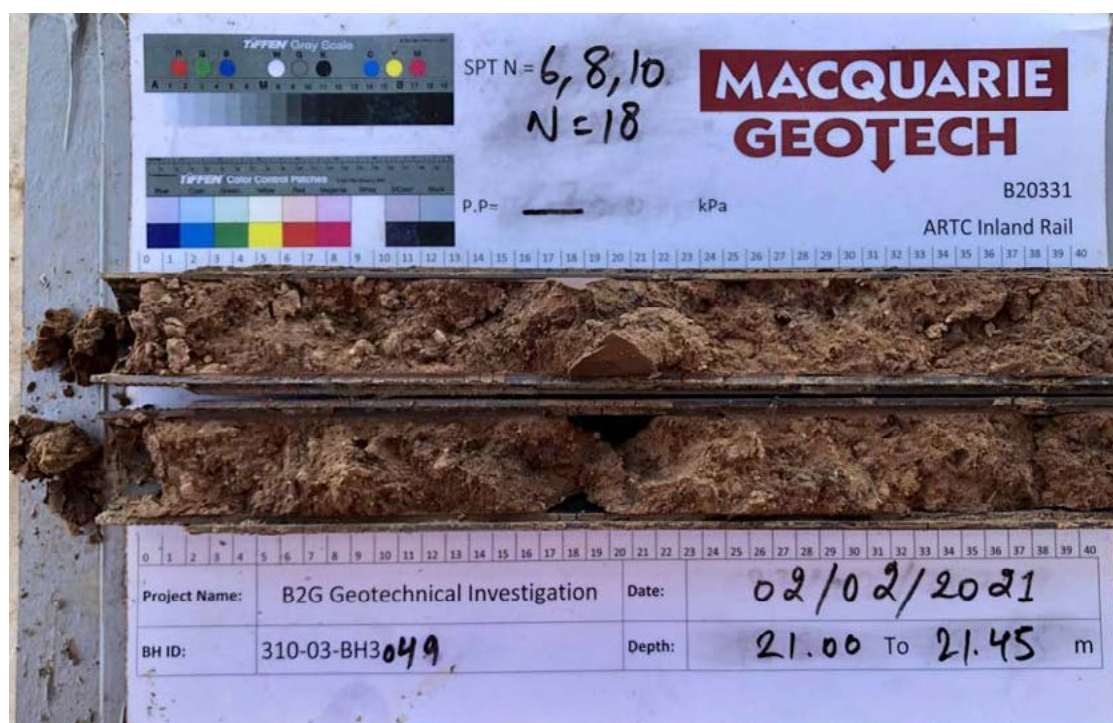


310-03-BH3049 Depth Range: 19.50 - 19.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	380.89 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3049 Depth Range: 21.00 - 21.45 m



310-03-BH3049 Depth Range: 22.50 - 22.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.89 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	M.Boga



310-03-BH3049 Depth Range: 24.00 - 24.45 m



310-03-BH3049 Depth Range: 25.50 - 25.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	380.89 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: M.Boga



310-03-BH3049 Depth Range: 27.00 - 27.45 m



310-03-BH3049 Depth Range: 28.50 - 28.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	380.89 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3049 Depth Range: 30.00 - 30.45 m



310-03-BH3049 Depth Range: 31.50 - 31.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	02/02/2021
Project Name:	Inland Rail B2G	Completed:	04/02/2021
Hole Location:	Approx. CH145149 - Pampas	Logged By:	A. Sharma
Hole Coordinates:	342107.1 m E 6923651.4 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	380.89 m
		Bearing:	
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3049 Depth Range: 33.00 - 33.55 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH147755 - Pampas
Hole Coordinates: 344095.1 m E 6925336.7 m N MGA94 Zone 56

Commenced: 10/02/2021
Completed: 17/02/2021
Logged By: A.Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 381.99 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: Max Boga

Drilling Information							Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
AD/T				PID 0.20 m 0.2 ppm J0050 0.50-0.60 m S00050 SPT 0.50-0.95 m 5.5,9 N=14 PID 0.50 m 0.4 ppm J00100 1.00-1.10 m U00100 1.00-1.50 m PID 1.00 m 0.6 ppm S00150 SPT 1.50-1.95 m 3.4,6 N=10 PP 1.50 m >600 kPa D00250 2.50-3.00 m S00300 SPT 3.00-3.45 m 6.8,12 N=20 PP 3.00 m >600 kPa D00400 4.00-4.50 m S00450 SPT 4.50-4.95 m 6.8,11 N=19 D00550 5.50-6.00 m S00600 SPT 6.00-6.45 m 12.8,12 N=20 D00700 7.00-7.50 m S00750 SPT 7.50-7.95 m 11.13,17													
						381.0	1		CH	FILL: CLAY trace gravel: low to medium plasticity, black, fine rounded gravel. Silty CLAY trace gravel: high plasticity, black, fine to medium sub-angular gravel.						FILL	
																ALLUVIAL SOIL	
						380.0	2					St				*	
												M (>PL)					
						379.0	3		CI	CLAY trace gravel, medium plasticity, black-brown, fine sub-angular gravel.						*	
						378.0	4										
													VSt				
						377.0	5		CI	Sandy CLAY: medium plasticity, brown-white, fine grained sand.			D				
						376.0	6		SC	SAND trace clay: fine grained sand, pale-brown to brown, low plasticity.							
						375.0	7					M	MD				
									SC	SAND: fine grained sand, orange-yellow.							
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT- Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Plastic Limit < PL = PL > PL Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Support C - Casing Classification Symbols and Soil Descriptions Based on Unified Soil Classification System																	

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH147755 - Pampas
Hole Coordinates: 344095.1 m E 6925336.7 m N MGA94 Zone 56

Commenced: 10/02/2021
Completed: 17/02/2021
Logged By: A.Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 381.99 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: Max Boga

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T				N=30					SC	SAND: fine grained sand, orange-yellow. (continued)					ALLUVIAL SOIL
				D00850 8.50-9.00 m		373.0	9					MD			
				S00900 SPT 9.00-9.45 m 16,17,27 N=44											
				D01000 10.00-10.50 m		372.0	10				M	D			
				S01050 SPT 10.50-10.95 m 5,9,9 N=18		371.0	11								
				D01150 11.50-12.00 m		370.0	12								
				S01200 SPT 12.00-12.45 m 15,16,14 N=30											
						369.0	13								
				S01350 SPT 13.50-13.95 m 12,13,14 N=27		368.0	14		SC	Clayey Gravelly SAND: fine to coarse grained, brown-orange, fine to medium sub-angular gravel, medium plasticity clay.		W			
				S01500 SPT 15.00-15.45 m 8,30,0 N=30 PP 15.00 m <500 kPa		367.0	15		CL-CI	Silty CLAY: low to medium plasticity, brown.	M (<PL)	VSt to H			

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB- Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH147755 - Pampas
Hole Coordinates: 344095.1 m E 6925336.7 m N MGA94 Zone 56

Commenced: 10/02/2021
Completed: 17/02/2021
Logged By: A.Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 381.99 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: Max Boga

Drilling Information							Soil Description							Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
AD/T				S01650 SPT 16.50-16.95 7,7,8 N=15		365.0	17		CL-CI	Silty CLAY: low to medium plasticity, brown. (continued)	M ($<PL$)	VSt to H			ALLUVIAL SOIL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 10/02/2021											
Project Name: Inland Rail B2G										Completed: 17/02/2021											
Hole Location: Approx. CH147755 - Pampas										Logged By: A.Sharma											
Hole Coordinates: 344095.1 m E 6925336.7 m N MGA94 Zone 56										Checked By: J.Boyle											
Drill Model and Mounting: Comacchio 305/Track					Inclination: -90°					RL Surface: 381.99 m											
Hole Diameter: 115 mm					Bearing:					Datum: AHD					Operator: Max Boga						
Drilling Information							Soil Description										Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations						
WB				S02400 SPT 24.00-24.45 m 9,13,17 N=30		357.0	25		SM	Silty SAND trace gravel: fine grained sand, brown-black, fine to medium sub-rounded to rounded gravel. (continued) Below 24.00m: colour change to pale-brown to mottled orange.						ALLUVIAL SOIL					
									GP	GRAVEL: fine sub-angular to sub-rounded, grey-black.	W	MD									
				S02550 SPT 25.50-25.95 m 11,16,19 N=35		356.0	26		SM	Silty SAND trace gravel: fine grained sand, brown-black, fine to medium sub-rounded to rounded gravel.											
									CI	Silty CLAY: medium plasticity, dark-brown to brown.					*						
				S02850 SPT 28.50-28.95 m 9,11,14 N=25 PP 28.50 m <600 kPa		353.0	29		CL-CI	28.50m: Silty CLAY trace sand: low to medium plasticity, grey-brown, fine grained sand.	M (<PL)	VSt			*						
									SM	SAND: fine grained sand, grey-brown.											
				S03000 SPT 30.00-30.45 m 8,9,12 N=21		352.0	30				W	MD to D									
							31		CI-CH	Sandy CLAY: medium to high plasticity, grey-brown to pale-brown, fine grained sand.	M (>PL)	VSt			*						
				S03150 SPT 31.50-31.95 m 7,9,12		351.0															
Method AS - Auger Screwing RR - Rock Roller WB- Washbore				Penetration 		Water 		Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test				Moisture Condition D - Dry M - Moist W - Wet			Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense						
Support C - Casing				Graphic Log/Core Loss 		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System				Plastic Limit < PL = PL > PL											

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH147755 - Pampas
Hole Coordinates: 344095.1 m E 6925336.7 m N MGA94 Zone 56

Commenced: 10/02/2021
Completed: 17/02/2021
Logged By: A.Sharma
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 381.99 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: Max Boga

Drilling Information					Soil Description								Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB				N=21 PP 31.50 m <400 kPa					CI-CH	Sandy CLAY: medium to high plasticity, grey-brown to pale-brown, fine grained sand. (continued)	M (>PL)	VSt			ALLUVIAL SOIL
				S03300 SPT 33.00-33.45 m 7.8,11 N=19		349.0	33		CI	Sandy CLAY: medium plasticity, grey-brown to pale-brown, fine grained sand.					
						348.0	34								
				S03500 SPT 35.00-35.45 m 8,11,16 N=27 PP 35.00 m <550 kPa		347.0	35		SP	SAND trace gravel: fine to coarse grained, pale-brown-off white and grey, fine to medium rounded gravel.	W	D		x	
				N=27 PP 35.00 m <550 kPa		346.0	36			Hole Terminated at 35.45 m Target depth Hole grouted to surface.					
						345.0	37								
						344.0	38								
						343.0	39								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Support
C - Casing

Penetration
 No resistance ranging to refusal

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	381.99 m
		Datum:	AHD
		Operator:	Max Boga



310-03-BH3050 Depth Range: 0.50 - 0.95 m



310-03-BH3050 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.99 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	Max Boga



310-03-BH3050 Depth Range: 3.00 - 3.45 m



310-03-BH3050 Depth Range: 4.50 - 4.95 m

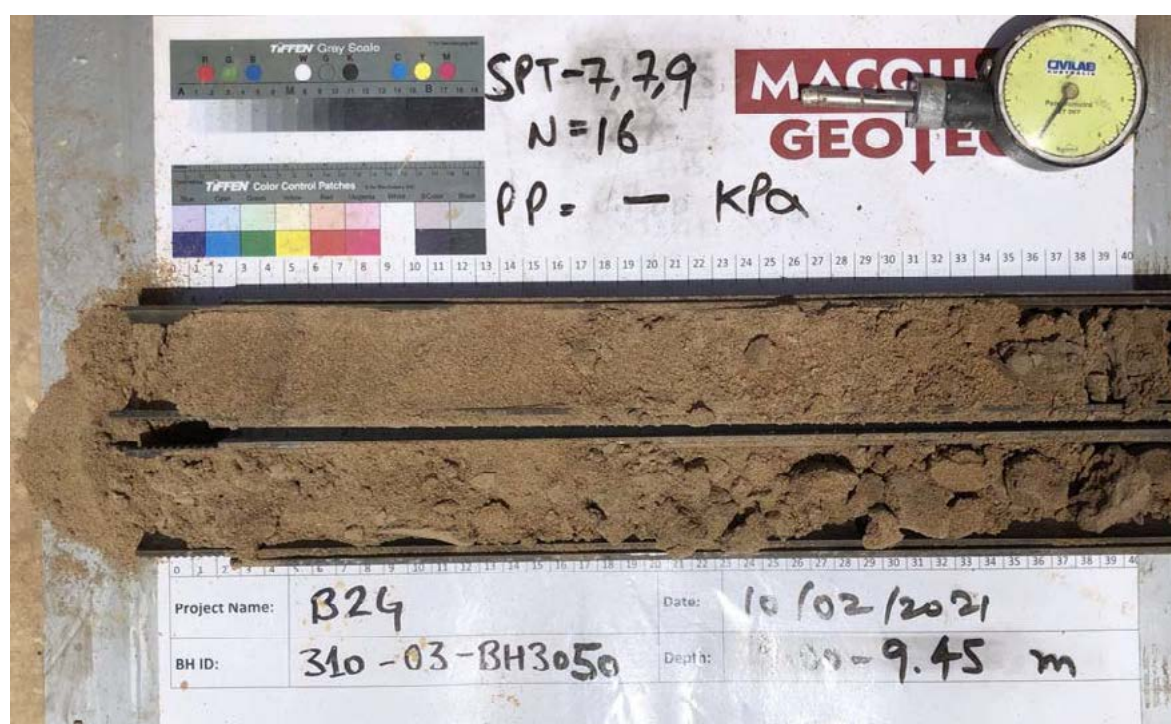
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	Max Boga



310-03-BH3050 Depth Range: 7.50 - 7.95 m



310-03-BH3050 Depth Range: 9.00 - 9.45 m

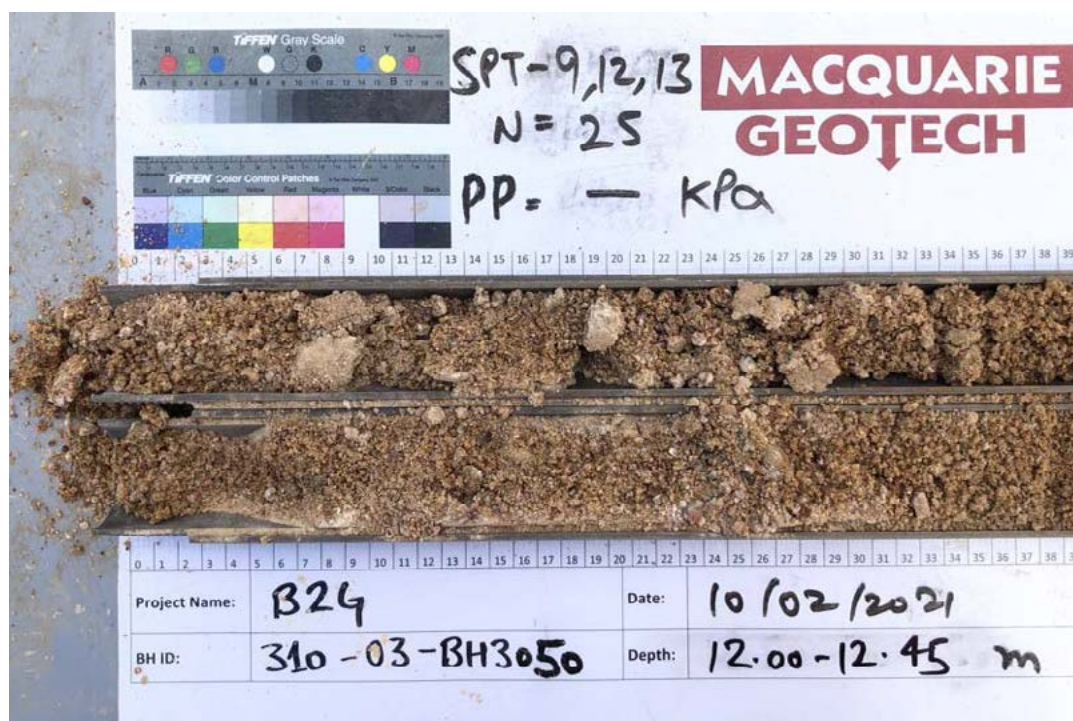
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	Max Boga



310-03-BH3050 Depth Range: 10.50 - 10.95 m



310-03-BH3050 Depth Range: 12.00 - 12.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.99 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	Max Boga



310-03-BH3050 Depth Range: 13.50 - 13.95 m



310-03-BH3050 Depth Range: 15.00 - 15.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.99 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	Max Boga



310-03-BH3050 Depth Range: 16.50 - 16.95 m



310-03-BH3050 Depth Range: 18.00 - 18.45 m

Engineering Log - Borehole

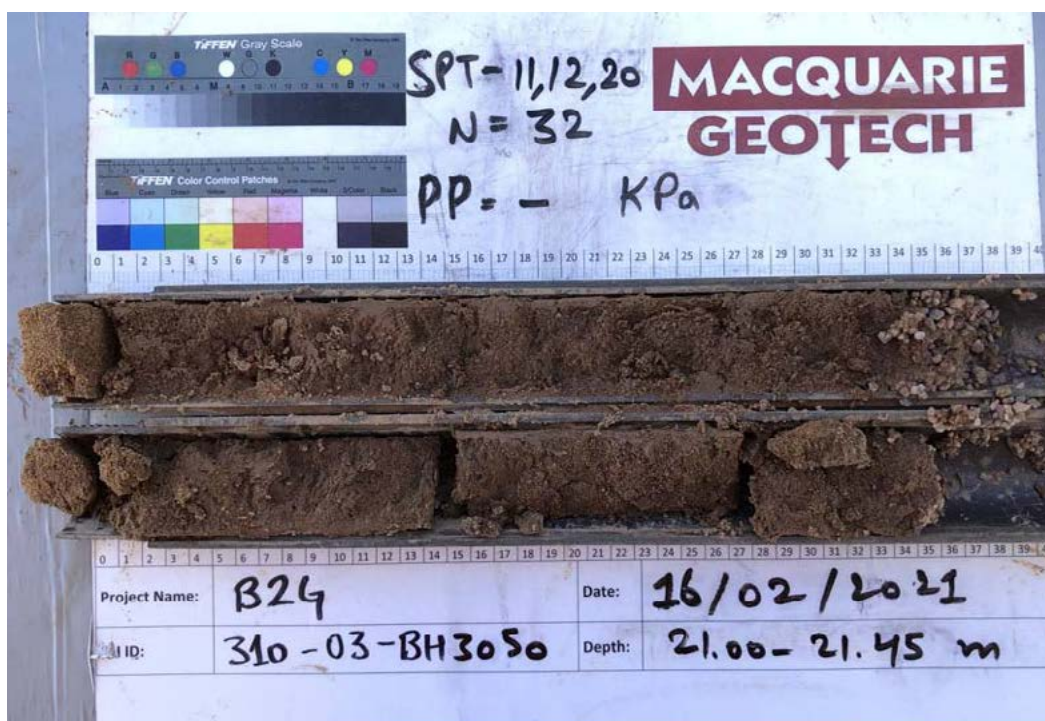
Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.99 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	Max Boga



310-03-BH3050 Depth Range: 19.50 - 19.95 m

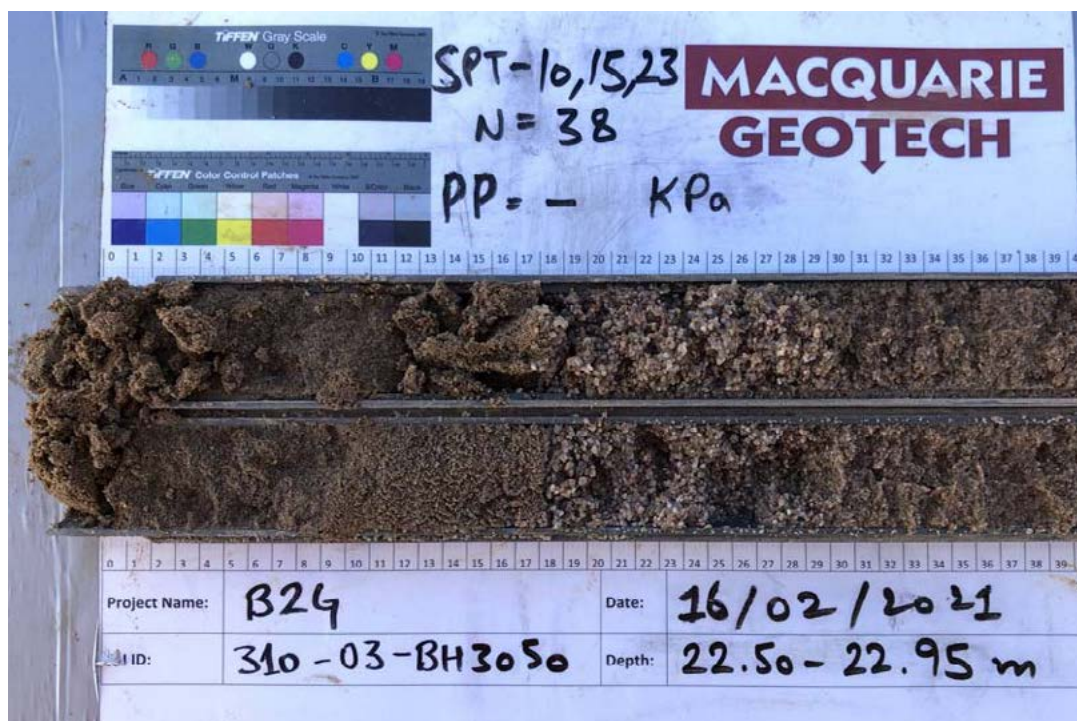


310-03-BH3050 Depth Range: 21.00 - 21.45 m

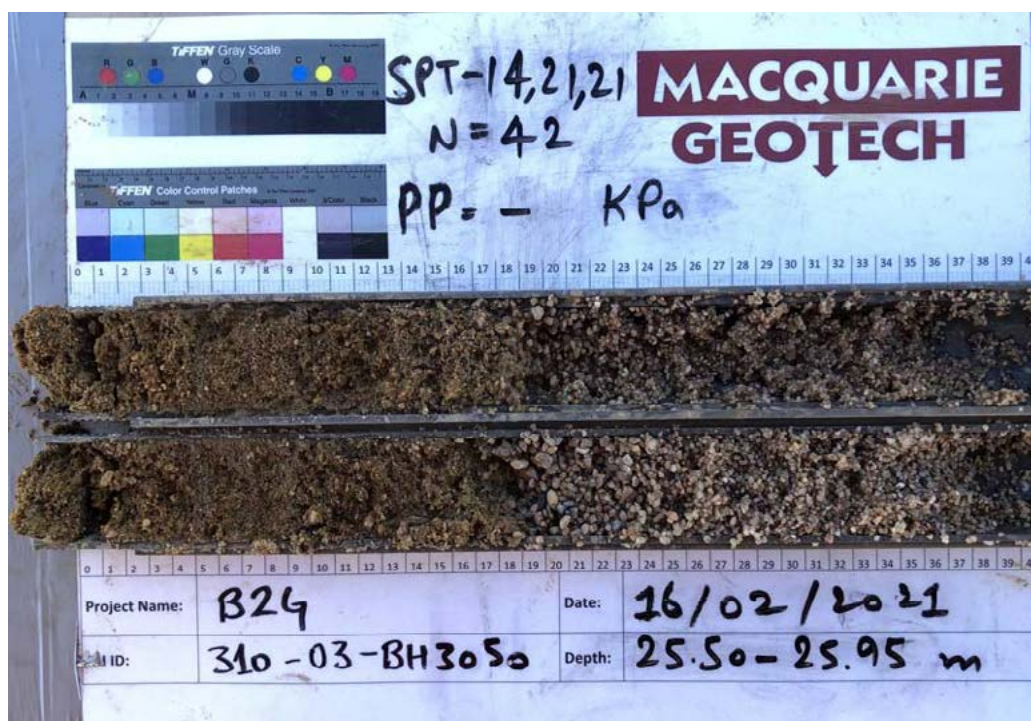
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	Max Boga



310-03-BH3050 Depth Range: 22.50 - 22.95 m

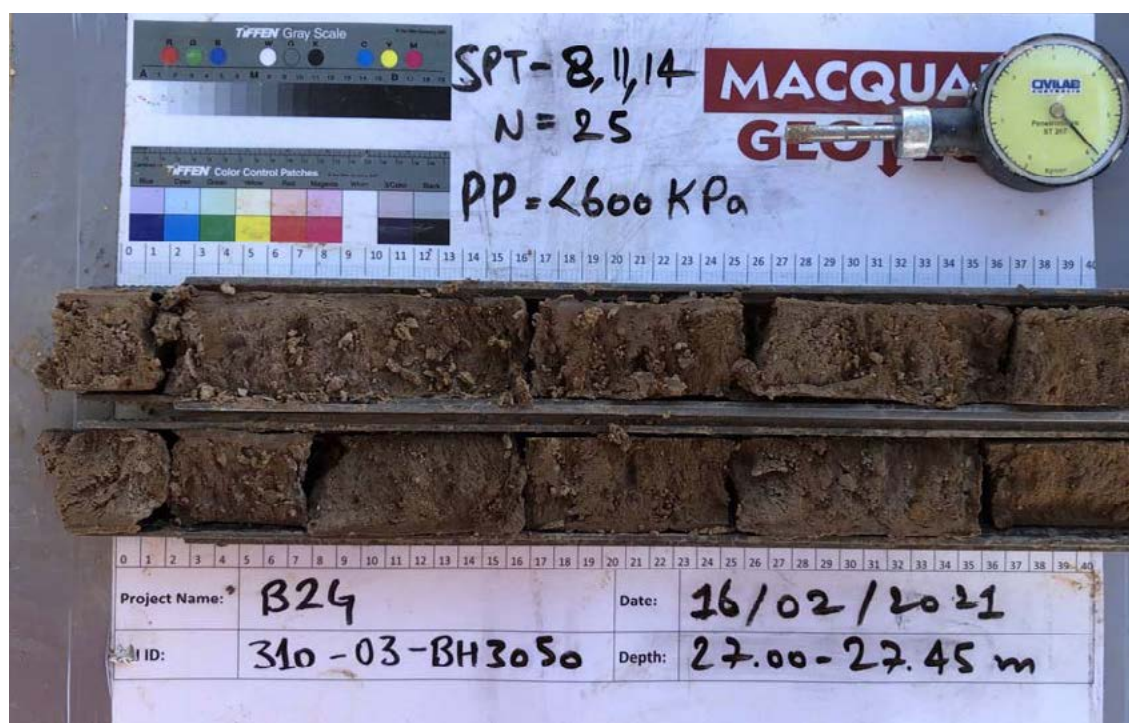


310-03-BH3050 Depth Range: 25.50 - 25.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	Max Boga



310-03-BH3050 Depth Range: 27.00 - 27.45 m



310-03-BH3050 Depth Range: 28.50 - 28.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	Max Boga



310-03-BH3050 Depth Range: 30.00 - 30.45 m



310-03-BH3050 Depth Range: 31.50 - 31.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH147755 - Pampas	Logged By:	A.Sharma
Hole Coordinates:	344095.1 m E 6925336.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	Max Boga



310-03-BH3050 Depth Range: 33.00 - 33.45 m



310-03-BH3050 Depth Range: 35.00 - 35.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.99 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	J. Komung

Drilling Information							Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)				Structure and Additional Observations
AD/T				J00020 0.20-0.30 m PID 0.20 m 0.1 ppm J00050 0.50-0.60 m S00050 SPT 0.50-0.95 m 6,8,11 N=19 PID 0.50 m 0.2 ppm PP 0.80 m >600 kPa J00100 1.00-1.10 m U00100 1.00-1.45 m PID 1.00 m 0.1 ppm D00150 1.50-2.00 m D00200 SPT 2.00-2.45 m 7,12,16 N=28 PP 2.40 m >600 kPa D00300 3.00-3.50 m S00350 SPT 3.50-3.95 m 6,9,10 N=19 PP 3.70 m >600 kPa D00450 4.50-5.00 m		381.0	1		CH	FILL: Silty CLAY with sand, high plasticity, black, fine to coarse grained sand, trace rootlets and plant decays. Silty CLAY trace sand: high plasticity, black, fine to coarse grained sand, trace fine sub-angular gravel.							REWORKED TOPSOIL
										Below 2.00m : dark brown.							ALLUVIAL SOIL
						380.0	2										
				S00500 SPT 5.00-5.45 m 15,20,26 N=46 D00600 6.00-6.50 m		379.0	3		CI-CH	Silty CLAY with sand trace gravel: medium to high plasticity, dark brown, fine to coarse grained sand, fine to medium sub-angular gravel.	M (<PL)	VSt					
						</											

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 10/02/2021																																																	
Project Name: Inland Rail B2G										Completed: 16/02/2021																																																	
Hole Location: Approx. CH147967 - Pampas										Logged By: V. Chandrasena																																																	
Hole Coordinates: 344247.6 m E 6925485.5 m N MGA94 Zone 56										Checked By: J.Boyle																																																	
Drill Model and Mounting: Comacchio 305/Track										Inclination: -90°																																																	
Hole Diameter: 115 mm										RL Surface: 381.99 m																																																	
										Bearing: Datum: AHD Operator: J. Komung																																																	
Drilling Information										Soil Description										Observations																																							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																																												
WB				S01400 SPT 14.00-14.45 m 9,12,15 N=27 PP 14.40 m =550 kPa		367.0	15		CI	Sandy silty CLAY: medium plasticity, brown mottled grey, fine to medium grained sand. (continued) Below 14:00m : brown, fine to coarse grained sand, fine sub-angular gravel.																																																	
				S01550 SPT 15.50-15.95 m 9,9,10 N=19 PP 15.70 m >600 kPa		366.0	16				VSt																																																
				S01700 SPT 17.00-17.45 m 10,15,20 N=35 PP 17.40 m =525 kPa		365.0	17			Below 17:00m : sandy, fine to coarse grained, trace coarse angular gravel.	M (<PL)																																																
				S01850 SPT 18.50-18.95 m 10,10,15 N=25 PP 18.80 m =450 kPa		363.0	19		CL-CI	Silty CLAY with sand: low to medium plasticity, dark brown mottled black, fine to coarse grained sand.																																																	
				S02000 SPT 20.00-20.45 m 7,11,14 N=25 PP 20.40 m =400 kPa		362.0	20					VSt																																															
Method										Penetration										Water										Samples and Tests										Moisture Condition										Consistency/Relative Density									
AS - Auger Screwing RR - Rock Roller WB- Washbore										 No resistance ranging to refusal										 Level (Date)  Inflow  Partial Loss  Complete Loss										U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test										D - Dry M - Moist W - Wet										VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense									
Support										Graphic Log/Core Loss										Classification Symbols and Soil Descriptions										Plastic Limit																													
C - Casing										 Core recovered (hatching indicates material)  Core loss										Based on Unified Soil Classification System										< PL = PL < PL																													

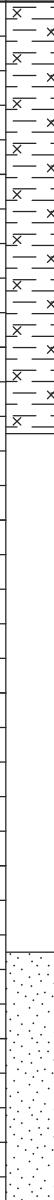
Client: ARTC										Commenced: 10/02/2021														
Project Name: Inland Rail B2G										Completed: 16/02/2021														
Hole Location: Approx. CH147967 - Pampas										Logged By: V. Chandrasena														
Hole Coordinates: 344247.6 m E 6925485.5 m N MGA94 Zone 56										Checked By: J.Boyle														
Drill Model and Mounting: Comacchio 305/Track										Inclination: -90°					RL Surface: 381.99 m									
Hole Diameter: 115 mm										Bearing:					Datum: AHD Operator: J. Komung									
Drilling Information										Soil Description										Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations									
WB				S02150 SPT 21.50-21.95 m 12,12,18 N=30 PP 21.80 m =420 kPa		360.0	22		CL-CI	Silty CLAY with sand: low to medium plasticity, dark brown mottled black, fine to coarse grained sand. (continued)	M (<PL)	VSt			ALLUVIAL SOIL									
				S02300 SPT 23.00-23.45 m 10,20,30 N=50		359.0	23		SP	Below 23.00m : trace fine angular gravel.	M (~PL) to M (>PL)	VSt to H												
				S02450 SPT 24.50-24.62 m 30/120mm		357.0	25			Below 24.50m : dark brown, trace fine angular gravel, trace low plasticity clay.	M to W	VD												
				S02600 SPT 26.00-26.45 m 14,17,19 N=36		356.0	26			Below 26.00m : medium to coarse grained sand, pale brown mottled dark grey.		D												
				S02750 SPT 27.50-27.95 m 7,11,15		355.0	27		CL-CI	Silty CLAY with sand: low to medium plasticity, brown mottled black, fine to coarse grained sand.	M (<PL) to M (>PL)	VSt		x										
Method		Penetration		Water		Samples and Tests		Moisture Condition		Consistency/Relative Density														
AS - Auger Screwing RR - Rock Roller WB- Washbore		No resistance ranging to refusal		Level (Date) Inflow Partial Loss Complete Loss		U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard L - Loose MD - Medium Dense D - Dense VD - Very Dense														
Support		Graphic Log/Core Loss				Classification Symbols and Soil Descriptions		Plastic Limit																
C - Casing		Core recovered (hatching indicates material) Core loss				Based on Unified Soil Classification System		< PL = PL > PL																

Engineering Log - Borehole

Project No.: B20331

Client: ARTC	Commenced: 10/02/2021
Project Name: Inland Rail B2G	Completed: 16/02/2021
Hole Location: Approx. CH147967 - Pampas	Logged By: V. Chandrasena
Hole Coordinates: 344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 381.99 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description						Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
WB				N=26 PP 27.80 m =320 kPa				CL-CI	Silty CLAY with sand: low to medium plasticity, brown mottled black, fine to coarse grained sand. (continued)						ALLUVIAL SOIL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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				S02900 SPT 29.00-29.45 m 12,16,16 N=32 PP 29.30 m =420 kPa		353.0				Below 29.00m : Sandy, fine to coarse grained.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client: ARTC		Commenced: 10/02/2021	
Project Name: Inland Rail B2G		Completed: 16/02/2021	
Hole Location: Approx. CH147967 - Pampas		Logged By: V. Chandrasena	
Hole Coordinates: 344247.6 m E 6925485.5 m N MGA94 Zone 56		Checked By: J.Boyle	
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	
Hole Diameter: 115 mm		RL Surface: 381.99 m	
		Bearing: Datum: AHD Operator: J. Komung	

Drilling Information				Soil Description				Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
				S03500 SPT 35.00-35.45 28,14,12 N=26 PP 35.35 m =420 kPa					SP		W	D			ALLUVIAL SOIL
									CI-CH	Silty CLAY trace sand: medium to high plasticity, green grey, fine to medium grained sand.	M (~PL)	VSt		x	
										Hole Terminated at 35.45 m Target depth Hole grouted to surface.					
						346.0	36								
						345.0	37								
						344.0	38								
						343.0	39								
						342.0	40								
						341.0	41								

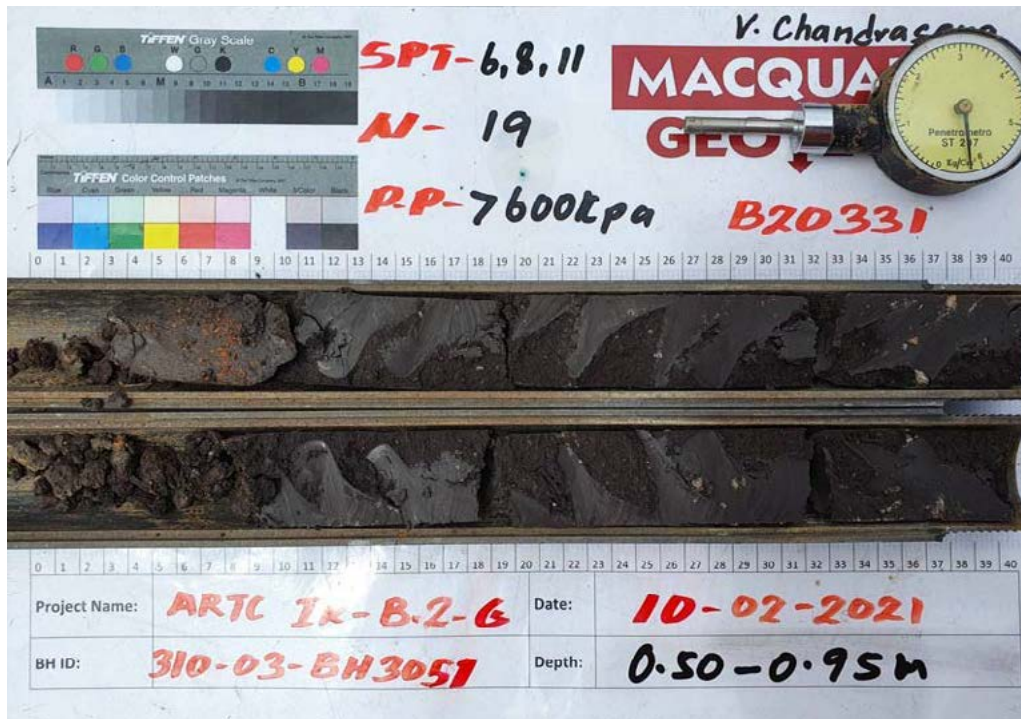
Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL		

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.99 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3051 Depth Range: 0.50 - 0.95 m

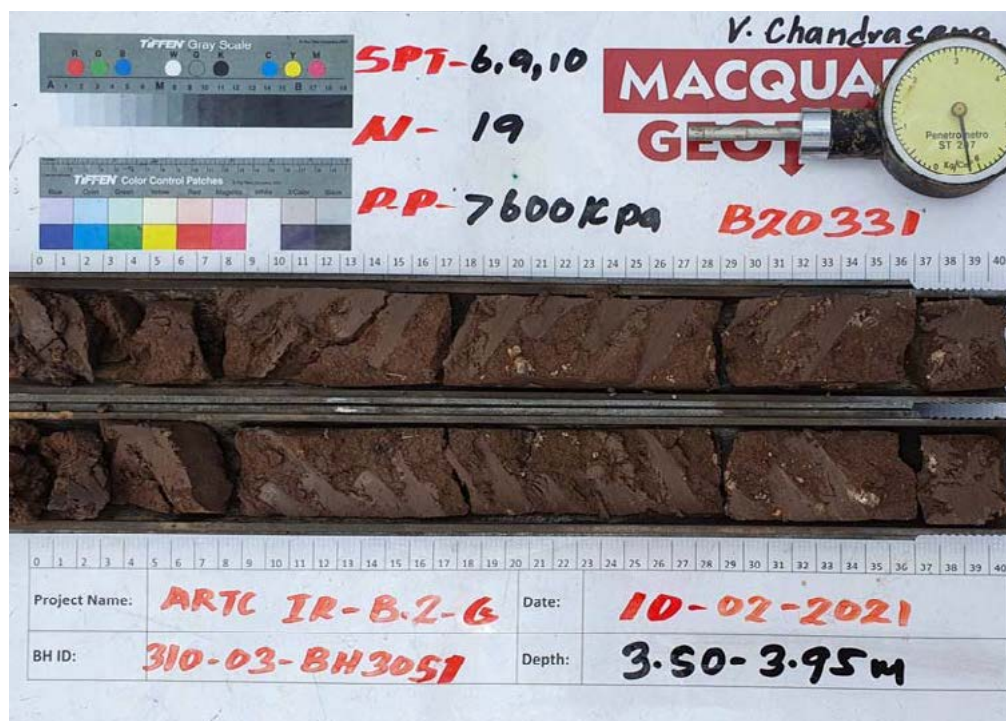


310-03-BH3051 Depth Range: 2.00 - 2.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	381.99 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3051 Depth Range: 3.50 - 3.95 m

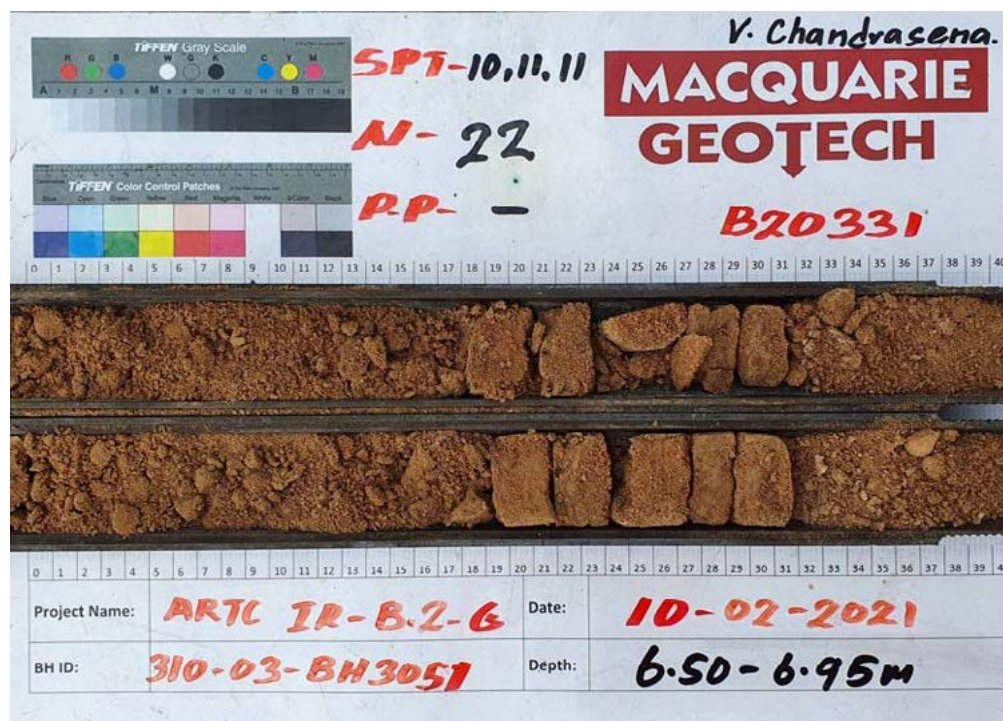


310-03-BH3051 Depth Range: 5.00 - 5.45 m

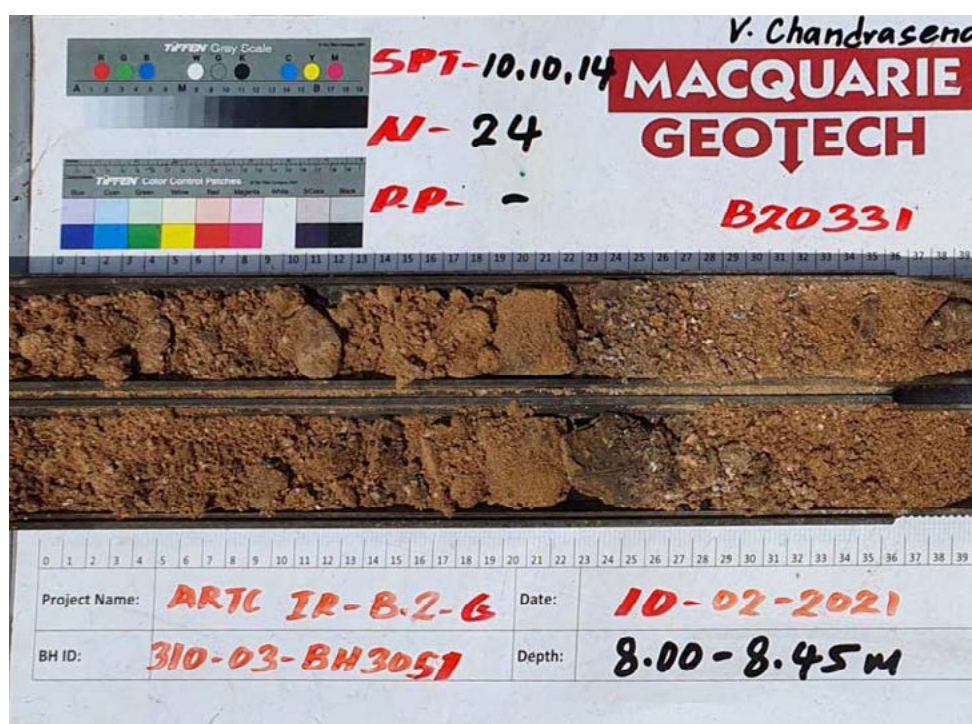
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	381.99 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3051 Depth Range: 6.50 - 6.95 m

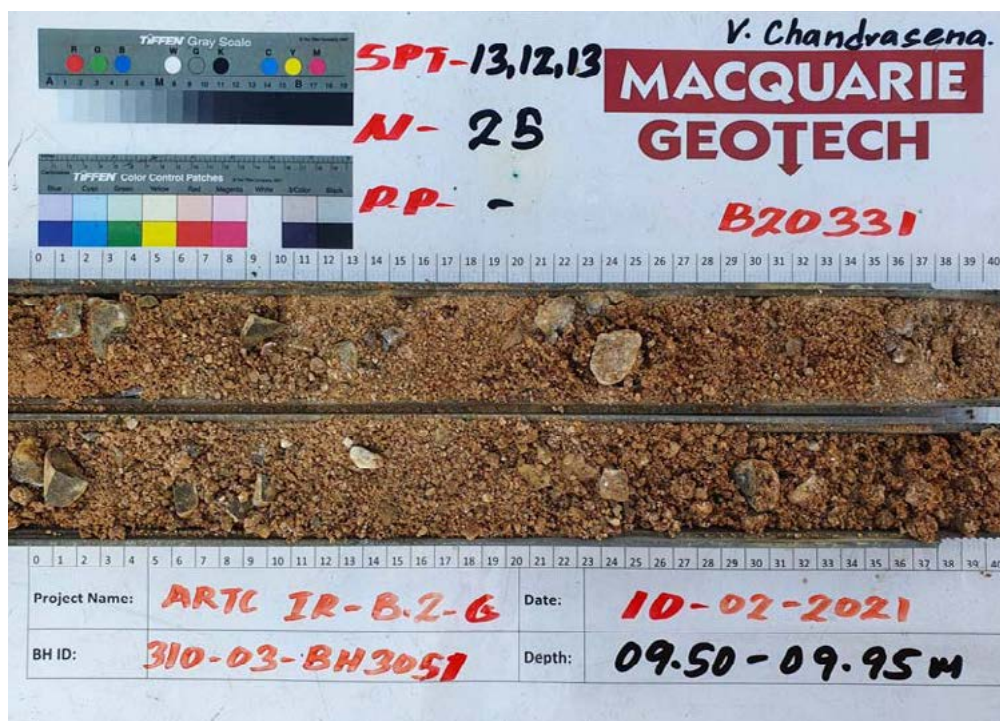


310-03-BH3051 Depth Range: 8.00 - 8.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	381.99 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3051 Depth Range: 9.50 - 9.95 m

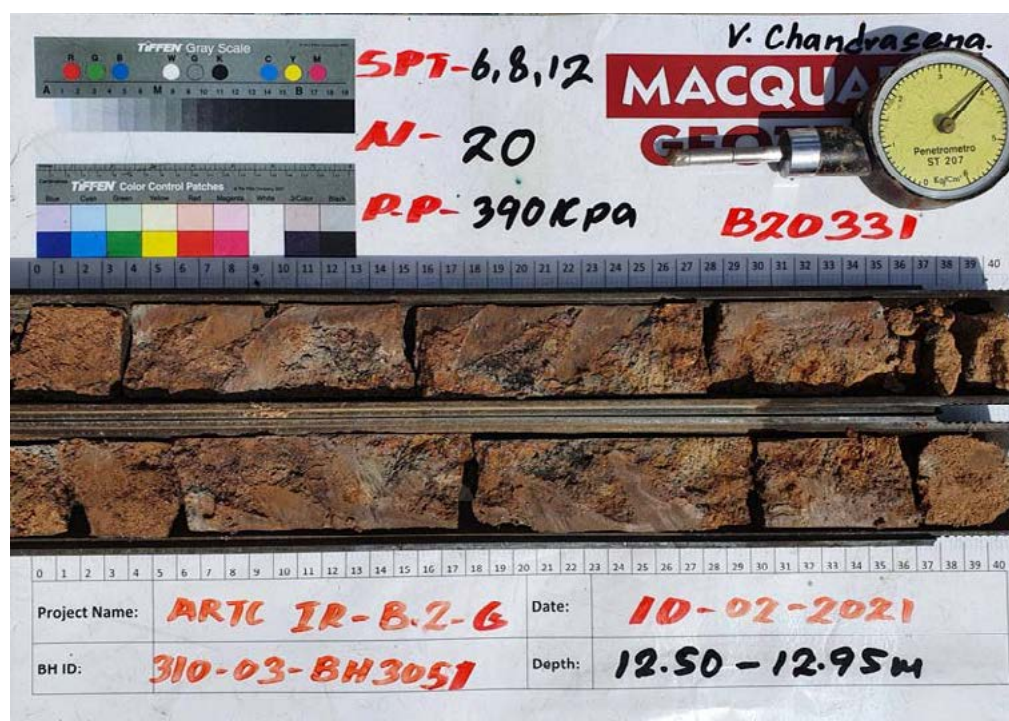


310-03-BH3051 Depth Range: 11.00 - 11.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3051 Depth Range: 12.50 - 12.95 m

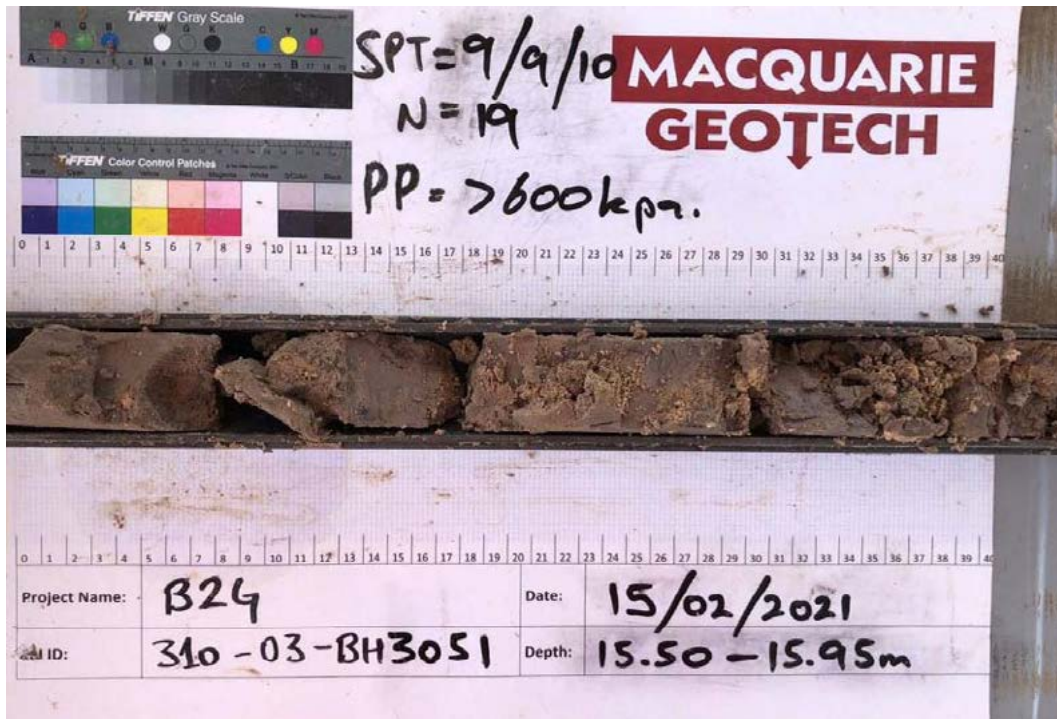


310-03-BH3051 Depth Range: 14.00 - 14.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3051 Depth Range: 15.50 - 15.95 m



310-03-BH3051 Depth Range: 17.00 - 17.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.99 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3051 Depth Range: 18.50 - 18.95 m

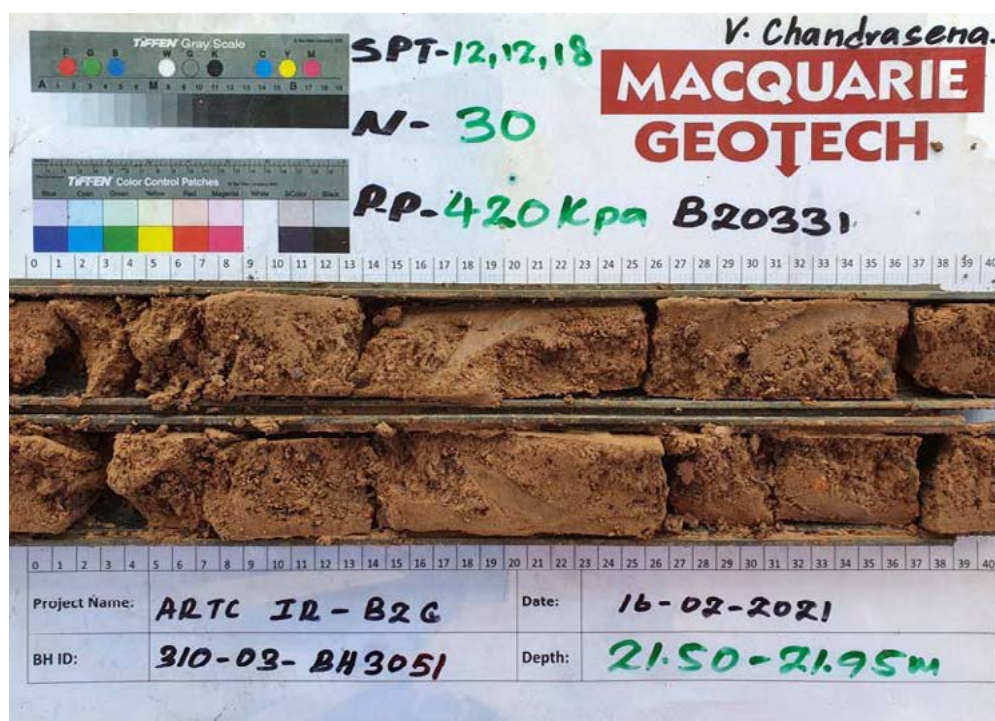


310-03-BH3051 Depth Range: 20.00 - 20.45 m

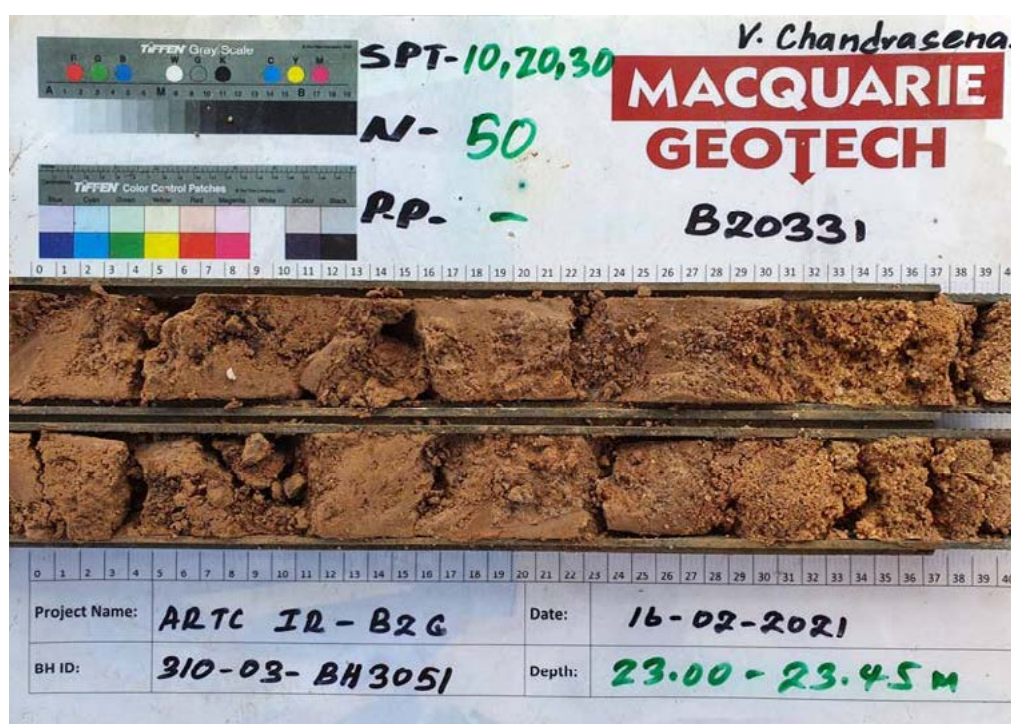
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3051 Depth Range: 21.50 - 21.95 m

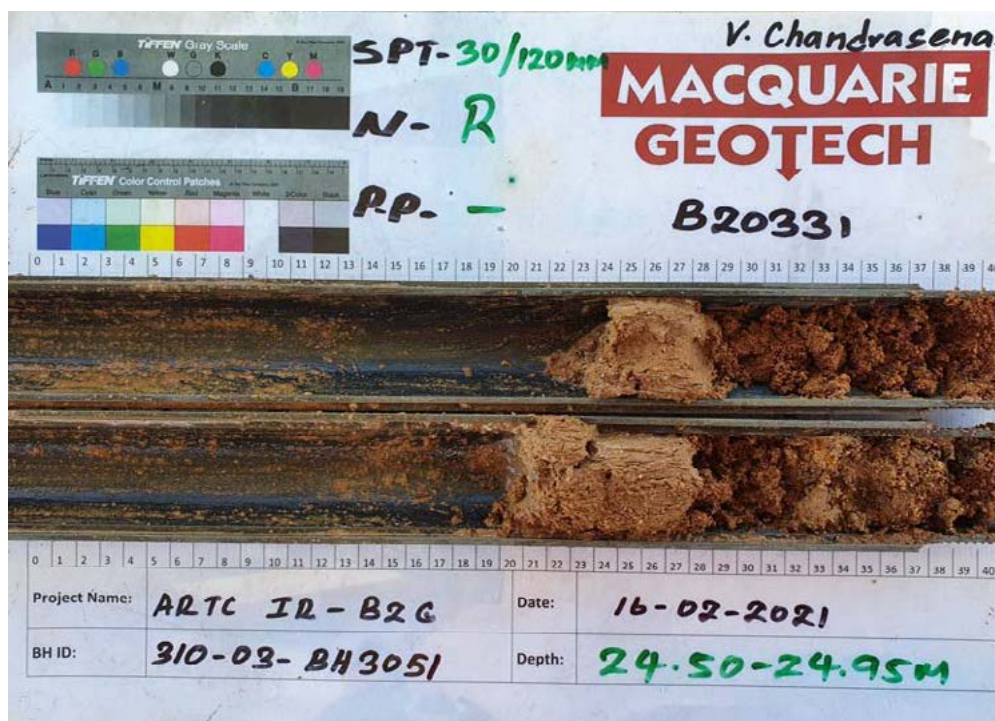


310-03-BH3051 Depth Range: 23.00 - 23.45 m

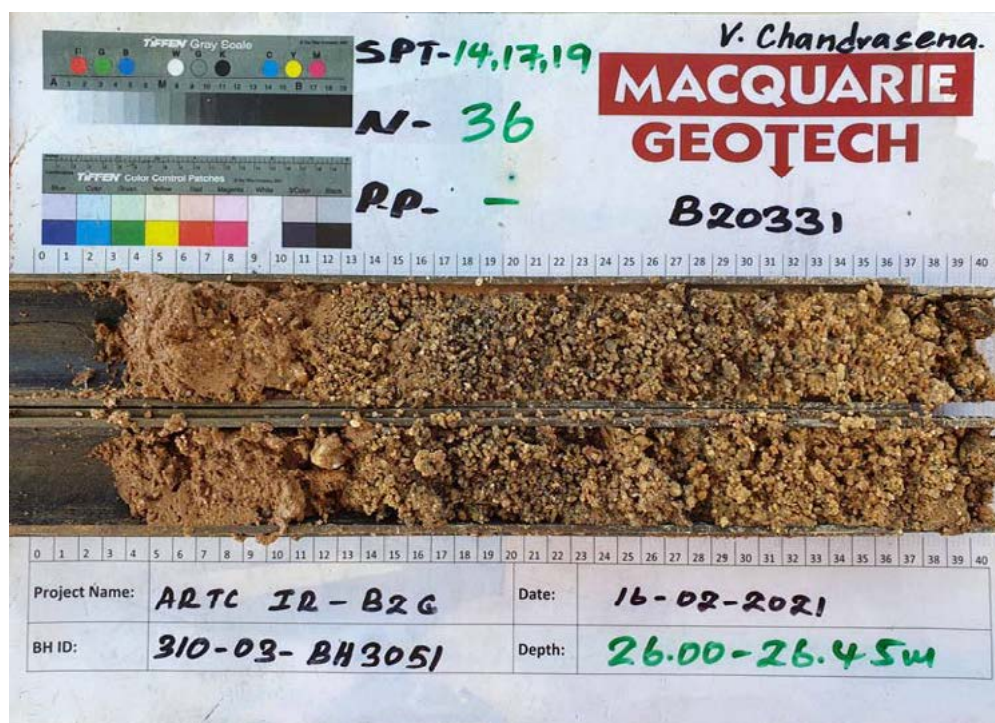
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	381.99 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3051 Depth Range: 24.50 - 24.95 m



310-03-BH3051 Depth Range: 26.00 - 26.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.99 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: J. Komung



310-03-BH3051 Depth Range: 27.50 - 27.95 m

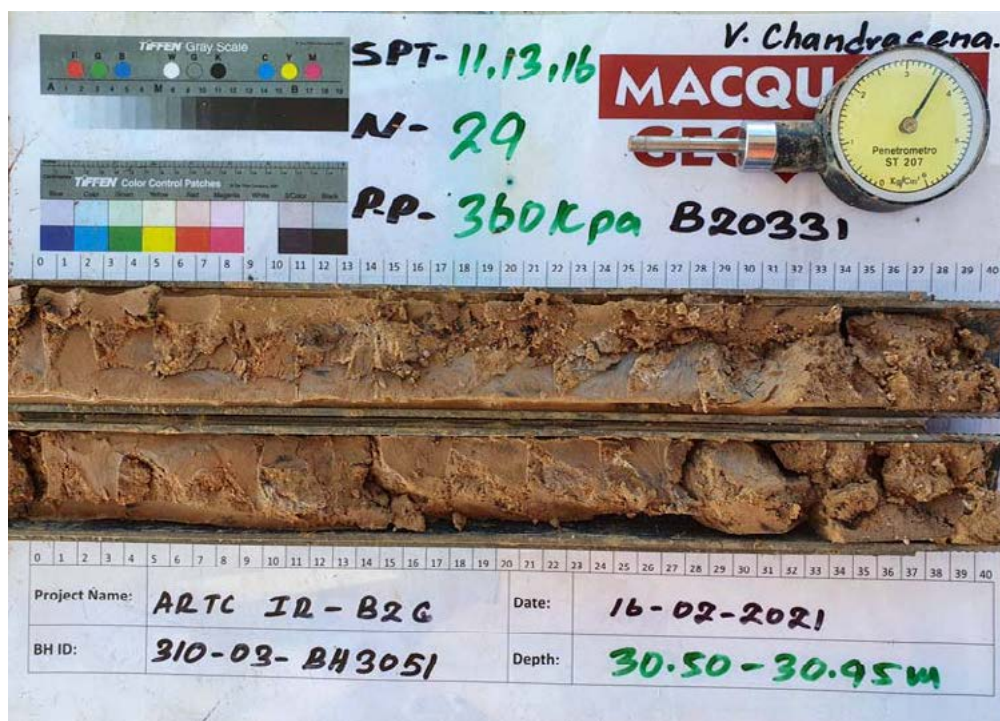


310-03-BH3051 Depth Range: 29.00 - 29.45 m

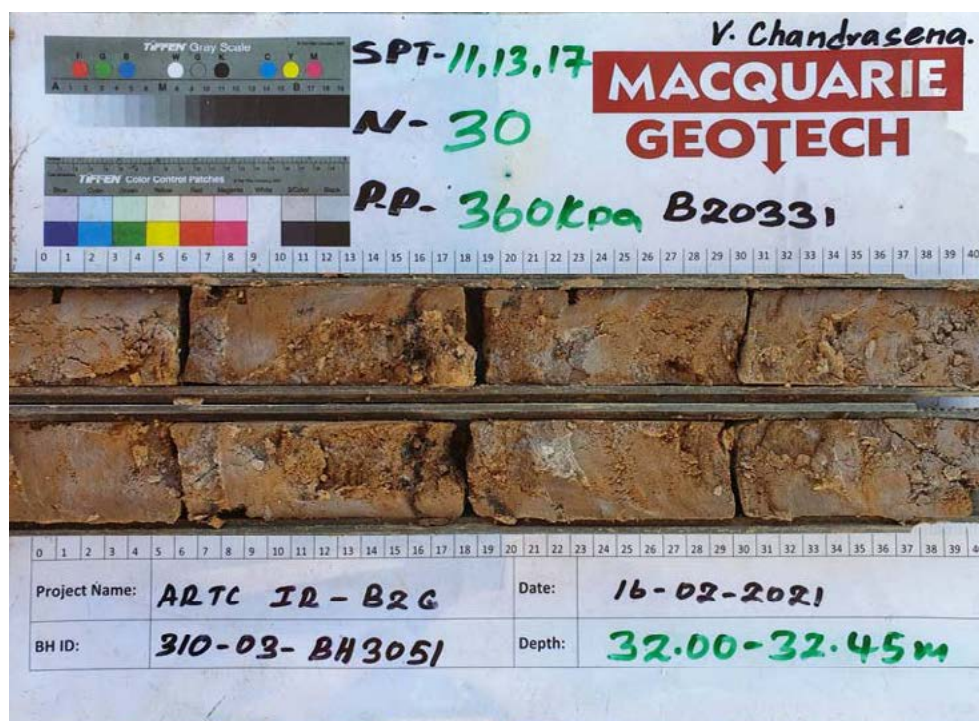
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3051 Depth Range: 30.50 - 30.95 m

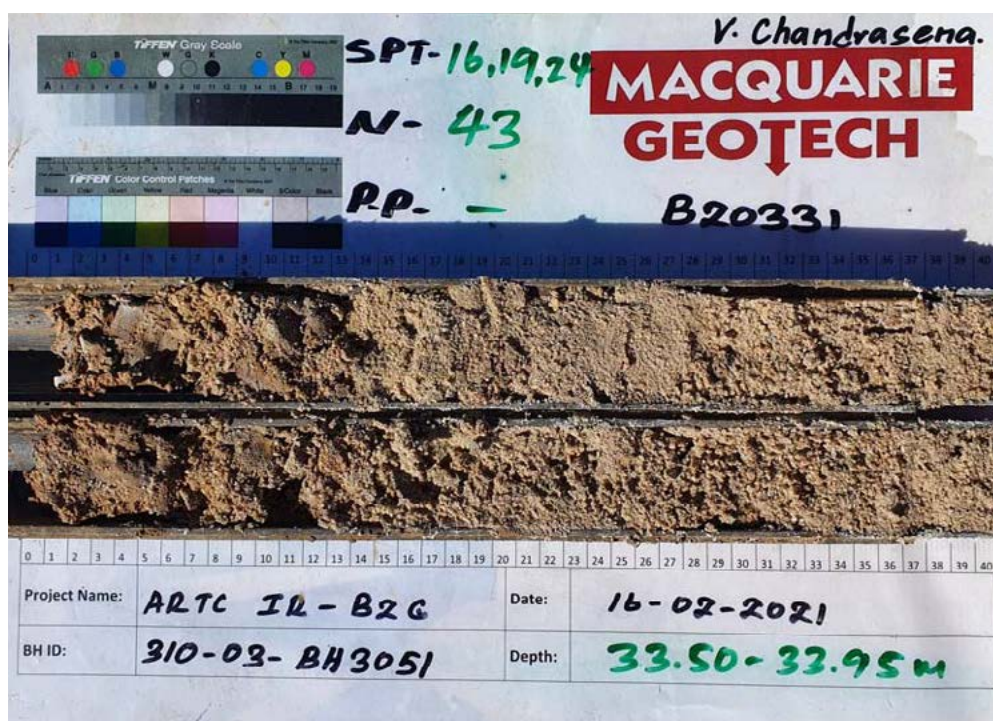


310-03-BH3051 Depth Range: 32.00 - 32.45 m

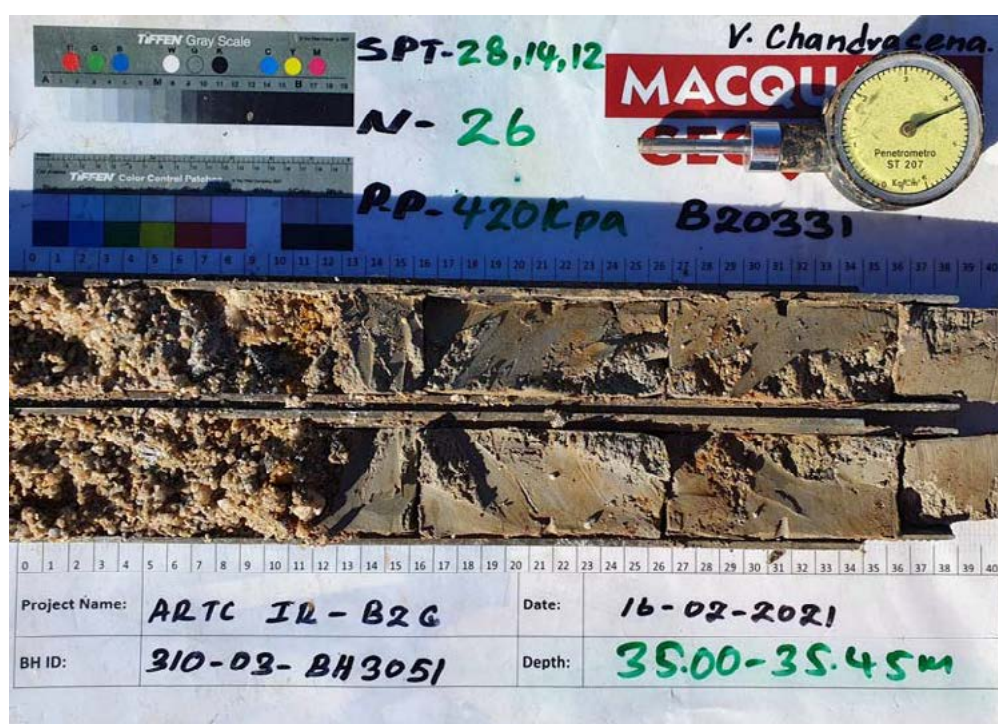
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	10/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147967 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344247.6 m E 6925485.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.99 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3051 Depth Range: 33.50 - 33.95 m



310-03-BH3051 Depth Range: 35.00 - 35.45 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC	Commenced: 06/02/2021
Project Name: Inland Rail B2G	Completed: 07/02/2021
Hole Location: Approx. CH148180 - Pampas	Logged By: V. Chandrasena
Hole Coordinates: 344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 381.40 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD
		Operator: J. Komung

Drilling Information							Soil Description						Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations
AD/T				J00020 0.20-0.30 m PID 0.20 m 0 ppm J00050 0.50-0.60 m S00050 SPT 0.50-0.95 m 7,10,12 N=22 PID 0.50 m 0.1 ppm PP 0.80 m >600 kPa J00100 1.00-1.10 m U00100 1.00-1.45 m PID 1.00 m 0.1 ppm PP 1.45 m >600 kPa D00150 1.50-2.00 m D00200 SPT 2.00-2.45 m 8,13,16 N=29 PP 2.40 m >600 kPa D00300 3.00-3.50 m S00350 SPT 3.50-3.95 m 6,8,11 N=19 PP 3.70 m >600 kPa D00450 4.50-5.00 m S00500 SPT 5.00-5.45 m 11,19,27 N=46 PP 5.35 m >600 kPa D00600 6.00-6.50 m S00650 SPT 6.50-6.95 m 13,20,13 N=33 D00750 7.50-8.00 m		380.4 <												

6.00: Water was added in to the bore hole to allow augers to penetrate in to the very stiff clay material.

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client: ARTC	Commenced: 06/02/2021
Project Name: Inland Rail B2G	Completed: 07/02/2021
Hole Location: Approx. CH148180 - Pampas	Logged By: V. Chandrasena
Hole Coordinates: 344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 381.40 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB				N=26 PP 15.70 m =210 kPa		364.4	17		CL-CI	Silty CLAY with sand: low to medium plasticity, brown, fine to coarse grained sand. (continued)		VSt			ALLUVIAL SOIL
				S01700 SPT 17.00-17.45 13,14,18 N=32 PP 17.40 m =290 kPa											
				S01850 SPT 18.50-18.95 8,9,12 N=21 PP 18.80 m =310 kPa											
				S02000 SPT 20.00-20.45 10,13,16 N=29 PP 20.40 m =340 kPa											
				S02150 SPT 21.50-21.95 11,12,14 N=26											
				S02300 SPT 23.00-23.45 10,18,25 N=43											

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Client: ARTC										Commenced: 06/02/2021									
Project Name: Inland Rail B2G										Completed: 07/02/2021									
Hole Location: Approx. CH148180 - Pampas										Logged By: V. Chandrasena									
Hole Coordinates: 344391.3 m E 6925641.8 m N MGA94 Zone 56										Checked By: J.Boyle									
Drill Model and Mounting: Comacchio 305/Track					Inclination: -90°					RL Surface: 381.40 m									
Hole Diameter: 115 mm					Bearing:					Datum: AHD Operator: J. Komung									
Drilling Information					Soil Description										Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations				
WB				S02450 SPT 24.50-24.95 m 8,9,12 N=21 PP 24.70 m =490 kPa		356.4	25		ML	Sandy Clayey SILT: low to medium plasticity, brown, fine to medium grained sand. (continued)	M to W	D			ALLUVIAL SOIL				
									CI-CH	Silty CLAY trace sand: medium to high plasticity, grey brown, fine to coarse grained sand.									
				S02600 SPT 26.00-26.45 m 6,9,13 N=22 PP 26.40 m =420 kPa		355.4	26		CI	Silty CLAY with sand: medium plasticity, brown mottled grey, fine to coarse grained sand.		VSt							
										Below 27.00m: trace fine to medium sub-angular gravel.									
				S02750 SPT 27.50-27.95 m 14,18,27 N=45 PP 27.70 m >600 kPa		353.4	28				M (~PL) to M (>PL)	H							
				S02900 SPT 29.00-29.45 m 8,11,13 N=24 PP 29.40 m =380 kPa		352.4	29		CL-CI	Silty CLAY with sand: low to medium plasticity, brown, fine to coarse grained sand.			VSt						
							30												
				S03050 SPT 30.50-30.95 m 12,16,19 N=35 PP 30.80 m =420 kPa		350.4	31			Below 30.50m: brown mottled black.		H							
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Support C - Casing Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Plastic Limit < PL = PL > PL																			

Engineering Log - Borehole

Project No.: B20331

Client: ARTC Project Name: Inland Rail B2G Hole Location: Approx. CH148180 - Pampas Hole Coordinates: 344391.3 m E 6925641.8 m N MGA94 Zone 56										Commenced: 06/02/2021 Completed: 07/02/2021 Logged By: V. Chandrasena Checked By: J.Boyle											
Drill Model and Mounting: Comacchio 305/Track					Inclination: -90°					RL Surface: 381.40 m											
Hole Diameter: 115 mm					Bearing:					Datum: AHD					Operator: J. Komung						
Drilling Information							Soil Description										Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations						
WB				S03200 SPT 32.00-32.45 m 11,14,17 N=31 PP 32.40 m =390 kPa		348.4	33		CH	Silty CLAY with sand: high plasticity, brown mottled black, fine to coarse grained sand.		H				ALLUVIAL SOIL					
				S03350 SPT 33.50-33.95 m 7,9,13 N=22 PP 33.80 m =200 kPa		347.4	34			Below 33.50m: brown mottled grey.	M (-PL) to M (>PL)			x							
				S03500 SPT 35.00-35.45 m 15,13,14 N=27 PP 35.35 m =210 kPa		346.4	35			Below 35.00m: sandy, fine to medium grained.	VSt			x							
						345.4	36			Hole Terminated at 35.45 m Target depth Hole grouted to surface.											
						344.4	37														
						343.4	38														
						342.4	39														
Method AS - Auger Screwing RR - Rock Roller WB- Washbore				Penetration No resistance ranging to refusal			Water Level (Date) Inflow Partial Loss Complete Loss			Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test			Moisture Condition D - Dry M - Moist W - Wet			Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense					
Support C - Casing				Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss			Classification Symbols and Soil Descriptions Based on Unified Soil Classification System			Plastic Limit < PL = PL < PL											

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.40 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3052 Depth Range: 0.50 - 0.95 m

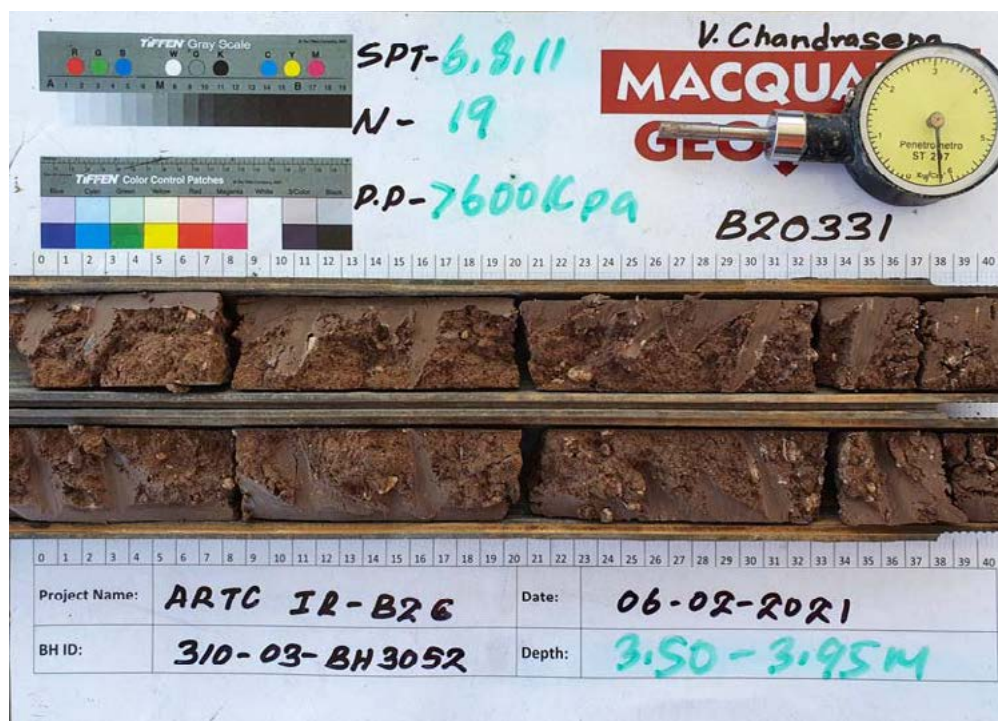


310-03-BH3052 Depth Range: 2.00 - 2.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 692564.18 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.40 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3052 Depth Range: 3.50 - 3.95 m

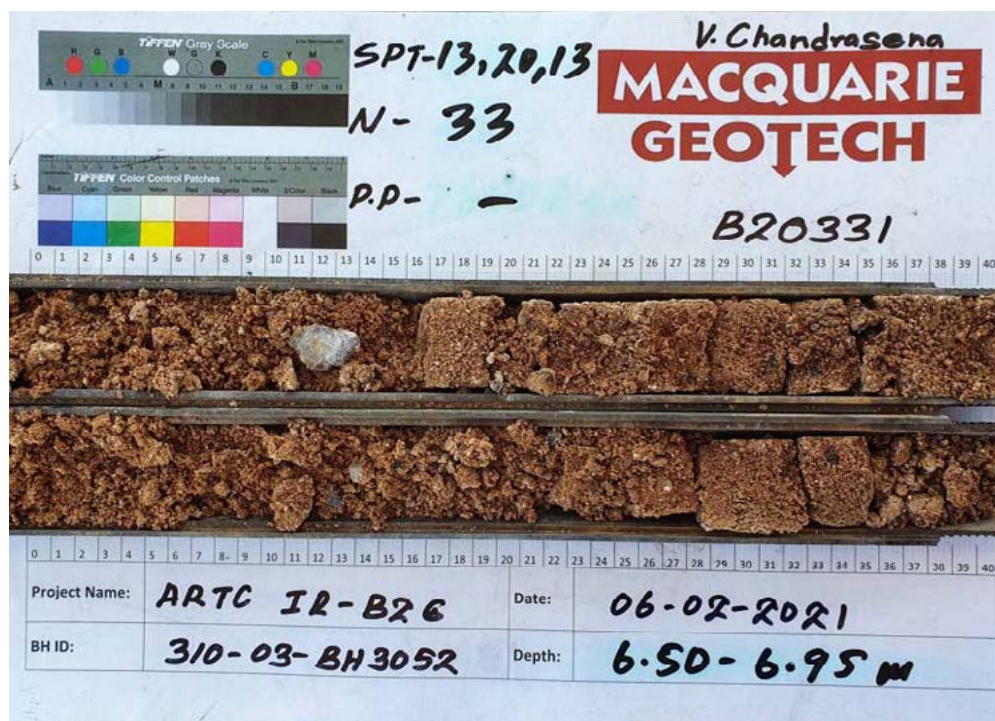


310-03-BH3052 Depth Range: 5.00 - 5.45 m

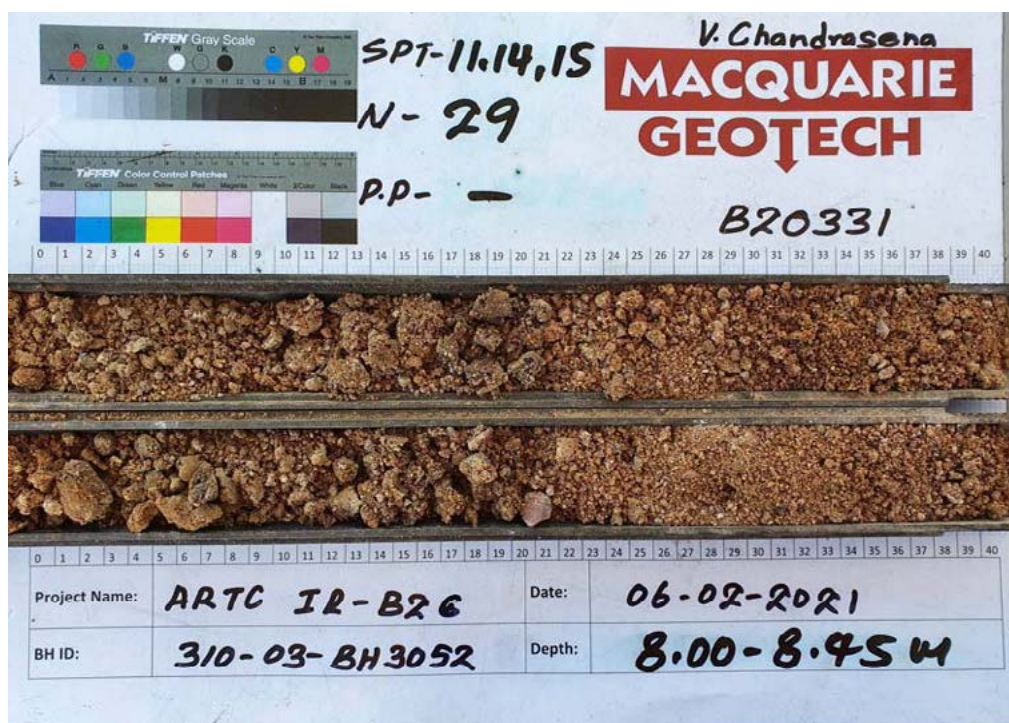
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.40 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3052 Depth Range: 6.50 - 6.95 m

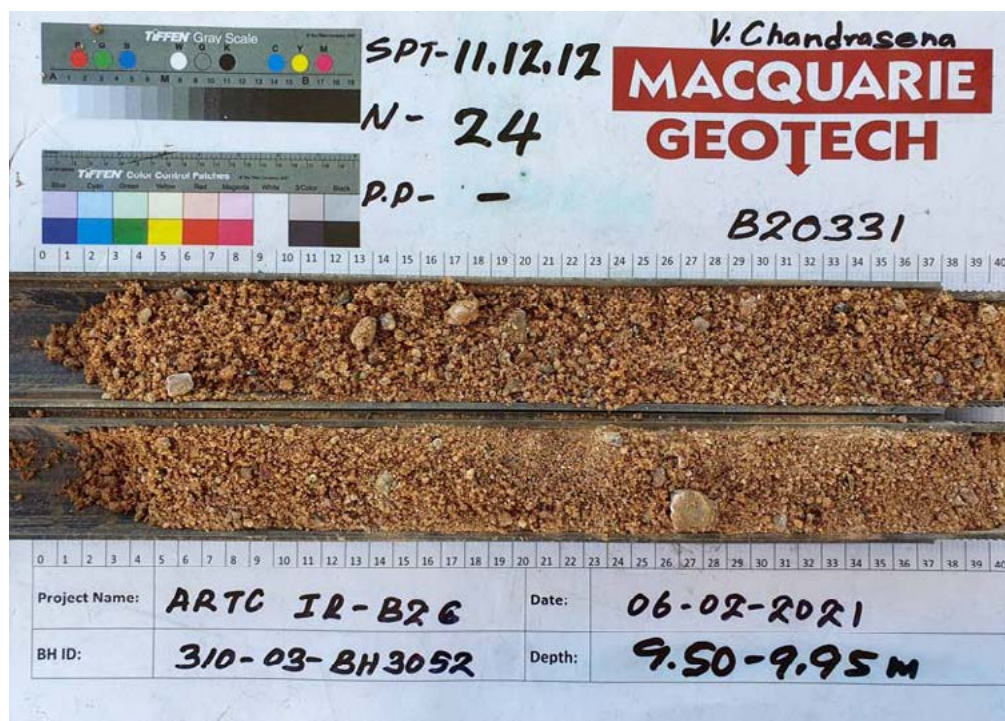


310-03-BH3052 Depth Range: 8.00 - 8.45 m

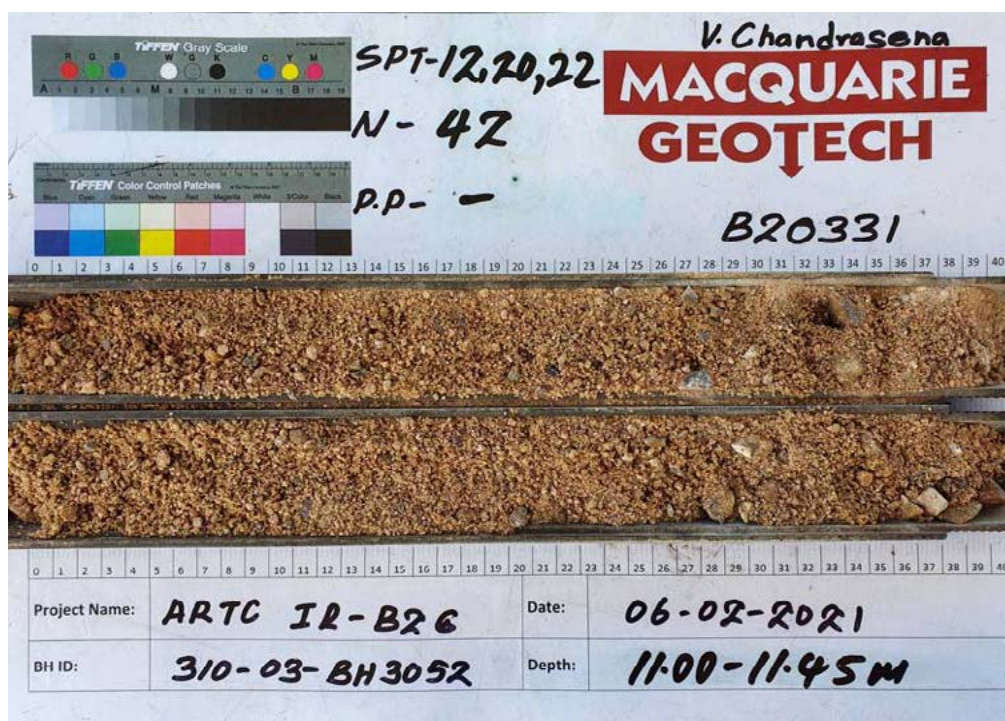
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	381.40 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3052 Depth Range: 9.50 - 9.95 m



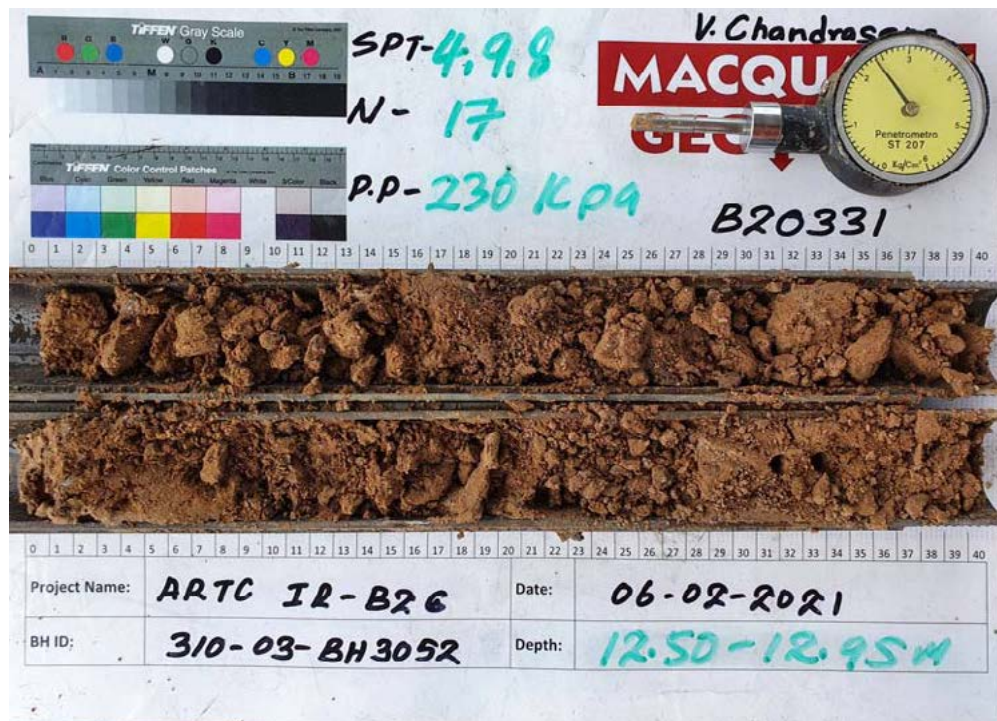
310-03-BH3052 Depth Range: 11.00 - 11.45 m

Engineering Log - Borehole

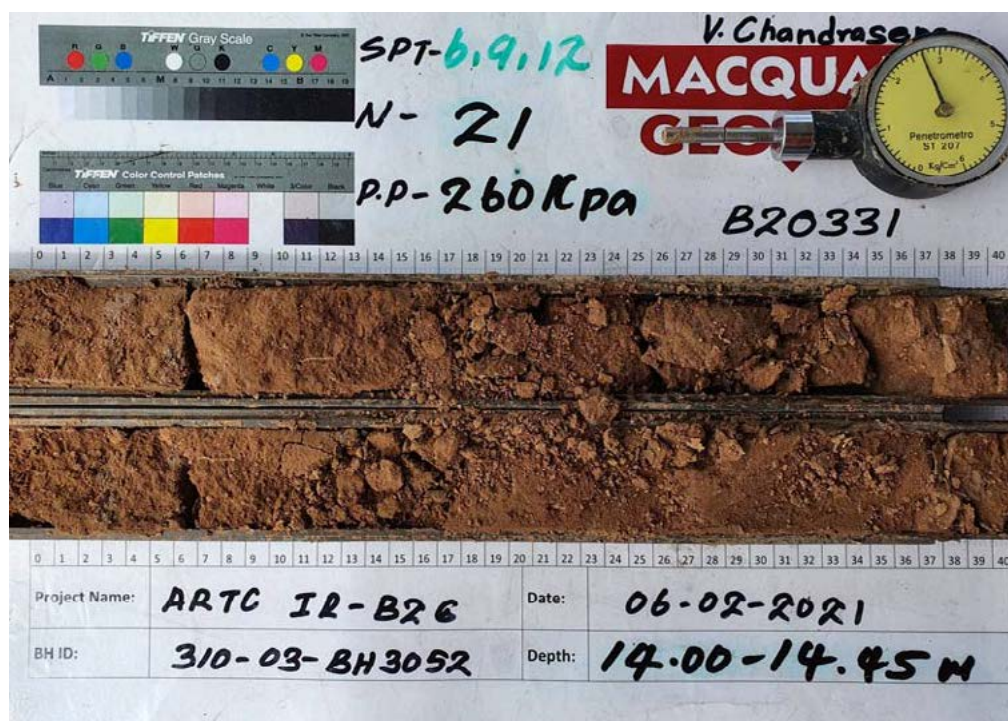
Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.40 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3052 Depth Range: 12.50 - 12.95 m



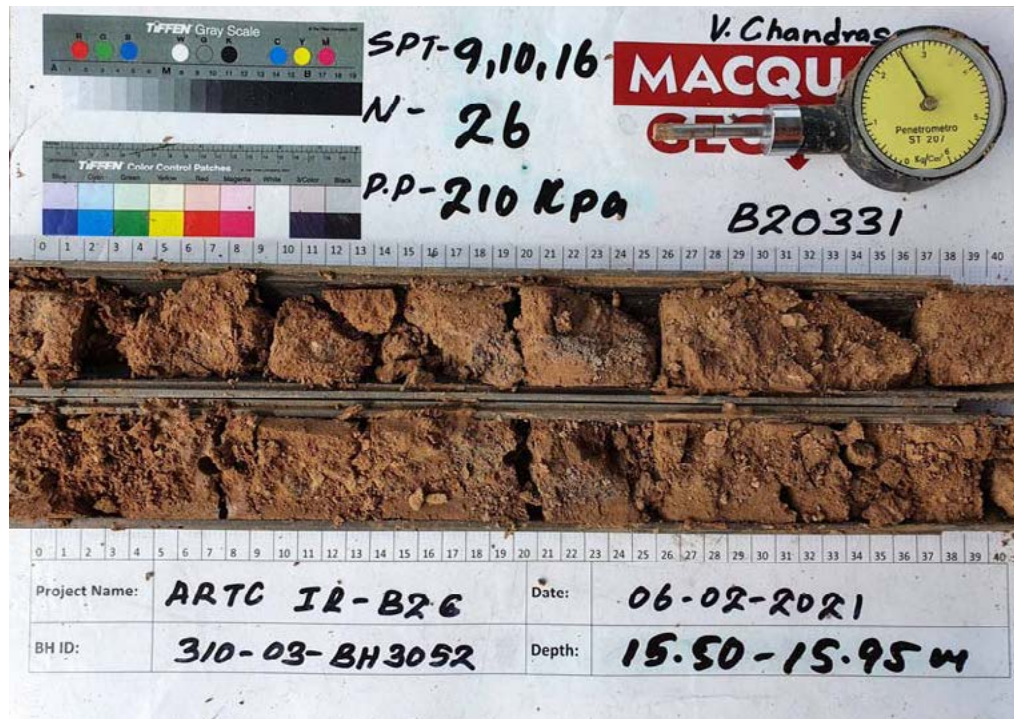
310-03-BH3052 Depth Range: 14.00 - 14.45 m

Engineering Log - Borehole

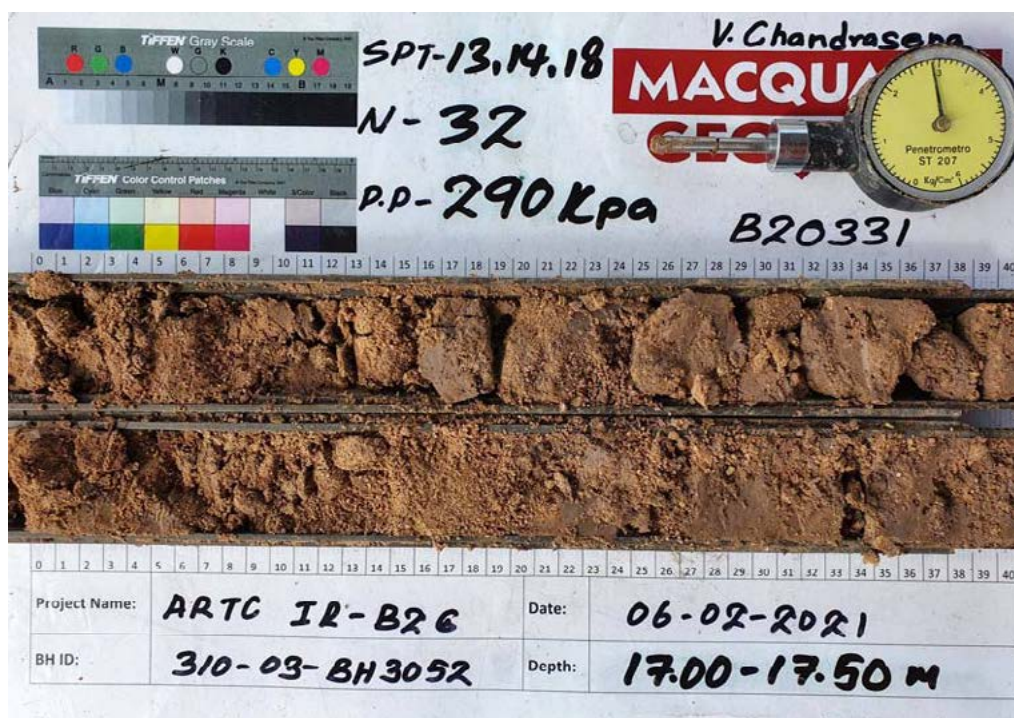
Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	381.40 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3052 Depth Range: 15.50 - 15.95 m

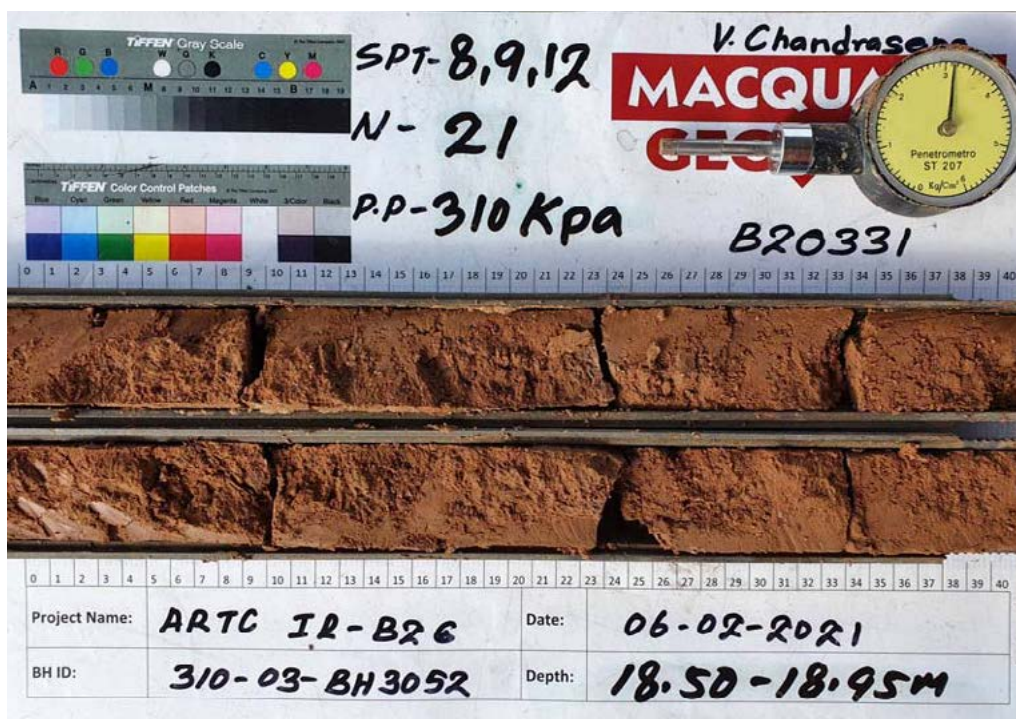


310-03-BH3052 Depth Range: 17.00 - 17.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.40 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3052 Depth Range: 18.50 - 18.95 m

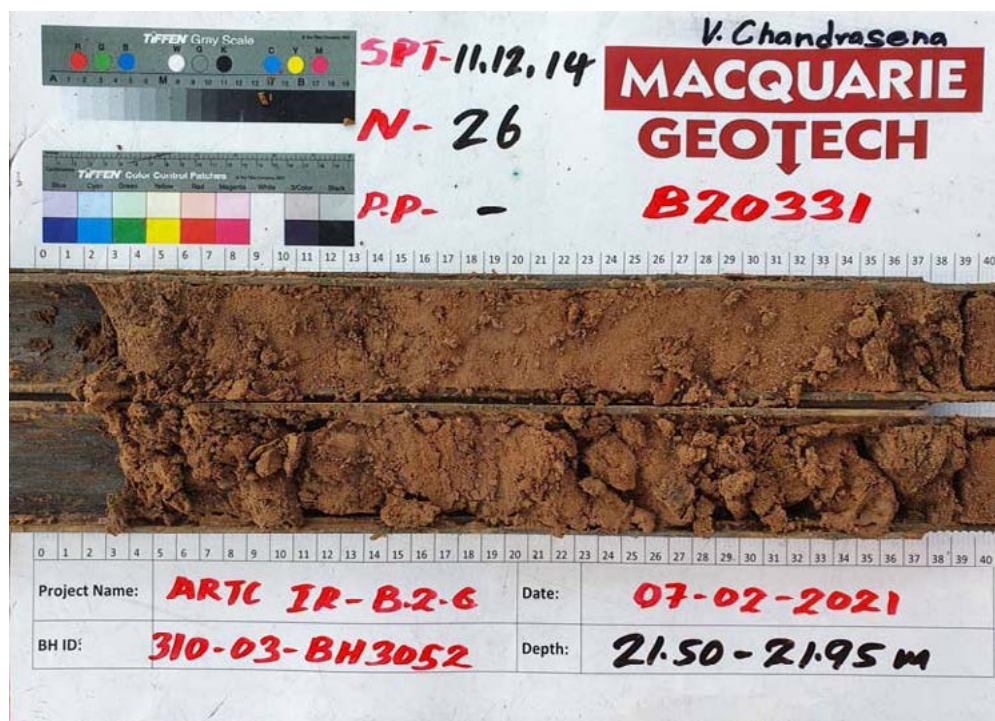


310-03-BH3052 Depth Range: 20.00 - 20.45 m

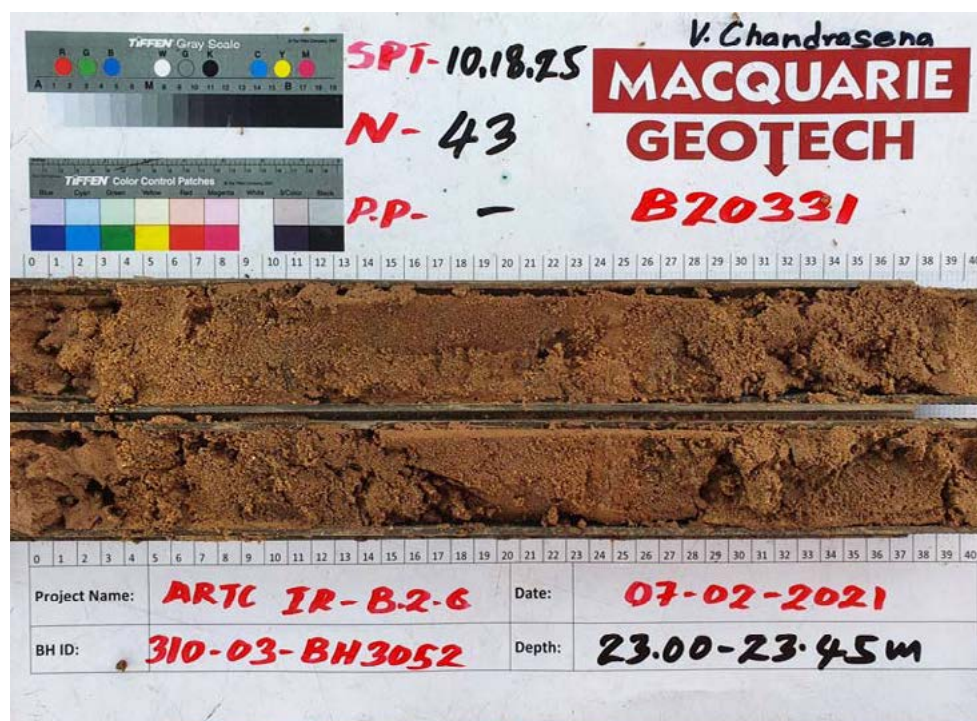
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	381.40 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3052 Depth Range: 21.50 - 21.95 m



310-03-BH3052 Depth Range: 23.00 - 23.45 m

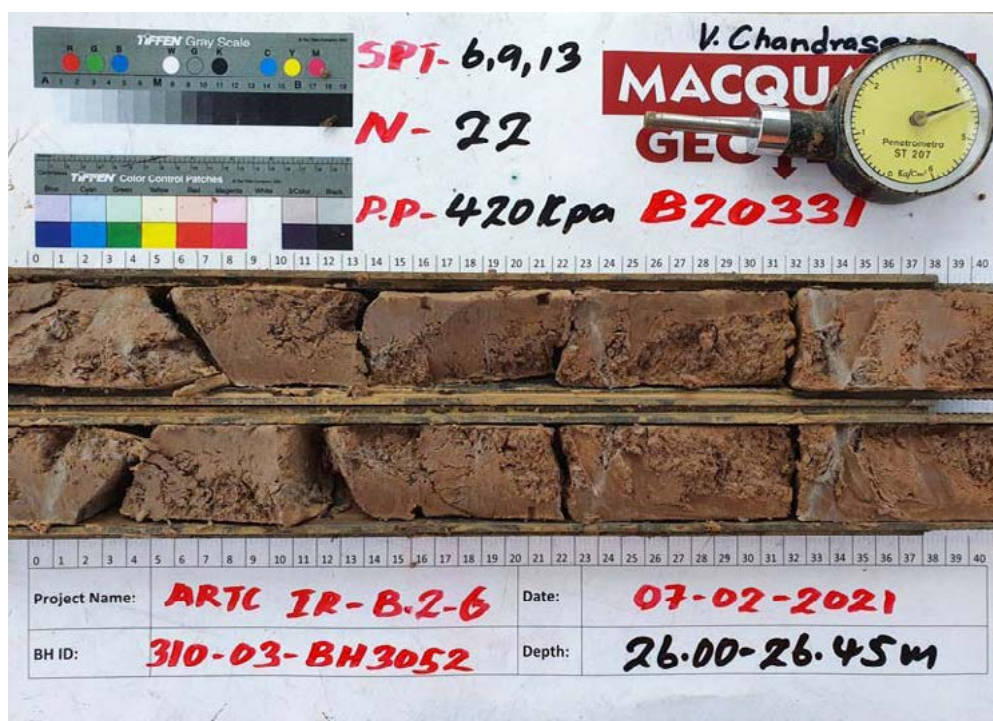
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.40 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3052 Depth Range: 24.50 - 24.95 m

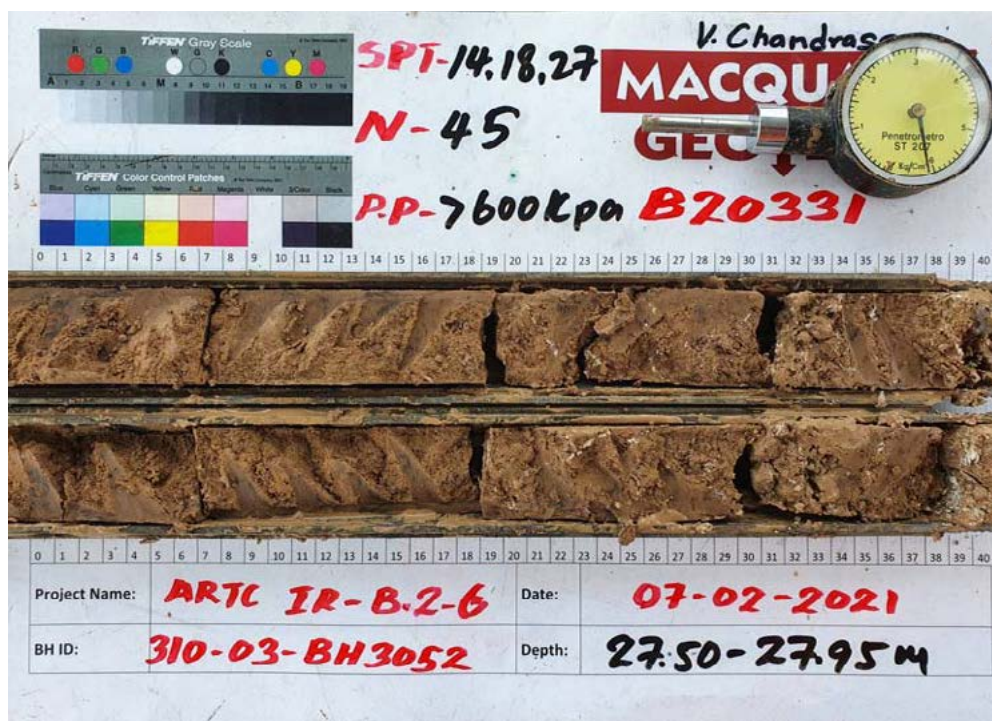


310-03-BH3052 Depth Range: 26.00 - 26.45 m

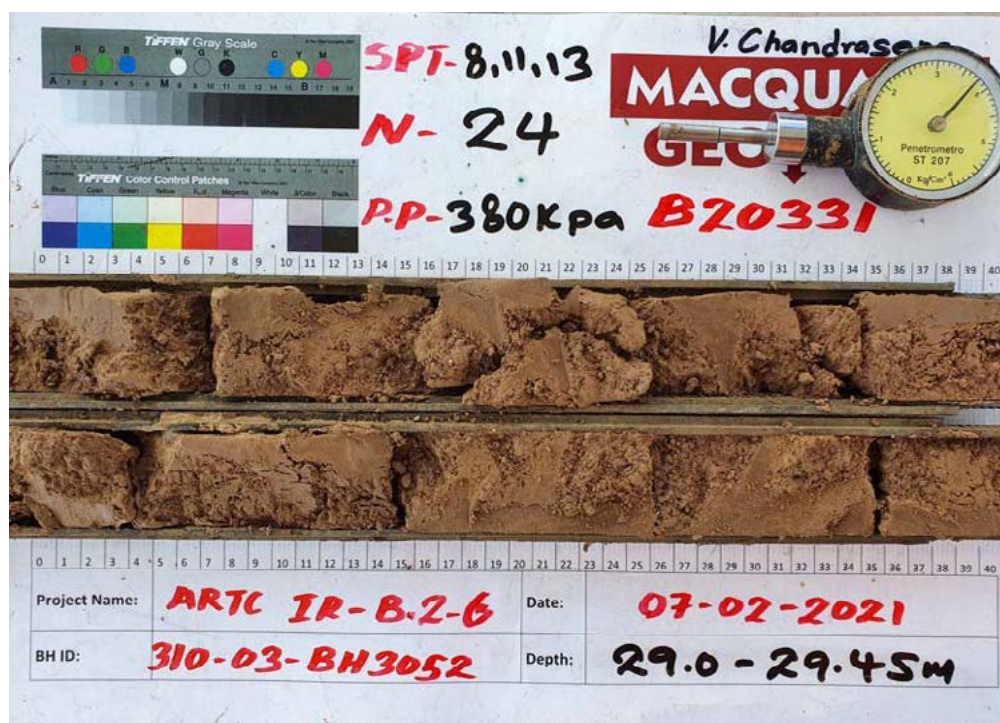
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 6925641.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	381.40 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3052 Depth Range: 27.50 - 27.95 m

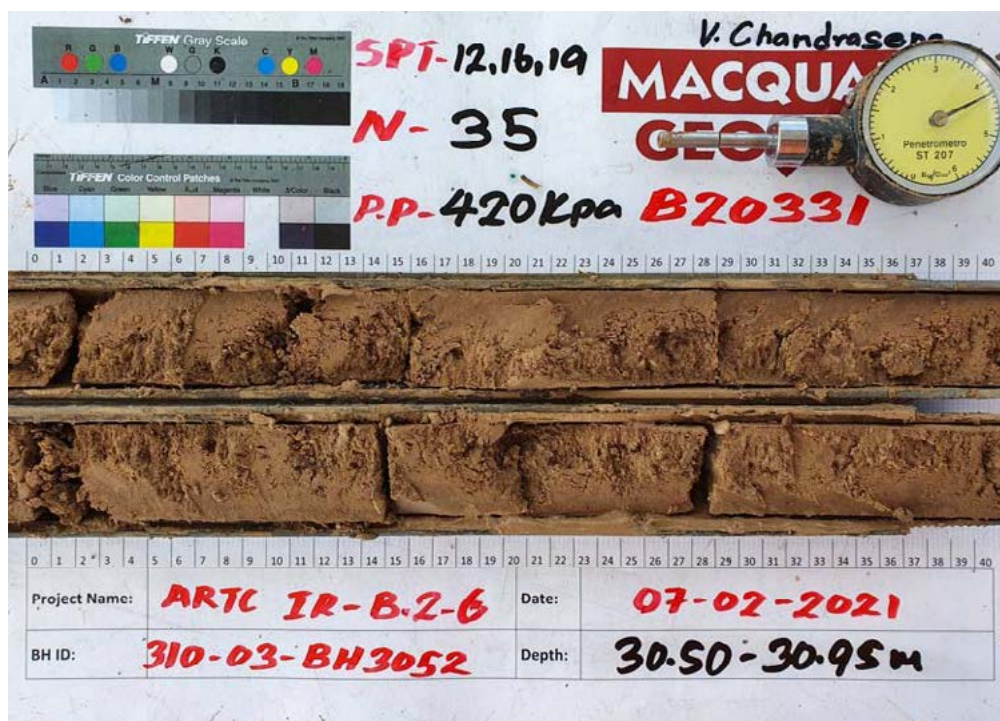


310-03-BH3052 Depth Range: 29.00 - 29.45 m

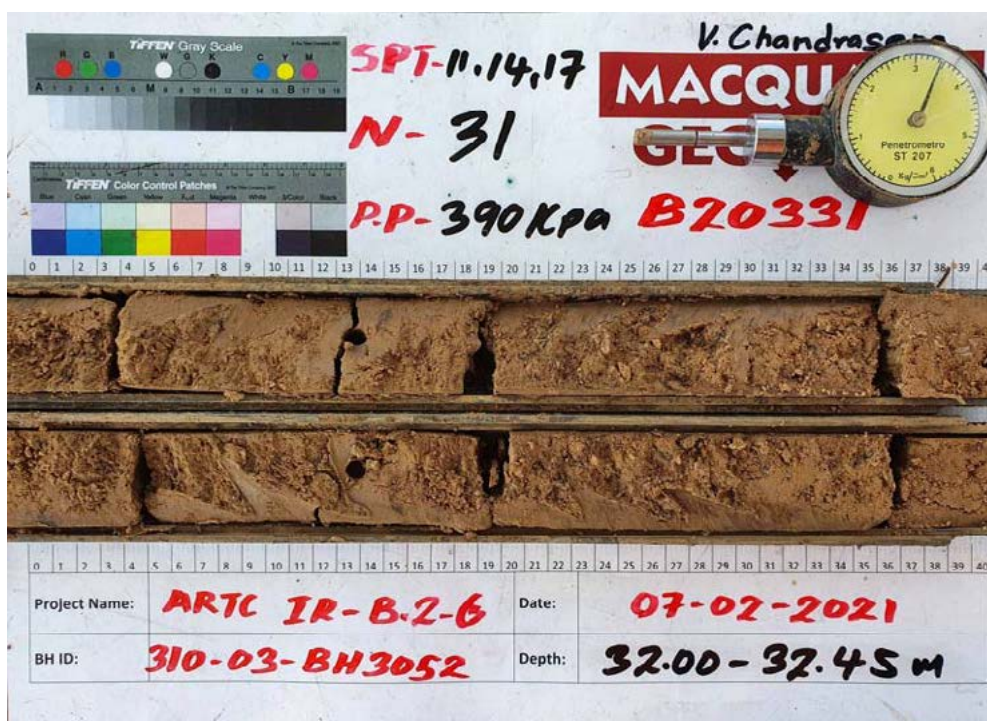
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 692564.18 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	381.40 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3052 Depth Range: 30.50 - 30.95 m

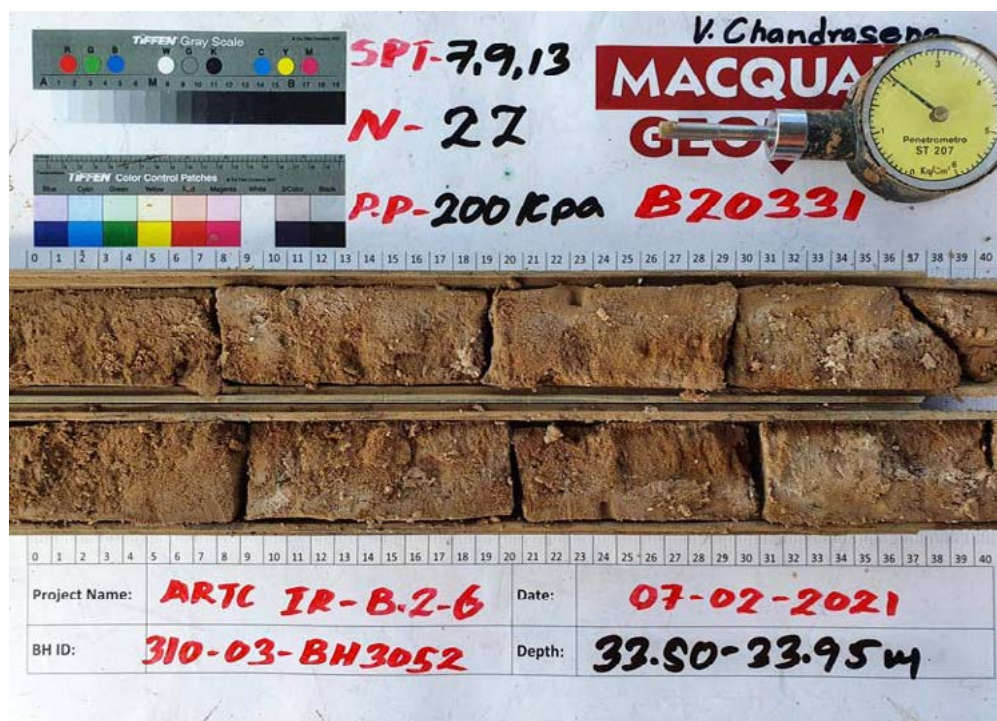


310-03-BH3052 Depth Range: 32.00 - 32.45 m

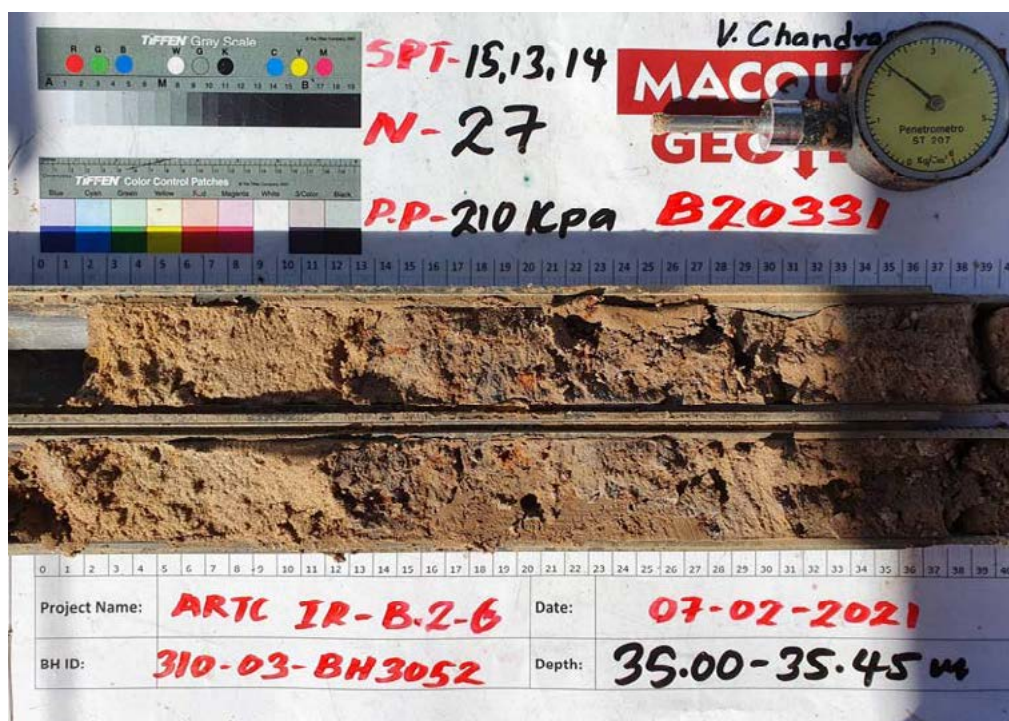
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH148180 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344391.3 m E 692564.18 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	381.40 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3052 Depth Range: 33.50 - 33.95 m



310-03-BH3052 Depth Range: 35.00 - 35.45 m

Engineering Log - Borehole

Project No.: B20331

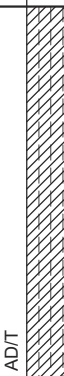
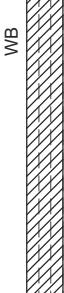
Client: ARTC		Commenced: 03/02/2021															
Project Name: Inland Rail B2G		Completed: 05/02/2021															
Hole Location: Approx. CH148387 - Pampas		Logged By: V. Chandrasena															
Hole Coordinates: 344517.2 m E 6925801.8 m N MGA94 Zone 56		Checked By: J.Boyle															
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 382.37 m														
Hole Diameter: 115 mm		Bearing:	Datum: AHD Operator: J. Komung														
Drilling Information				Soil Description				Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
AD/T				J00020 0.20-0.30 m PID 0.20 m 0 ppm J00050 0.50-0.60 m S00050 SPT 0.50-0.95 m 7,12,16 N=28 PID 0.50 m 0.1 ppm PP 0.80 m >600 kPa J00100 1.00-1.10 m U00100 1.00-1.45 m PID 1.00 m 0.1 ppm D00150 1.50-2.00 m D00200 SPT 2.00-2.45 m 4,9,11 N=20 PP 2.40 m >600 kPa D00300 3.00-3.50 m S00350 SPT 3.50-3.95 m 8,15,19 N=34 PP 3.70 m >600 kPa D00450 4.50-5.00 m S00500 SPT 5.00-5.45 m 11,12,12 N=24 D00600 6.00-6.50 m S00650 SPT 6.50-6.95 m 6,16,21 N=37 D00750 7.50-8.00 m		381.4	1		CH	FILL: Silty CLAY trace sand, high plasticity, black, fine to coarse grained sand, trace rootlets and plant decays. Silty CLAY trace sand: high plasticity, black, fine to medium grained sand, trace rootlets. Below 1.50m: brown black, no rootlets.		VSt					REWORKED TOPSOIL ALLUVIAL SOIL
						380.4	2										
						379.4	3		CH	Silty CLAY trace sand and gravel: high plasticity, black brown, fine to coarse grained sand, fine to coarse sub-angular gravel. Below 3.50m: sandy; fine to coarse grained.		H			3.00: Water was added in to the bore hole to allow augers to penetrate in to the very stiff clay material.		
						378.4	4										
						377.4	5		SM	Silty SAND with clay: fine to medium grained, brown black, low to medium plasticity clay.		MD					
						376.4	6										
						375.4	7										
									SP	SAND: fine to medium grained, yellow brown.		M					
Method		Penetration		Water		Samples and Tests		Moisture Condition		Consistency/Relative Density							
AS - Auger Screwing RR - Rock Roller WB- Washbore		No resistance ranging to refusal		Level (Date) Inflow Partial Loss Complete Loss		U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense							
Support		Graphic Log/Core Loss		Classification Symbols and Soil Descriptions		Plastic Limit											
C - Casing		Core recovered (hatching indicates material) Core loss		Based on Unified Soil Classification System		< PL = PL < PL											

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	382.37 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	J. Komung

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T				S00800 SPT 8.00-8.45 m 5,7,8 N=15					SP	SAND: fine to medium grained, yellow brown. (continued)	M	MD			ALLUVIAL SOIL
				D00900 9.00-9.50 m		373.4	9			Below 9.00m: trace fine to medium sub-rounded to sub-angular gravel.					
				S00950 SPT 9.50-9.95 m 13,20,18 N=38		372.4	10		SP-SC	Gravelly SAND: fine to coarse grained, pale brown, fine to medium sub-rounded to sub-angular gravel.		D			
				D01050 10.50-11.00 m		371.4	11			Below 10.50m: trace fine to medium, sub-rounded to sub-angular gravel.	D to M				
				S01100 SPT 11.00-11.45 m 10,13,15 N=28		370.4	12								
				D01200 12.00-12.50 m		369.4	13					MD			
				S01250 SPT 12.50-12.95 m 11,14,16 N=30 PP 12.80 m =400 kPa		368.4	14				W				
				S01400 SPT 14.00-14.43 m 28,30/130mm N=30/280mm PP 14.40 m =250 kPa		367.4	15		CL-CI	Sandy silty CLAY with gravel: low to medium plasticity, brown mottled white, fine to coarse grained sand, fine to coarse sub-angular gravel.	VSt to H				
				S01550 SPT 15.50-15.95 m 8,12,15							M (>PL)	VSt			
				WB											

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB- Washbore	 No resistance ranging to refusal	 Level (Date)  Inflow  Partial Loss  Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT- Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss		Classification Symbols and Soil Descriptions	Plastic Limit	
C - Casing	 Core recovered (hatching indicates material)  Core loss		Based on Unified Soil Classification System	< PL = PL > PL	

Engineering Log - Borehole

Project No.: B20331

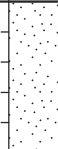
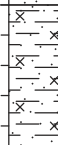
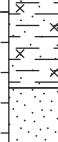
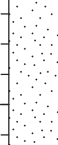
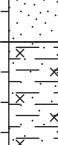
Client: ARTC		Commenced: 03/02/2021														
Project Name: Inland Rail B2G		Completed: 05/02/2021														
Hole Location: Approx. CH148387 - Pampas		Logged By: V. Chandrasena														
Hole Coordinates: 344517.2 m E 6925801.8 m N MGA94 Zone 56		Checked By: J.Boyle														
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°														
Hole Diameter: 115 mm		RL Surface: 382.37 m														
		Bearing: Datum: AHD Operator: J. Komung														
Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
WB				N=27 PP 15.70 m =210 kPa					CL-CI	Sandy silty CLAY with gravel: low to medium plasticity, brown mottled white, fine to coarse grained sand, fine to coarse sub-angular gravel. (continued)	M (>PL)	VSt			ALLUVIAL SOIL	
				S01700 SPT 17.00-17.45 15,20,15 N=35		365.4	17		SP	SAND with gravel: fine to coarse grained, brown mottled black, fine to medium sub-rounded to sub-angular gravel.	W	D				
				S01850 SPT 18.50-18.95 12,9,13 N=22 PP 18.80 m =520 kPa		363.4	19		CL-CI	Silty CLAY with sand: low to medium plasticity, brown, fine to coarse grained sand.	M (~PL) to M (>PL)	VSt				
				S02000 SPT 20.00-20.45 9,11,12 N=23		362.4	20		SP	SAND trace silt and clay: fine to medium grained, yellow brown, low to medium plasticity clay.		MD				
				S02150 SPT 21.50-21.95 10,17,19 N=36		360.4	22				W					
				S02300 SPT 23.00-23.45 17,16,24 N=40		359.4	23			Below 23.00m: fine to coarse grained sand.		D				
Method		Penetration		Water		Samples and Tests		Moisture Condition		Consistency/Relative Density						
AS - Auger Screwing RR - Rock Roller WB- Washbore		No resistance ranging to refusal		Level (Date) Inflow Partial Loss Complete Loss		U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense						
Support		Graphic Log/Core Loss		Classification Symbols and Soil Descriptions		Plastic Limit										
C - Casing		Core recovered (hatching indicates material) Core loss		Based on Unified Soil Classification System		< PL = PL < PL										

Engineering Log - Borehole

Project No.: B20331

Client: ARTC	Commenced: 03/02/2021
Project Name: Inland Rail B2G	Completed: 05/02/2021
Hole Location: Approx. CH148387 - Pampas	Logged By: V. Chandrasena
Hole Coordinates: 344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 382.37 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description						Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations
WB				S02450 SPT 25.00-25.45 13,21,27 N=48 PP 25.20 m =250 kPa		357.4	25		SP	SAND trace silt and clay: fine to medium grained, yellow brown, low to medium plasticity clay. (continued)	W	D					ALLUVIAL SOIL	
						356.4	26		CL-CI	Sandy silty CLAY: low to medium plasticity, dark brown, fine to coarse grained sand.	M (>PL)	H			x			
						355.4	27		SP	SAND with silt and clay: fine to coarse grained, pale brown, low to medium plasticity clay.	W	VD						
						354.4	28											
						353.4	29		CL-CI	Sandy silty CLAY trace gravel: low to medium plasticity, brown, fine to coarse grained sand, fine sub-rounded gravel.					x			
						352.4	30											
				S03050 SPT 30.50-30.95 8,10,11 N=21 PP 30.80 m =350 kPa		351.4	31		CH	Silty CLAY trace sand: high plasticity, grey brown, fine to coarse grained sand.	M (>PL)	VSt			x			

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client: ARTC Project Name: Inland Rail B2G Hole Location: Approx. CH148387 - Pampas Hole Coordinates: 344517.2 m E 6925801.8 m N MGA94 Zone 56										Commenced: 03/02/2021 Completed: 05/02/2021 Logged By: V. Chandrasena Checked By: J.Boyle																			
Drill Model and Mounting: Comacchio 305/Track Hole Diameter: 115 mm										Inclination: -90° Bearing:										RL Surface: 382.37 m Datum: AHD Operator: J. Komung									
Drilling Information										Soil Description										Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations														
WB				S03200 SPT 32.00-32.45 m 7,9,13 N=22 PP 32.40 m =330 kPa		349.4	33		CH	Silty CLAY trace sand: high plasticity, grey brown, fine to coarse grained sand. (continued) Below 32.00m: dark grey.	VSt			100 200 300 400 500	ALLUVIAL SOIL														
				S03350 SPT 33.50-33.95 m 12,15,19 N=34 PP 33.80 m >600 kPa		348.4	34		CH	Silty CLAY with sand: high plasticity, brown mottled grey, fine to coarse grained sand.	M (>PL)				x														
				S03500 SPT 35.00-35.45 m 10,14,18 N=32 PP 35.35 m =440 kPa		347.4	35								x														
						346.4	36			Hole Terminated at 35.45 m Target depth Hole grouted to surface.																			
						345.4	37																						
						344.4	38																						
						343.4	39																						

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Support

C - Casing

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Plastic Limit

< PL
= PL
> PL

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	382.37 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3053 Depth Range: 0.50 - 0.95 m



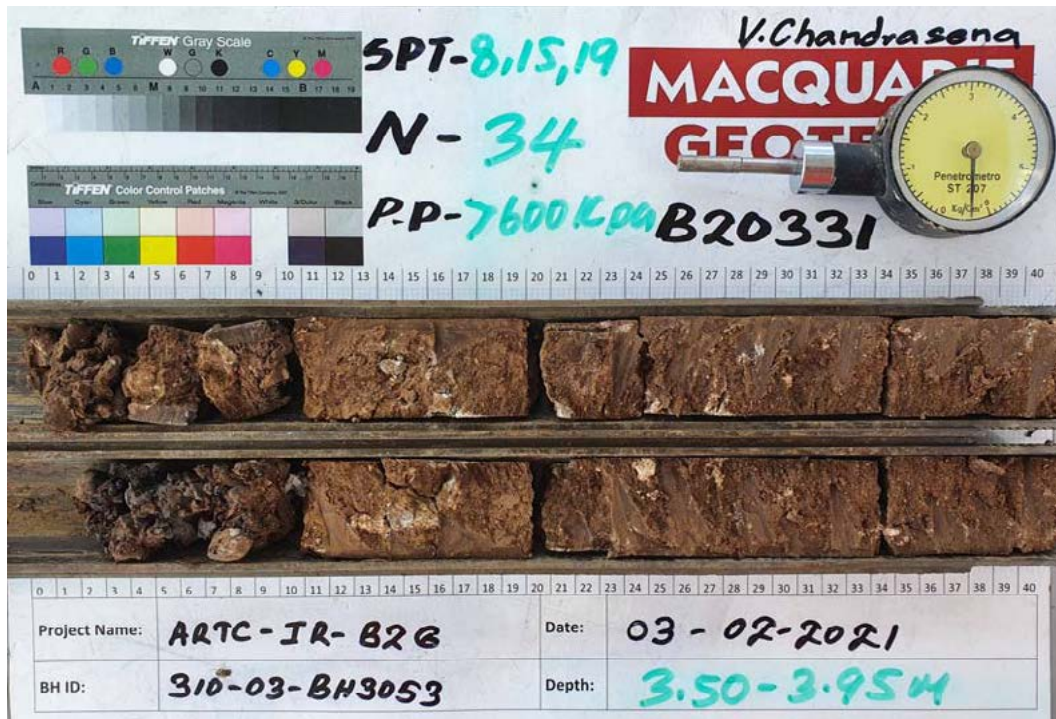
310-03-BH3053 Depth Range: 2.00 - 2.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	382.37 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3053 Depth Range: 3.50 - 3.95 m



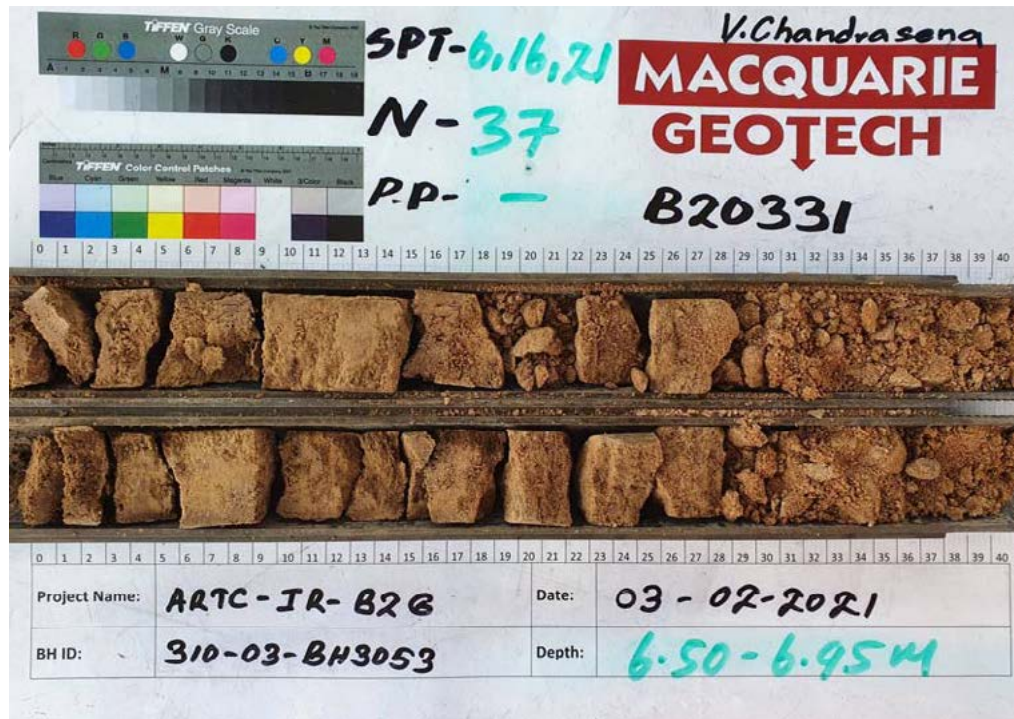
310-03-BH3053 Depth Range: 5.00 - 5.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	382.37 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: J. Komung



310-03-BH3053 Depth Range: 6.50 - 6.95 m

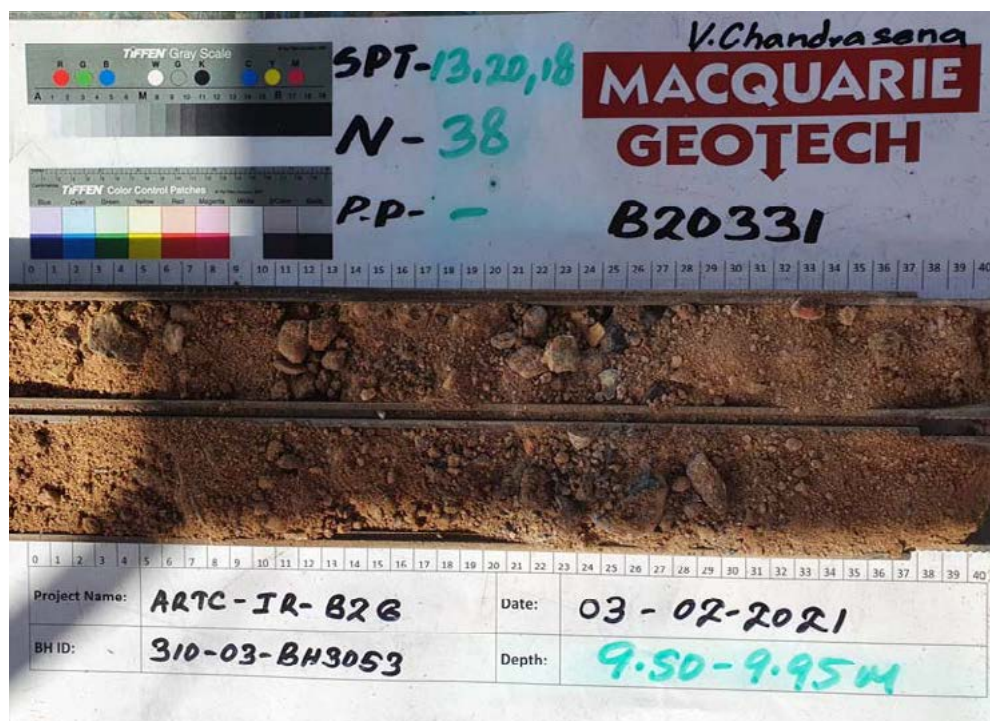


310-03-BH3053 Depth Range: 8.00 - 8.45 m

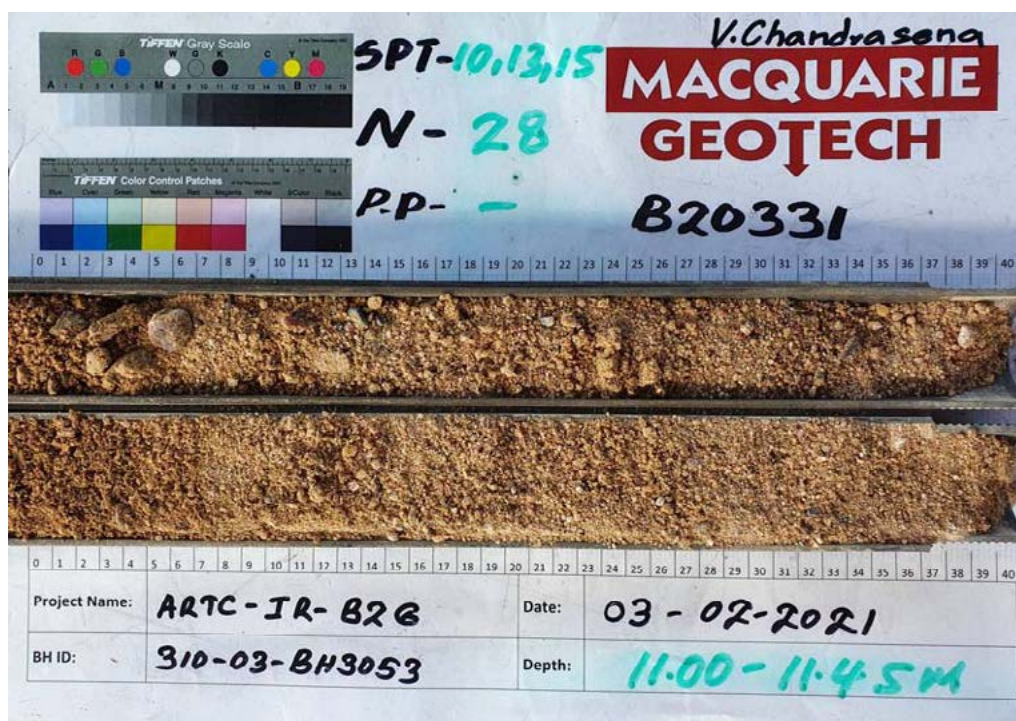
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	382.37 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3053 Depth Range: 9.50 - 9.95 m

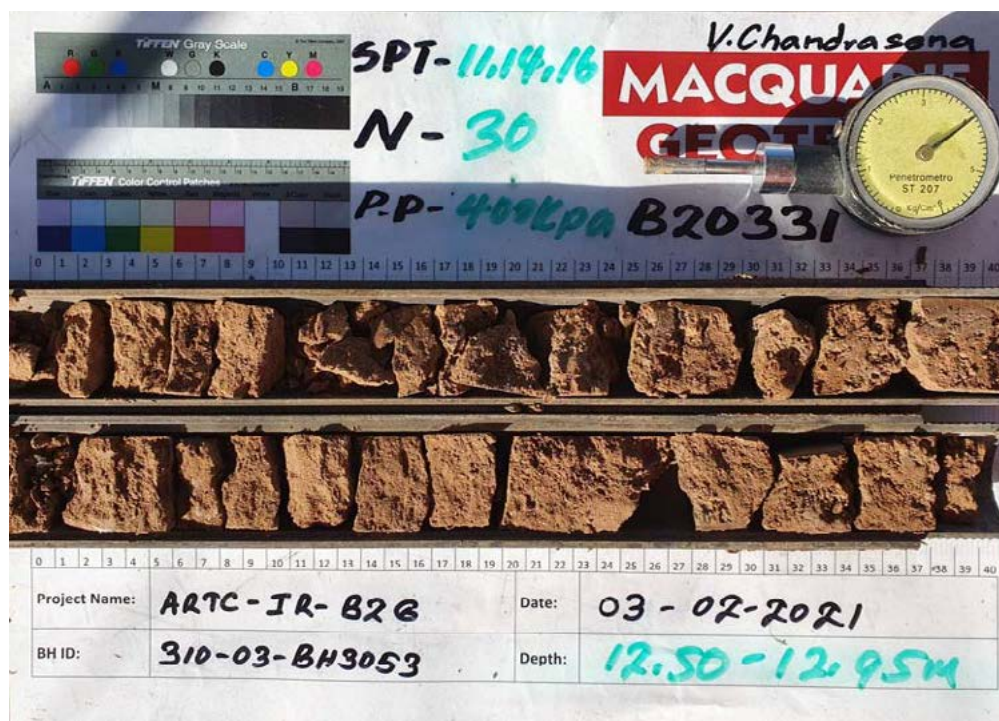


310-03-BH3053 Depth Range: 11.00 - 11.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	382.37 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3053 Depth Range: 12.50 - 12.95 m

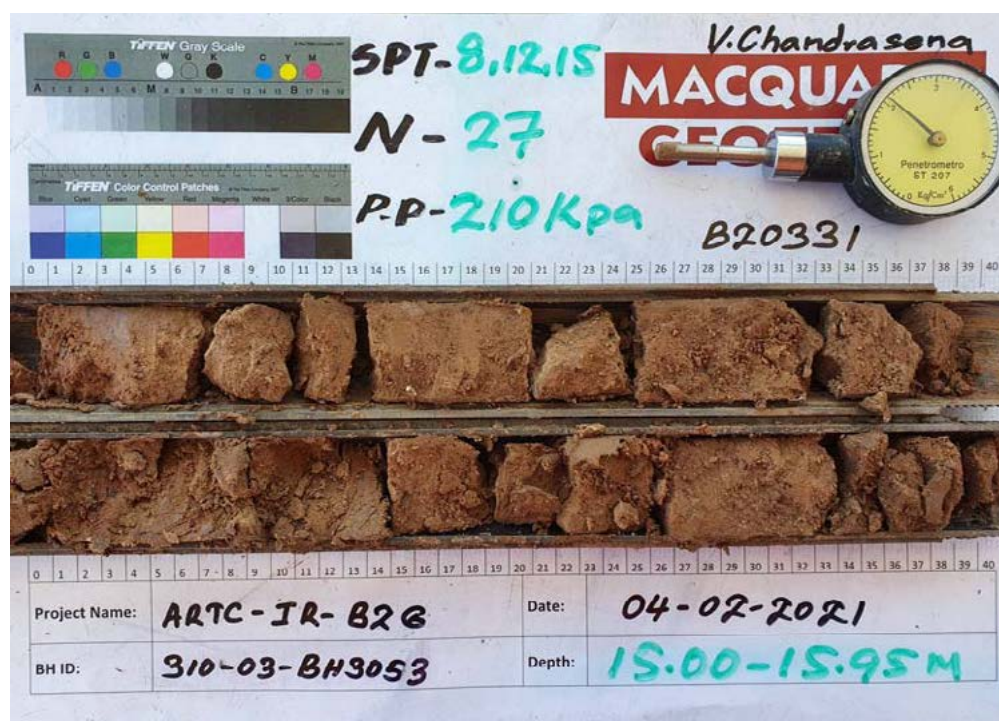


310-03-BH3053 Depth Range: 14.00 - 14.45 m

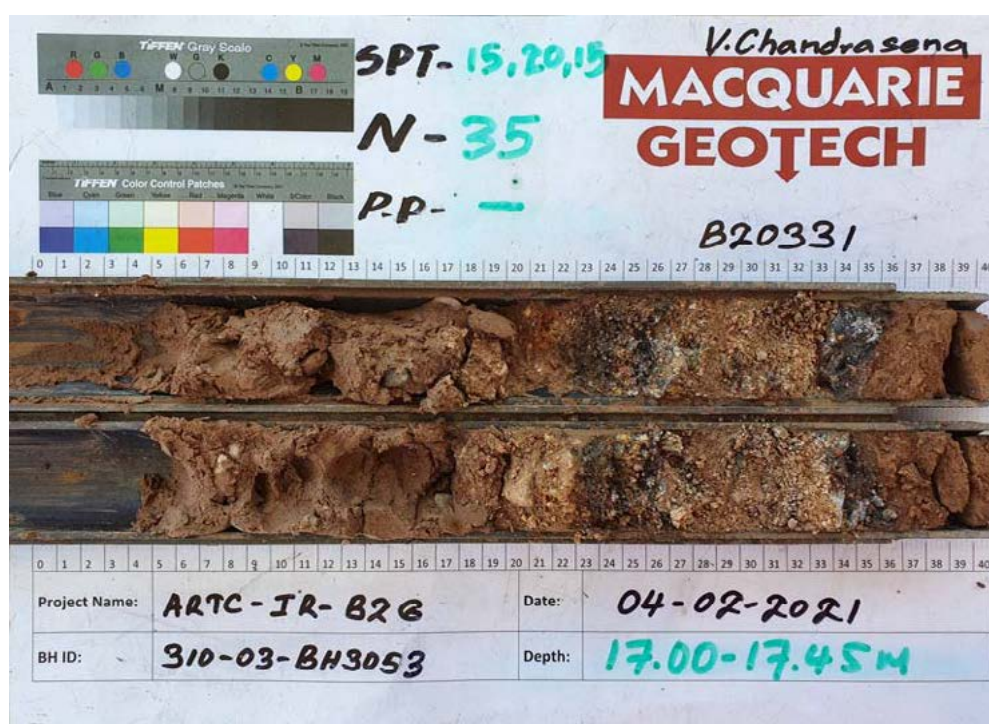
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	382.37 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3053 Depth Range: 15.50 - 15.95 m



