

APPENDIX G1

Geotechnical Reports— Investigation Results

Part 1 of 2

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT

Geotechnical Fieldwork Summary

This appendix presents the results of the geotechnical fieldworks completed by Golder in 2018 to 2019. Additional geotechnical fieldwork results completed in December 2021 by Macquarie Geotech is presented in Appendix G2: Macquarie Geotechnical - Laboratory Results.

This appendix supports Chapter 9 Land Resources and Appendix J Soil Impact Assessment.

Investigation type	Investigation ID	Approximate as-drilled Easting ** (MGA '94 Zone 56)	Approximate as-drilled Northing ** (MGA '94 Zone 56)	Approximate surface RL (mAHD)*	Final borehole depth (m bgl)	Final monitoring well depth (m bgl)	Date completed
Borehole	310-01-BH2201	288447	6840636	256.5	29.22	29.22	12 September 2018
Borehole	310-01-BH2203	300144	6852564	278.7	30.65	25	23 August 2018
Borehole	310-01-BH2206	302299	6853323	272.4	29.75	25.7	22 August 2018
Borehole	310-01-BH2210	311744	6857672	283.4	30.18	30	26 August 2018
Borehole	310-01-BH2214	319068	6875070	321.6	30.45	20	4 December 2018
Borehole	310-01-BH2215	318929	6875972	322.5	30	30	2 December 2018
Borehole	310-01-BH2216	321182	6880902	320.8	30	18.5	28 August 2018
Borehole	310-01-BH2219	323169	6887698	337.5	29.59	–	30 August 2018
Borehole	310-01-BH2221	321993	6884259	327.1	29.85	–	30 November 2018
Borehole	310-01-BH2228	329158	6911117	417.3	30.1	–	13 December 2018
Borehole	310-01-BH2229	330026	6911690	406.6	30.3	30.3	10 January 2019
Borehole	310-01-BH2230	337956	6918543	379	30.1	–	19 May 2018
Borehole	310-01-BH2231	338076	6918598	377.8	30	17.4	7 September 2018
Borehole	310-01-BH2232	338406	6918694	379.1	30	–	22 May 2018
Borehole	310-01-BH2233	340530	6922012	378.9	30	24.5	10 September 2018
Borehole	310-01-BH2234	340696	6922345	379.2	40	23	17 May 2018
Borehole	310-01-BH2235	344710	6926073	381.3	40.3	40	7 September 2018
Borehole	310-01-BH2236	347908	6928867	390.6	30	–	11 September 2018
Borehole	310-01-BH2248	378811	6952190	432.9	30	30	17 January 2019
Borehole	310-01-BH2251	297542	6849233	285.7	29.95	–	27 November 2018
Borehole	310-01-BH2302	298131	6850000	300.9	15.1	15	24 August 2018
Borehole	310-01-BH2304	300352	6852728	289.8	15	8.6	21 August 2018
Borehole	310-01-BH2305	300726	6852952	287.2	15.5	15	24 August 2018
Borehole	310-01-BH2307	303248	6853704	280.6	15.1	–	22 August 2018
Borehole	310-01-BH2308	305930	6855563	301.6	15.5	15	27 August 2018
Borehole	310-01-BH2309	309357	6857528	277.1	15	15	25 August 2018

Investigation type	Investigation ID	Approximate as-drilled Easting ** (MGA '94 Zone 56)	Approximate as-drilled Northing ** (MGA '94 Zone 56)	Approximate surface RL (mAHD)*	Final borehole depth (m bgl)	Final monitoring well depth (m bgl)	Date completed
Borehole	310-01-BH2311	316845	6859899	296.7	15	15	27 August 2018
Borehole	310-01-BH2322	324428	6899282	428.1	15	–	13 September 2018
Borehole	310-01-BH2323	324373	6900697	458.6	15	15	30 August 2018
Borehole	310-01-BH2326	326478	6907969	477	15	15	5 September 2018
Borehole	310-01-BH2327	324758	6900901	464.7	15.13	–	6 December 2018
Borehole	310-01-BH2337	359395	6933644	487.1	15	15	11 January 2019
Borehole	310-01-BH2338	360312	6933597	504.8	15	15	13 January 2019
Borehole	310-01-BH2341	324598	6898892	446.3	15	15	8 January 2019
Borehole	310-01-BH2343	375835	6942386	532.8	15	15	13 December 2018
Borehole	310-01-BH2344	377527	6944383	524.8	15	15	13 September 2018
Borehole	310-01-BH2345	377893	6945680	536.1	30	30	12 December 2018
Borehole	310-01-BH2346	378485	6948568	490.3	25	–	15 January 2019
Borehole	310-01-BH2347	379008	6950198	463	20	20	5 September 2018
Borehole	310-01-BH2350	379847	6954461	429.5	14.7	–	10 September 2018
Borehole	310-01-BH2352	382647	6956629	487.3	15	15	14 January 2019
Borehole	310-01-BH2353	305293	6856182	334.3	20.1	–	29 November 2018
Borehole	310-01-BH2355	324741	6902636	477.5	20	20	11 December 2018
Borehole	310-01-BH2356	304192	6855275	323.5	20	–	28 November 2018
Borehole	310-01-BH2612	319382	6864344	309.7	15.25	–	6 December 2018
Borehole	310-01-BH2613	319181	6874684	327.2	15.45	–	3 December 2018
Borehole	310-01-BH2617	322633	6882372	323.3	15	5	27 August 2018
Borehole	310-01-BH2624	324676	6901750	453.6	15.35	–	10 December 2018
Auger Hole	310-01-DH2446	381650	6955541	455.7	2.7	–	7 September 2018
Auger Hole	310-01-DH2508	297090	6846213	265	3	–	5 September 2018
Auger Hole	310-01-DH2509	297383	6848324	293.3	8.1	–	4 September 2018
Auger Hole	310-01-DH2510	311208	6857444	285.5	3	–	5 September 2018

Investigation type	Investigation ID	Approximate as-drilled Easting ** (MGA '94 Zone 56)	Approximate as-drilled Northing ** (MGA '94 Zone 56)	Approximate surface RL (mAHD)*	Final borehole depth (m bgl)	Final monitoring well depth (m bgl)	Date completed
Auger Hole	310-01-DH2516	324478	6899851	435.5	3	–	5 September 2018
Auger Hole	310-01-DH2517	325105	6904097	465.2	3	–	6 September 2018
Auger Hole	310-01-DH2518	325365	6904895	463.8	2	–	6 September 2018
Auger Hole	310-01-DH2519	325451	6905159	464.5	2.45	–	16 January 2019
Auger Hole	310-01-DH2520	326181	6907236	465.1	3.45	–	16 January 2019
Auger Hole	310-01-DH2521	326554	6908135	481.1	3	–	6 September 2018
Auger Hole	310-01-DH2523	327667	6910003	436	3.45	–	16 January 2019
Auger Hole	310-01-DH2524	339064	6919309	379.7	10	–	5 May 2018
Auger Hole	310-01-DH2525	339565	6920042	379.2	3	–	5 May 2018
Auger Hole	310-01-DH2526	339961	6920847	379.1	3	–	5 May 2018
Auger Hole	310-01-DH2527	340241	6921425	379.4	3	–	5 May 2018
Auger Hole	310-01-DH2528	341166	6922864	379.9	3	–	4 May 2018
Auger Hole	310-01-DH2529	352956	6931251	404	3	–	4 May 2018
Auger Hole	310-01-DH2533	363704	6933952	504.8	0.3	–	6 September 2018
Auger Hole	310-01-DH2536	368834	6936045	555.3	0.6	–	7 September 2018
Auger Hole	310-01-DH2541	374608	6941554	528.3	0.6	–	7 September 2018
Auger Hole	310-01-DH2542	376052	6942542	530.3	3.08	–	16 January 2018
Auger Hole	310-01-DH2543	376220	6942701	519.9	4.53	–	7 September 2018
Auger Hole	310-01-DH2702	257707	6832177	232.8	3	–	6 June 2018
Auger Hole	310-01-DH2703	262964	6832184	233.9	3	–	6 June 2018
Auger Hole	310-01-DH2704	270983	6834233	238.9	3	–	6 June 2018
Auger Hole	310-01-DH2705	275046	6835618	244	3	–	6 June 2018
Auger Hole	310-01-DH2706	279016	6836981	243.6	3	–	7 June 2018
Auger Hole	310-01-DH2707	287112	6839777	259.7	3	–	7 June 2018
DCP	310-01-DP2501	297542	6849191	283.7	0.3	–	29 July 2018
DCP	310-01-DP2502	298408	6850350	295.7	0.42	–	4 September 2018

Investigation type	Investigation ID	Approximate as-drilled Easting ** (MGA '94 Zone 56)	Approximate as-drilled Northing ** (MGA '94 Zone 56)	Approximate surface RL (mAHD)*	Final borehole depth (m bgl)	Final monitoring well depth (m bgl)	Date completed
DCP	310-01-DP2504	299786	6852135	276.8	1.17	–	29 July 2018
DCP	310-01-DP2505	304743	6854703	294.9	0.25	–	29 July 2018
DCP	310-01-DP2506	302661	6853433	273.3	1.5	–	29 July 2018
DCP	310-01-DP2508	305677	6855349	289.3	0.16	–	28 July 2018
DCP	310-01-DP2509	306111	6855709	294.6	1.1	–	28 July 2018
DCP	310-01-DP2510	306456	6856051	288.6	0.7	–	28 July 2018
DCP	310-01-DP2511	306823	6856379	280.5	1.3	–	28 July 2018
DCP	310-01-DP2514	308111	6857513	276.5	1	–	28 July 2018
DCP	310-01-DP2515	308462	6857630	276.8	0.6	–	28 July 2018
DCP	310-01-DP2516	309288	6857600	275.8	0.6	–	28 July 2018
DCP	310-01-DP2517	310525	6857440	294	1.2	–	28 July 2018
DCP	310-01-DP2518	312639	6858211	284.1	1.2	–	28 July 2018
DCP	310-01-DP2519	312973	6858474	284	1.2	–	27 July 2018
DCP	310-01-DP2520	313445	6858875	284.6	1.1	–	27 July 2018
DCP	310-01-DP2521	326554	6908135	481.1	3	–	27 July 2018
DCP	310-01-DP2526	318396	6862693	297.8	0.8	–	27 July 2018
DCP	310-01-DP2527	319311	6863575	313	0.09	–	27 July 2018
DCP	310-01-DP2533	319788	6879497	332.6	1.5	–	27 July 2018
DCP	310-01-DP2534	322184	6881830	324	0.5	–	27 July 2018
DCP	310-01-DP2535	322414	6882059	323.5	0.8	–	27 July 2018
DCP	310-01-DP2536	323194	6887836	336.8	3	–	27 July 2018
DCP	310-01-DP2537	325463	6905083	464.5	0.46	–	26 July 2018
DCP	310-01-DP2538	330278	6911813	406.2	0.4	–	25 July 2018
DCP	310-01-DP2540	338854	6919052	379.3	3	–	5 April 2018
DCP	310-01-DP2541	339364	6919714	379.8	3	–	5 April 2018
DCP	310-01-DP2542	339792	6920505	379.2	3	–	4 April 2018

Investigation type	Investigation ID	Approximate as-drilled Easting ** (MGA '94 Zone 56)	Approximate as-drilled Northing ** (MGA '94 Zone 56)	Approximate surface RL (mAHD)*	Final borehole depth (m bgl)	Final monitoring well depth (m bgl)	Date completed
DCP	310-01-DP2543	340102	6921165	379	3	–	4 April 2018
DCP	310-01-DP2544	340896	6922623	379.3	3	–	4 April 2018
DCP	310-01-DP2545	344278	6925537	381.5	3	–	4 April 2018
DCP	310-01-DP2546	344966	6926432	381.6	3	–	4 April 2018
DCP	310-01-DP2547	363454	6933755	499.6	0.54	–	24 July 2018
DCP	310-01-DP2548	364446	6934427	506.1	3	–	24 July 2018
DCP	310-01-DP2549	379075	6951031	441.6	1.62	–	25 July 2018
DCP	310-01-DP2550	378894	6951839	432.5	3	–	25 July 2018

Table notes:

* Surface RL from Data Elevation Model (DEM) derived from LiDAR data

** As-drilled coordinates recorded using hand-held GPS

APPENDIX G1

Geotechnical Reports—Investigation Results

Auger hole reports

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT



SYMBOLS

	FILL		CLAY (CL, CI or CH)
	GRAVEL (GW, GP, GM or GC)		ORGANIC SOILS (OL, OH or Pt)
	SAND (SW, SP, SM or SC)		COBBLES or BOULDERS
	SILT (ML or MH)		

Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay.

CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil and Rock is classified and described in Reports of Boreholes and Test Pits using the preferred method given in AS1726-2017. The material properties are assessed in the field by visual/tactile methods.

Particle Size			Plasticity Properties	
Soil Group	Sub Division	Particle Size		
BOULDERS		> 200 mm		
COBBLES		63 to 200 mm		
GRAVEL	Coarse	19 to 63 mm		
	Medium	6.7 to 19 mm		
	Fine	2.36 to 6.7 mm		
SAND	Coarse	0.6 to 2.36 mm		
	Medium	0.21 to 0.6 mm		
	Fine	0.075 to 0.21 mm		
SILT		0.002 to 0.075 mm		
CLAY		< 0.002 mm		

MOISTURE CONDITION

Symbol	Term	Description
D	Dry	Sands and gravels are free flowing. Clays and silts may be brittle or friable and powdery.
M	Moist	Soils are darker than in dry condition and may feel cool. Sands and gravels tend to cohere.
W	Wet	Soils exude free water. Sand and gravels tend to cohere.

Moisture condition for fine grained soils is described relative to the plastic limit or liquid limit as specified in AS1726-2017.

CONSISTENCY AND DENSITY

Fine Grained Soils			Coarse Grained Soils			
Symbol	Term	Undrained Shear Strength	Symbol	Term	Density Index (%)	SPN "N" *
VS	Very Soft	0 to 12 kPa	VL	Very Loose	Less than 15	0 to 4
S	Soft	12 to 25 kPa	L	Loose	15 to 35	4 to 10
F	Firm	25 to 50 kPa	MD	Medium Dense	35 to 65	10 to 30
St	Stiff	50 to 100 kPa	D	Dense	65 to 85	30 to 50
VSt	Very Stiff	100 to 200 kPa	VD	Very Dense	Above 85	Above 50
H	Hard	Above 200 kPa				
Fr	Friable	-				

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.

* SPT correlations are not stated in AS1726-2017, and may be subject to corrections for overburden pressure and equipment type.

CEMENTATION

Weakly Cemented	The soil may be easily disaggregated by hand in air or water.
Moderately Cemented	Effort is required to disaggregate the soil by hand in air or water.

DRILLING/EXCAVATION METHOD

ADH	Hollow auger drilling	EX	Excavator	PQ3	Diamond core - 83 mm
ADT	Auger drilling with tc-bit	HA	Hand auger	PT	Push tube sampling
ADV	Auger drilling with v-bit	HAND	Excavated by hand methods	RAB	Rotary air blast
AIRCORE	Aircore	HMLC	Diamond core - 63 mm	RC	Reverse circulation
AT	Air track	HQ3	Diamond core - 61 mm	RT	Rock roller
BH	Backhoe bucket	JET	Jetting	SONIC	Sonic drilling
CT	Cable tool rig	MZ	Mazier tube sampling	SPT	Standard penetration testing
DTC	Diatube coring	NDD	Non-destructive digging	U	Undisturbed tube sampling
EE	Existing excavation	NMLC	Diamond core - 52 mm	WB	Washbore drilling
EPT	Extruded push tube	NQ3	Diamond core - 45 mm		

PENETRATION/EXCAVATION RESISTANCE

L	Low resistance. Rapid penetration possible with little effort from the equipment used.
M	Medium resistance. Excavation/possible at an acceptable rate with moderate effort from the equipment used.
H	High resistance to penetration/excavation. Further penetration is possible at a slow rate and requires significant effort from the equipment.
R	Refusal or Practical Refusal. No further progress possible without the risk of damage or unacceptable wear to the digging implement or machine.

These assessments are subjective and are dependent on many factors including the equipment power, weight, condition of excavation or drilling tools, and the experience of the operator.

WATER

	Water level at date shown		Partial water loss
	Water inflow		Complete water loss
GROUNDWATER NOT OBSERVED	The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.		
GROUNDWATER NOT ENCOUNTERED	The borehole/test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/test pit been left open for a longer period.		

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following 150mm seating
30/80 mm	Where practical refusal occurs, the blows and penetration for that interval are reported
RW	Penetration occurred under the rod weight only
HW	Penetration occurred under the hammer and rod weight only
HB	Hammer double bouncing on anvil
DS	Disturbed sample
BDS	Bulk disturbed sample
G	Gas Sample
W	Water Sample
FP	Field permeability test over section noted
FV	Field vane shear test expressed as uncorrected shear strength (sv = peak value, sr = residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket penetrometer test expressed as instrument reading in kPa
U63	Thin walled tube sample - number indicates nominal sample diameter in millimetres
WPT	Water pressure test
DCP	Dynamic cone penetration test
CPT	Cone penetration test
CPTu	Cone penetration test with pore pressure (u) measurement

RANKING OF VISUALLY OBSERVABLE CONTAMINATION AND ODOUR (for specific soil contamination assessment projects)

R = 0	No visible evidence of contamination	R = A	No non-natural odours identified
R = 1	Slight evidence of visible contamination	R = B	Slight non-natural odours identified
R = 2	Visible contamination	R = C	Moderate non-natural odours identified
R = 3	Significant visible contamination	R = D	Strong non-natural odours identified

ROCK CORE RECOVERY

TCR = Total Core Recovery (%)	RQD = Rock Quality Designation (%)	SCR = Solid Core Recovery (%)	F = Fracture Frequency
$= \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$	$= \frac{\sum \text{Axial lengths of core} > 100 \text{ mm}}{\text{Length of core run}} \times 100$	$= \frac{\sum \text{Length of cylindrical core recovered}}{\text{Length of core run}} \times 100$	$= \frac{\text{No. of defects}}{\text{Length of zone (m)}}$



GOLDER

REPORT OF BOREHOLE: 310-01-DH2446

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 381650 m E 6955541 m N MGA94 56
SURFACE RL: 455.7 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 2.70 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 7/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M	GROUNDWATER NOT ENCOUNTERED	0.0	455.74	BDS 0.20-0.60 m			CI	TOPSOIL: Sandy CLAY medium plasticity, dark brown, fine to coarse grained sand, trace rootlets Sandy SILT low liquid limit, brown, fine to coarse grained sand		H		TOPSOIL
			ML	ALLUVIUM / COLLUVIUM									
			0.5		DS 0.50-0.80 m SPT 0.50-0.76 m 26, 30/105mm								
			1.0	1.00						CI	CLAY (EXTREMELY WEATHERED basalt) medium plasticity, dark brown, interlayered with weakly cemented/fused or hard clay bound sand and gravel of very low strength basalt	W (< PL)	
				454.74	DS 1.40-1.60 m SPT 1.50-1.53 m 21/30mm						H - Fb		
			1.5										
			2.0										
			2.5										
			3.0	453.04					END OF BOREHOLE @ 2.70 m REFUSAL GROUNDWATER NOT ENCOUNTERED BACKFILLED				
			3.5										
			4.0										
			4.5										
			5.0										

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2508

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 297090 m E 6846213 m N MGA94 56
 SURFACE RL: 265.0 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
 DRILL RIG: Edson CP1
 CONTRACTOR: Contract Drilling
 LOGGED: RWA DATE: 5/9/18
 CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M	GROUNDWATER NOT ENCOUNTERED	0.0	264.98				CL-CI	Sandy CLAY low to medium plasticity, pale brown, fine to medium grained sand, trace rootlets to 0.5 m depth			ALLUVIUM
			0.5		DS 0.50-0.90 m SPT 0.50-0.95 m 16, 16, 16 N=32							
			1.0		DS 1.00-1.40 m SPT 1.00-1.45 m 13, 14, 23 N=37					D		
			1.5							W (< PL)		
			2.0									
			2.20	262.78				CL-CI	Sandy CLAY low to medium plasticity, pale grey/pale yellow, medium grained sand			WALLOON COAL MEASURES (Lateritised)
	H		2.5		SPT 2.50-2.65 m 30/145mm					VD		
			3.0	261.98					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01a
 RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2509

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 297383 m E 6848324 m N MGA94 56
SURFACE RL: 293.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 8.10 m

SHEET: 1 OF 2
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 4/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling			Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0.0	293.26	BDS 0.10-0.50 m			SP	TOPSOIL: SAND fine to medium grained, pale brown		D		TOPSOIL / ALLUVIUM (Sheet wash)
			0.20	293.06				clay bound (hard) below 0.2 m					
			0.50	292.76	DS 0.50-0.95 m SPT 0.50-0.95 m 8, 9, 9		SC	Clayey SAND fine to medium grained, orange brown, low plasticity clay	VSI			ALLUVIUM	
			1.0	292.16	SAND (EXTREMELY WEATHERED sandstone) fine with coarse grained, pale red brown to red brown, trace clay								
			1.10										
			2.0										
			2.25	291.01			SAND (EXTREMELY WEATHERED sandstone) fine with coarse grained, dark red brown to orange brown, grading to highly weathered, very low strength						
			2.5										
			3.0										
			3.5										
4.0		SPT 3.50-3.59 m 30/85mm				D	VD						
4.5													
4.90	288.36							becoming pale orange and grey					

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2509

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 297383 m E 6848324 m N MGA94 56
 SURFACE RL: 293.3 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 8.10 m

SHEET: 2 OF 2
 DRILL RIG: Edson CP1
 CONTRACTOR: Contract Drilling
 LOGGED: RWA DATE: 4/9/18
 CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	H	GROUNDWATER NOT ENCOUNTERED	5.0		SPT 5.00-5.08 m 30/80mm			SP	SAND (EXTREMELY WEATHERED sandstone) fine with coarse grained, dark red brown to orange brown, grading to highly weathered, very low strength			WALLOON COAL MEASURES (Lateritised)
			5.5									
			6.0									
			6.5	6.60 286.66 6.75 286.51	SPT 6.50-6.70 m 30, 30/50mm		SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine with coarse grained, pale grey and red brown, low plasticity clay, partly ferruginous	D	VD		
			7.0			SP	SAND (EXTREMELY WEATHERED sandstone) fine with coarse grained, pale grey and red brown, partly weakly cemented (ferruginous)					
			7.5									
			8.0	285.16	SPT 8.00-8.10 m 30/95mm							
			8.5				END OF BOREHOLE @ 8.10 m REFUSAL GROUNDWATER NOT ENCOUNTERED BACKFILLED					
			9.0									
			9.5									

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GAP gINT FN. F01a
 RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2510

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 311208 m E 6857444 m N MGA94 56
SURFACE RL: 285.5 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 5/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	285.54	BDS 0.20-0.60 m			SP	TOPSOIL: SAND fine to medium grained, pale yellow, with rootlets	D			TOPSOIL	
			0.10	285.44				CL-CI	Sandy CLAY low to medium plasticity, pale grey, fine to medium grained sand, with intense orange staining	W (< PL)		ALLUVIUM		
	0.5		0.50	DS 0.50-0.90 m SPT 0.50-0.95 m 5, 11, 22 N=33			SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale orange, grey and red brown, low to medium plasticity clay, apparent irregular bedding (to 100 mm)		D		WALLOON COAL MEASURES (Lateritised)		
	285.04													
	1.0		SPT 1.00-1.45 m 16, 19, 17 N=36											
	1.5										M			
	2.0													
	2.5		2.60	DS 2.50-2.90 m SPT 2.50-2.95 m 16, 13, 12 N=25			SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale grey, low to medium plasticity clay, with orange staining, grading to sandy clay		MD				
	282.94													
	3.0		282.54							END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				
			3.5											
			4.0											
			4.5											
			5.0											

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2516

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324478 m E 6899851 m N MGA94 56
SURFACE RL: 435.5 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 5/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	435.49				CH	TOPSOIL: CLAY high plasticity, dark brown	W (< PL)		TOPSOIL	
			0.30		BDS 0.20-0.60 m			CH	CLAY high plasticity, dark grey, with fine to medium grained sand			ALLUVIUM	
			0.50					CH	CLAY high plasticity, dark brown and grey, with fine to medium grained sand, with black and brown staining		St		
			0.5	434.99	DS 0.50-0.95 m U50 0.50-0.65 m								
			1.0		SPT 1.00-1.45 m 7, 8, 13 N=21								
			1.5								W (~ PL)	VSt	
			2.0										
			2.5										
			2.60		DS 2.50-2.95 m SPT 2.50-2.95 m 10, 13, 17 N=30			CL-CH	CLAY medium to high plasticity, brown and grey, trace sand, partly cemented (ferruginous)				
			432.89										
3.0	432.49							END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED					
3.5													
4.0													
4.5													
5.0													

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2517

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 325105 m E 6904097 m N MGA94 56
 SURFACE RL: 465.2 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
 DRILL RIG: Edson CP1
 CONTRACTOR: Contract Drilling
 LOGGED: RWA DATE: 6/9/18
 CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	465.18	BDS 0.20-0.60 m			CH	TOPSOIL: CLAY dark brown, with rootlets	W (< PL)	H	TOPSOIL
			0.20	464.98		CH	CLAY high plasticity, dark brown, trace fine grained sand	ALLUVIUM				
			0.5			DS 0.50-0.90 m U50 0.50-0.65 m						
			0.90	464.28	DS 1.00-1.40 m SPT 1.00-1.45 m 10, 12, 16 N=28	CH	CLAY high plasticity, pale brown, with silt					
			1.0									
			2.5		SPT 2.50-2.95 m 14, 16, 22 N=38							
			3.0	462.18				END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01a
 RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2518

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 325365 m E 6904895 m N MGA94 56
SURFACE RL: 463.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 2.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 6/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	463.78	BDS 0.20-0.60 m			CH	CLAY high plasticity, dark grey, with fine to medium grained sand, trace sand	W (< PL)	Vst	ALLUVIUM
			0.5	DS 0.50-0.90 m U50 0.50-0.79 m								
			1.0		DS 1.00-1.40 m SPT 1.00-1.45 m 0, 8, 15 N=23							
			1.5		SPT 1.50-1.95 m 9, 12, 15 N=27							
			2.0	461.78					END OF BOREHOLE @ 2.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2519

SHEET: 1 OF 1

DRILL RIG: Edson CP1

CONTRACTOR: Contract Drilling

LOGGED: RC DATE: 16/1/18

CHECKED: AL DATE: 17/1/18

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 325451 m E 6905159 m N MGA94 56

SURFACE RL: 464.5 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 2.45 m

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	464.54	BDS 0.10-0.60 m			CH	TOPSOIL: CLAY medium to high plasticity, brown, with silt, trace fine grained sand, trace rootlets	VSt	H	TOPSOIL	
			CI-CH	Sandy CLAY medium to high plasticity, brown, fine grained sand, with silt, trace calcium carbonate nodules				ALLUVIUM					
			0.5	464.04	SPT 0.50-0.95 m 8, 10, 10 N=20			CL-CI	Sandy CLAY low to medium plasticity, brown mottled dark grey, fine to medium grained sand, trace calcium carbonate nodules				
			1.0	463.54					becoming pale brown mottled orange brown				EXTREMELY WEATHERED Sandstone (WALLOON COAL MEASURES)
			1.2	463.34					increasing sand content			W (< PL)	
			1.5										
			2.0		SPT 2.00-2.45 m 16, 20, 30 N=50								
			2.5	462.09					END OF BOREHOLE @ 2.45 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED				
			3.0										
			3.5										
4.0													
4.5													
5.0													

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2520

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 326181 m E 6907236 m N MGA94 56
SURFACE RL: 465.1 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.45 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RC DATE: 16/1/18
CHECKED: AL DATE: 17/1/18

Drilling				Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	465.12	BDS 0.10-0.60 m				CLAY high plasticity, dark brown, with silt, trace fine to medium grained sand, trace rootlets, trace calcium carbonate nodules			TOPSOIL		
			0.20	464.92					CH			Sandy CLAY high plasticity, dark brown, fine to medium grained sand, with silt, trace calcium carbonate nodules	ALLUVIUM	
			0.5		U50 0.50-0.70 m PP >600 kPa				increasing sand content	W (< PL)	H			
			0.80	464.32										
			1.25	463.87										
			1.50	463.62			CI-CH	Sandy CLAY medium to high plasticity, brown, fine grained sand, trace silt, trace calcium carbonate nodules						
			2.0		SPT 2.00-2.45 m 8, 11, 9 N=20					M	MD			
			2.70	462.42									SC	Clayey SAND fine to medium grained, brown, low to medium plasticity clay
			3.0	462.02										
						3.5	461.67				END OF BOREHOLE @ 3.45 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED			
						4.0								
						4.5								
			5.0											

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2521

SHEET: 1 OF 1

DRILL RIG: Edson CP1

CONTRACTOR: Contract Drilling

LOGGED: RWA DATE: 6/9/18

CHECKED: IT DATE: 14/9/18

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 326554 m E 6908135 m N MGA94 56

SURFACE RL: 481.1 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 3.00 m

Drilling					Sampling	Field Material Description										
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	481.06	BDS 0.20-0.60 m			CH	TOPSOIL: CLAY	W (< PL)	St		TOPSOIL			
			0.10	CH				high plasticity, dark brown	ALLUVIUM							
			0.5	DS 0.50-0.90 m				Sandy CLAY								
			0.50-0.75 m	high plasticity, dark brown, fine to course grained sand, trace angular medium to coarse grained sand, trace fine grained gravel												
			1.0	DS 1.00-1.40 m				grading to gravelly clay, fine grained, angular to sub-angular, pale grey and yellow								
			1.00	SPT 1.00-1.45 m												
			480.06	5, 8, 10												
			N=18													
			1.5													
			2.0													
2.5		SPT 2.50-2.95 m														
5, 7, 12																
N=19																
3.0	478.06							END OF BOREHOLE @ 3.00 m								
								TARGET DEPTH								
								GROUNDWATER NOT ENCOUNTERED								
								BACKFILLED								
													</			

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2523

SHEET: 1 OF 1

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 327667 m E 6910003 m N MGA94 56
SURFACE RL: 436.0 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.45 m

DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RC DATE: 16/1/19
CHECKED: AL DATE: 17/1/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	435.96	BDS 0.10-0.60 m		CI	TOPSOIL: CLAY medium plasticity, dark brown, with fine to medium grained sand, with silt, trace rootlets to 0.25 m	W (< PL) H	TOPSOIL
			0.25	435.71			CI	CLAY medium plasticity, dark brown, with fine to medium grained sand, with silt		ALLUVIUM
			0.5		U 0.50-0.70 m 0.50 m PP >600 kPa			trace calcium carbonate nodules		
			0.80	435.16						
			1.00	434.96			CI	Sandy CLAY medium plasticity, brown, fine to coarse grained sand, with silt, trace fine grained subrounded to subangular gravel, trace calcium carbonate nodules		
			1.50	434.46			CH	CLAY high plasticity, brown, with silt, trace fine to coarse grained sand, trace fine grained subrounded to subangular gravel		
			2.0		SPT 2.00-2.45 m 9, 12, 15 N=27					
			2.50	433.46			CI-CH	Sandy CLAY medium to high plasticity, brown, fine to coarse grained sand, with silt, trace subangular fine grained gravel gravel		RESIDUAL SOIL (WALLOON COAL MEASURES)
			3.0		SPT 3.00-3.45 m 11, 16, 17 N=33					
			3.5	432.51				END OF BOREHOLE @ 3.45 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED		
			4.0							
			4.5							
			5.0							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2533

SHEET: 1 OF 1

DRILL RIG: Edson CP1

CONTRACTOR: Contract Drilling

LOGGED: RWA DATE: 6/9/18

CHECKED: IT DATE: 14/9/18

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 363704 m E 6933952 m N MGA94 56

SURFACE RL: 504.8 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 84 mm HOLE DEPTH: 0.30 m

Drilling				Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	H	GNE	0.0	504.79	DS 0.01-0.30 m				BASALT grey and brown, fine grained, low to medium strength, moderately weathered	D	MAIN RANGE VOLCANICS
			504.49						END OF BOREHOLE @ 0.30 m REFUSAL GROUNDWATER NOT ENCOUNTERED BACKFILLED		
			0.5								
			1.0								
			1.5								
			2.0								
			2.5								
			3.0								
			3.5								
			4.0								
			4.5								
			5.0								

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2536

SHEET: 1 OF 1

DRILL RIG: Edson CP1

CONTRACTOR: Contract Drilling

LOGGED: RWA DATE: 7/9/18

CHECKED: IT DATE: 14/9/18

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 368834 m E 6936045 m N MGA94 56

SURFACE RL: 555.3 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 0.60 m

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
L	GNE		0.0	555.28	DS 0.00-0.20 m				TOPSOIL: CLAY high plasticity, dark brown, trace sand, trace rootlets	W (< PL)	H		TOPSOIL
			0.20	555.08									
H			0.5		SPT 0.50-0.58 m 15/80mm				BASALT fine grained, pale grey, crystalline, vesicular, low strength, highly weathered, friable	D	VD		MAIN RANGE VOLCANICS
			554.68						END OF BOREHOLE @ 0.60 m REFUSAL GROUNDWATER NOT ENCOUNTERED BACKFILLED				
			1.0										
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										
			4.0										
			4.5										
			5.0										

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2541

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 374608 m E 6941554 m N MGA94 56
 SURFACE RL: 528.3 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 0.60 m

SHEET: 1 OF 1
 DRILL RIG: Edson CP1
 CONTRACTOR: Contract Drilling
 LOGGED: RWA DATE: 7/9/18
 CHECKED: IT DATE: 14/9/18

Drilling				Sampling			Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M	GNE	0.0	528.30	BDS 0.10-0.35 m DS 0.10-0.30 m			GW	FILL: Sandy GRAVEL fine to medium grained, to 16 mm, sub-rounded to sub-angular, grey brown, fine to coarse grained sand, with silt	D			FILL
			0.33										
	H		0.5	527.95	SPT 0.50-0.58 m 30/80mm			CH	CLAY high plasticity, dark brown, trace sand, trace rootlets BASALT dark grey/black, fine grained, crystalline, low strength, highly weathered, friable, with high plasticity orange and brown clay, recovered as gravel, fine to coarse grained	W (s) PL D		TOPSOIL (Remanent) MAIN RANGE VOLCANICS	
			527.70						END OF BOREHOLE @ 0.60 m REFUSAL GROUNDWATER NOT ENCOUNTERED BACKFILLED				
			1.0										
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										
			4.0										
			4.5										
			5.0										

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GAP gINT FN. F01a
 RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2542

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 376052 m E 6942542 m N MGA94 56
SURFACE RL: 530.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.08 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RC DATE: 16/1/19
CHECKED: AL DATE: 17/1/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	530.30	SPT 0.50-0.95 m 6, 7, 12 N=19							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2543

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 376220 m E 6942701 m N MGA94 56
SURFACE RL: 519.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 4.53 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 7/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	519.91	DS 0.50-0.80 m SPT 0.50-0.95 m 5, 5, 7 N=12			CH	TOPSOIL: CLAY high plasticity, dark brown, trace fine grained sand				TOPSOIL (Deep cracking clay)
			0.25	519.63				CH	CLAY high plasticity, dark brown, trace rootlets				MAIN RANGE VOLCANICS
			0.5	518.91				CH	CLAY high plasticity, dark brown, trace medium grained sand				St
			1.0	518.91					grading to gravelly, fine to medium grained, angular gravel of grey, low strength crystalline rock), trace fine to coarse grained sand, stained red				
			1.42	518.49				CI	CLAY (EXTREMELY WEATHERED basalt) medium plasticity, dark grey, with brown staining				
			2.0	517.81					remnant fine and medium crystalline structure, speckled grey and red brown				W (< PL)
			2.5										
			3.0	516.91				CI	CLAY (EXTREMELY WEATHERED basalt) medium plasticity, dark grey, with fine to medium grained sand, with orange staining				H - Fb
			3.5										
			4.0										
			4.5	515.38	SPT 4.50-4.53 m 10/25mm				END OF BOREHOLE @ 4.53 m REFUSAL GROUNDWATER NOT ENCOUNTERED BACKFILLED				

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2702

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 257707 m E 6832177 m N MGA94 56
SURFACE RL: 232.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 6/6/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	H	GROUNDWATER NOT ENCOUNTERED	0.0	232.78				CH	TOPSOIL: CLAY high plasticity, dark grey, with silt, trace fine grained, sub-rounded gravel, trace woody organics	W (< PL)	St	H	TOPSOIL
			0.20	232.58	BDS 0.10-0.50 m		CH	CLAY high plasticity, grey, with silt, trace fine to medium grained sand	ALLUVIUM				
			0.5		DS 0.50-0.90 m SPT 0.50-0.95 m 9, 13, 20 N=33								
			1.0	231.76	U50 1.00-1.45 m PP>400kPa		CH	CLAY high plasticity, brown, with fine to medium grained sand					
			1.5										
			2.0		DS 2.00-2.40 m SPT 2.00-2.42 m 10, 19, 30/120mm								
			2.5										
			3.0	229.76				END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED					
			3.5										
			4.0										
4.5													
5.0													

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2703

SHEET: 1 OF 1

DRILL RIG: Edson CP1

CONTRACTOR: Contract Drilling

LOGGED: RWA DATE: 6/6/18

CHECKED: IT DATE: 13/9/18

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 262964 m E 6832184 m N MGA94 56

SURFACE RL: 233.9 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 3.00 m

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M	GROUNDWATER NOT ENCOUNTERED	0.0	233.91				CH	TOPSOIL: CLAY		St		TOPSOIL
				0.10				CH	high plasticity, dark grey, with silt, trace fine to medium grained sand, trace woody organics				ALLUVIUM
				233.81	BDS 0.10-0.50 m BDS 0.10 m				CLAY				
									CLAY				
			0.5		DS 0.50-0.90 m BDS 0.50 m SPT 0.50-0.95 m 8, 16, 28 N=44								
			1.0		U50 1.00-1.45 m PP>400kPa					H			
			1.5							W (< PL)			
			2.0	2.00	DS 2.00-2.40 m SPT 2.00-2.45 m 9, 17, 18 N=35			CL	Sandy CLAY low plasticity, orange brown, fine to medium grained sand			Potentially grading to Kumbarilla Beds	
				231.91									
			2.5							VSt			
			3.0	230.91					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				
			3.5										
			4.0										
			4.5										
			5.0										

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2704

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 270983 m E 6834233 m N MGA94 56
SURFACE RL: 238.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 6/6/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
ADT	L-M	GROUNDWATER NOT ENCOUNTERED	0.0	238.91				CH	TOPSOIL: CLAY high plasticity, dark grey, trace fine to medium grained sand, trace, trace woody organics Sandy CLAY medium plasticity, brown, fine grained sand, with silt, trace fine grained, sub-rounded gravel		VSt		TOPSOIL	
			0.10											
			238.81	BDS 0.10-0.50 m BDS 0.10 m		CI							ALLUVIUM	
			0.5		DS 0.50-0.90 m SPT 0.50-0.95 m 6, 10, 12 N=22									
			1.0											
			1.5											
			1.70											
			237.21			CL-CI	CLAY low to medium plasticity, pale orange brown, with fine to medium grained sand							
			2.0		DS 2.00-2.40 m SPT 2.00-2.45 m 7, 14, 16 N=30								MD-D	
2.5														
3.0	235.91						END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED							
		</												

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2705

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 275046 m E 6835618 m N MGA94 56
SURFACE RL: 244.0 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 6/6/18
CHECKED: IT DATE: 25/7/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M	GROUNDWATER NOT ENCOUNTERED	0.0	243.99				CI-CH	TOPSOIL: CLAY medium to high plasticity, dark grey, with silt, trace fine to medium grained sand, trace woody organics CLAY medium to high plasticity, grey, brown, trace fine to medium grained sand, with silt				TOPSOIL
				243.89	BDS 0.10-0.50 m		CI-CH					ALLUVIUM	
			0.5		DS 0.50-0.90 m 0.50 m SPT 0.50-0.95 m 9, 11, 12 N=23					VSt			
			1.0		U50 1.00-1.45 m PP=600+			W (< PL)					
			1.5					H					
			2.0	2.00	DS 2.00-2.40 m SPT 2.00-2.45 m 13, 14, 16 N=30		CH	Sandy CLAY low to medium plasticity, pale brown, fine to medium grained sand					
			2.5	2.50				becoming pale yellow brown		D	MD-D		
			3.0	240.99				END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED					
			3.5										
			4.0										
			4.5										
			5.0										

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2706

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 279016 m E 6836981 m N MGA94 56
SURFACE RL: 243.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 7/6/18
CHECKED: IT DATE: 25/7/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M	GROUNDWATER NOT ENCOUNTERED	0.0	243.64	BDS 0.10-0.50 m			CH	CLAY medium to high plasticity, dark grey, with silt, trace fine to medium grained sand, trace woody organics			TOPSOIL
			0.10	243.54				CL				CLAY low plasticity, white and pale brown, with silt
			0.5		DS 0.50-0.90 m SPT 0.50-0.95 m 7, 8, 8 N=16				St			
			1.0		U50 1.00-1.45 m PP>500kPa 1.00 m				W (< PL)		H	
			1.5									
			2.0	2.00								
	L		2.0	241.64	DS 2.00-2.40 m SPT 2.00-2.45 m 2, 2, 20 N=22		CH	Sandy CLAY high plasticity, grey, fine to coarse grained sand, with fine to medium grained, sub-angular to sub-rounded gravel of sandstone (clasts) and quartz gravel			VSt	
			2.30	241.34			SW				SAND fine to coarse grained, pale grey, with fine to medium grained, sub-rounded gravel (clasts)	D
	M-H		2.40	241.24			CL-CI	Sandy CLAY low to medium plasticity, grey, fine to coarse grained sand	W (< PL)	H		
			2.70	240.94	DS 2.70-2.70 m		becoming yellow brown, interbedded/laminated layers of sand and clayey sand from 2.7 m					
			3.0	240.64				END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				
			3.5									
			4.0									
			4.5									
			5.0									

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2707

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 287112 m E 6839777 m N MGA94 56
SURFACE RL: 259.7 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 7/6/18
CHECKED: IT DATE: 25/7/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M-H	GROUNDWATER NOT ENCOUNTERED	0.0	259.67				CI	TOPSOIL: Sandy CLAY medium plasticity, brown, fine to coarse grained sand, trace fine grained, sub-rounded gravel, trace woody organics	W (< PL)			TOPSOIL
			0.20		BDS 0.10-0.50 m BDS 0.10 m								
			259.47				SW	SAND fine to coarse grained, pale yellow brown, with fine to medium grained, sub-angular, orange brown gravel, with clay				QUATERNARY ALLUVIUM (Sand Plain)	
			0.5		DS 0.50-0.90 m SPT 0.50-0.95 m 10, 13, 15 N=28								
			1.0										
			1.10										
			258.57						becoming thinly interbedded with clay				
			1.5								D	MD	
			2.0		DS 2.00-2.40 m SPT 2.00-2.45 m 9, 11, 13 N=24								
			2.5										
	M												
	M-H												
			3.0	256.67					END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				
			3.5										
			4.0										
			4.5										
			5.0										

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2524

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 339064 m E 6919309 m N MGA94 56
SURFACE RL: 379.7 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 10.00 m

SHEET: 1 OF 2
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 5/6/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0	379.74	BDS 0.10-0.50 m		GC	FILL: Clayey GRAVEL fine to coarse grained, sub-angular, grey brown, high plasticity clay, with fine to coarse grained sand, with silt		FILL
			0.5	0.65 379.09	DS 0.50-0.90 m SPT 0.50-0.95 m 4, 3, 3 N=6		CH	CLAY high plasticity, dark grey, trace silt, trace fine grained sand	D w < PL	
			1.0		U50 1.00-1.45 m PP = 280 kPa				VSt	ALLUVIUM
			1.5							
			1.75 377.99					becoming dark brown		
			2.0		DS 2.00-2.40 m SPT 2.00-2.45 m 4, 7, 9 N=16					
			2.5							
			3.0						w ~ PL	
			3.5		U50 3.50-3.95 m PP >400 kPa				VSt - H	
			4.0							
			4.5							
			5.0							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2524

SHEET: 2 OF 2

DRILL RIG: Edson CP1

CONTRACTOR: Contract Drilling

LOGGED: RWA DATE: 5/6/18

CHECKED: IT DATE: 13/9/18

CLIENT: Future Freight JV

COORDS: 339064 m E 6919309 m N MGA94 56

PROJECT: Inland Rail, B2G Project, Phase 2

SURFACE RL: 379.7 m DATUM: AHD

LOCATION: Condamine Valley (Section 310)

INCLINATION: -90°

JOB NO: 1897791

HOLE DEPTH: 10.00 m

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
			5.0		SPT 5.00-5.45 m 5, 7, 10 N=17		CH	CLAY high plasticity, dark grey, trace silt, trace fine grained sand		ALLUVIUM
			5.5							
			6.0	6.00 373.74			CI-CH	CLAY medium to high plasticity, grey mottled brown, trace fine grained, rounded gravel		
			6.5		U50 6.50-6.95 m PP >400 kPa					
			7.0							
			7.5	7.50 372.24	DS 7.50-7.80 m		CI	Sandy CLAY medium plasticity, grey, fine to medium grained sand		
			8.0		SPT 8.00-8.45 m 6, 10, 13 N=23					
			8.5							
			9.0		DS 9.00-9.40 m					
			9.5	9.50 370.24	SPT 9.50-9.95 m 9, 17, 18 N=35		SC	Clayey SAND fine to coarse grained, pale yellow brown, medium plasticity clay, trace fine to medium grained, rounded gravel		
			10.0		END OF BOREHOLE @ 10.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED				M D	

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2525

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 339565 m E 6920042 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 5/6/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M	GROUNDWATER NOT ENCOUNTERED	0.0	379.17			CH	TOPSOIL: CLAY		TOPSOIL
				0.10				high plasticity, dark grey, trace fine to medium grained, sub-rounded gravel, trace of woody organics	D	ALLUVIUM
				379.07	BDS 0.10-0.50 m		CH	CLAY		
								high plasticity, dark grey, with silt		
			0.5		DS 0.50-0.90 m					
					SPT 0.50-0.95 m					
					2, 3, 4					
					N=7					
			1.0		U50 1.00-1.45 m					
					PP = 370 kPa					
			2.0	2.00						
				377.17	DS 2.00-2.40 m		CI	Gravelly CLAY		
				2.15	SPT 2.00-2.45 m			medium plasticity, dark grey, fine to medium grained, rounded gravel		
				377.02	4, 5, 7		CH	CLAY		
				2.25	N=12			high plasticity, dark brown becoming brown		
				376.92						
			2.5							
					DS 2.70-3.00 m					
			3.0	376.17				END OF BOREHOLE @ 3.00 m		
								TARGET DEPTH		
			3.5					GROUNDWATER NOT ENCOUNTERED		
								BACKFILLED		
			4.0							
			4.5							
			5.0							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2526

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 339961 m E 6920847 m N MGA94 56
SURFACE RL: 379.1 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 5/6/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M	GROUNDWATER NOT ENCOUNTERED	0.0	379.13 0.10			CH	TOPSOIL: CLAY high plasticity, dark grey, trace fine grained, sub-rounded gravel, trace woody organics	D	TOPSOIL
			0.1	379.03	BDS 0.10-0.50 m		CH	CLAY high plasticity, dark grey, trace fine to coarse grained sand		ALLUVIUM
M			0.5		DS 0.50-0.90 m SPT 0.50-0.95 m 3, 4, 4 N=8					
			1.0		U 1.00-1.45 m PP >400 kPa					
			2.0	2.00 377.13	DS 2.00-2.40 m SPT 2.00-2.45 m 5, 10, 17 N=27			becoming dark brown		
			2.5	2.50 376.63	DS 2.70-3.00 m		CH	CLAY high plasticity, dark brown, with trace fine to medium grained sand, trace fine grained, rounded gravel		
			3.0	376.13				END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED		
			3.5							
			4.0							
			4.5							
			5.0							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2527

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340241 m E 6921425 m N MGA94 56
SURFACE RL: 379.4 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 5/6/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M	GROUNDWATER NOT ENCOUNTERED	0.0	379.36			CH	TOPSOIL: CLAY		TOPSOIL
			0.10	379.26	BDS 0.10-0.40 m		CH	high plasticity, dark grey, with trace fine grained, sub-rounded gravel, with silt, trace woody organics	D	ALLUVIUM
			0.5		DS 0.50-0.90 m SPT 0.50-0.95 m 2, 2, 3 N=5			CLAY high plasticity, dark grey, with trace silt		
			1.0		U50 1.00-1.45 m PP = 350 kPa					
			1.5							
			2.0		DS 2.00-2.40 m SPT 2.00-2.45 m 3, 6, 7 N=13					
			2.40	376.96				trace fine grained, sub-angular to sub-rounded gravel	St - VST	
			2.5							
			3.0	376.36				END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED		
			3.5							
			4.0							
			4.5							
			5.0							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-DH2528

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 341166 m E 6922864 m N MGA94 56
SURFACE RL: 379.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 4/6/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L	GROUNDWATER NOT ENCOUNTERED	0.0	379.87 0.10			CH	TOPSOIL: CLAY high plasticity, dark grey, with, trace fine grained, sub-rounded gravel, trace woody organics	D	TOPSOIL
			0.1	379.77	BDS 0.10-0.40 m		CH	CLAY high plasticity, dark grey, with, trace fine grained sand		ALLUVIUM
			0.5		DS 0.50-0.90 m SPT 0.50-0.95 m 2, 2, 3 N=5					
			1.0		U 1.00-1.34 m				w < PL	
			1.5		1.34 m PP >200-<250 kPa					
			2.0		DS 2.00-2.40 m SPT 2.00-2.45 m 2, 4, 6 N=10				St - VST	
			2.5						w ~ PL	
			3.0	376.87				END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED		
			3.5							
			4.0							
			4.5							
			5.0							

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GAP gINT FN. F01a
RL3



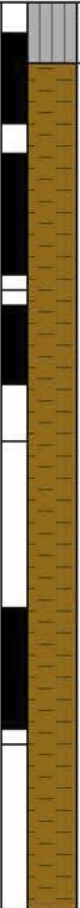
GOLDER

REPORT OF BOREHOLE: 310-01-DH2529

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 352956 m E 6931251 m N MGA94 56
SURFACE RL: 404.0 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 3.00 m

SHEET: 1 OF 1
DRILL RIG: Edson CP1
CONTRACTOR: Contract Drilling
LOGGED: RWA DATE: 4/6/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	H	GROUNDWATER NOT ENCOUNTERED	0.0	403.99	BDS 0.10-0.40 m		CH	TOPSOIL: CLAY high plasticity, dark grey, with trace fine to medium grained sand, trace woody organics	D	F	TOPSOIL
			0.20	403.79			CH	CLAY high plasticity, dark grey, trace fine to medium grained sand, with fine grained, sub-rounded gravel			ALLUVIUM
			0.5		DS 0.50-0.90 m SPT 0.50-0.95 m 8, 14, 21 N=35						
			1.0		U50 1.00-1.45 m						
			1.5		PP = 250-300 kPa						
			2.0		DS 2.00-2.40 m SPT 2.00-2.45 m 5, 12, 19 N=31				w < PL	VSt	
			2.5								
			3.0	400.99				END OF BOREHOLE @ 3.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
			3.5								
			4.0								
			4.5								
			5.0								

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GAP gINT FN. F01a
RL3

APPENDIX G1

Geotechnical Reports—Investigation Results

Borehole reports

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT



SYMBOLS



FILL



GRAVEL (GW, GP, GM or GC)



SAND (SW, SP, SM or SC)



SILT (ML or MH)



CLAY (CL, CI or CH)



ORGANIC SOILS (OL, OH or Pt)



COBBLES or BOULDERS

Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay.

CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil and Rock is classified and described in Reports of Boreholes and Test Pits using the preferred method given in AS1726-2017. The material properties are assessed in the field by visual/tactile methods.

Particle Size		
Soil Group	Sub Division	Particle Size
BOULDERS		> 200 mm
COBBLES		63 to 200 mm
GRAVEL	Coarse	19 to 63 mm
	Medium	6.7 to 19 mm
	Fine	2.36 to 6.7 mm
SAND	Coarse	0.6 to 2.36 mm
	Medium	0.21 to 0.6 mm
	Fine	0.075 to 0.21 mm
SILT		0.002 to 0.075 mm
CLAY		< 0.002 mm

Plasticity Properties	
PLASTICITY INDEX I_p , %	
	LIQUID LIMIT W_L , %

MOISTURE CONDITION

Symbol	Term	Description
D	Dry	Sands and gravels are free flowing. Clays and silts may be brittle or friable and powdery.
M	Moist	Soils are darker than in dry condition and may feel cool. Sands and gravels tend to cohere.
W	Wet	Soils exude free water. Sand and gravels tend to cohere.

Moisture condition for fine grained soils is described relative to the plastic limit or liquid limit as specified in AS1726-2017.

CONSISTENCY AND DENSITY

Fine Grained Soils			Coarse Grained Soils			
Symbol	Term	Undrained Shear Strength	Symbol	Term	Density Index (%)	SPN "N" *
VS	Very Soft	0 to 12 kPa	VL	Very Loose	Less than 15	0 to 4
S	Soft	12 to 25 kPa	L	Loose	15 to 35	4 to 10
F	Firm	25 to 50 kPa	MD	Medium Dense	35 to 65	10 to 30
St	Stiff	50 to 100 kPa	D	Dense	65 to 85	30 to 50
VSt	Very Stiff	100 to 200 kPa	VD	Very Dense	Above 85	Above 50
H	Hard	Above 200 kPa				
Fr	Friable	-				

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.

* SPT correlations are not stated in AS1726-2017, and may be subject to corrections for overburden pressure and equipment type.

CEMENTATION

Weakly Cemented	The soil may be easily disaggregated by hand in air or water.
Moderately Cemented	Effort is required to disaggregate the soil by hand in air or water.

DRILLING/EXCAVATION METHOD

ADH	Hollow auger drilling	EX	Excavator	PQ3	Diamond core - 83 mm
ADT	Auger drilling with tc-bit	HA	Hand auger	PT	Push tube sampling
ADV	Auger drilling with v-bit	HAND	Excavated by hand methods	RAB	Rotary air blast
AIRCORE	Aircore	HMLC	Diamond core - 63 mm	RC	Reverse circulation
AT	Air track	HQ3	Diamond core - 61 mm	RT	Rock roller
BH	Backhoe bucket	JET	Jetting	SONIC	Sonic drilling
CT	Cable tool rig	MZ	Mazier tube sampling	SPT	Standard penetration testing
DTC	Diatube coring	NDD	Non-destructive digging	U	Undisturbed tube sampling
EE	Existing excavation	NMLC	Diamond core - 52 mm	WB	Washbore drilling
EPT	Extruded push tube	NQ3	Diamond core - 45 mm		

PENETRATION/EXCAVATION RESISTANCE

L	Low resistance. Rapid penetration possible with little effort from the equipment used.
M	Medium resistance. Excavation/possible at an acceptable rate with moderate effort from the equipment used.
H	High resistance to penetration/excavation. Further penetration is possible at a slow rate and requires significant effort from the equipment.
R	Refusal or Practical Refusal. No further progress possible without the risk of damage or unacceptable wear to the digging implement or machine.

These assessments are subjective and are dependent on many factors including the equipment power, weight, condition of excavation or drilling tools, and the experience of the operator.

WATER

	Water level at date shown		Partial water loss
	Water inflow		Complete water loss
GROUNDWATER NOT OBSERVED	The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.		
GROUNDWATER NOT ENCOUNTERED	The borehole/test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/test pit been left open for a longer period.		

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following 150mm seating
30/80 mm	Where practical refusal occurs, the blows and penetration for that interval are reported
RW	Penetration occurred under the rod weight only
HW	Penetration occurred under the hammer and rod weight only
HB	Hammer double bouncing on anvil
DS	Disturbed sample
BDS	Bulk disturbed sample
G	Gas Sample
W	Water Sample
FP	Field permeability test over section noted
FV	Field vane shear test expressed as uncorrected shear strength (sv = peak value, sr = residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket penetrometer test expressed as instrument reading in kPa
U63	Thin walled tube sample - number indicates nominal sample diameter in millimetres
WPT	Water pressure test
DCP	Dynamic cone penetration test
CPT	Cone penetration test
CPTu	Cone penetration test with pore pressure (u) measurement

RANKING OF VISUALLY OBSERVABLE CONTAMINATION AND ODOUR (for specific soil contamination assessment projects)

R = 0	No visible evidence of contamination	R = A	No non-natural odours identified
R = 1	Slight evidence of visible contamination	R = B	Slight non-natural odours identified
R = 2	Visible contamination	R = C	Moderate non-natural odours identified
R = 3	Significant visible contamination	R = D	Strong non-natural odours identified

ROCK CORE RECOVERY

TCR = Total Core Recovery (%)	RQD = Rock Quality Designation (%)	SCR = Solid Core Recovery (%)	F = Fracture Frequency
$= \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$	$= \frac{\sum \text{Axial lengths of core} > 100 \text{ mm}}{\text{Length of core run}} \times 100$	$= \frac{\sum \text{Length of cylindrical core recovered}}{\text{Length of core run}} \times 100$	$= \frac{\text{No. of defects}}{\text{Length of zone (m)}}$



GOLDER

TERMS FOR ROCK MATERIAL STRENGTH & WEATHERING AND ABBREVIATIONS FOR DEFECT DESCRIPTIONS

STRENGTH

Symbol	Term	UCS (MPa)	Field Guide
VL	Very Low	0.6 to 2	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30 mm can be broken by finger pressure.
L	Low	2 to 6	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
M	Medium	6 to 20	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
H	High	20 to 60	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken with pick with a single firm blow; rock rings under hammer.
VH	Very High	60 to 200	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
EH	Extremely High	>200	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Material with strength less than 'Very Low' shall be described using soil characteristics. The presence of an original rock structure, fabric or texture should be noted, if relevant.

ROCK MATERIAL WEATHERING

ROCK MATERIAL WEATHERING			Field Guide
Symbol	Term		
RS	Residual Soil		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
XW	Extremely Weathered		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
DW	HW	Highly Weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
	MW	Moderately Weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable, but shows little or no change of strength from fresh rock.
SW	Slightly Weathered		Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
FR	Fresh		Rock shows no sign of decomposition of individual minerals or colour changes.

ABBREVIATIONS FOR DEFECT TYPES AND DESCRIPTIONS

Defect Type		Coating or Infilling		Roughness	
P	Parting	Cn	Clean	VRo	Very Rough
X	Foliation	Sn	Stain	Ro	Rough
L	Cleavage	Ve	Veneer	Sm	Smooth
C	Contact	Ct	Coating	Po	Polished
J	Joint	In	Infill	Sl	Slickensided
SSu	Sheared Surface	Planarity		Vertical Boreholes – The dip (inclination from horizontal) of the defect is given. Inclined Boreholes – The inclination is measured as the acute angle between the core axis and the vertical direction.	
SS	Sheared Seam				
SZ	Sheared Zone	Pl	Planar		
CS	Crushed Seam	Cv	Curved		
IS	Infilled Seam	Un	Undulating		
EWS	Extremely Weathered Seam	St	Stepped		
V	Vein	Ir	Irregular		



GOLDER

REPORT OF BOREHOLE: 310-01-BH2201

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 288447 m E 6840636 m N MGA94 56
SURFACE RL: 256.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 29.22 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	256.47			CI-CH	TOPSOIL: Sandy CLAY medium to high plasticity, dark brown, fine to coarse grained sand, with silt, trace fine grained, sub-rounded to sub-angular gravel, trace rootlets		TOPSOIL
				0.20			SP			ALLUVIUM
				256.27						
					SPT 0.50-0.95 m 15, 17, 14 N=31			SAND fine to coarse grained, sub-rounded to sub-angular, pale brown, with silt, trace fine to coarse grained, to 9mm, sub-rounded to sub-angular gravel, trace clay		D
			1	0.88			CI-CH	Sandy CLAY medium to high plasticity, brown, fine to medium grained sand, with silt		
				255.59						
				1.50			SC	Clayey SAND fine to coarse grained, yellow brown, medium plasticity clay, with silt, trace fine grained, sub-angular gravel		St
				254.97						
			2	2.13			SC	Clayey SAND fine to coarse grained, yellow brown, medium plasticity clay		
				254.34						
RD					SPT 2.00-2.29 m 10, 30/140mm					VD
			3							
				3.70			CL	Sandy CLAY (EXTREMELY WEATHERED sandstone/siltstone) low plasticity, yellow pale grey mottled orange brown, fine to medium grained sand		
				252.77						
			4		SPT 3.70-4.15 m 10, 16, 20 N=36					PILLIGA SANDSTONE FORMATION / SPRINGBOK SANDSTONE (Lateritised)
			5		SPT 5.20-5.65 m 7, 12, 18 N=30					
				6.70			ML	Sandy SILT (EXTREMELY WEATHERED sandstone/siltstone) low liquid limit, pale grey mottled orange brown, fine to medium grained sand, trace clay		VSt
				249.77						
			7		SPT 6.70-7.15 m 14, 22, 18 N=40					
			8		SPT 8.20-8.65 m 9, 9, 10 N=19					
			9							
					SPT 9.70-10.13 m 7, 16, 30/125mm					
			10	9.98						

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2201

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 288447 m E 6840636 m N MGA94 56
SURFACE RL: 256.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 29.22 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
RD	L	GROUNDWATER NOT OBSERVED	10	246.39 246.38				GM	Silty GRAVEL (EXTREMELY WEATHERED sandstone) fine to medium grained, to 9 mm, angular, siliceous (breccia clasts), orange brown, low liquid limit silt, trace coarse grained, angular sand		VD	PILLIGA SANDSTONE FORMATION / SPRINGBOK SANDSTONE (Lateritised)	
									SM	Silty SAND (EXTREMELY WEATHERED sandstone) brown mottled pale green grey, low liquid limit silt, trace fine to medium grained gravel (clasts) interbedded with orange brown silt			
			11		SPT 11.20-11.33 m 30/130mm						W (< PL)		H
			12										
			13	12.70 243.77	SPT 12.70-12.85 m 30/150mm			SM	Silty SAND (EXTREMELY WEATHERED sandstone) fine to coarse grained, sub-angular to angular, pale green grey, low liquid limit silt, interbedded with sand, fine to coarse grained, sub-angular, with silt, trace fine to medium grained, sub-rounded to rounded gravels to 15 mm				
			14		SPT 14.20-14.29 m 30/90mm								
			15										
			16		SPT 15.70-15.85 m 30/150mm						W		VD
			17		SPT 17.20-17.28 m 30/80mm								
			18										
			19		SPT 18.70-18.73 m 30/30mm								

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2201

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 288447 m E 6840636 m N MGA94 56
SURFACE RL: 256.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 29.22 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
SPT	RD	M-H	GROUNDWATER NOT OBSERVED	20	SPT 20.20-20.35 m 30/150mm		SM	Silty SAND (EXTREMELY WEATHERED sandstone) fine to coarse grained, sub-angular to angular, pale green grey, low liquid limit silt, interbedded with sand, fine to coarse grained, sub-angular, with silt, trace fine to medium grained, sub-rounded to rounded gravels to 15 mm		PILLIGA SANDSTONE FORMATION / SPRINGBOK SANDSTONE (Lateritised)
				21						
				22	SPT 21.70-21.77 m 30/70mm					
				23						
				24	SPT 23.20-23.24 m 30/40mm					
				24.00 232.47				becoming pale grey mottled orange brown		
				25	SPT 24.70-24.78 m 30/80mm				W	VD
				26						
				27	SPT 26.20-26.29 m 30/90mm					
				28						
SPT	RD	M-H	GROUNDWATER NOT OBSERVED	29	SPT 27.70-27.77 m 30/70mm		GW			
				29.00 227.47						
				227.25	SPT 29.20-29.22 m 30/20mm			Sandy GRAVEL (EXTREMELY WEATHERED sandstone) fine to medium grained, to 15 mm, angular, breccia clasts, pale grey, fine to coarse grained sand, trace fine to medium grained, sub-rounded gravel END OF BOREHOLE @ 29.22 m REFUSAL GROUNDWATER NOT OBSERVED STANDPIPE INSTALLED		
				30						

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



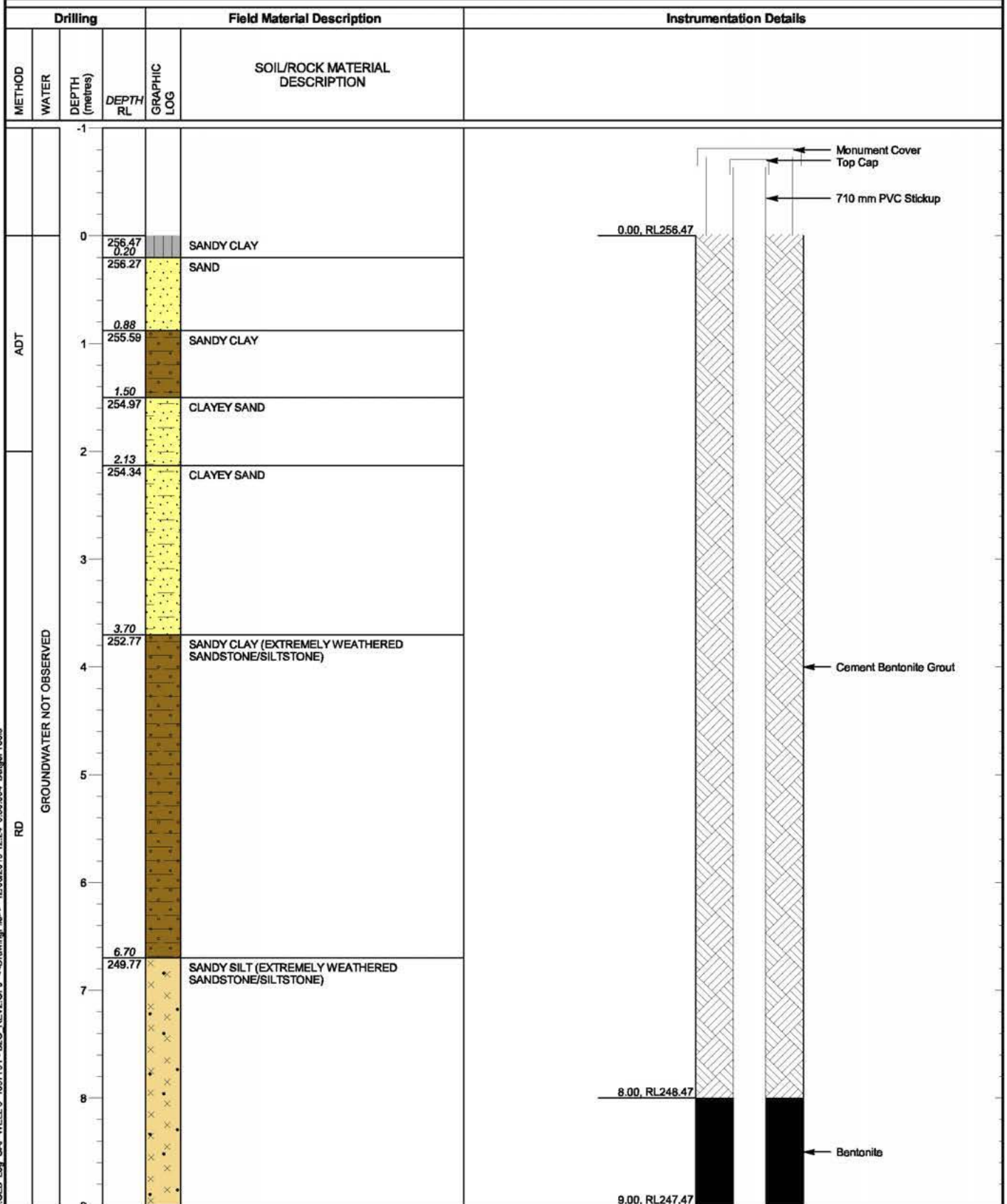
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2201

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 288447 m E 6840636 m N MGA94 56
SURFACE RL: 256.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 29.22 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/9/18
CHECKED: IT DATE: 14/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1

SHEET: 2 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: EA DATE: 12/9/18

CHECKED: IT DATE: 14/9/18

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 288447 m E 6840636 m N MGA94 56

SURFACE RL: 256.5 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 29.22 m

Drilling				Field Material Description	Instrumentation Details				
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION				
RD	GROUNDWATER NOT OBSERVED	9			SANDY SILT (EXTREMELY WEATHERED SANDSTONE/SILTSTONE)				
		9.98							
		246.39			SILTY GRAVEL (EXTREMELY WEATHERED SANDSTONE)				
		246.38			SILTY SAND (EXTREMELY WEATHERED SANDSTONE)				
		11							
		12							
		12.70			SILTY SAND (EXTREMELY WEATHERED SANDSTONE)				
		243.77							
		13							
		14							
15									
16									
17									
18									
19									

This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RI 1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2201

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 288447 m E 6840636 m N MGA94 56

SURFACE RL: 256.5 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 29.22 m

SHEET: 3 OF 4

DRILL RIG: DB520

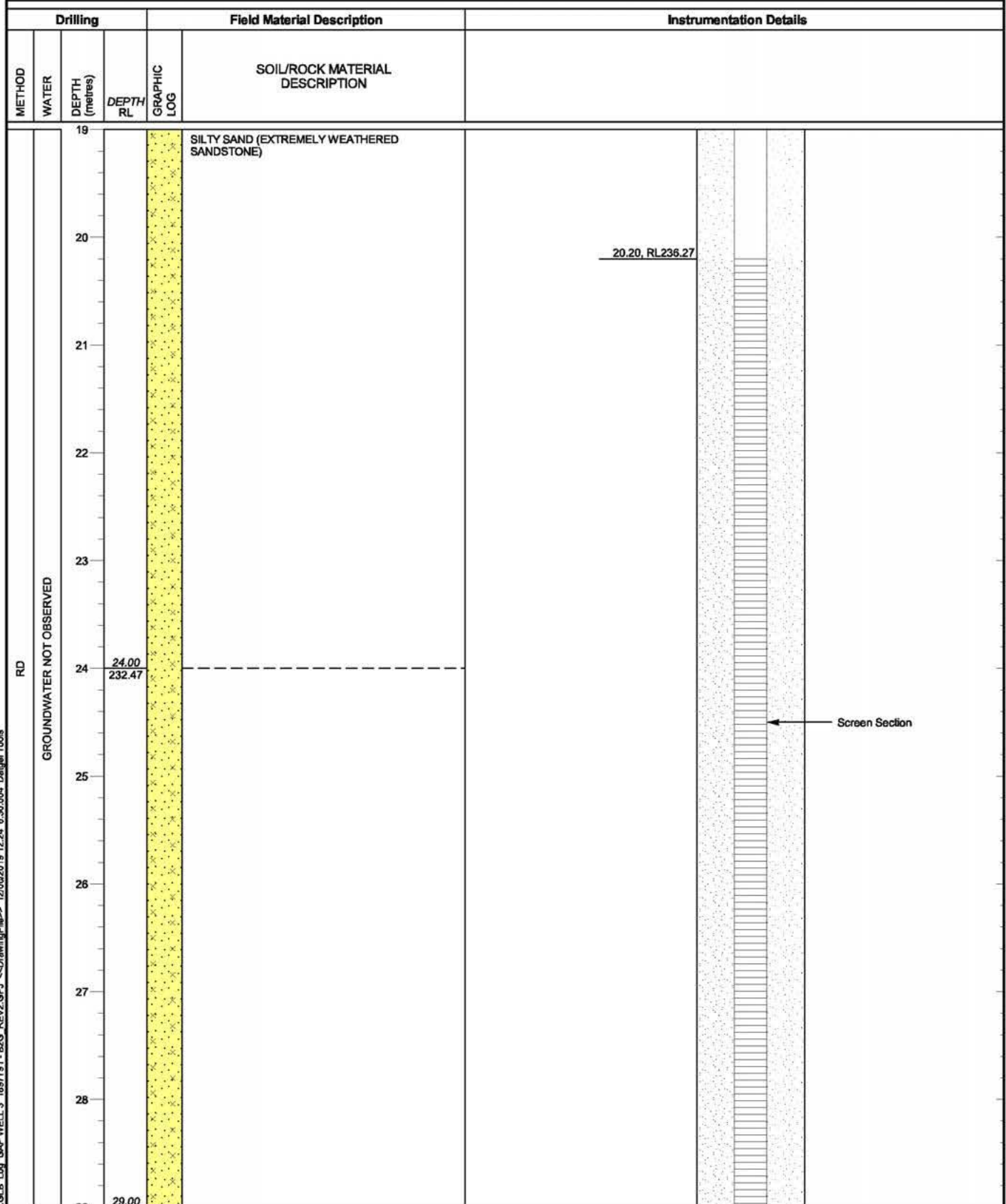
CONTRACTOR: NUMAC

LOGGED: EA

DATE: 12/9/18

CHECKED: IT

DATE: 14/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2201

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 288447 m E 6840636 m N MGA94 56

SURFACE RL: 256.5 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 29.22 m

SHEET: 4 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: EA

DATE: 12/9/18

CHECKED: IT

DATE: 14/9/18

Drilling				Field Material Description	Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
SPRD		29	227.47		SANDY GRAVEL (EXTREMELY WEATHERED SANDSTONE)
			29.22		
			227.25		END OF BOREHOLE @ 29.22 m REFUSAL GROUNDWATER NOT OBSERVED STANDPIPE INSTALLED
		30			
		31			
		32			
		33			
		34			
		35			
		36			
		37			
		38			
		39			

29.15, RL 227.32
29.20, RL 227.27



Bottom Cap



GOLDER

REPORT OF BOREHOLE: 310-01-BH2203

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
 SURFACE RL: 278.7 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 1 OF 5
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: RA DATE: 22/8/18
 CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L		0	278.70	SPT 0.50-0.95 m 5, 15, 14 N=29			SP	TOPSOIL: SAND fine grained, yellow, trace woody organic (rootlets and leaf litter)	W (-PL)	MD	TOPSOIL
			SP	SAND fine grained, pale grey, pale yellow				QUATERNARY ALLUVIUM (Sand Plain)				
			1	0.90 277.80				becoming red brown				
	M		2	1.80 276.90			SPT 2.00-2.10 m 30/100mm		SP		SAND (EXTREMELY WEATHERED sandstone) fine grained, pale grey	VD
									For Continuation Refer to Sheet 2			
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2203

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
SURFACE RL: 278.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 2 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/8/18
CHECKED: IT DATE: 14/9/18

Drilling					Field Material Description							Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)			
					0											
					1											
					2											
					2.10			Continuation of Sheet 1								
					276.60			SAND (EXTREMELY WEATHERED sandstone) (SP)	XW							
					2.50			fine grained, pale grey, with medium plasticity clay, weakly cemented, very dense	HW							
					276.20			SANDSTONE								
								fine grained, massive, pale grey, orange								
					3											
					3.40											
					275.30			SAND (EXTREMELY WEATHERED sandstone) (SP)	XW							
								fine grained, pale grey								
					4											
					5											
					5.20			trace carbonaceous staining				5.20 m: Remnant fracture/joint				
					273.50											
					6											
					7											
					8											
					8.90											
					269.80			SANDSTONE	HW			9.00-9.40 m: Fractured zone; recovered as blocky (<15 mm) angular fragments of pale grey and red stained clay, red veneer, compact				
								fine to medium grained, pale grey, red stained								
					9											
					10.00											

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2203

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
SURFACE RL: 278.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 3 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/8/18
CHECKED: IT DATE: 14/9/18

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
HQ3					10	268.70		SAND (EXTREMELY WEATHERED sandstone) (SP) fine to medium grained, pale yellow, pale grey, trace clay, appears dense	XW			PLI(A)=0.00 PL(D)=0.02	510202530	
		95	45 (45)		11	11.00 267.70		SANDSTONE fine grained, massive, pale grey to white	HW					
					11.50			CORE LOSS						
					267.10			SANDSTONE fine grained, massive, pale grey to white	HW					
					12	12.00 266.70		Clayey SAND (EXTREMELY WEATHERED sandstone) (SC) medium grained, pale red, low to medium plasticity clay, appears dense	XW					
					12.50 266.20			Clayey SAND (EXTREMELY WEATHERED sandstone) (SC) medium grained, pale grey, pale yellow, low to medium plasticity clay						
		110	0 (0)		13									
					14									
					14.83 263.87			CORE LOSS						
					15	15.54 263.16								
					16			SANDSTONE fine grained, massive, pale grey and orange brown	HW					
					17									
		100	90 (90)		18									
					18.50 260.20			CORE LOSS						
					19									
					20.00									
					20.00									
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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2203

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
SURFACE RL: 278.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 4 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/8/18
CHECKED: IT DATE: 14/9/18

Drilling					Field Material Description							Defect Information					
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa					LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)
										US	VS	LS	JS	RS	HS	BS	
HQ3			50	40 (40)		20	258.70	SANDSTONE fine grained, massive, pale grey and orange brown	HW								
						20.80		becoming orange brown									
						21	257.90										
						21.60		becoming white and pale grey									
						22	257.10										
						22.80		becoming orange									
			100	80 (85)		23	255.90										
						23.90		becoming yellow									
						24	254.80										
						25	253.70	SILTSTONE massive, pale grey, trace sand, red stained	XW HW								
					26												
					26.90												
					27	251.70	CORE LOSS SILTSTONE massive, pale grey, trace sand, red stained	HW									
					28	250.70		white and red stained									
					29												

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2203

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
SURFACE RL: 278.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 5 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/8/18
CHECKED: IT DATE: 14/9/18

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations		FRACTURE FREQUENCY (Defects per unit metre length)
HQ3		100	100 (100)		30			SILTSTONE massive, pale grey, trace sand, red stained	HW					
					30.65	248.05		END OF BOREHOLE @ 30.65 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 19.08 m DEPTH STANDPIPE INSTALLED						
					31									
					32									
					33									
					34									
					35									
					36									
					37									
					38									
					39									
					40									

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2203

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
SURFACE RL: 278.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/8/18
CHECKED: IT DATE: 14/9/18



310-01-BH2203 2.10 - 6.00 m



310-01-BH2203 6.00 - 11.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2203

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
SURFACE RL: 278.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/8/18
CHECKED: IT DATE: 14/9/18



310-01-BH2203 11.00 - 16.00 m



310-01-BH2203 16.00 - 21.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2203

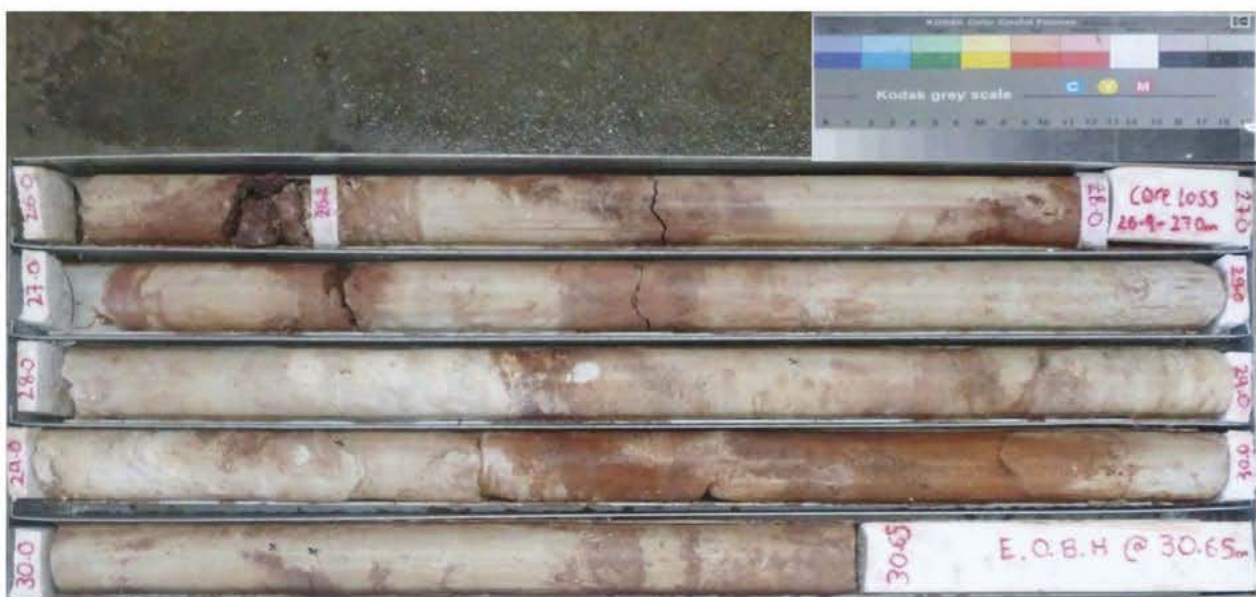
CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
SURFACE RL: 278.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/8/18
CHECKED: IT DATE: 14/9/18



310-01-BH2203 21.00 - 26.00 m



310-01-BH2203 26.00 - 30.65 m

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GAP gINT FN. F28
RL1



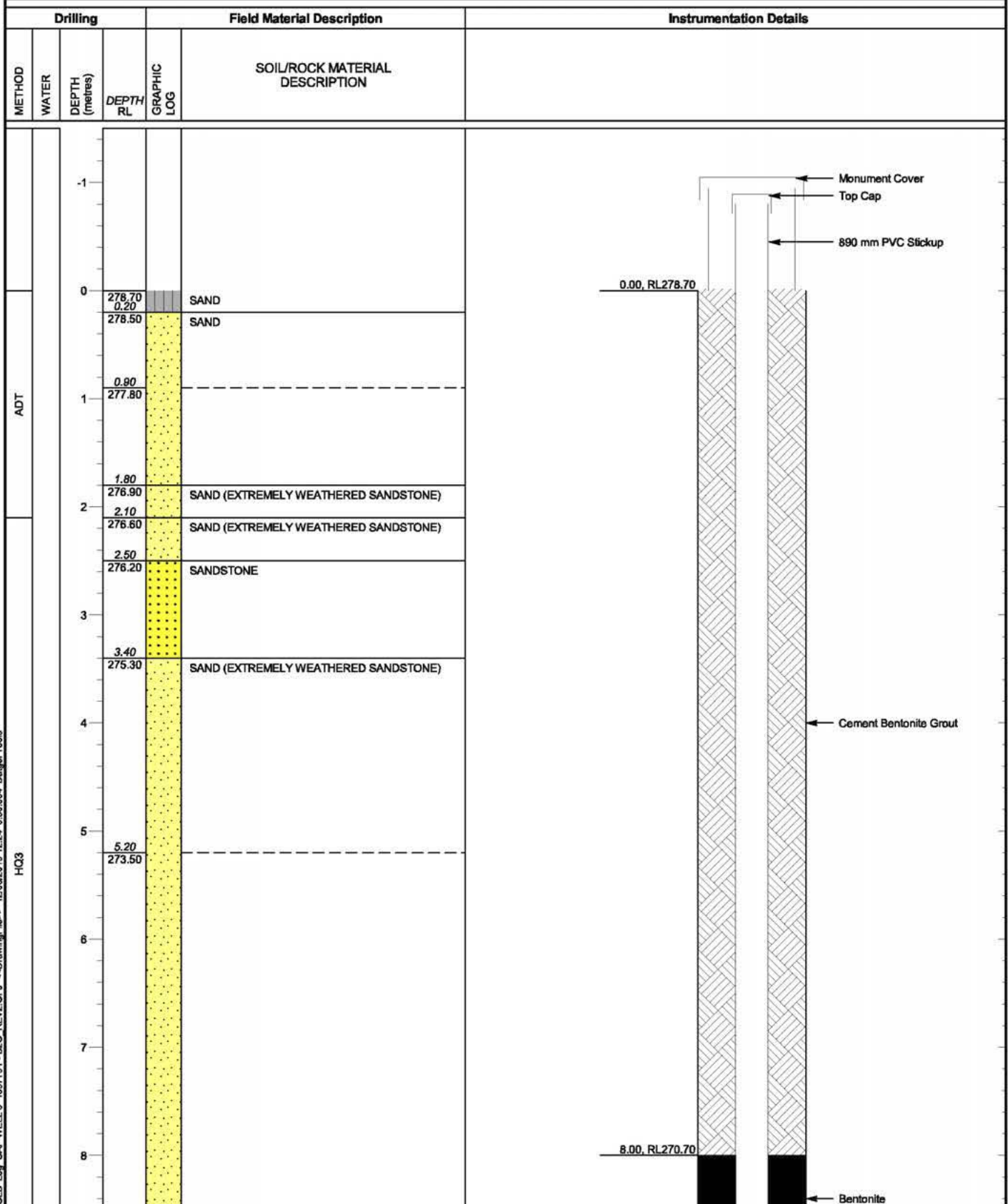
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2203

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
SURFACE RL: 278.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/8/18
CHECKED: IT DATE: 14/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



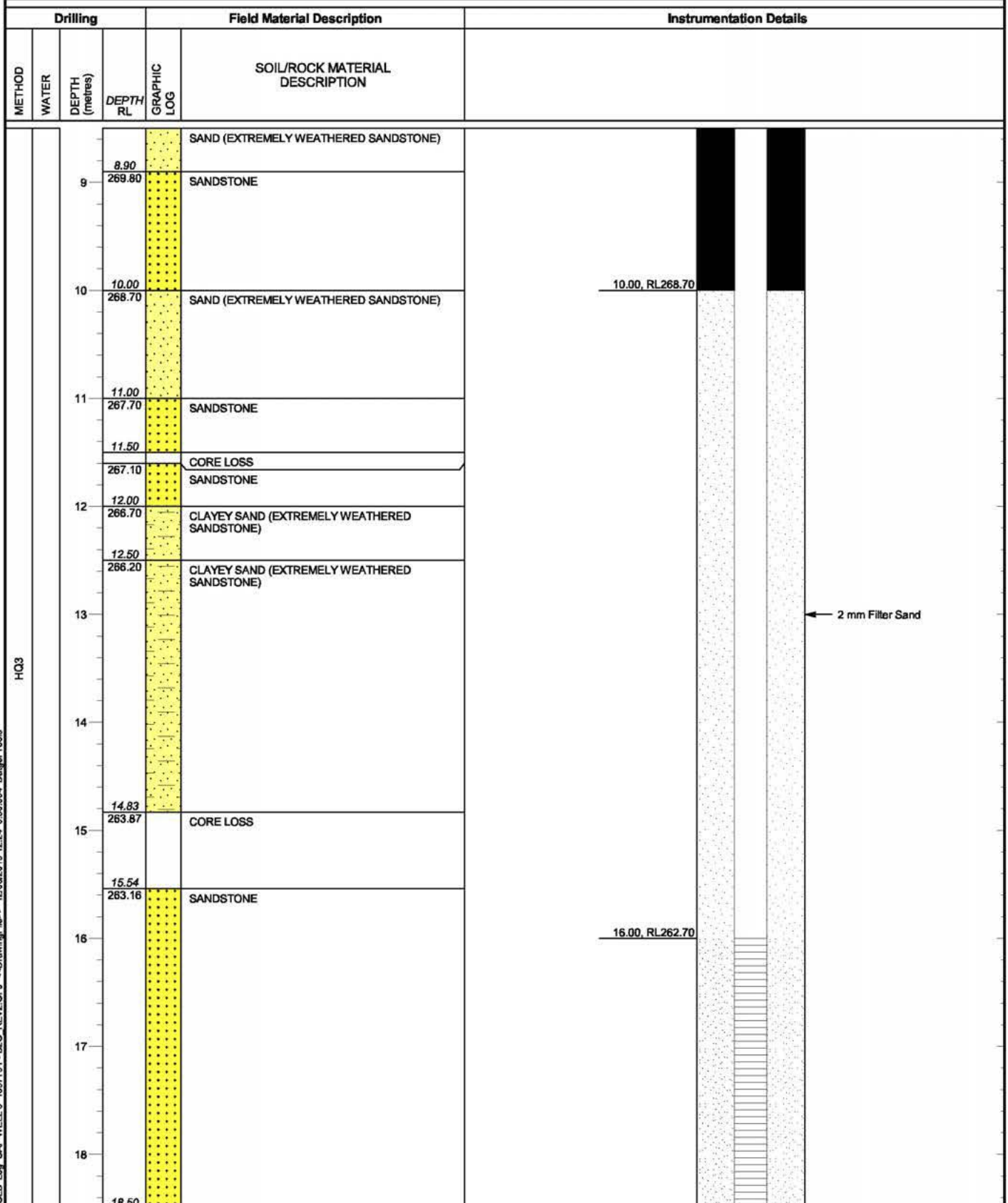
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2203

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
SURFACE RL: 278.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 2 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/8/18
CHECKED: IT DATE: 14/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



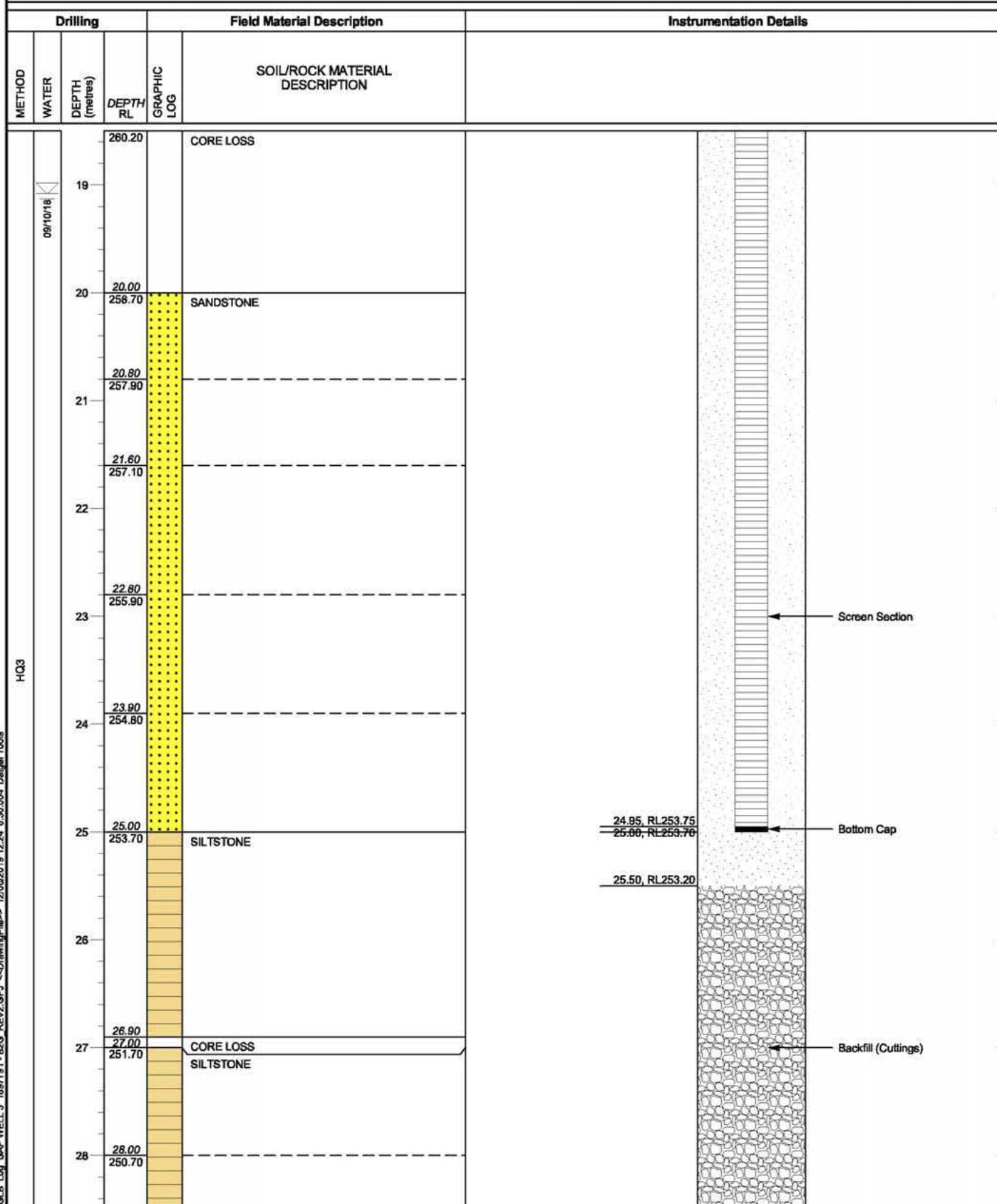
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2203

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300144 m E 6852564 m N MGA94 56
SURFACE RL: 278.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

SHEET: 3 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/8/18
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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2203

SHEET: 4 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: RA DATE: 22/8/18

CHECKED: IT DATE: 14/9/18

CLIENT: Future Freight JV

COORDS: 300144 m E 6852564 m N MGA94 56

PROJECT: Inland Rail, B2G Project, Phase 2

SURFACE RL: 278.7 m DATUM: AHD

LOCATION: NSW/QLD Border to Gowrie (Section 310)

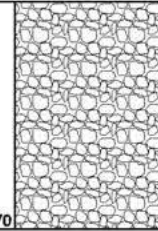
INCLINATION: -90°

JOB NO: 1897791

HOLE DIA: 96/150 mm HOLE DEPTH: 30.65 m

Drilling				Field Material Description	Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
HQ3		29			SILTSTONE
		30			
			30.65		
			248.05		
		31			END OF BOREHOLE @ 30.65 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 19.08 m DEPTH STANDPIPE INSTALLED
		32			
		33			
		34			
		35			
		36			
		37			
		38			

30.00, RL248.70



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2206

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 302299 m E 6853323 m N MGA94 56
SURFACE RL: 272.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94 mm HOLE DEPTH: 29.75 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 22/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	272.39	SPT 0.50-0.95 m 6, 7, 8 N=15		SP	TOPSOIL: SAND	D	L	TOPSOIL	
			0.30	fine grained, brown, with medium plasticity clay, with weakly cemented fine grained gravel to 4mm				L			ALLUVIUM	
			272.09	Sandy CLAY								
			1	medium plasticity, orange brown, fine to medium grained sand								
			2									
			3									
			4									
			5									
			6									
			7									
RD			5	5.00	SPT 5.30-5.73 m 8, 15, 30/130mm		CI	CLAY	W (< PL)			
			267.39	medium plasticity, pale grey brown mottled orange and brown, with fine to medium grained sand								
			6									
			7									
			7	7.00	SPT 6.80-7.25 m 8, 13, 24 N=37		SC	SAND (EXTREMELY WEATHERED sandstone)	M	D - VD	WALLOON COAL MEASURES (Lateritised)	
			265.39	fine to medium grained, pale grey brown mottled orange and brown, with medium plasticity clay								
			8									
			9									
			9	9.00	SPT 8.30-8.75 m 11, 17, 23 N=40		SP	SAND (EXTREMELY WEATHERED sandstone)	W		Disturbed SPT at water table	
			263.39	fine to medium grained, pale brown, brown, trace clay, trace fine grained, angular gravel, of lithic sandstone/chert to 3 mm								
06/10/18												

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2206

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 302299 m E 685323 m N MGA94 56
SURFACE RL: 272.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94 mm HOLE DEPTH: 29.75 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 22/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling			Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L		10	262.04	SPT 9.80-10.25 m 7, 9, 11 N=20			SP	SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale brown, brown, trace clay, trace fine grained, angular gravel, of lithic sandstone/chert to 3 mm becoming orange brown			WALLOON COAL MEASURES (Lateritised)
			11		SPT 11.30-11.61 m 5, 8, 5/150mm							
			12						W	D - VD		
			13		SPT 12.80-13.05 m 24, 30/95mm							
			14									
			14.30		DS 14.30-14.40 m							
			14.50		SPT 14.30-14.60 m	CI-CH		CLAY medium to high plasticity, pale grey, mottled yellow	W (- PL)	VSt		
			257.89		28, 33/150mm HB DS 14.40-14.75 m	SP		SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale brown, trace clay				
			15									
			15.90		SPT 15.80-16.25 m							
16	256.49	15, 25, 29 N=54					becoming red brown mottled orange	W	VD			
17												
17.30		DS 17.30-17.45 m	CI-CH	CLAY medium to high plasticity, pale grey, interlaminated with fine grained sand	W (- PL)	St						
17.50		SPT 17.30-17.75 m	SP	SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale grey, mottled orange, trace clay								
18		14, 16, 16 N=32 DS 17.45-17.75 m				W	D					
18.50			CH	Sandy CLAY (EXTREMELY WEATHERED mudstone) high plasticity, pale grey, mottled orange, medium grained sand	W (- PL)	St						
19		SPT 18.80-19.25 m										
19.15		6, 7, 11 N=18	SP	becoming orange stained, trace medium grained sand								
253.19				SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale grey, mottled orange, trace clay	W	D						
20												

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2206

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 302299 m E 6853323 m N MGA94 56
SURFACE RL: 272.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94 mm HOLE DEPTH: 29.75 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 22/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
RD	L		20					SP	SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale grey, mottled orange, trace clay		D	WALLOON COAL MEASURES (Lateritised)	
			20.50	SPT 20.30-20.75 m									
			251.89	11, 12, 16 N=28									
			21										
			22	22.00	SPT 21.80-22.10 m					VSt			
			250.39	20, 35/150mm					thinly interbedded with fine to medium grained sand	W			
			23										
			24	24.00	SPT 23.30-23.75 m					St			
			248.39	9, 8, 8 N=16									
			M		25						CL-CI		CLAY (EXTREMELY WEATHERED mudstone) low to medium plasticity, pale grey
25		SPT 24.80-25.25 m								VSt			
		9, 16, 22 N=38											
26													
26.50	SPT 26.30-26.75 m												
245.89	9, 12, 15 N=27							becoming orange stained	W (-PL)				
27													
27.80	SPT 27.80-28.22 m												
244.59	14, 26, 30/120mm							weakly cemented, laminae of fine grained sand	H				
L-M		28											
		29											
				SPT 29.30-29.56 m									
				22, 30/110mm									

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GAP gINT FN. F01a
RL3



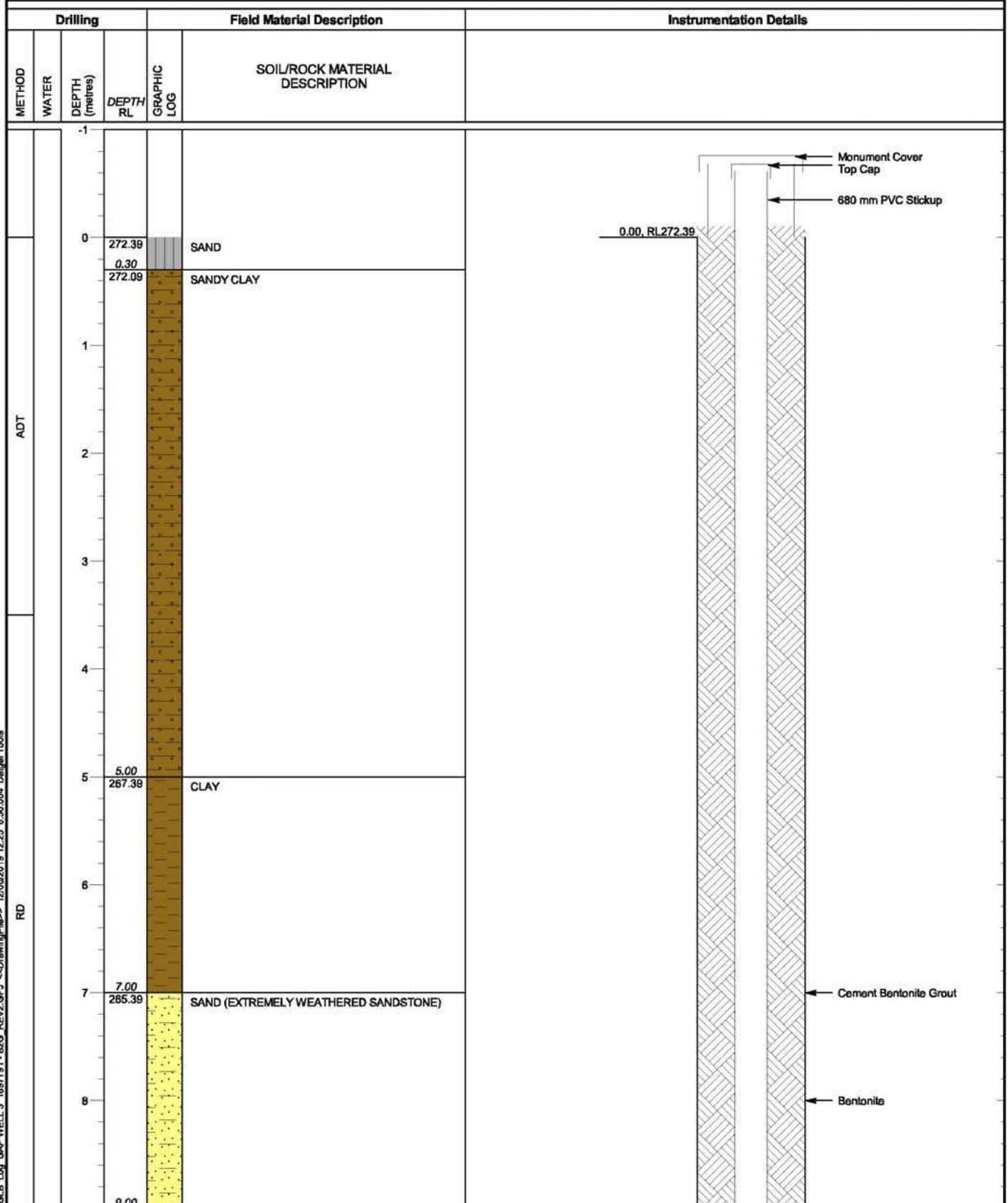
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2206

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 302299 m E 6853323 m N MGA94 56
SURFACE RL: 272.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94 mm HOLE DEPTH: 29.75 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 22/8/18
CHECKED: IT DATE: 12/9/18