310-03-BH3053 Depth Range: 17.00 - 17.45 m

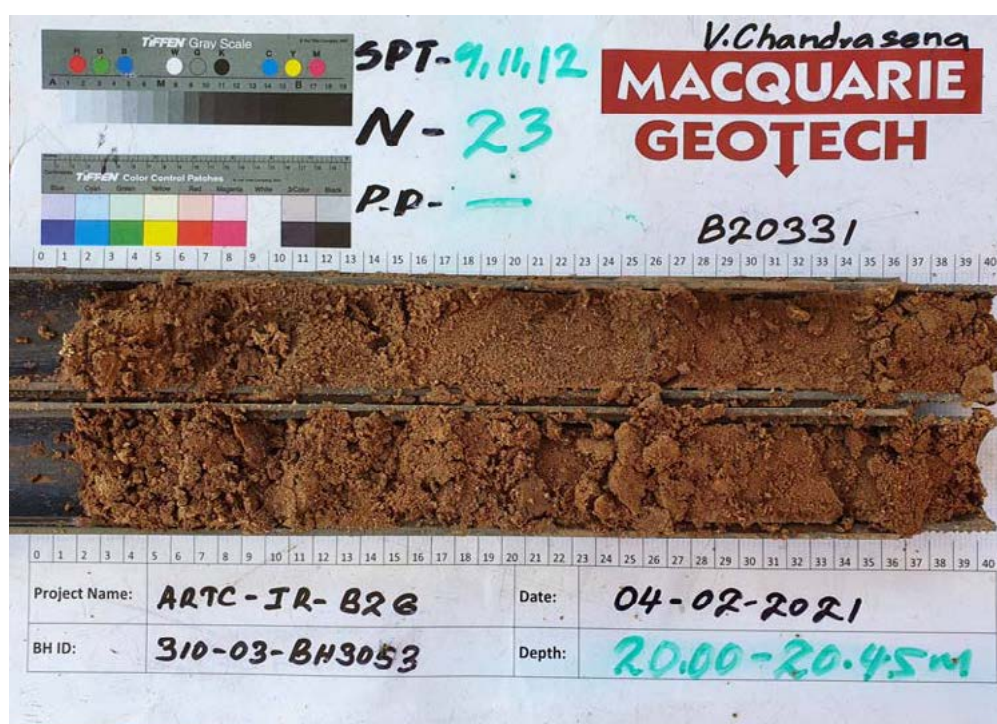
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	382.37 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3053 Depth Range: 18.50 - 18.95 m



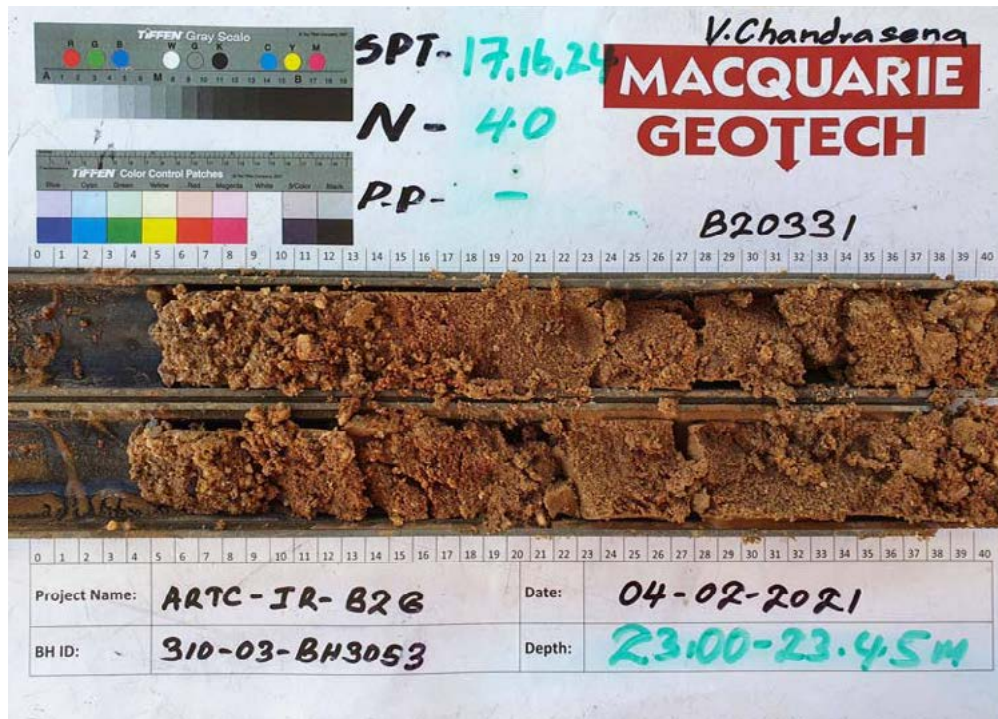
310-03-BH3053 Depth Range: 20.00 - 20.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	382.37 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: J. Komung



310-03-BH3053 Depth Range: 23.00 - 23.45 m

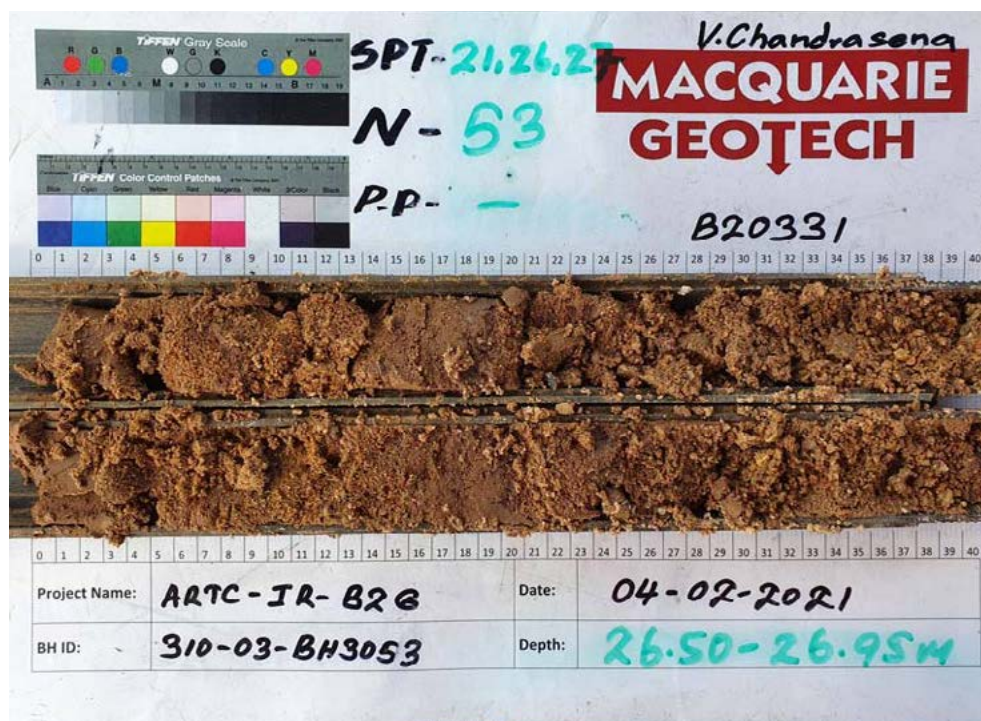


310-03-BH3053 Depth Range: 25.00 - 25.45 m

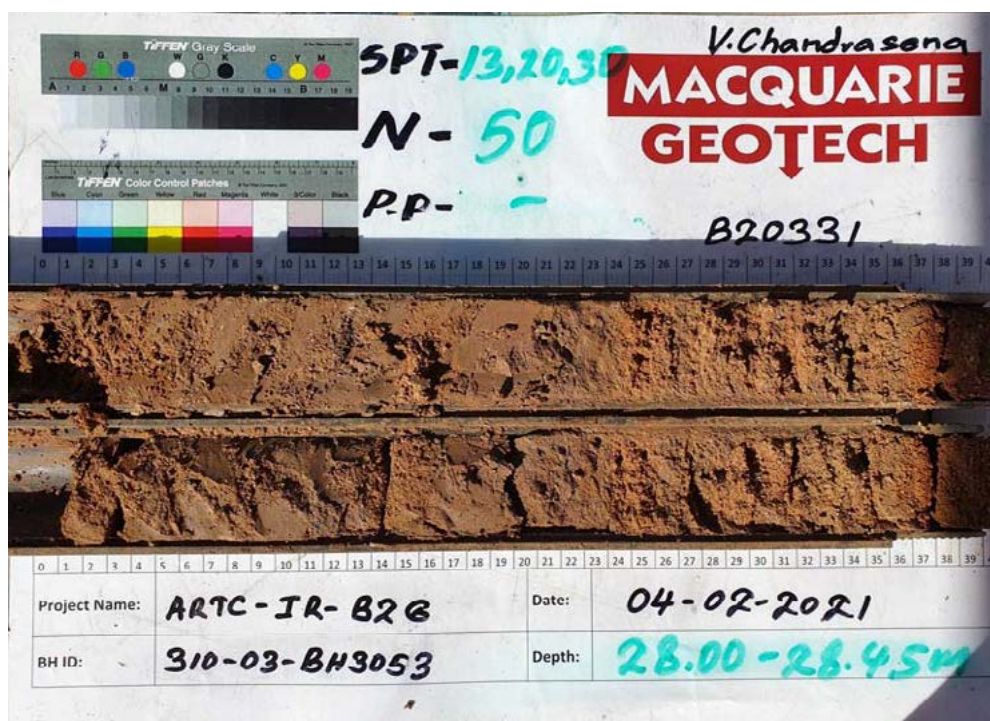
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.37 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3053 Depth Range: 26.50 - 26.95 m

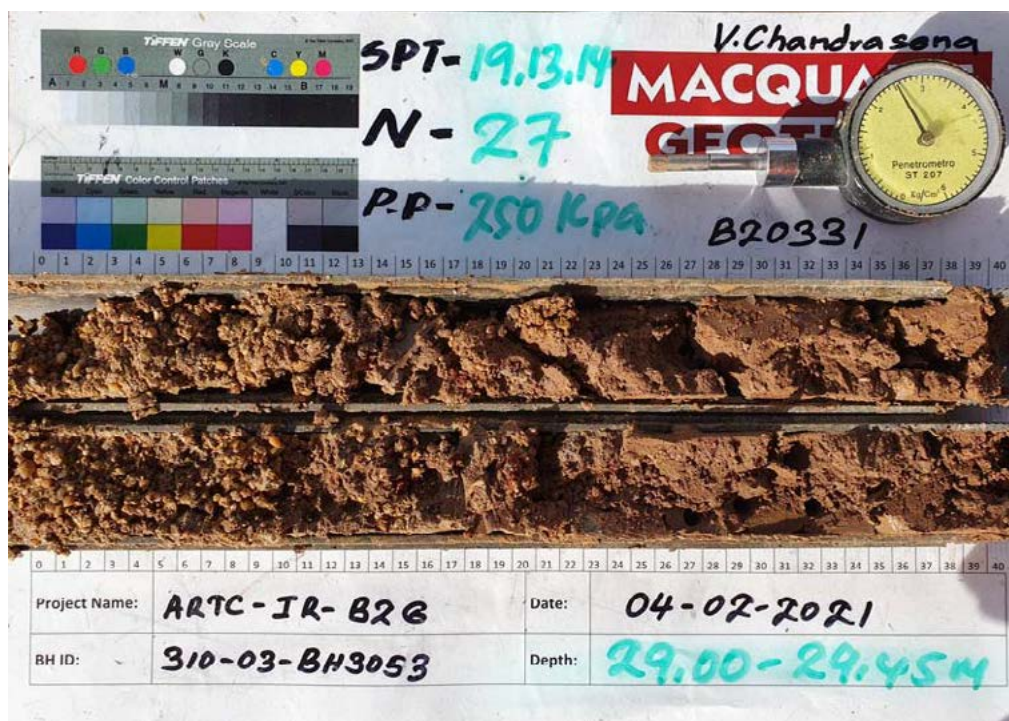


310-03-BH3053 Depth Range: 28.00 - 28.45 m

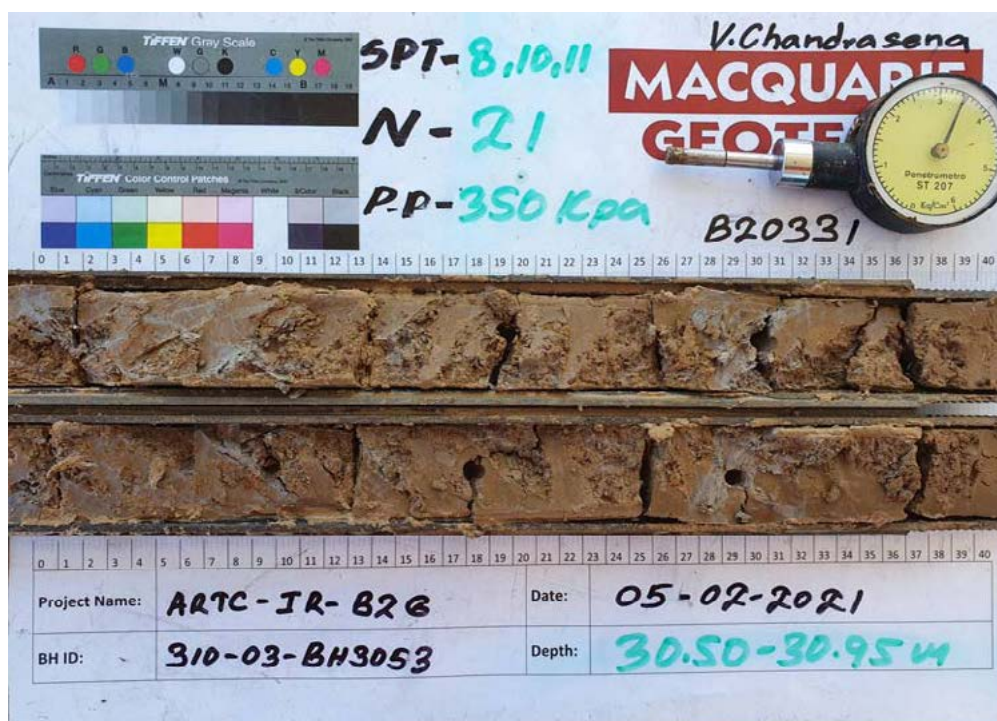
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.37 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3053 Depth Range: 29.00 - 29.45 m



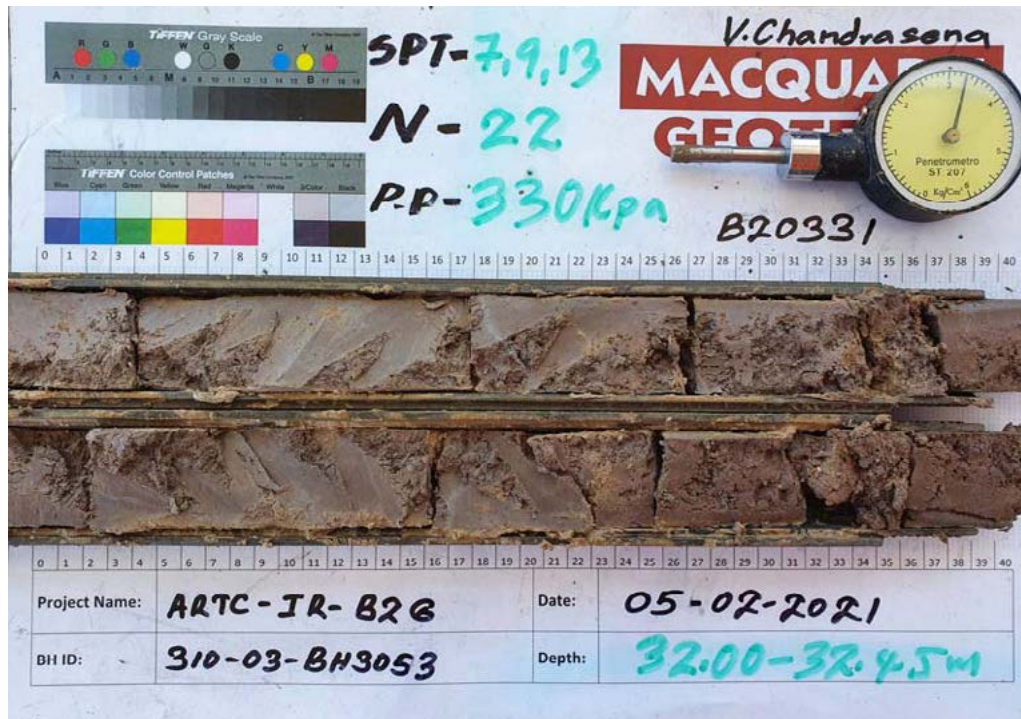
310-03-BH3053 Depth Range: 30.50 - 30.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	382.37 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3053 Depth Range: 32.00 - 32.45 m

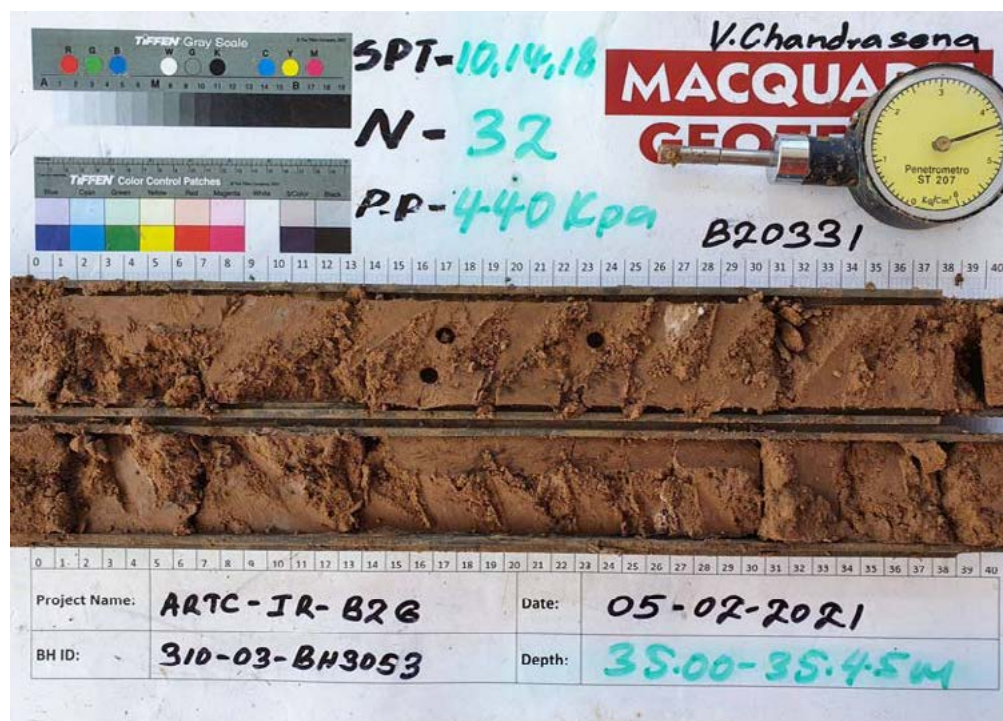


310-03-BH3053 Depth Range: 33.50 - 33.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	03/02/2021
Project Name:	Inland Rail B2G	Completed:	05/02/2021
Hole Location:	Approx. CH148387 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344517.2 m E 6925801.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.37 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3053 Depth Range: 35.00 - 35.45 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 01/02/2021																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Hole Location: Approx. CH148567 - Pampas										Logged By: V. Chandrasena																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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AD/T				J00020 0.20-0.30 m PID 0.20 m 0.6 ppm J00050 0.50-0.60 m S00050 SPT 0.50-0.95 m 6,7,9 N=16 PID 0.50 m 0.4 ppm PP 0.80 m >600 kPa J00100 1.00-1.10 m U00100 1.00-1.45 m PID 1.00 m 0.4 ppm D00150 1.50-2.00 m D00200 SPT 2.00-2.45 m 5,9,10 N=19 PP 2.40 m >600 kPa D00300 3.00-3.50 m S00350 SPT 3.50-3.95 m 7,11,15 N=26 PP 3.70 m >600 kPa D00450 4.50-5.00 m S00500 SPT 5.00-5.45 m 7,9,12 N=21 PP 5.35 m >600 kPa D00600 6.00-6.50 m S00650 SPT 6.50-6.95 m 12,16,17 N=33 D00750 7.50-8.00 m		381.2	1		CH	FILL: silty CLAY trace sand, high plasticity, black, fine to coarse grained sand, trace rootlets and plant decays. Silty CLAY: high plasticity, black. Below 1.50m : trace fine to medium sub-angular gravel. Below 3.00m: trace sand.	M (<PL)	VSt				REWORKED TOPSOIL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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Engineering Log - Borehole

Project No.: B20331

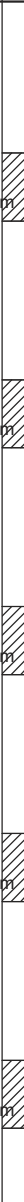
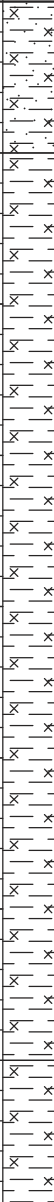
Client: ARTC				Commenced: 01/02/2021															
Project Name: Inland Rail B2G				Completed: 03/02/2021															
Hole Location: Approx. CH148567 - Pampas				Logged By: V. Chandrasena															
Hole Coordinates: 344624.0 m E 6925945.0 m N MGA94 Zone 56				Checked By: J.Boyle															
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°		RL Surface: 382.20 m															
Hole Diameter: 115 mm		Bearing:		Datum: AHD		Operator: J. Komung													
Drilling Information							Soil Description							Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations				
AD/T				S00800 SPT 8.00-8.45 m 11,13,15 N=28		373.2	9		CL-CI	Sandy silty CLAY : low to medium plasticity, brown mottled grey, fine to medium grained sand. (continued)	M (-PL)	D			ALLUVIAL SOIL				
				D00900 9.00-9.50 m					SP-SC	Gravelly SAND trace clay: fine to coarse grained, pale brown, fine to coarse sub-rounded gravel, medium plasticity clay.		VSt to H							
				S00950 SPT 9.50-9.95 m 17,24,26 N=50								VD							
				D01050 10.50-11.00 m					SP	SAND trace gravel: fine to coarse grained, yellow, fine to medium sub-rounded gravel.	M								
				S01100 SPT 11.00-11.39 m 16,28,30/90mm N=58/240mm								H	Standing Water Level - 03/02/2021						
				D01200 12.00-12.50 m															
				S01250 SPT 12.50-12.95 m 5,8,16 N=24 PP 12.80 m =260 kPa					CL-CI	Silty CLAY with sand: low to medium plasticity, pale brown, fine to coarse grained sand.		VSt		12.50: Switched to Wash Boring due to slow auger panitration and hole continued to cave-in.					
				S01400 SPT 14.00-14.45 m 11,17,30 N=47 PP 14.40 m =250 kPa					CL	Extremely weathered calcarius sediments recovered as ; sandy Silty CLAY trace gravel : low plasticity, pale brown mottled white, fine to coarse grained sand, fine sub-angular gravel.	M (<PL) to M (-PL)		13.80: Extremely weathered calcarius sediments						
				S01550 SPT 15.50-15.95 m 12,19,14								H							
				WB										367.2		15			
Method		Penetration		Water		Samples and Tests		Moisture Condition		Consistency/Relative Density									
AS - Auger Screwing RR - Rock Roller WB- Washbore		No resistance ranging to refusal		Level (Date) Inflow Partial Loss Complete Loss		U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense									
Support		Graphic Log/Core Loss		Classification Symbols and Soil Descriptions		Plastic Limit													
C - Casing		Core recovered (hatching indicates material) Core loss		Based on Unified Soil Classification System		< PL = PL < PL													

Engineering Log - Borehole

Project No.: B20331

Client: ARTC	Commenced: 01/02/2021
Project Name: Inland Rail B2G	Completed: 03/02/2021
Hole Location: Approx. CH148567 - Pampas	Logged By: V. Chandrasena
Hole Coordinates: 344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 382.20 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB				N=33 PP 15.70 m =230 kPa		365.2	17		CL	Extremely weathered calcarius sediments recovered as ; sandy Silty CLAY trace gravel : low plasticity, pale brown mottled white, fine to coarse grained sand, fine sub-angular gravel. <i>(continued)</i>	M (<PL) to M (~PL)	H		x	ALLUVIAL SOIL
				S01700 SPT 17.00-17.45 m 9,14,16 N=30 PP 17.40 m =550 kPa					CL-CI	Silty CLAY with sand: low to medium plasticity, brown, fine to medium grained sand.					
				S01850 SPT 18.50-18.95 m 10,12,16 N=28 PP 18.80 m =240 kPa						Below 18.50m : with fine to coarse grained sand.					
				S02000 SPT 20.00-20.45 m 10,13,14 N=27 PP 20.40 m =220 kPa						Below 20.00m : sandy; fine to coarse grained, brown mottled black.					
				S02150 SPT 21.50-21.95 m 12,13,17 N=30 PP 21.80 m =150 kPa											
				S02300 SPT 23.00-23.45 m 5,7,8 N=15 PP 23.30 m =140 kPa					CI	Silty CLAY trace sand: medium plasticity, pink grey, fine to coarse grained sand.					

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client: ARTC	Commenced: 01/02/2021
Project Name: Inland Rail B2G	Completed: 03/02/2021
Hole Location: Approx. CH148567 - Pampas	Logged By: V. Chandrasena
Hole Coordinates: 344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 382.20 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description						Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
WB				S02450 SPT 24.50-24.95 13,14,19 N=33 PP 24.70 m =410 kPa		357.2	25		CI	Silty CLAY trace sand: medium plasticity, pink grey, fine to coarse grained sand. (continued)		St to VSt				ALLUVIAL SOIL
						356.2	26		CL-CI	Silty CLAY with sand: low to medium plasticity, brown mottled black, fine to coarse grained sand.	M (>PL)	H			x	
				S02600 SPT 26.00-26.45 17,27,24 N=51		355.2	27		SP	SAND trace silt and clay: fine to medium grained, yellow brown, low to medium plasticity clay.	W	VD				
				S02750 SPT 27.50-27.95 15,15,21 N=36 PP 27.80 m =410 kPa		354.2	28		CL-CI	Silty CLAY with sand: low to medium plasticity, brown mottled black, fine to coarse grained sand.	M (>PL)	H			x	
				S02900 SPT 29.00-29.45 18,19,25 N=44		353.2	29		SP-SC	SAND with clay trace gravel: fine to coarse grained, pale brown, low to medium plasticity clay, fine sub-rounded gravel.	W	D				
				S03050 SPT 30.50-30.95 11,12,15 N=27 PP 30.80 m =310 kPa		351.2	31		CI-CH	Silty CLAY with sand: medium to high plasticity, grey brown, fine to coarse grained sand.	M (~PL) to M (>PL)	VSt			x	RESIDUAL SOIL
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Support C - Casing Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Moisture Condition D - Dry M - Moist W - Wet Plastic Limit < PL = PL > PL Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard L - Loose MD - Medium Dense D - Dense VD - Very Dense																

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 01/02/2021																			
Project Name: Inland Rail B2G										Completed: 03/02/2021																			
Hole Location: Approx. CH148567 - Pampas										Logged By: V. Chandrasena																			
Hole Coordinates: 344624.0 m E 6925945.0 m N MGA94 Zone 56										Checked By: J.Boyle																			
Drill Model and Mounting: Comacchio 305/Track										Inclination: -90°																			
Hole Diameter: 115 mm										RL Surface: 382.20 m																			
										Bearing: AHD																			
										Operator: J. Komung																			
Drilling Information										Soil Description										Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations														
WB				S03200 SPT 32.00-32.45 m 8,11,16 N=27 PP 32.40 m =550 kPa		349.2	33		CI-CH	Silty CLAY with sand: medium to high plasticity, grey brown, fine to coarse grained sand. (continued)					RESIDUAL SOIL														
				S03350 SPT 33.50-33.95 m 10,12,14 N=26 PP 33.80 m =490 kPa						Below 33.50m : high plasticity clay, green grey, trace fine to medium grained sand.																			
				S03500 SPT 35.00-35.45 m 10,16,20 N=36 PP 35.35 m =480 kPa					CL-CI	Silty CLAY with sand: low to medium plasticity, grey mottled yellow brown, fine to coarse grained sand.																			
						346.2	36			Hole Terminated at 35.45 m Target depth Hole grouted to surface.																			
						345.2	37																						
						344.2	38																						
						343.2	39																						
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Support C - Casing Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Plastic Limit < PL = PL > PL																													

MG 4.02 LUB Log MG BOREHOLE EXCL DCP MG 4.02 GPJ <<DrawingFile>> 30/04/2021 10:57 10.0000 Dugout Lab and In Situ Tool - DGD | Uic DGDTP 4.01.2.dpi 3.04 2019-07-02 Pjt DGDTP 4.00.6 2017-11-25

Method
 AS - Auger Screwing
 RR - Rock Roller
 WB - Washbore

Penetration
 No resistance ranging to refusal

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Samples and Tests
 U - Undisturbed Sample
 D - Disturbed Sample
 SPT - Standard Penetration Test

Moisture Condition
 D - Dry
 M - Moist
 W - Wet

Consistency/Relative Density
 VS - Very Soft
 S - Soft
 F - Firm
 VSt - Very Stiff
 H - Hard
 VL - Very Loose
 L - Loose
 MD - Medium Dense
 D - Dense
 VD - Very Dense

Support
 C - Casing

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Classification Symbols and Soil Descriptions
 Based on Unified Soil Classification System

Plastic Limit
 < PL
 = PL
 < PL

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.20 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3054 Depth Range: 0.50 - 0.95 m

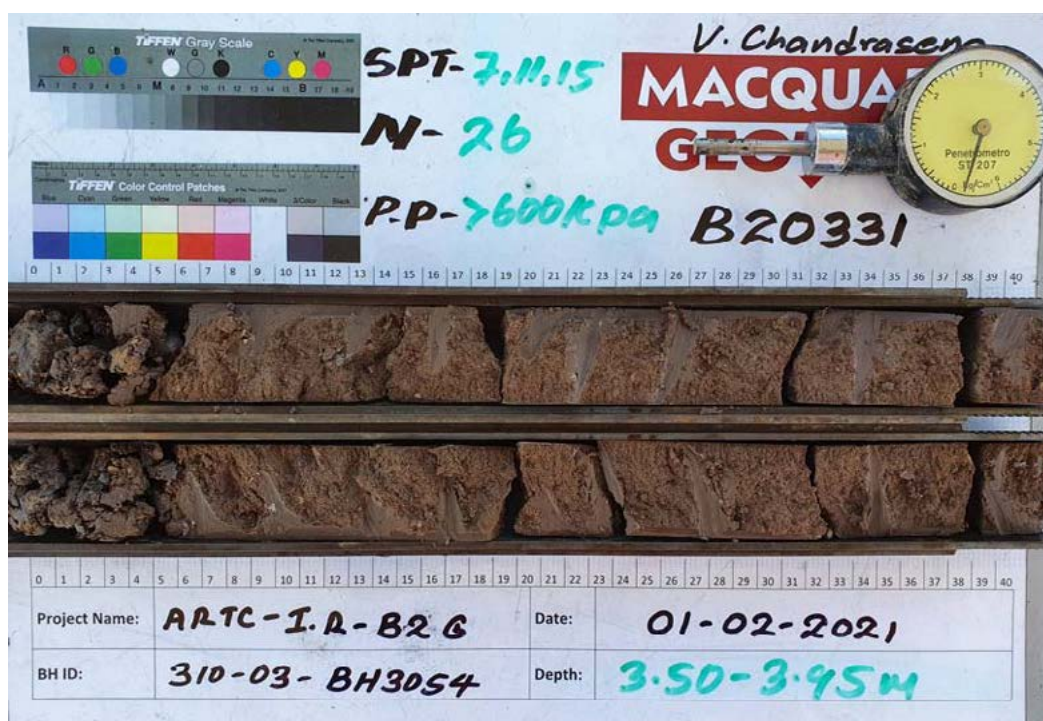


310-03-BH3054 Depth Range: 2.00 - 2.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.20 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3054 Depth Range: 3.50 - 3.95 m

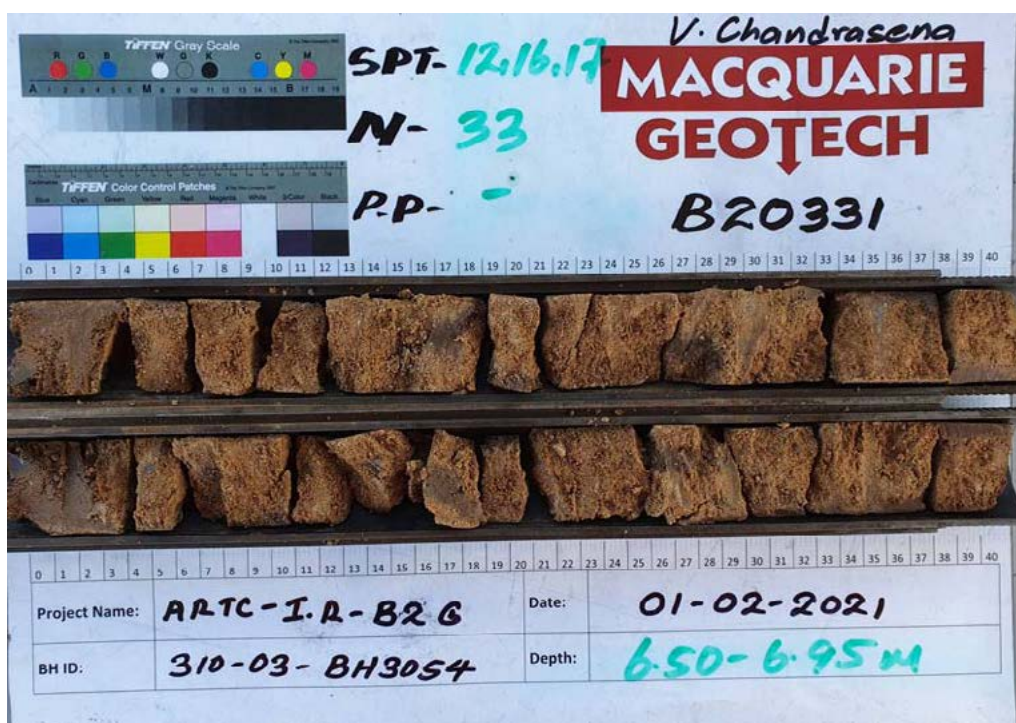


310-03-BH3054 Depth Range: 5.00 - 5.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.20 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3054 Depth Range: 6.50 - 6.95 m



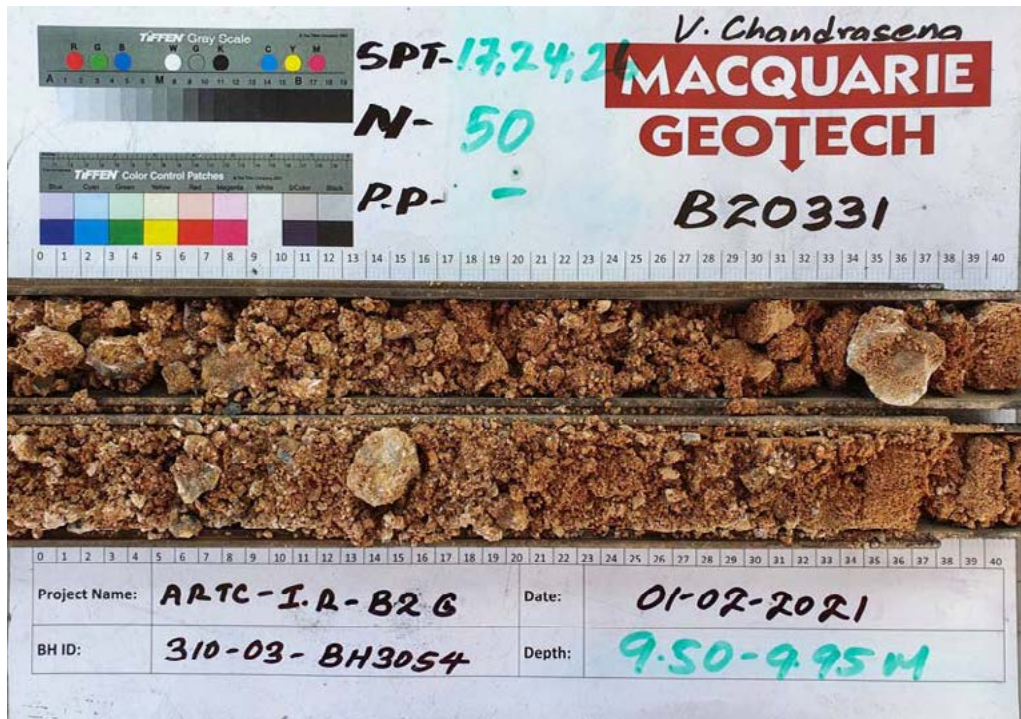
310-03-BH3054 Depth Range: 8.00 - 8.45 m

Engineering Log - Borehole

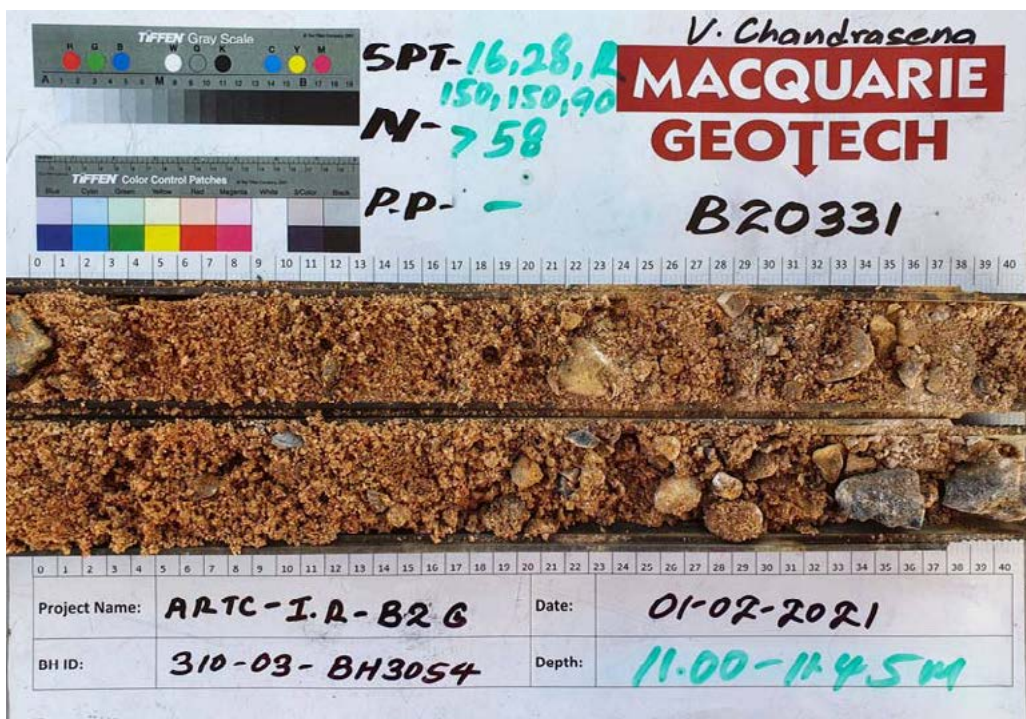
Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	382.20 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: J. Komung



310-03-BH3054 Depth Range: 9.50 - 9.95 m

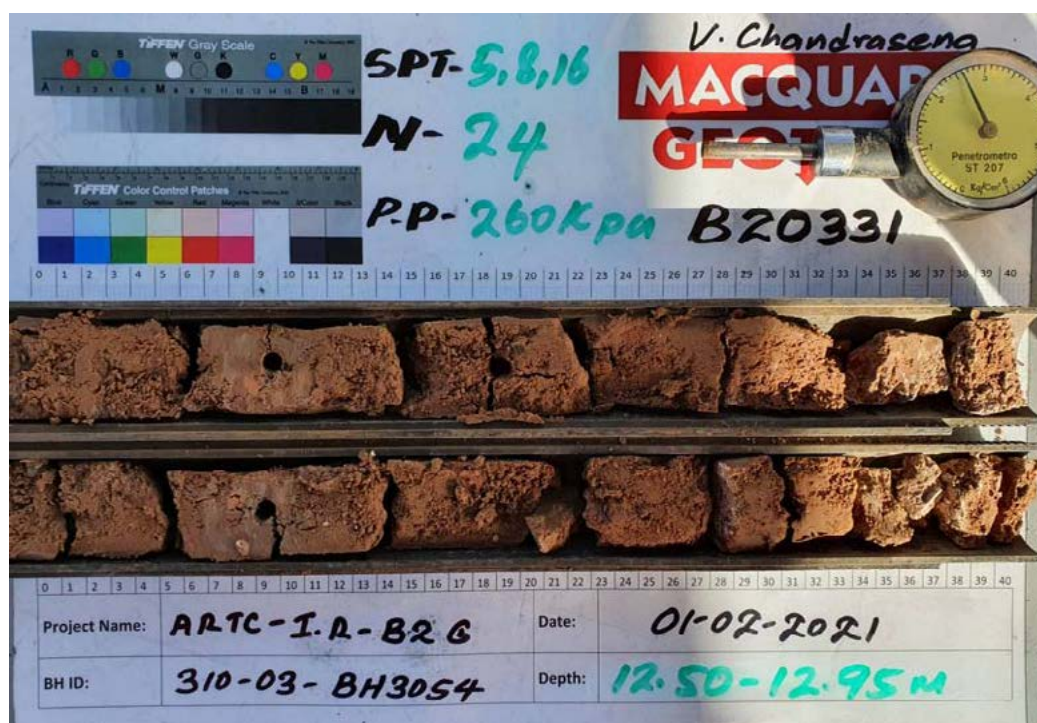


310-03-BH3054 Depth Range: 11.00 - 11.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.20 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3054 Depth Range: 12.50 - 12.95 m



310-03-BH3054 Depth Range: 14.00 - 14.45 m

Engineering Log - Borehole

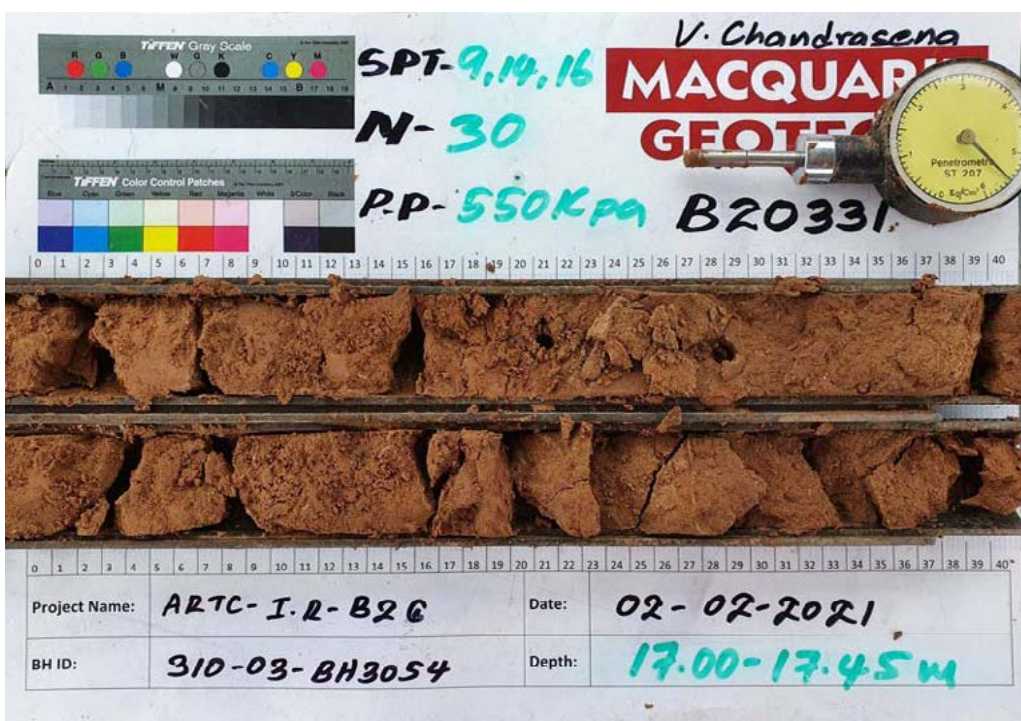
Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	382.20 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3054 Depth Range: 15.50 - 15.95 m

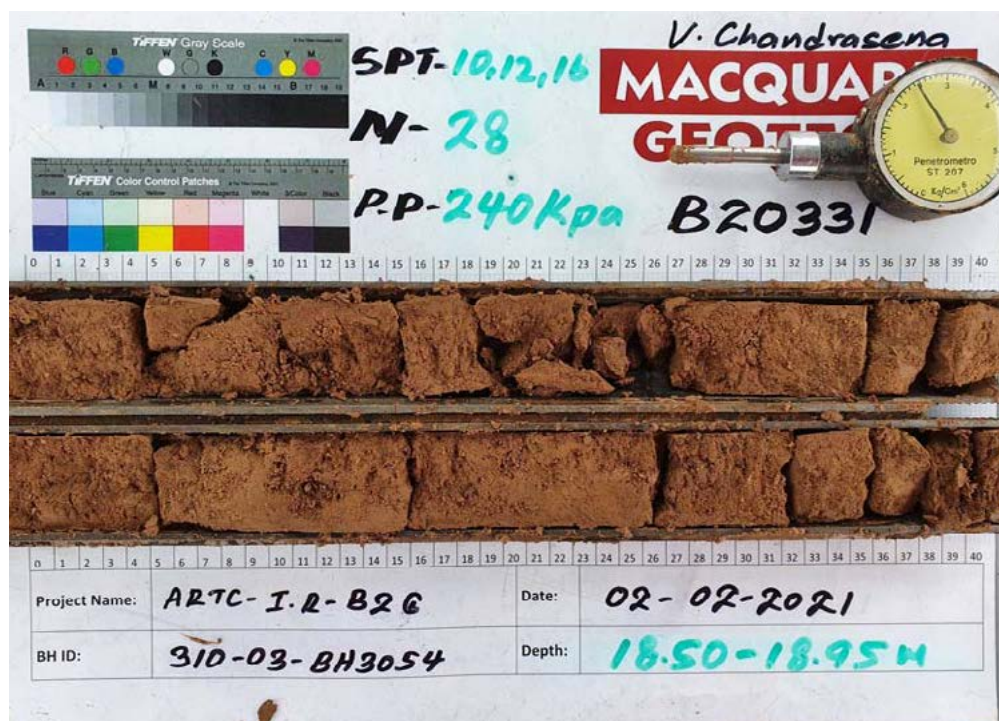


310-03-BH3054 Depth Range: 17.00 - 17.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	382.20 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3054 Depth Range: 18.50 - 18.95 m



310-03-BH3054 Depth Range: 20.00 - 20.45 m

Engineering Log - Borehole

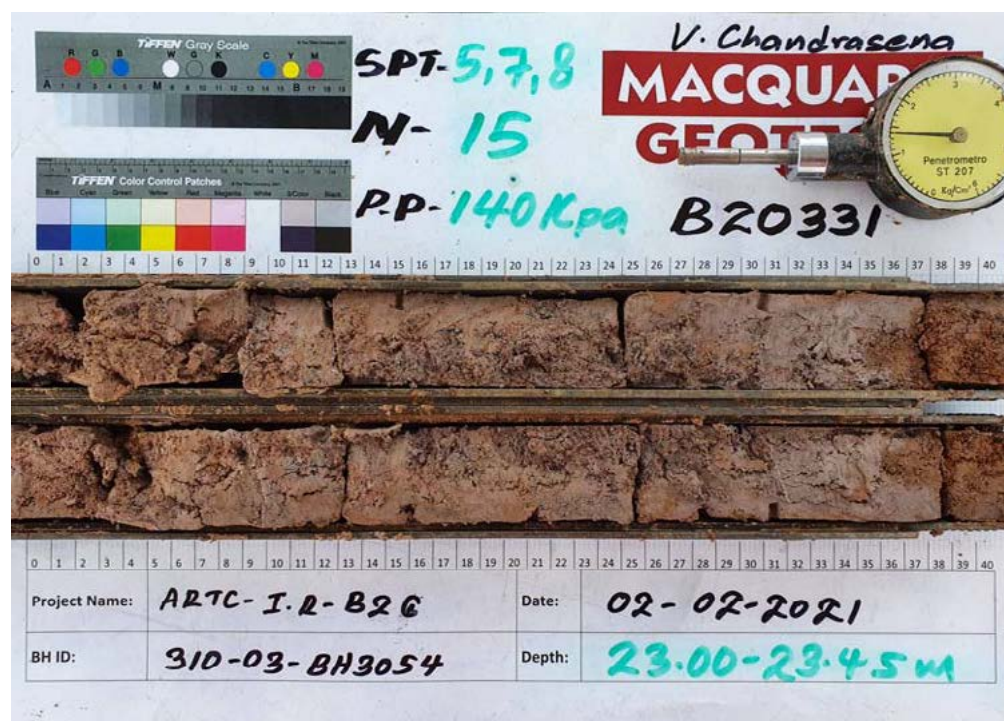
Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	382.20 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3054 Depth Range: 21.50 - 21.95 m



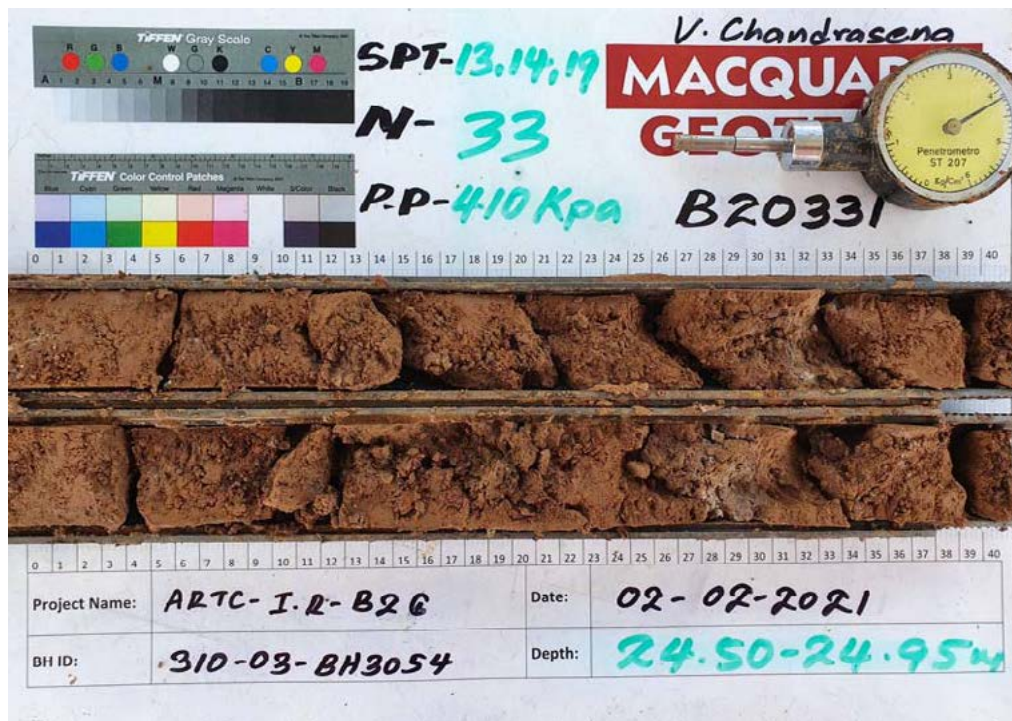
310-03-BH3054 Depth Range: 23.00 - 23.45 m

Engineering Log - Borehole

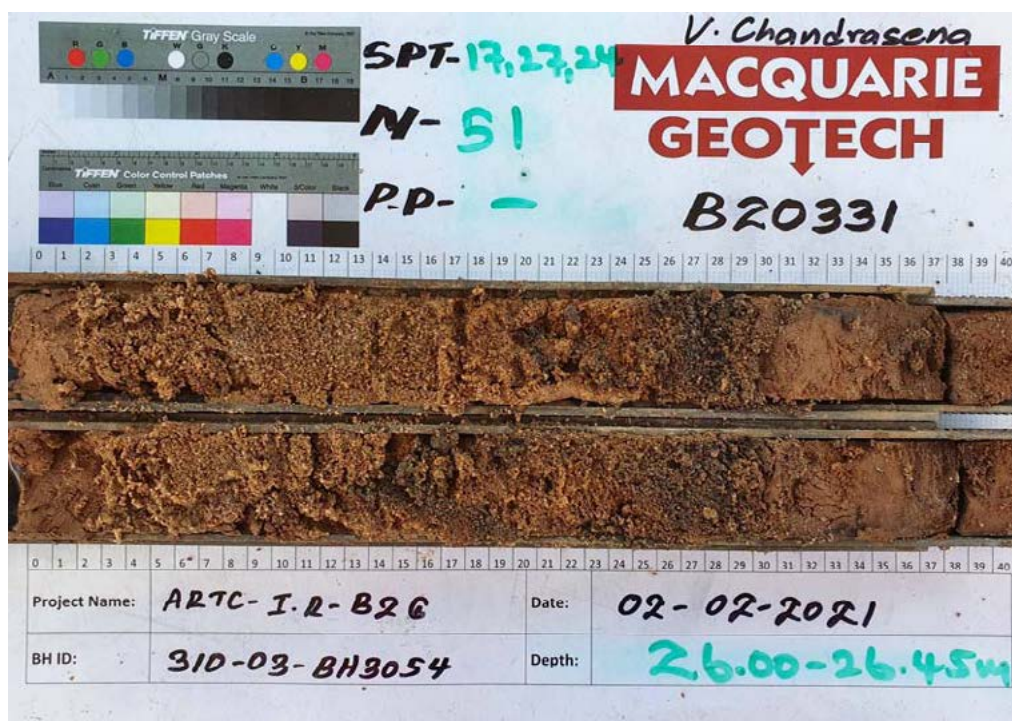
Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	382.20 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	J. Komung



310-03-BH3054 Depth Range: 24.50 - 24.95 m



310-03-BH3054 Depth Range: 26.00 - 26.45 m

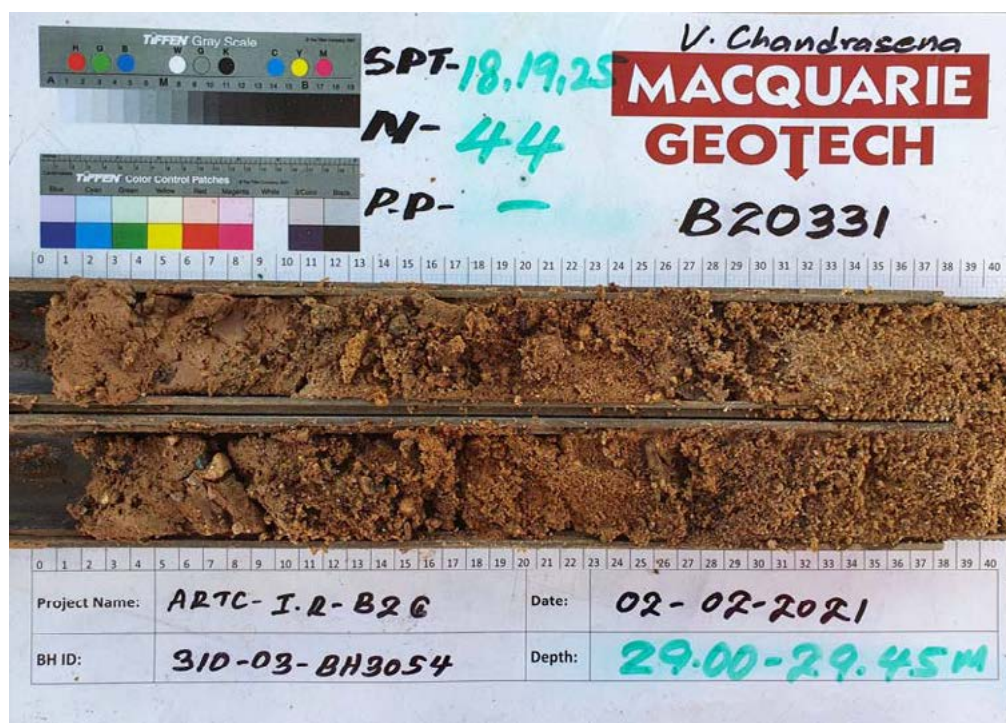
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.20 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3054 Depth Range: 27.50 - 27.95 m



310-03-BH3054 Depth Range: 29.00 - 29.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.20 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3054 Depth Range: 30.50 - 30.95 m



310-03-BH3054 Depth Range: 32.00 - 32.45 m

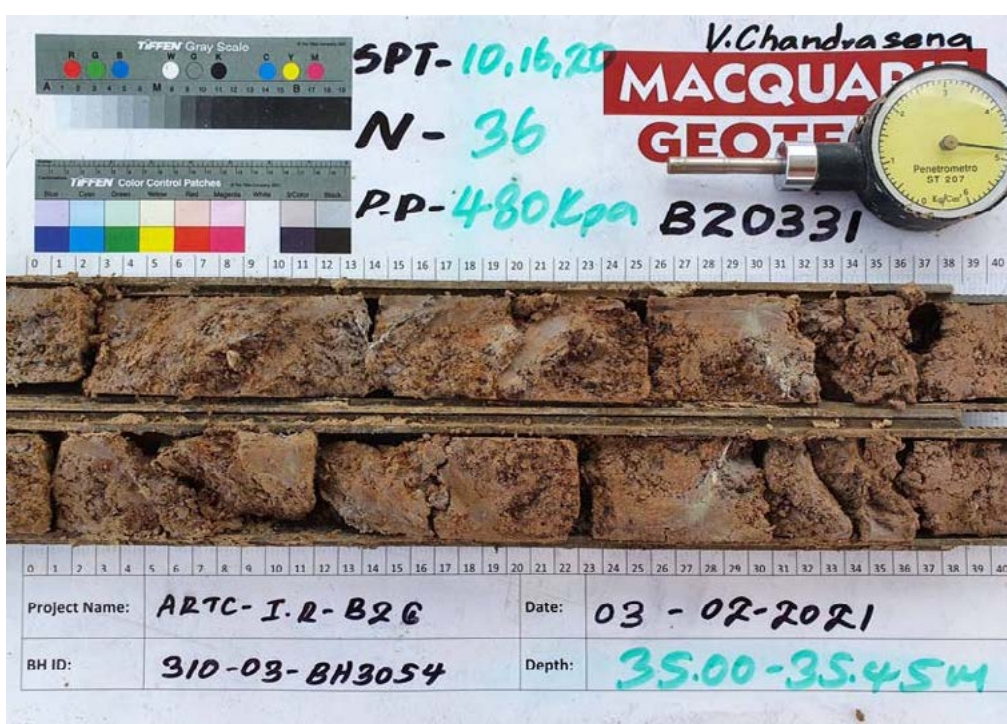
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148567 - Pampas	Logged By:	V. Chandrasena
Hole Coordinates:	344624.0 m E 6925945.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	382.20 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3054 Depth Range: 33.50 - 33.95 m



310-03-BH3054 Depth Range: 35.00 - 35.45 m

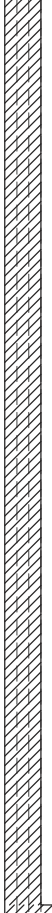
Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH148865 - Brookstead
Hole Coordinates: 344797.8 m E 6926188.6 m N MGA94 Zone 56

Commenced: 01/02/2021
Completed: 03/02/2021
Logged By: H.Tran
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Truck mounted rig Inclinor: -90° RL Surface: 382.24 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Soil Description						Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)				Structure and Additional Observations
AD/T				J00015 0.15-0.20 m PID 0.20 m 0.2 ppm D00030 0.30-0.50 m J00045 0.45-0.50 m S00050 SPT 0.50-0.95 m 6,9,15 N=24 PID 0.50 m 0.3 ppm PP 0.85 m >600 kPa J00095 0.95-1.00 m D00100 1.00-1.50 m PID 1.00 m 0.3 ppm S00150 SPT 1.50-1.95 m 10,16,20 N=36 PP 1.75 m >600 kPa D00250 2.50-3.00 m S00300 SPT 3.00-3.45 m 6,8,9 N=17 PP 3.30 m >600 kPa U00350 3.50-3.95 m D00400 4.00-4.50 m S00450 SPT 4.50-4.95 m 6,7,8 N=15 PP 4.75 m >600 kPa D00550 5.50-6.00 m S00600 SPT 6.00-6.45 m 6,6,9 N=15 PP 6.30 m =320 kPa D00700 7.00-7.50 m	381.2	1		CH	FILL Silty CLAY trace sand: high plasticity, black, fine to medium grained sand.	VSt H M (<PL) VSt D L		100 200 300 400 500	REWORKED TOPSOIL				
				380.2	2		Silty CLAY: high plasticity, black. From 0.80 to 0.95m: trace organic material.	*ALLUVIAL SOIL									
				379.2	3		Below 2.50m: trace fine grained sand.	*									
				378.2	4			*									
				377.2	5		CI-CH Silty CLAY with sand: medium to high plasticity, dark brown, fine grained sand.	*									
				376.2	6		CI Sandy CLAY: medium plasticity, dark yellow brown, fine grained sand.	x	6.00: Added water to drilling								
				375.2	7		SC Clayey SAND: fine to coarse grained, yellow brown and dark brown, low to medium plasticity clay.										
Method AS - Auger Screwing RR - Rock Roller WB - Washbore				Penetration  No resistance ranging to refusal		Water  Level (Date)  Inflow  Partial Loss  Complete Loss		Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		Moisture Condition D - Dry M - Moist W - Wet		Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense					
Support C - Casing				Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System		Plastic Limit < PL = PL < PL									

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 01/02/2021									
Project Name: Inland Rail B2G										Completed: 03/02/2021									
Hole Location: Approx. CH148865 - Brookstead										Logged By: H.Tran									
Hole Coordinates: 344797.8 m E 6926188.6 m N MGA94 Zone 56										Checked By: J.Boyle									
Drill Model and Mounting: D4TAPG Truck mounted rig					Inclination: -90°					RL Surface: 382.24 m									
Hole Diameter: 115 mm					Bearing:					Datum: AHD Operator: B.Boga									
Drilling Information							Soil Description								Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations				
AD/T			IK	S00750 SPT 7.50-7.95 m 5,4,5 N=9 D00850 8.50-9.00 m		373.2	9		SC	Clayey SAND: fine to coarse grained, yellow brown and dark brown, low to medium plasticity clay. (continued)					ALLUVIAL SOIL				
				S00900 SPT 9.00-9.45 m 4,3,4 N=7					SP	SAND with gravel: fine to coarse grained, yellow brown, fine sub-rounded gravel.									
				D01000 10.00-10.50 m															
				S01050 SPT 10.50-10.95 m 3,4,5 N=9															
				D01150 11.50-12.00 m															
WB		60% Water RETURN		S01200 SPT 12.00-12.45 m 10,12,14 N=26		370.2	12		SP	Gravelly SAND trace clay: fine to coarse grained, dark yellow brown, fine to coarse sub-rounded gravel, low plasticity clay.	M								
										MD									
				S01350 SPT 13.50-13.95 m 22,30,14 N=44					GP	Sandy GRAVEL trace clay: fine to coarse sub-rounded, dark brown, fine to coarse grained sand, low plasticity clay.	W		D						
		95% Water RETURN		S01500 SPT 15.00-15.45 m 10,14,16 N=30 PP 15.30 m =570 kPa		367.2	15		ML-MH	Clayey SILT trace sand: yellow brown and grey, low to medium plasticity clay, fine grained sand.	M (>PL)	VSt		x					
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Support C - Casing Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Plastic Limit < PL = PL < PL																			

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle

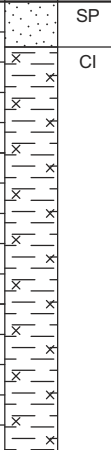
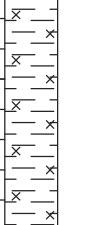
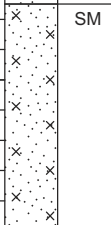
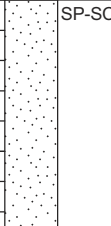
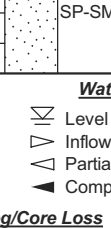
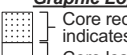
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.24 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	B.Boga

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB			100% Water RETURN	S01650 SPT 16.50-16.95 m 8,16,18 N=34 PP 16.75 m =430 kPa		365.2	17		ML-MH CI	Clayey SILT trace sand: yellow brown and grey, low to medium plasticity clay, fine grained sand. (continued) Silty CLAY trace sand: medium plasticity, dark brown, fine grained sand. From 16.70 to 16.90m: tending to Clayey SAND: fine grained, pale yellow brown, low plasticity clay.	VSt M (>PL) H				x
			100% Water RETURN	S01800 SPT 18.00-18.45 m 13,18,20 N=38		364.2	18		SP-SC	Clayey Gravelly SAND: fine to coarse grained, orange brown and grey, medium plasticity clay, fine to medium sub-rounded gravel.	D				
			90% Water RETURN	S01950 SPT 19.50-19.95 m 11,13,13 N=26		362.2	20		SP	SAND trace gravel: fine to coarse grained, dark brown, fine to medium sub-rounded gravel.	MD				
			50% Water RETURN	S02100 SPT 21.00-21.45 m 13,16,20 N=36		361.2	21				W				
			70% Water RETURN	S02250 SPT 22.50-22.95 m 15,21,27 N=48		359.2	23				D				

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal 	Level (Date) Inflow Partial Loss Complete Loss 	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss 	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B20331

Client: ARTC		Commenced: 01/02/2021														
Project Name: Inland Rail B2G		Completed: 03/02/2021														
Hole Location: Approx. CH148865 - Brookstead		Logged By: H.Tran														
Hole Coordinates: 344797.8 m E 6926188.6 m N MGA94 Zone 56		Checked By: J.Boyle														
Drill Model and Mounting: D4TAPG Truck mounted rig		Inclination: -90°														
Hole Diameter: 115 mm		RL Surface: 382.24 m														
		Bearing: Datum: AHD Operator: B.Boga														
Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
WB			100% Water RETURN	S02400 SPT 24.00-24.45 m 9,14,18 N=32 PP 24.40 m =360 kPa		357.2	25		SP	Silty CLAY: medium plasticity, pale grey and orange brown.	W	D		x	ALLUVIAL SOIL	
				CI												
				S02550 SPT 25.50-25.95 m 10,16,20 N=36 PP 25.75 m =520 kPa						356.2	26		M (>PL)	H		x
				SC									Clayey SAND: fine to medium grained, dark brown, medium plasticity clay.	MD		
				S02700 SPT 27.00-27.45 m 6,10,10 N=20						355.2	27		W	D		
				S02850 SPT 28.50-28.95 m 11,19,17 N=36											353.2	29
S03000 SPT 30.00-30.45 m 6,11,14 N=25		352.2	30		D	MD	RESIDUAL SOIL									
S03150 SPT 31.50-31.95 m 8,16,18									351.2	31		D	MD			
Method AS - Auger Screwing RR - Rock Roller WB - Washbore		Penetration 		Water Level (Date) Inflow Partial Loss Complete Loss		Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		Moisture Condition D - Dry M - Moist W - Wet		Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense		Plastic Limit < PL = PL < PL		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System		
Support C - Casing		Graphic Log/Core Loss 														

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Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.24 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 0.50 - 0.95 m

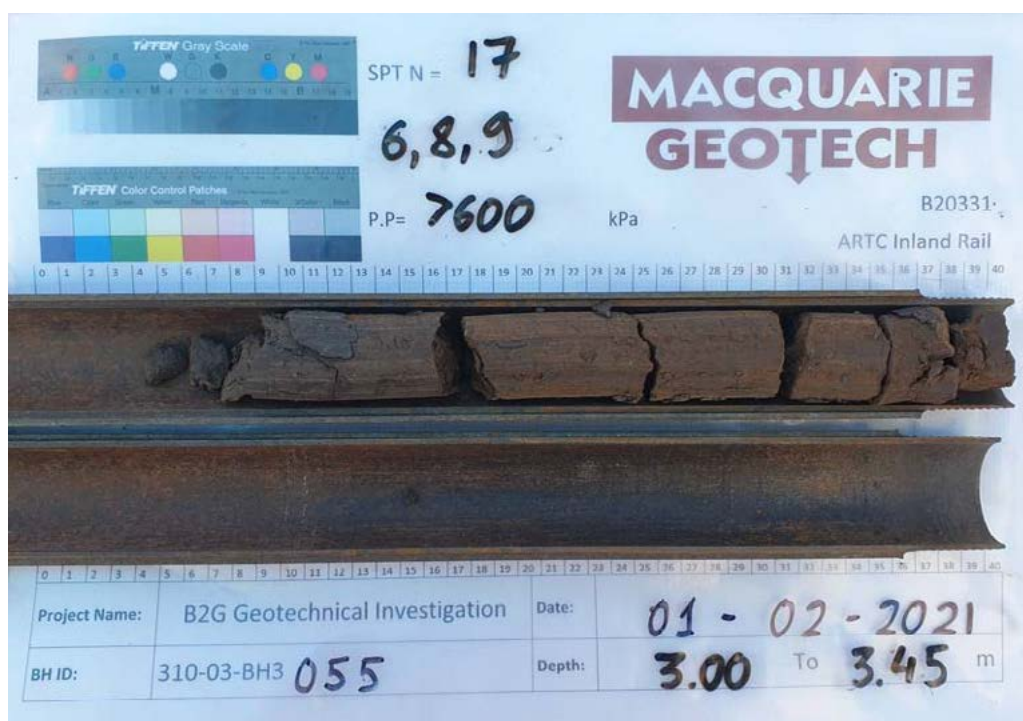


310-03-BH3055 Depth Range: 1.50 - 1.95 m

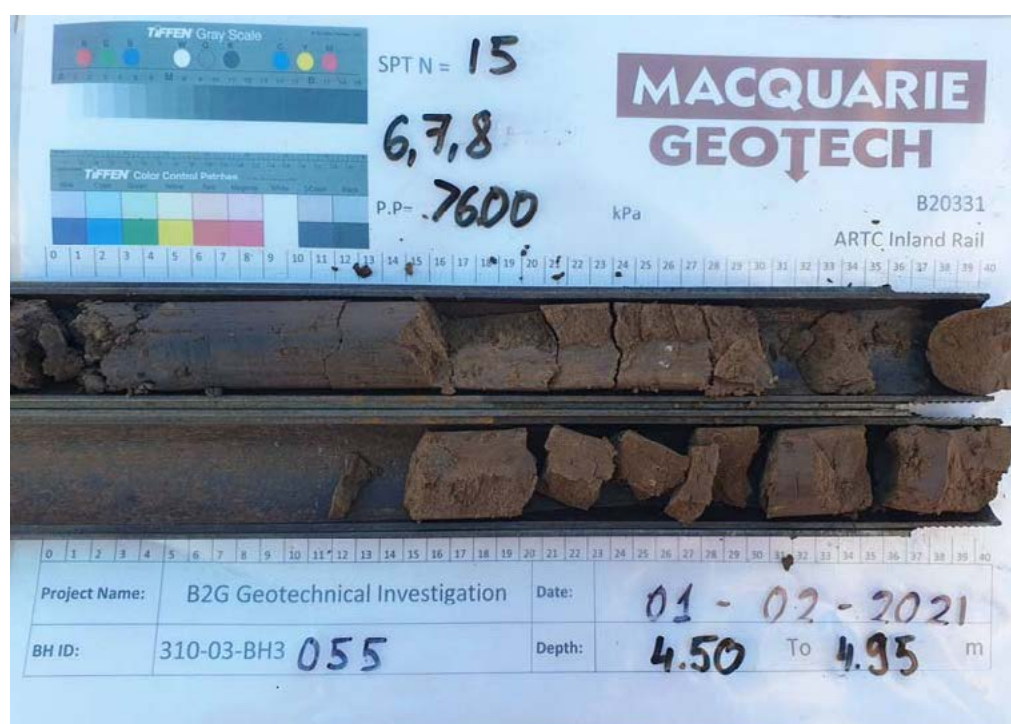
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.24 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 3.00 - 3.45 m



310-03-BH3055 Depth Range: 4.50 - 4.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	382.24 m
		Bearing:	
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 6.00 - 6.45 m



310-03-BH3055 Depth Range: 7.50 - 7.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.24 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 9.00 - 9.45 m



310-03-BH3055 Depth Range: 10.50 - 10.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.24 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 12.00 - 12.45 m



310-03-BH3055 Depth Range: 13.50 - 13.95 m

Engineering Log - Borehole

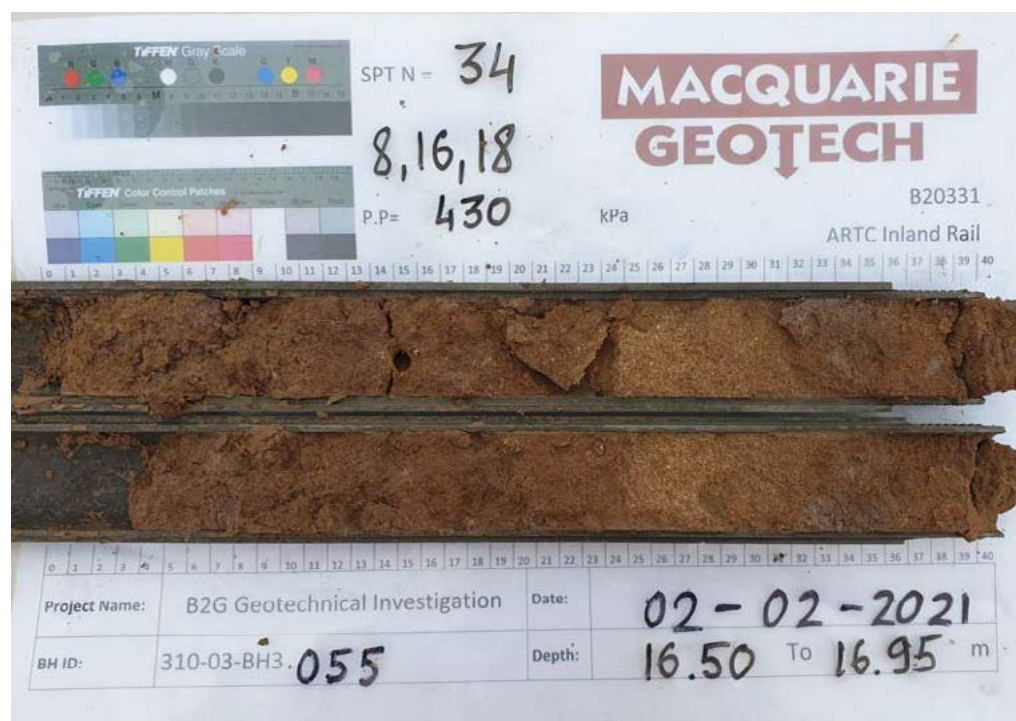
Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.24 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	B.Boga



310-03-BH3055 Depth Range: 15.00 - 15.45 m

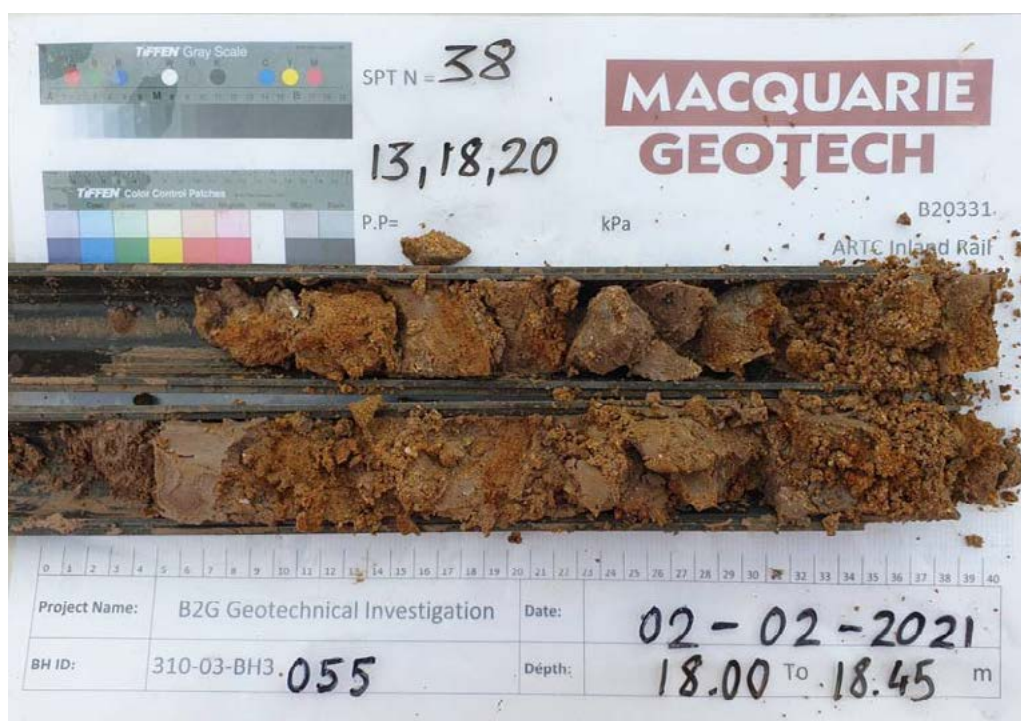


310-03-BH3055 Depth Range: 16.50 - 16.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.24 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 18.00 - 18.45 m

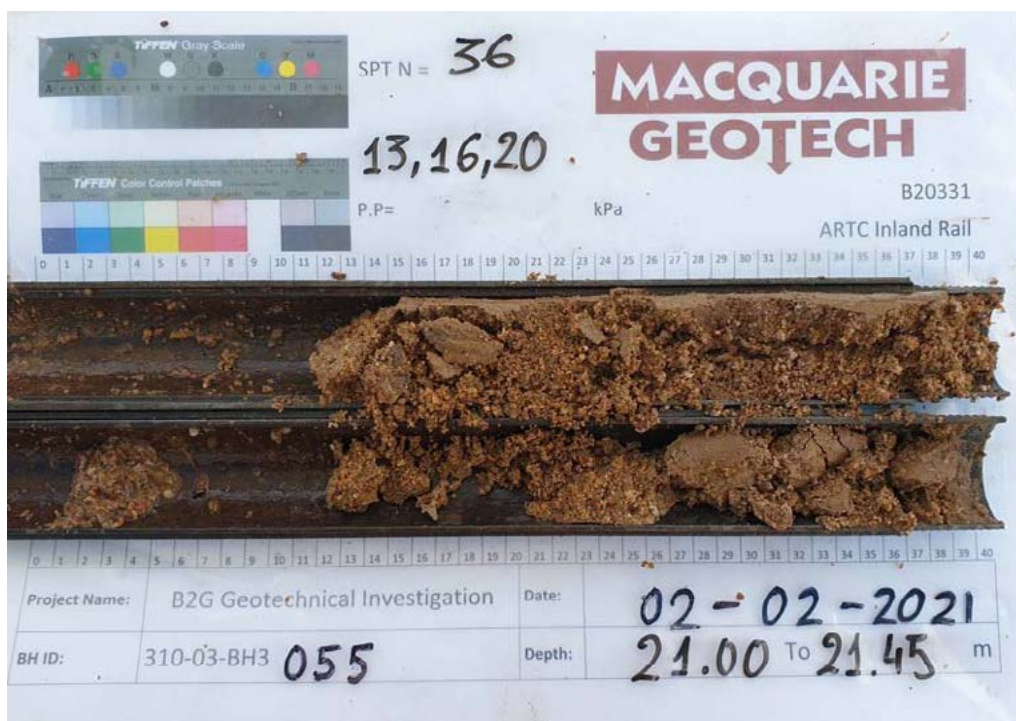


310-03-BH3055 Depth Range: 19.50 - 19.95 m

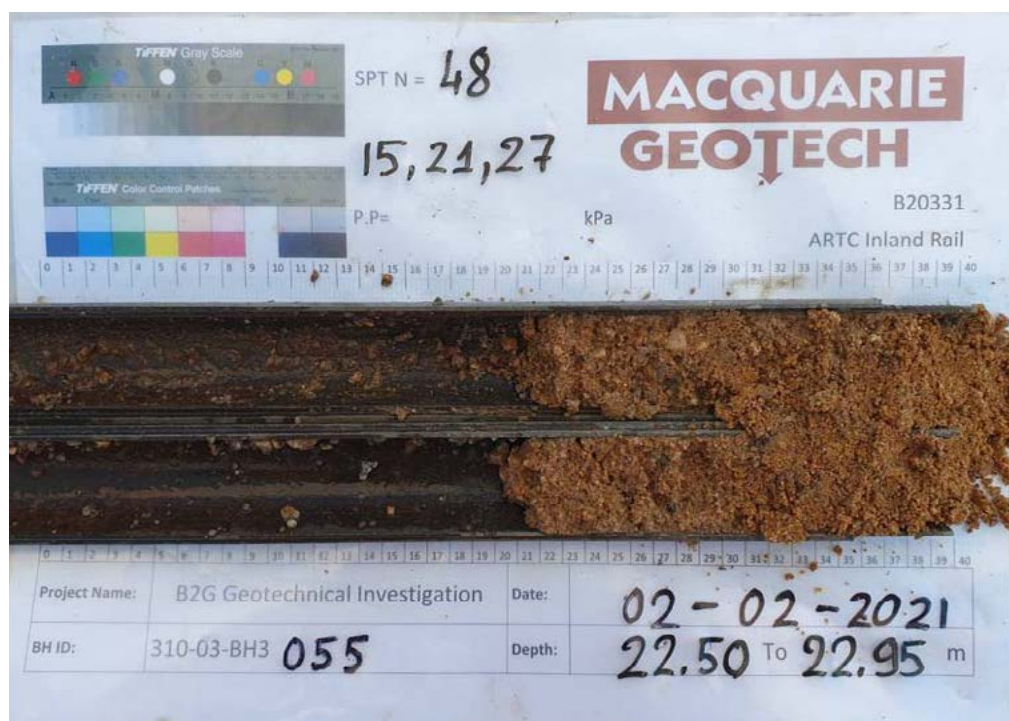
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.24 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 21.00 - 21.45 m



310-03-BH3055 Depth Range: 22.50 - 22.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.24 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 24.00 - 24.45 m



310-03-BH3055 Depth Range: 25.50 - 25.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.24 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 27.00 - 27.45 m



310-03-BH3055 Depth Range: 28.50 - 28.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.24 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 30.00 - 30.45 m

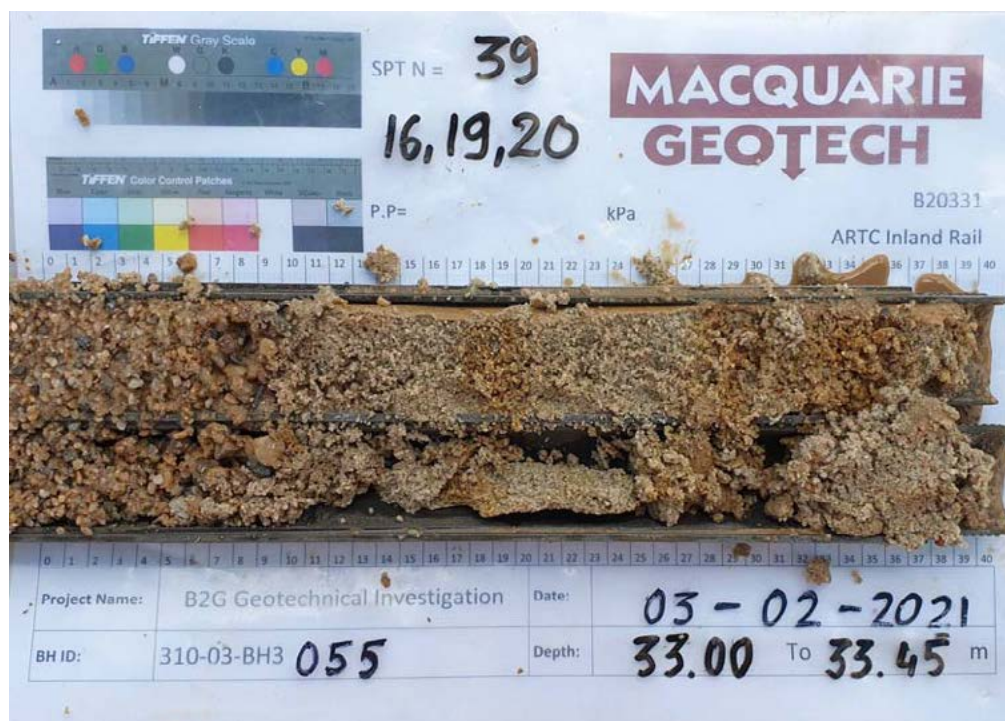


310-03-BH3055 Depth Range: 31.50 - 31.95 m

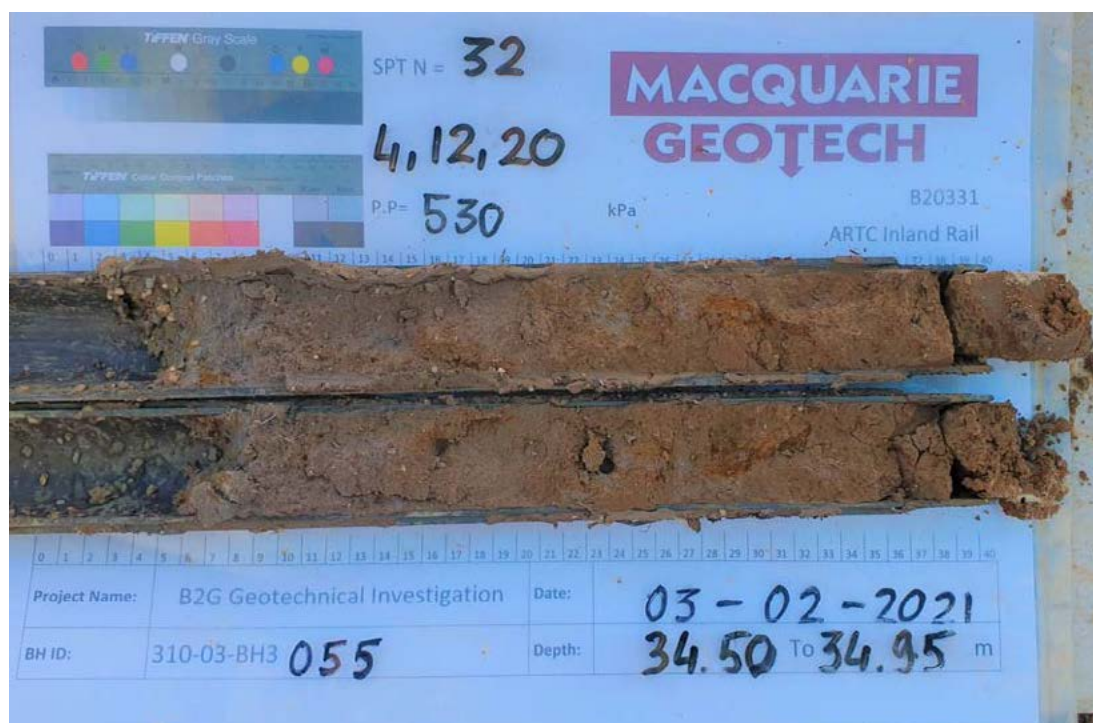
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	01/02/2021
Project Name:	Inland Rail B2G	Completed:	03/02/2021
Hole Location:	Approx. CH148865 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344797.8 m E 6926188.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.24 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3055 Depth Range: 33.00 - 33.45 m



310-03-BH3055 Depth Range: 34.50 - 34.95 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH149129 - Brookstead
Hole Coordinates: 344946.6 m E 6926406.0 m N MGA94 Zone 56

Commenced: 21/01/2021
Completed: 23/01/2021
Logged By: H.Tran
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Truck mounted rig Inclinor: -90° RL Surface: 382.14 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)				Structure and Additional Observations
AD/V				D00030 0.30-0.50 m J00045 0.45-0.50 m S00050 SPT 0.50-0.95 m 4.7,10 N=17 PID 0.50 m 0.1 ppm PP 0.85 m >600 kPa J00095 0.95-1.00 m D00100 1.00-1.50 m PID 1.00 m 0.2 ppm S00150 SPT 1.50-1.95 m 12,13,14 N=27 PP 1.75 m >600 kPa J00195 1.95-2.00 m PID 2.00 m 0 ppm D00250 2.50-3.00 m S00300 SPT 3.00-3.45 m 10,12,14 N=26 PP 3.35 m >600 kPa S00450 SPT 4.50-4.95 m 10,12,17 N=29 PP 4.75 m >600 kPa S00600 SPT 6.00-6.45 m 9,7,9 N=16 PP 6.30 m =550 kPa S00750 SPT 7.50-7.95 m 6.5,8		381.1	1		CH	FILL Silty CLAY trace sand and gravel: high plasticity, black, fine to coarse grained sand, fine sub-rounded gravel, with rootlets (<2mm) FILL Silty CLAY trace gravel: high plasticity, black, fine sub-rounded gravel.							REWORKED TOPSOIL
										FILL							
										*ALLUVIAL SOIL							
WB			70% Water RETURN			380.1	2		CI-CH	Silty CLAY: medium to high plasticity, dark brown.	M (<PL)						x
						379.1	3		SM	Silty SAND: fine to medium grained, dark yellow brown.	W	MD					x
						378.1	4		CI	Sandy CLAY: medium plasticity, dark brown, fine grained sand.							x
						377.1	5		CI-CH	Silty CLAY with sand: medium to high plasticity, dark brown, fine grained sand, with calcareous material.	M (>PL)	St					x

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB- Washbore	 No resistance ranging to refusal	 Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	 Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Plastic Limit

< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.14 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	B.Boga

Drilling Information							Soil Description						Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations
WB			70% Water RETURN	N=13 PP 7.80 m =420 kPa					CI-CH	Silty CLAY with sand: medium to high plasticity, dark brown, fine grained sand, with calcareous material. (continued)							ALLUVIAL SOIL	
				S00900 SPT 9.00-9.45 m 5.5,8 N=13 PP 9.30 m =420 kPa		373.1	9					St				x		
						372.1	10											
				S01050 SPT 10.50-10.95 m 5.6,9 N=15 PP 10.75 m =480 kPa		371.1	11		CI-CH	Sandy CLAY: medium to high plasticity, dark grey and dark yellow brown, fine grained sand.						x		
						370.1	12		CI	Silty CLAY: medium plasticity, brown.	M (>PL)	VSt			x			
				S01200 SPT 12.00-12.45 m 8,10,20 N=30 PP 12.25 m =220 kPa		369.1	13		CH	Gravelly CLAY: high plasticity, brown and dark grey, fine to medium sub-rounded to sub-angular gravel.								
				S01350 SPT 13.50-13.95 m 11,19,21 N=40 PP 13.60 m =360 kPa		368.1	14		CL	Silty CLAY trace sand: low plasticity, brown, fine grained sand, with calcareous material.		H				x		
				S01500 SPT 15.00-15.45 m 10,7,10 N=17 PP 15.35 m =250 kPa		367.1	15			Below 15.00m: trace fine sub-rounded to sub-angular gravel.		VSt				x		

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	 No resistance ranging to refusal	 Level (Date)  Inflow  Partial Loss  Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss		Classification Symbols and Soil Descriptions	Plastic Limit	
C - Casing	 Core recovered (hatching indicates material)  Core loss		Based on Unified Soil Classification System	< PL = PL < PL	

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.14 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	B.Boga

Drilling Information							Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)				Structure and Additional Observations
WB			70% Water RETURN	S01650 SPT 16.50-16.95 m 7,11,14 N=25 PP 16.70 m =300 kPa		365.1	17		CL	Silty CLAY trace sand: low plasticity, brown, fine grained sand, with calcareous material. (continued)	M (>PL)	VSt					ALLUVIAL SOIL Standing Water Level - 23/01/2021
				S01800 SPT 18.00-18.45 m 11,10,12 N=22		364.1	18		SP	SAND: fine to medium grained, dark yellow brown.				MD			
			0% Water RETURN	S01950 SPT 19.50-19.95 m 29,23,22 N=45		362.1	20		GP	Sandy GRAVEL: fine to medium sub-rounded, orange brown and dark yellow brown, fine to medium grained sand.	W	D					
				S02100 SPT 21.00-21.45 m 15,14,21 N=35		361.1	21			From 21.00 to 21.45m: trace low plasticity clay.							
				S02250 SPT 22.50-22.95 m 10,15,24 N=39		359.1	23		SC	Clayey SAND: fine to medium grained, dark yellow brown, low to medium plasticity clay.							

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal 	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss		Classification Symbols and Soil Descriptions	Plastic Limit	
C - Casing	Core recovered (hatching indicates material) Core loss		Based on Unified Soil Classification System	< PL = PL < PL	

Client: ARTC										Commenced: 21/01/2021																			
Project Name: Inland Rail B2G										Completed: 23/01/2021																			
Hole Location: Approx. CH149129 - Brookstead										Logged By: H.Tran																			
Hole Coordinates: 344946.6 m E 6926406.0 m N MGA94 Zone 56										Checked By: J.Boyle																			
Drill Model and Mounting: D4TAPG Truck mounted rig										Inclination: -90°		RL Surface: 382.14 m																	
Hole Diameter: 115 mm										Bearing:		Datum: AHD		Operator: B.Boga															
Drilling Information										Soil Description										Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations														
WB			80% Water RETURN	S02400 SPT 24.00-24.45 m 11,9,12 N=21		357.1	25		CI-CH	Silty CLAY: medium to high plasticity, dark brown.	M (<PL)	VSt			ALLUVIAL SOIL														
				S02550 SPT 25.50-25.95 m 6,11,14 N=25 PP 25.75 m =510 kPa		356.1	26		Below 26.50m: with fine to coarse sub-rounded gravel.																				
				S02700 SPT 27.00-27.45 m 25,20,18 N=38		355.1	27			SP	SAND with gravel: fine to coarse grained, dark yellow brown, fine sub-rounded gravel.	W	D			RESIDUAL SOIL													
				S02850 SPT 28.50-28.95 m 11,22,26 N=48		354.1	28		SP-SC	SAND with clay: fine to coarse grained, dark grey and pale grey, low plasticity clay.																			
				S03000 SPT 30.00-30.45 m 18,17,21 N=38		353.1	29																						
				S03150 SPT 31.50-31.95 m 13,17,19		352.1	30		SP	Gravelly SAND: fine to coarse grained, pale grey, fine to medium sub-rounded gravel.	SP-SC																		
Method AS - Auger Screwing RR - Rock Roller WB- Washbore										Penetration No resistance ranging to refusal										Water Level (Date) Inflow Partial Loss Complete Loss									
Support C - Casing										Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss										Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT- Standard Penetration Test									
										Moisture Condition D - Dry M - Moist W - Wet										Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense									
										Plastic Limit < PL = PL > PL										Classification Symbols and Soil Descriptions Based on Unified Soil Classification System									

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Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.14 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3056 Depth Range: 0.50 - 0.95 m



310-03-BH3056 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.14 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	B.Boga



310-03-BH3056 Depth Range: 3.00 - 3.45 m

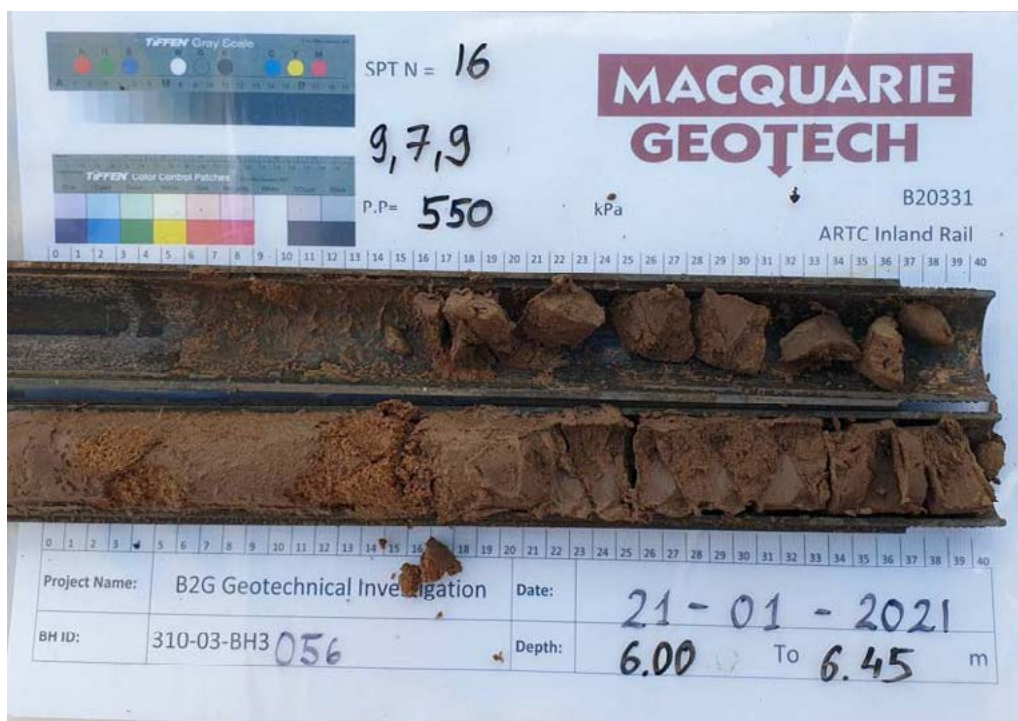


310-03-BH3056 Depth Range: 4.50 - 4.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.14 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3056 Depth Range: 6.00 - 6.45 m

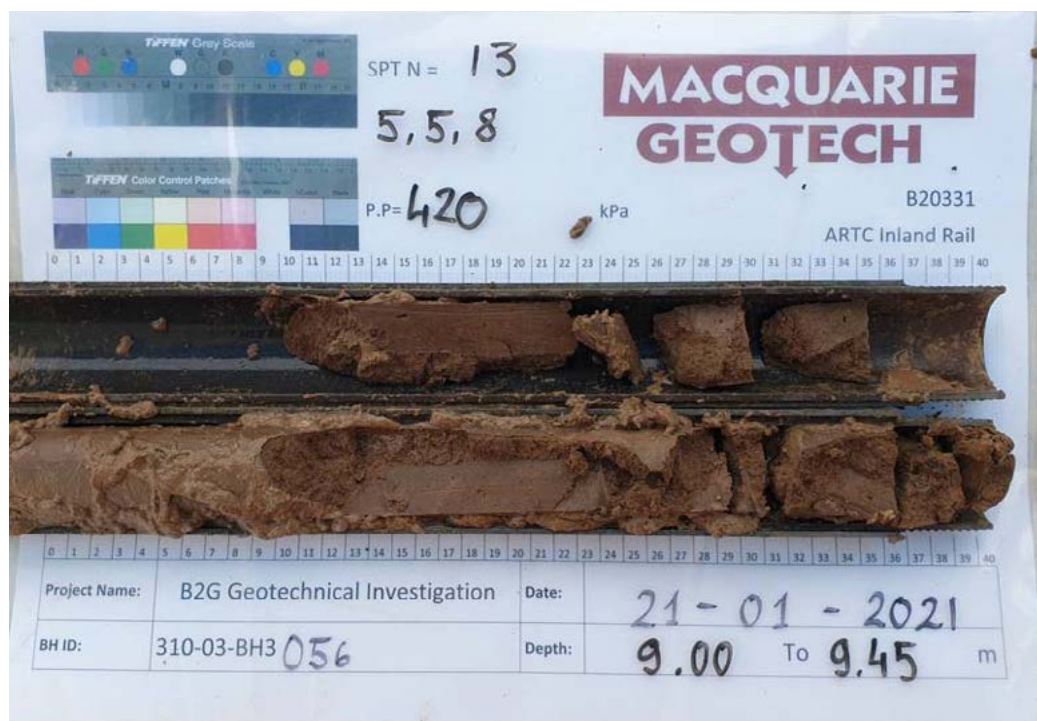


310-03-BH3056 Depth Range: 7.50 - 7.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.14 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3056 Depth Range: 9.00 - 9.45 m



310-03-BH3056 Depth Range: 10.50 - 10.95 m

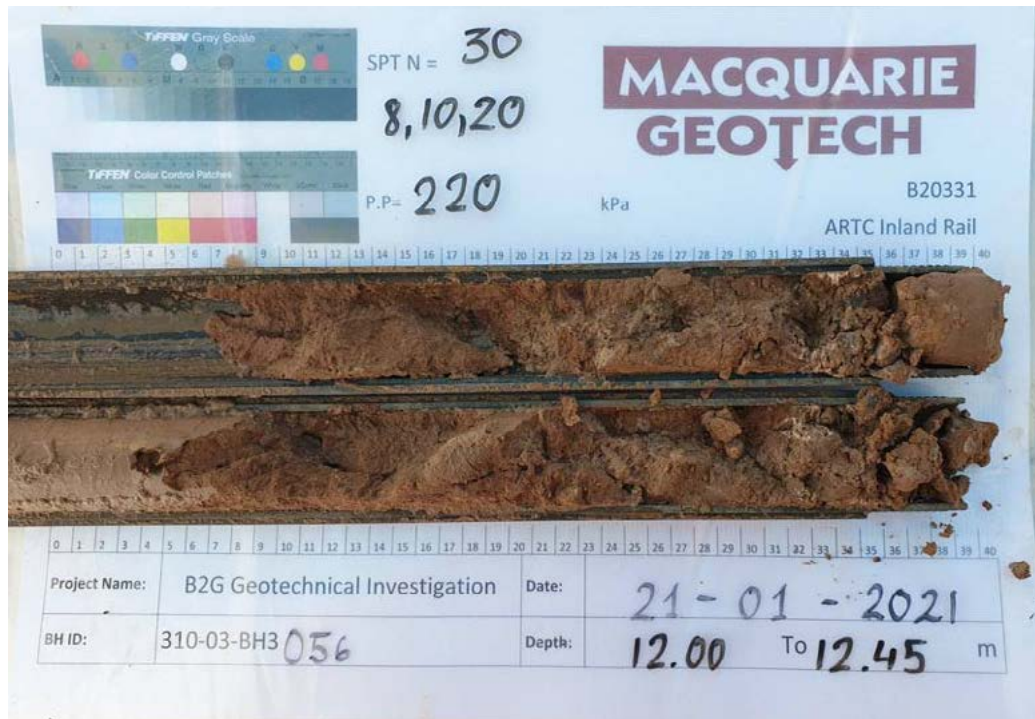
Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH149129 - Brookstead
Hole Coordinates: 344946.6 m E 6926406.0 m N MGA94 Zone 56

Commenced: 21/01/2021
Completed: 23/01/2021
Logged By: H.Tran
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Truck mounted rig Inclusion: -90° RL Surface: 382.14 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: B.Boga



310-03-BH3056 Depth Range: 12.00 - 12.45 m

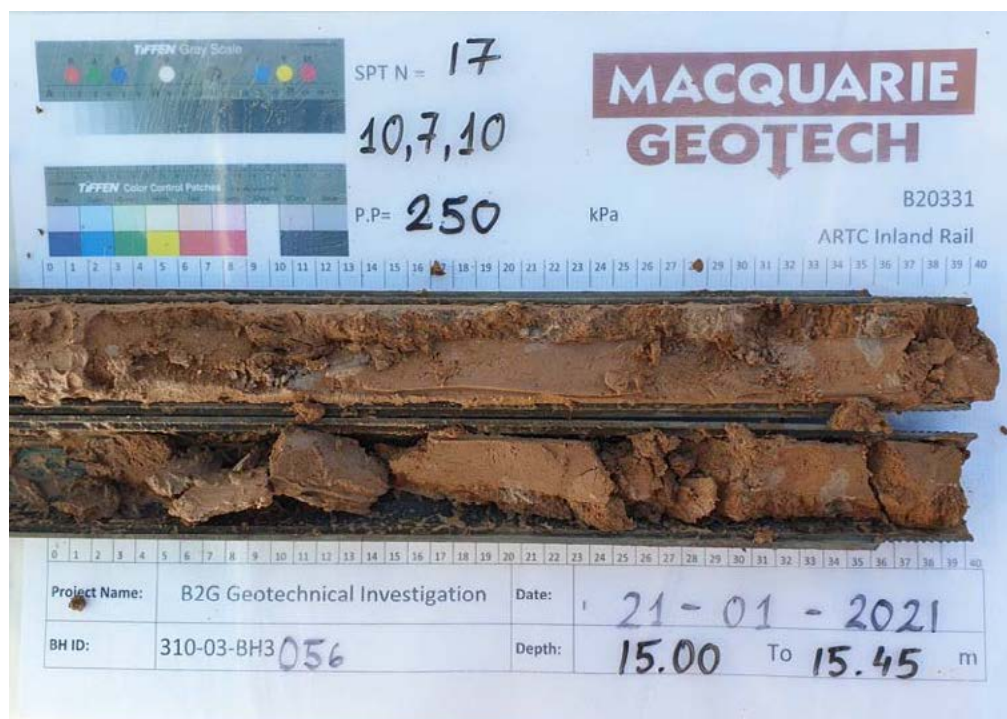


310-03-BH3056 Depth Range: 13.50 - 13.95 m

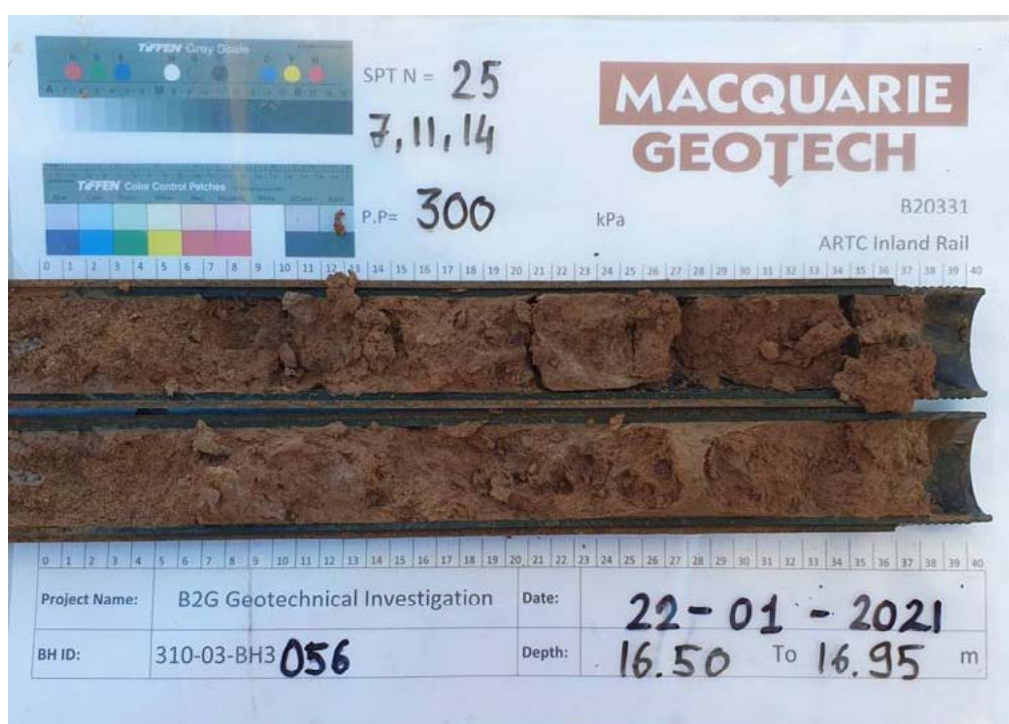
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.14 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3056 Depth Range: 15.00 - 15.45 m

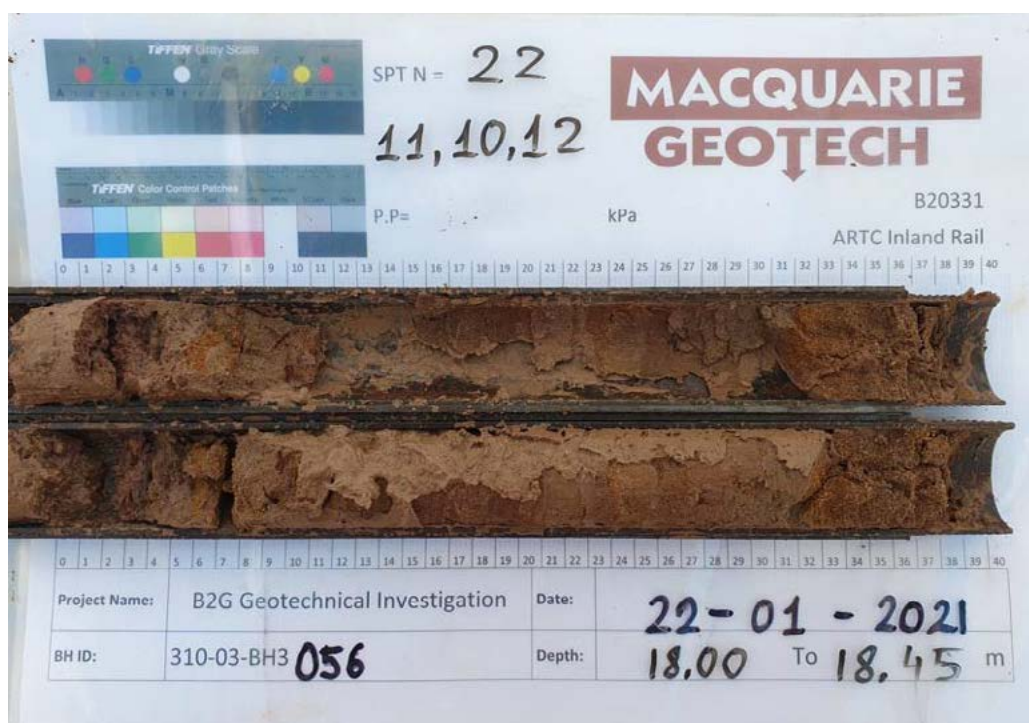


310-03-BH3056 Depth Range: 16.50 - 16.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.14 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3056 Depth Range: 18.00 - 18.45 m



310-03-BH3056 Depth Range: 19.50 - 19.95 m

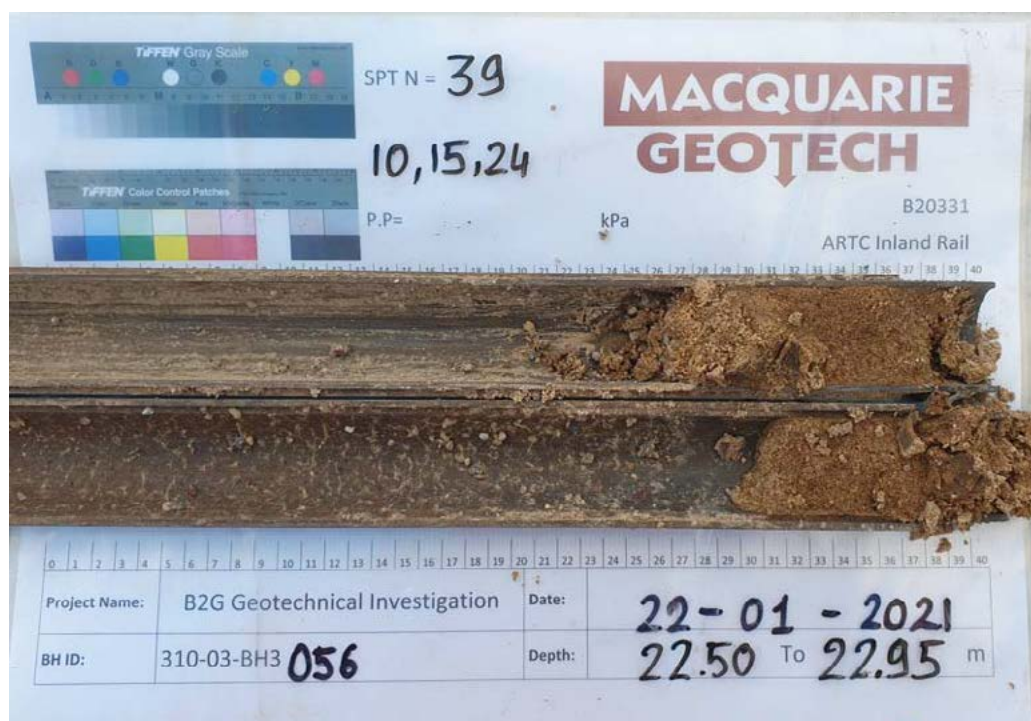
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.14 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3056 Depth Range: 21.00 - 21.45 m



310-03-BH3056 Depth Range: 22.50 - 22.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.14 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	B.Boga



310-03-BH3056 Depth Range: 24.00 - 24.45 m



310-03-BH3056 Depth Range: 25.50 - 25.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.14 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3056 Depth Range: 27.00 - 27.45 m

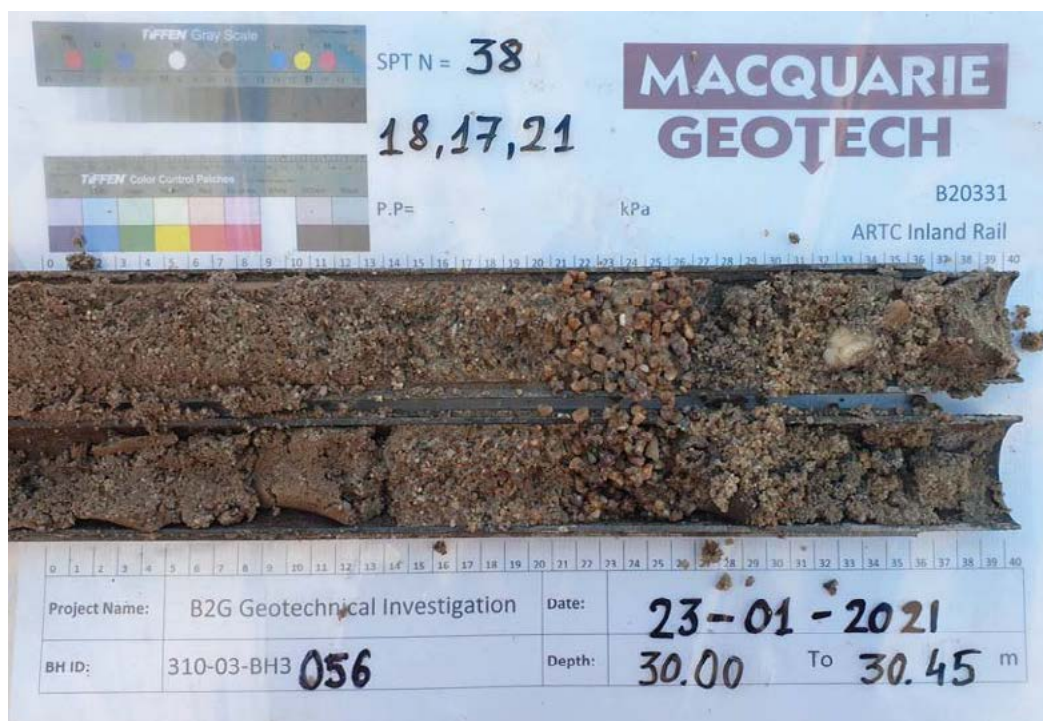


310-03-BH3056 Depth Range: 28.50 - 28.95 m

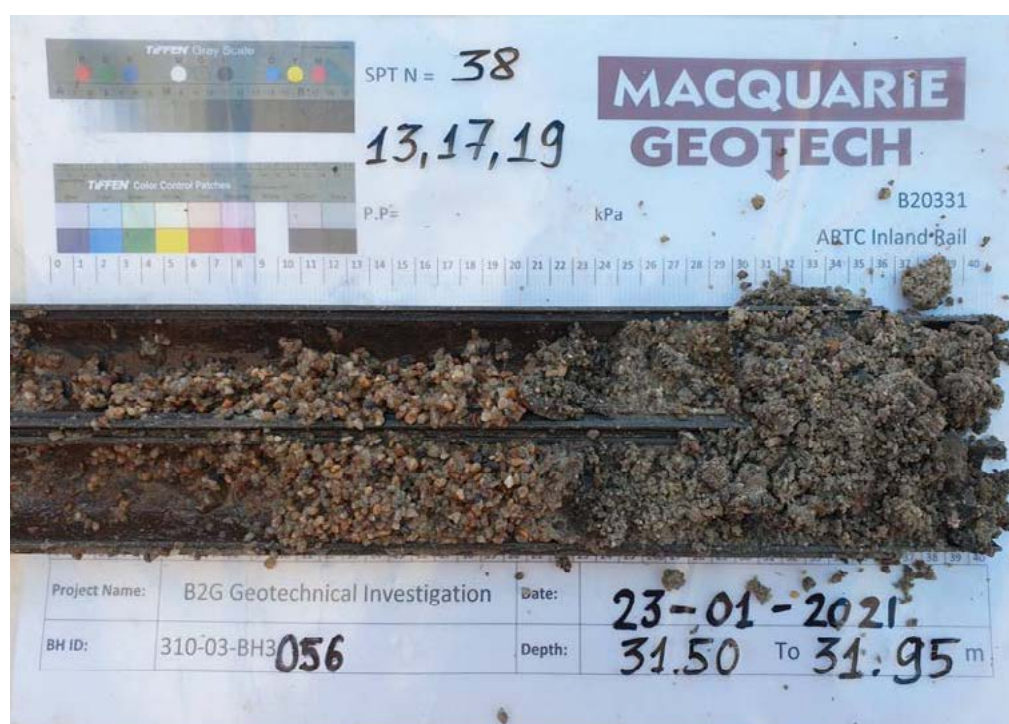
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.14 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3056 Depth Range: 30.00 - 30.45 m



310-03-BH3056 Depth Range: 31.50 - 31.95 m

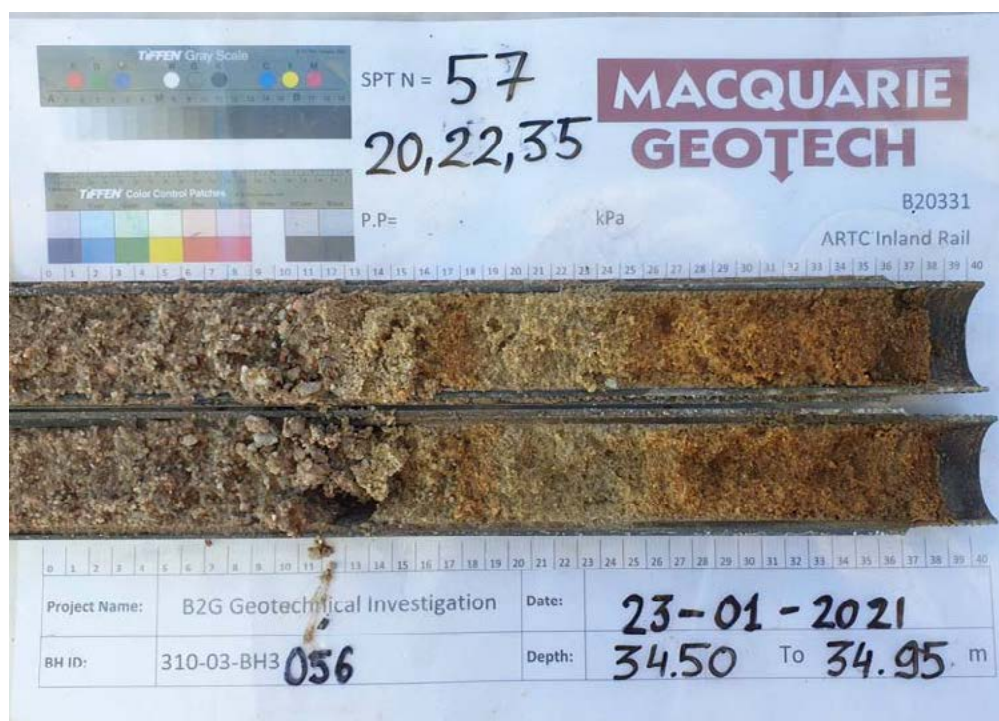
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	21/01/2021
Project Name:	Inland Rail B2G	Completed:	23/01/2021
Hole Location:	Approx. CH149129 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	344946.6 m E 6926406.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.14 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3056 Depth Range: 33.00 - 33.45 m



310-03-BH3056 Depth Range: 34.50 - 34.95 m

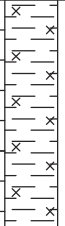
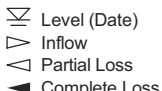
Engineering Log - Borehole

Project No.: B20331

Client: ARTC				Commenced: 24/01/2021															
Project Name: Inland Rail B2G				Completed: 26/01/2021															
Hole Location: Approx. CH149330 - Brookstead				Logged By: H.Tran															
Hole Coordinates: 345064.2 m E 6926573.2 m N MGA94 Zone 56				Checked By: J.Boyle															
Drill Model and Mounting: D4TAPG Truck mounted rig		Inclination: -90°		RL Surface: 382.07 m															
Hole Diameter: 115 mm		Bearing:		Datum: AHD		Operator: B.Boga													
Drilling Information						Soil Description						Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations				
AD/T			IK	J00015 0.15-0.20 m PID 0.20 m 0.4 ppm D00030 0.30-0.50 m		381.1	1		CH	FILL Silty CLAY trace sand and gravel: high plasticity, black, fine grained sand, fine to medium sub-rounded to sub-angular gravel.					REWORKED TOPSOIL				
				J00045 0.45-0.50 m S00050 SPT 0.50-0.95 m 4,5,6 N=11 PID 0.50 m 0.3 ppm PP 0.85 m >600 kPa		380.1	2			Silty CLAY trace gravel: high plasticity, black, trace fine sub-rounded gravel.	St				* ALLUVIAL SOIL				
				J00095 0.95-1.00 m D00100 1.00-1.50 m PID 1.00 m 0.3 ppm S00150 SPT 1.50-1.95 m 9,15,20 N=35 PP 1.75 m >600 kPa		379.1	3	CI-CH	Silty CLAY trace sand: medium to high plasticity, dark brown, fine to medium grained sand.	H				3.00: Lost SPT shoe in the borehole- no sample retrieved.					
				D00250 2.50-3.00 m S00300 SPT 3.00-3.45 m 7,8,8 N=16 D00400 4.00-4.50 m S00450 SPT 4.50-4.95 m 11,14,14 N=28 PP 4.75 m >600 kPa		378.1	4				M (<PL)								
				D00550 5.50-6.00 m S00600 SPT 6.00-6.45 m 7,9,14 N=23 PP 6.35 m >600 kPa		377.1	5						VSt			Standing Water Level - 26/01/2021			
				D00700 7.00-7.50 m S00750 SPT 7.50-7.95 m 5,8,10		376.1	6									6.00: Added water to drilling			
						375.1	7										7.50: Added water to drilling		
Method AS - Auger Screwing RR - Rock Roller WB - Washbore		Penetration No resistance ranging to refusal		Water Level (Date) Inflow Partial Loss Complete Loss		Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		Moisture Condition D - Dry M - Moist W - Wet		Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense									
Support C - Casing		Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System		Plastic Limit < PL = PL < PL													

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 24/01/2021																																																	
Project Name: Inland Rail B2G										Completed: 26/01/2021																																																	
Hole Location: Approx. CH149330 - Brookstead										Logged By: H.Tran																																																	
Hole Coordinates: 345064.2 m E 6926573.2 m N MGA94 Zone 56										Checked By: J.Boyle																																																	
Drill Model and Mounting: D4TAPG Truck mounted rig										Inclination: -90°																																																	
Hole Diameter: 115 mm										RL Surface: 382.07 m																																																	
										Bearing: AHD																																																	
										Operator: B.Boga																																																	
Drilling Information										Soil Description										Observations																																							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																																												
WB			70% Water RETURN	S01650 SPT 16.50-16.95 m 8,13,21 N=34 PP 16.50 m =340 kPa		365.1	17		CL-CI	Silty CLAY with sand: low to medium plasticity, dark brown and grey, fine grained sand. (continued) Below 14.00m: becoming medium plasticity clay. Below 14.00m: becoming medium plasticity clay. (continued) Below 16.70m: sand increasing with depth.	M (<PL)	VSt		100 200 300 400 500																																													
				S01800 SPT 18.00-18.45 m 9,13,17 N=30		364.1	18		SM	Silty SAND: fine grained, dark brown.	W	MD																																															
				S01950 SPT 19.50-19.95 m 8,11,18 N=29 PP 19.75 m =290 kPa		362.1	20		CL-CI	Silty CLAY with sand: low to medium plasticity, dark brown mottled black, fine grained sand.				x	ALLUVIAL SOIL																																												
			100% Water RETURN	S02100 SPT 21.00-21.45 m 9,11,10 N=21 PP 21.30 m =325 kPa		361.1	21				M (>PL)	VSt		x																																													
				S02250 SPT 22.50-22.95 m 4,7,13 N=20		359.1	23																																																				
Method AS - Auger Screwing RR - Rock Roller WB - Washbore										Penetration 										Water 										Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test										Moisture Condition D - Dry M - Moist W - Wet										Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense									
Support C - Casing										Graphic Log/Core Loss 										Classification Symbols and Soil Descriptions Based on Unified Soil Classification System										Plastic Limit < PL = PL < PL																													

Engineering Log - Borehole

Project No.: B20331

Client: ARTC			Commenced: 24/01/2021														
Project Name: Inland Rail B2G			Completed: 26/01/2021														
Hole Location: Approx. CH149330 - Brookstead			Logged By: H.Tran														
Hole Coordinates: 345064.2 m E 6926573.2 m N MGA94 Zone 56			Checked By: J.Boyle														
Drill Model and Mounting: D4TAPG Truck mounted rig		Inclination: -90°	RL Surface: 382.07 m														
Hole Diameter: 115 mm		Bearing:	Datum: AHD	Operator: B.Boga													
Drilling Information				Soil Description				Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
WB				S02400 SPT 24.00-24.45 m 7.9,11 N=20		357.1	25		CL-CI	Silty CLAY with sand: low to medium plasticity, dark brown mottled black, fine grained sand. (continued)	M (>PL)	VSt			ALLUVIAL SOIL		
			100% Water RETURN	S02550 SPT 25.50-25.95 m 8,11,15 N=26		356.1	26		SC	Clayey SAND: fine grained, dark brown, low plasticity clay.		MD					
				S02700 SPT 27.00-27.45 m 10,16,20 N=36		355.1	27		SC	Clayey SAND: fine to coarse grained, dark brown and dark grey, low to medium plasticity clay.	W						
						354.1	28					D					
			95% Water RETURN	S02850 SPT 28.50-28.95 m 7,12,13 N=25 PP 28.70 m =320 kPa		353.1	29		CI	Silty CLAY trace sand: medium plasticity, dark grey and brown, fine grained sand.	M (>PL)	VSt		x			
						352.1	30										
			100% Water RETURN	S03000 SPT 30.00-30.45 m 6,9,12 N=21		351.1	31		SM	Silty SAND: fine grained, pale yellow brown.	W	MD					
					S03150 SPT 31.50-31.95 m 10,9,9					SC	Clayey SAND: fine grained, grey and dark yellow brown.						RESIDUAL SOIL
Method		Penetration		Water		Samples and Tests		Moisture Condition		Consistency/Relative Density							
AS - Auger Screwing RR - Rock Roller WB - Washbore				Level (Date) Inflow Partial Loss Complete Loss		U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense							
Support		Graphic Log/Core Loss				Classification Symbols and Soil Descriptions		Plastic Limit									
C - Casing		 				Based on Unified Soil Classification System		< PL = PL < PL									

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 24/01/2021																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Hole Location: Approx. CH149330 - Brookstead										Logged By: H.Tran																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Hole Coordinates: 345064.2 m E 6926573.2 m N MGA94 Zone 56										Checked By: J.Boyle																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Drill Model and Mounting: D4TAPG Truck mounted rig					Inclination: -90°					RL Surface: 382.07 m																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Hole Diameter: 115 mm					Bearing:					Datum: AHD Operator: B.Boga																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
WB			100% Water RETURN	N=18					SC	Clayey SAND: fine grained, grey and dark yellow brown. (continued)					RESIDUAL SOIL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3057 Depth Range: 0.50 - 0.95 m

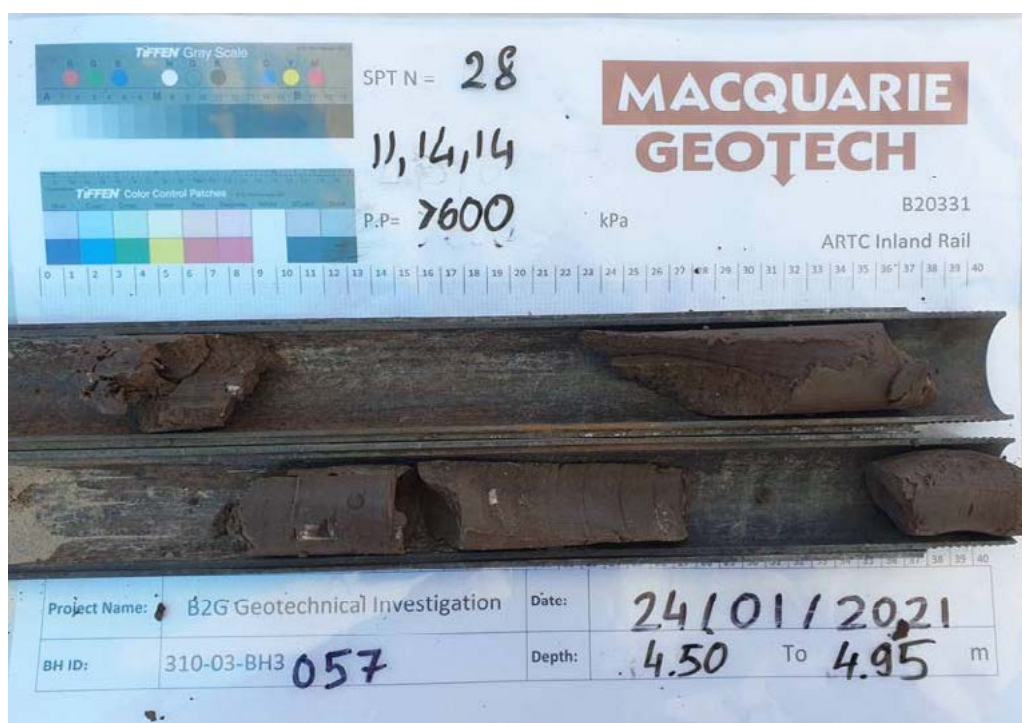


310-03-BH3057 Depth Range: 1.50 - 1.95 m

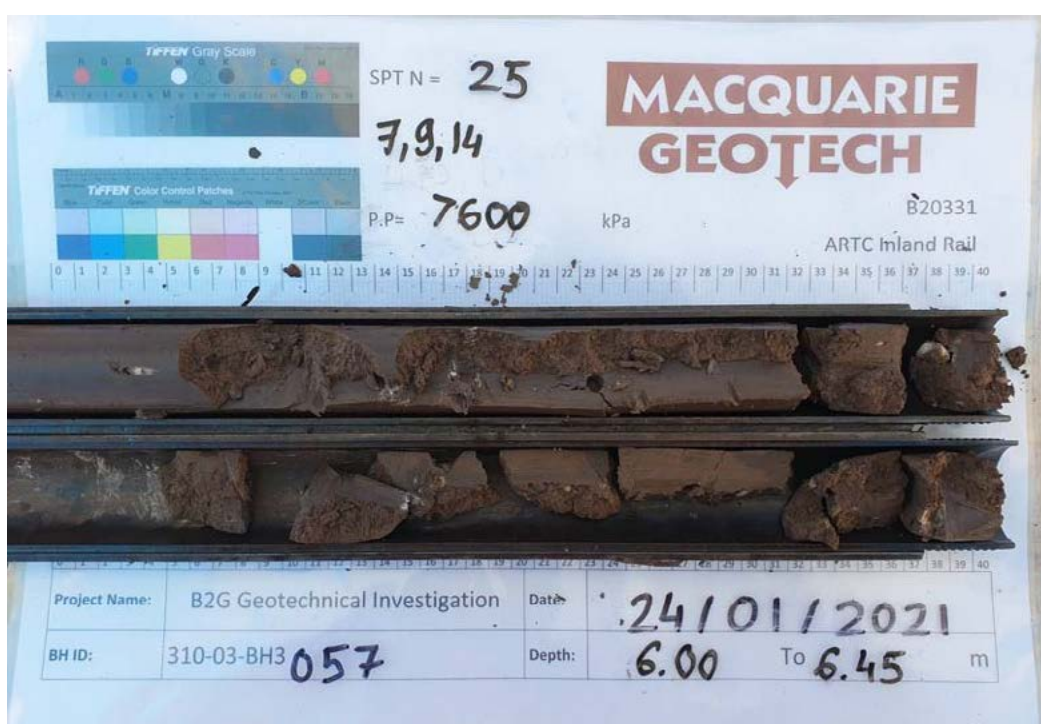
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3057 Depth Range: 4.50 - 4.95 m



310-03-BH3057 Depth Range: 6.00 - 6.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3057 Depth Range: 7.50 - 7.95 m



310-03-BH3057 Depth Range: 9.00 - 9.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3057 Depth Range: 10.50 - 10.95 m



310-03-BH3057 Depth Range: 12.00 - 12.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3057 Depth Range: 14.00 - 14.45 m



310-03-BH3057 Depth Range: 15.00 - 15.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3057 Depth Range: 16.50 - 16.95 m



310-03-BH3057 Depth Range: 18.00 - 18.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3057 Depth Range: 19.50 - 19.95 m



310-03-BH3057 Depth Range: 21.00 - 21.45 m

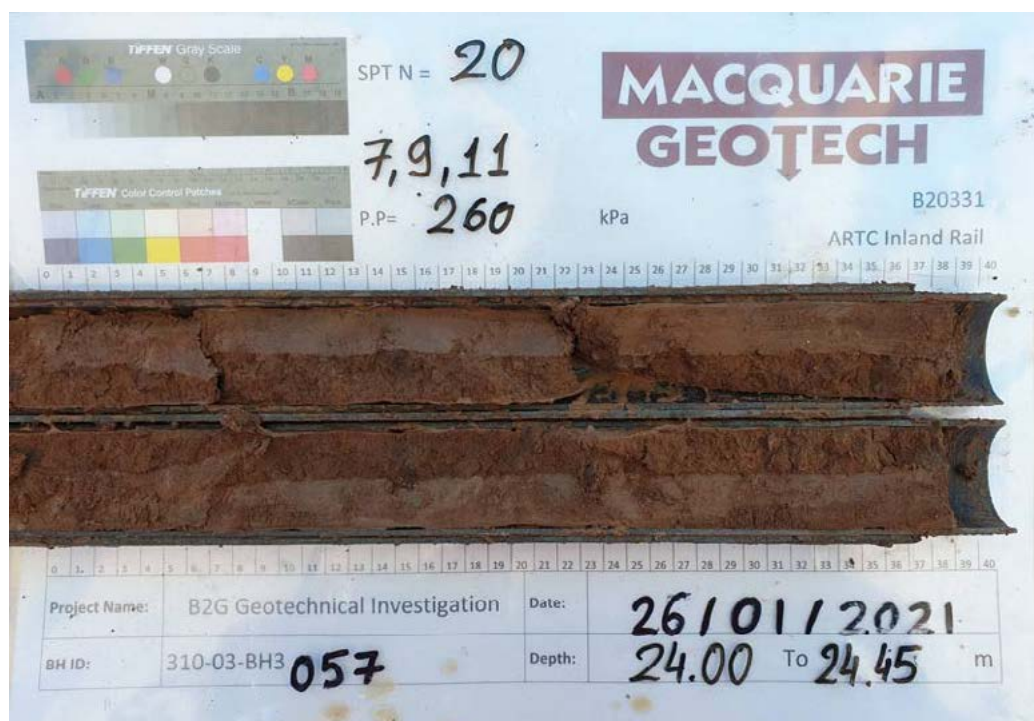
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3057 Depth Range: 22.50 - 22.95 m



310-03-BH3057 Depth Range: 24.00 - 24.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3057 Depth Range: 25.50 - 25.95 m



310-03-BH3057 Depth Range: 27.00 - 27.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.07 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: B.Boga



310-03-BH3057 Depth Range: 28.50 - 28.95 m



310-03-BH3057 Depth Range: 30.00 - 30.45 m

Engineering Log - Borehole

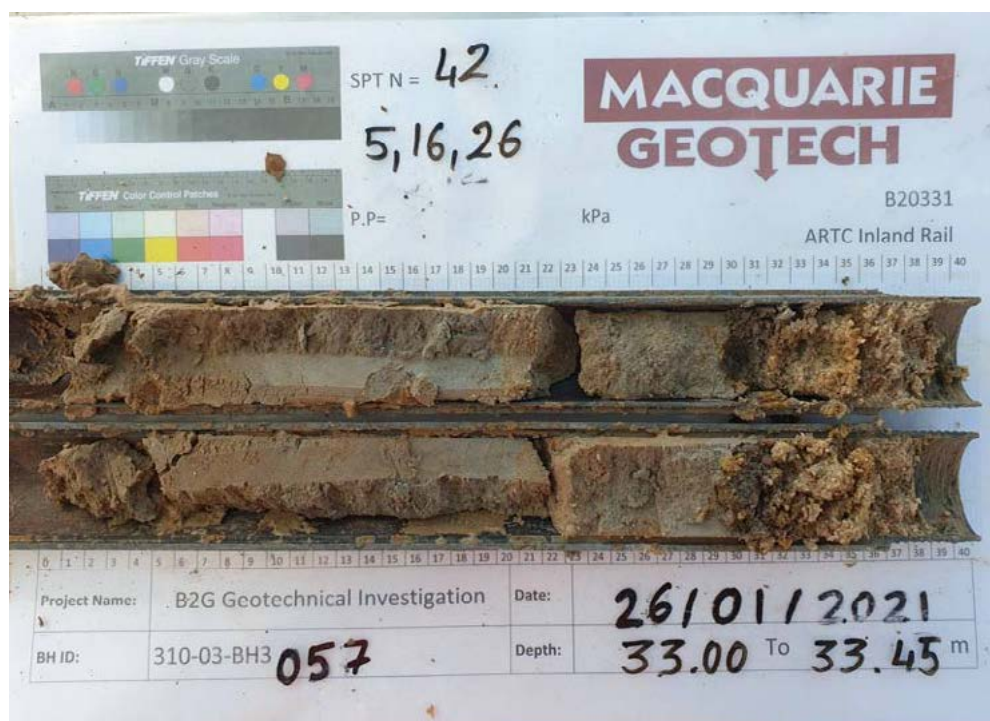
Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.07 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD
				Operator:	B.Boga



310-03-BH3057 Depth Range: 31.50 - 31.95 m



310-03-BH3057 Depth Range: 33.00 - 33.45 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	24/01/2021
Project Name:	Inland Rail B2G	Completed:	26/01/2021
Hole Location:	Approx. CH149330 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	345064.2 m E 6926573.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	382.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3057 Depth Range: 34.50 - 34.95 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC	Commenced: 08/02/2021
Project Name: Inland Rail B2G	Completed: 08/02/2021
Hole Location: Approx. CH104443 - Yandilla	Logged By: V. Chandrasena
Hole Coordinates: 338145.2 m E 6918604.1 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 317.03 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T				D00030 0.30-0.50 m					CH	FILL: silty CLAY with sand, high plasticity, black, fine to coarse grained sand, trace rootlets and plant decays.					REWORKED TOPSOIL
				S00100 1.00-1.45 m SPT 1.00-1.45 m 5,10,14 N=24 PP 1.20 m >600 kPa		316.0	1		Silty CLAY trace sand: high plasticity, black, fine to medium grained sand. Below 0.50m : trace fine to coarse grained sand, trace fine sub-angular gravel.					ALLUVIAL SOIL	
				S00150 1.50-2.00 m		315.0	2		Below 1.00m : trace rootlets.						
				S00250 2.50-2.95 m SPT 2.50-2.95 m 5,6,10 N=16 PP 2.90 m >600 kPa		314.0	3		Below 2.50m : grey black, no rootlets.						
				D00350 3.50-4.00 m		313.0	4		Below 3.50m : blue grey.						
				S00400 4.00-4.45 m SPT 4.00-4.45 m 5,9,16 N=25 PP 4.30 m >600 kPa		312.0	5	SP	Gravelly SAND with clay: fine to coarse grained, grey brown, fine to coarse sub-rounded to angular gravel, medium plasticity clay.						
				D00500 5.00-5.50 m		311.0	6	GP	Below 4.90m : clayey, medium plasticity.						
				S00550 5.50-5.90 m SPT 5.50-5.90 m 30,30/100mm,0 N=30/250mm		310.0	7	SC	Sandy GRAVEL trace clay: fine to coarse sub-angular to angular, brown grey, fine to coarse grained sand, medium plasticity clay.						
				D00650 6.50-7.00 m					Clayey SAND: fine to medium grained, black grey, low to medium plasticity clay.						
				S00700 7.00-7.43 m SPT 7.00-7.43 m 12,30/130mm,0 N=30/280mm					Sandy GRAVEL: fine to coarse sub-rounded to angular, grey brown, fine to coarse grained sand.						
									</						

Engineering Log - Borehole

Project No.: B20331

Client: ARTC		Commenced: 08/02/2021	
Project Name: Inland Rail B2G		Completed: 08/02/2021	
Hole Location: Approx. CH104443 - Yandilla		Logged By: V. Chandrasena	
Hole Coordinates: 338145.2 m E 6918604.1 m N MGA94 Zone 56		Checked By: J.Boyle	
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	
Hole Diameter: 115 mm		RL Surface: 317.03 m	
		Bearing: Datum: AHD Operator: J. Komung	

Drilling Information				Soil Description				Observations						
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T				D00800 8.00-8.50 m					SP	SAND trace gravel and clay: fine to coarse grained, yellow brown, fine to medium sub-angular gravel, medium plasticity clay. (continued)	D to M	VD		ALLUVIAL SOIL
				S00850 SPT 8.50-8.95 m 12,16,18 N=34		308.0	9	GP	GRAVEL with sand: fine to coarse sub-rounded to angular, yellow brown, fine to coarse grained sand.					
				D00950 9.50-10.00 m		307.0	10	SP	Gravelly SAND: fine to coarse grained, yellow brown, fine to coarse sub-rounded to angular gravel.					
				S01000 SPT 10.00-10.45 m 8,16,15 N=31 D01050 10.50-11.00 m		306.0	11							
						305.0	12			Hole Terminated at 11.50 m Target depth. Hole grouted to surface. Hole grouted to surface.				
						304.0	13							
						303.0	14							
						302.0	15							

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	08/02/2021
Project Name:	Inland Rail B2G	Completed:	08/02/2021
Hole Location:	Approx. CH104443 - Yandilla	Logged By:	V. Chandrasena
Hole Coordinates:	338145.2 m E 6918604.1 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	317.03 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3097 Depth Range: 1.00 - 1.45 m



310-03-BH3097 Depth Range: 2.50 - 2.95 m

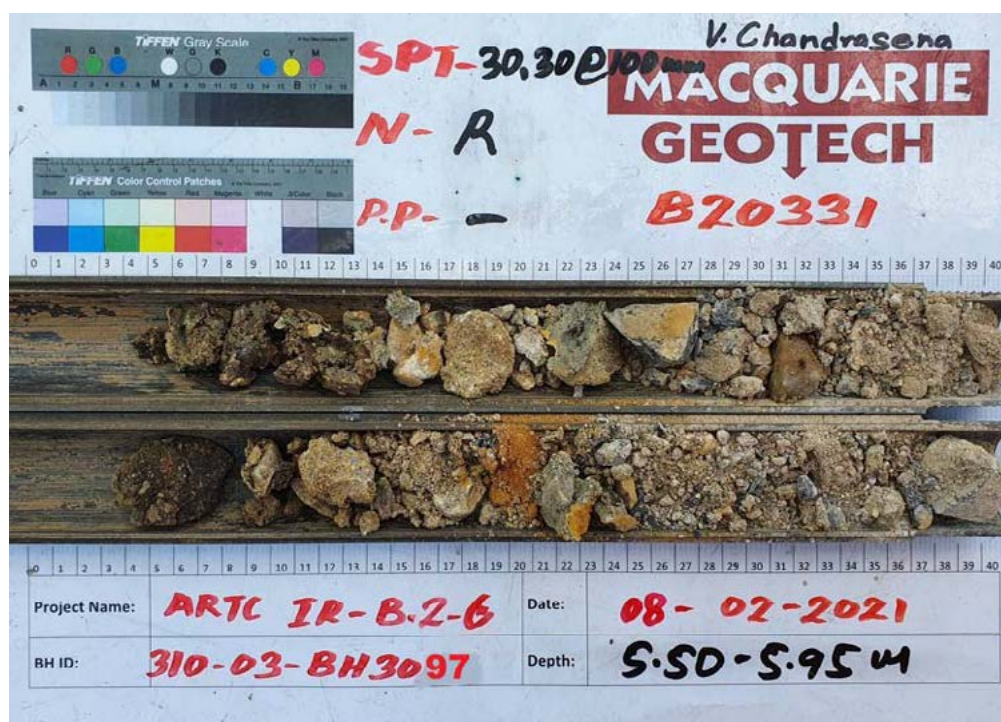
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	08/02/2021
Project Name:	Inland Rail B2G	Completed:	08/02/2021
Hole Location:	Approx. CH104443 - Yandilla	Logged By:	V. Chandrasena
Hole Coordinates:	338145.2 m E 6918604.1 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	317.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3097 Depth Range: 4.00 - 4.45 m

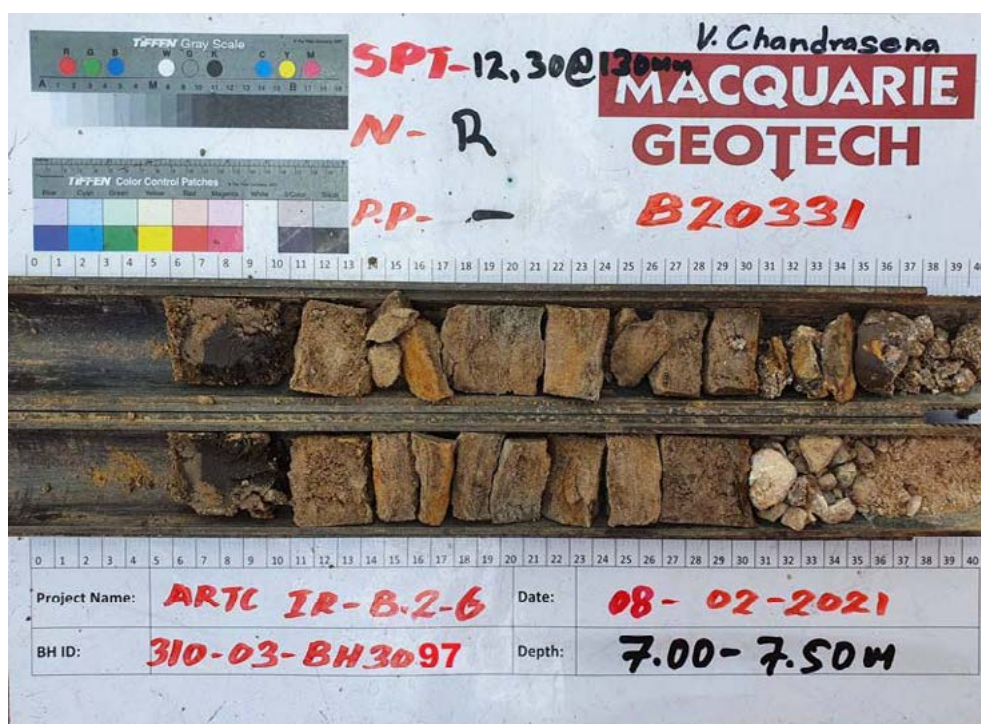


310-03-BH3097 Depth Range: 5.50 - 5.95 m

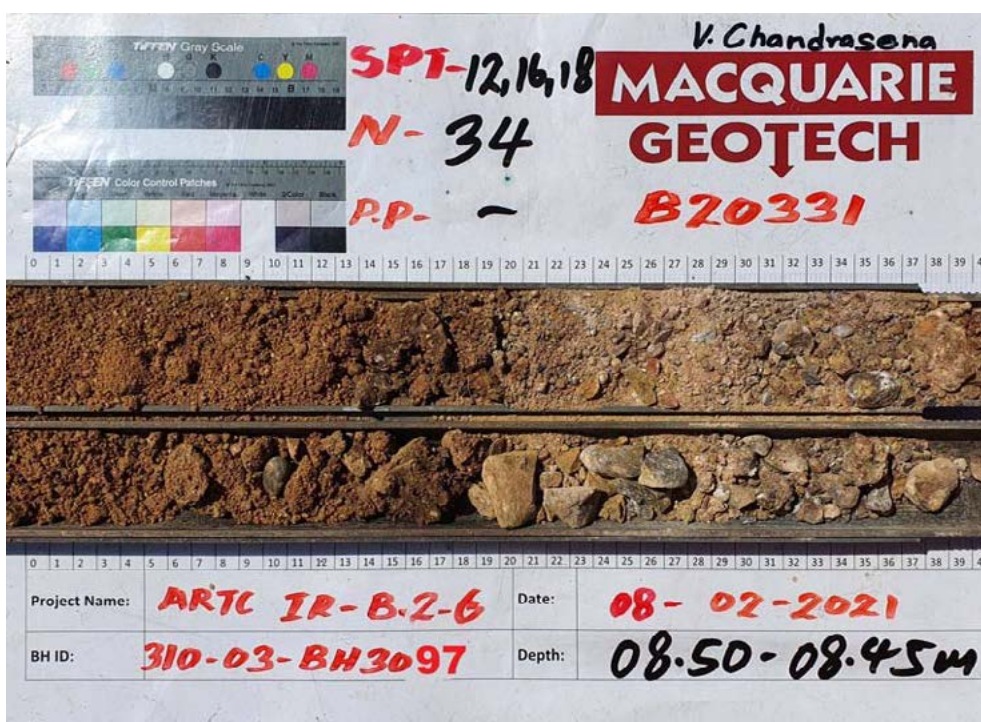
Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	08/02/2021
Project Name:	Inland Rail B2G	Completed:	08/02/2021
Hole Location:	Approx. CH104443 - Yandilla	Logged By:	V. Chandrasena
Hole Coordinates:	338145.2 m E 6918604.1 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	317.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3097 Depth Range: 7.00 - 7.45 m



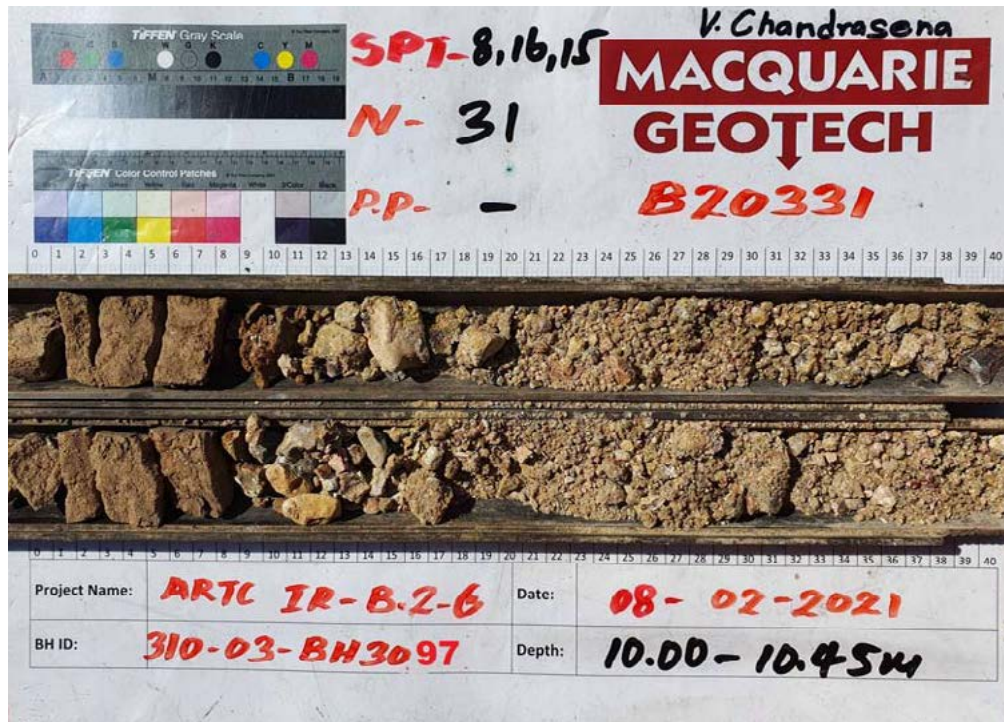
310-03-BH3097 Depth Range: 8.50 - 8.95 m

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	08/02/2021
Project Name:	Inland Rail B2G	Completed:	08/02/2021
Hole Location:	Approx. CH104443 - Yandilla	Logged By:	V. Chandrasena
Hole Coordinates:	338145.2 m E 6918604.1 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	317.03 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: J. Komung



310-03-BH3097 Depth Range: 10.00 - 10.45 m

POSITION : E: 337320.0, N: 6918337.0 (MGA94 Zone 56)

SURFACE ELEVATION : 380.39 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 02/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 2.50 m LONG 1.00 m WIDE

EXCAVATION INFORMATION					MATERIAL							
PENETRATION VE E F H		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER kPa 100 200 300 400	STRUCTURE & Other Observations
				0.0			FILL Silty CLAY trace gravel: high plasticity, black, fine to medium sub-rounded gravel, with rootlets (<2mm)	D	F			REWORKED TOPSOIL
				0.30m			Silty CLAY: high plasticity, black.		St			ALLUVIAL SOIL 0.35: Field mois not available - material too stiff to attain measurement
			0.45m B00045 x6 0.58m J00055 0.69m J00066 0.70m	0.5		CH	At 0.60m: with roots (<120mm)		VSt			
				1.04m								
			1.05m J00104	1.0			Silty CLAY with gravel trace sand: medium to high plasticity, dark brown, fine to medium sub-rounded gravel, fine grained sand.					ALLUVIAL SOIL
			1.20m B00120 x5									
			1.40m	1.40m								
				1.5		CI-CH		M (<PL)				
				1.78.9								
				2.0					H			
				2.10m			Silty CLAY: medium to high plasticity, dark grey.					
			2.40m B00240 x3 2.50m	2.5		CI-CH						
				3.0								
				3.10m			Hole Terminated at 3.10 m Target depth					
				3.5								
				4.0								
PHOTOGRAPHS NOTES												
METHOD		PENETRATION		SAMPLES & FIELD TESTS			CLASSIFICATION SYMBOLS & SOIL DESCRIPTION			CONSISTENCY/ RELATIVE DENSITY		
N Natural Exposure X Existing Excavation BH Backhoe Bucket B Bulldozer Blade R Ripper		 WATER 10 Oct., 73 Water Level on Date shown water inflow water outflow		U - Undisturbed Sample D - Disturbed Sample B - Bulk Disturbed Sample MC - Moisture Content PP - Pocket Penetrometer (UCS kPa) VS - Vane Shear; P-Peak, R-Remoulded (uncorrected kPa)			Based on Unified Classification System MOISTURE D - Dry M - Moist W - Wet M > PL- Moisture Content > Plastic Limit M ~ PL- Moisture Content = Plastic Limit M < PL- Moisture Content < Plastic Limit			VS - Very Soft S - Soft F - Firm St - Stiff VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense		
See Explanatory Notes for details of abbreviations & basis of descriptions.												

POSITION : E: 337320.0, N: 6918337.0 (MGA94 Zone 56)

SURFACE ELEVATION : 380.39 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 02/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 2.50 m LONG 1.00 m WIDE



310-03-TP3141 - 2 Depth Range: 0.00 m



310-03-TP3141 - 3 Depth Range: 0.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

POSITION : E: 337320.0, N: 6918337.0 (MGA94 Zone 56)

SURFACE ELEVATION : 380.39 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 02/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 2.50 m LONG 1.00 m WIDE



310-03-TP3141 - 4 Depth Range: 0.00 m



310-03-TP3141 - 5 Depth Range: 0.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

POSITION : E: 340359.4, N: 6921661.6 (MGA94 Zone 56)

SURFACE ELEVATION : 379.24 (AHD)

EQUIPMENT TYPE : 20T Tracked Excavator

METHOD : 20T Tracked Excavator

DATE EXCAVATED : 19/02/2021

LOGGED BY : J.Boyle

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 6.00 m LONG 0.60 m WIDE

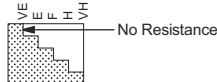
EXCAVATION INFORMATION					MATERIAL								
VE E F H		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER kPa 100 200 300 400	STRUCTURE & Other Observations	
		Not Encountered	0.30m B-1 0.40m B-2 B-3 B-4 B-5 0.60m	0.0		CH	0.10m Silty CLAY trace gravel: high plasticity, dark grey-brown; gravel fine to coarse, sub-angular to angular; with rootlets. CLAY: high plasticity, dark grey.	D	St				
				378.7									
				0.5									
				378.2									
				1.0									
				377.7									
				1.5									
				377.2									
				2.0									
				376.7									
		2.5											
		376.2											
		3.0					3.00m Hole Terminated at 3.00 m Target depth Pit reinstated to surface.						
				375.7									
				3.5									
				4.0									

PHOTOGRAPHS
NOTES

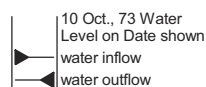
METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER



SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL - Moisture Content > Plastic Limit
M ~ PL - Moisture Content = Plastic Limit
M < PL - Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

POSITION : E: 340359.4, N: 6921661.6 (MGA94 Zone 56)	SURFACE ELEVATION : 379.24 (AHD)
EQUIPMENT TYPE : 20T Tracked Excavator	METHOD : 20T Tracked Excavator
DATE EXCAVATED : 19/02/2021	LOGGED BY : J.Boyle
EXCAVATION DIMENSIONS : 6.00 m LONG 0.60 m WIDE	CHECKED BY : J.Boyle



310-03-TP3303 - 1 Depth Range: 0.00 m



310-03-TP3303 - 2 Depth Range: 0.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

CLIENT : ARTC
LOCATION : Approx. CH142445

PROJECT : Inland Rail B2G

FILE / JOB NO : B20331
SHEET : 3 OF 3

POSITION : E: 340359.4, N: 6921661.6 (MGA94 Zone 56)	SURFACE ELEVATION : 379.24 (AHD)
EQUIPMENT TYPE : 20T Tracked Excavator	METHOD : 20T Tracked Excavator
DATE EXCAVATED : 19/02/2021	LOGGED BY : J.Boyle
EXCAVATION DIMENSIONS : 6.00 m LONG 0.60 m WIDE	CHECKED BY : J.Boyle



310-03-TP3303 - 3 Depth Range: 0.00 m



310-03-TP3303 - 4 Depth Range: 0.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 09/02/2021																			
Project Name: Inland Rail B2G										Completed: 09/02/2021																			
Hole Location: Approx. CH145265 - Pampas										Logged By: H.Tran																			
Hole Coordinates: 342189.8 m E 6923728.8 m N MGA94 Zone 56										Checked By: J.Boyle																			
Drill Model and Mounting: D4TAPG Truck mounted rig					Inclination: -90°					RL Surface: 384.06 m																			
Hole Diameter: 115 mm					Bearing:					Datum: AHD					Operator: B.Boga														
Drilling Information										Soil Description										Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations														
PT				U00000 0.00-1.43 m		383.6	0.5		CH	RAIL GRAVEL: medium to coarse sub-angular to angular, dark grey.	M (~PL)	VSt			BALLAST														
				J00015 0.15-0.20 m						GRAVEL with sand: fine to coarse sub-angular, dark grey, fine to coarse grained sand.					FOUL BALLAST														
				B00020 0.20-0.70 m						SAND trace clay: fine to coarse grained, black, low to medium plasticity clay.					ASH CAPPING														
				J00045 0.45-0.50 m						SAND trace gravel: fine to coarse grained, grey brown, fine to medium sub angular gravel.					SUB-BASECOURSE														
				B00075 0.75-1.00 m						CLAY trace sand: high plasticity, black. fine to coarse grained sand.					ALLUVIAL SOIL														
				J00095 0.95-1.00 m						Silty CLAY: high plasticity, black.					0.90: PP Samp =210 kPa														
				B00100 1.00-1.50 m						Silty CLAY trace sand and gravel: medium to high plasticity, dark grey and dark yellow brown, fine grained sand, fine to medium sub-rounded to sub-angular gravel.																			
				D00100 1.00-1.50 m																									
				D00143 1.43-1.50 m																									
				D00150 1.50-2.00 m																									
AD/T				D00200 2.00-2.50 m		382.1	2.0		CI-CH																				
				D00300 2.50-3.00 m																									
						381.6	2.5																						
						381.1	3.0																						
						380.6	3.5																						
Hole Terminated at 3.00 m Target depth Hole reinstated to surface.																													

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Plastic Limit

< PL
= PL
> PL

MG 4.02 LUB.GLB Log MG BOREHOLE EXCL DCP MG 4.02 G.P.J. <<DrawingFile>> 30/04/2021 13:34 10.0000 Dugout Lab and In Situ Tool - DGD | Uir DGDTP 4.01.2.dpt 3.04 2019-07-02 Ppt DGDTP 4.00.6 2017-11-25

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Support

C - Casing

Penetration

No resistance
ranging to
refusal

Graphic Log/Core Loss

Core recovered (hatching
indicates material)
Core loss

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

**Classification Symbols
and Soil Descriptions**

Based on Unified Soil
Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Plastic Limit

< PL
= PL
< PL

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	09/02/2021
Project Name:	Inland Rail B2G	Completed:	09/02/2021
Hole Location:	Approx. CH145265 - Pampas	Logged By:	H.Tran
Hole Coordinates:	342189.8 m E 6923728.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	115 mm	RL Surface:	384.06 m
		Bearing:	
		Datum:	AHD
		Operator:	B.Boga



310-03-TP3304 Depth Range: 0.00 - 1.50 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH145626 - Pampas
Hole Coordinates: 342467.6 m E 6923965.4 m N MGA94 Zone 56

Commenced: 09/02/2021
Completed: 09/02/2021
Logged By: H.Tran
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Truck mounted rig Inclusion: -90° RL Surface: 382.22 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: B.Boga

Drilling Information								Soil Description							Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations					
PT				U00000 0.00-1.43 m		381.7	0.5		CH	RAIL GRAVEL: medium to coarse sub-angular to angular, dark grey.					BALLAST					
				J00015 0.15-0.20 m						GRAVEL with sand: fine to coarse sub-angular, dark grey, fine to coarse grained sand.						FOUL BALLAST				
				B00020 0.20-0.50 m													Silty SAND with gravel: fine to coarse grained, dark grey, fine to medium sub-angular gravel	ASH CAPPING		
				J00045 0.45-0.50 m															SAND trace gravel: fine to coarse grained, yellow brown, fine to medium sub-angular gravel.	SUB-BASECOURSE
				B00050 0.50-0.80 m																
				J00095 0.95-1.00 m						Silty CLAY: high plasticity, black.										
				B00100 1.00-1.50 m												Silty CLAY trace sand and gravel: medium to high plasticity, dark grey and dark yellow brown, fine grained sand, fine to medium sub-rounded to sub-angular gravel.				
				D00100 1.00-1.50 m																
				D00143 1.43-1.50 m																
				D00150 1.50-2.00 m																
AD/T			Not Encountered	D00200 2.00-2.50 m		380.2	2.0		CI-CH		M (~PL)	H		1.05: PP Samp =190 kPa						
				D00250 2.50-3.00 m																
						379.7	2.5													
						379.2	3.0			Hole Terminated at 3.00 m Target depth Hole reinstated to surface.										
						378.7	3.5													

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Support
C - Casing

Penetration
 No resistance ranging to refusal

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	09/02/2021
Project Name:	Inland Rail B2G	Completed:	09/02/2021
Hole Location:	Approx. CH145626 - Pampas	Logged By:	H.Tran
Hole Coordinates:	342467.6 m E 6923965.4 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.22 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: B.Boga



310-03-TP3305 Depth Range: 0.00 - 1.50 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC										Commenced: 09/02/2021																			
Project Name: Inland Rail B2G										Completed: 09/02/2021																			
Hole Location: Approx. CH146099 - Pampas										Logged By: H.Tran																			
Hole Coordinates: 342825.3 m E 6924268.4 m N MGA94 Zone 56										Checked By: J.Boyle																			
Drill Model and Mounting: D4TAPG Truck mounted rig										Inclination: -90°																			
Hole Diameter: 115 mm										RL Surface: 382.74 m																			
										Datum: AHD																			
										Operator: B.Boga																			
Drilling Information										Soil Description										Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations														
PT				U00000 0.00-1.43 m		382.2	0.5		CH	RAIL GRAVEL: medium to coarse sub-angular to angular, dark grey.		F			BALLAST 0.00: Top of rail 0.11m above the top of BALLAST. Top of Sleepers RLs is same with BALLAST RLs. FOUL BALLAST ASH CAPPING SUB-BASECOURSE FILL ALLUVIAL SOIL														
				J00015 0.15-0.20 m						GRAVEL with sand: fine to coarse sub-angular, dark grey, fine to coarse grained sand.																			
				D00020 0.20-0.50 m						Gravelly SAND trace clay: fine to coarse grained, dark grey and black, fine to medium sub-angular gravel, medium plasticity clay.																			
				J00045 0.45-0.50 m						SAND with gravel: fine to coarse grained, yellow brown, fine to medium sub-angular gravel.																			
				B00050 0.50-0.90 m						Clayey Sandy GRAVEL: fine to coarse sub-rounded to sub-angular, dark grey, medium to high plasticity, fine to coarse grained sand.																			
				D00050 0.50-0.90 m																									
				J00095 0.95-1.00 m						FILL Silty SAND: fine grained, yellow brown. At 0.42m: with cobbles (<75m)																			
				D00100 1.00-1.50 m						Silty CLAY: high plasticity, black.																			
				B00110 1.10-1.50 m						Silty CLAY trace sand and gravel: medium to high plasticity, dark grey and dark yellow brown, fine grained sand, fine to medium sub-rounded to sub-angular gravel.																			
				D00143 1.43-1.50 m																									
AD/T				D00150 1.50-2.00 m		381.2	1.5		CI-CH		M (~PL)				1.00: PP Samp =230 kPa														
				D00200 2.00-2.50 m																									
				D00250 2.50-3.00 m																									
						380.7	2.0				H																		
						380.2	2.5																						
						379.7	3.0			Hole Terminated at 3.00 m Target depth Hole reinstated to surface.																			
						379.2	3.5																						
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT- Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Support C - Casing Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Plastic Limit < PL = PL < PL																													

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	09/02/2021
Project Name:	Inland Rail B2G	Completed:	09/02/2021
Hole Location:	Approx. CH146099 - Pampas	Logged By:	H.Tran
Hole Coordinates:	342825.3 m E 6924268.4 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.74 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: B.Boga



310-03-TP3306 Depth Range: 0.00 - 1.50 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC		Commenced: 09/02/2021													
Project Name: Inland Rail B2G		Completed: 09/02/2021													
Hole Location: Approx. CH146599 - Pampas		Logged By: H.Tran													
Hole Coordinates: 343207.4 m E 6924592.1 m N MGA94 Zone 56		Checked By: J.Boyle													
Drill Model and Mounting: D4TAPG Truck mounted rig		Inclination: -90°													
Hole Diameter: 115 mm		RL Surface: 382.78 m													
		Bearing: Datum: AHD Operator: B.Boga													
Drilling Information						Soil Description						Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
PT				U00000 0.00-1.43 m		382.3	0.5		CH	GRAVEL: medium to coarse sub-angular to angular, dark grey.	F	St	VSt	x	BALLAST 0.00: Top of rail 0.11m above the top of BALLAST. Top of Sleepers RLs is same with BALLAST RLs. FOUL BALLAST CAPPING SUB-BASECOURSE ALLUVIAL SOIL
				J00015 0.15-0.20 m						GRAVEL with sand: fine to coarse sub-angular, dark grey, fine to coarse grained sand.					
				D00020 0.20-0.50 m						Gravelly SAND trace clay: fine to coarse grained, dark grey and black, fine to medium sub-angular gravel, medium plasticity clay.					
				J00045 0.45-0.50 m						Silty SAND trace gravel: fine to medium grained, yellow brown, fine to medium sub-rounded to sub-angular gravel.					
				B00050 0.50-0.90 m						Silty CLAY: high plasticity, black.					
				D00050 0.50-0.90 m						Silty CLAY trace sand and gravel: medium to high plasticity, dark grey and dark yellow brown, fine grained sand, fine to medium sub-rounded to sub-angular gravel.					
				J00095 0.95-1.00 m											
				D00100 1.00-1.50 m											
				B00110 1.10-1.50 m											
				D00143 1.43-1.50 m											
AD/T				D00150 1.50-2.00 m		381.3	1.5		CI-CH		M (~PL)	H			1.00: PP Samp =150 kPa
				D00200 2.00-2.50 m											
				D00250 2.50-3.00 m											
						379.8	3.0			Hole Terminated at 3.00 m Target depth Hole reinstated to surface.					
						379.3	3.5								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
 No resistance ranging to refusal

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support
C - Casing

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

MG 4.02 LIB.GLB Log MG BOREHOLE EXCL DCP MG 4.02.GPJ <<DrawingFile>> 30/04/2021 13:34 10.0000 Dugout Lab and In Situ Tool - DGD | Use DGDTP-F 4.01.2.dpi 3.04 2019-07-02 Pjt DGDTP-F 4.00.6 2017-11-25

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Support

C - Casing

Penetration

No resistance
ranging to
refusal

Graphic Log/Core Loss

Core recovered (hatching
indicates material)
Core loss

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

**Classification Symbols
and Soil Descriptions**

Based on Unified Soil
Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Plastic Limit

< PL
= PL
< PL

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	09/02/2021
Project Name:	Inland Rail B2G	Completed:	09/02/2021
Hole Location:	Approx. CH146599 - Pampas	Logged By:	H.Tran
Hole Coordinates:	343207.4 m E 6924592.1 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.78 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: B.Boga



310-03-TP3307 Depth Range: 0.00 - 1.50 m

Engineering Log - Borehole

Project No.: B20331

Client: ARTC				Commenced: 16/02/2021																			
Project Name: Inland Rail B2G				Completed: 16/02/2021																			
Hole Location: Approx. CH147676 - Pampas				Logged By: J.Cooper																			
Hole Coordinates: 344014.6 m E 6925276.1 m N MGA94 Zone 56				Checked By: J.Boyle																			
Drill Model and Mounting: D4TAPG Truck mounted rig		Inclination: -90°		RL Surface: 382.72 m																			
Hole Diameter: 115 mm		Bearing:		Datum: AHD		Operator: B.Boga																	
Drilling Information							Soil Description							Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations								
PT				1 U 0.15-1.50 m		382.2	0.5			RAIL	D				RAIL								
										GRAVEL: medium to coarse sub-angular to angular, dark grey.					BALLAST								
										GRAVEL with sand: fine to coarse sub-angular, dark grey, fine to coarse grained sand.					FOUL BALLAST								
										Gravelly SAND trace clay: fine to coarse grained, dark grey and black, fine to medium sub-angular gravel, medium plasticity clay.					CAPPING								
AD/T			Not Encountered	1 D 1.40-1.50 m		381.7	1.0		CH	CLAY with gravel: medium to high plasticity. dark grey, fine to coarse, sub-angular to angular gravel.	M (=LL)	VSt			SUB-BASECOURSE								
										CLAY: high plasticity, dark grey.					ALLUVIAL SOIL								
										Silty CLAY: medium to high plasticity, dark brown					M (<PL)	H							
						381.2	1.5																
						380.7	2.0																
						380.2	2.5																
						379.7	3.0																
						379.2	3.5			Hole Terminated at 3.00 m Target depth Hole reinstated to surface.													
Method				Penetration				Water				Samples and Tests				Moisture Condition				Consistency/Relative Density			
AS - Auger Screwing RR - Rock Roller WB- Washbore				No resistance ranging to refusal				Level (Date) Inflow Partial Loss Complete Loss				U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test				D - Dry M - Moist W - Wet				VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense			
Support				Graphic Log/Core Loss				Classification Symbols and Soil Descriptions				Plastic Limit											
C - Casing				Core recovered (hatching indicates material) Core loss				Based on Unified Soil Classification System				< PL = PL < PL											

MG 4.02 LIB GLB Log MG BOREHOLE EXCL DCP MG 4.02 GPJ <<DrawingFile>> 30/04/2021 13:34 10.0000 Dugout Lab and In Situ Tool - DGD | Uir DGDTP 4.01.2.dpt 3.04 2019-07-02 Pjt DGDTP 4.00.6 2017-11-25

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance
ranging to
refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching
indicates material)
Core loss

**Classification Symbols
and Soil Descriptions**
Based on Unified Soil
Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B20331

Client:	ARTC	Commenced:	16/02/2021
Project Name:	Inland Rail B2G	Completed:	16/02/2021
Hole Location:	Approx. CH147676 - Pampas	Logged By:	J.Cooper
Hole Coordinates:	344014.6 m E 6925276.1 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	382.72 m
Hole Diameter:	115 mm	Bearing:		Datum:	AHD Operator: B.Boga



310-03-TP3310 Depth Range: 0.00 - 1.50 m

POSITION : E: 345185.7, N: 6926743.8 (MGA94 Zone 56)

SURFACE ELEVATION : 382.77 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 05/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 3.70 m LONG 1.00 m WIDE

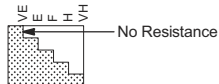
EXCAVATION INFORMATION				MATERIAL							
VE PENETRATION E F H		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER kPa 100 200 300 400	STRUCTURE & Other Observations
Not Encountered			0.18m J00018	0.0			FILL Silty CLAY: high plasticity, black, with rootlets (<2mm)	D	F	33	FILL
			0.19m J00018			0.30m					
			0.40m B00040 J00050	0.30m 382.3			Silty CLAY: high plasticity, black.		Vst		ALLUVIAL SOIL 0.40: Field water content: 31.34% Temperature: 19.2 C
			0.50m J00050	0.5							
			0.80m								
			1.04m J00104	0.80m 381.8							
			1.05m J00104	1.0							
			1.50m B00150	1.50m 381.3							
			1.60m	1.60m							
				380.8							
		380.3									
		379.8									
		379.3									

PHOTOGRAPHS
NOTES

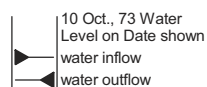
METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER



SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL- Moisture Content > Plastic Limit
M ~ PL- Moisture Content = Plastic Limit
M < PL- Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

POSITION : E: 345185.7, N: 6926743.8 (MGA94 Zone 56)

SURFACE ELEVATION : 382.77 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 05/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 3.70 m LONG 1.00 m WIDE



310-03-TP3311 - 1 Depth Range: 0.00 - 3.00 m



310-03-TP3311 - 2 Depth Range: 0.00 - 3.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

POSITION : E: 345185.7, N: 6926743.8 (MGA94 Zone 56)

SURFACE ELEVATION : 382.77 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 05/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 3.70 m LONG 1.00 m WIDE



310-03-TP3311 - 3 Depth Range: 0.00 - 3.00 m



310-03-TP3311 - 4 Depth Range: 0.00 - 3.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

POSITION : E: 355986.2, N: 6933026.6 (MGA94 Zone 56)

SURFACE ELEVATION : 441.40 (AHD)

EQUIPMENT TYPE : Excavator 14T

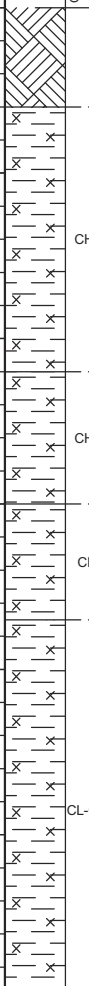
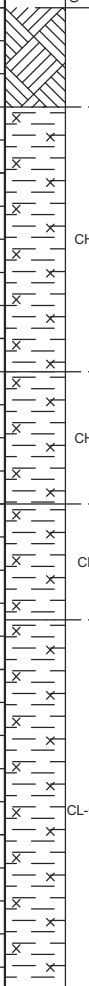
METHOD : 900mm bucket

DATE EXCAVATED : 06/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 3.20 m LONG 1.10 m WIDE

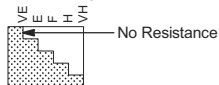
EXCAVATION INFORMATION				MATERIAL																	
PENETRATION		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETROMETER kPa 100 200 300 400	STRUCTURE & Other Observations								
VE	F																				
H		Not Observed	0.10m J00010 0.20m	0.0			TOPSOIL Silty CLAY: high plasticity, black, with rootlets (<2mm)	D	St				TOPSOIL								
			0.40m B00040 J00040 0.50m	440.9 0.5			Silty CLAY: high plasticity, black.							VSt			ALLUVIAL SOIL 0.30: Field water content: 20.53% Temperature: 26.0 C				
			0.90m J00090 1.00m	440.4 1.0			CH							H							
			1.20m B00120	439.9 1.10m			CH							VSt							
			1.40m B00150	439.9 1.5			CI							M (<PL)						RESIDUAL SOIL	
			1.50m	1.50m			Silty CLAY trace gravel: medium plasticity, dark red brown, fine to medium sub-angular gravel.														
			1.70m	1.85m			Silty CLAY with gravel: low to medium plasticity, orange red and pale grey														
			2.00m B00200	438.4 2.0			CL-CI														
			2.20m	438.9 2.5																	
				438.4 3.0																	
				437.9 3.5																	

PHOTOGRAPHS
NOTES

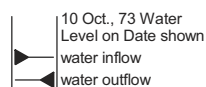
METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER



SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL- Moisture Content > Plastic Limit
M ~ PL- Moisture Content = Plastic Limit
M < PL- Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 355986.2, N: 6933026.6 (MGA94 Zone 56)

SURFACE ELEVATION : 441.40 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 06/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 3.20 m LONG 1.10 m WIDE



310-03-TP3334 - 2 Depth Range: 0.00 - 3.00 m



310-03-TP3334 - 3 Depth Range: 0.00 - 3.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 355986.2, N: 6933026.6 (MGA94 Zone 56)

SURFACE ELEVATION : 441.40 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 06/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 3.20 m LONG 1.10 m WIDE



310-03-TP3334 - 4 Depth Range: 0.00 - 3.00 m



310-03-TP3334 - 5 Depth Range: 0.00 - 3.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 356318.4, N: 6933152.1 (MGA94 Zone 56)

SURFACE ELEVATION : 380.41 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 06/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 3.40 m LONG 1.05 m WIDE

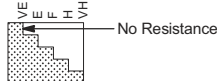
EXCAVATION INFORMATION				MATERIAL											
VE E F H			GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER kPa 100 200 300 400	STRUCTURE & Other Observations	
Not Observed			0.10m J00010 0.20m		CI-CH	FILL Silty CLAY: medium to high plasticity, dark grey, with rootlets (<2mm)	D	F to St					REWORKED TOPSOIL		
			0.40m B00040 J00040 0.50m				Vst					RESIDUAL SOIL 0.30: Field water content: 6.96% Temperature: 32.1 C			
			0.90m J00090 1.00m		CI	Sandy Silty CLAY trace gravel: medium plasticity, dark grey, fine to coarse sand, fine rounded to sub rounded gravel.	M (<PL)	H							
			379.9 379.4 1.00m												
			378.9 1.5		CI-CH	Silty CLAY trace gravel: medium to high plasticity, dark brown, fine to medium sub-angular gravel.									
			378.4 2.0												
			2.00m B00200 2.20m		CI	Silty CLAY with sand trace gravel: medium plasticity, orange brown and pale grey, fine to medium grained sand, fine to medium sub-rounded gravel.									
			2.40m B00240 2.50m				Below 2.20m: sand increasing with depth.								
			377.9 377.4 3.00m												
376.9 3.5															
3.0															

PHOTOGRAPHS
NOTES

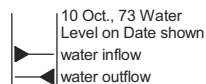
METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER



SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL - Moisture Content > Plastic Limit
M ~ PL - Moisture Content = Plastic Limit
M < PL - Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 356318.4, N: 6933152.1 (MGA94 Zone 56)

SURFACE ELEVATION : 380.41 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 06/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 3.40 m LONG 1.05 m WIDE



310-03-TP3335 - 1 Depth Range: 0.00 - 3.00 m



310-03-TP3335 - 2 Depth Range: 0.00 - 3.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 356318.4, N: 6933152.1 (MGA94 Zone 56)

SURFACE ELEVATION : 380.41 (AHD)

EQUIPMENT TYPE : Excavator 14T

METHOD : 900mm bucket

DATE EXCAVATED : 06/03/2021

LOGGED BY : H.Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 3.40 m LONG 1.05 m WIDE



310-03-TP3335 - 3 Depth Range: 0.00 - 3.00 m



310-03-TP3335 - 4 Depth Range: 0.00 - 3.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

CLIENT : ARTC PROJECT : Inland Rail B2G
LOCATION : CH162555 Lot.2RP7482 Yarranlea

FILE / JOB NO : B21003
SHEET : 4 OF 4

POSITION : E: 356318.4, N: 6933152.1 (MGA94 Zone 56)	SURFACE ELEVATION : 380.41 (AHD)	
EQUIPMENT TYPE : Excavator 14T	METHOD : 900mm bucket	
DATE EXCAVATED : 06/03/2021	LOGGED BY : H.Tran	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 3.40 m LONG 1.05 m WIDE		



310-03-TP3335 - 5 Depth Range: 0.00 - 3.00 m

POSITION : E: 357524.8, N: 6933394.2 (MGA94 Zone 56)

SURFACE ELEVATION : 449.69 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 23/08/2021

LOGGED BY : A. Drösemeyer

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE

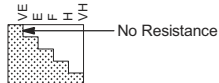
EXCAVATION INFORMATION				MATERIAL							
VE PENETRATION F H		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER kPa 100 200 300 400	STRUCTURE & Other Observations
		Not Observed		0.0		CI-CH	TOPSOIL Silty CLAY trace sand: medium to high plasticity, dark grey; sand fine to medium grained; with rootlets <2mm..				TOPSOIL
	0.30m		D-D00030	449.2		CH	Silty CLAY: high plasticity, dark grey.	St			RESIDUAL SOIL
	0.60m		B-B00060	0.5		CH	Sandy Silty CLAY trace gravel: high plasticity, dark grey mottled orange and white; sand fine to coarse grained; gravel fine sub angular gravel.	M (<PL)			0.60: PP In-situ =575 kPa
	0.90m			448.7		CH		F to St			
	1.00m		B-B00100	1.0			Silty CLAY: high plasticity, grey mottled yellow.				0.90: PP In-situ =225 kPa
				1.5				VSt			
				2.0		CH		M (~PL)			
				2.5				H			
				3.0							
				3.10m							
				446.2			Hole Terminated at 3.10 m Target depth Testpit reinstated to surface				

PHOTOGRAPHS
NOTES

METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER

10 Oct., 73 Water
Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL- Moisture Content > Plastic Limit
M ~ PL- Moisture Content = Plastic Limit
M < PL- Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 357524.8, N: 6933394.2 (MGA94 Zone 56)

SURFACE ELEVATION : 449.69 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 23/08/2021

LOGGED BY : A. Drösemeyer

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE



310-03-TP3336 - 1 Depth Range: 0.00 - 3.10 m



310-03-TP3336 - 2 Depth Range: 0.00 - 3.10 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 357524.8, N: 6933394.2 (MGA94 Zone 56)

SURFACE ELEVATION : 449.69 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 23/08/2021

LOGGED BY : A. Drösemeyer

CHECKED BY : J. Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE



310-03-TP3336 - 3 Depth Range: 0.00 - 3.10 m



310-03-TP3336 - 4 Depth Range: 0.00 - 3.10 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 357524.8, N: 6933394.2 (MGA94 Zone 56)

SURFACE ELEVATION : 449.69 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 23/08/2021

LOGGED BY : A. Drösemeyer

CHECKED BY : J. Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE



310-03-TP3336 - 5 Depth Range: 0.00 - 3.10 m

POSITION : E: 357855.0, N: 6933451.0 (MGA94 Zone 56)

SURFACE ELEVATION : 468.23 (AHD)

EQUIPMENT TYPE : Backhoe

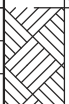
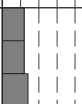
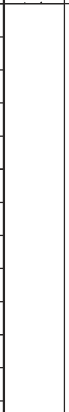
METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 23/08/2021

LOGGED BY : A. Drösemeyer

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE

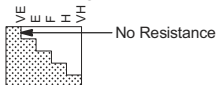
EXCAVATION INFORMATION						MATERIAL						
VE E F H		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER 100 200 300 400 kPa	STRUCTURE & Other Observations
Not Observed		J00000 0.10m	0.0		GC	0.30m	TOPSOIL Silty CLAY: medium to high plasticity, brown; with rootlets (<2mm).	NA	NA			TOPSOIL
		0.40m J00040 0.50m 0.55m	467.7 0.5			0.55m	Clayey GRAVEL trace sand: fine to coarse grained, sub-angular to angular, pale brown; clay medium to high-plasticity; sand fine to coarse grained.	D	VD			RESIDUAL SOIL
		B00055				Extremely weathered BASALT low strength; recovered as GRAVEL trace clay trace cobbles: brown and grey brown, fine to coarse, angular to sub-angular, medium-plasticity clay, cobbles up to 200mm.					EXTREMELY WEATHERED BEDROCK	
		0.90m J00090 1.00m	467.2 1.0		1.20m	Highly weathered BASALT medium strength; recovered as GRAVEL with cobbles: brown, fine to coarse, angular to sub-angular, cobbles up to 200mm.					HIGHLY WEATHERED BEDROCK	
					466.7 1.5							
			466.2 2.0									
			465.7 2.5		2.50m	Hole Terminated at 2.50 m Refusal on rock Testpit reinstated to surface						
			465.2 3.0									
			464.7 3.5									
			4.0									

PHOTOGRAPHS
NOTES

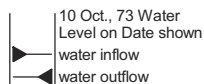
METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER



SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL - Moisture Content > Plastic Limit
M ~ PL - Moisture Content = Plastic Limit
M < PL - Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 357855.0, N: 6933451.0 (MGA94 Zone 56)

SURFACE ELEVATION : 468.23 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 23/08/2021

LOGGED BY : A. Drösemeyer

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE



310-03-TP3337 - 1 Depth Range: 0.00 - 2.50 m



310-03-TP3337 - 2 Depth Range: 0.00 - 2.50 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 357855.0, N: 6933451.0 (MGA94 Zone 56)

SURFACE ELEVATION : 468.23 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 23/08/2021

LOGGED BY : A. Drösemeyer

CHECKED BY : J. Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE



310-03-TP3337 - 3 Depth Range: 0.00 - 2.50 m



310-03-TP3337 - 4 Depth Range: 0.00 - 2.50 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

EXCAVATION - GEOLOGICAL LOG

PIT NO : 310-03-TP3337

CLIENT : ARTC
LOCATION : N3 - Brookstead to Gowrie

PROJECT : Inland Rail B2G

FILE / JOB NO : B21003
SHEET : 4 OF 4

POSITION : E: 357855.0, N: 6933451.0 (MGA94 Zone 56)	SURFACE ELEVATION : 468.23 (AHD)
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket
DATE EXCAVATED : 23/08/2021	LOGGED BY : A. Drösemeyer
EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE	CHECKED BY : J.Boyle



310-03-TP3337 - 5 Depth Range: 0.00 - 2.50 m

MG 4.02 LIB.GLB Log MG TEST PIT MG 4.02 GPJ <DrawingFile> 07/03/2022 22:32 10/02/2004 Dated Lib and in Situ Test - DGD | Lib DGD P 4.01 2 dtd 3.04 2018-07-02 Pj DGD P 4.00 6 2017-11-25

See Explanatory Notes for details of abbreviations & basis of descriptions.

Macquarie Geotech

POSITION : E: 358340.2, N: 6933528.2 (MGA94 Zone 56)

SURFACE ELEVATION : 476.31 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 23/08/2021

LOGGED BY : A. Drösemeyer

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE

EXCAVATION INFORMATION						MATERIAL						
VE E F H		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER kPa 300 400	STRUCTURE & Other Observations
		Not Observed	J00000 0.10m	0.0			TOPSOIL CLAY with silt: high plasticity, black; with rootlets (<2mm).	M (<PL)	F to St St VSt			TOPSOIL
			0.40m J00040 0.50m	475.8 0.5			0.25m CLAY: high plasticity, black.					X 0.40: PP In-situ =250 kPa 0.50: PP In-situ =550 kPa
			0.90m J00090 1.00m	475.3 1.0			1.25m					
			1.30m B00130	474.8 1.5			Extremely weathered SILTSTONE very low strength, recovered as Silty Sandy CLAY: medium palsticity pale yellow, fine grained sand.					EXTREMELY WEATHERED BEDROCK
			1.90m B00200	474.3 2.0			1.90m Highly weathered SANDSTONE low strength, recovered as silty SAND: off white, fine grained sand.					
			3.00m	473.3 3.0		3.00m	Hole Terminated at 3.00 m Target depth Testpit reinstated to surface					
				472.8 3.5								

PHOTOGRAPHS
NOTES

METHOD	PENETRATION	SAMPLES & FIELD TESTS	CLASSIFICATION SYMBOLS & SOIL DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY
N Natural Exposure		U - Undisturbed Sample	Based on Unified Classification System	VS - Very Soft
X Existing Excavation		D - Disturbed Sample		S - Soft
BH Backhoe Bucket		B - Bulk Disturbed Sample		F - Firm
B Bulldozer Blade		MC - Moisture Content	MOISTURE D - Dry M - Moist W - Wet M > PL- Moisture Content > Plastic Limit M ~ PL- Moisture Content = Plastic Limit M < PL- Moisture Content < Plastic Limit	St - Stiff
R Ripper		PP - Pocket Penetrometer (UCS kPa)		VSt - Very Stiff
		VS - Vane Shear; P-Peak, R-Remoulded (uncorrected kPa)		H - Hard
				VL - Very Loose
				L - Loose
				MD - Medium Dense
				D - Dense
				VD - Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

Macquarie Geotech

POSITION : E: 358340.2, N: 6933528.2 (MGA94 Zone 56)	SURFACE ELEVATION : 476.31 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket	
DATE EXCAVATED : 23/08/2021	LOGGED BY : A. Drösemeyer	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE		



310-03-TP3338 - 1 Depth Range: 0.00 - 3.00 m



310-03-TP3338 - 2 Depth Range: 0.00 - 3.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 358340.2, N: 6933528.2 (MGA94 Zone 56)

SURFACE ELEVATION : 476.31 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 23/08/2021

LOGGED BY : A. Drösemeyer

CHECKED BY : J. Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE



310-03-TP3338 - 3 Depth Range: 0.00 - 3.00 m



310-03-TP3338 - 4 Depth Range: 0.00 - 3.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

CLIENT : ARTC
LOCATION : N3 - Brookstead to Gowrie

PROJECT : Inland Rail B2G

FILE / JOB NO : B21003
SHEET : 4 OF 4

POSITION : E: 358340.2, N: 6933528.2 (MGA94 Zone 56)	SURFACE ELEVATION : 476.31 (AHD)
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket
DATE EXCAVATED : 23/08/2021	LOGGED BY : A. Drösemeyer
EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE	CHECKED BY : J.Boyle



310-03-TP3338 - 5 Depth Range: 0.00 - 3.00 m

MG 4.02 LIB.GLB Log MG TEST PPT MG 4.02 GPJ <DrawingFile> 07/03/2022 22:32 10/02/00.04 Dated Lib and in Situ Test - DOD | Lib: DODT P 4.01 2 dtd 3.04 2018-07-02 Pjt: DODT P 4.00 6 2017-11-25

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 358539.3, N: 6933581.0 (MGA94 Zone 56)

SURFACE ELEVATION : 476.62 (AHD)

EQUIPMENT TYPE : 22t Excavator

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 24/06/2021

LOGGED BY : J.Cooper

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE

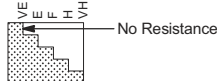
EXCAVATION INFORMATION				MATERIAL										
VE E F H			GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER kPa 100 200 300 400	STRUCTURE & Other Observations	
Not Observed			J00000 0.10m	0.0		0.10m	TOPSOIL CLAY: low plasticity, dark brown; with rootlets. CLAY: medium to high plasticity, dark brown.						TOPSOIL	
			0.40m B00040 J00040 0.50m	476.1 0.5		CI-CH		M (>PL)	F				RESIDUAL SOIL	
			0.70m			0.70m	Silty CLAY: medium plasticity, orange-brown mottled grey.							
			0.90m J00090 1.00m B00100	475.6 1.0										
			1.30m			CI			St					
			1.5m											
			1.90m					M (~PL)						EXTREMELY WEATHERED BEDROCK
			2.00m B00200	474.6 2.0			Silty CLAY trace gravel: medium plasticity, orange-brown mottled grey; gravel fine to coarse, sub-angular to angular.							
			2.30m			CI			VSt					
			2.5m											
2.90m				Extremely weathered SANDSTONE: recovered as Sandy GRAVEL with cobbles; fine to coarse sub-angular to angular, pale brown, fine to coarse grained sand, sub-angular cobbles.							HIGHLY WEATHERED BEDROCK			
3.00m B00300	473.6 3.0													
3.20m														
				473.1 3.5					D	D				
							3.80m	Hole Terminated at 3.80 m Target depth Testpit reinstated to surface						

PHOTOGRAPHS
NOTES

METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER



SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL- Moisture Content > Plastic Limit
M ~ PL- Moisture Content = Plastic Limit
M < PL- Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 358539.3, N: 6933581.0 (MGA94 Zone 56)	SURFACE ELEVATION : 476.62 (AHD)
EQUIPMENT TYPE : 22t Excavator	METHOD : 600mm Toothed Bucket
DATE EXCAVATED : 24/06/2021	LOGGED BY : J.Cooper
EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE	CHECKED BY : J.Boyle



310-03-TP3339 - 1 Depth Range: 0.00 - 3.80 m



310-03-TP3339 - 2 Depth Range: 0.00 - 3.80 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 358539.3, N: 6933581.0 (MGA94 Zone 56)	SURFACE ELEVATION : 476.62 (AHD)
EQUIPMENT TYPE : 22t Excavator	METHOD : 600mm Toothed Bucket
DATE EXCAVATED : 24/06/2021	LOGGED BY : J.Cooper
EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE	CHECKED BY : J.Boyle



310-03-TP3339 - 3 Depth Range: 0.00 - 3.80 m



310-03-TP3339 - 4 Depth Range: 0.00 - 3.80 m

See Explanatory Notes for details of abbreviations & basis of descriptions.

Macquarie Geotech

CLIENT : ARTC
LOCATION : N3 - Brookstead to Gowrie

PROJECT : Inland Rail B2G

FILE / JOB NO : B21003
SHEET : 4 OF 4

POSITION : E: 358539.3, N: 6933581.0 (MGA94 Zone 56)	SURFACE ELEVATION : 476.62 (AHD)
EQUIPMENT TYPE : 22t Excavator	METHOD : 600mm Toothed Bucket
DATE EXCAVATED : 24/06/2021	LOGGED BY : J.Cooper
EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE	CHECKED BY : J.Boyle



310-03-TP3339 - 5 Depth Range: 0.00 - 3.80 m

MG 4.02 LIB.GLB Log MG TEST PIT MG 4.02 GPJ <DrawingFile> 07/03/2022 22:33 10/02/2004 Dated Lib and in Situ Test - DGD | Lib DGD P 4.01 2 dtd 3.04 2018-07-02 Pj DGD P 4.00 6 2017-11-25

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359044.0, N: 6933604.7 (MGA94 Zone 56)

SURFACE ELEVATION : 498.83 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 23/08/2021

LOGGED BY : A. Drösemeyer

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE

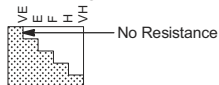
EXCAVATION INFORMATION					MATERIAL									
VE E F H			GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER kPa 100 200 300 400	STRUCTURE & Other Observations	
Not Observed			ES-J00000 0.10m	0.0			TOPSOIL CLAY: high plasticity, black; with rootlets (<5mm).						TOPSOIL	
			0.40m	498.3		0.35m	Extremely weathered BASALT recovered as GRAVEL trace clay trace cobbles: brown and grey brown, fine to coarse, angular to sub-angular, medium-plasticity clay, cobbles up to 200mm.						EXTREMELY WEATHERED BEDROCK	
			ES-J00040 0.50m	0.5										
			0.60m											
			B-B00060											
			0.90m	497.8										
				1.0										
			1.20m	497.3										
			B-B00120	1.5		1.50m	Highly weathered BASALT recovered as COBBLES trace boulders: brown and grey, angular to sub-angular, cobbles up to 200mm, boulders up to 350mm.						HIGHLY WEATHERED BEDROCK	
	2.0													
	2.5													
	2.60m		2.60m											
</														

PHOTOGRAPHS
NOTES

METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER



SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL - Moisture Content > Plastic Limit
M ~ PL - Moisture Content = Plastic Limit
M < PL - Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359044.0, N: 6933604.7 (MGA94 Zone 56)	SURFACE ELEVATION : 498.83 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket	
DATE EXCAVATED : 23/08/2021	LOGGED BY : A. Drösemeyer	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE		



310-03-TP3340 - 1 Depth Range: 0.00 - 2.60 m



310-03-TP3340 - 2 Depth Range: 0.00 - 2.60 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359044.0, N: 6933604.7 (MGA94 Zone 56)	SURFACE ELEVATION : 498.83 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket	
DATE EXCAVATED : 23/08/2021	LOGGED BY : A. Drösemeyer	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE		



310-03-TP3340 - 3 Depth Range: 0.00 - 2.60 m



310-03-TP3340 - 4 Depth Range: 0.00 - 2.60 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

CLIENT : ARTC
LOCATION : N3 - Brookstead to Gowrie

PROJECT : Inland Rail B2G

FILE / JOB NO : B21003
SHEET : 4 OF 4

POSITION : E: 359044.0, N: 6933604.7 (MGA94 Zone 56)	SURFACE ELEVATION : 498.83 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket	
DATE EXCAVATED : 23/08/2021	LOGGED BY : A. Drösemeyer	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 5.30 m LONG 1.20 m WIDE		



310-03-TP3340 - 5 Depth Range: 0.00 - 2.60 m

MG 4.02 LIB.GLB Log MG TEST PIT MG 4.02 GPJ <DrawingFile> 07/03/2022 22:34 10/02/2004 Dated Lib and in Situ Test - DGD | Lib DGD P 4.01 2 dtd 3.04 2018-07-02 Pj DGD P 4.00 6 2017-11-25

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359291.2, N: 6933601.2 (MGA94 Zone 56)

SURFACE ELEVATION : 490.54 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 450mm Toothed Bucket

DATE EXCAVATED : 08/09/2021

LOGGED BY : T. Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 5.00 m LONG 1.50 m WIDE

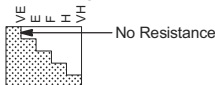
EXCAVATION INFORMATION				MATERIAL								
VE PENETRATION E F H		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER 100 200 300 400	STRUCTURE & Other Observations
Not Observed				0.0			TOPSOIL: CLAY with gravel trace cobbles: medium to high plasticity, black, fine to medium sub-angular gravel, sub-rounded cobbles (<200mm), with roots (<4mm)					TOPSOIL
		0.20m D-D00020 0.30m		0.30m			CLAY with sand trace gravel: high plasticity, dark brown mottled orange, fine grained sand					COLLUVIAL SOIL
		0.40m D-D00040 0.50m		0.60m			Sandy gravelly CLAY: medium plasticity, brown mottled orange and white, fine to coarse grained sand, fine to coarse sub-angular to angular gravel, trace calcareous inclusions					RESIDUAL SOIL
		0.60m B-B00060										
		0.90m										
										</		

PHOTOGRAPHS
NOTES

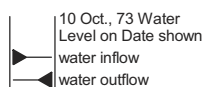
METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER



SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL - Moisture Content > Plastic Limit
M ~ PL - Moisture Content = Plastic Limit
M < PL - Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
Vst - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

CLIENT : ARTC
LOCATION : N3 - Brookstead to Gowrie

PROJECT : Inland Rail B2G

FILE / JOB NO : B21003
SHEET : 2 OF 3

POSITION : E: 359291.2, N: 6933601.2 (MGA94 Zone 56)	SURFACE ELEVATION : 490.54 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 450mm Toothed Bucket	
DATE EXCAVATED : 08/09/2021	LOGGED BY : T. Tran	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 5.00 m LONG 1.50 m WIDE		



310-03-TP3341 - 1 Depth Range: 0.00 - 2.70 m



310-03-TP3341 - 2 Depth Range: 0.00 - 2.70 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359291.2, N: 6933601.2 (MGA94 Zone 56)	SURFACE ELEVATION : 490.54 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 450mm Toothed Bucket	
DATE EXCAVATED : 08/09/2021	LOGGED BY : T. Tran	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 5.00 m LONG 1.50 m WIDE		



310-03-TP3341 - 3 Depth Range: 0.00 - 2.70 m



310-03-TP3341 - 4 Depth Range: 0.00 - 2.70 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359482.9, N: 6933593.8 (MGA94 Zone 56)

SURFACE ELEVATION : 485.84 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 24/08/2021

LOGGED BY : T. Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE

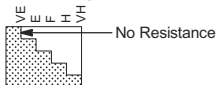
EXCAVATION INFORMATION				MATERIAL								
VE E F H		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER kPa	STRUCTURE & Other Observations
		Not Observed	0.10m D00010	0.0			TOPSOIL Silty CLAY with sand with gravel: medium plasticity, brown; sand fine to coarse grained; gravel fine to coarse, angular to sub-rounded; with rootlets(<1mm).					TOPSOIL
			0.30m							>>X 0.20: PP In-situ >600 kPa		
			0.40m D00040	0.40m			Gravelly CLAY trace sand: medium to high plasticity, pale yellow brown and dark red; gravel fine to coarse sub-angular to angular; sand fine to coarse grained.	M (<PL)	VSt to H		RESIDUAL SOIL	
			0.60m							>>X 0.50: PP In-situ >600 kPa		
			0.70m D00070	0.70m			Extremely weathered BASALT low to medium strength recovered as sandy GRAVEL with cobbles (200mm) and boulders (350mm): reddish brown, fine to coarse, sub angular cobbles and boulder sub-rounded to sub-angular, fine to coarse grained sand.				EXTREMELY WEATHERED BEDROCK	
			1.10m	1.0								
				1.5								
				2.0								
				2.5								
				2.60m			Hole Terminated at 2.60 m Refusal on rock Testpit reinstated to surface					
				3.0								
				3.5								

PHOTOGRAPHS
NOTES

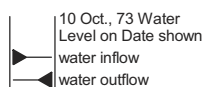
METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER



SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL- Moisture Content > Plastic Limit
M ~ PL- Moisture Content = Plastic Limit
M < PL- Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359482.9, N: 6933593.8 (MGA94 Zone 56)	SURFACE ELEVATION : 485.84 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket	
DATE EXCAVATED : 24/08/2021	LOGGED BY : T. Tran	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE		



310-03-TP3342 - 0 Depth Range: 0.00 - 2.60 m



310-03-TP3342 - 1 Depth Range: 0.00 - 2.60 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359482.9, N: 6933593.8 (MGA94 Zone 56)

SURFACE ELEVATION : 485.84 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 24/08/2021

LOGGED BY : T. Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE



310-03-TP3342 - 2 Depth Range: 0.00 - 2.60 m



310-03-TP3342 - 3 Depth Range: 0.00 - 2.60 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359482.9, N: 6933593.8 (MGA94 Zone 56)

SURFACE ELEVATION : 485.84 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 24/08/2021

LOGGED BY : T. Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE



310-03-TP3342 - 4 Depth Range: 0.00 - 2.60 m

POSITION : E: 359665.2, N: 6933575.2 (MGA94 Zone 56)

SURFACE ELEVATION : 487.56 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 24/08/2021

LOGGED BY : T. Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE

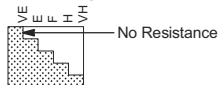
EXCAVATION INFORMATION				MATERIAL								
VE E F H		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETRO- METER kPa 100 200 300 400	STRUCTURE & Other Observations
D00010 0.10m		0.0		0.10m	TOPSOIL Silty CLAY with sand: dark brown; sand fine to coarse grained; with rootlets (<1mm).	M (<PL)	H				TOPSOIL	
0.20m D00020					Sandy Silty CLAY with gravel: medium plasticity, purple brown and pale brown mottled orange; sand fine to coarse grained; gravel fine to coarse, sub-rounded to sub-angular; trace rootlets (<1mm).						RESIDUAL SOIL	
0.40m		487.1									>>X 0.30: PP In-situ >600 kPa	
0.60m B00060		0.5		0.50m	Extremely weathered BASALT low to medium strength, recovered as GRAVEL with cobbles: brown and grey brown, fine to coarse, angular to sub-angular, cobbles up to 200mm.						EXTREMELY WEATHERED BEDROCK	
Not Observed		1.50m										
				486.6								
				486.1								
				485.6								
				2.0			Below 2.00m medium to high strength					
				485.1								
				2.5								
				2.60m			Hole Terminated at 2.60 m Refusal on rock Testpit reinstated to surface					
				484.6								
				3.0								
				484.1								
				3.5								
				4.0								

PHOTOGRAPHS
NOTES

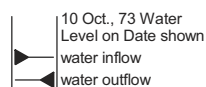
METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER



SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL- Moisture Content > Plastic Limit
M ~ PL- Moisture Content = Plastic Limit
M < PL- Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359665.2, N: 6933575.2 (MGA94 Zone 56)	SURFACE ELEVATION : 487.56 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket	
DATE EXCAVATED : 24/08/2021	LOGGED BY : T. Tran	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE		



310-03-TP3343 - 0 Depth Range: 0.00 - 2.60 m



310-03-TP3343 - 1 Depth Range: 0.00 - 2.60 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359665.2, N: 6933575.2 (MGA94 Zone 56)

SURFACE ELEVATION : 487.56 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 24/08/2021

LOGGED BY : T. Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE



310-03-TP3343 - 2 Depth Range: 0.00 - 2.60 m



310-03-TP3343 - 3 Depth Range: 0.00 - 2.60 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 359665.2, N: 6933575.2 (MGA94 Zone 56)	SURFACE ELEVATION : 487.56 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket	
DATE EXCAVATED : 24/08/2021	LOGGED BY : T. Tran	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE		



310-03-TP3343 - 4 Depth Range: 0.00 - 2.60 m

POSITION : E: 360128.3, N: 6933582.2 (MGA94 Zone 56)

SURFACE ELEVATION : 502.04 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 24/08/2021

LOGGED BY : T. Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE

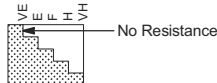
EXCAVATION INFORMATION				MATERIAL																	
VE PENETRATION E F H		GROUND WATER LEVELS		SAMPLES & FIELD TESTS		ELEVATION (RL) DEPTH (M)		GRAPHIC LOG		CLASSIFICATION SYMBOL		MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components		MOISTURE CONDITION CONSISTENCY RELATIVE DENSITY		DCP Blows/100mm 5 10 15 20		POCKET PENETRO- METER kPa 100 200 300 400		STRUCTURE & Other Observations	
		Not Observed		D-D00000 0.10m		0.0				CI		0.10m TOPSOIL Sandy SILT trace gravel: brown, fine to coarse grained sand, fine to coarse sub-angular gravel.		M ($<PL$)		H				TOPSOIL	
				0.20m						0.20m Sandy CLAY trace silt: medium plasticity, purple brown, fine grained sand.								RESIDUAL SOIL			
				D-D00020 0.40m																	
				0.50m		501.5															
				B-B00050 0.60m D-D00060		0.5				SP		Gravelly SAND: fine to coarse grained, purple, reddish brown and mottled pale grey to dark grey, fine to coarse sub-rounded to sub-angular gravel.		D		VD				>>X 0.30: PP In-situ >600 kPa	
		Not Observed		0.80m																	
				1.00m		501.0						1.00m Highly weathered BASALT recovered as GRAVEL with cobbles: brown and grey brown, fine to coarse, angular to sub-angular, cobbles up to 200mm.								HIGHLY WEATHERED BEDROCK	
				B-B00100		1.0															
				1.40m																	
						500.5															
		Not Observed				500.0															
						2.00m															
		Not Observed				2.0															
		Not Observed				499.5															
		Not Observed				499.0															
		Not Observed				498.5															
		Not Observed				4.0															
PHOTOGRAPHS NOTES																					
METHOD				PENETRATION				SAMPLES & FIELD TESTS				CLASSIFICATION SYMBOLS & SOIL DESCRIPTION				CONSISTENCY/ RELATIVE DENSITY					
N Natural Exposure X Existing Excavation BH Backhoe Bucket B Bulldozer Blade R Ripper								U Undisturbed Sample D Disturbed Sample B Bulk Disturbed Sample MC Moisture Content PP Pocket Penetrometer (UCS kPa) VS Vane Shear; P-Peak, R-Remoulded (uncorrected kPa)				Based on Unified Classification System				VS Very Soft S Soft F Firm St Stiff VSt Very Stiff H Hard VL Very Loose L Loose MD Medium Dense D Dense VD Very Dense					
				WATER								MOISTURE									
				10 Oct., 73 Water Level on Date shown water inflow water outflow								D Dry M Moist W Wet M > PL - Moisture Content > Plastic Limit M ~ PL - Moisture Content = Plastic Limit M < PL - Moisture Content < Plastic Limit									

PHOTOGRAPHS
NOTES

METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION



WATER

10 Oct., 73 Water
Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION
Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL - Moisture Content > Plastic Limit
M ~ PL - Moisture Content = Plastic Limit
M < PL - Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 360128.3, N: 6933582.2 (MGA94 Zone 56)	SURFACE ELEVATION : 502.04 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket	
DATE EXCAVATED : 24/08/2021	LOGGED BY : T. Tran	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE		



310-03-TP3344 - 1 Depth Range: 0.00 - 2.00 m



310-03-TP3344 - 2 Depth Range: 0.00 - 2.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 360128.3, N: 6933582.2 (MGA94 Zone 56)	SURFACE ELEVATION : 502.04 (AHD)
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket
DATE EXCAVATED : 24/08/2021	LOGGED BY : T. Tran
EXCAVATION DIMENSIONS : 4.50 m LONG 1.00 m WIDE	CHECKED BY : J.Boyle



310-03-TP3344 - 3 Depth Range: 0.00 - 2.00 m



310-03-TP3344 - 4 Depth Range: 0.00 - 2.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 361041.0, N: 6933655.9 (MGA94 Zone 56)

SURFACE ELEVATION : 504.92 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 450mm Toothed Bucket

DATE EXCAVATED : 06/09/2021

LOGGED BY : T. Tran

CHECKED BY : J. Boyle

EXCAVATION DIMENSIONS : 5.30 m LONG 1.50 m WIDE

EXCAVATION INFORMATION					MATERIAL											
PENETRATION VE E F H				GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP Blows/100mm 5 10 15 20	POCKET PENETROMETER kPa 100 200 300 400	STRUCTURE & Other Observations		
Not Observed																
0.10m D00010 0.20m						0.0			Fill: Gravelly SAND trace clay and cobbles: fine to coarse grained, red brown, fine to coarse sub-angular gravel, sub-angular cobbles (<200mm)					FILL		
0.50m B00050					504.4			0.30m			Moderately weathered BASALT medium to high strength: Recovered as GRAVEL and COBBLES trace boulders, fine to coarse sub-angular gravel, sub-angular to angular cobbles (<200mm), sub-angular boulders (<450mm)					MODERATELY WEATHERED BEDROCK
0.80m					503.9			1.00m					Hole Terminated at 1.00 m Refusal on rock Testpit reinstated to surface			
						1.0										
						503.4										
						502.9										
						502.4										
						501.9										
						501.4										
						4.0										
PHOTOGRAPHS NOTES																
METHOD		PENETRATION		SAMPLES & FIELD TESTS		CLASSIFICATION SYMBOLS & SOIL DESCRIPTION		CONSISTENCY/ RELATIVE DENSITY								
N Natural Exposure X Existing Excavation BH Backhoe Bucket B Bulldozer Blade R Ripper		 No Resistance		U - Undisturbed Sample D - Disturbed Sample B - Bulk Disturbed Sample MC - Moisture Content PP - Pocket Penetrometer (UCS kPa) VS - Vane Shear; P-Peak, R-Remoulded (uncorrected kPa)		Based on Unified Classification System		VS - Very Soft S - Soft F - Firm St - Stiff VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense								
		WATER 10 Oct., 73 Water Level on Date shown water inflow water outflow				MOISTURE D - Dry M - Moist W - Wet M > PL - Moisture Content > Plastic Limit M ~ PL - Moisture Content = Plastic Limit M < PL - Moisture Content < Plastic Limit										

See Explanatory Notes for details of abbreviations & basis of descriptions.

POSITION : E: 361041.0, N: 6933655.9 (MGA94 Zone 56)	SURFACE ELEVATION : 504.92 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 450mm Toothed Bucket	
DATE EXCAVATED : 06/09/2021	LOGGED BY : T. Tran	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 5.30 m LONG 1.50 m WIDE		



310-03-TP3346 - 1 Depth Range: 0.00 - 1.00 m



310-03-TP3346 - 2 Depth Range: 0.00 - 1.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 361041.0, N: 6933655.9 (MGA94 Zone 56)	SURFACE ELEVATION : 504.92 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 450mm Toothed Bucket	
DATE EXCAVATED : 06/09/2021	LOGGED BY : T. Tran	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 5.30 m LONG 1.50 m WIDE		



310-03-TP3346 - 3 Depth Range: 0.00 - 1.00 m



310-03-TP3346 - 4 Depth Range: 0.00 - 1.00 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

CLIENT : ARTC
LOCATION : N3 - Brookstead to Gowrie

PROJECT : Inland Rail B2G

FILE / JOB NO : B21003
SHEET : 4 OF 4

POSITION : E: 361041.0, N: 6933655.9 (MGA94 Zone 56)	SURFACE ELEVATION : 504.92 (AHD)
EQUIPMENT TYPE : Backhoe	METHOD : 450mm Toothed Bucket
DATE EXCAVATED : 06/09/2021	LOGGED BY : T. Tran
EXCAVATION DIMENSIONS : 5.30 m LONG 1.50 m WIDE	CHECKED BY : J.Boyle



310-03-TP3346 - 5 Depth Range: 0.00 - 1.00 m

MG 4.02 LIB.GLB Log MG TEST PPT MG 4.02 GPJ <DrawingFile> 07/03/2022 22:57 10/02/2004 Dated Lib and in Situ Test - DGD | Lib DGD P 4.01 2 dtd 3.04 2018-07-02 Pj DGD P 4.00 6 2017-11-25

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 361343.2, N: 6933695.8 (MGA94 Zone 56)

SURFACE ELEVATION : 505.98 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 25/08/2021

LOGGED BY : T. Tran

CHECKED BY : J.Boyle

EXCAVATION DIMENSIONS : 5.00 m LONG 1.50 m WIDE

EXCAVATION INFORMATION					MATERIAL				
VE PENETRATION F H	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	ELEVATION (RL) DEPTH (M)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
			0.0			TOPSOIL Clayey SILT with sand trace gravel: dark brown; clay low-plasticity; sand fine to coarse grained; gravel fine to medium sub-angular.			TOPSOIL
		0.10m D00010	0.20m						
		0.30m D00030			CI-CH	Silty Sandy CLAY with gravel: medium to high plasticity, brown mottled black and orange; sand fine to coarse grained; gravel fine to coarse, sub-rounded to sub-angular.	M (<PL)	St	RESIDUAL SOIL
		0.50m B00050	0.5					H	0.30: PP In-situ =540 kPa
			0.90m		GP	GRAVEL with clay trace sand: fine to coarse grained, sub-rounded to sub-angular, red brown mottled orange and dark grey; clay low-plasticity; sand fine to coarse grained; trace cobbles (<200mm).	M	VD	EXTREMELY WEATHERED MATERIAL
	Not Observed		1.50m B00150						
		1.80m				Highly weathered BASALT recovered as GRAVEL with cobbles: brown and grey brown, fine to coarse, angular to sub-angular, cobbles up to 200mm.			HIGHLY WEATHERED BEDROCK
			2.0						
			2.10m			Hole Terminated at 2.10 m Refusal on rock Testpit reinstated to surface			
			503.5						
			2.5						
			503.0						
			3.0						
			502.5						
			3.5						
			4.0						

PHOTOGRAPHS
NOTES

METHOD

N Natural Exposure
X Existing Excavation
BH Backhoe Bucket
B Bulldozer Blade
R Ripper

PENETRATION

VE
W
U
I
H

No Resistance

WATER

10 Oct., 73 Water
Level on Date shown

water inflow
water outflow

SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
PP - Pocket Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak,
R-Remoulded (uncorrected kPa)

CLASSIFICATION SYMBOLS &
SOIL DESCRIPTION

Based on Unified
Classification System

MOISTURE

D - Dry
M - Moist
W - Wet
M > PL- Moisture Content > Plastic Limit
M ~ PL- Moisture Content = Plastic Limit
M < PL- Moisture Content < Plastic Limit

CONSISTENCY/
RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

POSITION : E: 361343.2, N: 6933695.8 (MGA94 Zone 56)	SURFACE ELEVATION : 505.98 (AHD)	
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket	
DATE EXCAVATED : 25/08/2021	LOGGED BY : T. Tran	CHECKED BY : J.Boyle
EXCAVATION DIMENSIONS : 5.00 m LONG 1.50 m WIDE		



310-03-TP3347 - 0 Depth Range: 0.00 - 2.10 m



310-03-TP3347 - 1 Depth Range: 0.00 - 2.10 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 361343.2, N: 6933695.8 (MGA94 Zone 56)

SURFACE ELEVATION : 505.98 (AHD)

EQUIPMENT TYPE : Backhoe

METHOD : 600mm Toothed Bucket

DATE EXCAVATED : 25/08/2021

LOGGED BY : T. Tran

CHECKED BY : J. Boyle

EXCAVATION DIMENSIONS : 5.00 m LONG 1.50 m WIDE



310-03-TP3347 - 2 Depth Range: 0.00 - 2.10 m



310-03-TP3347 - 3 Depth Range: 0.00 - 2.10 m

See Explanatory Notes for
details of abbreviations
& basis of descriptions.

Macquarie Geotech

POSITION : E: 361343.2, N: 6933695.8 (MGA94 Zone 56)	SURFACE ELEVATION : 505.98 (AHD)
EQUIPMENT TYPE : Backhoe	METHOD : 600mm Toothed Bucket
DATE EXCAVATED : 25/08/2021	LOGGED BY : T. Tran
EXCAVATION DIMENSIONS : 5.00 m LONG 1.50 m WIDE	CHECKED BY : J. Boyle



310-03-TP3347 - 4 Depth Range: 0.00 - 2.10 m

Engineering Log - Borehole

Project No.: B21003

[illegible]

Engineering Log - Borehole

Project No.: B21003

[illegible]

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/02/2021
Project Name:	Inland Rail B2G	Completed:	20/02/2021
Hole Location:	Approx. CH161218 - Yarranlea	Logged By:	V. Chandrasena
Hole Coordinates:	355190.5 m E 6932464.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	426.58 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3058 Depth Range: 0.50 - 0.95 m



310-03-BH3058 Depth Range: 2.00 - 2.45 m

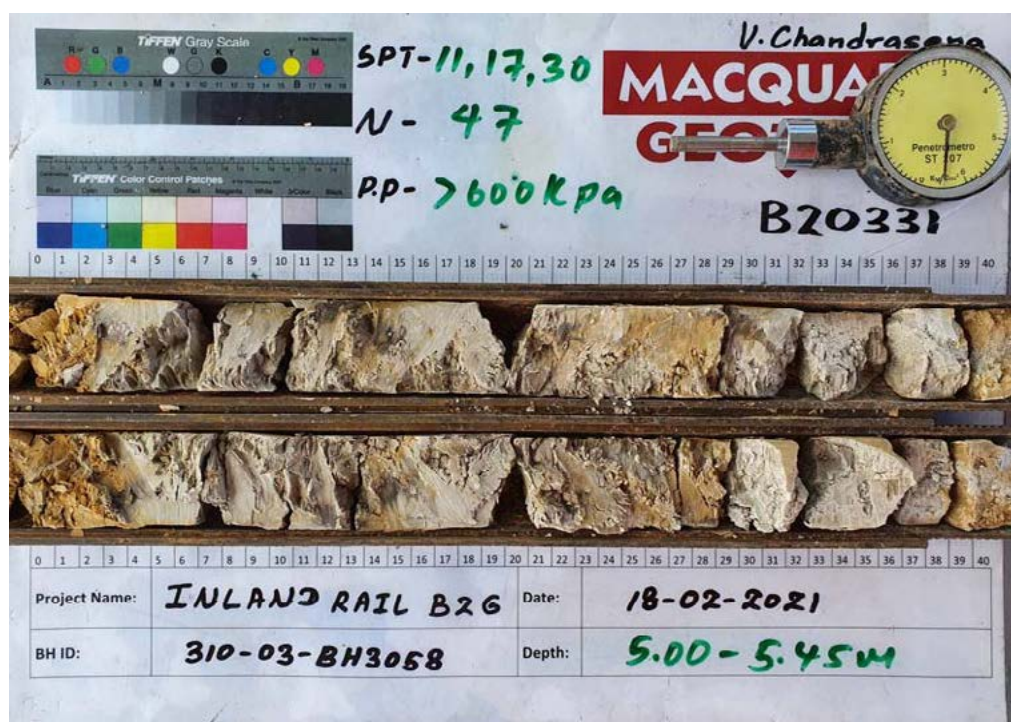
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/02/2021
Project Name:	Inland Rail B2G	Completed:	20/02/2021
Hole Location:	Approx. CH161218 - Yarranlea	Logged By:	V. Chandrasena
Hole Coordinates:	355190.5 m E 6932464.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	426.58 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3058 Depth Range: 3.50 - 3.95 m



310-03-BH3058 Depth Range: 5.00 - 5.45 m

Engineering Log - Borehole

Project No.: B21003

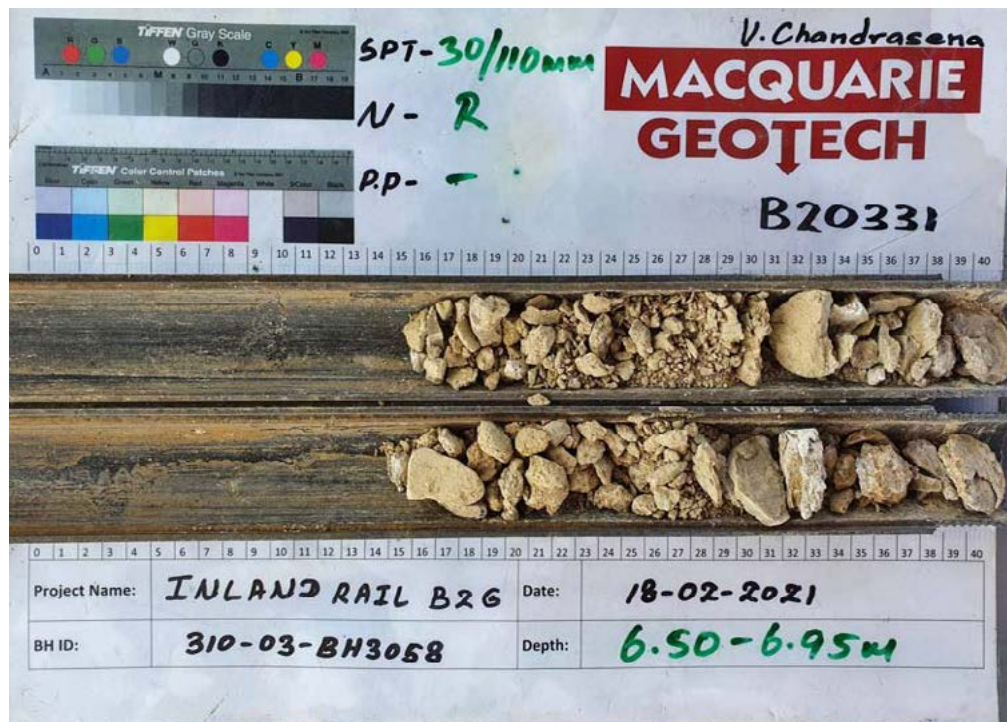
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH161218 - Yarranlea
Hole Coordinates: 355190.5 m E 6932464.0 m N MGA94 Zone 56

Commenced: 18/02/2021
Completed: 20/02/2021
Logged By: V. Chandrasena
Checked By: J. Boyle

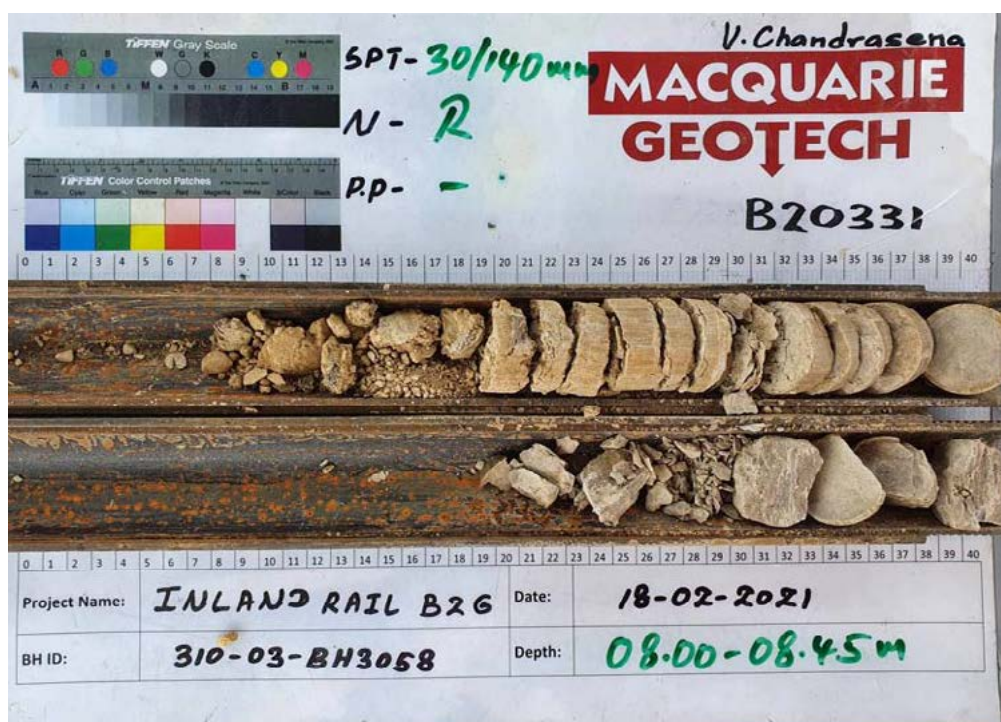
Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 426.58 m
Datum: AHD Operator: J. Komung



310-03-BH3058 Depth Range: 6.50 - 6.95 m



310-03-BH3058 Depth Range: 8.00 - 8.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH161218 - Yarranlea
Hole Coordinates: 355190.5 m E 6932464.0 m N MGA94 Zone 56

Commenced: 18/02/2021
Completed: 20/02/2021
Logged By: V. Chandrasena
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 426.58 m
Datum: AHD Operator: J. Komung



310-03-BH3058 Depth Range: 9.50 - 9.95 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 18/02/2021
Project Name: Inland Rail B2G	Completed: 20/02/2021
Hole Location: Approx. CH161218 - Yarranlea	Logged By: V. Chandrasena
Hole Coordinates: 355190.5 m E 6932464.0 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 426.58 m
Barrel Type and Length:	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information								Rock Substance					Rock Mass Defects								
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral		Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
											EL VL L M H VH EH	30 100 300 1000 3000	Particular	General							
HQ3						418.6	8														
						417.6	9														
									Continued from non-cored borehole sheet												
			100		0	416.6	10	XXXXXX	Extremely weathered SILTSTONE : Recovered as Silty CLAY trace sand : low to medium plasticity, yellow brown mottled grey, fine to medium grained sand.					BP, 10°, Fe SN, UN, S BP, 10°, Fe SN, UN, S BP, 10°, Clay VNR, PR, S BP, 10°, Clay VNR, PR, S BP, 10°, Clay VNR, PR, S							
								XXXXXX	NO CORE 0.05m					BP, 10°, Clay VNR, PR, S BP, 10°, Clay VNR, PR, S BP, 10°, Clay VNR, PR, S BP, 10°, Clay VNR, PR, S							
			98		0	415.6	11	XXXXXX	Extremely weathered SILTSTONE : Recovered as Silty CLAY trace sand : medium plasticity, yellow brown mottled grey, fine to medium grained sand.	XW											
						414.6	12	XXXXXX													
			100		57	413.6	13	XXXXXX													
									XXXXXX	SANDSTONE : fine to medium grained, brown grey mottled yellow, weak black laminations, low to medium strength.	HW to XW				JT, 60°, Clay VNR, PR, S						
<table><tr><td>Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel</td><td>Water ☒ Level (Date) ☐ Inflow ☐ Partial Loss ▲ Complete Loss</td><td>Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss</td><td>Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil</td><td>Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High</td></tr></table>																	Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water ☒ Level (Date) ☐ Inflow ☐ Partial Loss ▲ Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water ☒ Level (Date) ☐ Inflow ☐ Partial Loss ▲ Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																	

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 18/02/2021
Project Name: Inland Rail B2G	Completed: 20/02/2021
Hole Location: Approx. CH161218 - Yarranlea	Logged By: V. Chandrasena
Hole Coordinates: 355190.5 m E 6932464.0 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 426.58 m
Barrel Type and Length:	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects												
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)			Defect Description thickness, type, inclination, planarity, roughness, coating/infilling					
											El VL L M H VH EH		30 100 300 1000 3000											
HQ3									SANDSTONE : fine to medium grained, brown grey mottled yellow, weak black laminations, low to medium strength.(continued)	HW to XW														
			100		57	411.6	15																	BP, 10°, Clay VNR, PR, S
																								BP, 10°, Clay VNR, UN, S
							16																	BP, 10°, X SN, UN, S
																								BP, 10°, Fe SN, PR, S
			100		83	409.6	17																BP, 10 - 200°, Clay VNR, PR, S	
							18																	
							19																BP, 10°, X SN, UN, RF	
																						DB		
			100		87	407.6																JT, 10 - 20°, Clay VNR, PR, S		
																						BP, 10°, Fe SN, PR, S		
																						BP, 10 - 15°, Fe SN, PR, S		
							20															BP, 10°, Clean CN, UN, S		

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 18/02/2021
Project Name: Inland Rail B2G	Completed: 20/02/2021
Hole Location: Approx. CH161218 - Yarranlea	Logged By: V. Chandrasena
Hole Coordinates: 355190.5 m E 6932464.0 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 426.58 m
Barrel Type and Length:	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral		Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
											EL VL L M H VH EH		30 100 300 1000 3000		Particular	General					
HQ3									SANDSTONE : fine to medium grained, green grey with weak black laminations, medium strength.(continued)	SW to MW						BP, 10°, X SN, UN, RF					
			100		87		22														
			100		93		23														
							24														
			90		54		25														
							26		SILTSTONE : green grey, highly fractured, medium to high strength.							BP, 0 - 10°, CN, PR, S					
									NO CORE 0.23m							BP, X SN, UN, RF					
									COAL: fine grained, black, fractured.							FZ					
			100		50		27		CARBONACEOUS SILTSTONE: green grey, low strength.	HW						IS, Clay FILLED					
																BP, X SN, UN, RF					
			100		46											BP, 10°, X SN, UN, RF					
																BP, 10°, Clay VNR, PR, S					
<table><tr><td>Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel</td><td>Water ▽ Level (Date) ▽ Inflow ▽ Partial Loss ◄ Complete Loss</td><td>Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss</td><td>Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil</td><td>Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High</td></tr></table>																	Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water ▽ Level (Date) ▽ Inflow ▽ Partial Loss ◄ Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water ▽ Level (Date) ▽ Inflow ▽ Partial Loss ◄ Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																	

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 18/02/2021
Project Name: Inland Rail B2G	Completed: 20/02/2021
Hole Location: Approx. CH161218 - Yarranlea	Logged By: V. Chandrasena
Hole Coordinates: 355190.5 m E 6932464.0 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 426.58 m
Barrel Type and Length:	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
													Particular	General	
HQ3			100		46	397.6	29		COAL: fine grained, grey black, fractured.	HW			BP, 10°, Clean CN, UN, S BP, 10°, Clean CN, UN, S BP, 10°, Clean CN, UN, S BP, 10°, Clean CN, UN, S FZ BP, 10°, Clean CN, UN, S		
							CARBONACEOUS SANDSTONE: fine to medium grained, black grey, low to medium strength.								
							COAL: fine grained, black, fractured.	MW to HW			FZ, Clay FILLED, DIS SM, Clay VNR BP, 10°, Clean CN, UN, S				
							CARBONACEOUS SANDSTONE: fine to coarse grained, grey and black, medium strength.								
						395.6	31	Hole Terminated at 30.65 m Target depth. Hole grouted to surface. Hole reinstated to surface.							
						394.6	32								
						393.6	33								
						392.6	34								

Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water Level (Date) Inflow Partial Loss Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
	Support T - Timbering			

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
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XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/02/2021
Project Name:	Inland Rail B2G	Completed:	20/02/2021
Hole Location:	Approx. CH161218 - Yarranlea	Logged By:	V. Chandrasena
Hole Coordinates:	355190.5 m E 6932464.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	426.58 m
Barrel Type and Length:		Bearing:		Datum:	AHD
				Operator:	J. Komung



PointID : 310-03-BH3058 Depth Range: 9.50 - 13.00 m



PointID : 310-03-BH3058 Depth Range: 13.00 - 17.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/02/2021
Project Name:	Inland Rail B2G	Completed:	20/02/2021
Hole Location:	Approx. CH161218 - Yarranlea	Logged By:	V. Chandrasena
Hole Coordinates:	355190.5 m E 6932464.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	426.58 m
Barrel Type and Length:		Bearing:		Datum:	AHD Operator: J. Komung



PointID : 310-03-BH3058 Depth Range: 17.00 - 21.00 m



PointID : 310-03-BH3058 Depth Range: 21.00 - 25.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/02/2021
Project Name:	Inland Rail B2G	Completed:	20/02/2021
Hole Location:	Approx. CH161218 - Yarranlea	Logged By:	V. Chandrasena
Hole Coordinates:	355190.5 m E 6932464.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	426.58 m
Barrel Type and Length:		Bearing:		Datum:	AHD Operator: J. Komung



PointID : 310-03-BH3058 Depth Range: 25.00 - 29.00 m



PointID : 310-03-BH3058 Depth Range: 29.00 - 30.65 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH161276 - Yarranlea
Hole Coordinates: 355222.4 m E 6932514.6 m N MGA94 Zone 56

Commenced: 16/02/2021
Completed: 17/02/2021
Logged By: J.Cooper
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Truck mounted rig Inclin: -90° RL Surface: 426.23 m
Hole Diameter: 120 mm Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/T	Not Observed			1 ES 0.10-0.20 m		425.2	1		CH	TOPSOIL CLAY trace sand: high plasticity, dark brown; sand fine to coarse; with rootlets.	M (<PL)	St			TOPSOIL	
				2 ES 0.40-0.50 m						CLAY: medium plasticity, dark brown.					ALLUVIAL SOIL	
				1 SPT 0.50-0.95 m 7,7,8 N=15						0.90m: Becoming dark grey.					* 0.60: PP Samp >600 kPa	
				1 D 0.90-1.00 m						1.20m: CLAY with sand trace gravel, becoming orange-brown mottled grey.					* 1.50: PP Samp >600 kPa	
				3 ES 0.90-1.00 m												
				2 D 1.20-1.50 m												
				2 SPT 1.50-1.95 m 6,10,15 N=25						CLAY: high plasticity, pale grey-brown mottled orange.						
				3 D 2.00-2.20 m												
				4 D 3.00-3.30 m												
				SPT 3.00-3.45 m 8,12,19 N=31						CLAY trace gravel: medium plasticity, brown-grey; gravel fine to coarse, subrounded ironstones.					EXTREMELY WEATHERED MATERIAL	
				5 D 3.30-3.50 m												
				6 D 4.00-4.20 m						4.00m: Becoming high plasticity clay.						
				3 SPT 4.50-4.75 m 17,33/100mm HB N=33/100mm											* 4.50: PP Samp >600 kPa	
				7 D 5.50-5.70 m						Silty CLAY trace sand: high plasticity, brown-grey; fine to coarse grained sand.					ALLUVIAL SOIL	
				4 SPT 6.00-6.45 m 25,21,29 HB N=50												
Continued on cored borehole sheet																

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss		Classification Symbols and Soil Descriptions	Plastic Limit	
C - Casing	Core recovered (hatching indicates material) Core loss		Based on Unified Soil Classification System	< PL = PL < PL	

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

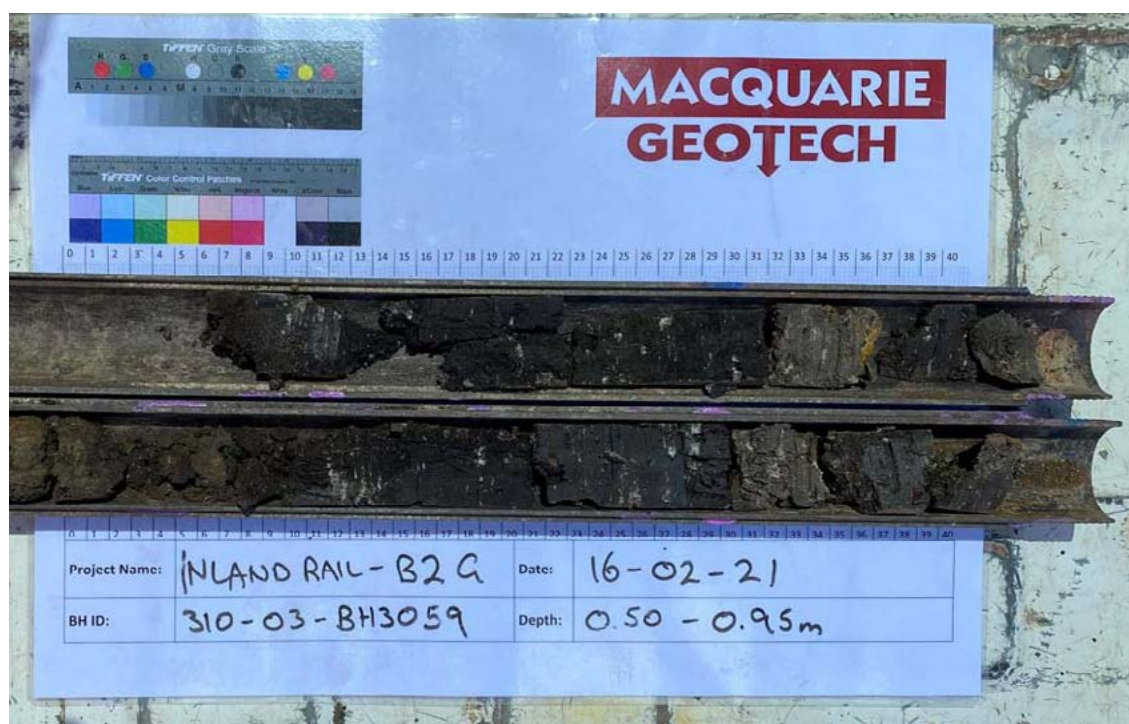
Engineering Log - Borehole

Project No.: B21003

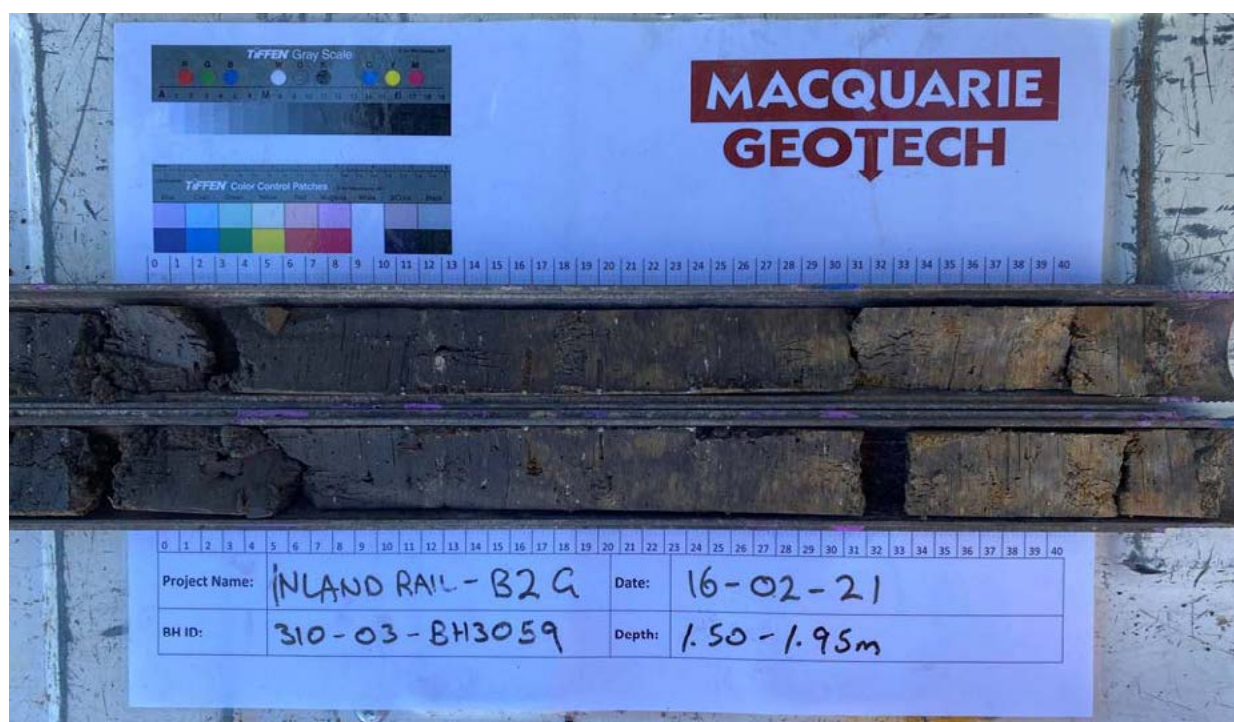
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH161276 - Yarranlea
Hole Coordinates: 355222.4 m E 6932514.6 m N MGA94 Zone 56

Commenced: 16/02/2021
Completed: 17/02/2021
Logged By: J.Cooper
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Truck mounted rig Inclusion: -90°
Hole Diameter: 120 mm Bearing: RL Surface: 426.23 m
Datum: AHD Operator: B.Boga



310-03-BH3059 Depth Range: 0.50 - 0.95 m

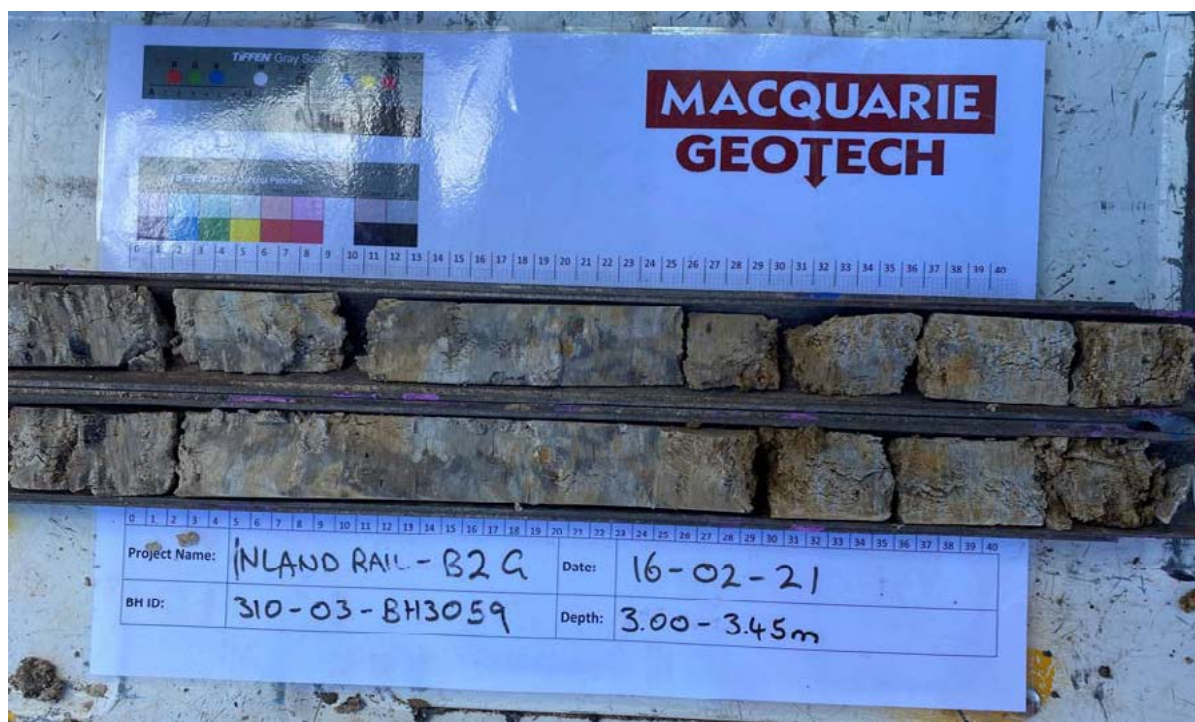


310-03-BH3059 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH161276 - Yarranlea	Logged By:	J.Cooper
Hole Coordinates:	355222.4 m E 6932514.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Hole Diameter:	120 mm	Bearing:	
		RL Surface:	426.23 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3059 Depth Range: 3.00 - 3.45 m



310-03-BH3059 Depth Range: 4.50 - 4.95 m

Engineering Log - Borehole

Project No.: B21003

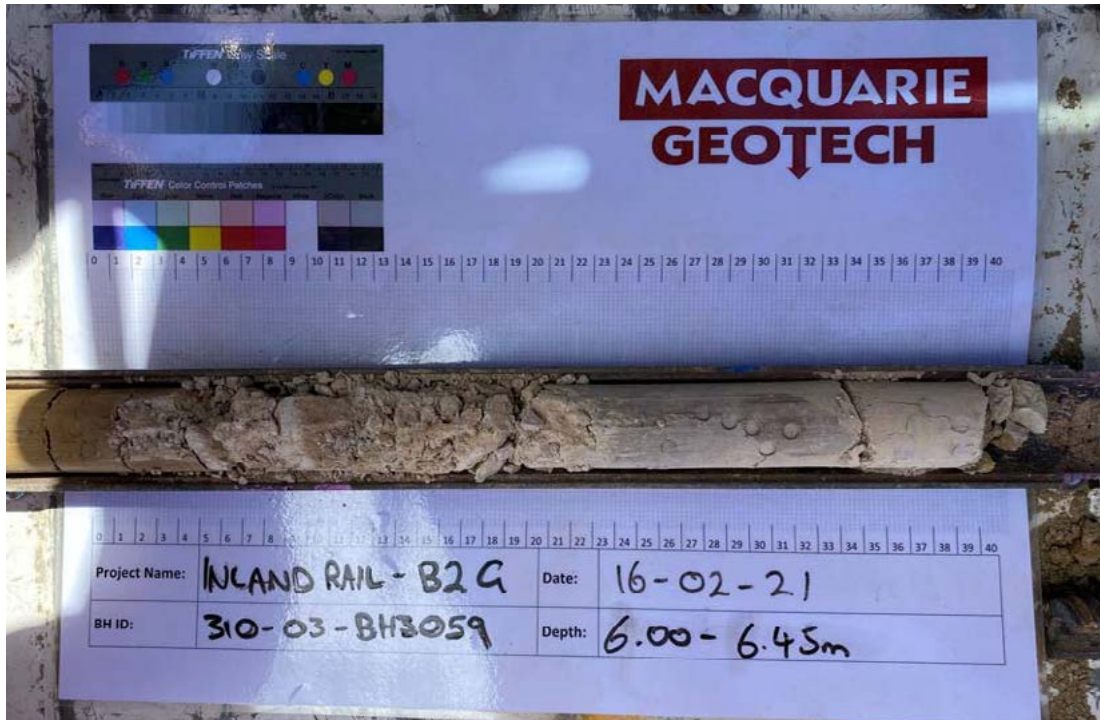
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH161276 - Yarranlea
Hole Coordinates: 355222.4 m E 6932514.6 m N MGA94 Zone 56

Commenced: 16/02/2021
Completed: 17/02/2021
Logged By: J.Cooper
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Truck mounted rig
Hole Diameter: 120 mm

Inclination: -90°
Bearing:

RL Surface: 426.23 m
Datum: AHD Operator: B.Boga



310-03-BH3059 Depth Range: 6.00 - 6.45 m



310-03-BH3059 Depth Range: 7.50 - 7.95 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH161276 - Yarranlea	Logged By:	J.Cooper
Hole Coordinates:	355222.4 m E 6932514.6 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	426.23 m		
Barrel Type and Length:	3 m	Bearing:		Datum:	AHD	Operator:	B.Boga

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
										EL VL L M H VH EH		30 100 300 1000 3000	Particular		General	
						425.2	1									
						424.2	2									
						423.2	3									
						422.2	4									
						421.2	5									
						420.2	6									
						419.2	7									
									Continued from non-cored borehole sheet							
HQ3			0	0					7.70m: Becoming grey mottled red and dark grey.	XW						

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss
[Hatched Box] Core recovered (hatching indicates material)
[Empty Box] Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support
T - Timbering

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH161276 - Yarranlea
Hole Coordinates: 355222.4 m E 6932514.6 m N MGA94 Zone 56

Commenced: 16/02/2021
Completed: 17/02/2021
Logged By: J.Cooper
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Truck mounted rig Inclin: -90° RL Surface: 426.23 m
Barrel Type and Length: 3 m Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Rock Substance					Rock Mass Defects							
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
													Particular	General					
HQ3		Not Observed	97		42	417.2	9		CI CLAY trace gravel: medium plasticity, brown-grey; gravel fine to coarse, subrounded ironstones.	XW			FC, 5°, CN, PR, S						
							10		SILTSTONE: pale brown mottled grey, thinly laminated.	MW			FC, 0°, Clay SN, PR, S						
			100		74	416.2	11	415.2	12	414.2	13	413.2	14		412.2	15	411.2	16	410.2
			100		71	415.2	11	414.2	12	413.2	13	412.2	14		411.2	15	410.2	16	409.2
			100		0	412.2	14	411.2	15	410.2	16	409.2	17		408.2	18	407.2	19	406.2
			100			411.2	15	410.2	16	409.2	17	408.2	18		407.2	19	406.2	20	405.2
			100			410.2	16	409.2	17	408.2	18	407.2	19		406.2	20	405.2	21	404.2
			100			409.2	17	408.2	18	407.2	19	406.2	20		405.2	21	404.2	22	403.2
			100			408.2	18	407.2	19	406.2	20	405.2	21		404.2	22	403.2	23	402.2
100			407.2	19	406.2	20	405.2	21	404.2	22	403.2	23	402.2	24	401.2				
																10	JT, 20°, CN, PR, S		
100			406.2	20	405.2	21	404.2	22	403.2	23	402.2	24	401.2	25	400.2				
																10	JT, 30°, CN, PR, S		
100			405.2	21	404.2	22	403.2	23	402.2	24	401.2	25	400.2	26	399.2				
																10	JT, 45°, CN, PR, S		
100			404.2	22	403.2	23	402.2	24	401.2	25	400.2	26	399.2	27	398.2				
																10	FC, 5°, CN, PR, S		
100			403.2	23	402.2	24	401.2	25	400.2	26	399.2	27	398.2	28	397.2				
																10	JT, 60°, Clay VNR, PR, S		
100			402.2	24	401.2	25	400.2	26	399.2	27	398.2	28	397.2	29	396.2				
																10	JT, 60°, Clay VNR, PR, S		
100			401.2	25	400.2	26	399.2	27	398.2	28	397.2	29	396.2	30	395.2				
																10	FC, 5°, Clay VNR, PR, S		
100			400.2	26	399.2	27	398.2	28	397.2	29	396.2	30	395.2	31	394.2				
																10	FC, 5°, Clay VNR, PR, S		
100			399.2	27	398.2	28	397.2	29	396.2	30	395.2	31	394.2	32	393.2				
																10	FC, 5°, Clay VNR, PR, S		
100			398.2	28	397.2	29	396.2	30	395.2	31	394.2	32	393.2	33	392.2				
																10	JT, 10°, Clay VNR, PR, S		
100			397.2	29	396.2	30	395.2	31	394.2	32	393.2	33	392.2	34	391.2				
																10	FC, 0°, Clay VNR, UN, S		
100			396.2	30	395.2	31	394.2	32	393.2	33	392.2	34	391.2	35	390.2				
																10	FC, 5°, Clay VNR, UN, S		
100			395.2	31	394.2	32	393.2	33	392.2	34	391.2	35	390.2	36	389.2				
																10	FC, 5°, Clay VNR, UN, S		
100			394.2	32	393.2	33	392.2	34	391.2	35	390.2	36	389.2	37	388.2				
																10	FC, 5°, Clay VNR, UN, S		
100			393.2	33	392.2	34	391.2	35	390.2	36	389.2	37	388.2	38	387.2				
																10	FC, 5°, Clay VNR, UN, S		
100			392.2	34	391.2	35	390.2	36	389.2	37	388.2	38	387.2	39	386.2				
																10	FC, 5°, Clay VNR, UN, S		
100			391.2	35	390.2	36	389.2	37	388.2	38	387.2	39	386.2	40	385.2				
																10	FC, 5°, Clay VNR, UN, S		
100			390.2	36	389.2	37	388.2	38	387.2	39	386.2	40	385.2	41	384.2				
																10	FC, 5°, Clay VNR, UN, S		
100			389.2	37	388.2	38	387.2	39	386.2	40	385.2	41	384.2	42	383.2				
																10	FC, 5°, Clay VNR, UN, S		
100			388.2	38	387.2	39	386.2	40	385.2	41	384.2	42	383.2	43	382.2				
																10	FC, 5°, Clay VNR, UN, S		
100			387.2	39	386.2	40	385.2	41	384.2	42	383.2	43	382.2	44	381.2				
																10	FC, 5°, Clay VNR, UN, S		
100			386.2	40	385.2	41	384.2	42	383.2	43	382.2	44	381.2	45	380.2				
																10	FC, 5°, Clay VNR, UN, S		
100			385.2	41	384.2	42	383.2	43	382.2	44	381.2	45	380.2	46	379.2				
																10	FC, 5°, Clay VNR, UN, S		
100			384.2	42	383.2	43	382.2	44	381.2	45	380.2	46	379.2	47	378.2				
																10	FC, 5°, Clay VNR, UN, S		
100			383.2	43	382.2	44	381.2	45	380.2	46	379.2	47	378.2	48	377.2				
																10	FC, 5°, Clay VNR, UN, S		
100			382.2	44	381.2	45	380.2	46	379.2	47	378.2	48	377.2	49	376.2				
																10	FC, 5°, Clay VNR, UN, S		
100			381.2	45	380.2	46	379.2	47	378.2	48	377.2	49	376.2	50	375.2				
																10	FC, 5°, Clay VNR, UN, S		
100			380.2	46	379.2	47	378.2	48	377.2	49	376.2	50	375.2	51	374.2				
																10	FC, 5°, Clay VNR, UN, S		
100			379.2	47	378.2	48	377.2	49	376.2	50	375.2	51	374.2	52	373.2				
																10	FC, 5°, Clay VNR, UN, S		
100			378.2	48	377.2	49	376.2	50	375.2	51	374.2	52	373.2	53	372.2				
																10	FC, 5°, Clay VNR, UN, S		
100			377.2	49	376.2	50	375.2	51	374.2	52	373.2	53	372.2	54	371.2				
																10	FC, 5°, Clay VNR, UN, S		
100			376.2	50	375.2	51	374.2	52	373.2	53	372.2	54	371.2	55	370.2				
																10	FC, 5°, Clay VNR, UN, S		
100			375.2	51	374.2	52	373.2	53	372.2	54	371.2	55	370.2	56	369.2				
																10	FC, 5°, Clay VNR, UN, S		
100			374.2	52	373.2	53	372.2	54	371.2	55	370.2	56	369.2	57	368.2				
																10	FC, 5°, Clay VNR, UN, S		
100			373.2	53	372.2	54	371.2	55	370.2	56	369.2	57	368.2	58	367.2				
																10	FC, 5°, Clay VNR, UN, S		
100			372.2	54	371.2	55	370.2	56	369.2	57	368.2	58	367.2	59	366.2				
																10	FC, 5°, Clay VNR, UN, S		
100			371.2	55	370.2	56	369.2	57	368.2	58	367.2	59	366.2	60	365.2				
																10	FC, 5°, Clay VNR, UN, S		
100			370.2	56	369.2	57	368.2	58	367.2	59	366.2	60	365.2	61	364.2				
																10	FC, 5°, Clay VNR, UN, S		
100			369.2	57	368.2	58	367.2	59	366.2	60	365.2	61	364.2	62	363.2				
																10	FC, 5°, Clay VNR, UN, S		
100			368.2	58	367.2	59	366.2	60	365.2	61	364.2	62	363.2	63	362.2				
																10	FC, 5°, Clay VNR, UN, S		
100			367.2	59	366.2	60	365.2	61	364.2	62	363.2	63	362.2	64	361.2				
																10	FC, 5°, Clay VNR, UN, S		
100			366.2	60	365.2	61	364.2	62	363.2	63	362.2	64	361.2	65	360.2				
																10	FC, 5°, Clay VNR, UN, S		
100			365.2	61	364.2	62	363.2	63	362.2	64	361.2	65	360.2	66	359.2				
																10	FC, 5°, Clay VNR, UN, S		
100			364.2	62	363.2	63	362.2	64	361.2	65	360.2	66	359.2	67	358.2				
																10	FC, 5°, Clay VNR, UN, S		
100			363.2	63	362.2	64	361.2	65	360.2	66	359.2	67	358.2	68	357.2				
																10	FC, 5°, Clay VNR, UN, S		
100			362.2	64	361.2	65	360.2	66	359.2	67	358.2	68	357.2	69	356.2				
																10	FC, 5°, Clay VNR, UN, S		
100			361.2	65	360.2	66	359.2	67	358.2	68	357.2	69	356.2	70	355.2				
																10	FC, 5°, Clay VNR, UN, S		
100			360.2	66	359.2	67	358.2	68	357.2	69	356.2	70	355.2	71	354.2				
																10	FC, 5°, Clay VNR, UN, S		
100			359.2	67	358.2	68	357.2	69	356.2	70	355.2	71	354.2	72	353.2				
																10	FC, 5°, Clay VNR, UN, S		
100			358.2	68	357.2	69													

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC						Commenced: 16/02/2021																							
Project Name: Inland Rail B2G						Completed: 17/02/2021																							
Hole Location: Approx. CH161276 - Yarranlea						Logged By: J.Cooper																							
Hole Coordinates: 355222.4 m E 6932514.6 m N MGA94 Zone 56						Checked By: J.Boyle																							
Drill Model and Mounting: D4TAPG Truck mounted rig						Inclination: -90°		RL Surface: 426.23 m																					
Barrel Type and Length: 3 m						Bearing:		Datum: AHD		Operator: B.Boga																			
Drilling Information						Rock Substance						Rock Mass Defects																	
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																
													Particular	General															
HQ3		Not Observed	100		38				MUDSTONE: dark grey, thinly laminated, with seams of coal approx. 0-150mm thick and lenses of fine sand.(continued)	SW			FC, 0°, CN, UN, S																
						401.2	25		25.25 to 25.33m: Coal seam, black 25.35 to 25.4m: Coal seam, black				JT, 5°, Clay VNR, UN, S FC, 0 - 5°, CN, PI, S																
			100		0	400.2	26			MW			JT, 5°, Clay VNR, PR, S FC, 0 - 5°, Clay VNR, PR, S FC, 0 - 5°, Clay VNR, PR, S FC, 0 - 5°, Clay VNR, PR, S FC, 0 - 5°, Clay VNR, PR, S FC, 0 - 5°, Clay VNR, PR, S FC, 0 - 5°, Clay VNR, PR, S																
						399.2	27		27.3 to 27.6m: Coal seam, black				JT, 40°, Clay SN, PR, S JT, 15°, Clay SN, PR, S JT, 45°, Clay SN, PR, S JT, 5°, Clay VNR, PR, S JT, 45°, Clay VNR, PR, S FC, 0°, Clay VNR, PR, S FC, 0°, Clay VNR, PR, S																
						398.2	28		27.67 to 27.67m: Coal seam, black	HW			JT, 5°, Clay SN, PR, S FC, 5°, Clay VNR, PR, S FC, 5°, Clay VNR, PR, S JT, 5°, Clay VNR, PR, S JT, 75°, Clay VNR, PR, S FC, 90°, Clay VNR, PR, S JT, 5°, Clay VNR, PR, S FC, 90°, Clay VNR, PR, S FC, 0°, Clay VNR, PR, S 0°, Clay VNR, PR, S 0°, Clay VNR, PR, S																
			100		36	397.2	29		28.4 to 28.52m: Coal seam, black 28.69 to 29.00m: Coal seam, black	SW			FC, 5°, Clay VNR, PR, S FC, 90°, Clay CN, PR, S JT, 5°, Clay VNR, PR, S FC, 0 - 5°, Clay VNR, UN, S																
						396.2	30		29.75 to 29.82m: Coal seam, black 29.89 to 30.00m: Coal seam, black	XW SW			FC, 0 - 5°, Clay VNR, UN, S FC, 0 - 5°, Clay VNR, UN, S FC, 0 - 5°, Clay VNR, UN, S																
						395.2	31		Hole Terminated at 30.45 m Target depth. Hole grouted to surface. Hole reinstated to surface.																				
Method AS - Auger Screwing WB - Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel						Water ☒ Level (Date) ▽ Inflow △ Partial Loss ▲ Complete Loss						Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss						Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil						Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High					

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH161276 - Yarranlea	Logged By:	J.Cooper
Hole Coordinates:	355222.4 m E 6932514.6 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	426.23 m
Barrel Type and Length:	3 m	Bearing:		Datum:	AHD Operator: B.Boga



PointID : 310-03-BH3059 Depth Range: 7.50 - 11.00 m



PointID : 310-03-BH3059 Depth Range: 11.00 - 15.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH161276 - Yarranlea	Logged By:	J.Cooper
Hole Coordinates:	355222.4 m E 6932514.6 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°
Barrel Type and Length:	3 m	RL Surface:	426.23 m
		Bearing:	
		Datum:	AHD
		Operator:	B.Boga



PointID : 310-03-BH3059 Depth Range: 15.00 - 19.00 m



PointID : 310-03-BH3059 Depth Range: 19.00 - 23.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/02/2021
Project Name:	Inland Rail B2G	Completed:	17/02/2021
Hole Location:	Approx. CH161276 - Yarranlea	Logged By:	J.Cooper
Hole Coordinates:	355222.4 m E 6932514.6 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG Truck mounted rig	Inclination:	-90°	RL Surface:	426.23 m
Barrel Type and Length:	3 m	Bearing:		Datum:	AHD Operator: B.Boga



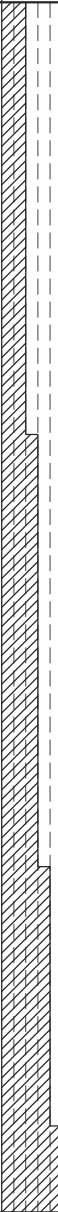
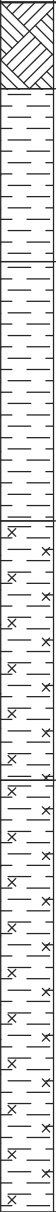
PointID : 310-03-BH3059 Depth Range: 23.00 - 27.00 m



PointID : 310-03-BH3059 Depth Range: 27.00 - 30.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC				Commenced: 06/02/2021																			
Project Name: Inland Rail B2G				Completed: 07/02/2021																			
Hole Location: Approx. CH163287 - Yarranlea				Logged By: V. Chandrasena																			
Hole Coordinates: 357034.0 m E 6933303.3 m N MGA94 Zone 56				Checked By: J.Boyle																			
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°		RL Surface: 442.19 m		Operator: J. Komung																	
Hole Diameter: 115 mm		Bearing:		Datum: AHD																			
Drilling Information							Soil Description							Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations								
AD/T				J00020 ES 0.20-0.30 m PID 0.20 m 0 ppm		441.2	1		CI	TOPSOIL: Gravelly CLAY trace rootlets: medium plasticity, dark-brown to black, fine to coarse sub-angular gravel.	M (>PL)	VSt to H			TOPSOIL								
				J00050 ES 0.50-0.60 m S00050 SPT 0.50-0.95 m 12,13,21 N=34 PP 0.50 m >600 kPa PID 0.50 m 0.1 ppm						CLAY trace gravel: medium plasticity, black, fine sub-angular gravel.					* ALLUVIAL SOIL								
				J00100 ES 1.00-1.10 m U00100 U 1.00-1.50 m PID 1.00 m 0.1 ppm S00150 SPT 1.50-1.95 m 11,12,18 N=30 PP 1.50 m >600 kPa D00250 D 2.50-3.00 m S00300 SPT 3.00-3.45 m 10,16,22 N=38 PP 3.00 m >600 kPa D00400 D 4.00-4.50 m S00450 SPT 4.50-4.95 m 14,22,32 N=54						Silty CLAY trace gravel: low plasticity, off-white more black, fine to coarse sub-rounded to sub-angular gravel.					*								
				D00550 D 5.50-6.00 m						Silty CLAY: high plasticity, red-yellow, more white.					* RESIDUAL SOIL								
				S00600 SPT 6.00-6.35 m 18,30,50/50mm HB N=80/200mm PP 6.00 m >600 kPa						Silty CLAY trace gravel: medium plasticity, pale yellow to brown, fine sub-rounded gravel.													
				Below 6.00m: colour change to pale brown to off-white.											*								

Engineering Log - Borehole

Project No.: B21003

Client: ARTC						Commenced: 06/02/2021									
Project Name: Inland Rail B2G						Completed: 07/02/2021									
Hole Location: Approx. CH163287 - Yarranlea						Logged By: V. Chandrasena									
Hole Coordinates: 357034.0 m E 6933303.3 m N MGA94 Zone 56						Checked By: J.Boyle									
Drill Model and Mounting: Comacchio 305/Track						Inclination: -90°		RL Surface: 442.19 m							
Hole Diameter: 115 mm						Bearing:		Datum: AHD		Operator: J. Komung					
Drilling Information						Soil Description								Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
AD/T				D00700 D 7.00-7.50 m				CI	Silty CLAY trace gravel: medium plasticity, pale yellow to brown, fine sub-rounded gravel. (<i>continued</i>)	M (>PL)	VSt to H	100 200 300 400 500	RESIDUAL SOIL		
									Continued on cored borehole sheet				*		
						434.2									
						433.2									
						432.2									
						431.2									
						430.2									
						429.2									
Method AS - Auger Screwing RR - Rock Roller WB- Washbore						Penetration No resistance ranging to refusal		Water Level (Date) Inflow Partial Loss Complete Loss		Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		Moisture Condition D - Dry M - Moist W - Wet		Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense	
Support C - Casing						Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System		Plastic Limit < PL = PL < PL					

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH163287 - Yarranlea
Hole Coordinates: 357034.0 m E 6933303.3 m N MGA94 Zone 56

Commenced: 06/02/2021
Completed: 07/02/2021
Logged By: V. Chandrasena
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 442.19 m
Datum: AHD Operator: J. Komung



310-03-BH3061 Depth Range: 0.50 - 0.95 m



310-03-BH3061 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B21003

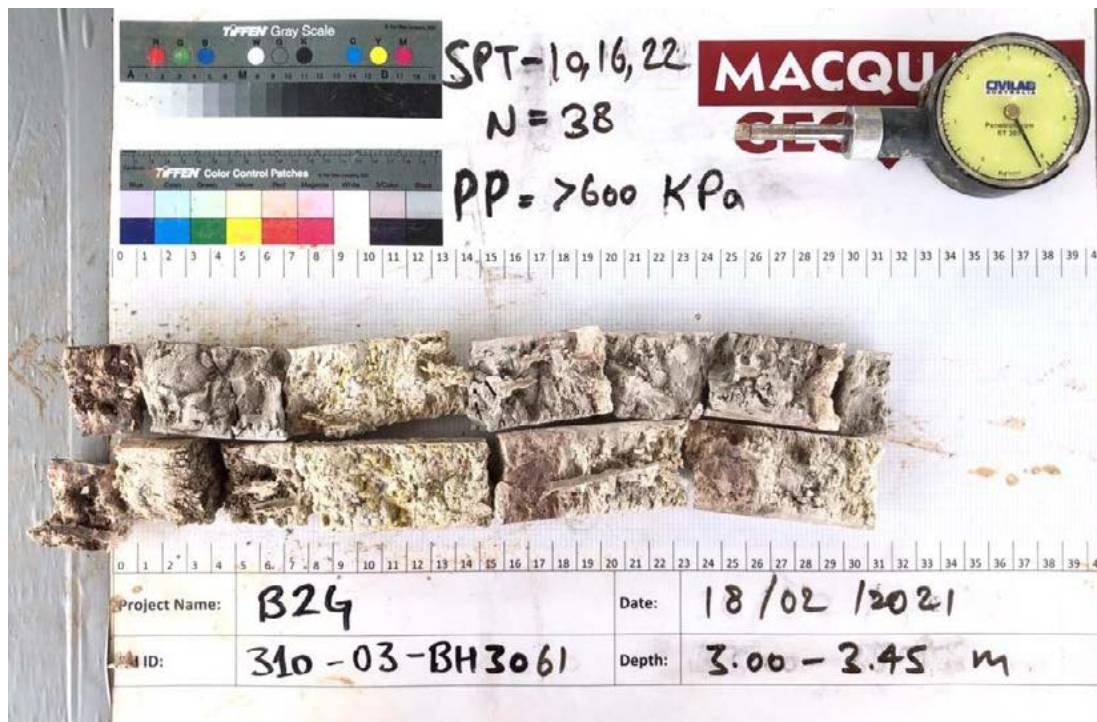
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH163287 - Yarranlea
Hole Coordinates: 357034.0 m E 6933303.3 m N MGA94 Zone 56

Commenced: 06/02/2021
Completed: 07/02/2021
Logged By: V. Chandrasena
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 442.19 m
Datum: AHD Operator: J. Komung



310-03-BH3061 Depth Range: 3.00 - 3.45 m



310-03-BH3061 Depth Range: 4.50 - 4.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH163287 - Yarranlea
Hole Coordinates: 357034.0 m E 6933303.3 m N MGA94 Zone 56

Commenced: 06/02/2021
Completed: 07/02/2021
Logged By: V. Chandrasena
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 442.19 m
Datum: AHD Operator: J. Komung



310-03-BH3061 Depth Range: 6.00 - 6.45 m



310-03-BH3061 Depth Range: 7.50 - 7.65 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 06/02/2021													
Project Name: Inland Rail B2G		Completed: 07/02/2021													
Hole Location: Approx. CH163287 - Yarranlea		Logged By: V. Chandrasena													
Hole Coordinates: 357034.0 m E 6933303.3 m N MGA94 Zone 56		Checked By: J.Boyle													
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 442.19 m												
Barrel Type and Length: HQ 3 m		Bearing:	Datum: AHD Operator: J. Komung												
Drilling Information		Rock Substance		Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	Particular	General
									Continued from non-cored borehole sheet						
			100		0		434.2	8	SILTSTONE: fine grained, orange and grey, Thinly Laminated; moist greater than plastic limit.				7.50: PP In-situ >600 kPa BP, Not Intact Core BP, 0°, CN, PR, RF, <1 mm JT, 80°, CN, UN, RF, <1 mm JT, 80°, SN, PR, RF, <1 mm BP, 5°, CN, PR, RF, <1 mm JT, 60°, VNR, CU, RF BP, 90°, CN, Not Intact core JT, 70°, SN, UN, RF BP, 5°, CN, PR, RF BP, 0°, CN, PR, RF, <1 mm JT, 10°, CN, PR, RF, <1 mm JT, 10°, CN, PR, RF, <1 mm BP, 80°, CN, Not Intact Core JT, 80°, CN, PR, RF JT, 30°, CN, PR, RF, <1 mm BP, 0°, CN, PR, RF, <1 mm JT, 40°, CN, PR, RF, <1 mm XS, 0°, CN, PR, RF, <1 mm JT, 0°, CN, IR, VR, <1 mm JT, 20°, CN, IR, VR, <1 mm JT, 0°, CN, IR, VR, <1 mm BP, 0°, CN, IR, VR, <1 mm, Not Intact Core BP, 0°, CN, PR, RF, <1 mm BP, 0°, CN, PR, RF, <1 mm, Not Intact Core JT, 60°, VNR, PR, RF, <1 mm JT, 5°, CN, PR, RF, <1 mm JT, 80°, CN, UN, RF, <1 mm BP, 5°, CN, PR, RF, <1 mm JT, 10°, CN, CU, RF, <1 mm JT, 10°, CN, IR, VR, <1 mm Not Intact Core JT, 0°, CN, PR, RF, <1 mm		
			100		0		433.2	9							
			100		27		432.2	10							
							431.2	11							
							430.2	12							
			100		0		429.2	13	CARBONACEOUS SILTSTONE: fine grained, black and grey, Thinly Laminated.						
									COAL: black.						
Method		Water		Graphic Log/Core Loss		Weathering		Strength							
AS - Auger Screwing		Level (Date)		Core recovered (hatching indicates material)		FR - Fresh		EL - Extremely Low							
WB - Washbore		Inflow		Core loss		SW - Slightly Weathered		VL - Very Low							
HQ3 HQ3 Core Barrel		Partial Loss				DW - Distinctly Weathered		L - Low							
NQ3 NQ3 Core Barrel		Complete Loss				XW - Extremely Weathered		M - Medium							
						RS - Residual Soil		H - High							
								VH - Very High							
								EH - Extremely High							

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH163287 - Yarranlea
Hole Coordinates: 357034.0 m E 6933303.3 m N MGA94 Zone 56

Commenced: 06/02/2021
Completed: 07/02/2021
Logged By: V. Chandrasena
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 442.19 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
													Particular	General		
HQ3			100		0		15	COAL: black. (continued)					DB			
								CARBONACEOUS SILTSTONE: black and grey, Thinly Laminated.					BP, 5°, CN, PR, RF, <1 mm			
													SM, Not Intact Core			
													BP, 5°, CN, PR, RF, <1 mm			
													SM, Not Intact Core			
													JT, 90°, CN, PR, RF, <1 mm			
													JT, 5°, CN, UN, RF, <1 mm			
													JT, 0°, CN, PR, RF, <1 mm			
													JT, 70°, CN, UN, RF, <1 mm			
													JT, 5°, CN, UN, RF, <1 mm			
HQ3			100		23		16	COAL: black.					JT, 5°, CN, PR, RF, <1 mm			
								CARBONACEOUS SILTSTONE: dark grey and black, Thinly Laminated.					JT, 0°, VNR, PR, RF, <1 mm			
													SM, VNR			
													No Intact Core			
													JT, 5°, CN, PR, RF, <1 mm			
													JT, 0°, CN, PR, RF, <1 mm			
													BP, 0°, CN, PR, RF, <1 mm			
													SM, Not Intact Core			
													SM, VNR, PR, RF, <1 mm			
													Not Intact Core			
HQ3							17	COAL: black.					BP, 10°, CN, UN, RF, <1 mm			
													Not Intact Core			
													BP, 5°, CN, IR, VR, <1 mm			
													DB			
													JT, 0°, VNR, PR, VR, <1 mm			
													JT, 20°, CN, PR, RF, <1 mm			
													JT, 15°, VNR, PR, RF, <1 mm			
													JT, 5°, CN, PR, RF, <1 mm			
													JT, 0°, CN, PR, RF, <1 mm			
													JT, 0°, CN, PR, RF, <1 mm			
HQ3							18	CARBONACEOUS SILTSTONE: dark grey and black, Thinly Laminated.					JT, 80°, CN, UN, VR, <1 mm			
													JT, 15°, CN, IR, VR, <1 mm			
													JT, 80°, VNR, PR, RF, <1 mm			
													Not Intact Core			
													JT, 5°, CN, IR, RF, <1 mm			
													JT, 0°, VNR, PR, RF, <1 mm			
													JT, 5°, VNR, PR, RF, <1 mm			

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH163287 - Yarranlea
Hole Coordinates: 357034.0 m E 6933303.3 m N MGA94 Zone 56

Commenced: 06/02/2021
Completed: 07/02/2021
Logged By: V. Chandrasena
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track
Barrel Type and Length: HQ 3 m
Inclination: -90°
Bearing:
RL Surface: 442.19 m
Datum: AHD
Operator: J. Komung

Drilling Information								Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling				
HQ3		07/02/21							CARBONACEOUS SILTSTONE: dark grey and black, Thinly Laminated.(continued)								
			100		15	420.2	22			DW							

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH163287 - Yarranlea
Hole Coordinates: 357034.0 m E 6933303.3 m N MGA94 Zone 56

Commenced: 06/02/2021
Completed: 07/02/2021
Logged By: V. Chandrasena
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track
Barrel Type and Length: HQ 3 m
Inclination: -90°
Bearing:
RL Surface: 442.19 m
Datum: AHD
Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
													Particular	General		
HQ3						413.2	29		CARBONACEOUS SILTSTONE: dark grey and black, Thinly Laminated.	DW			BP, 5°, CN, PR, RF, <1 mm			
													DB			
													BP, 0°, CN, PR, RF, <1 mm			
													JT, 85°, CN, PR, VR, <1 mm			
		100			39	412.2	30			XW			BP, 0°, CN, PR, RF, <1 mm			
													DB			
													XS			
													BP, 0°, CN, PR, RF, <1 mm			
										DW			BP, 5°, CN, PR, RF, <1 mm			
													XS			
													XS			
													XS			
										HW			BP, 5°, CN, UN, RF, <1 mm			
						411.2	31		Hole Terminated at 30.22 m Target depth. Hole grouted to surface. Hole grouted to surface.				BP, 5°, CN, UN, RF, <1 mm			
														JT, 70°, CN, PR, RF, <1 mm		
														JT, 5°, VNR, PR, RF, <1 mm		
														JT, 30°, VNR, PR, RF, <1 mm		
														BP, 5°, CN, PR, RF, <1 mm		
														Not Intact Core		
														BP, 5°, CN, UN, RF, <1 mm		
														Not Intact Core		
														XS		
														JT, 60°, VNR, PR, RF, <1 mm		
														BP, 10°, CN, PR, RF, <1 mm		
														BP, 10°, CN, PR, RF, <1 mm		
														Not Intact Core		
														JT, 5°, CN, PR, RF, <1 mm		
														JT, 45°, CN, PR, RF, <1 mm		
														BP, 0°, CN, UN, RF, <1 mm		
													JT, 0°, CN, PR, RF, <1 mm			
													CL, Fissures with carbonate infilling			
													Not Intact Core			
													BP, 0°, CN, UN, RF, <1 mm			
													JT, 0°, CN, PR, RF, <1 mm			
													Not Intact Core			
													JT, 0°, CN, PR, RF, <1 mm			
													Not Intact Core			
													JT, 80°, CN, PR, RF, <1 mm			

Method	Water	Graphic Log/Core Loss	Weathering	Strength
AS - Auger Screwing	Level (Date)	Core recovered (hatching indicates material)	FR - Fresh	(indirect tensile strength)
WB- Washbore	Inflow	Core loss	SW - Slightly Weathered	EL - Extremely Low
HQ3 HQ3 Core Barrel	Partial Loss		DW - Distinctly Weathered	VL - Very Low
NQ3 NQ3 Core Barrel	Complete Loss		XW - Extremely Weathered	L - Low
			RS - Residual Soil	M - Medium
				H - High
				VH - Very High
				EH - Extremely High

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support
T - Timbering

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC						Commenced: 06/02/2021																
Project Name: Inland Rail B2G						Completed: 07/02/2021																
Hole Location: Approx. CH163287 - Yarranlea						Logged By: V. Chandrasena																
Hole Coordinates: 357034.0 m E 6933303.3 m N MGA94 Zone 56						Checked By: J.Boyle																
Drill Model and Mounting: Comacchio 305/Track			Inclination: -90°			RL Surface: 442.19 m																
Barrel Type and Length: HQ 3 m			Bearing:			Datum: AHD			Operator: J. Komung													
Drilling Information						Rock Substance						Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50)						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
											● - Axial ○ - Diametral	EL VL L M H VH EH	30 100 300 1000 3000	Particular		General						
						406.2	36										JT, 0°, VNR, PR, RF, <1 mm					
																	BP, 0°, CN, PR, RF, <1 mm					
																	BP, 0°, CN, PR, RF, <1 mm					
																	BP, 0°, CN, PR, RF, <1 mm					
																	No core					
																	XS					
																	BP, 5°, CN, PR, RF, <1 mm					
																	JT, 5°, CN, IR, RF, <1 mm					
																	BP, 0°, CN, PR, RF, <1 mm					
						405.2	37															
						404.2	38															
						403.2	39															
						402.2	40															
						401.2	41															
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water ☒ Level (Date) ▽ Inflow △ Partial Loss ◀ Complete Loss Support T - Timbering Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																						

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH163287 - Yarranlea	Logged By:	V. Chandrasena
Hole Coordinates:	357034.0 m E 6933303.3 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ 3 m	RL Surface:	442.19 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3061 Depth Range: 7.50 - 11.00 m



PointID : 310-03-BH3061 Depth Range: 11.00 - 15.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH163287 - Yarranlea	Logged By:	V. Chandrasena
Hole Coordinates:	357034.0 m E 6933303.3 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	442.19 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: J. Komung



PointID : 310-03-BH3061 Depth Range: 15.00 - 19.00 m

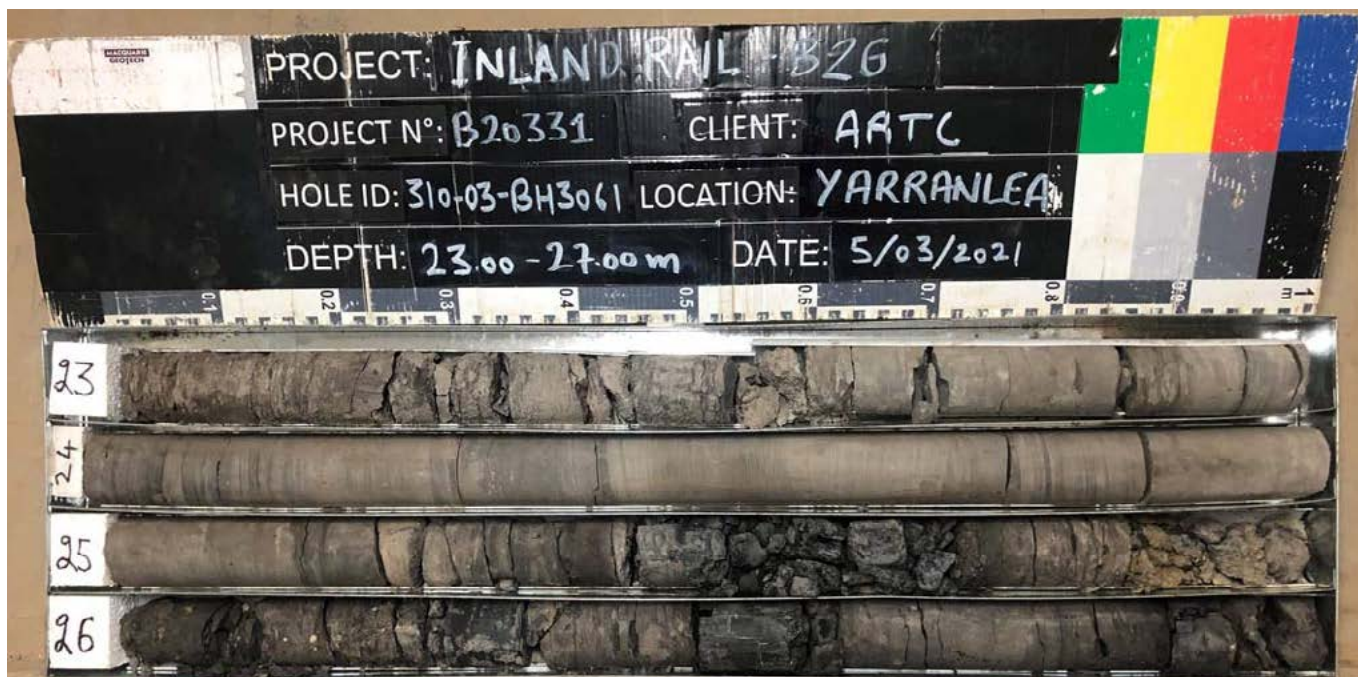


PointID : 310-03-BH3061 Depth Range: 19.00 - 23.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	06/02/2021
Project Name:	Inland Rail B2G	Completed:	07/02/2021
Hole Location:	Approx. CH163287 - Yarranlea	Logged By:	V. Chandrasena
Hole Coordinates:	357034.0 m E 6933303.3 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ 3 m	RL Surface:	442.19 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3061 Depth Range: 23.00 - 27.00 m



PointID : 310-03-BH3061 Depth Range: 27.00 - 30.22 m

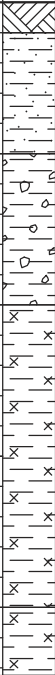
Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 307504.5 m E 6857839.1 m N MGA94 Zone 56

Commenced: 24/08/2021
Completed: 25/08/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: D4TAPG Inclin: -90° RL Surface: 290.63 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/V			Not Observed	D00000 D 0.00-0.50 m		289.6	1		CI	Sandy CLAY trace rootlets trace gravel: medium to high plasticity, brown mottled pale yellow, fine grained sand, fine sub-rounded gravel	M (<PL)			TOPSOIL	
				D00100 U 0.50-0.79 m					CI	Sandy CLAY: medium plasticity, dark-brown to brown mottled pale yellow, fine grained sand					RESIDUAL SOIL
				S00100 1.00 m S00100 SPT 1.00-1.45 m 6,10,12 N=22 PP 1.00 m >600 kPa D00200 D 2.00-3.00 m					2	CH	Gravelly CLAY: medium plasticity, dark brown mottled black, fine to medium sub-rounded to sub-angular gravel	VSt		X	1.00: PP Samp >600 kPa
				S00250 2.50 m S00250 SPT 2.50-2.95 m 3,6,7 N=13 PP 2.50 m >600 kPa D00350 D 3.50-4.00 m					3		Silty CLAY trace sand and gravel: high plasticity, brown mottled grey, fine to coarse grained sand, fine to medium sub angular gravel.	M (=PL) to M (<PL)		X	2.50: PP Samp >600 kPa
				S00400 4.00 m S00400 SPT 4.00-4.18 m 19,30/25mm N=30/25mm					4	CH	Below 2.50m: colour changes to brown to mottled pale grey	H		X	4.00: PP Samp >600 kPa
				Continued on cored borehole sheet		285.6	5								
						284.6	6								
						283.6	7								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
 No resistance ranging to refusal

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support
C - Casing

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 307504.5 m E 6857839.1 m N MGA94 Zone 56

Commenced: 24/08/2021
Completed: 25/08/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: D4TAPG
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 290.63 m
Datum: AHD Operator: B.Boga



310-03-BH3062 Depth Range: 1.00 - 1.45 m



310-03-BH3062 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	24/08/2021
Project Name:	Inland Rail B2G	Completed:	25/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	307504.5 m E 6857839.1 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	D4TAPG	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	290.63 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3062 Depth Range: 4.00 - 4.45 m

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 24/08/2021													
Project Name: Inland Rail B2G		Completed: 25/08/2021													
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma													
Hole Coordinates: 307504.5 m E 6857839.1 m N MGA94 Zone 56		Checked By: C.Green													
Drill Model and Mounting: D4TAPG		Inclination: -90°	RL Surface: 290.63 m												
Barrel Type and Length: HQ 3 m		Bearing:	Datum: AHD Operator: B.Boga												
Drilling Information		Rock Substance		Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
													Particular	General	
HQ3	Not Observed		67		26	281.6	9		SILTSTONE: grey mottled brown and brown(continued)	XW			Non Intact BP, 0°, Fe SN, PR, S BP, 0°, Fe SN, PR, S		
									NO CORE 1.00m						
									SILTSTONE: Recovered as Clayey SILT: low plasticity, grey						
									SILTSTONE: grey with thin laminations of dark grey sandstone, very closely to closely spaced						
			92		76	280.6	10								
						279.6	11								
						278.6	12								
						277.6	13								
			91		72	276.6	14								
						275.6	15								
			100		100										
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water Level (Date) Inflow Partial Loss Complete Loss Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High Support T - Timbering															