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GAP gINT FN. F17
RL1



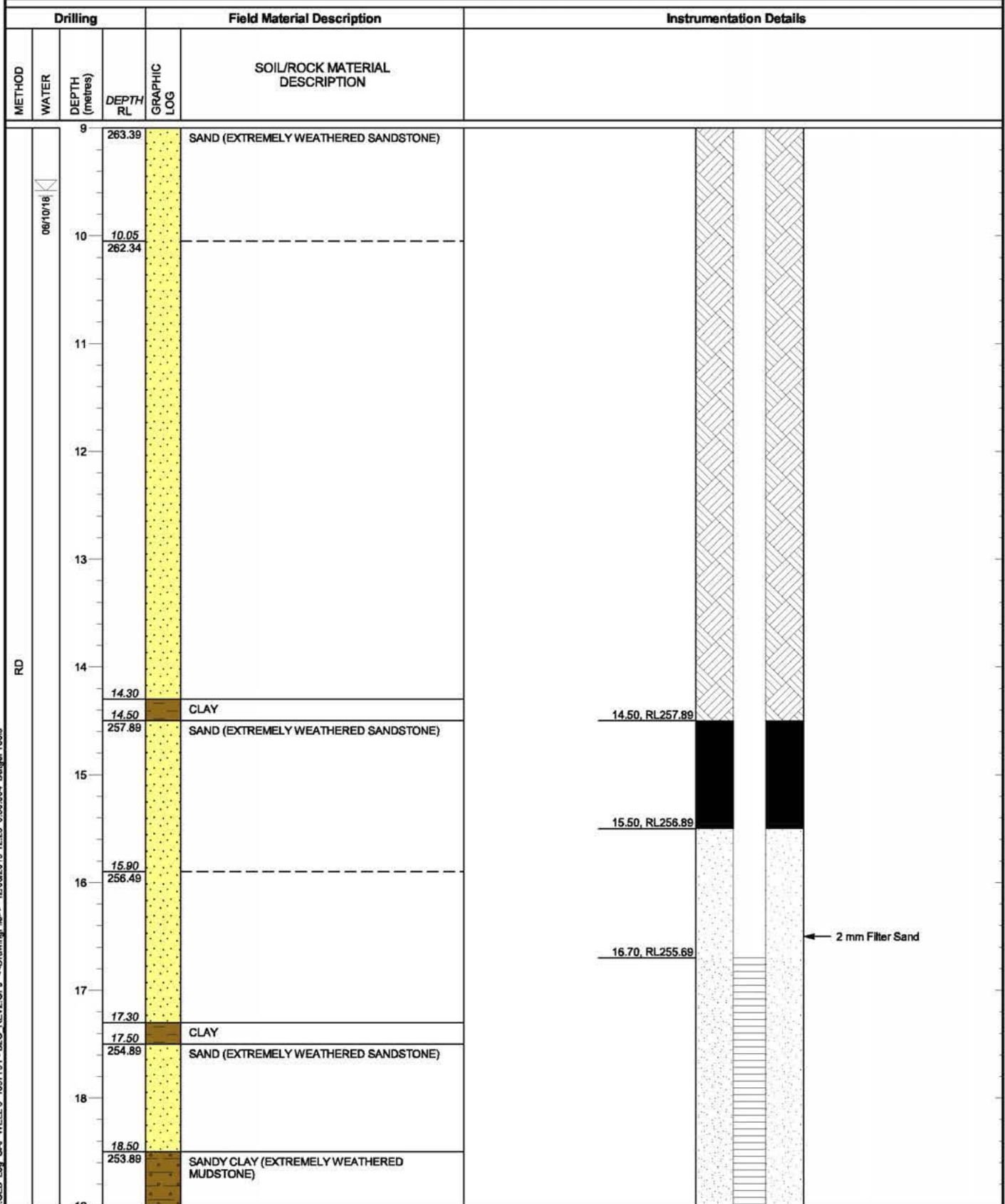
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2206

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 302299 m E 6853323 m N MGA94 56
SURFACE RL: 272.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94 mm HOLE DEPTH: 29.75 m

SHEET: 2 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 22/8/18
CHECKED: IT DATE: 12/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2206

SHEET: 3 OF 4

CLIENT: Future Freight JV

COORDS: 302299 m E 6853323 m N MGA94 56

DRILL RIG: DB520

PROJECT: Inland Rail, B2G Project, Phase 2

SURFACE RL: 272.4 m DATUM: AHD

CONTRACTOR: NUMAC

LOCATION: NSW/QLD Border to Gowrie (Section 310)

INCLINATION: -90°

LOGGED: OM

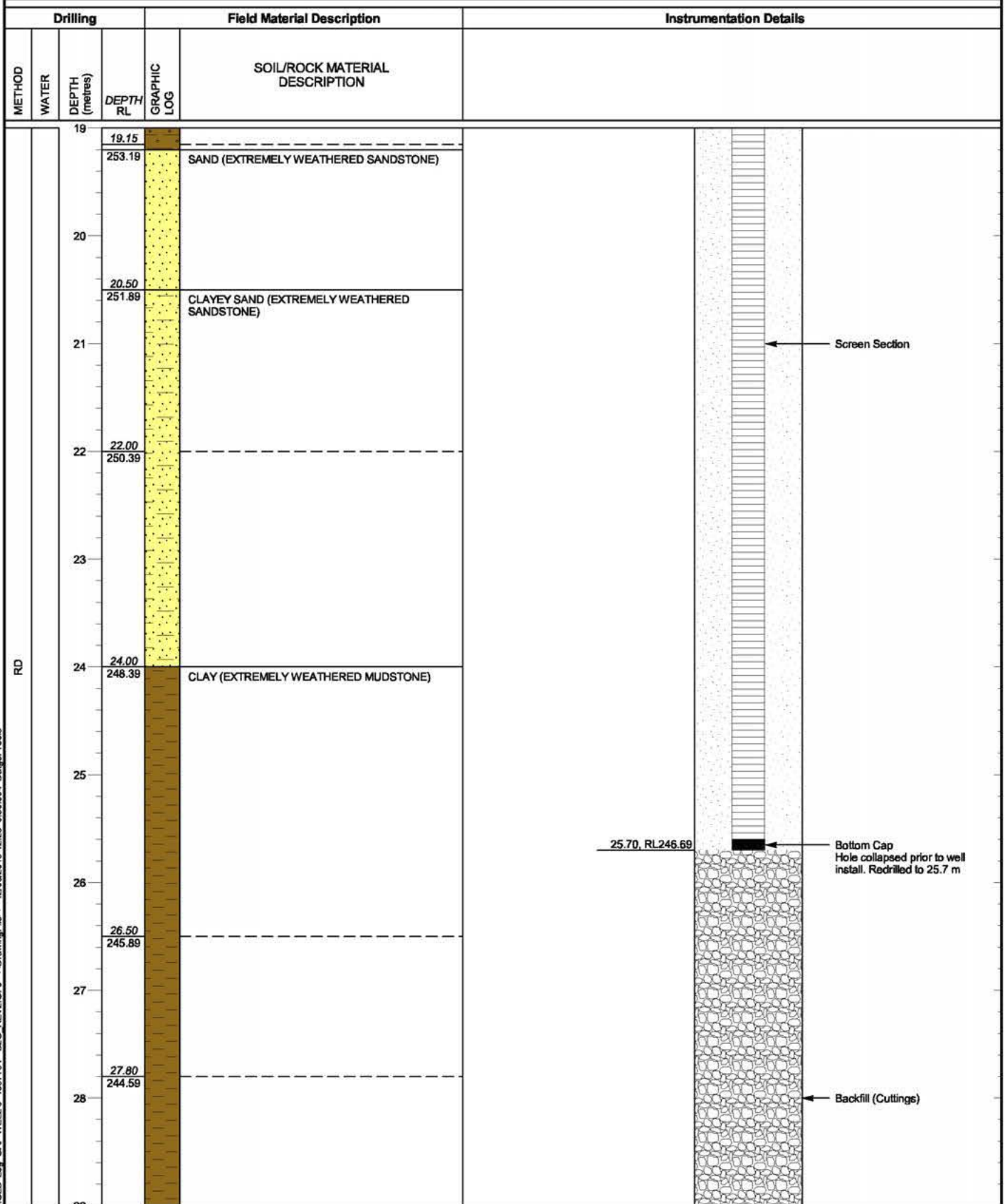
DATE: 22/8/18

JOB NO: 1897791

HOLE DIA: 94 mm HOLE DEPTH: 29.75 m

CHECKED: IT

DATE: 12/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2206

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 302299 m E 6853323 m N MGA94 56

SURFACE RL: 272.4 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94 mm HOLE DEPTH: 29.75 m

SHEET: 4 OF 4

DRILL RIG: DB520

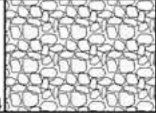
CONTRACTOR: NUMAC

LOGGED: OM

DATE: 22/8/18

CHECKED: IT

DATE: 12/9/18

Drilling				Field Material Description	Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
RD		29			CLAY (EXTREMELY WEATHERED MUDSTONE) END OF BOREHOLE @ 29.75 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.58 m DEPTH STANDPIPE INSTALLED
			29.75		
		30			
		31			
		32			
		33			
		34			
		35			
		36			
		37			
		38			
		39			

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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2210

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56
SURFACE RL: 283.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 1 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 26/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L		0	283.40	SPT 0.50-0.95 m 4, 6, 5 N=11		SP	TOPSOIL: SAND fine to medium grained, pale grey and orange brown	VL	TOPSOIL
			0.30	283.10			SP	SAND fine to medium grained, pale orange brown		ALLUVIUM / COLLUVIUM
			1		SPT 2.00-2.12 m 30/120mm		SC	Clayey SAND medium grained, pale grey, medium plasticity clay, weakly cemented, cap rock	MD	WALLOON COAL MEASURES (Lateritised)
			1.80	281.60					D	
			2						VD	
			3							
					SPT 3.00-3.25 m 30, 30/100mm					
					SPT 3.50-3.76 m 28, 30/110mm					
	M		4					For Continuation Refer to Sheet 2		
			5							
			6							
			7							
			8							
			9							
			10							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2210

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56
SURFACE RL: 283.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 2 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 26/8/18
CHECKED: IT DATE: 12/9/18

Drilling					Field Material Description							Defect Information							
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)						
					0														
					1														
					2														
					3														
					3.70			Continuation of Sheet 1											
					279.70			SANDSTONE fine to medium grained, pale grey and orange brown, apparently massive	HW										
					4														
					4.90														
		45	45 (45)		278.40			GRAVEL (EXTREMELY WEATHERED breccia) (GW) fine to coarse grained, to 30 mm, sub-angular, pale brown, with fine to coarse grained sand, lithic clasts, lithic clasts CORE LOSS	XW										
					5														
					6														
					7														
					7.00			SANDSTONE fine to coarse grained, pale grey and orange brown, apparently massive	HW										
		85	80 (85)		276.40														
					8														
					9														
					9.50			SANDSTONE fine to medium grained, pale grey and orange brown, apparently massive	HW										
		75	45 (45)		273.90														

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2210

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56
SURFACE RL: 283.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 3 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 26/8/18
CHECKED: IT DATE: 12/9/18

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
HQ3					10	10.10 273.30		SAND (EXTREMELY WEATHERED sandstone) (SP) fine to medium grained, pale grey brown, with silt	XW			SPT 15.30-15.75 m; 7, 10, 11 N=21		
		75	45 (45)			10.45 272.95		CORE LOSS						
						10.80								
					11	11.00 272.40		SAND (EXTREMELY WEATHERED sandstone) (SP) fine to medium grained, pale grey brown, with silt	XW					
		80	30 (35)					SANDSTONE fine to medium grained, pale grey and orange brown, apparently massive	HW		PLI(A)=0.03 PLI(D)=0.05			
					12	12.10 271.30		CORE LOSS						
					13									
		10	5 (5)		14									
					15	15.00		SANDSTONE fine to medium grained, pale grey and orange brown, apparently massive	HW					
						15.20 15.30 268.10		GRAVEL (EXTREMELY WEATHERED sandstone/breccia) (GW) fine to coarse grained, to 20 mm, sub-angular, brown, lithic clasts	XW					
					16	15.95 267.45		CLAY (EXTREMELY WEATHERED mudstone) (CH) high plasticity, pale grey, trace fine grained sand	HW					
		90	70 (75)					SILTSTONE fine grained, pale grey, apparently massive						
					17	16.90 17.00 266.40		CORE LOSS	HW					
								SANDSTONE fine to medium grained, pale grey, apparently massive, trace black (carbonaceous) staining						
		85	85 (85)			17.60 265.80		SILTSTONE fine grained, pale grey, apparently massive						
					18	18.30		CORE LOSS						
						18.50 264.90		SILTSTONE fine grained, pale grey orange brown	HW					
		100	95 (100)		19									

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2210

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56
SURFACE RL: 283.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 4 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 26/8/18
CHECKED: IT DATE: 12/9/18

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
					20			SILTSTONE fine grained, pale grey orange brown	HW			20.10-20.25 m: DS, ferruginous		
			100	95 (100)								20.60-20.82 m: DS, ferruginous		
					21							21.00-21.25 m: DS, ferruginous		
					22						PLI(A)=0.04 PLI(D)=0.01			
					23							22.45-22.50 m: DS, ferruginous		
			100	65 (100)										
					24									
					25									
					26									
			100	95 (100)										
					27							26.90-27.00 m: DS, ferruginous		
					27.50									
					255.90			Sandy CLAY (EXTREMELY WEATHERED sandstone) (CL-CI)	XW			SPT 27.50-27.77 m; 20, 30/120mm		
					27.80			low to medium plasticity, pale orange brown, fine to medium sand, hard, hard	HW					
					255.60			SANDSTONE fine to medium grained, pale grey, apparently massive						
					28.40									
			100	45 (45)				Sandy GRAVEL (EXTREMELY WEATHERED conglomerate) (SW)	XW					
					255.00			fine to coarse grained, to 20 mm, sub-rounded to sub-angular, orange brown, fine to coarse sand, with clay, very dense, lithic clasts, very dense						
					29.00			CLAY (EXTREMELY WEATHERED mudstone) (CH)				SPT 29.00-29.38 m; 16, 26, 30/80mm HB		
					254.40			high plasticity, pale grey, orange brown, with fine to medium grained sand, hard, hard	HW					
					29.38									
			100	100 (100)				SANDSTONE fine to medium grained, pale grey, apparently massive						
					254.02									

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2210

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56
 SURFACE RL: 283.4 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 5 OF 5
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: RA DATE: 26/8/18
 CHECKED: IT DATE: 12/9/18

Drilling						Field Material Description				Defect Information			
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)
		100			30	30.18			HW				
					253.22			END OF BOREHOLE @ 30.18 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.10 m DEPTH STANDPIPE INSTALLED					
					31								
					32								
					33								
					34								
					35								
					36								
					37								
					38								
					39								
					40								

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2210

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56
SURFACE RL: 283.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 26/8/18
CHECKED: IT DATE: 12/9/18



310-01-BH2210 3.76 - 8.00 m



310-01-BH2210 8.00 - 13.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2210

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56
SURFACE RL: 283.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 26/8/18
CHECKED: IT DATE: 12/9/18



310-01-BH2210 13.00 - 18.00 m



310-01-BH2210 18.00 - 23.00 m

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GAP gINT FN. F28
RL1



CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56
SURFACE RL: 283.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 26/8/18
CHECKED: IT DATE: 12/9/18



310-01-BH2210 23.00 - 28.00 m



310-01-BH2210 28.00 - 30.00 m

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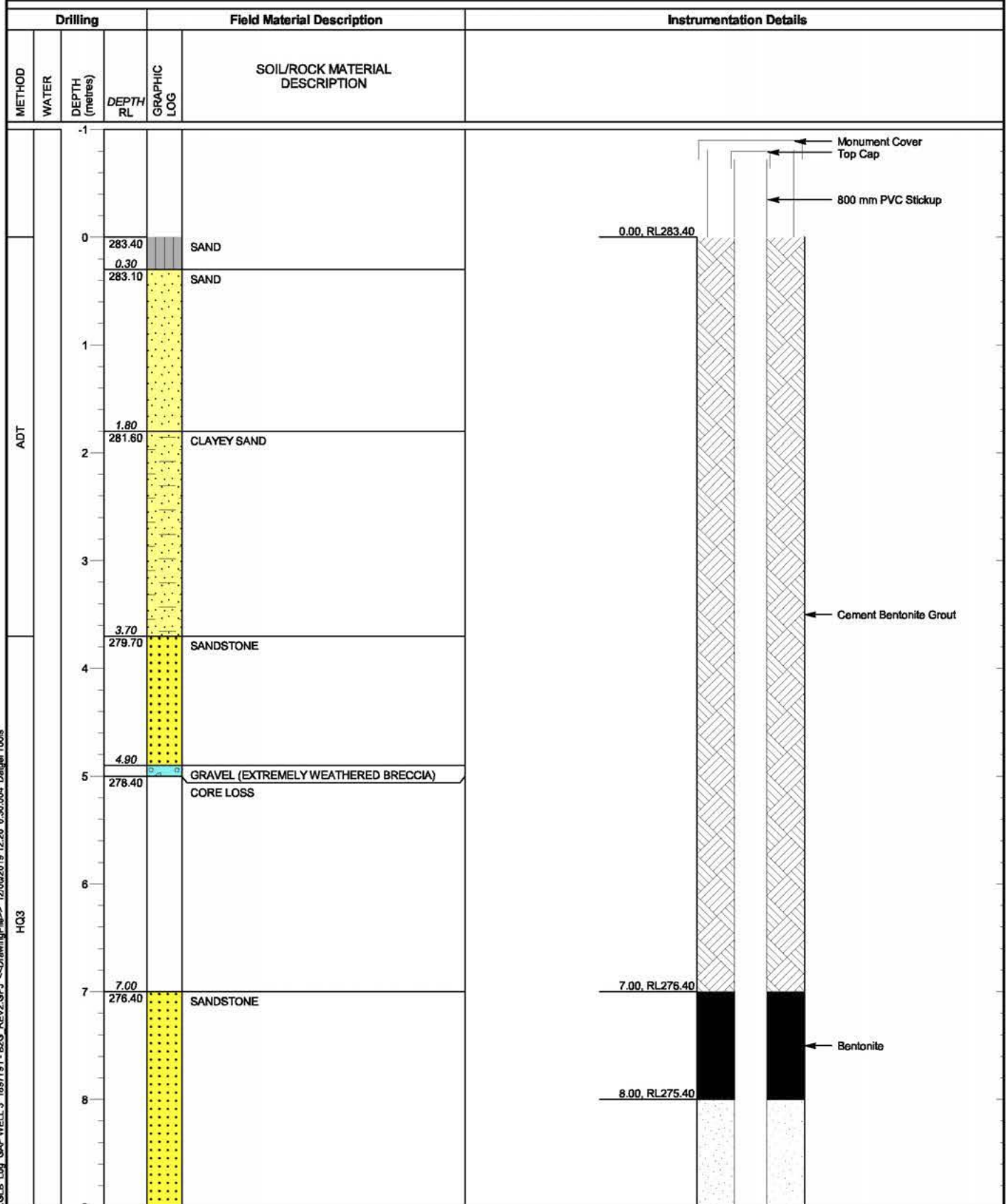
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2210

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56
SURFACE RL: 283.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 26/8/18
CHECKED: IT DATE: 12/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2210

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56
SURFACE RL: 283.4 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 2 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 26/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Field Material Description	Instrumentation Details			
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION			
09/10/18 HQ3		9			SANDSTONE			
		9.50	273.90		SANDSTONE			
		10						
		10.10	273.30		SAND (EXTREMELY WEATHERED SANDSTONE)			
		10.45	272.95		CORE LOSS			
		10.80						
		11.00	272.40		SAND (EXTREMELY WEATHERED SANDSTONE)			
					SANDSTONE			
		12						
		12.10	271.30		CORE LOSS			
		13						
		14						
		15						
		15.00			SANDSTONE			
		15.20						
		15.30			GRAVEL (EXTREMELY WEATHERED SANDSTONE/BRECCIA)			
		15.80	268.10		CLAY (EXTREMELY WEATHERED MUDSTONE)			
		15.95						
		16	267.45		SILTSTONE			
		16.90						
		17						
		17.00	266.40		CORE LOSS			
					SANDSTONE			
		17.60	265.80					
					SILTSTONE			
		18						
		18.30						
		18.50			CORE LOSS			
		18.90	264.90		SILTSTONE			
		19						

← 2 mm Filter Sand

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GAP gINT FN. F17
RL1



CHECKED: IT DATE: 12/9/18

JOB NO: 1897791

HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

HQ3

GAP gINT FN. F17
RI 1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2210

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 311744 m E 6857672 m N MGA94 56

SURFACE RL: 283.4 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 84 mm HOLE DEPTH: 30.18 m

SHEET: 4 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

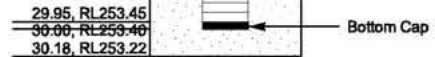
LOGGED: RA

DATE: 26/8/18

CHECKED: IT

DATE: 12/9/18

Drilling			Field Material Description		Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
HQ3		29	254.40		CLAY (EXTREMELY WEATHERED MUDSTONE)
		29.38	254.02		SANDSTONE
		30	30.18		END OF BOREHOLE @ 30.18 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.10 m DEPTH STANDPIPE INSTALLED
			253.22		
		31			
		32			
		33			
		34			
		35			
		36			
		37			
		38			
		39			



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2214

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 319068 m E 6875070 m N MGA94 56
SURFACE RL: 321.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 30.45 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 4/12/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	321.60 0.20			SP	TOPSOIL: SAND fine to medium grained, pale orange brown, trace rootlets	L	TOPSOIL
				321.40			SP	SAND fine to medium grained, orange-brown mottled grey, trace medium plasticity clay		ALLUVIUM (QUATERNARY)
			1		SPT 0.50-0.95 m 12, 12, 23 N=35					
			2	2.00 319.60	SPT 2.00-2.45 m 19, 30, 28 N=58		SP	SAND fine to medium grained, grey mottled orange-brown, with medium plasticity clay, with lenses of high plasticity clay	D	D - VD
			3							
			4		SPT 3.50-3.95 m 13, 12, 20 N=32					
			5	4.30 317.30	SPT 5.00-5.45 m 6, 10, 19 N=29		CI	Sandy CLAY (RESIDUAL SOIL) medium plasticity, grey mottled pale grey and orange-brown, fine to medium grained sand		WALLOON COAL MEASURES
			6						H	
			7		SPT 6.80-7.25 m 11, 14, 18 N=32				W (< PL)	
			8	8.30 313.30	SPT 8.30-8.75 m 9, 12, 12 N=24		CH	CLAY (RESIDUAL SOIL) high plasticity, grey mottled orange-brown, with fine to medium grained sand		VSt
RD			9							
			10	9.40 312.20			CH	Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, orange-brown mottled grey, fine to medium grained sand		D

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2214

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 319068 m E 6875070 m N MGA94 56
SURFACE RL: 321.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 30.45 m

SHEET: 2 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 4/12/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L	29/01/19	10		SPT 9.80-10.25 m 13, 19, 26 N=45			CH	Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, orange-brown mottled grey, fine to medium grained sand			WALLOON COAL MEASURES
			11		SPT 11.30-11.75 m 13, 16, 20 N=36				D			
			12	11.90 309.70				high plasticity, grey mottled orange-brown, trace carbonaceous inclusions, increasing clay content				
			13		SPT 12.80-13.25 m 10, 10, 15 N=25							
			14	13.80 307.80				CI	CLAY (EXTREMELY WEATHERED sandstone) medium plasticity, grey mottled orange-brown, with fine to medium grained sand			VSt
			15		SPT 14.30-14.75 m 7, 10, 16 N=26				W (< PL)			
			16		SPT 15.80-16.25 m 14, 23, 30 N=53				H			
			17	17.30 304.30	SPT 17.30-17.75 m 8, 11, 13 N=24				becoming with fine to coarse, sub-rounded gravel to 30 mm from 17.3 m to 18.8 m			
			18									
			19		SPT 18.80-19.25 m 7, 9, 14 N=23							St - VSt

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2214

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 319068 m E 6875070 m N MGA94 56
SURFACE RL: 321.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 30.45 m

SHEET: 3 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 4/12/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L		20				CI			WALLOON COAL MEASURES
			20.30							
			301.30		SPT 20.30-20.75 m 5, 7, 12 N=19		CH	CLAY (EXTREMELY WEATHERED sandstone) high plasticity, grey mottled orange-brown	W (< PL)	
			21							
			21.80							
			219.80		SPT 21.80-22.25 m 11, 13, 23 N=36			becoming with fine to medium grained sand		
			22							
			23							
			23.30		SPT 23.30-23.75 m 7, 9, 12 N=21					
			24							
			24.80		SPT 24.80-25.25 m 6, 10, 15 N=25				St - VSt	
			25							
			26						W (~ PL)	
			26.30		SPT 26.30-26.75 m 6, 8, 12 N=20					
			27							
			27.80		SPT 27.80-28.25 m 7, 9, 14 N=23					
			28							
			29							
			30							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2214

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 319068 m E 6875070 m N MGA94 56
 SURFACE RL: 321.6 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 84/120 mm HOLE DEPTH: 30.45 m

SHEET: 4 OF 4
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: OM DATE: 4/12/18
 CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
SPT			30		SPT 30.00-30.45 m 6, 8, 10 N=18			CH	CLAY (EXTREMELY WEATHERED sandstone) high plasticity, grey mottled orange-brown	W (~ PL)	WALLOON COAL MEASURES
			291.15						END OF BOREHOLE @ 30.45 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.97 m DEPTH STANDPIPE INSTALLED		
			31								
			32								
			33								
			34								
			35								
			36								
			37								
			38								
			39								
			40								

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GAP gINT FN. F01a
RL3



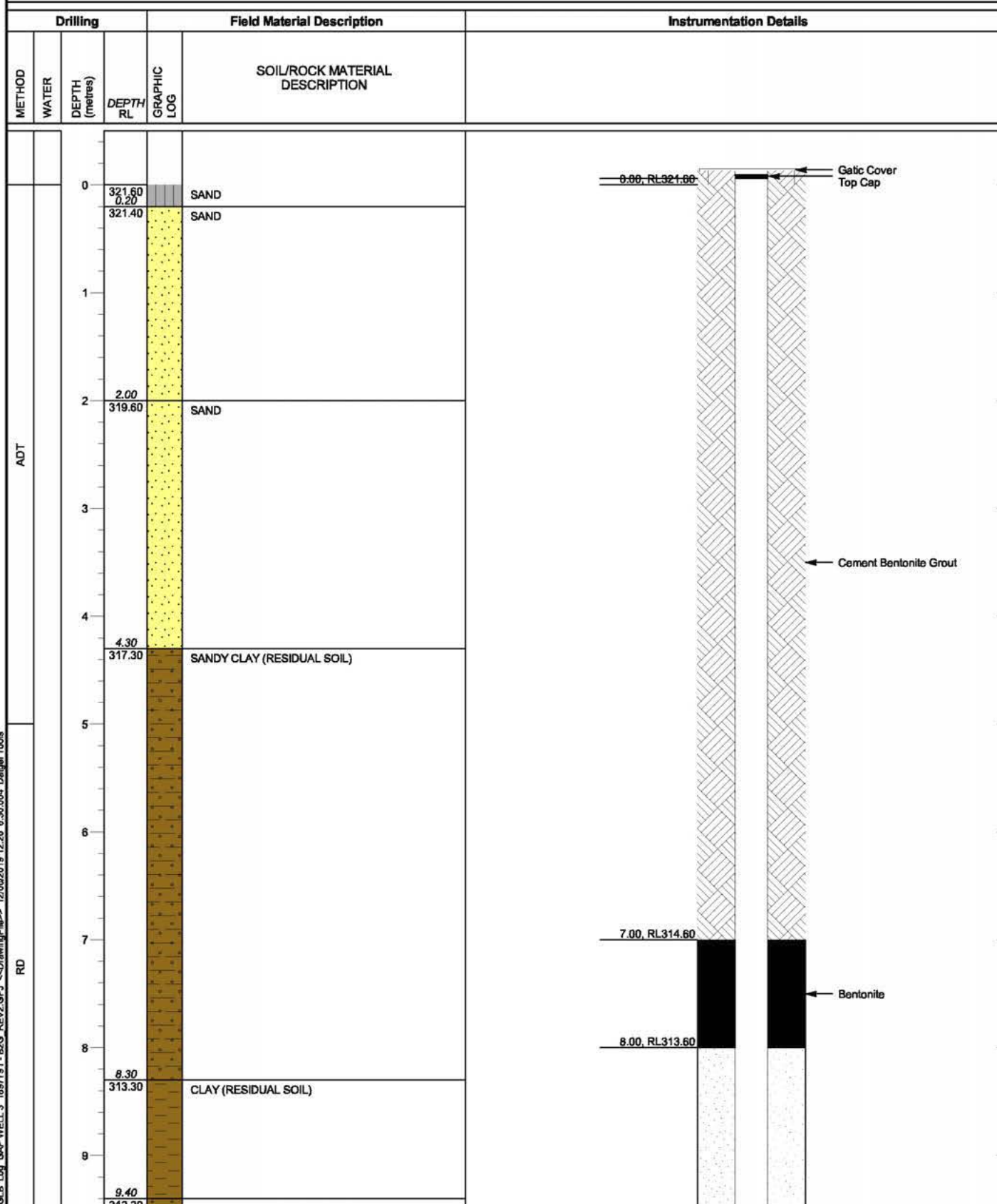
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2214

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 319068 m E 6875070 m N MGA94 56
SURFACE RL: 321.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 30.45 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 4/12/18
CHECKED: CB DATE: 11/12/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2214

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 319068 m E 6875070 m N MGA94 56

SURFACE RL: 321.6 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 84/120 mm HOLE DEPTH: 30.45 m

SHEET: 2 OF 4

DRILL RIG: DB520

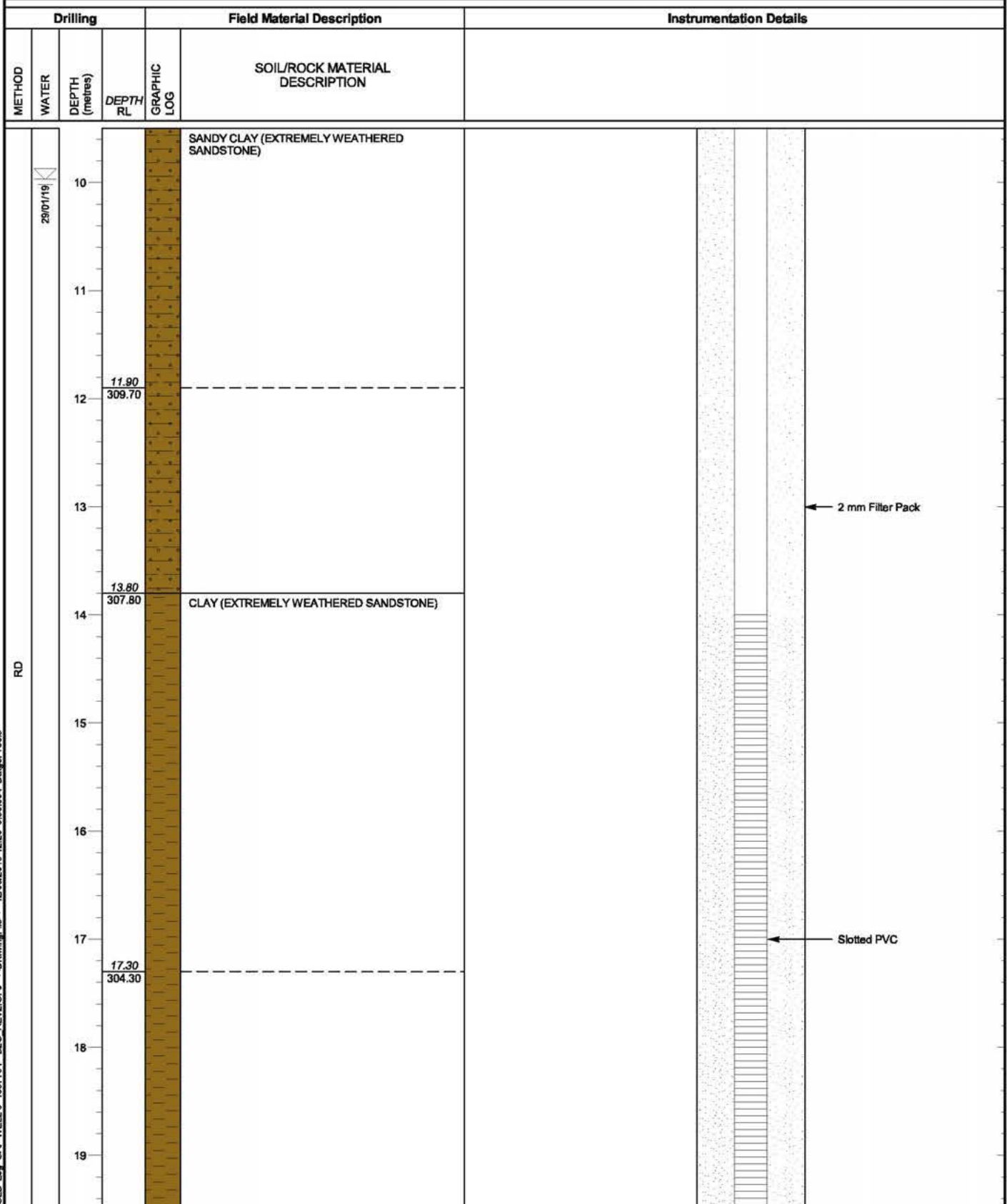
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LOGGED: OM

DATE: 4/12/18

CHECKED: CB

DATE: 11/12/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2214

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 319068 m E 6875070 m N MGA94 56

SURFACE RL: 321.6 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 84/120 mm HOLE DEPTH: 30.45 m

SHEET: 3 OF 4

DRILL RIG: DB520

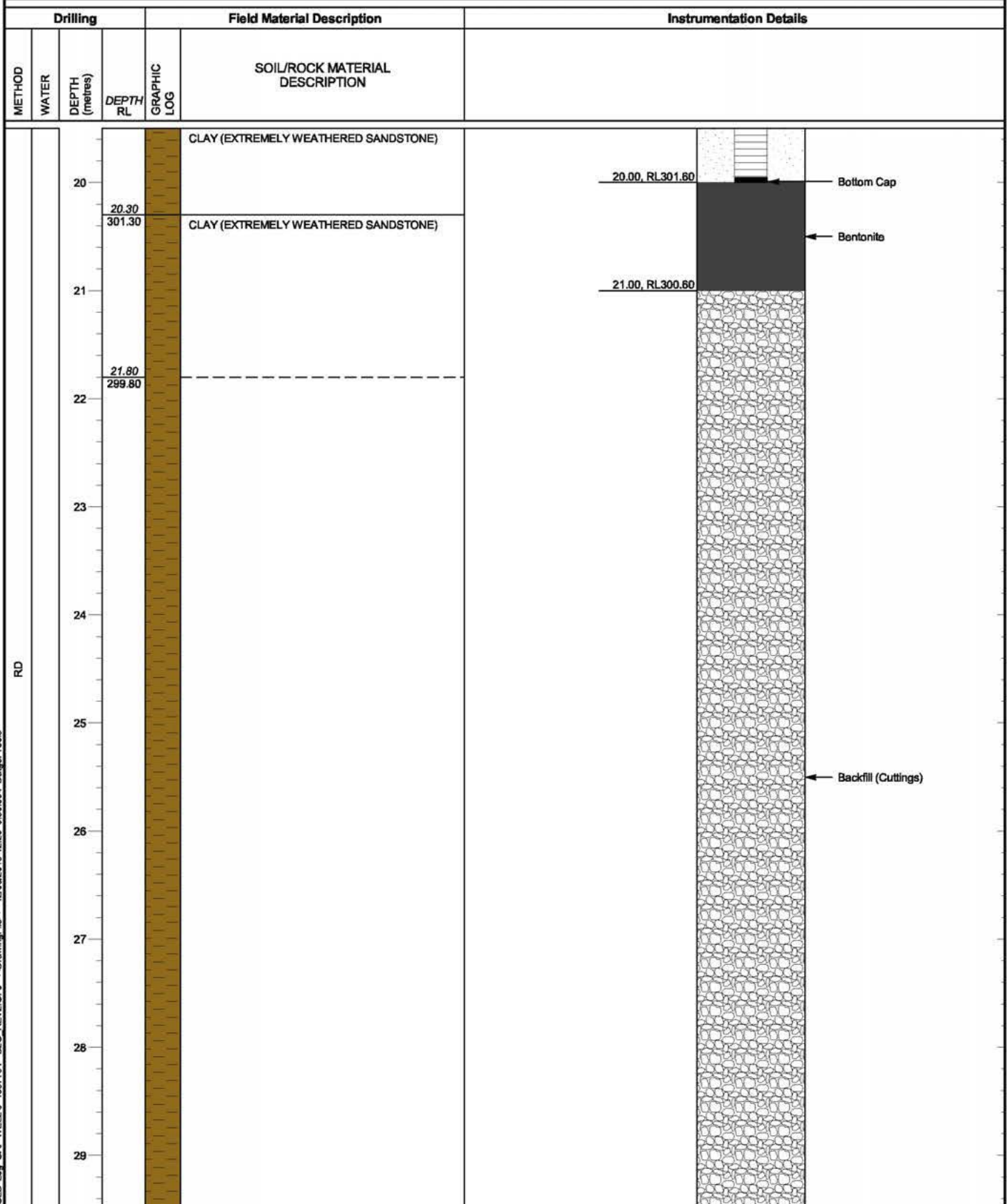
CONTRACTOR: NUMAC

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DATE: 4/12/18

CHECKED: CB

DATE: 11/12/18



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GAP gINT FN. F17
RL1

SHEET: 4 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: OM DATE: 4/12/18

CHECKED: CB DATE: 11/12/18

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 319068 m E 6875070 m N MGA94 56

SURFACE RL: 321.6 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 84/120 mm HOLE DEPTH: 30.45 m

Drilling				Field Material Description	Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
SPT	RD	30	30.45 291.15		CLAY (EXTREMELY WEATHERED SANDSTONE)
		31			
		32			
		33			
		34			
		35			
		36			
		37			
		38			
		39			

This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



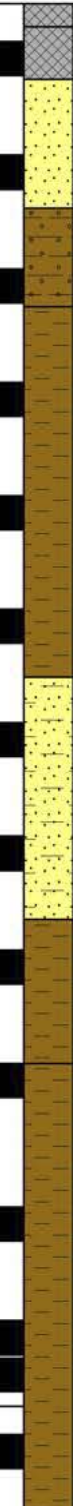
GOLDER

REPORT OF BOREHOLE: 310-01-BH2215

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 318929 m E 6875972 m N MGA94 56
SURFACE RL: 322.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 30.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 2/12/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
M	ADT		0.30	322.22	SPT 0.50-0.95 m 21, 17, 15 N=32		GP- GC SP	FILL: Clayey Sandy GRAVEL fine to coarse grained, to 25 mm, sub-angular to angular, with chert, orange-brown, fine to coarse grained sand, medium plasticity clay	D	MD - D	FILL
			1.00	321.52			SP	FILL: SAND fine to coarse grained, orange-brown, with fine to medium grained, sub-angular to angular grained gravel, with medium plasticity clay	M	MD	ALLUVIUM (QUATERNARY)
			2.70	319.82	SPT 2.00-2.45 m 4, 10, 13 N=23		CI- CH	SAND fine to coarse grained, orange-brown mottled yellow, with medium plasticity clay			
			4.00	318.52	SPT 3.50-3.94 m 4, 4, 11/140mm		CH	Sandy CLAY medium to high plasticity, orange-brown mottled yellow, fine to coarse grained sand, trace fine grained, sub-rounded gravel		H	
			6.50	316.02	SPT 5.00-5.45 m 7, 14, 19 N=33			CLAY high plasticity, grey mottled red-brown and yellow, with fine to medium grained sand	W (< PL)	H	
			8.90	313.62	SPT 6.50-6.95 m 9, 17, 20 N=37			becoming with trace fine to medium grained sand			
			12.10	310.42	SPT 8.00-8.45 m 8, 15, 19 N=34		SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, grey mottled red-brown, high plasticity clay	M	D - VD	WALLOON COAL MEASURES
			14.00	308.52	SPT 9.50-9.95 m 10, 19, 23 N=42		CI	CLAY (EXTREMELY WEATHERED sandstone) medium plasticity, grey mottled orange-brown, with fine to medium grained sand			
			15.90	306.62	SPT 11.00-11.45 m 18, 21, 30 N=51		CH	CLAY (EXTREMELY WEATHERED sandstone) high plasticity, dark grey mottled orange-brown	VSt - H		
			17.40	305.12	SPT 12.50-12.95 m 10, 15, 30 N=45			becoming dark grey mottled orange-brown and yellow in colour	W (- PL)		
RD			18.53		SPT 14.00-14.45 m 6, 10, 14 N=24			becoming with trace fine to medium grained sand		St - VSt	
			20.00		SPT 15.90-16.35 m 4, 5, 8 N=13						
			21.00		SPT 17.40-17.85 m 4, 6, 6 N=12						
			22.00		SPT 18.90-19.35 m 6, 6, 9 N=15						

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2215

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 318929 m E 6875972 m N MGA94 56
 SURFACE RL: 322.5 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 84/120 mm HOLE DEPTH: 30.00 m

SHEET: 2 OF 2
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: OM DATE: 2/12/18
 CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L		20							
			20.40	302.12	SPT 20.40-20.85 m 6, 6, 10 N=16		CH	CLAY (EXTREMELY WEATHERED sandstone) high plasticity, dark grey mottled orange-brown becoming dark grey mottled orange-brown in colour	St - VSt	WALLOON COAL MEASURES
			22		SPT 21.90-22.35 m 5, 9, 13 N=22					
			24		SPT 23.40-23.85 m 7, 8, 12 N=20					
			26		SPT 24.90-25.35 m 7, 8, 13 N=21				W (~ PL)	VSt
			28		SPT 26.40-26.85 m 6, 7, 9 N=16					
			30		SPT 27.90-28.35 m 9, 12, 18 N=30					H
			30		SPT 29.40-29.85 m 12, 13, 18 N=31			END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 10.00 m DEPTH STANDPIPE INSTALLED		
			32							
			34							
			36							
			38							
			40							

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GAP gINT FN. F01a
 RL3



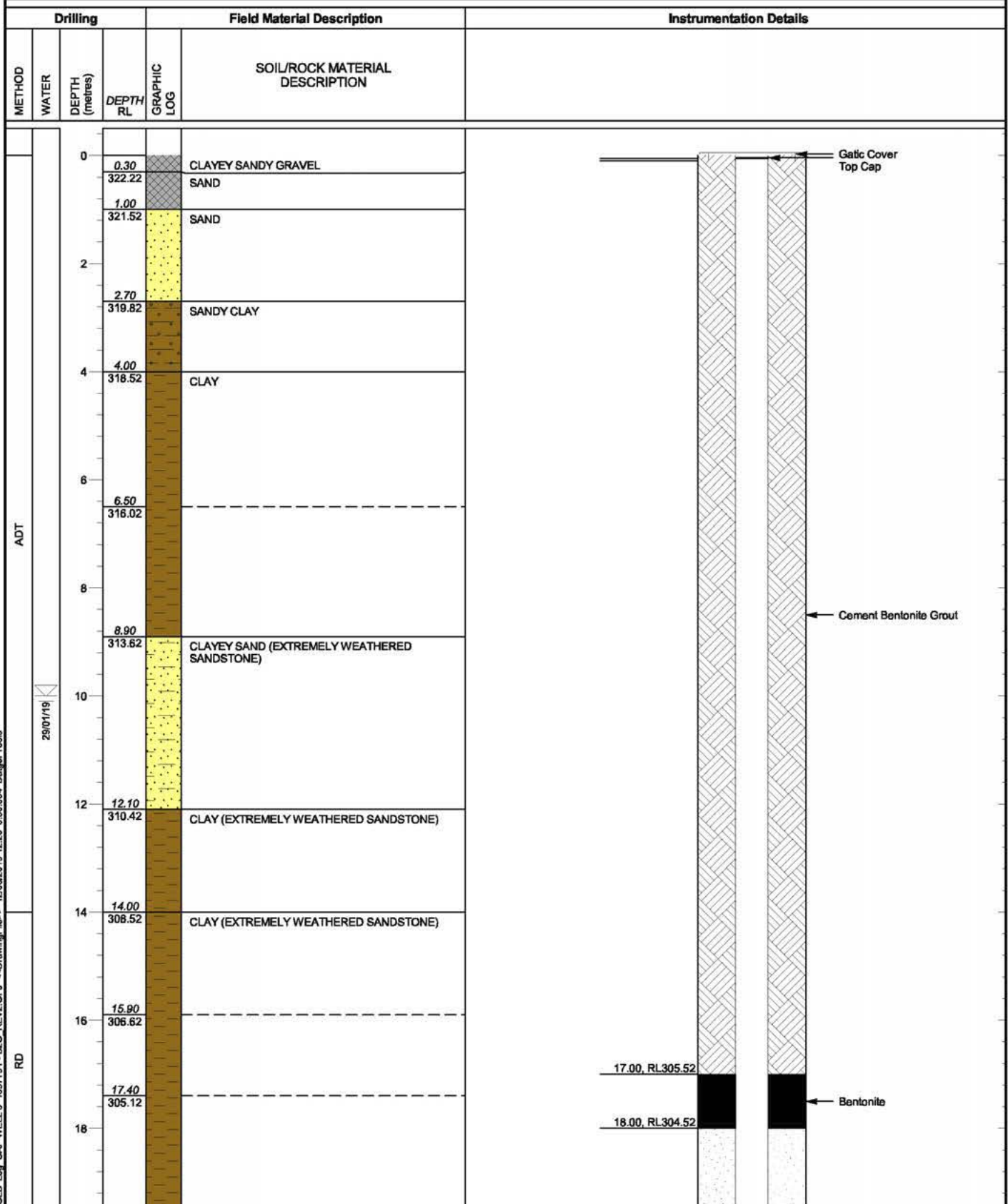
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2215

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 318929 m E 6875972 m N MGA94 56
SURFACE RL: 322.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 30.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 2/12/18
CHECKED: CB DATE: 11/12/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2215

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 318929 m E 6875972 m N MGA94 56

SURFACE RL: 322.5 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 84/120 mm HOLE DEPTH: 30.00 m

SHEET: 2 OF 2

DRILL RIG: DB520

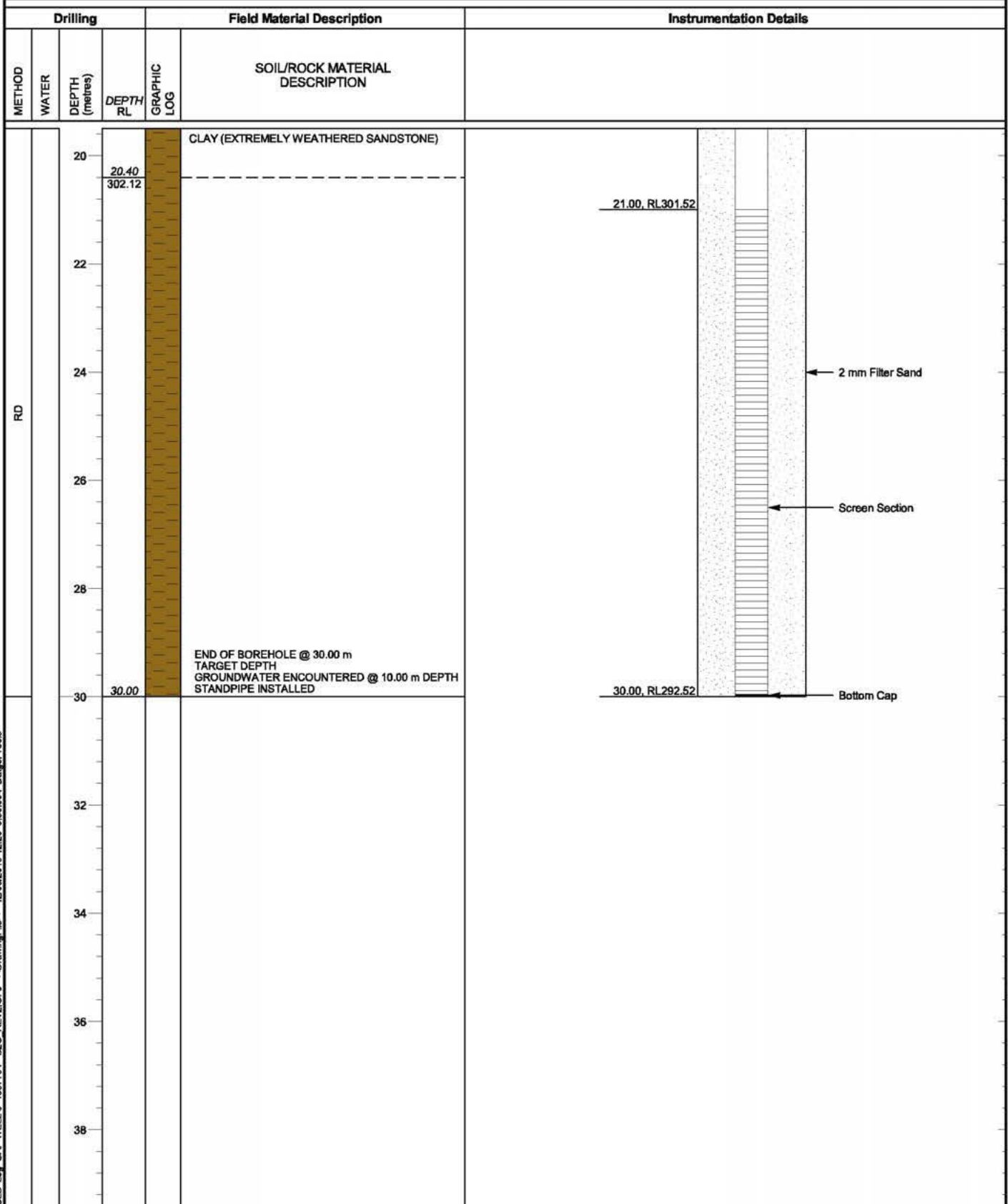
CONTRACTOR: NUMAC

LOGGED: OM

DATE: 2/12/18

CHECKED: CB

DATE: 11/12/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2216

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 321182 m E 6880902 m N MGA94 56
SURFACE RL: 320.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 30.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 28/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	320.72			CI	Sandy CLAY medium plasticity, dark brown, fine to medium grained sand, rootlets present			TOPSOIL
					SPT 0.50-0.95 m 11, 17, 24 HB N=41		CI	Sandy CLAY medium plasticity, dark brown	W (< PL)	H	ALLUVIUM (HOLOCENE)
L-M			2	318.92	SPT 2.00-2.45 m 24, 26, 28 HB N=54		SC	Clayey SAND medium grained, pale yellow brown, medium plasticity clay			ALLUVIUM (QUATERNARY)
			4	317.42	SPT 3.80-4.24 m 18, 26, 30/140mm HB N>56		SW	SAND fine to coarse grained, yellow brown, pale grey, with high plasticity clay, trace fine to coarse grained, sub-angular to sub-rounded gravel, of lithic sandstone and chert	W	VD	
RD			6		SPT 5.30-5.75 m 11, 24, 30 HB N=54						
			7	314.22	SPT 6.80-7.25 m 5, 8, 11 N=19		CH	CLAY (EXTREMELY WEATHERED mudstone) high plasticity, yellow brown and pale grey, with fine to medium grained sand			WALLOON COAL MEASURES / EURAMBAH BEDS (Lateritised)
L			8	312.82	SPT 8.30-8.75 m 6, 9, 15 N=24			becoming with fine to medium grained sand	W (< PL)	St - VSst	
			10								

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2216

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 321182 m E 6880902 m N MGA94 56
SURFACE RL: 320.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 30.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 28/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling			Field Material Description									
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
RD	L		10		SPT 9.80-10.25 m 5, 8, 11 N=19			CH	CLAY (EXTREMELY WEATHERED mudstone) high plasticity, yellow brown and pale grey, with fine to medium grained sand		St -		WALLOON COAL MEASURES / EURAMBAH BEDS (Lateritised)			
			11		SPT 11.30-11.75 m 8, 10, 13 N=23						VSt					
			12													
			13		SPT 12.80-13.25 m 7, 11, 17 N=28											
			14		SPT 14.30-14.75 m 9, 13, 17 N=30											
			15	14.80 306.02	U 14.80-15.10 m PP >600 kPa						CH			Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, pale grey, yellow brown, medium grained sand	W (< PL)	
			16		SPT 15.80-16.25 m 10, 14, 19 N=33											
			17		SPT 17.30-17.75 m 11, 24, 27 HB N=51											
			18													
			19	18.60 302.22	SPT 18.80-19.25 m 14, 19, 27 HB N=46						CH			Sandy CLAY (EXTREMELY WEATHERED mudstone) high plasticity, pale grey and black, fine to medium grained sand, with silt, (carbonaceous clay)	H	

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2216

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 321182 m E 6880902 m N MGA94 56
SURFACE RL: 320.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 30.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 28/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M		20		SPT 20.30-20.60 m 21, 30/150mm HB N>30		CH	Sandy CLAY (EXTREMELY WEATHERED mudstone) high plasticity, pale grey and black, fine to medium grained sand, with silt, (carbonaceous clay)	W (< PL)	H
			21							
			22		SPT 21.80-21.95 m 30/150mm HB					
			23							
			24		SPT 23.30-23.60 m 21, 30/150mm HB N>30					
			25		SPT 24.80-25.22 m 19, 28, 30/120mm HB N>58					
			26							
			27		SPT 26.30-26.71 m 18, 28, 30/110mm HB N>58					
			28		SPT 27.80-28.09 m 21, 30/140mm HB N>30					
			29	28.90 291.92			CH			
			30		SPT 29.30-29.41 m 30/110mm HB			Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, pale grey, fine to coarse grained sand		
								END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 14.16 m DEPTH STANDPIPE INSTALLED		

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GAP gINT FN. F01a
RL3



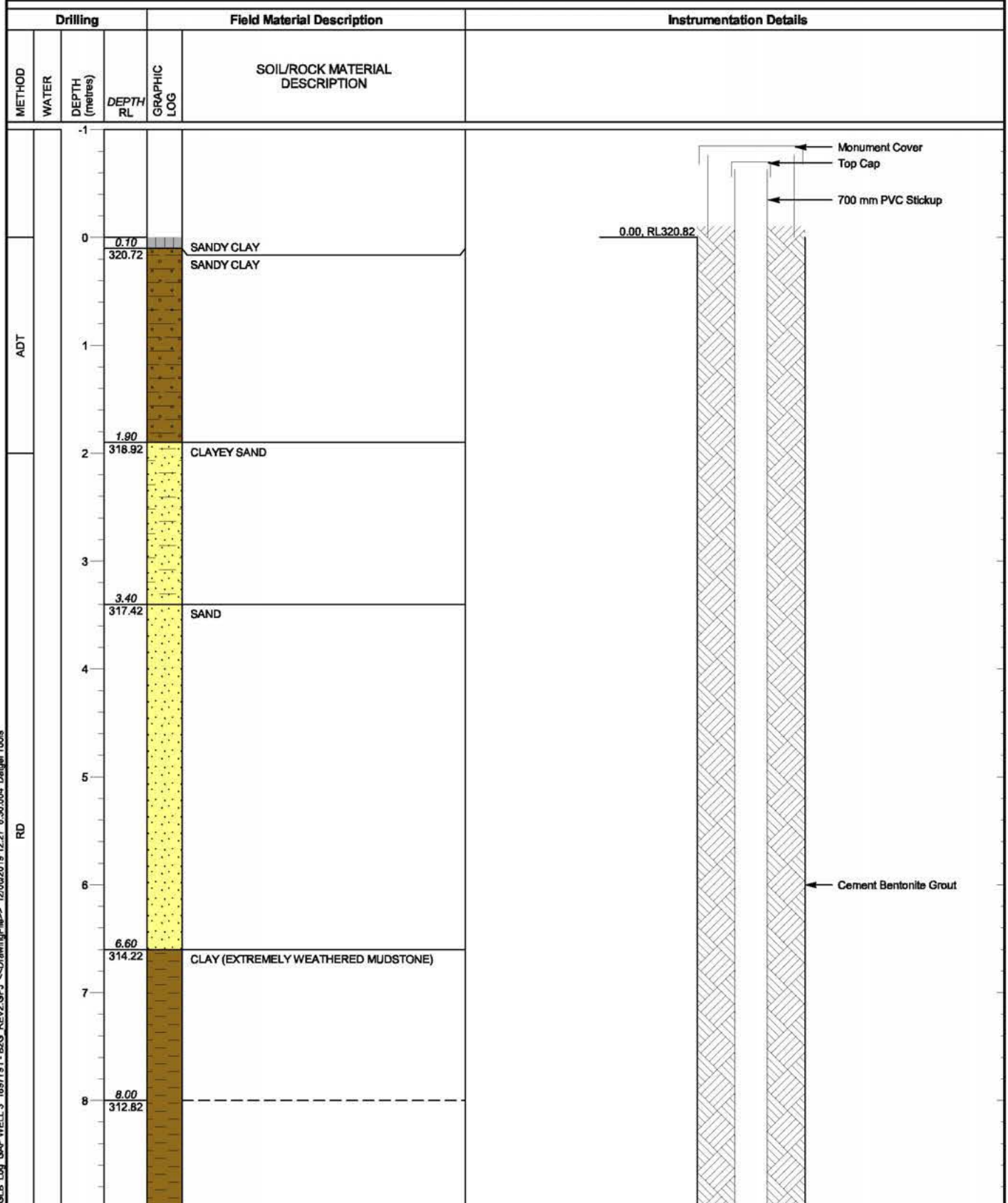
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2216

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 321182 m E 6880902 m N MGA94 56
SURFACE RL: 320.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 30.00 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 28/8/18
CHECKED: IT DATE: 12/9/18



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GAP gINT FN. F17
RL1



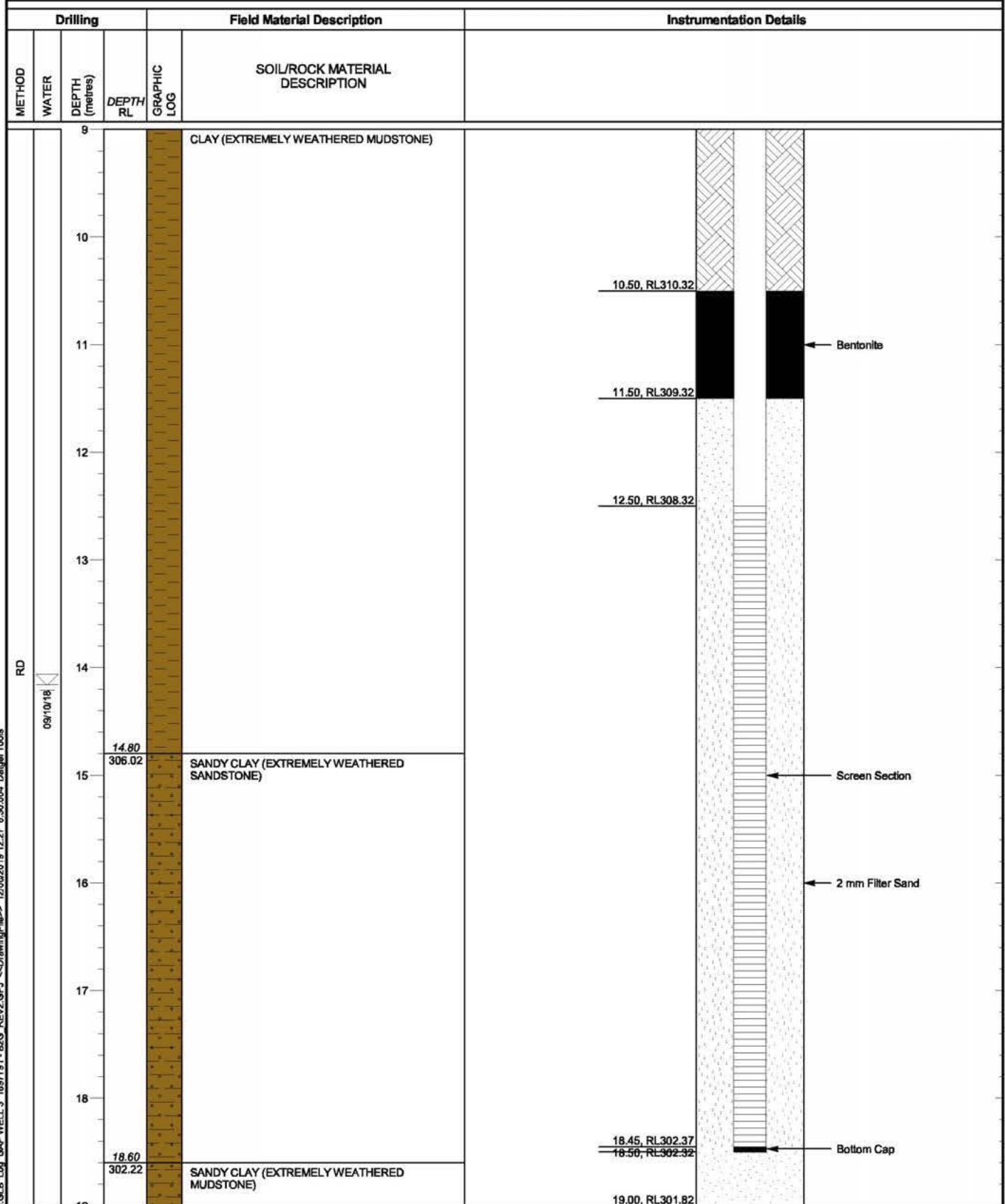
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2216

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 321182 m E 6880902 m N MGA94 56
SURFACE RL: 320.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 30.00 m

SHEET: 2 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 28/8/18
CHECKED: IT DATE: 12/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2216

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 321182 m E 6880902 m N MGA94 56

SURFACE RL: 320.8 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 30.00 m

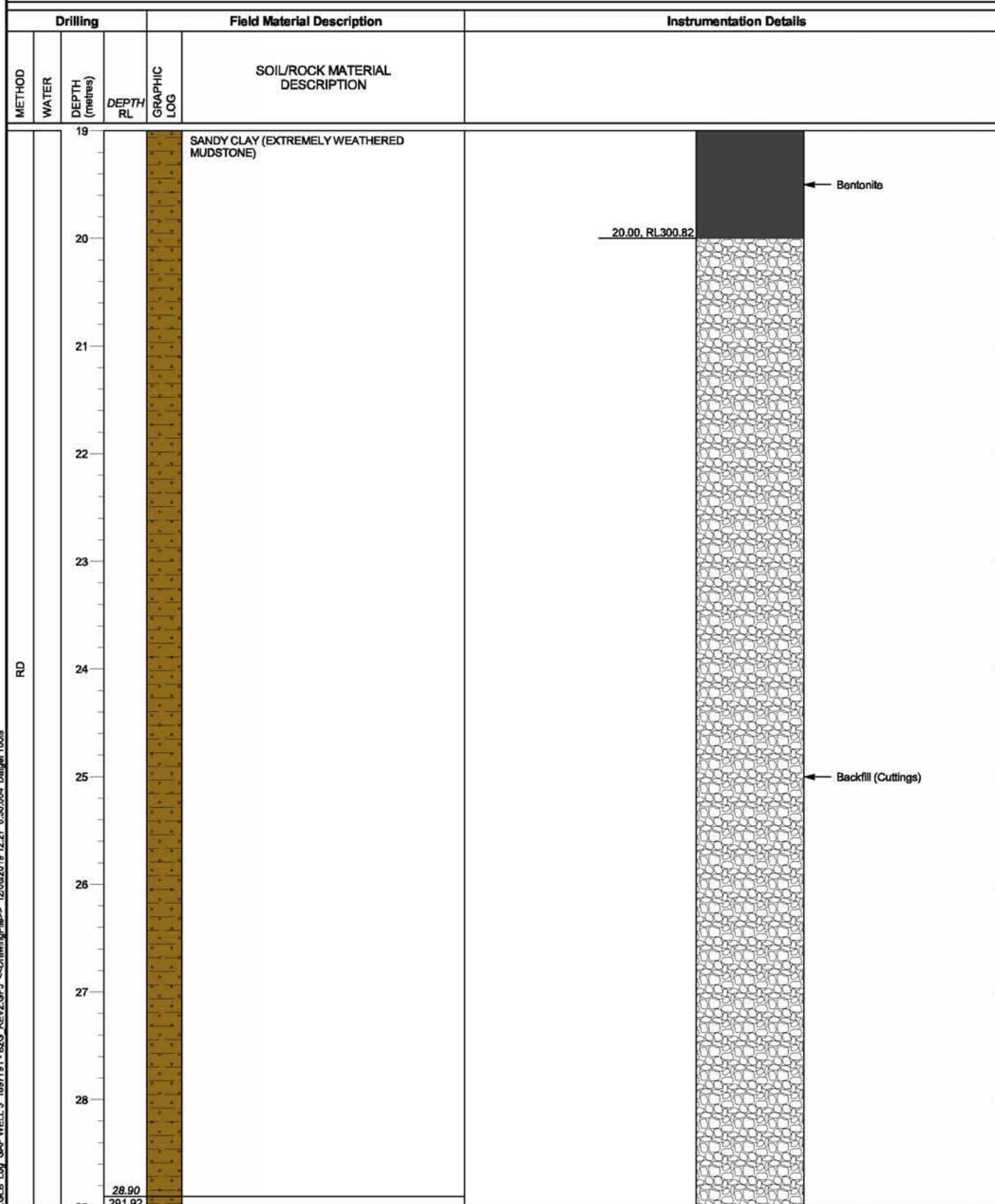
SHEET: 3 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: FZ DATE: 28/8/18

CHECKED: IT DATE: 12/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2216

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 321182 m E 6880902 m N MGA94 56

SURFACE RL: 320.8 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 30.00 m

SHEET: 4 OF 4

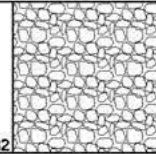
DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: FZ DATE: 28/8/18

CHECKED: IT DATE: 12/9/18

Drilling				Field Material Description	Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
RD		29			SANDY CLAY (EXTREMELY WEATHERED SANDSTONE)
		30	30.00		END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 14.16 m DEPTH STANDPIPE INSTALLED
		31			
		32			
		33			
		34			
		35			
		36			
		37			
		38			
		39			



30.00, RL290.82

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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2219

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 323169 m E 6887698 m N MGA94 56
SURFACE RL: 337.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 29.59 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 30/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
ADT	L		0	337.47	SPT 0.50-0.95 m 8, 11, 15 N=26			CL-CL	CLAY low to medium plasticity, dark grey brown, with silt, with fine grained sand	W (< PL)	VSt	TOPSOIL		
			337.27	CL-CL				CLAY low to medium plasticity, dark brown, with silt, with fine grained sand	ALLUVIUM					
			1											
			2	2.06				SPT 2.00-2.45 m 5, 9, 10 N=19	SC			Clayey SAND fine to medium grained, dark brown, low plasticity clay	M	MD
			2.32	SW				Gravelly SAND fine to coarse grained, dark brown, fine grained, sub-rounded to sub-angular gravel						
			2.50	CL				Sandy CLAY low plasticity, grey brown, fine to medium grained sand, trace fine to medium grained, sub-angular gravel, trace nodules of calcium carbonate				St		
			334.97											
			3					SPT 3.00-3.45 m 5, 8, 10 N=18						
			4											
			5					SPT 4.50-4.95 m 7, 11, 19 N=30						
RD	L	GROUNDWATER NOT OBSERVED	5	5.40	SPT 5.40-5.85 m 6, 12, 15 N=27			CH	Sandy CLAY (EXTREMELY WEATHERED mudstone) high plasticity, pale grey and orange brown, fine to medium grained sand, trace fine grained sand	W (< PL)	VSt	TERTIARY TO QUATERNARY SEDIMENTARY SEQUENCE - SANDSTONE AND MUDSTONE (Residual Soil)		
			6										WALLOON COAL MEASURES (Lateritised)	
			7					U50 7.00-7.22 m PP >500 kPa SPT 7.22-7.67 m 10, 15, 18 N=33						
			8					U50 8.50-8.88 m						
			9					PP >500 kPa					H	
			9.80						CH					
			327.67											
			10											

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2219

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 323169 m E 6887698 m N MGA94 56
SURFACE RL: 337.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 29.59 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 30/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M	GROUNDWATER NOT OBSERVED	10		U50 10.00-10.20 m PP >500 kPa		CH	Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, pale orange brown grey, fine to coarse grained sand		WALLOON COAL MEASURES (Lateritised)
			11							
			12		SPT 11.50-11.63 m 30/130mm HB					
			13		SPT 13.00-13.40 m 15, 29, 30/100mm					
			13.30 324.17					trace fine grained, sub-angular gravel, weakly cemented dark brown (ferruginous) to 13.5m		
			14							
			15		SPT 14.50-14.79 m 18, 30/140mm					
			16		SPT 16.00-16.25 m 24, 30/100mm					
			16.10 321.37					trace fine grained, sub-angular gravel (breccia) to 16.4 m		
			17							
			17.30 320.17							
			18		SPT 17.50-17.78 m 28, 30/130mm		CH	Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, grey, fine to medium grained sand		
			19		SPT 19.00-19.29 m 23, 30/140mm					
			20							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2219

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 323169 m E 6887698 m N MGA94 56
SURFACE RL: 337.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 29.59 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 30/8/18
CHECKED: IT DATE: 12/9/18

Drilling				Sampling			Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
SPT	RD	M	GROUNDWATER NOT OBSERVED	20				CH	Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, grey, fine to medium grained sand				WALLOON COAL MEASURES (Lateritised)
					SPT 20.50-20.79 m 22, 30/140mm								
				21									
				22	SPT 22.00-22.29 m 23, 30/140mm								
				23									
				23.50									
				313.97	SPT 23.50-23.60 m 30/100mm				with fine to coarse grained sand, trace nodules of calcium carbonate				
				24									
				25	SPT 25.00-25.08 m 30/80mm						W (< PL)	H	
				26									
26.50													
310.97	SPT 26.50-26.79 m 17, 30/140mm			CH	CLAY (EXTREMELY WEATHERED mudstone) high plasticity, grey, trace fine to coarse grained sand								
27													
28					SPT 28.00-28.07 m 30/70mm								
29													
307.88	SPT 29.50-29.59 m 30/90mm												
30									END OF BOREHOLE @ 29.59 m REFUSAL GROUNDWATER NOT OBSERVED BACKFILLED				

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2221

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 321993 m E 6884259 m N MGA94 56
SURFACE RL: 327.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 29.85 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 29/11/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description									
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
ADT	L		0	0.10 326.96	SPT 0.50-0.95 m 8, 11, 15 N=26			CI	TOPSOIL: CLAY medium plasticity, dark brown, with fine to medium grained sand, trace rootlets				TOPSOIL		
			1											ALLUVIUM (HOLOCENE)	
			2	2.00 325.06	SPT 2.00-2.45 m 5, 7, 9 N=16					becoming dark grey mottled brown in colour		H			
			3												
			4	3.50 323.56	SPT 3.50-3.95 m 4, 4, 6 N=10					increasing fine to medium grained sand content		W (< PL)			
			5	4.10 322.96											
			6												
			7												
			8												
			9												
RD	L		5	29/11/18	SPT 5.00-5.45 m 4, 7, 8 N=15			CI	Sandy CLAY medium plasticity, grey mottled brown, fine to medium grained sand				St - VSI	WALLOON COAL MEASURES	
			6	5.60 321.46											
			7	6.90 320.16	SPT 6.90-7.35 m 15, 16, 30 N=46										
			8	7.30 319.76											
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This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2221

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 321993 m E 6884259 m N MGA94 56
SURFACE RL: 327.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 29.85 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 29/11/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L		10		SPT 9.90-10.35 m 5, 6, 10 N=16			CI	CLAY medium plasticity, grey mottled orange-brown, with fine to medium grained sand	VSt	H	WALLOON COAL MEASURES
			10.90	316.16			CI	Sandy CLAY high plasticity, grey mottled orange-brown, fine to medium grained sand				
			11		SPT 11.40-11.85 m 9, 15, 17 N=32							
			12							W (-PL)		
			13		SPT 12.90-13.35 m 9, 13, 12 N=25							
			13.60	313.46		SC	Clayey SAND fine to medium grained, grey, high plasticity clay	W	MD			
			14									
			15									
			16		SPT 15.90-16.35 m 9, 12, 13 N=25		becoming grey mottled orange-brown in colour					
			17									
18		SPT 17.40-17.85 m 6, 10, 18 N=28										
18.90	308.16	SPT 18.90-19.35 m 8, 11, 15 N=26		CI	CLAY medium plasticity, orange-brown mottled grey, with fine to medium grained sand	W (-PL)	H					

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2221

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 321993 m E 6884259 m N MGA94 56
SURFACE RL: 327.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 29.85 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 29/11/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L		20					CI	CLAY medium plasticity, orange-brown mottled grey, with fine to medium grained sand	W (-PL)	H		WALLOON COAL MEASURES
			20.40	306.66	SPT 20.40-20.85 m 7, 10, 18 N=28			becoming grey mottled orange-brown in colour					
			21										
			21.60	305.46			CH	Sandy CLAY high plasticity, orange-brown mottled grey, fine to medium grained sand					
			22		SPT 21.90-21.99 m 30/90mm								
			23										
			23.40	303.66	SPT 23.40-23.48 m 30/80mm		CH	CLAY high plasticity, orange-brown, with fine to medium grained sand					
			24										
			24.70	302.36	SPT 24.90-25.01 m 30/110mm		CH	Sandy CLAY high plasticity, orange-brown mottled grey, fine to medium grained sand					
			25										
26													
26.40	300.66	SPT 26.40-26.50 m 30/100mm				increasing fine to medium grained sand content							
27													
28													
28.30	298.76	SPT 27.90-27.99 m 30/90mm			CH	CLAY high plasticity, grey, with fine to medium grained sand							
29													
SPT					SPT 29.40-29.85 m 16, 22, 32 N=54								
									END OF BOREHOLE @ 29.85 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 4.70 m DEPTH BACKFILLED				

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2228

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 329158 m E 6911117 m N MGA94 56
SURFACE RL: 417.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 30.10 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/12/18
CHECKED: IT DATE: 20/12/18

Drilling				Sampling		Field Material Description									
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
ADT	L-M	GROUNDWATER NOT OBSERVED	0	417.30				GP	FILL: Sandy GRAVEL medium to coarse grained, to 20 mm, sub-rounded, yellow-brown, fine to medium grained sand	D	VD		FILL		
			0.48	416.82	SPT 0.50-0.95 m 4, 8, 6 N=14			CH	CLAY high plasticity, yellow-brown, with fine to medium grained gravel sand, fine to medium grained, gravel of low strength sandstone (to 10 mm)						
			1												
			1.80	415.50	SPT 2.00-2.45 m 7, 11, 16 N=27			CH	CLAY high plasticity, yellow-brown mottled grey, with fine to medium grained sand, fine grained, sub-rounded of low strength sandstone, trace grave of low strength sandstone			St - VSt		QUATERNARY ALLUVIUM (Lateritised)	
			2												
			2.90	414.40	SPT 3.50-3.95 m 3, 6, 10 N=16			CI	CLAY medium plasticity, pale grey mottled yellow, (bleached) trace yellow staining			W (< PL)			
			3												
			4												
			4.50	412.80	SPT 5.00-5.45 m 5, 19, 34 N=53			CH	Sandy CLAY high plasticity, pale grey mottled yellow-brown and red, fine grained sand, with silt						
			5												
HQ3	M		6	6.11 411.19	C 6.11-7.58 m			CI-CH	Cobbly CLAY medium to high plasticity, grey, rounded cobbles of basalt, with fine to coarse grained sand				ALLUVIUM		
			7												
			7.30 410.00						CORE LOSS			H			
			7.58 409.72	C 7.58-9.00 m				GC	Clayey GRAVEL fine to coarse grained, rounded to sub-rounded, grey, medium to high plasticity clay, with fine to coarse grained sand		D				
RD			8	8.48 408.82											
			9	9.00 408.30											

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2228

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 329158 m E 6911117 m N MGA94 56
SURFACE RL: 417.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 30.10 m

SHEET: 2 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/12/18
CHECKED: IT DATE: 20/12/18

Drilling				Sampling			Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M	GROUNDWATER NOT OBSERVED	10		SPT 9.90-10.35 m 26, 29, 33 N=62			CI-CH	Gravelly CLAY medium to high plasticity, grey, fine to coarse grained to 30 mm, sub-rounded to rounded of basalt and ferruginous siltstone gravel, trace fine to coarse grained sand	W (< PL)	H	ALLUVIUM
			10.50	406.80		CI-CH	Gravelly CLAY medium to high plasticity, orange-brown mottled grey, fine to coarse grained to 25 mm, sub-rounded of basalt gravel, trace fine to coarse grained sand					
			11		SPT 11.40-11.64 m 30, 30/90mm HB N>30			GP-GC	Clayey GRAVEL fine to medium grained, to 10 mm, rounded to sub-rounded, grey, medium plasticity, pale grey and yellow-brown clay, with medium grained sand	D	VD	
			11.70	405.60								
			12		SPT 12.90-13.13 m 8, 30/75mm HB N>30			GP-GC	Clayey SAND and GRAVEL fine to medium grained to 15 mm, sub-angular to sub-rounded, dark grey and red-brown, high strength basalt, and chert (possible siltcrete), quartz gravel, fine to coarse grained sand, low plasticity clay	H	WALLOON COAL MEASURES (Lateritised)	
			14.00	403.30								
			14.50	402.80	SPT 14.30-14.56 m 3, 30/110mm HB N>30			CI-CH	Sandy CLAY medium to high plasticity, yellow-brown, fine to medium grained sand, trace fine to medium grained to 15 mm, sub-rounded to sub-angular gravel, grading to clayey fine grained (bleached) sand	W (< PL)		VD
			15		SPT 15.80-15.86 m 30/60mm HB N=R			CI-CH	Sandy CLAY medium to high plasticity, pale grey mottled yellow, fine to medium grained sand			
			16		SPT 17.30-17.41 m 30/105mm HB N=R			CI-CH	becoming interbedded with clayey sand and medium grained sand (to 100 mm)	W (< PL)	VD	
			17.30	400.00								
18		SPT 18.80-18.91 m 30/105mm HB N=R			CI-CH	becoming with beds of sandy clay	W (< PL)	VD				
18.80	398.50											

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2228

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 329158 m E 6911117 m N MGA94 56
SURFACE RL: 417.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 30.10 m

SHEET: 3 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/12/18
CHECKED: IT DATE: 20/12/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M	GROUNDWATER NOT OBSERVED	20		SPT 20.30-20.37 m 30/70mm HB N=R			CL-CH	Sandy CLAY medium to high plasticity, pale grey mottled yellow, fine to medium grained sand	W (< PL)	VD		WALLOON COAL MEASURES (Lateritised)
			21		SPT 21.40-21.47 m 30/65mm HB N=R								
			21.80 395.50			SC	Clayey SAND fine to medium grained, grey, medium to high plasticity clay, grading to sandy clay in places						
			22										
			23		SPT 22.90-22.97 m 30/65mm HB N=R								
			24										
			25		SPT 24.40-24.45 m 30/45mm HB N=R								
			25.40 391.90			SC	Clayey SAND medium grained, grey, medium to high plasticity clay, trace fine grained, sub-rounded gravel, trace carbonaceous streaks	M					
			26		SPT 25.90-25.95 m 30/50mm HB N=R								
			26.20 391.10										
			27			CL-CH	Clayey SAND fine grained, grey, medium to high plasticity clay, with silt						
			28		SPT 27.40-27.42 m 30/20mm HB N=R								
			28.00 389.30			CL-CH	Clayey SAND fine grained, grey, medium to high plasticity clay, with silt						
			29										
			29.10 388.20										
			30										

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2228

SHEET: 4 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: OM DATE: 11/12/18

CHECKED: IT DATE: 20/12/18

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 329158 m E 6911117 m N MGA94 56

SURFACE RL: 417.3 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 84/120 mm HOLE DEPTH: 30.10 m

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
SPT			30	387.20	SPT 30.00-30.10 m 30/100mm HB N=R				END OF BOREHOLE @ 30.10 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED				
			31										
			32										
			33										
			34										
			35										
			36										
			37										
			38										
			39										
			40										

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2228

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 329158 m E 6911117 m N MGA94 56
SURFACE RL: 417.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 30.10 m

SHEET: 1 OF 1
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/12/18
CHECKED: IT DATE: 20/12/18



310-01-BH2228 6.11 - 9.00 m

This report of core photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F28
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2229

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56
SURFACE RL: 406.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.30 m

SHEET: 1 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 28/1/19

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M	GROUNDWATER NOT OBSERVED	0	406.57				CI-CH	TOPSOIL: CLAY medium to high plasticity, dark grey, trace rootlets				TOPSOIL
			0.50	406.07	SPT 0.50-0.95 m 14, 13, 15 N=28		CI-CH	Sandy CLAY medium to high plasticity, dark grey, trace rootlets to 0.9m	W (< PL)	H	QUATERNARY ALLUVIUM		
			1										
			1.90	404.67	SPT 2.00-2.45 m 15, 17, 17 N=34		SC	Clayey SAND fine to medium grained, orange brown, medium to high plasticity clay	D				
			2										
			3.20	403.37	SPT 3.50-3.95 m 9, 12, 11 N=23		SC	Clayey SAND fine to medium grained, pale grey mottled orange brown	D - M	MD - D			
			4										
			4.30	402.27			CI-CH	Sandy CLAY medium to high plasticity, grey mottled orange brown, fine to medium grained sand	W (< PL)	VST - H			
			5										
			5.00	401.57	SPT 5.00-5.45 m 10, 17, 30 N=47		SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, grey mottled orange brown, medium to high plasticity clay, carbonaceous flecks, trace angular gravel	D - M	D	WALLOON COAL MEASURES (Lateritised)		
M-H	RD		6										
			6.30	400.27	SPT 6.50-6.95 m 8, 14, 20 N=34		CI-CH	Sandy CLAY medium to high plasticity, grey mottled orange brown					
			7										
			7.40	399.17				with fine to medium grained sand	W (< PL)	H			
			8		SPT 8.00-8.45 m 12, 19, 29 N=48								
			9										
					SPT 9.50-9.95 m 10, 19, 24 N=43								

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2229

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56
SURFACE RL: 406.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.30 m

SHEET: 2 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 28/1/19

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M-H	GROUNDWATER NOT OBSERVED	10	10.10 396.47	SPT 11.30-11.50 m 23, 30/50mm HB			CI-CH	Gravelly Sandy CLAY medium to high plasticity, dark grey mottled orange brown, fine to medium grained sand, fine to medium grained, subangular to angular, (to 20mm) gravel				WALLOON COAL MEASURES (Lateritised)
			11										
			12										
			12.50 394.07										
			13	12.80-13.25 m 18, 25, 36 N=61			CI-CH	Sandy CLAY medium to high plasticity, grey and orange brown, fine to medium grained sand, trace fine to medium grained, subangular gravel, (to 10 mm)					
			13.80 392.77										
			14	14.30-14.75 m 22, 30, 30 N=60									
			15	15.00 391.57									
			16	15.80-16.25 m 6, 11, 28 N=39			CI-CH	CLAY medium to high plasticity, pale grey mottled pale brown and orange brown, with fine to medium grained sand				W (< PL) H	
			17	17.30-17.36 m 30/60mm HB									
			18	18.50 388.07									
			19	18.80-18.85 m 30/50mm HB									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2229

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56
 SURFACE RL: 406.6 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 30.30 m

SHEET: 3 OF 5
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: OM DATE: 10/1/19
 CHECKED: AL DATE: 28/1/19

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M-H		20		C 20.30-21.35 m SPT 20.30-20.35 m 30/50mm HB			CL-CH	Sandy CLAY low to medium plasticity, brown, fine to medium grained sand	W (< PL)	H	EXTREMELY WEATHERED Sandstone (WALLOON COAL MEASURES)	
									For Continuation Refer to Sheet 4				
			21										
			22										
			23										
			24										
			25										
			26										
			27										
			28										
			29										

GROUNDWATER NOT OBSERVED

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2229

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56
SURFACE RL: 406.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.30 m

SHEET: 4 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 28/1/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
					20									
								Continuation of Sheet 3						
								SANDSTONE fine to coarse grained, orange brown, cross bedded, 5 to 10 degrees			PLI(A)=0.12 PLI(D)=0.11	20.40 m: B, 5°, PI-Un, Ro, clay Ct 20.58-20.67 m: J, 40°, St, Ro, sandy clay, red and orange brown Ct 20.74 m: B, 5°, Un, Ro, Sn		
		100	65 (100)		21			bed of medium to coarse grained sand				21.22 m: B, 0°, PI-Un, Ro, Cn, close 21.30 m: B, 0°, PI, Sm-Ro, Cn, close 21.40-21.65 m: Bx 5, 0-10°, sp = 50 mm, PI, Ro, red brown Sn		
								trace fine to coarse grained, subrounded gravel (to 30 mm)				21.78 m: B, 0°, PI, Ro, Sn, close 21.90 m: B, 10°, PI, Ro, clay Ct		
					22			becoming pale grey, with orange brown staining	MW			22.10 m: B, 0-5°, PI-Un, Ro, red brown Sn 22.29 m: B, 0-5°, PI, Ro, red brown Sn		
		80	65 (80)		23			CORE LOSS				22.61-22.96 m: Bx3, 5°, sp = 100 mm, PI-Un, Ro, Cn, close		
											PLI(A)=0.23 PLI(D)=0.21	23.21 m: B, 10°, PI, Ro, clay, orange Ve 23.29 m: B, 5°, PI-Un, Ro, sand Ve 23.31 m: B, 5°, PI, Ro, sand Ve 23.58 m: B, 0°, Un, Ro, Cn, close 23.68 m: Jx 2, 30°, sp = 30 mm, Un, Ro, sand Ve		
					24									
								SANDSTONE fine to coarse grained, orange brown, bedded, 3 to 5 degrees, with beds of medium to coarse sand	HW			24.77 m: B, 0°, PI-Un, Ro, Cn, close 24.78-25.00 m: Bx 7, 5°, sp = 10 mm, Un, Sm-Ro, Cn-Sn		
					25			fine grained, becoming pale grey and orange brown				25.42 m: B, 5°, PI, Sm, Ve 25.46 m: B, 5°, PI, Sm, Ve		
		90	80 (85)		26				MW			25.92 m: B, 10°, PI-Un, Ro, Cn, close 26.05-26.44 m: Bx5, 5°, sp = 80 mm, PI, Sm-Ro, Cn, close 26.28 m: B, 10°, PI, Sm-Ro, Cn, close		
											PLI(A)=0.13 PLI(D)=0.16	26.73 m: B, 5°, PI, Ro, Sn, close 27.00 m: B, 0°, PI, black Ve 27.16 m: B, 5°, Ir, Ro, Ve 27.34 m: Bx2, 0°, sp = 40 mm, PI, Ro, red brown Sn		
					27									
					28			bed of medium to coarse grained sandstone			PLI(A)=0.24 PLI(D)=0.21	28.32 m: Bx2, 10°, sp = 150 mm, PI, Ro, Cn, close		
		100	85 (100)		29							29.06-29.14 m: Bx 4, 5°, sp = 20 mm, PI, Sm, Sn 29.20 m: Jx 2, 60°, sp = 90 mm, PI, Ro, Cn, close 29.37 m: B, 10°, PI, Sm-Ro, orange brown Sn 29.48 m: Bx 2, 10°, sp = 40 mm, PI, Ro, Cn, close 29.86 m: B, 0°, PI, Sm, Cn, close		
					29.95									

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2229

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56
SURFACE RL: 406.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.30 m

SHEET: 5 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 28/1/19

Drilling						Field Material Description				Defect Information			
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)
			100	85 (100)	30	376.62		SILTSTONE fine grained, massive, grey	HW			29.93 m: B, 10°, PI-Un, Sm, Cn, close	
						30.30		END OF BOREHOLE @ 30.30 m	MW			30.07 m: B, 10°, PI-Un, Sm, Cn, close	
						376.27		TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.87 m DEPTH STANDPIPE INSTALLED				30.13 m: J, 20°, PI, Sm, Cn, close	
					31								
					32								
					33								
					34								
					35								
					36								
					37								
					38								
					39								
					40								

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2229

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56
SURFACE RL: 406.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.30 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 28/1/19



310-01-BH2229 20.30 - 24.00 m



310-01-BH2229 24.00 - 28.00 m

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GAP gINT FN. F28
RL1



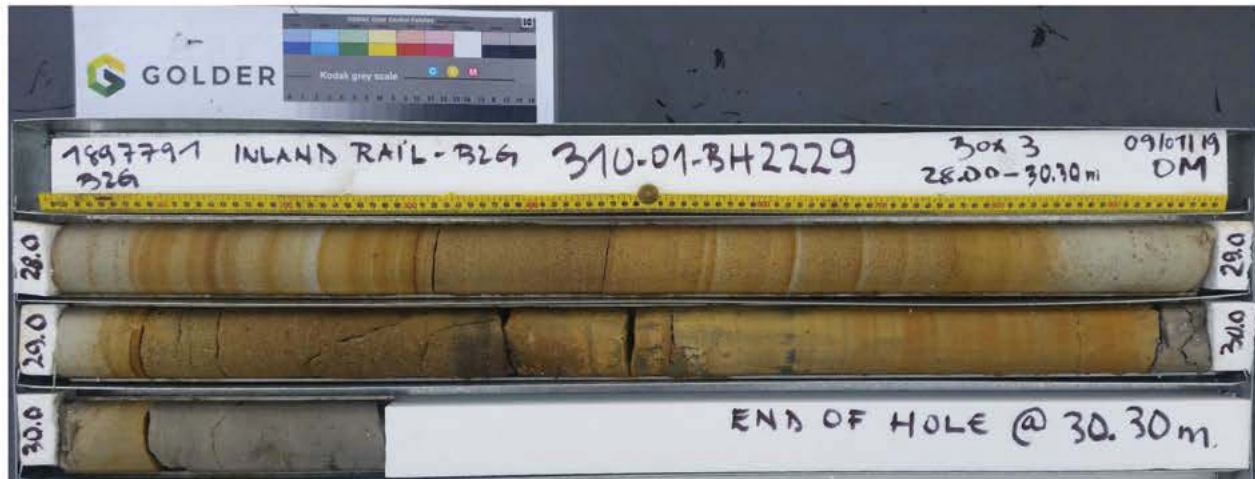
GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2229

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56
SURFACE RL: 406.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.30 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 28/1/19



310-01-BH2229 28.00 - 30.30 m



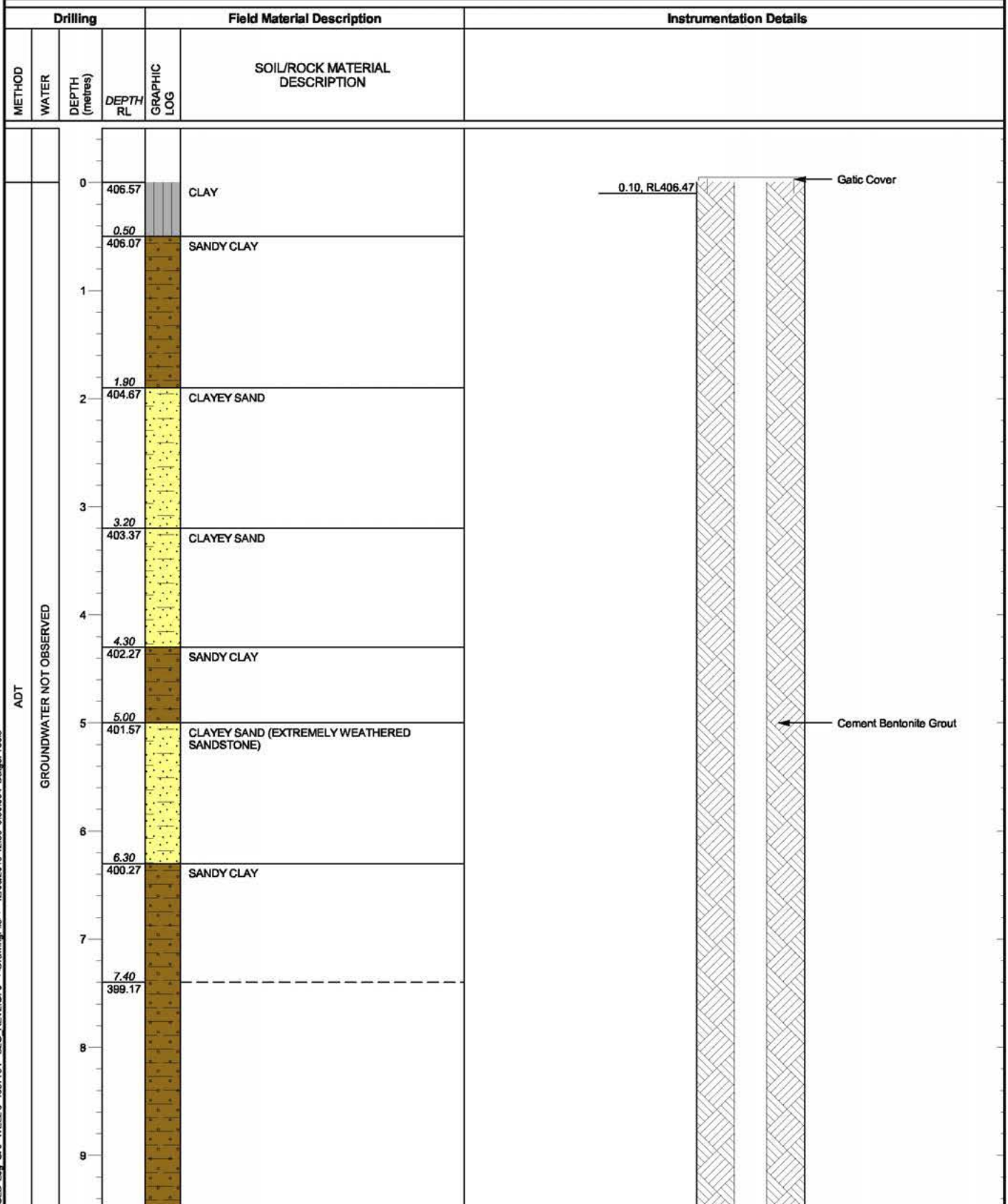
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2229

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56
SURFACE RL: 406.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.30 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 28/1/19



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GAP gINT FN. F17
RL1



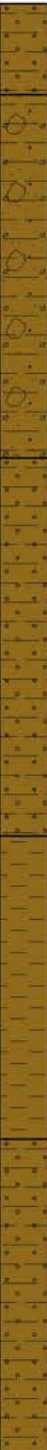
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2229

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56
SURFACE RL: 406.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.30 m

SHEET: 2 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 28/1/19

Drilling				Field Material Description		Instrumentation Details	
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION		
RD	30/01/19 GROUNDWATER NOT OBSERVED				SANDY CLAY		
		10	10.10 396.47		GRAVELLY SANDY CLAY		
		11					
		12					
		12.50	12.50 394.07		SANDY CLAY		
		13					
		13.80	13.80 392.77				
		14					
		15	15.00 391.57		CLAY		
		16					
		17	17.00 389.57		SANDY CLAY		
		18					
		18.50	18.50 388.07				
		19					

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GAP gINT FN. F17
RL1



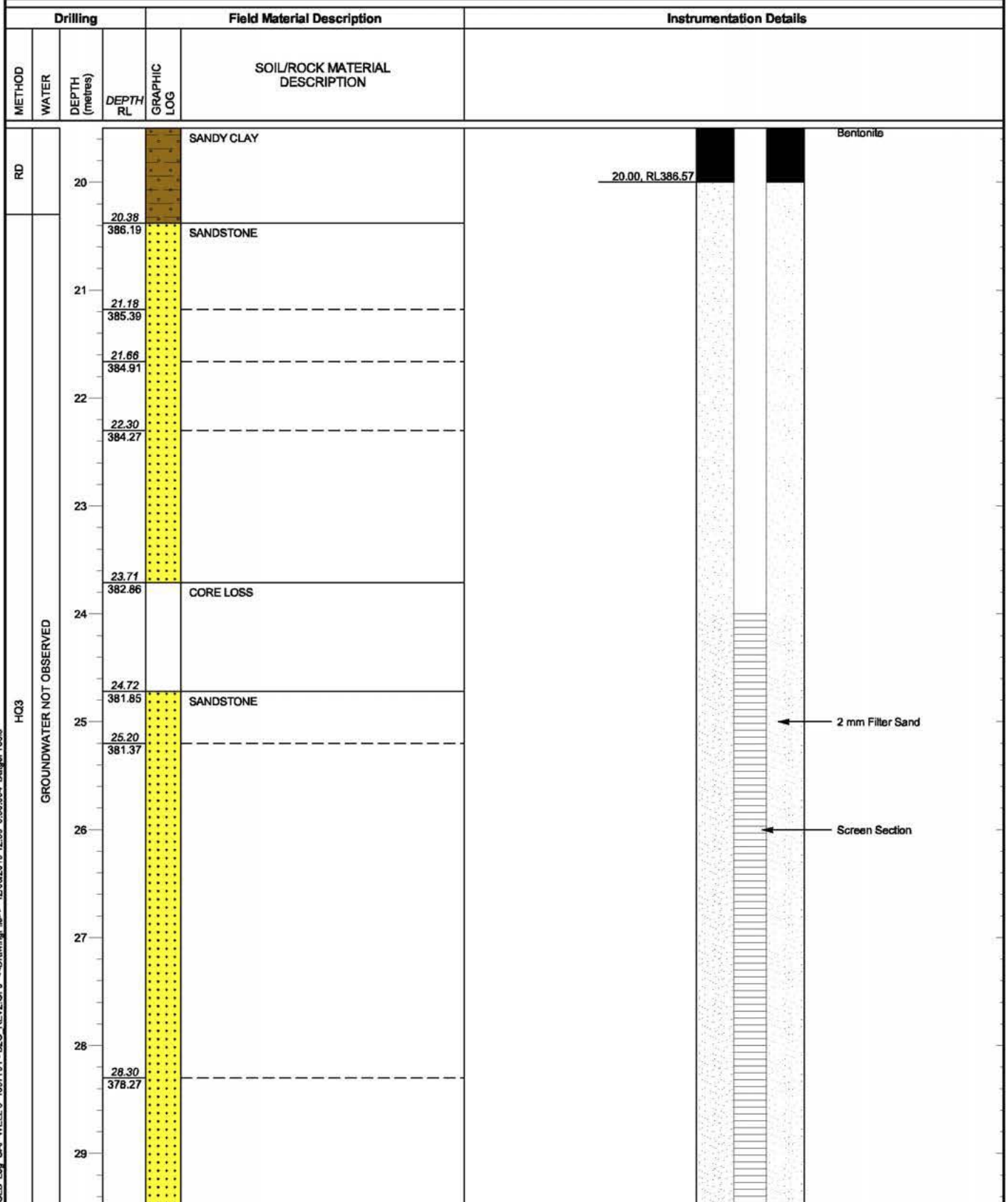
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2229

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56
SURFACE RL: 406.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.30 m

SHEET: 3 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 28/1/19



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2229

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 330026 m E 6911690 m N MGA94 56

SURFACE RL: 406.6 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 30.30 m

SHEET: 4 OF 4

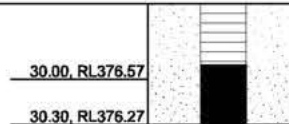
DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: OM DATE: 10/1/19

CHECKED: AL DATE: 28/1/19

Drilling				Field Material Description	Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
HQ3			29.95		SANDSTONE
		30	376.62		SILTSTONE
			30.30		END OF BOREHOLE @ 30.30 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.87 m DEPTH STANDPIPE INSTALLED
			376.27		
		31			
		32			
		33			
		34			
		35			
		36			
		37			
		38			
		39			



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2248

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 378811 m E 6952190 m N MGA94 56
SURFACE RL: 432.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 17/1/19
CHECKED: AL DATE: 28/1/19

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M		0	432.85			CH	TOPSOIL: CLAY high plasticity, dark brown, with rootlets and calcium carbonate nodules		TOPSOIL
			0.50	432.35	SPT 0.50-0.95 m 4, 5, 5 N=10		CH	CLAY high plasticity, red brown, trace fine to medium grained, angular (<7 mm calcium carbonate nodules) gravel	F - S	
			2		SPT 2.00-2.45 m 4, 8, 12 N=20					ALLUVIUM AND COLLUVIUM
			4		SPT 3.50-3.95 m 3, 6, 10 N=16				St - VSt	
			6		U50 5.00-5.25 m 5.00-5.25 m PP =340 kPa					
					U50 6.50-6.88 m 6.50-6.88 m PP =340 kPa				W (< PL)	
			8	7.30	SPT 8.00-8.45 m 10, 11, 16 N=27		CH	Gravelly CLAY high plasticity, grey mottled red-brown, fine to medium grained, angular gravel, trace medium to coarse grained, sub-angular sand		
				425.55				with calcite, calcium carbonate nodules and carbonaceous flecks		
			10	9.50	SPT 9.50-9.95 m 6, 8, 24 N=32				H	
				423.35						
RD	M		12	10.80	SPT 11.00-11.45 m 10, 18, 26 N=44		CH	CLAY (EXTREMELY WEATHERED mudstone) high plasticity, grey mottled yellow-brown, with carbonaceous flecks		EXTREMELY WEATHERED laminated MUDSTONE and SANDSTONE WALLOON COAL MEASURES
				422.05				becoming grey		
			14	12.50	SPT 12.80-13.20 m 21, 27, 30/100mm HB					
				420.35						
			16	13.90	SPT 14.30-14.55 m 30, 30/100mm HB		SC	Clayey SAND fine to medium grained, grey		
				418.95						
			18		SPT 15.80-16.05 m 23, 30/100mm HB				D VD	
					SPT 17.30-17.55 m 23, 30/100mm HB					
				18.40						
				414.45			SC	Clayey SAND grey, with fine to medium grained, sub-rounded (to 15 mm) gravel		
H			20	19.90	SPT 18.80-18.94 m 30/140mm HB					

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2248

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 378811 m E 6952190 m N MGA94 56
 SURFACE RL: 432.9 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 30.00 m

SHEET: 2 OF 3
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: OM DATE: 17/1/19
 CHECKED: AL DATE: 28/1/19

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	H		20	412.95	SPT 20.30-20.57 m 13, 30/120mm HB			SC	Clayey SAND medium to coarse grained, pale grey, low to medium plasticity clay, with carbonaceous flecks	D	VD	EXTREMELY WEATHERED laminated MUDSTONE and SANDSTONE WALLOON COAL MEASURES
			22		SPT 21.80-22.04 m 30, 30/90mm HB							
		23.00	409.85	SPT 23.30-23.55 m 24, 30/100mm HB			SP-SC	Clayey SAND fine to medium grained, pale grey, medium to high plasticity clay	M	VD		
		24	24.50	408.35	SPT 24.80-24.85 m 30/50mm HB			CI	Sandy CLAY medium plasticity, grey-brown, fine to medium grained sand	W (< PL)	H	
NMLC	L-M		26	26.30	C 26.30-27.10 m SPT 26.30-26.39 m 30/90mm HB				MUDSTONE fine grained, dark grey, laminated, fresh, low to medium strength For Continuation Refer to Sheet 3			WALLOON COAL MEASURES
			28									
			30									
			32									
			34									
			36									
			38									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2248

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 378811 m E 6952190 m N MGA94 56
SURFACE RL: 432.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 17/1/19
CHECKED: AL DATE: 28/1/19

Drilling					Field Material Description							Defect Information			
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)		
					20										
					22										
					24										
					26										
					26.39			Continuation of Sheet 2							
					406.43			MUDSTONE fine grained, massive, dark grey, laminated	FR			26.40 m: J, 30°, Pl, Sm, Cn			
			100	100 (100)	27.20			MUDSTONE fine grained, massive, grey			PLI(A)=0.41 PLI(D)=0.54 PLI(A)=0.55 PLI(D)=0.25				
			100	100 (100)	28			SANDSTONE fine grained, layered, pale grey, indistinct bedding 0 - 5 degrees							
					28.40			grading to medium to coarse grained gravelly sand							
					404.45			with carbonaceous laminations and flecks							
					29.00										
					403.85										
			100	85 (100)	29.60			SANDSTONE fine grained, massive, grey			PLI(A)=0.39 PLI(D)=0.25	29.28 m: B, 15°, Pl, Sm, Cn, carbonaceous lamination 29.43 m: B, 20°, Un, Sm, Cn, carbonaceous lamination 29.58 m: B, 30°, Un, Cn, carbonaceous lamination 29.73 m: J, 10°, Pl, Sm, Cn 29.85 m: J, 40°, Pl, Sm, Cn			
					30			END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.88 m DEPTH STANDPIPE INSTALLED							
					402.85										
					32										
					34										
					36										
					38										

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2248

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 378811 m E 6952190 m N MGA94 56
SURFACE RL: 432.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 1 OF 1
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 17/1/19
CHECKED: AL DATE: 28/1/19