Engineering Log - Cored Borehole

Project No.: B21003

Client:ARTC Project Name:Inland Rail B2G Hole Location:N3 - Brookstead to Gowrie Hole Coordinates:307504.5 m E 6857839.1 m N MGA94 Zone 56						Commenced:24/08/2021 Completed:25/08/2021 Logged By:A.Sharma Checked By:C.Green																							
Drill Model and Mounting:D4TAPG Barrel Type and Length:HQ 3 m						Inclination:-90° Bearing: RL Surface:290.63 m Datum:AHD Operator:B.Boga																							
Drilling Information						Rock Substance						Rock Mass Defects																	
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling				Particular	General											
HQ3		Not Observed	100		100		17		COAL (50%) interbedded with SILTSTONE (50%), black and dark grey(continued)	HW			BP, 0°, CN, UN, RF BP, 0°, Clay VNR, UN, RF BP, 0°, Clay VNR, PR, S																
							18						JT, 75°, CN, PR, S Non Intact																
							19		SANDSTONE: fine to medium grained, grey, very thinly bedded				BP, 0°, Clay VNR, PR, S BP, 0°, Clay VNR, PR, S																
			100		94		20		SANDSTONE (70%) interbedded with siltstone (30%): fine grained grey and dark grey	MW			BP, 0°, CN, PR, S																
							21						BP, 0°, CN, UN, RF BP, 0°, Clay VNR, PR, S Non Intact																
			100		95		22						BP, 0°, CN, PR, S																
							23																						
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel						Water Level (Date) Inflow Partial Loss Complete Loss						Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss						Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil						Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High					

Engineering Log - Cored Borehole

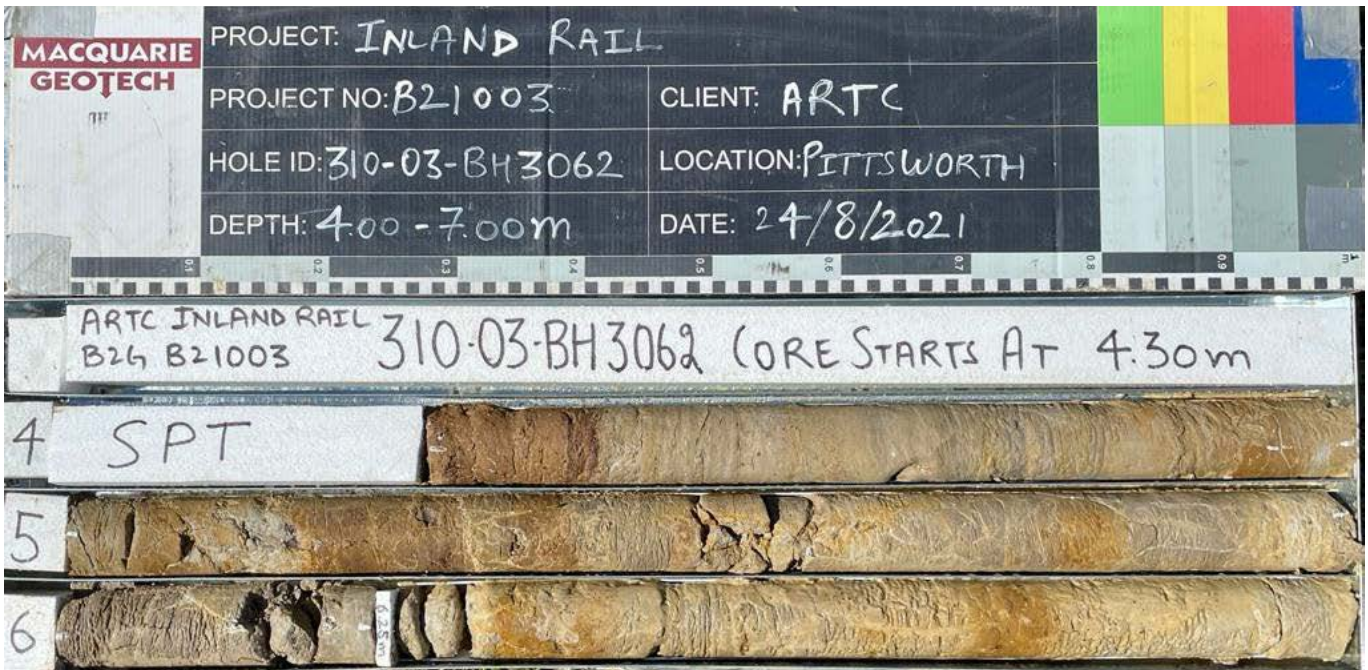
Project No.: B21003

Client: ARTC		Commenced: 24/08/2021												
Project Name: Inland Rail B2G		Completed: 25/08/2021												
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma												
Hole Coordinates: 307504.5 m E 6857839.1 m N MGA94 Zone 56		Checked By: C.Green												
Drill Model and Mounting: D4TAPG		Inclination: -90°												
Barrel Type and Length: HQ 3 m		RL Surface: 290.63 m												
		Datum: AHD												
		Operator: B.Boga												
Drilling Information				Rock Substance				Rock Mass Defects						
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
													Particular	General
HQ3	Not Observed	100	95	265.6	25	265.6	25		SANDSTONE (70%) interbedded with siltstone (30%): fine grained grey and dark grey(continued)	MW			BP, 0°, CN, PR, S	
									From 25.25m to 25.50m zone of alteration					
									SANDSTONE (90%) interbedded with siltstone (10%): fine grained grey and dark grey, with carbonaceous inclusions					
			</											

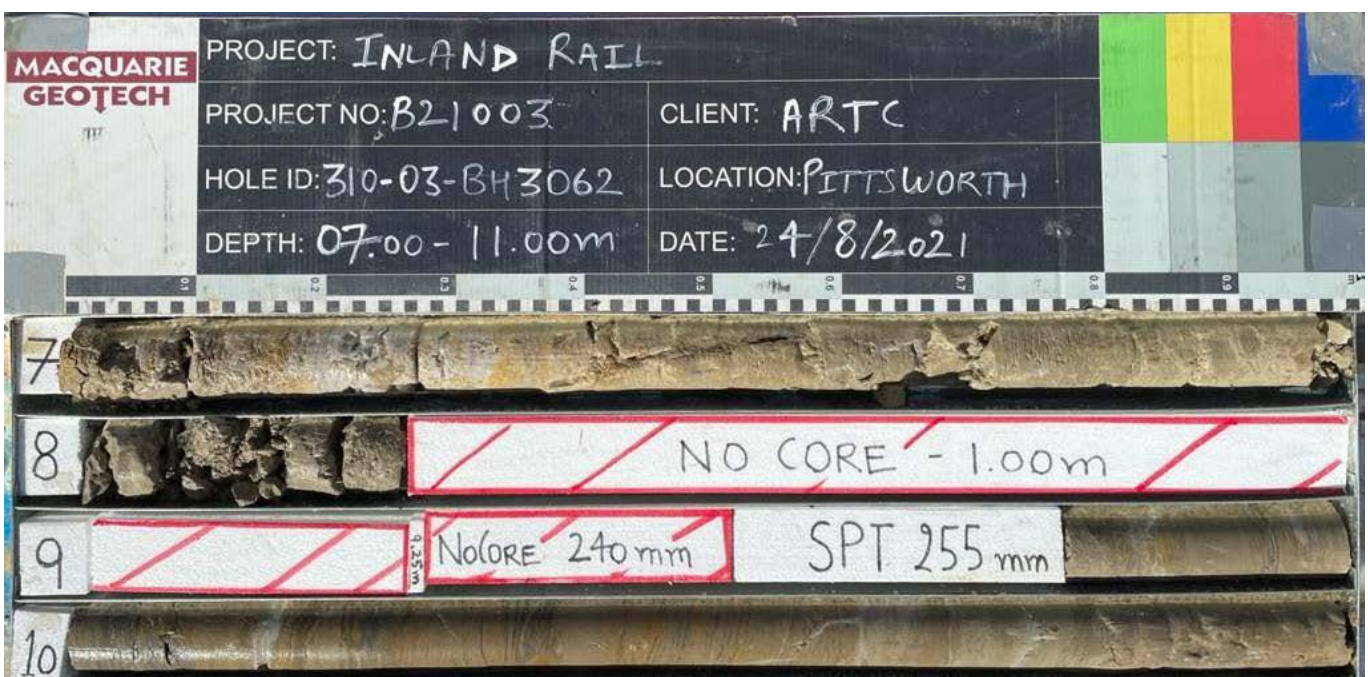
Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	24/08/2021
Project Name:	Inland Rail B2G	Completed:	25/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	307504.5 m E 6857839.1 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	D4TAPG	Inclination:	-90°
Barrel Type and Length:	HQ 3 m	RL Surface:	290.63 m
		Bearing:	
		Datum:	AHD
		Operator:	B.Boga



PointID : 310-03-BH3062 Depth Range: 4.00 - 7.00 m



PointID : 310-03-BH3062 Depth Range: 7.00 - 11.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	24/08/2021
Project Name:	Inland Rail B2G	Completed:	25/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	307504.5 m E 6857839.1 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	D4TAPG	Inclination:	-90°
Barrel Type and Length:	HQ 3 m	RL Surface:	290.63 m
		Bearing:	
		Datum:	AHD
		Operator:	B.Boga



PointID : 310-03-BH3062 Depth Range: 9.50 - 9.76 m



PointID : 310-03-BH3062 Depth Range: 11.00 - 16.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 307504.5 m E 6857839.1 m N MGA94 Zone 56

Commenced: 24/08/2021
Completed: 25/08/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: D4TAPG
Barrel Type and Length: HQ 3 m

Inclination: -90°
Bearing:

RL Surface: 290.63 m
Datum: AHD

Operator: B.Boga



PointID : 310-03-BH3062 Depth Range: 16.00 - 20.00 m



PointID : 310-03-BH3062 Depth Range: 20.00 - 24.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	24/08/2021
Project Name:	Inland Rail B2G	Completed:	25/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	307504.5 m E 6857839.1 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	D4TAPG	Inclination:	-90°	RL Surface:	290.63 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: B.Boga



PointID : 310-03-BH3062 Depth Range: 24.00 - 27.25 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364406.3 m E 6934433.4 m N MGA94 Zone 56

Commenced: 31/08/2021
Completed: 01/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 504.84 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)				Structure and Additional Observations	
ADV		Not Observed		D00000 D 0.00-0.50 m		503.8	1		CH	TOPSOIL CLAY trace gravel: medium plasticity, dark-brown, fine rounded to sub-rounded gravel, with rootlets (<2mm)	VSt		100	200	300	400	500	TOPSOIL
				U00050 U 0.50-0.90 m						CLAY trace sand: high plasticity, dark-brown, fine grained sand								RESIDUAL SOIL
				S00100 SPT 1.00-1.45 m 8,13,16 N=29 PP 1.00 m >600 kPa														
				D00200 D 2.00-2.50 m														
				S00250 SPT 2.50-2.95 m 6,10,18 N=28 PP 2.50 m >600 kPa						Gravelly CLAY trace sand: medium plasticity, red-brown mottled grey, fine rounded to sub-rounded gravel fine grained sand.								
				D00350 D 3.50-4.00 m														
				S00400 SPT 4.00-4.30 m 14,30 N=30/150mm PP 4.00 m >600 kPa						Silty CLAY: low to medium plasticity, pale-grey to pale-brown								
				S00500 D 5.00-5.50 m														
				S00550 SPT 5.50-5.83 m 6,10,11/30mm N=21/180mm PP 5.50 m >600 kPa						Sandy CLAY trace gravel: medium plasticity, red-brown mottled grey, fine to coarse grained sand, fine rounded to sub-rounded gravel								
				D00650 D 6.50-7.00 m														
				S00700 SPT 7.00-7.45 m 5,11,13 N=24 PP 7.00 m >600 kPa		497.8	7		CI									
Method AS - Auger Screwing RR - Rock Roller WB - Washbore Penetration  No resistance ranging to refusal Water  Level (Date)  Inflow  Partial Loss  Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Support C - Casing Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Plastic Limit < PL = PL < PL																		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 31/08/2021
Project Name: Inland Rail B2G	Completed: 01/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 364406.3 m E 6934433.4 m N MGA94 Zone 56	Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 504.84 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/V				D00800 D 8.00-8.50 m					CI	Sandy CLAY: medium plasticity, red-brown mottled grey, fine to coarse grained sand	M	VSt			RESIDUAL SOIL	
WB		Not Observed		S00850 SPT 8.50-8.95 m 5,6,9 N=15 PP 8.50 m >600 kPa		495.8	9			Below 8.50m: colour changes to dark red-brown mottled white	M (<PL)	St			x	
				S01000 SPT 10.00-10.45 m 4,6,10 N=16 PP 10.00 m >500 kPa		494.8	10		CI	CLAY trace sand: medium plasticity, red-brown, fine grained sand	M (=PL)	VSt		x		
				S01150 SPT 11.50-11.95 m 4,6,9 N=15 PP 11.50 m >600 kPa		492.8	12		CH	Silty CLAY with sand: high plasticity, red-brown to pale-brown, fine to medium grained sand	M (<PL)	St		x		
				S01300 SPT 13.00-13.45 m 5,8,11 N=19 PP 13.00 m >600 kPa		491.8	13						x			
				S01450 SPT 14.50-14.95 m 5,11,12 N=23 PP 14.50 m >200 kPa		489.8	15		CI-CH	Sandy CLAY: medium to high plasticity, red-brown, fine to coarse grained sand	M (<PL) to M (=PL)	VSt	x			
										Continued on cored borehole sheet						

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364406.3 m E 6934433.4 m N MGA94 Zone 56

Commenced: 31/08/2021
Completed: 01/09/2021
Logged By: A.Sharma
Checked By: C.Green

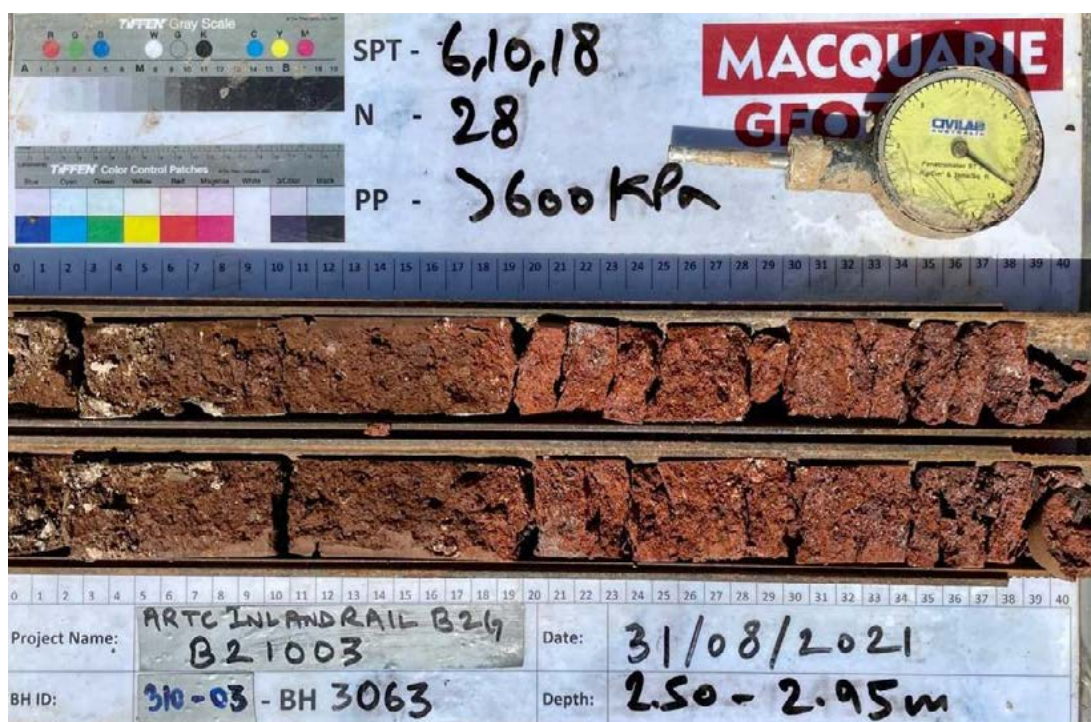
Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 504.84 m
Datum: AHD Operator: R.Welsh



310-03-BH3063 Depth Range: 1.00 - 1.45 m



310-03-BH3063 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364406.3 m E 6934433.4 m N MGA94 Zone 56

Commenced: 31/08/2021
Completed: 01/09/2021
Logged By: A.Sharma
Checked By: C.Green

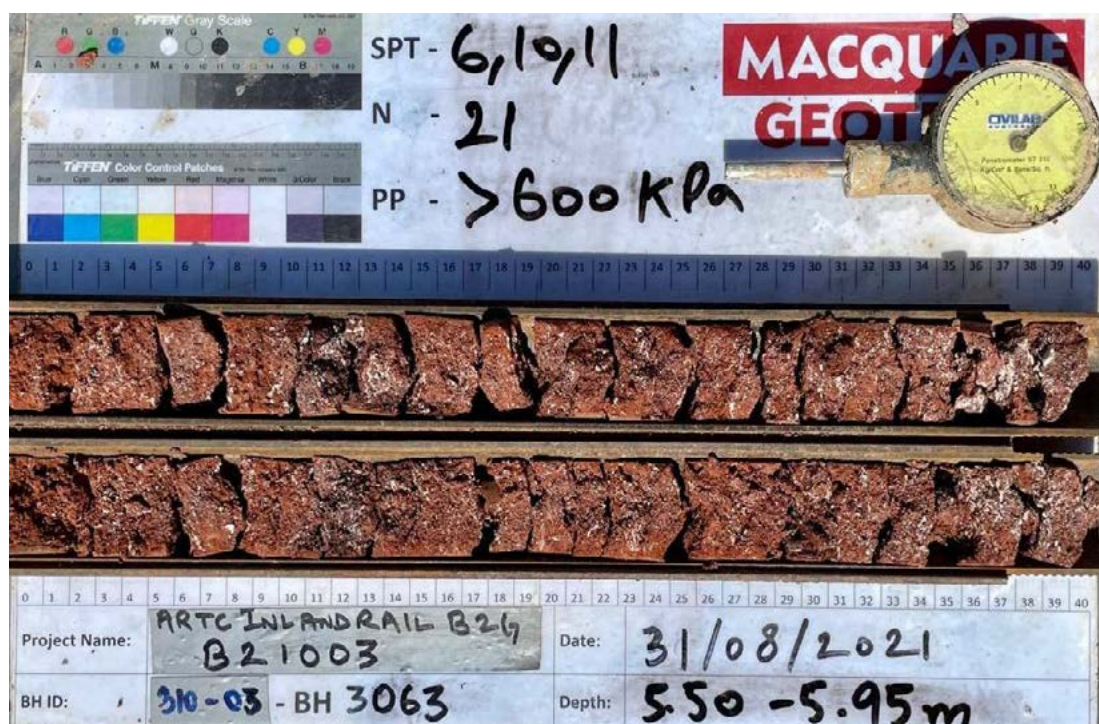
Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 504.84 m
Datum: AHD Operator: R.Welsh



310-03-BH3063 Depth Range: 4.00 - 4.45 m



310-03-BH3063 Depth Range: 5.50 - 5.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364406.3 m E 6934433.4 m N MGA94 Zone 56

Commenced: 31/08/2021
Completed: 01/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 504.84 m
Datum: AHD Operator: R.Welsh



310-03-BH3063 Depth Range: 7.00 - 7.45 m



310-03-BH3063 Depth Range: 8.50 - 8.95 m

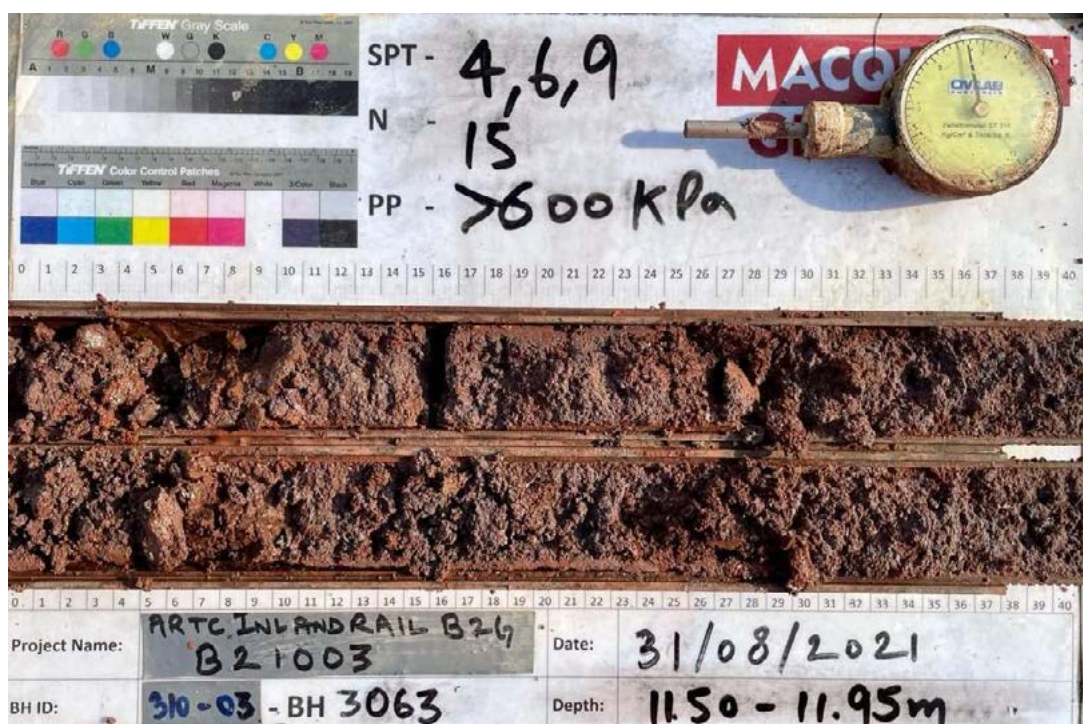
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	31/08/2021
Project Name:	Inland Rail B2G	Completed:	01/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	364406.3 m E 6934433.4 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	504.84 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3063 Depth Range: 10.00 - 10.45 m



310-03-BH3063 Depth Range: 11.50 - 11.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	31/08/2021
Project Name:	Inland Rail B2G	Completed:	01/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	364406.3 m E 6934433.4 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	504.84 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3063 Depth Range: 13.00 - 13.45 m



310-03-BH3063 Depth Range: 14.50 - 14.95 m

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC						Commenced: 31/08/2021										
Project Name: Inland Rail B2G						Completed: 01/09/2021										
Hole Location: N3 - Brookstead to Gowrie						Logged By: A.Sharma										
Hole Coordinates: 364406.3 m E 6934433.4 m N MGA94 Zone 56						Checked By: C.Green										
Drill Model and Mounting: Comacchio 305/Track						Inclination: -90°		RL Surface: 504.84 m								
Barrel Type and Length: HQ3 3 m						Bearing:		Datum: AHD		Operator: R.Welsh						
Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
										EL VL L M H VH EH		30 100 300 1000 3000	Particular	General		
HQ3		Not Observed	100		89	487.8	17	✓	Volcanic Breccia: grey and red brown; matrix supported, fine to coarse sub rounded to sub angular clast(<i>continued</i>)	HW to XW						
						486.8	18	✓	BASALT: fine crystalline, dark-green mottled and brown, with randomly oriented incipient fractures infilled with calcite and chlorite, massive	MW			JT, 0°, Fe SN, PR, RF			
			100		61	485.8	19	✓	From 19.00m to 20.80m with Fe staining				JT, 0°, Fe SN, UN, RF			
						484.8	20	✓					JT, 0°, Fe SN, DIS, RF			
						483.8	21	✓					JT, 0°, Fe SN, PR, RF			
						482.8	22	✓	Below 21.50m vesicular	SW			JT, 0°, Fe SN, PR, RF			
			100		86	481.8	23	✓					JT, 5°, Clay VNR, PR, S			
								✓					JT, 5°, Fe SN, PR, RF			
								✓					JT, 5°, Fe SN, CU, RF			
								✓					JT, 0°, Clay VNR, PR, S			
								✓					JT, 0°, Fe SN, PR, RF			
								✓					JT, 0°, Clay VNR, PR, S			
								✓					JT, 5°, Fe SN, PR, RF			
								✓					JT, 5°, Clay VNR, UN, S			
								✓					JT, 0°, Fe SN, PR, RF			
								✓					JT, 10°, Clay VNR, UN, S			
								✓					JT, 20°, CN, PR, RF			
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel																
Water Level (Date) Inflow Partial Loss Complete Loss																
Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss																
Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil																
Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																

Engineering Log - Cored Borehole

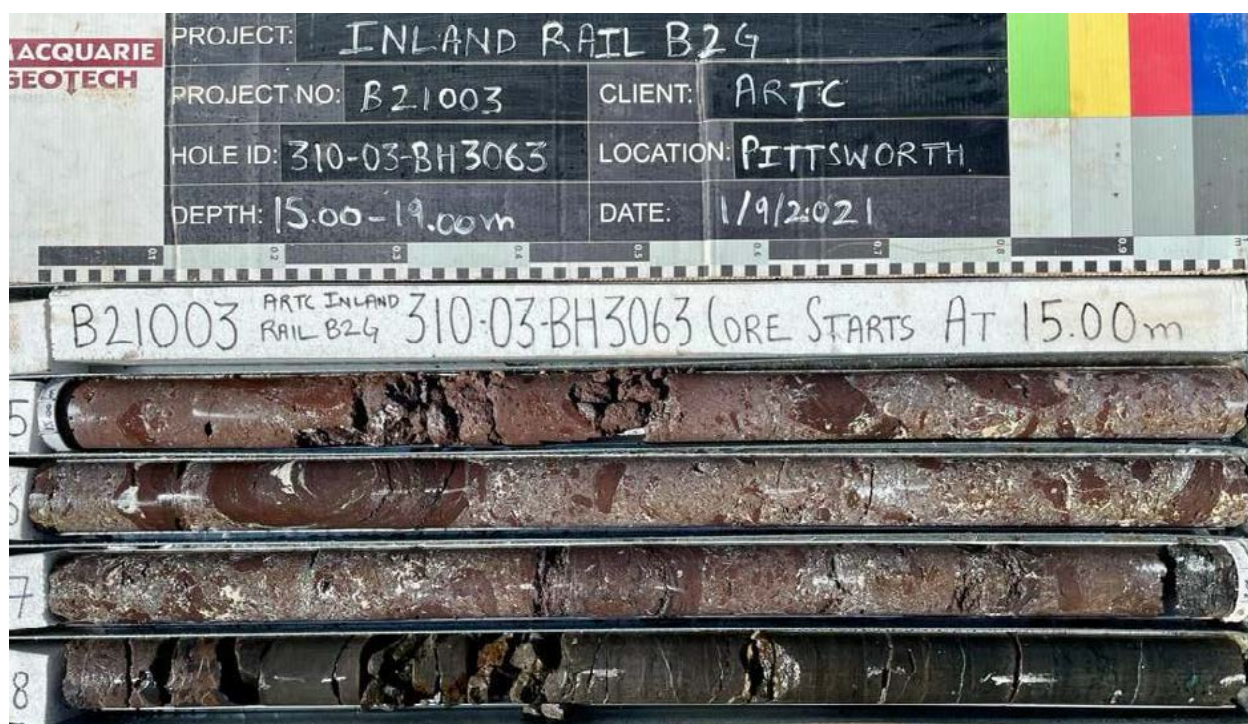
Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	31/08/2021
Project Name:	Inland Rail B2G	Completed:	01/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	364406.3 m E 6934433.4 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	504.84 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3063 Depth Range: 15.00 - 19.00 m



PointID : 310-03-BH3063 Depth Range: 19.00 - 24.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	31/08/2021
Project Name:	Inland Rail B2G	Completed:	01/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	364406.3 m E 6934433.4 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	504.84 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: R.Welsh



PointID : 310-03-BH3063 Depth Range: 24.00 - 25.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364457.9 m E 6934464.2 m N MGA94 Zone 56

Commenced: 01/11/2021
Completed: 02/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 506.12 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description						Observations															
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)				Structure and Additional Observations											
ADV				D00030 0.30-0.50 m U00050 0.50-0.87 m		505.1	1		CH	TOPSOIL: Silty CLAY, high plasticity, dark brown, trace rootlets (<1mm) CLAY trace silt, high plasticity, dark brown - purple	M (=PL)	VSt					0.50: PP Samp =290 kPa											
				S00100 SPT 1.00-1.45 m 5,7,10 N=17 U00150 1.50-1.86 m		504.1	2		CI-CH	trace carbonate inclusion CLAY with silt trace sand: medium to high plasticity, brown mottled orange, fine grained sand	M (<PL)	VSt to H					1.00: PP Samp >600 kPa 1.86: PP Samp >600 kPa											
				D00200 2.00-2.50 m		503.1	3		CI	cobble or boulder Silty CLAY trace sand: medium plasticity, purple and dark grey mottled white and orange, fine grained sand							2.50: PP Samp =310 kPa											
				S00250 SPT 2.50-2.95 m 7,8,12 N=20		502.1	4				M (<PL)	VSt					4.00: PP Samp =290 kPa											
				D00350 3.50-4.00 m		501.1	5											5.50: PP Samp =290 kPa										
				S00400 SPT 4.00-4.45 m 7,13,13 N=26		500.1	6																					
				D00500 5.00-5.50 m		499.1	7					M (=PL)	VSt to H					7.00: PP Samp =330 kPa										
				S00550 SPT 5.50-5.95 m 5,8,21 N=29																								
				D00650 6.50-7.00 m																								
				S00700 SPT 7.00-7.45 m 8,15,19 N=34																								
<table><tr><td>Method AS - Auger Screwing RR - Rock Roller WB - Washbore</td><td>Penetration No resistance ranging to refusal</td><td>Water Level (Date) Inflow Partial Loss Complete Loss</td><td>Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test</td><td>Moisture Condition D - Dry M - Moist W - Wet</td><td>Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense</td></tr><tr><td>Support C - Casing</td><td>Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss</td><td>Classification Symbols and Soil Descriptions Based on Unified Soil Classification System</td><td>Plastic Limit < PL = PL > PL</td><td></td><td></td></tr></table>																	Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense	Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL		
Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense																							
Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL																									

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364457.9 m E 6934464.2 m N MGA94 Zone 56

Commenced: 01/11/2021
Completed: 02/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 506.12 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/V				D00800 8.00-8.50 m					CI	Silty CLAY trace sand: medium plasticity, purple and dark grey mottled white and orange, fine grained sand (continued)	M (=PL)	VSt to H			
WB				S00850 SPT 8.50-8.95 m 7,17,29 N=46		497.1	9				M (<PL)	H			8.50: PP Samp =500 kPa
				1 C 10.00-12.45 m S01000 SPT 10.00-10.02 5/20mm		496.1	10			BASALT: Material recovered as Sandy GRAVEL, fine to coarse sub-angular to angular, dark grey mottled white, fine to coarse grained sand Continued on cored borehole sheet					
						495.1	11								
						494.1	12								
						493.1	13								
						492.1	14								
						491.1	15								

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Plastic Limit

< PL
= PL
< PL

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364457.9 m E 6934464.2 m N MGA94 Zone 56

Commenced: 01/11/2021
Completed: 02/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 506.12 m
Datum: AHD Operator: R. Welsh



310-03-BH3064 Depth Range: 1.00 - 1.45 m



310-03-BH3064 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/11/2021
Project Name:	Inland Rail B2G	Completed:	02/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	364457.9 m E 6934464.2 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	506.12 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3064 Depth Range: 4.00 - 4.45 m



310-03-BH3064 Depth Range: 5.50 - 5.95 m

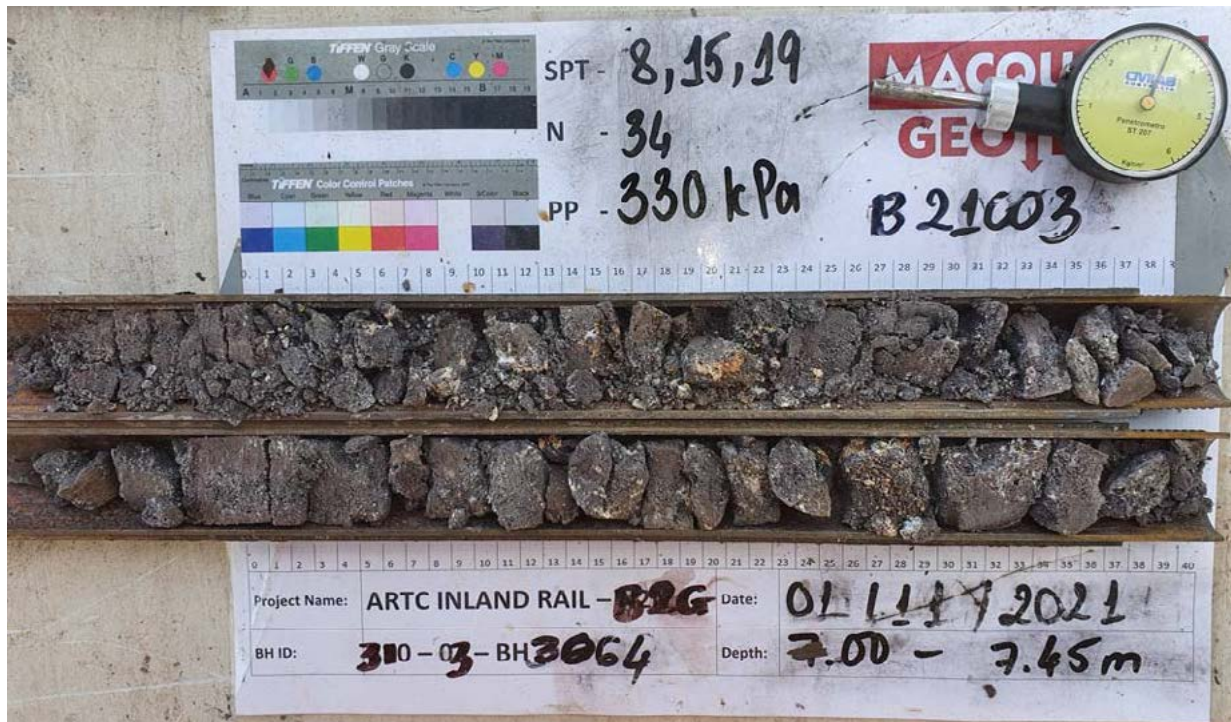
Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364457.9 m E 6934464.2 m N MGA94 Zone 56

Commenced: 01/11/2021
Completed: 02/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclusion: -90° RL Surface: 506.12 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R. Welsh



310-03-BH3064 Depth Range: 7.00 - 7.45 m



310-03-BH3064 Depth Range: 8.50 - 8.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364457.9 m E 6934464.2 m N MGA94 Zone 56

Commenced: 01/11/2021
Completed: 02/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 506.12 m
Datum: AHD Operator: R. Welsh



310-03-BH3064 Depth Range: 10.00 - 10.08 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364457.9 m E 6934464.2 m N MGA94 Zone 56

Commenced: 01/11/2021
Completed: 02/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 506.12 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		Particular	General
						497.1	9									
						496.1	10		Continued from non-cored borehole sheet							
			100		86	495.1	11	✓	BASALT: fine crystalline, dark grey and purple, fractured, with occasional healed joints (calcite infill), trace ironstaining	HW			JT, 10°, CN, IR, VR			
						494.1	12	✓		MW			JT, 30°, CN, UN, RF			
						493.1	13	✓					JT, 30°, CN, UN, VR			
			100		77	492.1	14	✓		MW to HW			CS, 50°, FE SN, UN, RF			
						491.1	15	✓		SW to MW			JT, 80°, CN, UN, VR			
								✓	Below 13.15m: red purple and dark grey				JT, 10°, CN, UN, VR			
								✓					JT, 45°, CN, IR, RF			
								✓					CS, UN, VR			
								✓					JT, 30°, CN, UN, VR			
								✓					JT, 40°, CA CT, UN, RF			
								✓					JT, 70°, CA CT, UN, RF			
								✓					JT, 20°, CN, UN, RF			
								✓					JT, 5°, MS VNR, UN, VR			
								✓					JT, 10°, FE CLAY VNR, UN, RF			
								✓					JT, 30°, CN, UN, VR			
								✓					JT, 40°, FE CLAY VNR, IR, RF			
								✓					JT, 30°, FE CLAY VNR, IR, RF			
								✓					JT, 10°, FE SN, UN, VR			
								✓					JT, 40°, MS CT, UN, RF			
								✓					JT, 5°, MS CT, UN, RF			
								✓					JT, 20°, CN, UN, VR			
								✓					JT, 20°, CLAY CT, ST, VR			
								✓					JT, 5°, CN, UN, VR			
								✓					JT, 20°, Qz CT, UN, VR			
								✓					JT, 85°, CLAY VNR, UN, RF			
								✓					JT, 10°, CLAY VNR, UN, RF			
								✓					JT, 15°, CLAY VNR, UN, RF			
								✓					JT, 25°, CA CT, UN, RF			
								✓					JT, 5°, CN, UN, RF			
								✓					JT, 20°, FE CLAY VNR, IR, RF			
								✓					JT, 10°, FE CLAY CT, UN, VR			
								✓					JT, 10°, CLAY VNR, IR, VR			
								✓					JT, 40°, CA CT, UN, VR			
								✓					JT, 5°, FE SN, UN, VR			

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364457.9 m E 6934464.2 m N MGA94 Zone 56

Commenced: 01/11/2021
Completed: 02/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 506.12 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
										EL VL L M H VH EH		30 100 300 1000 3000	Particular	General
HQ3			100		43	489.1	17	✓	BASALT: fine crystalline, dark grey and purple, highly fractured, with iron stained calcite infilled healed joints(continued)	FR			JT, 25°, CLAY VNR, UN, RF	
								✓					CS, 20°, FE CLAY CT, UN, RF	
								✓					JT, 20°, FE CLAY CT, UN, VR	
								✓					JT, 20°, FE SN, UN, RF	
								✓					JT, 20°, CN, UN, VR	
								✓					JT, 10°, FE SN, UN, RF	
								✓					JT, 15°, FE SN, UN, RF	
								✓					JT, 15°, FE SN, UN, RF	
								✓					JT, 15°, CA	
								✓					JT, 15°, CA	
								✓					JT, 15°, CA	
								✓					JT, 10°, FE SN, UN, RF	
								✓					JT, 15°, CA	
								✓					JT, 15°, CA	
								✓					JT, 15°, CA	
								✓					JT, 15°, CA CT, UN, RF	
								✓					JT, 10°, CA CT, UN, RF	
								✓					JT, 20°, CA CT, UN, RF	
								✓					JT, 5°, MS CT, UN, RF	
								✓					VN, 45°, CA FILLED, UN, RF	
								✓					JT, 30°, CA CT, UN, RF	
								✓					JT, 10°, MS CT, UN, RF	
								✓					JT, 10°, CA CT, UN, RF	
								✓					JT, 15°, CA CT, UN, RF	
								✓					JT, 45°, MS CT, UN, RF	
								✓					JT, 10°, CA CT, UN, RF	
								✓					JT, 10°, CA CT, UN, RF	
								✓					JT, 15°, CA CT, IR, RF	
								✓					JT, 15°, CA CT, UN, RF	
								✓					JT, 15°, CN, UN, RF	
								✓					JT, 5°, CA VNR, UN, RF	
								✓					JT, 5°, CA CT, UN, RF	
								✓					JT, 75°, CA VNR, UN, RF	
								✓					JT, 5°, CA CT, UN, RF	
								✓					JT, 20°, CA CT, UN, RF	
								✓					JT, 5°, CA CT, UN, RF	
								✓					JT, 10°, CA CT, UN, RF	
								✓					JT, 10°, MS CT, UN, RF	
								✓					JT, 5°, CA VNR, UN, RF	
								✓					JT, 5°, MS CT, UN, RF	
								✓					JT, 5°, CA VNR, UN, RF	
								✓					JT, 5°, CA VNR, UN, RF	
								✓					JT, 30°, CA VNR, PR, RF	
								✓					JT, 15°, CN, UN, RF	
								✓					JT, 20°, CA VNR, UN, RF	
								✓					JT, 20°, CA VNR, UN, RF	
								✓					JT, 25°, CA VNR, UN, RF	
								✓					JT, 20°, CA CT, UN, RF	
								✓					JT, 45°, CN, UN, RF	
								✓					JT, 5°, CA VNR, UN, RF	
								✓					JT, 5°, CN, PR, RF	
								✓					JT, 25°, CN, UN, RF	
								✓					JT, 10°, CN, UN, RF	
								✓					JT, 10°, CN, UN, RF	

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 364457.9 m E 6934464.2 m N MGA94 Zone 56										Commenced: 01/11/2021 Completed: 02/11/2021 Logged By: T. Tran Checked By: D.Hill																																							
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ3 3 m										Inclination: -90° Bearing: RL Surface: 506.12 m Datum: AHD Operator: R. Welsh																																							
Drilling Information							Rock Substance							Rock Mass Defects																																			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)			Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																													
HQ3			100	100				✓	BASALT, fine crystalline, dark grey, highly fractured(continued)	FR	EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General																									
							25	481.1																																									
							26	480.1																																									
							27	479.1																																									
							28	478.1																																									
							29	477.1																																									
							30	476.1																																									
							31	475.1																																									
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel										Water ▬ Level (Date) ▽ Inflow ▴ Partial Loss ◼ Complete Loss Support T - Timbering										Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss										Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil										Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High									

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/11/2021
Project Name:	Inland Rail B2G	Completed:	02/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	364457.9 m E 6934464.2 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	506.12 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: R. Welsh



PointID : 310-03-BH3064 Depth Range: 10.00 - 15.00 m



PointID : 310-03-BH3064 Depth Range: 15.00 - 20.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/11/2021
Project Name:	Inland Rail B2G	Completed:	02/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	364457.9 m E 6934464.2 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	506.12 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: R. Welsh



PointID : 310-03-BH3064 Depth Range: 20.00 - 24.32 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 20/08/2021
Project Name: Inland Rail B2G	Completed: 21/08/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 365614.5 m E 6935275.4 m N MGA94 Zone 56	Checked By: J. Boyle
Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°
Hole Diameter: 115 mm	RL Surface: 518.82 m
	Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
ADV	Not Observed	Not Observed	Not Observed	D00030 0.30-0.50 m U00050 0.50-1.00 m		517.8	1		CH	TOPSOIL: Sandy silty CLAY: medium plasticity, dark brown, with rootlets (<1mm). Silty CLAY: high plasticity, dark brown. Below 0.50m: colour change to brown mottled orange and grey, trace fine to coarse grained sand.	M (=PL)	St				TOPSOIL	
				S00100 SPT 1.00-1.45 m 9,13,17 N=30			516.8	2		CH	Silty CLAY with sand: high plasticity, purple, orange brown mottled white, fine to medium grained sand, trace calcrete inclusions (<5%).		H			RESIDUAL SOIL	
				D00200 2.00-2.50 m			515.8	3				M (<PL)	VSt				
				S00250 SPT 2.50-2.95 m 7,9,12 N=21			514.8	4		CI	Silty CLAY with sand: medium plasticity, brown mottled grey, fine grained sand.		H				
				D00350 3.50-4.00 m			513.8	5		SM	Silty SAND with clay trace gravel: reddish brown and purple and grey mottled orange and green, low to medium plasticity clay, fine to medium sub-rounded to sub-angular gravel.	D	D				
				D00500 5.00-5.50 m			512.8	6		CH	Sandy silty CLAY trace gravel: high plasticity, brown mottled grey, fine to coarse grained sand, fine sub-angular gravel.		H				
				S00550 SPT 5.50-5.80 m 11,30/145mm N=30/145mm			511.8	7		ML	Below 6.50m: colour change to dark brown mottled grey and orange and white, trace calcrete inclusions (<5%). Sandy SILT with gravel: low plasticity, brown mottled grey and white-green, fine to coarse grained, fine to coarse sub-rounded to sub-angular gravel.	M (<PL)	VSt				
				D00650 6.50-7.00 m													
				S00700 SPT 7.00-7.45 m 7,12,15 N=27													
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Support C - Casing Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT- Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Plastic Limit < PL = PL < PL Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System																	

MG 4.02 LUB/LB Log MG BOREHOLE EXCL DCP MG 4.02 GPJ <<DrawingFile>> 07/03/2022 23:10 10.02.00.04 Daugel Lab and In Situ Tool - DGD Lib: DGD-P 4.01.2 gpt 3.04.2016-07-02 Pjt: DGD-P 4.00.6 2017-11-25

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC				Commenced: 20/08/2021			
Project Name: Inland Rail B2G				Completed: 21/08/2021			
Hole Location: N3 - Brookstead to Gowrie				Logged By: T. Tran			
Hole Coordinates: 365614.5 m E 6935275.4 m N MGA94 Zone 56				Checked By: J. Boyle			
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°		RL Surface: 518.82 m			
Hole Diameter: 115 mm		Bearing:		Datum: AHD		Operator: R. Welsh	

Drilling Information				Soil Description						Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB	ADV			D00800 8.00-8.20 m S00835 SPT 8.35-8.49 m 7/135mm					ML	Sandy SILT with gravel: low plasticity, brown mottled grey and white-green, fine to coarse grained, fine to coarse sub-rounded to sub-angular gravel. (continued) Below 8.00m: colour change to pale brown mottled grey, with low plasticity clay.	M (<PL)	VSt		100 200 300 400 500	RESIDUAL SOIL
						509.8	9			Continued on cored borehole sheet					
						508.8	10								
						507.8	11								
						506.8	12								
						505.8	13								
						504.8	14								
						503.8	15								

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Plastic Limit

< PL
= PL
< PL

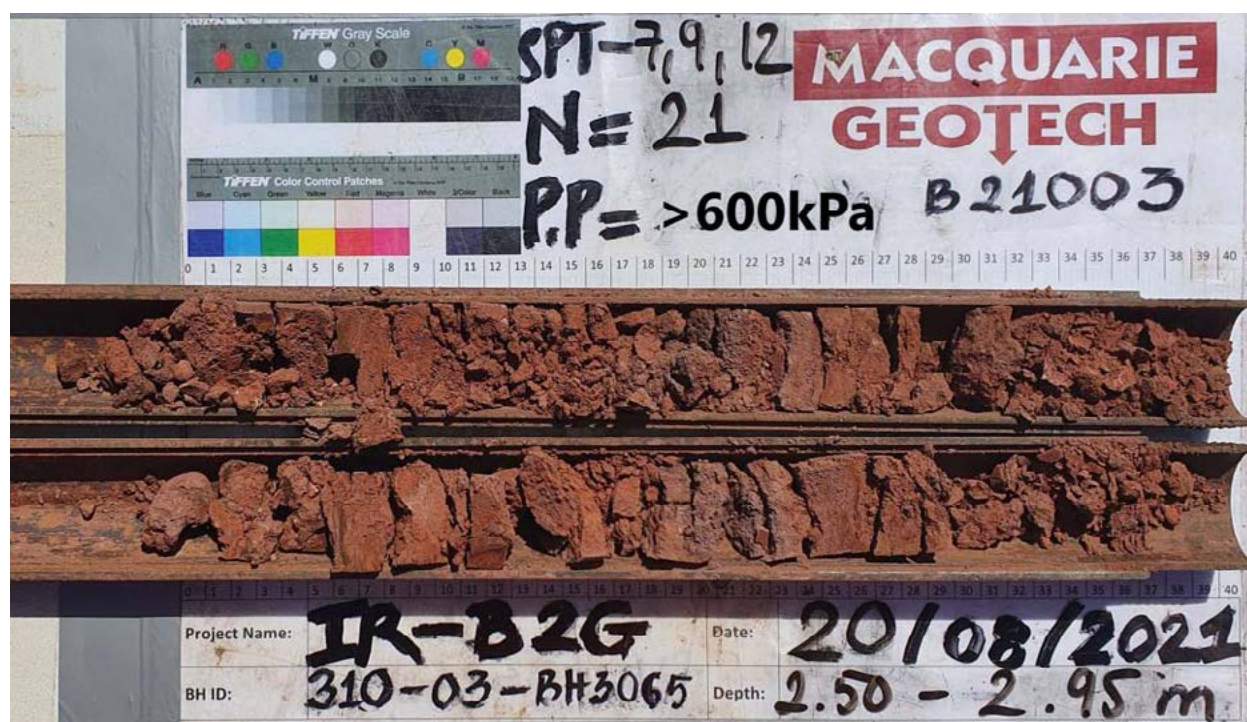
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/08/2021
Project Name:	Inland Rail B2G	Completed:	21/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365614.5 m E 6935275.4 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	518.82 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3065 Depth Range: 1.00 - 1.45 m



310-03-BH3065 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 365614.5 m E 6935275.4 m N MGA94 Zone 56

Commenced: 20/08/2021
Completed: 21/08/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 518.82 m
Datum: AHD Operator: R. Welsh



310-03-BH3065 Depth Range: 4.00 - 4.45 m



310-03-BH3065 Depth Range: 5.50 - 5.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 365614.5 m E 6935275.4 m N MGA94 Zone 56

Commenced: 20/08/2021
Completed: 21/08/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 518.82 m
Datum: AHD Operator: R. Welsh



310-03-BH3065 Depth Range: 7.00 - 7.45 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/08/2021
Project Name:	Inland Rail B2G	Completed:	21/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365614.5 m E 6935275.4 m N MGA94 Zone 56	Checked By:	J. Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	518.82 m		
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD	Operator:	R. Welsh

Drilling Information						Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
									Continued from non-cored borehole sheet				
			100		63	509.8	9	✓	BASALT: fine crystalline, grey mottled orange, ironstain inclusion (<5%).	HW	●		JT, 45°, Fe SN, UN, VR JT, 50°, CN, UN, VR JT, 30°, Clay VNR, IR, RF
			68		21	508.8	10	✓	Extremely weathered BASALT recovered as Gravelly Sandy CLAY: low to medium plasticity, purple-brown and dark grey mottled white, fine to coarse sub-rounded to sub-angular gravel, fine to coarse grained sand.	XW	●		
						507.8	11	X	NO CORE: 0.71m				
						506.8	12	X	Sandy SILT with gravel trace clay: low plasticity, dark grey - brown mottled black, fine to coarse grained sand, fine to coarse sub-rounded to sub-angular gravel, low plasticity fines. SPT 11.50 - 11.95m 5,8,7 N = 15				
			0		0	505.8	13	X	Gravelly SAND trace silt: fine to coarse grained, grey-dark grey mottled orange, fine to medium sub-rounded to angular gravel, low plasticity silt. SPT 13.00 - 13.17m 25, 4/15mm (HB) N = 4/15mm (R)	RS			
						504.8	14	X					
			100		80	503.8	15	✓	Sandy GRAVEL: fine to coarse sub-rounded to angular, dark grey - black, fine to coarse grained sand. SPT 14.50 - 14.80m 13, 30/145mm N = 30/145mm (R)	MW	●		JT, 70°, CN, UN, VR JT, 60°, CN, UN, VR 5°, CN, UN, VR JT, 45°, CN, IR, VR 5°, CN, UN, VR JT, 40°, CN, UN, VR
			80		59			✓	BASALT: fine crystalline, dark grey, some vesicles of 1 - 2 mm (<5%), highly fractured.		●		

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 20/08/2021																
Project Name: Inland Rail B2G		Completed: 21/08/2021																
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Tran																
Hole Coordinates: 365614.5 m E 6935275.4 m N MGA94 Zone 56		Checked By: J. Boyle																
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 518.82 m															
Barrel Type and Length: HQ3 3 m		Bearing:	Datum: AHD Operator: R. Welsh															
Drilling Information		Rock Substance		Rock Mass Defects														
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling					
HQ3	Not Observed	100	80	59	501.8	17	✓	BASALT: fine crystalline, dark grey, some vesicles of 1 - 2 mm (<5%), highly fractured.(continued)	MW	EL VL L M H VH EH	●	30 100 300 1000 3000	JT, 65°, Clay VNR, UN, VR JT, 10°, CLay FILLED, IR, VR JT, 5°, Clay VNR, IR, VR JT, 10°, CN, IR, VR JT, 60°, CN, IR, VR JT, 30°, CN, UN, VR JT, 50°, CN, UN, VR JT, 20°, CN, UN, VR JT, 45°, CN, IR, VR JT, 20°, CN, IR, VR JT, 30°, CN, IR, VR JT, 35°, CN, UN, VR JT, 5°, CN, UN, VR JT, 90°, CN, IR, VR JT, 5°, CN, UN, VR					
						18	✗							Extremely weathered BASALT recovered as Sandy GRAVEL with silt: fine to coarse sub-rounded to sub-angular, purple and red mottled pale grey, fine to coarse grained sand, low plasticity silt. NO CORE: 0.36m BASALT: fine crystalline, reddish brown and (dark) grey, vesicles of 1 - 2mm (<5%), massive.	XW	○		
						19	✓							Below 19.94m: colour change to dark grey mottled re-orange, become very highly fractured with multiple healed joints infilled with calcite, iron or quartz.	MW	●		
						20	✓											
						21	✓											
						22	✓										SW	●
						23	✓											
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Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 365614.5 m E 6935275.4 m N MGA94 Zone 56										Commenced: 20/08/2021 Completed: 21/08/2021 Logged By: T. Tran Checked By: J. Boyle																			
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ3 3 m										Inclination: -90° Bearing: RL Surface: 518.82 m Datum: AHD Operator: R. Welsh																			
Drilling Information										Rock Substance										Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling								
HQ3			100	69				✓✓	BASALT: fine crystalline, reddish brown and (dark) grey, vesicles of 1 - 2mm (<5%), massive.(continued)	SW	EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General					
								✓✓	Hole Terminated at 24.40 m Target depth																				
							25																						
							26																						
							27																						
							28																						
							29																						
							30																						
							31																						

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
◼ Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC				Commenced:	20/08/2021	
Project Name:	Inland Rail B2G				Completed:	21/08/2021	
Hole Location:	N3 - Brookstead to Gowrie				Logged By:	T. Tran	
Hole Coordinates:	365614.5 m E 6935275.4 m N MGA94 Zone 56				Checked By:	J. Boyle	
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	518.82 m		
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD	Operator:	R. Welsh



PointID : 310-03-BH3065 Depth Range: 8.65 - 11.50 m



PointID : 310-03-BH3065 Depth Range: 11.50 - 11.95 m

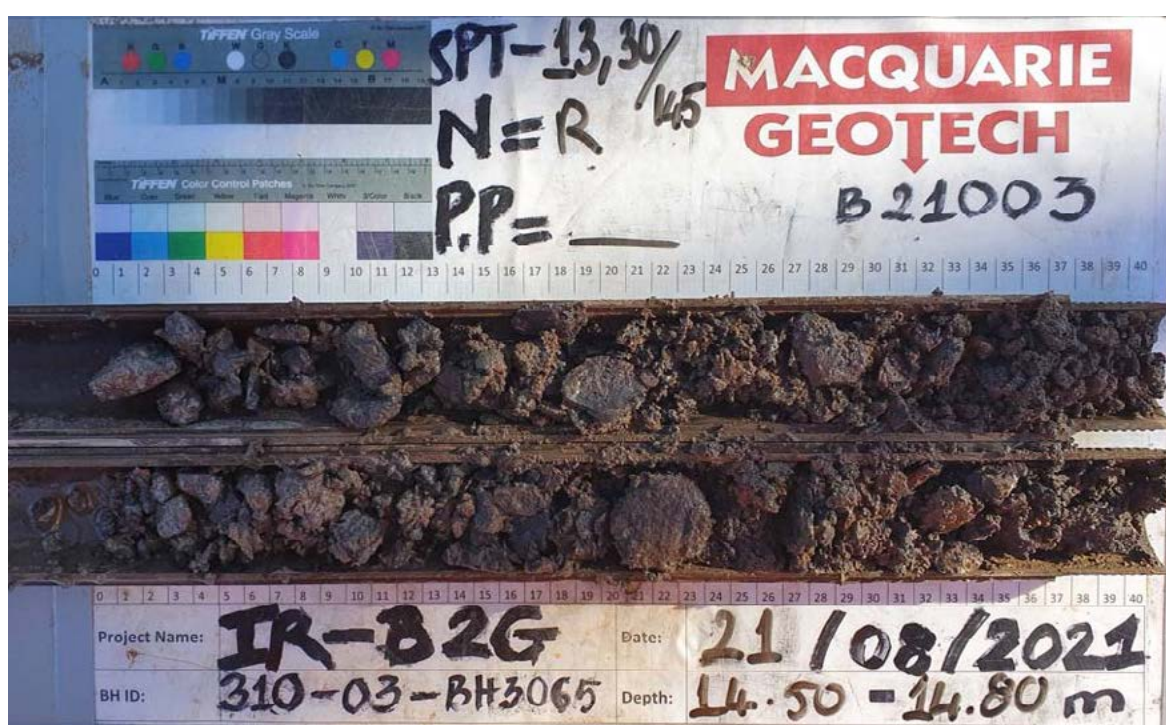
Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/08/2021
Project Name:	Inland Rail B2G	Completed:	21/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365614.5 m E 6935275.4 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	518.82 m
		Bearing:	
		Datum:	AHD
		Operator:	R. Welsh



PointID : 310-03-BH3065 Depth Range: 13.00 - 13.17 m



PointID : 310-03-BH3065 Depth Range: 14.50 - 14.80 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/08/2021
Project Name:	Inland Rail B2G	Completed:	21/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365614.5 m E 6935275.4 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	518.82 m
		Bearing:	
		Datum:	AHD
		Operator:	R. Welsh



PointID : 310-03-BH3065 Depth Range: 14.50 - 18.00 m



PointID : 310-03-BH3065 Depth Range: 18.00 - 18.20 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 365614.5 m E 6935275.4 m N MGA94 Zone 56

Commenced: 20/08/2021
Completed: 21/08/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclination: -90° RL Surface: 518.82 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R. Welsh



PointID : 310-03-BH3065 Depth Range: 18.00 - 22.00 m



PointID : 310-03-BH3065 Depth Range: 22.00 - 24.40 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 365677.2 m E 6935332.6 m N MGA94 Zone 56

Commenced: 18/08/2021
Completed: 20/08/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 518.56 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADV				D00020 0.20-0.50 m U00050 0.50-1.00 m		517.6	1		CI	TOPSOIL: Silty sandy CLAY: medium plasticity, dark brown, trace rootlets (<1mm). Silty sandy CLAY: medium plasticity, dark brown and brown mottled orange, fine to coarse grained sand.	M (<PL) to M (=PL)				TOPSOIL
				S00100 SPT 1.00-1.45 m 9,15,20 N=35		516.6	2		CI-CH	Sandy CLAY with silt: medium to high plasticity, reddish brown mottled white (no reaction with HCl), orange and black, fine to coarse grained sand.	M (<PL)	H			RESIDUAL SOIL
				D00200 2.00-2.50 m S00250 SPT 2.50-2.95 m 10,14,18 N=32		515.6	3		SC	Clayey SAND trace silt and gravel: fine to medium grained, red brown mottled orange and black and white (no reaction with HCl), medium plasticity clay, fine sub-rounded to sub-angular gravel. Below 2.50m: fine to coarse grained sand, low plasticity clay, with fine sub-rounded to sub-angular gravel.	D	D			
				D00350 3.50-4.00 m S00400 SPT 4.00-4.45 m 8,14,16 N=30		514.6	4		CI	Silty CLAY with sand: medium plasticity, brown mottled black and white (no reaction with HCl), fine grained sand.	M (<PL)	VSt			
				D00500 5.00-5.50 m S00550 SPT 5.50-5.95 m 9,13,16 N=29		513.6	5		SM	Silty SAND with clay trace gravel: fine to coarse grained, brown and dark grey mottled orange and white (no reaction with HCl), low plasticity clay, fine sub-angular gravel.	D	MD			
				D00670 6.70-7.00 m S00700 SPT 7.00-7.45 m 5,14,25 N=39		512.6	6		CH	Sandy silty CLAY: high plasticity, brown mottled black and white (no reaction with HCl), fine grained sand.	M (<PL)	VSt			
						511.6	7		SM	Silty SAND with gravel trace clay: fine to coarse grained, dark brown and orange brown mottled white, fine to medium sub-angular gravel, low plasticity clay.	D	MD			
									CI	Sandy CLAY trace gravel: medium plasticity, brown and dark grey, fine to coarse sub angular gravel.	M (<PL)	VSt			
									SP	Gravelly SAND with silt trace clay: fine to coarse grained, pale grey mottled dark grey and white and orange, fine to coarse sub-rounded to sub-angular gravel, low plasticity fines.	D	D			
Method AS - Auger Screwing RR - Rock Roller WB - Washbore Support C - Casing Penetration No resistance ranging to refusal Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Water Level (Date) Inflow Partial Loss Complete Loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Plastic Limit < PL = PL < PL															

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 18/08/2021
Project Name: Inland Rail B2G	Completed: 20/08/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By: J. Boyle
Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°
Hole Diameter: 115 mm	Bearing:
	RL Surface: 518.56 m
	Datum: AHD
	Operator: R. Welsh

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/V				D00800 8.00-8.50 m					CH	Silty sandy CLAY, high plasticity, brown mottled dark grey and orange, fine to coarse grained sand	M (=PL)	VSt		RESIDUAL SOIL	
WB			19/08/22 09:30	S00850 SPT 8.50-8.95 m 6,16,21 N=37		509.6	9		SP	SAND with clay and gravel: fine to coarse grained, reddish brown and dark brown mottled orange, low plasticity clay, fine to coarse sub-rounded to sub-angular gravel.		D			
				S00990 SPT 9.90-10.35 m 6,10,13 N=23		508.6	10			Below 9.90m: colour changing to dark brown mottled reddish brown.					
				S01140 SPT 11.40-11.85 m 9,12,16 N=28		507.6	11								
				S01290 SPT 12.90-13.35 m 7,11,15 N=26		506.6	12		SM	Silty SAND with gravel trace clay: fine to coarse grained, reddish brown mottled orange and white and green, fine to medium sub-rounded to sub-angular gravel, low plasticity fines.		MD			
				S01440 SPT 14.40-14.85 m 9,13,20 N=33		505.6	13			Below 12.90m: red brown and dark grey mottled orange, white and green.					
						504.6	14			Below 14.40m: red brown and purple brown mottled yellowish white and orange.					
						503.6	15					D			
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Support C - Casing Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Plastic Limit < PL = PL < PL Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard L - Loose MD - Medium Dense D - Dense VD - Very Dense															

MG 4.02 LUB L8 Log MG BOREHOLE EXCL DCP MG 4.02 GPJ <<DrawingFile>> 0703/2022 23:15 10.02.00.04 Dugail Lab and In Situ Tool - DGD [Lib: DGD-P 4.01.2 dpt 3.04 2016-07-02 PJ: DGD-P 4.00.6 2017-11-25

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration

No resistance
ranging to
refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching
indicates material)
Core loss

**Classification Symbols
and Soil Descriptions**

Based on Unified Soil
Classification System

Plastic Limit

< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 18/08/2021
Project Name: Inland Rail B2G	Completed: 20/08/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By: J. Boyle
Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°
Hole Diameter: 115 mm	Bearing:
	RL Surface: 518.56 m
	Datum: AHD
	Operator: R. Welsh

Drilling Information								Soil Description						Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB				S01590 SPT 15.90-16.35 11,14,24 N=38		501.6	17		SM	Silty SAND with gravel trace clay: fine to coarse grained, reddish brown mottled orange and white and green, fine to medium sub-rounded to sub-angular gravel, low plasticity fines. (continued)	W	D			RESIDUAL SOIL
				S01740 SPT 17.40-17.85 7,15,19 N=34		500.6	18								
				S01890 SPT 18.90-19.35 8,10,15 N=25		499.6	19								
				S02040 SPT 20.40-20.72 11,21,5/20mm N=26/170mm		498.6	20								
				S02190 SPT 21.90-22.35 9,14,21 N=35		497.6	21								
				S02340 SPT 23.40-23.85 7,15,24		495.6	23								

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 18/08/2021
Project Name: Inland Rail B2G	Completed: 20/08/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 518.56 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description						Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
WB				N=39					SP	Gravelly SAND: fine to coarse grained, purple brown and dark grey and orange mottled white, fine to medium sub-rounded to sub-angular gravel, trace cabonat (5%). (continued)				100	RESIDUAL SOIL	
				S02490 SPT 24.90-25.35 12,15,19 N=34		493.6	25			Below 24.90m: with clay, colour changing to dark grey mottled purple and orange.		D		200		
						492.6	26							300		
				S02640 SPT 26.40-26.68 19,30/130mm N=30/130mm		491.6	27			Below 26.40m: colour changing to dark grey and orange-brown.	W			400		
						490.6	28					VD		500		
				S02790 SPT 27.90-28.35 16,17,18 N=35		489.6	29		SM	Silty SAND with gravel trace clay: fine to coarse grained, reddish brown and dark grey mottled orange and white, fine sub-angular gravel, low plasticity fines, trace carbonate material (<5%).						
				S02940 SPT 29.40-29.69 19,30/140mm N=30/140mm		488.6	30			Below 29.40m: fine to coarse sub-rounded to sub-angular gravel.		D				
						487.6	31									

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 365677.2 m E 6935332.6 m N MGA94 Zone 56

Commenced: 18/08/2021
Completed: 20/08/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 518.56 m
Datum: AHD Operator: R. Welsh



310-03-BH3066 Depth Range: 1.00 - 1.45 m



310-03-BH3066 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/08/2021
Project Name:	Inland Rail B2G	Completed:	20/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	518.56 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3066 Depth Range: 4.00 - 4.45 m



310-03-BH3066 Depth Range: 5.50 - 5.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/08/2021
Project Name:	Inland Rail B2G	Completed:	20/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	518.56 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3066 Depth Range: 7.00 - 7.45 m



310-03-BH3066 Depth Range: 8.50 - 8.95 m

Engineering Log - Borehole

Project No.: B21003

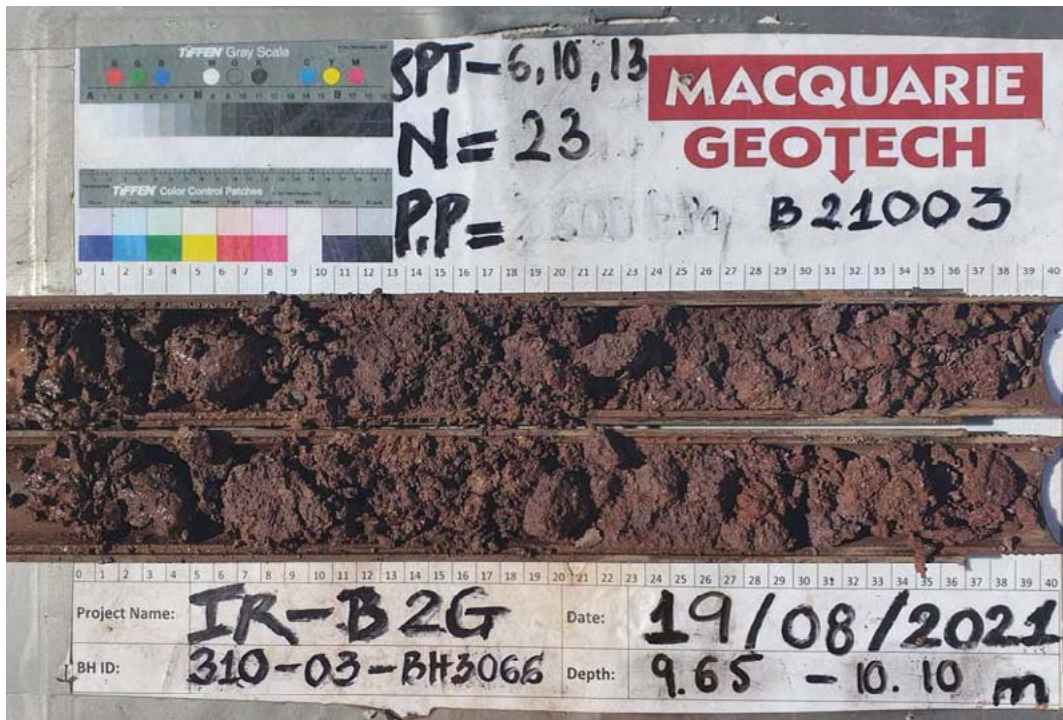
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 365677.2 m E 6935332.6 m N MGA94 Zone 56

Commenced: 18/08/2021
Completed: 20/08/2021
Logged By: T. Tran
Checked By: J. Boyle

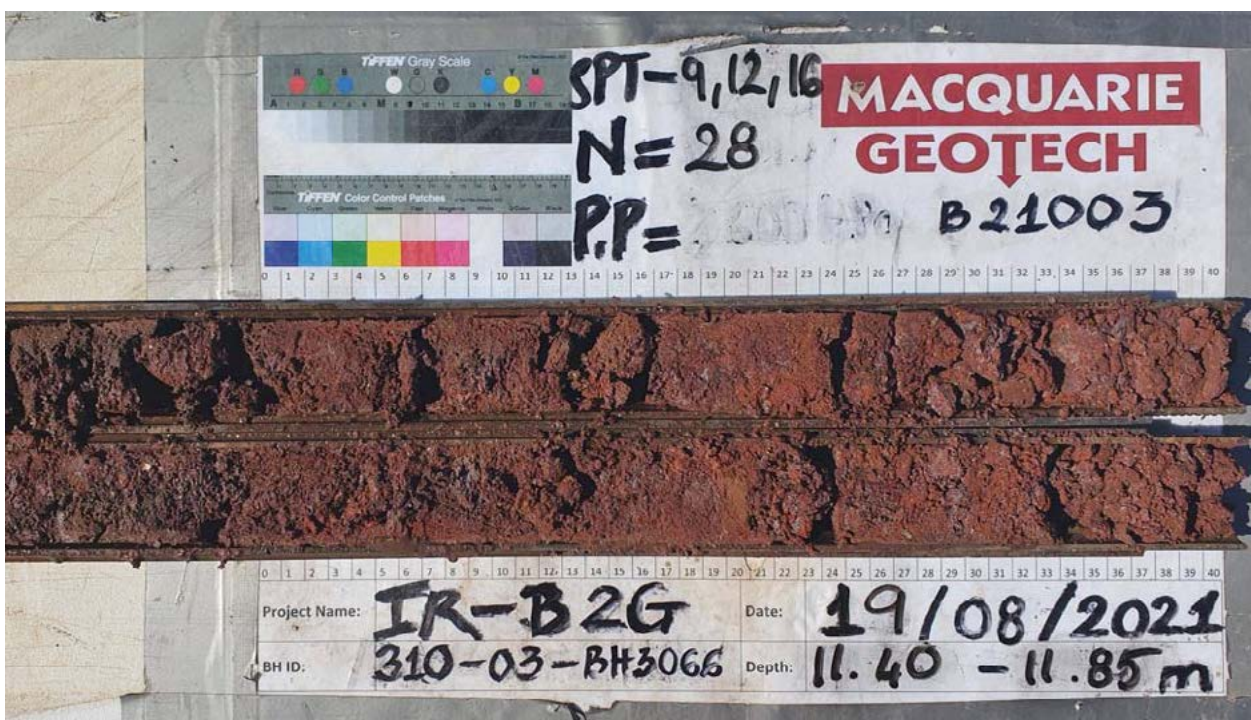
Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 518.56 m
Datum: AHD Operator: R. Welsh



310-03-BH3066 Depth Range: 9.65 - 10.10 m



310-03-BH3066 Depth Range: 11.40 - 11.85 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/08/2021
Project Name:	Inland Rail B2G	Completed:	20/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	518.56 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3066 Depth Range: 12.90 - 13.35 m

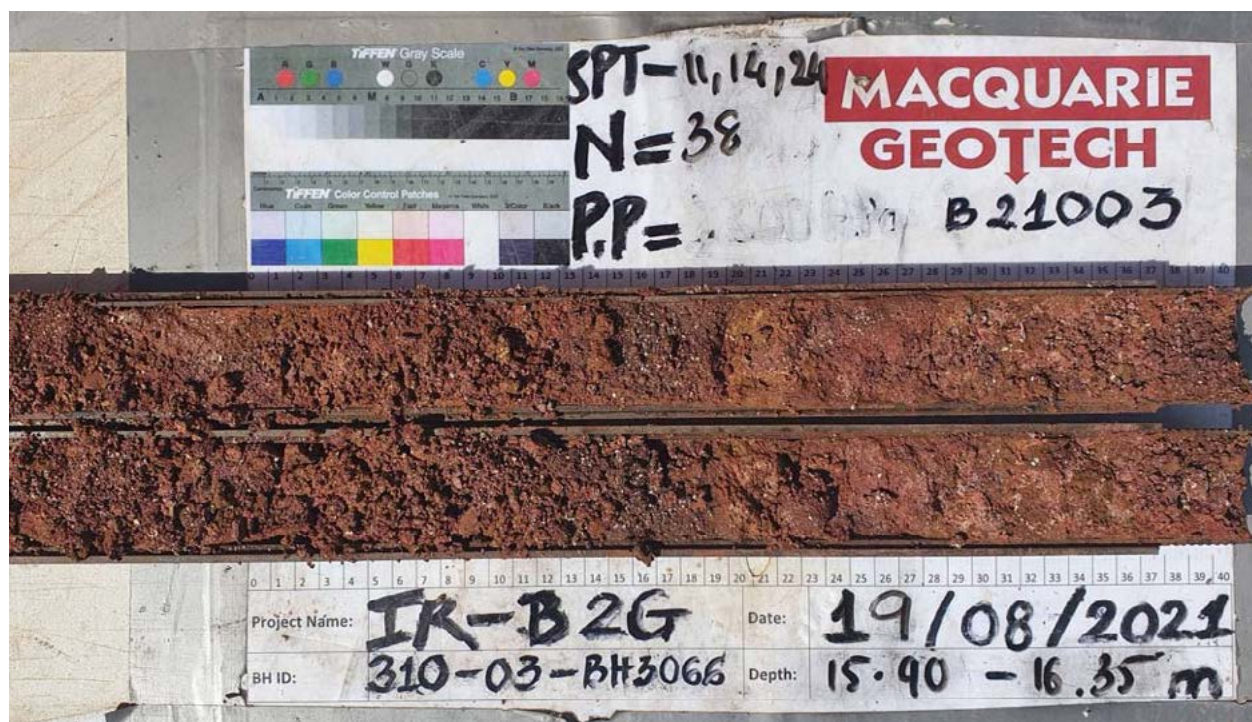


310-03-BH3066 Depth Range: 14.40 - 14.85 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/08/2021
Project Name:	Inland Rail B2G	Completed:	20/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	518.56 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3066 Depth Range: 15.90 - 16.35 m

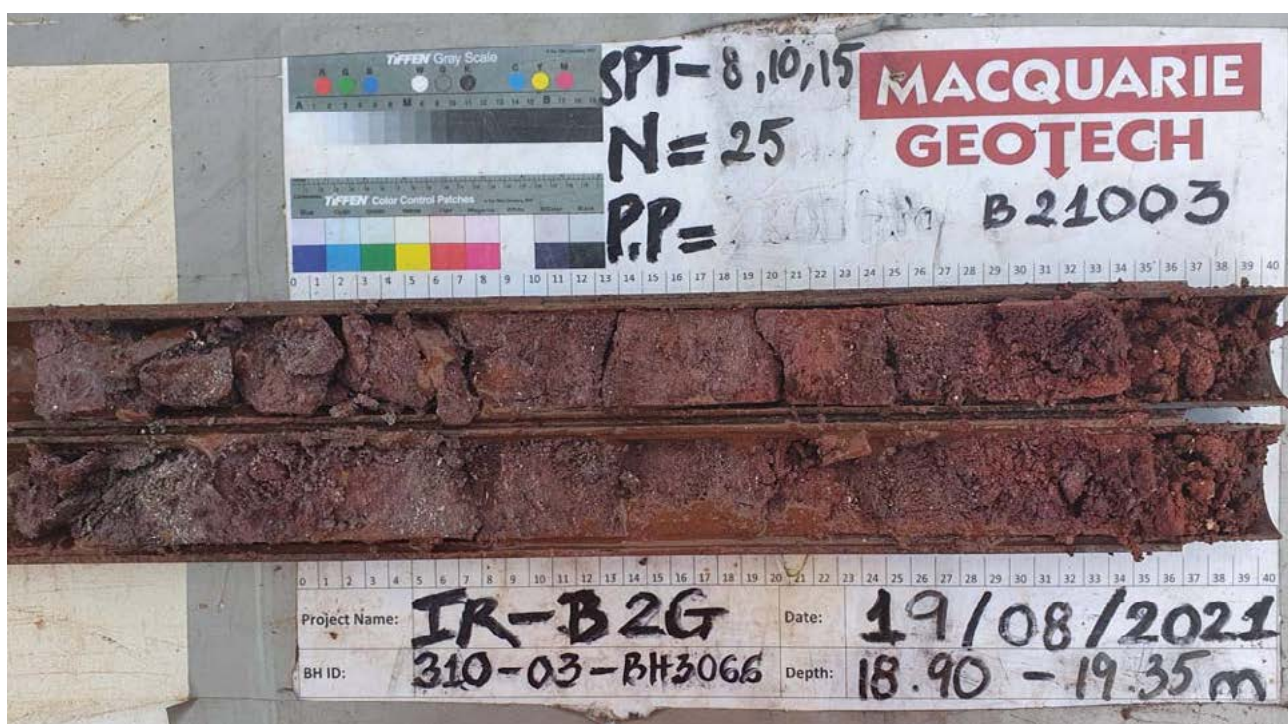


310-03-BH3066 Depth Range: 17.40 - 17.85 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/08/2021
Project Name:	Inland Rail B2G	Completed:	20/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	518.56 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3066 Depth Range: 18.90 - 19.35 m



310-03-BH3066 Depth Range: 20.40 - 20.72 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/08/2021
Project Name:	Inland Rail B2G	Completed:	20/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	518.56 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3066 Depth Range: 21.90 - 22.35 m



310-03-BH3066 Depth Range: 23.40 - 23.85 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/08/2021
Project Name:	Inland Rail B2G	Completed:	20/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	518.56 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3066 Depth Range: 24.90 - 25.35 m



310-03-BH3066 Depth Range: 26.40 - 26.65 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/08/2021
Project Name:	Inland Rail B2G	Completed:	20/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	365677.2 m E 6935332.6 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	518.56 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3066 Depth Range: 27.40 - 28.35 m



310-03-BH3066 Depth Range: 29.40 - 29.69 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 374398.0 m E 6941253.8 m N MGA94 Zone 56

Commenced: 08/11/2021
Completed: 11/11/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 518.93 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/T			Not Observed	D00000 0.00-0.50 m		517.9	1		CI-CH	TOPSOIL: Sandy CLAY trace gravel: medium plasticity, brown, fine grained sand, fine to medium sub-angular to angular gravel	M (=PL)	H			TOPSOIL	
				S00050 SPT 0.50-0.95 m 5,18,25 N=43 PP 0.95 m >600 kPa					SC	Silty CLAY: medium to high plasticity, brown to pale-brown	D	VD			RESIDUAL SOIL	
				D00100 1.00-1.50 m S00150 SPT 1.50-1.70 m 11,30/50mm N=30/50mm					SC	Clayey SAND: fine grained sand, pale brown, low plasticity						
				D00200 2.00-2.50 m						Extremely weathered BASALT reworked as sandy CLAY: low plasticity, brown to orange, fine grained sand	M (<PL)	H			EXTREMELY WEATHERED MATERIAL	
				S00300 SPT 3.00-3.07 m 30/80mm		515.9	3			Continued on cored borehole sheet						
						514.9	4									
						513.9	5									
						512.9	6									
						511.9	7									

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Support
C - Casing

Penetration
 No resistance ranging to refusal

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 374398.0 m E 6941253.8 m N MGA94 Zone 56

Commenced: 08/11/2021
Completed: 11/11/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 518.93 m
Datum: AHD Operator: J. Komung



310-03-BH3067 Depth Range: 0.50 - 0.95 m



310-03-BH3067 Depth Range: 1.50 - 1.75 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 374398.0 m E 6941253.8 m N MGA94 Zone 56

Commenced: 08/11/2021
Completed: 11/11/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 518.93 m
Datum: AHD Operator: J. Komung



310-03-BH3067 Depth Range: 3.00 - 3.07 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 08/11/2021	
Project Name: Inland Rail B2G		Completed: 11/11/2021	
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma	
Hole Coordinates: 374398.0 m E 6941253.8 m N MGA94 Zone 56		Checked By: D.Hill	
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	
Barrel Type and Length: HQ3 3.15 m		RL Surface: 518.93 m	
		Datum: AHD	
		Operator: J. Komung	

Drilling Information						Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
										EL VL L M H EH	30 100 300 1000 3000	Particular	General
						517.9	1						
						516.9	2						
						515.9	3		Continued from non-cored borehole sheet				
			100		0	514.9	4	✓	BASALT: fine crystalline, dark-green mottled brown, highly fractured	MW to HW	●		JT, 25°, Fe SN, PR, RF DZ, 15°, Fe Clay VNR, PR, RF
			100		0	514.9		✓					JT, 25°, Fe Clay SN, DIS, RF
			100		57	513.9	5	✓	Below 4.00m: dark-green, fractured				JT, 45°, Fe SN, PR, RF JT, 0°, Fe SN, PR, S DZ, 0°, Fe SN, PR, RF JT, 90°, Fe SN, PR, RF Sub-vertical joint JT, 85°, Fe SN, PR, RF Sub-vertical joint JT, 0°, Fe SN, PR, S JT, 0°, Fe SN, DIS, RF JT, 0°, Fe SN, PR, RF JT, 90°, Fe SN, PR, RF Sub-vertical joint SH, 0°, Fe Clay VNR, PR, RF
			100		27	512.9	6	✓		SW			JT, 10°, Fe SN, PR, S JT, 85°, Fe SN, PR, S Sub-vertical joint JT, 35°, Fe SN, PR, S JT, 90°, Fe SN, PR, RF Sub-vertical joint JT, 0°, Fe SN, PR, RF JT, 0°, Fe Clay VNR, PR, S
			100		66	511.9	7	✓					JT, 45°, Fe SN, CU, S JT, 10°, Fe SN, PR, S JT, 30°, Fe SN, PR, RF JT, 45°, Fe SN, PR, S JT, 5°, Fe SN, PR, RF JT, 30°, Fe SN, PR, RF JT, 85°, Fe SN, UN, RF Sub-vertical joint JT, 85°, Fe SN, PR, RF

Method AS - Auger Screwing WB - Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water Level (Date) Inflow Partial Loss Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
Support T - Timbering				

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 374398.0 m E 6941253.8 m N MGA94 Zone 56

Commenced: 08/11/2021
Completed: 11/11/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 518.93 m
Barrel Type and Length: HQ3 3.15 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects					
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling				
HQ3		Not Observed	100		0	66	509.9 508.9 507.9 506.9 505.9 504.9 503.9	9	BASALT: fine crystalline, dark-green mottled brown, highly fractured(continued)	SW			Particular JT, 0°, Fe SN, DIS, RF JT, 5°, CN, CU, S JT, 15°, Fe SN, PR, RF JT, 0°, Fe SN, PR, S JT, 45°, CN, PR, S JT, 5°, Fe SN, UN, RF JT, 25°, CN, PR, S JT, 15°, Fe SN, PR, S JT, 15°, Fe SN, DIS, RF JT, 0°, Fe Clay VNR, PR, RF JT, 55°, Fe SN, PR, S JT, 25°, Fe SN, PR, RF JT, 0°, Fe SN, DIS, RF JT, 45°, Fe SN, PR, S JT, 75°, Fe SN, PR, RF DZ, 0°, Fe SN, DIS, RF JT, 0°, Fe SN, DIS, RF JT, 85°, Fe SN, PR, S, Sub-vertical joint JT, 10°, Fe Clay VNR, PR, S JT, 5°, Fe SN, PR, RF JT, 60°, Fe SN, PR, S JT, 10°, Fe SN, PR, RF JT, 5°, Fe Clay SN, PR, S JT, 0°, Fe SN, PR, S JT, 0°, Fe SN, UN, RF JT, 0°, Fe Clay SN, DIS, S JT, 0°, Fe SN, PR, RF JT, 0°, Fe SN, DIS, RF JT, 10°, Fe SN, PR, RF JT, 10°, Fe SN, PR, RF JT, 10°, Fe SN, PR, RF JT, 45°, Fe SN, PR, RF JT, 0°, Fe Clay SN, DIS, S JT, 85°, Fe SN, PR, S, Sub-vertical joint JT, 45°, Fe SN, PR, S JT, 5°, CN, PR, RF DZ, 10°, Fe SN, PR, RF JT, 0°, Fe SN, CU, RF JT, 15°, Fe SN, CU, RF JT, 10°, Fe SN, PR, RF JT, 0°, Fe SN, DIS, RF DZ, 0°, Fe SN, DIS, RF JT, 5°, CN, DIS, S JT, 10°, CN, PR, S JT, 25°, CN, PR, S JT, 5°, CN, PR, S JT, 5°, Fe SN, CU, RF JT, 0°, CN, PR, S JT, 15°, Fe Clay SN, PR, RF JT, 5°, Fe Clay VNR, PR, S JT, 0°, CN, PR, S JT, 5°, CN, PR, S JT, 0°, CN, UN, RF		General		
			100		0	37		10	BASALT: fine crystalline, brown-green mottled off white, highly fractured with crushed seams and secondary mineralisation	MW							
			100					11									
								12	BASALT: fine crystalline, dark-green, slightly fractured	FR							
			100		64			13	BASALT: fine crystalline, brown-green mottled off white, highly fractured with crushed seams and secondary mineralisation	MW							
								14	BASALT: porphyritic, orange-red and brown, with irregular black secondary mineralisation, fractured	HW							
								15	Below 15.10m: dark-grey mottled green	SW							
			Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water ☒ Level (Date) ☐ Inflow ☐ Partial Loss ▲ Complete Loss Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High														

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 374398.0 m E 6941253.8 m N MGA94 Zone 56

Commenced: 08/11/2021
Completed: 11/11/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 518.93 m
Barrel Type and Length: HQ3 3.15 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
													Particular	General
HQ3	Not Observed	100	87	501.9	17	✓	✓	✓	BASALT: porphyritic, orange-red and brown, with irregular black secondary mineralisation, fractured(continued)	SW	●	30	DZ, 0°, Fe SN, PR, S	
													DZ, 0°, Fe SN, PR, S	
													JT, 0°, CN, PR, S	
													JT, 0°, Fe SN, PR, RF	
													JT, 5°, Fe SN, PR, RF	
HQ3	Not Observed	98	92	500.9	18	✓	✓	✓	BASALT: fine crystalline, dark green to dark grey, slightly fractured	FR	●	100	JT, 0°, CN, PR, S	
													JT, 45°, Fe SN, PR, RF	
													JT, 85°, CN, UN, RF,	
													Sub-vertical joint	
													JT, 0°, CN, DIS, RF	
HQ3	Not Observed	92	499.9	19	✓	✓	✓	✓			●	300	JT, 90°, CN, PR, S,	
													Sub-vertical joint	
													JT, 5°, CN, PR, S	
													JT, 10°, CN, PR, S	
													JT, 10°, CN, PR, S	
HQ3	Not Observed	92	498.9	20	✓	✓	✓	✓	Hole Terminated at 20.00 m Target depth		●	3000	JT, 5°, CN, PR, S	
													JT, 10°, CN, PR, S	
													JT, 5°, CN, PR, S	
													JT, 10°, CN, PR, S	
													JT, 5°, CN, PR, RF	
HQ3	Not Observed	92	497.9	21	✓	✓	✓	✓			●		JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
HQ3	Not Observed	92	496.9	22	✓	✓	✓	✓			●		JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
HQ3	Not Observed	92	495.9	23	✓	✓	✓	✓			●		JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	
													JT, 5°, CN, PR, S	

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	08/11/2021
Project Name:	Inland Rail B2G	Completed:	11/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	374398.0 m E 6941253.8 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3 3.15 m	RL Surface:	518.93 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3067 Depth Range: 3.07 - 7.00 m



PointID : 310-03-BH3067 Depth Range: 7.00 - 12.00 m

Engineering Log - Cored Borehole

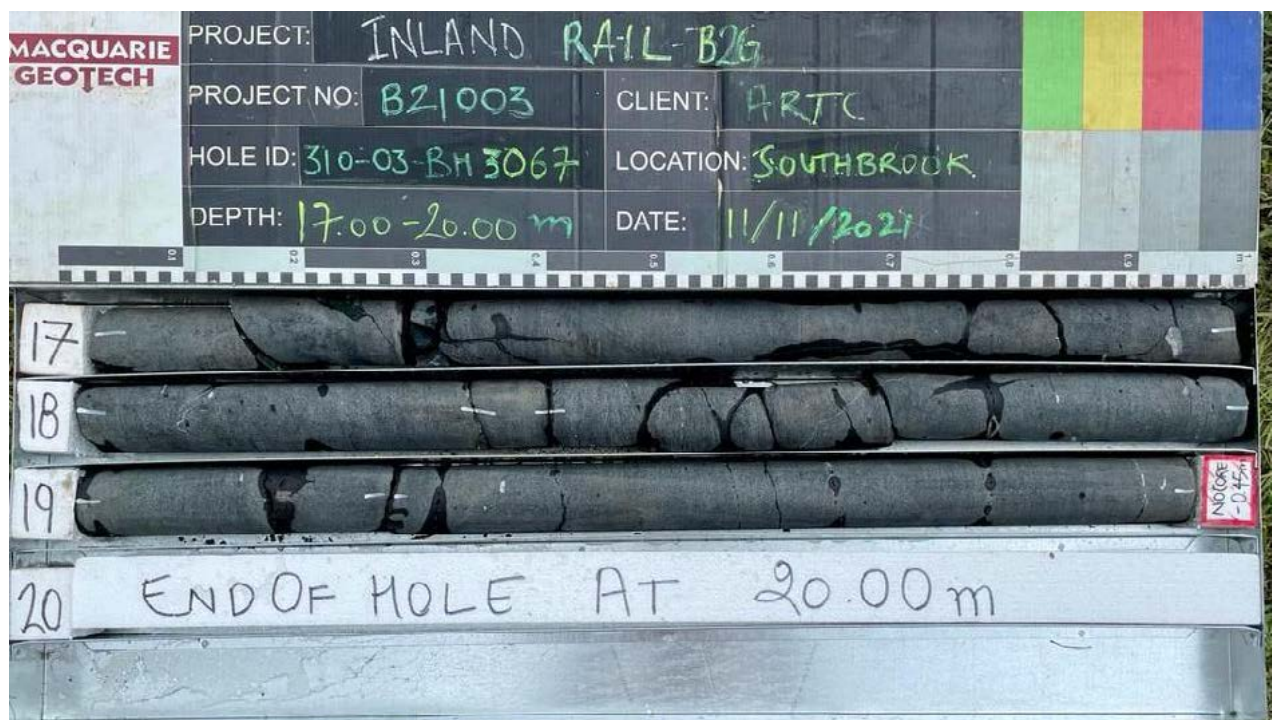
Project No.: B21003

Client:	ARTC	Commenced:	08/11/2021
Project Name:	Inland Rail B2G	Completed:	11/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	374398.0 m E 6941253.8 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	518.93 m
Barrel Type and Length:	HQ3 3.15 m	Bearing:		Datum:	AHD
				Operator:	J. Komung



PointID : 310-03-BH3067 Depth Range: 12.00 - 17.00 m



PointID : 310-03-BH3067 Depth Range: 17.00 - 20.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378796.3 m E 6952234.5 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 433.06 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description							Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations			
ADV				D00030 D 0.30-0.50 m D00050 D 0.50-1.00 m		432.1	1		CH	TOPSOIL: Silty CLAY trace gravel, medium to high plasticity, dark brown, fine to coarse sub-rounded to sub-angular gravel, trace rootlets (<1mm)	M (<PL) to M (=PL)	VSt					TOPSOIL				
				U00100 U 1.00-1.50 m						FILL: Gravelly sandy CLAY: medium to high plasticity, dark brown and dark grey mottled orange, fine to coarse grained sand, fine to coarse sub-rounded to sub-angular gravel							FILL				
				S00150 SPT 1.50-1.95 m 4,8,11 N=19						CLAY trace silt and sand: high plasticity, dark brown, fine grained sand							ALLUVIAL SOIL				
				D00200 D 2.00-2.50 m						Below 2.00m: brown and dark grey mottled orange							* 1.00: PP Samp >600 kPa				
				S00250 SPT 2.50-2.95 m 4,9,14 N=23						Below 2.00m: brown and dark grey mottled orange							* 1.50: PP Samp >600 kPa				
				D00350 D 3.50-4.00 m						CI-CH							Sandy CLAY trace gravel: medium to high plasticity, dark brown and pale orange - brown, fine to coarse grained sand, medium to coarse sub-angular gravel	M (=PL)	VSt		
				S00400 SPT 4.00-4.45 m 4,6,8 N=14						Below 3.50m: brown mottled orange											
WB				D00500 D 5.00-5.50 m		428.1	5		CI	Sandy CLAY: medium plasticity, brown mottled white, fine grained sand, trace organics	M (<PL)	St to VSt									
				S00550 SPT 5.50-5.95 m 6,10,12 N=22						Below 5.50m: trace gravel, fine to medium, sub-angular								M (=PL)			
				S00700 SPT 7.00-7.45 m 12,22,18 N=40						Extremely weathered BASALT: fine crystalline, dark grey mottled orange, trace quartz inclusion, very low strength								M	VD	EXTREMELY WEATHERED MATERIAL	
										Extremely weathered ANDESITE recovered as SAND with clay: fine grained, pale yellow to orange brown, low plasticity clay											

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB- Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

MG 4.02 LIB.GLB Log MG BOREHOLE EXCL DCP MG 4.02 G.P.J. <<DrawingFile>> 0703/2022 23:17 10.02.00.04 Daugel Lab and In Situ Tool - DGD [Lib: DGD-P 4.01.2 dpt 3.04 2016-07-02 Pjt: DGD-P 4.00.6 2017-11-25]

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC		Commenced: 30/10/2021	
Project Name: Inland Rail B2G		Completed: 30/10/2021	
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Tran	
Hole Coordinates: 378796.3 m E 6952234.5 m N MGA94 Zone 56		Checked By: D.Hill	
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 433.06 m
Hole Diameter: 115 mm		Bearing:	Datum: AHD Operator: R. Welsh
Drilling Information			
Soil Description			
Observations			
Method	Penetration	Support	Water
Samples Tests Remarks	Recovery	RL (m)	Depth (m)
Graphic Log	Classification Symbol	Moisture Condition	Consistency Relative Density
Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
WB			
Not Observed			
S00850 SPT 8.50-8.78 m 11,30/125mm N=30/125mm			
S01000 SPT 10.00-10.45 m 10,20,29 N=49			
S01150 SPT 11.50-11.95 m 6,6,8 N=14			
S01300 SPT 13.00-13.45 m 11,25,18 N=43			
S01450 SPT 14.50-14.95 m 11,28,20 N=48			
CL			
Extremely weathered ANDESITE recovered as SAND with clay: fine grained, pale yellow to orange brown, low plasticity clay (continued)			
Extremely weathered BASALT: fine crystalline, dark grey, very low strength			
Extremely weathered ANDESITE recovered as SAND trace clay: fine grained, pale yellow to orange brown, low plasticity clay			
COAL: black, fragmented Silty CLAY: low plasticity, brown mottled orange COAL: black, fragmented			
Extremely weathered SANDSTONE recovered as Silty CLAY: medium plasticity, dark grey			
13.00: PP Samp >600 kPa			
Method Penetration Water Samples and Tests Moisture Condition Consistency/Relative Density			
AS - Auger Screwing RR - Rock Roller WB- Washbore			
No resistance ranging to refusal			
Level (Date) Inflow Partial Loss Complete Loss			
Graphic Log/Core Loss			
Core recovered (hatching indicates material) Core loss			
Classification Symbols and Soil Descriptions			
Based on Unified Soil Classification System			
Plastic Limit			
VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense			

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	30/10/2021
Project Name:	Inland Rail B2G	Completed:	30/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	378796.3 m E 6952234.5 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	433.06 m	
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator: R. Welsh

Drilling Information								Soil Description						Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB			Not Observed	S01600 SPT 16.00-16.22 8,12/70mm N=12/70mm		416.1	17			Extremely weathered SANDSTONE recovered as SAND trace clay, fine grained, grey, low plasticity clay	W	VD		100 200 300 400 500	EXTREMELY WEATHERED MATERIAL
				S01750 SPT 17.50-17.79 18,30/135mm N=30/135mm		415.1	18								
				S01900 SPT 19.00-19.24 15,20/90mm N=20/90mm		414.1	19								
HQ				S01940 SPT 19.40-19.56 14,18/10mm N=18/10mm		413.1	20			Continued on cored borehole sheet					
						412.1	21								
						411.1	22								
						410.1	23								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378796.3 m E 6952234.5 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 433.06 m
Datum: AHD Operator: R. Welsh



310-03-BH3070 Depth Range: 1.50 - 1.95 m



310-03-BH3070 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378796.3 m E 6952234.5 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: T. Tran
Checked By: D.Hill

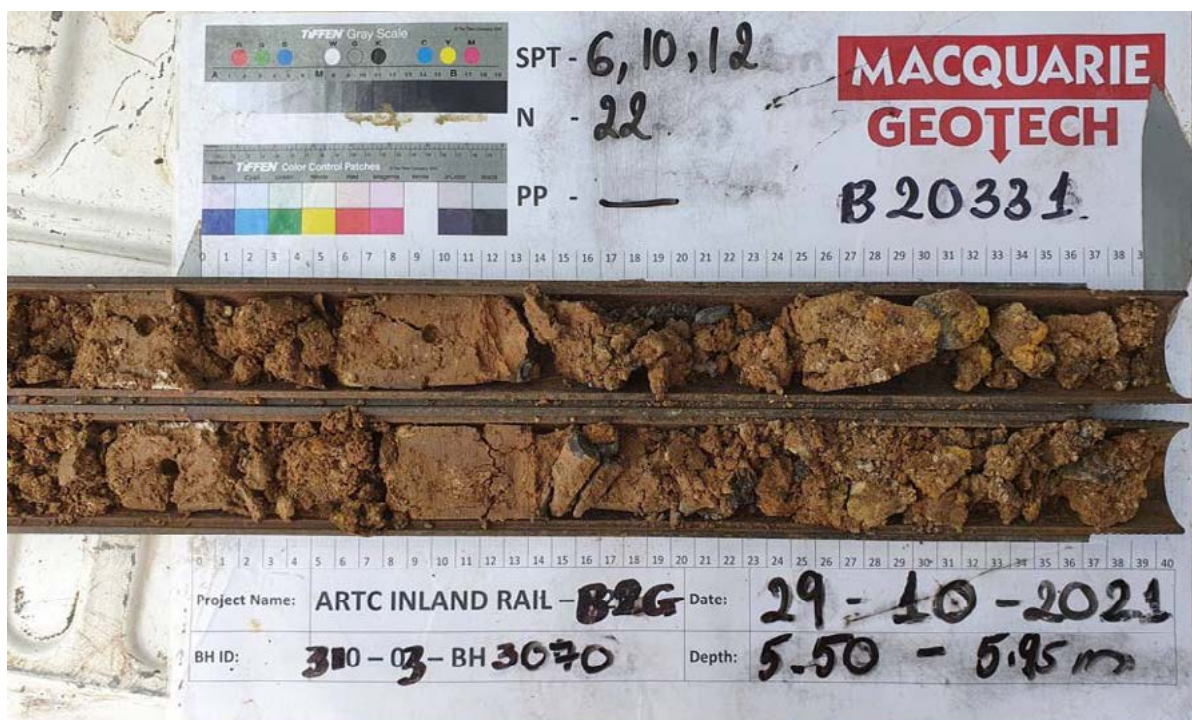
Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 433.06 m
Datum: AHD Operator: R. Welsh



310-03-BH3070 Depth Range: 4.00 - 4.45 m



310-03-BH3070 Depth Range: 5.50 - 5.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	30/10/2021
Project Name:	Inland Rail B2G	Completed:	30/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	378796.3 m E 6952234.5 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	433.06 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3070 Depth Range: 7.00 - 7.45 m



310-03-BH3070 Depth Range: 8.50 - 8.78 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378796.3 m E 6952234.5 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: T. Tran
Checked By: D.Hill

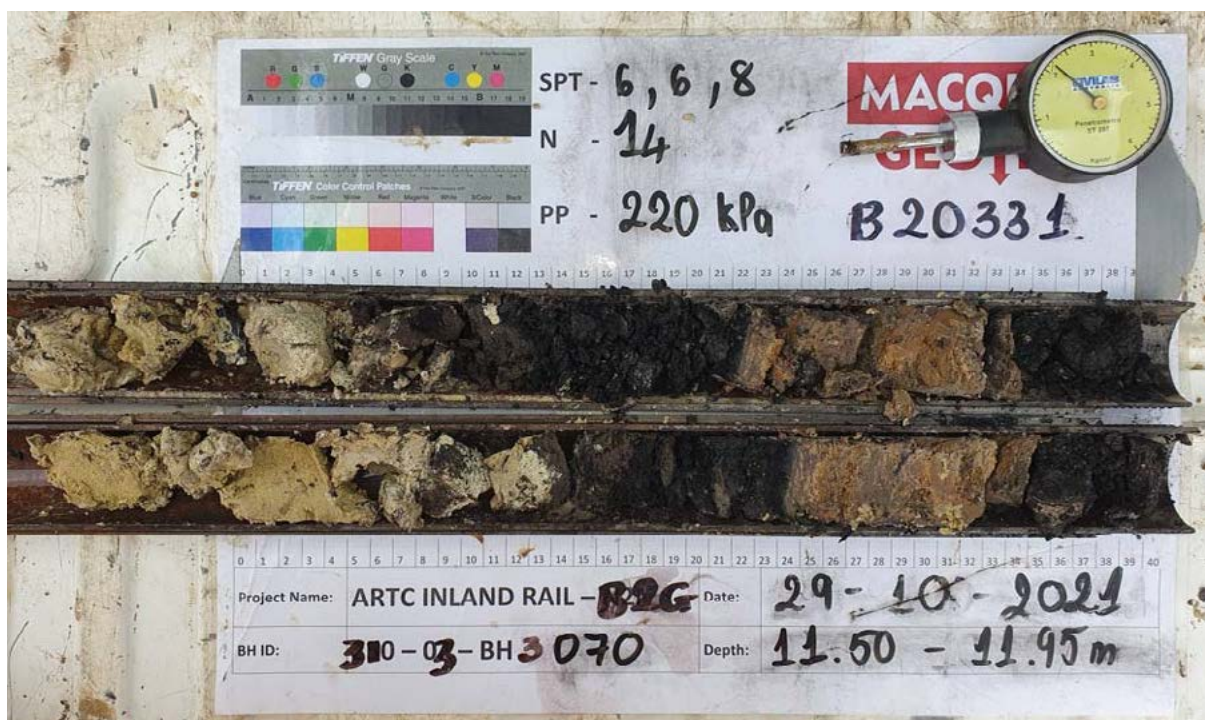
Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 433.06 m
Datum: AHD Operator: R. Welsh



310-03-BH3070 Depth Range: 10.00 - 10.45 m



310-03-BH3070 Depth Range: 11.50 - 11.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	30/10/2021
Project Name:	Inland Rail B2G	Completed:	30/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	378796.3 m E 6952234.5 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	433.06 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3070 Depth Range: 13.00 - 13.45 m



310-03-BH3070 Depth Range: 14.50 - 14.87 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378796.3 m E 6952234.5 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 433.06 m
Datum: AHD Operator: R. Welsh



310-03-BH3070 Depth Range: 16.00 - 16.22 m



310-03-BH3070 Depth Range: 17.50 - 17.79 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378796.3 m E 6952234.5 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 433.06 m
Datum: AHD Operator: R. Welsh



310-03-BH3070 Depth Range: 19.00 - 19.24 m



310-03-BH3070 Depth Range: 19.40 - 19.53 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378796.3 m E 6952234.5 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 433.06 m
Barrel Type and Length: Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
										EL VL J M H VH EH		30 100 300 1000 3000	Particular	General
						416.1	17							
						415.1	18							
						414.1	19							
									Continued from non-cored borehole sheet					
									NO CORE 0.20m					
			90		74	413.1	20		SANDSTONE: fine to medium grained, grey, very thinly bedded, with occasional carbonaceous wisps, unbroken				JT, 75°, CN, UN, RF BP, 5°, CN, UN, RF BP, 10°, CN, PR, RF BP, 5°, CN, UN, RF	
						412.1	21						BP, 15°, CN, UN, RF	
						411.1	22						BP, 15°, CN, UN, RF BP, 20°, VNR, UN, RF, coal	
			92		88	410.1	23						BP, 10°, CN, UN, RF BP, 5°, CLAY VNR, UN, RF	
									SILTSTONE: dark grey mottled brown and black, with occasional interbedded of sandstone (~10%), trace coal and carbonate inclusions,					

Method

AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength

(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

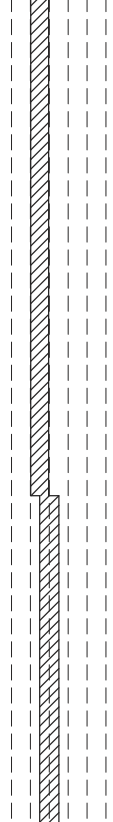
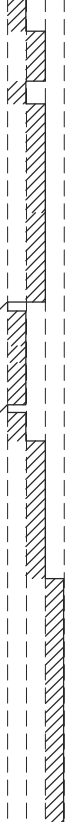
Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378796.3 m E 6952234.5 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 433.06 m
Barrel Type and Length: Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects						
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling					
HQ	Not Observed	100	92	88	96	408.1	25		unbroken NO CORE 0.25m SILTSTONE: dark grey mottled brown and black, with occasional interbedded of sandstone (~10%), trace coal and carbonate inclusions, unbroken	FR			Particular	General				
							26								407.1	BP, 15°, CLAY VNR, UN, RF SM, 5°, CLAY VNR, PR, S		
							27								406.1	BP, 5°, CLAY VNR, UN, RF BP, 10°, CN, UN, RF BP, 5°, CN, UN, RF BP, 10°, CN, UN, RF BP, 5°, CLAY VNR, UN, RF BP, 5°, CLAY VNR, UN, RF JT, 60°, CN, UN, S BP, 5°, CN, PR, S		
							28								405.1	BP, 5°, CN, PR, S		
							29								404.1			
							30								403.1			
							31								402.1	JT, 75°, CN, UN JT, 45°, CN, UN JT, 80°, CN, UN, RF BP, 20°, CN, IR, RF JT, 55°, CN, IR		
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel							Water  Level (Date)  Inflow  Partial Loss  Complete Loss			Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss			Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil			Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High		
Support T - Timbering																		

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 30/10/2021													
Project Name: Inland Rail B2G		Completed: 30/10/2021													
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Tran													
Hole Coordinates: 378796.3 m E 6952234.5 m N MGA94 Zone 56		Checked By: D.Hill													
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 433.06 m												
Barrel Type and Length:		Bearing:	Datum: AHD Operator: R. Welsh												
Drilling Information		Rock Substance		Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
													Particular	General	
HQ		Not Observed	100		93	400.1	33		SANDSTONE: fine to medium grained, pale grey, massive, with occasional carbonaceous laminations(continued) From 32.00m to 33.00m: very thinly bedded with carbonaceous laminations and occasional medium grained gravel lense	FR				BP, 20°, CN, IR	
														JT, 85°, CLAY VNR, UN, RF	
														JT, 70°, CLAY VNR, UN, RF	
														SM, 10°, CLAY VNR, IR	
														SM, 5°, CLAY VNR, UN	
														BP, 5°, CN, PR, RF	
														BP, 5°, CN, UN, RF	
														BP, 10°, CN, UN, RF	
														JT, 20°, CLAY VNR, UN, RF	
														JT, 45°, CLAY VNR, PR, RF	
														BP, 5°, CN, UN, RF	
														BP, 5°, CN, UN, RF	
														BP, 10°, CN, UN, RF	
														BP, 10°, CN, PR, RF	
														BP, 10°, CN, IR	
														BP, 10°, CN, PR, RF	
														BP, 5°, CN, UN	
														JT, 20°, CN, UN, RF	
														BP, 5°, CN, UN, RF	
									Hole Terminated at 39.49 m Target depth						
Method		Water		Graphic Log/Core Loss		Weathering		Strength							
AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel		Level (Date) Inflow Partial Loss Complete Loss		Core recovered (hatching indicates material) Core loss		FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil		(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High							
Support		T - Timbering													

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	30/10/2021
Project Name:	Inland Rail B2G	Completed:	30/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	378796.3 m E 6952234.5 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:		RL Surface:	433.06 m
		Bearing:	
		Datum:	AHD
		Operator:	R. Welsh



PointID : 310-03-BH3070 Depth Range: 19.40 - 23.00 m



PointID : 310-03-BH3070 Depth Range: 23.00 - 27.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	30/10/2021
Project Name:	Inland Rail B2G	Completed:	30/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	378796.3 m E 6952234.5 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	433.06 m
Barrel Type and Length:		Bearing:		Datum:	AHD
				Operator:	R. Welsh



PointID : 310-03-BH3070 Depth Range: 27.00 - 32.00 m



PointID : 310-03-BH3070 Depth Range: 32.00 - 37.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	30/10/2021
Project Name:	Inland Rail B2G	Completed:	30/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	378796.3 m E 6952234.5 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	433.06 m
Barrel Type and Length:		Bearing:		Datum:	AHD Operator: R. Welsh



PointID : 310-03-BH3070 Depth Range: 37.00 - 39.49 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378786.2 m E 6952295.3 m N MGA94 Zone 56

Commenced: 22/09/2021
Completed: 27/09/2021
Logged By: J.Cooper
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 432.63 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADV		Not Observed		D00020 0.20-0.30 m		431.6	1		CH	TOPSOIL Silty CLAY: high plasticity, dark brown, with rootlets (<2mm) CLAY: high plasticity, dark brown.	M (>PL)	St		x	TOPSOIL ALLUVIAL SOIL
				S00050 SPT 0.50-0.95 m 2,4,6 N=10 PP 0.75 m =140 kPa U00100 1.00-1.37 m PP 1.00 m >600 kPa S00150 SPT 1.50-1.95 m 3,9,8 N=17 PP 1.95 m =300 kPa D00200 2.00-2.20 m SPT 3.00-3.03 m 20/30mm HB D00350 3.50-3.70 m											
				S00450 SPT 4.50-4.95 m 8,16,21 HB N=37 PP 4.95 m >600 kPa											
				D00550 5.50-5.70 m											
				S00600 SPT 6.00-6.16 m 12,30/10mm HB N=30/10mm D00680 6.80-7.00 m											
				S00750 SPT 7.50-7.78 m 12,30/130mm											
Method AS - Auger Screwing RR - Rock Roller WB - Washbore Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Support C - Casing Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Plastic Limit < PL = PL > PL															

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 22/09/2021
Project Name: Inland Rail B2G	Completed: 27/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: J.Cooper
Hole Coordinates: 378786.2 m E 6952295.3 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 432.63 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/V			22/09/21	HB N=30/130mm					CL	Silty CLAY trace sand: low plasticity, grey brown, fine grained sand. (continued)	M (<PL)				RESIDUAL SOIL
				D00860 8.60-8.80 m		423.6	9		CI	Sandy silty CLAY with gravel: medium plasticity, grey mottled orange and dark grey, fine to coarse grained sand, fine sub-angular gravel.	M (>PL)				
				S00900 SPT 9.00-9.25 m 30,20/100mm HB N=20/100mm		422.6	10		CI	Silty CLAY trace sand: medium plasticity, grey brown, fine grained sand.					
				S01050 SPT 10.50-10.75 m 30,30/100mm HB N=30/100mm		421.6	11		ML	Sandy SILT trace clay: low plasticity, blue grey, fine grained sand					EXTREMELY WEATHERED MATERIAL
				S01200 SPT 12.00-12.12 m 30/120mm HB		420.6	12					H			
				S01350 SPT 13.50-13.70 m 20,11/50mm HB N=11/50mm		418.6	14			From 13.00 to 13.50m: colour tending to black - carbonaceous					
				S01500 SPT 15.00-15.10 m 20/100mm HB		417.6	15			From 13.50 to 13.75m: COAL					

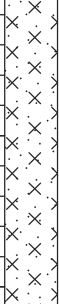
Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	22/09/2021
Project Name:	Inland Rail B2G	Completed:	27/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	378786.2 m E 6952295.3 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	432.63 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	J. Komung

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB			Not Observed	S01650 SPT 16.50-16.62 30/120mm HB		415.6	17		ML	Sandy SILT trace clay: low plasticity, blue grey, fine grained sand (continued)	M (<PL)	H		100 200 300 400 500	EXTREMELY WEATHERED MATERIAL
				S01800 SPT 18.00-18.12 30/120mm HB		414.6	18								
						413.6	19			Hole Terminated at 18.12 m Target depth Early termination on agreement with ARTC representatives.					
						412.6	20								
						411.6	21								
						410.6	22								
						409.6	23								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	22/09/2021
Project Name:	Inland Rail B2G	Completed:	27/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	378786.2 m E 6952295.3 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	432.63 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3071 Depth Range: 0.50 - 0.95 m



310-03-BH3071 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378786.2 m E 6952295.3 m N MGA94 Zone 56

Commenced: 22/09/2021
Completed: 27/09/2021
Logged By: J.Cooper
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 432.63 m
Datum: AHD Operator: J. Komung



310-03-BH3071 Depth Range: 3.00 - 3.03 m



310-03-BH3071 Depth Range: 4.50 - 4.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	22/09/2021
Project Name:	Inland Rail B2G	Completed:	27/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	378786.2 m E 6952295.3 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	432.63 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3071 Depth Range: 6.00 - 6.16 m

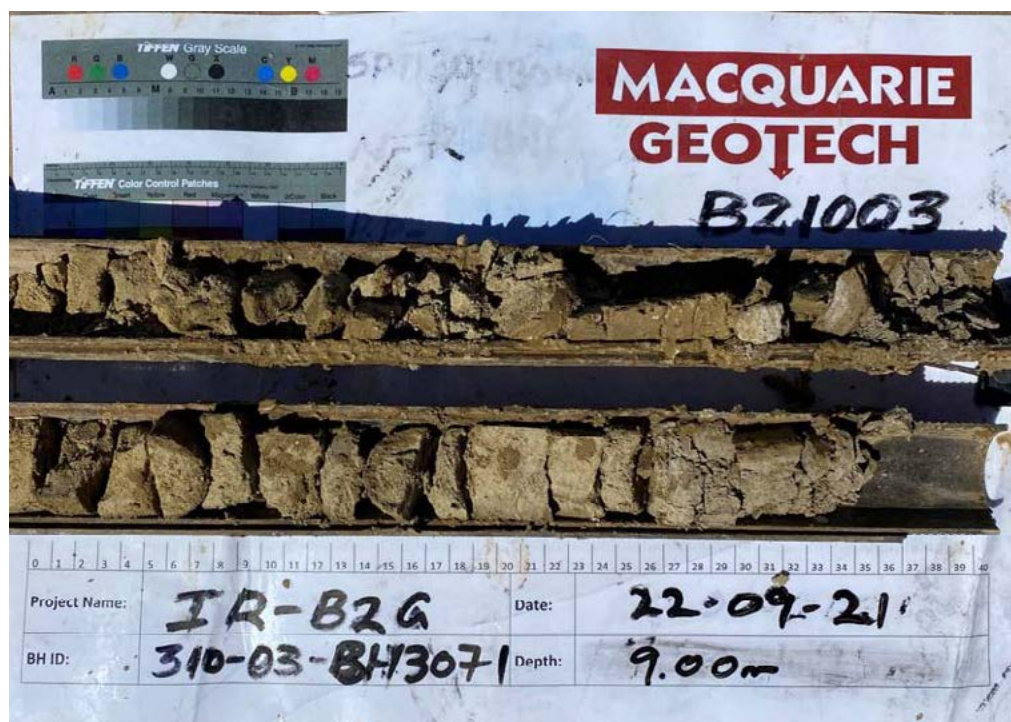


310-03-BH3071 Depth Range: 7.50 - 7.78 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	22/09/2021
Project Name:	Inland Rail B2G	Completed:	27/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	378786.2 m E 6952295.3 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	432.63 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3071 Depth Range: 9.00 - 9.25 m



310-03-BH3071 Depth Range: 10.50 - 10.75 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378786.2 m E 6952295.3 m N MGA94 Zone 56

Commenced: 22/09/2021
Completed: 27/09/2021
Logged By: J.Cooper
Checked By: J.Boyle

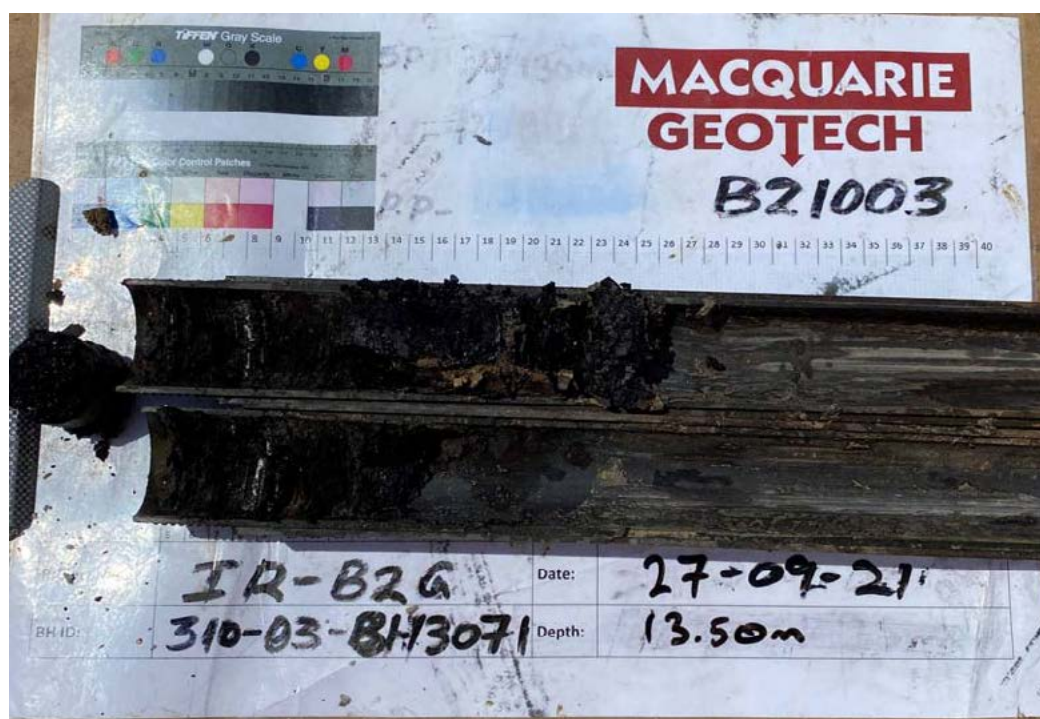
Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 432.63 m
Datum: AHD Operator: J. Komung



310-03-BH3071 Depth Range: 12.00 - 12.12 m



310-03-BH3071 Depth Range: 13.50 - 13.70 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	22/09/2021
Project Name:	Inland Rail B2G	Completed:	27/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	378786.2 m E 6952295.3 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	432.63 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3071 Depth Range: 15.00 - 15.05 m



310-03-BH3071 Depth Range: 16.50 - 16.62 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378786.2 m E 6952295.3 m N MGA94 Zone 56

Commenced: 22/09/2021
Completed: 27/09/2021
Logged By: J.Cooper
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 432.63 m
Datum: AHD Operator: J. Komung



310-03-BH3071 Depth Range: 18.00 - 18.12 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378866.9 m E 6953215.3 m N MGA94 Zone 56

Commenced: 15/11/2021
Completed: 16/11/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 431.19 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Soil Description						Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)				Structure and Additional Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
AD/T				D00000 0.20-0.50 m		430.2	1		CH	TOPSOIL: CLAY with gravel: high plasticity, dark brown, trace rootlets	VS _t		100	200	300	400	500	TOPSOIL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
				S00100 SPT 0.50-0.79 m 12,30/140mm N=30/140mm						CLAY with cobbles: high plasticity, dark brown, cobble>200mm comprised of basalt								RESIDUAL SOIL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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				S00250 SPT 3.00-3.15 m 30 HB PP 3.30 m >600 kPa																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 15/11/2021
Project Name: Inland Rail B2G	Completed: 16/11/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 378866.9 m E 6953215.3 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 431.19 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information								Soil Description						Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB		Not Observed		N=41 PP 7.95 m >600 kPa		422.2	9		CI	Gravelly CLAY: medium plasticity, dark brown to black, fine to coarse angular to sub-angular gravel comprised of basalt (continued)	M (<PL)	H		100	EXTREMELY WEATHERED MATERIAL
				S00900 SPT 9.00-9.45 m 3,22,5 N=27 PP 9.32 m >600 kPa		421.2	10			Below 9.00m: colour changes to black mottled grey				200	
						420.2	11							300	
						419.2	12							400	
														500	
						418.2	13			Continued on cored borehole sheet					
						417.2	14								
						416.2	15								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378866.9 m E 6953215.3 m N MGA94 Zone 56

Commenced: 15/11/2021
Completed: 16/11/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 431.19 m
Datum: AHD Operator: J. Komung



310-03-BH3072 Depth Range: 0.50 - 0.79 m



310-03-BH3072 Depth Range: 6.00 - 6.15 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378866.9 m E 6953215.3 m N MGA94 Zone 56

Commenced: 15/11/2021
Completed: 16/11/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 431.19 m
Datum: AHD Operator: J. Komung

310-03-BH3072 Depth Range: 7.50 - 7.95 m



310-03-BH3072 Depth Range: 9.00 - 9.32 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 378866.9 m E 6953215.3 m N MGA94 Zone 56										Commenced: 15/11/2021 Completed: 16/11/2021 Logged By: A.Sharma Checked By: D.Hill																			
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ3/WB										Inclination: -90° Bearing:										RL Surface: 431.19 m Datum: AHD Operator: J. Komung									

Drilling Information							Rock Substance							Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
						422.2	9																	
						421.2	10																	
						420.2	11																	
						419.2	12																	
						418.2	13	✓	Continued from non-cored borehole sheet															
						417.2	14	✓	BASALT: fine grained, dark green mottled grey, slightly fractured	FR													JT, 10°, CN, PR, S	
						416.2	15	✓															JT, 0°, Clay VNR, PR, S	
								✓															JT, 0°, CN, PR, S	
								✓															JT, 5°, CN, PR, S	
								✓															JT, 0°, CN, PR, S	
								✓															JT, 15°, CN, PR, S	
								✓															JT, 0°, Clay VNR, PR, RF	
								✓															JT, 5°, CN, PR, S	

Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water ▬ Level (Date) ▽ Inflow ▴ Partial Loss ▲ Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil
Support T - Timbering	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High		

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 15/11/2021												
Project Name: Inland Rail B2G		Completed: 16/11/2021												
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma												
Hole Coordinates: 378866.9 m E 6953215.3 m N MGA94 Zone 56		Checked By: D.Hill												
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 431.19 m											
Barrel Type and Length: HQ3/WB		Bearing:	Datum: AHD Operator: J. Komung											
Drilling Information		Rock Substance		Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
													Particular	General
									BASALT: fine grained, dark green mottled grey, slightly fractured(continued)					

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	15/11/2021
Project Name:	Inland Rail B2G	Completed:	16/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	378866.9 m E 6953215.3 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3/WB	RL Surface:	431.19 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3072 Depth Range: 12.90 - 17.00 m



PointID : 310-03-BH3072 Depth Range: 17.00 - 22.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	15/11/2021
Project Name:	Inland Rail B2G	Completed:	16/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	378866.9 m E 6953215.3 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	431.19 m
Barrel Type and Length:	HQ3/WB	Bearing:		Datum:	AHD
				Operator:	J. Komung



PointID : 310-03-BH3072 Depth Range: 22.00 - 24.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 06/12/2021
Project Name: Inland Rail B2G	Completed: 11/12/2012
Hole Location: N3 - Brookstead to Gowrie	Logged By: J.Cooper
Hole Coordinates: 379249.1 m E 6953840.3 m N MGA94 Zone 56	Checked By: C. Green
Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°
Hole Diameter: 125 mm	RL Surface: 425.08 m
	Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Soil Description						Observations										
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations								
AD/T				D00000 D 0.00-0.20 m					CH	TOPSOIL: silty CLAY, high plasticity, dark brown, with rootlets	St				TOPSOIL								
				S00050 SPT 0.50-0.95 m 2,4,5 N=9 PP 0.95 m =230 kPa U00100 U 1.00-1.45 m PP 1.45 m =500 kPa S00170 SPT 1.70-2.15 m 7,10,8 N=18 PP 2.15 m >600 kPa D00250 D 2.50-3.00 m S00300 SPT 3.00-3.45 m 3,5,8 N=13 PP 3.45 m >600 kPa D00400 D 4.00-4.20 m		424.1	1											ALLUVIAL SOIL					
WB			06/12/21	U00450 U 4.50-4.95 m PP 4.95 m =340 kPa		420.1	5				M (>PL)	H											
				D00580 D 5.80-6.00 m S00600 SPT 6.00-6.45 m 3,6,8 N=14		419.1	6																
				S00750 SPT 7.50-7.95 m 7,7,13		418.1	7																
6.00: Water encountered at 6.00m bgl on 06/12/2021																							
RESIDUAL SOIL																							

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB- Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

MG 4.02 LUB L8 Log MG BOREHOLE EXCL DCP MG 4.02 GPJ <<DrawingFile>> 0703/2022 23:20 10.02.00.04 Dargal Lab and In Situ Tool - DGD [Lib: DGD-T-P 4.01.2 dpt 3.04 2016-07-02 Pjt: DGD-T-P 4.00.6 2017-11-25]

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Support

C - Casing

Penetration

No resistance
ranging to
refusal

Graphic Log/Core Loss

Core recovered (hatching
indicates material)
Core loss

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions

Based on Unified Soil
Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Plastic Limit

< PL
= PL
< PL

Consistency/Relative Density

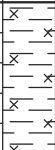
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 06/12/2021
Project Name: Inland Rail B2G	Completed: 11/12/2012
Hole Location: N3 - Brookstead to Gowrie	Logged By: J.Cooper
Hole Coordinates: 379249.1 m E 6953840.3 m N MGA94 Zone 56	Checked By: C. Green

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 425.08 m
Hole Diameter: 125 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB			Water	N=20					CI	Silty CLAY with gravel with sand: medium plasticity, brown mottled grey, fine to medium sub-angular to sub-rounded gravel, fine to coarse granied sand (continued)	M (>PL)	H			RESIDUAL SOIL
				S00900 SPT 9.00-9.40 m 7,13,15/100mm HB N=28/250mm		416.1	9		CL-CI	Sandy gravelly CLAY: low to medium plasiticity, dark borwn, fine to coarse grained sand, fine to medium sub-angular to sub-rounded gravel (basalt)	M (<PL)	D			
				S01050 SPT 10.50-10.90 m 7,24,27/100mm HB N=51/250mm		415.1	10		GP	Sandy clayey GRAVEL: dark grey mottled orange-brown, fine to coarse grained sand, medium plasticity clay	W	VD			
						414.1	11								
						413.1	12			Continued on cored borehole sheet					
						412.1	13								
						411.1	14								
						410.1	15								

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	06/12/2021
Project Name:	Inland Rail B2G	Completed:	11/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379249.1 m E 6953840.3 m N MGA94 Zone 56	Checked By:	C. Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	125 mm	Bearing:	
		RL Surface:	425.08 m
		Datum:	AHD
		Operator:	J. Komung



SPT:2/4/5

N : 9

PP : 230 Kpa



310-03-BH3077 Depth Range: 0.50 - 0.95 m



SPT : 7/10/8

N :18

PP :>600 Kpa



310-03-BH3077 Depth Range: 1.70 - 2.15 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	06/12/2021
Project Name:	Inland Rail B2G	Completed:	11/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379249.1 m E 6953840.3 m N MGA94 Zone 56	Checked By:	C. Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	125 mm	Bearing:	
		RL Surface:	425.08 m
		Datum:	AHD
		Operator:	J. Komung



SPT: 3/5/8

N : 13

PP : >600 Kpa



0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40																			
																																																											
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40																			
Project Name:																				Inland Rail – B2G																				Date:		06/12/2021																	
BH ID:																				310-03-BH3077																				Depth:		3.00 m																	

310-03-BH3077 Depth Range: 3.00 - 3.45 m



SPT: 3/6/8

N : 14

PP :



0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40																			
																																																											
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40																			
Project Name:																				Inland Rail – B2G																				Date:		06/12/2021																	
BH ID:																				310-03-BH3077																				Depth:		6.00 m																	

310-03-BH3077 Depth Range: 6.00 - 6.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379249.1 m E 6953840.3 m N MGA94 Zone 56

Commenced: 06/12/2021
Completed: 11/12/2012
Logged By: J.Cooper
Checked By: C. Green

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 125 mm

Inclination: -90°
Bearing:

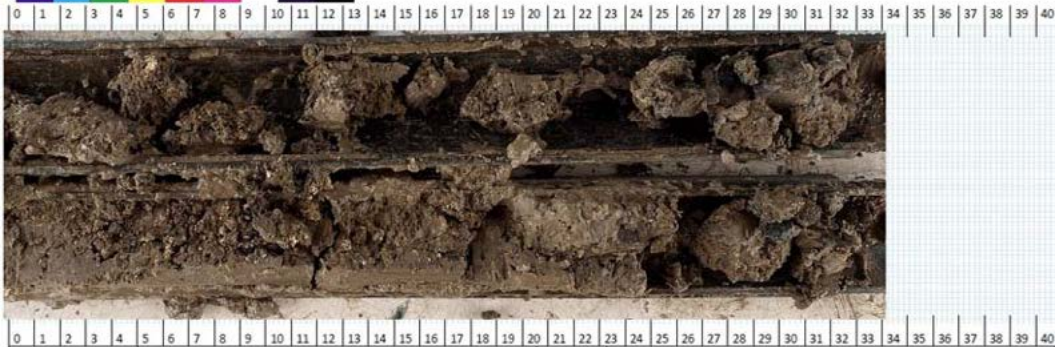
RL Surface: 425.08 m
Datum: AHD Operator: J. Komung



SPT: 7/7/13

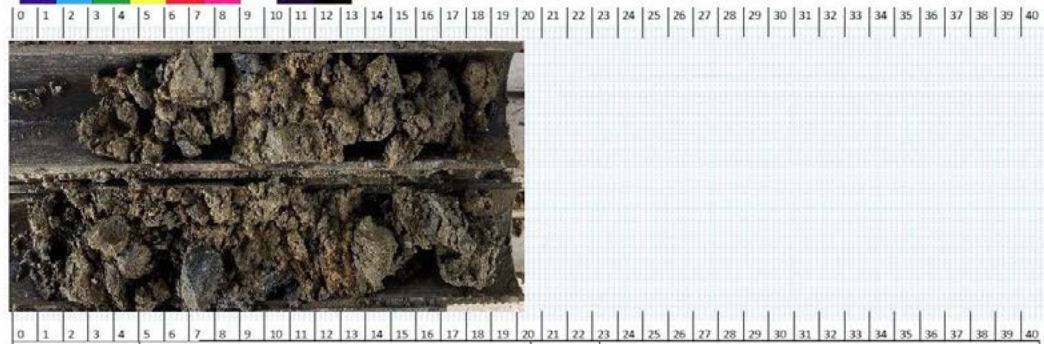
N :20

PP :



Project Name:	Inland Rail – B2G	Date:	06/12/2021
BH ID:	310-03-BH3077	Depth:	7.50 m

310-03-BH3077 Depth Range: 7.50 - 7.95 m



Project Name:	Inland Rail - B2G	Date:	6/12/2021
BH ID:	310-03-BH3077	Depth:	10.50m

310-03-BH3077 Depth Range: 10.50 - 10.90 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 06/12/2021
Project Name: Inland Rail B2G	Completed: 11/12/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: J.Cooper
Hole Coordinates: 379249.1 m E 6953840.3 m N MGA94 Zone 56	Checked By: C. Green

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 425.08 m
Barrel Type and Length: HQ3 3 m	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
													Particular	General		
						416.1	9									
						415.1	10									
						414.1	11									
									Continued from non-cored borehole sheet							
HQ3		GW Observed	100	100	0	413.1	12	✓	BASALT: dark grey, fine crystalline, highly fractured	SW	●		JT, PR, RF, Joint set dips 0-90° Non intact			
			100	100	0			✓					JT, 25°, Clay VNR, UN, RF			
			100	100	0			✓					JT, 25°, Clay VNR, UN, RF			
			100	100	0	412.1	13	✓					JT, 25°, Clay VNR, UN, RF			
			100	100	0			✓					FZ, Clay SN, PR, RF, Fracture set dips 45-65°			
			100	100	0			✓					Non intact			
			100	100	0			✓					JT, 50°, Clay VNR, UN, RF			
			100	100	0			✓					IS, 5°, CA SN, PR, RF			
			100	100	0			✓					FZ, Clay VNR, UN, RF, Fracture set dips 45-60°			
			100	100	0	411.1	14	✓					JT, 20°, IR, RF			
			100	100	0			✓					JT, 15°, Clay VNR, UN, RF			
			100	100	0			✓					JT, 15°, Clay VNR, UN, RF			
			100	100	0			✓					JT, 15°, Clay VNR, UN, RF			
			100	100	0			✓					JT, 45°, Clay VNR, PR, RF			
			100	100	0			✓					Non intact			
			100	100	0			✓					FZ, Clay SN, PR, RF, Fracture set dips 10-40°			
			100	100	0	410.1	15	✓					JT, 50°, Clay VNR, PR, RF			
			100	100	0			✓					JT, 50°, Clay VNR, PR, RF			
			100	100	0			✓					CZ, 20°, Clay SN, UN			
			100	100	0			✓					JT, 65°, Clay VNR, PR, RF			
			100	100	0			✓					HB			
			100	100	0			✓					FZ, 10°, Clay SN, PR, RF, Fracture set dips 5-25°			
			100	100	0			✓					JT, 5°, Fe SN, PR, RF			
			100	100	0			✓					JT, 20°, Fe SN, PR, RF			

Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water ▧ Level (Date) ▢ Inflow ▤ Partial Loss ▴ Complete Loss	Graphic Log/Core Loss ▨ Core recovered (hatching indicates material) ▩ Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
	T - Timbering			

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379249.1 m E 6953840.3 m N MGA94 Zone 56

Commenced: 06/12/2021
Completed: 11/12/2021
Logged By: J.Cooper
Checked By: C. Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 425.08 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
										EL VL L M H VH EH		30 100 300 1000 3000	Particular	General		
HQ3		GW Observed	100		5	408.1	17	✓	BASALT: dark grey, fine crystalline, highly fractured(continued)	SW				FZ, CA SN, UN, RF, Fracture set dips 5-45°		
						✓	JT, 20°, Fe SN, PR, RF									
						✓	VN, CA, 10mm									
						✓	JT, 5°, Fe SN, UN, RF									
			89	12	407.1	18	✓	HB								
					✓	JT, 5°, Fe SN, IR, RF										
					✓	JT, 5°, Fe SN, IR, RF										
					✓	JT, 10°, Fe SN, PR, RF										
			100	47	406.1	19	✓	BASALT: brown-red, brecciated, clast supported up to 50mm within sandy clay matrix	HW			JT, 20°, CA FILLED, IR, RF				
					✓	JT, 40°, Fe SN, PR, RF										
					✓	JT, 20°, Fe Clay SN, CU, RF										
					✓	JT, 10°, CA SN, PR, RF, CA and Fe stained										
			100	0	405.1	20	✓	From 20.06-20.56m: Basalt clasts containing vesicles up to 25mm dia.	HW			JT, 5°, Clay SN, PR, S				
					✓	JT, 65°, Clay SN, PR, S										
					✓	JT, 5°, Clay SN, PR, S										
✓	JT, 40°, Fe SN, PR, S															
71	0	404.1	21	✓	NO CORE: 0.35m				JT, 45°, Clay VNR, PR, S							
		✓	DB													
		✓	JT, 10°, Fe SN, PR, RF													
		✓	CZ, PR, RF													
90	0	403.1	22	✗	BASALT: brown-red, brecciated, clast supported up to 50mm within sandy clay matrix	XW			JT, 60°, Fe SN, PR, RF							
		✓	JT, 5°, Fe SN, PR, RF													
		✓	JT, 5°, Fe SN, PR, RF													
		✓	JT, 5°, Fe SN, PR, RF													
		402.1	23	✗	BASALT: brown-red, brecciated, clast supported up to 50mm within sandy clay matrix	HW			JT, 5°, Fe SN, PR, RF							
		✓	JT, 45°, Fe SN, UN, RF													
		✓	IS, 5°, CA, PR, RF													
		✓	JT, 40°, Fe SN, PR, RF													
								✗	NO CORE: 0.14m				IS, 5°, CA SN, PR, RF, 10mm			
								✗	NO CORE: 0.14m				JT, 5°, Fe SN, PR, RF			
								✗	NO CORE: 0.14m				JT, 5°, Fe SN, PR, RF			
								✗	NO CORE: 0.14m				JT, 5°, Fe SN, PR, RF			
								✗	NO CORE: 0.14m				JT, 20°, Fe SN, PR, S			
								✗	NO CORE: 0.14m				JT, 65°, Fe SN, PR, S			
								✗	NO CORE: 0.14m				JT, 65°, Fe SN, PR, S			
								✗	NO CORE: 0.14m				JT, 45°, Fe SN, PR, S			
								✗	NO CORE: 0.14m				FZ, Fe SN, PR, RF			
								✗	NO CORE: 0.14m				Fracture set dips 10-80°			
								✗	NO CORE: 0.14m				JT, 5°, CA SN, PR, RF			
								✗	NO CORE: 0.14m				JT, 10°, Fe SN, PR, RF			
								✗	NO CORE: 0.14m				FZ, Fe SN, PR, RF			
								✗	NO CORE: 0.14m				Fracture set dips 5-90°			
								✗	NO CORE: 0.14m				JT, 5°, Fe SN, PR, RF			
								✗	NO CORE: 0.14m				FZ, Fe SN, PR, RF			
								✗	NO CORE: 0.14m				Fracture set dips 20-65°			
								✗	NO CORE: 0.14m				JT, 20°, Clay VNR, PR, RF			
								✗	NO CORE: 0.14m				JT, 30°, CN, UN, RF			
								✗	NO CORE: 0.14m				JT, 30°, Fe SN, PR, RF			
								✗	NO CORE: 0.14m				JT, 35°, Fe SN, PR, RF			
								✗	NO CORE: 0.14m				JT, 15°, CN, UN, RF			

Method	Water	Graphic Log/Core Loss	Weathering	Strength
AS - Auger Screwing	✗ Level (Date)	Core recovered (hatching indicates material)	FR - Fresh	(indirect tensile strength)
WB- Washbore	▽ Inflow	Core loss	SW - Slightly Weathered	EL - Extremely Low
HQ3 HQ3 Core Barrel	△ Partial Loss		DW - Distinctly Weathered	VL - Very Low
NQ3 NQ3 Core Barrel	◄ Complete Loss		XW - Extremely Weathered	L - Low
			RS - Residual Soil	M - Medium
				H - High
				VH - Very High
				EH - Extremely High

| Support | | | | |
| T - Timbering | | | | |

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
✗ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379249.1 m E 6953840.3 m N MGA94 Zone 56

Commenced: 06/12/2021
Completed: 11/12/2021
Logged By: J.Cooper
Checked By: C. Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 425.08 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
													Particular	General		
HQ3		GW Observed	22		0	400.1	25		NO CORE: 1.32m	DW				FZ		
									JT, 60°, Clay SN, UN, RF							
									JT, 45°, Clay SN, UN, RF							
									Non intact							
									JT, 20°, Clay VNR, IR, RF							
									JT, 15°, Clay VNR, PR, RF							
									JT, 65°, Fe SN, IR, RF							
									JT, 40°, Fe SN, IR, RF							
									JT, 20°, Fe SN, IR, RF							
									HB							
									JT, 20°, Clay VNR, UN, RF							
		JT, 30°, Clay VNR, UN, RF														
		JT, 30°, Clay VNR, UN, RF														
		JT, 30°, Clay VNR, UN, RF														
		FZ, 10°, Clay SN, UN, RF														
		JT, 15°, Clay SN, UN, RF														
		JT, 40°, Clay SN, UN, RF														
		JT, 40°, Clay SN, PR, RF														
		JT, 40°, Clay SN, PR, RF														
		JT, 45°, Fe SN, PR, RF														
		JT, 65°, Fe SN, PR, RF														
		JT, 50°, Fe SN, PR, RF														
		JT, 65°, Clay SN, PI, RF														
		FZ, Fe SN, UN, RF														
		JT, 65°, Clay SN, PI, RF														
		JT, 65°, Clay SN, PI, RF														
		JT, 20°, Fe SN, PI, RF														
		JT, 30°, Fe SN, PI, RF														
		JT, 30°, Fe SN, PI, RF														
		FZ, Clay SN, PI, RF														
		JT, 20°, Clay SN, PI, S														
		JT, 65°, Clay SN, PI, S														
		JT, 10°, Clay SN, UN, RF														
		FZ, Clay SN, UN, RF														
		JT, 70°, CN, UN, RF														
		JT, 20°, CN, UN, RF														
		JT, 80°, CN, UN, RF														
		FZ, Clay SN, UN, RF														
		Fracture set dips 0-90°														
		JT, 65°, Clay SN, UN, RF														
		FZ, Clay SN, UN, RF														
		Fracture set dips 10-75°														
		JT, 30°, Clay SN, PR, RF														
		FZ														
		JT, 65°, CA, PR, S														
		JT, 45°, CA, PR, S														
		DB														
		JT, 50°, Fe SN, PR, RF														
		JT, 60°, Fe SN, UN, RF														
		JT, 10°, Clay VNR, PR, RF														
		HB														
		JT, 55°, Clay VNR, IR, S														
		JT, 25°, Clay VNR, IR, S														
		JT, 45°, Clay VNR, IR, S														
		JT, Clay SN, UN, RF														
		JT, 20°, CN, IR, RF														
		JT, 40°, CN, PR, RF														
		JT, 20°, CN, PR, S														
		Non intact														
		JT, 60°, CN, PR, RF														
		JT, 50°, CN, UN, RF														
		HB														
		HB														

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 379249.1 m E 6953840.3 m N MGA94 Zone 56										Commenced: 06/12/2021 Completed: 11/12/2021 Logged By: J.Cooper Checked By: C. Green																			
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ3 3 m										Inclination: -90° Bearing: RL Surface: 425.08 m Datum: AHD Operator: J. Komung																			
Drilling Information										Rock Substance										Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling								
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General					
						392.1	33																JT, 50°, CN, UN, RF JT, 20°, CN, UN, RF JT, 60°, CN, UN, RF JT, 20°, CN, UN, RF IS, 20°, Clay SN JT, 20°, CN, UN, RF JT, 60°, CN, UN, RF						
						391.1	34																						
						390.1	35																						
						389.1	36																						
						388.1	37																						
						387.1	38																						
						386.1	39																						

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379249.1 m E 6953840.3 m N MGA94 Zone 56

Commenced: 06/12/2021
Completed: 11/12/2021
Logged By: J.Cooper
Checked By: C. Green

Drill Model and Mounting: Comacchio 305/Track Inclination: -90° RL Surface: 425.08 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: J. Komung



PointID : 310-03-BH3077 Depth Range: 11.70 - 16.00 m



PointID : 310-03-BH3077 Depth Range: 16.00 - 21.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	06/12/2021
Project Name:	Inland Rail B2G	Completed:	11/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379249.1 m E 6953840.3 m N MGA94 Zone 56	Checked By:	C. Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	425.08 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3077 Depth Range: 21.00 - 26.00 m



PointID : 310-03-BH3077 Depth Range: 26.00 - 30.10 m

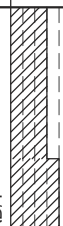
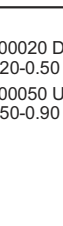
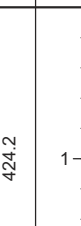
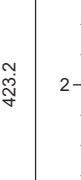
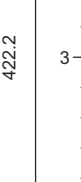
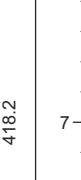
Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379290.3 m E 6953907.3 m N MGA94 Zone 56

Commenced: 10/12/2021
Completed: 11/12/2021
Logged By: J.Cooper
Checked By: C. Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 425.24 m
Hole Diameter: 125 mm Bearing: Datum: AHD Operator: J. Komung

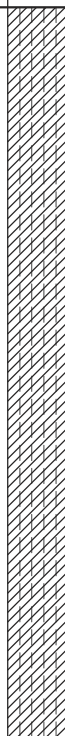
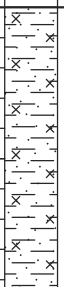
Drilling Information							Soil Description						Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T				D00020 D 0.20-0.50 m U00050 U 0.50-0.90 m		424.2	1		CH	TOPSOIL: silty CLAY, high plasticity, dark brown, with rootlets (<2mm) silty CLAY trace sand, high plasticity, dark brown, fine grained sand	F	H		TOPSOIL ALLUVIAL SOIL
				S00150 SPT 1.50-1.95 m 3.5,7 N=12 D00200 D 2.00-2.50 m D00250 D 2.50-2.70 m		423.2	2		CI-CH	silty CLAY trace gravel and sand, high plasticity, grey mottled brown-grey and white, fine to medium gravel, fine to coarse grained sand	H			0.80: PP Samp =250 kPa
				S00300 SPT 3.00-3.45 m 2.4,7 N=11		422.2	3				St			
				D00400 D 4.00-4.20 m U00450 U 4.50-4.92 m		421.2	4		CH	silty CLAY, high plasticity, grey mottled orange brown	M (>PL)			
				D00550 D 5.50-5.70 m S00600 SPT 6.00-6.45 m 2.2,3 N=5 U00650 U 6.50-7.05 m		419.2	6				VD			6.50: ground water observed on 10/12/21 0900
				S00750 SPT 7.50-7.95 m 2.3,4		418.2	7		CH	sandy silty CLAY trace gravel, medium plasticity, brown mottled dark grey and orange, fine to coarse grained sand, fine to medium sub-rounded to sub-angular gravel				RESIDUAL SOIL
Method AS - Auger Screwing RR - Rock Roller WB - Washbore Penetration  No resistance ranging to refusal Water  Level (Date)  Inflow  Partial Loss  Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Support C - Casing Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Plastic Limit < PL = PL < PL														