310-01-BH2248 26.39 - 30.00 m



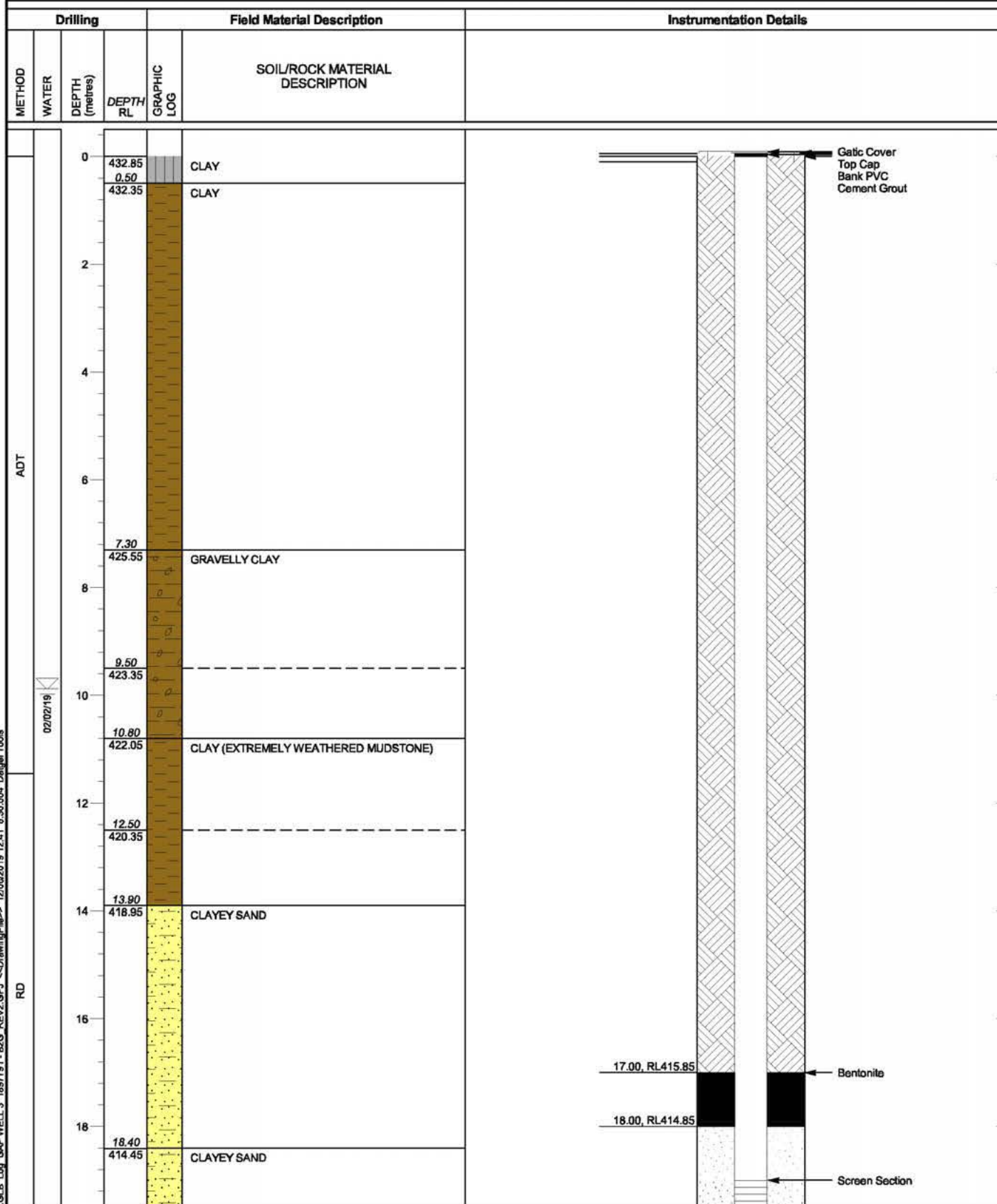
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2248

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 378811 m E 6952190 m N MGA94 56
SURFACE RL: 432.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 17/1/19
CHECKED: AL DATE: 28/1/19



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



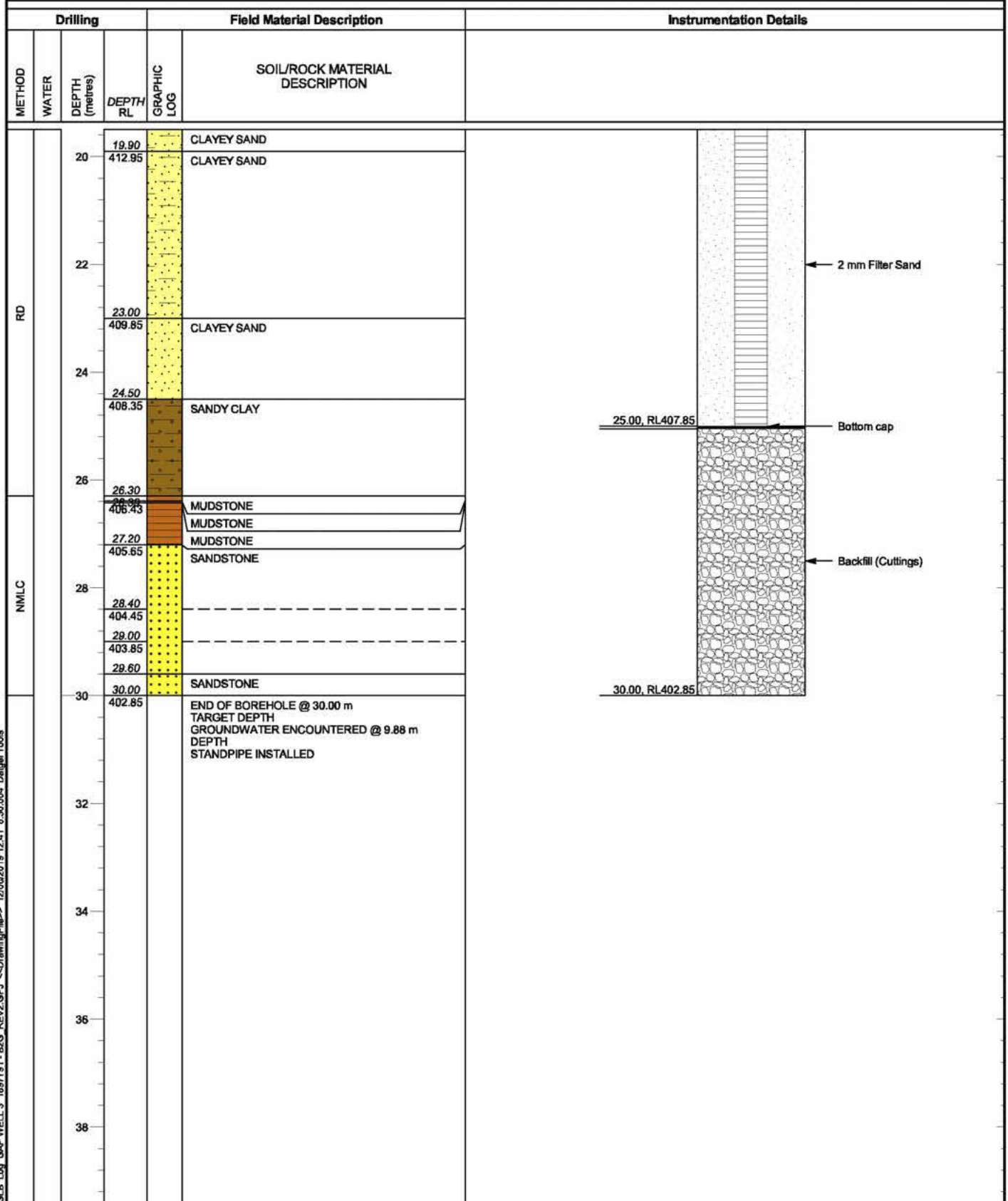
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2248

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 378811 m E 6952190 m N MGA94 56
SURFACE RL: 432.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 17/1/19
CHECKED: AL DATE: 28/1/19



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2251

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 297542 m E 6849233 m N MGA94 56
SURFACE RL: 285.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/120 mm HOLE DEPTH: 29.95 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 27/11/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
ADT	L		0	285.74	SPT 0.50-0.56 m 30/55mm HB			SP	TOPSOIL: SAND fine to medium grained, dark grey, with medium plasticity clay, trace rootlets	D	VL		TOPSOIL	
			0.20	CL-CI				Sandy CLAY (RESIDUAL SOIL) low to medium plasticity, red-brown, fine to medium grained sand			WALLOON COAL MEASURES			
			1	285.54	SPT 1.50-1.78 m 20, 28/130mm HB		CL-CI	CLAY (RESIDUAL SOIL) low to medium plasticity, red-brown, with fine to medium grained sand						
			1.30											
			284.44											
			2	284.04			CL	Sandy CLAY (EXTREMELY WEATHERED sandstone) low plasticity, red-brown mottled pale grey, fine to medium grained sand	W (< PL)	H				
			1.70											
			284.04											
			3											
			4		SPT 3.00-3.15 m 30/150mm HB									
			5		SPT 4.50-4.65 m 30/150mm HB									
			6	5.60	SPT 6.00-6.22 m 28, 31/70mm HB									
				280.14										
			7	6.18	SPT 7.50-7.62 m 30/115mm HB									
				279.56										
			8	7.50	SPT 9.00-9.29 m 23, 31/140mm HB									
				278.24										
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This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2251

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 297542 m E 6849233 m N MGA94 56
SURFACE RL: 285.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/120 mm HOLE DEPTH: 29.95 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 27/11/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling			Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L	GROUNDWATER NOT OBSERVED	10					CL	Sandy CLAY (EXTREMELY WEATHERED sandstone) low plasticity, red-brown mottled pale grey, fine to medium grained sand			WALLOON COAL MEASURES
				SPT 10.50-10.63 m 31/125mm HB								
			11									
				SPT 12.00-12.26 m 20, 30/105mm HB						W (< PL)	H	
			12									
				SPT 13.50-13.62 m 30/115mm HB								
			13									
			14	14.00 271.74			SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, red-brown, medium plasticity clay, grading to sandy clay in places				
				15.00 270.74	SPT 15.00-15.23 m 29, 30/80mm HB			with layers of sandy clay, medium plasticity clay, fine to medium grained sand up to 120mm		M	VD	
			15									
L-M				16								
				SPT 16.50-16.75 m 24, 30/100mm HB								
			17									
			18	17.60 268.14			CL-CL	CLAY (EXTREMELY WEATHERED sandstone) low to medium plasticity, red-brown, with fine to medium grained sand				
				19.00 266.74	SPT 18.00-18.45 m 12, 18, 23 N=41					W (~ PL)	H	
			19				CL	Sandy CLAY (EXTREMELY WEATHERED sandstone) low plasticity, red-brown, fine to medium grained sand				
			20		SPT 19.50-19.95 m 13, 18, 20 N=38							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2251

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 297542 m E 6849233 m N MGA94 56
SURFACE RL: 285.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/120 mm HOLE DEPTH: 29.95 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 27/11/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling			Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
SPT	RD	L-M	GROUNDWATER NOT OBSERVED	20				CL	Sandy CLAY (EXTREMELY WEATHERED sandstone) low plasticity, red-brown, fine to medium grained sand		H	WALLOON COAL MEASURES
				21	SPT 21.00-21.45 m 15, 21, 29 N=50							
				22						W (~PL)	H	
				23	SPT 22.50-22.95 m 12, 22, 26 N=48							
				24	23.80 261.94	SPT 24.00-24.15 m 31/145mm HB		SP	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, red-brown mottled pale grey, medium plasticity clay		VD	
				25						W		
				26	26.00 259.74	SPT 25.50-25.77 m 22, 31/120mm N>31		CI	Sandy CLAY (EXTREMELY WEATHERED sandstone) medium plasticity, pale-grey mottled red-brown, fine to medium grained sand			
				27		SPT 27.00-27.44 m 16, 23, 30/135mm						
				28	28.20 257.54	SPT 28.50-28.95 m 13, 17, 25 N=42		CI	CLAY (EXTREMELY WEATHERED sandstone) medium plasticity, red-brown mottled pale grey and yellow, with fine to coarse grained sand, with pockets of sandy clay, medium plasticity clay, fine to medium grained sand	W (~PL)	H	
				29	29.10 256.64	SPT 29.50-29.95 m 15, 18, 31 N=49		CI	Sandy CLAY (EXTREMELY WEATHERED sandstone) medium plasticity, red-brown mottled pale grey and yellow, fine to coarse grained sand END OF BOREHOLE @ 29.95 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED			
				30								

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2302

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 298131 m E 6850000 m N MGA94 56
 SURFACE RL: 300.9 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 96/140 mm HOLE DEPTH: 15.10 m

SHEET: 1 OF 3
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: FZ DATE: 23/8/18
 CHECKED: IT DATE: 22/11/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L	GROUNDWATER NOT ENCOUNTERED	0	300.85	SPT 0.50-0.95 m 8, 7, 8 N=15			SP	TOPSOIL: SAND fine to medium grained, pale yellow brown, with rootlets		L - L		TOPSOIL ALLUVIUM (Sand Plains)
			0.40	300.50				SP					
			1						SAND fine to medium grained, yellow brown with red brown, with low plasticity clay		MD		
			2		SPT 2.00-2.07 m 30/70mm HB						D - M		
	H										VD		
													WALLOON COAL MEASURES
									For Continuation Refer to Sheet 2				
			3										
			4										
			5										
			6										
			7										
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This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
 RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2302

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 298131 m E 6850000 m N MGA94 56
SURFACE RL: 300.9 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/140 mm HOLE DEPTH: 15.10 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 23/8/18
CHECKED: IT DATE: 22/11/18

Drilling						Field Material Description					Defect Information			
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
					0									
					1									
					2	2.10		Continuation of Sheet 1						
						298.80		Clayey SAND (EXTREMELY WEATHERED sandstone) (SP)	XW					
						2.40		fine to coarse grained, yellow brown, pale red, low plasticity clay, wet	HW					
						298.50		SANDSTONE						
								fine to coarse grained, white, yellow brown, pale red brown, apparently massive (structureless), partly weakly cemented						
					3	3.00			XW					
						297.90		SAND AND CLAYEY SAND (EXTREMELY WEATHERED SANDSTONE)						
								yellow brown, dense, fine to coarse grained, low plasticity clay, weakly cemented						
					4									
						4.50			HW					
						296.40		SANDSTONE						
								fine to coarse grained, massive, pale yellow and red brown						
					5									
					6									
					7									
						7.70			XW					
						293.20		CLAYEY SAND (EXTREMELY WEATHERED SANDSTONE)						
						7.90		becoming pale grey	HW					
						293.00		SANDSTONE						
								Clayey and fine to coarse grained, pale grey and yellow stained, massive						
					9									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2302

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 298131 m E 6850000 m N MGA94 56
SURFACE RL: 300.9 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/140 mm HOLE DEPTH: 15.10 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 23/8/18
CHECKED: IT DATE: 22/11/18

Drilling					Field Material Description							Defect Information																				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa					LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)															
HQ3	GROUNDWATER NOT ENCOUNTERED	100	0 (100)		10	289.80		becoming pale brown and pale grey	HW					PLI(A)=0.18 PLI(D)=0.12 UCS=1.82	9.95 m: B, 10°, Pl, Sm, Cn, close																	
					11									10.45 m: B, 10°, Pl, Sm, sandy clay Ct																		
														10.80 m: B, 5°, Pl, Sm, sandy clay Ct																		
														11.10 m: B, 5°, Pl, Sm, Cn, close																		

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



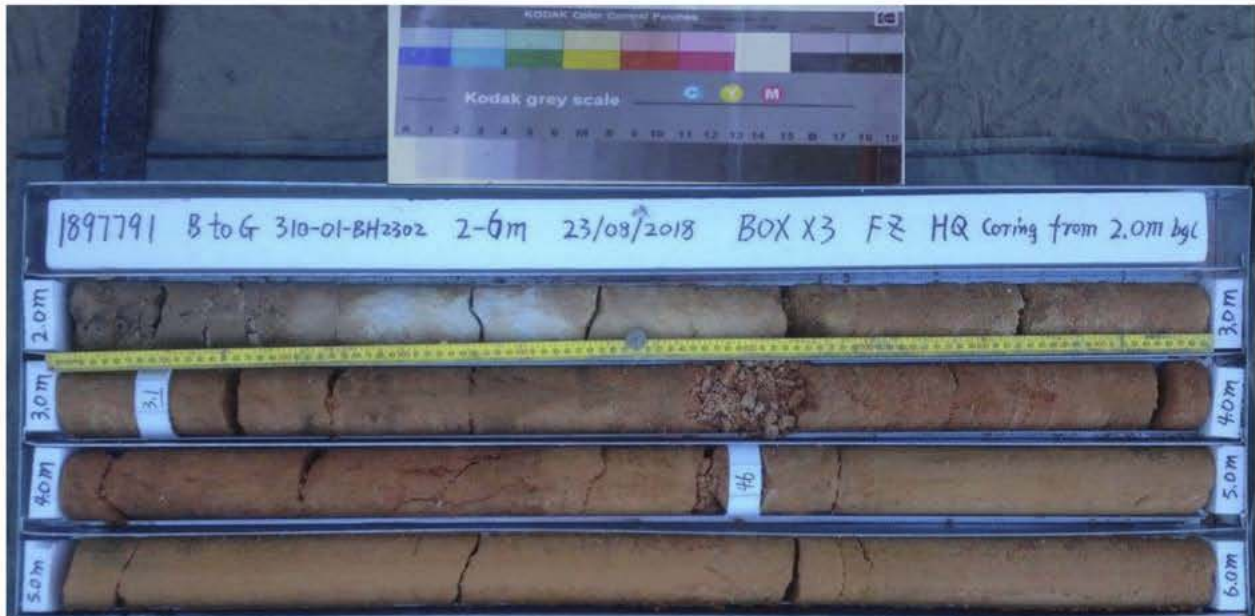
GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2302

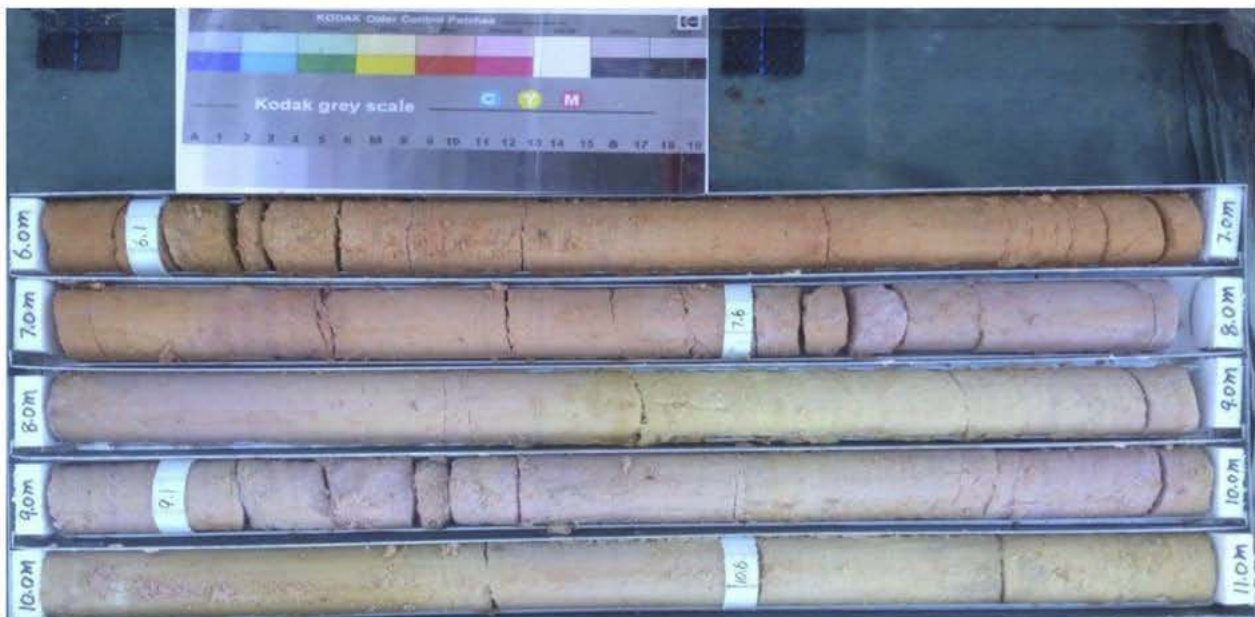
CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 298131 m E 6850000 m N MGA94 56
SURFACE RL: 300.9 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/140 mm HOLE DEPTH: 15.10 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 23/8/18
CHECKED: IT DATE: 22/11/18



310-01-BH2302 2.00 - 6.00 m



310-01-BH2302 6.00 - 11.00 m

This report of core photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2302

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 298131 m E 6850000 m N MGA94 56
SURFACE RL: 300.9 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/140 mm HOLE DEPTH: 15.10 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 23/8/18
CHECKED: IT DATE: 22/11/18



310-01-BH2302 11.00 - 15.10 m



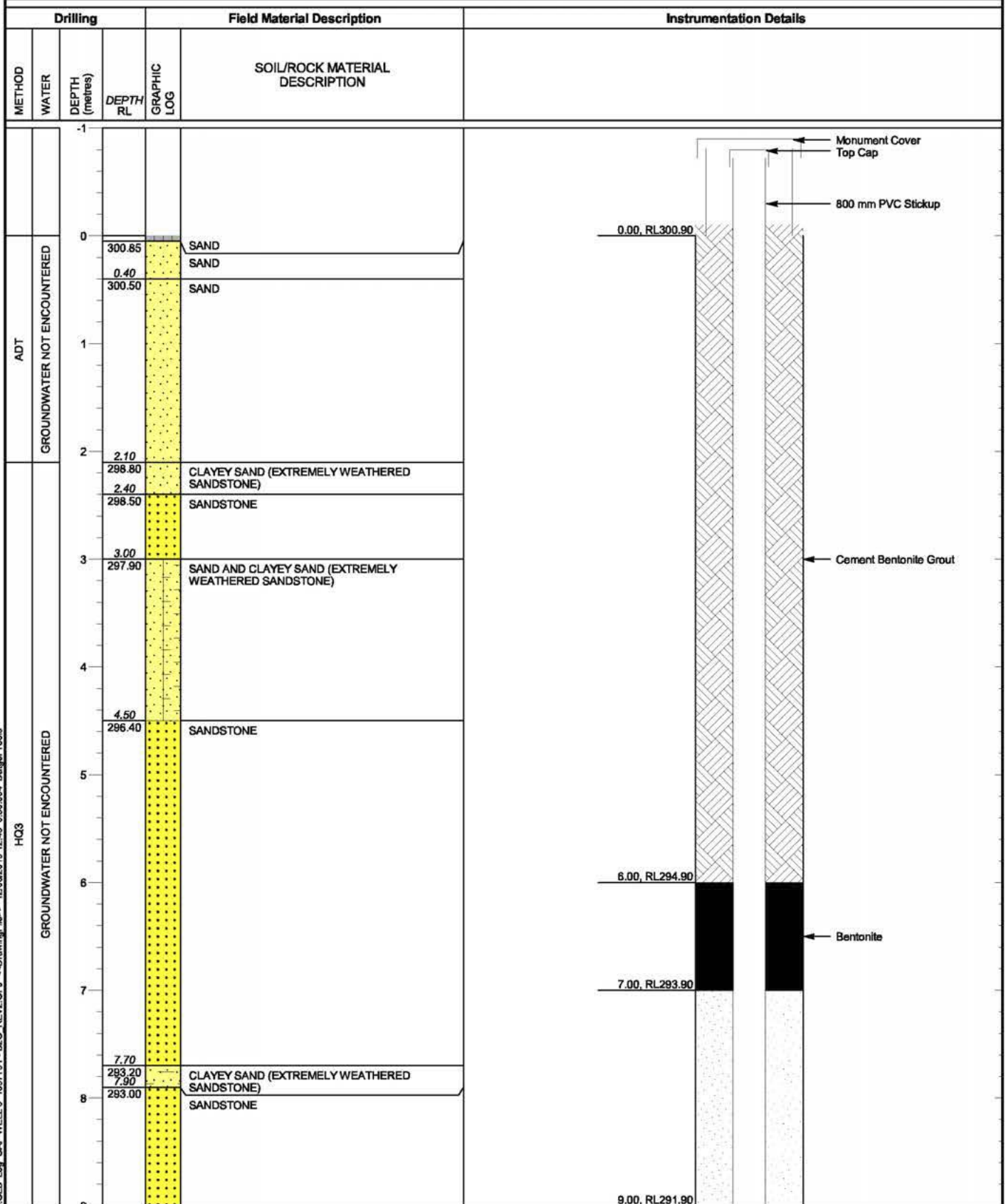
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2302

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 298131 m E 6850000 m N MGA94 56
SURFACE RL: 300.9 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/140 mm HOLE DEPTH: 15.10 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 23/8/18
CHECKED: IT DATE: 22/11/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2302

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 298131 m E 6850000 m N MGA94 56

SURFACE RL: 300.9 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 96/140 mm HOLE DEPTH: 15.10 m

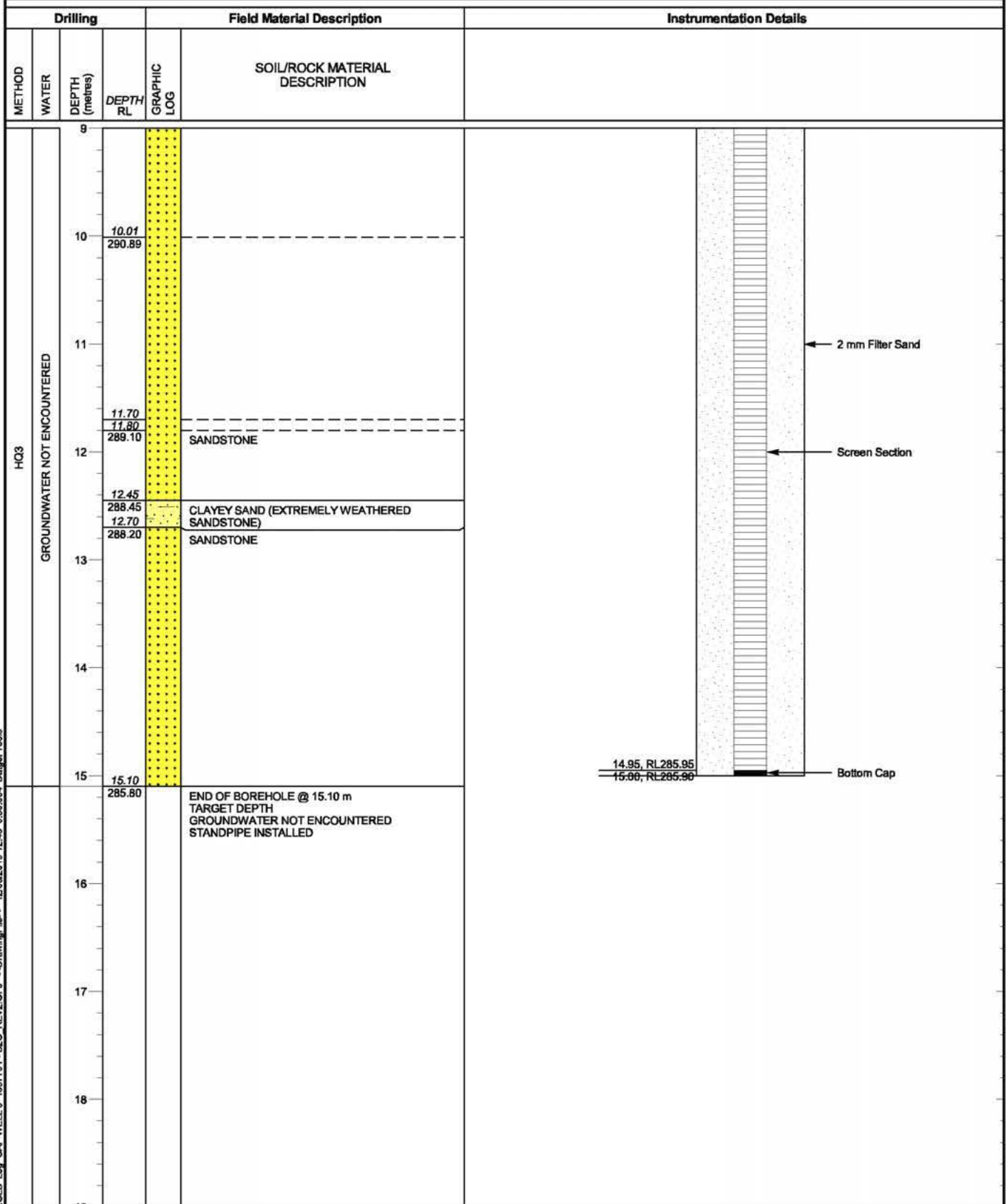
SHEET: 2 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: FZ DATE: 23/8/18

CHECKED: IT DATE: 22/11/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2304

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 300352 m E 6852728 m N MGA94 56
 SURFACE RL: 289.8 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 96/125 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 3
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: RWA DATE: 21/8/18
 CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	H	GROUNDWATER NOT ENCOUNTERED	0	289.78	SPT 0.50-0.65 m 30/148mm			SP	SAND fine grained, orange brown	D	VD		COLLUVIUM
			0.30	SW				SAND fine grained, pale grey and pale orange brown, with clay, with fine grained gravel, becoming residual sandstone	WALLOON COAL MEASURES (Lateritised)				
			1	289.46									
			2		SPT 2.00-2.10 m 30/100mm								
			3						For Continuation Refer to Sheet 2				
			4										
			5										
			6										
			7										
			8										
			9										
			10										

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GAP gINT FN. F01a
 RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2304

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300352 m E 6852728 m N MGA94 56
SURFACE RL: 289.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/125 mm HOLE DEPTH: 15.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 21/8/18
CHECKED: IT DATE: 13/9/18

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
					0									
					1									
					2	2.10		Continuation of Sheet 1						
						287.86		CORE LOSS						
						2.32								
						287.44		Clayey SAND (SC) fine grained, pale yellow brown	XW					
					3									
					4	4.10								
						285.66		CORE LOSS						
						4.40								
						285.36		SANDSTONE	XW					
						285.26		fine grained, pale grey, massive, pale orange						
						4.70		weakly (ferruginous) cemented, red brown	HW					
						285.06								
					5	5.00		SILTSTONE						
						284.76		fine grained, pale grey, massive becoming mottled red brown						
					6									
					7							6.73-6.73 m: J, 35°, Pl, Sm, Ve, (red) 6.85-7.10 m: DS, Low strength angular gravel and medium plasticity clay		
					8									
												8.12-8.12 m: J, 35°, Pl, Sm, Ve, (red)		
					9	8.60		MUDSTONE						
						281.16		fine grained, pale grey, massive, trace sand, stained yellow and orange brown						
						9.40								
						280.36		SANDSTONE						
								fine grained, pale orange brown and pale grey, massive, indistinctly laminated						

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2304

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300352 m E 6852728 m N MGA94 56
SURFACE RL: 289.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/125 mm HOLE DEPTH: 15.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 21/8/18
CHECKED: IT DATE: 13/9/18

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
HQ3	GROUNDWATER NOT ENCOUNTERED	96	77 (91)		10			SANDSTONE fine grained, pale orange brown and pale grey, massive, indistinctly laminated	HW		UCS=0.244 PLI(A)=0.01 PLI(D)=0.07			
		95	84 (95)		11									
					12									
		100	89 (100)		14									
					15	15.00 274.76		END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED STANDPIPE INSTALLED						
					16									
					17									
					18									
					19									

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2304

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300352 m E 6852728 m N MGA94 56
SURFACE RL: 289.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/125 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 21/8/18
CHECKED: IT DATE: 13/9/18



310-01-BH2304 2.10 - 6.00 m



310-01-BH2304 6.00 - 11.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2304

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300352 m E 6852728 m N MGA94 56
SURFACE RL: 289.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/125 mm HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 21/8/18
CHECKED: IT DATE: 13/9/18



310-01-BH2304 11.00 - 15.00 m



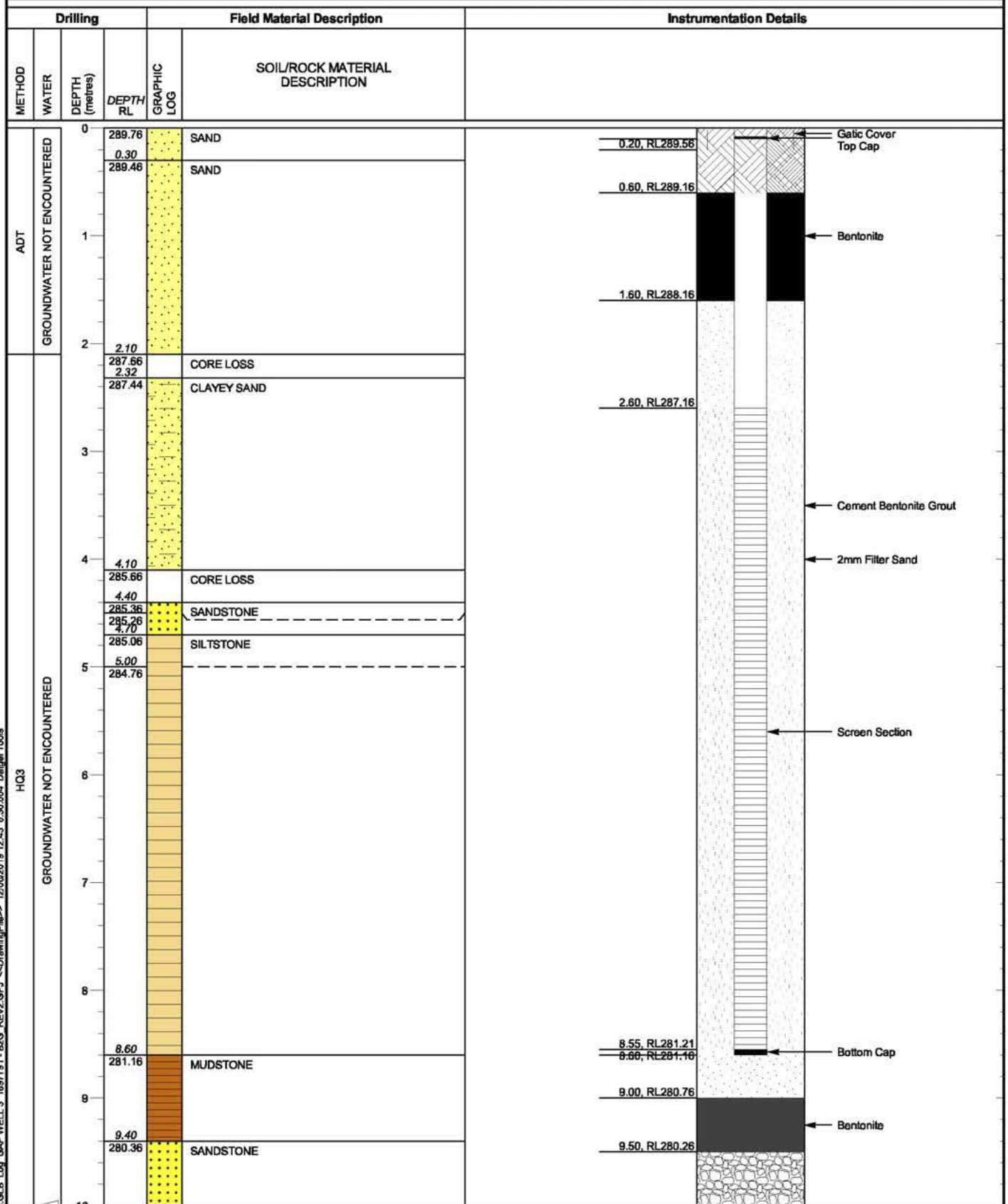
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2304

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300352 m E 6852728 m N MGA94 56
SURFACE RL: 289.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/125 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 21/8/18
CHECKED: IT DATE: 13/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2304

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300352 m E 6852728 m N MGA94 56
SURFACE RL: 289.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/125 mm HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 21/8/18
CHECKED: IT DATE: 13/9/18

Drilling				Field Material Description	Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
HQ3	GROUNDWATER NOT ENCOUNTERED	10			SANDSTONE
		11			
		12			
		13			
		14			
		15	15.00 274.76		
		16			END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED STANDPIPE INSTALLED
		17			
		18			
		19			
		20			



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2305

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300726 m E 6852952 m N MGA94 56
SURFACE RL: 287.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.50 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 24/8/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L	GROUNDWATER NOT ENCOUNTERED	0	287.06	SPT 0.50-0.90 m 17, 29, 30/100mm		SP	SAND fine to medium grained, pale orange brown, organics and woody rootlets present	D	TOPSOIL COLLUVIUM
			0.10	287.06			SP	SAND fine to medium grained, orange		WALLOON COAL MEASURES
	L-M		1	285.36	SPT 2.00-2.45 m 12, 28, 27 N=55		CH	Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, orange, fine to medium grained sand, grading to pale grey, hard (clay bound)	VD	
	M		2	285.36					W (< PL)	
L	GROUNDWATER NOT ENCOUNTERED		3		SPT 3.00-3.41 m 17, 28, 30/110mm					
					C 3.40-5.00 m			For Continuation Refer to Sheet 2		
			4							
			5							
			6							
			7							
			8							
			9							
			10							

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2305

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300726 m E 6852952 m N MGA94 56
SURFACE RL: 287.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.50 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 24/8/18
CHECKED: IT DATE: 13/9/18

Drilling						Field Material Description						Defect Information							
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)						
					0														
					1														
					2														
					3														
						3.41		Continuation of Sheet 1											
						283.66		CORE LOSS											
					4			Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale grey and orange brown, high plasticity clay	XW										
						4.25													
						282.91		SANDSTONE fine grained, massive, orange and pale grey to white	HW			4.25-4.75 m: FZ, 5", Pl, Sm							
					5														
						5.00													
						282.16		trace black (carbonaceous) staining											
					6														
					7														
					8														
					9														

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2305

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300726 m E 6852952 m N MGA94 56
SURFACE RL: 287.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.50 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 24/8/18
CHECKED: IT DATE: 13/9/18

Drilling					Field Material Description							Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)			
HQ3			100	100 (95)	10			SANDSTONE fine grained, massive, orange and pale grey to white	HW		UCS=0.325					
					11						PLI(A)=0.08 PL(D)=0.08					
					12							11.45 m: J, 10°, Pl, Sm, Cn 11.50 m: FZ, 15°				
					13	13.00		weakly cemented (ferruginous), dark red brown				13.00 m: J, 5°, Pl, Sm, Cn 13.05 m: J, 5°, Pl, Sm, Cn				
			125	125 (120)	14	14.05 273.11		SANDSTONE fine grained, orange grey and black, irregularly laminated, (carbonaceous)				14.20 m: J, 5°, Pl, Sm, Cn				
						14.40 272.76		SANDSTONE fine grained, dark grey and grey, thinly bedded (approx. horizontal)								
					15	15.00 272.16		becoming dark grey								
						15.50 271.66		END OF BOREHOLE @ 15.50 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED STANDPIPE INSTALLED								
					16											
					17											
				18												
				19												

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2305

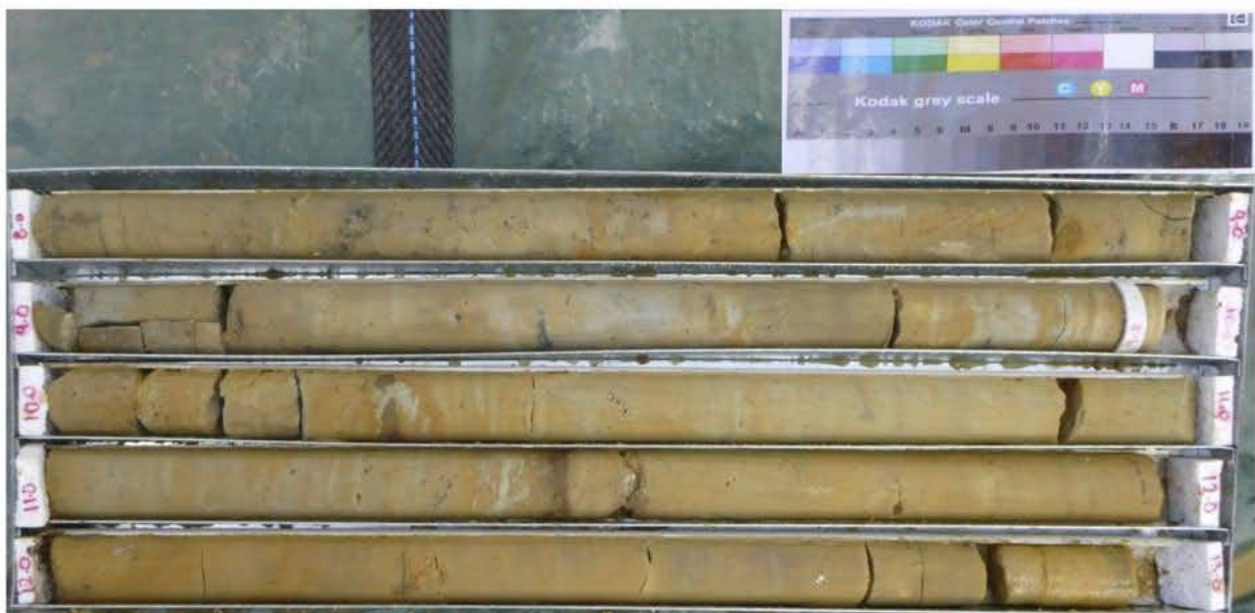
CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300726 m E 6852952 m N MGA94 56
SURFACE RL: 287.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.50 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 24/8/18
CHECKED: IT DATE: 13/9/18



310-01-BH2305 3.41 - 8.00 m



310-01-BH2305 8.00 - 13.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2305

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300726 m E 6852952 m N MGA94 56
SURFACE RL: 287.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.50 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 24/8/18
CHECKED: IT DATE: 13/9/18



310-01-BH2305 13.00 - 15.50 m



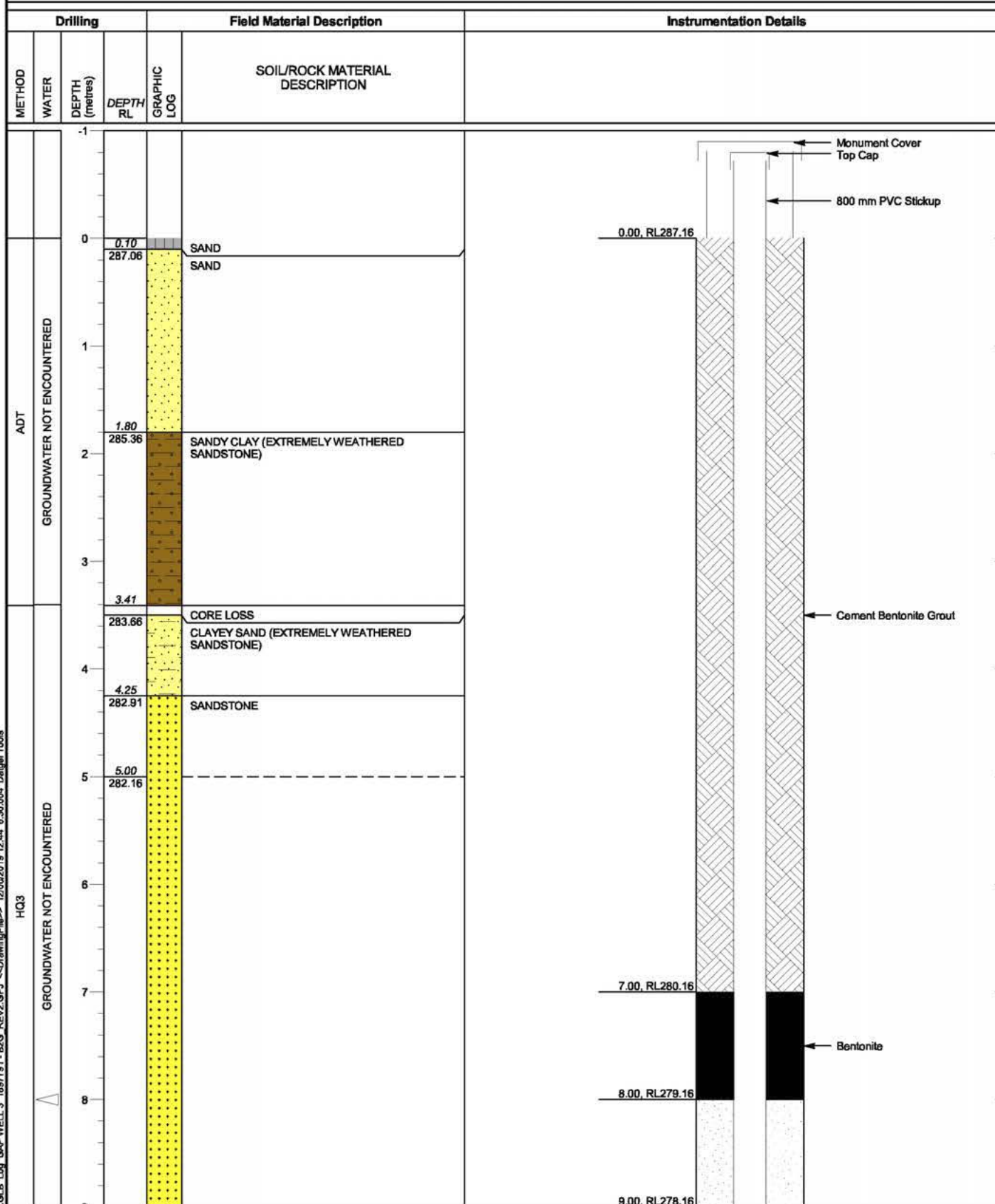
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2305

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 300726 m E 6852952 m N MGA94 56
SURFACE RL: 287.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.50 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RWA DATE: 24/8/18
CHECKED: IT DATE: 13/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2305

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 300726 m E 6852952 m N MGA94 56

SURFACE RL: 287.2 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 96/150 mm HOLE DEPTH: 15.50 m

SHEET: 2 OF 2

DRILL RIG: DB520

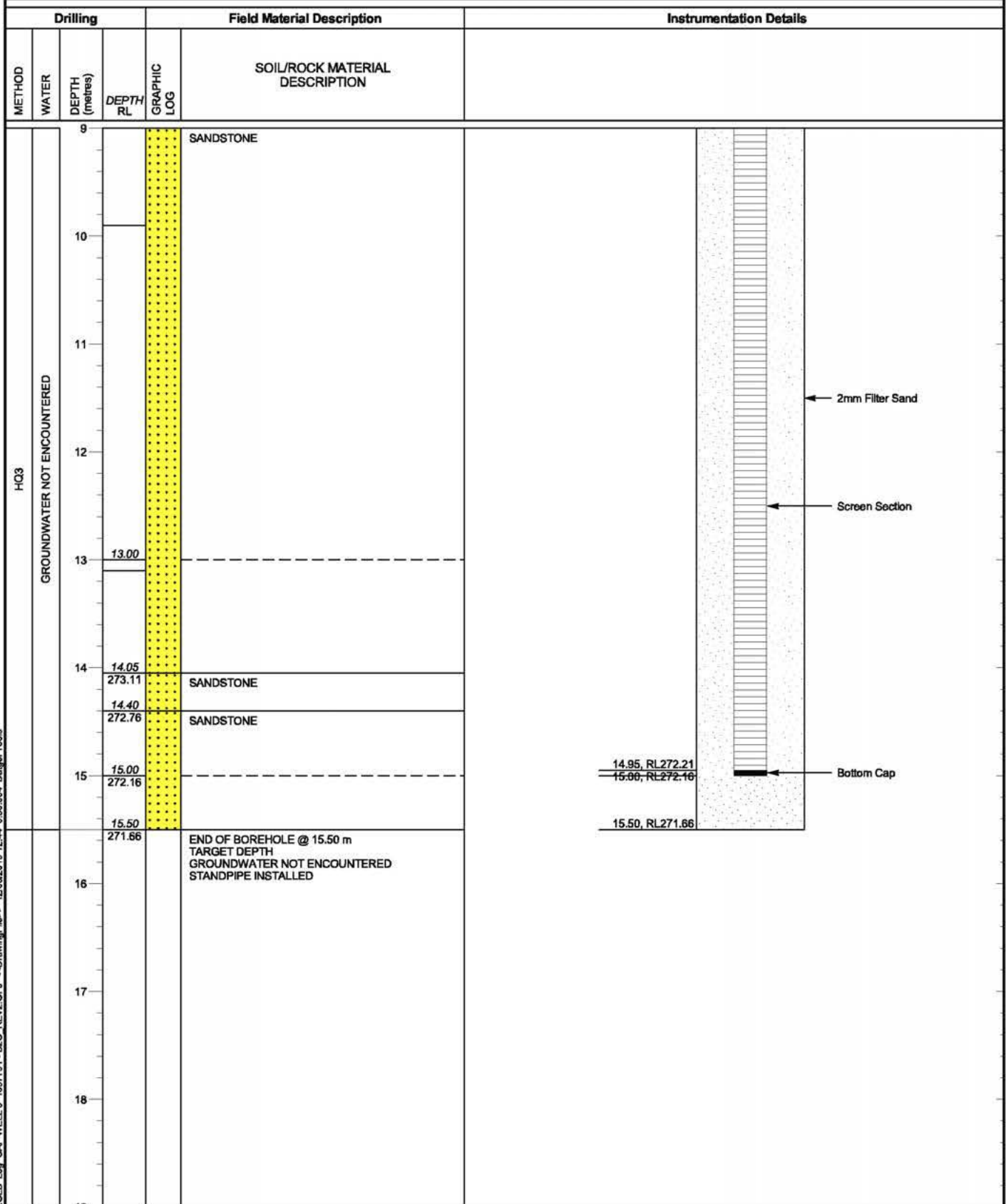
CONTRACTOR: NUMAC

LOGGED: RWA

DATE: 24/8/18

CHECKED: IT

DATE: 13/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2307

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 303248 m E 6853704 m N MGA94 56
 SURFACE RL: 280.6 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 84/96 mm HOLE DEPTH: 15.10 m

SHEET: 1 OF 3
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: OM DATE: 22/8/18
 CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
ADT	L	GROUNDWATER NOT ENCOUNTERED	0	280.64	SPT 0.50-0.95 m 13, 24, 28 N=52			SP	TOPSOIL: SAND fine to medium grained, brown	D	L		TOPSOIL	
			0.30				SP	SAND fine to medium grained, brown, with clay				COLLUVIUM		
			0.60				SP	SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale grey, mottled orange brown				WALLOON COAL MEASURES		
			280.04											
			1	1.10		SPT 1.50-1.59 m 30/90mm			SC	Sandy CLAY (EXTREMELY WEATHERED sandstone) fine, medium plasticity, pale grey, fine grained sand	W (< PL)	VD		
			279.54											
			2							For Continuation Refer to Sheet 2				
			3											
			4											
			5											
6														
7														
8														
9														

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
 RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2307

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 303248 m E 6853704 m N MGA94 56
SURFACE RL: 280.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/96 mm HOLE DEPTH: 15.10 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 22/8/18
CHECKED: IT DATE: 13/9/18

Drilling						Field Material Description						Defect Information								
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)							
																			</	

PLI(A)=0.03
PLI(D)=0.03

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2307

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 303248 m E 6853704 m N MGA94 56
SURFACE RL: 280.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/96 mm HOLE DEPTH: 15.10 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 22/8/18
CHECKED: IT DATE: 13/9/18

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
HQ3	GROUNDWATER NOT OBSERVED	95	65 (95)		10			SANDSTONE fine to medium grained, pale grey	HW		UCS=0.159			
		95	0 (15)		10.83 269.81		Clayey SAND (EXTREMELY WEATHERED sandstone and siltstone) (SC) fine grained, pale grey mottled orange brown, medium plasticity clay, locally indistinctly bedded fine to medium grained sand to 450 mm thick	XW						
					11.85 268.79					fine to medium grained sand				
		60	0 (0)		13.00 267.64		CORE LOSS							
		80	15 (15)		13.85 266.79		SAND (EXTREMELY WEATHERED sandstone and siltstone) (SP) orange brown to pale grey, trace coarse grained, angular grains of quartz	XW						
14.90 265.54				SANDSTONE fine to medium grained, red brown, ferruginous, horizontally bedded END OF BOREHOLE @ 15.10 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED	MW									
					16									
					17									
					18									
					19									

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2307

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 303248 m E 6853704 m N MGA94 56
SURFACE RL: 280.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/96 mm HOLE DEPTH: 15.10 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 22/8/18
CHECKED: IT DATE: 13/9/18



310-01-BH2307 2.00 - 6.00 m



310-01-BH2307 6.00 - 10.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2307

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 303248 m E 6853704 m N MGA94 56
SURFACE RL: 280.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/96 mm HOLE DEPTH: 15.10 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 22/8/18
CHECKED: IT DATE: 13/9/18



310-01-BH2307 10.00 - 14.00 m



310-01-BH2307 14.00 - 15.10 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2308

SHEET: 1 OF 2

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 305930 m E 6855563 m N MGA94 56
SURFACE RL: 301.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.50 m

DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 27/8/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	301.58	SPT 0.50-0.95 m 9, 12, 22 N=34			SP	SAND fine to medium grained, brown, with Clay, with rootlets	D			ALLUVIUM (Sheet wash)
			301.36	CL				Sandy CLAY low plasticity, yellow red, fine grained sand, trace fine grained gravel	W (< PL)	VSt	ALLUVIUM		
			1	1.60	SPT 2.00-2.06 m 30/60mm HB			SP-SM	Silty SAND fine grained, red brown, trace fine grained gravel				
			299.96										
			2	2.40	SPT 3.00-3.41 m 7, 19, 30/110mm N>49			SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, red brown, medium plasticity clay		VD	WALLOON COAL MEASURES	
			299.16										
			3	3.00	SPT 4.50-4.95 m 3, 6, 10 N=16			SP	SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, red brown, with low to medium plasticity clay	D			
			298.56										
			4	4.00	SPT 6.00-6.25 m 16, 30/100mm				becoming grey, weakly cemented		MD		
			297.56										
5	6.00	SPT 7.50-7.68 m 25, 30/30mm HB			SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, orange brown, low plasticity clay		D - M					
295.56													
6	7.00					weakly cemented							
294.56													
7	7.50												
294.06													
8													
9													
10													

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2308

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 305930 m E 6855563 m N MGA94 56
 SURFACE RL: 301.6 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 94/140 mm HOLE DEPTH: 15.50 m

SHEET: 2 OF 2
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: RA DATE: 27/8/18
 CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
RD	L		10					SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, orange brown, low plasticity clay			WALLOON COAL MEASURES	
				SPT 10.50-10.62 m 30/120mm HB									
			11										
			12	12.00 289.56 289.46	SPT 12.00-12.10 m 30/100mm HB			becoming red brown, weakly cemented (ferruginous) becoming grey					VD
			13										M
			14		SPT 13.50-13.58 m 30/80mm HB								
			15	14.50 287.06				becoming stained red brown					
			15	15.00 286.56	SPT 15.00-15.45 m 7, 8, 14 N=22			becoming red brown, weakly cemented (ferruginous)					MD
			16	286.06				END OF BOREHOLE @ 15.50 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 14.68 m DEPTH STANDPIPE INSTALLED					
			17										
18													
19													

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GAP gINT FN. F01a
 RL3

SHEET: 1 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: RA DATE: 27/8/18

CHECKED: IT DATE: 13/9/18

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

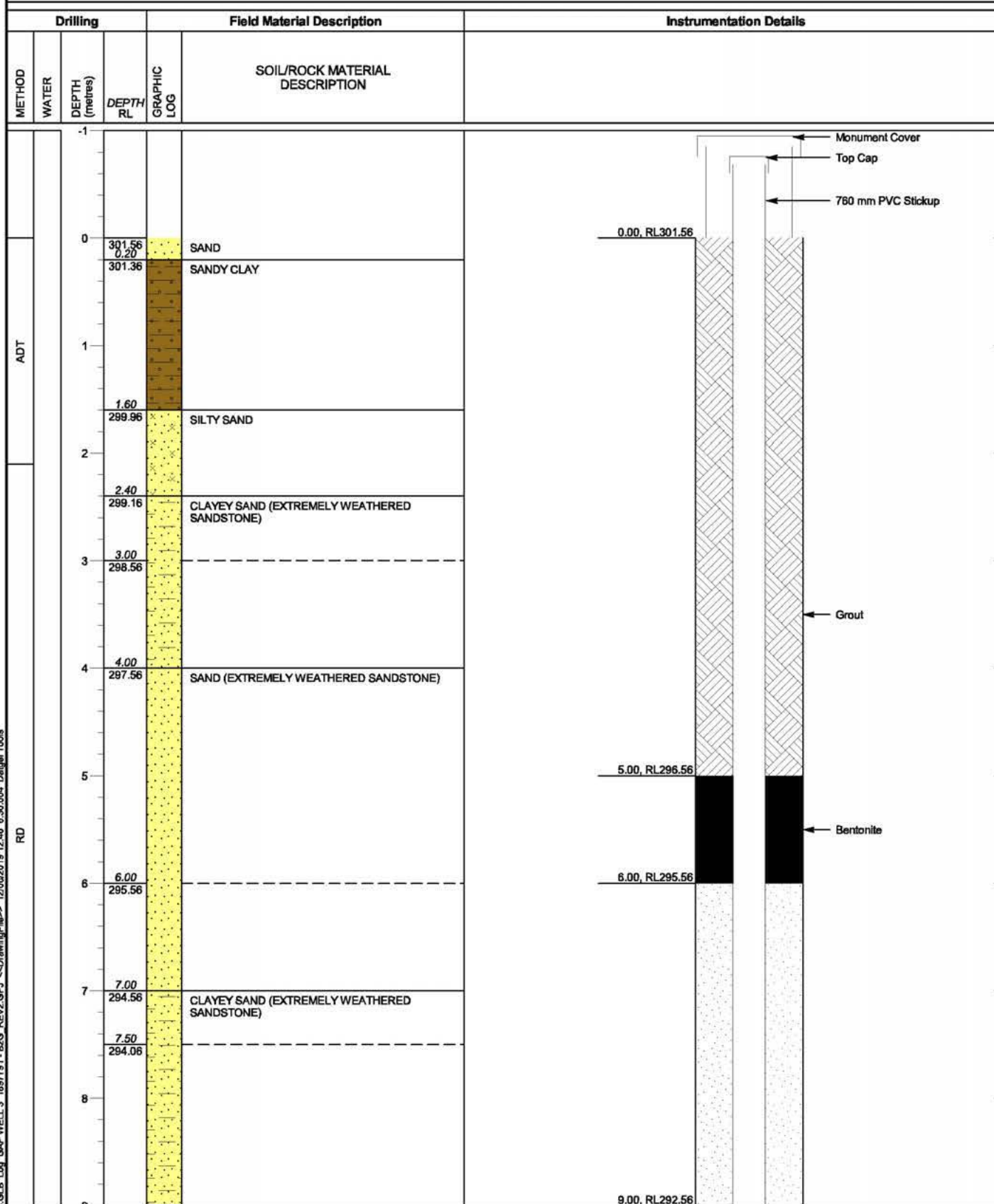
JOB NO: 1897791

COORDS: 305930 m E 6855563 m N MGA94 56

SURFACE RL: 301.6 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 15.50 m



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2308

SHEET: 2 OF 2

CLIENT: Future Freight JV

COORDS: 305930 m E 6855563 m N MGA94 56

DRILL RIG: DB520

PROJECT: Inland Rail, B2G Project, Phase 2

SURFACE RL: 301.6 m DATUM: AHD

CONTRACTOR: NUMAC

LOCATION: NSW/QLD Border to Gowrie (Section 310)

INCLINATION: -90°

LOGGED: RA

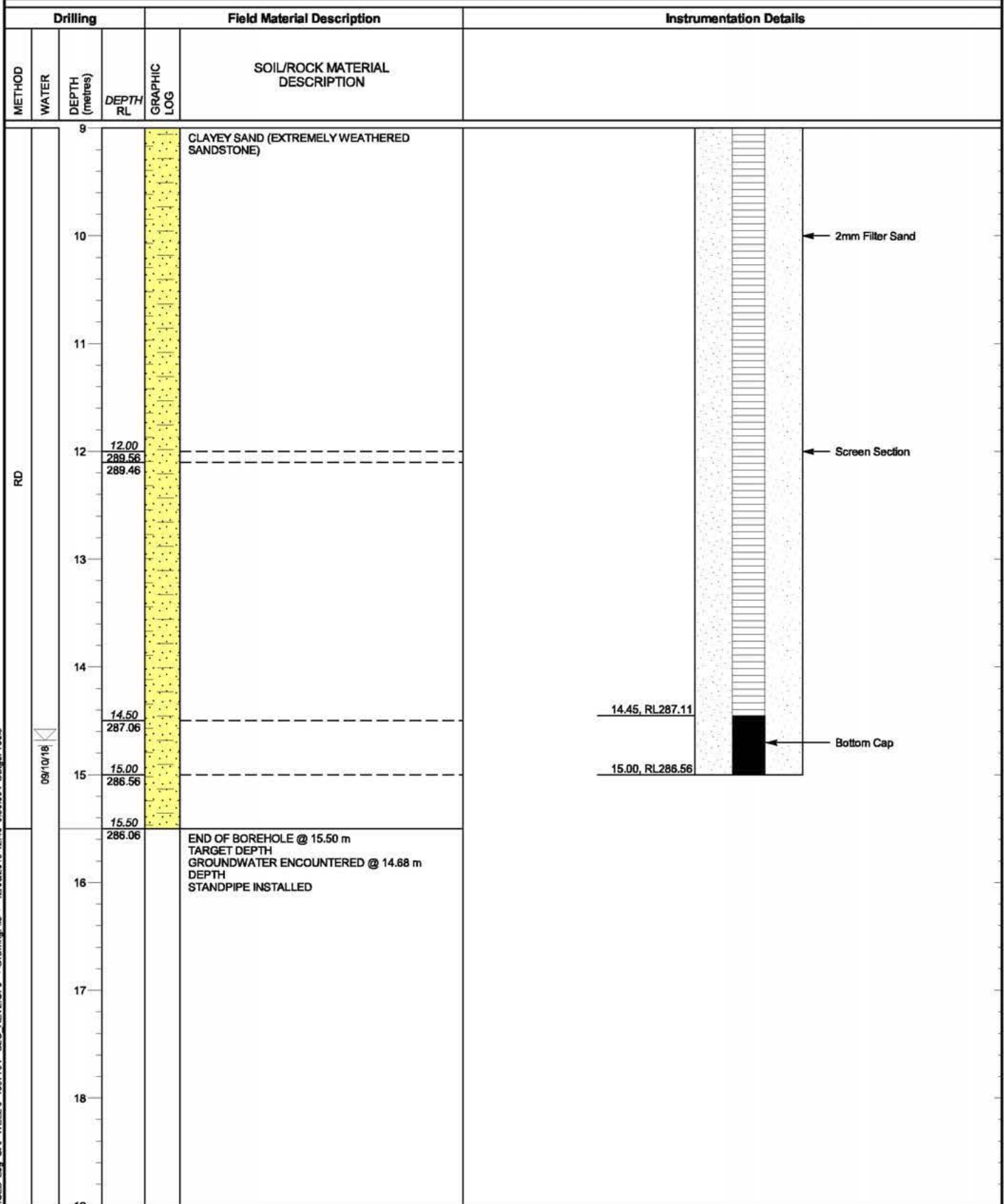
DATE: 27/8/18

JOB NO: 1897791

HOLE DIA: 94/140 mm HOLE DEPTH: 15.50 m

CHECKED: IT

DATE: 13/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2309

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 309357 m E 6857528 m N MGA94 56
SURFACE RL: 277.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 24/8/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling				Field Material Description			
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	276.97				ML	TOPSOIL: Sandy SILT low liquid limit, pale yellow brown, fine to coarse grained sand, trace rootlets		TOPSOIL ALLUVIUM (HOLOCENE)
			1		SPT 0.50-0.95 m 12, 13, 12 N=25			CL	Sandy CLAY low plasticity, pale yellow brown, fine to coarse grained sand	W (< PL)	VSI
			2	274.97	SPT 2.00-2.45 m 5, 5, 10 N=15			GP	Sandy GRAVEL fine to medium grained, sub-rounded to sub-angular, yellow brown, medium to coarse grained sand, with medium plasticity clay, (remnant conglomerate clasts)		
			3							M	MD
			4		SPT 3.80-4.25 m 3, 6, 6 N=12						
			5	272.17	SPT 5.30-5.58 m 15, 30/130mm HB N>30			GW	Sandy GRAVEL fine to coarse grained, sub-rounded to sub-angular, pale grey, pale red brown, medium to coarse grained sand, trace medium plasticity clay		
			6								Hole collapse back to 4.9m.
			7	270.07	SPT 6.80-7.24 m 9, 19, 30/140mm HB N>49				becoming clayey	W	VD
			8	269.07	SPT 8.30-8.73 m 14, 28, 30/130mm HB N>58			CL	Sandy CLAY (EXTREMELY WEATHERED sandstone) low plasticity, pale grey, red brown, fine to medium grained sand	W (< PL)	H
			9								
RD			10								

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2309

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 309357 m E 6857528 m N MGA94 56
 SURFACE RL: 277.1 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: FZ DATE: 24/8/18
 CHECKED: IT DATE: 13/9/18

Drilling				Sampling			Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
RD	M		10	10.20 266.87	SPT 9.80-10.24 m 18, 22, 30/140mm HB N=52		CL	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to coarse grained, pale grey, red brown, yellow brown, high plasticity clay		H	WALLOON COAL MEASURES	
			11	SPT 11.30-11.75 m 7, 20, 29 HB N=49		SW						
			12	SPT 12.80-13.25 m 15, 24, 26 HB N=50								
			13	SPT 14.30-14.39 m 30/90mm HB		SC	Clayey SAND (EXTREMELY WEATHERED sandstone) yellow brown, high plasticity clay, with fine to coarse grained, sub-angular to angular gravel					
			14									
			15	262.07				END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 11.68 m DEPTH STANDPIPE INSTALLED				
			16									
			17									
			18									
			19									

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GAP gINT FN. F01a
 RL3



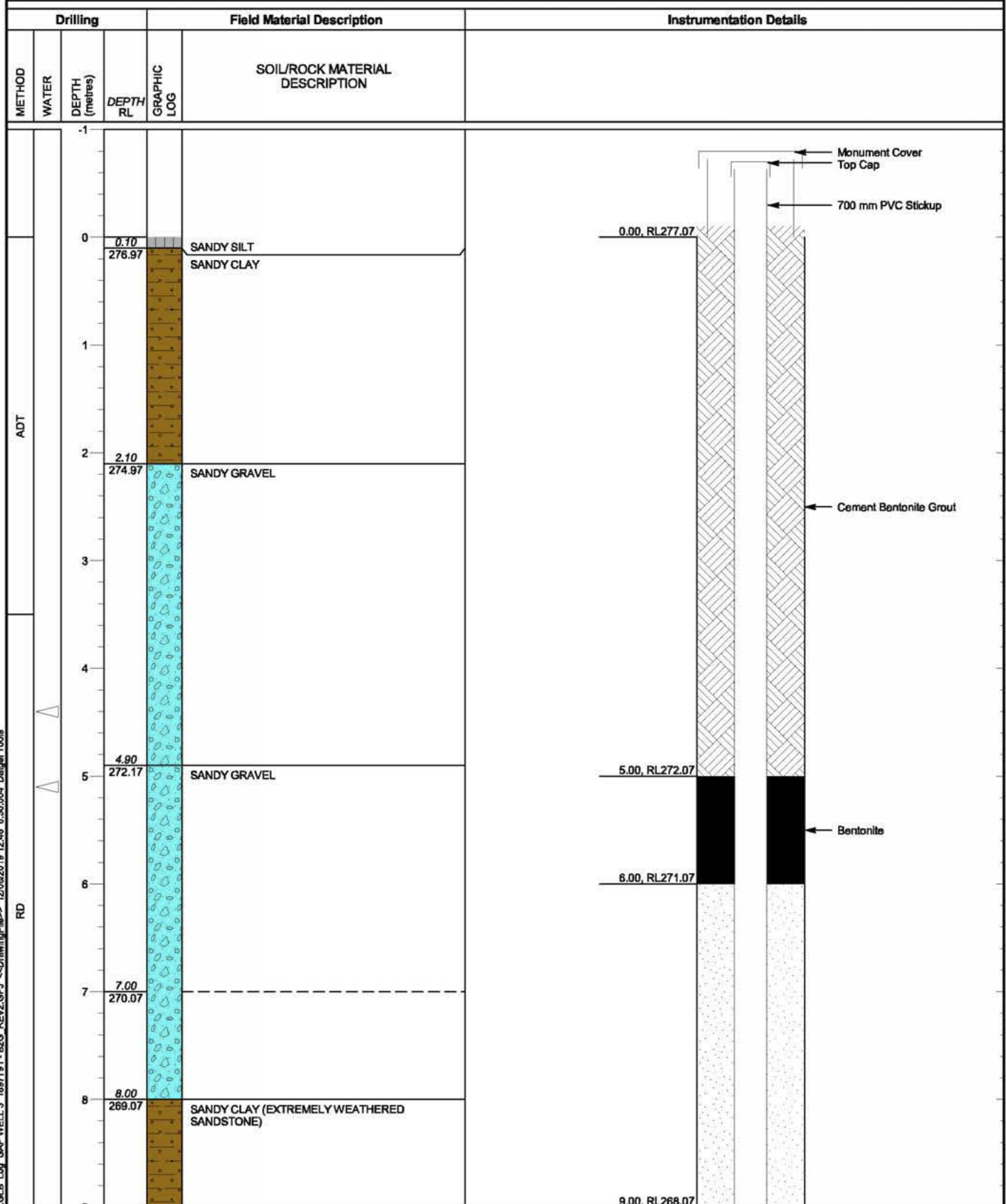
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2309

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 309357 m E 6857528 m N MGA94 56
SURFACE RL: 277.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 24/8/18
CHECKED: IT DATE: 13/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2309

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 309357 m E 6857528 m N MGA94 56

SURFACE RL: 277.1 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

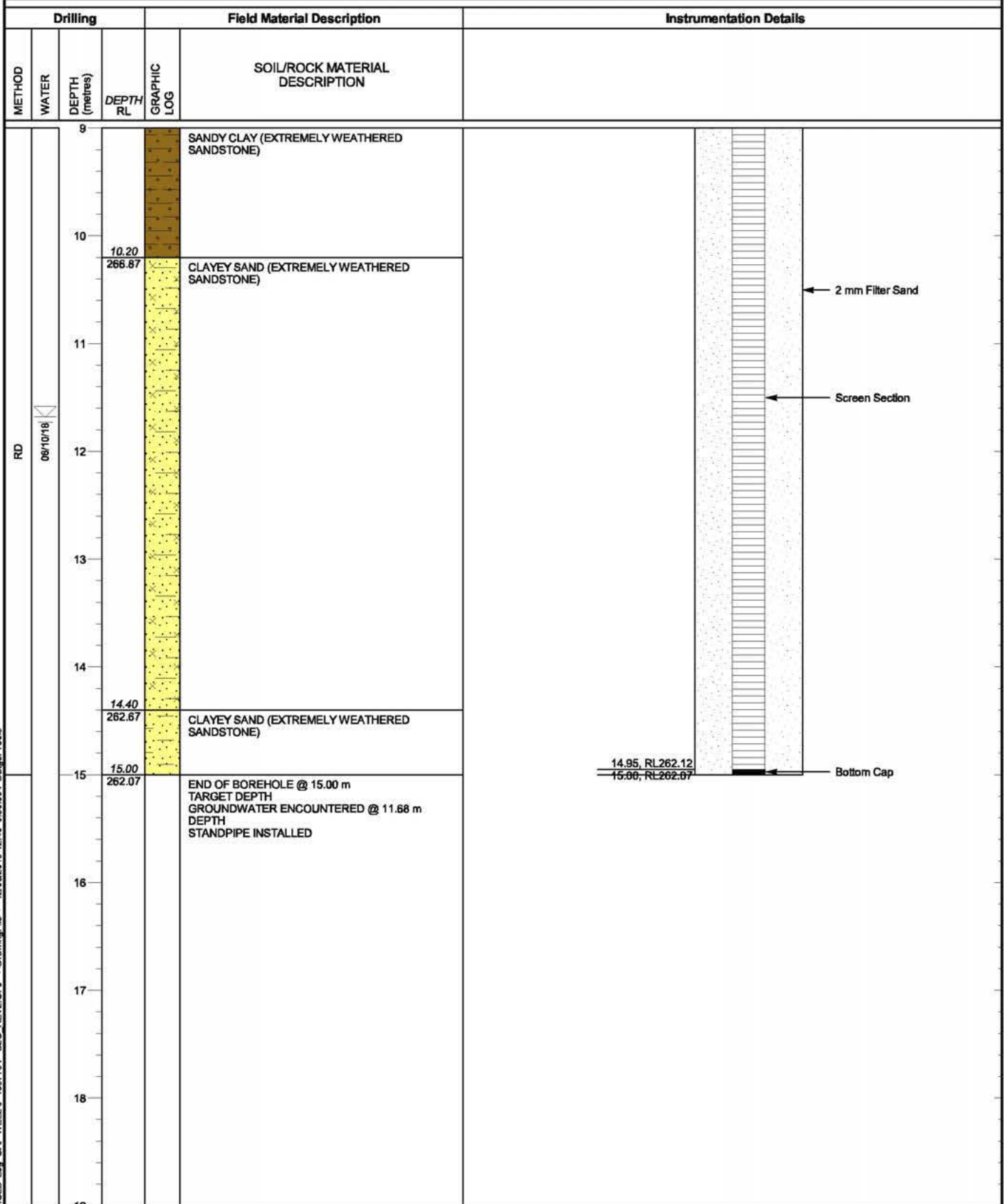
SHEET: 2 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: FZ DATE: 24/8/18

CHECKED: IT DATE: 13/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2311

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 316845 m E 6859899 m N MGA94 56
SURFACE RL: 296.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 25/8/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	0.10	SPT 0.50-0.95 m 7, 11, 13 N=24		SW	TOPSOIL: SAND fine to coarse grained, pale yellow brown, with high plasticity clay, trace rootlets	D	TOPSOIL ALLUVIUM
			0.40	296.57			SW			
			0.40	296.27			CH	SAND fine to coarse grained, pale yellow brown, with high plasticity clay Sandy CLAY medium to high plasticity, pale red brown, fine to coarse grained sand	MD	
			1	1.50	SPT 2.00-2.45 m 9, 17, 19 N=36		CH	Sandy CLAY medium to high plasticity, pale grey, fine to medium grained sand		EURAMBAH BEDS (Lateritised)
			1.50	295.17			CH			
			2							
			3	3.00	SPT 3.50-3.95 m 11, 18, 23 N=41		CH	CLAY (EXTREMELY WEATHERED mudstone) high plasticity, pale grey to white, with fine to coarse grained sand		W (< PL)
			3	293.67						
			4							
			5		SPT 5.30-5.56 m 19, 30/110mm HB					H
			6	6.50			CH	CLAY (EXTREMELY WEATHERED mudstone) high plasticity, pale grey, with fine to medium grained, sub-angular to angular, ferruginous gravel		
			7	290.17						
RD			8	8.00	SPT 8.30-8.42 m 30/120mm HB		CH	Gravelly CLAY (EXTREMELY WEATHERED sandstone and conglomerate) high plasticity, yellow brown, fine to coarse grained, sub-angular to sub-rounded gravel, (lithic sandstone conglomerate clasts)		W (- PL)
			9	288.67						
			10							
M					DS 9.80-10.00 m					

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GAP gINT FN. F01a
RL3



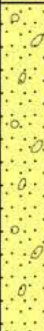
GOLDER

REPORT OF BOREHOLE: 310-01-BH2311

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 316845 m E 6859899 m N MGA94 56
SURFACE RL: 296.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 25/8/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
RD	M	GROUNDWATER NOT OBSERVED	10		SPT 9.80-10.03 m 27, 30/80mm HB			CH	Gravelly CLAY (EXTREMELY WEATHERED sandstone and conglomerate) high plasticity, yellow brown, fine to coarse grained, sub-angular to sub-rounded gravel, (lithic sandstone conglomerate clasts)	W (- PL)	H	EURAMBAH BEDS (Lateritised)	
			10.60	286.07			SW	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to coarse grained, pale grey, high plasticity clay					
			11										
			12	12.00	284.67	SPT 12.10-12.35 m 27, 30/100mm HB			SW	Gravelly SAND (EXTREMELY WEATHERED sandstone) medium to coarse grained, pale red brown, red brown and yellow brown, fine to medium grained, sub-rounded to sub-angular gravel, with high plasticity clay	W		VD
			13		SPT 12.80-13.10 m 17, 30/150mm HB								
	14		14.20	282.47	SPT 14.30-14.75 m 14, 21, 30 HB N=51			CL	CLAY (EXTREMELY WEATHERED mudstone) low plasticity, red brown, yellow brown, pale grey, trace fine grained sand	W (- PL)	H		
	15		281.67					END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER NOT OBSERVED STANDPIPE INSTALLED					
	16												
	17												
	18												
19													

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GAP gINT FN. F01a
RL3



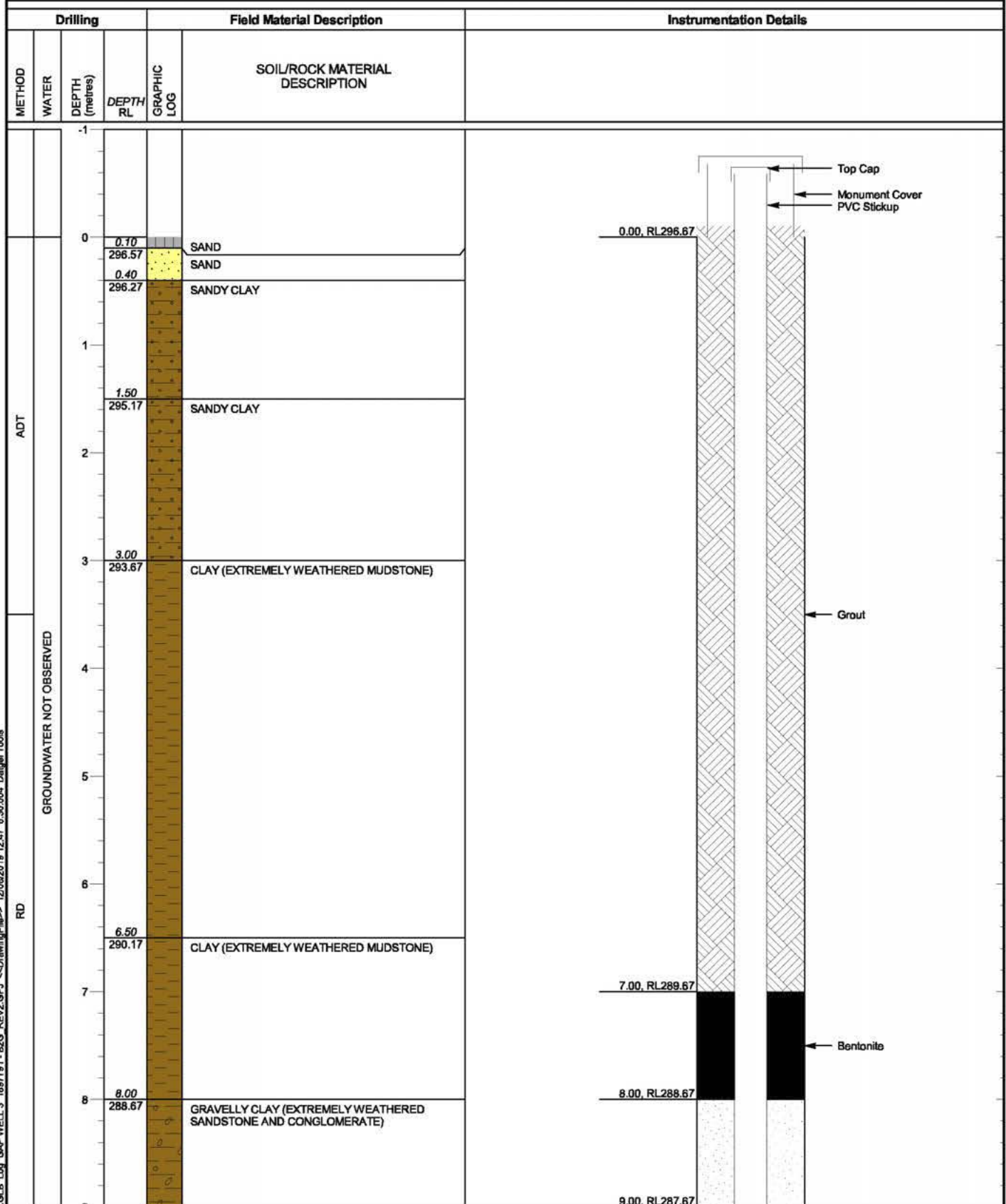
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2311

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 316845 m E 6859899 m N MGA94 56
SURFACE RL: 296.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 25/8/18
CHECKED: IT DATE: 13/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2311

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 316845 m E 6859899 m N MGA94 56

SURFACE RL: 296.7 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

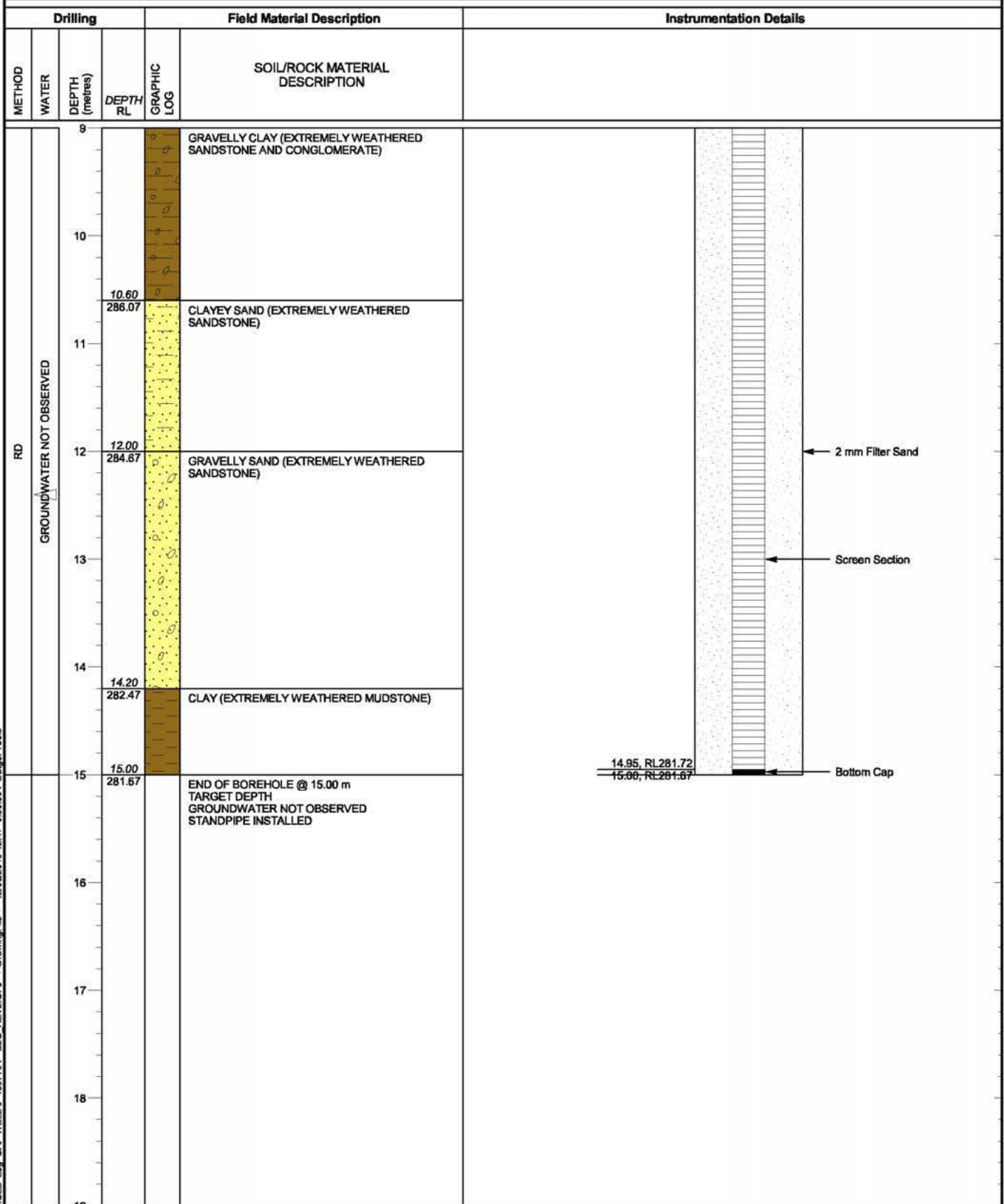
SHEET: 2 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: FZ DATE: 25/8/18

CHECKED: IT DATE: 13/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2322

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324428 m E 6899282 m N MGA94 56
SURFACE RL: 428.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 13/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description									
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
ADT			L	GROUNDWATER NOT OBSERVED	0	428.06		CI-CH	TOPSOIL: CLAY medium to high plasticity, brown, with silt, trace rootlets			TOPSOIL			
					0.20	427.86		CH	CLAY high plasticity, dark brown, with silt, trace fine grained sand, trace rootlets; vertosol			ALLUVIUM			
					0.57	427.49		CI-CH	Sandy CLAY medium to high plasticity, brown mottled pale grey, fine to coarse grained sand, with silt, trace fine grained sub-angular gravel						
					1										
					2	2.00		SPT 2.00-2.45 m 17, 22, 26 N=48				Interbedded with high liquid limit, brown silt pockets of fine grained, brown sand inclusions	H		
					4.26	426.01									
					3										
					4	3.40		SPT 3.80-3.95 m 30/145mm				CH	Sandy Gravelly CLAY high plasticity, orange brown, fine to coarse grained, rounded to sub-angular gravel, fine to coarse grained sand	W (< PL)	TERTIARY TO QUATERNARY SEDIMENTARY SEQUENCE
					4.24	424.14						interbedded with fine grained, yellow pale grey sand, trace fine grained, rounded gravel			
					5			SPT 5.30-5.43 m 30/130mm						D - VD	
					6	6.60									
					7	421.46		SPT 6.80-7.25 m 11, 13, 24 N=37				CI-CH	CLAY medium to high plasticity, pale grey, with silt, fibrous organics present	VSt	
					8										
					8			SPT 8.30-8.35 m 30/50mm							
					9										
9								For Continuation Refer to Sheet 2			WALLOON COAL MEASURES				

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2322

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324428 m E 6899282 m N MGA94 56
SURFACE RL: 428.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 13/9/18
CHECKED: IT DATE: 13/9/18

Drilling					Field Material Description						Defect Information			
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
					0									
					1									
					2									
					3									
					4									
					5									
					6									
					7									
					8									
					8.60			Continuation of Sheet 1						
					419.46			SANDSTONE	DW			8.60-13.33 m: B, 10-30°, Un, Ro,		
					9			fine to medium grained, layered, pale brown				carbonaceous material Sn-Ct, <=3 mm, 15		
					419.06			interbedded with coal/carbonaceous material	SW			bedding partings		
												8.60-15.00 m: WALLOON COAL MEASURES		

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2322

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324428 m E 6899282 m N MGA94 56
SURFACE RL: 428.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 13/9/18
CHECKED: IT DATE: 13/9/18

Drilling					Field Material Description							Defect Information																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa					LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2322

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324428 m E 6899282 m N MGA94 56
SURFACE RL: 428.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 1
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 13/9/18
CHECKED: IT DATE: 13/9/18



310-01-BH2322 8.60 - 12.00 m



310-01-BH2322 12.00 - 15.00 m

This report of core photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F28
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2323

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324373 m E 6900697 m N MGA94 56
SURFACE RL: 458.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 30/8/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
ADT			0	458.56	SPT 0.50-0.95 m 6, 15, 28 N=43			CH	TOPSOIL: CLAY high plasticity, dark brown, trace fine to coarse grained sand, trace fine to medium grained, sub-angular to sub-rounded gravel, trace rootlets CLAY high plasticity, dark brown, trace fine to coarse grained sand, trace fine grained, sub-angular to sub-rounded gravel becoming yellow brown				TOPSOIL	
			0.20	458.36		CH				ALLUVIUM				
			0.70	457.86										
			1											
			2	1.90	SPT 2.00-2.45 m 11, 16, 17 N=33			CH	CLAY (EXTREMELY WEATHERED mudstone) high plasticity, dark grey, dark brown becoming yellow brown				EURAMBAH BEDS (Lateritised)	
			456.86											
			3											
			4	3.50		455.06								
			5		SPT 3.80-4.25 m 17, 28, 30 N=58									
			6											
		7	6.60	SPT 5.30-5.58 m 25, 30/125mm HB				CH	CLAY (EXTREMELY WEATHERED sandstone / mudstone) high plasticity, pale grey and yellow brown, with fine to medium grained sand					
		8	451.96											
		9												
		10												
RD					SPT 6.80-7.22 m 22, 29, 30/120mm HB N>59									
					SPT 8.30-8.74 m 14, 25, 30/140mm HB N>55									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2323

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324373 m E 6900697 m N MGA94 56
SURFACE RL: 458.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 30/8/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L-M		10		SPT 9.80-10.03 m 15, 30/80mm HB		CH	CLAY (EXTREMELY WEATHERED sandstone / mudstone) high plasticity, pale grey and yellow brown, with fine to medium grained sand	W (< PL) H	EURAMBAH BEDS (Lateritised)
			11		SPT 11.30-11.75 m 14, 25, 30/145mm HB N>55					
			12							
			13		SPT 12.80-13.19 m 15, 24, 30/90mm HB					
			14		SPT 14.30-14.75 m 16, 22, 30 N=52					
			15	443.56				END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 14.26 m DEPTH STANDPIPE INSTALLED		
			16							
			17							
			18							
			19							
			20							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2323

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 324373 m E 6900697 m N MGA94 56

SURFACE RL: 458.6 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

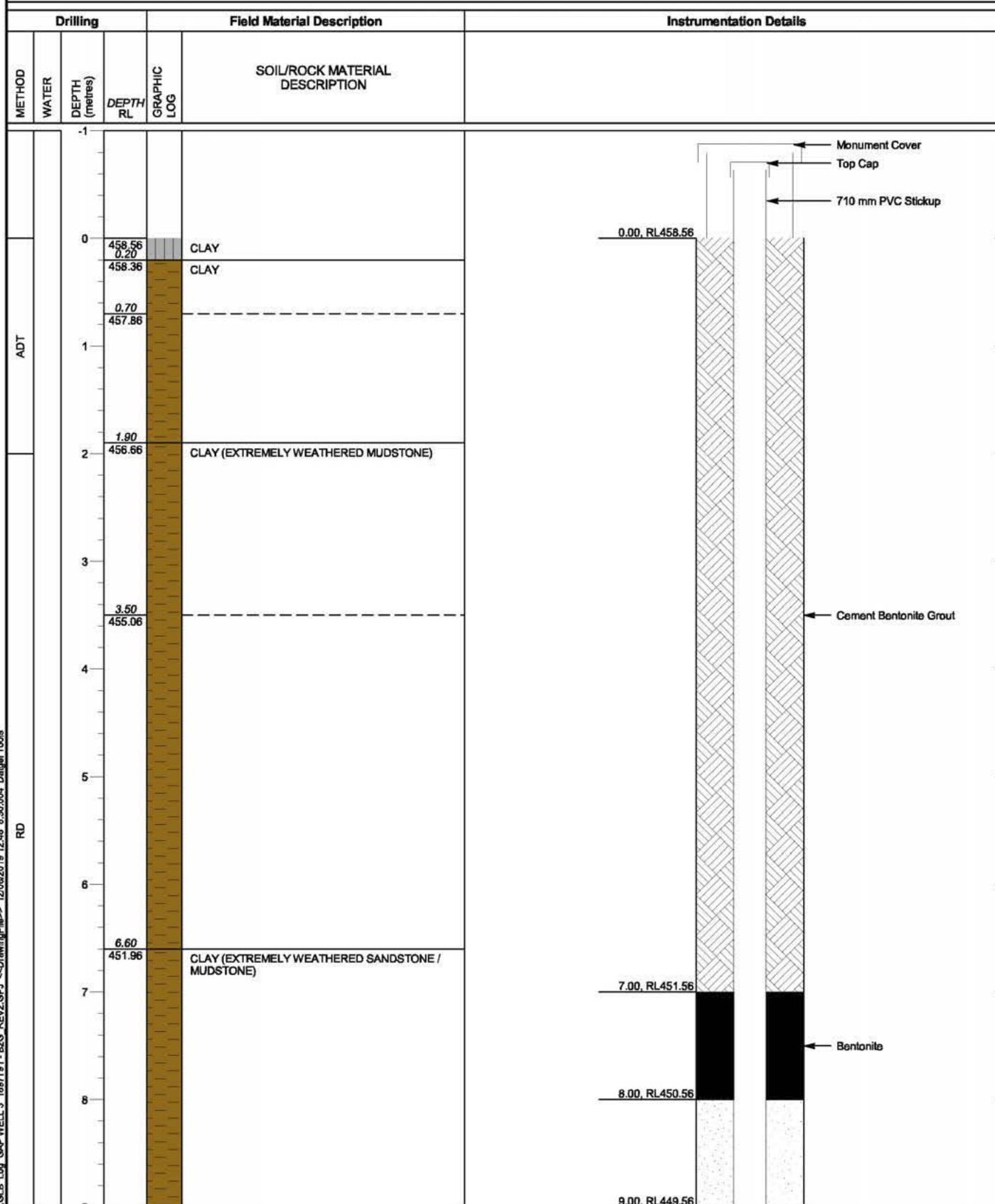
SHEET: 1 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: FZ DATE: 30/8/18

CHECKED: IT DATE: 13/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2323

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 324373 m E 6900697 m N MGA94 56

SURFACE RL: 458.6 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

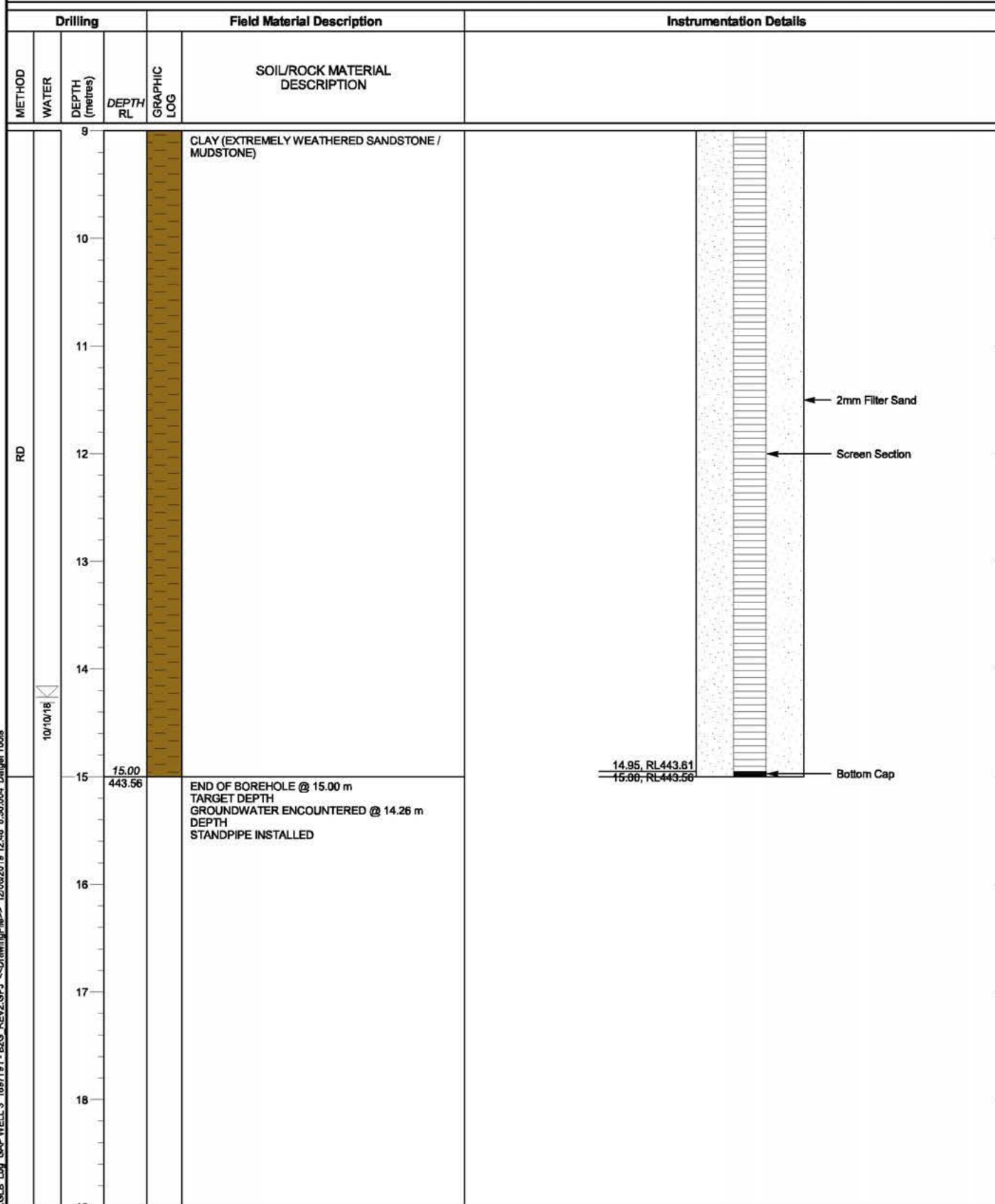
SHEET: 2 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: FZ DATE: 30/8/18

CHECKED: IT DATE: 13/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2326

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 326478 m E 6907969 m N MGA94 56
SURFACE RL: 477.0 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 5/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	476.95			CH	CLAY high plasticity, dark brown, with fine to medium grained sand		ALLUVIUM / COLLUVIUM
			0.40	476.55	SPT 0.50-0.95 m 6, 8, 11 N=19			becoming brown, with trace of calcium carbonate nodules	W (< PL) VSt	
RD			2	2.10	SPT 2.00-2.45 m 5, 10, 14 N=24		CH	CLAY (EXTREMELY WEATHERED siltstone) high plasticity, pale grey, yellow brown, with silt, with fine to medium grained sand		WALLOON COAL MEASURES (Lateritised)
				474.85					VSt	
RD			4		SPT 4.00-4.45 m 9, 14, 22 N=36					
									H	
RD			6		SPT 5.50-5.73 m 27, 30/80mm HB				W (~ PL)	
									H - Fb	
RD			7	6.80	SPT 6.80-6.81 m 10/5mm HB			moderately strongly cemented (ferruginous), red brown		
				470.15						
RD			8		SPT 8.00-8.25 m 25, 30/100mm HB					
									H	
RD			9							
RD			10							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2326

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 326478 m E 6907969 m N MGA94 56
SURFACE RL: 477.0 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 5/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M	10/10/18	10		SPT 10.00-10.12 m 30/120mm HB		CH	CLAY (EXTREMELY WEATHERED siltstone) high plasticity, pale grey, yellow brown, with silt, with fine to medium grained sand		W (~ PL)	H	WALLOON COAL MEASURES (Lateritised)
			11		SPT 11.50-11.63 m 30/130mm HB							
			12	12.50 464.45			CH	Sandy CLAY (EXTREMELY WEATHERED sandstone) pale grey, grey, dark grey, fine to coarse grained sand				
			13		SPT 13.00-13.06 m 30/60mm HB							
			14		SPT 14.50-14.61 m 30/110mm HB							
			15	461.95				END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 12.74 m DEPTH STANDPIPE INSTALLED				
			16									
			17									
			18									
			19									
			20									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



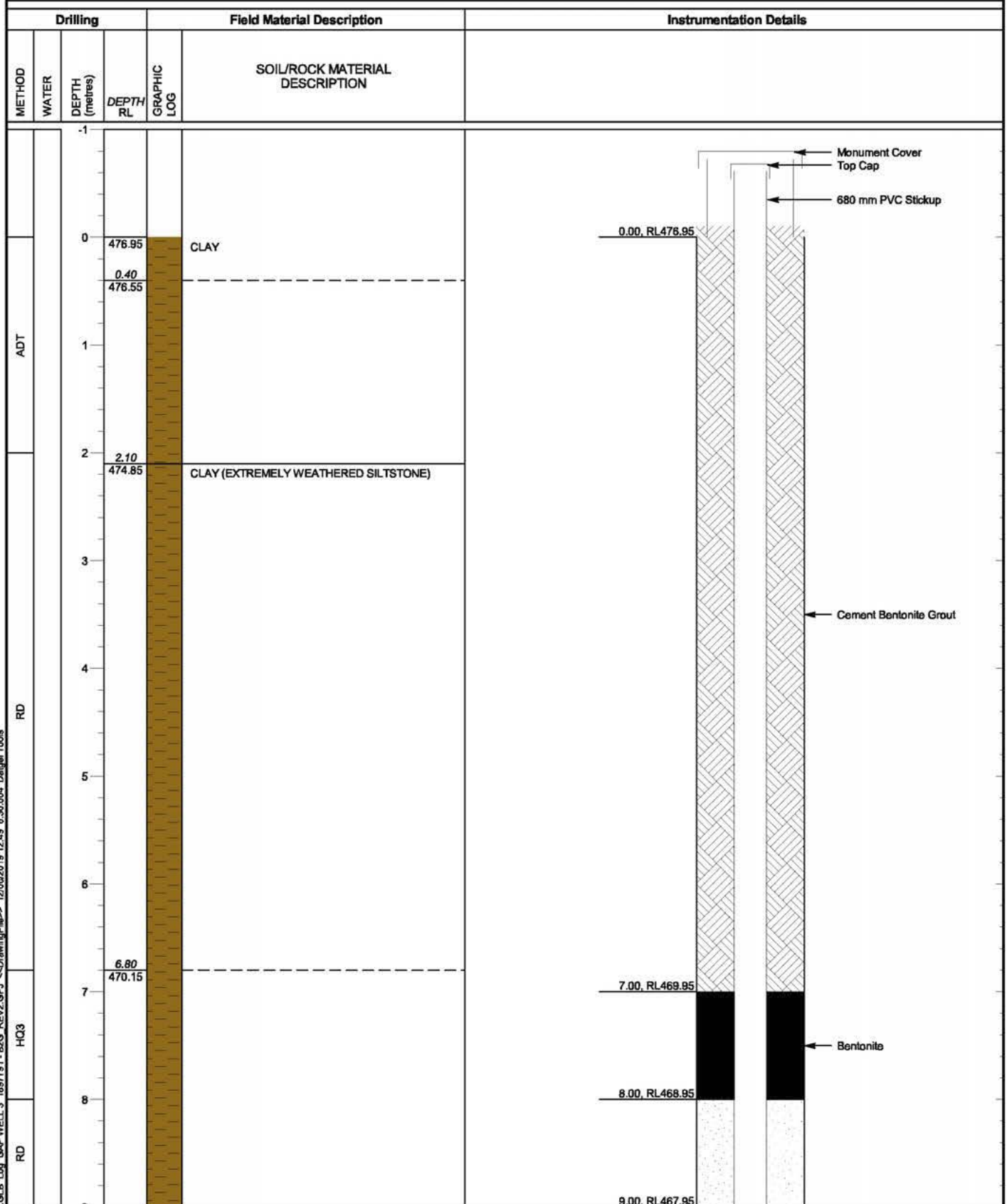
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2326

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 326478 m E 6907969 m N MGA94 56
SURFACE RL: 477.0 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 5/9/18
CHECKED: IT DATE: 13/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2326

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 326478 m E 6907969 m N MGA94 56