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/12/2021
Project Name:	Inland Rail B2G	Completed:	11/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379290.3 m E 6953907.3 m N MGA94 Zone 56	Checked By:	C. Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	425.24 m		
Hole Diameter:	125 mm	Bearing:		Datum:	AHD	Operator:	J. Komung

Drilling Information								Soil Description					Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)			Structure and Additional Observations		
HQ3			GW Observed	N=7		416.2	9		CH	sandy silty CLAY trace gravel, medium plasticity, brown mottled dark grey and orange, fine to coarse grained sand, fine to medium sub-rounded to sub-angular gravel (continued)	M (>PL)		100	200	300	400	500	RESIDUAL SOIL
				S00900 SPT 9.00-9.45 m 3,3,4 N=7 S00938														
				S01050 SPT 10.50-10.95 m 6,10,18 N=28		415.2	10		GP	clayey sandy GRAVEL, dark brown-grey, fine to coarse, sub-angular to angular gravel, low plasticity clay, fine to coarse grained sand	VD						EXTREMELY WEATHERED BEDROCK	
						414.2	11		D									
						413.2	12											
						412.2	13			Continued on cored borehole sheet								
												</						

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
 No resistance ranging to refusal

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/12/2021
Project Name:	Inland Rail B2G	Completed:	11/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379290.3 m E 6953907.3 m N MGA94 Zone 56	Checked By:	C. Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	125 mm	Bearing:	
		RL Surface:	425.24 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3078 Depth Range: 1.50 - 1.95 m



310-03-BH3078 Depth Range: 3.00 - 3.45 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/12/2021
Project Name:	Inland Rail B2G	Completed:	11/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379290.3 m E 6953907.3 m N MGA94 Zone 56	Checked By:	C. Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	125 mm	Bearing:	
		RL Surface:	425.24 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3078 Depth Range: 6.00 - 6.45 m



310-03-BH3078 Depth Range: 7.50 - 7.95 m

Engineering Log - Borehole

Project No.: B21003

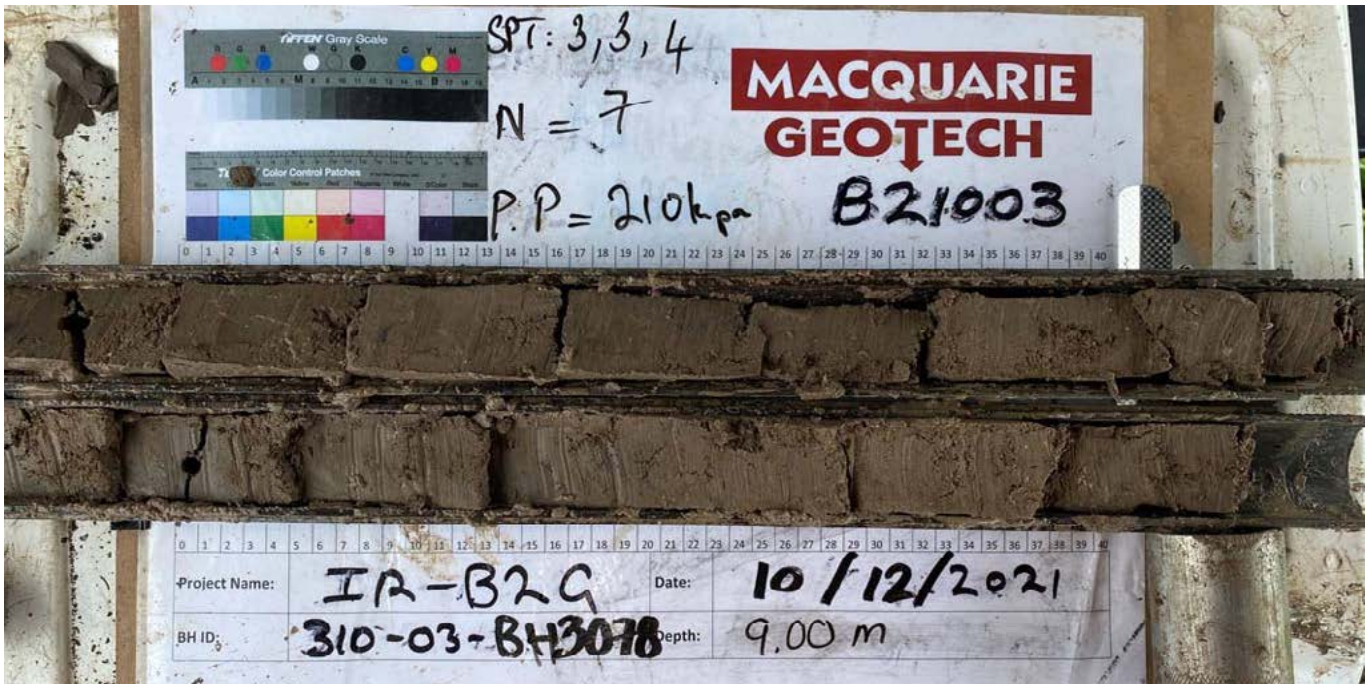
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379290.3 m E 6953907.3 m N MGA94 Zone 56

Commenced: 10/12/2021
Completed: 11/12/2021
Logged By: J.Cooper
Checked By: C. Green

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 125 mm

Inclination: -90°
Bearing:

RL Surface: 425.24 m
Datum: AHD Operator: J. Komung



310-03-BH3078 Depth Range: 9.00 - 9.45 m



310-03-BH3078 Depth Range: 10.50 - 10.95 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 379290.3 m E 6953907.3 m N MGA94 Zone 56										Commenced: 10/12/2021 Completed: 11/12/2021 Logged By: J.Cooper Checked By: C. Green									
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ 3 m										Inclination: -90° Bearing: RL Surface: 425.24 m Datum: AHD Operator: J. Komung									

Drilling Information							Rock Substance							Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
						416.2	9																	
						415.2	10																	
						414.2	11																	
						413.2	12																	
						412.2	13		Continued from non-cored borehole sheet From 12.85m to 13.37m: NO CORE															
						411.2	14		BASALT: fine crystalline, dark grey, with occasional calcite vein	FR													JT, 10°, CA FILLED, UN, RF JT, 5°, CN, UN, RF JT, 5°, CN, UN, RF JT, 85°, CA FILLED, CU, RF JT, 10°, CA FILLED, PR, RF JT, 10°, CA FILLED, PR, RF JT, 10°, CN, PR, RF	
						410.2	15																JT, 25°, CA FILLED, PR, RF IS, 30°, KT JT, 25°, CN, UN, RF JT, 30°, CN, UN, RF JT, 5°, CN, PR, RF	

Method

AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/12/2021
Project Name:	Inland Rail B2G	Completed:	11/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379290.3 m E 6953907.3 m N MGA94 Zone 56	Checked By:	C. Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	425.24 m		
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD	Operator:	J. Komung

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
										EL VL L M H VH EH		30 100 300 1000 3000	Particular	General
		GW Observed	100		100	408.2	17	✓	BASALT: fine crystalline, dark grey, with occasional calcite vein(continued)	FR	○		JT, 30°, CN, PR, RF	
						407.2	18	✓					JT, 10°, CN, UN, RF	
						406.2	19	✓					JT, 10°, CN, UN, RF	
						405.2	20	✓					JT, 10°, CN, UN, RF JT, 10°, CN, PR, RF JT, 5°, CN, PR, RF	
						404.2	21	✓					JT, 40°, CN, PR, RF JT, 10°, CN, UN, RF JT, 40°, CN, PR, RF JT, 40°, CN, PR, RF JT, 30°, CN, PR, RF	
		80		69		403.2	22		Hole Terminated at 21.58 m Target depth					
						402.2	23							

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 379290.3 m E 6953907.3 m N MGA94 Zone 56										Commenced: 10/12/2021 Completed: 11/12/2021 Logged By: J.Cooper Checked By: C. Green																			
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ 3 m										Inclination: -90° Bearing: RL Surface: 425.24 m Datum: AHD Operator: J. Komung																			
Drilling Information										Rock Substance										Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling								
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General					
						400.2	25																						
						399.2	26																						
						398.2	27																						
						397.2	28																						
						396.2	29																						
						395.2	30																						
						394.2	31																						

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 379290.3 m E 6953907.3 m N MGA94 Zone 56										Commenced: 10/12/2021 Completed: 11/12/2021 Logged By: J.Cooper Checked By: C. Green														
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ 3 m										Inclination: -90° Bearing: RL Surface: 425.24 m Datum: AHD Operator: J. Komung														
Drilling Information							Rock Substance							Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
						392.2	33																	
						391.2	34																	
						390.2	35																	
						389.2	36																	
						388.2	37																	
						387.2	38																	
						386.2	39																	

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 379290.3 m E 6953907.3 m N MGA94 Zone 56										Commenced: 10/12/2021 Completed: 11/12/2021 Logged By: J.Cooper Checked By: C. Green														
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ 3 m										Inclination: -90° Bearing: RL Surface: 425.24 m Datum: AHD Operator: J. Komung														
Drilling Information							Rock Substance							Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
						384.2	41																	
						383.2	42																	
						382.2	43																	
						381.2	44																	
						380.2	45																	
						379.2	46																	
						378.2	47																	

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

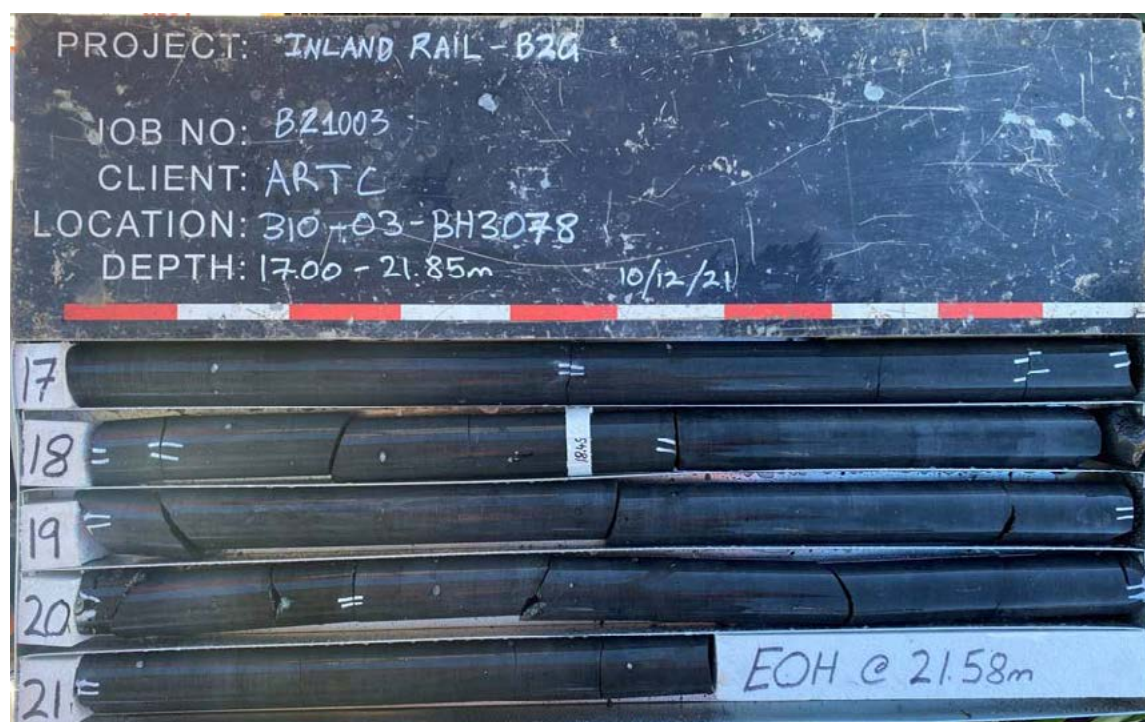
Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/12/2021
Project Name:	Inland Rail B2G	Completed:	11/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379290.3 m E 6953907.3 m N MGA94 Zone 56	Checked By:	C. Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ 3 m	RL Surface:	425.24 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3078 Depth Range: 12.85 - 17.00 m



PointID : 310-03-BH3078 Depth Range: 17.00 - 21.58 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379322.1 m E 6953956.7 m N MGA94 Zone 56

Commenced: 16/11/2021
Completed: 17/11/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 424.74 m
Hole Diameter: 125 mm Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
ADT			Not Observed	D00000 D 0.00-0.50 m		423.7	1		CI	TOPSOIL: CLAY: medium plasticity, dark-brown CLAY: medium plasticity, dark-brown to black							TOPSOIL RESIDUAL SOIL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
				D00100 SPT 0.50-0.95 m 3,5,6 N=11 S00150 D 1.00-1.50 m																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
				S00150 SPT 1.50-1.95 m 3,5,6 N=11 PP 1.50 m >600 kPa D00200 D 2.00-2.50 m																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
									Below 2.50m: colour changes to dark-brown mottled pale-brown	M (<PL)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
				S00250 SPT 3.00-3.33 m 3,4,4/30mm N=8/180mm PP 3.00 m >600 kPa					CI-CH	Silty CLAY: medium to high plasticity, brown to pale-brown mottled white								F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
				S00400 D 4.00-4.50 m					CI	CLAY: medium plasticity, dark-brown to black																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	S00450 SPT 4.50-4.95 m 3,4,5 N=9 PP 4.50 m >600 kPa	CI	Silty CLAY trace sand: medium plasticity, dark-brown mottled white, fine grained sand																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
				S00550 D 5.50-6.00 m					CI	CLAY with gravel: high plasticity, dark-brown mottled black, fine sub-rounded to sub-angular gravel	M (<PL) to M (=PL)	St																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										</

Engineering Log - Borehole

Project No.: B21003

Client: ARTC				Commenced: 16/11/2021			
Project Name: Inland Rail B2G				Completed: 17/11/2021			
Hole Location: N3 - Brookstead to Gowrie				Logged By: A.Sharma			
Hole Coordinates: 379322.1 m E 6953956.7 m N MGA94 Zone 56				Checked By: C.Green			
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°		RL Surface: 424.74 m			
Hole Diameter: 125 mm		Bearing:		Datum: AHD		Operator: J. Komung	

Drilling Information				Soil Description				Observations						
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADT	Not Observed	Not Observed	Not Observed	S00600 SPT 6.00-6.45 m 4,5,5 N=10 PP 6.00 m >600 kPa	417.7	7	x	CI	CLAY with gravel: high plasticity, dark-brown mottled black, fine sub-rounded to sub-angular gravel (continued)	Water table at 6.00m	St	F	M (<PL) to M (=PL)	* RESIDUAL SOIL
				S00700 D 7.00-7.50 m	416.7	8	x	CI-CH	Silty CLAY trace sand: medium to high plasticity, brown to pale-brown mottled black, fine grained sand					
				S00750 SPT 7.50-7.95 m 3,4,4 N=8 PP 7.50 m >600 kPa	415.7	9	x	CI-CH	CLAY: medium to high plasticity, brown					
				S00850	414.7	10	x	CI-CH	CLAY with gravel: high plasticity, dark-brown mottled black, fine sub-rounded to sub-angular gravel, cobbles>200mm					
				S01050 SPT 10.50-10.73 m 23,23/80mm N=23/80mm PP 10.50 m >600 kPa	413.7	11	x	CI-CH						

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss		Classification Symbols and Soil Descriptions	Plastic Limit	
C - Casing	Core recovered (hatching indicates material) Core loss		Based on Unified Soil Classification System	< PL = PL > PL	

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/11/2021
Project Name:	Inland Rail B2G	Completed:	17/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	379322.1 m E 6953956.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	424.74 m		
Hole Diameter:	125 mm	Bearing:		Datum:	AHD	Operator:	J. Komung

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/T																

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379322.1 m E 6953956.7 m N MGA94 Zone 56

Commenced: 16/11/2021
Completed: 17/11/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 125 mm

Inclination: -90°
Bearing:

RL Surface: 424.74 m
Datum: AHD Operator: J. Komung



310-03-BH3079 Depth Range: 0.50 - 0.95 m



310-03-BH3079 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/11/2021
Project Name:	Inland Rail B2G	Completed:	17/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	379322.1 m E 6953956.7 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	125 mm	Bearing:	
		RL Surface:	424.74 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3079 Depth Range: 3.00 - 3.45 m



310-03-BH3079 Depth Range: 4.50 - 4.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/11/2021
Project Name:	Inland Rail B2G	Completed:	17/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	379322.1 m E 6953956.7 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	125 mm	Bearing:	
		RL Surface:	424.74 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3079 Depth Range: 6.00 - 6.45 m



310-03-BH3079 Depth Range: 7.50 - 7.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379322.1 m E 6953956.7 m N MGA94 Zone 56

Commenced: 16/11/2021
Completed: 17/11/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 125 mm

Inclination: -90°
Bearing:

RL Surface: 424.74 m
Datum: AHD Operator: J. Komung



310-03-BH3079 Depth Range: 9.00 - 9.45 m



310-03-BH3079 Depth Range: 10.50 - 10.95 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379322.1 m E 6953956.7 m N MGA94 Zone 56

Commenced: 16/11/2021
Completed: 17/11/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 424.74 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information								Rock Substance					Rock Mass Defects													
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling								
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General		
HQ3									Continued from non-cored borehole sheet																	
			100		0	411.7	13	✓	BASALT: fine grained, dark-green with irregular brown	SW													JT, 10°, Fe SN, PR, S			
							✓	✓																		SH, 0°, Fe SN, DIS, RF
							✓	✓																		JT, 85°, Fe SN, PR, RF,
							✓	✓																		Sub-vertical joint
							✓	✓																		JT, 0°, Fe SN, UN, RF
							✓	✓																		DZ, 5°, Fe SN, DIS, RF
							✓	✓																		JT, 10°, Clay SN, PR, S
							✓	✓																		JT, 15°, Fe SN, PR, s
							✓	✓																		JT, 15°, Fe SN, DIS, RF
							✓	✓																		JT, 90°, Fe SN, PR, RF
							✓	✓															JT, 45°, Fe SN, PR, RF			
							✓	✓															JT, 10°, Fe SN, PR, RF			
							✓	✓															JT, 5°, Fe SN, PR, RF			
							✓	✓															JT, 10°, Fe SN, ST, RF			
							✓	✓															JT, 0°, Fe SN, PR, RF			
							✓	✓															JT, 0°, Fe SN, PR, RF			
							✓	✓															JT, 0°, Fe SN, PR, RF			
							✓	✓															JT, 35°, Fe SN, PR, RF			
							✓	✓															JT, 15°, Fe SN, UN, RF			
							✓	✓															JT, 5°, Fe SN, PR, RF			
							✓	✓															JT, 0°, Fe SN, PR, RF			
							✓	✓															JT, 5°, Clay SN, PR, S			
							✓	✓															JT, 5°, Fe SN, PR, RF			
							✓	✓															JT, 0°, CN, PR, S			
							✓	✓															JT, 10°, Fe SN, PR, S			
							✓	✓															JT, 20°, Fe SN, PR, S			
							✓	✓															JT, 0°, Fe SN, DIS, S			
							✓	✓															JT, 0°, Fe SN, PR, S			
							✓	✓															JT, 90°, CN, PR, S			
							✓	✓																		
							✓	✓																		
							✓	✓																		
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							✓	✓																		

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379322.1 m E 6953956.7 m N MGA94 Zone 56

Commenced: 16/11/2021
Completed: 17/11/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 424.74 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		Particular	General
HQ3	Not Observed	Not Observed	100	87	84	405.7	19	✓	BASALT: fine grained, dark-green with irregular brown (continued)	FR	●	30	JT, 10°, Fe SN, PR, S			
								✓					JT, 10°, Fe SN, PR, S			
								✓					JT, 0°, CN, PR, S			
								✓					JT, 55°, CN, PR, S			
								✓					JT, 5°, Fe SN, PR, RF			
								✓					JT, 0°, CN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe Clay SN, PR, S			
								✓					JT, 0°, CN, PR, S			
								✓					JT, 35°, CN, PR, S			
								✓					JT, 45°, CN, UN, S			
								✓					JT, 25°, CN, CU, S			
								✓					JT, 0°, CN, PR, S			
HQ3	Not Observed	Not Observed	100	82	84	404.7	20	✓			○	300	JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
HQ3	Not Observed	Not Observed	100	82	84	403.7	21	✓			○	300	JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
HQ3	Not Observed	Not Observed	100	82	84	402.7	22	✓			○	300	JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
HQ3	Not Observed	Not Observed	100	82	84	401.7	23	✓			○	300	JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			
								✓					JT, 0°, Fe SN, PR, S			

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Hole Terminated at 24.00 m
Water Target depth

Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/11/2021
Project Name:	Inland Rail B2G	Completed:	17/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	379322.1 m E 6953956.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	424.74 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD
				Operator:	J. Komung



PointID : 310-03-BH3079 Depth Range: 12.45 - 17.00 m

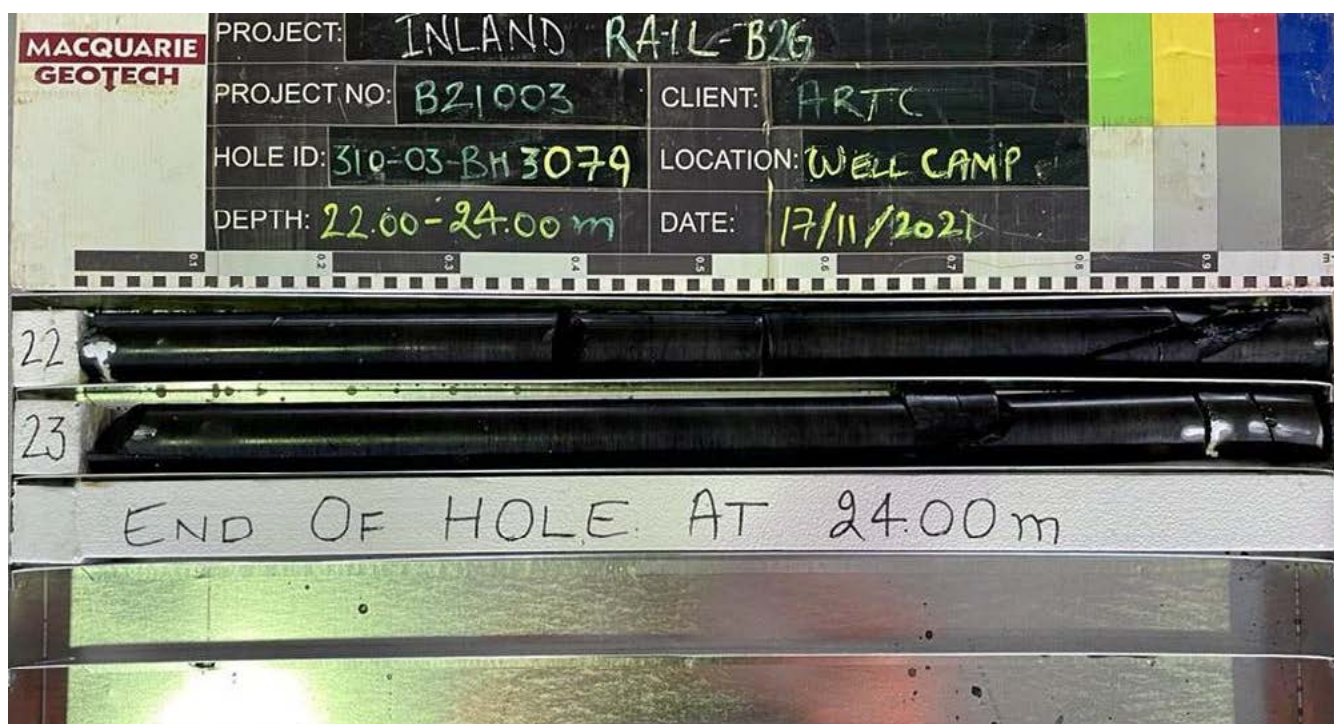


PointID : 310-03-BH3079 Depth Range: 17.00 - 22.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/11/2021
Project Name:	Inland Rail B2G	Completed:	17/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	379322.1 m E 6953956.7 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ 3 m	RL Surface:	424.74 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3079 Depth Range: 22.00 - 24.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379357.2 m E 6954008.9 m N MGA94 Zone 56

Commenced: 07/12/2021
Completed: 08/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 425.99 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
A/D/T WB				D00030 0.30-0.50 m U00050 0.50-0.75 m					CI-CH	TOPSOIL: Clayey SILT: dark brown-black, medium plasticity clay, some rootlets (<1mm) Silty CLAY: medium to high plasticity, dark brown-purple					TOPSOIL
				S00100 SPT 1.00-1.45 m 3,4,5 N=9		425.0	1		CI	Silty CLAY: medium plasticity, brown mottled white and black, calcareous (trace carbonate soil)				x	1.00: PP Samp =210 kPa
				D00200 2.00-2.50 m		424.0	2								
				S00250 SPT 2.50-2.95 m 3,4,6 N=10		423.0	3				M (=PL)	St to VSt		x	2.50: PP Samp =290 kPa
				D00350 3.50-4.00 m		422.0	4								
				S00400 SPT 4.00-4.45 m 3,3,5 N=8		421.0	5		CL-CI	CLAY trace sand: low to medium plasticity, brown-grey, fine grained sand, calcareous				x	4.00: PP Samp =270 kPa
				D00500 5.00-5.50 m		420.0	6					M (>PL)	F to St		x
			S00700 SPT 7.00-7.45 m 1,2,3 N=5		419.0	7		CL	Silty CLAY: low plasticity, orange-brown				x	7.00: PP Samp =110 kPa	
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Penetration No resistance ranging to refusal Water Level (Date) Inflow Partial Loss Complete Loss Support C - Casing Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Moisture Condition D - Dry M - Moist W - Wet Plastic Limit < PL = PL > PL Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense															

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379357.2 m E 6954008.9 m N MGA94 Zone 56

Commenced: 07/12/2021
Completed: 08/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 425.99 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB			Not Observed	S00850 SPT 8.50-8.95 m 12,5,6 N=11		417.0	9		CL	Silty CLAY: low plasticity, orange-brown (continued)		F to St			ALLUVIAL SOIL
									CI	Gravelly CLAY trace sand: medium plasticity, brown and dark grey, fine to coarse sub-rounded to sub-angular gravel, fine grained sand	M (>PL)	St			
				S01000 SPT 10.00-10.45 m 16,9,7 N=16		416.0	10			Highly weathered BASALT recovered as GRAVEL with sand trace clay: fine to coarse, sub-rounded to angular, dark grey mottled pale brown, fine to coarse grained sand, low plasticity clay					HIGHLY WEATHERED BEDROCK
				S01150 SPT 11.50-11.95 m 16,13,7 N=20		415.0	11				W	MD			
						414.0	12			Continued on cored borehole sheet					
						413.0	13								
						412.0	14								
						411.0	15								

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Support
C - Casing

Penetration
 No resistance ranging to refusal

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
 No resistance ranging to refusal

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/12/2021
Project Name:	Inland Rail B2G	Completed:	08/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379357.2 m E 6954008.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	425.99 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3080 Depth Range: 1.00 - 1.45 m

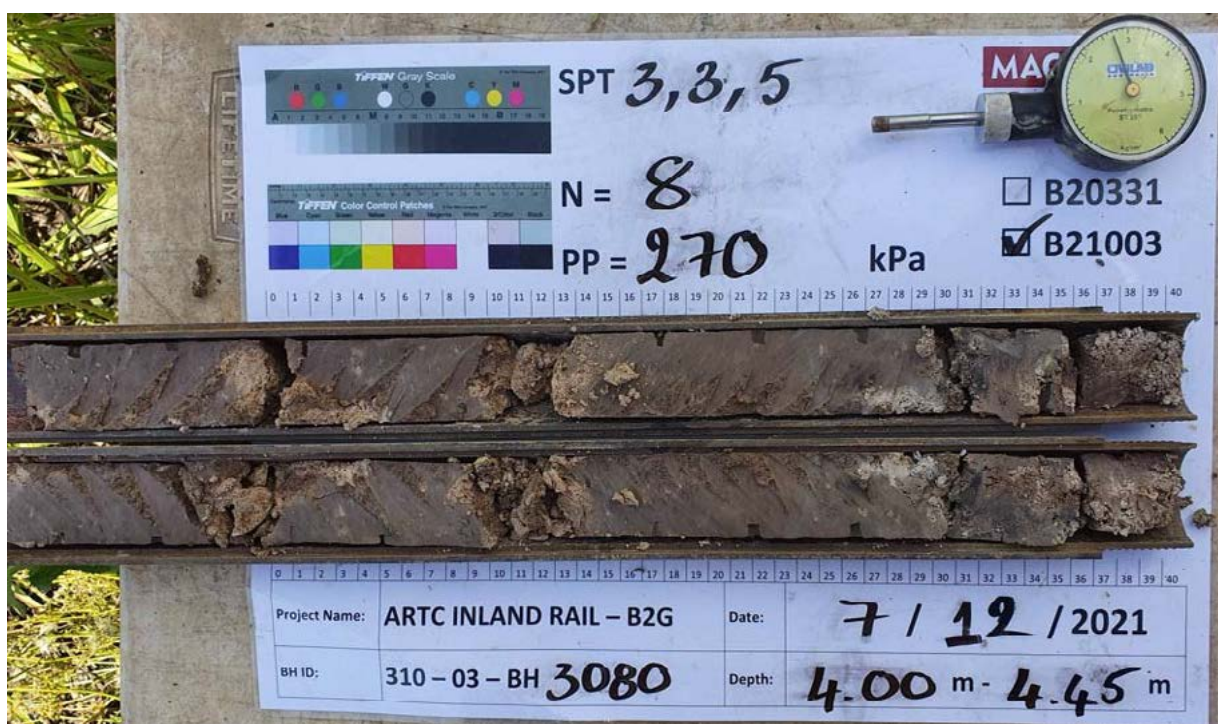


310-03-BH3080 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/12/2021
Project Name:	Inland Rail B2G	Completed:	08/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379357.2 m E 6954008.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	425.99 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3080 Depth Range: 4.00 - 4.45 m



310-03-BH3080 Depth Range: 5.50 - 5.95 m

Engineering Log - Borehole

Project No.: B21003

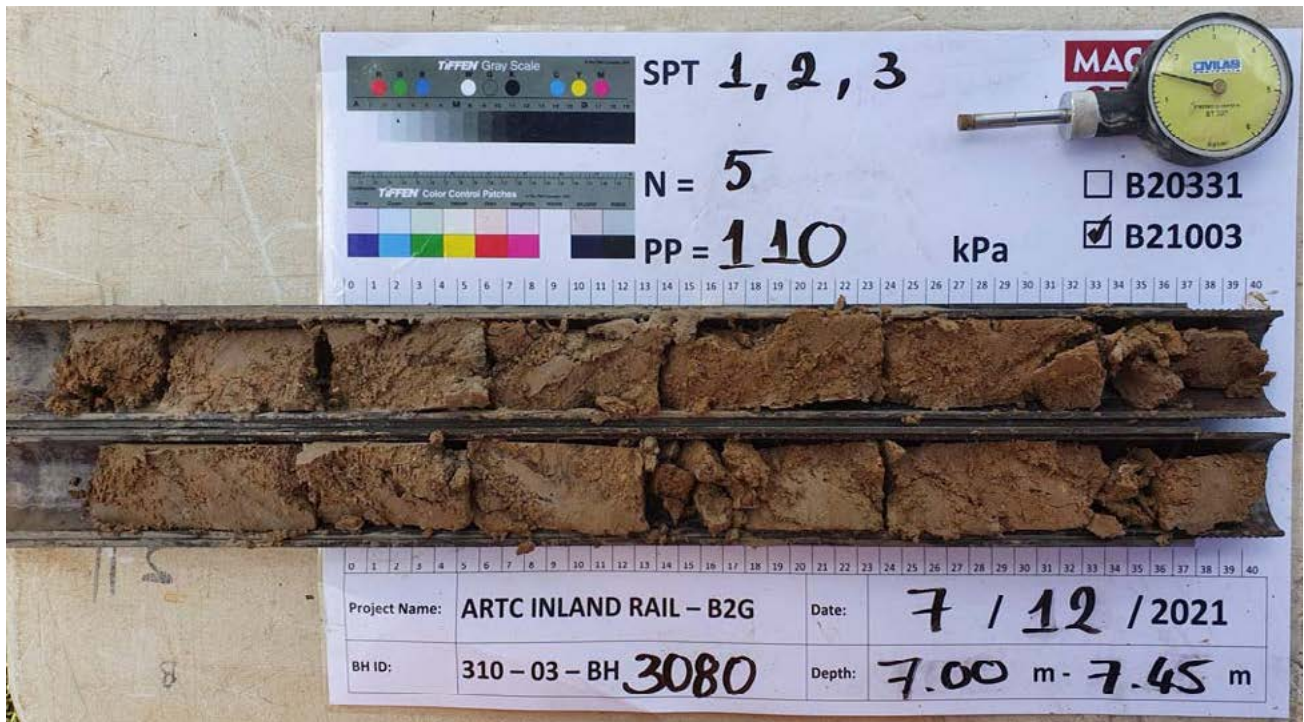
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379357.2 m E 6954008.9 m N MGA94 Zone 56

Commenced: 07/12/2021
Completed: 08/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 425.99 m
Datum: AHD Operator: R. Welsh



310-03-BH3080 Depth Range: 7.00 - 7.45 m

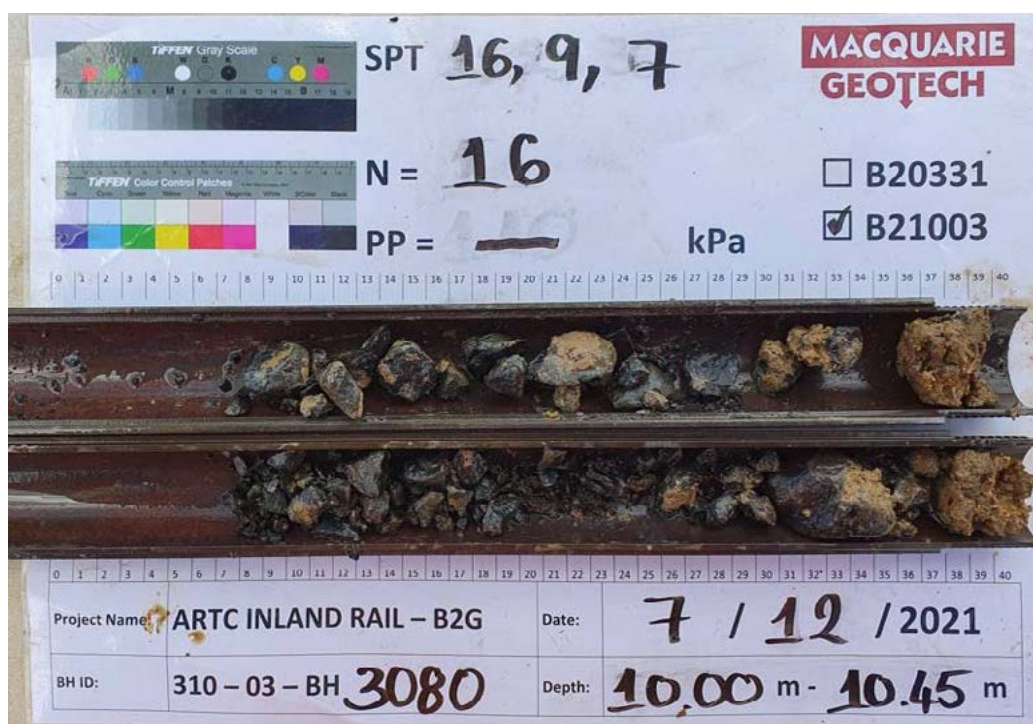


310-03-BH3080 Depth Range: 8.50 - 8.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/12/2021
Project Name:	Inland Rail B2G	Completed:	08/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379357.2 m E 6954008.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	425.99 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3080 Depth Range: 10.00 - 10.45 m



310-03-BH3080 Depth Range: 11.50 - 11.95 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 07/12/2021											
Project Name: Inland Rail B2G		Completed: 08/12/2021											
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Tran											
Hole Coordinates: 379357.2 m E 6954008.9 m N MGA94 Zone 56		Checked By: D.Hill											
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 425.99 m										
Barrel Type and Length: HQ 3 m		Bearing:	Datum: AHD Operator: R. Welsh										
Drilling Information		Rock Substance		Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
							9						
							10						
							11						
							12						
							13						
							14						
							15						
							16						
							17						
							18						
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							63						
							64						
							65						

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379357.2 m E 6954008.9 m N MGA94 Zone 56

Commenced: 07/12/2021
Completed: 08/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 425.99 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance						Rock Mass Defects						
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral			Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL VL L M H VH EH	30 100 300 1000 3000	Particular	General					
HQ		Not Observed	100		95	409.0	17	✓	BASALT: fine crystalline, dark grey-blue, amygdaloidal, chlorite infill, slightly fractured, some healed joints of calcite infill(<i>continued</i>)	FR			JT, 10°, CN, UN, VR	JT, 10°, MS CT, UN, RF JT, 5°, MS VNR, UN, VR JT, 5°, MS VNR, UN, VR JT, 40°, MS VNR, UN, VR JT, 20°, CA VNR, UN, VR JT, 20°, CA VNR, UN, VR JT, 5°, MS VNR, UN, VR JT, 25°, CN, UN, VR JT, 15°, CN, UN, RF JT, 5°, CN, UN, RF JT, 15°, CN, UN, RF JT, 5°, CN, UN, RF JT, 5°, MS VNR, UN, S JT, 5°, MS VNR, UN, S JT, 10°, MS VNR, UN, S JT, 5°, MS VNR, UN, RF JT, 10°, CN, UN, VR JT, 5°, CN, UN, VR					
						408.0	18	✓									JT, 10°, MS VNR, UN, S		
						407.0	19	✓									JT, 10°, MS VNR, UN, RF JT, 5°, MS VNR, UN, S		
						406.0	20	✓									JT, 5°, CN, UN, RF		
						405.0	21	✓									JT, 10°, CN, UN, RF		
						404.0	22	✓									JT, 5°, CN, UN, RF		
						403.0	23	✓									JT, 10°, CN, UN, VR		
								✓									JT, 5°, CN, UN, VR		
								✓									JT, 25°, CN, PR, RF		
								✓									JT, 25°, CN, UN, VR		
								✓											
								✓											

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
☒ Level (Date)
☐ Inflow
☐ Partial Loss
◀ Complete Loss

Graphic Log/Core Loss
[Hatched Box] Core recovered (hatching indicates material)
[Crossed Box] Core loss

Support
T - Timbering

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379357.2 m E 6954008.9 m N MGA94 Zone 56

Commenced: 07/12/2021
Completed: 08/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 425.99 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
										EL VL L M H VH EH		30 100 300 1000 3000	Particular	General
HQ		Not Observed	100		100		25	✓	BASALT: fine crystalline, dark grey-blue, amygdaloidal, chlorite infill, slightly fractured, some healed joints of calcite infill(<i>continued</i>)	FR	●		JT, 10°, CN, UN, VR	
						401.0	26	✓	26.20m: large olivine xenolith (up to 50mm)				JT, 10°, CN, UN, VR	
						400.0	27	✓			●		JT, 5°, MS VNR, UN, S	
						399.0		✓					JT, 30°, CN, UN, RF	
						398.0	28		Hole Terminated at 27.35 m Target depth					
						397.0	29							
						396.0	30							
						395.0	31							

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss
Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/12/2021
Project Name:	Inland Rail B2G	Completed:	08/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379357.2 m E 6954008.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ 3 m	RL Surface:	425.99 m
		Bearing:	
		Datum:	AHD
		Operator:	R. Welsh



PointID : 310-03-BH3080 Depth Range: 12.10 - 16.00 m



PointID : 310-03-BH3080 Depth Range: 16.00 - 21.00 m

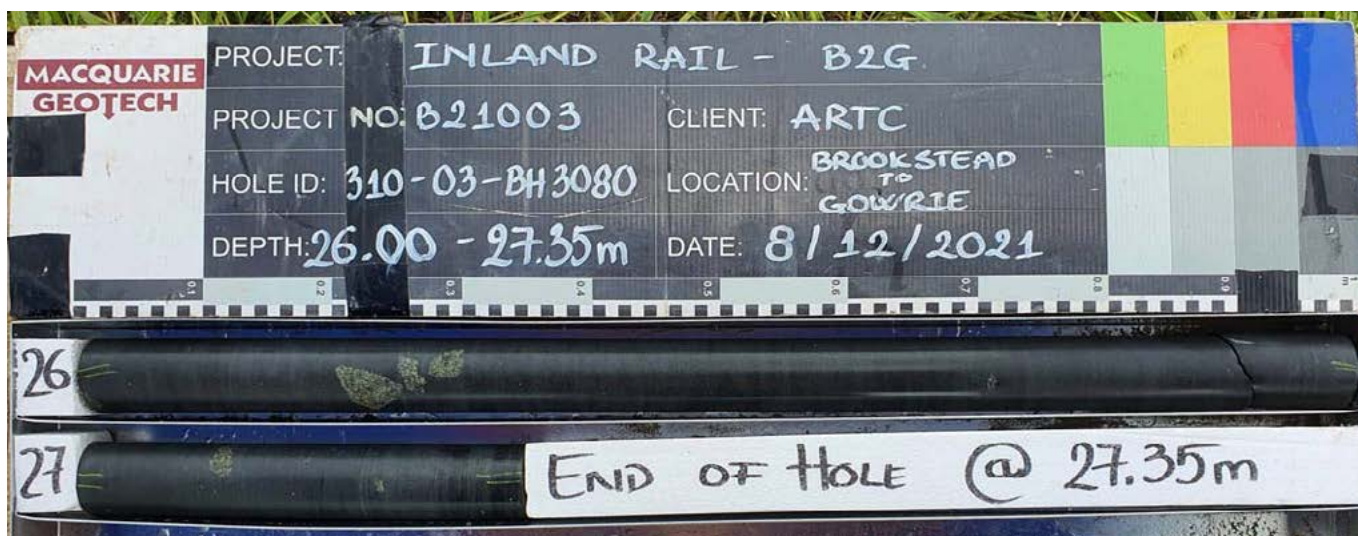
Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/12/2021
Project Name:	Inland Rail B2G	Completed:	08/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379357.2 m E 6954008.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ 3 m	RL Surface:	425.99 m
		Bearing:	
		Datum:	AHD
		Operator:	R. Welsh



PointID : 310-03-BH3080 Depth Range: 21.00 - 26.00 m



PointID : 310-03-BH3080 Depth Range: 26.00 - 27.35 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379795.2 m E 6954463.9 m N MGA94 Zone 56

Commenced: 09/12/2021
Completed: 10/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 428.98 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description						Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
A/D/T				D00020 0.20-0.50 m		428.0	1		CI-CH	TOPSOIL: Silty CLAY, high plasticity, black, trace rootlets (<2mm)	M (=PL) - M (>PL)			x	TOPSOIL		
				U00050 0.50-0.83 m					CLAY with silt trace sand: medium to high plasticity, black, fine grained sand	ALLUVIAL SOIL							
				PP 0.50 m =150 kPa													
				S00100 1.00-1.45 m					CLAY trace silt trace sand: high plasticity, dark brown mottled white, fine grained sand, trace carbonates								
				SPT 4,6,7 N=13 PP 1.00 m =500 kPa													
				D00200 2.00-2.50 m					2.00m: trace fine to medium sub-rounded gravel (calcrete)								
				S00250 2.50-2.95 m													
				D00350 3.50-4.00 m													
				S00400 4.00-4.45 m													
				SPT 4,5,9 N=14 PP 2.50 m =410 kPa													
				D00500 5.00-5.50 m													
				S00550 5.50-5.95 m					Silty CLAY trace gravel: medium plasticity, brown mottled white and dark grey-black, fine to medium sub-rounded to sub-angular gravel								
				SPT 3,5,7 N=12 PP 5.50 m =380 kPa													
				S00700 7.00-7.45 m					7.00m: Gravel content increasing								
WB				Not Observed		427.0	2		CH		M (=PL)	St		x			
				D00350 3.50-4.00 m													
				S00400 4.00-4.45 m													
				SPT 4,5,7 N=12 PP 4.00 m =415 kPa													
				D00500 5.00-5.50 m													
				S00550 5.50-5.95 m													
				SPT 3,5,7 N=12 PP 5.50 m =380 kPa													
				S00700 7.00-7.45 m													
				SPT 4,5,7 N=12 PP 7.00 m =380 kPa													

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC				Commenced: 09/12/2021			
Project Name: Inland Rail B2G				Completed: 10/12/2021			
Hole Location: N3 - Brookstead to Gowrie				Logged By: T. Tran			
Hole Coordinates: 379795.2 m E 6954463.9 m N MGA94 Zone 56				Checked By: D.Hill			
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°		RL Surface: 428.98 m			
Hole Diameter: 115 mm		Bearing:		Datum: AHD		Operator: R. Welsh	

Drilling Information				Soil Description				Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB			Not Observed	S00850 SPT 8.50-8.95 m 9,12,17 N=29 PP 8.50 m =345 kPa		420.0	9		CI	Silty CLAY trace gravel: medium plasticity, brown mottled white and dark grey-black, fine to medium sub-rounded to sub-angular gravel (<i>continued</i>)	M (=PL)	St		100 200 300 400 500	ALLUVIAL SOIL
				S01010 SPT 10.10-10.48 m 7,8,12/80mm N=20/230mm		419.0	10		CL-CI	Sandy CLAY with gravel: low to medium plasticity, brown mottled dark grey and white, fine to coarse grained sand, fine to coarse sub-rounded to sub-angular gravel	M (>PL)	VSt		x	RESIDUAL SOIL
										BASALT: fine crystalline, dark grey mottled orange Continued on cored borehole sheet					HIGHLY WEATHERED BEDROCK
						418.0	11								
						417.0	12								
						416.0	13								
						415.0	14								
						414.0	15								

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Plastic Limit

< PL
= PL
> PL

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379795.2 m E 6954463.9 m N MGA94 Zone 56

Commenced: 09/12/2021
Completed: 10/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 428.98 m
Datum: AHD Operator: R. Welsh



310-03-BH3081 Depth Range: 1.00 - 1.45 m



310-03-BH3081 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379795.2 m E 6954463.9 m N MGA94 Zone 56

Commenced: 09/12/2021
Completed: 10/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 428.98 m
Datum: AHD Operator: R. Welsh



310-03-BH3081 Depth Range: 4.00 - 4.45 m

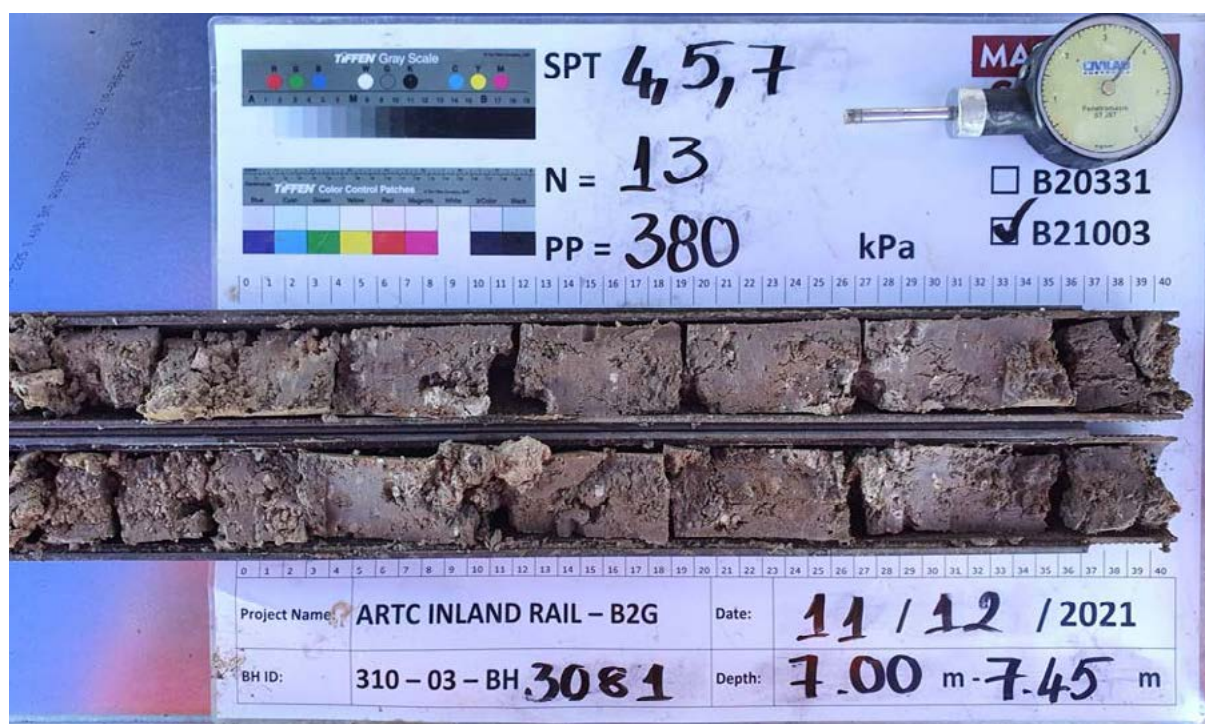


310-03-BH3081 Depth Range: 5.50 - 5.95 m

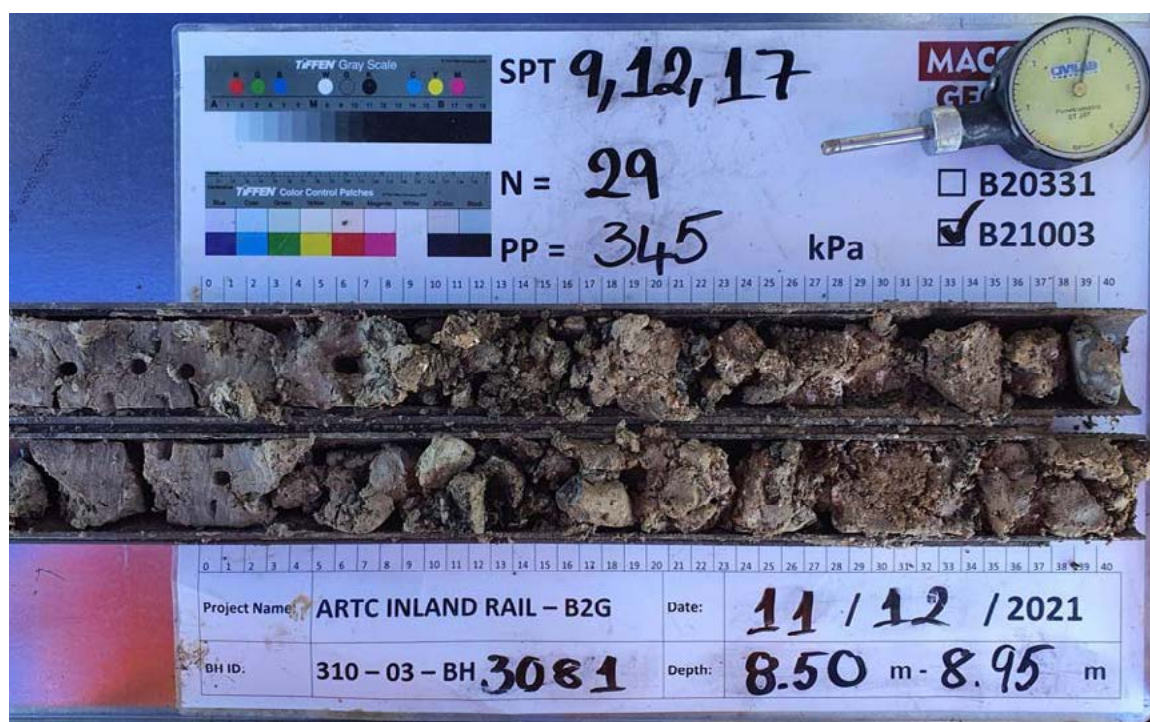
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	09/12/2021
Project Name:	Inland Rail B2G	Completed:	10/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379795.2 m E 6954463.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	428.98 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3081 Depth Range: 7.00 - 7.45 m

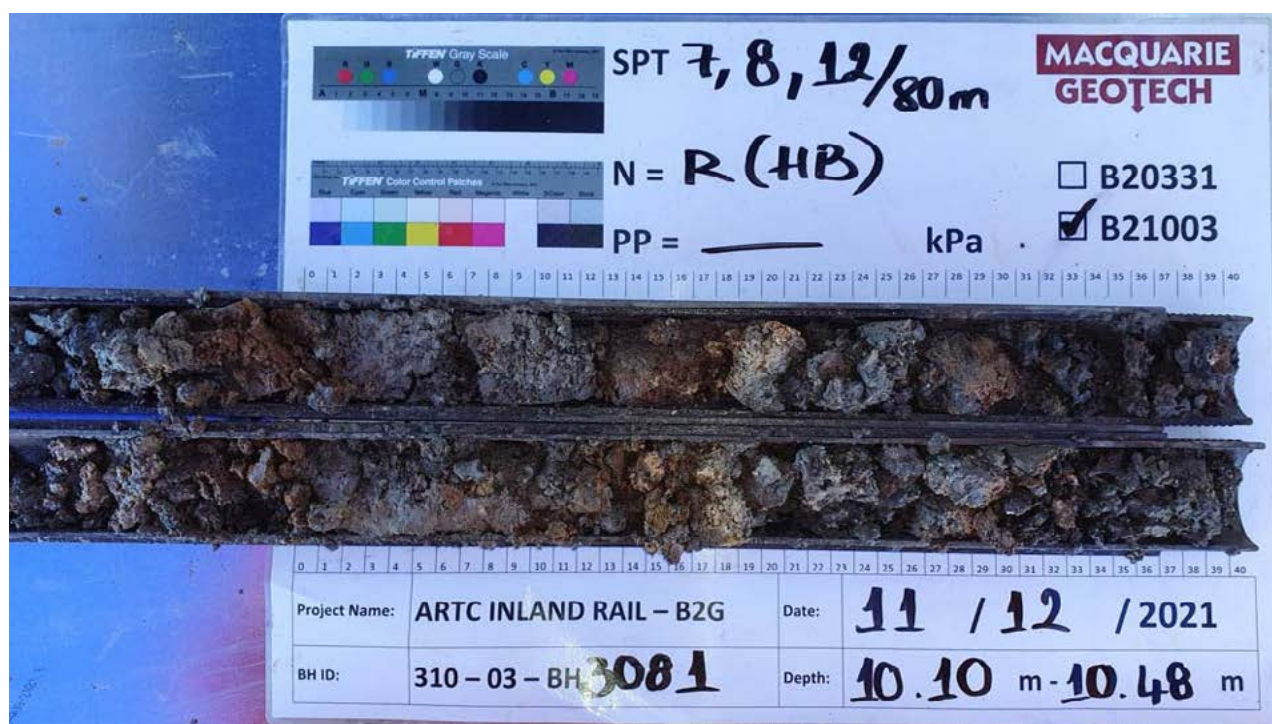


310-03-BH3081 Depth Range: 8.50 - 8.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	09/12/2021
Project Name:	Inland Rail B2G	Completed:	10/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379795.2 m E 6954463.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	428.98 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3081 Depth Range: 10.10 - 10.48 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379795.2 m E 6954463.9 m N MGA94 Zone 56

Commenced: 09/12/2021
Completed: 10/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 428.98 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
													Particular	General		
							420.0									
							419.0									
									Continued from non-cored borehole sheet							
			61		10		418.0	✓	BASALT: fine crystalline, dark grey mottled orange, vesicular, trace amygdales of calcite infill, fragmented with clay seams	HW			50°, CLAY FILLED, IR, VR JT, 10°, FE SN, IR, VR CS, 10°, CLAY FILLED, UN, VR JT, 5°, FE SN, UN, VR CS, 10°, CLAY FILLED, IR, VR JT, 5°, FE SN, UN, VR 10°, CLAY FILLED, IR, VR IS, 70°, CLAY FILLED, UN, VR			
							417.0	✗	NO CORE: 0.66m							
							416.0	✓	BASALT: fine crystalline, dark grey mottled orange, vesicular, trace amygdales of calcite infill, highly fractured with iron stained clay seams	MW			JT, 45°, FE SN, UN, VR JT, 20°, FE SN, UN, VR JT, 20°, FE SN, UN, VR JT, 10°, FE SN, UN, VR JT, 20°, FE SN, UN, VR JT, 25°, CLAY VNR, UN, VR			
			57		0		415.0	✗	NO CORE: 1.05m							
							414.0	✓	BASALT: fine crystalline, dark grey mottled orange, vesicular, trace amygdales, highly fractured with iron stained crushed seams	HW			JT, 70°, FE SN, UN, RF CS, 20°, IR, VR JT, 20°, FE SN, IR, VR JT, 70°, FE CLAY VNR, UN, VR JT, 25°, CN, UN, VR JT, 10°, FE SN, IR, VR			
			38		7			✗	NO CORE: 1.85m							

Method	Water	Graphic Log/Core Loss	Weathering	Strength
AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Level (Date) Inflow Partial Loss Complete Loss	Core recovered (hatching indicates material) Core loss	FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
	Support T - Timbering			

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
✗ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:		ARTC		Commenced:		09/12/2021													
Project Name:		Inland Rail B2G		Completed:		10/12/2021													
Hole Location:		N3 - Brookstead to Gowrie		Logged By:		T. Tran													
Hole Coordinates:		379795.2 m E 6954463.9 m N MGA94 Zone 56		Checked By:		D.Hill													
Drill Model and Mounting:		Comacchio 305/Track		Inclination:		-90°													
Barrel Type and Length:		HQ 3 m		Bearing:															
				RL Surface:		428.98 m													
				Datum:		AHD													
				Operator:		R. Welsh													
Drilling Information				Rock Substance				Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
													Particular	General					
HQ3		Not Observed						X	NO CORE: 1.85m(continued)										
			38		7		412.0	17	BASALT: fine crystalline, dark grey, vesicular, trace amygdales, highly fractured to fragmented	MW			JT, 5°, CN, UN, RF						
							411.0	18	18.00m: 350mm ironstained zone	HW			JT, 15°, FE SN, UN, VR CS, 30°, CLAY FILLED, IR, VR JT, 5°, FE SN, UN, RF						
			69		0		410.0	19	NO CORE: 0.29m										
							410.0	19	BASALT: fine crystalline, dark grey mottled orange, trace amygdales of calcite infill, fragmented	MW			JT, 40°, CN, UN, VR JT, 85°, FE SN, UN, VR						
							409.0	20	NO CORE: 0.12m										
			93		36		409.0	20	BASALT: fine crystalline, dark grey mottled orange brown, trace amygdales and veins of calcite infill, highly fractured with crushed zones	HW			70°, FE CLAY FILLED, IR, VR JT, 50°, FE CLAY CT, UN, VR JT, 45°, FE CLAY VNR, UN, VR JT, 30°, CA VNR, UN, RF JT, 15°, FE SN, CU, RF JT, 10°, FE CLAY CT, UN, VR JT, 20°, FE CLAY CT, UN, VR JT, 30°, FE CLAY CT, UN, VR JT, 55°, CLAY VNR, UN, VR JT, 20°, FE CLAY CT, UN, VR CS, 10°, CLAY FILLED, IR, VR CS, 20°, FE CLAY FILLED, UN, VR JT, 10°, FE SN, UN, VR JT, 5°, FE SN, UN, VR JT, 5°, FE SN, UN, VR JT, 10°, FE SN, UN, VR JT, 5°, CLAY VNR, UN, VR JT, 10°, CLAY VNR, UN, VR JT, 5°, CLAY VNR, UN, VR JT, 20°, CLAY VNR, UN, VR						
							408.0	21	NO CORE: 0.15m										
			94		34		407.0	22	BASALT: fine crystalline, dark grey mottled orange brown, trace ironstained veins, highly fractured	HW									
							407.0	22	BASALT: fine crystalline, dark grey-blue, trace amygdales of calcite/chlorite infill	SW									
							406.0	23	BASALT: fine crystalline, dark grey mottled orange brown, ironstained, highly fractured with crushed zones	HW									
			100		86		406.0	23	BASALT: fine crystalline, dark grey-blue, trace exenoliths up to 30mm in size, fractured	SW									
Method				Water				Graphic Log/Core Loss				Weathering				Strength			
AS - Auger Screwing				Level (Date)				Core recovered (hatching indicates material)				FR - Fresh				(indirect tensile strength)			
WB- Washbore				Inflow				Core loss				SW - Slightly Weathered				EL - Extremely Low			
HQ3 HQ3 Core Barrel				Partial Loss								DW - Distinctly Weathered				VL - Very Low			
NQ3 NQ3 Core Barrel				Complete Loss								XW - Extremely Weathered				L - Low			
				Support								RS - Residual Soil				M - Medium			
				T - Timbering												H - High			
																VH - Very High			
																EH - Extremely High			

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379795.2 m E 6954463.9 m N MGA94 Zone 56

Commenced: 09/12/2021
Completed: 10/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 428.98 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information						Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
HQ3	Not Observed		100	86				✓	BASALT: fine crystalline, dark grey-blue, trace exenoloths up to 30mm in size, fractured(continued)	SW			VR
								✗	NO CORE: 0.43m				JT, 20°, FE SN, UN, VR
								✓					JT, 10°, CA VNR, UN, VR
								✓					JT, 15°, FE CLAY VNR, UN, VR
								✓					JT, 15°, FE CLAY VNR, UN, VR
								✓					JT, 60°, MS CT, UN, VR
								✓					JT, 25°, CLAY CT, UN, VR
								✓					JT, 10°, FE SN, UN, VR
								✓					JT, 20°, FE CLAY VNR, UN, VR
								✓					10°, FE CLAY FILLED, UN, VR
			85	41		404.0	25	✓	BASALT: fine crystalline, dark grey mottled orange brown, trace amygdals and veins of calcite infill, ironstained, highly fractured with crushed zones	HW			JT, 10°, FE CLAY VNR, UN, VR
						403.0	26	✓					JT, 20°, FE SN, UN, VR
								✓					JT, 50°, FE SN, UN, VR
								✓					CS, 30°, FE CLAY FILLED, IR, VR
								✓					JT, 80°, CA CT, UN, VR
								✓					CS, 30°, FE CLAY FILLED, IR, VR
								✓					JT, 10°, FE CLAY VNR, UN, VR
								✓					JT, 20°, CA VNR, UN, RF
								✓					JT, 70°, CA VNR, UN, RF
								✓					JT, 10°, CA VNR, UN, RF
			100	60		402.0	27	✓	BASALT: fine crystalline, dark grey-blue, trace amygdals and calcite veins, slightly fractured to fractured	MW			JT, 80°, CA VNR, UN, RF
								✓					JT, 45°, CN, UN, RF
								✓					JT, 5°, CA VNR, UN, RF
								✓					JT, 65°, MS CT, UN, VR
								✓					JT, 10°, CLAY VNR, UN, VR
								✓					JT, 30°, CLAY VNR, UN, VR
								✓					JT, 55°, CLAY VNR, UN, VR
								✓					JT, 40°, FE SN, UN, VR
								✓					JT, 30°, CLAY VNR, UN, VR
								✓					CS, 30°, FE CLAY FILLED, UN, VR
						401.0	28	✓		SW			JT, 30°, CLAY VNR, UN, VR
								✓					JT, 15°, FE SN, UN, VR
								✓					CS, 25°, FE CLAY FILLED, IR, VR
								✓					JT, 50°, CN, UN, RF
								✓					JT, 10°, CN, UN, RF
								✓					JT, 5°, CA VNR, UN, VR
								✓					JT, 20°, CN, UN, VR
								✓					JT, 10°, CN, UN, VR
								✓					JT, 25°, CA CT, UN, VR
								✓					JT, 15°, CN, UN, VR
						400.0	29	✓	BASALT: highly altered, dark grey-blue, highly fractured (possibly heat altered mudstone)	HW			JT, 70°, CN, UN, S
								✓					JT, 85°, CN, UN, S
								✓					JT, 45°, CN, UN, S
								✓					JT, 50°, CN, UN, S
								✓					JT, 70°, CN, UN, S
								✓					CN, S
								✓					JT, 20°, CN, UN, S
								✓					JT, 20°, CN, UN, S
								✓					
								✓					
						399.0	30	✓	Hole Terminated at 30.00 m Target depth	M			
								✓					
								✓					
								✓					
								✓					
								✓					
								✓					
								✓					
								✓					
								✓					
						398.0	31	✓					
								✓					
								✓					
								✓					
								✓					
								✓					
								✓					
								✓					
								✓					
								✓					

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

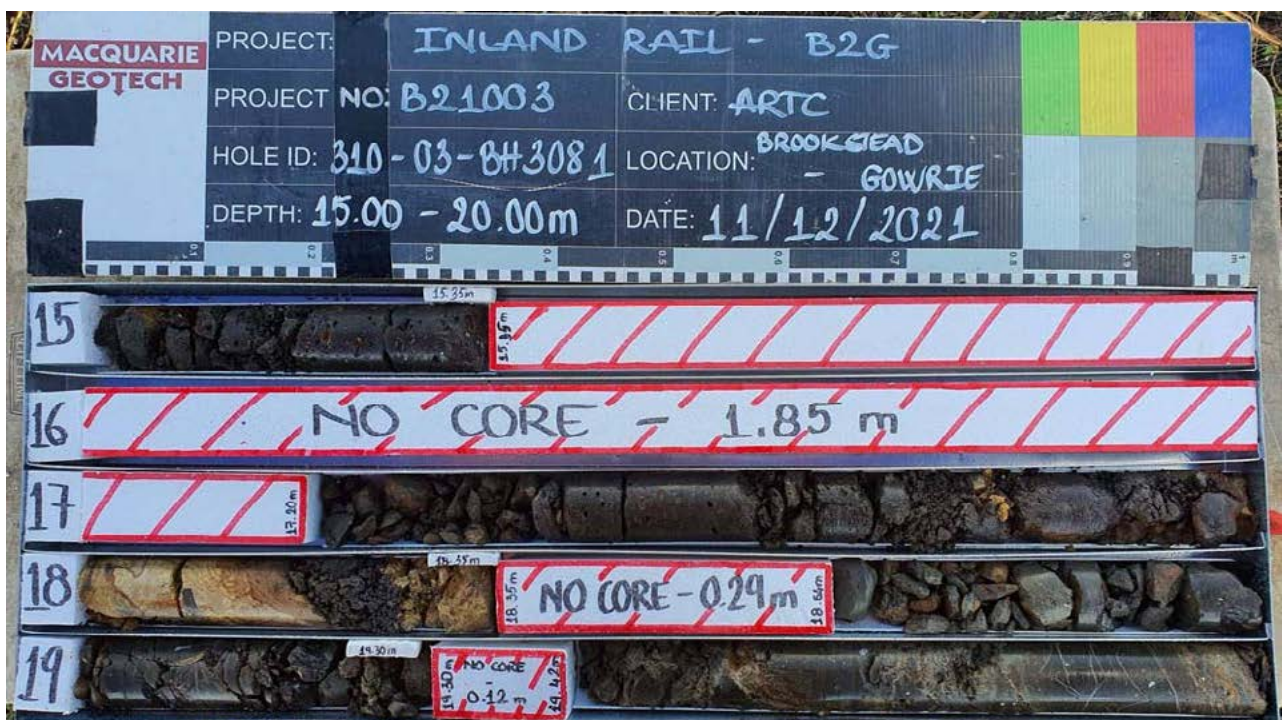
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379795.2 m E 6954463.9 m N MGA94 Zone 56

Commenced: 09/12/2021
Completed: 10/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclusion: -90° RL Surface: 428.98 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh



PointID : 310-03-BH3081 Depth Range: 10.10 - 15.00 m



PointID : 310-03-BH3081 Depth Range: 15.00 - 20.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	09/12/2021
Project Name:	Inland Rail B2G	Completed:	10/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379795.2 m E 6954463.9 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	428.98 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: R. Welsh



PointID : 310-03-BH3081 Depth Range: 20.00 - 25.00 m



PointID : 310-03-BH3081 Depth Range: 25.00 - 30.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379838.3 m E 6954490.9 m N MGA94 Zone 56

Commenced: 10/11/2021
Completed: 13/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 430.02 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/T		Not Observed	Not Observed	D00030 0.30-0.50 m 0.50 m U00050 0.50-0.81 m 1.00 m S00100 SPT 1.00-1.45 m 5,7,15 N=22		429.0	1		CI-CH	Sandy Silty CLAY with gravel: medium plasticity, dark brown - purple, fine to coarse grain sand, fine to coarse sub-rounded to angular gravel, trace rootlets (<2mm) CLAY trace sand and gravel: medium to high plasticity, dark brown - black, fine grained sand, fine to medium sub-angular gravel	M (=PL)	VSt			TOPSOIL	
																ALLUVIAL SOIL
																0.50: PP Samp >500 kPa
																1.00: PP Samp =570 kPa
				D00200 2.00-2.50 m 2.50 m U00250 2.50-2.91 m 3.00 m S00300 SPT 3.00-3.45 m 5,8,11 N=19 D00350 3.50-4.00 m 4.00 m S00400 SPT 4.00-4.45 m 4,5,8 N=13		428.0	2		CH	CLAY trace silt: high plasticity, brown, calcereous	M (<PL) - M (=PL)	VSt			2.50: PP Samp >600 kPa	
										3.00: PP Samp =550 kPa						
				D00500 5.00-5.50 m 5.50 m S00550 SPT 5.50-5.95 m 4,6,8 N=14 D00650 6.50-7.00 m 7.00 m S00700 SPT 7.00-7.45 m 4,7,11 N=18		426.0	4			trace gravel, fine, sub-rounded to sub-angular	M (=PL) - M (=PL)	St to VSt			4.00: PP Samp =450 kPa	
				D00500 5.00-5.50 m 5.50 m S00550 SPT 5.50-5.95 m 4,6,8 N=14 D00650 6.50-7.00 m 7.00 m S00700 SPT 7.00-7.45 m 4,7,11 N=18		425.0	5				M (=PL)	VSt			5.50: PP Samp =440 kPa	
				D00500 5.00-5.50 m 5.50 m S00550 SPT 5.50-5.95 m 4,6,8 N=14 D00650 6.50-7.00 m 7.00 m S00700 SPT 7.00-7.45 m 4,7,11 N=18		424.0	6				M (=PL)	VSt			RESIDUAL SOIL =450 kPa	
				D00500 5.00-5.50 m 5.50 m S00550 SPT 5.50-5.95 m 4,6,8 N=14 D00650 6.50-7.00 m 7.00 m S00700 SPT 7.00-7.45 m 4,7,11 N=18		423.0	7		CI	Silty CLAY trace sand and gravel: medium plasticity, pale brown - grey mottled white, fine grained sand, fine to medium sub-angular to angular gravel, calcereous	M (=PL)	VSt			RESIDUAL SOIL =450 kPa	

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	 No resistance ranging to refusal	 Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	 Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

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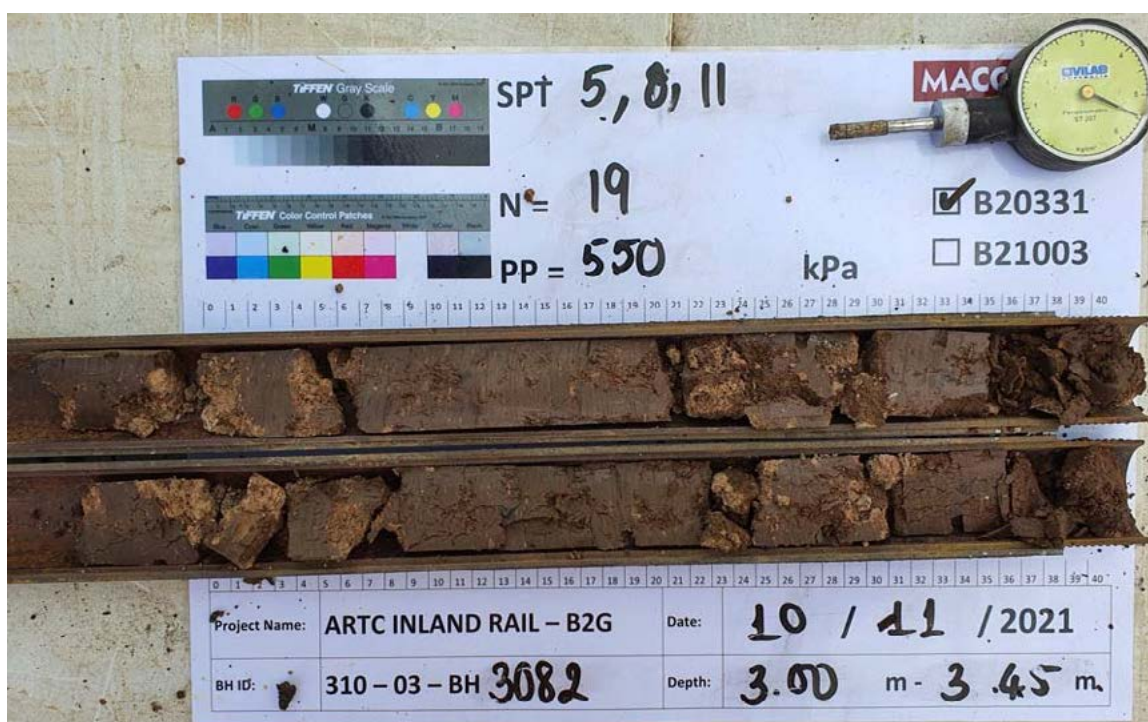
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/11/2021
Project Name:	Inland Rail B2G	Completed:	13/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379838.3 m E 6954490.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	430.02 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3082 Depth Range: 1.00 - 1.45 m



310-03-BH3082 Depth Range: 3.00 - 3.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379838.3 m E 6954490.9 m N MGA94 Zone 56

Commenced: 10/11/2021
Completed: 13/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 430.02 m
Datum: AHD Operator: R. Welsh



310-03-BH3082 Depth Range: 4.00 - 4.45 m

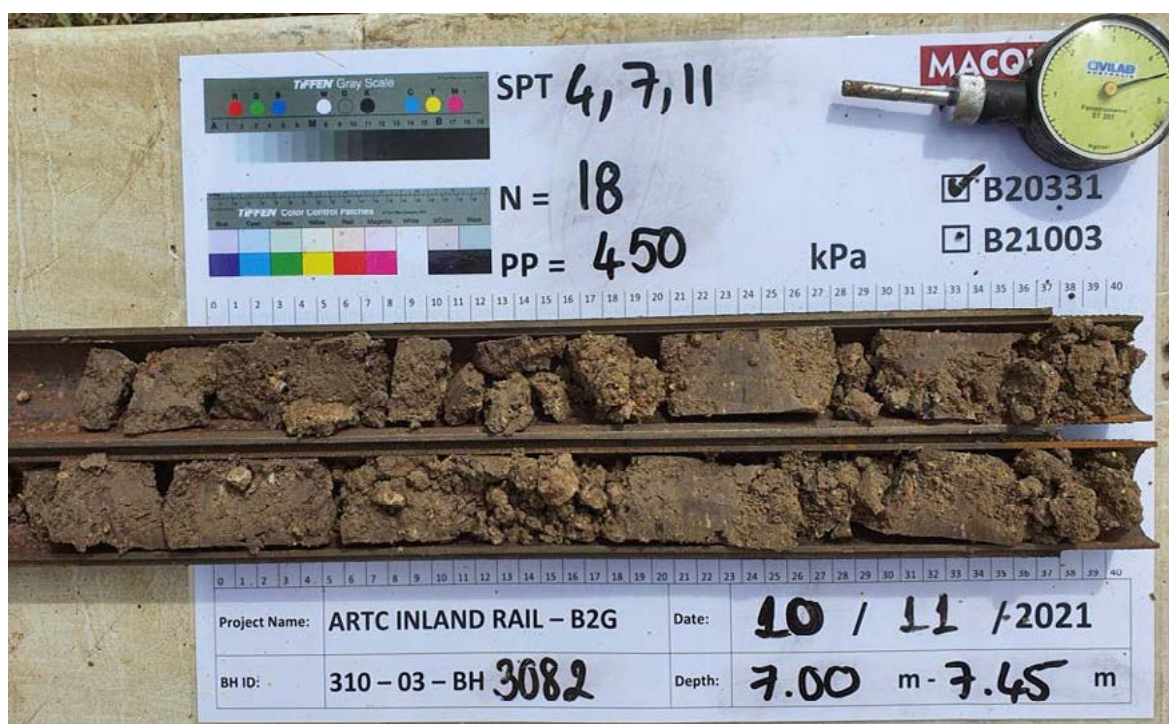


310-03-BH3082 Depth Range: 5.50 - 5.95 m

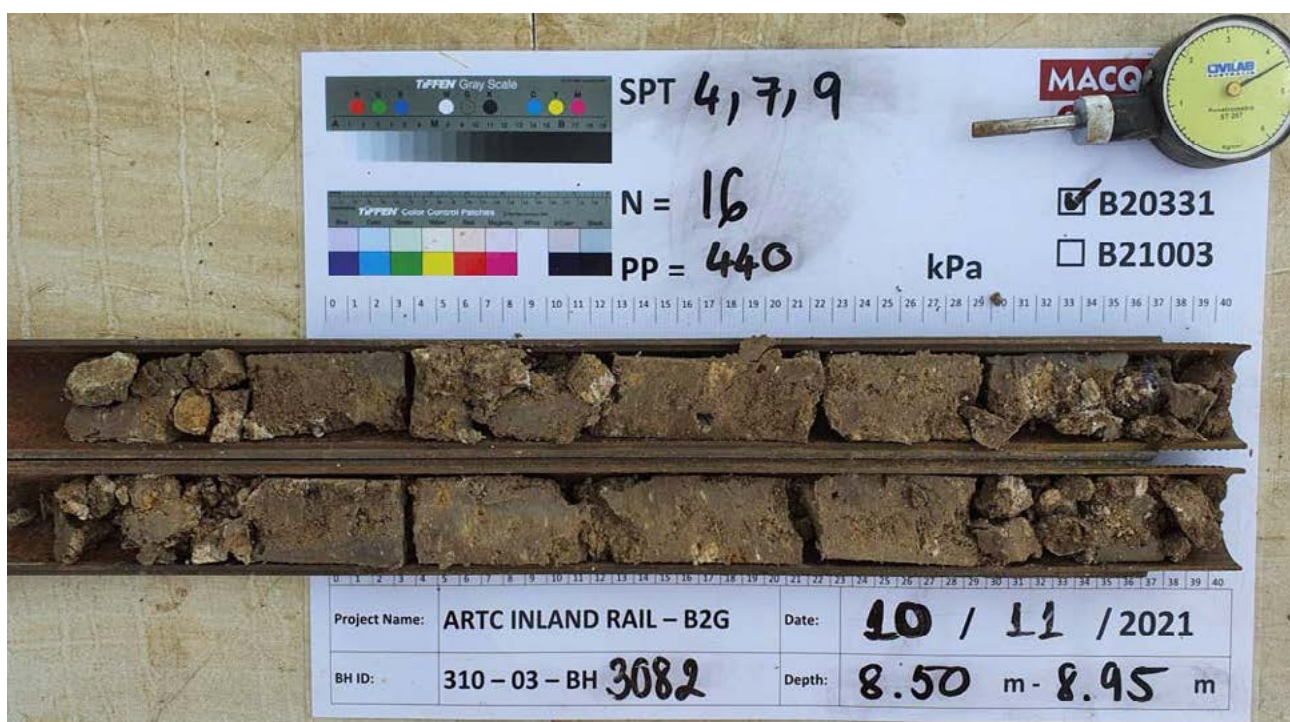
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/11/2021
Project Name:	Inland Rail B2G	Completed:	13/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379838.3 m E 6954490.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	430.02 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3082 Depth Range: 7.00 - 7.45 m



310-03-BH3082 Depth Range: 8.50 - 8.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379838.3 m E 6954490.9 m N MGA94 Zone 56

Commenced: 10/11/2021
Completed: 13/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 430.02 m
Datum: AHD Operator: R. Welsh



310-03-BH3082 Depth Range: 10.00 - 10.05 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/11/2021
Project Name:	Inland Rail B2G	Completed:	13/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379838.3 m E 6954490.9 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	430.02 m	
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD	Operator: R. Welsh

Drilling Information							Rock Substance							Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)			Defect Description thickness, type, inclination, planarity, roughness, coating/infilling					
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General	
						421.0	9																		
						420.0	10		Continued from non-cored borehole sheet NO CORE: 0.73m																
			68		0	419.0	11		Extremely weathered BASALT recovered as sandy CLAY trace gravel: meidum plasicty, brown mottled orange and grey, fine to coarse grained sand, fine to meidum sub-angular gravel BASALT: fine crystalline, dark grey and pale yellow mottled orange, highly fractured to fragmented, ironstained, trace vesicles	XW													JT, 40°, FE SN, IR, RF JT, 5°, CN, UN, RF JT, 20°, FE SN, IR, VR JT, 10°, FE SN, UN, S JT, 45°, FE SN, UN, RF JT, 15°, MS VNR, UN, RF		
						418.0	12			HW														JT, 10°, CN, UN, RF JT, 15°, FE SN, UN, VR JT, 5°, FE SN, UN, VR JT, 15°, FE SN, UN, RF JT, 15°, FE SN, UN, RF	
						417.0	13		NO CORE: 0.46m															CS, 15°, FE CLAY CT, UN, VR CS, 5°, FE CLAY CT, UN, VR	
			73		0	416.0	14		BASALT: fine crystalline, dark grey and pale yellow mottled orange, fragmented, ironstained with calcite infilled jointing	HW													JT, 60°, CN, UN, RF CS, 20°, FE SN, UN, RF CS, 10°, FE CLAY CT, UN, RF JT, 5°, FE SN, UN, RF JT, 10°, FE SN, UN, VR 5°, FE CLAY FILLED, UN, RF 20°, FE CLAY FILLED, UN, VR JT, 5°, FE SN, UN, VR JT, 5°, FE CLAY CT, UN, RF 5°, FE SN, UN, VR 85°, CLAY FILLED, UN, RF JT, 5°, FE SN, UN, RF CS, 35°, FE CLAY FILLED, UN, RF 5°, FE SN, UN, RF 15°, FE CLAY FILLED, UN, VR 30°, CLAY FILLED, UN, RF 30°, FE SN, UN, RF		
			100		72	415.0	15																		

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379838.3 m E 6954490.9 m N MGA94 Zone 56

Commenced: 10/11/2021
Completed: 13/11/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 430.02 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance							Rock Mass Defects																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50)						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
											● - Axial	○ - Diametral	EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
HQ	Not Observed		100		72	413.0	17		BASALT: fine crystalline, dark grey and pale yellow mottled orange, fragmented, ironstained with calcite infilled jointing(continued) Below 14.22m: highly fractured with closely spaced ironstained calcite veins 1-4mm thick Below 14.22m: highly fractured with closely spaced ironstained calcite veins 1-4mm thick(continued)	HW												JT, 85°, FE SN, UN, RF JT, 10°, FE SN, UN, VR JT, 10°, FE SN, UN, VR JT, 35°, FE SN, UN, VR JT, 5°, FE SN, UN, VR JT, 10°, FE SN, UN, VR JT, 5°, FE SN, UN, VR JT, 5°, FE SN, UN, VR JT, 5°, FE SN, UN, VR JT, 20°, FE SN, UN, VR JT, 10°, FE SN, UN, VR VN, 30°, CA FILLED, UN, RF JT, 15°, FE CLAY CT, UN, RF JT, 5°, CLAY CT, UN, RF JT, 45°, FE CLAY CT, UN, VR 45°, FE CLAY FILLED, UN, VR JT, 5°, FE CLAY CT, UN, VR JT, 40°, FE CLAY SN, UN, VR JT, 40°, FE CLAY SN, UN, VR JT, 45°, FE SN, UN, VR 5°, FE CLAY FILLED, UN, VR 20°, FE CLAY FILLED, UN, VR JT, 20°, FE SN, UN, VR JT, 10°, FE SN, UN, VR CS, 20°, CLAY FILLED, UN, VR JT, 40°, FE CLAY CT, UN, VR VN, 25°, MS CT, UN, VR JT, 40°, FE SN, UN, VR JT, 20°, FE SN, UN, VR JT, 40°, FE SN, UN, VR JT, 20°, FE CLAY CT, UN, VR JT, 20°, CA CT, UN, RF CS, 15°, FE CLAY FILLED, UN, VR JT, 40°, FE SN, UN, VR JT, 10°, FE CLAY CT, UN, VR JT, 10°, FE CLAY CT, UN, VR JT, 5°, FE CLAY VNR, UN, VR JT, 5°, FE CLAY CT, UN, VR JT, 5°, FE CLAY CT, UN, VR JT, 10°, FE CLAY CT, UN, VR JT, 10°, FE CLAY VNR, UN, VR JT, FE CLAY CT, UN, VR JT, 20° FE SN, UN, VR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
						60		0	412.0	18		NO CORE: 0.43m	MW																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		</

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
✗ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 10/11/2021												
Project Name: Inland Rail B2G		Completed: 13/11/2021												
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Tran												
Hole Coordinates: 379838.3 m E 6954490.9 m N MGA94 Zone 56		Checked By: D.Hill												
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 430.02 m											
Barrel Type and Length: HQ 3 m		Bearing:	Datum: AHD Operator: R. Welsh											
Drilling Information		Rock Substance		Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
HQ		Not Observed	100		76		405.0	25	BASALT: fine crystalline, dark grey, some amygdales and healed joints calcite infilled veins(continued)	FR			Particular	General
			100		93		404.0	26					JT, 80°, FE SN, UN, VR JT, 20°, FE CLAY VNR, UN, VR JT, 20°, FE SN, UN, VR JT, 10°, CA VNR, UN, VR JT, 5°, CA VNR, UN, VR JT, 20°, FE CLAY VNR, UN, VR JT, 10°, FE CLAY VNR, UN, VR JT, 15°, FE SN, UN, VR JT, 15°, FE SN, UN, VR JT, 10°, FE SN, UN, VR JT, 20°, FE SN, UN, VR JT, 20°, Fe SN, UN, VR JT, 10°, CA CT, UN, RF JT, 15°, Fe Clay CT, UN, RF JT, 20°, Fe Clay CT, UN, RF JT, 5°, Fe Clay CT, UN, RF JT, 80°, Fe Clay CT, UN, RF JT, 5°, Fe Clay VNR, UN, RF JT, 5°, Fe Clay VNR, UN, RF 35°, Fe Clay FILLED, UN, RF JT, 60°, Clay VNR, UN, RF JT, 20°, Fe SN, UN, VR JT, 80°, Fe SN, UN, RF JT, 5°, Fe Clay VNR, UN, VR JT, 5°, Fe Clay CT, UN, RF JT, 10°, Fe Clay VNR, UN, RF JT, 5°, Fe Clay VNR, UN, RF JT, 85°, Fe Clay VNR, UN, VR JT, 20°, Fe Clay VNR, UN, VR JT, 25°, CA VNR, UN, RF 10°, Fe Clay FILLED, UN, RF JT, 80°, Fe SN, UN, RF 5°, Fe Clay FILLED, UN, RF JT, 70°, Fe Clay VNR, UN, RF JT, 15°, Fe Clay CT, UN, VR JT, 60°, Fe Clay VNR, UN, VR JT, 30°, Fe Clay CT, UN, VR 15°, Fe Clay FILLED, UN, VR 20°, Clay FILLED, UN, RF JT, 15°, Fe SN, UN, RF	
			100		96		402.0	28						
							401.0	29						
							400.0	30	Hole Terminated at 30.00 m Target depth					
							399.0	31						
Method		Water		Graphic Log/Core Loss		Weathering		Strength						
AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel		Level (Date) Inflow Partial Loss Complete Loss		Core recovered (hatching indicates material) Core loss		FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil		(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High						

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/11/2021
Project Name:	Inland Rail B2G	Completed:	13/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379838.3 m E 6954490.9 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	430.02 m		
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD	Operator:	R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		Particular	General
						397.0	33								JT, 25°, Fe SN, UN, RF	
															JT, 55°, Clay CT, UN, RF	
															CS, 20°, Fe Clay FILLED, UN, RF	
															JT, 5°, Fe Clay CT, UN, VR	
															JT, 60°, Fe Clay VNR, UN, VR	
															JT, 85°, MS VNR, UN, RF	
															JT, 5°, CA VNR, UN, VR	
															JT, 20°, MS CT, UN, RF	
															JT, 20°, Clay VNR, UN, VR	
															JT, 5°, MS CT, UN, RF	
															JT, 20°, CN, UN, VR	
															VN, 40°, MS FILLED, UN, RF	
															JT, 25°, CN, IR, VR	
															JT, 60°, MS CT, UN, RF	
															JT, 10°, MS VNR, UN, RF	
															JT, 10°, MS CT, UN, RF	
															JT, 15°, MS VNR, UN, RF	
															JT, 20°, CN, UN, VR	
															JT, 45°, MS CT, UN, RF	
															JT, 5°, MS CT, UN, RF	
															JT, 55°, MS CT, UN, RF	
															JT, 40°, MS VNR, UN, S	
															JT, 65°, MS VNR, UN, S	
															VN, 40°, MS FILLED, UN, RF	
															JT, 30°, MS CT, UN, S	
															JT, 50°, MS CT, UN, S	
															JT, 50°, MS VNR, UN, S	
															JT, 10°, CN, UN, VR	
															JT, 15°, MS VNR, UN, RF	
															JT, 15°, MS VNR, UN, RF	
															VN, 80°, MS FILLED, UN, RF	
															JT, 15°, CA VNR, UN, VR	
															JT, 70°, CA CT, UN, VR	
															JT, 5°, CN, UN, VR	
															JT, 10°, CN, UN, VR	
															JT, 25°, CA VNR, UN, VR	
															JT, 45°, CN, UN, RF	
															JT, 40°, CN, UN, RF	
															JT, 65°, CA CT, UN, VR	
															JT, 10°, CN, UN, VR	
															JT, 5°, CN, UN, VR	
															JT, 50°, CN, UN, VR	
															JT, 5°, CN, UN, VR	

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support
T - Timbering

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/11/2021
Project Name:	Inland Rail B2G	Completed:	13/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379838.3 m E 6954490.9 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	430.02 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD
				Operator:	R. Welsh



PointID : 310-03-BH3082 Depth Range: 10.00 - 15.00 m



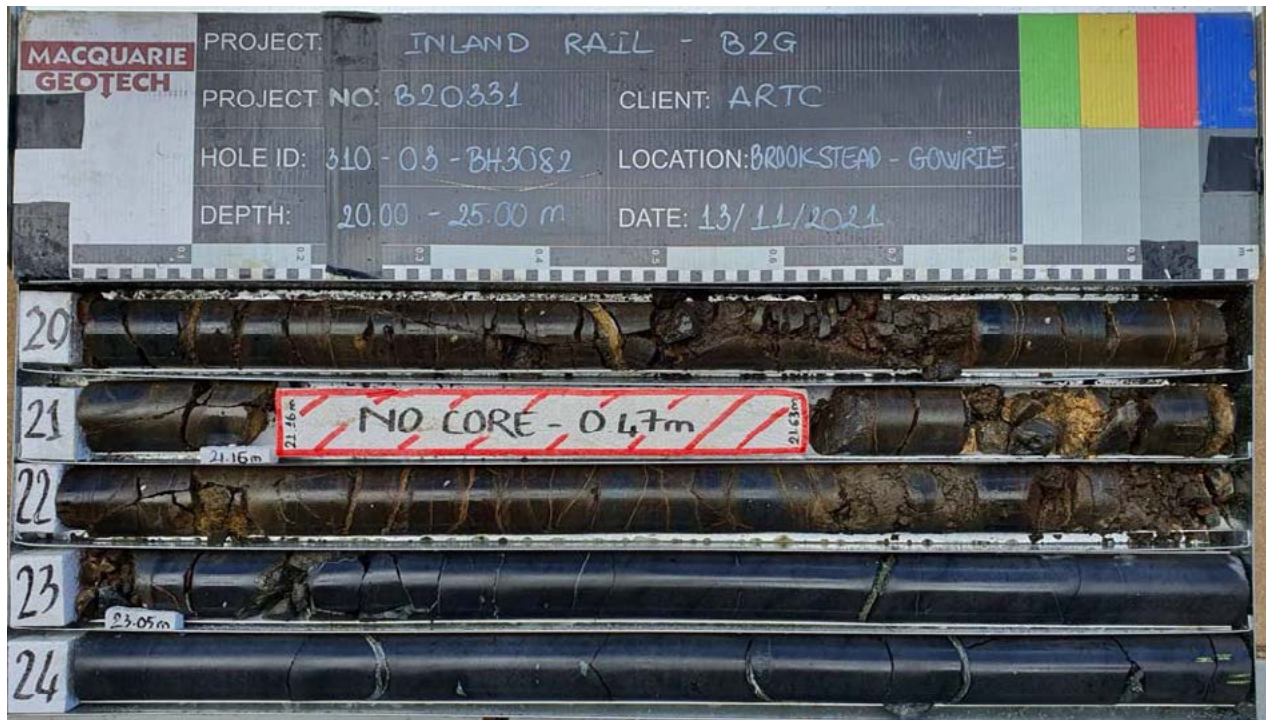
PointID : 310-03-BH3082 Depth Range: 15.00 - 20.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	10/11/2021
Project Name:	Inland Rail B2G	Completed:	13/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	379838.3 m E 6954490.9 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	430.02 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: R. Welsh



PointID : 310-03-BH3082 Depth Range: 20.00 - 25.00 m



PointID : 310-03-BH3082 Depth Range: 25.00 - 30.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 16/10/2021
Project Name: Inland Rail B2G	Completed: 18/10/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 383107.9 m E 6957082.4 m N MGA94 Zone 56	Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 473.91 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T			Not Observed	D 0.30-0.50 m D00030 D 0.30-0.50 m U 0.50-1.00 m U00050 U 0.50-1.00 m S00100 SPT 1.00-1.45 m 8,10,12 N=22		472.9	1		CH	TOPSOIL: Silty CLAY, medium to high plasticity, dark brown and black, trace rootlets (<2mm) Silty CLAY trace sand, high plasticity, dark brown and black, fine to coarse grained sand Below 1.00m trace fine to coarse grained sand, colour changing to dark brown and black mottled purple red	M (<PL) to M (=PL)	VSt			TOPSOIL RESIDUAL SOIL
				471.9		2	CI		Gravelly sandy CLAY, medium plasticity, pale brown mottled grey and pink and orange, fine to coarse grained sand, fine to medium sub-rounded to sub-angular gravel						
				470.9		3									
						469.9	4			Continued on cored borehole sheet					
						468.9	5								
						467.9	6								
						466.9	7								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/10/2021
Project Name:	Inland Rail B2G	Completed:	18/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	383107.9 m E 6957082.4 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	473.91 m
		Datum:	AHD
		Operator:	R. Welsh



310-03-BH3083 Depth Range: 1.00 - 1.45 m



310-03-BH3083 Depth Range: 2.50 - 2.67 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383107.9 m E 6957082.4 m N MGA94 Zone 56

Commenced: 16/10/2021
Completed: 18/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 473.91 m
Datum: AHD Operator: R. Welsh



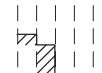
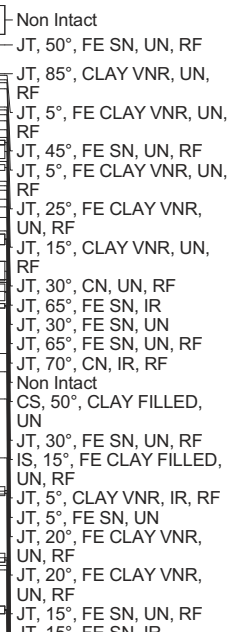
310-03-BH3083 Depth Range: 2.50 - 2.95 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 16/10/2021
Project Name: Inland Rail B2G	Completed: 18/10/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 383107.9 m E 6957082.4 m N MGA94 Zone 56	Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 473.91 m
Barrel Type and Length: HQ3 3 m	Bearing:	Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance						Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
											EL VL L M H VH EH	30 100 300 1000 3000			Particular	General						
									Continued from non-cored borehole sheet													
HQ3	Not Observed		100		0	469.9	4		CLAY trace sand, high plasticity, dark purple brown, fine grained sand Volcanic BRECCIA, Recovered as gravelly CLAY, high plasticity, purple, orange and brown mottled dark grey, white, fine to medium sub-rounded to angular gravel BASALT, fine crystalline, dark grey mottled orange, highly fractured, Fe stained	RS XW			Non Intact JT, 50°, FE SN, UN, RF									
			100	36									JT, 85°, CLAY VNR, UN, RF									
			100										JT, 5°, FE CLAY VNR, UN, RF									
			100	23									JT, 45°, FE SN, UN, RF									
													JT, 5°, FE CLAY VNR, UN, RF									
													JT, 25°, FE CLAY VNR, UN, RF									
													JT, 15°, CLAY VNR, UN, RF									
													JT, 30°, CN, UN, RF									
													JT, 65°, FE SN, IR									
													JT, 30°, FE SN, UN									
																JT, 65°, FE SN, UN, RF						
																JT, 70°, CN, IR, RF						
																Non Intact						
																CS, 50°, CLAY FILLED, UN						
																JT, 30°, FE SN, UN, RF						
																IS, 15°, FE CLAY FILLED, UN, RF						
																JT, 5°, CLAY VNR, IR, RF						
																JT, 5°, FE SN, UN						
																JT, 20°, FE CLAY VNR, UN, RF						
																JT, 20°, FE CLAY VNR, UN, RF						
																JT, 15°, FE SN, UN, RF						
																JT, 15°, FE SN, IR						

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383107.9 m E 6957082.4 m N MGA94 Zone 56

Commenced: 16/10/2021
Completed: 18/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 473.91 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information								Rock Substance					Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling							
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
HQ3		Not Observed	100		77	464.9	9		BASALT, fine crystalline, dark grey, slightly fractured, some healed joints (calcite infilled), trace amygdales infilled with calcite(continued)	FR to SW													JT, 10°, FE CLAY FILLED, UN	
								SM, 10°, CLAY FILLED, UN																
								10°, CLAY FILLED, UN, VR / 50mm aperture																
			100	75	463.9	10		SM, 10°, CLAY FILLED, UN																
							10°, CLAY FILLED, UN, VR / 50mm aperture																	
							JT, 10°, CLAY VNR, UN, RF																	
			100		462.9	11		JT, 70°, CLAY VNR, UN, RF																
							JT, 5°, CLAY VNR, UN, RF																	
							JT, 15°, FE SN, UN, RF																	
			100	83	461.9	12		JT, 15°, FE CLAY VNR, UN																
							JT, 65°, FE CLAY FILLED, UN																	
							FZ, 10°, CLAY VNR, IR																	
			100		460.9	13		10°, CLAY VNR, IR, VR																
							FZ, 10°, CLAY VNR, IR																	
							10°, CLAY VNR, IR, VR																	
100		459.9	14		JT, 15°, CLAY VNR, IR, RF																			
				JT, 45°, CLAY VNR, UN, RF																				
				JT, 15°, FE CLAY FILLED, UN, RF																				
100		458.9	15		JT, 15°, CN, UN, RF																			
				JT, 25°, CLAY VNR, UN, RF																				
				JT, 45°, CN, UN, RF																				
Below 11.74m colour changing to darker grey and green																								
JT, 55°, CLAY VNR, UN, RF																								
JT, 50°, CLAY VNR, UN, RF																								
JT, 70°, CLAY VNR, IR																								
JT, 15°, CLAY VNR, IR, RF																								
SM, 30°, FE CLAY FILLED, UN, RF																								
30°, FE CLAY FILLED, UN, RF																								
SM, 30°, FE CLAY FILLED, UN, RF																								
30°, FE CLAY FILLED, UN, RF																								
JT, 75°, CN, IR, RF																								
JT, 40°, CLAY VNR, IR, RF																								
JT, 45°, CN, UN																								
JT, 85°, MS VNR, UN, RF																								
Non Intact																								
JT, 80°, CLAY VNR, UN, RF																								
JT, 65°, CLAY VNR, UN, RF																								
JT, 50°, CA CT, UN, RF																								
JT, 30°, CLAY VNR, UN																								
JT, 20°, CLAY VNR, UN																								

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/10/2021
Project Name:	Inland Rail B2G	Completed:	18/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	383107.9 m E 6957082.4 m N MGA94 Zone 56	Checked By:	J. Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	473.91 m		
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD	Operator:	R. Welsh

Drilling Information							Rock Substance										Rock Mass Defects							
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
																							RF	

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss
[Hatched Box] Core recovered (hatching indicates material)
[Empty Box] Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support
T - Timbering

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/10/2021
Project Name:	Inland Rail B2G	Completed:	18/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	383107.9 m E 6957082.4 m N MGA94 Zone 56	Checked By:	J. Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	473.91 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: R. Welsh



PointID : 310-03-BH3083 Depth Range: 3.40 - 8.00 m



PointID : 310-03-BH3083 Depth Range: 8.00 - 13.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/10/2021
Project Name:	Inland Rail B2G	Completed:	18/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	383107.9 m E 6957082.4 m N MGA94 Zone 56	Checked By:	J. Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	473.91 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: R. Welsh



PointID : 310-03-BH3083 Depth Range: 13.00 - 17.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC				Commenced: 28/10/2021			
Project Name: Inland Rail B2G				Completed: 28/10/2021			
Hole Location: N3 - Brookstead to Gowrie				Logged By: T. Tran			
Hole Coordinates: 383153.5 m E 6957164.3 m N MGA94 Zone 56				Checked By: D.Hill			

Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°		RL Surface: 473.06 m	
Hole Diameter: 115 mm		Bearing:		Datum: AHD Operator: R. Welsh	

Drilling Information				Soil Description				Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
A/D/T		Not Observed		D00020 0.20-0.50 m		472.1	1			FILL: Silty CLAY trace gravel: medium plasticity, dark brown mottled grey and orange, fine to coarse sub-angular to angular gravel, trace rootlets (<1mm)					FILL
				D00050 0.50-1.00 m						FILL: Gravely sandy CLAY, high plasticity, orange-brown mottled grey, fine to coarse grained sand, fine to coarse sub-rounded to angular gravel					
				S00100 SPT 1.00-1.45 m 2,10,28 N=38						Extremely weathered BASALT recovered as Sandy GRAVEL with clay: fine to coarse sub-rounded to angular, grey and pale brown mottled orange, fine to coarse grained sand, medium plasticity clay					
				D00200 2.00-2.50 m						Extremely weathered BASALT recovered as Gravely SAND trace clay: fine to coarse grained, pale brown mottled grey, fine to coarse sub-rounded to sub-angular gravel, low plasticity clay					
				S00250 SPT 2.50-2.92 m 4,5,12/115mm N=17/265mm		470.1	3								
				D 3.50-4.00 m		469.1	4								
						468.1	5			Continued on cored borehole sheet					
						468.1	6								
						467.1	7								
						466.1									

Method AS - Auger Screwing RR - Rock Roller WB - Washbore Support C - Casing	Penetration No resistance ranging to refusal Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Plastic Limit < PL = PL > PL
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Engineering Log - Borehole

Project No.: B21003

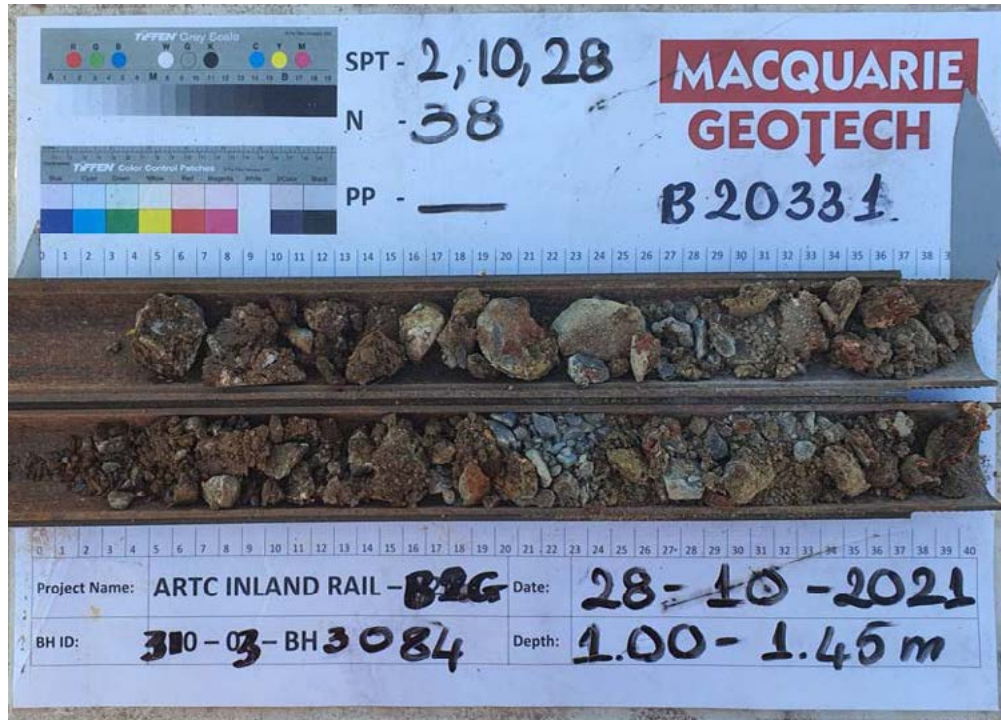
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383153.5 m E 6957164.3 m N MGA94 Zone 56

Commenced: 28/10/2021
Completed: 28/10/2021
Logged By: T. Tran
Checked By: D.Hill

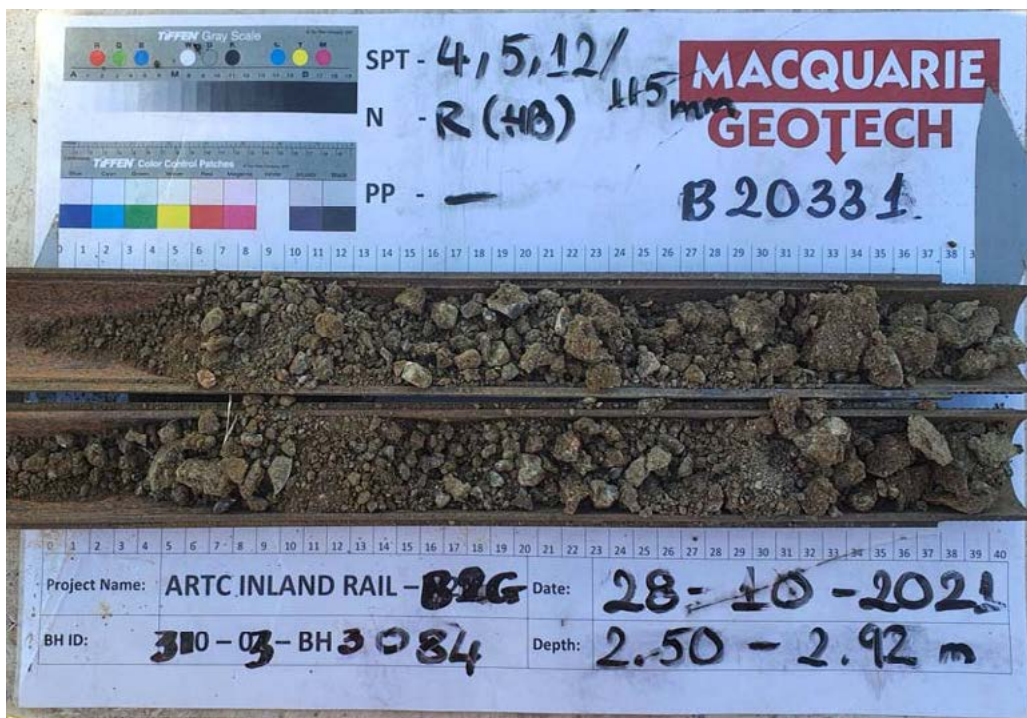
Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 473.06 m
Datum: AHD Operator: R. Welsh



310-03-BH3084 Depth Range: 1.00 - 1.45 m



310-03-BH3084 Depth Range: 2.50 - 2.92 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383153.5 m E 6957164.3 m N MGA94 Zone 56

Commenced: 28/10/2021
Completed: 28/10/2021
Logged By: T. Tran
Checked By: D.Hill

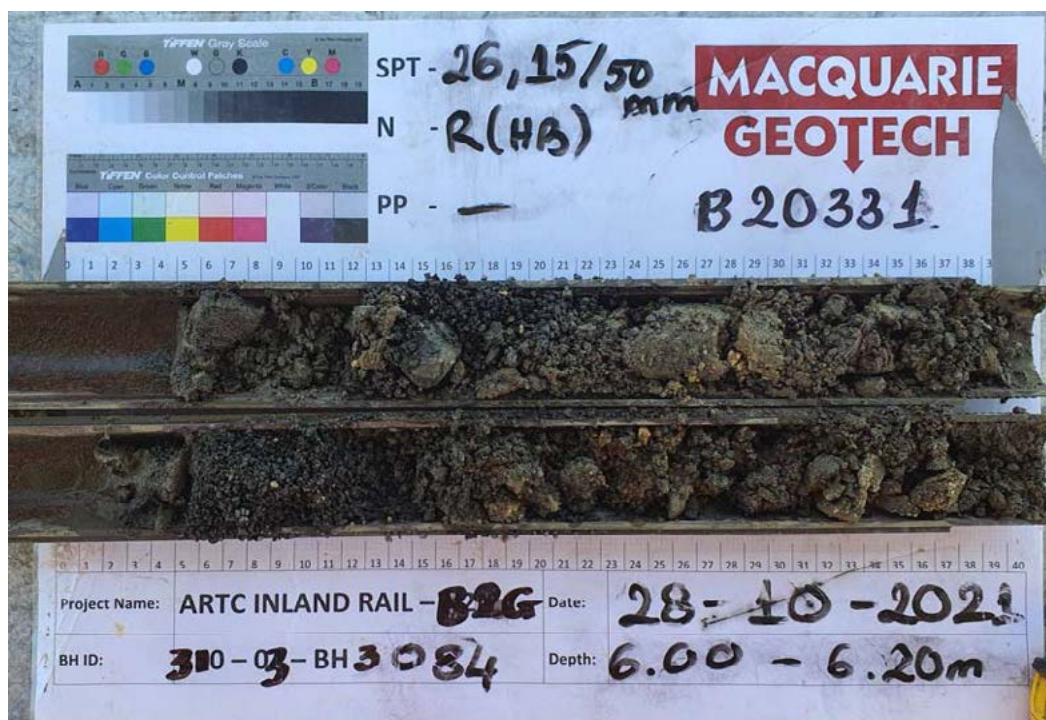
Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 473.06 m
Datum: AHD Operator: R. Welsh



310-03-BH3084 Depth Range: 4.00 - 4.34 m



310-03-BH3084 Depth Range: 6.00 - 6.20 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383153.5 m E 6957164.3 m N MGA94 Zone 56

Commenced: 28/10/2021
Completed: 28/10/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 473.06 m
Datum: AHD Operator: R. Welsh



310-03-BH3084 Depth Range: 7.50 - 7.55 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	28/10/2021
Project Name:	Inland Rail B2G	Completed:	28/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	383153.5 m E 6957164.3 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	473.06 m	
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD	Operator: R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		Particular	General
							1									
							2									
							3									
							4		Continued from non-cored borehole sheet							
							4		Extremely weathered BASALT recovered as Gravelly SAND trace clay: fine to coarse grained, pale brown mottled grey, fine to coarse sub-rounded to sub-angular gravel, low plasticity clay							
							5		NO CORE 0.66m							
							5		BASALT: finely crystalline, dark grey	HW						
							6		NO CORE 0.72m							
							6		BASALT: Recovered as SAND trace gravel, fine to coarse grain, dark grey - black, fine to coarse sub-angular gravel	XW						
							7		NO CORE 0.80m							
							7		BASALT: finely crystalline, dark grey, fragmented	HW						
									NO CORE 1.45m							

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
▽ Level (Date)
▽ Inflow
▽ Partial Loss
▲ Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383153.5 m E 6957164.3 m N MGA94 Zone 56

Commenced: 28/10/2021
Completed: 28/10/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 473.06 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
HQ3		Not Observed	31		18	464.1	9		NO CORE 1.45m(continued)	HW 						

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 28/10/2021	
Project Name: Inland Rail B2G		Completed: 28/10/2021	
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Tran	
Hole Coordinates: 383153.5 m E 6957164.3 m N MGA94 Zone 56		Checked By: D.Hill	
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	
Barrel Type and Length: HQ 3 m		RL Surface: 473.06 m	
		Datum: AHD Operator: R. Welsh	

Drilling Information				Rock Substance				Rock Mass Defects					
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
HQ3		Not Observed	100		88	456.1	17	✓	BASALT, fine crystalline, dark grey, trace calcite amygdales, slightly fractured(continued)	FR	●	30	Particular JT, 5°, CN, PR, S JT, 10°, CN, UN, RF JT, 5°, CN, UN, RF JT, 5°, CN, UN, RF JT, 20°, CN, UN, RF JT, 5°, CN, UN, RF JT, 5°, CN, UN, RF JT, 10°, CN, UN, VR JT, 20°, CN, IR, RF JT, 5°, MS VNR, UN, S JT, 10°, CN, UN, VR JT, 5°, CLAY VNR, UN, RF JT, 10°, CN, UN, RF JT, 85°, CN, UN, VR JT, 5°, CN, UN, S JT, 70°, CN, UN, RF General
						455.1	18	✓					
						454.1	19		Hole Terminated at 18.47 m Target depth				
						453.1	20						
						452.1	21						
						451.1	22						
						450.1	23						

Method
 AS - Auger Screwing
 WB- Washbore
 HQ3 HQ3 Core Barrel
 NQ3 NQ3 Core Barrel

Water
 ▬ Level (Date)
 ▽ Inflow
 ▴ Partial Loss
 ▲ Complete Loss

Support
 T - Timbering

Graphic Log/Core Loss
 [Hatched] Core recovered (hatching indicates material)
 [Blank] Core loss

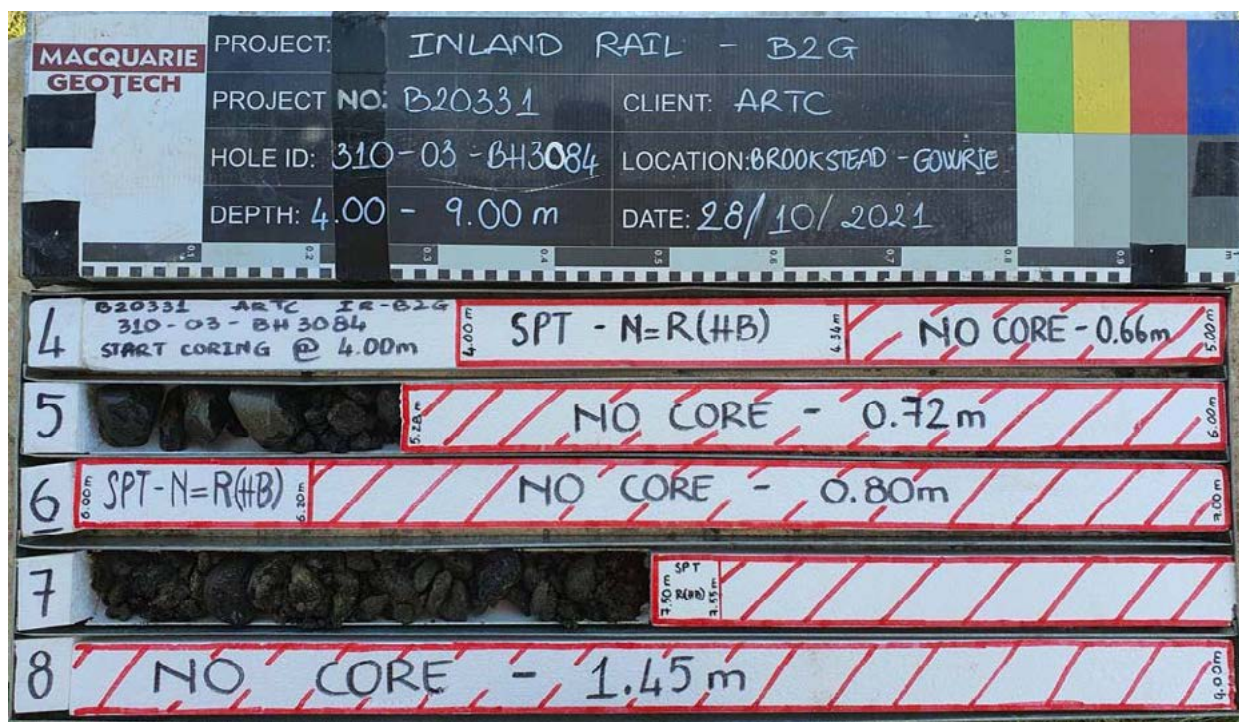
Weathering
 FR - Fresh
 SW - Slightly Weathered
 DW - Distinctly Weathered
 XW - Extremely Weathered
 RS - Residual Soil

Strength
 (indirect tensile strength)
 EL - Extremely Low
 VL - Very Low
 L - Low
 M - Medium
 H - High
 VH - Very High
 EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC				Commenced:	28/10/2021	
Project Name:	Inland Rail B2G				Completed:	28/10/2021	
Hole Location:	N3 - Brookstead to Gowrie				Logged By:	T. Tran	
Hole Coordinates:	383153.5 m E 6957164.3 m N MGA94 Zone 56				Checked By:	D.Hill	
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	473.06 m		
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD	Operator:	R. Welsh



PointID : 310-03-BH3084 Depth Range: 4.00 - 9.00 m



PointID : 310-03-BH3084 Depth Range: 6.00 - 6.20 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC				Commenced:	28/10/2021	
Project Name:	Inland Rail B2G				Completed:	28/10/2021	
Hole Location:	N3 - Brookstead to Gowrie				Logged By:	T. Tran	
Hole Coordinates:	383153.5 m E 6957164.3 m N MGA94 Zone 56				Checked By:	D.Hill	
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	473.06 m		
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD	Operator:	R. Welsh



PointID : 310-03-BH3084 Depth Range: 7.50 - 7.55 m



PointID : 310-03-BH3084 Depth Range: 9.00 - 14.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	28/10/2021
Project Name:	Inland Rail B2G	Completed:	28/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	383153.5 m E 6957164.3 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	473.06 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: R. Welsh



PointID : 310-03-BH3084 Depth Range: 14.00 - 18.47 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 06/12/2021
Project Name: Inland Rail B2G	Completed: 06/12/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 383983.2 m E 6958246.2 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 450.72 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
Hand auger				D 0.20-0.30 m		449.7			CI	TOPSOIL: CLAY with silt: medium to high plasticity, dark brown - black, trace rootlets (<1mm)	M (=PL)	F			TOPSOIL	
				D 0.50-0.80 m					CH	Silty CLAY: meidum plasticity, dark purple-brown-black					ALLUVIAL SOIL	
A/D		Not Observed		SPT 1.00-1.45 m 9,17,18 N=35		448.7	1		CH	CLAY with silt: high plasticity, dark brown mottled purple and orange	M (=PL) - M (>PL)				EXTREMELY WEATHERED MATERIAL	
				D 2.00-2.50 m						Extremely weathered BASALT recovered as Gravelly SAND trace clay: fine to coarse grained, pale brown and dark grey and orange-red and white, fine to medium sub-angular to angular gravel, low plasticity clay, trace carbonate soil						
						447.7	3			Continued on cored borehole sheet						
						446.7	4									
						445.7	5									
						444.7	6									
						443.7	7									

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss		Classification Symbols and Soil Descriptions	Plastic Limit	
C - Casing	Core recovered (hatching indicates material) Core loss		Based on Unified Soil Classification System	< PL = PL < PL	

Engineering Log - Borehole

Project No.: B21003

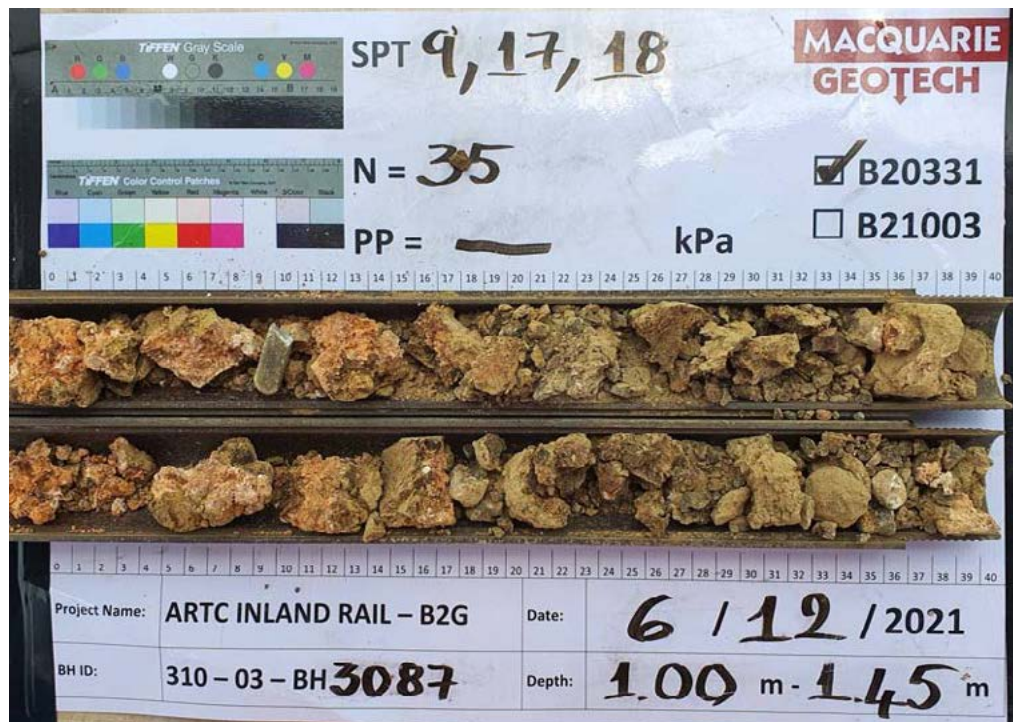
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383983.2 m E 6958246.2 m N MGA94 Zone 56

Commenced: 06/12/2021
Completed: 06/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 450.72 m
Datum: AHD Operator: R. Welsh



310-03-BH3087 Depth Range: 1.00 - 1.45 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383983.2 m E 6958246.2 m N MGA94 Zone 56

Commenced: 06/12/2021
Completed: 06/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 450.72 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information								Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling				
										EL VL L M H VH EH		30 100 300 1000 3000	Particular	General			
							1										
							2										
									Continued from non-cored borehole sheet NO CORE: 0.24m								
			72		0		3		Extremely weathered BASALT recovered as Sandy Gravelly with clay: fine to coarse, pale brown and dark grey and orange-red and white,sub-angular to angular, fine to coarse sand, low plasticity clay	XW			JT, 40°, FE SN, UN, RF JT, 5°, FE SN, PR, RF FE SN, UN, VR				
			72		0		4		BASALT: fine crystallined, dark grey mottled orange, some ironstain, trace iron oxide clay seam, highly fractured NO CORE: 0.18m	MW			JT, 60°, FE CLAY VNR, UN, RF JT, 80°, FE SN, UN, VR JT, 75°, FE SN, UN, VR FE SN, UN, VR				
									BASALT: fine crystallined, dark grey and dark orange-brown, heavily ironstained, some healed joints of calcite infill, fractured				JT, 45°, FE SN, UN, VR JT, 75°, FE CLAY VNR, UN, VR				
			100		6		5		BASALT: fine crystallined, dark grey and orange, some healed joints of calcite infill, slightly fractured, some ironstaining	MW - HW			JT, 40°, FE SN, UN, VR JT, 30°, FE SN, UN, VR FE SN, IR, VR JT, 85°, FE SN, UN, VR CZ, Rock fragments JT, 10°, FE SN, UN, VR JT, 5°, CLAY CT, UN, VR JT, 10°, CLAY CT, UN, VR JT, 5°, FE SN, UN, VR JT, 60°, FE SN, UN, VR JT, 60°, FE CLAY VNR, UN, VR				
							6						JT, 5°, FE CLAY CT, UN, VR JT, 5°, FE CLAY CT, UN, VR				
			100		83		7			SW			JT, 5°, FE SN, UN, VR JT, 10°, FE CLAY VNR, UN, VR JT, 45°, FE SN, UN, RF JT, 5°, FE CLAY VNR, UN, VR JT, 15°, CA CT, UN, RF JT, 15°, FE SN, UN, VR JT, 5°, CA CT, UN, RF JT, 25°, FE CLAY VNR, UN, VR JT, 5°, FE SN, IR, VR JT, 25°, FE SN, UN, VR				
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water Level (Date) Inflow Partial Loss Complete Loss Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																	

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383983.2 m E 6958246.2 m N MGA94 Zone 56

Commenced: 06/12/2021
Completed: 06/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 450.72 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral		Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
											EL VL L M H VH EH	30 100 300 1000 3000	Particular	General		
HQ3		Not Observed	100		83	441.7	9		BASALT: fine crystallined, dark grey and orange, some healed joints of calcite infill, slightly fractured, some ironstaining(continued)	SW				JT, 10°, FE SN, UN, VR		
								FE SN, UN, VR								
								JT, 30°, CLAY VNR, UN, RF								
								JT, 10°, FE CLAY VNR, UN, VR								
								JT, 10°, FE SN, UN, VR								
				JT, 10°, FE SN, UN, VR												
				JT, 10°, FE SN, UN, VR												
				JT, 10°, FE SN, UN, VR												
				JT, 85°, CLAY VNR, UN, VR												
				JT, 20°, CLAY VNR, UN, VR												
				JT, 10°, MS VNR, UN, VR												
				JT, 10°, MS VNR, UN, VR												
				JT, 30°, FE SN, IR, VR												
				JT, 5°, MS CT, UN, RF												
				JT, 10°, MS CT, UN, RF												
	JT, 10°, FE SN, IR, VR															
	JT, 5°, FE CLAY CT, UN, VR															
	JT, 10°, FE CLAY CT, UN, VR															
	JT, 5°, MS CT, UN, VR															
	JT, 5°, MS VNR, UN, VR															
	JT, 10°, FE CLAY CT, UN, VR															
	JT, 85°, FE SN, UN, VR															
	JT, 10°, FE SN, UN, VR															
	JT, 60°, CLAY VNR, UN, RF															
	JT, 5°, FE CLAY CT, UN, VR															
	JT, 10°, FE CLAY CT, UN, VR															
	JT, 5°, FE CLAY CT, UN, VR															
	JT, 20°, FE CLAY VNR, UN, VR															
	JT, 10°, FE SN, UN, VR															
	5°, FE CLAY FILLED, UN, VR															
	25°, FE CLAY FILLED, UN, VR															
	JT, 20°, CLAY VNR, UN, VR															
	JT, 20°, FE SN, UN, VR															
	JT, 45°, FE SN, UN, VR															
	JT, 80°, FE CLAY CT, UN, RF															
	JT, 10°, FE SN, UN, VR															
	JT, 15°, FE CLAY CT, UN, VR															
	JT, 5°, FE SN, UN, VR															
	JT, 10°, CA VNR, UN, VR															
	JT, 5°, FE SN, UN, VR															
	JT, 5°, FE SN, UN, VR															
	JT, 5°, FE CLAY CT, UN, VR															
	JT, 10°, FE SN, UN, VR															
	JT, 25°, FE SN, UN, VR															
	JT, 5°, FE CLAY CT, UN, VR															

Method	Water	Graphic Log/Core Loss	Weathering	Strength
AS - Auger Screwing	Level (Date)	Core recovered (hatching indicates material)	FR - Fresh	(indirect tensile strength)
WB- Washbore	Inflow	Core loss	SW - Slightly Weathered	EL - Extremely Low
HQ3 HQ3 Core Barrel	Partial Loss		DW - Distinctly Weathered	VL - Very Low
NQ3 NQ3 Core Barrel	Complete Loss		XW - Extremely Weathered	L - Low
	<u>Support</u>		RS - Residual Soil	M - Medium
	T - Timbering			H - High
				VH - Very High
				EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383983.2 m E 6958246.2 m N MGA94 Zone 56

Commenced: 06/12/2021
Completed: 06/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 450.72 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
										EL VL J M H VH EH		30 100 300 1000 3000	Particular	General
HQ3	Not Observed	100	70	433.7	17	✓	✓	✓	BASAL:; fine crystalline, dark grey, some amygdaloids of calcite infill(continued)	FR	●	300	JT, 20°, FE CLAY CT, UN, VR	
													JT, 30°, CA CT, UN, VR	
													10°, FE CLAY FILLED, UN, VR	
													JT, 10°, FE SN, UN, VR	
													JT, 10°, FE CLAY VNR, UN, VR	
													FE SN, IR, VR	
													15°, CLAY FILLED, UN, VR	
													JT, 45°, FE SN, UN, VR	
													JT, 50°, FE SN, IR, VR	
													JT, 10°, FE CLAY CT, UN, VR	
HQ3	Not Observed	100	95	432.7	18	✓	✓	✓		FR	●	300	JT, 5°, MS VNR, UN, VR	
													JT, 10°, FE CLAY VNR, UN, VR	
													JT, 5°, CA VNR, UN, VR	
													JT, 50°, FE CLAY CT, UN, VR	
													JT, 5°, FE CLAY VNR, UN, VR	
													JT, 5°, CA VNR, UN, VR	
													JT, 20°, FE CLAY VNR, UN, VR	
													JT, 5°, CLAY VNR, UN, VR	
													JT, 20°, CLAY VNR, UN, VR	
													JT, 80°, MS VNR, UN, S	
HQ3	Not Observed	100	95	430.7	20	✓	✓	✓		FR	●	300	JT, 10°, CN, UN, RF	
													JT, 10°, CN, UN, RF	
													JT, 10°, CN, UN, RF	
													JT, 20°, CA VNR, UN, RF	
													JT, 70°, MS VNR, UN, RF	
													JT, 5°, MS CT, UN, S	
													JT, 15°, Fe SN, UN, VR	
													JT, 60°, Fe SN, UN, VR	
													JT, 10°, Fe SN, UN, VR	
													15°, Clay FILLED, IR, VR	
HQ3	Not Observed	100	95	429.7	21	✓	✓	✓	Hole Terminated at 21.30 m Target depth	FR	●	300	Fe SN, IR, VR	
													JT, 10°, MS CT, UN, RF	
													JT, 20°, Clay VNR, UN, VR	
													JT, 85°, CN, UN, VR	
													JT, 10°, MS CT, UN, RF	
													JT, 5°, CN, UN, RF	
													JT, 10°, CN, UN, RF	
													JT, 10°, MS CT, UN, VR	
													JT, 20°, CA CT, UN, VR	
													JT, 15°, CN, UN, RF	
HQ3	Not Observed	100	95	430.7	20	✓	✓	✓		FR	●	300	JT, 10°, CN, UN, RF	
													JT, 5°, CN, UN, RF	
													JT, 10°, CN, UN, RF	
													JT, 10°, CN, UN, RF	
													JT, 10°, MS VNR, UN, VR	
													JT, 15°, CA VNR, UN, VR	
													JT, 5°, MS CT, UN, VR	
													JT, 25°, CA CT, UN, VR	
													JT, 10°, CA CT, UN, VR	
													JT, 5°, CN, UN, VR	
HQ3	Not Observed	100	95	427.7	23	✓	✓	✓		FR	●	300	JT, 5°, CN, UN, VR	
													JT, 5°, CN, UN, VR	
													JT, 5°, CN, UN, VR	
													JT, 10°, CN, UN, RF	
													JT, 10°, CN, UN, RF	
													JT, 10°, MS VNR, UN, VR	
													JT, 15°, CA VNR, UN, VR	
													JT, 5°, MS CT, UN, VR	
													JT, 25°, CA CT, UN, VR	
													JT, 10°, CA CT, UN, VR	

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 06/12/2021
Project Name: Inland Rail B2G	Completed: 06/12/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 383983.2 m E 6958246.2 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 450.72 m
Barrel Type and Length: HQ 3 m	Bearing:	Datum: AHD Operator: R. Welsh

Drilling Information								Rock Substance							Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
																				JT, 5°, MS CT, UN, RF				
																				JT, 10°, CN, UN, VR				
																				JT, 5°, MS VNR, UN, RF				
																				JT, 5°, CN, UN, VR				
																				JT, 5°, MS VNR, UN, S				
																				JT, 15°, CA VNR, UN, RF				
																				JT, 5°, CN, UN, RF				
																				JT, 5°, CN, UN, RF				
																				VN, 80°, MS FILLED, UN, RF				
																				JT, 10°, CN, UN, RF				
																				JT, 15°, CN, UN, RF				
																				JT, 5°, CN, UN, RF				
																				JT, 5°, CA VNR, UN, VR				
																				JT, 5°, CN, UN, RF				
																				JT, 5°, CN, UN, RF				
																				JT, 20°, MS VNR, UN, RF				
																				JT, 10°, CA CT, UN, VR				
																				JT, 5°, CN, UN, RF				
																				JT, 10°, MS CT, UN, VR				
																				JT, 10°, CN, UN, VR				
																				JT, 5°, MS VNR, UN, VR				
																				JT, 60°, MS CT, UN, VR				
																				JT, 25°, MS VNR, UN, VR				
																				JT, 10°, CN, UN, RF				
																				JT, 5°, CN, UN, RF				
																				JT, 10°, CN, UN, RF				
																				JT, 5°, CN, UN, RF				
																				JT, 25°, MS VNR, UN, VR				
																				JT, 5°, CN, UN, RF				
																				JT, 20°, MS VNR, UN, VR				
																				JT, 10°, MS VNR, UN, RF				
																				JT, 45°, CN, UN, RF				
																				JT, 20°, MS VNR, UN, VR				

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	06/12/2021				
Project Name:	Inland Rail B2G	Completed:	06/12/2021				
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran				
Hole Coordinates:	383983.2 m E 6958246.2 m N MGA94 Zone 56	Checked By:	D.Hill				
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	450.72 m		
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD	Operator:	R. Welsh



PointID : 310-03-BH3087 Depth Range: 2.50 - 7.00 m



PointID : 310-03-BH3087 Depth Range: 7.00 - 12.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 383983.2 m E 6958246.2 m N MGA94 Zone 56

Commenced: 06/12/2021
Completed: 06/12/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclination: -90° RL Surface: 450.72 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh



PointID : 310-03-BH3087 Depth Range: 12.00 - 17.00 m



PointID : 310-03-BH3087 Depth Range: 17.00 - 21.30 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 17/09/2021
Project Name: Inland Rail B2G	Completed: 21/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 368774.3 m E 6936319.2 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: D4TAPG	Inclination: -90°	RL Surface: 565.77 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: B.Boga

Drilling Information					Soil Description										Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
ADV			Not Observed	D00000 0.00-0.50 m		564.8	1		CH	TOPSOIL: Silty CLAY: high plasticity, black, trace rootlets (<2mm)	NA	NA			TOPSOIL	
				S00050 SPT 0.50-0.95 m 5,9,14 N=23 PP 0.70 m >600 kPa					CI-CH	Silty CLAY: high plasticity, black trace fine to coarse grained sand and fine angular gravel					ALLUVIAL SOIL	
				D00150 1.50-2.00 m						M (<PL)	H			RESIDUAL SOIL		
				S00200 SPT 2.00-2.45 m 13,17,30 N=47												
						562.8	3			Continued on cored borehole sheet						
						561.8	4									
						560.8	5									
						559.8	6									
						558.8	7									

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

 No resistance ranging to refusal

Water

 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support

C - Casing

Graphic Log/Core Loss

 Core recovered (hatching indicates material)
 Core loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Plastic Limit

< PL
= PL
< PL

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	17/09/2021
Project Name:	Inland Rail B2G	Completed:	21/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	368774.3 m E 6936319.2 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	D4TAPG	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	565.77 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3091 Depth Range: 0.50 - 0.95 m



310-03-BH3091 Depth Range: 2.00 - 2.45 m

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

MG 4.02 | LIB.GLB | loc MG CORED BOREHOLE MG 4.02.GPJ <<DrawingFile>> 07/03/2022 23:29 10.02.00.04 Datagel Lab and In Situ Tool - DGD | Lib: DGD.T.P 4.01.2 dtd 3.04.2018-07-02 Pri: DGD.T.P 4.00.6 2017-11-25

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 368774.3 m E 6936319.2 m N MGA94 Zone 56										Commenced: 17/09/2021 Completed: 21/09/2021 Logged By: T. Tran Checked By: D.Hill														
Drill Model and Mounting: D4TAPG Barrel Type and Length: HQ3 3 m					Inclination: -90° Bearing:					RL Surface: 565.77 m Datum: AHD Operator: B.Boga														
Drilling Information							Rock Substance							Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
									Hole Terminated at 16.08 m Target depth															
						548.8	17																JT, 40°, CLAY VNR, IR, VR	
																							JT, 80°, CLAY FILLED, UN, VR	
																							JT, 90°, FE SN, IR, VR	
																							JT, 15°, CLAY FILLED, IR, VR	
																							JT, 10°, FE SN, IR, RF	
						547.8	18																JT, 90°, CLAY VNR, UN, VR	
																							JT, 15°, CLAY VNR, IR, VR	
																							JT, 80°, FE SN, IR, RF	
																							JT, 10°, FE SN, UN, VR	
																							JT, 85°, CLAY VNR, UN, VR	
																							JT, 5°, FE SN, UN, VR	
																							JT, 50°, FE SN, UN, VR	
																							JT, 40°, FE SN, UN, VR	
																							JT, 20°, CLAY VNR, PR, RF	
																							NI	
																							JT, 20°, CN, PR, RF	
																							JT, 20°, CLAY VNR, IR, VR	
																							JT, 60°, CLAY VNR, UN, RF	
																							JT, 20°, CLAY VNR, PR, RF	
																							JT, 30°, CLAY VNR, PR, RF	
																							JT, 45°, CLAY VNR, IR, VR	
																							JT, 85°, MU FILLED, UN, VR	
																							JT, 70°, MU FILLED, UN, VR	
																							JT, 50°, MU FILLED, UN, VR	
																							JT, 5°, MU FILLED, UN, VR	
																							JT, 20°, CN, PR, RF	
																							NI	
																							JT, 70°, CLAY VNR, UN, VR	
																							JT, 85°, MU FILLED, IR, VR	
																							JT, 10°, CN, IR, RF	
																							JT, 5°, CLAY VNR, UN, VR	

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength

(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 368774.3 m E 6936319.2 m N MGA94 Zone 56

Commenced: 17/09/2021
Completed: 21/09/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: D4TAPG Inclusion: -90° RL Surface: 565.77 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: B.Boga



PointID : 310-03-BH3091 Depth Range: 2.27 - 7.00 m



PointID : 310-03-BH3091 Depth Range: 7.00 - 12.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	17/09/2021
Project Name:	Inland Rail B2G	Completed:	21/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	368774.3 m E 6936319.2 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	D4TAPG	Inclination:	-90°	RL Surface:	565.77 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: B.Boga

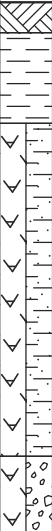


PointID : 310-03-BH3091 Depth Range: 12.00 - 16.08 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 14/09/2021
Project Name: Inland Rail B2G	Completed: 15/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: V.Chandrasena
Hole Coordinates: 368760.4 m E 6936371.4 m N MGA94 Zone 56	Checked By: D.Hill
Drill Model and Mounting: D4TAPG	Inclination: -90°
Hole Diameter: 96 - 115 mm	RL Surface: 567.02 m
	Bearing: AHD
	Operator: B.Boga

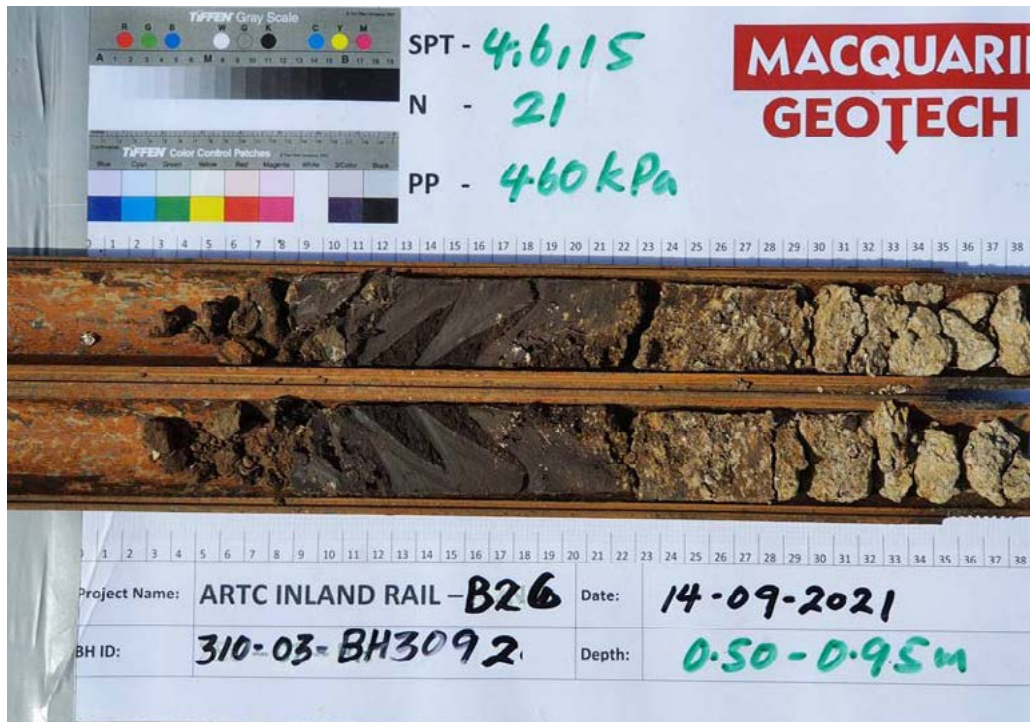
Drilling Information				Soil Description										Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
ADW		Not Observed		D00000 0.00-0.50 m		566.0	1		CH	TOPSOIL CLAY: high plasticity, black, trace rootlets (<2mm)	M (-PL)	St			TOPSOIL		
				S00050 SPT 0.50-0.95 m 4,6,15 N=21 PP 0.95 m =460 kPa						CLAY: high plasticity, black					ALLUVIAL SOIL		
				D00100 1.00-1.50 m S00150 SPT 1.50-1.95 m 9,28,29 N=57						Extremely weathered BASALT recovered as: Sandy silty CLAY: low plasticity, dark grey, fine to coarse grained sand					EXTREMELY WEATHERED BEDROCK		
				D00250 2.50-3.00 m													
				D00300 3.00-3.40 m S00300 SPT 3.00-3.01 m 30/10mm HB						Extremely weathered BASALT: recovered as Clayey GRAVEL with sand: fine to medium angular gravel, pale grey to brown spotted white, low plasticity, fine to coarse grained sand							
										Continued on cored borehole sheet							
									</								

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal 	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	14/09/2021
Project Name:	Inland Rail B2G	Completed:	15/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	V.Chandrasena
Hole Coordinates:	368760.4 m E 6936371.4 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	D4TAPG	Inclination:	-90°
Hole Diameter:	96 - 115 mm	Bearing:	
		RL Surface:	567.02 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3092 Depth Range: 0.50 - 0.95 m



310-03-BH3092 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 368760.4 m E 6936371.4 m N MGA94 Zone 56

Commenced: 14/09/2021
Completed: 15/09/2021
Logged By: V.Chandrasena
Checked By: D.Hill

Drill Model and Mounting: D4TAPG
Hole Diameter: 96 - 115 mm

Inclination: -90°
Bearing:

RL Surface: 567.02 m
Datum: AHD Operator: B.Boga



310-03-BH3092 Depth Range: 3.00 - 3.10 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 368760.4 m E 6936371.4 m N MGA94 Zone 56										Commenced: 14/09/2021 Completed: 15/09/2021 Logged By: V.Chandrasena Checked By: D.Hill									
Drill Model and Mounting: D4TAPG Barrel Type and Length: HQ3 4.2 m										Inclination: -90° Bearing: RL Surface: 567.02 m Datum: AHD Operator: B.Boga									

Drilling Information							Rock Substance							Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling					
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General	
						566.0	1																		
						565.0	2																		
						564.0	3																		
									Continued from non-cored borehole sheet																
HQ3	Not Observed		100		20	563.0	4	✓	BASALT: fine crystalline, orange brown and grey, massive, highly fractured	MW to HW													JT, 5°, Fe SN, UN, RF JT, 40°, Fe SN, PR, RF JT, 40°, Fe SN, UN, RF JT, 80°, Fe SN, PR, RF JT, 35°, CN, UN, RF JT, 0°, CN, PR, RF JT, 75°, Fe SN, UN, RF JT, 25°, CN, UN, RF JT, 15°, CN, UN, RF		
			100		17	562.0	5	✓	BASALT: fine crystalline, dark grey, grey and blue, massive, highly fractured														JT, 5°, Fe SN, UN, RF JT, 30°, Fe SN, UN, RF JT, 85°, Fe SN, UN, RF JT, 40°, Fe SN, UN, RF CZ, 0°, CN, IR, RF JT, 60°, Fe SN, UN, RF JT, 55°, Fe CN, UN, RF CZ JT, 75°, Fe SN, UN, RF CZ JT, 85°, Fe SN, UN, RF CZ		
			100		36	561.0	6	✓		MW													JT, 85°, Fe SN, UN, RF CZ JT, 80°, CN, UN, RF JT, 10°, CN, UN, RF JT, 50°, CN, UN, RF JT, 10°, CN, UN, RF JT, 10°, CN, UN, RF JT, 45°, CN, UN, RF JT, 10°, CN, UN, RF JT, 55°, CN, UN, RF JT, 55°, CN, UN, RF JT, 40°, Fe SN, UN, RF JT, 5°, Fe SN, UN, RF JT, 5°, Fe SN, UN, RF		
						560.0	7	✓																	

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 368760.4 m E 6936371.4 m N MGA94 Zone 56