SURFACE RL: 477.0 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 15.00 m

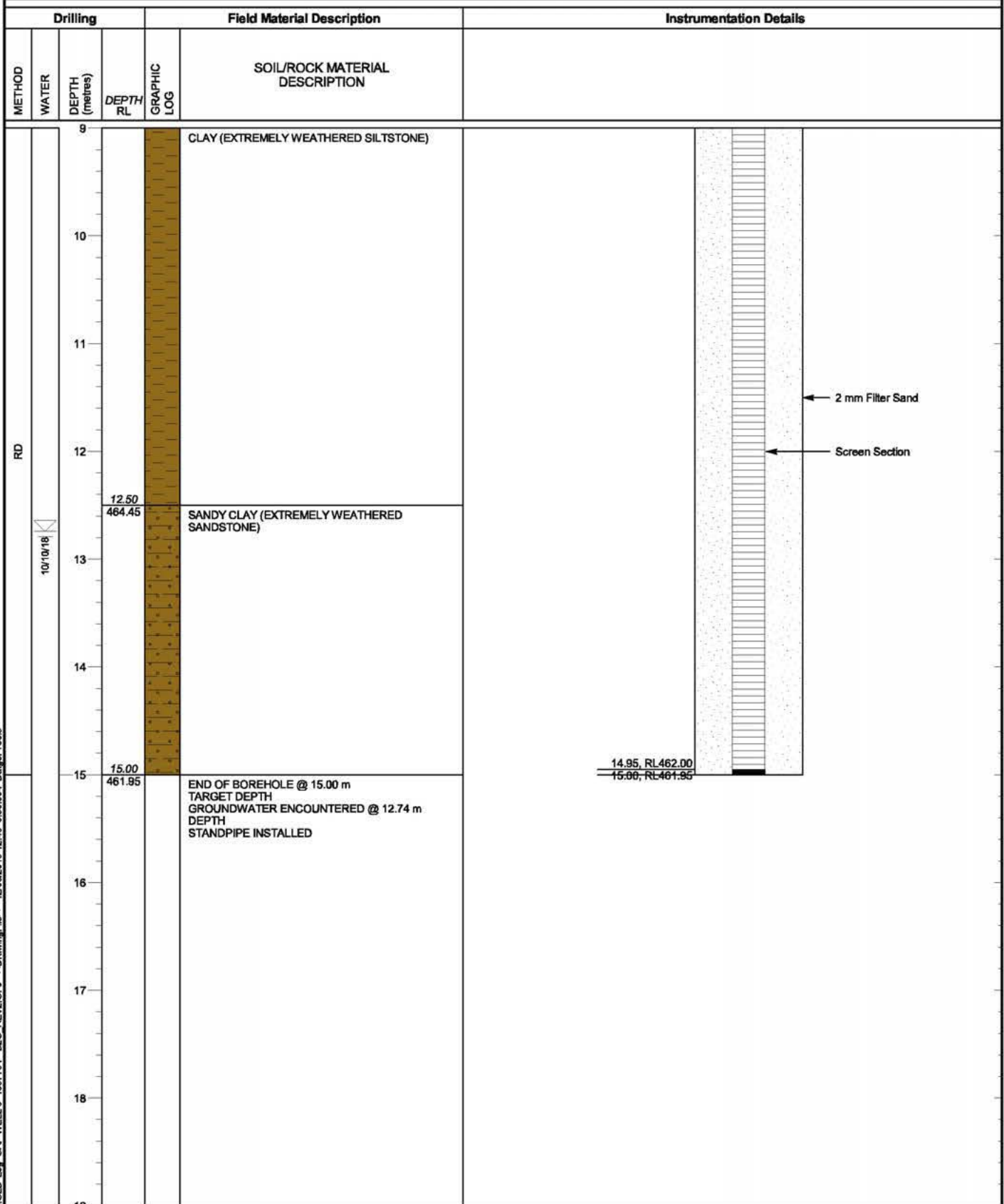
SHEET: 2 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: FZ DATE: 5/9/18

CHECKED: IT DATE: 13/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2327

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324758 m E 6900901 m N MGA94 56
SURFACE RL: 464.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 120 mm HOLE DEPTH: 15.13 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 6/12/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
L-M			0	464.86 0.20 464.46			CH	TOPSOIL: CLAY high plasticity, grey brown, trace fine to coarse grained sand, trace rootlets		TOPSOIL
					SPT 0.50-0.95 m 8, 9, 9 N=18		CH	CLAY high plasticity, pale grey brown, trace fine to medium grained sand	VSt	ALLUVIUM / COLLUVIUM
			1	1.30 463.36			CH	CLAY (EXTREMELY WEATHERED siltstone) high plasticity, pale grey mottled orange-brown and yellow, trace carbonaceous inclusions (<5 mm) and streaks, with fine and medium grained sand		WALLOON COAL MEASURES (Lateritised)
			2		SPT 2.00-2.45 m 11, 21, 30 N=51					
			3							
			4	3.50 461.16	SPT 3.50-3.95 m 15, 26, 31 N=57			becoming grey mottled orange-brown and distinctly laminated (horizontal) to 20 mm		
			5		SPT 5.00-5.27 m 18, 30/120mm				W (< PL)	
			6						H	
			7	6.50 458.16	SPT 6.50-6.95 m 18, 18, 22 N=40		CH	Sandy CLAY (EXTREMELY WEATHERED sandy siltstone/sandstone) high plasticity, grey mottled orange-brown and yellow, fine to medium grained sand, trace carbonaceous inclusions		
			8		SPT 8.00-8.26 m 13, 30/110mm					
M			9							
			10		SPT 9.50-9.52 m 30/20mm					

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2327

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324758 m E 6900901 m N MGA94 56
SURFACE RL: 464.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 120 mm HOLE DEPTH: 15.13 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 6/12/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M	GROUNDWATER NOT ENCOUNTERED	10					CH	Sandy CLAY (EXTREMELY WEATHERED sandy siltstone/sandstone) high plasticity, grey mottled orange-brown and yellow, fine to medium grained sand, trace carbonaceous inclusions		H	WALLOON COAL MEASURES (Lateritised)
			10.50	454.16				CH	CLAY (EXTREMELY WEATHERED sandy siltstone/sandstone) high plasticity, dark grey and black, carbonaceous (amorphous and partly friable)			
			11		SPT 11.00-11.13 m 30/130mm							
			12		SPT 12.50-12.57 m 30/70mm					W (< PL)	H - Fb	
			13									
			14	13.80 450.86	SPT 14.00-14.10 m 30/100mm			CH	CLAY (EXTREMELY WEATHERED sandy siltstone/sandstone) high plasticity, dark grey, with carbonaceous inclusions		H	
			15	449.53	SPT 15.00-15.13 m 30/130mm				END OF BOREHOLE @ 15.13 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
			16									
			17									
			18									
			19									
			20									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2337

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 359395 m E 6933644 m N MGA94 56
 SURFACE RL: 487.1 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 15.00 m

SHEET: 1 OF 3
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: OM DATE: 10/1/19
 CHECKED: AL DATE: 29/1/19

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M-H	GNO	0	487.10	SPT 0.50-0.90 m 13, 29, 30/100mm			CI-CH	TOPSOIL: CLAY medium to high plasticity, dark brown, trace rootlets	W (< PL)	H	D - VD	TOPSOIL
			CI	Gravelly Sandy CLAY (EXTREMELY WEATHERED basalt) medium plasticity, pale grey mottled orange brown, fine to coarse grained sand, fine grained, sub-angular gravel				EXTREMELY WEATHERED Basalt MAIN RANGE VOLCANICS					
			1						For Continuation Refer to Sheet 2				
			2										
			3										
			4										
			5										
			6										
			7										
			8										
			9										

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2337

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 359395 m E 6933644 m N MGA94 56
SURFACE RL: 487.1 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 29/1/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
					0									
					1									
					1.25			Continuation of Sheet 1						
		100	0 (0)		485.85			BASALT fine grained, grey, recovered as fine to medium grained subangular gravel and fine grained subangular cobbles, with red and orange staining	MW			1.25-3.75 m: FZ, 0-10°, sp = 20 mm, Pl-Un, Sm, clay, red brown Ve-Ct, open (to 1mm)		
		60	0 (0)		1.89									
					485.21			CORE LOSS						
					2.20									
		80	0 (0)		484.90			: as above	MW					
					2.52									
					484.50			CORE LOSS	MW					
		75	0 (0)		2.90			: as above						
					3.00			CORE LOSS						
		100	0 (30)		484.10			: as above	MW					
		100	0 (30)		3.75							3.43 m: J, 10°, Pl, Sm, red brown Sn 3.47 m: J, 10°, Pl, Sm, red brown Sn 3.58 m: J, 10°, Pl, Sm, red brown Sn 3.83 m: J, 5°, Pl, Ro, red brown Sn 3.88 m: J, 20°, Un, Ro, sandy clay, red and white Ct, open (to 1mm) 4.03 m: J, 10°, Un, Ro, Cn, close 4.08 m: Jx3, 5°, sp = 100 mm, Pl, Ro, Cn, close 4.50 m: J, 10°, Un, Ro, red brown Sn		
					483.35			BASALT fine grained, vesicular, grey and red brown						
		100	75 (100)		5							5.28 m: J, 30°, Un, Ro, Cn, close 5.37 m: J, 20°, Pl-Un, Ro, Cn, close 5.54 m: J, 10°, Pl, Sm-Ro, Cn, close 5.67 m: J, 5°, Pl, Sm, Cn, close 5.73 m: J, 20°, Pl, Sm, Cn, close 5.90 m: J, 10°, Pl, Sm, Cn, close 5.95 m: J, 10°, Pl, Sm, Cn, close 6.09 m: J, 50°, Pl, Sm, Cn, close 6.20 m: J, 60-70°, Pl, Sm, clay, yellow brown Ve-Ct, open (to 1mm) 6.24 m: J, 60-70°, Pl, Sm, Cn, close 6.28 m: J, 10°, Pl, Sm, Cn, close		
		100	0 (100)		6							6.82 m: J, 45°, Un, Sm, clay, yellow and orange brown Ct, open (to 1mm) 6.93 m: J, 10°, Pl, Sm, grey Ve		
		75	25 (50)		6.20			yellow and orange staining along joints						
					6.45			CORE LOSS						
					480.90									
					6.65									
					6.75			yellow and orange staining along joints	MW					
		100	0 (45)		480.35			Sandy CLAY (EXTREMELY WEATHERED basalt) medium plasticity, yellow and brown, fine to medium grained sand	XW					
					7.00							7.48 m: J, 0°, Un, Ro, Cn, close 7.54 m: J, 20°, Un, Ro, yellow brown Sn 7.59 m: J, 20°, Un, Ro, yellow brown Sn 7.63 m: J, 30°, Pl-Un, Ro, Cn, close 7.65 m: J, 50°, Un, Ro, Cn, close 7.70 m: J, 20°, Pl-Un, Ro, yellow brown Sn 7.77 m: J, 30°, Pl, Ro, yellow brown Sn 7.90 m: J, 10°, Un, Ro, Cn, close		
					7.40			BASALT fine grained, vesicular, grey and red brown	MW					
					479.70									
		75	0 (50)		8.00			Sandy CLAY (EXTREMELY WEATHERED basalt) medium plasticity, yellow and brown, fine to medium grained sand, with fine to medium grained, angular gravel	XW					
					479.10							8.67 m: J, 10°, Un, Ro, Cn, close 8.73 m: J, 5°, Pl, Ro, Cn, close 8.76 m: J, 20°, Pl, Sm, Cn, close 9.08 m: J, 30°, Pl, Ro, Cn, close 9.23 m: J, 30°, Un, Ro, clay, brown Ve 9.29 m: J, 20°, Un, Ro, red brown Sn 9.33 m: J, 50°, Pl, Ro, red brown Sn 9.38 m: J, 50°, Pl, Ro, red brown Sn 9.50 m: J, 10°, Pl, Ro, red brown Sn 9.74 m: J, 30°, Un, Ro, red brown Sn 9.80 m: Jx2, 20°, sp = 50 mm, Pl-Un, Ro, red		
					8.29			CORE LOSS	MW					
					478.81									
					8.60									
		100	0 (45)		478.50			BASALT fine grained, vesicular, grey and red brown						
					9									
					10									

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2337

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 359395 m E 6933644 m N MGA94 56
SURFACE RL: 487.1 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 29/1/19

Drilling					Field Material Description							Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)			
HQ3	GROUNDWATER NOT OBSERVED	90	45 (90)		10			BASALT fine grained, vesicular, grey and red brown	MW			brown Sn 10.10 m: J, 5°, Pl-Un, Ro, Cn, close 10.15 m: J, 30°, Pl, Ro, Cn, close 10.34 m: Jx3, 10°, sp = 90 mm, Pl-Un, Ro, Cn, close 10.63 m: J, 20°, Un, Ro, Cn, close 10.70 m: J, 10°, Pl, Ro, Cn, close 10.83 m: J, 20°, Pl, Ro, Cn, close 11.05 m: J, 30°, Pl, Ro, Cn, close 11.14 m: J, 10°, Pl, Ro, clay, brown brown Ve				
					11	11.00 476.10			trace white amygdalae (to 5mm)							
						11.29 475.81 11.50 475.60			CORE LOSS							
		100	0 (70)		12			BASALT fine grained, vesicular, grey and red brown	MW			11.53 m: J, 50°, Pl, Ro, Cn, close 11.68 m: J, 20°, Pl, Sm, clay, yellow brown Ct, open (to 1mm) 11.73 m: Jx3, 5°, sp = 20 mm, Pl, Sm, Cn, close 11.85 m: J, 30°, Un, Ro, Cn, close 11.91 m: J, 10°, Un, Ro, Cn, close 12.05 m: J, 10°, Un, Ro, Cn, close 12.15-12.68 m: FZ, 5°, sp = 30 mm, Un, Ro, Cn, close, clay, orange yellow 12.81 m: J, 50°, Un, Sm-Ro, sandy clay, red brown and orange brown Ve 13.05 m: J, 70°, Un, Ro, orange brown Sn 13.25 m: J, 5°, Un, Ro, Cn, close 13.35 m: J, 30°, Pl, Ro, Cn, close 13.54 m: J, 20°, Pl, Ro, Cn, close 13.72 m: J, 70°, Un, Ro, Cn, close 13.86-14.40 m: FZ, 10-20°, sp = 30 mm, Pl-Un, Ro, Cn, close 14.58 m: J, 30°, Un, Ro, Cn, close 14.60-15.00 m: FZ, 10-20°, sp = 30 mm, Un, Sm-Ro, Cn, close				
						12.50 474.60			stony clay joints, orange and yellow	MW - SW						
		100	25 (35)		13				SW							
		100	35 (35)		14											
		100	35 (35)													
		100	0 (45)													
							15	15.00 472.10		END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.77 m DEPTH STANDPIPE INSTALLED			PLI(A)=1.13 PLI(D)=0.91			
					16											
					17											
					18											
					19											

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2337

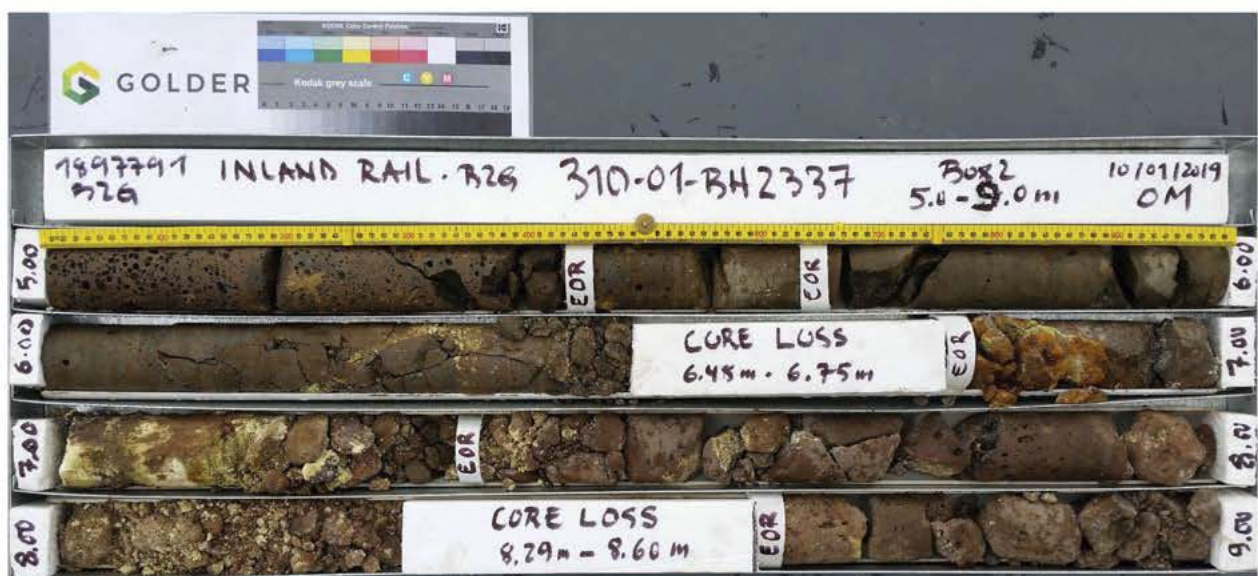
CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 359395 m E 6933644 m N MGA94 56
SURFACE RL: 487.1 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 29/1/19



310-01-BH2337 1.25 - 5.00 m



310-01-BH2337 5.00 - 9.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2337

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 359395 m E 6933644 m N MGA94 56
SURFACE RL: 487.1 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 29/1/19



310-01-BH2337 9.00 - 13.00 m



310-01-BH2337 13.00 - 15.00 m

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GAP gINT FN. F28
RL1



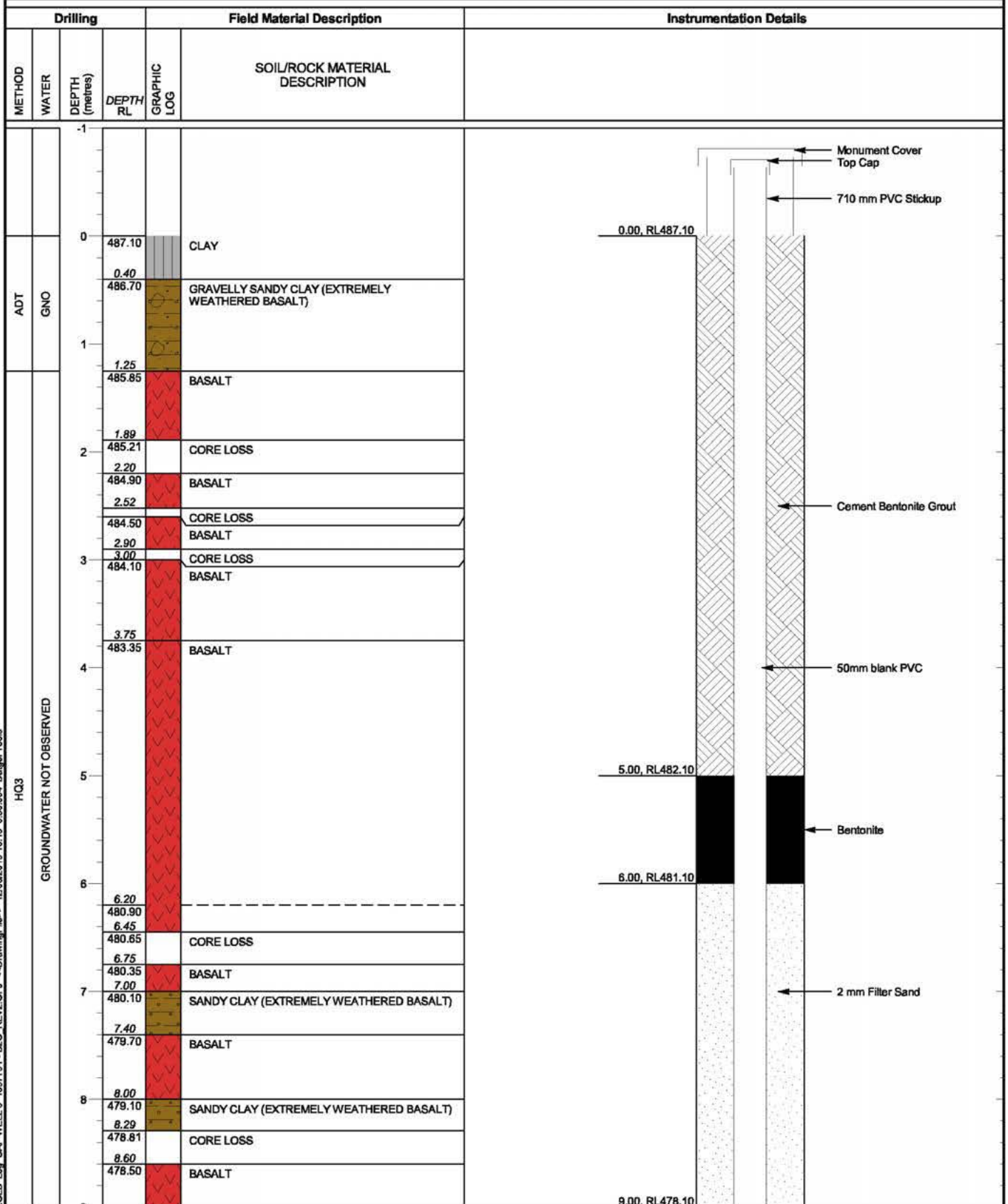
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2337

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 359395 m E 6933644 m N MGA94 56
SURFACE RL: 487.1 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 10/1/19
CHECKED: AL DATE: 29/1/19



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2337

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 359395 m E 6933644 m N MGA94 56

SURFACE RL: 487.1 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 15.00 m

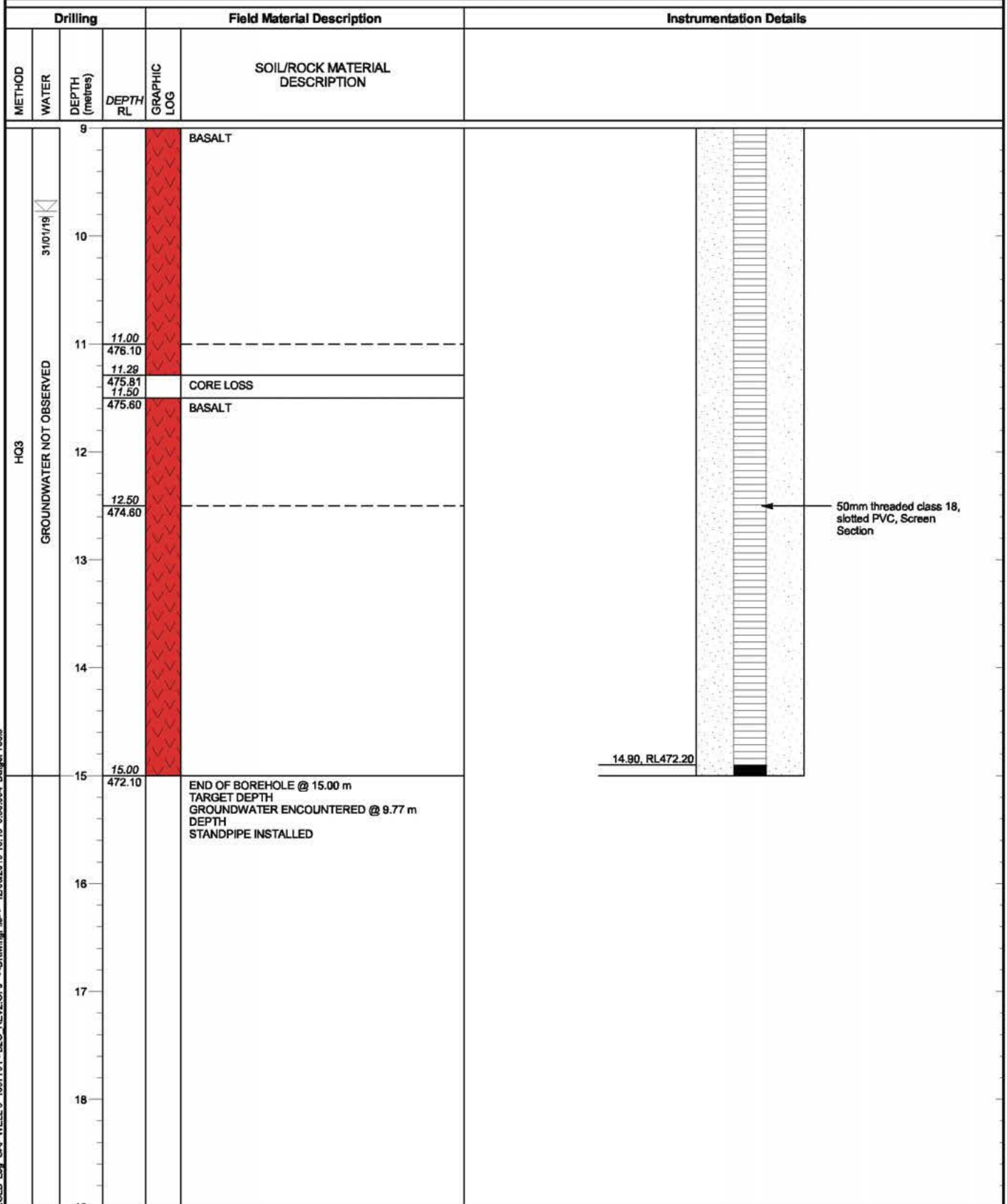
SHEET: 2 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: OM DATE: 10/1/19

CHECKED: AL DATE: 29/1/19



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2338

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 360312 m E 6933597 m N MGA94 56
SURFACE RL: 504.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/1/19
CHECKED: AL DATE: 31/1/19

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M-H	GNO	0	504.78			CI-CH	TOPSOIL: CLAY medium to high plasticity, brown, with rootlets	W (< PL)	TOPSOIL
			1					For Continuation Refer to Sheet 2		
			2							
			3							
			4							
			5							
			6							
			7							
			8							
			9							
			10							

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GAP gINT FN. F01a
RL3



SHEET: 2 OF 3

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: OM DATE: 11/1/19

CHECKED: AL DATE: 31/1/19

CLIENT: Future Freight JV

COORDS: 360312 m E 6933597 m N MGA94 56

PROJECT: Inland Rail, B2G Project, Phase 2

SURFACE RL: 504.8 m DATUM: AHD

LOCATION: NSW/QLD Border to Gowrie (Section 310)

INCLINATION: -90°

JOB NO: 1897791

HOLE DEPTH: 15.00 m

GROUNDWATER NOT OBSERVED

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2338

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 360312 m E 6933597 m N MGA94 56
SURFACE RL: 504.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/1/19
CHECKED: AL DATE: 31/1/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
HQ3	GROUNDWATER NOT OBSERVED	100	0 (0)		10	10.25		CLAY (EXTREMELY WEATHERED basalt) medium plasticity, grey and orange brown, with fine to coarse grained, angular gravels and cobbles of basalt increasing content of fine to coarse grained sand	XW					
			494.51											
		100	0 (0)		11									
		50	0 (0)		12	11.73		CORE LOSS						
						493.03								
		60	0 (0)		13	12.20		BASALT fine grained, grey recovered as fine to coarse grained, sub-rounded to sub-angular gravel to 30mm and cobbles to 70mm, yellow	HW - MW				12.20-12.58 m: FZ, 0-10°, Pl, Sm, sandy clay, yellow Ve	
			492.50											
						12.58								
						492.18								
		100	0 (45)		13	12.81		CORE LOSS						
						491.95								
100	0 (0)		14	13.30		BASALT fine grained, grey recovered as fine to medium grained, sub-rounded to sub-angular gravel to 20mm and cobbles to 70mm	MW - SW				12.90 m: J, 30°, Un, Sm, Cn, close 13.02 m: J, 20°, Pl, Sm, Cn, close 13.09 m: J, 30°, Pl, Sm, Cn, close 13.12 m: J, 5°, Pl, Sm, Cn, close 13.13 m: J, 90°, Pl, Sm, clay, yellow Ct, close 13.23-13.53 m: FZ, 0-10°, Pl, Sm, Cn, close			
	491.48													
100	0 (0)			13.55										
100	0 (0)			491.21		SANDY CLAY (EXTREMELY WEATHERED basalt) medium plasticity, brown and orange brown, fine to medium grained sand, trace fine to coarse, sub-angular gravel	XW							
		100	35 (85)		14	13.95		BASALT fine grained, vesicular, grey	MW - SW			14.06 m: J, 5°, Un, Ro, Cn, close 14.16 m: J, 5°, Un, Ro, Cn, close 14.20 m: J, 20°, Pl, Ro, Cn, close 14.38 m: J, 10°, Pl, Ro, Cn, close 14.40 m: J, 60-70°, Un, Ro, sandy clay, brown Ve 14.56 m: J, 50°, Un, Ro, sandy clay, brown Ve 14.65-14.77 m: Jx5, 5-10°, sp = 40 mm, Pl-St, Ro, Cn, close 14.86 m: J, 20°, Un, Ro, Cn, close 14.92 m: J, 10°, Pl, Ro, Cn, close		
			490.81											
					15	15.00		END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.75 m DEPTH STANDPIPE INSTALLED						
						489.76								
					16									
					17									
					18									
					19									
					20									

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2338

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 360312 m E 6933597 m N MGA94 56
SURFACE RL: 504.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/1/19
CHECKED: AL DATE: 31/1/19



310-01-BH2338 0.50 - 4.00 m



310-01-BH2338 4.00 - 8.00 m

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GAP gINT FN. F28
RL1



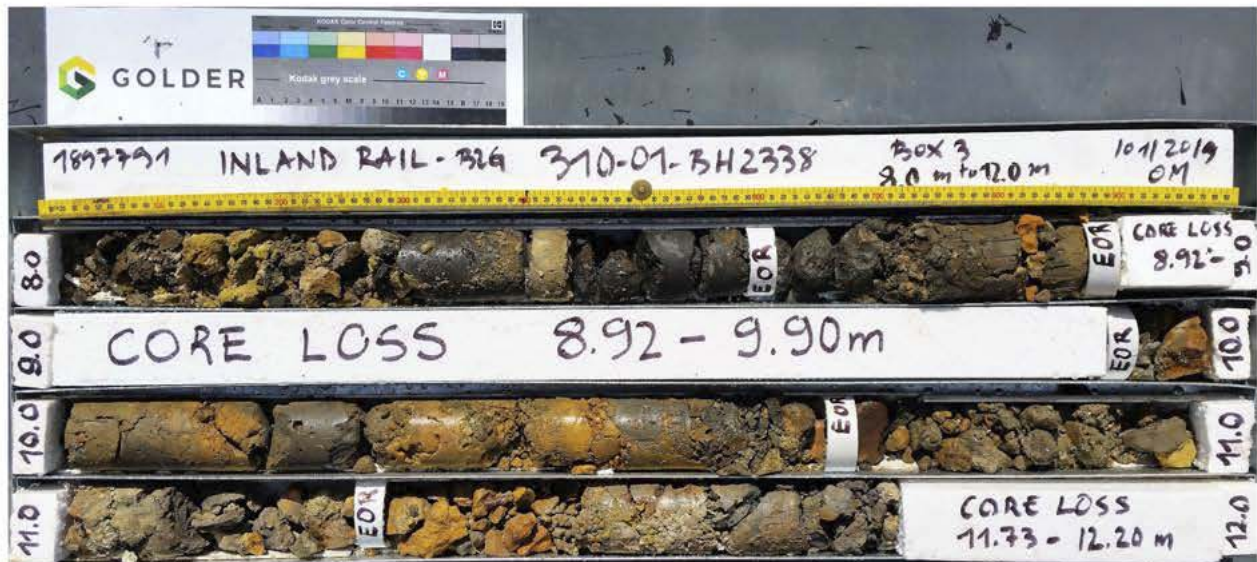
GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2338

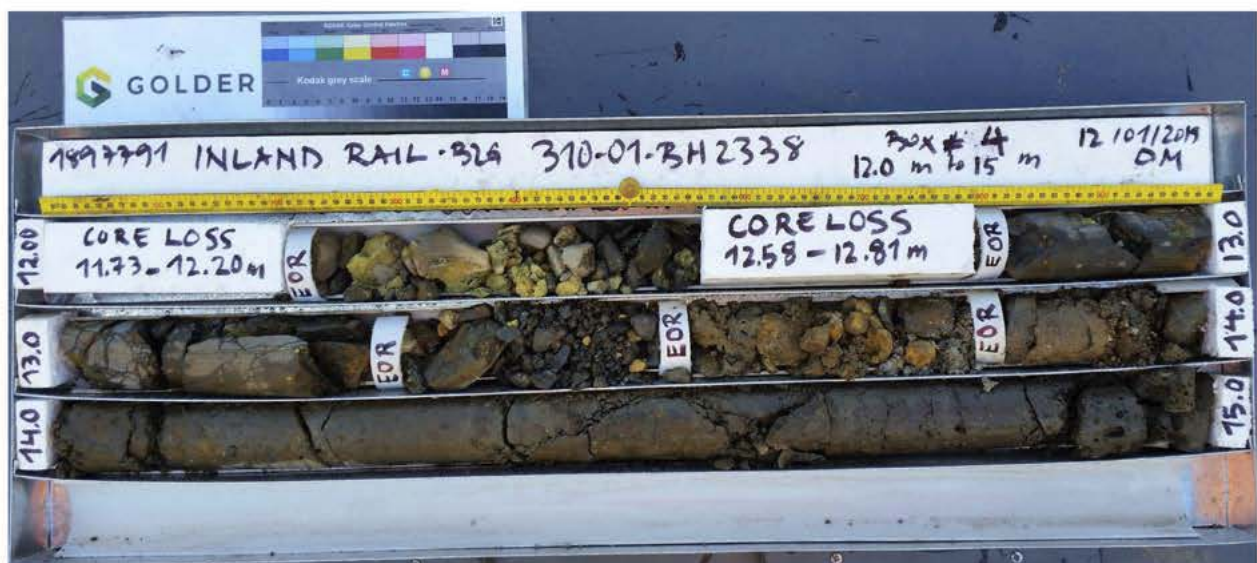
CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 360312 m E 6933597 m N MGA94 56
SURFACE RL: 504.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/1/19
CHECKED: AL DATE: 31/1/19



310-01-BH2338 8.00 - 12.00 m



310-01-BH2338 12.00 - 15.00 m

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GAP gINT FN. F28
RL1

SHEET: 1 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: OM DATE: 11/1/19

CHECKED: AL DATE: 31/1/19

CLIENT: Future Freight JV

COORDS: 360312 m E 6933597 m N MGA94 56

PROJECT: Inland Rail, B2G Project, Phase 2

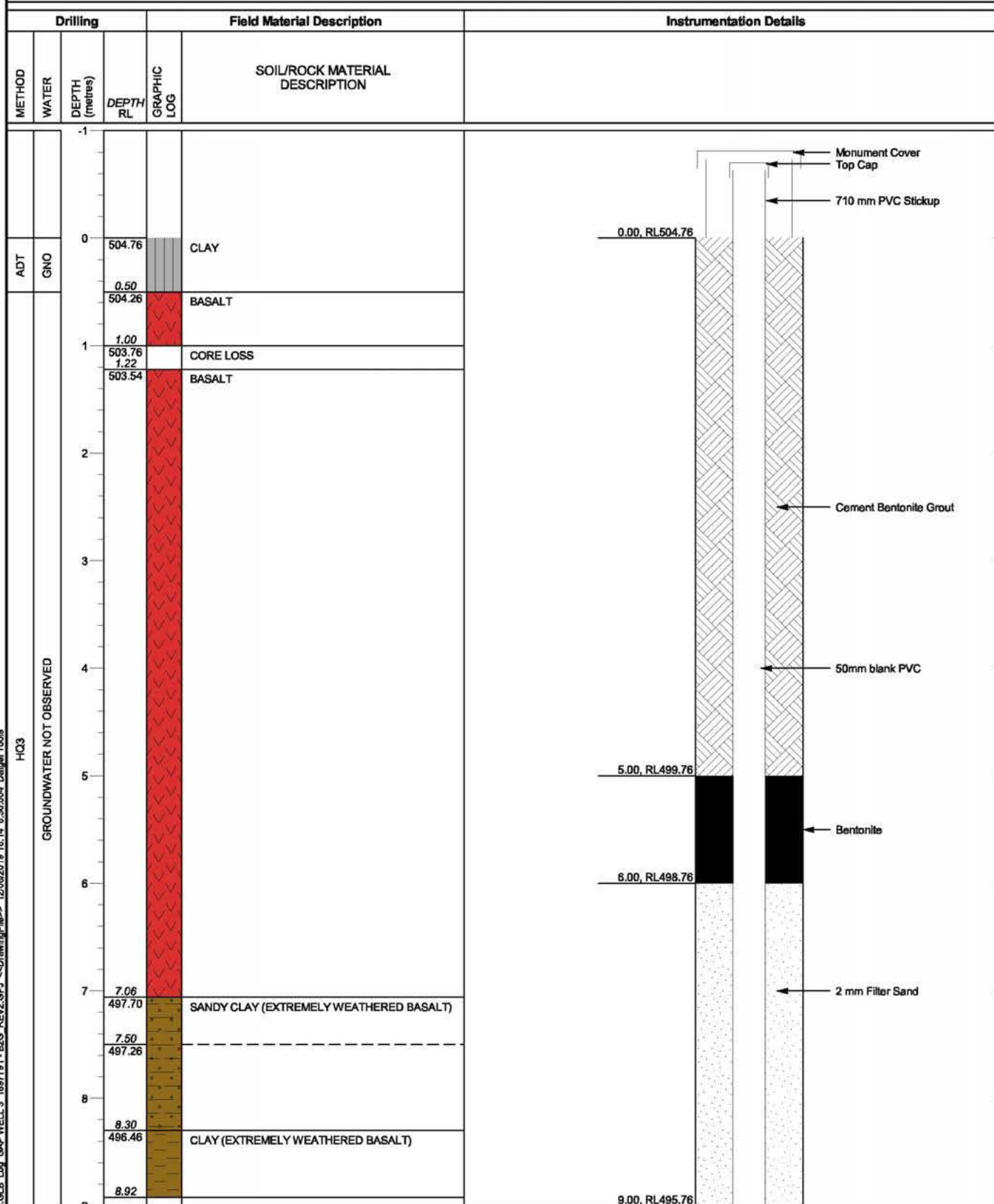
SURFACE RL: 504.8 m DATUM: AHD

LOCATION: NSW/QLD Border to Gowrie (Section 310)

INCLINATION: -90°

JOB NO: 1897791

HOLE DEPTH: 15.00 m



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RI 1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2338

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 360312 m E 6933597 m N MGA94 56

SURFACE RL: 504.8 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 15.00 m

SHEET: 2 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: OM DATE: 11/1/19

CHECKED: AL DATE: 31/1/19

Drilling				Field Material Description	Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
HQ3	GROUNDWATER NOT OBSERVED	9	495.84		CORE LOSS
		9.90	494.86		CLAY (EXTREMELY WEATHERED BASALT)
		10.25	494.51		
		11			
		11.73	493.03		CORE LOSS
		12			
		12.20	492.56		BASALT
		12.58	492.18		CORE LOSS
		12.81	491.95		BASALT
		13			
		13.30	491.46		
		13.55	491.21		SANDY CLAY (EXTREMELY WEATHERED BASALT)
		13.95	490.81		BASALT
		14			
		15	15.00	489.76	END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.75 m DEPTH STANDPIPE INSTALLED
		16			
		17			
		18			
		19			

14.90, RL489.86

50mm threaded class 18, slotted PVC, Screen Section

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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2341

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324598 m E 6898892 m N MGA94 56
SURFACE RL: 446.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 8/1/19
CHECKED: AL DATE: 29/1/19

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
HA	L		0	446.27				CI-CH	TOPSOIL: CLAY medium to high plasticity, dark brown, with rootlets	W (< PL)	H	TOPSOIL	
			0.80	445.47			CI-CH	CLAY medium to high plasticity, pale brown	Residual soil				
ADT	L-M		1										
			2	2.00	444.27	SPT 2.00-2.45 m 7, 9, 14 N=23		CI	CLAY medium to high plasticity, pale brown and grey mottled brown, with fine to medium grained sand				
			2.80	443.47					becoming orange brown grey				
			3										
			3.30	442.97	SPT 3.50-3.75 m 25, 30/100mm HB		SP	SAND (EXTREMELY WEATHERED Sandstone) fine to medium grained, medium to high plasticity, pale brown and pale grey, with clay			Extremely weathered sandstone (WALLOON COAL MEASURES)		
M-H			4						D	VD			
			5			SPT 5.00-5.25 m 19, 30/100mm HB							
			6			SPT 6.50-6.74 m 16, 30/90mm HB							
			7	7.50	438.77				grading to clay, becoming pale grey mottled red brown				
			8						For Continuation Refer to Sheet 2				
			9										
			10										

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GAP gINT FN. F01a
RL3



SHEET: 2 OF 3

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: OM DATE: 8/1/19

CHECKED: AL DATE: 29/1/19

CLIENT: Future Freight JV

COORDS: 324598 m E 6898892 m N MGA94 56

PROJECT: Inland Rail, B2G Project, Phase 2

SURFACE RL: 446.3 m DATUM: AHD

LOCATION: NSW/QLD Border to Gowrie (Section 310)

INCLINATION: -90°

JOB NO: 1897791

HOLE DEPTH: 15.00 m

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RI 3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2341

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324598 m E 6898892 m N MGA94 56
SURFACE RL: 446.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 8/1/19
CHECKED: AL DATE: 29/1/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
HQ3			100	60 (100)	10				XW			9.65 m: B, 10°, Pl, Sm, clay Ve 9.67 m: J, 60°, Pl, Sm, clay Ve 10.03 m: B, 0°, Pl, Sm, clay Ve 10.10 m: DS, 0°, Pl, Sm, clay (to 100 mm) Ct 10.23-10.50 m: Bx4, 0°, sp = 50 mm, Pl, Sm, clay Ve 10.35 m: B, 20°, Pl, Sm, clay Ve 10.81 m: B, 0°, Pl, Sm, clay Ve 10.96 m: B, 10°, Pl, Sm, pale brown Sn		
					10.80	435.47		becoming pale grey	HW		PLI(A)=0.37 PLI(D)=0.05	11.20-11.30 m: Bx2, 5°, sp = 90 mm, Pl, Sm, clay Ct 11.39 m: B, 0°, Pl, Sm, clay Ct 11.47 m: B, 5°, Pl, Sm, clay Ve		
					11									
					12				HW		PLI(A)=0.24 PLI(D)=0.23			
					12.61	433.68		SANDSTONE fine to medium grained, orange and grey, cross bedded, indistinct bedding, 5 to 10 degrees	MW			12.20-12.46 m: Jx3, 50°, sp = 50 mm, Pl, Sm, Cn 12.27 m: Bx3, 5°, sp = 90 mm, Pl, Sm, orange brown Sn 12.32 m: J, 50°, Pl, Sm, orange brown Sn, healed 12.43-12.74 m: Bx4, 0°, sp = 40-80 mm, Pl, Sm, clay Ve		
			100	29 (100)	13				MW		PLI(A)=0.56 PLI(D)=0.45	12.85 m: B, 0°, Pl, Sm, clay, orange brown Ve, open, (to 1mm) 13.10-13.80 m: Bx3, 0°, sp = 60 mm, Pl, Ro, Cn		
					13.73	432.54		becoming grey and pale grey, with carbonaceous laminations	SW		PLI(A)=1.13 PLI(D)=0.12	13.25 m: B, 20°, Pl, Sm, Cn 13.44 m: B, 5°, Pl, Sm, Cn 13.60 m: Bx2, 10°, sp = 110 mm, Pl, Ro, clay Ve		
					14			interbedded fine to coarse grained sandstone beds, 100 to 150 mm	- FR			13.73-13.86 m: Bx4, 10°, sp = 50 mm, Pl, Sm, clay Ve 14.14 m: B, 10°, Pl, Ro, clay Ve		
			100	81 (100)	14.12	432.15					PLI(A)=0.41 PLI(D)=0.09	14.48-15.00 m: Bx5, 10°, sp = 100 mm, Pl, Sm, clay Ve		
					15	15.00	431.27		END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.83 m DEPTH STANDPIPE INSTALLED					
					16									
					17									
					18									
					19									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2341

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324598 m E 6898892 m N MGA94 56
SURFACE RL: 446.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 1
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 8/1/19
CHECKED: AL DATE: 29/1/19



310-01-BH2341 7.90 - 11.00 m



310-01-BH2341 11.00 - 15.00 m

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GAP gINT FN. F28
RL1



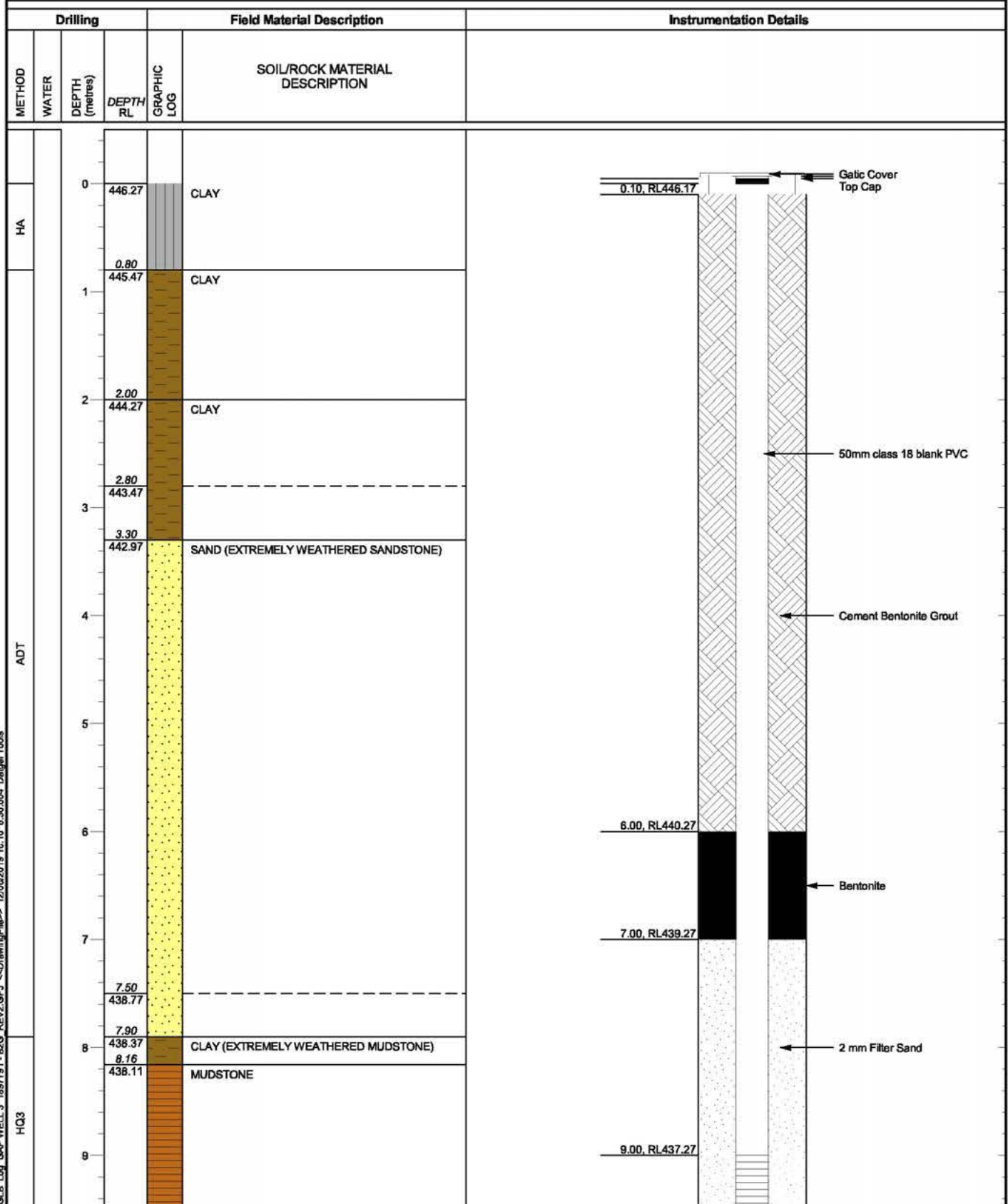
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2341

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324598 m E 6898892 m N MGA94 56
SURFACE RL: 446.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 8/1/19
CHECKED: AL DATE: 29/1/19



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2341

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 324598 m E 6898892 m N MGA94 56

SURFACE RL: 446.3 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 15.00 m

SHEET: 2 OF 2

DRILL RIG: DB520

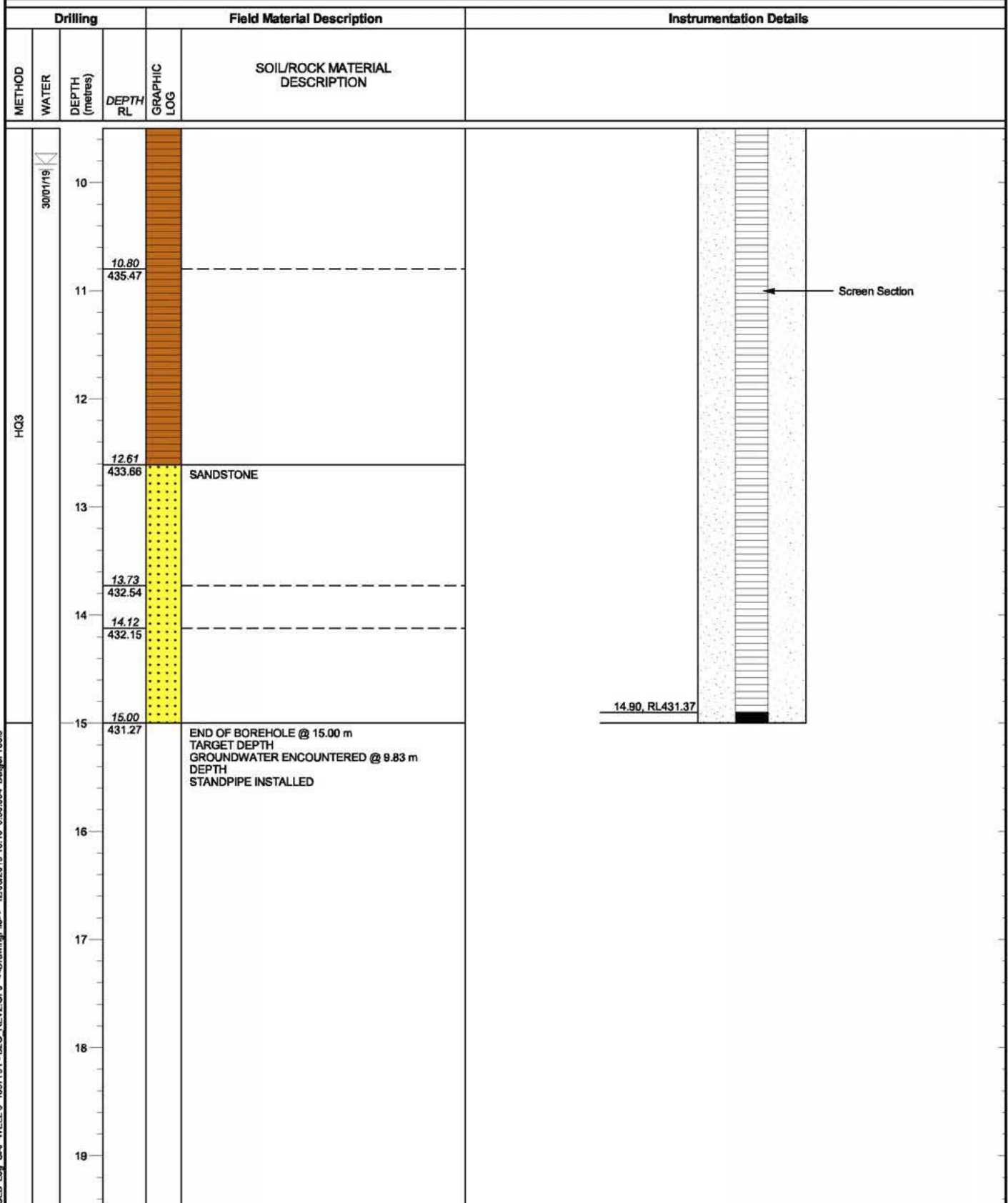
CONTRACTOR: NUMAC

LOGGED: OM

DATE: 8/1/19

CHECKED: AL

DATE: 29/1/19



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2343

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 375835 m E 6942386 m N MGA94 56
SURFACE RL: 532.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 13/12/18
CHECKED: IT DATE: 20/12/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0	532.70			SW	TOPSOIL: SAND	D	TOPSOIL
				532.70			CI-CH	fine to coarse grained, angular, brown, trace fine to medium, sub-rounded gravel, trace rootlets	L-MD	ALLUVIUM
			0.50	532.30	SPT 0.50-0.95 m 8, 11, 19 N=30		MH	CLAY	Vst	Residual Soil (MAIN RANGE VOLCANICS)
								medium to high plasticity, brown, trace fine to medium grained sand, trace silt, trace rootlets		
			1					Sandy SILT		
								high liquid limit, purple and brown mottled orange-brown and yellow, fine grained sand		
			2		SPT 2.00-2.28 m 20, 30/125mm HB N>30					
			3							
			4		SPT 3.50-3.93 m 19, 29, 30/130mm HB N>59				Vst-H	
			5		SPT 5.00-5.30 m 12, 30/145mm N>30				W (<PL)	
			6	526.80			MH	Sandy SILT		
					SPT 6.50-6.56 m 30/60mm N=R			high liquid limit, pale brown, fine to coarse grained sand, trace silt		
			7	525.80				with fine to medium grained, sub-angular gravel (to 20mm)		
								becoming fine to coarse grained and with clay	D-VD	
			8	524.80	SPT 8.00-8.18 m 28, 30/30mm N>30		SM	Silty SAND		
				524.70				brown	M	
								becoming interbedded with fine to medium grained, angular gravel		
			9	523.80			CI	Sandy CLAY		
					SPT 9.50-9.72 m 4, 30/70mm HB N>30			medium plasticity, brown, fine to medium grained sand, with silt	W (<Vst-H)	
			10							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2343