Commenced: 14/09/2021
Completed: 15/09/2021
Logged By: V.Chandrasena
Checked By: D.Hill

Drill Model and Mounting: D4TAPG Inclinometer: -90° RL Surface: 567.02 m
Barrel Type and Length: HQ3 4.2 m Bearing: Datum: AHD Operator: B.Boga

Drilling Information						Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
HQ3	Not Observed	Not Observed	100		28	558.0	9	✓	BASALT: fine crystalline, dark grey, massive, highly fractured	MW	○	30	JT, 90°, CN, UN, RF
							9	✓				100	JT, 10°, Fe SN, UN, RF
							9	✓				300	JT, 60°, Fe SN, UN, RF
			55	12	557.0	10	10	✗	NO CORE 0.69m			100	JT, 15°, CN, UN, RF
							10	✓	BASALT: fine crystalline, dark grey, massive, highly fractured	MW		300	JT, 40°, CN, UN, RF
							10	✓				300	JT, 15°, CN, UN, RF
			67	0	556.0	11	11	✓	Extremely weathered BASALT recovered as Sandy CLAY with gravel: low plasticity, dark red mottled white, fine to coarse grained sand, fine to coarse sub-angular to angular gravel	XW		300	JT, 50°, CN, UN, RF
							11	✓				100	JT, 10°, Fe SN, UN, RF
							11	✓				300	JT, 10°, Clay VNR, UN, RF
			84	7	554.0	12	12	✗	NO CORE 0.50m			300	JT, 30°, CN, UN, RF
							12	✓	Extremely weathered BASALT recovered as Sandy CLAY with gravel: low plasticity, dark red mottled white, fine to coarse grained sand, fine to coarse sub-angular to angular gravel	XW		300	JT, 30°, CN, UN, RF
							12	✓				300	JT, 45°, CN, UN, RF
			87	50	552.0	13	13	✗	NO CORE 0.24m			300	JT, 45°, CN, UN, RF
							13	✓	BASALT: fine crystalline, brown red, trace white amygdaloids, highly weathered, highly fractured	HW		300	JT, 10°, CN, UN, RF
							13	✓	Below 13.60m: dark grey and fractured	MW		300	JT, 50°, CN, UN, RF
			100	24	553.0	14	14	✗	NO CORE 0.20m			300	JT, 85°, Clay FILLED, UN, RF
							14	✓	BASALT: fine crystalline, dark grey, trace white amygdaloids, fractured	XW		300	FR
							14	✓				300	CZ
			100	24	552.0	15	15	✓				300	JT, 30°, CN, UN, RF
							15	✓				300	JT, 40°, CN, UN, RF
							15	✓				300	JT, 50°, CN, UN, RF

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
✗ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 14/09/2021													
Project Name: Inland Rail B2G		Completed: 15/09/2021													
Hole Location: N3 - Brookstead to Gowrie		Logged By: V.Chandrasena													
Hole Coordinates: 368760.4 m E 6936371.4 m N MGA94 Zone 56		Checked By: D.Hill													
Drill Model and Mounting: D4TAPG		Inclination: -90°	RL Surface: 567.02 m												
Barrel Type and Length: HQ3 4.2 m		Bearing:	Datum: AHD Operator: B.Boga												
Drilling Information		Rock Substance		Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
HQ3		Not Observed	100		24	550.0	17		BASALT: fine crystalline, dark grey, trace white amygdaloids, fractured(continued)	SW			Particular	General	
						549.0	18		Hole Terminated at 17.60 m Target depth Early termination on agreement with ARTC representatives.				JT, 30°, CN, UN, RF JT, 40°, CN, UN, RF JT, 5°, CN, UN, RF JT, 5°, CN, UN, RF FZ JT, 10°, Fe SN, UN, RF JT, 10°, Fe SN, UN, RF JT, 50°, CN, UN, RF JT, 10°, CN, UN, RF JT, 10°, CN, UN, RF JT, 10°, CN, UN, RF JT, 10°, CN, UN, RF JT, 10°, CN, UN, RF JT, 10°, CN, UN, RF FZ JT, 5°, CN, UN, RF JT, 0°, CN, UN, RF JT, 0°, CN, UN, RF		
						548.0	19								
						547.0	20								
						546.0	21								
						545.0	22								
						544.0	23								
Method		Water		Graphic Log/Core Loss		Weathering		Strength							
AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel		Level (Date) Inflow Partial Loss Complete Loss		Core recovered (hatching indicates material) Core loss		FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil		(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High							
Support		T - Timbering													

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	14/09/2021
Project Name:	Inland Rail B2G	Completed:	15/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	V.Chandrasena
Hole Coordinates:	368760.4 m E 6936371.4 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	D4TAPG	Inclination:	-90°	RL Surface:	567.02 m
Barrel Type and Length:	HQ3 4.2 m	Bearing:		Datum:	AHD Operator: B.Boga



PointID : 310-03-BH3092 Depth Range: 3.50 - 8.00 m



PointID : 310-03-BH3092 Depth Range: 8.00 - 13.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	14/09/2021
Project Name:	Inland Rail B2G	Completed:	15/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	V.Chandrasena
Hole Coordinates:	368760.4 m E 6936371.4 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	D4TAPG	Inclination:	-90°	RL Surface:	567.02 m
Barrel Type and Length:	HQ3 4.2 m	Bearing:		Datum:	AHD
				Operator:	B.Boga



PointID : 310-03-BH3092 Depth Range: 13.00 - 17.60 m

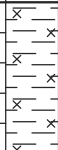
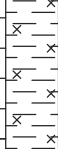
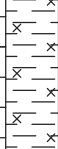
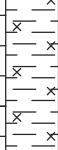
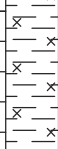
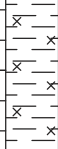
Engineering Log - Borehole

Project No.: B21003

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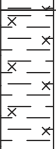
Engineering Log - Borehole

Project No.: B21003

Client: ARTC				Commenced: 20/02/2021																												
Project Name: Inland Rail B2G				Completed: 21/02/2021																												
Hole Location: Approx. CH153164 - Brookstead				Logged By: H.Tran																												
Hole Coordinates: 348013.9 m E 6928861.9 m N MGA94 Zone 56				Checked By: J.Boyle																												
Drill Model and Mounting: Comacchio 305		Inclination: -90°		RL Surface: 391.53 m																												
Hole Diameter: 115 mm		Bearing:		Datum: AHD		Operator: M.Boga																										
Drilling Information				Soil Description				Observations																								
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations																	
AD/T			 21/02/21	7.50-7.95 m 15,17,20 N=37 PP 7.95 m >600 kPa D00850 8.50-9.00 m		382.5	9		CH	Silty CLAY trace sand: high plasticity, dark brown, trace fine grained sand. (continued)	M (<PL)	H				ALLUVIAL SOIL																
				S00900 SPT 9.00-9.45 m 23,25,24 N=49 PP 9.45 m >600 kPa D01000 10.00-10.50 m		381.5	10		Below 9.00m: colour tending to dark brown and dark grey.	9.00: Below 9.00m: added water to drilling.																						
				S01050 SPT 10.50-10.95 m 16,13,28 N=41 PP 10.95 m >600 kPa D01150 11.50-12.00 m		380.5	11			9.73: Ground water observed at 08:05AM 21/02/2021																						
				S01200 SPT 12.00-12.45 m 12,20,20 N=40 PP 12.45 m >600 kPa D01300 13.00-13.50 m		378.5	12			12.57: Ground water observed at 04:45PM 20/02/2021																						
				S01350 SPT 13.50-13.95 m 14,21,21 N=42 PP 13.95 m >600 kPa D01450 14.50-15.00 m		377.5	13		At 13.75m: with medium to coarse sub-rounded gravel.																							
				S01500 SPT 15.00-15.45 m 13,16,25 N=41 PP 15.45 m >600 kPa		376.5	14																									
				Method				Penetration								Water				Samples and Tests				Moisture Condition				Consistency/Relative Density				
				AS - Auger Screwing RR - Rock Roller WB- Washbore				 No resistance ranging to refusal								 Level (Date)  Inflow  Partial Loss  Complete Loss				U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test				D - Dry M - Moist W - Wet				VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense				
Support				Graphic Log/Core Loss				Classification Symbols and Soil Descriptions				Plastic Limit																				
C - Casing				 Core recovered (hatching indicates material)  Core loss				Based on Unified Soil Classification System				< PL = PL < PL																				

Engineering Log - Borehole

Project No.: B21003

Client: ARTC				Commenced: 20/02/2021														
Project Name: Inland Rail B2G				Completed: 21/02/2021														
Hole Location: Approx. CH153164 - Brookstead				Logged By: H.Tran														
Hole Coordinates: 348013.9 m E 6928861.9 m N MGA94 Zone 56				Checked By: J.Boyle														
Drill Model and Mounting: Comacchio 305		Inclination: -90°		RL Surface: 391.53 m														
Hole Diameter: 115 mm		Bearing:		Datum: AHD		Operator: M.Boga												
Drilling Information							Soil Description							Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations			
AD/T				D01600 16.00-16.50 m					CH	Silty CLAY trace sand: high plasticity, dark brown, trace fine grained sand. (continued)	M ($<PL$)					ALLUVIAL SOIL		
				S01650 SPT 16.50-16.95 m 11,17,24 N=41 PP 16.95 m >600 kPa		374.5	17		CH	Silty CLAY trace sand and gravel: high plasticity, dark brown, trace fine grained sand, fine to medium sub-rounded gravel.								
				D01750 17.50-18.00 m		373.5	18		CI	Sandy CLAY: medium plasticity, brown and dark grey, fine grained sand. At 18.45m: with medium to coarse sub-rounded gravel.								
				S01800 SPT 18.00-18.45 m 18,25,28 N=53 PP 18.45 m >600 kPa		372.5	19											
				D01900 19.00-19.50 m		371.5	20											
				S01950 SPT 19.50-19.95 m 14,16,21 N=37 PP 19.95 m >600 kPa		370.5	21											
				D02050 20.50-21.00 m		369.5	22											
				S02100 SPT 21.00-21.32 m 21,31,20/20mm HB N=51/170mm PP 21.20 m >600 kPa		368.5	23		CI-CH	Silty CLAY with sand: medium to high plasticity, dark brown, fine grained sand.								
				S02250 SPT 22.50-22.95 m 14,18,23 N=41 PP 22.95 m >600 kPa														
				WB			95% Water RETURN											
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Penetration  No resistance ranging to refusal Water  Level (Date)  Inflow  Partial Loss  Complete Loss Support C - Casing Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Plastic Limit $< PL$ $= PL$ $> PL$ Classification Symbols and Soil Descriptions Based on Unified Soil Classification System																		

MG 4.02 LUB/LB Log MG BOREHOLE EXCL DCP MG 4.02 GPJ <<DrawingFile>> 1003/2022 18:59 10.02.00.04 Dargel Lab and In Situ Tool - DGD [Lib: DGD-P 4.01.2 dpt 3.04.2018-07-02 Pjt: DGD-P 4.00.6 2017-11-25]

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Support

C - Casing

Penetration

No resistance
ranging to
refusal

Graphic Log/Core Loss

Core recovered (hatching
indicates material)
Core loss

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

**Classification Symbols
and Soil Descriptions**

Based on Unified Soil
Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Plastic Limit

< PL
= PL
< PL

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 20/02/2021
Project Name: Inland Rail B2G	Completed: 21/02/2021
Hole Location: Approx. CH153164 - Brookstead	Logged By: H.Tran
Hole Coordinates: 348013.9 m E 6928861.9 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 391.53 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: M.Boga

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB			95% Water RETURN	S02400 SPT 24.00-24.10 m 40/100mm HB		366.5	25		SC	Clayey SAND with gravel: fine to coarse grained, pale brown, low plasticity clay, fine to medium sub-rounded to sub-angular calcareous gravel. At 24.10m: SPT possibly refusal on gravel.	W	VD			ALLUVIAL SOIL
				S02550 SPT 25.50-25.95 m 13,16,20 N=36 PP 25.95 m =520 kPa		365.5	26		CI	Silty CLAY trace gravel: medium plasticity, brown, fine to medium sub-rounded to sub-angular gravel.					RESIDUAL SOIL
				S02700 SPT 27.00-27.45 m 13,19,21 N=40 PP 27.45 m >600 kPa		364.5	27			From 27.00 to 30.00m: no gravel.					
				S02850 SPT 28.50-28.70 m 27,30/50mm N=30/50mm PP 28.95 m =520 kPa		362.5	29			At 28.70m: SPT refusal on coarse sub-rounded calcareous gravel.	M (>PL)	H			
				S03000 SPT 30.00-30.45 m 13,16,23 N=39 PP 30.45 m >600 kPa		361.5	30								
				S03150 SPT 31.50-31.95 m 5,9,13		360.5	31			From 31.50 to 33.00m: trace fine grained sand.		VSt			

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal 	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss		Classification Symbols and Soil Descriptions	Plastic Limit	
C - Casing	Core recovered (hatching indicates material) Core loss		Based on Unified Soil Classification System	< PL = PL < PL	

Engineering Log - Borehole

Project No.: B21003

[illegible]

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH153164 - Brookstead
Hole Coordinates: 348013.9 m E 6928861.9 m N MGA94 Zone 56

Commenced: 20/02/2021
Completed: 21/02/2021
Logged By: H.Tran
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 391.53 m
Datum: AHD Operator: M.Boga



310-03-BH3095 Depth Range: 0.50 - 0.95 m



310-03-BH3095 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153164 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	348013.9 m E 6928861.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.53 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3095 Depth Range: 3.00 - 3.45 m



310-03-BH3095 Depth Range: 4.50 - 4.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH153164 - Brookstead
Hole Coordinates: 348013.9 m E 6928861.9 m N MGA94 Zone 56

Commenced: 20/02/2021
Completed: 21/02/2021
Logged By: H.Tran
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 391.53 m
Datum: AHD Operator: M.Boga



310-03-BH3095 Depth Range: 6.00 - 6.45 m



310-03-BH3095 Depth Range: 7.50 - 7.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153164 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	348013.9 m E 6928861.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.53 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3095 Depth Range: 9.00 - 9.45 m



310-03-BH3095 Depth Range: 10.50 - 10.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH153164 - Brookstead
Hole Coordinates: 348013.9 m E 6928861.9 m N MGA94 Zone 56

Commenced: 20/02/2021
Completed: 21/02/2021
Logged By: H.Tran
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 391.53 m
Datum: AHD Operator: M.Boga



310-03-BH3095 Depth Range: 12.00 - 12.45 m



310-03-BH3095 Depth Range: 13.50 - 13.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153164 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	348013.9 m E 6928861.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.53 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3095 Depth Range: 15.00 - 15.45 m



310-03-BH3095 Depth Range: 16.50 - 16.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153164 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	348013.9 m E 6928861.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.53 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3095 Depth Range: 18.00 - 18.45 m



310-03-BH3095 Depth Range: 19.50 - 19.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153164 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	348013.9 m E 6928861.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.53 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3095 Depth Range: 21.00 - 21.32 m



310-03-BH3095 Depth Range: 22.50 - 22.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153164 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	348013.9 m E 6928861.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.53 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3095 Depth Range: 24.00 - 24.10 m

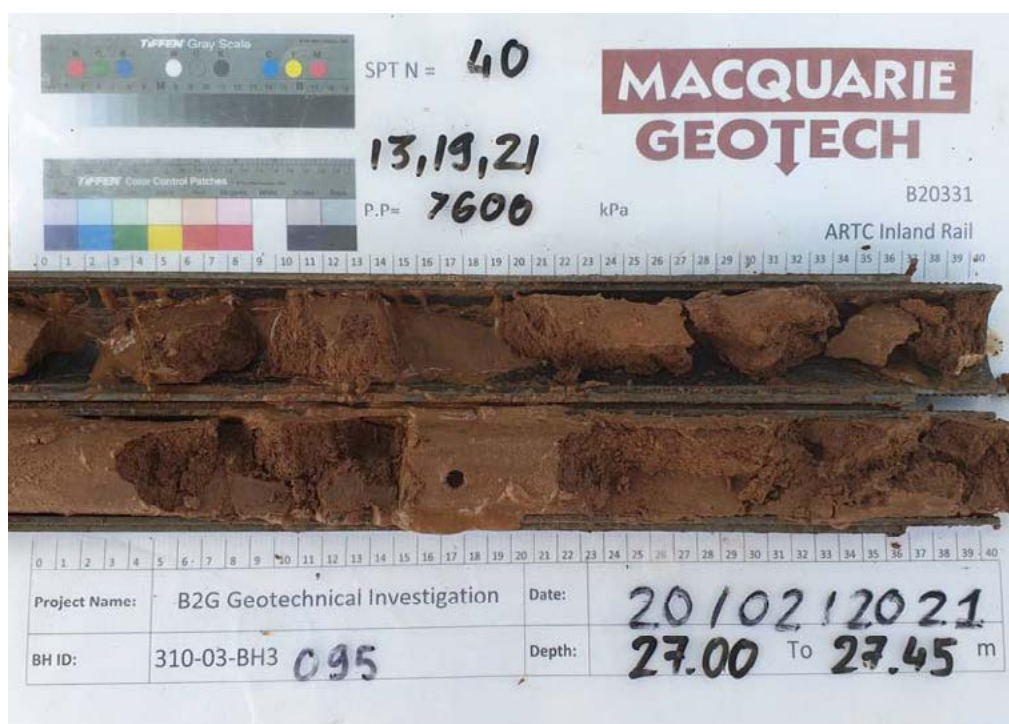


310-03-BH3095 Depth Range: 25.50 - 25.95 m

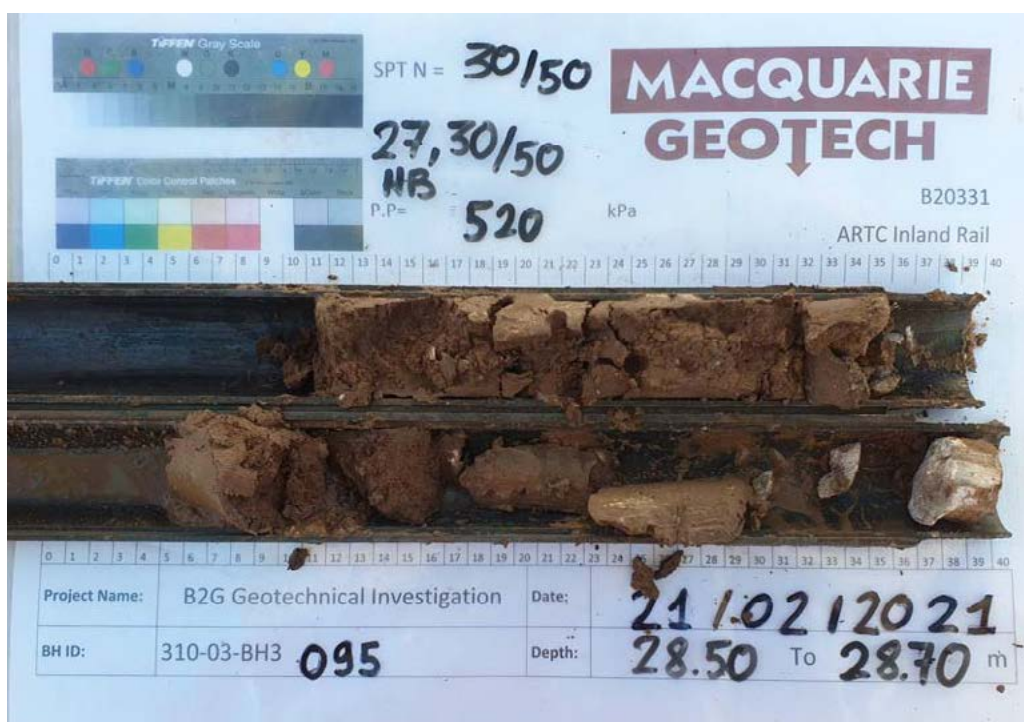
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153164 - Brookstead	Logged By:	H.Tran
Hole Coordinates:	348013.9 m E 6928861.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.53 m
		Datum:	AHD
		Operator:	M.Boga



310-03-BH3095 Depth Range: 27.00 - 27.45 m



310-03-BH3095 Depth Range: 28.50 - 28.70 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH153164 - Brookstead
Hole Coordinates: 348013.9 m E 6928861.9 m N MGA94 Zone 56

Commenced: 20/02/2021
Completed: 21/02/2021
Logged By: H.Tran
Checked By: J.Boyle

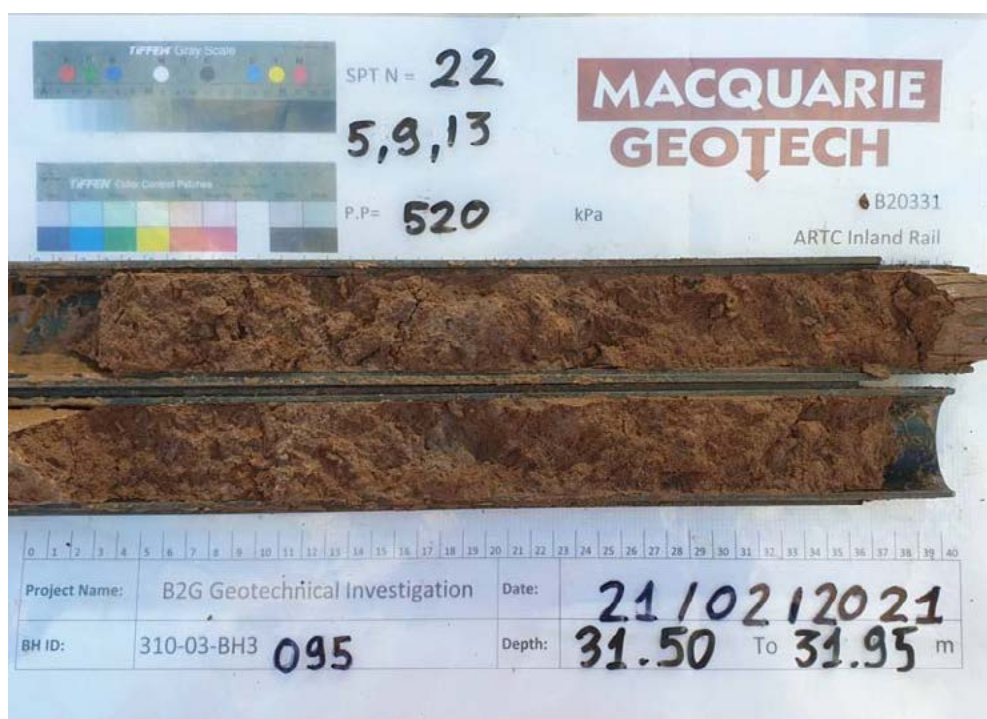
Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 391.53 m
Datum: AHD Operator: M.Boga



310-03-BH3095 Depth Range: 30.00 - 30.45 m



310-03-BH3095 Depth Range: 31.50 - 31.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH153164 - Brookstead
Hole Coordinates: 348013.9 m E 6928861.9 m N MGA94 Zone 56

Commenced: 20/02/2021
Completed: 21/02/2021
Logged By: H.Tran
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 391.53 m
Datum: AHD Operator: M.Boga



310-03-BH3095 Depth Range: 33.00 - 33.45 m



310-03-BH3095 Depth Range: 34.50 - 34.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC		Commenced: 20/02/2021															
Project Name: Inland Rail B2G		Completed: 21/02/2021															
Hole Location: Approx. CH153146 - Brookstead		Logged By: V. Chandrasena															
Hole Coordinates: 347979.7 m E 6928886.7 m N MGA94 Zone 56		Checked By: J.Boyle															
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 391.03 m														
Hole Diameter: 115 mm		Bearing:	Datum: AHD Operator: J. Komung														
Drilling Information		Soil Description		Observations													
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
AD/T				J00010 0.10-0.20 m PID 0.10 m 0.1 ppm J00040 0.40-0.50 m PID 0.40 m 0.2 ppm S00050 SPT 0.50-0.95 m 2.3.7 N=10 PP 0.80 m >600 kPa		390.0	1		CH	TOPSOIL: Gravelly CLAY; high plasticity, dark brown, fine to coarse sub-angular gravel, with rootlets.	M (>PL)					TOPSOIL	
				CLAY: high plasticity, dark brown.						ALLUVIAL SOIL							
				Below 1.20m: grey mottled white, trace fine sub-rounded to sub-angular gravel, white mottling is silty with gravels.						M (<PL)							
				Silty CLAY with sand trace gravel: low to medium plasticity, brown mottled white and dark grey, fine to coarse grained sand, fine sub-angular gravel.						St							
				D00460 4.60-4.80 m		388.0	3										
				S00500 SPT 5.00-5.45 m 6.8,11 N=19 PP 5.35 m >600 kPa												387.0	4
				D00600 6.00-6.20 m		386.0	5										
				S00650 SPT 6.50-6.95 m 6,12,14											385.0	6	

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Plastic Limit

< PL
= PL
> PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH153146 - Brookstead
Hole Coordinates: 347979.7 m E 6928886.7 m N MGA94 Zone 56

Commenced: 20/02/2021
Completed: 21/02/2021
Logged By: V. Chandrasena
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 391.03 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Soil Description					Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T				N=26 PP 6.70 m >600 kPa					CL-CI	Silty CLAY with sand trace gravel: low to medium plasticity, brown mottled white and dark grey, fine to coarse grained sand, fine sub-angular gravel. (continued)				
				D00760 7.60-7.80 m		383.0	8							
			21/02/21	S00800 SPT 8.00-8.45 m 7,10,12 N=22 PP 8.20 m >600 kPa		382.0	9		VSt				9.00: Slight moisture decrease.	
				D00900 9.00-9.20 m		381.0	10				M (>PL) to M (~PL)			
				S00950 SPT 9.50-9.95 m 9,14,17 N=31 PP 9.80 m >600 kPa		380.0	11							
				D01060 10.60-10.80 m		379.0	12							
				S01100 SPT 11.00-11.45 m 11,19,23 N=42 PP 11.30 m >600 kPa		378.0	13				H			
				D01200 12.00-12.20 m										
				S01250 SPT 12.50-12.95 m 6,13,17 N=30 PP 12.60 m >600 kPa										
				D01360 13.60-13.80 m										
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Support C - Casing Penetration No resistance ranging to refusal Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Water Level (Date) Inflow Partial Loss Complete Loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Plastic Limit < PL = PL < PL Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense														

Engineering Log - Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: Approx. CH153146 - Brookstead Hole Coordinates: 347979.7 m E 6928886.7 m N MGA94 Zone 56					Commenced: 20/02/2021 Completed: 21/02/2021 Logged By: V. Chandrasena Checked By: J.Boyle				
Drill Model and Mounting: Comacchio 305/Track Hole Diameter: 115 mm			Inclination: -90° Bearing:		RL Surface: 391.03 m Datum: AHD		Operator: J. Komung		

Drilling Information				Soil Description					Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T				S01400 SPT 14.00-14.45 m 9,15,21 N=36 PP 14.30 m >600 kPa		376.0	15		CL-CI	Silty CLAY with sand trace gravel: low to medium plasticity, brown mottled white and dark grey, fine to coarse grained sand, fine sub-angular gravel. (continued)	M (>PL) to M (~PL)	H	100	*
				D01500 15.00-15.20 m		375.0	16		200					
				S01550 SPT 15.50-15.95 m 9,13,18 N=31		374.0	17		300					
				S01700 SPT 17.00-17.45 m 12,19,25 N=44		373.0	18		400					
				S01850 SPT 18.50-18.95 m 12,18,21 N=39		372.0	19		500					
WB				S02000 SPT 20.00-20.45 m 9,16,21 N=37		371.0	20			M (<PL)				

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Plastic Limit

< PL
= PL
> PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC						Commenced: 20/02/2021									
Project Name: Inland Rail B2G						Completed: 21/02/2021									
Hole Location: Approx. CH153146 - Brookstead						Logged By: V. Chandrasena									
Hole Coordinates: 347979.7 m E 692886.7 m N MGA94 Zone 56						Checked By: J.Boyle									
Drill Model and Mounting: Comacchio 305/Track						Inclination: -90°		RL Surface: 391.03 m							
Hole Diameter: 115 mm						Bearing:		Datum: AHD		Operator: J. Komung					
Drilling Information						Soil Description						Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations	
WB				S02150 SPT 21.50-21.95 m 13,16,23 N=39		369.0	22		CL-CI	Silty CLAY with sand trace gravel: low to medium plasticity, brown mottled white and dark grey, fine to coarse grained sand, fine sub-angular gravel. <i>(continued)</i> At 4.00m: trace sand and gravel. At 4.00m: trace sand and gravel. <i>(continued)</i> At 4.00m: trace sand and gravel. <i>(continued)</i> At 4.00m: trace sand and gravel. <i>(continued)</i>	M (<PL)				
				S02300 SPT 23.00-23.45 m 13,25,25 N=50		368.0	23		CH	Silty CLAY trace gravel: high plasticity, brown mottled white and dark grey, fine to medium sub-angular to angular gravel.					ALLUVIAL SOIL
				S02450 SPT 24.50-24.93 m 20,26,10/130mm HB N=36/280mm		367.0	24		CI	Sandy CLAY trace gravel: medium plasticity, brown, fine to coarse grained sand, fine sub-angular to angular gravel.	H				
				S02600 SPT 26.00-26.38 m 14,22,25/80mm HB N=47/230mm		366.0	25		CL-CI	Silty CLAY with sand trace gravel: low to medium plasticity, brown, fine to coarse grained sand, fine to medium sub-angular gravel.	M (<PL) to M (~PL)				
				S02750 SPT 27.50-27.95 m 14,17,20		365.0	26		CL-CI						
						364.0	27								
Legend															
Method AS - Auger Screwing RR - Rock Roller WB- Washbore		Penetration No resistance ranging to refusal		Water Level (Date) Inflow Partial Loss Complete Loss		Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		Moisture Condition D - Dry M - Moist W - Wet		Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense					
Support C - Casing		Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System		Plastic Limit < PL = PL > PL									

Engineering Log - Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: Approx. CH153146 - Brookstead Hole Coordinates: 347979.7 m E 6928886.7 m N MGA94 Zone 56					Commenced: 20/02/2021 Completed: 21/02/2021 Logged By: V. Chandrasena Checked By: J.Boyle									
Drill Model and Mounting: Comacchio 305/Track Hole Diameter: 115 mm			Inclination: -90° Bearing:		RL Surface: 391.03 m Datum: AHD		Operator: J. Komung							
Drilling Information				Soil Description				Observations						
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
WB				N=37 PP 27.80 m =260 kPa					CL-CI	Silty CLAY with sand trace gravel: low to medium plasticity, brown, fine to coarse grained sand, fine to medium sub-angular gravel. (continued)	M (<PL) to M (~PL)	H	100	ALLUVIAL SOIL
				S02900 SPT 29.00-29.45 12,18,20 N=38		362.0	29		Below 29.00m: no gravel.	200				
				S03050 SPT 30.50-30.95 13,15,21 N=36 PP 30.80 m =240 kPa		361.0	30			300				
				S03200 SPT 32.00-32.45 14,17,21 N=38 PP 32.40 m =340 kPa		360.0	31		Below 32.00m: sandy, fine to coarse grained.	400				
				S03350 SPT 33.50-33.95 13,18,21 N=39 PP 33.80 m =510 kPa		359.0	32		Below 33.50m: with fine to coarse grained sand.	500				
						358.0	33							
						357.0	34							

Method

AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Plastic Limit

< PL
= PL
> PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC					Commenced: 20/02/2021				
Project Name: Inland Rail B2G					Completed: 21/02/2021				
Hole Location: Approx. CH153146 - Brookstead					Logged By: V. Chandrasena				
Hole Coordinates: 347979.7 m E 6928886.7 m N MGA94 Zone 56					Checked By: J.Boyle				
Drill Model and Mounting: Comacchio 305/Track			Inclination: -90°		RL Surface: 391.03 m				
Hole Diameter: 115 mm			Bearing:		Datum: AHD		Operator: J. Komung		

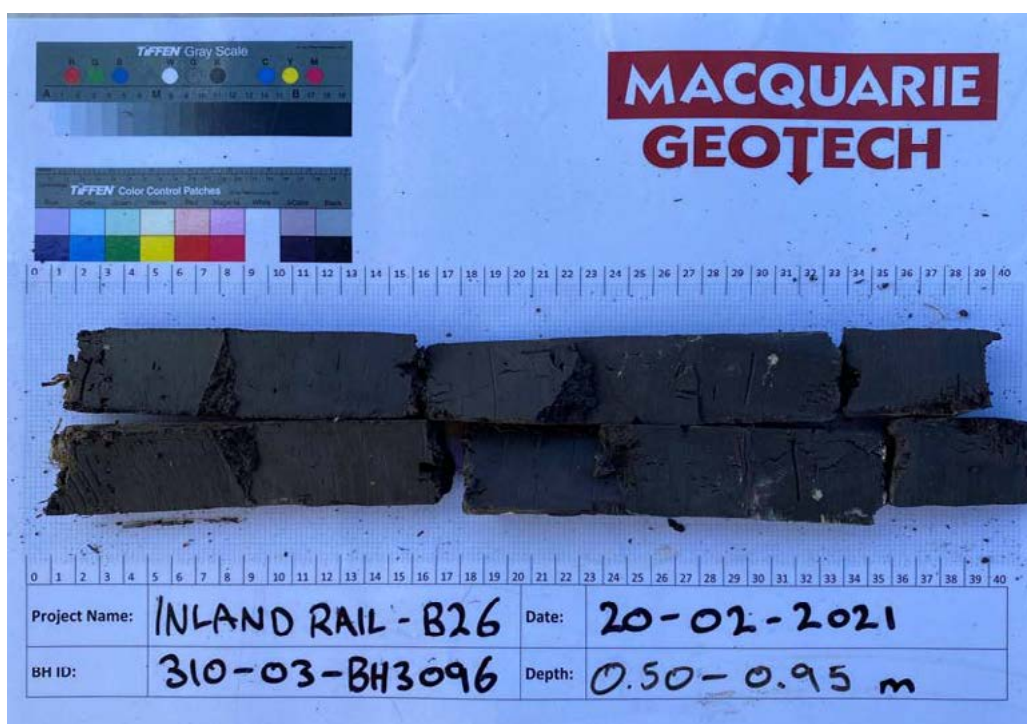
Drilling Information				Soil Description						Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
				S03500 SPT 35.00-35.45 12,13,17 N=30 PP 35.35 m =410 kPa					CL-CI	Silty CLAY with sand trace gravel: low to medium plasticity, brown, fine to coarse grained sand, fine to medium sub-angular gravel. (continued) Below 35.00m: brown mottled grey.	M (<PL to M ~PL)	H		100 200 300 400 500 x	ALLUVIAL SOIL
						355.0	36			Hole Terminated at 35.45 m Target depth. Hole grouted to surface. Hole grouted to surface.					
						354.0	37								
						353.0	38								
						352.0	39								
						351.0	40								
						350.0	41								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss				
Classification Symbols and Soil Descriptions Based on Unified Soil Classification System					

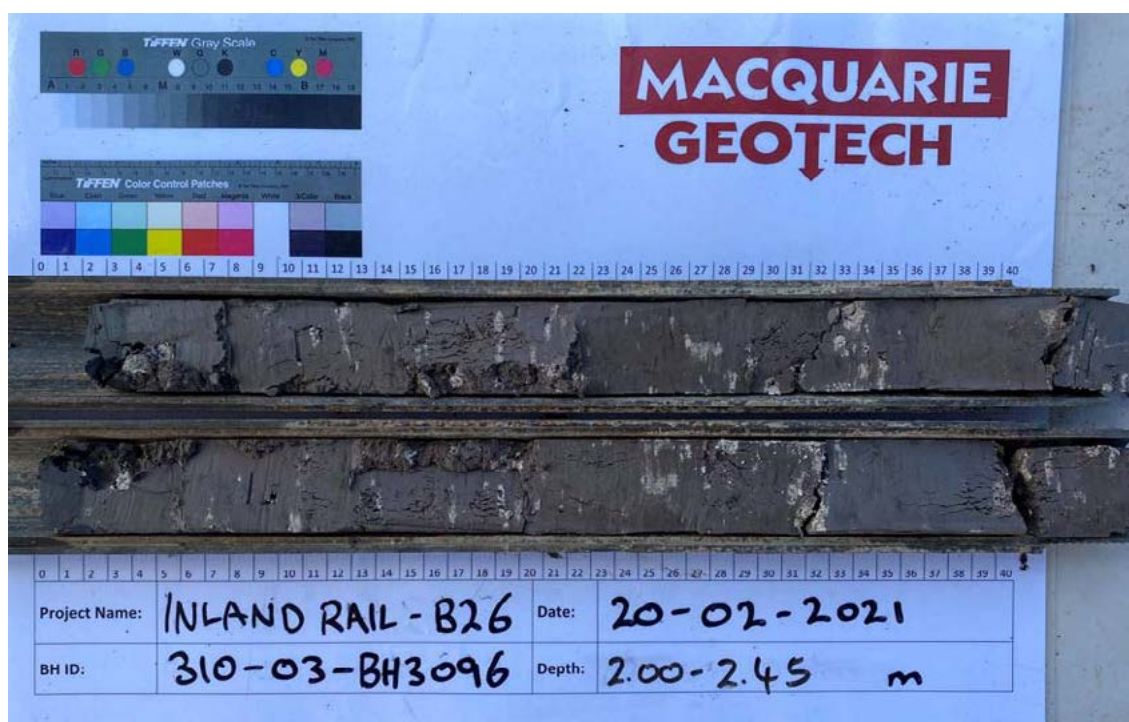
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153146 - Brookstead	Logged By:	V. Chandrasena
Hole Coordinates:	347979.7 m E 6928886.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3096 Depth Range: 0.50 - 0.95 m

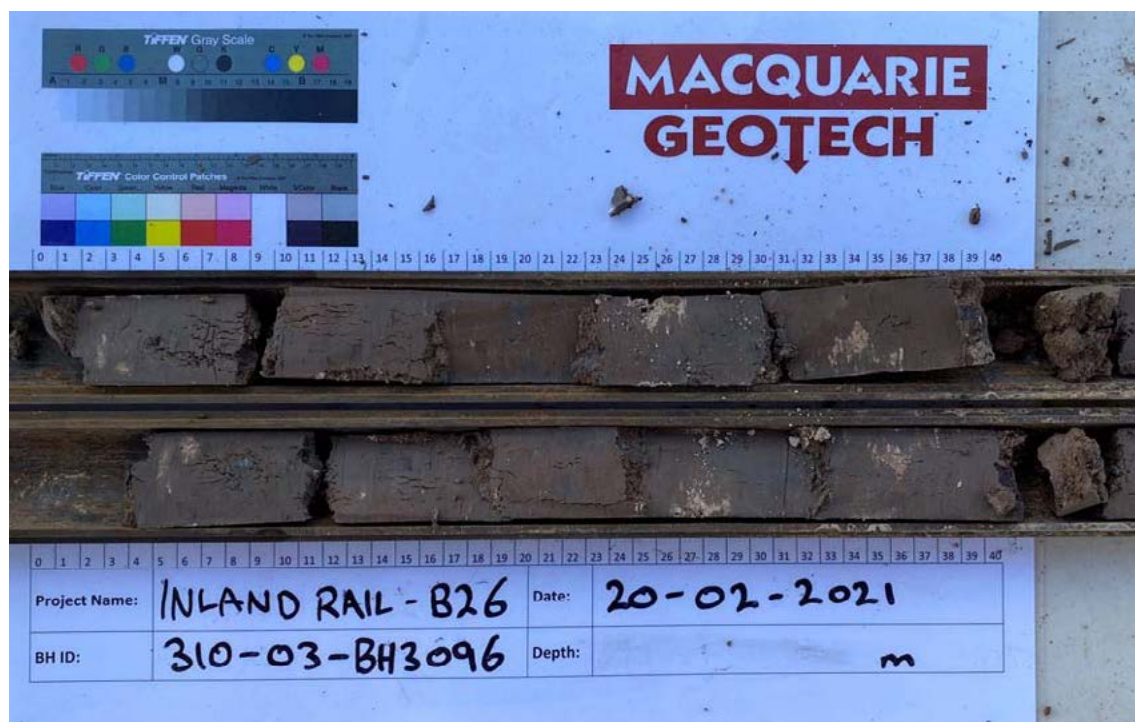


310-03-BH3096 Depth Range: 2.00 - 2.45 m

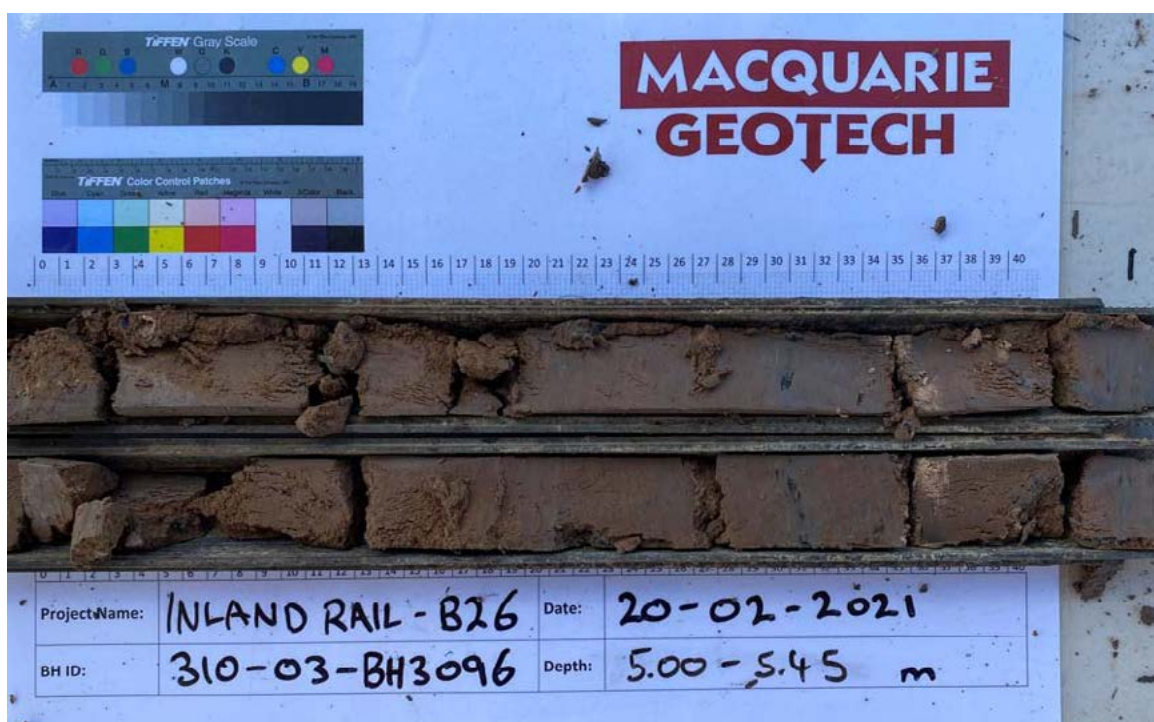
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153146 - Brookstead	Logged By:	V. Chandrasena
Hole Coordinates:	347979.7 m E 6928886.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3096 Depth Range: 3.50 - 3.95 m

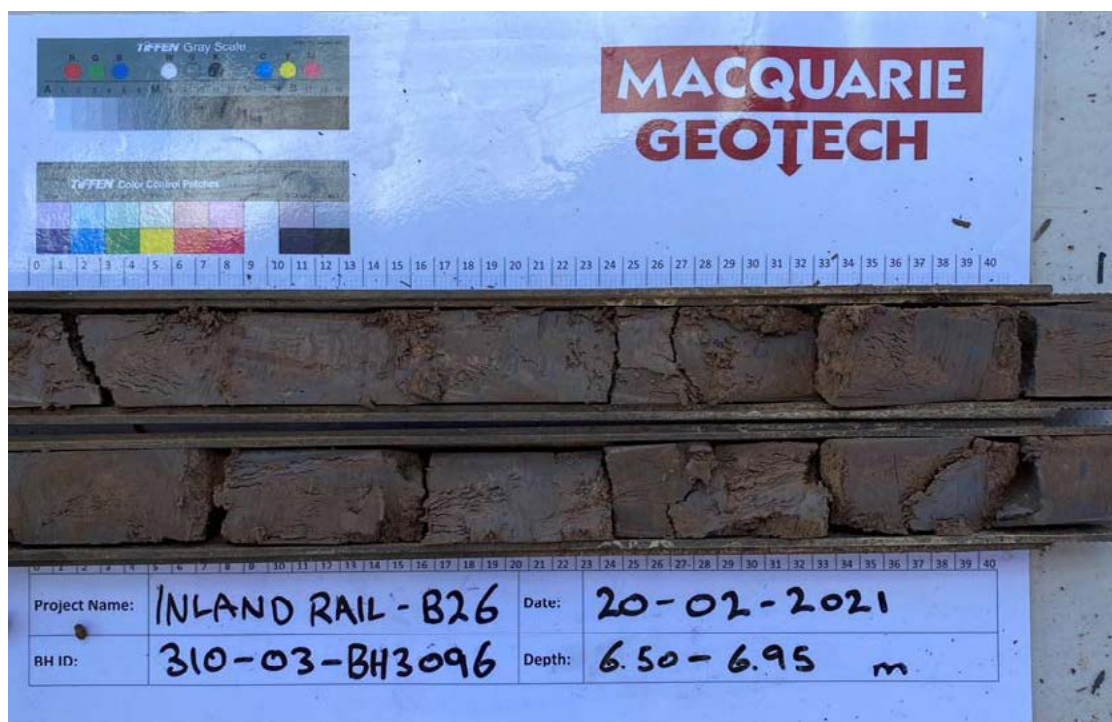


310-03-BH3096 Depth Range: 5.00 - 5.45 m

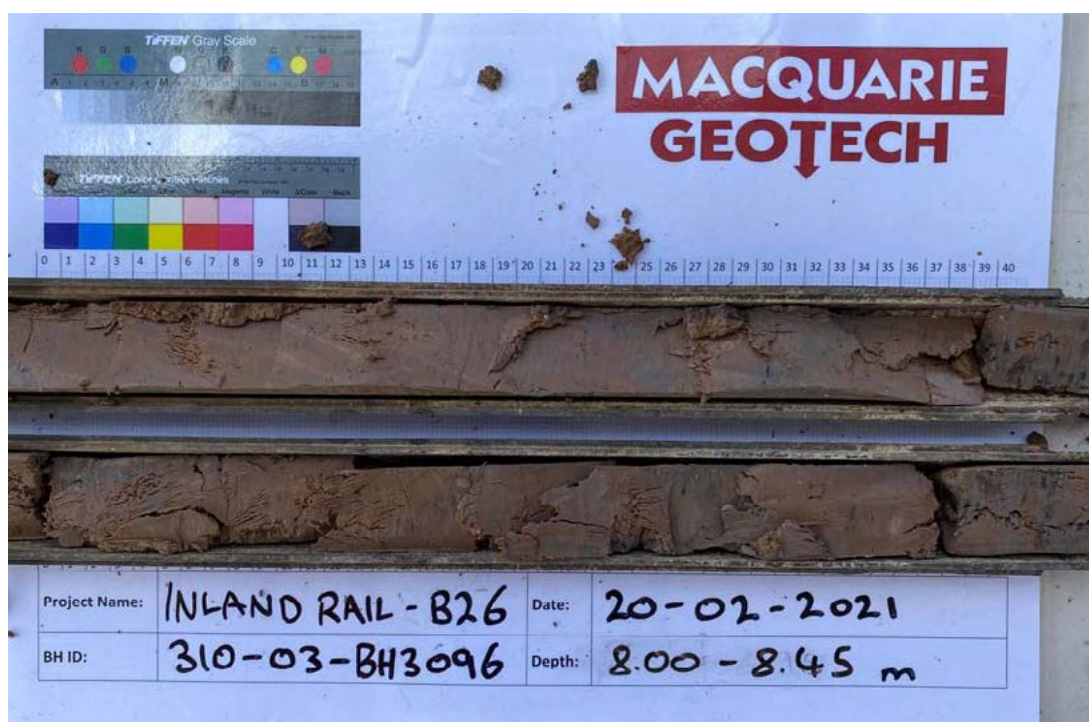
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153146 - Brookstead	Logged By:	V. Chandrasena
Hole Coordinates:	347979.7 m E 6928886.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3096 Depth Range: 6.50 - 6.95 m

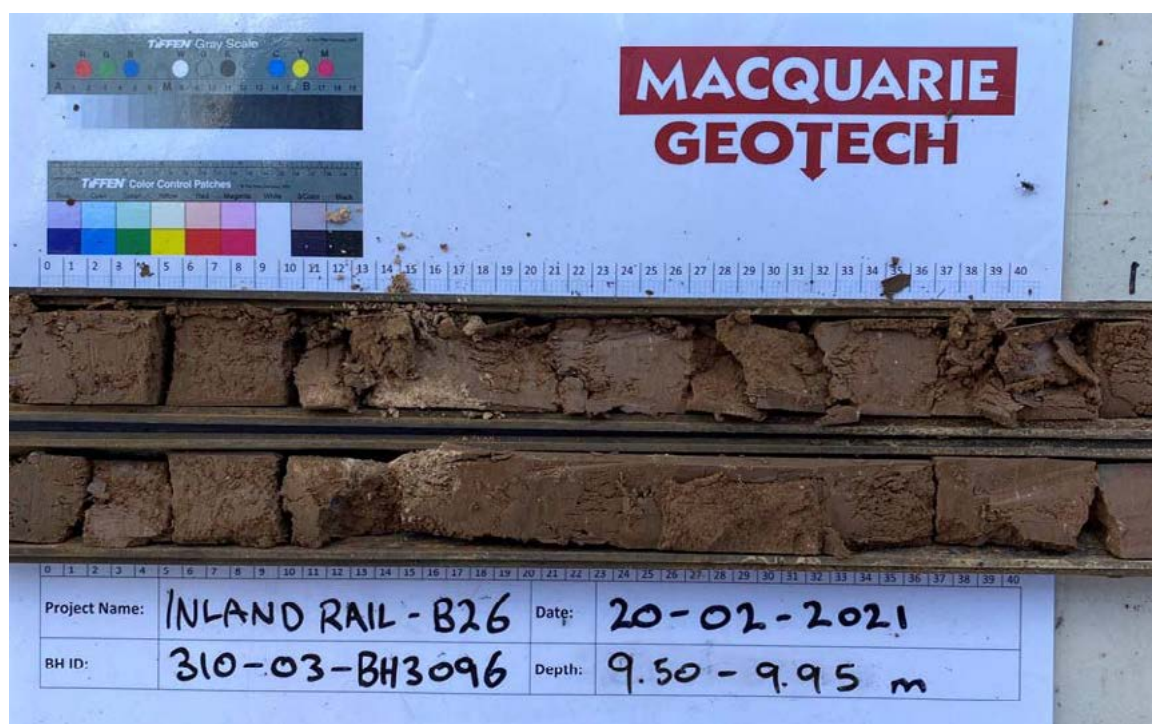


310-03-BH3096 Depth Range: 8.00 - 8.45 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153146 - Brookstead	Logged By:	V. Chandrasena
Hole Coordinates:	347979.7 m E 6928886.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3096 Depth Range: 9.50 - 9.95 m

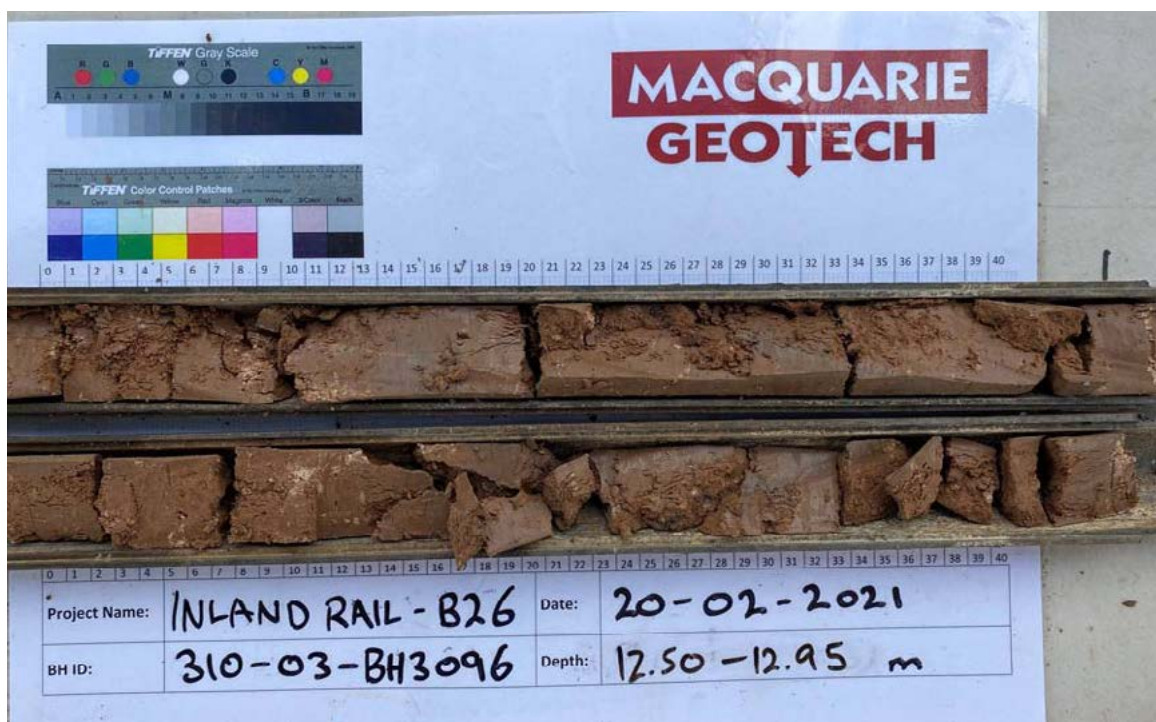


310-03-BH3096 Depth Range: 11.00 - 11.45 m

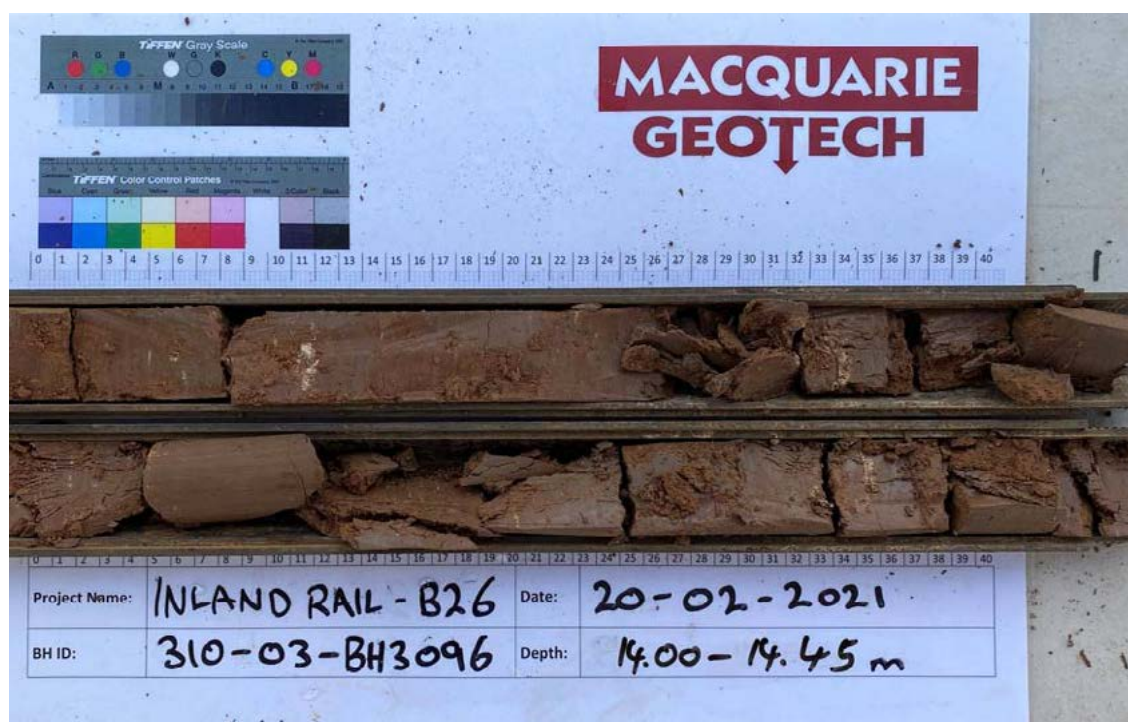
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153146 - Brookstead	Logged By:	V. Chandrasena
Hole Coordinates:	347979.7 m E 6928886.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3096 Depth Range: 12.50 - 12.95 m



310-03-BH3096 Depth Range: 14.00 - 14.45 m

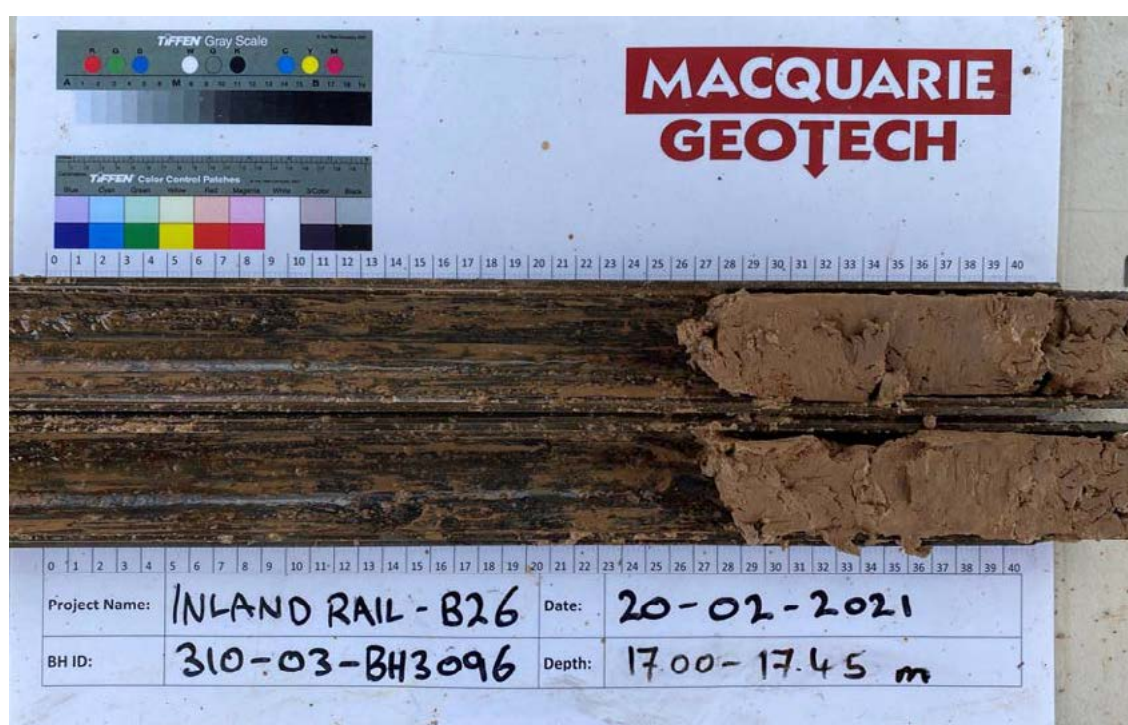
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153146 - Brookstead	Logged By:	V. Chandrasena
Hole Coordinates:	347979.7 m E 6928886.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3096 Depth Range: 15.50 - 15.95 m



310-03-BH3096 Depth Range: 17.00 - 17.45 m

Engineering Log - Borehole

Project No.: B21003

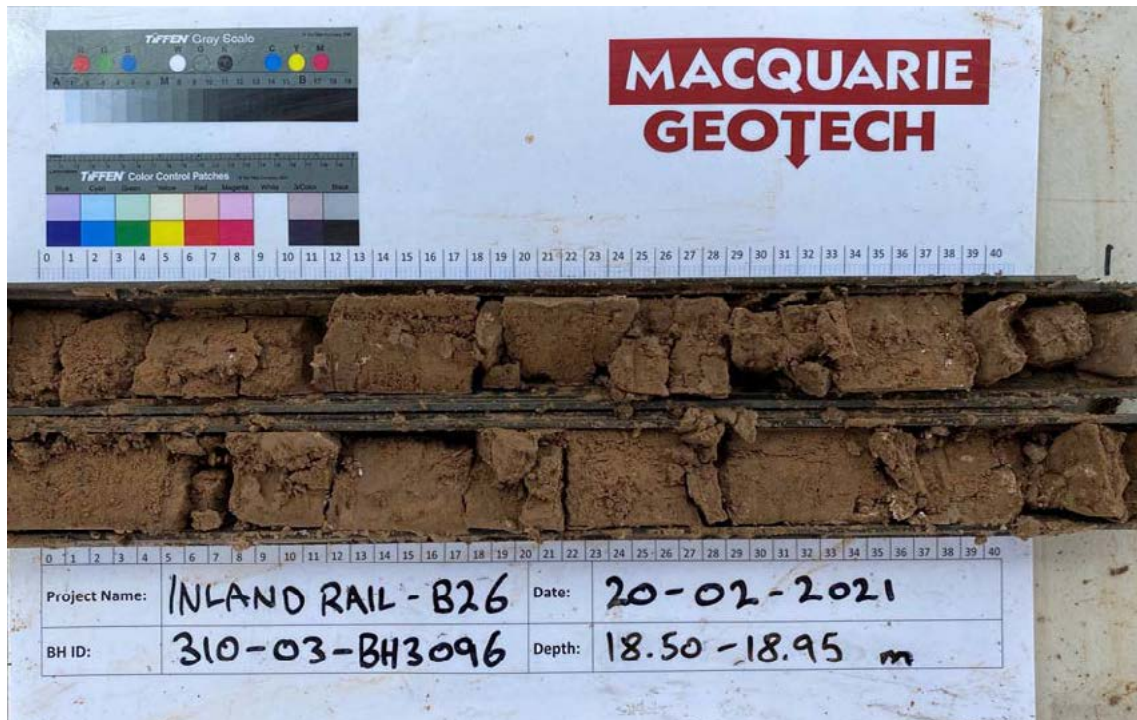
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH153146 - Brookstead
Hole Coordinates: 347979.7 m E 6928886.7 m N MGA94 Zone 56

Commenced: 20/02/2021
Completed: 21/02/2021
Logged By: V. Chandrasena
Checked By: J. Boyle

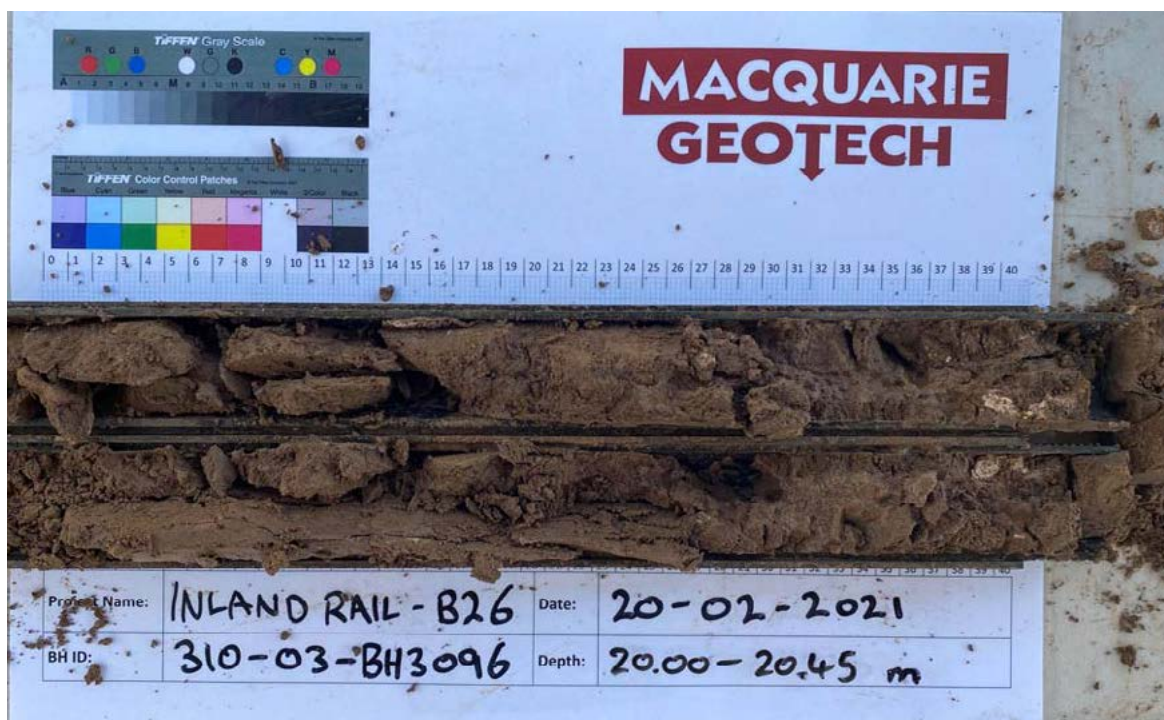
Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 391.03 m
Datum: AHD Operator: J. Komung



310-03-BH3096 Depth Range: 18.50 - 18.95 m

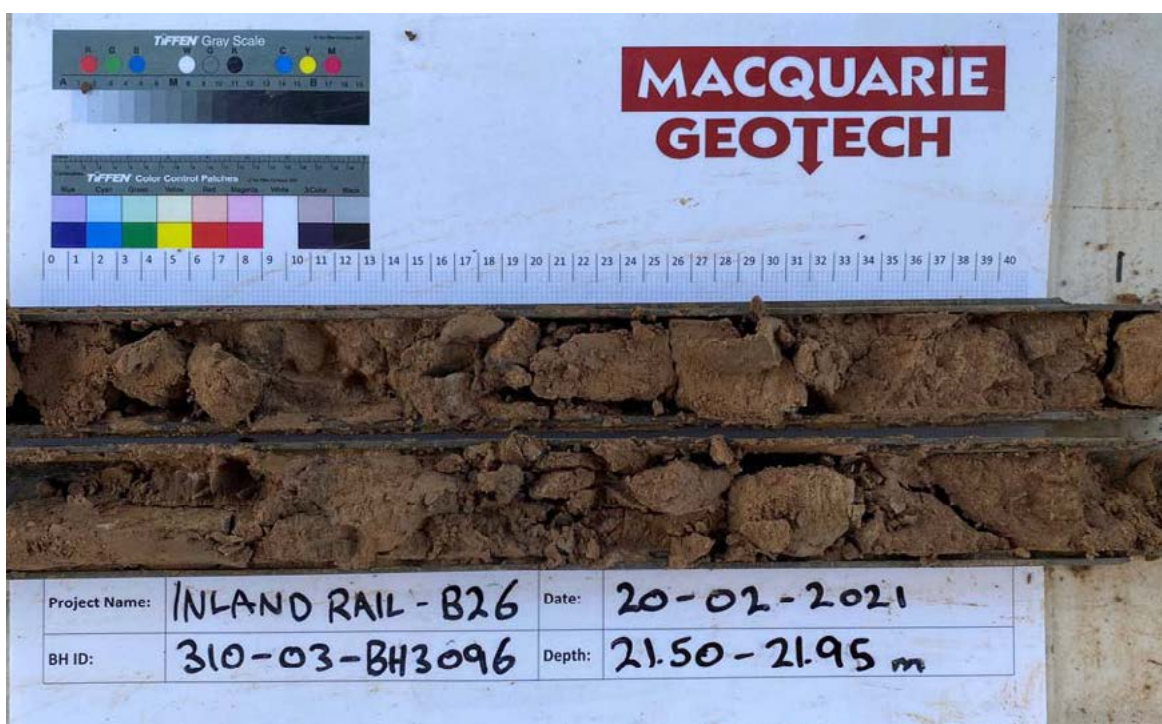


310-03-BH3096 Depth Range: 20.00 - 20.45 m

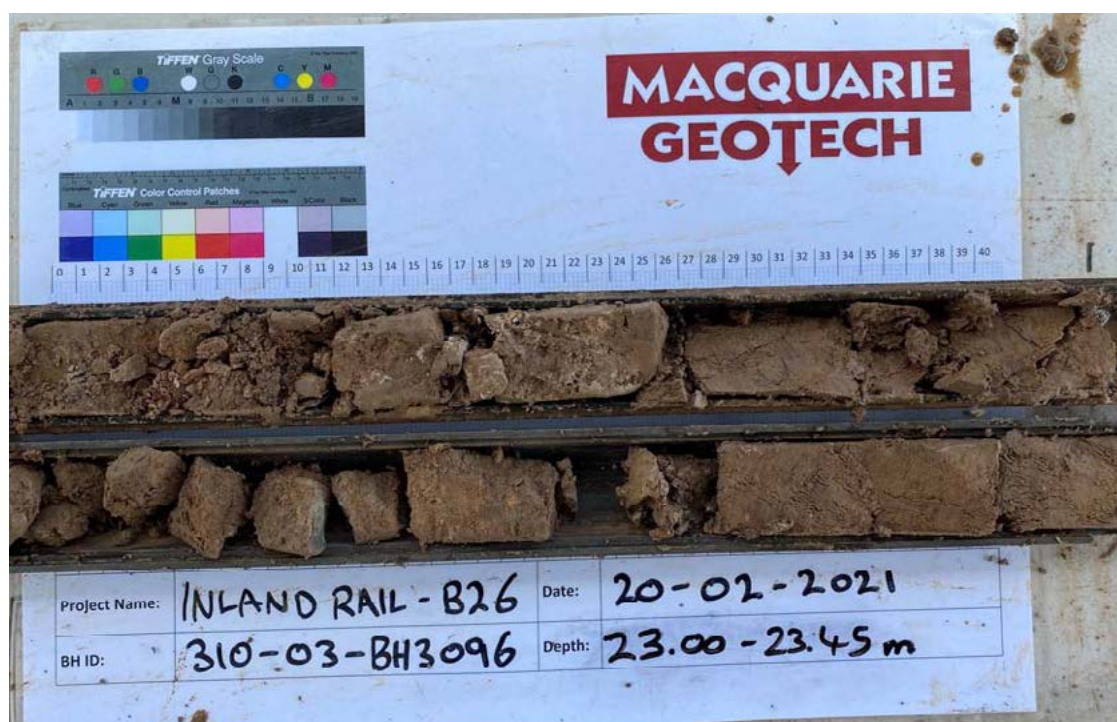
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153146 - Brookstead	Logged By:	V. Chandrasena
Hole Coordinates:	347979.7 m E 6928886.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3096 Depth Range: 21.50 - 21.95 m

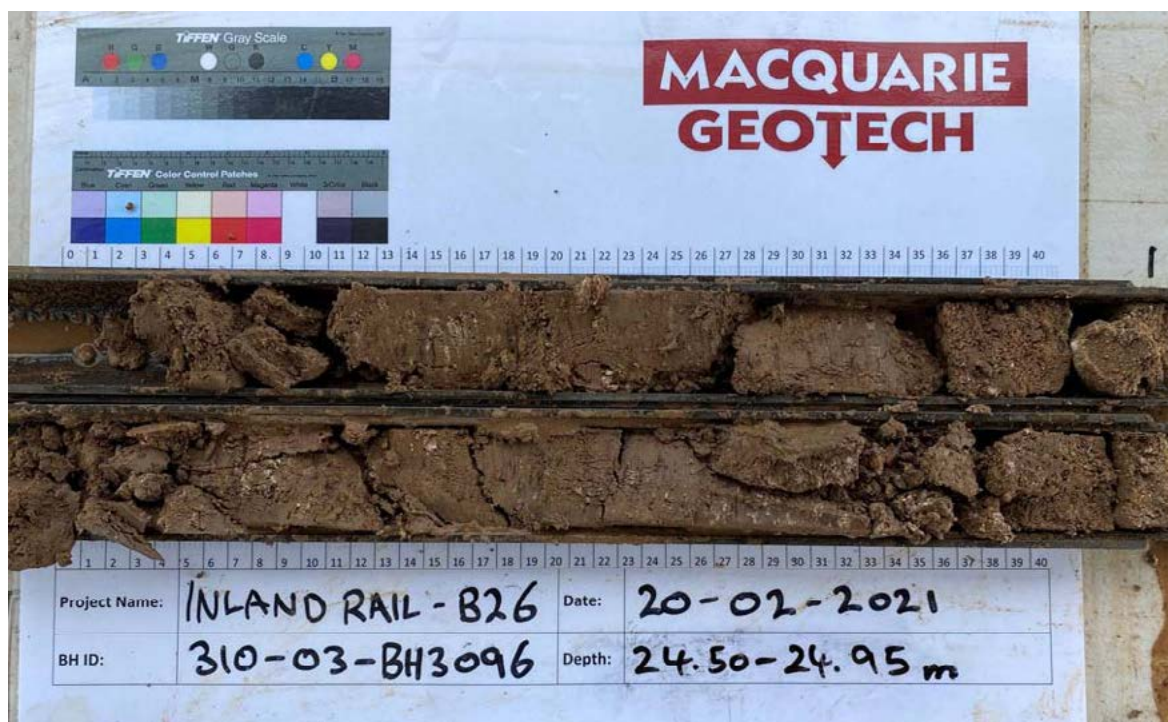


310-03-BH3096 Depth Range: 23.00 - 23.45 m

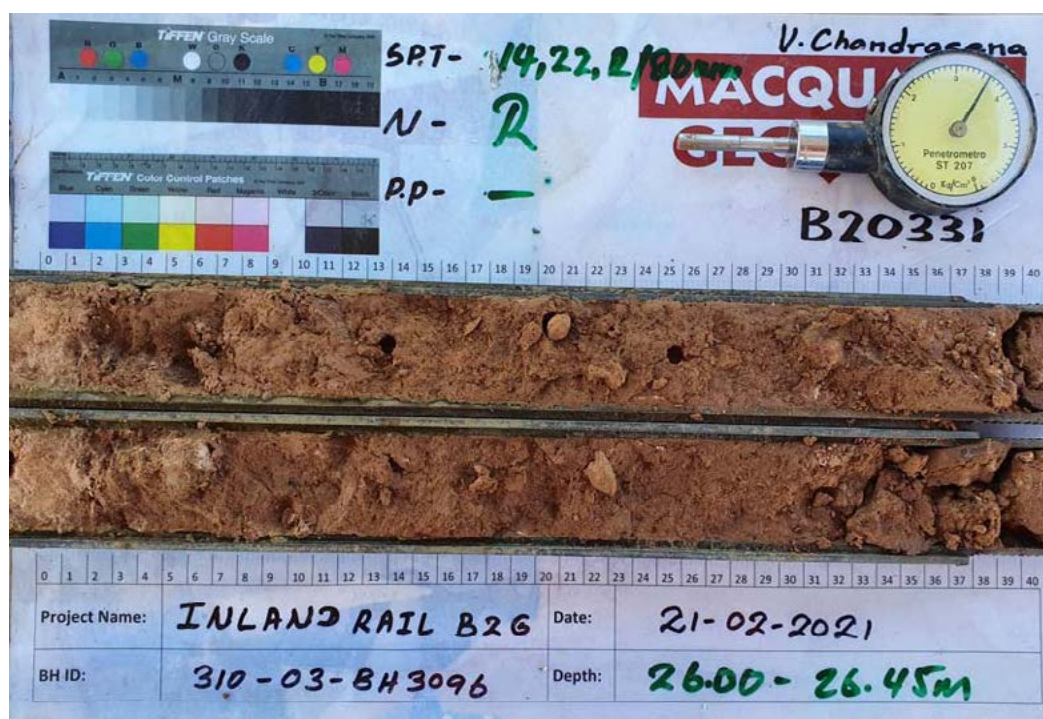
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153146 - Brookstead	Logged By:	V. Chandrasena
Hole Coordinates:	347979.7 m E 6928886.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3096 Depth Range: 24.50 - 24.95 m

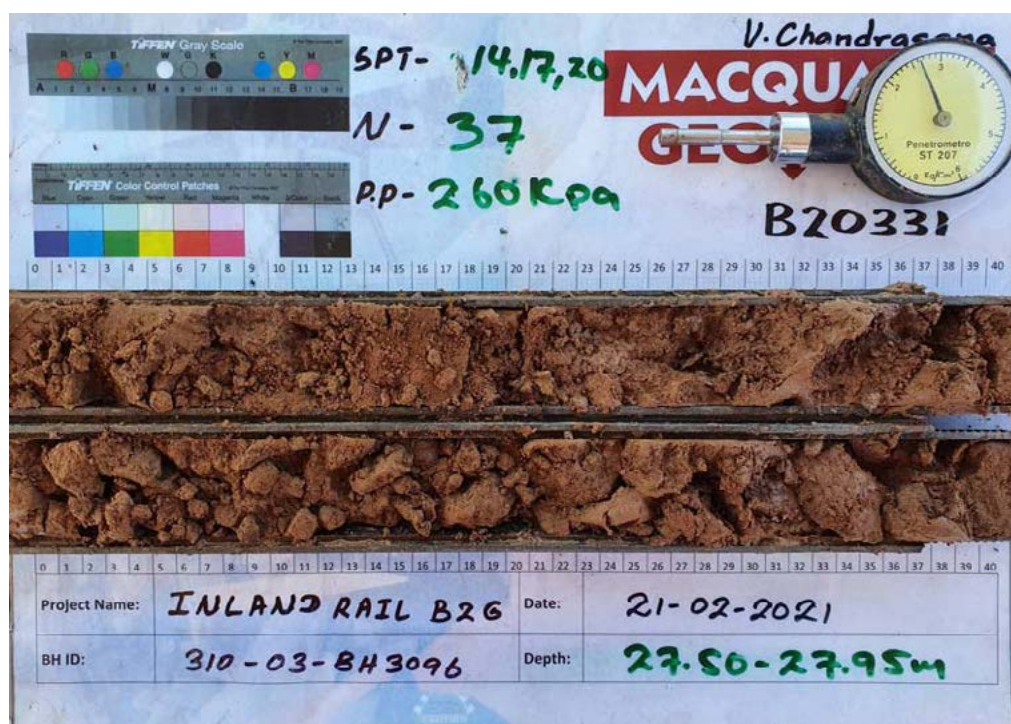


310-03-BH3096 Depth Range: 26.00 - 26.45 m

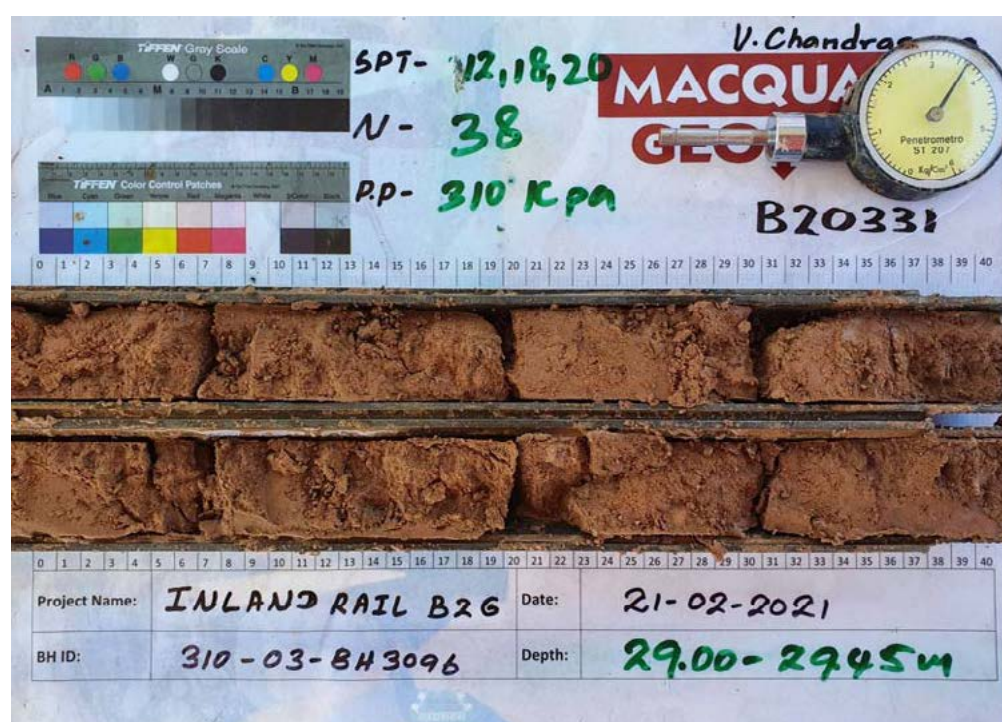
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/02/2021
Project Name:	Inland Rail B2G	Completed:	21/02/2021
Hole Location:	Approx. CH153146 - Brookstead	Logged By:	V. Chandrasena
Hole Coordinates:	347979.7 m E 6928886.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	391.03 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3096 Depth Range: 27.50 - 27.95 m



310-03-BH3096 Depth Range: 29.00 - 29.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH153146 - Brookstead
Hole Coordinates: 347979.7 m E 6928886.7 m N MGA94 Zone 56

Commenced: 20/02/2021
Completed: 21/02/2021
Logged By: V. Chandrasena
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 391.03 m
Datum: AHD Operator: J. Komung



310-03-BH3096 Depth Range: 30.50 - 30.95 m



310-03-BH3096 Depth Range: 32.00 - 32.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: Approx. CH153146 - Brookstead
Hole Coordinates: 347979.7 m E 6928886.7 m N MGA94 Zone 56

Commenced: 20/02/2021
Completed: 21/02/2021
Logged By: V. Chandrasena
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 391.03 m
Datum: AHD Operator: J. Komung



310-03-BH3096 Depth Range: 33.50 - 33.95 m



310-03-BH3096 Depth Range: 35.00 - 35.45 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 357978.0 m E 6933508.9 m N MGA94 Zone 56

Commenced: 13/10/2021
Completed: 13/10/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 474.92 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
									Continued from non-cored borehole sheet				Particular	General
HQ3		Not Observed	95	87	87	473.9	1		NO CORE 0.14m	FR			JT, 0°, Fe SN, DIS, RF	
							JT, 90°, Fe SN, PR, RF							
							JT, 80°, Fe SN, PR, S							
							JT, 0°, Fe SN, UN, RF							
							JT, 45°, Fe SN, PR, RF							
							JT, 0°, Fe SN, PR, RF							
							JT, 5°, Fe SN, CU, RF							
							JT, 0°, Fe SN, UN, RF							
							JT, 0°, Fe SN, PR, RF							
							JT, 90°, CN, PR, S							
							JT, 0°, CN, UN, RF							
	JT, 0°, CN, PR, RF													
	JT, 45°, Fe SN, PR, RF													
	JT, 10°, Fe SN, PR, RF													
	JT, 90°, CN, PR, S													
	JT, 90°, CN, PR, S													
	JT, 85°, CN, PR, S													
	JT, 0°, CN, PR, S													
	JT, 15°, Fe SN, CU, RF													
	JT, 0°, Fe SN, PR, RF													
	JT, 55°, Fe SN, PR, RF													
	JT, 5°, CN, PR, S													
	JT, 5°, Clay VNR, PR, S													

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss
Support
T - Timbering

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC						Commenced: 13/10/2021																							
Project Name: Inland Rail B2G						Completed: 13/10/2021																							
Hole Location: N3 - Brookstead to Gowrie						Logged By: A.Sharma																							
Hole Coordinates: 357978.0 m E 6933508.9 m N MGA94 Zone 56						Checked By: C.Green																							
Drill Model and Mounting: Comacchio 305/Track						Inclination: -90°		RL Surface: 474.92 m																					
Barrel Type and Length: HQ 3 m						Bearing:		Datum: AHD		Operator: J. Komung																			
Drilling Information						Rock Substance						Rock Mass Defects																	
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50)					Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling												
											● - Axial	○ - Diametral	EL	VL	L		M	H	VH	EH	Particular	General							
HQ3	Not Observed		100		82	465.9	9	✓	BASALT: fine crystalline, dark grey green, fractured(continued)	FR	●					30	JT, 5°, CN, PR, S												
							✓								JT, 5°, CN, CU, S														
							✓								JT, 0°, CN, PR, S														
							✓								JT, 75°, Fe SN, PR, RF														
							✓								JT, 90°, Fe SN, PR, RF														
			100	91	464.9	10	✓		●						100	JT, 5°, Fe SN, PR, RF													
						✓							JT, 0°, Fe SN, PR, S																
						✓							JT, 5°, Fe SN, CU, RF																
						✓							JT, 25°, Fe SN, PR, RF																
						✓							JT, 10°, Fe SN, PR, RF																
			18	6	463.9	11	✓		●	○					300	JT, 25°, Fe SN, DIS, RF													
						✓							JT, 5°, Fe SN, PR, RF																
						✓							JT, 5°, CN, PR, S																
						✓							JT, 45°, Fe SN, PR, RF																
						✓							JT, 5°, Fe SN, PR, S																
		462.9	12	✓		●						1000	JT, 30°, Fe SN, PR, RF																
			✓																										
			✓																										
			✓																										
			✓																										
		461.9	13	X	NO CORE 0.55m																								
			✓																										
		18	6	460.9	14	✓	BASALT: fine crystalline, dark grey green, fractured	FR	●					30	JT, 5°, Fe SN, DIS, RF														
					✓																								
					✓																								
					459.9	15	X	NO CORE 1.90m																					
						✓																							
									Hole Terminated at 15.45 m Refusal																				
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel						Water Level (Date) Inflow Partial Loss Complete Loss						Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss						Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil						Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High					

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 357978.0 m E 6933508.9 m N MGA94 Zone 56

Commenced: 13/10/2021
Completed: 13/10/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclusion: -90° RL Surface: 474.92 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J. Komung



PointID : 310-03-BH3320 Depth Range: 0.00 - 3.00 m



PointID : 310-03-BH3320 Depth Range: 3.00 - 7.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	13/10/2021
Project Name:	Inland Rail B2G	Completed:	13/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	357978.0 m E 6933508.9 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	474.92 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: J. Komung



PointID : 310-03-BH3320 Depth Range: 7.00 - 11.00 m



PointID : 310-03-BH3320 Depth Range: 11.00 - 15.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	13/10/2021
Project Name:	Inland Rail B2G	Completed:	13/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	357978.0 m E 6933508.9 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	474.92 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: J. Komung



PointID : 310-03-BH3320 Depth Range: 15.00 - 15.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 358348.2 m E 6933580.7 m N MGA94 Zone 56

Commenced: 23/08/2021
Completed: 23/08/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 478.60 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R.Welsh

Drilling Information								Soil Description				Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
ADV	Not Observed			D00000 0.00-0.50 m D00000 D 0.00-0.50 m U00050 0.50-0.90 m U00050 U 0.50-0.90 m S00100 SPT 1.00-1.45 m 7.9,11 N=20	477.6	1	CH	TOPSOIL: CLAY trace gravel: medium plasticity, dark brown mottled pale yellow, fine sub-rounded to rounded gravel, trace rootlets. CLAY trace sand: high plasticity, dark brown mottled yellow, fine grained sand. Below 1.00m: trace gravel: fine rounded to sub-rounded gravel, colour changes to pale brown. Below 1.21m: colour changes to dark brown.	M (=PL) VSt					TOPSOIL RESIDUAL SOIL	
				D00200 2.00-2.50 m D00200 D 2.00-2.50 m S00250 SPT 2.50-2.95 m 10,21,30 N=51											
				D00350 3.50-4.00 m D00350 D 3.50-4.00 m S00400 SPT 4.00-4.45 m 10,30,21 N=51											
				S00500											
				S00550 SPT 5.50-5.83 m 8,24,30/30mm N=54/180mm											
						476.6	2	CI-CH		Silty CLAY: medium to high plasticity, pale brown.	M (<PL)	H		EXTREMELY WEATHERED MATERIAL	
						475.6	3								
						474.6	4	CI-CH		Silty CLAY with sand: medium to high plasticity, pale brown, indistinctly very thinly laminated, fine to coarse grained sand.					
						473.6	5								
						472.6	6	ML-MH		Clayey SILT: medium plasticity, pale brown mottled orange.					
						471.6	7			Continued on cored borehole sheet					

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	23/08/2021
Project Name:	Inland Rail B2G	Completed:	23/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	358348.2 m E 6933580.7 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	478.60 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3321 Depth Range: 1.00 - 1.45 m



310-03-BH3321 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	23/08/2021
Project Name:	Inland Rail B2G	Completed:	23/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	358348.2 m E 6933580.7 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	478.60 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3321 Depth Range: 4.00 - 4.45 m



310-03-BH3321 Depth Range: 5.50 - 5.95 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 23/08/2021
Project Name: Inland Rail B2G	Completed: 23/08/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 358348.2 m E 6933580.7 m N MGA94 Zone 56	Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 478.60 m
Barrel Type and Length: HQ3 3 m	Bearing:	Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance			Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
										EL VL L M H VH EH	30 100 300 1000 3000	Particular	General
						477.6	1						
						476.6	2						
						475.6	3						
						474.6	4						
						473.6	5						
						472.6	6		Continued from non-cored borehole sheet				
			100		88	471.6	7		SILTSTONE: dark brown mottled orange, highly fractured, with thin laminations of dark grey fine grained sandstone				
			100		90				SANDSTONE: fine grained, pale grey brown, with closely spaced thin laminations of dark grey siltstone				
HQ3	Not Observed												

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

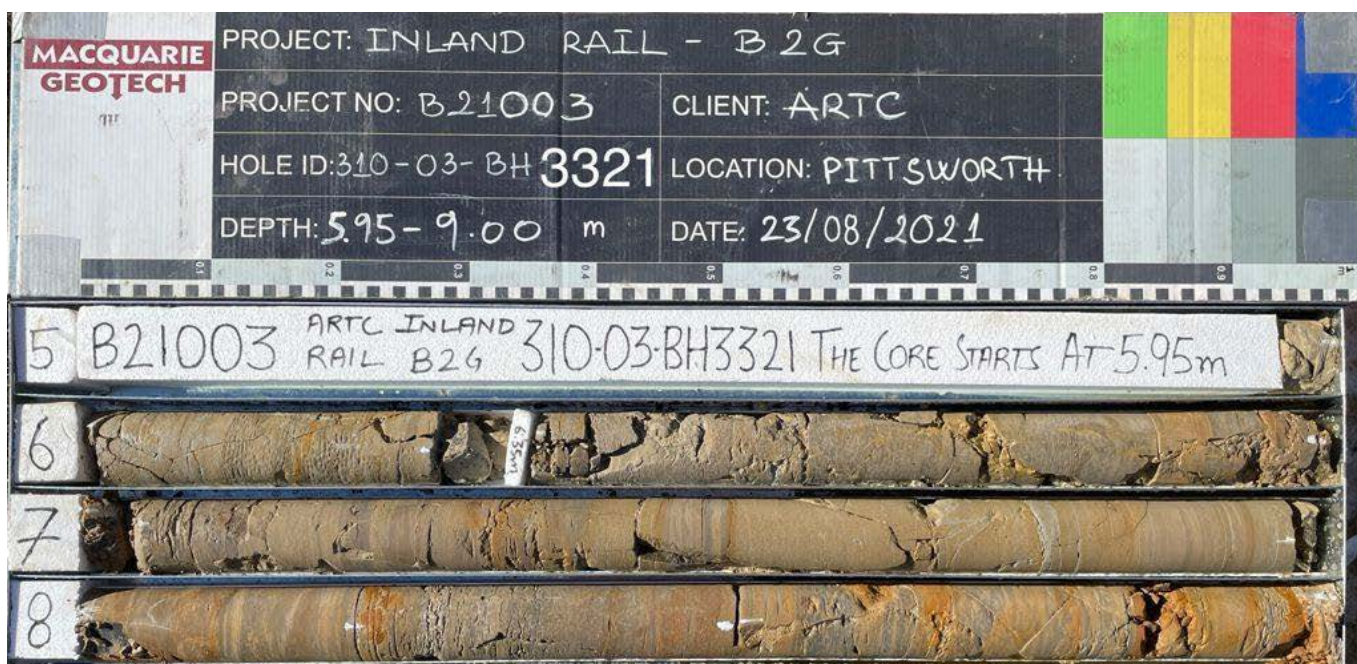
Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 358348.2 m E 6933580.7 m N MGA94 Zone 56

Commenced: 23/08/2021
Completed: 23/08/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 478.60 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R.Welsh



PointID : 310-03-BH3321 Depth Range: 5.95 - 9.00 m



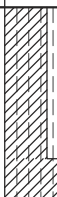
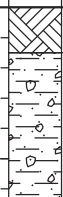
PointID : 310-03-BH3321 Depth Range: 9.00 - 12.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 01/10/2021
Project Name: Inland Rail B2G	Completed: 12/10/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 358742.7 m E 6933598.2 m N MGA94 Zone 56	Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 482.89 m
Hole Diameter:	Bearing:	Datum: AHD Operator: J.Komung

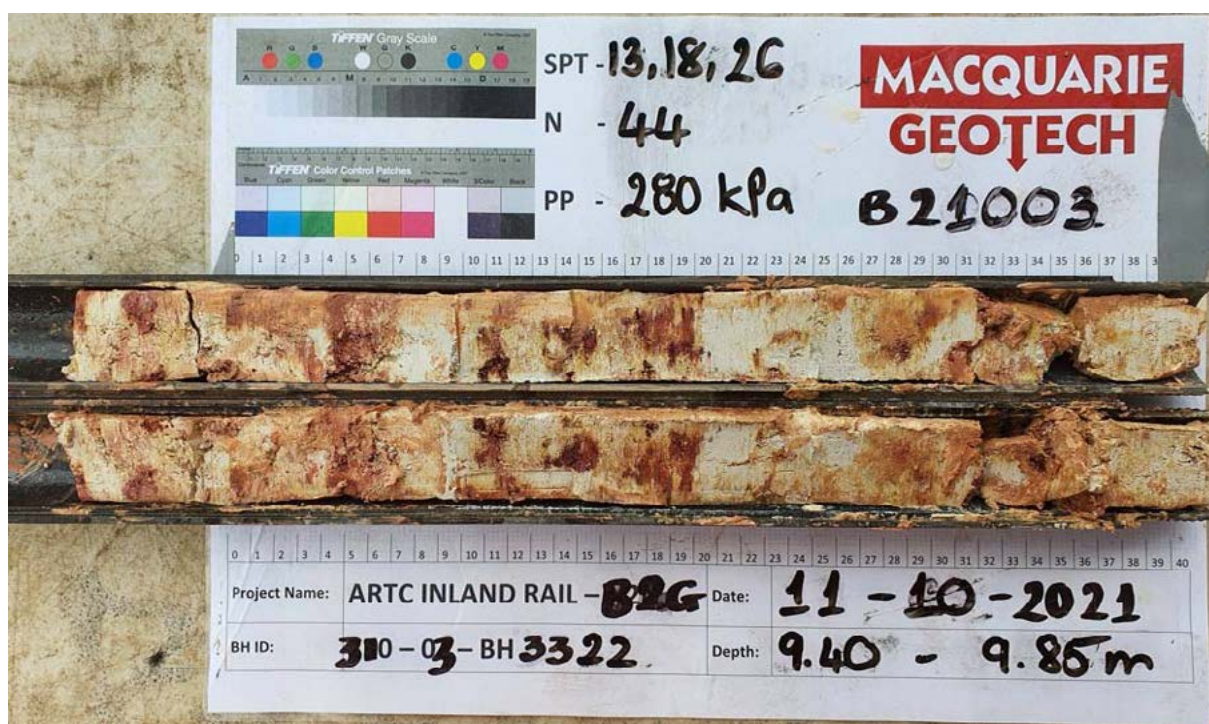
Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/V		Not Observed		D 0.20-0.50 m D00020 D 0.20-0.50 m B 0.50-1.20 m D 0.50-1.00 m B00050 B 0.50-1.20 m D00050 D 0.50-1.00 m		481.9	1		CI	Gravelly sandy CLAY with cobbles, medium plasticity, dark brown, fine to medium grained sand, fine to coarse sub-rounded to sub-angular gravel, sub-rounded to sub-angular cobbles (<200mm), trace rootlets (<1mm) CLAY with sand and gravel, medium plasticity, dark brown and grey, fine to coarse grained sand, fine to coarse sub-angular to angular gravel	D	MD				TOPSOIL
				RESIDUAL SOIL												
						480.9	2			Continued on cored borehole sheet						
						479.9	3									
						478.9	4									
						477.9	5									
						476.9	6									
						475.9	7									

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

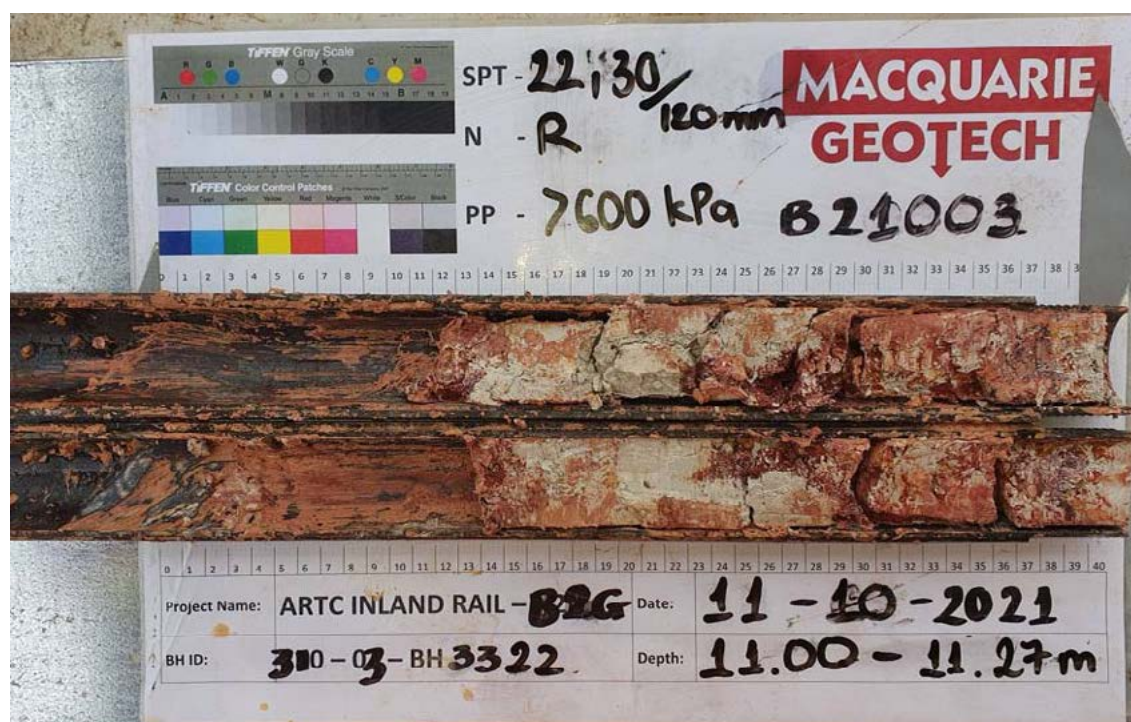
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/10/2021
Project Name:	Inland Rail B2G	Completed:	12/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	358742.7 m E 6933598.2 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:		RL Surface:	482.89 m
		Datum:	AHD
		Operator:	J.Komung



310-03-BH3322 Depth Range: 9.40 - 9.85 m



310-03-BH3322 Depth Range: 11.00 - 11.27 m

Engineering Log - Borehole

Project No.: B21003

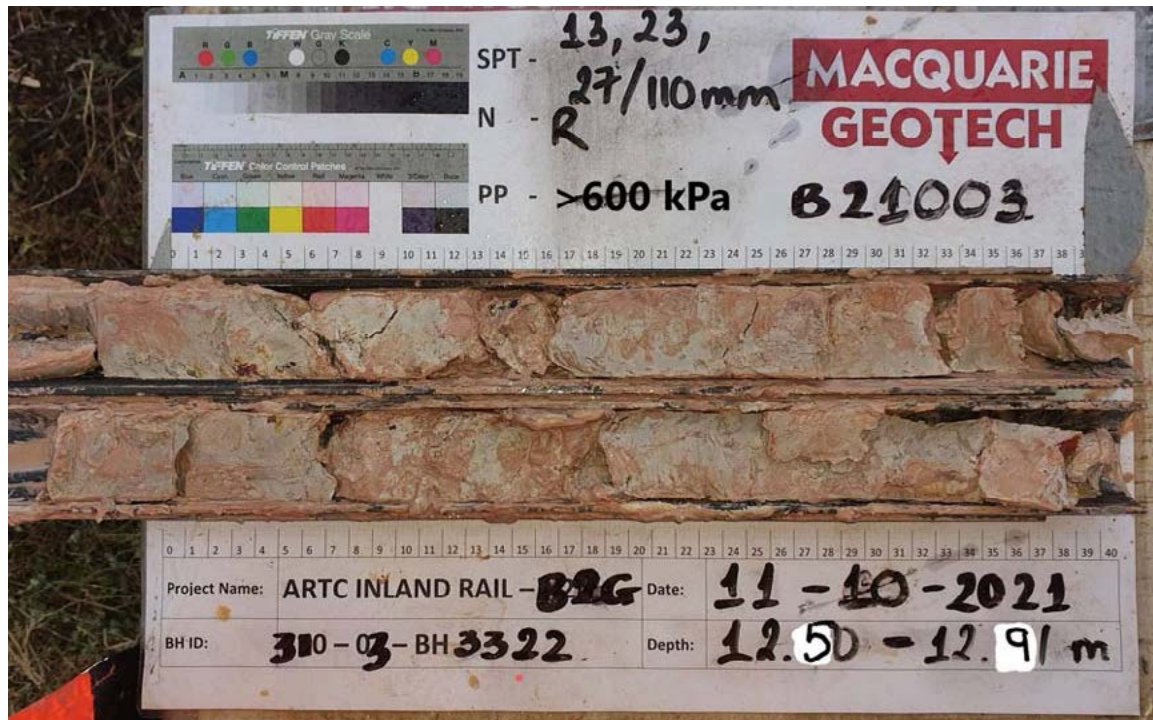
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 358742.7 m E 6933598.2 m N MGA94 Zone 56

Commenced: 01/10/2021
Completed: 12/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter:

Inclination: -90°
Bearing:

RL Surface: 482.89 m
Datum: AHD Operator: J.Komung



310-03-BH3322 Depth Range: 12.50 - 12.91 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 01/10/2021													
Project Name: Inland Rail B2G		Completed: 12/10/2021													
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Tran													
Hole Coordinates: 358742.7 m E 6933598.2 m N MGA94 Zone 56		Checked By: J. Boyle													
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 482.89 m												
Barrel Type and Length: HQ3/WB 3 m		Bearing:	Datum: AHD Operator: J.Komung												
Drilling Information		Rock Substance		Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	Particular	General
						481.9	1		Continued from non-cored borehole sheet						
			100		0		480.9	2	BASALT, fine crystalline, dark grey-blue, Fe stained, highly fractured	HW			JT, 90°, Fe SN, IR JT, 50°, Fe SN, UN JT, 85°, Fe SN, IR JT, 15°, Fe SN, IR JT, 40°, Fe SN, IR JT, 5°, Fe SN, UN JT, 85°, Fe SN, IR		
			9		0		479.9	3	NO CORE 1.00m						
			67		0		478.9	4	BASALT, fine crystalline, dark grey-blue, Fe stained, highly fractured	HW			JT, 40°, Fe Clay VNR, IR CZ, 45°, Clay FILLED, UN CZ, 10°, Fe Clay FILLED, UN		
							477.9	5	BASALT, fine crystalline, dark grey-blue, Fe SN throughout the rock, highly fractured				JT, 45°, Clay VNR, UN JT, 5°, Clay VNR, UN JT, 45°, Clay VNR, IR IS, 45°, Fe Clay FILLED, UN JT, 50°, Fe Clay FILLED, UN JT, 20°, Clay FILLED, UN JT, 20°, Clay FILLED, UN JT, 45°, Fe Clay VNR, IR JT, 75°, Fe Clay FILLED, UN		
			100		46		476.9	6	NO CORE 0.15m				JT, 5°, Clay VNR, UN JT, 75°, Fe Clay FILLED, IR CZ, 60°, Clay FILLED, IR CS, 70°, Clay FILLED, IR CS, 60°, Fe Clay FILLED, IR		
							475.9	7	BASALT, fine crystalline, dark grey-blue, Fe stained, highly fractured Below 3.40m with multiple clay seams				CS, 80°, Clay FILLED, IR 10°, Fe SN, UN, RF 20°, Fe Clay VNR, UN, RF JT, 30°, Fe Clay VNR, IR, RF JT, 60°, Fe Clay VNR, UN, RF JT, 10°, Fe Clay VNR, UN, RF JT, 5°, Fe SN, UN, RF JT, 25°, Fe SN, UN, RF JT, 40°, Clay FILLED, UN,		
			100		44				CONGLOMERATE, matrix supported, sandy CLAY matrix, medium plasticity, pale brown and grey mottled orange, fine to coarse grained sand, fine sub-rounded to sub-angular gravel, trace coal inclusion	MW to HW					
Method		Water		Graphic Log/Core Loss		Weathering		Strength							
AS - Auger Screwing WB - Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel		Level (Date) Inflow Partial Loss Complete Loss		Core recovered (hatching indicates material) Core loss		FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil		(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High							

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 358742.7 m E 6933598.2 m N MGA94 Zone 56

Commenced: 01/10/2021
Completed: 12/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 482.89 m
Barrel Type and Length: HQ3/WB 3 m Bearing: Datum: AHD Operator: J.Komung

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
													Particular	General
HQ3		Not Observed	100	44		473.9	9	SILTSTONE SILTSTONE: grey	HW	EL	VL	30	RF	
								SANDSTONE, fine to coarse grained, grey and white mottled orange					JT, 20°, Clay VNR, UN, RF	
								Extremely weathered SANDSTONE, recovered as sandy CLAY, medium plasticity, white and red mottled orange, fine grained sand	XW				JT, 75°, Clay VNR, UN, RF	
								Heavily weathered SANDSTONE, fine grained, white mottled red					JT, 20°, Fe Clay VNR, IR, RF	
WB		Not Observed				472.9	10	CLAY trace silt, high plasticity, pale red-orange and white SPT @ 9.40 - 9.85m 13/18/26 N=44					JT, 40°, Clay VNR, UN, RF	
													JT, 25°, Clay VNR, UN, RF	
													JT, 10°, Fe SN, UN, RF	
													JT, 65°, Fe Clay VNR, IR, RF	
						471.9	11	Silty CLAY, medium to high plasticity, purple-red mottled white SPT @ 11.00 - 11.27m 22, 30/120mm N=R	RS				JT, 15°, Fe Clay VNR, UN, RF	
													JT, 60°, Fe Clay VNR, IR	
													JT, 70°, Fe Clay VNR, UN, RF	
													JT, 75°, Clay FILLED, IR	
						470.9	12	CLAY trace silt, high plasticity, pale grey-white and pink orange SPT @ 12.50 - 12.91m 13, 23, 27/110mm N=R					CZ, 5°, FILLED, UN, S	
													CS, 60°, Clay FILLED, UN, RF	
													JT, 80°, Clay FILLED, IR, RF	
													CS, 30°, Clay FILLED, UN, RF	
						469.9	13	Hole Terminated at 12.91 m Target depth					BP, 40°, Clay VNR, IR, RF	
						468.9	14							
						467.9	15							

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 358742.7 m E 6933598.2 m N MGA94 Zone 56

Commenced: 01/10/2021
Completed: 12/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclusion: -90° RL Surface: 482.89 m
Barrel Type and Length: HQ3/WB 3 m Bearing: Datum: AHD Operator: J.Komung



PointID : 310-03-BH3322 Depth Range: 1.30 - 5.00 m



PointID : 310-03-BH3322 Depth Range: 5.00 - 9.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/10/2021
Project Name:	Inland Rail B2G	Completed:	12/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	358742.7 m E 6933598.2 m N MGA94 Zone 56	Checked By:	J. Boyle
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3/WB 3 m	RL Surface:	482.89 m
		Bearing:	
		Datum:	AHD
		Operator:	J.Komung



PointID : 310-03-BH3322 Depth Range: 9.00 - 13.00 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	21/09/2021
Project Name:	Inland Rail B2G	Completed:	22/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	358985.2 m E 6933673.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	504.19 m	
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator: R.Welsh

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/V			Not Observed	D00000 D 0.00-0.50 m		503.2	1			TOPSOIL: Sandy CLAY: low plasticity, dark-brown, fine grained sand	NA	NA			TOPSOIL	
				S00050					SP	Silty gravelly SAND : fine grained sand, brown to pale grey-brown, fine to coarse sub-rounded to sub-angular gravel, low plasticity silt.	D	VD		EXTREMELY WEATHERED MATERIAL		
										Continued on cored borehole sheet						
						502.2	2									
						501.2	3									
						500.2	4									
						499.2	5									
						498.2	6									
						497.2	7									

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 358985.2 m E 6933673.7 m N MGA94 Zone 56

Commenced: 21/09/2021
Completed: 22/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 504.19 m
Datum: AHD Operator: R.Welsh



310-03-BH3323 Depth Range: 0.50 - 0.60 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	21/09/2021
Project Name:	Inland Rail B2G	Completed:	22/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	358985.2 m E 6933673.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	504.19 m		
Barrel Type and Length:	HQ3 Triple Tube 3 m	Bearing:		Datum:	AHD	Operator:	R.Welsh

Drilling Information							Rock Substance			Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
										EL VL L M H VH EH	30 100 300 1000 3000	Particular	General
						503.2	1		Continued from non-cored borehole sheet				
			100		66	502.2	2	✓	BASALT: fine grained, dark-green mottled brown, with with randomly orientated incipient fracture massive.	HW	●		JT, 13°, Fe SN, UN, RF JT, 30°, Fe SN, IR, RF
								✓					JT, 15°, CN, PR, RF
								✓					JT, 45°, Fe SN, PR, RF
								✓					JT, 30°, Fe SN, PR, RF
								✓					JT, 0°, Fe Clay VNR, IR, RF
								✓					JT, 5°, Fe SN, PR, RF
								✓					JT, 45°, Fe Clay VNR, PR, S
								✓					JT, 33°, Fe Clay VNR, PR, RF
								✓					JT, 15°, Fe SN, PR, RF
								✓					JT, 64°, Fe SN, PR, RF
								✓					JT, 5°, Fe SN, PR, RF
								✓					JT, 20°, Fe SN, UN, RF
								✓					JT, 30°, Fe Clay VNR, PR, S
								✓					JT, 4°, Fe SN, PR, RF
								✓					JT, 16°, Fe SN, PR, RF
								✓					JT, 48°, Fe SN, PR, RF
								✓					JT, 28°, Fe SN, PR, RF
								✓					JT, 49°, Fe SN, CU, RF
								✓					JT, 40°, Fe Clay VNR, DIS, RF
								✓					JT, 10°, Fe SN, PR, RF
								✓					JT, 5°, Fe SN, UN, RF
								✓					JT, 0°, Fe Clay VNR, IR, RF
								✓					JT, 5°, Fe SN, CU, RF
								✓					JT, 10°, Fe SN, UN, RF
								✓					JT, 80°, Fe Clay VNR, PR, RF
								✓					JT, 45°, Fe SN, CU, RF
								✓					JT, 0°, Fe SN, PR, RF
								✓					JT, 85°, Fe SN, PR, S

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 21/09/2021											
Project Name: Inland Rail B2G		Completed: 22/09/2021											
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma											
Hole Coordinates: 358985.2 m E 6933673.7 m N MGA94 Zone 56		Checked By: C.Green											
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 504.19 m										
Barrel Type and Length: HQ3 Triple Tube 3 m		Bearing:	Datum: AHD Operator: R.Welsh										
Drilling Information		Rock Substance		Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
Not Observed		100	75	62	77	495.2	9	✓	BASALT: fine grained, dark-green mottled brown, with with randomly orientated incipient fracture massive.(continued)	EL	●	30	JT, 82°, Fe SN, UN, RF
						494.2	10	✓	From 8.7m becoming vesicular.	VL	○	100	JT, 40°, CN, PR, RF
						493.2	11	✓		MW to SW	●	300	JT, 58°, Clay VNR, UN, RF
						492.2	12	✓		EL	○	1000	JT, 70°, Clay VNR, UN, RF
						491.2	13	✓	From 12.3m becoming altered, brown and dark brown.	VL	●	30	JT, 13°, Clay VNR, UN, RF
						490.2	14	△	Clay seam, white, low plasticity.	MW to SW	○	100	JT, 0°, Fe Clay VNR, PR, RF
						489.2	15	△	BRECCIA: coarse clasts in fine groundmass, pale grey to yellow brown	EL	●	30	JT, 85°, Fe SN, PR, RF
								△	Becoming red-brown, orange and grey to white.	VL	○	100	JT, 5°, CN, UN, RF
								△		MW to SW	●	300	JT, 45°, Clay SN, UN, RF
								△		EL	○	1000	JT, 60°, Clay SN, IR, RF
								△		VL	●	30	JT, 30°, CN, PR, RF
								△		MW to SW	○	100	JT, 54°, Fe SN, PR, S
								△		EL	●	30	SM, 38°, Fe SN, PR, S
								△		VL	○	100	SM, 32°, Clay FILLED, UN, RF
								△		MW to SW	●	300	JT, 10°, Fe SN, PR, RF
								△		EL	○	1000	JT, 0°, Fe SN, UN, RF
								△		VL	●	30	JT, 5°, Fe SN, UN, RF
								△		MW to SW	○	100	JT, 25°, IR, RF
								△		EL	●	30	JT, 15°, Fe SN, PR, RF
								△		VL	○	100	JT, 40°, Fe SN, PR, RF
								△		MW to SW	●	300	JT, 0°, Fe SN, IR, RF
								△		EL	○	1000	SM, 31°, Clay VNR, UN, S
								△		VL	●	30	JT, 45°, Fe SN, UN, RF
								△		MW to SW	○	100	CO, 24°, MS, UN, RF
								△		EL	●	30	JT, 10°, Fe SN, PR, S
								△		VL	○	100	SM, 0°, Clay FILLED, IR, RF
								△		MW to SW	●	300	CZ, 32°, Fe Clay FILLED, IR, RF
								△		EL	○	1000	JT, 10°, Fe SN, PR, S
								△		VL	●	30	JT, 22°, MS CT, UN, RF
								△		MW to SW	○	100	JT, 22°, Clay CT, UN, RF
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	
								△		VL	○	100	
								△		MW to SW	●	300	
								△		EL	○	1000	
								△		VL	●	30	
								△		MW to SW	○	100	
								△		EL	●	30	

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 358985.2 m E 6933673.7 m N MGA94 Zone 56

Commenced: 21/09/2021
Completed: 22/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 504.19 m
Barrel Type and Length: HQ3 Triple Tube 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance					Rock Mass Defects												
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
HQ3	Not Observed	100	58	43	11	487.2	17		BRECCIA: coarse clasts in fine groundmass, pale grey to yellow brown(continued)	HW			SM, 30°, Clay FILLED, IR, VR											
								BASALT: fine crystalline, dark red - brown mottled grey. Vesicular and vuggy.				SM, 0°, Clay FILLED, IR, S												
								NO CORE - 0.34m				SM, 0°, Clay FILLED, IR, S												
								BASALT: fine crystalline, red brown brown, vesicular.	HW			JT, 80°, Fe SN, PR, S												
								BASALT: fine crystalline, red to brown, vesicular, vuggy with secondary mineralisation and chlorite.	MW to HW			JT, 15°, Fe SN, UN, RF												
									MW to HW			JT, 85°, Fe SN, UN, RF												
									MW to HW			JT, 32°, Fe SN, IR, S												
								NO CORE - 0.23m																
								BASALT: fine crystalline, red to brown, vesicular, vuggy with secondary mineralisation and chlorite.				JT, 20°, fe SN, UN, RF												
												JT, 30°, Fe SN, IR, S												
								200mm brecciated zone.																
									HW			SM, 20°, Fe SN, IR, S												
HQ3	Not Observed	100	29	75	483.2	21		Clay seams up to 60mm				JT, 0°, CN, UN, RF												
											SM, 20°, clay FILLED, IR, RF													
											VO, 40°, Clay FILLED, IR, S													
											JT, 0°, Fe SN, PR, RF													
											JT, 5°, Fe SN, UN, RF													
HQ3	Not Observed	100	75		482.2	22		NO CORE - 0.66m				SH, 50°, Fe Clay FILLED, IR, S												
HQ3	Not Observed	100	75		481.2	23		BRECCIA: coarse clasts, fine white to red groundmass, vesicular basalt boulders.	HW with XW			CO, 65°												
											CO, 85°													

Method	Water	Graphic Log/Core Loss	Weathering	Strength
AS - Auger Screwing	Level (Date)	Core recovered (hatching indicates material)	FR - Fresh	(indirect tensile strength)
WB- Washbore	Inflow	Core loss	SW - Slightly Weathered	EL - Extremely Low
HQ3 HQ3 Core Barrel	Partial Loss		DW - Distinctly Weathered	VL - Very Low
NQ3 NQ3 Core Barrel	Complete Loss		XW - Extremely Weathered	L - Low
			RS - Residual Soil	M - Medium
				H - High
				VH - Very High
				EH - Extremely High

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
▽ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	21/09/2021
Project Name:	Inland Rail B2G	Completed:	22/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	358985.2 m E 6933673.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	504.19 m	
Barrel Type and Length:	HQ3 Triple Tube 3 m	Bearing:		Datum:	AHD	Operator: R.Welsh

Drilling Information						Rock Substance				Rock Mass Defects														
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral			Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling								
HQ3		Not Observed	100		75	479.2 478.2 477.2 476.2 475.2 474.2 473.2	25		BRECCIA: coarse clasts, fine white to red groundmass, vesicular basalt boulders.(continued)	HW with XW	EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular General	JT, 35°, Fe Clay VNR, UN, RF <

Engineering Log - Cored Borehole

Project No.: B21003

Client:		ARTC				Commenced:		21/09/2021																	
Project Name:		Inland Rail B2G				Completed:		22/09/2021																	
Hole Location:		N3 - Brookstead to Gowrie				Logged By:		A.Sharma																	
Hole Coordinates:		358985.2 m E 6933673.7 m N MGA94 Zone 56				Checked By:		C.Green																	
Drill Model and Mounting:		Comacchio 305/Track		Inclination:		-90°		RL Surface: 504.19 m																	
Barrel Type and Length:		HQ3 Triple Tube 3 m		Bearing:		Datum:		AHD Operator: R.Welsh																	
Drilling Information		Rock Substance					Rock Mass Defects																		
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling												
													Particular	General											
HQ3	Not Observed	100	88	471.2	33	✓	BASALT: fine crystalline, dark green-grey, trace vugs, trace chlorite mineralisation.(continued)	SW to FR	EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	JT, 41°, Fe Clay VNR, PR, RF				
						✓																			
						✓																			
						✓																			
						✓																			
						✓																			
						✓																			
						✓																			
						✓																			
						✓																			
											</														

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	21/09/2021
Project Name:	Inland Rail B2G	Completed:	22/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	358985.2 m E 6933673.7 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3 Triple Tube 3 m	RL Surface:	504.19 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3323 Depth Range: 1.10 - 5.00 m



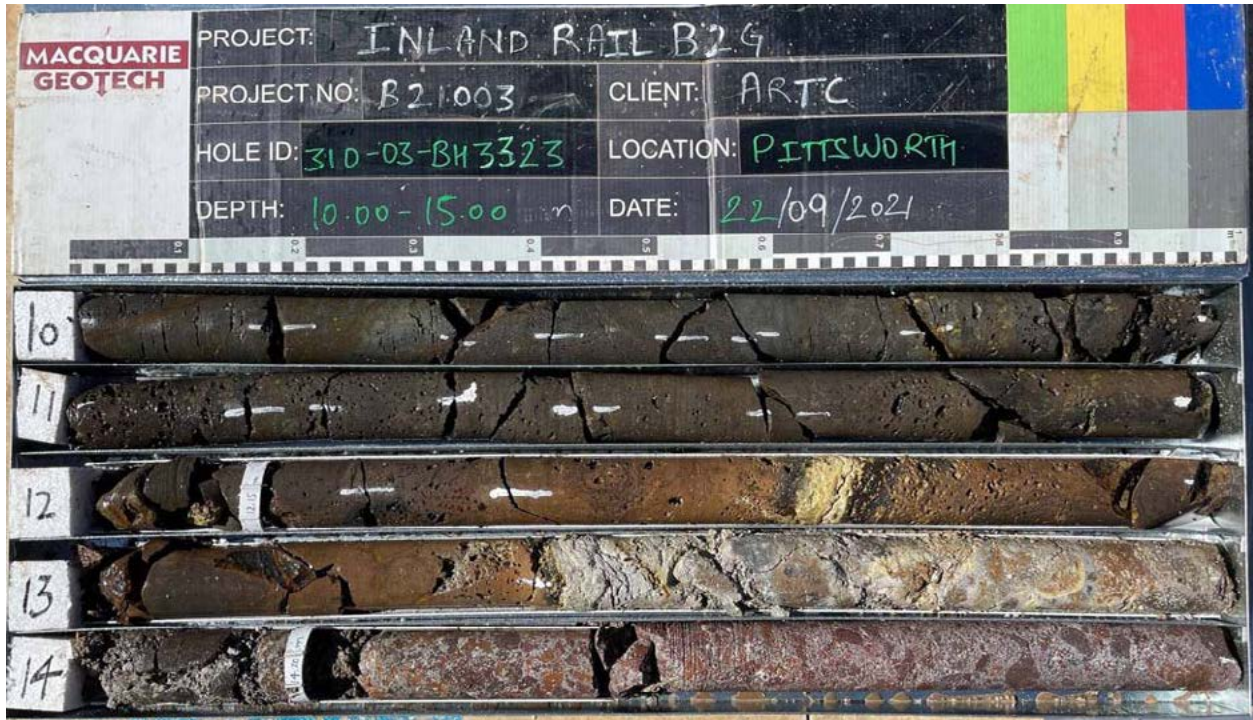
PointID : 310-03-BH3323 Depth Range: 5.00 - 10.00 m

Engineering Log - Cored Borehole

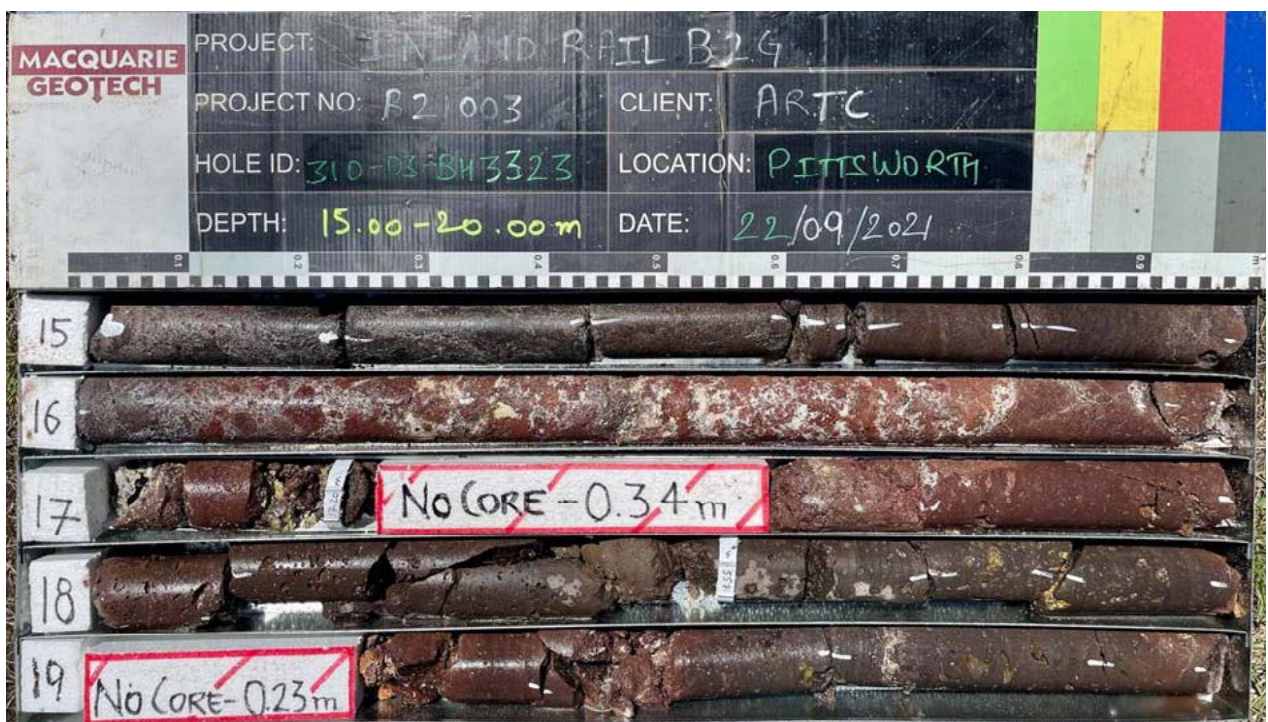
Project No.: B21003

Client:	ARTC	Commenced:	21/09/2021
Project Name:	Inland Rail B2G	Completed:	22/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	358985.2 m E 6933673.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	504.19 m
Barrel Type and Length:	HQ3 Triple Tube 3 m	Bearing:		Datum:	AHD Operator: R.Welsh



PointID : 310-03-BH3323 Depth Range: 10.00 - 15.00 m



PointID : 310-03-BH3323 Depth Range: 15.00 - 20.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	21/09/2021
Project Name:	Inland Rail B2G	Completed:	22/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	358985.2 m E 6933673.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	504.19 m
Barrel Type and Length:	HQ3 Triple Tube 3 m	Bearing:		Datum:	AHD Operator: R.Welsh



PointID : 310-03-BH3323 Depth Range: 20.00 - 25.00 m



PointID : 310-03-BH3323 Depth Range: 25.00 - 30.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	21/09/2021
Project Name:	Inland Rail B2G	Completed:	22/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	358985.2 m E 6933673.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	504.19 m
Barrel Type and Length:	HQ3 Triple Tube 3 m	Bearing:		Datum:	AHD Operator: R.Welsh



PointID : 310-03-BH3323 Depth Range: 30.00 - 35.00 m



PointID : 310-03-BH3323 Depth Range: 35.00 - 35.60 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359060.1 m E 6933553.8 m N MGA94 Zone 56

Commenced: 07/10/2021
Completed: 11/10/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclinor: -90° RL Surface: 494.93 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations
AD/T			Not Observed	D00000 0.00-0.50 m		493.9	1		CI	TOPSOIL: CLAY trace sand trace roots: medium plasticity, dark-brown mottled white, fine grained sand	M (<PL)	St to VSt					TOPSOIL	
				D00050 0.50-1.00 m						Silty CLAY with sand: medium plasticity, grey-brown mottled pale brown-white, fine to medium grained							RESIDUAL SOIL	
				S00150 SPT 1.00-1.45 m 6,13,14 N=27														
						492.9	2			Extremely weathered BASALT recovered as: Gravelly silty CLAY: low plasticity, dark grey, medium to coarse grained gravel		H					EXTREMELY WEATHERED BEDROCK	
						491.9	3			Continued on cored borehole sheet								
						490.9	4											
						489.9	5											

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Support
C - Casing

Penetration
 No resistance ranging to refusal

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/10/2021
Project Name:	Inland Rail B2G	Completed:	11/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	359060.1 m E 6933553.8 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	494.93 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3324 Depth Range: 1.00 - 1.45 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 07/10/2021	
Project Name: Inland Rail B2G		Completed: 11/10/2021	
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma	
Hole Coordinates: 359060.1 m E 6933553.8 m N MGA94 Zone 56		Checked By: D.Hill	
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	
Barrel Type and Length: HQ3 Triple Tube 4.15 m		RL Surface: 494.93 m	
		Datum: AHD Operator: R.Welsh	

Drilling Information				Rock Substance				Rock Mass Defects						
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
										EL VL J M H VH EH	30 100 300 1000 3000	Particular	General	
HQ3	Not Observed					493.9	1							
						492.9	2							
						491.9	3							
						490.9	4							
						489.9	5							
			100	69					Continued from non-cored borehole sheet					
								BASALT: fine crystalline, dark-green mottled brown, massive, fractured	MW			JT, 0°, Fe SN, DIS, RF JT, 0°, Fe SN, PR, RF		
								NO CORE: 1.77m				JT, 5°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF JT, 25°, Fe SN, CU, RF CZ		
			41	18										
									BASALT: fine crystalline, dark-green mottled red-brown, vesicular, highly fractured, trace secondary minerals	MW			CZ JT, 0°, Fe SN, PR, RF CZ JT, 0°, Fe SN, DIS, RF	

Method AS - Auger Screwing WB - Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water ☒ Level (Date) ☐ Inflow ☐ Partial Loss ▲ Complete Loss	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
Support T - Timbering				

Engineering Log - Cored Borehole

Project No.: B21003

Client:		ARTC		Commenced:		07/10/2021									
Project Name:		Inland Rail B2G		Completed:		11/10/2021									
Hole Location:		N3 - Brookstead to Gowrie		Logged By:		A.Sharma									
Hole Coordinates:		359060.1 m E 6933553.8 m N MGA94 Zone 56		Checked By:		D.Hill									
Drill Model and Mounting:		Comacchio 305/Track		Inclination:	-90°	RL Surface:	494.93 m								
Barrel Type and Length:		HQ3 Triple Tube 4.15 m		Bearing:		Datum:	AHD Operator: R.Welsh								
Drilling Information				Rock Substance				Rock Mass Defects							
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	Particular	General
HQ3		Not Observed	41		18				BASALT: fine crystalline, dark-green mottled red-brown, vesicular, highly fractured to fragmented, with decomposed zones 100-200mm long comprised of rock fragments and medium plasticity clay	HW			DZ, 0°, Fe Clay FILLED, IR, S JT, 0°, Fe SN, DIS, RF		
			100		31		7			MW					
										XW			DZ, 0°, Fe Clay SN, IR, S JT, 90°, Fe SN, PR, RF, Sub-vertical joint		
										HW			CZ		
									BASALT: fine crystalline, dark-green mottled red-brown, with randomly orientated healed jointing, fractured				JT, 20°, Fe SN, PR, RF JT, 80°, Fe SN, PR, RF, Sub-vertical joint JT, 30°, Fe SN, PR, RF		
			100		86		8			MW			JT, 90°, Fe SN, DIS, RF, Sub-vertical joint JT, 45°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF		
													JT, 30°, Fe SN, PR, RF JT, 10°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF		
							9		BASALT: fine crystalline, dark grey, with fe stained jointing and calcite veins, fractured				JT, 90°, Fe SN, PR, RF, Sub-vertical joint		
							10			SW			JT, 30°, Fe SN, PR, RF		
			100		78								JT, 0°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF		
							11						JT, 15°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 0°, Fe SN, UN, RF JT, 20°, Fe Clay VNR, PR, S JT, 5°, Fe SN, PR, RF JT, 45°, Fe SN, PR, RF		

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support
T - Timbering

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359060.1 m E 6933553.8 m N MGA94 Zone 56

Commenced: 07/10/2021
Completed: 11/10/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 494.93 m
Barrel Type and Length: HQ3 Triple Tube 4.15 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance					Rock Mass Defects					
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling				
													Particular	General			
HQ3	Not Observed	100	100	78	50	481.9	13	Extremely weathered BRECCIA, low plasticity, yellow and dark brown, medium to coarse sub-angular gravel	BASALT: fine crystalline, dark grey-brown, vesicular, trace phenocrysts, fractured	SW			JT, 45°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF CZ JT, 55°, Fe Clay SN, PR, S JT, 0°, Clay SN, PR, S JT, 0°, Clay SN, PR, S JT, 5°, Clay SN, CU, S JT, 5°, Clay SN, PR, RF				
							13		HW to XW			JT, 90°, CN, DIS, RF, Sub-vertical joint					
							14		MW			JT, 10°, Fe CN, UN, RF					
							14	Extremely weathered BRECCIA, low plasticity, yellow and dark brown, medium to coarse sub-angular gravel				JT, 0°, Clay SN, PR, S					
							15	BASALT: finely crystalline, dark red-brown, vesicular, trace phenocrysts, fractured	XW			JT, 6°, Clay SN, DIS, S DZ, 0°					
							15		HW to MW			JT, 85°, Fe Clay SN, UN, S, Sub-vertical joint JT, 0°, Fe Clay SN, DIS, S JT, 0°, Fe SN, UN, RF					
							16					JT, 10°, Fe Clay SN, PR, S JT, 0°, Fe SN, DIS, RF JT, 5°, Fe SN, CU, RF JT, 20°, Fe SN, PR, RF JT, 0°, Fe SN, UN, RF JT, 10°, Fe SN, PR, RF					
							17		MW			JT, 5°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF					
							17					JT, 0°, Fe Clay VNR, PR, RF JT, 0°, Fe SN, PR, RF JT, 85°, Fe SN, PR, RF, Sub-vertical joint CZ					
														NO CORE: 0.79m			
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel			Water Level (Date) Inflow Partial Loss Complete Loss			Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss			Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil			Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High					
T - Timbering																	

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 07/10/2021											
Project Name: Inland Rail B2G		Completed: 11/10/2021											
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma											
Hole Coordinates: 359060.1 m E 6933553.8 m N MGA94 Zone 56		Checked By: D.Hill											
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 494.93 m										
Barrel Type and Length: HQ3 Triple Tube 4.15 m		Bearing:	Datum: AHD Operator: R.Welsh										
Drilling Information		Rock Substance		Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
									NO CORE: 0.79m(continued)				
			66		34								
							19		BASALT: fine cyrstalline, dark grey-green, trace calcite veins, slightly fractured	MW			JT, 0°, Fe SN, PR, RF
			100		87		20			SW to FR			CZ
							21			FR			JT, 0°, Fe SN, PR, RF
							22						JT, 45°, Fe SN, PR, RF
			100		98		23						JT, 10°, Fe SN, PR, RF
Method		Water		Graphic Log/Core Loss		Weathering		Strength					
AS - Auger Screwing		Level (Date)		Core recovered (hatching indicates material)		FR - Fresh		(indirect tensile strength)					
WB- Washbore		Inflow		Core loss		SW - Slightly Weathered		EL - Extremely Low					
HQ3 HQ3 Core Barrel		Partial Loss				DW - Distinctly Weathered		VL - Very Low					
NQ3 NQ3 Core Barrel		Complete Loss				XW - Extremely Weathered		L - Low					
						RS - Residual Soil		M - Medium					
								H - High					
								VH - Very High					
								EH - Extremely High					

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 07/10/2021	
Project Name: Inland Rail B2G		Completed: 11/10/2021	
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma	
Hole Coordinates: 359060.1 m E 6933553.8 m N MGA94 Zone 56		Checked By: D.Hill	
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	
Barrel Type and Length: HQ3 Triple Tube 4.15 m		RL Surface: 494.93 m	
		Datum: AHD Operator: R.Welsh	

Drilling Information				Rock Substance				Rock Mass Defects					
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
													Particular
HQ3	Not Observed	100	100	98	469.9	25	✓	✓	BASALT: fine crystalline, dark grey-green, trace calcite veins, slightly fractured(continued)	FR	●	30	JT, 10°, Fe SN, PR, RF JT, 0°, CN, PR, S
467.9	27	✓	✓	Hole Terminated at 26.30 m Target depth									
											466.9	28	✓
465.9	29	✓	✓										

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

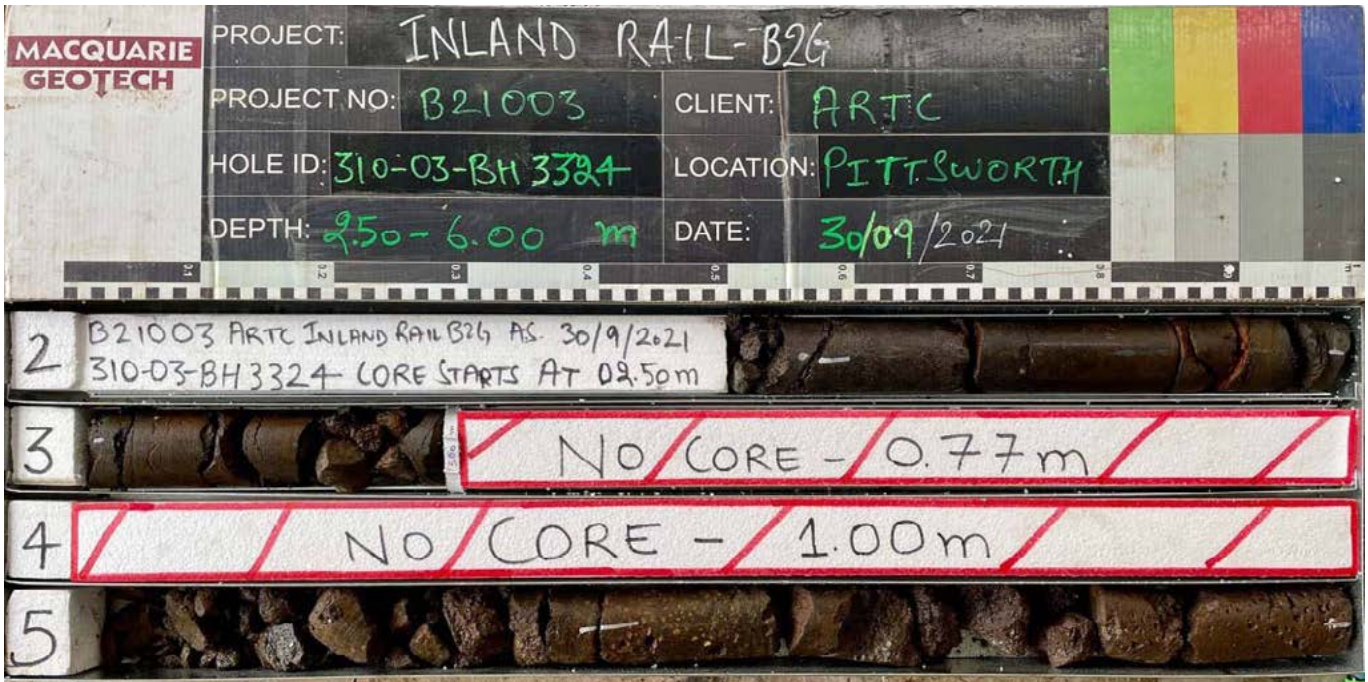
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/10/2021
Project Name:	Inland Rail B2G	Completed:	11/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	359060.1 m E 6933553.8 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	494.93 m
Barrel Type and Length:	HQ3 Triple Tube 4.15 m	Bearing:		Datum:	AHD Operator: R.Welsh



PointID : 310-03-BH3324 Depth Range: 2.50 - 6.00 m



PointID : 310-03-BH3324 Depth Range: 6.00 - 11.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/10/2021
Project Name:	Inland Rail B2G	Completed:	11/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	359060.1 m E 6933553.8 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	494.93 m
Barrel Type and Length:	HQ3 Triple Tube 4.15 m	Bearing:		Datum:	AHD Operator: R.Welsh



PointID : 310-03-BH3324 Depth Range: 11.00 - 16.00 m



PointID : 310-03-BH3324 Depth Range: 16.00 - 21.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/10/2021
Project Name:	Inland Rail B2G	Completed:	11/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	359060.1 m E 6933553.8 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	494.93 m
Barrel Type and Length:	HQ3 Triple Tube 4.15 m	Bearing:		Datum:	AHD
				Operator:	R.Welsh



PointID : 310-03-BH3324 Depth Range: 21.00 - 25.00 m



PointID : 310-03-BH3324 Depth Range: 25.00 - 26.30 m

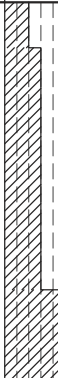
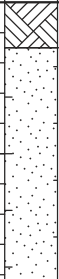
Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359164.1 m E 6933596.5 m N MGA94 Zone 56

Commenced: 12/10/2021
Completed: 13/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 494.63 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/V			Not Observed	D 0.20-0.50 m D00020 D 0.20-0.50 m B00050 B 0.50-1.00 m x2 B 0.50-1.00 m S00100 SPT 1.00-1.44 m 12,19,30/140mm N=49/290mm		493.6	1		SC	CLAY with silt, medium to high plasticity, dark brown and black, some rootlets (<5mm) Clayey SAND with gravel, fine to coarse grained sand, pale brown mottled orange, high plasticity, fine to coarse sub-angular gravel	M (<PL)	H			TOPSOIL	
				D 2.00-2.50 m D00200 D 2.00-2.50 m		492.6	2		GC	Clayey Gravelly SAND, fine to coarse grained, pale brown and grey mottled orange, high plasticity clay, fine to coarse sub-angular to angular gravel					D	VD
										491.6	3			Continued on cored borehole sheet		
						490.6	4									
						489.6	5									
						488.6	6									
						487.6	7									
Method AS - Auger Screwing RR - Rock Roller WB - Washbore Support C - Casing Penetration  No resistance ranging to refusal Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss Water  Level (Date)  Inflow  Partial Loss  Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Moisture Condition D - Dry M - Moist W - Wet Plastic Limit < PL = PL < PL Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Classification Symbols and Soil Descriptions Based on Unified Soil Classification System																

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359164.1 m E 6933596.5 m N MGA94 Zone 56

Commenced: 12/10/2021
Completed: 13/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 494.63 m
Datum: AHD Operator: R. Welsh



310-03-BH3325 Depth Range: 1.00 - 1.44 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359164.1 m E 6933596.5 m N MGA94 Zone 56

Commenced: 12/10/2021
Completed: 13/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 494.63 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance						Rock Mass Defects																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50)							Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359164.1 m E 6933596.5 m N MGA94 Zone 56

Commenced: 12/10/2021
Completed: 13/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 494.63 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral		Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
HQ3		Not Observed	100		38	485.6 484.6 483.6 482.6 481.6 480.6 479.6	9		BASALT, fine crystalline, dark grey mottled orange, amygdaloidal infilled with olivine and zeolite	MW				Particular		General					
			100		8												JT, 65°, FE CLAY VNR, UN				
																	JT, 90°, FE CLAY VNR, UN				
																	JT, 15°, CN, UN				
																	JT, 5°, FE CLAY VNR, IR Non Intact				
																	JT, 10°, CLAY VNR, IR				
																	SM, 45°, FE CLAY FILLED, IR, RF				
																	45°, FE CLAY FILLED, IR, RF				
																	SM, 45°, FE CLAY FILLED, IR, RF				
																	45°, FE CLAY FILLED, IR, RF				
																	JT, 30°, CLAY VNR, UN, RF				
																	SM, 85°, FE CLAY FILLED, IR, RF				
																	85°, FE CLAY FILLED, IR, RF				
																	SM, 85°, FE CLAY FILLED, IR, RF				
																	85°, FE CLAY FILLED, IR, RF				
			79		36	12		Extremely weathered BASALT: Recovered as gravelly silty CLAY, low plasticity, brown mottled orange and white and green, fine to coarse sub-angular to angular gravel	XW						SM, 85°, FE CLAY FILLED, IR, RF						
								From 11.42m to 11.65m: NO CORE 0.23m	XW						85°, FE CLAY FILLED, IR, RF						
								BASALT, fine crystalline, dark grey mottled orange, some vesicles, Fe stained							JT, 20°, CLAY VNR, IR, RF						
								From 12.20m to 12.42m: NO CORE 0.22m							JT, 20°, CLAY VNR, IR, RF						
								BASALT, fine crystalline, dark grey mottled orange, some vesicles, Fe stained							JT, 5°, CLAY VNR, UN, RF						
			86		33	13										JT, 45°, FE CLAY FILLED, UN, RF					
															JT, 40°, CLAY VNR, UN, RF						
															CS, 45°, CLAY FILLED, UN, RF						
															JT, 10°, CLAY VNR, UN, RF						
															JT, 40°, FE SN, UN, RF						
															JT, 85°, CLAY FILLED, UN, RF						
															JT, 20°, CLAY VNR, UN						
															JT, 45°, CLAY VNR, IR						
															JT, 30°, CLAY FILLED, UN, RF						
			100		65	15										JT, 50°, CLAY FILLED, UN, RF					
																JT, 5°, CLAY VNR, UN, RF					
																JT, 15°, CLAY FILLED, UN, RF					
																JT, 45°, CLAY VNR, UN, RF					
																JT, 45°, FE CLAY VNR, IR, RF					
<table><tr><td>Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel</td><td>Water Level (Date) Inflow Partial Loss Complete Loss</td><td>Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss</td><td>Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil</td><td>Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High</td></tr></table>																	Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water Level (Date) Inflow Partial Loss Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water Level (Date) Inflow Partial Loss Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																	

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359164.1 m E 6933596.5 m N MGA94 Zone 56

Commenced: 12/10/2021
Completed: 13/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 494.63 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects												
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral		Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling									
											EL	VL	M	H	VH	EH	30	100	300	1000	3000	Particular	General	
HQ3		Not Observed	100		65		477.6	✓✓	BASALT, fine crystalline, dark grey mottled orange, some vesicles, Fe stained(continued)	SW to MW												JT, 65°, FE CLAY VNR, UN, RF		
							17	✓✓	Below 16.00m: with amygdales infilled with olivine	DW	●											CS, 60°, CLAY FILLED, UN, RF		
							✓✓	Volcanic BRECCIA, clast support, fine to coarse sub-angular to angular gravel, red-purple and brown mottled white and green, fine grained matrix	○											CS, 35°, CLAY FILLED, UN, RF				
							✓✓													JT, 90°, CN, UN, RF				
			18	✓✓	BASALT, fine crystalline, vesicular, dark grey - purple, slightly fractured													Non Intact						
			476.6	✓✓	From 17.72m to 17.78m: Brecciated zone														JT, 75°, CLAY VNR, UN, RF					
			19	✓✓	BASALT, fine crystalline, dark grey-purple mottled orange, some amygdales infilled with olivine and calcite	HW													JT, 10°, CLAY VNR, IR, RF					
			475.6	✓✓															CZ, 40°, FILLED, UN, RF					
			474.6	✓✓															JT, 30°, FE SN, UN, RF					
			20	✓✓	BASALT, fine crystalline, dark grey and blue, vesicular, trace amygdales infilled with calcite	FR to SW														JT, 45°, CLAY VNR, UN, RF				
473.6	✓✓																JT, 45°, FE CLAY VNR, UN, RF							
21	✓✓																	CS, 5°, CLAY FILLED, UN, RF						
									Hole Terminated at 21.18 m Target depth												JT, 20°, FE CLAY VNR, UN, RF			
																					CZ, 40°, FILLED, UN, RF			
																					CS, 5°, CLAY FILLED, UN, RF			
																					CZ, 5°, CLAY FILLED, UN, RF			
																					5°, CLAY FILLED, UN, RF			
																					CZ, 5°, CLAY FILLED, UN, RF			
																					5°, CLAY FILLED, UN, RF			
																					CZ, 5°, CLAY FILLED, UN, RF			
																					5°, CLAY FILLED, UN, RF			
																					JT, 60°, CLAY FILLED, UN, RF			
																					JT, 50°, CLAY VNR, UN, RF			
																					JT, 70°, FE SN, UN, RF			
																					SM, 20°, CLAY FILLED, UN, RF			
																					20°, CLAY FILLED, UN, RF, 20mm aperture			
																					JT, 20°, FE SN, UN			
																					JT, 20°, FE SN, UN			
																					JT, 10°, FE SN, IR			
																					JT, 5°, FE SN, UN			
																					JT, 45°, MS VNR, UN			
																					JT, 10°, FE SN, UN, RF			
																					JT, 40°, FE SN, UN, RF			
																					JT, 20°, FE SN, UN			
																					JT, 10°, CLAY FILLED, UN			
																					JT, 10°, FE SN, UN			
																					JT, 45°, FE SN, UN, RF			
																					JT, 30°, FE CLAY VNR, IR			
																					JT, 25°, FE CLAY FILLED, UN			
																					JT, 10°, FE SN, IR, RF			
																					JT, 90°, FE SN, IR, RF			
																					20°, FE CLAY VNR, IR, VR			
																					CZ, 20°, FE CLAY VNR,			
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water Level (Date) Inflow Partial Loss Complete Loss Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Support T - Timbering Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																								

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 359164.1 m E 6933596.5 m N MGA94 Zone 56										Commenced: 12/10/2021 Completed: 13/10/2021 Logged By: T. Tran Checked By: J. Boyle														
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ3 3 m										Inclination: -90° Bearing: RL Surface: 494.63 m Datum: AHD Operator: R. Welsh														
Drilling Information							Rock Substance							Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
						469.6	25																IR	
						468.6	26																20°, FE CLAY VNR, IR, VR	
						467.6	27																JT, 20°, FE SN, IR	
						466.6	28																Non Intact	
						465.6	29																JT, 75°, MS FILLED, UN, RF	
						464.6	30																JT, 75°, MS VNR, IR, RF	
						463.6	31																JT, 5°, CN, UN, RF	
																							JT, 45°, CLAY VNR, UN	
																							SM, 20°, CLAY FILLED, IR	
																							20°, CLAY FILLED, IR, VR	
																							SM, 20°, CLAY FILLED, IR	
																							20°, CLAY FILLED, IR, VR	
																							CZ, 50°, CLAY FILLED, IR, RF	
																							JT, 80°, CN, IR, RF	
																							JT, 10°, CN, IR	

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359164.1 m E 6933596.5 m N MGA94 Zone 56

Commenced: 12/10/2021
Completed: 13/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclusion: -90° RL Surface: 494.63 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R. Welsh



PointID : 310-03-BH3325 Depth Range: 2.50 - 6.00 m



PointID : 310-03-BH3325 Depth Range: 6.00 - 10.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359164.1 m E 6933596.5 m N MGA94 Zone 56

Commenced: 12/10/2021
Completed: 13/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 494.63 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R. Welsh



PointID : 310-03-BH3325 Depth Range: 10.00 - 14.00 m



PointID : 310-03-BH3325 Depth Range: 14.00 - 18.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	12/10/2021
Project Name:	Inland Rail B2G	Completed:	13/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran
Hole Coordinates:	359164.1 m E 6933596.5 m N MGA94 Zone 56	Checked By:	J. Boyle

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	494.63 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: R. Welsh



PointID : 310-03-BH3325 Depth Range: 18.00 - 21.18 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 15/10/2021
Project Name: Inland Rail B2G	Completed: 16/10/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Tran
Hole Coordinates: 359914.4 m E 6933581.7 m N MGA94 Zone 56	Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 494.96 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R. Welsh

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADV		Not Observed		D00030 D 0.30-0.50 m B00050 B 0.50-1.20 m U00050 U 0.50-0.92 m S00100 SPT 1.00-1.45 m 12,16,16 N=32		494.0	1		CH	TOPSOIL: Silty CLAY trace gravel, high plasticity, dark brown and black mottled red-orange, medium to coarse rounded to sub-rounded gravel, trace rootlets (<2mm) Silty CLAY trace sand and gravel, high gravel, medium to high plasticity, brown mottled red orange, fine to coarse grained sand, medium sub-angular gravel Below 0.50m: colour gradually changing with depth to red orange and brown	M (<PL)	H			TOPSOIL
															RESIDUAL SOIL
				D00200 D 2.00-2.50 m			2			ML					Sandy SILT trace gravel: low plasticity, pale brown grey, fine to coarse sand, fine to medium, sub rounded to sub angular ground.
						492.0	3			Continued on cored borehole sheet					
						491.0	4								
						490.0	5								
						489.0	6								
						488.0	7								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359914.4 m E 6933581.7 m N MGA94 Zone 56

Commenced: 15/10/2021
Completed: 16/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 494.96 m
Datum: AHD Operator: R. Welsh



310-03-BH3326 Depth Range: 1.00 - 1.45 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359914.4 m E 6933581.7 m N MGA94 Zone 56

Commenced: 15/10/2021
Completed: 16/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 494.96 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects							
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
										EL VL L M H VH EH		30 100 300 1000 3000	Particular	General					
						494.0	1												
						493.0	2												
									Continued from non-cored borehole sheet										
			100		20	492.0	3		Extremely weathered Volcanic BRECCIA, Recovered as gravelly sandy CLAY, medium plasticity, dark grey mottled orange, fine to coarse grained sand, fine to coarse sub-angular to angular gravel	xw			JT, 80°, FE CLAY FILLED, UN, RF SM, 20°, FE CLAY FILLED, IR, RF JT, 20°, FE CLAY FILLED, IR JT, 20°, FE CLAY FILLED, UN SM, 20°, FE CLAY FILLED, IR JT, 50°, FE CLAY FILLED, IR, RF SM, 30°, FE CLAY FILLED, IR JT, 30°, FE CLAY FILLED, UN, RF JT, 30°, FE CLAY FILLED, IR						
			100		23	491.0	4		BASALT, fine crystalline, dark grey mottled orange, low strength, ironstain throughout core length, highly fractured, multiple clay seams				JT, 20°, FE CLAY FILLED, UN SM, 20°, FE CLAY FILLED, IR JT, 50°, FE CLAY FILLED, IR, RF SM, 30°, FE CLAY FILLED, IR JT, 30°, FE CLAY FILLED, UN, RF JT, 30°, FE CLAY FILLED, IR						
						490.0	5			HW			Non Intact JT, 5°, CLAY VNR, UN, RF SM, 25°, FE CLAY FILLED, IR JT, 45°, FE CLAY FILLED, UN, RF SM, 15°, FE CLAY FILLED, UN JT, 15°, FE CLAY FILLED, UN						
			100		24	489.0	6						SM, 45°, FE CLAY FILLED, UN JT, 10°, FE CLAY FILLED, UN						
						488.0	7		Extremely weathered BASALT: Recovered as gravelly sandy CLAY, medium plasticity, dark brown, grey and orange, fine to coarse sub-angular to angular gravel	xw			JT, 5°, FE CLAY VNR, UN JT, 10°, FE CLAY FILLED, UN						
									BASALT, fine crystalline, dark grey mottled orange, highly fractured, with Fe staining, and randomly orientated incipient joints	MW			JT, 85°, MS FILLED, IR JT, 10°, FE CLAY FILLED, UN JT, 80°, CLAY FILLED, IR SM, 15°, FE CLAY						
<table><tr><td>Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel</td><td>Water Level (Date) Inflow Partial Loss Complete Loss</td><td>Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss</td><td>Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil</td><td>Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High</td></tr></table>															Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water Level (Date) Inflow Partial Loss Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water Level (Date) Inflow Partial Loss Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High															

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 15/10/2021													
Project Name: Inland Rail B2G		Completed: 16/10/2021													
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Tran													
Hole Coordinates: 359914.4 m E 6933581.7 m N MGA94 Zone 56		Checked By: J. Boyle													
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 494.96 m												
Barrel Type and Length: HQ 3 m		Bearing:	Datum: AHD Operator: R. Welsh												
Drilling Information		Rock Substance		Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
													Particular	General	
HQ3		Not Observed	100		0		486.0	9	BASALT, fine crystalline, dark grey mottled orange, highly fractured, with Fe staining, and randomly orientated incipient joints(continued)	MW			FILLED, UN SM, 45°, FE CLAY FILLED, UN IS, 40°, CLAY FILLED, UN, RF JT, 10°, FE CLAY FILLED, UN, RF CZ, 15°, FE CLAY FILLED, UN, RF JT, 50°, FE CLAY VNR, UN, RF CZ, 20°, FE CLAY FILLED, UN JT, 5°, FE CLAY FILLED, UN Non Intact JT, 75°, FE SN, UN, RF JT, 85°, FE SN, UN, RF JT, 20°, FE SN, UN, RF JT, 60°, CLAY VNR, UN, RF JT, 85°, CLAY FILLED, IR, RF CZ, 20°, CLAY VNR, UN, RF JT, 5°, FE CLAY FILLED, UN, RF JT, 10°, FE SN, IR, RF JT, 80°, FE CLAY VNR, UN, RF JT, 10°, FE CLAY FILLED, IR		
			100		30		485.0	10						JT, 75°, CLAY FILLED, UN SM, 5°, CLAY FILLED, IR Non Intact SM, 10°, FE CLAY FILLED, UN JT, 70°, FE CLAY VNR, UN, RF Non Intact JT, 65°, FE SN, UN, RF JT, 65°, FE CLAY VNR, UN, RF JT, 70°, FE SN, UN, RF JT, 60°, FE SN, IR JT, 75°, FE CLAY VNR, UN, RF CZ, 20°, FE CLAY VNR, UN, RF JT, 5°, FE CLAY VNR, UN, RF JT, 10°, FE SN, UN, RF JT, 45°, FE CLAY FILLED, UN, RF JT, 85°, CN, IR JT, 40°, FE SN, UN, RF JT, 85°, FE SN, UN, RF JT, 45°, FE SN, UN, RF CS, 45°, FE CLAY FILLED, IR, RF JT, 45°, FE SN, IR, RF JT, 50°, FE CLAY VNR, UN, RF	
			100		30		484.0	11							
			100		30		483.0	12	Hole Terminated at 12.00 m Target depth						
							482.0	13							
							481.0	14							
							480.0	15							
Method		Water		Graphic Log/Core Loss		Weathering		Strength							
AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel		Level (Date) Inflow Partial Loss Complete Loss		Core recovered (hatching indicates material) Core loss		FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil		(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High							
Support		T - Timbering													

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 359914.4 m E 6933581.7 m N MGA94 Zone 56										Commenced: 15/10/2021 Completed: 16/10/2021 Logged By: T. Tran Checked By: J. Boyle														
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ 3 m										Inclination: -90° Bearing: RL Surface: 494.96 m Datum: AHD Operator: R. Welsh														
Drilling Information							Rock Substance							Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
						478.0	17																JT, 50°, FE CLAY VNR, UN, RF Non Intact JT, 20°, FE SN, UN, RF JT, 30°, FE SN, UN, RF JT, 45°, FE CLAY VNR, UN, RF CZ, 15°, FE SN, IR, RF JT, 80°, CLAY VNR, UN, RF JT, 20°, FE CLAY VNR, UN, RF Non Intact JT, 30°, CLAY VNR, UN, RF JT, 30°, FE CLAY VNR, UN, RF JT, 30°, FE CLAY VNR, UN, RF JT, 30°, CLAY VNR, UN, RF Non Intact JT, 10°, FE SN, UN, RF JT, 10°, FE SN, UN, RF JT, 5°, FE SN, UN, RF JT, 60°, CLAY VNR, UN, RF JT, 25°, FE CLAY VNR, IR, RF JT, 5°, FE SN, IR, RF JT, 5°, FE CLAY FILLED, IR, RF JT, 55°, FE SN, UN CZ, 25°, FE CLAY VNR, IR JT, 45°, FE CLAY VNR, UN, RF JT, 30°, FE CLAY VNR, UN, RF JT, 15°, FE CLAY VNR, UN, RF JT, 40°, CLAY VNR, UN, RF JT, 5°, FE CLAY VNR, UN, RF JT, 20°, FE CLAY VNR, UN, RF JT, 5°, FE CLAY VNR, IR, RF JT, 20°, FE CLAY VNR, UN, RF Non Intact JT, 20°, FE CLAY VNR, UN, RF JT, 25°, FE SN, UN, RF JT, 25°, FE SN, UN, RF JT, 25°, CLAY VNR, UN, RF JT, 50°, FE CLAY VNR, UN, RF Non Intact JT, 35°, Clay VNR, UN, RF JT, 60°, Fe Clay VNR, UN,	
						477.0	18																	
						476.0	19																	
						475.0	20																	
						474.0	21																	
						473.0	22																	
						472.0	23																	

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

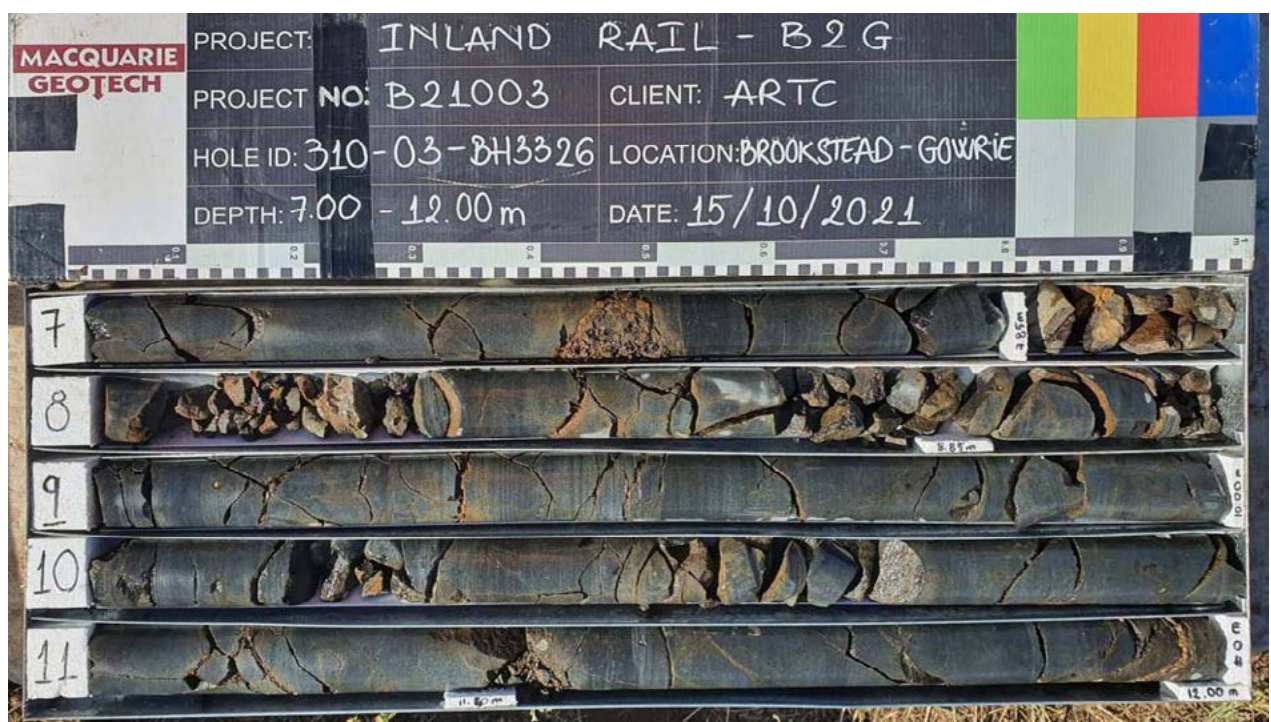
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 359914.4 m E 6933581.7 m N MGA94 Zone 56

Commenced: 15/10/2021
Completed: 16/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305/Track Inclusion: -90° RL Surface: 494.96 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R. Welsh



PointID : 310-03-BH3326 Depth Range: 2.50 - 7.00 m



PointID : 310-03-BH3326 Depth Range: 7.00 - 12.00 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	15/10/2021
Project Name:	Inland Rail B2G	Completed:	15/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	360419.2 m E 6933604.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	506.48 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	J. Komung

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADV			Not Observed	D00000 D 0.00-0.50 m		505.5	1		CI	TOPSOIL: CLAY trace sand trace roots: medium plasticity, dark-brown, fine grained sand	M (<PL)	H			TOPSOIL
				D00050 D 0.50-1.00 m						CLAY trace sand: medium plasticity, dark-brown mottled, fine grained sand					RESIDUAL SOIL
						505.5	1			Continued on cored borehole sheet					
						504.5	2								
						503.5	3								
						502.5	4								
						501.5	5								
						500.5	6								
						499.5	7								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

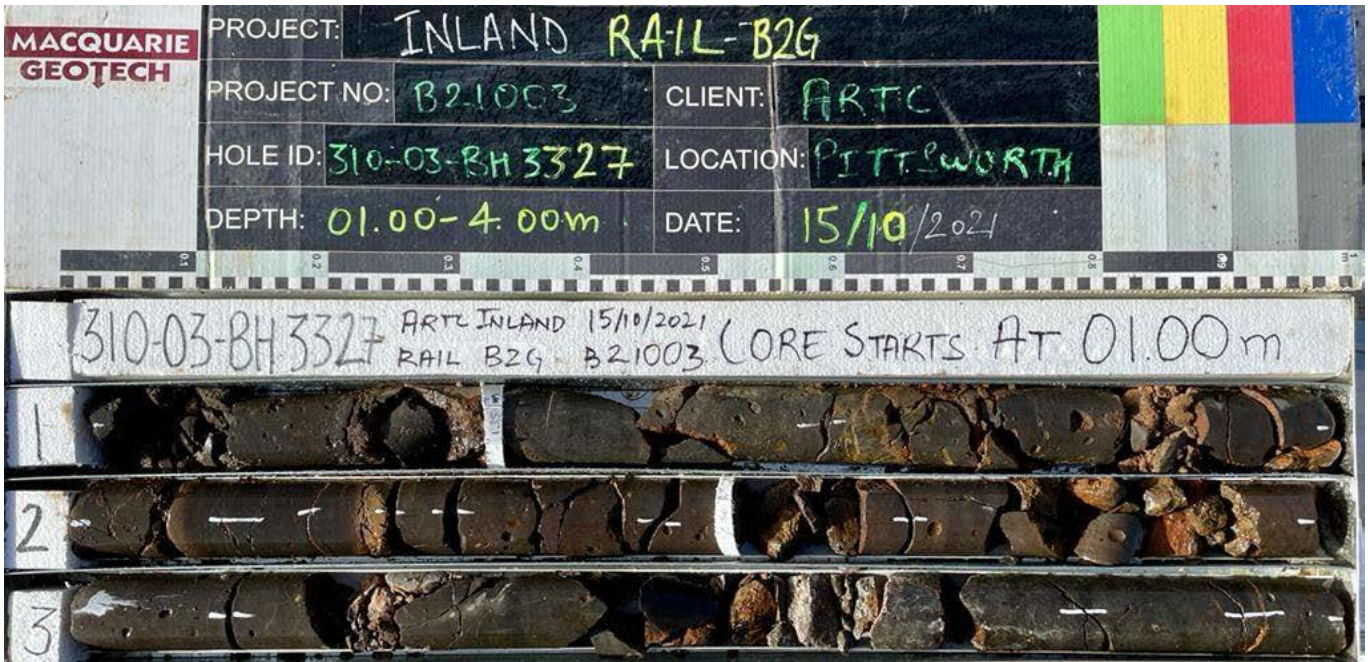
Client: ARTC		Commenced: 15/10/2021																									
Project Name: Inland Rail B2G		Completed: 15/10/2021																									
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma																									
Hole Coordinates: 360419.2 m E 6933604.7 m N MGA94 Zone 56		Checked By: C.Green																									
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 506.48 m																								
Barrel Type and Length: HQ 3 m		Bearing:	Datum: AHD Operator: J. Komung																								
Drilling Information		Rock Substance		Rock Mass Defects																							
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling														
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (m)		Depth (m)		Graphic Log		Material Description		Weathering		Strength		Defect Spacing		Defect Description	
Method		Support		Water		TCR (%)		SCR (%)		RQD (%)		RL (															

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	15/10/2021
Project Name:	Inland Rail B2G	Completed:	15/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	360419.2 m E 6933604.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	506.48 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: J. Komung



PointID : 310-03-BH3327 Depth Range: 1.00 - 4.00 m



PointID : 310-03-BH3327 Depth Range: 4.00 - 8.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	15/10/2021
Project Name:	Inland Rail B2G	Completed:	15/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	360419.2 m E 6933604.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	506.48 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD
				Operator:	J. Komung



PointID : 310-03-BH3327 Depth Range: 8.00 - 12.00 m



PointID : 310-03-BH3327 Depth Range: 12.00 - 13.65 m

Engineering Log - Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates:

Commenced: 21/09/2021
Completed: 22/09/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: No survey
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Rock Substance						Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral		Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling							
											EL VL L M H VH EH	30 100 300 1000 3000	Particular	General								
HQ3		Not Observed	100		0		1		Continued from non-cored borehole sheet													
							2									BASALT: fine crystalline, dark grey mottled orange, ironstained joints, highly fractured	MW					
							3															
			4		Below 3.80m: mottled orange	MW - HW																
			5		BASALT: fine crystalline, dark blue to dark grey, trace iron staining, highly fractured	SW																
			6																			
			7		BASALT: fine crystalline, dark blue to dark grey, trace iron staining, highly fractured to fractured												SW					
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water Level (Date) Inflow Partial Loss Complete Loss Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																						

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates:

Commenced: 21/09/2021
Completed: 22/09/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: No survey
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
													Particular	General
HQ3	Not Observed	100	92		14		9	✓	BASALT: fine crystalline, dark blue to dark grey, trace iron staining, highly fractured (continued)	SW	●	300	VR	
			100	0			9	✓					JT, 10°, CLAY VNR, UN, VR	
							9	✓					JT, 85°, CLAY VNR, UN, VR	
			100	35			10	✓					JT, 5°, FE SN, UN, VR	
							11	✓	Hole Terminated at 10.13 m Target depth				JT, 15°, CLAY VNR, UN, VR	
							11	✓					JT, 80°, FE SN, UN, VR	
							11	✓					JT, 5°, CLAY VNR, UN, VR	
							11	✓					JT, 10°, CLAY VNR, IR, VR	
							11	✓					JT, 35°, CLAY FILLED, IR, VR	
							11	✓					JT, 10°, CLAY VNR, UN, VR	
							11	✓					JT, 5°, CLAY VNR, UN, VR	
							11	✓					JT, 70°, CLAY VNR, UN, VR	
							11	✓					JT, 80°, CN, UN, VR	
							11	✓					JT, 20°, CLAY VNR, UN, VR	
							11	✓					JT, 20°, CLAY FILLED, UN, VR	
							11	✓					JT, 10°, CLAY FILLED, UN, VR	
							11	✓					JT, 5°, CLAY VNR, UN, VR	
							11	✓					JT, 5°, CLAY VNR, UN, VR	
							11	✓					JT, 60°, CLAY VNR, UN, VR	
							11	✓					JT, 85°, CLAY VNR, IR, VR	
							11	✓					JT, 40°, CLAY VNR, UN, VR	
							11	✓					JT, 20°, CLAY FILLED, UN, VR	
							11	✓					JT, 10°, FE SN, UN, VR	
							11	✓					JT, 45°, CLAY VNR, UN, VR	
							11	✓					JT, 10°, CLAY FILLED, UN, VR	
							11	✓					JT, 60°, CLAY VNR, IR, VR	
							11	✓					JT, 45°, CLAY VNR, IR, VR	
							11	✓					JT, 40°, CLAY VNR, IR, VR	
							11	✓					JT, 5°, CLAY VNR, UN, VR	
							11	✓					JT, 15°, CLAY VNR, IR, VR	
							11	✓					JT, 60°, CLAY VNR, UN, VR	
							11	✓					JT, 5°, CLAY FILLED, UN, VR	
							11	✓					JT, 5°, CLAY VNR, UN, VR	
							11	✓					JT, 40°, CLAY VNR, UN, VR	
							11	✓					JT, 40°, CLAY VNR, UN, VR	

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates:										Commenced: 21/09/2021 Completed: 22/09/2021 Logged By: T. Tran Checked By: D.Hill																			
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ 3 m										Inclination: -90° Bearing:										RL Surface: No survey Datum: AHD Operator: B.Boga									

Drilling Information							Rock Substance										Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling					
											EL	VL	J	M	H	VH	EH	30	100	300	1000	3000	Particular	General		
							17																JT, 5°, CLAY VNR, UN, VR			
																							JT, 80°, CLAY VNR, UN, VR			
																							JT, 70°, CLAY VNR, UN, VR			
																							JT, 35°, CLAY VNR, UN, VR			
																							JT, 75°, CLAY VNR, UN, VR			
																							JT, 15°, CLAY VNR, UN, VR			
																							JT, 65°, CLAY VNR, UN, VR			
							18																JT, 20°, FE SN, UN, VR			
																							JT, 90°, CLAY VNR, IR, VR			
																							JT, 10°, CLAY VNR, UN, VR			
																							JT, 5°, CLAY VNR, UN, VR			
																							JT, 70°, CLAY VNR, UN, VR			
							19																JT, 20°, FE SN, PR, RF			
																							JT, 10°, CN, PR, RF			
																							JT, 5°, FE SN, UN, VR			
																							JT, 85°, CLAY VNR, UN, VR			
																							JT, 50°, CLAY VNR, UN, VR			
																							JT, 40°, CLAY VNR, UN, VR			
							20																25°, CLAY VNR, UN, VR			
																							JT, 5°, CN, UN, VR			
																							JT, 85°, CLAY VNR, UN, VR			
																							JT, 15°, CN, UN, VR			
																							JT, 15°, CN, UN, RF			
							21																45°, FE SN, UN, VR			
																							JT, 70°, CLAY VNR, UN, VR			
																							JT, 20°, CLAY VNR, UN, VR			
																							JT, 90°, CLAY VNR, IR, VR			
																							JT, 60°, CN, UN, VR			
							22																JT, 40°, Clay VNR, IR, VR			
																							JT, 40°, Clay VNR, UN, VR			
																							JT, 20°, Clay VNR, IR, VR			
																							JT, 25°, Clay VNR, PR, VR			
																							JT, 10°, Clay VNR, UN, VR			
																							JT, 85°, Clay VNR, UN, VR			
							23																10°, CN, UN, VR			
																							JT, 10°, CN, UN, VR			
																							20°, Clay VNR, UN, VR			
																							JT, 25°, Clay VNR, UN, VR			
																							JT, 25°, Clay VNR, UN, VR			
																							JT, 40°, CN, IR, VR			

Method

AS - Auger Screwing

WB- Washbore

HQ3 HQ3 Core Barrel

NQ3 NQ3 Core Barrel

Water

≡ Level (Date)

▽ Inflow

△ Partial Loss

◼ Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)

Core loss

Weathering

FR - Fresh

SW - Slightly Weathered

DW - Distinctly Weathered

XW - Extremely Weathered

RS - Residual Soil

Strength
(indirect tensile strength)

EL - Extremely Low

VL - Very Low

L - Low

M - Medium

H - High

VH - Very High

EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates:										Commenced: 21/09/2021 Completed: 22/09/2021 Logged By: T. Tran Checked By: D.Hill																			
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ 3 m										Inclination: -90° Bearing:										RL Surface: No survey Datum: AHD Operator: B.Boga									
Drilling Information										Rock Substance										Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling								
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General					
							25																JT, 90°, Clay VNR, UN, VR						
																							40°, Clay FILLED, UN, VR						
																							JT, 40°, Fe SN, IR, VR						
																							45°, Clay VNR, UN, VR						
																							JT, 45°, Fe SN, UN, VR						
																							JT, 20°, Fe SN, IR, VR						
																							JT, 30°, Clay VNR, UN, VR						
																							JT, 20°, Clay VNR, UN, VR						
							26																						
							27																						
							28																						
							29																						
							30																						
							31																						

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
◼ Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates:

Commenced: 21/09/2021
Completed: 22/09/2021
Logged By: T. Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Barrel Type and Length: HQ 3 m

Inclination: -90°
Bearing:

RL Surface: No survey
Datum: AHD

Operator: B.Boga



PointID : 310-03-BH3329 Depth Range: 1.50 - 6.00 m



PointID : 310-03-BH3329 Depth Range: 6.00 - 10.13 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 01/09/2021
Project Name: Inland Rail B2G	Completed: 01/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 364979.9 m E 6934800.8 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 528.45 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations	
ADV			Not Observed	D00000 0.00-0.50 m					CI	FILL Gravelly CLAY: medium plasticity, dark brown to black, fine to coarse sub-angular to angular gravel CLAY trace sand: medium plasticity, dark brown mottled yellow, fine grained sand			100	200	300	400	500	FILL RESIDUAL SOIL	
				U00050 0.50-0.90 m															
				S00100 SPT 1.00-1.45 m 3,6,10 N=16 PP 1.45 m >600 kPa		527.5	1		CI-CH	Sandy CLAY trace gravel: medium to high plasticity, red brown mottled black and white, fine to coarse grained sad fine rounded to sub-rounded gravel	M (~PL)	VSt						*	
				D00200 2.00-2.50 m		526.5	2		ML-MH	Clayey SILT trace gravel: medium plasticity, fine sub angular gravel									
				S00250 SPT 2.50-2.95 m 12,18,23 N=41 PP 2.95 m >600 kPa		525.5	3		CI-CH	Sandy CLAY: medium to high plasticity, pale red brown, fine grained sand								*	
				D00350 3.50-4.00 m		524.5	4												
				S00400 SPT 4.00-4.30 m 8,18,26/0mm N=44/150mm PP 4.45 m >600 kPa		523.5	5				M (<PL)	H						*	
				D00500 5.00-5.50 m		522.5	6												*
				S00550 SPT 5.50-5.83 m 8,14,18/30mm N=32/180mm PP 5.95 m >600 kPa		521.5	7		CH	Gravelly CLAY trace sand: high plasticity, red brown mottled dark grey, fine to medium sub-angular to angular gravel, fine grained sand									
				D00650 6.50-7.00 m															
				S00700 SPT 7.00-7.45 m 6,6,8 N=14 PP 7.45 m >600 kPa					CI-CH	Sandy CLAY trace gravel: medium to high plasticity, red brown mottled dark grey, fine grained sand, fine sub-angular gravel	M (<PL)	St					*		

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 01/09/2021
Project Name: Inland Rail B2G	Completed: 01/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 364979.9 m E 6934800.8 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 528.45 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/V			Not Observed	D00800 8.00-8.50 m		519.5	9		CI-CH	Sandy CLAY trace gravel: medium to high plasticity, red brown mottled dark grey, fine grained sand, fine sub-angular gravel (<i>continued</i>)	M (<PL) to M (~PL) H	St			RESIDUAL SOIL
				PP 8.45 m >600 kPa S00850 SPT 8.50-8.95 m 10,17,22 N=39											
				D00950 9.50-10.00 m		518.5	10			At 10.00m: 1 no.coarse angular gravel, colour changes to red-brown mottled white					
				S01000 SPT 10.00-10.45 m 7,14,24 N=38 PP 10.45 m >600 kPa		517.5	11			Hole Terminated at 10.45 m Target depth					*
						516.5	12								
						515.5	13								
						514.5	14								
						513.5	15								

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Plastic Limit

< PL
= PL
< PL

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/09/2021
Project Name:	Inland Rail B2G	Completed:	01/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	364979.9 m E 6934800.8 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	528.45 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3330 Depth Range: 1.00 - 1.45 m



310-03-BH3330 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/09/2021
Project Name:	Inland Rail B2G	Completed:	01/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	364979.9 m E 6934800.8 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	528.45 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3330 Depth Range: 4.00 - 4.45 m

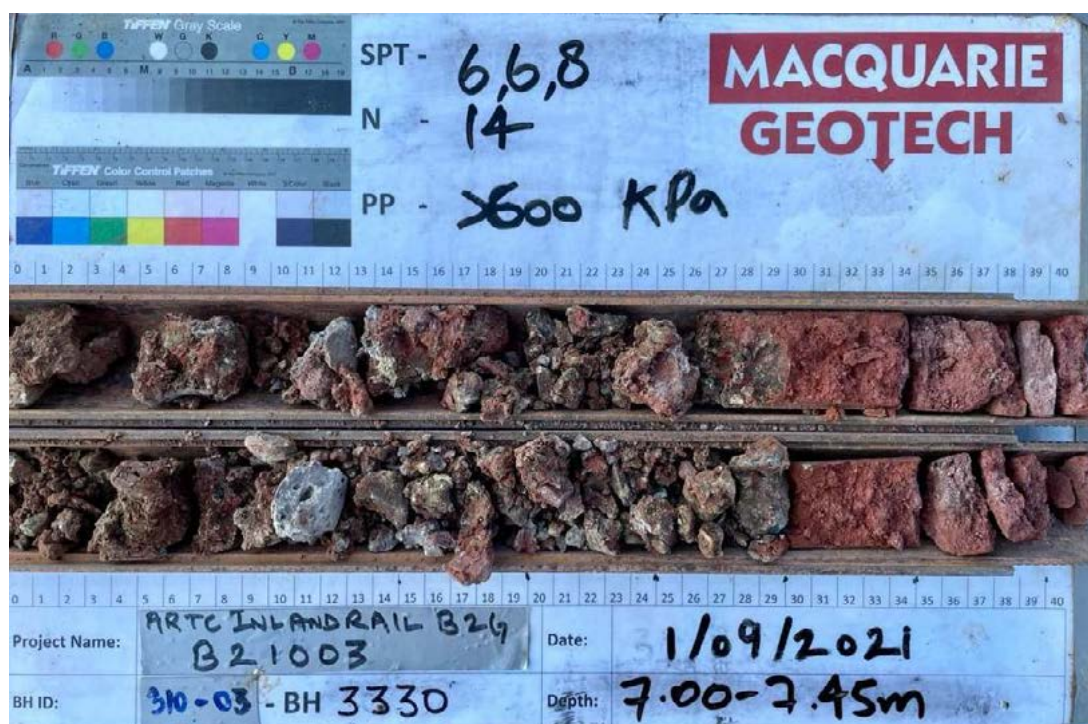


310-03-BH3330 Depth Range: 5.50 - 5.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/09/2021
Project Name:	Inland Rail B2G	Completed:	01/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	364979.9 m E 6934800.8 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	528.45 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3330 Depth Range: 7.00 - 7.45 m



310-03-BH3330 Depth Range: 8.50 - 8.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 364979.9 m E 6934800.8 m N MGA94 Zone 56

Commenced: 01/09/2021
Completed: 01/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 528.45 m
Datum: AHD Operator: R.Welsh



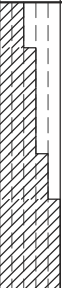
310-03-BH3330 Depth Range: 10.00 - 10.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 27/09/2021
Project Name: Inland Rail B2G	Completed: 29/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: J.Cooper
Hole Coordinates: 368369.4 m E 6936063.9 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 566.50 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/V		Not Observed		D00030 0.30-0.50 m D00050 0.50-1.00 m		565.5	1		CH	TOPSOIL Silty CLAY trace sand: medium to high plasticity, dark brown to black, fine grained sand, trace rootlets (<2mm)	M (<PL)	St			TOPSOIL	
				SM					CLAY with silt trace gravel: high plasticity, dark brown, fine to coarse sub-rounded to sub-angular gravel, trace rootlets (<1mm)	RESIDUAL SOIL						
				S00100 SPT 1.00-1.16 m 7.7/10mm HB N=7/10mm D01500 1.50-1.90 m		564.5	2			Silty SAND with gravel: fine to coarse grained, pale brown grey mottled white, fine to medium sub-angular to angular gravel.	D	VD				
						564.5				Continued on cored borehole sheet						
						563.5	3									
						562.5	4									
						561.5	5									
						560.5	6									
						559.5	7									

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

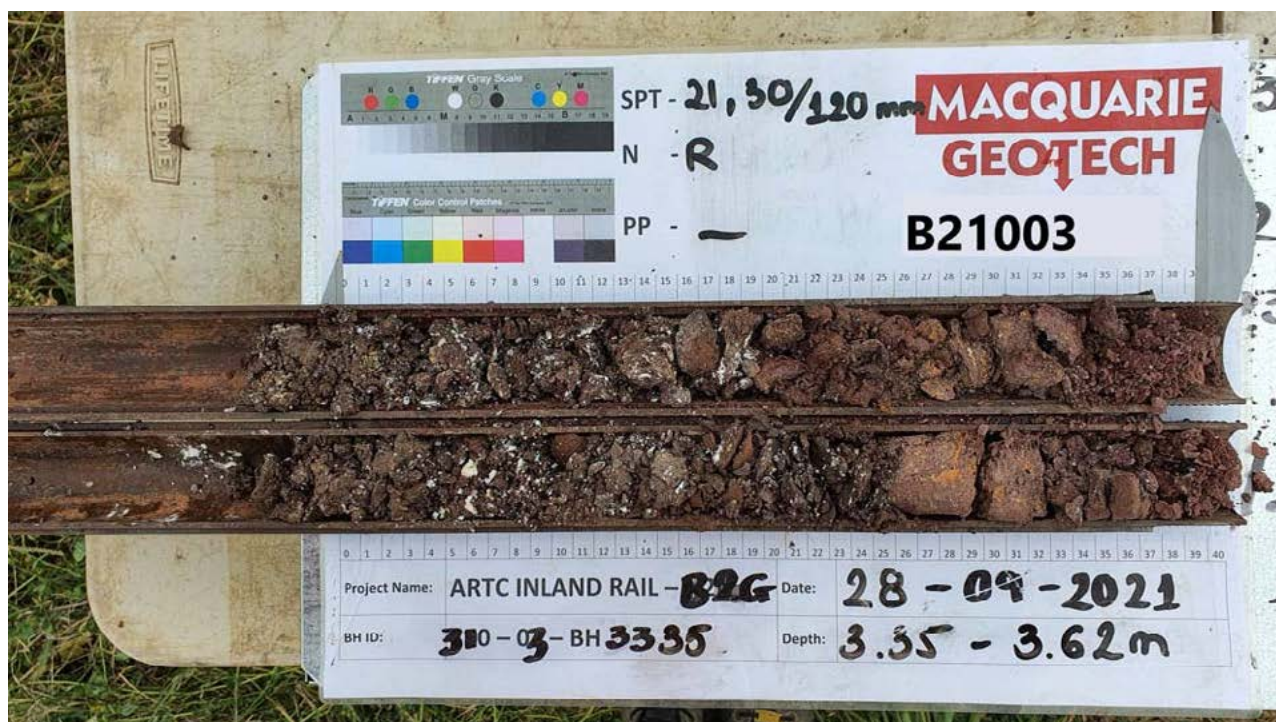
Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	27/09/2021
Project Name:	Inland Rail B2G	Completed:	29/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	368369.4 m E 6936063.9 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	566.50 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3335 Depth Range: 1.00 - 1.16 m



310-03-BH3335 Depth Range: 3.35 - 3.62 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 368369.4 m E 6936063.9 m N MGA94 Zone 56

Commenced: 27/09/2021
Completed: 29/09/2021
Logged By: J.Cooper
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 566.50 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
													Particular	General
						565.5	1							
						564.5	2		Continued from non-cored borehole sheet					
						564.5			BASALT: fine, vesicular, dark grey.	SW			JT, 65°, Fe SN, UN, RF	
						563.5	3		NO CORE 0.85m				JT, 10°, Fe SN, UN, RF	
						562.5	4		Extremely weathered BASALT: recovered as Sandy CLAY trace gravel: low plasticity, red brown, fine to coarse grained sand, fine sub-angular to angular gravel.	XW			JT, 50°, Fe SN, UN, RF	
						562.5			BASALT: fine crystalline, amygdaloidal, red brown.	XW			JT, 40°, Fe SN, UN, RF	
						561.5	5		From 4.00m to 4.14m: NO CORE 0.14m	HW			JT, 75°, Fe SN, UN, RF, <270mm	
						560.5	6		BASALT: fine crystalline, amygdaloidal, red brown.	HW			JT, 75°, CN, UN, RF	
						559.5	7		From 6.15m to 6.35m: Extremely weathered BASALT: recovered as Gravelly CLAY: medium plasticity, dark grey and red brown, fine to coarse sub-angular to angular gravel.	XW			JT, 40°, Clay VNR, UN, RF	
						559.5			From 6.35m to 6.44m: NO CORE 0.09m				JT, 25°, Clay VNR, UN, RF	
						559.5			Extremely weathered BASALT: recovered as Gravelly CLAY: medium plasticity, dark grey and red brown, fine to coarse sub-angular to angular gravel.	XW			N.C	
						559.5			From 7.43m to 7.59m: NO CORE 0.16m				JT, 75°, Clay VNR, UN, RF	
						559.5			BASALT: fine crystalline, dark brown grey, trace amygdaloids.	SW			JT, 20°, CN, UN, RF	
						559.5				HW			JT, 20°, Clay VNR, UN, RF	
						559.5							JT, 20°, Clay VNR, UN, RF	
						559.5							JT, 10°, Clay VNR, UN, RF	
						559.5							JT, 10°, Clay VNR, UN, RF	
						559.5							JT, 25°, Clay VNR, UN, RF	
						559.5							NC	
						559.5							JT, 30°, Clay VNR, UN, RF	
						559.5							JT, 30°, Clay VNR, UN, RF	
						559.5							JT, 30°, Clay VNR, UN, RF	
						559.5							JT, 20°, Clay VNR, UN, RF	
						559.5							JT, 45°, Clay VNR, UN, RF	
						559.5							JT, 25°, Clay VNR, UN, RF	
						559.5							JT, 20°, CN, UN, RF	
						559.5							JT, 20°, Clay VNR, UN, RF	
						559.5							JT, 20°, Clay VNR, UN, RF	
						559.5							FZ	
						559.5							JT, 10°, Clay VNR, UN, RF	
						559.5							JT, 20°, Clay VNR, UN, RF	
						559.5							JT, 20°, Clay VNR, UN, RF	
						559.5							JT, 20°, Clay VNR, UN, RF	
						559.5							JT, 65°, Clay VNR, UN, RF	
						559.5							JT, 40°, Clay VNR, UN, RF	
						559.5							JT, 15°, Clay VNR, UN, RF	
						559.5							XW	
						559.5							NC	
						559.5							JT, 75°, Clay VNR, UN, RF	
						559.5							JT, 20°, Clay VNR, UN, RF	
						559.5							JT, 20°, Clay VNR, UN, RF	

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 27/09/2021																					
Project Name: Inland Rail B2G		Completed: 29/09/2021																					
Hole Location: N3 - Brookstead to Gowrie		Logged By: J.Cooper																					
Hole Coordinates: 368369.4 m E 6936063.9 m N MGA94 Zone 56		Checked By: J.Boyle																					
Drill Model and Mounting: Comacchio 305		Inclination: -90°	RL Surface: 566.50 m																				
Barrel Type and Length: HQ 3 m		Bearing:	Datum: AHD Operator: R.Welsh																				
Drilling Information		Rock Substance		Rock Mass Defects																			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling										
HQ3	Not Observed	100	82		11	557.5	9		highly weathered BASALT: recovered as Gravelly CLAY: medium plasticity, dark grey, fine to coarse sub-angular to angular gravel.(continued) BASALT: fine crystalline, dark brown grey, trace amygdaloids, massive.	HW			Particular FZ JT, 30°, Clay VNR, UN, RF JT, 15°, Clay VNR, UN, RF FZ JT, 20°, Clay VNR, UN, RF JT, 65°, Clay FILLED, UN, RF, <10mm JT, 15°, CN, UN, RF JT, 50°, CN, UN, RF JT, 30°, CN, UN, RF JT, 30°, CN, UN, RF JT, 45°, CN, UN, RF JT, 80°, CN, UN, RF JT, 30°, CN, UN, RF JT, 60°, CN, UN, RF JT, 60°, CN, UN, RF JT, 65°, CN, UN, RF FZ JT, 65°, CN, UN, RF FZ JT, 50°, Clay VNR, UN, RF JT, 0°, Clay VNR, UN, RF General JT, 0°, Clay VNR, UN, RF JT, 65°, Clay VNR, UN, RF JT, 65°, Clay VNR, UN, RF FZ JT, 50°, Clay VNR, UN, RF										
			100		20		556.5							10									
			100		0		555.5							11									
			Hole Terminated at 11.00 m Target depth																				
			554.5	12																			
			553.5	13																			
			552.5	14																			
			551.5	15																			
			Method																				
			AS - Auger Screwing																				
WB- Washbore																							
HQ3 HQ3 Core Barrel																							
NQ3 NQ3 Core Barrel																							
Water																							
Level (Date)																							
Inflow																							
Partial Loss																							
Complete Loss																							
Support																							
T - Timbering																							
Graphic Log/Core Loss																							
Core recovered (hatching indicates material)																							
Core loss																							
Weathering																							
FR - Fresh																							
SW - Slightly Weathered																							
DW - Distinctly Weathered																							
XW - Extremely Weathered																							
RS - Residual Soil																							
Strength (indirect tensile strength)																							
EL - Extremely Low																							
VL - Very Low																							
L - Low																							
M - Medium																							
H - High																							
VH - Very High																							
EH - Extremely High																							

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength

(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 368369.4 m E 6936063.9 m N MGA94 Zone 56

Commenced: 27/09/2021
Completed: 29/09/2021
Logged By: J.Cooper
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 566.50 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh



PointID : 310-03-BH3335 Depth Range: 1.90 - 5.00 m



PointID : 310-03-BH3335 Depth Range: 5.00 - 9.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	27/09/2021
Project Name:	Inland Rail B2G	Completed:	29/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	368369.4 m E 6936063.9 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	566.50 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: R.Welsh



PointID : 310-03-BH3335 Depth Range: 9.00 - 11.00 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC			Commenced:	25/10/2021		
Project Name:	Inland Rail B2G			Completed:	27/10/2021		
Hole Location:	N3 - Brookstead to Gowrie			Logged By:	T.Tran		
Hole Coordinates:	370860.9 m E 6937800.6 m N MGA94 Zone 56			Checked By:	D.Hill		
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-70°	RL Surface:	591.79 m		
Hole Diameter:	115 mm	Bearing:	330°	Datum:	AHD	Operator:	R. Welsh

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
A/D/T		Not Observed		D00030 0.30-0.50 m		590.8	1		CI-CH	TOPSOIL: sandy silty CLAY with gravel, low plasticity, brown mottled grey, fine to coarse grained sand, fine to coarse sub-rounded to sub-angular gravel, trace rootlets (<2mm)	M (<PL)	H			TOPSOIL	
				D00050 0.50-1.00 m						RESIDUAL SOIL						
				D00100 1.00-1.50 m												
				D00200 2.00-2.50 m		589.9	2			Extremely weathered BASALT recovered as Clayey SAND with gravel: fine to coarse grained, purple mottled orange and white, medium plasticity clay, fine to coarse sub-angular to angular gravel	D	VD			EXTREMELY WEATHERED MATERIAL	
						589.0	3			Continued on cored borehole sheet						
						588.0	4									
						587.1	5									
						586.1	6									
						585.2	7									
						584.3										
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Support C - Casing Penetration  No resistance ranging to refusal Water  Level (Date)  Inflow  Partial Loss  Complete Loss Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Moisture Condition D - Dry M - Moist W - Wet Plastic Limit < PL = PL < PL Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense																

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
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Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL
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Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 370860.9 m E 6937800.6 m N MGA94 Zone 56

Commenced: 25/10/2021
Completed: 27/10/2021
Logged By: T.Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -70° RL Surface: 591.79 m
Barrel Type and Length: HQ 3 m Bearing: 330° Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance						Rock Mass Defects								
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral		Defect Spacing (mm)			Defect Description thickness, type, inclination, planarity, roughness, coating/infilling					
											EL VL L M H VH EH	30 100 300 1000 3000			Particular	General					
						590.8	1														
						589.9	2														
									Continued from non-cored borehole sheet												
HQ3	Not Observed	31	100	0	0	589.0	3		Extremely weathered BASALT recovered as CLAY with sand and gravel: medium to high plasticity, purple mottled dark grey and orange, fine to coarse grained sand, fine to coarse sub-angular to angular gravel	XW				JT, 85°, MS VNR, UN, RF							
																JT, 60°, FE CLAY VNR, IR, S					
																		JT, 50°, CLAY VNR, UN, RF			
																			JT, 25°, FE CLAY CT, UN, RF		
																			JT, 70°, CLAY VNR, UN, RF		
																			JT, 80°, MS VNR, UN, RF		
																			JT, 80°, MS VNR, IR, VR		
																			JT, 20°, CN, UN, S		
																			JT, 60°, FE SN, UN, RF		
																			JT, 70°, FE SN, UN, S		
																			JT, 40°, MS VNR, PR, RF		
																			20°, FE SN, IR, VR		
													JT, 5°, FE SN, UN, S								
													JT, 15°, FE SN, UN, S								
													JT, 75°, FE SN, UN, S								
													JT, 45°, FE SN, UN, RF								
													JT, 80°, FE SN, UN, RF								
													JT, 45°, CN, IR, VR								
													JT, 35°, FE SN, PR, S								
													JT, 45°, FE SN, UN, RF								
													JT, 40°, FE SN, UN, RF								
													JT, 70°, FE SN, UN, RF								
													JT, 15°, FE SN, UN, RF								
													JT, 70°, FE SN, IR, RF								
													JT, 20°, CLAY VNR, IR, RF								
													JT, 80°, FE SN, IR, RF								
													JT, 85°, FE SN, UN, VR								
													JT, 45°, FE SN, UN, VR								
													JT, 50°, FE SN, UN, RF								
													JT, 75°, FE CLAY VNR, IR, RF								
													45°, FE SN, IR, VR								
													JT, 50°, FE CLAY VNR, UN, RF								
													JT, 55°, FE CLAY VNR,								
						584.3															

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 370860.9 m E 6937800.6 m N MGA94 Zone 56

Commenced: 25/10/2021
Completed: 27/10/2021
Logged By: T.Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -70° RL Surface: 591.79 m
Barrel Type and Length: HQ 3 m Bearing: 330° Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance							Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling					
HQ3		Not Observed	100		80	583.3 582.4 581.5 580.5 579.6 578.6 577.7 576.8	9	✓	ANDESITE: aphanitic, pale grey mottled orange, vesicular, iron stained, fractured(continued)	MW	EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	UN, RF	Particular	General
			100		40		✓	●													JT, 10°, FE CLAY VNR, UN, RF				
			100				✓														JT, 20°, FE CLAY VNR, UN, RF				
			100				✓														JT, 90°, FE CLAY CT, UN, RF				
			100				✓														JT, 80°, FE CLAY CT, IR, RF				
			100				✓														JT, 25°, CN, IR, RF				
			100				✓														JT, 40°, FE CLAY VNR, UN, RF				
			100				✓														JT, 75°, CN, UN, RF				
			100				✓														JT, 20°, CLAY VNR, UN, RF				
			100				✓														JT, 30°, FE CLAY VNR, UN, RF				
			100				✓														JT, 30°, FE CLAY VNR, UN, RF				
			100				✓														JT, 75°, FE SN, UN, VR				
			100				✓														10°, FE SN, IR, VR				
			100				✓														JT, 70°, FE CLAY VNR, UN, VR				
			100				✓														JT, 45°, FE CLAY CT, UN, VR				
100			✓												40°, FE CLAY VNR, UN, VR										
100			✓												JT, 60°, CLAY VNR, IR, VR										
100			✓												JT, 45°, FE CLAY CT, UN, VR										
100			✓												JT, 45°, FE CLAY CT, UN, VR										
100			✓												JT, 55°, CN, UN, VR										
100			✓												JT, 20°, CN, CU, RF										
100			✓												JT, 10°, CN, UN, RF										
100			✓												JT, 70°, FE SN, UN, VR										
100			✓												JT, 5°, CN, UN, VR										
100			✓												JT, 5°, FE CLAY VNR, UN, VR										
100			✓												JT, 15°, FE CLAY VNR, UN, VR										
100			✓												JT, 25°, CN, IR, VR										
100			✓												JT, 60°, CLAY VNR, UN, VR										
100			✓												JT, 20°, CN, UN, VR										
100			✓												JT, 30°, CLAY VNR, UN, VR										
100			✓												JT, 30°, CLAY VNR, UN, VR										
100			✓												JT, 10°, FE CLAY CT, UN, VR										
100			✓												CS, 45°, FE CLAY FILLED, UN, RF										
100			✓												JT, 60°, CLAY VNR, UN, VR										
100			✓												40°, FE CLAY VNR, IR, VR										
100			✓												JT, 10°, CN, UN, RF										
100			✓												JT, 60°, FE CLAY CT, UN, RF										
100			✓												JT, 60°, FE CLAY CT, PR, RF										
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel							Water ▽ Level (Date) ▽ Inflow ▽ Partial Loss ▲ Complete Loss			Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss			Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil			Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High									
Support T - Timbering																									

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 370860.9 m E 6937800.6 m N MGA94 Zone 56

Commenced: 25/10/2021
Completed: 27/10/2021
Logged By: T.Tran
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -70° RL Surface: 591.79 m
Barrel Type and Length: HQ 3 m Bearing: 330° Datum: AHD Operator: R. Welsh

Drilling Information							Rock Substance					Rock Mass Defects															
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling									
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General			
HQ3	Not Observed	100	100	71	575.8	17	✓	✓	BASALT: fine crystalline, dark grey, some vesicles, slightly ironstained, highly fractured to fractured(continued)	SW													JT, 55°, CLAY VNR, UN, RF				
							✓	✓																			JT, 25°, CLAY VNR, UN, VR
							✓	✓																			JT, 25°, FE SN, UN, VR
							✓	✓																			JT, 20°, FE CLAY CT, UN, RF
							✓	✓																			JT, 25°, FE SN, UN, RF
							✓	✓																			JT, 70°, FE CLAY VNR, UN, RF
		574.9	18	✓	✓																				JT, 15°, FE CLAY VNR, UN, RF		
				✓	✓																				JT, 25°, CN, UN, VR		
				✓	✓																				JT, 85°, FE SN, IR, VR		
				✓	✓																				JT, 30°, CLAY VNR, UN, RF		
				✓	✓																				JT, 30°, FE CLAY VNR, UN, RF		
				✓	✓																				JT, 10°, FE CLAY VNR, UN, RF		
573.9	19	✓	✓																				10°, FE CLAY VNR, UN, VR				
		✓	✓																			JT, 10°, CN, UN, VR					
		✓	✓																			JT, 25°, FE CLAY CT, UN, VR					
		✓	✓																			CS, 80°, FE CLAY FILLED, UN, RF					
		✓	✓																			JT, 10°, CLAY VNR, UN, RF					
		✓	✓																			10°, CLAY CT, UN, VR					
573.0	20	✓	✓																				JT, 5°, FE CLAY VNR, UN, RF				
		✓	✓																				JT, 15°, FE SN, UN, VR				
		✓	✓																				JT, 10°, CN, IR, RF				
		✓	✓																				JT, 50°, FE SN, IR, RF				
		✓	✓																				JT, 50°, Fe SN, IR, VR				
		✓	✓																				JT, 45°, Fe Clay VNR, IR, VR				
572.1	21	✓	✓																					JT, 5°, Fe SN, UN, VR			
		✓	✓																				JT, 5°, Clay VNR, UN, VR				
		✓	✓																				JT, 10°, MS VNR, IR, VR				
		✓	✓																				JT, 5°, Fe Clay VNR, IR, VR				
		✓	✓																				JT, 10°, Clay VNR, UN, RF				
		✓	✓																				JT, 65°, Fe Clay VNR, IR, RF				
571.1	22	✓	✓																					JT, 5°, CN, IR, VR			
		✓	✓																					JT, 10°, Fe Clay VNR, IR, VR			
		✓	✓																					JT, 25°, Fe SN, IR, RF			
		✓	✓																					JT, 10°, CN, UN, VR			
		✓	✓																					JT, 20°, Fe SN, IR, VR			
		✓	✓																					JT, 20°, Fe SN, UN, VR			
570.2	23	✓	✓																						JT, 5°, Fe SN, UN, VR		
		✓	✓																					JT, 5°, Fe SN, IR, VR			
		✓	✓																					JT, 10°, Fe SN, UN, VR			
		✓	✓																					JT, 10°, Fe SN, IR, VR			
		✓	✓																					JT, 70°, Fe SN, IR, RF			
		✓	✓																					JT, 45°, Fe SN, UN, RF			
569.2		✓	✓																					JT, 60°, Fe Clay VNR, IR, RF			
		✓	✓																					JT, 70°, Fe Clay VNR, UN, RF			
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water ↗ Level (Date) ▽ Inflow △ Partial Loss ◀ Complete Loss Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Support T - Timbering Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																											

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 25/10/2021																											
Project Name: Inland Rail B2G		Completed: 27/10/2021																											
Hole Location: N3 - Brookstead to Gowrie		Logged By: T.Tran																											
Hole Coordinates: 370860.9 m E 6937800.6 m N MGA94 Zone 56		Checked By: D.Hill																											
Drill Model and Mounting: Comacchio 305/Track		Inclination: -70°	RL Surface: 591.79 m																										
Barrel Type and Length: HQ 3 m		Bearing: 330°	Datum: AHD Operator: R. Welsh																										
Drilling Information		Rock Substance		Rock Mass Defects																									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																
Particular														General															
HQ3														Not Observed															
66														13		568.3		25		ANDESITE: fine crystalline, vesicular, orange brown, slightly fractured, trace ironstaining(continued) Below 21.70m: trace iron staining and pale grey mottled orange Below 21.70m: trace iron staining and pale grey mottled orange(continued)		MW SW		EL VL J M H EH		30 100 300 1000 3000		JT, 40°, Fe SN, IR, VR JT, 20°, CN, UN, RF JT, 20°, Fe SN, UN, VR JT, 20°, Fe SN, UN, VR JT, 30°, Clay VNR, UN, S JT, 10°, Clay VNR, UN, RF JT, 30°, CN, UN, S 30° JT, 15°, Fe SN, IR, VR JT, 20°, Clay VNR, UN, RF JT, 70°, Fe Clay VNR, UN, RF JT, 45°, Fe Clay VNR, UN, RF JT, 20°, CN, UN, VR 10°, Fe Clay FILLED, UN, VR JT, 30°, Fe Clay VNR, UN, VR JT, 30°, Fe Clay VNR, UN, VR JT, 30°, Fe Clay VNR, UN, VR JT, 5°, Fe Clay VNR, IR, VR 65°, Fe Clay FILLED, IR, VR JT, 70°, Fe Clay VNR, IR, VR JT, 5°, Fe Clay VNR, UN, VR JT, 5°, Fe Clay VNR, UN, VR JT, 5°, CN, UN, VR JT, 20°, Fe Clay CT, UN, VR JT, 40°, Fe Clay VNR, UN, VR JT, 5°, CN, UN, VR JT, 20°, Fe Clay VNR, UN, VR JT, 20°, Fe Clay CT, IR, VR JT, 20°, Fe Clay CT, UN, VR JT, 50°, Fe Clay CT, UN, VR JT, 30°, CN, UN, VR JT, 20°, Fe SN, UN, VR JT, 20°, Fe SN, UN, VR JT, 45°, Fe SN, UN, VR JT, 65°, Fe SN, UN, VR JT, 10°, CN, UN, VR JT, 15°, Fe Clay VNR, IR, VR JT, 20°, Fe SN, UN, VR JT, 65°, Fe Clay VNR, IR, VR JT, 45°, Fe Clay CT, UN, VR JT, 40°, Fe SN, UN, RF JT, 10°, CN, UN, VR JT, 10°, Fe Clay VNR, UN, VR	
567.4														26		NO CORE													
100														22		566.4		27		ANDESITE: fine crystalline, vesicular, dark grey mottled orange-brown and red, heavy ironstaining, trace amygdales, highly fractured		HW		EL VL J M H EH		30 100 300 1000 3000			
565.5														28															
100														70		564.5		29		ANDESITE: fine crystalline, vesicular, pale grey mottled orange, slightly fractured, trace ironstaining		MW		EL VL J M H EH		30 100 300 1000 3000			
563.6														30															
562.7														31		Hole Terminated at 30.31 m Target depth Hole direction adjusted to 330 degree Azimuth instead of 300 degree due to safety reasons													
561.7																													
Method		Water		Graphic Log/Core Loss		Weathering		Strength																					
AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel		Level (Date) Inflow Partial Loss Complete Loss		Core recovered (hatching indicates material) Core loss		FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil		(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																					
Support		T - Timbering																											

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 370860.9 m E 6937800.6 m N MGA94 Zone 56										Commenced: 25/10/2021 Completed: 27/10/2021 Logged By: T.Tran Checked By: D.Hill																			
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ 3 m										Inclination: -70° Bearing: 330°										RL Surface: 591.79 m Datum: AHD Operator: R. Welsh									

Drilling Information							Rock Substance										Rock Mass Defects																		
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling														
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular						General						
						560.8	33																	RF JT, 50°, Fe SN, UN, VR JT, 15°, Fe SN, UN, VR 50°, Fe SN, UN, RF JT, 15°, Clay VNR, UN, RF JT, 15°, Fe SN, UN, RF JT, 5°, Clay VNR, PR, RF JT, 40°, CN, UN, RF JT, 10°, Clay VNR, ST, VR JT, 15°, Clay VNR, UN, RF JT, 20°, Fe Clay VNR, UN, RF JT, 40°, Fe Clay VNR, UN, RF JT, 5°, Fe Clay CT, UN, RF JT, 220°, CN, UN, VR JT, 5°, Fe Clay VNR, UN, RF JT, 5°, Fe SN, UN, VR JT, 10°, Fe SN, UN, RF 40°, Fe Clay VNR, UN, RF JT, 45°, Fe SN, PR, RF CS, 40°, Fe Clay FILLED, UN, RF JT, 75°, Fe Clay VNR, UN, VR 65°, Fe Clay FILLED, IR, VR 25°, Clay FILLED, UN, VR JT, 40°, Fe SN, UN, VR JT, 70°, Clay VNR, UN, VR JT, 45°, Fe SN, UN, VR JT, 40°, Clay VNR, UN, VR CS, 60°, Clay FILLED, IR, VR JT, 85°, Clay VNR, UN, VR JT, 15°, Fe SN, UN, VR JT, 60°, Fe SN, UN, VR JT, 40°, CN, UN, VR JT, 45°, Clay VNR, UN, VR JT, 5°, Fe SN, UN, VR JT, 65°, Fe SN, UN, VR JT, 20°, Clay VNR, ST, VR JT, 45°, Clay VNR, UN, VR JT, 45°, Clay VNR, UN, VR JT, 60°, Clay VNR, UN, VR											
						559.8	34																												
						558.9	35																												
						558.0	36																												
						557.0	37																												
						556.1	38																												
						555.1	39																												
						554.2																													

Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Water ▬ Level (Date) ▽ Inflow ▴ Partial Loss ◼ Complete Loss	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
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T - Timbering

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	25/10/2021				
Project Name:	Inland Rail B2G	Completed:	27/10/2021				
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Tran				
Hole Coordinates:	370860.9 m E 6937800.6 m N MGA94 Zone 56	Checked By:	D. Hill				
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-70°	RL Surface:	591.79 m		
Barrel Type and Length:	HQ 3 m	Bearing:	330°	Datum:	AHD	Operator:	R. Welsh



PointID : 310-03-BH3340 Depth Range: 2.50 - 7.00 m



PointID : 310-03-BH3340 Depth Range: 7.00 - 12.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC				Commenced:	25/10/2021	
Project Name:	Inland Rail B2G				Completed:	27/10/2021	
Hole Location:	N3 - Brookstead to Gowrie				Logged By:	T. Tran	
Hole Coordinates:	370860.9 m E 6937800.6 m N MGA94 Zone 56				Checked By:	D. Hill	
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-70°	RL Surface:	591.79 m		
Barrel Type and Length:	HQ 3 m	Bearing:	330°	Datum:	AHD	Operator:	R. Welsh



PointID : 310-03-BH3340 Depth Range: 12.00 - 17.00 m



PointID : 310-03-BH3340 Depth Range: 17.00 - 22.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 370860.9 m E 6937800.6 m N MGA94 Zone 56

Commenced: 25/10/2021
Completed: 27/10/2021
Logged By: T. Tran
Checked By: D. Hill

Drill Model and Mounting: Comacchio 305/Track Inclusion: -70° RL Surface: 591.79 m
Barrel Type and Length: HQ 3 m Bearing: 330° Datum: AHD Operator: R. Welsh



PointID : 310-03-BH3340 Depth Range: 22.00 - 27.00 m



PointID : 310-03-BH3340 Depth Range: 27.00 - 30.31 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 370895.6 m E 6938018.2 m N MGA94 Zone 56

Commenced: 27/09/2021
Completed: 27/09/2021
Logged By: T.Tran
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Inclusion: -90° RL Surface: 590.44 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
ADN			Not Observed	D00030 0.30-0.50 m S00050 SPT 0.50-0.95 m 6,6,11 N=17 PP 0.50 m >600 kPa D00100 1.00-1.50 m S00150 SPT 1.50-1.95 m 6,8,11 N=19 PP 1.50 m >600 kPa D00250 2.50-3.00 m		589.4	1		CH	TOPSOIL Clayey SILT with gravel trace sand: brown mottled dark grey, low plasticity fines, fine to coarse sub-angular to angular gravel, fine to coarse grained sand, trace rootlets (<2mm)	St			TOPSOIL	
				CH					CLAY trace sand and gravel: high plasticity, brown mottled orange and white, fine to coarse grained sand, fine to medium sub-rounded gravel.	RESIDUAL SOIL					
				D00400 4.00-4.50 m S00450 SPT 4.50-4.69 m 9,11/40mm HB N=11/40mm PP 4.50 m >600 kPa D00500 5.00-5.50 m		587.4	3		M (<PL)			x			
						586.4	4		ML-MH	Clayey SILT with sand: pale brown and pale grey, medium plasticity fines, fine to coarse grained sand.	H			x	
						585.4	5								
						584.4	6			Continued on cored borehole sheet					
						583.4	7								
Method AS - Auger Screwing RR - Rock Roller WB - Washbore Support C - Casing Penetration No resistance ranging to refusal Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Water Level (Date) Inflow Partial Loss Complete Loss Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Plastic Limit < PL = PL < PL															

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	27/09/2021
Project Name:	Inland Rail B2G	Completed:	27/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Tran
Hole Coordinates:	370895.6 m E 6938018.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	590.44 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3341 Depth Range: 0.50 - 0.95 m



310-03-BH3341 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 370895.6 m E 6938018.2 m N MGA94 Zone 56

Commenced: 27/09/2021
Completed: 27/09/2021
Logged By: T.Tran
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 590.44 m
Datum: AHD Operator: B.Boga



310-03-BH3341 Depth Range: 3.00 - 3.45 m



310-03-BH3341 Depth Range: 4.50 - 4.69 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 370895.6 m E 6938018.2 m N MGA94 Zone 56										Commenced: 27/09/2021 Completed: 27/09/2021 Logged By: T.Tran Checked By: J.Boyle									
Drill Model and Mounting: D4TAPG Barrel Type and Length: HQ3 3 m					Inclination: -90° Bearing:					RL Surface: 590.44 m Datum: AHD Operator: B.Boga									
Drilling Information					Rock Substance					Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
										EL VL L M H VH EH	30 100 300 1000 3000	Particular	General						
						589.4	1												
						588.4	2												
						587.4	3												
						586.4	4												
						585.4	5												
Continued from non-cored borehole sheet																			
HQ3	Not Observed		100	92		584.4	6	✓	BASALT: fine crystalline, vesicular, dark grey mottled orange, massive.	MW	●		JT, 5°, Clay VNR, UN, RF						
								✓					JT, 40°, Clay VNR, UN, RF						
								✓					JT, 10°, Fe SN, UN, RF						
								✓					JT, 10°, CN, UN, RF						
								✓											
								✓					JT, 15°, Clay VNR, UN, RF						
								✓					JT, 5°, Clay VNR, UN, RF						
								✓					JT, 5°, Clay VNR, UN, RF						
								✓					JT, 65°, Clay VNR, UN, RF						
								✓					JT, 35°, Clay VNR, UN, RF						
								✓					JT, 20°, CN, UN, RF						
								✓					JT, 45°, CN, UN, RF						

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	27/09/2021
Project Name:	Inland Rail B2G	Completed:	27/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Tran
Hole Coordinates:	370895.6 m E 6938018.2 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG	Inclination:	-90°	RL Surface:	590.44 m		
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD	Operator:	B.Boga

Drilling Information							Rock Substance					Rock Mass Defects							
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50)						Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
											EL	VL	L	M	H	VH		EH	Particular
HQ3	Not Observed		100		92	581.4	9		BASALT: fine crystalline, vesicular, dark grey mottled orange, massive.(continued)	MW			JT, 5°, Clay VNR, UN, RF						
							JT, 50°, Clay VNR, UN, RF												
							JT, 10°, Fe SN, UN, RF												
							JT, 10°, CN, IR, RF												
							JT, 5°, Fe SN, IR, RF												
			JT, 20°, CN, UN, RF																
			JT, 20°, CN, UN, RF																
			JT, 90°, CN, IR, RF																
			JT, 25°, Clay VNR, UN, RF																
			JT, 40°, Fe Clay VNR, IR, RF																
			JT, 50°, Fe Clay VNR, UN, RF																
			JT, 35°, Clay VNR, UN, RF																
			JT, 5°, MS FILLED, UN, RF																
			JT, 55°, Fe Clay VNR, UN, RF																
			JT, 55°, Fe Clay VNR, UN, RF																
JT, 30°, Fe Clay VNR, UN, RF																			
JT, 15°, Clay VNR, UN, RF																			
JT, 10°, Fe Clay VNR, UN, RF																			
JT, 15°, Clay VNR, UN, RF																			
JT, 5°, Fe Clay VNR, UN, RF																			
JT, 10°, Fe Clay VNR, UN, RF																			
FZ, 20°, Fe Clay VNR, UN, RF																			
JT, 5°, Fe Clay VNR, UN, RF																			
JT, 5°, CN, UN, RF																			
JT, 90°, Fe Clay VNR, UN, RF																			
JT, 15°, Clay FILLED, UN, RF																			
N.I																			
JT, 50°, Clay VNR, UN, RF																			
FZ, 5°, Clay FILLED, UN, RF																			
JT, 50°, Clay VNR, UN, RF																			
JT, 25°, Fe Clay VNR, UN, RF																			
JT, 10°, Fe Clay VNR, UN, RF																			
JT, 10°, Clay VNR, UN, RF																			
CZ, 10°, Clay FILLED, UN, RF																			
JT, 15°, Clay VNR, UN, RF																			
JT, 5°, Clay VNR, UN, RF																			
JT, 20°, Clay VNR, IR, RF																			
JT, 20°, Clay VNR, UN, RF																			
JT, 50°, Fe Clay VNR, UN, RF																			

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support
T - Timbering

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 27/09/2021
Project Name: Inland Rail B2G	Completed: 27/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T.Tran
Hole Coordinates: 370895.6 m E 6938018.2 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: D4TAPG	Inclination: -90°	RL Surface: 590.44 m
Barrel Type and Length: HQ3 3 m	Bearing:	Datum: AHD Operator: B.Boga

Drilling Information							Rock Substance					Rock Mass Defects																																																																																																																			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																																																																																																													
HQ3		Not Observed	100		87	565.4	25		BASALT: fine crystalline, vesicular, dark red grey.(continued)	MW																																																																																																																					

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 370895.6 m E 6938018.2 m N MGA94 Zone 56										Commenced: 27/09/2021 Completed: 27/09/2021 Logged By: T.Tran Checked By: J.Boyle														
Drill Model and Mounting: D4TAPG Barrel Type and Length: HQ3 3 m					Inclination: -90° Bearing:					RL Surface: 590.44 m Datum: AHD Operator: B.Boga														
Drilling Information							Rock Substance							Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
						557.4	33																JT, 5°, CN, UN, RF JT, 80°, Fe Clay VNR, UN, RF JT, 65°, MS VNR, UN, RF JT, 10°, CN, IR, RF JT, 70°, Fe SN, UN, RF JT, 45°, Fe SN, UN, RF JT, 45°, CN, UN, RF JT, 25°, CN, UN, RF JT, 25°, Fe Clay VNR, UN, RF JT, 40°, Clay VNR, UN, RF JT, 80°, Clay VNR, UN, RF JT, 65°, Clay VNR, UN, RF JT, 45°, CN, IR, RF	
						556.4	34																	
						555.4	35																	
						554.4	36																	
						553.4	37																	
						552.4	38																	
						551.4	39																	

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	27/09/2021
Project Name:	Inland Rail B2G	Completed:	27/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Tran
Hole Coordinates:	370895.6 m E 6938018.2 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG	Inclination:	-90°	RL Surface:	590.44 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: B.Boga



PointID : 310-03-BH3341 Depth Range: 5.50 - 10.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	27/09/2021
Project Name:	Inland Rail B2G	Completed:	27/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Tran
Hole Coordinates:	370895.6 m E 6938018.2 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	D4TAPG	Inclination:	-90°	RL Surface:	590.44 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: B.Boga



PointID : 310-03-BH3341 Depth Range: 10.00 - 15.00 m



PointID : 310-03-BH3341 Depth Range: 15.00 - 20.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	27/09/2021
Project Name:	Inland Rail B2G	Completed:	27/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Tran
Hole Coordinates:	370895.6 m E 6938018.2 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	590.44 m
		Bearing:	
		Datum:	AHD
		Operator:	B.Boga



PointID : 310-03-BH3341 Depth Range: 20.00 - 25.00 m



PointID : 310-03-BH3341 Depth Range: 25.00 - 28.20 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 25/07/2021
Project Name: Inland Rail B2G	Completed: 31/07/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 371073.9 m E 6938064.3 m N MGA94 Zone 56	Checked By: C.Green

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 592.28 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADV			Not Observed	D00000 D 0.00-0.50 m		591.3	1		CH	TOPSOIL: Gravelly SAND trace clay: fine grained sand, brown to pale-brown, fine sub-angular to sub-rounded gravel, low plasticity	NA	NA			TOPSOIL
				U00100 Y 0.50-0.79 m						Sandy CLAY trace gravel: high plasticity, dark-brown to brown, fine grained sand, fine to medium, sub angular gravel.					RESIDUAL SOIL
				PP 1.00 m >600 kPa						Below 1.00m: colour changes to brown to pale-brown mottled red	M (<PL)	H			*
				S00150 SPT 1.50-1.95 m 14,15,21 N=36											
				D00200 D 2.00-2.50 m						Below 2.50m: trace fine to medium rounded to sub-rounded gravel					*
			S00250 SPT 2.50-2.95 m 11,20,24 N=44 PP 2.50 m >600 kPa	589.3	3		Continued on cored borehole sheet								
						588.3	4								
						587.3	5								
						586.3	6								
						585.3	7								

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	25/07/2021
Project Name:	Inland Rail B2G	Completed:	31/07/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	371073.9 m E 6938064.3 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	592.28 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3342 Depth Range: 1.00 - 1.45 m



310-03-BH3342 Depth Range: 2.50 - 2.95 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 25/07/2021	
Project Name: Inland Rail B2G		Completed: 31/07/2021	
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma	
Hole Coordinates: 371073.9 m E 6938064.3 m N MGA94 Zone 56		Checked By: C.Green	
Drill Model and Mounting: Comacchio 305		Inclination: -90°	
Barrel Type and Length: HQ3 3 m		RL Surface: 592.28 m	
		Datum: AHD	
		Operator: R.Welsh	

Drilling Information							Rock Substance			Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
										EL VL L M H VH EH	30 100 300 1000 3000	Particular	General
HQ3						591.3	1						
						590.3	2						
						589.3	3		Continued from non-cored borehole sheet				
			100		0	588.3	4		BASALT: vesicular, dark red, highly altered with randomly oriented veining				JT, 10°, Fe SN, UN, RF JT, 10°, Fe SN, UN, RF JT, 30°, Fe SN, UN, RF JT, 10°, Fe SN, UN, RF CZ JT, 15°, Fe SN, UN, RF JT, 70°, Fe SN, UN, RF JT, 10°, Fe SN, UN, RF JT, 10°, Fe SN, UN, RF
			100		53	587.3	5			HW			JT, 0°, Fe SN, PR, RF JT, 85°, Fe SN, UN, RF JT, 0°, Fe SN, PR, S JT, 30°, Clay VNR, PR, S JT, 0°, Fe SN, DIS, RF JT, 0°, Fe SN, DIS, RF
						586.3	6						JT, 5°, Fe SN, UN, RF JT, 5°, Fe SN, CU, RF
			100		85	585.3	7		BASALT: fine crystalline, dark grey, massive	MW			JT, 0°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF
					75								

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 371073.9 m E 6938064.3 m N MGA94 Zone 56

Commenced: 25/07/2021
Completed: 31/07/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 592.28 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information						Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
										EL VL M H VH EH		30 100 300 1000 3000	Particular General
			100		75	583.3	9	✓	BASALT: fine crystalline, dark grey, massive(continued) From 07.00-07.08m: red brown From 07.00-07.08m: red brown(continued)		●		JT, 0°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 35°, Fe SN, PR, RF
						582.3	10	✓	Below 09.00m: vesicular		●		JT, 45°, Fe SN, PR, RF JT, 10°, Fe SN, PR, RF JT, 75°, CN, CU, RF
			100		73	581.3	11	✓			●		JT, 0°, Fe SN, PR, RF
						580.3	12	✓			●		JT, 10°, Fe SN, DIS, S JT, 90°, Fe SN, UN, RF JT, 0°, Fe SN, UN, RF
						579.3	13	✓			●		JT, 5°, CN, PR, RF JT, 35°, Fe VNR, PR, RF
			100		77	578.3	14	✓			●		JT, 30°, CN, UN, RF JT, 20°, CN, PR, RF JT, 0°, CN, DIS, RF
						577.3	15	✓			●		JT, 15°, Fe SN, CU, RF JT, 5°, CN, UN, RF
								✓			○		JT, 10°, Fe SN, UN, RF
			100		67			✓			●		

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 371073.9 m E 6938064.3 m N MGA94 Zone 56

Commenced: 25/07/2021
Completed: 31/07/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 592.28 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance					Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
													Particular	General	
Not Observed			100		67	575.3	17		Below 09.00m: vesicular(continued)	HW			JT, 45°, Fe SN, PR, RF		
							JT, 35°, Fe SN, PR, RF								
							JT, 5°, Fe SN, PR, RF								
							JT, 10°, Clay VNR, PR, S								
							JT, 5°, Fe SN, PR, S								
							JT, 85°, Fe SN, PR, RF								
			JT, 90°, Fe SN, PR, RF												
			JT, 0°, Fe SN, UN, RF												
			JT, 15°, Fe SN, PR, RF												
			JT, 20°, Fe SN, PR, RF												
			JT, 20°, Fe SN, PR, RF												
			100	51	572.3	20	MW					JT, 0°, Clay VNR, PR, S			
						JT, 0°, Fe SN, DIS, RF									
						JT, 5°, Fe SN, UN, RF									
						JT, 45°, Fe SN, PR, RF									
						JT, 25°, Fe SN, PR, RF									
						JT, 35°, Fe SN, PR, RF									
			JT, 5°, Fe SN, PR, RF												
JT, 90°, Fe SN, PR, RF															
JT, 0°, Fe SN, DIS, RF															
JT, 0°, Fe SN, PR, RF															
JT, 90°, Fe SN, PR, RF															
JT, 0°, Fe SN, DIS, RF															
100	86	570.3	22				JT, 45°, Fe SN, PR, RF								
			JT, 90°, Fe SN, PR, RF												
			JT, 5°, Fe SN, PR, RF												
			JT, 0°, CN, PR, RF												
			JT, 60°, Fe SN, PR, RF												
569.3	23														

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Support
T - Timbering

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 25/07/2021
Project Name: Inland Rail B2G	Completed: 31/07/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 371073.9 m E 6938064.3 m N MGA94 Zone 56	Checked By: C.Green

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 592.28 m
Barrel Type and Length: HQ3 3 m	Bearing:	Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance						Rock Mass Defects													
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General		
		Not Observed	100		86			✓	Below 09.00m: vesicular(continued)	MW													JT, 10°, Fe SN, PR, RF			
							✓	BASALT: coarse crystalline, grey, vesicular, massive																		
							✓	BASALT: coarse crystalline, grey, vesicular, massive(continued)																		
							✓	BASALT: fine crystalline, blue grey, massive																		
							✓	BASALT: fine crystalline, blue grey, massive(continued)																		
				100		84		25	✓																JT, 5°, CN, UN, RF	
								26	✓																JT, 0°, Clay VNR, PR, S	
								26	✓		From 26.18-26.4m: Fe staining														JT, 0°, Fe SN, PR, RF	
								26	✓																JT, 45°, Fe SN, PR, RF	
								27	✓																JT, 0°, Fe SN, PR, RF	
							27	✓															JT, 0°, Fe SN, PR, RF			
							27	✓															JT, 10°, Fe SN, PR, RF			
							27	✓															JT, 0°, Fe SN, DIS, RF			
							27	✓															JT, 45°, Clay SN, PR, S			
							28	△	Volcanic Breccia: matrix supported, fine to coarse, sub angular to angular clast	HW													JT, 5°, Fe SN, PR, RF			
							28	△																JT, 10°, Fe SN, UN, RF		
							28	△															JT, 10°, Clay VNR, PR, S			
			100		70		28	✓	BASALT: medium crystalline, vesicular, dark-grey														JT, 0°, CN, PR, RF			
							29	✓		MW													JT, 0°, CN, PR, RF			
							29	✓																JT, 0°, Fe Clay SN, PR, RF		
							29	✓															JT, 0°, Fe Clay SN, PR, RF			
							29	✓															JT, 0°, Fe SN, ST, RF			
							30	✓	From 29.40-29.74: started red	HW													CZ			
							30	✓																JT, 30°, UN, RF		
							30	✓															JT, 10°, UN, RF			
							562.3		Hole Terminated at 30.00 m Target depth																	
							561.3																			

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	25/07/2021
Project Name:	Inland Rail B2G	Completed:	31/07/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	371073.9 m E 6938064.3 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	592.28 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3342 Depth Range: 2.95 - 6.00 m



PointID : 310-03-BH3342 Depth Range: 6.00 - 10.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	25/07/2021
Project Name:	Inland Rail B2G	Completed:	31/07/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	371073.9 m E 6938064.3 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	592.28 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3342 Depth Range: 10.00 - 14.00 m



PointID : 310-03-BH3342 Depth Range: 14.00 - 19.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	25/07/2021
Project Name:	Inland Rail B2G	Completed:	31/07/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	371073.9 m E 6938064.3 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	592.28 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3342 Depth Range: 23.00 - 27.00 m



PointID : 310-03-BH3342 Depth Range: 27.00 - 30.00 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	25/08/2021
Project Name:	Inland Rail B2G	Completed:	31/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalisiri
Hole Coordinates:	371125.4 m E 6938298.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Hanjin DB8	Inclination:	-90°	RL Surface:	582.62 m		
Hole Diameter:	115 mm	Bearing:		Datum:	AHD	Operator:	J. Komung

Drilling Information							Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations		
AD/V			Not Observed	D00000 D 0.00-0.50 m		581.6	1		CI-CH	TOPSOIL Silty CLAY with gravel: medium to high plasticity, dark brown, coarse sub-rounded to sub-angular gravel, with rootlets (<2mm) Silty CLAY trace sand and gravel: medium to high plasticity, dark brown, fine to medium grained sand, medium to coarse sub-rounded to sub-angular gravel Below 0.50m colour tending grey dark brown	M (<PL)	VSt	H	100	TOPSOIL		
												200		300		400	500
				S00050 SPT 0.50-0.78 m 9,30/130mm N=30/130mm													
						580.6	2			Continued on cored borehole sheet							
						579.6	3										
						578.6	4										
						577.6	5										
						576.6	6										
						575.6	7										

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 371125.4 m E 6938298.7 m N MGA94 Zone 56

Commenced: 25/08/2021
Completed: 31/08/2021
Logged By: T. Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Hanjin DB8 Inclinometer: -90° RL Surface: 582.62 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral		Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
											EL VL L M H VH EH	30 100 300 1000 3000	Particular	General		
HQ3	Not Observed		85	12	0	581.6	1		Continued from non-cored borehole sheet							
						580.6	2	NO CORE 0.10m BASALT: pale grey to grey, vesicular	MW to HW			JT, 15°, Clay VNR, UN, RF				
						579.6	3	NO CORE 0.35m BASALT: pale grey to grey, vesicular				NON-INTACT JT, 10°, Clay VNR, UN, RF JT, 5°, Fe SN, PR, RF JT, 5°, Clay VNR, UN, RF JT, 80°, Clay VNR, PR, RF JT, 70°, Clay VNR, PR, RF JT, 65°, FE SN, PR, RF JT, 15°, CLAY VNR, UN, RF				
						578.6	4	Below 4.00m: multiple healed joints	MW			JT, 80°, FE SN, PR, RF JT, 80°, CLAY VNR, PR, RF				
						577.6	5					JT, 60°, CLAY VNR, PR, RF JT, 45°, CLAY CT, PR JT, 75°, CLAY VNR, PR, RF JT, 30°, CLAY VNR, PR, RF				
						576.6	6	Below 6.20m: colour tending brown grey			NON-INTACT JT, 45°, CLAY VNR, UN, RF JT, 0°, FE SN, PR, RF					
						575.6	7		MW to HW			VN, 0°, AP, 4 mm JT, 75°, FE SN, UN, RF JT, 45°, FE SN, UN, RF JT, 40°, FE SN, UN, RF JT, 60°, FE SN, UN, RF JT, 45°, FE SN, PR, RF				
												JT, 40°, FE SN, PR, RF JT, 40°, CLAY VNR, PR,				

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 25/08/2021												
Project Name: Inland Rail B2G		Completed: 31/08/2021												
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Nimalsiri												
Hole Coordinates: 371125.4 m E 6938298.7 m N MGA94 Zone 56		Checked By: J.Boyle												
Drill Model and Mounting: Hanjin DB8		Inclination: -90°	RL Surface: 582.62 m											
Barrel Type and Length: HQ3 3 m		Bearing:	Datum: AHD Operator: J. Komung											
Drilling Information		Rock Substance		Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
													Particular	General
HQ3	Not Observed		100		73	573.6	9	✓	BASALT: pale grey to grey, vesicular(continued)	SW to MW	●	300	RF	
							10	✓						
							11	✓						
			100		92	572.6	10	✓	MW	●	300	JT, 50°, FE SN, PR, RF JT, 70°, CLAY VNR, UN, RF JT, 65°, CN, PR, RF		
							11	✓						
							12	✓						
			100			571.6	11	×	HW	○	300	JT, 0°, FE SN, UN, RF JT, 10°, FE SN, UN, RF		
							12	×						
							13	×						
			100		100	570.6	12	✓	MW to HW	●	300	JT, 0°, CLAY VNR, PR, RF JT, 70°, CLAY VNR, UN, RF		
							13	✓						
							14	✓						
			100		100	569.6	13	✓	FR to SW	●	300	JT, 20°, Fe SN, UN, RF JT, 10°, Clay FILLED, UN, RF JT, 45°, CLAY VNR, PR, RF		
							14	✓						
							15	✓						
90			568.6	14	✓			300	JT, 10°, Fe SN, UN, RF					
				15	✓									
				16	✓									
									Below 12.90m: colour tending dark grey					

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength

(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 371125.4 m E 6938298.7 m N MGA94 Zone 56										Commenced: 25/08/2021 Completed: 31/08/2021 Logged By: T. Nimalsiri Checked By: J.Boyle																
Drill Model and Mounting: Hanjin DB8 Barrel Type and Length: HQ3 3 m					Inclination: -90° Bearing:					RL Surface: 582.62 m Datum: AHD Operator: J. Komung																
Drilling Information							Rock Substance							Rock Mass Defects												
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)			Defect Description thickness, type, inclination, planarity, roughness, coating/infilling							
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General		
HQ3		Not Observed	100		90	565.6	17	✓	BASALT: fine crystalline red grey, vesicular with infill, massive(continued)	FR to SW													NON-INTACT JT, 15°, CLAY VNR, UN, RF JT, 20°, CLAY VNR			
					564.6	18	✓																			
					563.6	19	✓																			
					562.6	20	✓																			
					561.6	21	✓																			
					560.6	22	✓																			
					559.6	23	✓																			
Hole Terminated at 18.00 m Target depth																										

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	25/08/2021
Project Name:	Inland Rail B2G	Completed:	31/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalsiri
Hole Coordinates:	371125.4 m E 6938298.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Hanjin DB8	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	582.62 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3343 Depth Range: 1.20 - 5.00 m



PointID : 310-03-BH3343 Depth Range: 5.00 - 9.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	25/08/2021
Project Name:	Inland Rail B2G	Completed:	31/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalsiri
Hole Coordinates:	371125.4 m E 6938298.7 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Hanjin DB8	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	582.62 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3343 Depth Range: 9.00 - 13.00 m



PointID : 310-03-BH3343 Depth Range: 13.00 - 17.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	25/08/2021
Project Name:	Inland Rail B2G	Completed:	31/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalsiri
Hole Coordinates:	371125.4 m E 6938298.7 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Hanjin DB8	Inclination:	-90°	RL Surface:	582.62 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: J. Komung



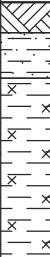
PointID : 310-03-BH3343 Depth Range: 17.00 - 18.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 30/10/2021
Project Name: Inland Rail B2G	Completed: 30/10/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 374991.5 m E 6941625.9 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 535.16 m
Hole Diameter: 125 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/T			Not Observed	D00000 0.00-0.50 m		534.2	1		CI	TOPSOIL/Sandy CLAY with gravel: medium plasticity, dark-brown, fine grained sand, fine rounded to sub-rounded gravel	M (<PL)	VSt - H			TOPSOIL	
				CI					Sandy CLAY: medium plasticity, dark-brown, fine grained sand Silty CLAY with gravel: medium plasticity, dark-brown, fine grained sand, fine rounded to sub-rounded gravel	RESIDUAL SOIL						
				S00050 SPT 0.50-0.95 m 7,11,15 N=26 D00150 1.00-1.50 m												
				S00200 SPT 1.50-1.93 m 5,3,14/125mm N=17/275mm		533.2	2			Continued on cored borehole sheet						
						532.2	3									
						531.2	4									
						530.2	5									
						529.2	6									
						528.2	7									

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 374991.5 m E 6941625.9 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 125 mm

Inclination: -90°
Bearing:

RL Surface: 535.16 m
Datum: AHD Operator: J. Komung



310-03-BH3344 Depth Range: 0.50 - 0.95 m



310-03-BH3344 Depth Range: 1.50 - 1.70 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 30/10/2021	
Project Name: Inland Rail B2G		Completed: 30/10/2021	
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma	
Hole Coordinates: 374991.5 m E 6941625.9 m N MGA94 Zone 56		Checked By: D.Hill	
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	
Barrel Type and Length: HQ 3 m		RL Surface: 535.16 m	
		Datum: AHD	
		Operator: J. Komung	

Drilling Information						Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
										EL VL L M H VH EH	30 100 300 1000 3000	Particular	General
						534.2	1						
						533.2	2		Continued from non-cored borehole sheet No core				
			63		0	532.2	3		ANDESITE: aphanitic, dark-green with irregular brown, highly fractured	MW			DZ, 0°, Fe SN, DIS, RF JT, 5°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF DZ, 0°, Fe SN, DIS, RF JT, 0°, Fe Clay VNR, PR, S
			100		17	531.2	4						JT, 10°, Fe Clay SN, PR, S JT, 15°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 45°, Fe Clay SN, PR, S JT, 15°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF JT, 45°, Fe SN, PR, RF JT, 45°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 0°, Fe SN, DIS, RF JT, 45°, Fe SN, CU, S JT, 45°, Fe Clay SN, PR, RF
			100		23	530.2	5		ANDESITE: aphanitic, dark-green, brown and orange, iron stained, highly fractured	HW			JT, 90°, Fe SN, PR, S Sub-vertical joint JT, 30°, Clay SN, PR, RF JT, 30°, Clay SN, PR, RF JT, 45°, Fe SN, PR, RF DZ, 5°, Fe SN, PR, RF JT, 5°, Fe Clay SN, PR, S SH, 0°, Fe Clay SN, PR, RF
			100		64	529.2	6						JT, 0°, SN, PR, RF JT, 5°, Fe Clay VNR, PR, S
						528.2	7		ANDESITE: aphanitic, dark-green with irregular brown, fractured to slightly fractured	MW			JT, 0°, Fe Clay VNR, PR, RF DZ, 0°, Fe SN, PR, RF JT, 45°, Fe SN, PR, RF JT, 20°, Fe SN, PR, RF JT, 0°, Fe Clay SN, DIS, S JT, 0°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF DZ, 0°, Fe Clay SN, DIS, RF JT, 85°, Fe SN, PR, S Sub-vertical joint JT, 0°, Fe SN, PR, RF
			100		87				Below 7.00m: pale grey and brown				

Method

AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 374991.5 m E 6941625.9 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 535.16 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information								Rock Substance					Rock Mass Defects																																																																																																																																																																																																																																																																																																																																																																																																																												
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																																																																																																																																																																																																																																																																																																																																																																																																																												
													Particular	General																																																																																																																																																																																																																																																																																																																																																																																																																											
HQ3		Not Observed	100		87	526.2	9	✓	ANDESITE: aphanitic, dark-green with irregular brown, fractured to slightly fractured(continued)	MW	○			JT, 10°, SN, PR, RF																																																																																																																																																																																																																																																																																																																																																																																																																											
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Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss
Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	30/10/2021
Project Name:	Inland Rail B2G	Completed:	30/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	374991.5 m E 6941625.9 m N MGA94 Zone 56	Checked By:	D.Hill

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°	RL Surface:	535.16 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD
				Operator:	J. Komung



PointID : 310-03-BH3344 Depth Range: 1.70 - 6.00 m



PointID : 310-03-BH3344 Depth Range: 6.00 - 11.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 374991.5 m E 6941625.9 m N MGA94 Zone 56

Commenced: 30/10/2021
Completed: 30/10/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclinometer: -90° RL Surface: 535.16 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J. Komung



PointID : 310-03-BH3344 Depth Range: 11.00 - 13.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 377368.5 m E 6944004.6 m N MGA94 Zone 56

Commenced: 02/09/2021
Completed: 02/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclinometer: -90° RL Surface: 537.71 m
Hole Diameter: 115 mm Bearing: AHD Operator: R.Welsh

Drilling Information					Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T			Not Observed	D00000 D 0.00-0.50 m		536.7	1		CI	TOPSOIL: CLAY trace sand trace roots: medium plasticity, dark-brown mottled orange, fine grained sand	M (=PL)	F			TOPSOIL
				D00050 U 0.50-0.65 m D00100 U 0.50-0.65 m S00150 SPT 1.00-1.16 m 25,30/5mm N=30/5mm S00150 SPT 1.50-1.66 m 25,30/5mm N=30/5mm 1 C 2.00-3.00 m						CLAY trace sand: medium plasticity, dark-brown mottled yellow, fine grained sand					RESIDUAL SOIL
HQ3						535.7	2		GI	Silty CLAY: medium plasticity, grey brown.					
										Continued on cored borehole sheet					
<u>Method</u> AS - Auger Screwing RR - Rock Roller WB - Washbore <u>Support</u> C - Casing <u>Penetration</u>  No resistance ranging to refusal <u>Graphic Log/Core Loss</u>  Core recovered (hatching indicates material)  Core loss <u>Water</u>  Level (Date)  Inflow  Partial Loss  Complete Loss <u>Samples and Tests</u> U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test <u>Classification Symbols and Soil Descriptions</u> Based on Unified Soil Classification System <u>Plastic Limit</u> < PL = PL < PL <u>Moisture Condition</u> D - Dry M - Moist W - Wet <u>Consistency/Relative Density</u> VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense															

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 377368.5 m E 6944004.6 m N MGA94 Zone 56

Commenced: 02/09/2021
Completed: 02/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 537.71 m
Datum: AHD Operator: R.Welsh



310-03-BH3346 Depth Range: 1.00 - 1.45 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 377368.5 m E 6944004.6 m N MGA94 Zone 56

Commenced: 02/09/2021
Completed: 02/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 537.71 m
Barrel Type and Length: Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance					Rock Mass Defects															
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling							
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General			
HQ3			Not Observed			536.7	1																				
						535.7	2		Continued from non-cored borehole sheet																		
						534.7	3	✓	BASALT: crystalline, dark green grey, highly fractured	RS																	
						533.7	4	✗	No Core: 550mm.	HW																	
						532.7	5	✓	BASALT: fine crystalline, dark green grey, massive	XW																	
						531.7	6	✓		MW																	
						530.7	7	✓	Below 06.00m with Fe staining along incipient fractures	MW																	
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water ✗ Level (Date) ▽ Inflow △ Partial Loss ◼ Complete Loss Support T - Timbering Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																											

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 377368.5 m E 6944004.6 m N MGA94 Zone 56

Commenced: 02/09/2021
Completed: 02/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 537.71 m
Barrel Type and Length: Bearing: Datum: AHD Operator: R.Welsh

Drilling Information								Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
													Particular	General	
HQ3	Not Observed	100	82	86	94	528.7	9	✓	BASALT: fine crystalline, dark green grey, massive(continued)	MW SW	●	300	JT, 45°, Fe SN, DIS, RF		
						527.7	10	✓					JT, 15°, Fe SN, PR, S JT, 15°, Fe SN, CU, RF JT, 0°, Fe SN, PR, RF SH, 10°, Fe SN, PR, RF JT, 85°, Fe SN, PR, RF		
						526.7	11	✓					JT, 5°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF		
						525.7	12	✓					JT, 10°, Fe SN, UN, RF SH, 0°, Fe SN, DIS, RF		
						524.7	13	✓					JT, 10°, Fe SN, UN, RF SH, 0°, Fe SN, DIS, RF JT, 0°, Fe SN, PR, RF		
						523.7	14	✓					JT, 5°, Clay VNR, PR, S JT, 5°, Fe SN, PR, RF		
						522.7	15	✓					JT, 5°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF		
								✓					JT, 45°, Fe SN, PR, RF JT, 30°, Fe SN, PR, RF		
								✓					JT, 25°, Fe SN, PR, RF JT, 5°, Clay VNR, PR, RF		
								✓					JT, 0°, Fe SN, UN, RF		
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Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	02/09/2021
Project Name:	Inland Rail B2G	Completed:	02/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	377368.5 m E 6944004.6 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Barrel Type and Length:		RL Surface:	537.71 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3346 Depth Range: 2.00 - 6.00 m



PointID : 310-03-BH3346 Depth Range: 6.00 - 11.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	02/09/2021
Project Name:	Inland Rail B2G	Completed:	02/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	377368.5 m E 6944004.6 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	537.71 m
Barrel Type and Length:		Bearing:		Datum:	AHD Operator: R.Welsh



PointID : 310-03-BH3346 Depth Range: 11.00 - 14.00 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/10/2021
Project Name:	Inland Rail B2G	Completed:	25/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	377758.0 m E 6945529.6 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-70°	RL Surface:	532.21 m		
Hole Diameter:	96 - 115 mm	Bearing:	115°	Datum:	AHD	Operator:	J. Komung

Drilling Information					Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T			Not Observed	D00000 D 0.00-0.90 m					CI	Topsoil: Sandy CLAY with gravel: low to medium plasticity, brown, fine sub-angular to angular gravel Sandy CLAY: medium plasticity, brown, fine grained sand	M (<PL)	VSt		100 200 300 400 500	TOPSOIL RESIDUAL SOIL
						531.3	1			Continued on cored borehole sheet					
						530.3	2								
						529.4	3								
						528.5	4								
						527.5	5								
						526.6	6								
						525.6	7								
						524.7									

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 377758.0 m E 6945529.6 m N MGA94 Zone 56

Commenced: 16/10/2021
Completed: 25/08/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -70° RL Surface: 532.21 m
Barrel Type and Length: HQ 3 m Bearing: 115° Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects																	
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral				Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling										
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General					
HQ3	Not Observed	100	100	0	0	531.3	1	Continued from non-cored borehole sheet																					
						530.3	2	BASALT: fine grained, crystalline, dark-green mottled brown																			JT, 0°, Fe SN, PR, RF DZ, 0°, Fe SN, DIS, RF JT, 10°, Fe SN, PR, RF JT, 5°, Fe SN, DIS, RF JT, 45°, Fe SN, PR, RF JT, 45°, Fe SN, PR, RF SH, 0°, Fe SN, DIS, RF DZ, 5°, Fe SN, PR, RF JT, 35°, Fe SN, PR, S JT, 0°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 0°, Fe Clay VNR, PR, S JT, 0°, Fe SN, PR, RF JT, 5°, Fe SN, DIS, RF JT, 0°, Fe SN, PR, S DZ, 0°, Fe Clay VNR, PR, S JT, 15°, Fe SN, UN, RF JT, 15°, Fe SN, PR, RF JT, 0°, Fe SN, DIS, RF JT, 5°, Fe SN, PR, S JT, 85°, Fe SN, UN, RF JT, 15°, Clay SN, PR, S JT, 0°, Clay SN, PR, RF JT, 5°, Fe SN, UN, RF JT, 5°, Fe Clay SN, UN, S JT, 0°, Clay SN, PR, S JT, 0°, Clay CN, PR, S JT, 15°, Clay SN, UN, RF JT, 10°, CN, UN, RF JT, 85°, Clay CN, CU, S JT, 5°, CN, UN, RF JT, 5°, Clay VNR, ST, S JT, 0°, CN, PR, S JT, 0°, Clay SN, PR, S JT, 0°, Fe SN, DIS, RF JT, 5°, Fe SN, PR, RF SH, 0°, Clay SN, DIS, RF JT, 5°, Clay VNR, PR, RF JT, 5°, Clay SN, PR, S JT, 0°, Clay SN, PR, S JT, 0°, Clay SN, PR, RF JT, 0°, Clay SN, DIS, RF DZ, 5°, Fe SN, PR, RF DZ, 0°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF JT, 20°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF JT, 5°, Fe SN, PR, RF JT, 15°, Fe SN, PR, RF		
						529.4	3																						
						528.5	4	Below 3.70m: colour changes to red-brown																					
						527.5	5	Below 4.70m: colour changes to dark-green mottled brown																					
						526.6	6																						
						525.6	7																						
						524.7																							
						Method AS - Auger Screwing WB - Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel							Water ▬ Level (Date) ▽ Inflow ▴ Partial Loss ▲ Complete Loss			Graphic Log/Core Loss ▨ Core recovered (hatching indicates material) ▭ Core loss			Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil			Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High							
						Support T - Timbering																							

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 377758.0 m E 6945529.6 m N MGA94 Zone 56

Commenced: 16/10/2021
Completed: 25/08/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -70° RL Surface: 532.21 m
Barrel Type and Length: HQ 3 m Bearing: 115° Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
													Particular	General		
HQ3	Not Observed		100		29	523.8	9		BASALT: fine grained, crystalline, dark-green mottled brown(continued)	SW			JT, 5°, Fe Clay SN, PR, RF			
			100		12		JT, 10°, Fe Clay SN, PR, RF									
			100				DZ, 0°, Fe SN, PR, RF									
			100		59	521.9	10		Below 10.00m: colour changes to grey mottled dark-green	FR	JT, 25°, Fe SN, UN, RF					
							JT, 10°, Fe SN, UN, RF									
							JT, 5°, Fe SN, PR, RF									
							JT, 0°, Fe SN, PR, RF									
							JT, 0°, Fe SN, PR, RF									
							JT, 0°, Fe SN, PR, RF									
							JT, 45°, Fe SN, PR, S									
							JT, 8°, Fe SN, UN, RF									
							JT, 5°, Fe SN, ST, RF									
							JT, 15°, Fe SN, UN, RF									
							JT, 15°, Fe SN, PR, RF									
							DZ, 10°, Fe SN, PR, RF									
							DZ, 35°, Fe SN, PR, S									
							DZ, 5°, Fe SN, PR, RF									
JT, 0°, Fe SN, CU, RF																
DZ, 0°, Fe SN, PR, RF																
JT, 45°, Fe Clay SN, PR, S																
DZ, 0°, Fe SN, PR, RF																
JT, 5°, Fe SN, PR, S																
JT, 5°, Fe SN, PR, S																
JT, 55°, Fe SN, CU, RF																
JT, 0°, Fe Clay SN, PR, S																
JT, 5°, Fe Clay SN, PR, S																
JT, 10°, Fe SN, PR, S																
JT, 10°, Fe SN, PR, S																
JT, 15°, CN, PR, RF																
JT, 15°, CN, PR, S																
JT, 0°, CN, PR, S																
SM, 45°, Clay SN, PR, S																
JT, 0°, CN, PR, S																
JT, 10°, Fe Clay SN, UN, RF																
JT, 5°, CN, PR, S																
JT, 5°, CN, CU, RF																
JT, 0°, CN, PR, S																
JT, 25°, CN, PR, RF																
JT, 5°, CN, UN, RF																
JT, 10°, CN, PR, S																
JT, 90°, CN, PR, S																
Sub-vertical joint																
JT, 10°, CN, UN, RF																
JT, 5°, CN, PR, S																
JT, 5°, Clay VNR, PR, S																
JT, 0°, CN, PR, S																

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
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DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/10/2021
Project Name:	Inland Rail B2G	Completed:	25/08/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	377758.0 m E 6945529.6 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-70°	RL Surface:	532.21 m	
Barrel Type and Length:	HQ 3 m	Bearing:	115°	Datum:	AHD	Operator: J. Komung

Drilling Information							Rock Substance						Rock Mass Defects					
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral		Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL VL L M H VH EH	30 100 300 1000 3000	Particular	General				
HQ3									BASALT: fine grained, crystalline, dark-green mottled brown(continued)	FR					JT, 5°, CN, PR, RF			
Not Observed																		JT, 5°, CN, PR, S

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 377758.0 m E 6945529.6 m N MGA94 Zone 56										Commenced: 16/10/2021 Completed: 25/08/2021 Logged By: A.Sharma Checked By: C.Green																			
Drill Model and Mounting: Comacchio 305/Track Barrel Type and Length: HQ 3 m										Inclination: -70° Bearing: 115°										RL Surface: 532.21 m Datum: AHD Operator: J. Komung									
Drilling Information										Rock Substance										Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling									
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General					
HQ3		Not Observed	100		61	508.7	25	✓	BASALT: fine grained, crystalline, dark-green mottled brown(continued)	FR																			
			100		59	507.8	26	✓																					
								✓																					
								✓																					
								✓																					
								✓																					
								✓																					
								✓																					
								✓																					
								✓																					
						506.8	27		Hole Terminated at 26.56 m Target depth																				
						505.9	28																						
						505.0	29																						
						504.0	30																						
						503.1	31																						
						502.1																							

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss

▨ Core recovered (hatching indicates material)
▩ Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

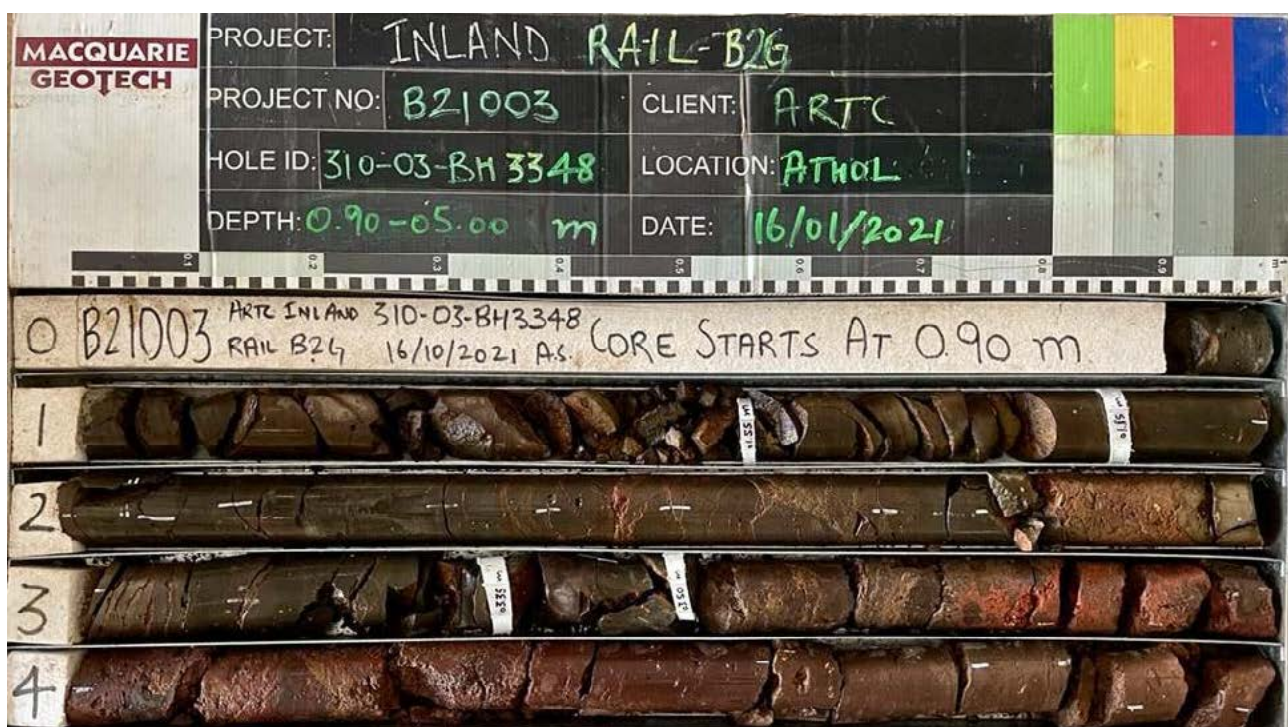
Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC				Commenced:	16/10/2021	
Project Name:	Inland Rail B2G				Completed:	25/08/2021	
Hole Location:	N3 - Brookstead to Gowrie				Logged By:	A.Sharma	
Hole Coordinates:	377758.0 m E 6945529.6 m N MGA94 Zone 56				Checked By:	C.Green	
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-70°	RL Surface:	532.21 m		
Barrel Type and Length:	HQ 3 m	Bearing:	115°	Datum:	AHD	Operator:	J. Komung



PointID : 310-03-BH3348 Depth Range: 0.90 - 5.00 m



PointID : 310-03-BH3348 Depth Range: 5.00 - 10.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC				Commenced:	16/10/2021	
Project Name:	Inland Rail B2G				Completed:	25/08/2021	
Hole Location:	N3 - Brookstead to Gowrie				Logged By:	A.Sharma	
Hole Coordinates:	377758.0 m E 6945529.6 m N MGA94 Zone 56				Checked By:	C.Green	
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-70°	RL Surface:	532.21 m		
Barrel Type and Length:	HQ 3 m	Bearing:	115°	Datum:	AHD	Operator:	J. Komung



PointID : 310-03-BH3348 Depth Range: 10.00 - 15.00 m



PointID : 310-03-BH3348 Depth Range: 15.00 - 20.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 377758.0 m E 6945529.6 m N MGA94 Zone 56

Commenced: 16/10/2021
Completed: 25/08/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclusion: -70° RL Surface: 532.21 m
Barrel Type and Length: HQ 3 m Bearing: 115° Datum: AHD Operator: J. Komung



PointID : 310-03-BH3348 Depth Range: 25.00 - 26.56 m

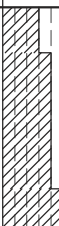
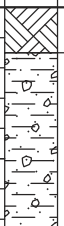
Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378029.5 m E 6945877.8 m N MGA94 Zone 56

Commenced: 02/10/2021
Completed: 06/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -70° RL Surface: 533.68 m
Hole Diameter: 115 mm Bearing: 285° Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations			
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)				Structure and Additional Observations
ADV		Not Observed		D00000 0.00-0.50 m		532.7	1		CI	TOPSOIL Clayey SILT with cobbles and gravel: low to medium plasticity, dark-brown, medium to coarse sub-angular to angular gravel, sub-rounded to (sub-angular cobble (<200mm), trace rootlets (<2mm)).	NA	NA				TOPSOIL	
				D00050 0.50-1.00 m						CLAY with sand and gravel trace cobble: medium plasticity, yellow brown, fine to coarse sub-angular to angular gravel, fine to coarse grained sand, sub-rounded to sub-angular cobble (<150mm)	M (<PL)	VSt				RESIDUAL SOIL	
										Continued on cored borehole sheet							
						531.8	2										
						530.9	3										
						529.9	4										
						529.0	5										
						528.0	6										
						527.1	7										
						526.2											
Method		Penetration		Water		Samples and Tests		Moisture Condition		Consistency/Relative Density		Plastic Limit					
AS - Auger Screwing RR - Rock Roller WB- Washbore				Level (Date) Inflow Partial Loss Complete Loss		U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test		D - Dry M - Moist W - Wet		VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense		< PL = PL < PL					
Support		Graphic Log/Core Loss		Classification Symbols and Soil Descriptions													
C - Casing				Based on Unified Soil Classification System													

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	02/10/2021
Project Name:	Inland Rail B2G	Completed:	06/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Tran
Hole Coordinates:	378029.5 m E 6945877.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-70°	RL Surface:	533.68 m	
Barrel Type and Length:	HQ3 3 m	Bearing:	285°	Datum:	AHD	Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50)						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000
						532.7	1															
									Continued from non-cored borehole sheet													
HQ3	Not Observed		100		0	531.8	2	✓ ✓														

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
✗ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378029.5 m E 6945877.8 m N MGA94 Zone 56

Commenced: 02/10/2021
Completed: 06/10/2021
Logged By: T.Tran
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -70° RL Surface: 533.68 m
Barrel Type and Length: HQ3 3 m Bearing: 285° Datum: AHD Operator: J. Komung

Drilling Information						Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
			100		21				BRECCIA: fine to coarse, angular clast, dark grey and brown, with fine to coarse sub-angular to angular clast. (continued)	HW			
			100		0	525.2	9		Extremely weathered BRECCIA recovered as Gravelly CLAY: medium to high plasticity, red brown and dark grey, fine to coarse sub-angular to angular gravel.	XW			
						524.3	10		BASALT: fine crystalline, dark grey.	HW			
			100		49	523.3	11		BASALT: fine crystalline, dark grey, with randomly oriented calcite infill, massive.	SW			
						522.4	12						
						521.5	13						
			100		89	520.5	14						
						519.6	15						
			100		83	518.6							
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water Level (Date) Inflow Partial Loss Complete Loss Support T - Timbering Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High													

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378029.5 m E 6945877.8 m N MGA94 Zone 56

Commenced: 02/10/2021
Completed: 06/10/2021
Logged By: T.Tran
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -70° RL Surface: 533.68 m
Barrel Type and Length: HQ3 3 m Bearing: 285° Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
HQ3	Not Observed	06/10/21	100	83	517.7	516.8	17		BASALT: fine crystalline, dark grey, with randomly oriented calcite infill, massive.(continued)	SW			Particular	General
													JT, 20°, Clay VNR, UN, RF	
													JT, 0°, Clay VNR, UN, RF	
													JT, 10°, CN, UN, RF	
													JT, 15°, CN, UN, RF	
													JT, 5°, CN, IR, RF	
													JT, 30°, CN, UN, RF	
													JT, 10°, MS VNR, UN, RF	
													JT, 70°, Fe SN, UN, RF	
													JT, 15°, Fe SN, IR, RF	
		JT, 10°, Fe VNR, IR, RF												
		CZ												
		JT, 50°, Fe Clay VNR, UN, RF												
		JT, 45°, Fe Clay VNR, UN, RF												
		CZ, 40°, Fe Clay VNR, IR, RF												
		JT, 20°, Clay VNR, UN, RF												
		JT, 10°, Clay VNR, UN, RF												
		JT, 40°, Clay VNR, IR, RF												
		JT, 40°, CN, UN, RF												
		JT, 20°, Fe SN, IR, RF												
		JT, 5°, Clay VNR, UN, RF												
		JT, 5°, Fe SN, UN, RF												
		JT, 5°, Clay VNR, UN, RF												
		CZ, 10°, Fe SN, IR, RF												
		JT, 5°, Fe Clay Vb, IR, RF												
		JT, 5°, Fe Clay VNR, IR, RF												
		JT, 5°, Clay VNR, IR, RF												
		JT, 5°, Clay VNR, IR, RF												
		CZ, 30°, Fe Clay VNR, IR, RF												
		JT, 15°, Clay VNR, IR, RF												
		JT, 5°, Clay VNR, IR, RF												
		CZ, 10°, Clay FILLED, IR, RF												
		JT, 10°, Clay VNR, IR, RF												
		CZ, 5°, Clay FILLED, UN, RF												
		JT, 5°, Fe SN, UN, RF												
		JT, 10°, Clay VNR, UN, RF												
		JT, 45°, CN, UN, RF												

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378029.5 m E 6945877.8 m N MGA94 Zone 56

Commenced: 02/10/2021
Completed: 06/10/2021
Logged By: T.Tran
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -70° RL Surface: 533.68 m
Barrel Type and Length: HQ3 3 m Bearing: 285° Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
													Particular	General	
HQ3		Not Observed	100		97				BASALT: amygdaloidal, dark grey mottled white, massive.(continued)	SW	EL VL L M H VH EH	30	JT, 45°, CN, UN, RF		
						100	JT, 30°, CN, UN, RF								
						300	JT, 45°, CN, UN, RF								
						1000	JT, 45°, CN, UN, RF								
						3000	JT, 75°, CN, UN, RF								
							JT, 30°, Clay VNR, UN, RF								
							JT, 30°, Clay VNR, UN, RF								
							JT, 45°, Clay VNR, UN, RF								
							JT, 30°, Clay VNR, UN, RF								
							JT, 15°, Clay VNR, UN, RF								
							JT, 15°, Clay VNR, UN, RF								
							JT, 30°, Clay VNR, UN, RF								
				JT, 25°, Clay VNR, UN, RF											
				JT, 10°, MS VNR, UN, RF											
				JT, 45°, Clay FILLED, UN, RF											
				JT, 50°, Clay VNR, UN, RF											
				JT, 80°, Clay VNR, UN, RF											
				JT, 15°, Clay VNR, UN, RF											
				JT, 10°, Clay VNR, UN, RF											
				JT, 75°, Clay VNR, UN, RF											
				JT, 15°, Clay VNR, UN, RF											
				JT, 45°, Clay VNR, UN, RF											
				JT, 5°, Clay VNR, UN, RF											
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel							Water Level (Date) Inflow Partial Loss Complete Loss			Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss		Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil		Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High	

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC							Commenced: 02/10/2021															
Project Name: Inland Rail B2G							Completed: 06/10/2021															
Hole Location: N3 - Brookstead to Gowrie							Logged By: T.Tran															
Hole Coordinates: 378029.5 m E 6945877.8 m N MGA94 Zone 56							Checked By: J.Boyle															
Drill Model and Mounting: Comacchio 305							Inclination: -70°		RL Surface: 533.68 m													
Barrel Type and Length: HQ3 3 m							Bearing: 285°		Datum: AHD		Operator: J. Komung											
Drilling Information							Rock Substance							Rock Mass Defects								
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50)						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000
HQ3		Not Observed	100		85	502.7	33		BASALT: amygdaloidal, dark grey mottled white, massive.(continued)	SW												JT, 10°, Clay VNR, UN, RF JT, 60°, MS FILLED, UN, RF JT, 10°, Clay VNR, UN, RF JT, 20°, Clay VNR, UN, RF JT, 5°, Fe SN, UN, RF
						501.7	34		BASALT: amygdaloidal, dark grey and orange brown.	HW												N.I
						500.8	35		Hole Terminated at 33.35 m Target depth													
						499.8	36															
						498.9	37															
						498.0	38															
						497.0	39															
						496.1																
<u>Method</u> AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel							<u>Water</u> Level (Date) Inflow Partial Loss Complete Loss				<u>Graphic Log/Core Loss</u> Core recovered (hatching indicates material) Core loss				<u>Weathering</u> FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil				<u>Strength</u> (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High			
							T - Timbering															

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378029.5 m E 6945877.8 m N MGA94 Zone 56

Commenced: 02/10/2021
Completed: 06/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -70° RL Surface: 533.68 m
Barrel Type and Length: HQ3 3 m Bearing: 285° Datum: AHD Operator: J. Komung



PointID : 310-03-BH3349 Depth Range: 1.50 - 5.00 m



PointID : 310-03-BH3349 Depth Range: 5.00 - 9.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378029.5 m E 6945877.8 m N MGA94 Zone 56

Commenced: 02/10/2021
Completed: 06/10/2021
Logged By: T. Tran
Checked By: J. Boyle

Drill Model and Mounting: Comacchio 305 Inclusion: -70° RL Surface: 533.68 m
Barrel Type and Length: HQ3 3 m Bearing: 285° Datum: AHD Operator: J. Komung



PointID : 310-03-BH3349 Depth Range: 9.00 - 13.00 m



PointID : 310-03-BH3349 Depth Range: 13.00 - 17.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	02/10/2021				
Project Name:	Inland Rail B2G	Completed:	06/10/2021				
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Tran				
Hole Coordinates:	378029.5 m E 6945877.8 m N MGA94 Zone 56	Checked By:	J.Boyle				
Drill Model and Mounting:	Comacchio 305	Inclination:	-70°	RL Surface:	533.68 m		
Barrel Type and Length:	HQ3 3 m	Bearing:	285°	Datum:	AHD	Operator:	J. Komung



PointID : 310-03-BH3349 Depth Range: 17.00 - 21.00 m



PointID : 310-03-BH3349 Depth Range: 21.00 - 25.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	02/10/2021				
Project Name:	Inland Rail B2G	Completed:	06/10/2021				
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Tran				
Hole Coordinates:	378029.5 m E 6945877.8 m N MGA94 Zone 56	Checked By:	J.Boyle				
Drill Model and Mounting:	Comacchio 305	Inclination:	-70°	RL Surface:	533.68 m		
Barrel Type and Length:	HQ3 3 m	Bearing:	285°	Datum:	AHD	Operator:	J. Komung



PointID : 310-03-BH3349 Depth Range: 25.00 - 29.00 m



PointID : 310-03-BH3349 Depth Range: 29.00 - 33.35 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378020.5 m E 6946126.0 m N MGA94 Zone 56

Commenced: 02/10/2021
Completed: 03/10/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Inclin: -90° RL Surface: 516.38 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADV			Not Observed	D00000 D 0.00-0.50 m					CI	Silty CLAY trace sand: medium plasticity, black, fine grained sand, with rootlets	NA	NA			TOPSOIL
				CI					Silty CLAY trace sand: medium plasticity, dark brown mottled grey, fine grained sand	M (<PL)	H			RESIDUAL SOIL	
				S00050 SPT 0.50-0.79 m 9.30/140mm HB N=30/140mm PP 0.50 m >600 kPa		515.4	1			Sandy silty CLAY trace gravel: medium plasticity, pale brown, fine to medium grained sand, medium sub angular to angular gravel					
						514.4	2			Continued on cored borehole sheet					
						513.4	3								
						512.4	4								
						511.4	5								
						510.4	6								
						509.4	7								

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Plastic Limit

< PL
= PL
< PL

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

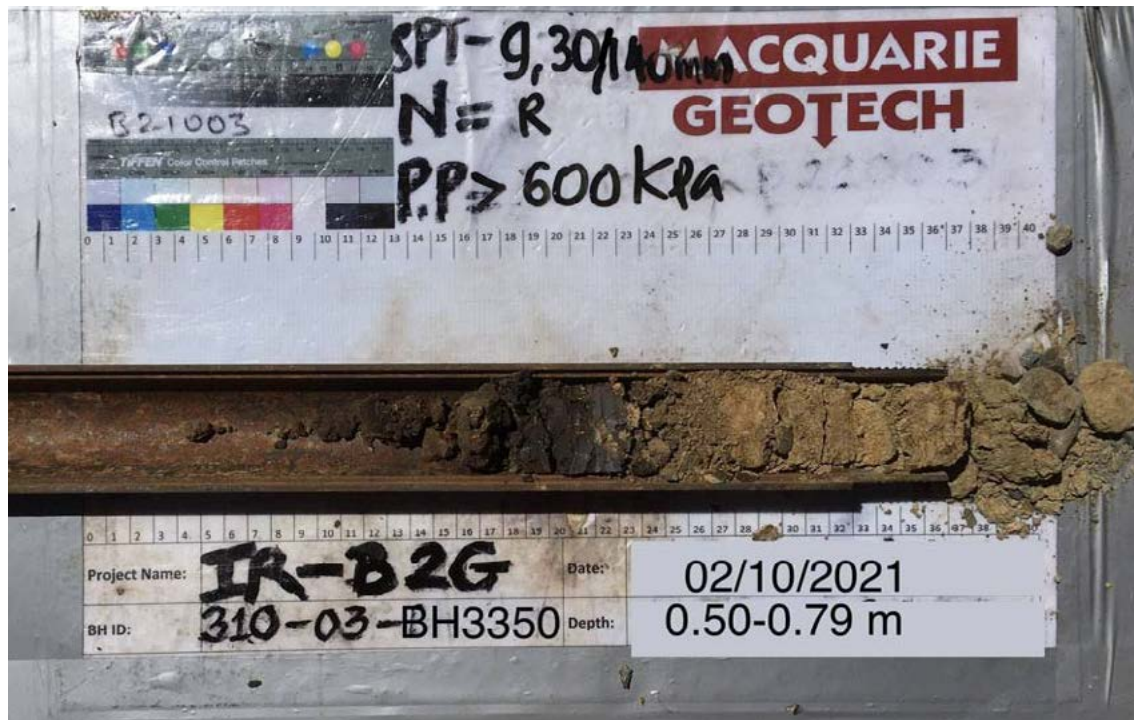
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378020.5 m E 6946126.0 m N MGA94 Zone 56

Commenced: 02/10/2021
Completed: 03/10/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 516.38 m
Datum: AHD Operator: B.Boga



310-03-BH3350 Depth Range: 0.50 - 0.79 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378020.5 m E 6946126.0 m N MGA94 Zone 56

Commenced: 02/10/2021
Completed: 03/10/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Inclinometer: -90° RL Surface: 516.38 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQR (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		Particular	General
									Continued from non-cored borehole sheet							
							515.4	1	NO CORE: 0.86m							
			47		0		514.4	2	CLAY trace gravel: low to medium plasticity, dark brown, fine to medium sub angular to angular gravel	SW to MW			JT, 10°, Fe SN, UN, RF			
									BASALT: dark grey, fine crystalline	RS			JT, 35°, Fe SN, UN, RF			
									CLAY with gravel: low to medium plasticity, brown mottled red, fine to medium sub angular to angular gravel.	HW to XW			JT, 10°, Fe SN, UN, RF			
			70		0		513.4	3	BASALT: dark grey brown, fine crystalline				JT, 45°, Clay VNR, UN, RF			
									NO CORE: 0.33m				JT, 30°, Clay VNR, UN, RF			
									BASALT: dark grey, fine crystalline	SW			CS, 40°			
													CS, 20°			
													JT, 90°, Clay VNR, UN, RF			
													CS, 5°			
									NO CORE 0.10m				JT, 25°, Clay VNR, UN, RF			
									BASALT: dark grey, fine crystalline	MW			5°, 30mm			
			91		0		512.4	4					CZ, 10°			
													JT, 15°, Fe SN, UN, RF			
									Below 4.20m: multiple healed fractures	SW to MW			JT, 85°, Clay VNR, UN, RF			
										HW			JT, 25°, Clay VNR, UN, RF			
													30mm			
									NO CORE: 0.62m				JT, 25°, healed joint			
													4mm			
			36		0		511.4	5					JT, 15°, Clay VNR, UN, RF			
									BASALT: pale grey, fine crystalline				CS, 15°			
													JT, 20°, healed joint			
													10°, 3mm			
													JT, 85°, Clay VNR, UN, RF			
													CS, 0°			
													JT, 25°, Clay VNR, UN, RF			
													CS, 0°			
			100		0		510.4	6					JT, 10°, Fe SN, UN, RF			
													20mm			
													JT, 50°, Fe SN, PR, RF			
													JT, 0°, Fe SN, UN, RF			
													JT, 25°, Fe SN, PR, RF			
													JT, 20°, Fe SN, PR, RF, 2			
									NO CORE: 0.38m				JT, 20°, Clay VNR, UN, RF			
													30mm			
									BASALT: grey brown, fine crystalline				JT, 85°, Fe SN, PR, RF			
			77		42		509.4	7					JT, 20°, Fe SN, UN, RF			
									Serpentinized zone							
									Below 7.20m: with vesicular texture	SW to MW			IS, 20mm			

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC	Commenced: 02/10/2021
Project Name: Inland Rail B2G	Completed: 03/10/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T.Nimalsiri
Hole Coordinates: 378020.5 m E 6946126.0 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: D4TAPG	Inclination: -90°	RL Surface: 516.38 m
Barrel Type and Length: HQ3 3 m	Bearing:	Datum: AHD Operator: B.Boga

Drilling Information						Rock Substance						Rock Mass Defects																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50)						Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
											EL	VL	L	M	H	VH		EH	Particular	General																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
HQ3	Not Observed	100	95	52	507.4	9	✓	NO CORE: 0.05m BASALT: grey, fine crystalline, massive	SW to MW							JT, 0°, Clay VNR, UN, RF JT, 25°, Clay VNR, UN, RF JT, 10°, Clay VNR, UN, RF JT, 5°, Clay VNR, UN, RF JT, 45°, Clay VNR, UN, RF JT, 40°, Clay VNR, UN, RF CS, 25° 40mm JT, 70°, Clay VNR, PR, RF JT, 5°, healed joint JT, 25°, Fe SN, PR, RF SZ, 20° SZ, 45° JT, 30°, CA VNR, PR, RF JT, 20°, CA VNR, PR, RF JT, 35°, CA CT, UN, RF JT, 35°, CA VNR, PR, RF JT, 65°, CA VNR, ST, RF JT, 35°, CA CT, PR, RF JT, 50°, CA VNR, PR, RF JT, 25°, CA VNR, PR, RF JT, 50°, CA CT, PR, RF JT, 20°, CA VNR, UN, RF JT, 40°, CA VNR, PR, RF JT, 20°, CA VNR, UN, RF JT, 50°, Clay VNR, PR, RF JT, 50°, Fe SN, UN, RF JT, 80°, Clay VNR, UN, RF JT, 35°, CN, UN, RF																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
																		100	89	506.4	10	✓	Below 8.80m: colour tending dark grey	FR to SW																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

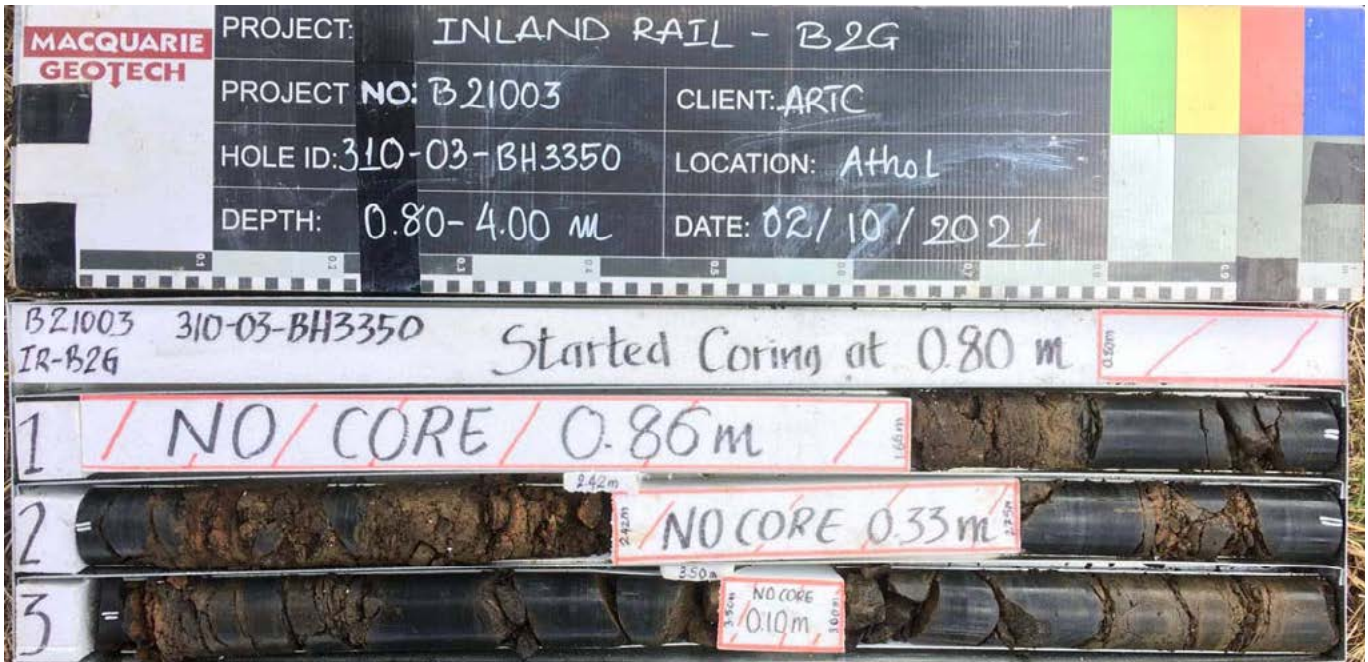
Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378020.5 m E 6946126.0 m N MGA94 Zone 56

Commenced: 02/10/2021
Completed: 03/10/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: D4TAPG Inclin: -90° RL Surface: 516.38 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: B.Boga



PointID : 310-03-BH3350 Depth Range: 0.80 - 4.00 m



PointID : 310-03-BH3350 Depth Range: 4.00 - 8.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	02/10/2021
Project Name:	Inland Rail B2G	Completed:	03/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Nimalsiri
Hole Coordinates:	378020.5 m E 6946126.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	D4TAPG	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	516.38 m
		Bearing:	
		Datum:	AHD
		Operator:	B.Boga



PointID : 310-03-BH3350 Depth Range: 8.00 - 12.00 m



PointID : 310-03-BH3350 Depth Range: 12.00 - 15.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 05/10/2021
Project Name: Inland Rail B2G	Completed: 06/10/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 378164.5 m E 6946368.3 m N MGA94 Zone 56	Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 513.07 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: B.Boga

Drilling Information							Soil Description							Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations
AD/V			Not Observed	D00000 D 0.00-0.50 m		512.1	1		CI	TOPSOIL: Clayey SILT with gravels and cobbles trace rootlets: low to medium plasticity clay dark-brown, medium to coarse sub-angular to angular gravel, sub-rounded to sub-angular cobbles	M (<PL)	H	100				TOPSOIL	
																RESIDUAL SOIL		
				S00050 SPT 0.50-0.95 m 11,15,19 N=34 D00100 D 1.00-1.50 m					Gravelly sandy CLAY trace cobble, medium plasticity, yellow brown, fine to coarse sub-angular gravel, fine to coarse grained sand, sub-rounded to sub-angular cobble									
S00150 SPT 1.50-1.90 m 10,30,12/100mm N=42/250mm D00200 D 2.00-2.50 m	Sandy Clay with gravel: medium plasticity, yellow brown, fine to coarse grained sand, fine to meduium sub angular gravel.																	
						510.1	3			Continued on cored borehole sheet								
						509.1	4											
						508.1	5											
						507.1	6											
						506.1	7											

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	05/10/2021
Project Name:	Inland Rail B2G	Completed:	06/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	378164.5 m E 6946368.3 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	513.07 m
		Datum:	AHD
		Operator:	B.Boga



310-03-BH3351 Depth Range: 0.50 - 0.95 m



310-03-BH3351 Depth Range: 1.50 - 1.95 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378164.5 m E 6946368.3 m N MGA94 Zone 56

Commenced: 05/10/2021
Completed: 06/10/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 513.07 m
Barrel Type and Length: HQ3 4.2 m Bearing: Datum: AHD Operator: B.Boga

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
										EL VL L M H VH EH		30 100 300 1000 3000	Particular	General		
						512.1	1									
						511.1	2									
						510.1	3	Continued from non-cored borehole sheet								
			100		90	510.1	3	✓	BASALT: fine crystalline dark grey brown, with randomly orientated incipient fractures	XW	●		JT, 0°, Clay SN, UN, RF			
						509.1	4	✓	BASALT: fine crystalline, red brown, porphyritic		○		JT, 5°, Fe SN, PR, RF JT, 0°, Fe Clay SN, DIS, RF Non Intact JT, 10°, Fe Clay SN, PR, RF			
			100		81	508.1	5	✓	BASALT: fine crystalline, grey brown, vesicular, amygdal infilled with quartz	MW to HW	○		JT, 0°, Clay SN, PR, S			
						507.1	6	✓			●		JT, 0°, Fe Clay SN, PR, RF JT, 5°, Fe Clay VNR, PR, S JT, 0°, Fe SN, PR, RF JT, 0°, Fe SN, DIS, RF JT, 45°, Fe SN, PR, RF JT, 0°, Fe SN, UN, RF JT, 0°, Fe SN, UN, RF JT, 5°, Fe SN, CU, RF			
			100		95	506.1	7	✓			●		JT, 0°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF JT, 0°, Fe SN, UN, RF JT, 0°, Fe SN, DIS, RF JT, 0°, Fe SN, PR, RF			
								✓	BASALT: fine crystalline, dark grey, porphyritic	FR	○					
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water ↗ Level (Date) ▽ Inflow △ Partial Loss ▲ Complete Loss Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378164.5 m E 6946368.3 m N MGA94 Zone 56

Commenced: 05/10/2021
Completed: 06/10/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 513.07 m
Barrel Type and Length: HQ3 4.2 m Bearing: Datum: AHD Operator: B.Boga

Drilling Information										Rock Substance										Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling								
										EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular			General				
HQ3										FR																			
Not Observed																													

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	05/10/2021
Project Name:	Inland Rail B2G	Completed:	06/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	378164.5 m E 6946368.3 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3 4.2 m	RL Surface:	513.07 m
		Bearing:	
		Datum:	AHD
		Operator:	B.Boga



PointID : 310-03-BH3351 Depth Range: 2.83 - 6.00 m



PointID : 310-03-BH3351 Depth Range: 6.00 - 10.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	05/10/2021
Project Name:	Inland Rail B2G	Completed:	06/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	378164.5 m E 6946368.3 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3 4.2 m	RL Surface:	513.07 m
		Bearing:	
		Datum:	AHD
		Operator:	B.Boga



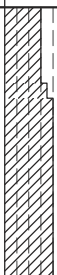
PointID : 310-03-BH3351 Depth Range: 10.00 - 14.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 01/09/2021
Project Name: Inland Rail B2G	Completed: 04/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T. Nimalsiri
Hole Coordinates: 378450.2 m E 6948695.8 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Hanjin DB8	Inclination: -90°	RL Surface: 501.78 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADW		Not Observed		D00000 0.00-0.50 m		500.8	1		ML	Sandy SILT with clay trace gravel: low plasticity, grey and pale brown, fine to coarse grained sand, fine to medium grained sub-angular to angular gravel.	NA	NA			TOPSOIL
				S00050 SPT 0.50-0.51 m 30/10mm					SC	CLayey SAND with gravel: fine to coarse grained sand, grey, medium plasticity clay, fine to medium sub angular gravel.					
				D00100 1.00-1.50 m					GP	Sandy GRAVEL with silt: fine to medium grained sub-angular to angular, dark brown mottled white, fine to coarse grained sand, low plasticity silt.	D	VD		RESIDUAL SOIL	
				S00150 SPT 1.50-1.63 m 30/130mm		499.8	2			Continued on cored borehole sheet					
						498.8	3								
						497.8	4								
						496.8	5								
						495.8	6								
						494.8	7								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378450.2 m E 6948695.8 m N MGA94 Zone 56

Commenced: 01/09/2021
Completed: 04/09/2021
Logged By: T. Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Hanjin DB8 Inclinometer: -90° RL Surface: 501.78 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects							
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
													Particular	General					
HQ3	Not Observed	75	87	61	500.8	1													
					</														

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 01/09/2021													
Project Name: Inland Rail B2G		Completed: 04/09/2021													
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Nimalsiri													
Hole Coordinates: 378450.2 m E 6948695.8 m N MGA94 Zone 56		Checked By: J.Boyle													
Drill Model and Mounting: Hanjin DB8		Inclination: -90°	RL Surface: 501.78 m												
Barrel Type and Length: HQ3 3 m		Bearing:	Datum: AHD Operator: J. Komung												
Drilling Information						Rock Substance				Rock Mass Defects					
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	Particular	General
HQ3	Not Observed	Water	55		37				ANDESITE: pink grey, vesicular texture.(continued)	XW			Non intact		
			100		42	492.8	9	✓	From 8.00m: colour tending to pale brown.						
							✓	From 8.50 to 9.00m: multiple sub-horizontal fractures.							
							✓	✓		MW to HW			VN, 90°, 5 - 50mm		
							✓	✓							
							✓	✓							
							✓	✓					JT, 30°, Clay VNR, PR, RF		
							✓	✓							
							✓	✓							
							✓	✓		MW to HW			Non intact		
							✓	✓							
							✓	✓							
							✓	✓		MW to HW			FZ, (30mm)		
							✓	✓							
							✓	✓							
							✓	✓		MW to HW			x3 JT, 75°, PR, RF, Clay, VNR		
							✓	✓							
							✓	✓							
							✓	✓		MW to HW			JT, 5°, Clay VNR, UN, RF		
							✓	✓							
							✓	✓							
							✓	✓		MW to HW			JT, 10°, Clay VNR, PR, RF		
							✓	✓							
							✓	✓							
							✓	✓		MW to HW			JT, 10°, Clay VNR, PR, RF		

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378450.2 m E 6948695.8 m N MGA94 Zone 56

Commenced: 01/09/2021
Completed: 04/09/2021
Logged By: T. Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Hanjin DB8 Inclinometer: -90° RL Surface: 501.78 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects																										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral			Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																						
										EL FR to SW	VL L	M	H	VH EH	30	100	300	1000	3000	Particular	General																	
HQ3	Not Observed	100	69	35	43	484.8	17		BASALT: fine crystalline, grey, vesicular massive.(continued)	FR to SW											JT, 45°, CA VNR, UN, RF	JT, 25°, CA VNR, UN, RF																
								From 16.50 to 17.00m: altered zone, grey in colour.	JT, 75°, Closed												JT, 45°, CA VNR, UN, RF		JT, 10°, CA CT, UN, RF															
								From 17.34 to 17.82m: altered	Non intact												VN, 35°, CA, 5mm		JT, 10°, CA VNR, UN, RF															
							HQ3	Not Observed	100	69	35	43	483.8	18		BASALT: dark grey, vesicular texture.	MW to HW										VN, 35°, CA, 10mm	JT, 35°, CA CT, PR, RF										
																VN, 40°, CA, 10mm											JT, 30°, Clay VNR, PR, RF		JT, 50°, CA CT, UN, RF	JT, 20°, Dark Minerals CT, UN, RF								
																CZ, 5°, 3mm											CZ, 0°, 5mm		CZ, 0°, 4mm	JT, 40°, Fe SN, UN, RF								
														HQ3	Not Observed	100	69	35	43	482.8	19		NO CORE: 0.78m	MW										JT, 30°, Dark Minerals VNR, UN, RF	JT, 45°, Dark Minerals VNR, UN, RF			
																							JT, 0°, Fe SN, UN, RF											JT, 0°, Fe CT, UN, RF		JT, 0°, CA CT, UN, RF	No core	
																							Non intact											SZ, 20°, UN, SL		Non intact	JT, 30°, CA VNR, UN, RF	
																					HQ3	Not Observed	100	69	35	43	481.8	20		BASALT: dark grey, vesicular texture.	HW							
	TUFF: red.	VN, 75°, CA, 5mm	JT, 0°, Clay VNR, UN, RF	JT, 0°, Clay VNR, UN, RF	VN, 45°, 5mm																																	
	BASALT: fine grained, black.	JT, 45°, CA VNR, UN, RF	JT, 20°, CA VNR, UN, RF	VN, 0°, CA, 70mm	JT, 0°, CA VNR, UN, RF																																	
HQ3	Not Observed	100	69	35	43	480.8																						21			SW to FR							
									CZ, 0°, 7mm	JT, 0°, Fe SN, UN, RF	JT, 10°, CA VNR, UN, RF	JT, 10°, CA VNR, UN, RF																										
									JT, 45°, 5mm	JT, 45°, CA VNR, UN, RF	JT, 20°, CA VNR, UN, RF	VN, 0°, CA, 70mm																										
							HQ3	Not Observed	100	69	35	43	479.8															22		At 22.00m: multiple calcite veins.	SW to FR							
																CZ, 0°, 7mm	JT, 0°, Fe SN, UN, RF	JT, 10°, CA VNR, UN, RF	JT, 10°, CA VNR, UN, RF																			
																JT, 45°, 5mm	JT, 45°, CA VNR, UN, RF	JT, 20°, CA VNR, UN, RF	VN, 0°, CA, 70mm																			
														HQ3	Not Observed	100	69	35	43	478.8								23			SW to FR							
																							CZ, 0°, 7mm	JT, 0°, Fe SN, UN, RF	JT, 10°, CA VNR, UN, RF	JT, 10°, CA VNR, UN, RF												
																							JT, 45°, 5mm	JT, 45°, CA VNR, UN, RF	JT, 20°, CA VNR, UN, RF	VN, 0°, CA, 70mm												

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

T - Timbering

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 01/09/2021												
Project Name: Inland Rail B2G		Completed: 04/09/2021												
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Nimalsiri												
Hole Coordinates: 378450.2 m E 6948695.8 m N MGA94 Zone 56		Checked By: J.Boyle												
Drill Model and Mounting: Hanjin DB8		Inclination: -90°	RL Surface: 501.78 m											
Barrel Type and Length: HQ3 3 m		Bearing:	Datum: AHD Operator: J. Komung											
Drilling Information		Rock Substance		Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
HQ3		Not Observed		100		59	476.8	25	BASALT: fine grained, black.(continued)	FR to SW			Particular	General
				100		71	475.8	26					JT, 45°, CA VNR, PR, RF	
				100		66	473.8	28	At 28.00m: multiple CA veins (5mm).				JT, 60°, CA VNR, PR, RF	
				100		66	472.8	29					JT, 90°, CA VNR, PR, RF	
				100		66	471.8	30	Hole Terminated at 30.00 m Target depth					
				100		66	470.8	31						

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC			Commenced:	01/09/2021	
Project Name:	Inland Rail B2G			Completed:	04/09/2021	
Hole Location:	N3 - Brookstead to Gowrie			Logged By:	T. Nimalsiri	
Hole Coordinates:	378450.2 m E 6948695.8 m N MGA94 Zone 56			Checked By:	J.Boyle	
Drill Model and Mounting:	Hanjin DB8	Inclination:	-90°	RL Surface:	501.78 m	
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD	Operator: J. Komung



PointID : 310-03-BH3352 Depth Range: 1.80 - 5.00 m



PointID : 310-03-BH3352 Depth Range: 5.00 - 9.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/09/2021
Project Name:	Inland Rail B2G	Completed:	04/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalsiri
Hole Coordinates:	378450.2 m E 6948695.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Hanjin DB8	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	501.78 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3352 Depth Range: 9.00 - 13.00 m



PointID : 310-03-BH3352 Depth Range: 13.00 - 17.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/09/2021
Project Name:	Inland Rail B2G	Completed:	04/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalsiri
Hole Coordinates:	378450.2 m E 6948695.8 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Hanjin DB8	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	501.78 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3352 Depth Range: 17.00 - 21.00 m



PointID : 310-03-BH3352 Depth Range: 21.00 - 25.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/09/2021
Project Name:	Inland Rail B2G	Completed:	04/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalsiri
Hole Coordinates:	378450.2 m E 6948695.8 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Hanjin DB8	Inclination:	-90°	RL Surface:	501.78 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: J. Komung



PointID : 310-03-BH3352 Depth Range: 25.00 - 29.00 m



PointID : 310-03-BH3352 Depth Range: 29.00 - 30.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC		Commenced: 13/09/2021	
Project Name: Inland Rail B2G		Completed: 15/09/2021	
Hole Location: N3 - Brookstead to Gowrie		Logged By: T.Nimalsiri	
Hole Coordinates: 378614.4 m E 6949088.0 m N MGA94 Zone 56		Checked By: J.Boyle	
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 482.61 m
Hole Diameter: 115 mm		Bearing:	Datum: AHD Operator: J. Komung
Drilling Information			
Soil Description			
Observations			
Method	Penetration	Support	Water
Samples Tests Remarks	Recovery	RL (m)	Depth (m)
Graphic Log	Classification Symbol	Moisture Condition	Consistency Relative Density
Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
ADIV			
Not Observed			
D00010 D 0.10-0.50 m	481.6	1	CH
D00050 SPT 0.50-0.95 m 7.9,11 N=20 D00100 D 1.00-1.50 m	480.6	2	CH
S00150 SPT 1.50-1.95 m 15,15,20 N=35 D00200 D 2.00-3.00 m	479.6	3	CI
S00300 SPT 3.00-3.45 m 6,15,10 N=25 D00350 D 3.50-4.50 m	478.6	4	
S00450 SPT 4.50-4.64 m 30/140mm	477.6	5	
Continued on cored borehole sheet			
6			
7			
Method Penetration Water Samples and Tests Moisture Condition Consistency/Relative Density			
AS - Auger Screwing RR - Rock Roller WB- Washbore			
No resistance ranging to refusal			
Level (Date) Inflow Partial Loss Complete Loss			
Graphic Log/Core Loss			
Core recovered (hatching indicates material) Core loss			
Classification Symbols and Soil Descriptions			
Based on Unified Soil Classification System			
Plastic Limit			
VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense			

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378614.4 m E 6949088.0 m N MGA94 Zone 56

Commenced: 13/09/2021
Completed: 15/09/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 482.61 m
Datum: AHD Operator: J. Komung



310-03-BH3353 Depth Range: 0.50 - 0.95 m



310-03-BH3353 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378614.4 m E 6949088.0 m N MGA94 Zone 56

Commenced: 13/09/2021
Completed: 15/09/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 482.61 m
Datum: AHD Operator: J. Komung



310-03-BH3353 Depth Range: 3.00 - 3.45 m



310-03-BH3353 Depth Range: 4.50 - 4.64 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378614.4 m E 6949088.0 m N MGA94 Zone 56

Commenced: 13/09/2021
Completed: 15/09/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 482.61 m
Barrel Type and Length: HQ 4.2 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
										EL VL L M H VH EH		30 100 300 1000 3000	Particular	General		
						481.6	1									
						480.6	2									
						479.6	3									
						478.6	4									
						477.6	5									
									Continued from non-cored borehole sheet							
									NO CORE: 0.26 m							
			65		23	476.6	6		BASALT: pale brown, fine crystalline, multiple calcite veins Below 5.74m: colour tending dark grey	HW HW to MW			JT, 0°, CA CT, PR, RF Non Intact JT, 90°, Fe SN, PR, RF Non Intact JT, 25°, CA CT, UN, RF Non Intact JT, 25°, CA VNR, UN, RF CS, 30° CZ			
			90		10				BASALT: dark grey, fine crystalline, multiple calcite veins	HW to MW HW						
						475.6	7			HW to MW						
			0		0				NO CORE: 0.70m							
			100		86											

Method	Water	Graphic Log/Core Loss	Weathering	Strength
AS - Auger Screwing	Level (Date)	Core recovered (hatching indicates material)	FR - Fresh	(indirect tensile strength)
WB- Washbore	Inflow	Core loss	SW - Slightly Weathered	EL - Extremely Low
HQ3 HQ3 Core Barrel	Partial Loss		DW - Distinctly Weathered	VL - Very Low
NQ3 NQ3 Core Barrel	Complete Loss		XW - Extremely Weathered	L - Low
			RS - Residual Soil	M - Medium
				H - High
				VH - Very High
				EH - Extremely High
	Support			
	T - Timbering			

Method

AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength

(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378614.4 m E 6949088.0 m N MGA94 Zone 56

Commenced: 13/09/2021
Completed: 15/09/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305/Track Inclinaton: -90° RL Surface: 482.61 m
Barrel Type and Length: HQ 4.2 m Bearing: Datum: AHD Operator: J. Komung



PointID : 310-03-BH3353 Depth Range: 5.30 - 9.00 m



PointID : 310-03-BH3353 Depth Range: 9.00 - 12.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 15/09/2021
Project Name: Inland Rail B2G	Completed: 16/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T.Nimalsiri
Hole Coordinates: 378801.7 m E 6950011.0 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 469.02 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/V		Not Observed		D00000 0.00-0.50 m		468.0	1		CI-CH	TOPSOIL Silty CLAY trace gravel: medium to high plasticity, black, fine to medium sub-angular to angular gravel, with rootlets (<2mm)	M (<PL)	St			TOPSOIL	
				CH					Silty CLAY trace gravel and sand: medium to high plasticity, black, fine to medium sub-angular to angular gravel, fine to coarse grained sand.	RESIDUAL SOIL						
				CI					Gravelly CLAY with sand: high plasticity, grey, fine to medium sub-angular to angular gravel, fine to coarse grained sand.	EXTREMELY WEATHERED MATERIAL						
									Sandy CLAY trace gravel: medium plasticity, dark grey, fine to coarse grained sand, fine to medium sub angular gravel							
						467.0	2			Continued on cored borehole sheet						
						466.0	3									
						465.0	4									
						464.0	5									
						463.0	6									
						462.0	7									

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378801.7 m E 6950011.0 m N MGA94 Zone 56

Commenced: 15/09/2021
Completed: 16/09/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 469.02 m
Datum: AHD Operator: J. Komung



310-03-BH3354 Depth Range: 1.00 - 1.45 m



310-03-BH3354 Depth Range: 3.50 - 3.95 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378801.7 m E 6950011.0 m N MGA94 Zone 56

Commenced: 15/09/2021
Completed: 16/09/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 469.02 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		Particular	General
						468.0	1									
									Continued from non-cored borehole sheet							
									NO CORE 1.90m							
						467.0	2									
						466.0	3									
						465.0	4		CLAY with gravel: low to medium plasticity, grey brown, fine to coarse sub-angular to angular gravel. (3.50m SPT 3,6,16 N=22)	RS						
						464.0	5		VOLCANIC BRECCIA: fine to coarse, orange grey, pyroclastic material (<50mm)	HW to XW						
						463.0	6		CLAY with gravel: low to medium plasticity, grey brown, fine to coarse sub-angular to angular gravel.	RS						
						462.0	7		VOLCANIC BRECCIA: fine to coarse, orange grey, pyroclastic material (<50mm)	HW to XW						
									Below 6.50m: colour tending to grey.							
									CLAY with gravel: low to medium plasticity, grey brown, fine to coarse sub-angular to angular gravel.	RS						
									VOLCANIC BRECCIA: fine to coarse, orange grey, pyroclastic material (<50mm)	HW to XW						
										XW						

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 15/09/2021											
Project Name: Inland Rail B2G		Completed: 16/09/2021											
Hole Location: N3 - Brookstead to Gowrie		Logged By: T.Nimalsiri											
Hole Coordinates: 378801.7 m E 6950011.0 m N MGA94 Zone 56		Checked By: J.Boyle											
Drill Model and Mounting: Comacchio 305		Inclination: -90°											
Barrel Type and Length: HQ 3 m		RL Surface: 469.02 m											
		Datum: AHD											
		Operator: J. Komung											
Drilling Information		Rock Substance		Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
HQ3		Not Observed	85		0	460.0	9	△	Extremely weathered VOLCANIC BRECCIA recovered as CLAY with gravel: low plasticity, dark red, fine to coarse sub-angular gravel.(continued)	XW	EL VL L M H VH EH	30 100 300 1000 3000	JT, 20°, Clay VNR, PR, S JT, 80°, Clay VNR, PR, S
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
			100		0	459.0	10	△	Extremely weathered VOLCANIC BRECCIA recovered as CLAY with gravel: low plasticity, dark red, fine to coarse sub-angular gravel. 9.58m - 1no. 70 degree weathered quartz vein	XW	EL VL L M H VH EH	30 100 300 1000 3000	
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
						458.0	11	△	Hole Terminated at 10.97 m Target depth		EL VL L M H VH EH	30 100 300 1000 3000	
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
						457.0	12	△			EL VL L M H VH EH	30 100 300 1000 3000	
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
						456.0	13	△			EL VL L M H VH EH	30 100 300 1000 3000	
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
						455.0	14	△			EL VL L M H VH EH	30 100 300 1000 3000	
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
						454.0	15	△			EL VL L M H VH EH	30 100 300 1000 3000	
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					
								△					

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength

(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support

T - Timbering

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378801.7 m E 6950011.0 m N MGA94 Zone 56

Commenced: 15/09/2021
Completed: 16/09/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 469.02 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J. Komung



PointID : 310-03-BH3354 Depth Range: 1.60 - 5.00 m



PointID : 310-03-BH3354 Depth Range: 5.00 - 9.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	15/09/2021
Project Name:	Inland Rail B2G	Completed:	16/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Nimalsiri
Hole Coordinates:	378801.7 m E 6950011.0 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	469.02 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: J. Komung



PointID : 310-03-BH3354 Depth Range: 9.00 - 10.97 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 16/09/2021
Project Name: Inland Rail B2G	Completed: 18/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: T.Nimalsiri
Hole Coordinates: 378863.9 m E 6950518.0 m N MGA94 Zone 56	Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 468.18 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information				Soil Description										Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T		Not Observed		D00000 0.00-0.50 m		467.2	1		CL-CI	TOPSOIL: Silty CLAY trace gravel: low to medium plasticity, dark brown and black, fine to medium sub-angular to angular gravel, with rootlets (<2mm)	M (<PL)	St			TOPSOIL
				GM					Silty CLAY with gravel: low to medium plasticity, dark brown, medium to coarse sub-angular to angular gravel.	D	VD	RESIDUAL SOIL			
									Silty GRAVEL trace sand and clay: fine to coarse sub-angular to angular, grey brown, fine to coarse grained sand, low plasticity clay.						
				S00100 SPT 1.00-1.07 m 30/70mm HB						Continued on cored borehole sheet					
						466.2	2								
						465.2	3								
						464.2	4								
						463.2	5								
						462.2	6								
						461.2	7								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL		

Engineering Log - Borehole

Project No.: B21003

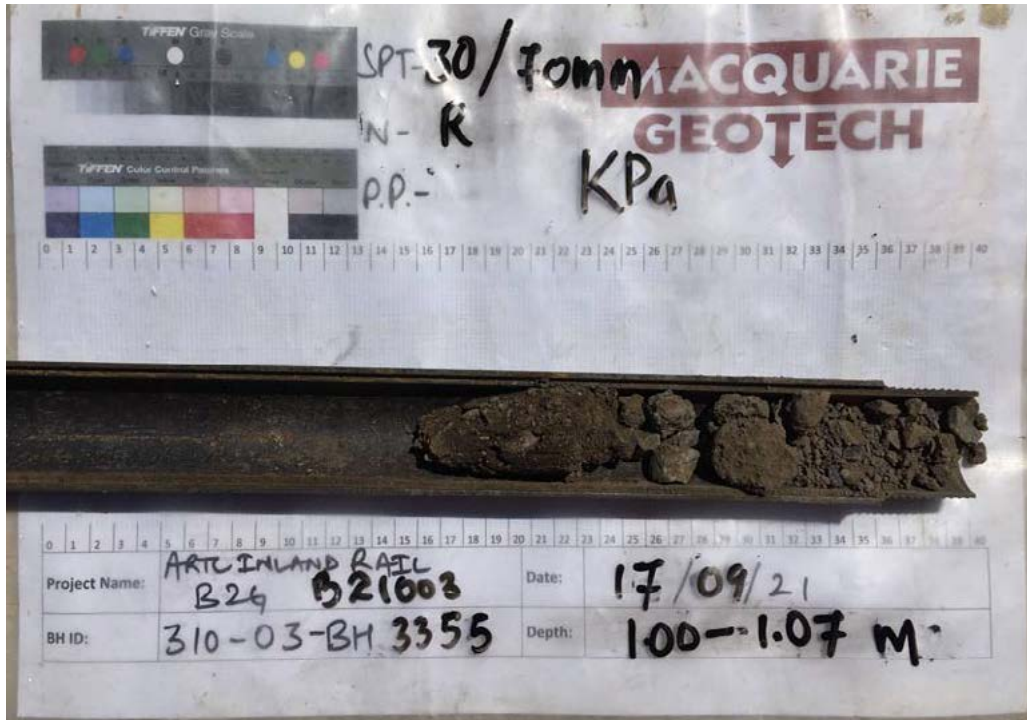
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378863.9 m E 6950518.0 m N MGA94 Zone 56

Commenced: 16/09/2021
Completed: 18/09/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 468.18 m
Datum: AHD Operator: J. Komung



310-03-BH3355 Depth Range: 1.00 - 1.07 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 16/09/2021											
Project Name: Inland Rail B2G		Completed: 18/09/2021											
Hole Location: N3 - Brookstead to Gowrie		Logged By: T.Nimalsiri											
Hole Coordinates: 378863.9 m E 6950518.0 m N MGA94 Zone 56		Checked By: J.Boyle											
Drill Model and Mounting: Comacchio 305		Inclination: -90°	RL Surface: 468.18 m										
Barrel Type and Length: HQ 3 m		Bearing:	Datum: AHD Operator: J. Komung										
Drilling Information		Rock Substance		Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
							467.2	1	Continued from non-cored borehole sheet NO CORE 0.35m				
			61		13		466.2	2	BASALT: fine crystalline, dark grey	HW			NC JT, 30°, Fe SN, PR, RF JT, 40°, Fe SN, PR, RF JT, 30°, Fe SN, PR, RF CZ JT, 25°, Fe SN, PR, RF CZ JT, 45°, Fe SN, PR, RF JT, 35°, Clay VNR, UN, RF JT, 90°, Clay VNR, UN, RF
			39		0		465.2	3	NO CORE 0.37m				NC CZ JT, 35°, Clay VNR, PR, RF JT, 40°, Clay VNR, PR, RF
			62		0		465.2	3	BASALT: fine crystalline, dark grey	HW			NC CZ IS, 65°, Clay FILLED, UN, S, <10mm FZ NC CZ JT, 15°, Clay VNR, PR, RF
			50		0		464.2	4	NO CORE 0.25m				NC CZ
			100		0		464.2	4	BASALT: fine crystalline, dark grey	HW			NC CZ
			48		0		463.2	5	NO CORE 0.48m				NC
			31		0		462.2	6	BASALT: fine crystalline, dark grey	HW			NC
			41		0		461.2	7	NO CORE 0.89m				NC
			100		13		461.2	7	BASALT: fine grained, vesicular, red brown, trace rounded xenocryst (<5mm)	MW to HW			CZ JT, 20°, Fe SN, PR, RF VN, 5°, CA FILLED, PR, RF JT, 15°, Clay VNR, PR, RF CZ JT, 15°, Clay VNR, PR, RF FZ SS, 10°, Clay FILLED, PR, S SS, 10°, Clay FILLED, PR, S SS, 10°, Clay FILLED, PR, S CZ
			100		71								
Method		Water		Graphic Log/Core Loss		Weathering		Strength					
AS - Auger Screwing		Level (Date)		Core recovered (hatching indicates material)		FR - Fresh		(indirect tensile strength)					
WB- Washbore		Inflow		Core loss		SW - Slightly Weathered		EL - Extremely Low					
HQ3 HQ3 Core Barrel		Partial Loss				DW - Distinctly Weathered		VL - Very Low					
NQ3 NQ3 Core Barrel		Complete Loss				XW - Extremely Weathered		L - Low					
						RS - Residual Soil		M - Medium					
								H - High					
								VH - Very High					
								EH - Extremely High					

Engineering Log - Cored Borehole

Project No.: B21003

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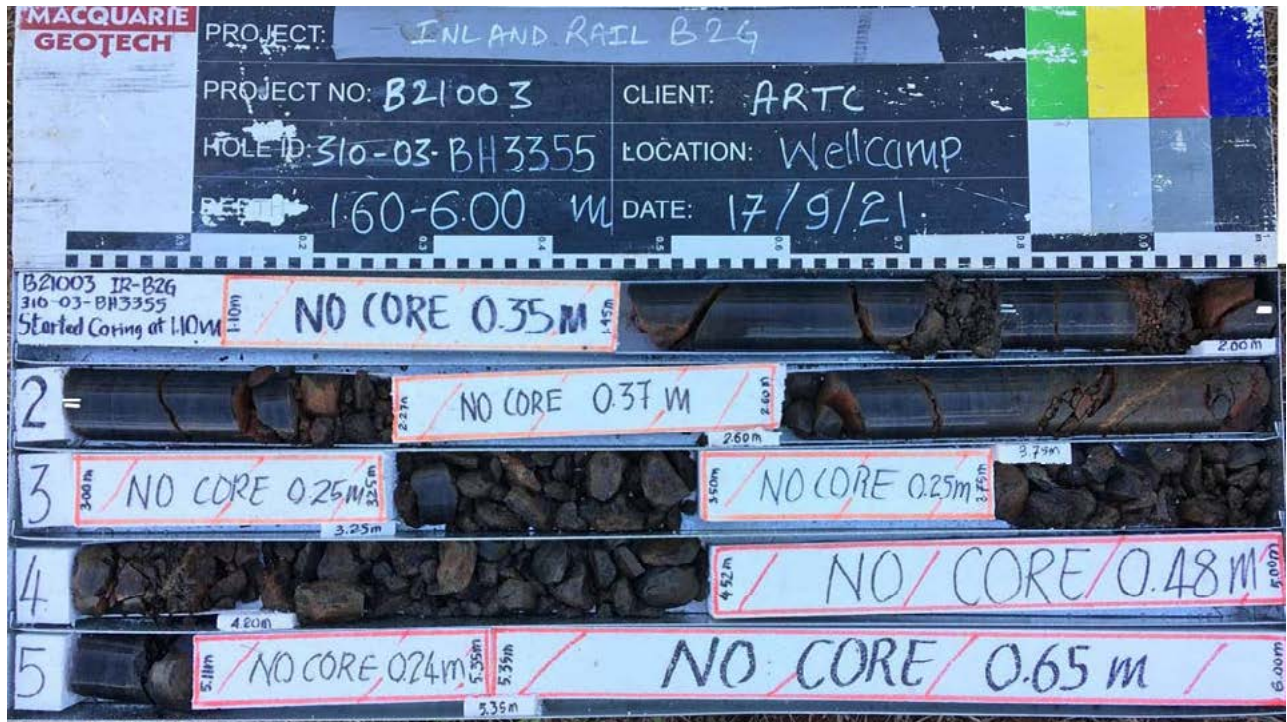
Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378863.9 m E 6950518.0 m N MGA94 Zone 56

Commenced: 16/09/2021
Completed: 18/09/2021
Logged By: T.Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 468.18 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J. Komung



PointID : 310-03-BH3355 Depth Range: 1.10 - 6.00 m



PointID : 310-03-BH3355 Depth Range: 6.00 - 11.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	16/09/2021
Project Name:	Inland Rail B2G	Completed:	18/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T.Nimalsiri
Hole Coordinates:	378863.9 m E 6950518.0 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Barrel Type and Length:	HQ 3 m	RL Surface:	468.18 m
		Bearing:	
		Datum:	AHD
		Operator:	J. Komung



PointID : 310-03-BH3355 Depth Range: 11.00 - 12.30 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 15/09/2021
Project Name: Inland Rail B2G	Completed: 15/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 382713.7 m E 6956519.4 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track	Inclination: -90°	RL Surface: 482.16 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R.Welsh

Drilling Information				Soil Description								Observations							
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations				
AD/T		Not Observed		D00000 D 0.00-0.50 m		481.2	1		CH	TOPSOIL: Gravelly CLAY trace roots: medium plasticity, dark brown mottled yellow, fine to medium sub-angular to angular gravel	M (<PL)	H			TOPSOIL				
				U00050 U 0.50-0.79 m						Gravelly CLAY: high plasticity, dark brown to pale-brown, fine to medium sub-angular to angular gravel					RESIDUAL SOIL				
				S00100 SPT 1.00-1.45 m N=33 PP 1.00 m >600 kPa						Gravelly Sandy CLAY: medium plasticity, brown to pale-brown mottled red, fine sub-angular to sub-rounded gravel, fine grained sand					*EXTREMELY WEATHERED MATERIAL				
				D00200 D 2.00-2.50 m					480.2	2					SC	Clayey SAND trave gravel: pale brown, fine to coarse grained sand, medium plasticity clay, fine sub angular gravel.	D	VD	
				S00250 SPT 2.50-2.69 m N=30/40mm PP 2.50 m >600 kPa						CI					Gravelly CLAY trace sand: medium plasticity, dark-brown to pale-brown, fine to medium sub-angular to angular gravel, fine grained sand	M (<PL)	H	*EXTREMELY WEATHERED MATERIAL	
				17,30/40mm N=30/40mm PP 2.50 m >600 kPa		479.2	3			Continued on cored borehole sheet									
						478.2	4												
						477.2	5												
						476.2	6												
						475.2	7												

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration No resistance ranging to refusal	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	15/09/2021
Project Name:	Inland Rail B2G	Completed:	15/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382713.7 m E 6956519.4 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	482.16 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3356 Depth Range: 1.00 - 1.45 m



310-03-BH3356 Depth Range: 2.50 - 2.76 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382713.7 m E 6956519.4 m N MGA94 Zone 56

Commenced: 15/09/2021
Completed: 15/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305/Track Inclin: -90° RL Surface: 482.16 m
Barrel Type and Length: HQ3 4.2 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information								Rock Substance					Rock Mass Defects						
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
										EL VL L M H VH EH	30	100	300	1000	3000	Particular	General		
							1												
							2												
									Continued from non-cored borehole sheet										
HQ3	Not Observed		100				3		Volcanic TUFF: fine to coarse grained, dark green mottled yellow								JT, 5°, Clay SN, PR, RF		
																JT, 5°, Clay SN, UN, RF			
																JT, 5°, Fe SN, PR, RF			
																JT, 45°, Fe Clay VNR, PR, S			
																JT, 0°, Fe Clay VNR, PR, S			
																JT, 5°, Fe Clay SN, PR, S			
																JT, 0°, Fe Clay SN, PR, S			
			92				4			XW						JT, 0°, Fe SN, PR, RF			
																JT, 0°, Fe SN, PR, RF			
																JT, 0°, Fe SN, PR, RF			
																	JT, 0°, Fe Clay SN, DIS, S		
																	JT, 5°, Fe SN, PR, RF		
																	JT, 0°, Fe Clay SN, PR, RF		
																	JT, 85°, Fe SN, PR, RF		
																	JT, 5°, Fe SN, PR, RF		
																	JT, 0°, Fe Clay SN, DIS, S		
																	JT, 0°, Clay SN, DIS, RF		
																	JT, 0°, Fe SN, PR, RF		
																	SH, 0°, Clay SN, DIS, S		

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 15/09/2021											
Project Name: Inland Rail B2G		Completed: 15/09/2021											
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma											
Hole Coordinates: 382713.7 m E 6956519.4 m N MGA94 Zone 56		Checked By: D.Hill											
Drill Model and Mounting: Comacchio 305/Track		Inclination: -90°	RL Surface: 482.16 m										
Barrel Type and Length: HQ3 4.2 m		Bearing:	Datum: AHD Operator: R.Welsh										
Drilling Information		Rock Substance		Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
HQ3		Not Observed	100		91		473.2	9	BASALT: fine crystalline, brown mottled dark green, with randomly oriented calcite veins.(continued)	MW to HW			JT, 10°, Clay VNR, PR, RF
							472.2	10					JT, 5°, Fe SN, PR, RF JT, 5°, Clay VNR, PR, S JT, 10°, Fe SN, PR, RF JT, 85°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF
			94		85		471.2	11	Below 11.00m: colour changes to dark green				JT, 0°, Fe SN, PR, RF JT, 45°, Fe SN, PR, RF
							470.2	12	Hole Terminated at 12.00 m Target depth				JT, 5°, Fe SN, UN, RF JT, 10°, Fe SN, CU, RF JT, 0°, Fe Clay VNR, PR, RF JT, 5°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF JT, 85°, Fe Clay SN, PR, RF JT, 45°, Fe SN, UN, RF JT, 15°, Fe SN, PR, RF JT, 10°, Fe Clay SN, PR, RF JT, 15°, Fe SN, DIS, RF JT, 0°, Fe SN, DIS, S
							469.2	13					
							468.2	14					
							467.2	15					
Method		Water		Graphic Log/Core Loss		Weathering		Strength					
AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel		Level (Date) Inflow Partial Loss Complete Loss		Core recovered (hatching indicates material) Core loss		FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil		(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High					
Support		T - Timbering											

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	15/09/2021
Project Name:	Inland Rail B2G	Completed:	15/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382713.7 m E 6956519.4 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3 4.2 m	RL Surface:	482.16 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3356 Depth Range: 2.76 - 6.00 m



PointID : 310-03-BH3356 Depth Range: 6.00 - 11.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	15/09/2021
Project Name:	Inland Rail B2G	Completed:	15/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382713.7 m E 6956519.4 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305/Track	Inclination:	-90°
Barrel Type and Length:	HQ3 4.2 m	RL Surface:	482.16 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3356 Depth Range: 11.00 - 12.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 18/09/2021
Project Name: Inland Rail B2G	Completed: 20/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 382578.9 m E 6956408.7 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 479.01 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations				
ADN			Not Observed	D00000 0.00-0.50 m						TOPSOIL.	NA	NA			TOPSOIL				
				U00050 0.50-0.79 m					CI	Gravelly CLAY: medium plasticity, dark brown to pale brown, fine to medium sub-angular to angular gravel.					RESIDUAL SOIL				
				S00100 SPT 1.00-1.45 m 13,22,19 N=41 PP 1.45 m >600 kPa		478.0	1		CI	Sandy CLAY trace gravel: medium plasticity, brown to pale brown, fine grained sand, fine sub-rounded to sub-angular gravel						*			
				D00200 2.00-2.50 m		477.0	2					H							
				S00250 SPT 2.50-2.95 m 13,28,24 N=52 PP 2.95 m >600 kPa		476.0	3		CI	Sandy CLAY with gravel: medium plasticity, dark brown, fine to medium grained sand, fine to medium sub-angular to angular gravel.	M (<PL)				*				
				D00350 3.50-4.00 m		475.0	4		CH	CLAY with sand: high plasticity, pale white mottled yellow-brown, fine grained sand Below 4.30m: red brown mottled grey					*				
				S00400 SPT 4.00-4.45 m 8,10,11 N=21 PP 4.45 m >600 kPa		474.0	5				VSt								
				Continued on cored borehole sheet															
						473.0	6												
						472.0	7												

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/09/2021
Project Name:	Inland Rail B2G	Completed:	20/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382578.9 m E 6956408.7 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	479.01 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3357 Depth Range: 1.00 - 1.45 m



310-03-BH3357 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382578.9 m E 6956408.7 m N MGA94 Zone 56

Commenced: 18/09/2021
Completed: 20/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 479.01 m
Datum: AHD Operator: R.Welsh



310-03-BH3357 Depth Range: 4.00 - 4.45 m

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382578.9 m E 6956408.7 m N MGA94 Zone 56

Commenced: 18/09/2021
Completed: 20/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 479.01 m
Barrel Type and Length: Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance					Rock Mass Defects																		
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling												
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General						
HQ3		Not Observed	100		63	470.0	9	✓	BASALT: fine crystalline, dark green grey, with clay seams and decomposed zones 100-200mm thick, trace irregular veins throughout(continued)	HW	●												JT, 10°, Fe SN, PR, RF							
							XW																					SM, Clay FILLED, RS		
							HW																					JT, 10°, Fe SN, PR, RF		
							XW																					JT, 0°, Fe SN, PR, RF		
																												SM, Clay FILLED		
																												JT, 15°, Fe SN, PR, RF		
			100		52		469.0	10		✓	HW	●																JT, 15°, Fe SN, PR, RF		
																														JT, 0°, Fe Clay SN, PR, S
																														JT, 10°, Fe SN, PR, RF
																														SM, Clay FILLED
																														SH, 0°, Fe SN, DIS, RF
																														JT, 85°, Fe Clay SN, PR, RF, Sub-vertical joint
70			468.0	11	✓																	JT, 0°, Fe Clay SN, PR, RF								
																							RF							
																							JT, 0°, Fe SN, DIS, RF							
																							JT, 0°, Fe Clay VNR, PR, S							
																							JT, 5°, Fe SN, PR, RF							
																							JT, 0°, Fe SN, DIS, RF							
					467.0	12	✓	Hole Terminated at 12.00 m Target depth																JT, 5°, Fe SN, CU, RF						
																										JT, 15°, Fe SN, PR, RF				
																										JT, 10°, Fe SN, DIS, RF				
																										JT, 10°, Fe Clay SN, DIS, RF				
																										RF				
																										JT, 10°, Fe SN, PR, RF				
																										JT, 0°, Fe Clay SN, DIS, RF				

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

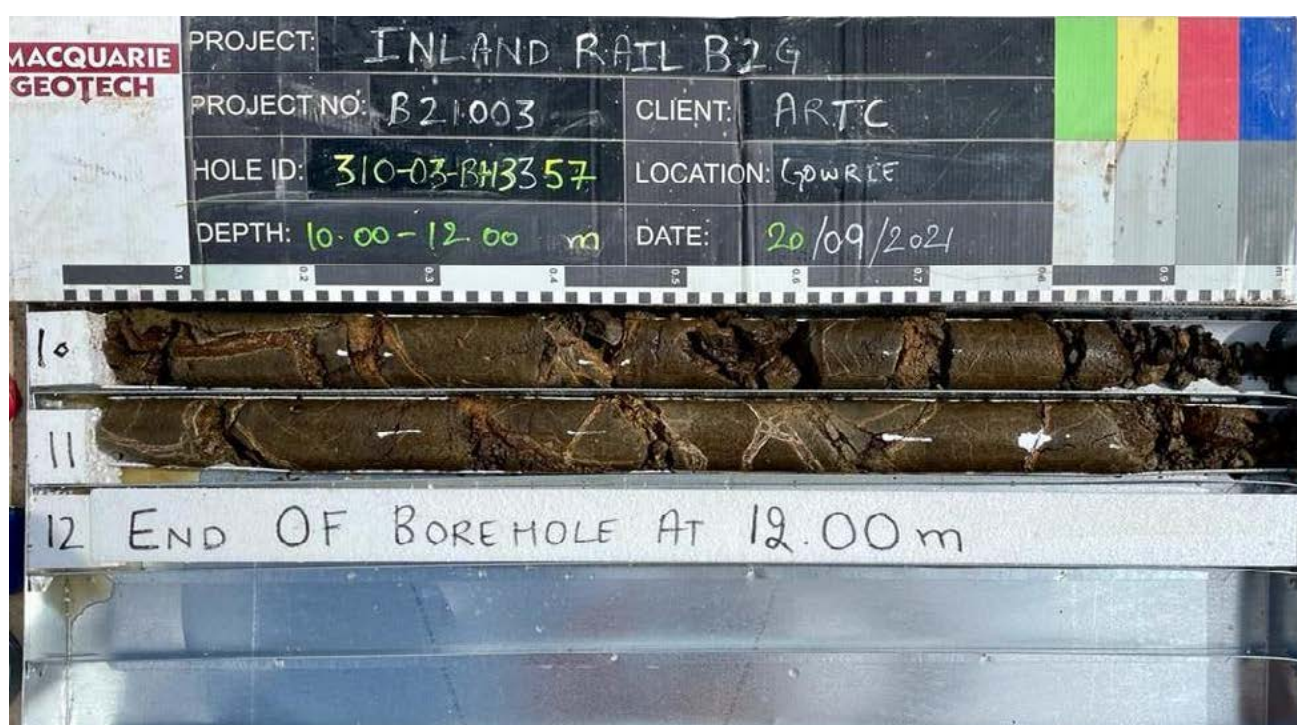
Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	18/09/2021
Project Name:	Inland Rail B2G	Completed:	20/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382578.9 m E 6956408.7 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Barrel Type and Length:		RL Surface:	479.01 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3357 Depth Range: 5.50 - 10.00 m



PointID : 310-03-BH3357 Depth Range: 10.00 - 12.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382507.3 m E 6956661.5 m N MGA94 Zone 56

Commenced: 16/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchi 305 Inclin: -90° RL Surface: 493.13 m
Hole Diameter: 96 - 115 mm Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T		Not Observed		D00000 D 0.00-0.50 m		492.1	1		CI	TOPSOIL: Sandy CLAY trace roots: medium plasticity, dark-brown mottled yellow, fine grained sand	M (<PL)	H			TOPSOIL
				D00050 D 0.50-0.79 m						Gravelly Sandy CLAY: medium plasticity, brown to pale-brown mottled white and orange brown, fine sub-angular gravel, fine grained sand					RESIDUAL SOIL
				S00100 SPT 1.00-1.45 m 14,15,18 N=33											* 1.00: PP Samp >600 kPa
				D00200 D 2.00-2.50 m											
				S00250 SPT 2.50-2.69 m 17,30/40mm N=30/40mm		491.1	2		CL-CI	Sandy CLAY: low to medium plasticity, brown, pale-brown and pink-red, fine grained sand					* 2.50: PP Samp >600 kPa
						490.1	3			Continued on cored borehole sheet					
						489.1	4								
						488.1	5								
						487.1	6								
						486.1	7								

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Plastic Limit

< PL
= PL
< PL

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382507.3 m E 6956661.5 m N MGA94 Zone 56

Commenced: 16/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchi 305
Hole Diameter: 96 - 115 mm

Inclination: -90°
Bearing:

RL Surface: 493.13 m
Datum: AHD Operator: R.Welsh



310-03-BH3358 Depth Range: 1.00 - 1.45 m



310-03-BH3358 Depth Range: 2.50 - 2.80 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382507.3 m E 6956661.5 m N MGA94 Zone 56

Commenced: 16/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchi 305 Inclin: -90° RL Surface: 493.13 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance						Rock Mass Defects															
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling							
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General				
HQ3	Not Observed		100		0	490.1	1																					
							2																					
							3																					
							4																					
							5																					
							6																					
							7																					
							8																					
							9																					
							10																					
Continued from non-cored borehole sheet																												
							3		Clayey SAND: medium plasticity, brown to orange-brown, medium grained sand																			
							4		Gravelly CLAY: medium plasticity, grey-green mottled brown and black, medium to coarse angular gravel	RS																		
			64		0		4		COAL: black, highly fractured																			
									DIORITE: fine to medium crystalline, brown green and grey, with randomly orientated veins throughout, highly fractured to fragmented	XW																		
							5		NO CORE 1.0m	HW																		
							6		DIORITE: fine to medium crystalline, brown green and grey, with randomly orientated veins throughout, highly fractured to fragmented	HW																		
			100		55		7			MW																		
CZ JT, 45°, Fe SN, UN, RF JT, 0°, Fe SN, DIS, S CZ JT, 60°, Fe SN, UN, RF JT, 45°, Fe SN, PR, RF JT, 45°, Fe SN, PR, RF JT, 6°, Fe SN, UN, RF CZ JT, 5°, Fe SN, PR, RF JT, 20°, Fe SN, PR, RF JT, 0°, Fe Clay SN, PR, S RF FZ JT, 0°, Fe SN, PR, RF CZ																												

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382507.3 m E 6956661.5 m N MGA94 Zone 56

Commenced: 16/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchi 305 Inclin: -90° RL Surface: 493.13 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance					Rock Mass Defects															
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral		Defect Spacing (mm)		Defect Description thickness, type, inclination, planarity, roughness, coating/infilling												
HQ3		Not Observed	100								EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General			
				100						DIORITE: fine to medium crystalline, brown green and grey, with randomly orientated veins throughout, highly fractured to fragmented(continued)	MW												CZ	JT, 5°, Fe SN, UN, RF			
				60				484.1	9	NO CORE 0.2m																	
					77					DIORITE: fine to medium crystalline, brown green and grey, with randomly orientated veins throughout, highly fractured														CZ			
						39			483.1	10														FZ	JT, 5°, Fe SN, PR, RF		
																								JT, 0°, Fe SN, ST, RF			
																								JT, 20°, Fe SN, PR, RF			
																								JT, 85°, Fe SN, UN, RF			
																								JT, 0°, Fe SN, DIS, RF			
																								CZ	JT, 40°, Fe SN, CU, RF		
																								JT, 10°, Fe SN, CU, RF			
																								FZ			
																								JT, 10°, Fe SN, UN, RF			
																								JT, 85°, Fe SN, PR, RF,			
																								Sub-vertical Joint			
																					JT, 0°, Fe SN, PR, RF						
																					JT, 0°, Fe Clay VNR, PR,						
																					S						
																					JT, 0°, Fe Clay SN, PR,						
																					RF						
																					JT, 60°, Fe Clay SN, PR,						
																					RF						
																					JT, 25°, Fe SN, PR, RF						
																					JT, 0°, Fe SN, PR, RF						
																					CZ						
																					JT, 45°, Fe SN, CU, RF						
																					JT, 0°, Fe SN, DIS, RF						

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382507.3 m E 6956661.5 m N MGA94 Zone 56

Commenced: 16/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchi 305 Inclin: -90° RL Surface: 493.13 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance					Rock Mass Defects					
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling				
													Particular	General			
HQ3	Not Observed		100		38	476.1	17		DIORITE: fine to medium crystalline, pale brown and grey, with randomly orientated veins throughout, highly fractured(continued)	HW			JT, 0°, Fe SN, PR, RF				
										HW to MW		JT, 90°, Fe SN, DIS, RF JT, 0°, Fe SN, PR, RF JT, 0°, Fe SN, PR, RF					
			84	40	475.1	18		MW to SW			JT, 45°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 80°, Fe SN, PR, RF FZ JT, 0°, Fe SN, PR, RF FZ JT, 30°, Fe Clay VNR, CU, RF JT, 10°, Fe SN, PR, RF CZ JT, 70°, Fe SN, UN, RF CZ						
			100	66	474.1	19		MW to HW			JT, 10°, Fe SN, PR, RF JT, 45°, Fe SN, PR, RF, Sub-vertical Joint JT, 0°, Fe SN, UN, RF JT, 90°, CN, UN, RF JT, 85°, Fe SN, PR, RF, Sub-vertical Joint JT, 5°, Fe SN, UN, S CZ						
			82	68	473.1	20		SW		JT, 5°, Fe SN, CU, RF JT, 10°, Fe SN, UN, RF JT, 70°, Fe SN, IR, RF CZ JT, 45°, Fe SN, UN, RF							
			100	88	472.1	21											
							22					JT, 10°, Fe SN, UN, RF JT, 20°, CN, ST, RF JT, 5°, CN, ST, RF					
							23		MUDDSTONE: dark brown, very thinly laminated	SW			FZ JT, 10°, CN, UN, RF				

Method	Water	Graphic Log/Core Loss	Weathering	Strength
AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Level (Date) Inflow Partial Loss Complete Loss	Core recovered (hatching indicates material) Core loss	FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
	Support T - Timbering			

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 382507.3 m E 6956661.5 m N MGA94 Zone 56										Commenced: 16/09/2021 Completed: 17/09/2021 Logged By: A.Sharma Checked By: D.Hill									
Drill Model and Mounting: Comacchi 305 Barrel Type and Length: HQ 3 m					Inclination: -90° Bearing:					RL Surface: 493.13 m Datum: AHD Operator: R.Welsh									
Drilling Information					Rock Substance					Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling						
HQ3		Not Observed	100		88	468.1	25		DIORITE: fine to medium crystalline, dark grey, with phenocrysts throughout, slightly fractured	SW			Particular JT, 10°, CN, UN, RF JT, 60°, CN, UN, RF JT, 10°, CN, UN, RF JT, 90°, CN, UN, RF General						
						467.1	26		Hole Terminated at 25.00 m Target depth										
						466.1	27												
						465.1	28												
						464.1	29												
						463.1	30												
						462.1	31												

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

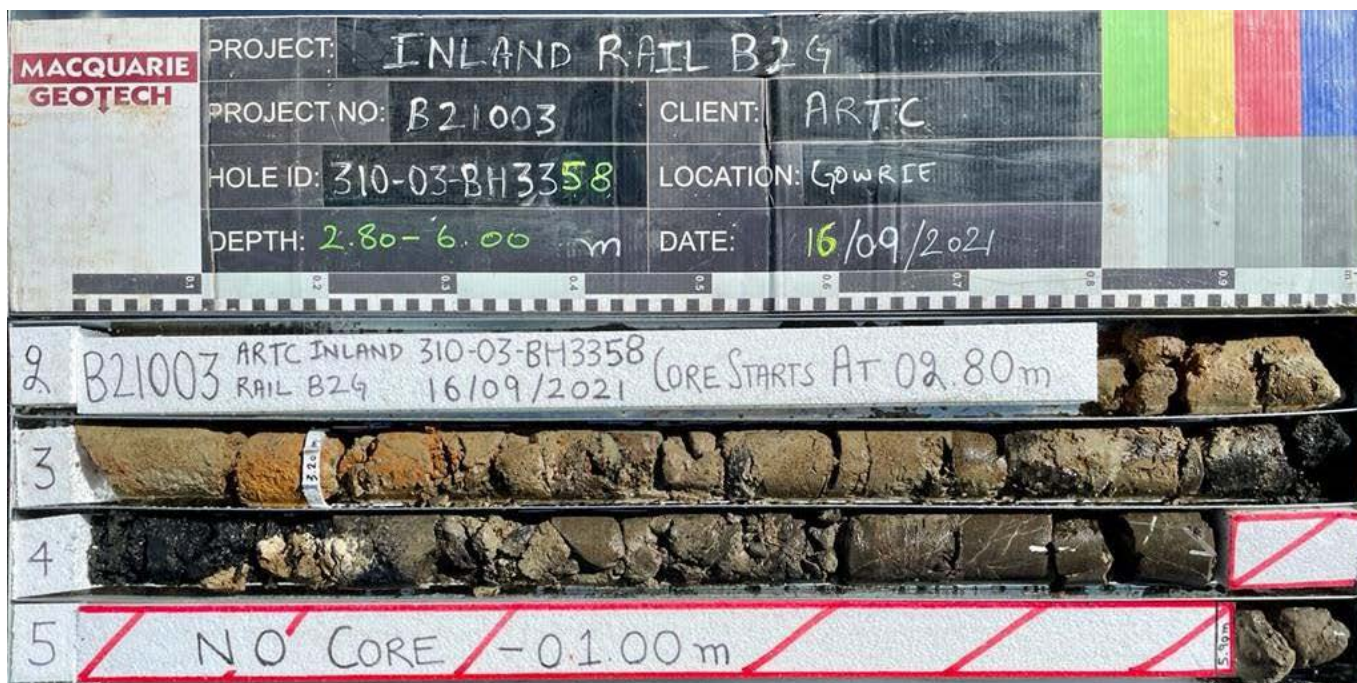
Engineering Log - Cored Borehole

Project No.: B21003

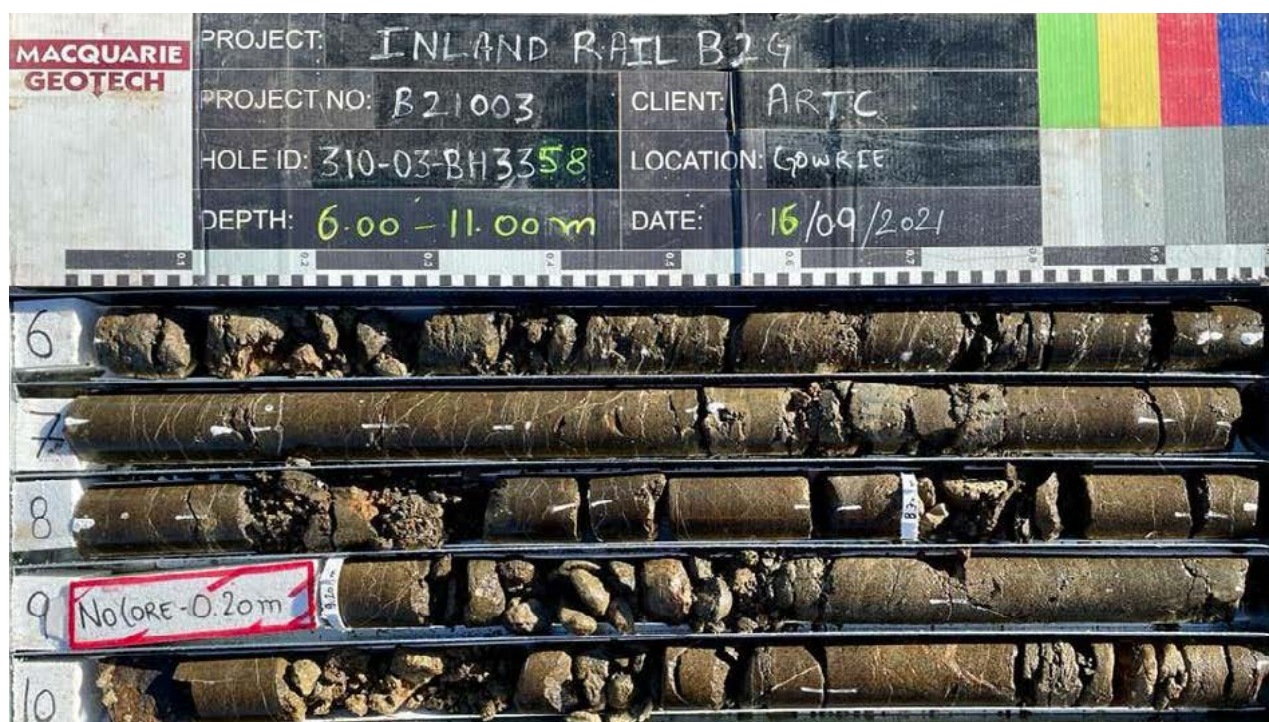
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382507.3 m E 6956661.5 m N MGA94 Zone 56

Commenced: 16/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchi 305 Inclination: -90° RL Surface: 493.13 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh



PointID : 310-03-BH3358 Depth Range: 2.80 - 6.00 m



PointID : 310-03-BH3358 Depth Range: 6.00 - 11.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382507.3 m E 6956661.5 m N MGA94 Zone 56

Commenced: 16/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchi 305 Inclusion: -90° RL Surface: 493.13 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh



PointID : 310-03-BH3358 Depth Range: 11.00 - 16.00 m



PointID : 310-03-BH3358 Depth Range: 16.00 - 21.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382507.3 m E 6956661.5 m N MGA94 Zone 56

Commenced: 16/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: D.Hill

Drill Model and Mounting: Comacchi 305
Barrel Type and Length: HQ 3 m

Inclination: -90°
Bearing:

RL Surface: 493.13 m
Datum: AHD

Operator: R.Welsh



PointID : 310-03-BH3358 Depth Range: 21.00 - 25.00 m

Engineering Log - Borehole

Project No.: B21003

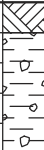
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382873.2 m E 6956680.3 m N MGA94 Zone 56

Commenced: 04/09/2021
Completed: 04/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305
Hole Diameter:

Inclination: -90°
Bearing:

RL Surface: 481.89 m
Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description						Observations									
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations							
ADV			Not Observed	D00000 0.00-0.50 m		480.9	1		CH	TOPSOIL: Gravelly CLAY trace sand trace roots: medium plasticity, dark-brown to pale brown, fine to coarse angular to sub-angular gravel, fine grained sand	NA	NA				TOPSOIL						
				U00050 0.50-0.85 m										Gravelly Sandy CLAY: high plasticity, brown to pale-brown mottled black, fine to coarse grained sand, fine angular to sub-angular gravel				RESIDUAL SOIL				
				S00100 SPT 1.00-1.30 m 8,30 N=30/150mm										Sandy CLAY trace gravel: medium plasticity, brown, fine grained sand, fine sub angular gravel.								
				D00200 2.00-2.50 m																		
				S00250 SPT 2.50-2.95 m 11,14,19 N=33 PP 2.50 m >600 kPa										CI-CH	Sandy CLAY trace gravel: medium to high plasticity, grey mottled red-brown, fine to coarse grained sand	M (<PL)	H			*		
				D00350 3.50-4.00 m																		
				S00400 SPT 4.00-4.45 m 5,32,30 N=62 PP 4.00 m >600 kPa											Below 4.00m: colour changes to brown to brown					*		
				D00500 5.00-5.50 m																		*
				S00550 SPT 5.50-5.75 m 12,17/100mm N=17/100mm PP 5.50 m >600 kPa																		*
														</								

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382873.2 m E 6956680.3 m N MGA94 Zone 56

Commenced: 04/09/2021
Completed: 04/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305
Hole Diameter:

Inclination: -90°
Bearing:

RL Surface: 481.89 m
Datum: AHD Operator: R.Welsh



310-03-BH3359 Depth Range: 1.00 - 1.45 m



310-03-BH3359 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	04/09/2021
Project Name:	Inland Rail B2G	Completed:	04/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382873.2 m E 6956680.3 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:		Bearing:	
		RL Surface:	481.89 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3359 Depth Range: 4.00 - 4.45 m



310-03-BH3359 Depth Range: 5.50 - 5.75 m

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 382873.2 m E 6956680.3 m N MGA94 Zone 56										Commenced: 04/09/2021 Completed: 04/09/2021 Logged By: A.Sharma Checked By: C.Green																			
Drill Model and Mounting: Comacchio 305 Barrel Type and Length: HQ3										Inclination: -90° Bearing: RL Surface: 481.89 m Datum: AHD Operator: R.Welsh																			
Drilling Information										Rock Substance										Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling								
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General					
HQ3		Not Observed	63		21				NO CORE 1.00m(continued)																				
			88		0		472.9	9		Extremely weathered BASALT: recovered as GRAVEL: fine to coarse sub-angular to angular, dark red.	XW		●	○															
						471.9	10		Hole Terminated at 10.00 m Target depth																				
						470.9	11																						
						469.9	12																						
						468.9	13																						
						467.9	14																						
						466.9	15																						

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)

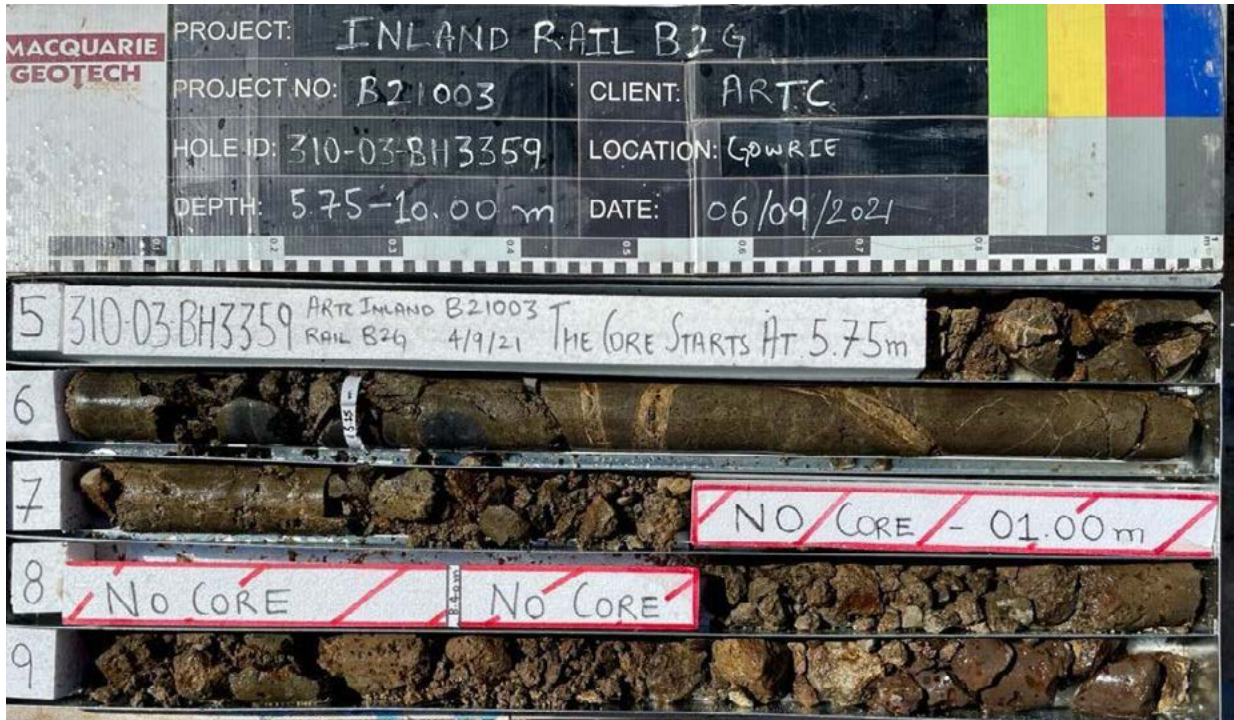
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	04/09/2021
Project Name:	Inland Rail B2G	Completed:	04/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382873.2 m E 6956680.3 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	481.89 m
Barrel Type and Length:	HQ3	Bearing:		Datum:	AHD
				Operator:	R.Welsh



PointID : 310-03-BH3359 Depth Range: 5.75 - 10.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382668.0 m E 6956824.5 m N MGA94 Zone 56

Commenced: 07/09/2021
Completed: 08/09/2021
Logged By: T. Nimalisiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclinometer: -90° RL Surface: 492.55 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADV		Not Observed		D00000 0.00-1.00 m		491.6	1		CI-CH	TOPSOIL: Silty CLAY: medium plasticity, pale brown, with rootlets (<2mm)	M (<PL)	H			TOPSOIL
									Silty CLAY trace sand and gravel: medium to high plasticity, red-brown, fine to medium grained sand, fine to medium sub-angular to angular gravel.	RESIDUAL SOIL					
				S00100 1.00-1.45 m SPT 1.00-1.45 m 14,21,27 N=48 D00150 1.50-2.50 m					ML	Gravelly SILT trace sand and clay: red-brown, fine to medium sub-angular to angular gravel, fine to medium grained sand, low plasticity clay.					
									SM	Silty SAND with gravel: fine to coarse gravel, brown, fine to medium sub angular gravel					
				S00250 2.50-2.62 m No Recovery SPT 2.50-2.62 m 30/120mm		489.6	3			Continued on cored borehole sheet					
						488.6	4								
						487.6	5								
						486.6	6								
						485.6	7								

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Plastic Limit

< PL
= PL
< PL

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

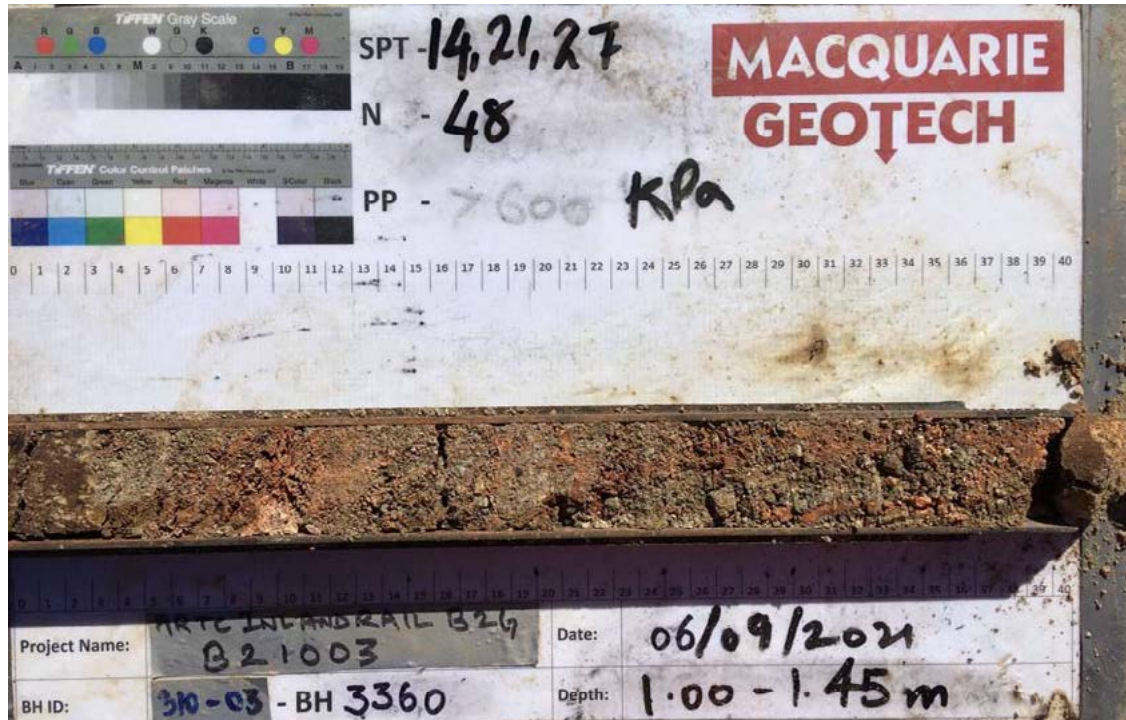
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382668.0 m E 6956824.5 m N MGA94 Zone 56

Commenced: 07/09/2021
Completed: 08/09/2021
Logged By: T. Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 492.55 m
Datum: AHD Operator: R.Welsh



310-03-BH3360 Depth Range: 1.00 - 1.45 m



310-03-BH3360 Depth Range: 6.50 - 6.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/09/2021
Project Name:	Inland Rail B2G	Completed:	08/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalsiri
Hole Coordinates:	382668.0 m E 6956824.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	492.55 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3360 Depth Range: 9.30 - 9.58 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382668.0 m E 6956824.5 m N MGA94 Zone 56

Commenced: 07/09/2021
Completed: 08/09/2021
Logged By: T. Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 492.55 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information								Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling				
										EL VL L M H VH EH		30 100 300 1000 3000	Particular	General			
						491.6	1										
						490.6	2										
									Continued from non-cored borehole sheet								
			100		0	489.6	3	✓✓✓✓	BASALTIC IGNIMBRITE: fine grained, red and grey.	MW to HW	○		JT, 30°, Clay VNR, UN, RF CZ, 30°, 5mm JT, 5°, Clay VNR, UN, RF CZ, 0°, 6mm JT, 45°, Clay VNR, PR, RF JT, 45°, Clay VNR, PR, RF CZ, 0°, 2mm Non intact FZ, 30mm CZ, 0°, 15mm JT, 10°, Fe SN, UN, RF x3 JT, 45°, UN, RF, Clay, VNR JT, 45°, Clay VNR, UN, RF JT, 35°, Healed FZ, 20mm				
			55		7	488.6	4	△△△△	Volcanic BRECCIA: dark grey, highly fractured.								
						487.6	5	△△△△	NO CORE: 1.35m	XW							
						486.6	6										
						485.6	7		CLAY with gravel: low to medium plasticity, red-brown, fine to medium sub-rounded to sub-angular gravel.	RS	○						
			100		6			△△△△	Volcanic BRECCIA: pale grey, randomly oriented calcite veining.	HW to XW	●						
													Non intact				
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water ☒ Level (Date) ☐ Inflow △ Partial Loss ▲ Complete Loss Support T - Timbering Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																	

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 07/09/2021													
Project Name: Inland Rail B2G		Completed: 08/09/2021													
Hole Location: N3 - Brookstead to Gowrie		Logged By: T. Nimalsiri													
Hole Coordinates: 382668.0 m E 6956824.5 m N MGA94 Zone 56		Checked By: J.Boyle													
Drill Model and Mounting: Comacchio 305		Inclination: -90°													
Barrel Type and Length: HQ3 3 m		RL Surface: 492.55 m													
		Datum: AHD													
		Operator: R.Welsh													
Drilling Information		Rock Substance		Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
													Particular	General	
HQ3	Not Observed	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Volcanic BRECCIA: pale grey, randomly oriented calcite veining.(continued) At 8.20m: colour tending to grey.	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	Particular	General
									From 9.70m: colour tending to white.						
									NO CORE: 0.23m						
									Volcanic BRECCIA: white.						
									BASALT: fine crystalline, dark grey, multiple calcite veining.						
									NO CORE: 0.46m						
									BASALT: fine crystalline, dark grey, randomly oriented calcite veining.						
									NO CORE: 1.30m						
									BASALT: fine grained, dark grey, randomly oriented calcite veining.						
									NO CORE: 0.85m						

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382668.0 m E 6956824.5 m N MGA94 Zone 56

Commenced: 07/09/2021
Completed: 08/09/2021
Logged By: T. Nimalsiri
Checked By: J.Boyle

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 492.55 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information								Rock Substance					Rock Mass Defects				
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling				
HQ3		Not Observed	70		10	475.6	17		BASALT: fine crystalline, dark grey, randomly oriented calcite veining.	HW			Particular	General			
							17	NO CORE: 0.07m									
							18	BASALT: fine crystalline, dark grey.	HW to XW								
							19	Silty CLAY: medium to high plasticity, red-brown.	RS								
							20	NO CORE: 2.23m									
			26		0	472.6	20		Hole Terminated at 21.30 m Target depth								
						471.6	21										
						470.6	22										
						469.6	23										

Method	Water	Graphic Log/Core Loss	Weathering	Strength
AS - Auger Screwing	Level (Date)	Core recovered (hatching indicates material)	FR - Fresh	(indirect tensile strength)
WB- Washbore	Inflow	Core loss	SW - Slightly Weathered	EL - Extremely Low
HQ3 HQ3 Core Barrel	Partial Loss		DW - Distinctly Weathered	VL - Very Low
NQ3 NQ3 Core Barrel	Complete Loss		XW - Extremely Weathered	L - Low
	<u>Support</u>		RS - Residual Soil	M - Medium
	T - Timbering			H - High
				VH - Very High
				EH - Extremely High

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC			Commenced:	07/09/2021	
Project Name:	Inland Rail B2G			Completed:	08/09/2021	
Hole Location:	N3 - Brookstead to Gowrie			Logged By:	T. Nimalsiri	
Hole Coordinates:	382668.0 m E 6956824.5 m N MGA94 Zone 56			Checked By:	J.Boyle	
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	492.55 m	
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD	Operator: R.Welsh



PointID : 310-03-BH3360 Depth Range: 2.58 - 6.00 m



PointID : 310-03-BH3360 Depth Range: 6.00 - 11.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/09/2021
Project Name:	Inland Rail B2G	Completed:	08/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalsiri
Hole Coordinates:	382668.0 m E 6956824.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	492.55 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3360 Depth Range: 6.30 - 6.75 m



PointID : 310-03-BH3360 Depth Range: 9.30 - 9.58 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/09/2021
Project Name:	Inland Rail B2G	Completed:	08/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalsiri
Hole Coordinates:	382668.0 m E 6956824.5 m N MGA94 Zone 56	Checked By:	J.Boyle

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	492.55 m
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD Operator: R.Welsh



PointID : 310-03-BH3360 Depth Range: 11.00 - 16.00 m



PointID : 310-03-BH3360 Depth Range: 16.00 - 21.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	07/09/2021
Project Name:	Inland Rail B2G	Completed:	08/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	T. Nimalsiri
Hole Coordinates:	382668.0 m E 6956824.5 m N MGA94 Zone 56	Checked By:	J.Boyle
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Barrel Type and Length:	HQ3 3 m	RL Surface:	492.55 m
		Bearing:	
		Datum:	AHD
		Operator:	R.Welsh



PointID : 310-03-BH3360 Depth Range: 21.00 - 21.30 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382570.3 m E 6956735.7 m N MGA94 Zone 56

Commenced: 08/09/2021
Completed: 15/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 493.90 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)				Structure and Additional Observations	
AD/T		Not Observed		D00000 0.00-0.50 m		492.9	1		CI	TOPSOIL Silty CLAY trace gravel: low plasticity, pale grey brown, fine to medium sub-angular to angular gravel, with rootlets (<2mm)	H	M (<PL)	100	200	300	400	500	TOPSOIL
				U00050 0.50-0.85 m						Silty CLAY with gravel trace sand: medium plasticity, red brown, fine to coarse sub-angular to angular gravel, fine to coarse grained sand								RESIDUAL SOIL
				S00100 SPT 1.00-1.45 m 12,26,30 N=56						Sandy SILT trace gravel: med plasticity, grey brown mottled orange brown, fine to coarse grained sand, fine to coarse sub angular gravel								EXTREMELY WEATHERED MATERIAL
				D00200 2.00-2.50 m														
				S00250 SPT 2.50-2.95 m 12,20,30 N=50		491.9	2				VD							
						490.9	3			Continued on cored borehole sheet								
						489.9	4											
						488.9	5											
						487.9	6											
						486.9	7											

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)

Inflow

Partial Loss

Complete Loss

Support
C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)

Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382570.3 m E 6956735.7 m N MGA94 Zone 56

Commenced: 08/09/2021
Completed: 15/09/2021
Logged By: A.Sharma
Checked By: C.Green

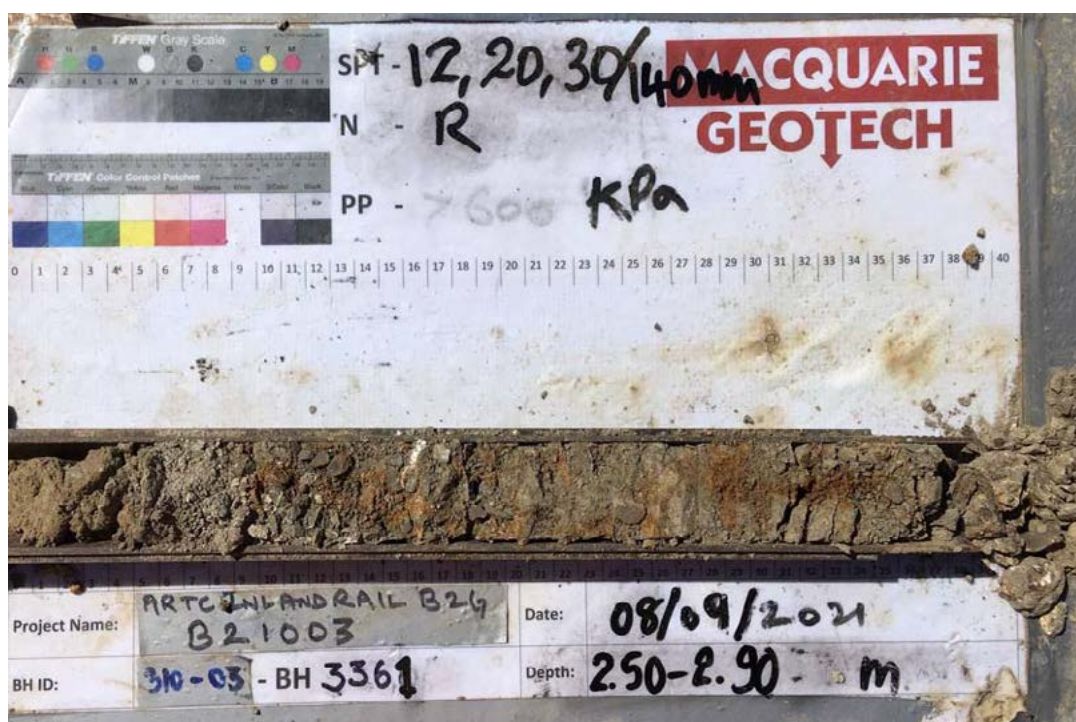
Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 493.90 m
Datum: AHD Operator: R.Welsh



310-03-BH3361 Depth Range: 1.00 - 1.45 m



310-03-BH3361 Depth Range: 2.50 - 2.90 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382570.3 m E 6956735.7 m N MGA94 Zone 56

Commenced: 08/09/2021
Completed: 15/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 493.90 m
Datum: AHD Operator: R.Welsh



310-03-BH3361 Depth Range: 6.23 - 6.58 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382570.3 m E 6956735.7 m N MGA94 Zone 56

Commenced: 08/09/2021
Completed: 15/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 493.90 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance						Rock Mass Defects																						
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling														
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General											
HQ3		Not Observed	100		0	490.9	1		Continued from non-cored borehole sheet																										
							2																												
							3	✓	Extremely weathered BASALT recovered as Clayey GRAVEL with sand: fine to coarse sub-angular to angular, dark grey to black, medium plasticity clay, fine to coarse grained sand.	HW to XW																									
							4	✓	BASALT: green-grey, fine grained, crystalline	XW																			JT, 20°, Clay VNR, PR, RF JT, 30°, Clay VNR, PR, RF, 3mm JT, 5°, Clay VNR, UN, RF JT, 40°, Clay VNR, PR, RF FZ, 90°, Fe Clay VNR, UN, RF						
							5	✓		HW																			JT, 50°, Fe Clay FILLED, UN, RF, 10mm FZ, 45°, Fe Clay VNR, UN, RF JT, 50°, CA VNR, UN, RF JT, 75°, CA VNR, PR, RF FZ, 60°, Fe Clay VNR						
							6	✗	Extremely weathered material: Recovered as Sandy SILT: pale orange, brown to grey and black, fine to medium grained sand. (6.23m SPT - 4,10,30/130mmR)	RS																			RS						
							7	✓	BASALT: fine crystalline, grey to dark grey, with aplite veins throughout.	HW																				JT, 10°, Fe SN, IR, RF JT, 30°, Clay FILLED, IR, RF JT, 10mm JT, 5°, Fe Clay SN, PR, RF JT, 5°, Fe Clay SN, PR, RF JT, 10°, Clay FILLED, UN, RF, <20mm JT, 10°, Clay VNR, UN, RF					
<table><tr><td>Method</td><td>Water</td><td>Graphic Log/Core Loss</td><td>Weathering</td><td>Strength</td></tr><tr><td>AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel</td><td>Level (Date) Inflow Partial Loss Complete Loss</td><td>Core recovered (hatching indicates material) Core loss</td><td>FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil</td><td>(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High</td></tr></table>																										Method	Water	Graphic Log/Core Loss	Weathering	Strength	AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Level (Date) Inflow Partial Loss Complete Loss	Core recovered (hatching indicates material) Core loss	FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High
Method	Water	Graphic Log/Core Loss	Weathering	Strength																															
AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel	Level (Date) Inflow Partial Loss Complete Loss	Core recovered (hatching indicates material) Core loss	FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil	(indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High																															

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382570.3 m E 6956735.7 m N MGA94 Zone 56

Commenced: 08/09/2021
Completed: 15/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	493.90 m	
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD	Operator: R.Welsh

Drilling Information							Rock Substance				Rock Mass Defects														
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling												
													Particular	General											
HQ3		Not Observed	100		64	484.9	9		BASALT: fine crystalline, grey to dark grey, with aplite veins throughout. (continued)	HW			JT, 0°, Fe Clay VNR, ST, RF	CZ, 0°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF JT, 10°, Fe SN, CU, RF FZ, 0°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 90°, Fe SN, UN, RF, <340mm JT, 10°, Fe SN, UN, RF JT, 0°, Fe SN, UN, RF JT, 10°, Fe SN, PR, RF NC CZ, 0°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF JT, 10°, Fe SN, UN, RF JT, 5°, Fe SN, PR, RF JT, 5°, Fe Clay VNR, PR, S JT, 5°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 0°, Fe SN, UN, RF JT, 0°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 0°, Fe Clay VNR, PR, RF CZ, 0°, Fe SN, IR, RF XS, 0°, Fe SN, UN, RF FZ, 5°, Fe Clay SN, IR, RF JT, 0°, Fe Clay VNR, PR, S JT, 5°, Fe Clay VNR, PR, RF JT, 30°, Fe Clay VNR, PR, RF JT, 5°, Fe Clay VNR, PR, RF JT, 10°, Fe Clay VNR, PR, S CZ, 0°, Fe SN, UN, RF	JT, 0°, Fe Clay VNR, PR, S JT, 0°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF JT, 0°, Fe SN, UN, RF JT, 5°, Fe SN, ST, RF JT, 0°, Fe Clay VNR, PR, S JT, 20°, Fe Clay SN, UN, RF JT, 15°, Fe Clay SN, UN, RF JT, 0°, Fe SN, UN, RF JT, 5°, Fe SN, UN, RF JT, 10°, Fe SN, CU, RF FZ, 0°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 90°, Fe SN, UN, RF, <340mm JT, 10°, Fe SN, UN, RF JT, 0°, Fe SN, UN, RF JT, 10°, Fe SN, PR, RF NC CZ, 0°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF JT, 10°, Fe SN, UN, RF JT, 5°, Fe SN, PR, RF JT, 5°, Fe Clay VNR, PR, S JT, 5°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 0°, Fe SN, UN, RF JT, 0°, Fe SN, UN, RF JT, 0°, Fe SN, PR, RF JT, 0°, Fe Clay VNR, PR, RF CZ, 0°, Fe SN, IR, RF XS, 0°, Fe SN, UN, RF FZ, 5°, Fe Clay SN, IR, RF JT, 0°, Fe Clay VNR, PR, S JT, 5°, Fe Clay VNR, PR, RF JT, 30°, Fe Clay VNR, PR, RF JT, 5°, Fe Clay VNR, PR, RF JT, 10°, Fe Clay VNR, PR, S CZ, 0°, Fe SN, UN, RF										
							10						483.9			11	482.9	12	481.9	13	480.9	14	479.9	15	478.9
							NO CORE 0.42m						NO CORE 0.97m												

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Support
T - Timbering

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382570.3 m E 6956735.7 m N MGA94 Zone 56

Commenced: 08/09/2021
Completed: 15/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 493.90 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance					Rock Mass Defects																																	
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral					Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																												
HQ3	Not Observed	100	61	74	80	476.9	17	✓	BASALT: fine crystalline, grey to dark grey(continued)	SW	EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General																					
							475.9	18																	✓	JT, 25°, Fe SN, PR, RF JT, 85°, MS FILLED, PR, S, <130mm JT, 55°, Clay VNR, PR, S JT, 15°, Fe SN, PR, RF JT, 0°, Fe SN, UN, RF JT, 5°, Fe SN, PR, RF JT, 5°, Fe Clay VNR, PR, S JT, 5°, Fe SN, ST, RF JT, 15°, CN, PR, S																			
							474.9	19																	✓	CZ, 45°, CN, PR, RF JT, 5°, CN, PR, S																			
							473.9	20																	✓	JT, 10°, CN, PR, S JT, 90°, CN, PR, S, <150mm																			
							472.9	21																	✓	VN, 70°, KT FILLED, PR, S, <70mm JT, 5°, CN, UN, RF VN, 70°, KT FILLED, PR, S, <200mm JT, 0°, CN, UN, RF JT, 0°, CN, UN, RF JT, 90°, Clay VNR, PR, S JT, 15°, Clay VNR, PR, RF JT, 85°, CN, PR, S JT, 45°, Clay VNR, CU, S JT, 10°, CN, PR, S																			
							471.9	22																	✓	JT, 45°, Clay VNR, PR, S JT, 0°, CN, PR, RF JT, 0°, Clay SN, PR, S JT, 0°, CN, UN, RF																			
							470.9	23																	✓	JT, 5°, Clay VNR, PR, S JT, 20°, Fe Clay SN, UN, RF FZ, 0°, Fe SN, UN, RF																			

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 382570.3 m E 6956735.7 m N MGA94 Zone 56										Commenced: 08/09/2021 Completed: 15/09/2021 Logged By: A.Sharma Checked By: C.Green																			
Drill Model and Mounting: Comacchio 305 Barrel Type and Length: HQ 3 m										Inclination: -90° Bearing: RL Surface: 493.90 m Datum: AHD Operator: R.Welsh																			
Drilling Information										Rock Substance										Rock Mass Defects									
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																
													Particular	General															
HQ3		Not Observed	100		80				BASALT: fine crystalline, grey to dark grey(<i>continued</i>) SILTSTONE: dark-brown, fine grained, thinly laminated.	SW			FZ, Fe Clay SN, UN, RF JT, 55°, CN, PR, S JT, 15°, Clay SN, PR, S NC																
						468.9	25		NO CORE 0.20m																				
									Hole Terminated at 25.00 m Target depth																				
						467.9	26																						
						466.9	27																						
						465.9	28																						
						464.9	29																						
						463.9	30																						
						462.9	31																						

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching)
 indicates material)
 Core loss

Weathering

FR - Fresh
 SW - Slightly Weathered
 DW - Distinctly Weathered
 XW - Extremely Weathered
 RS - Residual Soil

Strength
(indirect tensile strength)

EL - Extremely Low
 VL - Very Low
 L - Low
 M - Medium
 H - High
 VH - Very High
 EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382570.3 m E 6956735.7 m N MGA94 Zone 56

Commenced: 08/09/2021
Completed: 15/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 493.90 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh



PointID : 310-03-BH3361 Depth Range: 2.90 - 7.00 m



PointID : 310-03-BH3361 Depth Range: 7.00 - 12.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382570.3 m E 6956735.7 m N MGA94 Zone 56

Commenced: 08/09/2021
Completed: 15/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 493.90 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh



PointID : 310-03-BH3361 Depth Range: 12.00 - 16.00 m



PointID : 310-03-BH3361 Depth Range: 16.00 - 20.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	08/09/2021
Project Name:	Inland Rail B2G	Completed:	15/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382570.3 m E 6956735.7 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	493.90 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD Operator: R.Welsh



PointID : 310-03-BH3361 Depth Range: 20.00 - 24.00 m



PointID : 310-03-BH3361 Depth Range: 24.00 - 25.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 17/09/2021
Project Name: Inland Rail B2G	Completed: 17/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 382503.1 m E 6956510.3 m N MGA94 Zone 56	Checked By: C.Green

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 485.18 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: R.Welsh

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
ADV		Not Observed		D00000 D 0.00-0.50 m					CI	TOPSOIL CLAY trace sand: medium plasticity, dark-brown mottled yellow, fine grained sand, trace roots (<5mm)	NA	NA			TOPSOIL	
				U00050 U 0.50-0.85 m		484.2	1				CLAY trace sand: medium plasticity, dark-brown mottled yellow, fine grained sand					RESIDUAL SOIL
				S00100 SPT 1.00-1.45 m 10,12,14 N=26 PP 1.45 m >600 kPa		483.2	2				Sandy CLAY with gravel: medium plasticity, orange brown mottled white, fine to coarse grained sand, fine to mediumsub- angular to angular gravel	M (<PL)	VSt		*	
				D00200 D 2.00-2.50 m							CI-CH	Sandy CLAY trace gravel: medium to high plasticity, pale brown mottled orange yellow, fine to coarse grained sand, fine to medium sub-angular gravel.				
				S00250 SPT 2.50-2.83 m 8,18,30/30mm N=48/180mm		482.2	3			Continued on cored borehole sheet						
						481.2	4									
						480.2	5									
						479.2	6									
						478.2	7									

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	17/09/2021
Project Name:	Inland Rail B2G	Completed:	17/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382503.1 m E 6956510.3 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	485.18 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3362 Depth Range: 1.00 - 1.45 m



310-03-BH3362 Depth Range: 2.50 - 2.80 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382503.1 m E 6956510.3 m N MGA94 Zone 56

Commenced: 17/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 485.18 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh

Drilling Information							Rock Substance						Rock Mass Defects											
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General

Method
AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 17/09/2021																																																														
Project Name: Inland Rail B2G		Completed: 17/09/2021																																																														
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma																																																														
Hole Coordinates: 382503.1 m E 6956510.3 m N MGA94 Zone 56		Checked By: C.Green																																																														
Drill Model and Mounting: Comacchio 305		Inclination: -90°	RL Surface: 485.18 m																																																													
Barrel Type and Length: HQ 3 m		Bearing:	Datum: AHD Operator: R.Welsh																																																													
Drilling Information		Rock Substance		Rock Mass Defects																																																												
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling																																																			
HQ3	Not Observed	Water	100	86	476.2	9	475.2	10	474.2	11	473.2	12	472.2	13	471.2	14	470.2	15	DIORITE: coarse crystalline, dark grey and green with white aplite veins throughout.(continued)	MW	EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	JT, 45°, Fe SN, PR, RF	JT, 0°, Fe Clay FILLED, DIS, S	JT, 5°, Fe Clay SN, UN, RF	JT, 5°, Fe SN, PR, RF	JT, 15°, Fe SN, PR, RF	JT, 10°, Fe SN, PR, RF	JT, 45°, Fe SN, PR, RF	JT, 0°, Fe SN, PR, RF	JT, 40°, Fe SN, PR, VR	SM, 25°, Clay FILLED, S	JT, 0°, Fe Clay SN, IR, S	SM, 15°, Clay FILLED, S	JT, 0°, Fe SN, IR, RF	JT, 0°, Fe SN, IR, RF	JT, 0°, Fe Clay SN, PR, RF	JT, 0°, Fe SN, IR, RF	JT, 20°, Fe SN, PR, RF	JT, 10°, Fe SN, PR, RF	JT, 0°, Fe SN, IR, RF	JT, 5°, Fe SN, IR, RF	JT, 0°, Fe SN, IR, RF	N.C	JT, 5°, CN, UN, S	JT, 20°, Fe Clay SN, PR, RF	JT, 0°, Fe Clay SN, UN, RF	JT, 0°, Fe SN, IR, RF	JT, 90°, Fe SN, PR, RF	Sub-vertical joint	XW	N.C		
																																																															No Core: 0.47m	
																																																															BASALT: coarse crystalline, dark-green mottled white and brown	
																																																															Extremely weathered BASALT: recovered as COBBLES and GRAVEL: brown grey with green, sub-angular cobbles, medium to coarse sub-rounded to sub-angular gravel.	
																																																															No Core: 0.37m	
																																																															Hole Terminated at 15.00 m Target depth	

Method

AS - Auger Screwing

WB- Washbore

HQ3 HQ3 Core Barrel

NQ3 NQ3 Core Barrel

Water

Level (Date)

Inflow

Partial Loss

Complete Loss

Support

T - Timbering

Graphic Log/Core Loss

Core recovered (hatching indicates material)

Core loss

Weathering

FR - Fresh

SW - Slightly Weathered

DW - Distinctly Weathered

XW - Extremely Weathered

RS - Residual Soil

Strength

(indirect tensile strength)

EL - Extremely Low

VL - Very Low

L - Low

M - Medium

H - High

VH - Very High

EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382503.1 m E 6956510.3 m N MGA94 Zone 56

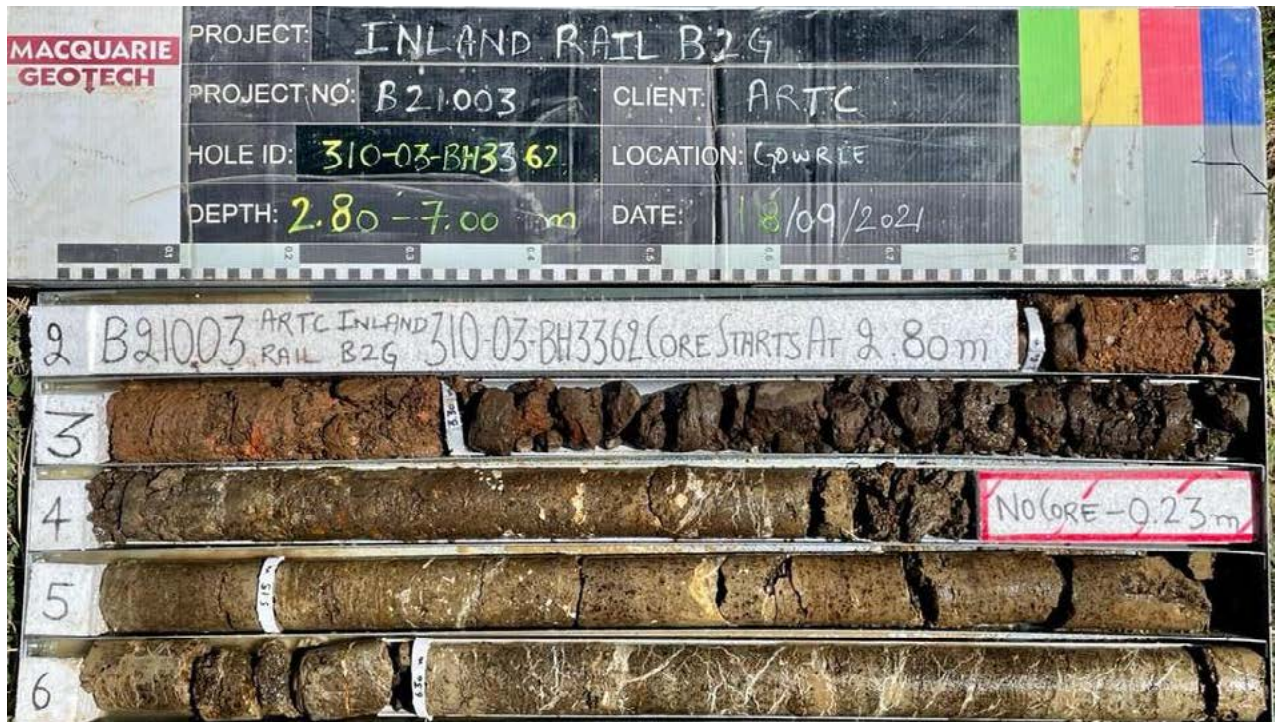
Commenced: 17/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305
Barrel Type and Length: HQ 3 m

Inclination: -90°
Bearing:

RL Surface: 485.18 m
Datum: AHD

Operator: R.Welsh



PointID : 310-03-BH3362 Depth Range: 2.80 - 7.00 m



PointID : 310-03-BH3362 Depth Range: 7.00 - 12.00 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382503.1 m E 6956510.3 m N MGA94 Zone 56

Commenced: 17/09/2021
Completed: 17/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305
Barrel Type and Length: HQ 3 m

Inclination: -90°
Bearing:

RL Surface: 485.18 m
Datum: AHD

Operator: R.Welsh



PointID : 310-03-BH3362 Depth Range: 12.00 - 15.00 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 03/09/2021
Project Name: Inland Rail B2G	Completed: 04/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 382814.4 m E 6956829.1 m N MGA94 Zone 56	Checked By: C.Green
Drill Model and Mounting: Comacchio 305	Inclination: -90°
Hole Diameter: 115 mm	Bearing:
	RL Surface: 486.36 m
	Datum: AHD
	Operator: R.Welsh

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADN			Not Observed	D00000 D 0.00-0.50 m		485.4	1		CI	TOPSOIL CLAY trace sand: medium plasticity, dark-brown mottled yellow, fine grained sand, with roots (<8mm)	NA	NA			TOPSOIL
				D00050 U 0.50-0.85 m						CLAY trace sand: medium plasticity, dark-brown mottled yellow, fine grained sand.				RESIDUAL SOIL	
				PP 1.00 m >600 kPa						Gravelly sandy CLAY: medium plasticity, brown to pale-brown mottled red, fine to coarse grained sand, fine to medium sub-angular to angular gravel	M (<PL)	H		*	
				S00150 SPT 1.50-1.95 m 12,19,21 N=40											
				D00200 D 2.00-2.50 m						Clayey SAND with gravel: fine to coarse grained, brown to pale-brown mottled red, medium plasticity clay, fine to medium sub angular gravel.				*	
				S00250 SPT 2.50-2.95 m 8,26,25 N=51						Gravelly Clayey SAND: fine to coarse grained, red brown, medium plasticity clay, fine to medium sub angular gravel	D	VD			
				PP 2.50 m >600 kPa											
				D00350 D 3.50-4.00 m										*	
				S00400 SPT 4.00-4.19 m 12,30/40mm N=30/40mm											
				PP 4.00 m >600 kPa											
				4.00-4.19 m 12,30/40mm N=30/40mm PP 4.00 m >600 kPa		481.4	5			Continued on cored borehole sheet					
						480.4	6								
						479.4	7								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Support
C - Casing

Penetration
 No resistance ranging to refusal

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT- Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
> PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	03/09/2021
Project Name:	Inland Rail B2G	Completed:	04/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382814.4 m E 6956829.1 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	486.36 m
		Datum:	AHD
		Operator:	R.Welsh



310-03-BH3363 Depth Range: 1.00 - 1.45 m



310-03-BH3363 Depth Range: 2.50 - 2.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382814.4 m E 6956829.1 m N MGA94 Zone 56

Commenced: 03/09/2021
Completed: 04/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 486.36 m
Datum: AHD Operator: R.Welsh



310-03-BH3363 Depth Range: 4.00 - 4.26 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC		Commenced: 03/09/2021	
Project Name: Inland Rail B2G		Completed: 04/09/2021	
Hole Location: N3 - Brookstead to Gowrie		Logged By: A.Sharma	
Hole Coordinates: 382814.4 m E 6956829.1 m N MGA94 Zone 56		Checked By: C.Green	
Drill Model and Mounting: Comacchio 305		Inclination: -90°	
Barrel Type and Length: HQ 3 m		RL Surface: 486.36 m	
		Datum: AHD	
		Operator: R.Welsh	

Drilling Information				Rock Substance				Rock Mass Defects					
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling
										EL VL L M H VH EH	30 100 300 1000 3000	Particular	General
						485.4	1						
						484.4	2						
						483.4	3						
						482.4	4						
									Continued from non-cored borehole sheet				
									NO CORE 0.24m				
									CLAY with gravel: medium to high plasticity, dark-brown, fine to coarse sub-angular to angular gravel	RS			
									BASALT: fine crystalline, grey mottled red-brown				
									TUFF: pale grey, fine grained	HW to XW			
									BASALT: fine crystalline, dark grey				
									NO CORE 1.00m				

Method

AS - Auger Screwing
WB - Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 382814.4 m E 6956829.1 m N MGA94 Zone 56

Commenced: 03/09/2021
Completed: 04/09/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 486.36 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: R.Welsh

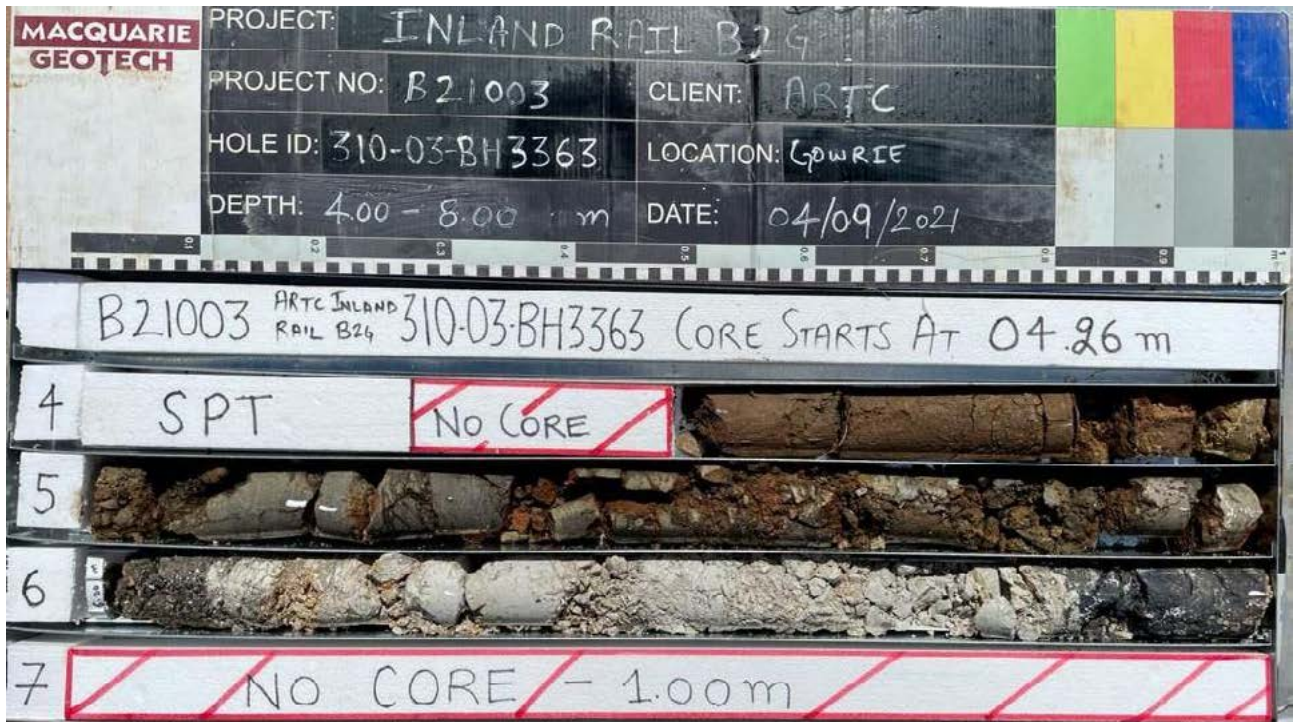
Drilling Information								Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling		
													Particular	General	
HQ3	Not Observed	100	67	80	0	477.4	9		TUFF: pale-brown mottled black	XW			JT, 10°, Clay VNR, UN, RF JT, 85°, Clay VNR, UN, RF JT, 0°, Clay VNR, DIS, RF JT, 0°, Fe SN, DIS, RF JT, 10°, Fe SN, ST, RF JT, 0°, Fe SN, DIS, RF JT, 0°, Clay SN, DIS, S		
						476.4	10		BASALT: fine crystalline, black, with randomly orientated quartz, massive				JT, 10°, Fe SN, UN, RF JT, 90°, Fe SN, PR, RF JT, 0°, Fe SN, DIS, RF JT, 0°, Fe SN, DIS, RF JT, 25°, Fe SN, PR, RF		
						475.4	11			MW			JT, 15°, Fe SN, PR, RF JT, 15°, Fe SN, PR, RF JT, 10°, Fe SN, PR, RF JT, 15°, Fe SN, PR, RF JT, 85°, Fe SN, PR, S JT, 0°, Fe SN, DIS, RF JT, 0°, Fe SN, PR, RF JT, 15°, Fe SN, PR, RF JT, 5°, Fe SN, CU, RF		
						474.4	12						JT, 0°, Fe SN, DIS, RF JT, 10°, Clay VNR, UN, S JT, 10°, Fe SN, PR, RF		
						473.4	13		Hole Terminated at 13.00 m Target depth						
						472.4	14								
						471.4	15								
Method AS - Auger Screwing WB- Washbore HQ3 HQ3 Core Barrel NQ3 NQ3 Core Barrel Water Level (Date) Inflow Partial Loss Complete Loss Support T - Timbering Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Weathering FR - Fresh SW - Slightly Weathered DW - Distinctly Weathered XW - Extremely Weathered RS - Residual Soil Strength (indirect tensile strength) EL - Extremely Low VL - Very Low L - Low M - Medium H - High VH - Very High EH - Extremely High															

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	03/09/2021
Project Name:	Inland Rail B2G	Completed:	04/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	382814.4 m E 6956829.1 m N MGA94 Zone 56	Checked By:	C.Green

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	486.36 m
Barrel Type and Length:	HQ 3 m	Bearing:		Datum:	AHD
				Operator:	R.Welsh



PointID : 310-03-BH3363 Depth Range: 4.00 - 8.00 m



PointID : 310-03-BH3363 Depth Range: 8.00 - 13.00 m

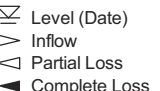
Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 01/11/2021
Project Name: Inland Rail B2G	Completed: 02/11/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: A.Sharma
Hole Coordinates: 375172.8 m E 6941755.8 m N MGA94 Zone 56	Checked By: C.Green

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 532.96 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J.Komjung

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
AD/T		Not Observed		D00020 D 0.20-0.50 m		532.0	1		CI	TOPSOIL: CLAY trace roots: medium plasticity, dark-brown to black CLAY: medium plasticity, dark-brown to black	M (<PL) to M (=PL)					TOPSOIL RESIDUAL SOIL
				D00100 D 0.50-0.85 m		531.0	2		CI	Sandy CLAY trace gravel: medium plasticity, dark-brown, fine grained sand, fine grained sub-rounded to rounded gravel	H				*	
				D00200 D 2.50-3.00 m		530.0	3		CI	CLAY trace sand trace gravel: medium plasticity, brown, fine grained sand, fine sub-rounded to rounded gravel	M (<PL)				*	
				S00250 PP 3.00 m >600 kPa		529.0	4									
				S00400 D 4.00-4.50 m		528.0	5			BASALT/ANDESITE: fine grained, dark-green mottled brown				HIGHLY WEATHERED BEDROCK		
				S00450 PP 4.50 m >600 kPa		528.0	5			Continued on cored borehole sheet						
						527.0	6									
						526.0	7									

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material) Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL > PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/11/2021
Project Name:	Inland Rail B2G	Completed:	02/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	375172.8 m E 6941755.8 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	532.96 m
		Datum:	AHD
		Operator:	J.Komjung



310-03-BH3365 Depth Range: 1.50 - 1.95 m



310-03-BH3365 Depth Range: 3.00 - 3.14 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/11/2021
Project Name:	Inland Rail B2G	Completed:	02/11/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	375172.8 m E 6941755.8 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	532.96 m
		Datum:	AHD
		Operator:	J.Komjung



310-03-BH3365 Depth Range: 4.50 - 4.60 m

Engineering Log - Cored Borehole

Project No.: B21003

[illegible]

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 375172.8 m E 6941755.8 m N MGA94 Zone 56

Commenced: 01/11/2021
Completed: 02/11/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 532.96 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J.Komjung

Drilling Information							Rock Substance					Rock Mass Defects						
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling					
													Particular	General				
HQ3		Not Observed	100		77	524.0	9	✓	ANDESITE/BASALT: fine grained, dark red brown, vesicular(continued)	HW	●	100	JT, 0°, Fe SN, PR, RF					
			100	56	✓		JT, 0°, Fe SN, PR, RF											
			✓	JT, 0°, Fe SN, PR, RF														
			✓	JT, 45°, Fe SN, PR, RF														
			✓	JT, 0°, Fe SN, PR, RF														
			✓	JT, 0°, Fe SN, PR, RF														
			✓	JT, 15°, Fe SN, PR, RF														
			✓	JT, 5°, Fe SN, PR, RF														
			✓	JT, 5°, Fe SN, PR, RF														
			✓	JT, 5°, Fe SN, PR, RF														
			✓	JT, 0°, Fe SN, DIS, RF														
			✓	JT, 10°, Fe SN, UN, RF														
			✓	JT, 90°, Fe SN, UN, RF, Sub-vertical joint														
			✓	JT, 0°, Fe SN, PR, RF														
		Not Observed	100		64	522.0	10	✓	BASALT/ANDESITE: fine grained, dark-green mottled brown	DW	●	100	JT, 25°, Fe SN, PR, RF					
			100	79	✓		JT, 10°, Fe Clay SN, DIS, RF											
			✓	JT, 5°, Fe SN, PR, RF														
			✓	JT, 5°, Fe SN, PR, S														
			✓	JT, 5°, Fe SN, UN, RF														
			✓	JT, 5°, Fe SN, PR, S														
			✓	JT, 0°, CN, UN, RF														
			✓	JT, 0°, CN, PR, S														
			✓	JT, 90°, CN, PR, RF, Sub-vertical joint														
			✓	JT, 0°, CN, PR, RF														
			✓	JT, 0°, CN, PR, S														
			✓	JT, 0°, Fe SN, PR, RF														
			✓	JT, 20°, Fe SN, PR, S														
			✓	JT, 20°, Fe SN, PR, RF														
		Not Observed				520.0	11	✓	Hole Terminated at 13.10 m Target depth									
							12	✓							FR	●	100	
							✓											
							✓											
							✓											
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							✓											
							✓											
							✓											
		Not Observed				519.0	13	✓		MW	●	100						
							14	✓								100		
							✓											
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							✓											
		Not Observed				518.0	15	✓										
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Method	Water	Graphic Log/Core Loss	Weathering	Strength
AS - Auger Screwing	Level (Date)	Core recovered (hatching indicates material)	FR - Fresh	(indirect tensile strength)
WB- Washbore	Inflow	Core loss	SW - Slightly Weathered	EL - Extremely Low
HQ3 HQ3 Core Barrel	Partial Loss		DW - Distinctly Weathered	VL - Very Low
NQ3 NQ3 Core Barrel	Complete Loss		XW - Extremely Weathered	L - Low
			RS - Residual Soil	M - Medium
				H - High
				VH - Very High
				EH - Extremely High
	Support			
	T - Timbering			

Method
AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Support
T - Timbering

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Weathering
FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Strength
(indirect tensile strength)
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 375172.8 m E 6941755.8 m N MGA94 Zone 56

Commenced: 01/11/2021
Completed: 02/11/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclination: -90° RL Surface: 532.96 m
Barrel Type and Length: HQ 3 m Bearing: Datum: AHD Operator: J.Komjung



PointID : 310-03-BH3365 Depth Range: 5.00 - 9.00 m



PointID : 310-03-BH3365 Depth Range: 9.00 - 13.10 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 20/09/2021
Project Name: Inland Rail B2G	Completed: 20/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: J.Cooper
Hole Coordinates: 379008.8 m E 6951555.3 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 433.19 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations	
ADV				D00000 0.00-0.20 m						TOPSOIL Silty CLAY: high plasticity, dark brown, with rootlets (<2mm)					TOPSOIL	
				SPT 0.50-0.95 m 3,4,7 N=11		432.2	1		CH	CLAY: high plasticity, dark grey.	M (~PL)				ALLUVIAL SOIL	
				D00120 1.20-1.50 m												
				S00150 SPT 1.50-1.95 m 5,5,6 N=11 PP 1.60 m =420 kPa D00200 2.00-2.20 m		431.2	2		CI-CH	Silty CLAY trace sand and gravel: medium to high plasticity, brown mottled white, fine to medium grained sand, fine to medium sub-rounded to sub-angular gravel, with calcareous material.	M (>PL)			x		
				S00300 SPT 3.00-3.45 m 3,4,6 N=10 PP 3.45 m =320 kPa D00380 3.80-4.00 m		430.2	3			At 3.00m: silt increasing.		St		x		
				S00450 SPT 4.50-4.95 m 3,4,7 N=11 PP 4.95 m =180 kPa		429.2	4				M (~PL)					
				D00550 5.50-5.70 m		428.2	5							x		
				S00600 SPT 6.00-6.45 m 15,15,17 N=32 PP 6.45 m =500 kPa		427.2	6		CH	CLAY with gravel trace silt: high plasticity, dark brown mottled white, fine sub-angular gravel.	M (>PL)	H		x		
				D00700 7.00-7.20 m		426.2	7									
				S00750 SPT 7.50-7.95 m 7,11,13					CI	Gravelly Sandy CLAY: medium plasticity, brown mottled orange and white, fine to medium sub-angular gravel, fine to coarse grained sand.	M (<PL)	VSt				

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379008.8 m E 6951555.3 m N MGA94 Zone 56

Commenced: 20/09/2021
Completed: 20/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305 Inclinometer: -90° RL Surface: 433.19 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Soil Description						Observations					
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations
ADV				N=24					CI	Gravelly Sandy CLAY: medium plasticity, brown mottled orange and white, fine to medium sub-angular gravel, fine to coarse grained sand. (continued)	M	VSt					ALLUVIAL SOIL	
				D00860 8.60-8.80 m		424.2	9		ML	Clayey SILT trace sand: grey, low plasticity clay, fine grained sand.	($<PL$)							
				S00900 SPT 9.00-9.13 m 30/130mm HB					ML	Sandy SILT: low plasticity fines, dark grey mottled black and pale grey, fine to medium grained, pockets of distinct laminations.								
				D01000 10.00-10.20		423.2	10				D	H						
				S01050 SPT 10.50-10.68 15,30/30mm HB N=30/30mm		422.2	11											
				D01150 11.50-11.70		421.2	12		CL	Sandy silty CLAY: low plasticity, brown grey, fine grained sand.	M	H						
				S01200 SPT 12.00-12.12 m 30/120mm HB		421.2			SM	Silty SAND: fine grained, brown grey, low plasticity fines, distinct carbonaceous laminations.								
				D01280 12.80-13.00		420.2	13											
				S01350 SPT 13.50-13.53 30/30mm HB		419.2	14				D	VD						
				D01480 14.80-15.00		418.2	15											
			S01500 SPT 15.00-15.10 30/100mm HB							Hole Terminated at 15.10 m Target depth								
Method AS - Auger Screwing RR - Rock Roller WB- Washbore Support C - Casing Penetration No resistance ranging to refusal Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Water Level (Date) Inflow Partial Loss Complete Loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Plastic Limit $< PL$ $= PL$ $> PL$																		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379008.8 m E 6951555.3 m N MGA94 Zone 56

Commenced: 20/09/2021
Completed: 20/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 433.19 m
Datum: AHD Operator: J. Komung



310-03-BH3606 Depth Range: 1.50 - 1.95 m



310-03-BH3606 Depth Range: 3.00 - 3.45 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	20/09/2021
Project Name:	Inland Rail B2G	Completed:	20/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379008.8 m E 6951555.3 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	433.19 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3606 Depth Range: 4.50 - 4.95 m



310-03-BH3606 Depth Range: 6.00 - 6.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379008.8 m E 6951555.3 m N MGA94 Zone 56

Commenced: 20/09/2021
Completed: 20/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 433.19 m
Datum: AHD Operator: J. Komung



310-03-BH3606 Depth Range: 7.50 - 7.95 m



310-03-BH3606 Depth Range: 9.00 - 9.13 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379008.8 m E 6951555.3 m N MGA94 Zone 56

Commenced: 20/09/2021
Completed: 20/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 433.19 m
Datum: AHD Operator: J. Komung



310-03-BH3606 Depth Range: 10.50 - 10.68 m



310-03-BH3606 Depth Range: 12.00 - 12.12 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379008.8 m E 6951555.3 m N MGA94 Zone 56

Commenced: 20/09/2021
Completed: 20/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 433.19 m
Datum: AHD Operator: J. Komung



310-03-BH3606 Depth Range: 13.00 - 13.12 m



310-03-BH3606 Depth Range: 15.00 - 15.10 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378859.9 m E 6951983.5 m N MGA94 Zone 56

Commenced: 21/09/2021
Completed: 21/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305 Inclinometer: -90° RL Surface: 432.52 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: J. Komung

Drilling Information								Soil Description						Observations																										
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)				Structure and Additional Observations																							
ADV				D00020 0.20-0.50 m					CH	TOPSOIL Silty CLAY: high plasticity, dark brown, with rootlets (<2mm)			100	200	300	400	500	TOPSOIL																						
				U00050 0.50-0.95 m						Silty CLAY trace gravel: high plasticity, dark brown, fine to medium sub-rounded to sub-angular gravel, with calcareous materials.		F						ALLUVIAL SOIL																						
				PP 0.95 m =260 kPa S00100 SPT 1.00-1.45 m 2,5,7 N=12 PP 1.40 m =350 kPa D00180 1.80-2.00 m		431.5	1				M (<PL)			x																										
						430.5	2								x																									
				D00250 2.50-2.70 m																																				
				S00300 SPT 3.00-3.45 m 3,5,6 N=11 PP 3.45 m =350 kPa		429.5	3			Below 03.00m: Trace sand, fine to medium grained, gravel absent					x																									
						428.5	4			Below 3.50m: colour tending to brown.																														
				D00400 4.00-4.20 m									St																											
				S00450 SPT 4.50-4.95 m 4,5,6 N=11 PP 4.95 m =300 kPa		427.5	5								x																									
			D00550 5.50-5.70 m									M (>PL)																												
			S00600 SPT 6.00-6.45 m 3,6,8 N=14		426.5	6																																		
			D00680 6.80-7.00 m																																					
				S00750 SPT 7.50-7.75 m 12,19/100mm					CH	Gravelly silty CLAY: high plasticity, pale brown, fine to medium sub-rounded to sub-angular gravel.	M (~PL)	H					ALLUVIAL SOIL																							
<table><tr><th>Method</th><th>Penetration</th><th>Water</th><th>Samples and Tests</th><th>Moisture Condition</th><th>Consistency/Relative Density</th></tr><tr><td>AS - Auger Screwing RR - Rock Roller WB - Washbore</td><td> No resistance ranging to refusal</td><td> Level (Date) Inflow Partial Loss Complete Loss</td><td>U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test</td><td>D - Dry M - Moist W - Wet</td><td>VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense</td></tr><tr><th>Support</th><th>Graphic Log/Core Loss</th><th>Classification Symbols and Soil Descriptions</th><th colspan="3">Plastic Limit</th></tr><tr><td>C - Casing</td><td> Core recovered (hatching indicates material) Core loss</td><td>Based on Unified Soil Classification System</td><td colspan="3">< PL = PL > PL</td></tr></table>																	Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density	AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense	Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit			C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL > PL		
Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density																																			
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense																																			
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit																																					
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL > PL																																					

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378859.9 m E 6951983.5 m N MGA94 Zone 56

Commenced: 21/09/2021
Completed: 21/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 432.52 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADV				HB N=19/100mm					CH	Gravelly silty CLAY: high plasticity, pale brown, fine to medium sub-rounded to sub-angular gravel. <i>(continued)</i>					ALLUVIAL SOIL
				D00850 8.50-8.70 m		423.5	9			H					
				S00900 SPT 9.00-9.45 m 7,9,9 N=18					M (~PL)						
				D01000 10.00-10.20		422.5	10			VSt					
				S01050 SPT 10.50-10.95 m 5,8,13 N=21		421.5	11								
				D01130 11.30-11.50					M (<PL)						
				SPT 12.00-12.45 m 21,12,29 HB N=41		420.5	12			H					
						419.5	13								
				S1350 SPT 13.50-13.95 20,20,24 N=44 D01380 13.80-14.00 m		418.5	14		W	D					
						417.5	15			VD					
				S01500 SPT 15.00-15.14 m 30/140mm HB											

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss		Classification Symbols and Soil Descriptions	Plastic Limit	
C - Casing	Core recovered (hatching indicates material) Core loss		Based on Unified Soil Classification System	< PL = PL < PL	

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378859.9 m E 6951983.5 m N MGA94 Zone 56

Commenced: 21/09/2021
Completed: 21/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 432.52 m
Datum: AHD Operator: J. Komung



310-03-BH3607 Depth Range: 1.00 - 1.45 m



310-03-BH3607 Depth Range: 3.00 - 3.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378859.9 m E 6951983.5 m N MGA94 Zone 56

Commenced: 21/09/2021
Completed: 21/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 432.52 m
Datum: AHD Operator: J. Komung



310-03-BH3607 Depth Range: 4.50 - 4.95 m



310-03-BH3607 Depth Range: 6.00 - 6.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378859.9 m E 6951983.5 m N MGA94 Zone 56

Commenced: 21/09/2021
Completed: 21/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 432.52 m
Datum: AHD Operator: J. Komung



310-03-BH3607 Depth Range: 7.50 - 7.75 m



310-03-BH3607 Depth Range: 9.00 - 9.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378859.9 m E 6951983.5 m N MGA94 Zone 56

Commenced: 21/09/2021
Completed: 21/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 432.52 m
Datum: AHD Operator: J. Komung



310-03-BH3607 Depth Range: 10.50 - 10.95 m



310-03-BH3607 Depth Range: 12.00 - 12.45 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	21/09/2021
Project Name:	Inland Rail B2G	Completed:	21/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	378859.9 m E 6951983.5 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	432.52 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3607 Depth Range: 13.50 - 13.95 m



310-03-BH3607 Depth Range: 15.00 - 15.14 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378736.1 m E 6952520.9 m N MGA94 Zone 56

Commenced: 27/09/2021
Completed: 28/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305 Inclinometer: -90° RL Surface: 436.87 m
Hole Diameter: 115 mm Bearing: AHD Operator: J. Komung

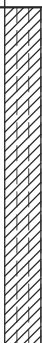
Drilling Information							Soil Description							Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations
ADV			Not Observed	D00010 0.10-0.20 m					CH	TOPSOIL Silty CLAY: high plasticity, dark brown, with rootlets (<2mm)							TOPSOIL	
				S00050 SPT 0.50-0.95 m 3,6,8 N=14 U00100 1.00-1.45 m PP 1.45 m >600 kPa S00150 SPT 1.50-1.95 m 6,10,13 N=23 D00230 2.30-2.50 m		435.9	1			Silty CLAY: high plasticity, dark brown mottled white.		St				ALLUVIAL SOIL		
						434.9	2		CI	Below 1.50m with sand trace gravel, fine to coarse gravel sand, fine to medium sub rounded gravel. Below 1.85m: colour tending to brown mottled yellow Silty CLAY: medium plasticity, brown mottled yellow brown and white.	M (~PL)				*	RESIDUAL SOIL		
				S00300 SPT 3.00-3.45 m 5,12,12 N=24 D00360 3.60-3.70 m D00380 3.80-4.00 m		433.9	3		CI	Silty CLAY: medium plasticity, yellow brown mottled grey becoming yellow, trace calcareous nodules.								
						432.9	4											
				S00450 SPT 4.50-4.95 m 7,11,18 N=29		431.9	5					VSt						
						430.9	6											
				D00550 5.50-5.70 m		429.9	7		CI	Silty CLAY: medium plasticity, dark brown.	M (>PL)							
				S00600 SPT 6.00-6.45 m 7,12,15 N=27														
				D00680 6.80-7.00 m D00700 7.00-7.20 m														
				S00750 SPT 7.50-7.95 m 7,12,16					CH	Silty Sandy Clay: high plasticity clay, yellow brown mottled grey, fine to coarse grained sand.	M (<PL)							
Method AS - Auger Screwing RR - Rock Roller WB - Washbore Penetration No resistance ranging to refusal Support C - Casing Water Level (Date) Inflow Partial Loss Complete Loss Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test Classification Symbols and Soil Descriptions Based on Unified Soil Classification System Moisture Condition D - Dry M - Moist W - Wet Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense Plastic Limit < PL = PL < PL																		

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 27/09/2021
Project Name: Inland Rail B2G	Completed: 28/09/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: J.Cooper
Hole Coordinates: 378736.1 m E 6952520.9 m N MGA94 Zone 56	Checked By: D.Hill

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 436.87 m
Hole Diameter: 115 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency	Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
ADV		Not Observed		N=28					CH	Silty Sandy Clay: high plasticity clay, yellow brown mottled grey, fine to coarse grained sand. (continued)	M (<PL)	VSt			RESIDUAL SOIL
				D00880 8.80-9.00 m S00900 SPT 9.00-9.05 m 30/50mm HB		427.9	9		CL-CI	Silty CLAY with sand: low to medium plasticity, grey, fine to medium grained sand.					
				D01000 10.00-10.20		426.9	10								
				S01050 SPT 10.50-10.55 m 30/50mm HB		425.9	11								
				D01150 11.50-11.70		424.9									
				S01200 SPT 12.00-12.01 m 30/10mm HB		424.9	12			Hole Terminated at 12.01 m Target depth Early termination on agreement with ARTC representatives.					
						423.9	13								
						422.9	14								
						421.9	15								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	27/09/2021
Project Name:	Inland Rail B2G	Completed:	28/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	378736.1 m E 6952520.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	436.87 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3608 Depth Range: 0.50 - 0.95 m



310-03-BH3608 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	27/09/2021
Project Name:	Inland Rail B2G	Completed:	28/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	378736.1 m E 6952520.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	436.87 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3608 Depth Range: 3.00 - 3.45 m

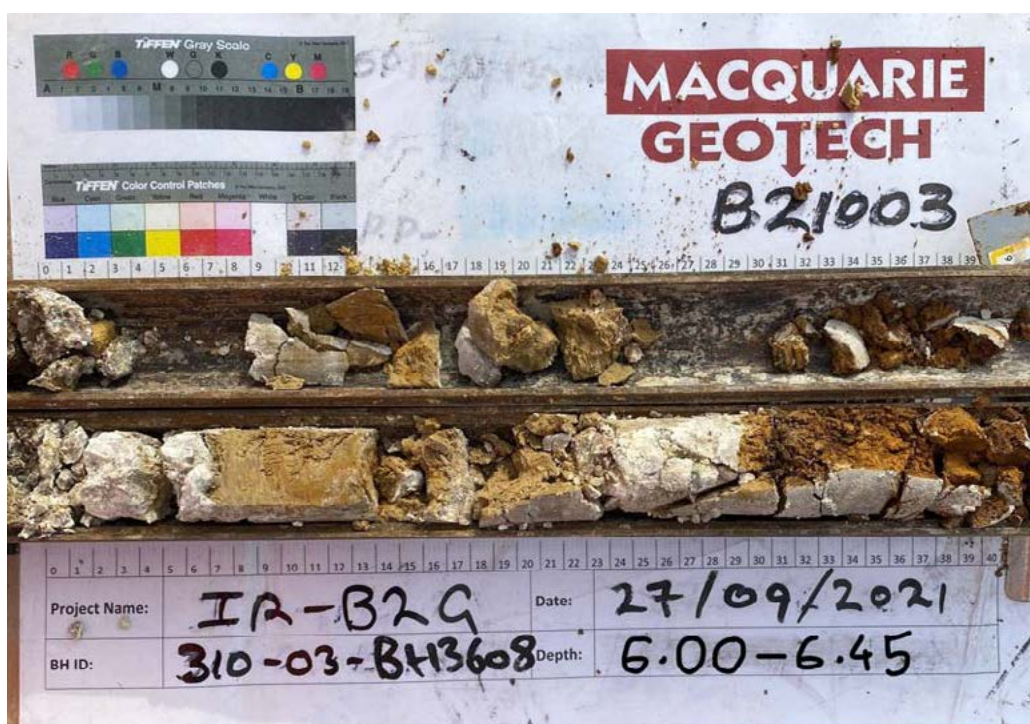


310-03-BH3608 Depth Range: 4.50 - 4.95 m

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	27/09/2021
Project Name:	Inland Rail B2G	Completed:	28/09/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	378736.1 m E 6952520.9 m N MGA94 Zone 56	Checked By:	D.Hill
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	436.87 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3608 Depth Range: 6.00 - 6.45 m



310-03-BH3608 Depth Range: 7.50 - 7.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378736.1 m E 6952520.9 m N MGA94 Zone 56

Commenced: 27/09/2021
Completed: 28/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 436.87 m
Datum: AHD Operator: J. Komung



310-03-BH3608 Depth Range: 9.00 - 9.05 m



310-03-BH3608 Depth Range: 10.50 - 10.55 m

Engineering Log - Borehole

Project No.: B21003

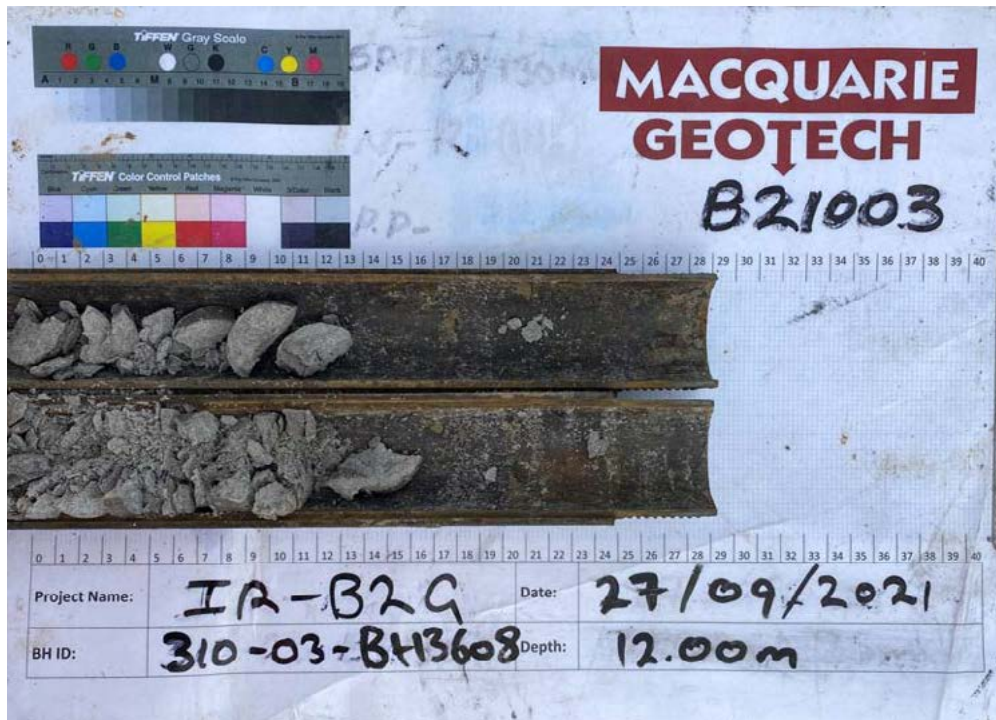
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 378736.1 m E 6952520.9 m N MGA94 Zone 56

Commenced: 27/09/2021
Completed: 28/09/2021
Logged By: J.Cooper
Checked By: D.Hill

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 436.87 m
Datum: AHD Operator: J. Komung



310-03-BH3608 Depth Range: 12.00 - 12.01 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC	Commenced: 11/12/2021
Project Name: Inland Rail B2G	Completed: 11/12/2021
Hole Location: N3 - Brookstead to Gowrie	Logged By: J.Cooper
Hole Coordinates: 379082.4 m E 6953560.9 m N MGA94 Zone 56	Checked By: C. Green

Drill Model and Mounting: Comacchio 305	Inclination: -90°	RL Surface: 425.95 m
Hole Diameter: 125 mm	Bearing:	Datum: AHD Operator: J. Komung

Drilling Information							Soil Description							Observations				
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations
AD/T			Not Observed	D00020 0.20-0.50 m		424.9	1		CH	TOPSOIL Silty CLAY: high plasticity, dark brown, with rootlets	M (<PL)	S	100			TOPSOIL		
				S00050 SPT 0.50-0.95 m					M (>PL)	F	200			ALLUVIAL SOIL				
				3,4,5 N=9 PP 0.95 m =350 kPa														
				U00100 1.00-1.45 m														
				PP 1.45 m >600 kPa														
				S00150 SPT 1.50-1.95 m														
				4,6,11 N=17 PP 1.95 m >600 kPa														
D00220 2.20-2.50 m		422.9	2		CH	Silty CLAY with gravel trace sand: High plasticity, brown, fine sub-angular gravel, fine to coarse grained sand	M (>PL)	VSt				x			x			
S00300 SPT 3.00-3.45 m																		
4,4,5 N=9 PP 3.45 m =350 kPa																		
U00350 3.50-3.95 m																		
PP 3.95 m =360 kPa																		
D00400 4.00-4.20 m																		
SPT 4.00-4.45 m																		
4,4,5 N=9 S00450 PP 4.95 m =300 kPa		421.9	3		CH	Silty CLAY: High plasticity, brown, trace seams (20mm) of fine sub-angular gravel (calcrete)	M (>PL)	St				x						
D00550 5.50-5.70 m																		
S00600 SPT 6.00-6.45 m																		
21,16,14 HB N=30																		
						419.9	6		CI	Gravelly CLAY: medium plasticity, pale yellow brown, fine to coarse angular gravel	M (<PL)	VSt					RESIDUAL SOIL	
						418.9	7		GP	Clayey sandy GRAVEL: dark grey brown, fine to coarse angular gravel, low plasticity fines, fine to coarse sand	D	VD					EXTREMELY WEATHERED MATERIAL	
										Continued on cored borehole sheet								

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB - Washbore	No resistance ranging to refusal	Level (Date) Inflow Partial Loss Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	Core recovered (hatching indicates material) Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	11/12/2021
Project Name:	Inland Rail B2G	Completed:	11/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379082.4 m E 6953560.9 m N MGA94 Zone 56	Checked By:	C. Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	125 mm	Bearing:	
		RL Surface:	425.95 m
		Datum:	AHD
		Operator:	J. Komung



310-03-BH3609 Depth Range: 0.50 - 0.95 m



310-03-BH3609 Depth Range: 1.50 - 1.95 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379082.4 m E 6953560.9 m N MGA94 Zone 56

Commenced: 11/12/2021
Completed: 11/12/2021
Logged By: J.Cooper
Checked By: C. Green

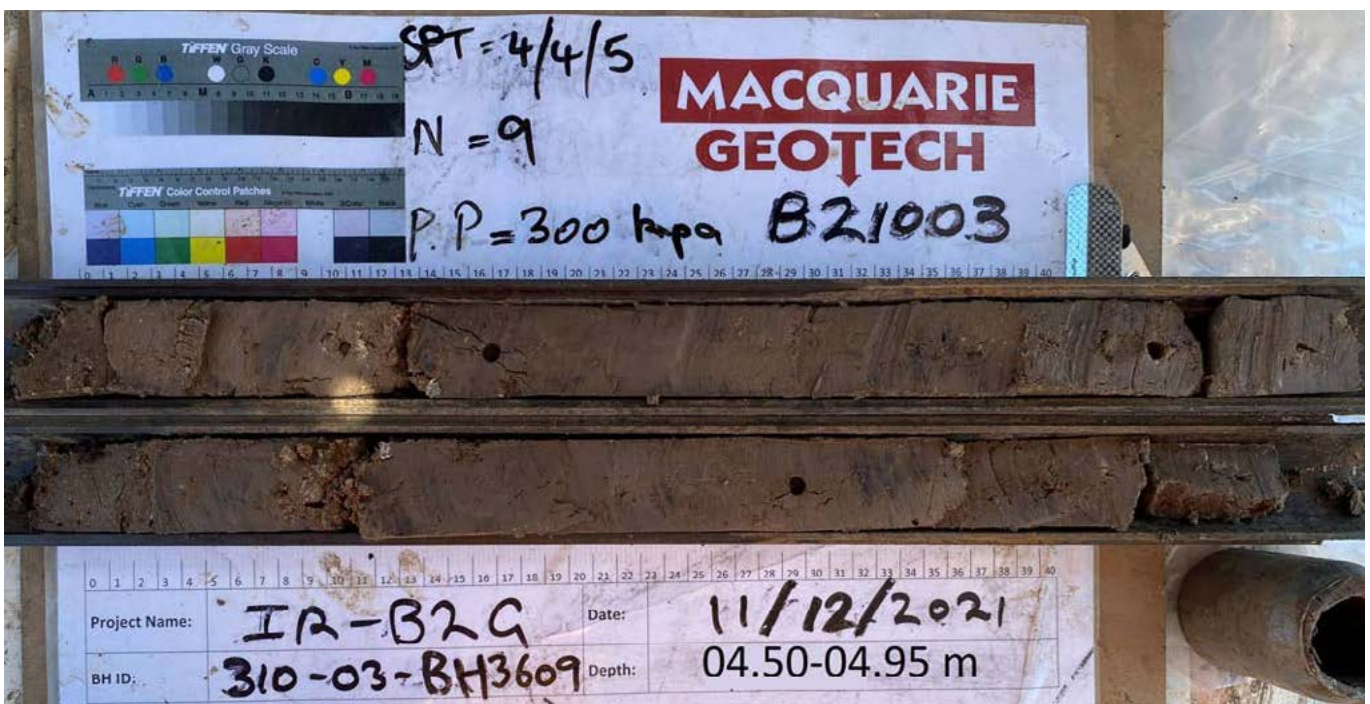
Drill Model and Mounting: Comacchio 305
Hole Diameter: 125 mm

Inclination: -90°
Bearing:

RL Surface: 425.95 m
Datum: AHD Operator: J. Komung



310-03-BH3609 Depth Range: 3.00 - 3.45 m



310-03-BH3609 Depth Range: 4.50 - 4.95 m

Engineering Log - Borehole

Project No.: B21003

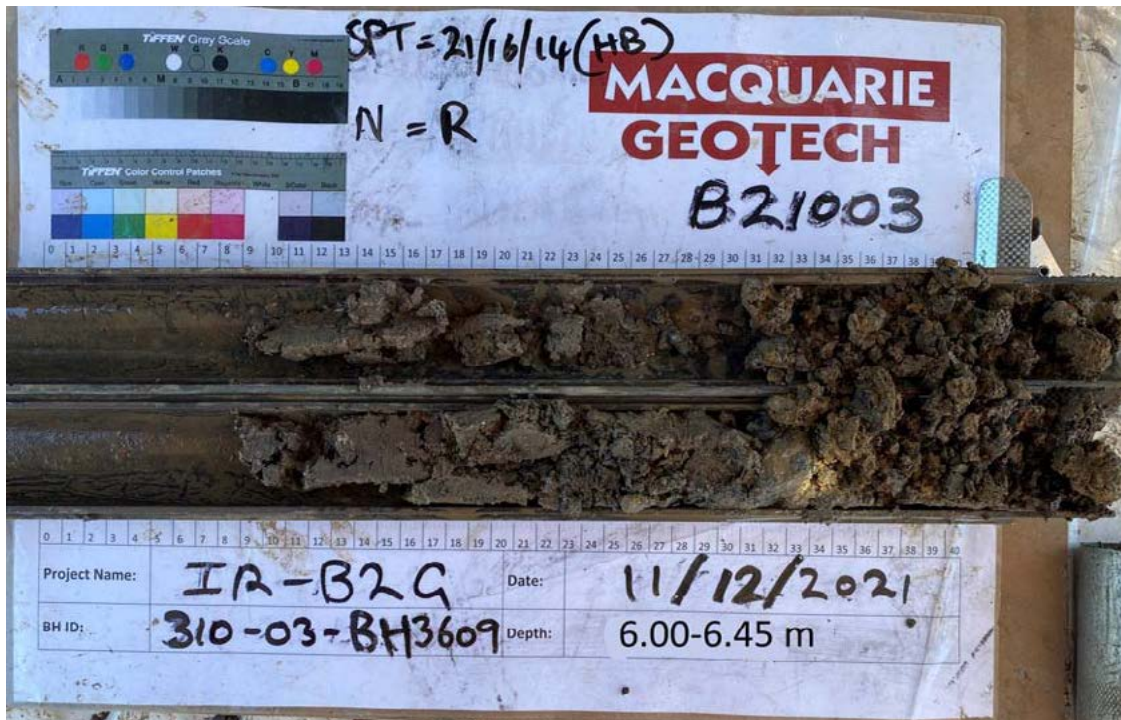
Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379082.4 m E 6953560.9 m N MGA94 Zone 56

Commenced: 11/12/2021
Completed: 11/12/2021
Logged By: J.Cooper
Checked By: C. Green

Drill Model and Mounting: Comacchio 305
Hole Diameter: 125 mm

Inclination: -90°
Bearing:

RL Surface: 425.95 m
Datum: AHD Operator: J. Komung



310-03-BH3609 Depth Range: 6.00 - 6.45 m

Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC Project Name: Inland Rail B2G Hole Location: N3 - Brookstead to Gowrie Hole Coordinates: 379082.4 m E 6953560.9 m N MGA94 Zone 56										Commenced: 11/12/2021 Completed: 11/12/2021 Logged By: J.Cooper Checked By: C. Green														
Drill Model and Mounting: Comacchio 305 Barrel Type and Length: HQ3 3 m										Inclination: -90° Bearing: RL Surface: 425.95 m Datum: AHD Operator: J. Komung														
Drilling Information							Rock Substance							Rock Mass Defects										
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral						Defect Spacing (mm)				Defect Description thickness, type, inclination, planarity, roughness, coating/infilling			
											EL	VL	L	M	H	VH	EH	30	100	300	1000	3000	Particular	General
						424.9	1																	
						423.9	2																	
						422.9	3																	
						421.9	4																	
						420.9	5																	
						419.9	6																	
									Continued from non-cored borehole sheet															
HQ3	Not Observed	100	59			418.9	7		BASALT: dark grey, fine crystalline	FR												DB JT, 10°, CN, UN, RF JT, 5°, CN, PR, RF JT, 15°, CN, PR, RF JT, 15°, CN, UN, RF JT, 15°, CN, UN, RF JT, 15°, CN, UN, RF JT, 5°, Fe SN, UN, RF JT, 10°, Fe SN, PR, RF JT, 10°, Fe SN, PR, RF		

Method

AS - Auger Screwing
WB- Washbore
HQ3 HQ3 Core Barrel
NQ3 NQ3 Core Barrel

Water

≡ Level (Date)
▽ Inflow
△ Partial Loss
▲ Complete Loss

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Weathering

FR - Fresh
SW - Slightly Weathered
DW - Distinctly Weathered
XW - Extremely Weathered
RS - Residual Soil

Support

T - Timbering

Strength
(indirect tensile strength)

EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Engineering Log - Cored Borehole

Project No.: B21003

Client:	ARTC	Commenced:	11/12/2021
Project Name:	Inland Rail B2G	Completed:	11/12/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	J.Cooper
Hole Coordinates:	379082.4 m E 6953560.9 m N MGA94 Zone 56	Checked By:	C. Green

Drill Model and Mounting:	Comacchio 305	Inclination:	-90°	RL Surface:	425.95 m		
Barrel Type and Length:	HQ3 3 m	Bearing:		Datum:	AHD	Operator:	J. Komung

Drilling Information							Rock Substance				Rock Mass Defects			
Method	Support	Water	TCR (%)	SCR (%)	RQD (%)	RL (m)	Depth (m)	Graphic Log	Material Description rock type: grain characteristics, colour, structure, minor components	Weathering	Strength Is(50) ● - Axial ○ - Diametral	Defect Spacing (mm)	Defect Description thickness, type, inclination, planarity, roughness, coating/infilling	
													Particular	General
HQ3	Not Observed	100	59	100	100	416.9	9	✓	BASALT: dark grey, fine crystalline(continued)	FR			JT, 15°, CN, PR, S JT, 65°, Fe SN, PR, RF JT, 5°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF JT, 5°, Fe SN, UN, RF JT, 45°, Fe SN, PR, RF JT, 5°, Fe SN, UN, RF JT, 10°, Fe SN, PR, RF JT, 40°, Fe SN, PR, RF Non-intact JT, 45°, Fe SN, PR, RF JT, 30°, Fe SN, PR, RF JT, 5°, CN, UN, RF JT, 55°, CN, PR, RF JT, 0°, CN, UN, RF	
						415.9	10	✓						
						414.9	11	✓	Hole Terminated at 10.78 m Target depth Early termination on agreement with ARTC representatives.					
						413.9	12	✓						
						412.9	13	✓						
						411.9	14	✓						
						410.9	15	✓						

Method
 AS - Auger Screwing
 WB- Washbore
 HQ3 HQ3 Core Barrel
 NQ3 NQ3 Core Barrel

Water
 Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support
 T - Timbering

Graphic Log/Core Loss
 Core recovered (hatching indicates material)
 Core loss

Weathering
 FR - Fresh
 SW - Slightly Weathered
 DW - Distinctly Weathered
 XW - Extremely Weathered
 RS - Residual Soil

Strength
 (indirect tensile strength)
 EL - Extremely Low
 VL - Very Low
 L - Low
 M - Medium
 H - High
 VH - Very High
 EH - Extremely High

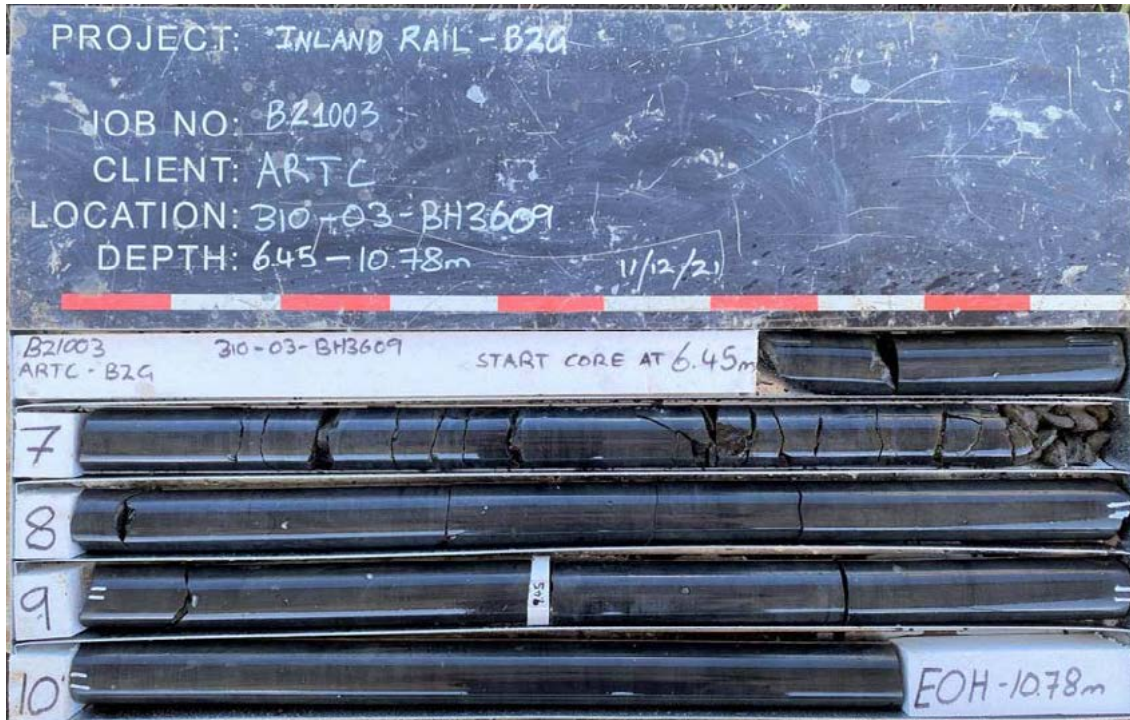
Engineering Log - Cored Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379082.4 m E 6953560.9 m N MGA94 Zone 56

Commenced: 11/12/2021
Completed: 11/12/2021
Logged By: J.Cooper
Checked By: C. Green

Drill Model and Mounting: Comacchio 305 Inclusion: -90° RL Surface: 425.95 m
Barrel Type and Length: HQ3 3 m Bearing: Datum: AHD Operator: J. Komung



PointID : 310-03-BH3609 Depth Range: 6.45 - 10.78 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379602.0 m E 6954326.7 m N MGA94 Zone 56

Commenced: 01/10/2021
Completed: 01/10/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclinometer: -90° RL Surface: 427.11 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: J.Komung

Drilling Information							Soil Description						Observations								
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)					Structure and Additional Observations			
ADV			Not Observed	D00000 0.00-0.50 m		426.1	1		CH	TOPSOIL CLAY trace roots: medium plasticity, dark brown to black, trace roots (<5mm) CLAY: high-plasticity, dark brown to black	NA	VSt	100	200	300	400	500	TOPSOIL			
				U00050 0.50-0.85 m																RESIDUAL SOIL	
				S00100 SPT 1.00-1.45 m 4,8,10 N=18 PP 1.00 m >600 kPa					CH	CLAY trace sand: high-plasticity, fine grained sand, dark brown to black black mottled grey.											*
				D00200 2.00-2.50 m																	
									CI-CH	CLAY trace sand gravel: medium to high-plasticity, dark brown to black, fine to coarse grained sand, fine sub angular gravel											
				S00250 SPT 3.00-3.45 m 3.7,6 N=13 PP 3.00 m >600 kPa						Below 3.00m: colour changes to brown to pale-brown mottled white											*
				D00400 4.00-4.50 m							M (<PL)										
									CI	Sandy CLAY: medium plasticity, brown mottled white, fine grained sand	St										*
				D00550 5.50-6.00 m					CI-CH	Silty CLAY trace sand and gravel: medium to high plasticity, brown to pale brown mottled white											*
				S00600 SPT 6.00-6.45 m 5,6,10 N=16 PP 6.00 m >600 kPa																	
				D00700 7.00-7.50 m		420.1	7		CH	CLAY with gravel: high plasticity, dark brown mottled black, fine sub-rounded to sub-angular gravel	VSt						*				
				S00750 SPT 7.50-7.95 m 8.11.11													*				

Method	Penetration	Water	Samples and Tests	Moisture Condition	Consistency/Relative Density
AS - Auger Screwing RR - Rock Roller WB- Washbore	 No resistance ranging to refusal	 Level (Date)  Inflow  Partial Loss  Complete Loss	U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	D - Dry M - Moist W - Wet	VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support	Graphic Log/Core Loss	Classification Symbols and Soil Descriptions	Plastic Limit		
C - Casing	 Core recovered (hatching indicates material)  Core loss	Based on Unified Soil Classification System	< PL = PL < PL		

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379602.0 m E 6954326.7 m N MGA94 Zone 56

Commenced: 01/10/2021
Completed: 01/10/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305 Inclin: -90° RL Surface: 427.11 m
Hole Diameter: 115 mm Bearing: Datum: AHD Operator: J.Komung

Drilling Information								Soil Description					Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/V			Not Observed	N=22 PP 7.50 m >600 kPa S00850		418.1	9		CH	CLAY with gravel: high plasticity, dark brown mottled black, fine sub-rounded to sub-angular gravel (continued)	M (<PL)	VSt		RESIDUAL SOIL
				S00900 SPT 9.00-9.45 m 3,5,5 N=10 PP 9.00 m >600 kPa					CI-CH	Silty CLAY: medium to high plasticity, dark brown mottled white		St		
				S01050 SPT 10.50-10.95 m 3,3,4 N=7 PP 10.50 m =400 kPa						M (~PL)	F	x		
				S01200 SPT 12.00-12.45 m 4,4,5 N=9 PP 12.00 m =400 kPa							St	x		
				S01350 SPT 13.50-13.52 m 30/20mm						M (<PL)	H			
						412.1	15			Hole Terminated at 15.00 m Target depth				

Method

AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration

No resistance ranging to refusal

Water

Level (Date)
 Inflow
 Partial Loss
 Complete Loss

Support

C - Casing

Graphic Log/Core Loss

Core recovered (hatching indicates material)
 Core loss

Samples and Tests

U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions

Based on Unified Soil Classification System

Moisture Condition

D - Dry
M - Moist
W - Wet

Consistency/Relative Density

VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Plastic Limit

< PL
= PL
< PL

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
 No resistance ranging to refusal

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 Level (Date)
Inflow
Partial Loss
Complete Loss

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Graphic Log/Core Loss
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Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Engineering Log - Borehole

Project No.: B21003

Client:	ARTC	Commenced:	01/10/2021
Project Name:	Inland Rail B2G	Completed:	01/10/2021
Hole Location:	N3 - Brookstead to Gowrie	Logged By:	A.Sharma
Hole Coordinates:	379602.0 m E 6954326.7 m N MGA94 Zone 56	Checked By:	C.Green
Drill Model and Mounting:	Comacchio 305	Inclination:	-90°
Hole Diameter:	115 mm	Bearing:	
		RL Surface:	427.11 m
		Datum:	AHD
		Operator:	J.Komung



310-03-BH3610 Depth Range: 1.00 - 1.45 m



310-03-BH3610 Depth Range: 3.00 - 3.45 m

Engineering Log - Borehole

Project No.: B21003

Client: ARTC
Project Name: Inland Rail B2G
Hole Location: N3 - Brookstead to Gowrie
Hole Coordinates: 379602.0 m E 6954326.7 m N MGA94 Zone 56

Commenced: 01/10/2021
Completed: 01/10/2021
Logged By: A.Sharma
Checked By: C.Green

Drill Model and Mounting: Comacchio 305
Hole Diameter: 115 mm

Inclination: -90°
Bearing:

RL Surface: 427.11 m
Datum: AHD Operator: J.Komung



310-03-BH3610 Depth Range: 4.50 - 4.95 m



310-03-BH3610 Depth Range: 6.00 - 6.45 m