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 375835 m E 6942386 m N MGA94 56
 SURFACE RL: 532.8 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 96/150 mm HOLE DEPTH: 15.00 m

SHEET: 2 OF 3
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: EA DATE: 13/12/18
 CHECKED: IT DATE: 20/12/18

Drilling				Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M		10					CI	Sandy CLAY medium plasticity, brown, fine to medium grained sand, with silt	W (<VST-PL) H	Residual Soil (MAIN RANGE VOLCANICS)
			11						For Continuation Refer to Sheet 3		
			12								
			13								
			14								
			15								
			16								
			17								
			18								
			19								
			20								

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2343

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 375835 m E 6942386 m N MGA94 56
SURFACE RL: 532.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 13/12/18
CHECKED: IT DATE: 20/12/18

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations		FRACTURE FREQUENCY (Defects per unit metre length)
HQ3					10			Continuation of Sheet 2						
					10.30	522.50		BASALT fine grained, porphyritic, grey, trace coarse grained (phenocrysts), red brown (approximately 20mm from joint faces)	SW		PLI(A)=8.18 PLI(D)=7.45	10.40-14.70 m: J(x14), 5-40°, sp = 15-400 mm, Un-St, Ro, green chlorite Cn-Ve, <=5 mm, open		
		90	65 (80)		11							10.85-14.70 m: V(x3), 5-20°, sp = 150-1500 mm, Un-St, Ro, calcite Ve, (<=1mm)		
					12									
					12.09			CORE LOSS						
					12.20	520.60		BASALT fine grained, grey, trace amygdaloids	SW - FR		PLI(A)=1.65 PLI(D)=2.84 UCS=193			
					13									
		95	85 (95)		13.58			BASALT fine grained, dark grey, amygdaloidal, vughy, blue and black crystals in vughs	HW MW			13.57 m: DB, at large vugh 13.69 m: DB, at vugh		
					14			BASALT fine grained, partly porphyritic, grey	SW - FR			13.90 m: fracture (at vugh), possible DB 14.00 m: DB		
					14.12	518.68								
					14.93			CORE LOSS						
					15	517.80		END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.73 m DEPTH STANDPIPE INSTALLED						
					16									
					17									
					18									
					19									
					20									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2343

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 375835 m E 6942386 m N MGA94 56
SURFACE RL: 532.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 1
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 13/12/18
CHECKED: IT DATE: 20/12/18



310-01-BH2343 10.30 - 14.00 m



310-01-BH2343 14.00 - 15.00 m

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GAP gINT FN. F28
RL1



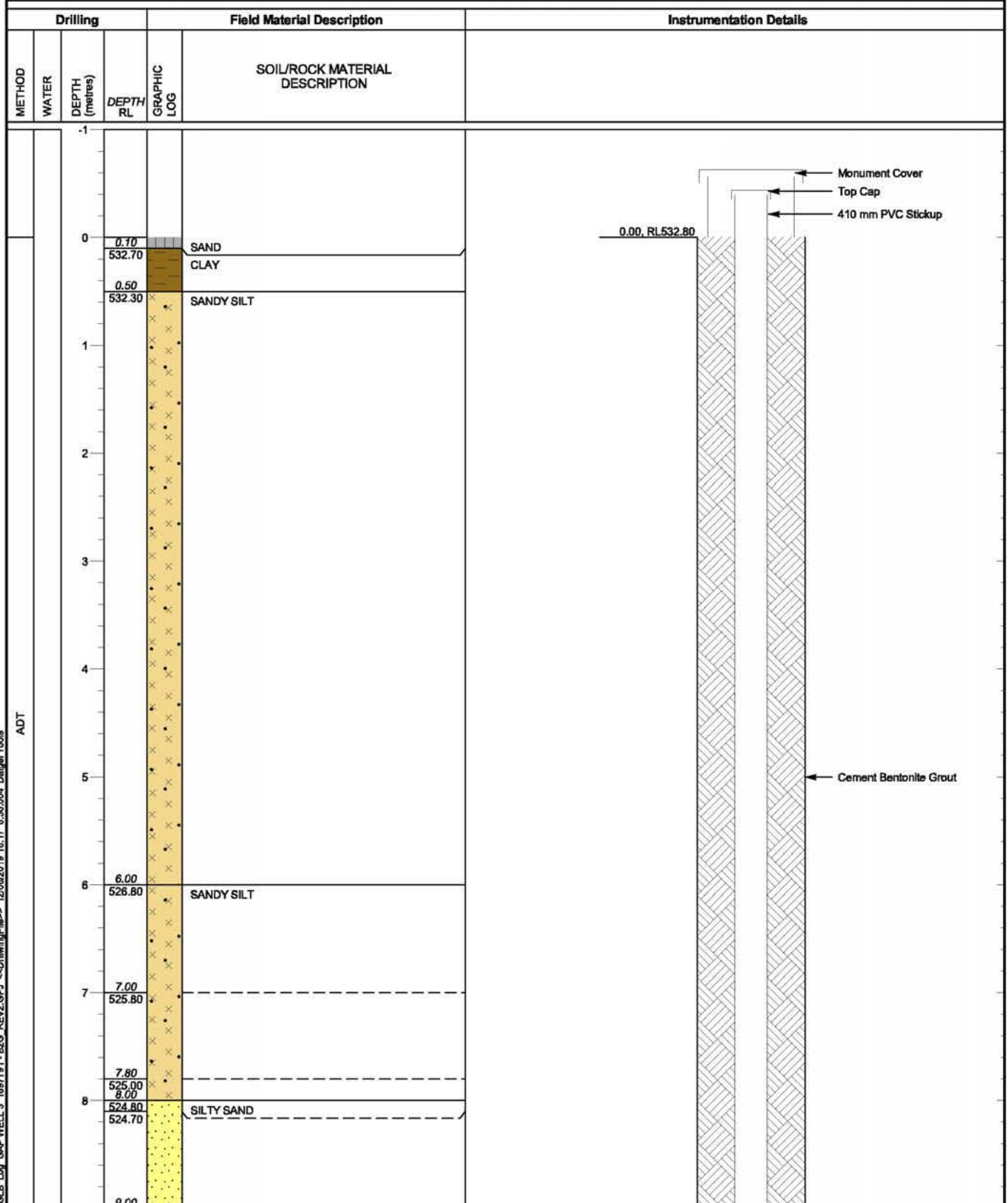
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2343

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 375835 m E 6942386 m N MGA94 56
SURFACE RL: 532.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 13/12/18
CHECKED: IT DATE: 20/12/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



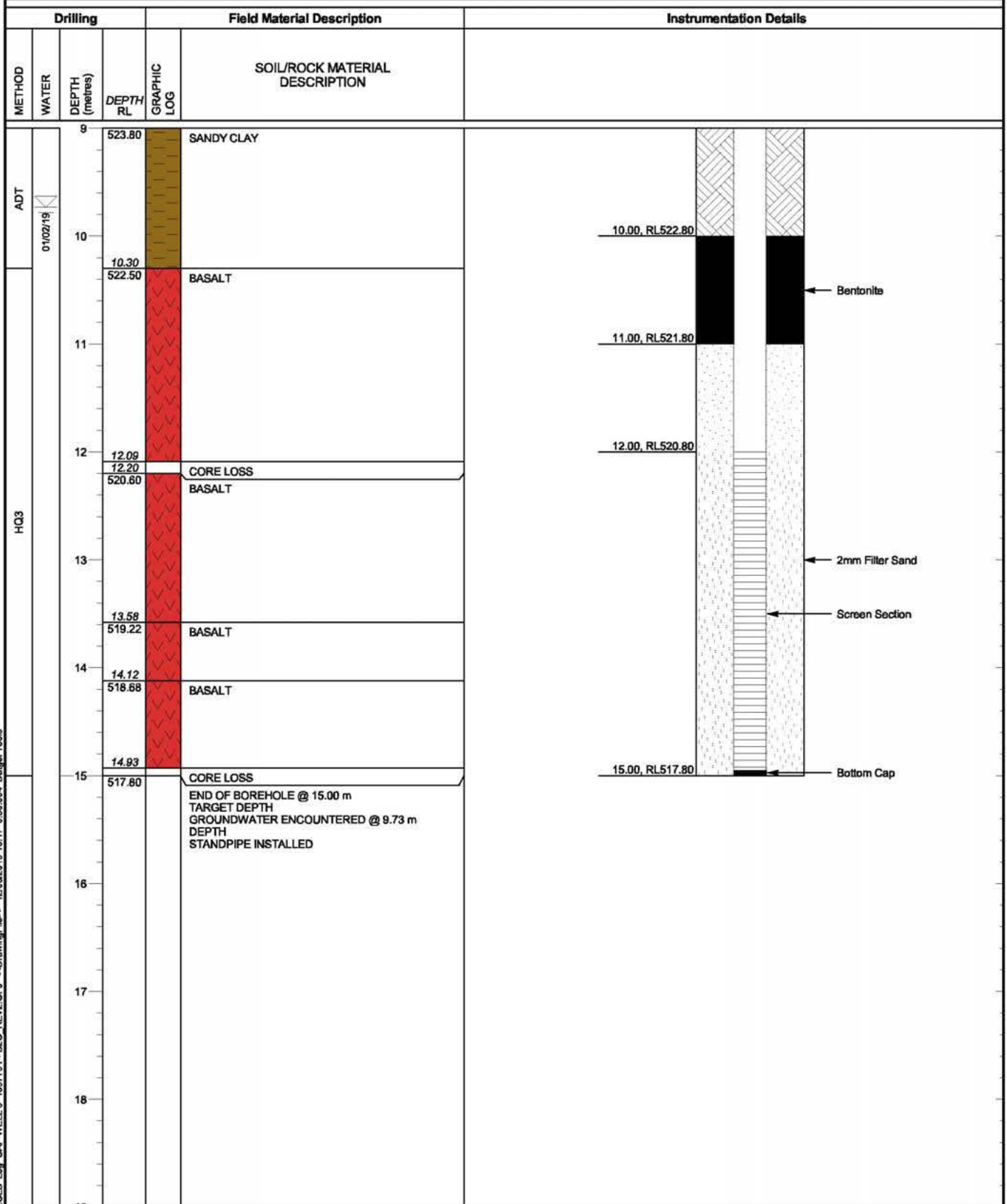
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2343

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 375835 m E 6942386 m N MGA94 56
SURFACE RL: 532.8 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 13/12/18
CHECKED: IT DATE: 20/12/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2344

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377527 m E 6944383 m N MGA94 56
SURFACE RL: 524.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 13/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
ADT			0	0.15	SPT 0.50-0.95 m 7, 12, 24 N=36		CH	TOPSOIL: CLAY high plasticity, brown, trace rootlets		W (<Vst-PL)	H	TOPSOIL	
			524.64	CH			CLAY high plasticity, brown	COLLUVIUM					
			0.60	524.19			CH	Sandy CLAY high plasticity, yellow brown, fine to medium grained sand					
			1	1.80	522.99	SPT 2.00-2.05 m 10/50mm HB		CH	Gravelly CLAY high plasticity, yellow brown, fine to coarse grained, sub-angular to angular of low strength crystalline rock gravel, with fine to coarse grained sand			MAIN RANGE VOLCANICS	
			2	3.50	521.29			GW	Sandy GRAVEL fine to coarse grained, sub-angular to angular, dark brown, fine to coarse grained sand, with silt				
			3	5.00	519.79			SC	Clayey SAND fine to coarse grained, yellow brown, pale green brown, high plasticity clay, with fine to coarse grained, sub-angular to angular gravel				
			4	6.50	518.29	SPT 5.50-5.93 m 9, 29, 30/130mm HB		SW	Gravelly SAND medium to coarse grained, dark brown, fine to medium grained, sub-angular to angular gravel, with high plasticity clay	M	VD		
			5	8.50	516.79								
			6	10.00	515.29								
			RD			7	11.50	SPT 7.00-7.10 m 30/100mm HB					
8	13.00	513.79											
			9	14.50	SPT 8.50-8.79 m 13, 30/140mm HB								
			10	16.00			512.29						

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2344

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 377527 m E 6944383 m N MGA94 56
 SURFACE RL: 524.8 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 15.00 m

SHEET: 2 OF 3
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: FZ DATE: 13/9/18
 CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M	10/10/18	10		SPT 10.00-10.03 m 10/30mm HB			SV	Gravelly SAND medium to coarse grained, dark brown, fine to medium grained, sub-angular to angular gravel, with high plasticity clay	M	VD	MAIN RANGE VOLCANICS
			11									
			12		C 11.50-12.50 m SPT 11.50-11.53 m 10/30mm HB				For Continuation Refer to Sheet 3			
			13									
			14									
			15									
			16									
			17									
			18									
			19									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2344

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377527 m E 6944383 m N MGA94 56
SURFACE RL: 524.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 13/9/18
CHECKED: IT DATE: 13/9/18

Drilling					Field Material Description							Defect Information							
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)						
					10														
					11														
						11.53		Continuation of Sheet 2											
						513.26		CORE LOSS											
						11.75													
						513.04		OLIVINE BASALT fine grained, porphyritic, massive, pale green brown	SW										
			75	60 (75)	12						UCS=39.1	11.87 m: J, 5-10°, Un-St, Ro, Sn, red brown							
											PLI(A)=2.52	12.11 m: J, 5-10°, Pl-Un, Ro, Cn							
											PLI(D)=0.88	12.32 m: J, 10-15°, Un, Ro, Cn							
											PLI(A)=4.56	12.42 m: J, 10-15°, Un-St, Ro, Sn, red brown							
											PLI(D)=3.33	12.54 m: J, 10-15°, Un-St, Ro, Ve, clay veneer							
												12.64 m: J, 5-10°, Pl-Un, Ro, Cn							
					13							12.85 m: J, 5°, Pl, Ro, Cn							
												13.17 m: J, 5-10°, Pl, Ro, Cn							
												13.37 m: J, 5-10°, Pl-Un, Ro, Ct, calcite							
												13.64 m: J, 5-10°, Pl, Ro, Cn							
					14							13.90 m: J, 5-10°, Un, Ro, Sn, red brown							
												14.20 m: J, 10-20°, Pl, Ro, Cn							
												14.24 m: J, 20°, Un-St, Ro, Sn, red brown							
												14.28 m: J, 5°, Pl-Un, Ro, Cn							
												14.65 m: J, 10°, Pl-Un, Ro, Cn							
					15	15.00		END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 11.32 m DEPTH STANDPIPE INSTALLED				14.93 m: SS, 30-40°, Pl-Un, Ro, sandy gravel infill, <5 mm							
						509.79													
					16														
					17														
					18														
					19														

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GAP gINT FN. F02b
RL3



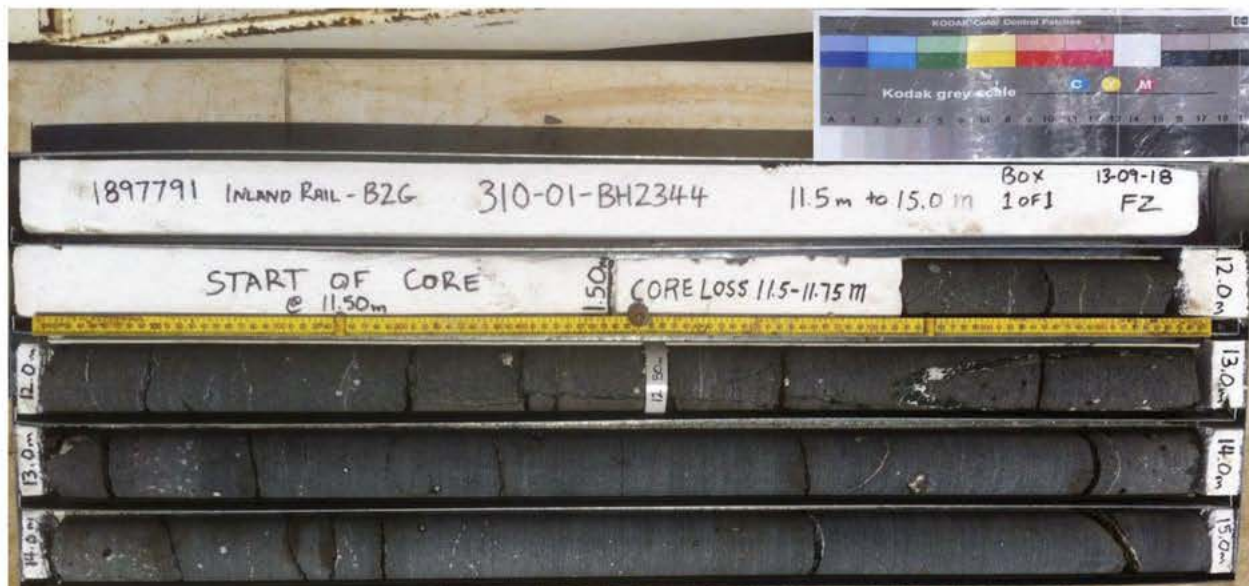
GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2344

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377527 m E 6944383 m N MGA94 56
SURFACE RL: 524.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 1
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 13/9/18
CHECKED: IT DATE: 13/9/18



310-01-BH2344 11.50 - 15.00 m



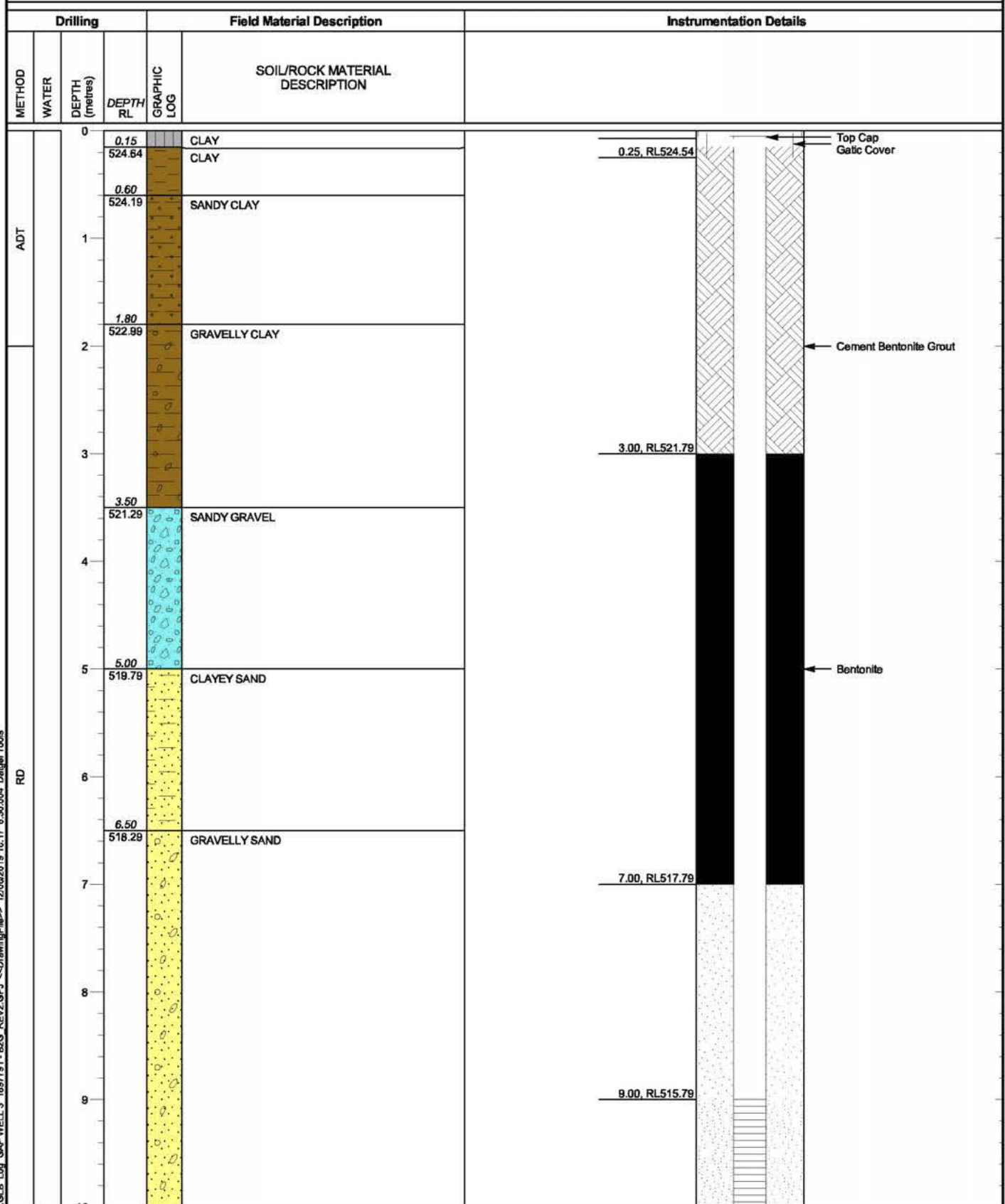
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2344

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377527 m E 6944383 m N MGA94 56
SURFACE RL: 524.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 13/9/18
CHECKED: IT DATE: 13/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



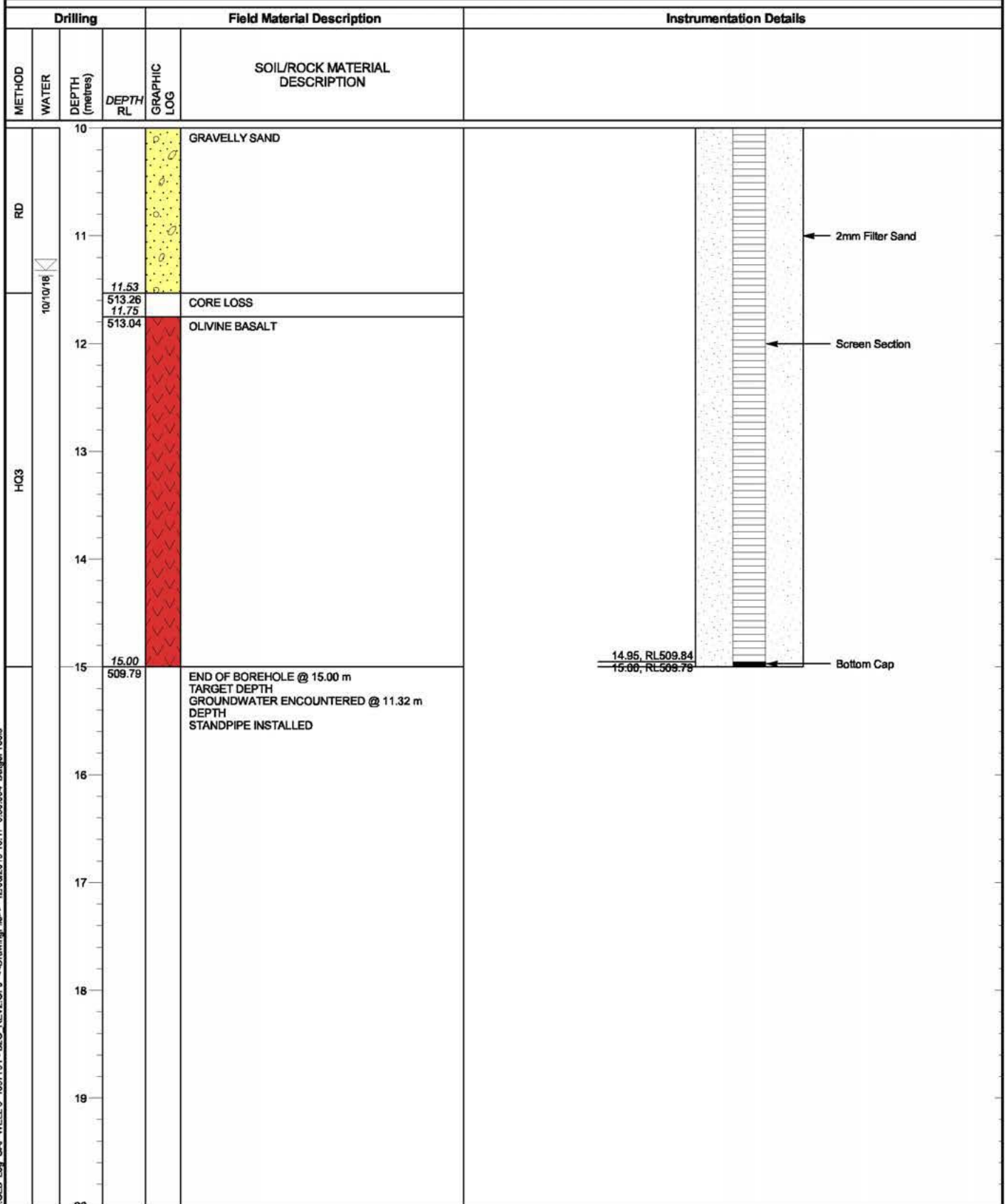
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2344

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377527 m E 6944383 m N MGA94 56
SURFACE RL: 524.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 13/9/18
CHECKED: IT DATE: 13/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2345

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377893 m E 6945680 m N MGA94 56
SURFACE RL: 536.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/12/18
CHECKED: IT DATE: 21/12/18

Drilling				Sampling		Field Material Description										
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS				
ADT	L		0	536.10	SPT 0.50-0.80 m 15, 30/145mm N>30			SM	TOPSOIL: Silty SAND fine to coarse grained, sub-angular to angular, brown, low liquid limit silt, trace rootlets	D	L	TOPSOIL				
			0.50	535.55				SC GP	Sandy CLAY low to medium plasticity, dark brown, fine to coarse grained, angular sand, trace fine grained gravel	W (PL)	St	MAIN RANGE VOLCANICS				
	H		1	534.90				DS 1.20-1.40 m			GP	GRAVEL (EXTREMELY WEATHERED basalt) fine to medium grained, to 7 mm, angular, yellow-brown mottled brown and orange-brown, trace fine to coarse grained sand	D	D		
			1.20	534.90							GP	GRAVEL (EXTREMELY WEATHERED basalt) fine to medium grained, to 13 mm, angular, grey, trace fine to coarse grained sand				
			2						For Continuation Refer to Sheet 2							
			3													
			4													
			5													
			6													
			7													
			8													
			9													
			10													

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2345

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377893 m E 6945680 m N MGA94 56
SURFACE RL: 536.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

SHEET: 2 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/12/18
CHECKED: IT DATE: 21/12/18

Drilling					Field Material Description							Defect Information			
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)		
					0										
					1										
					1.40			Continuation of Sheet 1							
					534.70			BASALT fine grained, grey, aphanitic, some red brown	XW			1.55-1.77 m: FZ, Pl, Sm, Cn, angular fragments <= 30mm dia. 1.66-5.60 m: J(x39), 3-5°, sp = 10-250 mm, Pl-St, Sm, Cn-Sn, <=1 mm 1.84-2.08 m: FZ, St, Ro, Cn, angular fragments <= 40mm dia. 2.20-2.38 m: FZ, St, Sm, Cn, angular fragments <= 15mm dia.			
					2				MW			2.62-2.78 m: FZ, Pl, Sm, Cn, angular fragments <= 50mm dia.			
					3							3.15-3.40 m: FZ, Pl, Ro, Cn, angular fragments <= 30mm dia.			
					3.50			CORE LOSS				3.65-3.70 m: FZ, St, Sm, Cn, angular fragments <= 25mm dia. 3.74-3.85 m: FZ, St, Sm, Cn, angular fragments <= 20mm dia. 3.90-3.95 m: FZ, Pl, Sm, Cn, angular fragments <= 15mm dia. 4.15-4.38 m: FZ, St, Sm, Cn, angular fragments <= 20mm dia. 4.45-4.53 m: FZ, Pl, Sm, Cn, angular fragments <= 30mm dia.			
					3.65							5.08-5.17 m: FZ, St, Sm, Cn, angular fragments <= 20mm dia.			
					532.45			BASALT fine grained, grey, aphanitic, some red brown	MW			5.40-5.63 m: FZ, Pl-St, Sm-Ro, Cn-Sn, angular fragments <= 90mm dia.			
					4							6.95-7.23 m: FZ, Pl-St, Ro, Cn-Sn, angular fragments <= 30mm dia.			
					5							7.45-8.94 m: J(x8), 3-5°, sp = 10-500 mm, Pl-St Sm, Cn-Sn, <=1 mm, close or open 7.55-7.63 m: DS, 20-30°, Ir, Sl, medium to coarse grained, angular poor fragments Ct, <=80 mm			
					5.20			CORE LOSS				8.10-8.65 m: FZ, Pl-St, Sm, Cn-Sn, angular fragments <= 80mm dia.			
					530.80			BASALT fine grained, grey and red brown, aphanitic, some red brown	MW			8.80-8.94 m: FZ, Pl-St, Sm, Cn-Sn, angular fragments <= 100mm dia.			
					5.80			EXTREMELY WEATHERED BASALT (SP) (SP) medium and coarse grained, angular, red brown and yellow, with clay	XW			9.63-9.75 m: FZ, Pl-St, Sm, Cn-Sn, angular fragments <= 40mm dia. 9.83-10.20 m: FZ, Pl-St, Sm-Ro, with clay and			
					6										
					6.10			CORE LOSS							
					6.35			EXTREMELY WEATHERED BASALT (SP) (SP) medium and coarse grained, angular, red brown and yellow, with clay	XW						
					529.75										
					6.80			BASALT fine grained, grey, aphanitic	MW						
					529.30										
					7										
					7.81			CORE LOSS							
					528.29										
					8			BASALT fine grained, grey, aphanitic	MW						
					8.10										
					528.00										
					9			CORE LOSS							
					9.00										
					527.10										
					9.60			BASALT fine grained, grey, aphanitic	MW						
					526.50										

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2345

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377893 m E 6945680 m N MGA94 56
SURFACE RL: 536.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

SHEET: 3 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/12/18
CHECKED: IT DATE: 21/12/18

Drilling						Field Material Description					Defect Information			
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
HQ3			55	0 (5)		10		BASALT fine grained, grey, aphanitic	HW			sand Cn-Sn, angular fragments <= 70mm dia.		
			100	30 (90)		11			MW			10.45-11.93 m: J, 25-45°, sp = 50-175 mm, Un-St, Ro, Cn-Sn, <=1 mm 10.64-12.60 m: J(x14), 3-10°, sp = 40-150 mm, Un-St, Ro, Cn-Sn, <=1 mm		
						12			SW - MW			12.08-12.11 m: DS, 25°, Un, Sl, fine to medium grained, angular rock fragments, with clay, 70 mm		
			100	80 (90)		13			FR			12.61 m: J, 3-5°, Un, Ro, coarse grained, angular rock fragments 13.15-13.54 m: J, 83°, Un, Ro, chlorite Ve, <=1 mm		
						14								
						15						UCS=57.8		
			100	90 (95)		16							15.14 m: J(x46), 30°, Un-St, Ro, Cn-Sn, close	
						17							16.15 m: J, 10°, Un, Cn-Sn, close 16.41 m: J(x2), 5-10°, sp = 15 mm, Un, Sm, Cn, close 16.51-16.67 m: J, 70°, Pl, Sm, chlorite Ve, <=1 mm 16.65 m: J, 10°, Un, Sm, Cn, close	
						18							17.12 m: J, 10°, Un, Sm, Cn, close 17.28-17.83 m: J, 70-80°, Un, Sm, chlorite Ve, <=5 mm, patchy veneer, intersecting fractures 17.30 m: J, 5°, Pl, Sm, Cn, close	
			65	0 (0)		19							18.00-18.55 m: J, 70-85°, Pl, Sm, chlorite Ve, <=1 mm, patchy veneer 18.25 m: J(x2), 10°, sp = 150 mm, Pl, Sm, Cn, close	
		100	55 (60)								19.00-19.25 m: J, 80-90°, Un, Sm-Ro, chlorite Ve, <=1 mm, patchy veneer 19.10 m: J, 5°, Pl, Sm, Cn, close 19.30 m: J(x2), sp = 80 mm, Un, Sm, Cn, close			
		100	60								PLI(A)=6.08 PLI(D)=6.93			

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2345

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377893 m E 6945680 m N MGA94 56
SURFACE RL: 536.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

SHEET: 4 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/12/18
CHECKED: IT DATE: 21/12/18

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
HQ3			(100)		20			BASALT fine grained, grey, aphanitic	FR			20.35 m: J(x2), 20°, Pl, Sm, Cn, close or open <3mm		
		100	60 (100)		21						PLI(A)=4.01 PL(D)=3.72	21.05 m: J, 25°, Pl, Sm, chloritised Ve		
					21.50	514.60		BASALT fine grained, red brown, amygdaloidal and vesicular (vughy), trace lithic (basalt) fragments	MW			21.55 m: J, 25°, Pl, Sm, clay and rock fragments, ct (< 5mm), intersecting joints, red brown stained		
					22	22.00 514.10		becoming grey	FR			21.65 m: J, 15°, Pl, Sm, clay and rock fragments, ct (<2mm)		
		100	90 (95)		23									
					24									
					24.15	511.95		BASALT fine grained, grey			UCS=59.1			
					25									
		100	90 (95)		26								26.56-26.72 m: V, 90°, Un, Ro, chlorite Ve, <=1 mm, patchy veneer, intersecting joints, fractured	
					27								27.40-27.53 m: J, 65-75°, Pl, Sm-Ro, micaceous sheen Ct, <=2 mm	
		100	45 (75)		28									
					29									
	100	70 (85)			30							29.55-29.62 m: J, 66°, Pl, Sm, chlorite Ct, <=2 mm		
					30.00			END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 17.61 m DEPTH STANDPIPE INSTALLED						

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2345

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377893 m E 6945680 m N MGA94 56
SURFACE RL: 536.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/12/18
CHECKED: IT DATE: 21/12/18



310-01-BH2345 1.40 - 5.00 m



310-01-BH2345 5.00 - 10.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2345

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377893 m E 6945680 m N MGA94 56
SURFACE RL: 536.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/12/18
CHECKED: IT DATE: 21/12/18



310-01-BH2345 10.00 - 15.00 m



310-01-BH2345 15.00 - 20.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2345

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 377893 m E 6945680 m N MGA94 56
SURFACE RL: 536.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 12/12/18
CHECKED: IT DATE: 21/12/18



310-01-BH2345 20.00 - 25.00 m



310-01-BH2345 25.00 - 30.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2345

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 377893 m E 6945680 m N MGA94 56

SURFACE RL: 536.1 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

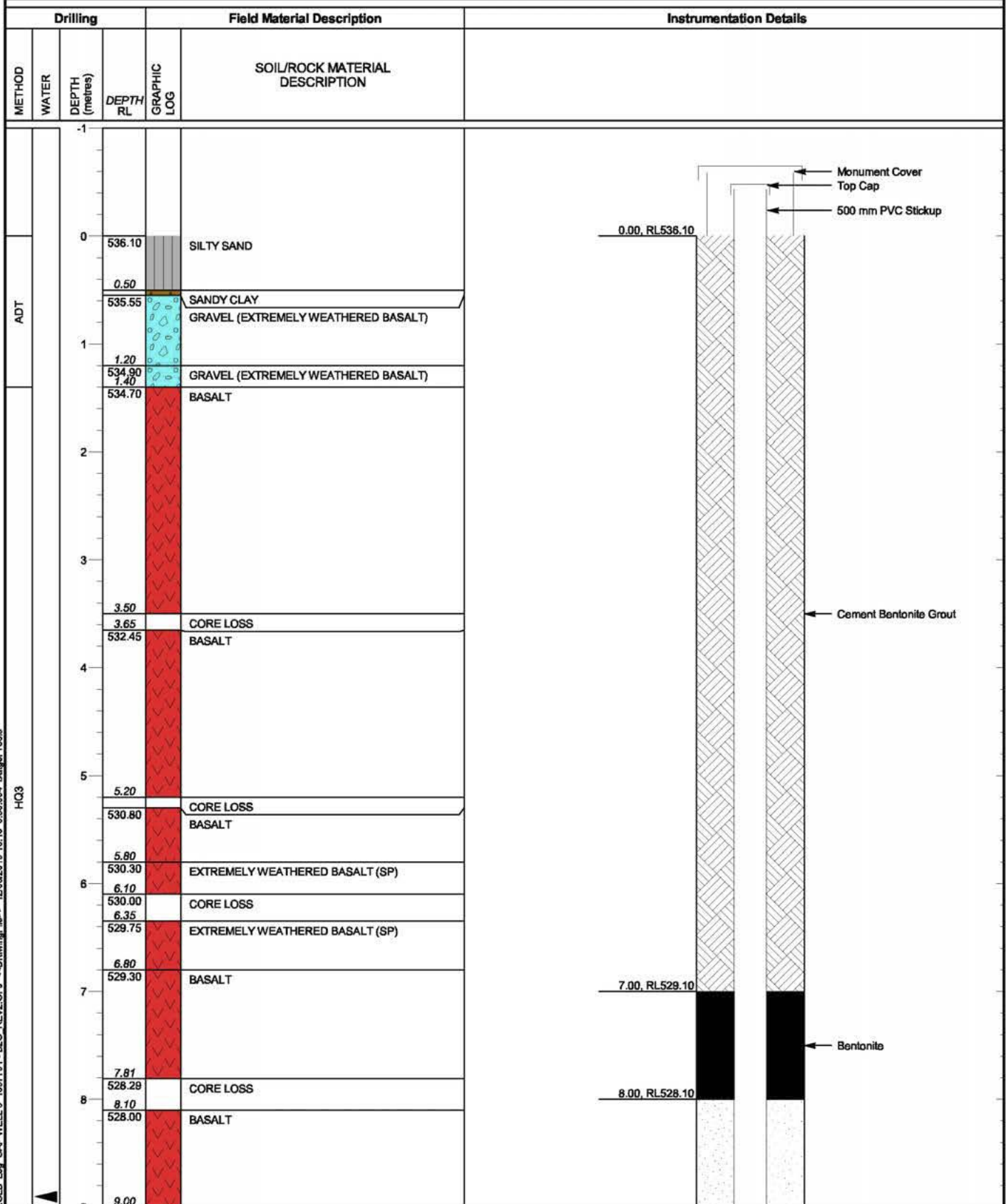
SHEET: 1 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: EA DATE: 12/12/18

CHECKED: IT DATE: 21/12/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2345

SHEET: 2 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: EA DATE: 12/12/18

CHECKED: IT DATE: 21/12/18

CLIENT: Future Freight JV

COORDS: 377893 m E 6945680 m N MGA94 56

PROJECT: Inland Rail, B2G Project, Phase 2

SURFACE RL: 536.1 m DATUM: AHD

LOCATION: NSW/QLD Border to Gowrie (Section 310)

INCLINATION: -90°

JOB NO: 1897791

HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

Drilling				Field Material Description	Instrumentation Details			
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION			
		9	527.10		CORE LOSS			
		9.60	526.50		BASALT			
		10						
		11						
		12						
		12.60	523.50		BASALT			
		13						
		14						
		14.45	521.65		BASALT			
		15						
		16						
		17						
		17.40			CORE LOSS			
		17.55	518.55		BASALT			
		18						
		19						

HQ3

01/02/19

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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2345

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 377893 m E 6945680 m N MGA94 56

SURFACE RL: 536.1 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

SHEET: 3 OF 4

DRILL RIG: DB520

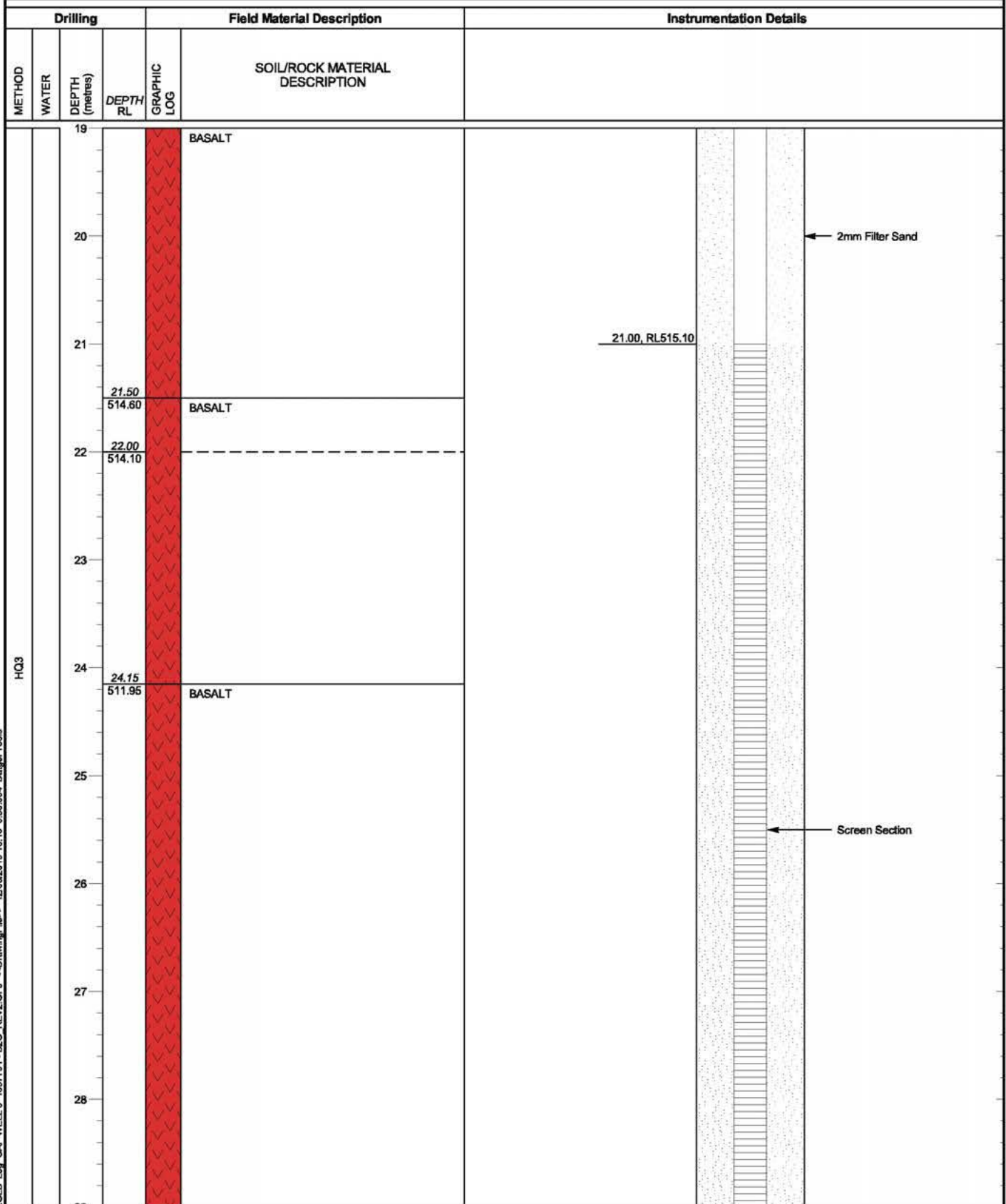
CONTRACTOR: NUMAC

LOGGED: EA

DATE: 12/12/18

CHECKED: IT

DATE: 21/12/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2345

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 377893 m E 6945680 m N MGA94 56

SURFACE RL: 536.1 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 96/150 mm HOLE DEPTH: 30.00 m

SHEET: 4 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

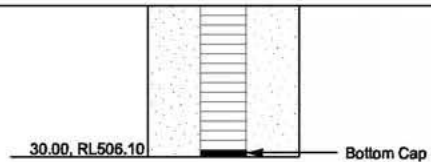
LOGGED: EA

DATE: 12/12/18

CHECKED: IT

DATE: 21/12/18

Drilling				Field Material Description	Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
HQ3		29			BASALT
		30	30.00		END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 17.61 m DEPTH STANDPIPE INSTALLED
		31			
		32			
		33			
		34			
		35			
		36			
		37			
		38			
		39			



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2346

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 378485 m E 6948568 m N MGA94 56
 SURFACE RL: 490.3 m DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 25.00 m

SHEET: 1 OF 4
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: OM DATE: 14/1/19
 CHECKED: AL DATE: 29/1/19

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M-H	GNO	0	490.31			CL-CI	TOPSOIL: CLAY low to medium plasticity, dark brown, trace rootlets		TOPSOIL
			0.50							
			489.81		SPT 0.50-0.77 m 18, 30/120mm HB		CL-CI	Sandy CLAY low to medium plasticity, pale brown, fine to medium grained sand	W (< PL) H	MAIN RANGE VOLCANICS (EXTREMELY WEATHERED basalt)
			1.70	488.61			CL-CI	Sandy CLAY low to medium plasticity, pale brown, fine to medium grained sand		
			2		SPT 2.00-2.19 m 29, 30/40mm HB					
			3					For Continuation Refer to Sheet 2		
			4							
			5							
			6							
			7							
			8							
			9							
			10							

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GAP gINT FN. F01a
 RL3



SHEET: 2 OF 4

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: OM DATE: 14/1/19

CHECKED: AL DATE: 29/1/19

CLIENT: Future Freight JV

COORDS: 378485 m E 6948568 m N MGA94 56

PROJECT: Inland Rail, B2G Project, Phase 2

SURFACE RL: 490.3 m DATUM: AHD

LOCATION: NSW/QLD Border to Gowrie (Section 310)

INCLINATION: -90°

JOB NO: 1897791

HOLE DEPTH: 25.00 m

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GAP gINT FN. F02b
RI.3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2346

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 378485 m E 6948568 m N MGA94 56
SURFACE RL: 490.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 25.00 m

SHEET: 3 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 14/1/19
CHECKED: AL DATE: 29/1/19

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
					10									
		90	15 (40)			10.17		Sandy CLAY (EXTREMELY WEATHERED basalt)	HW					
						10.35		medium plasticity, brown, fine to medium grained sand						
						10.50		CORE LOSS	RS					
		100	15 (25)			479.81		Sandy CLAY (EXTREMELY WEATHERED basalt)						
								medium plasticity, pale brown and orange, fine to medium grained sand						
						11.50			HW					
		100	40 (55)			478.81		BASALT						
								fine grained, dark grey with lenses of pale brown staining						
						12.30		lenses of sandy clay within basalt matrix, to 12.8m			PLI(A)=0.22 PLI(D)=0.04			
		100	40 (70)			478.01								
									MW					
		100	70 (90)											
									SW					
						15.05		lenses of sandy clay within basalt matrix, to 15.4m	MW					
						475.26								
		100	90 (100)											
									SW		PLI(A)=2.70 PLI(D)=0.85			
									MW					
		100	85 (100)			18.40		with veins, 30 to 45 degrees, quartz						
						471.91								
						18.70		amygdaloidal (white)						
						471.61								
						18.90		dark grey						
						471.41			SW					
		100	80											

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GAP gINT FN. F02b
RL3



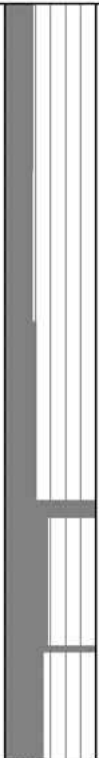
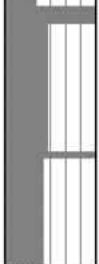
GOLDER

REPORT OF BOREHOLE: 310-01-BH2346

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 378485 m E 6948568 m N MGA94 56
SURFACE RL: 490.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 25.00 m

SHEET: 4 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 14/1/19
CHECKED: AL DATE: 29/1/19

Drilling						Field Material Description						Defect Information						
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)					
HQ3	GROUNDWATER NOT OBSERVED	100	80 (100)	100	20	465.31		BASALT fine grained, dark grey with lenses of pale brown staining	SW		PLI(A)=3.67 PLI(D)=6.75							
					21													
					22													
					23													
					24													
		100	80 (90)		25	25.00		END OF BOREHOLE @ 25.00 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED	HW MW		PLI(A)=2.24 PLI(D)=0.43							
					26	465.31												
					27													
					28													
					29													
					30													

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2346

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 378485 m E 6948568 m N MGA94 56
SURFACE RL: 490.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 25.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 14/1/19
CHECKED: AL DATE: 29/1/19



310-01-BH2346 2.20 - 6.00 m



310-01-BH2346 6.00 - 10.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2346

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 378485 m E 6948568 m N MGA94 56
SURFACE RL: 490.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 25.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 14/1/19
CHECKED: AL DATE: 29/1/19



310-01-BH2346 10.00 - 14.00 m



310-01-BH2346 14.00 - 18.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2346

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 378485 m E 6948568 m N MGA94 56
SURFACE RL: 490.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 25.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 14/1/19
CHECKED: AL DATE: 29/1/19



310-01-BH2346 18.00 - 22.00 m



310-01-BH2346 22.00 - 25.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2347

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 379008 m E 6950198 m N MGA94 56
SURFACE RL: 463.0 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 20.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 5/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L		0	462.96	SPT 0.50-0.95 m 6, 7, 9 N=16		CH	TOPSOIL: CLAY high plasticity, dark grey, trace silt, trace woody organics/roots trace calcium carbonate nodules		TOPSOIL
				0.20			CI	Sandy CLAY medium plasticity, brown, fine to medium grained sand		ALLUVIUM/COLLUVIUM
				462.76						
				0.40						
			1	462.58						
				1.80						
				461.16	SPT 2.00-2.45 m 10, 10, 11 N=21			trace calcium carbonate nodules	W (< PL)	
			2							
					U63 2.50-3.00 m					
			3							
RD	L			3.30						
				459.66				becoming with fine to coarse grained sand		
				3.70						
				459.26	SPT 3.80-4.25 m 9, 11, 14 N=25		SM	Silty SAND fine to coarse grained, brown, low liquid limit silt, trace fine to medium grained to 10mm, sub-angular to sub-rounded gravel		
			4							
				4.90						
				458.06			CH	CLAY high plasticity, grey, red brown, trace fine grained sand		COLLUVIUM
			5		SPT 5.30-5.75 m 6, 11, 15 N=26					
				6.80						
				456.16			CH	CLAY high plasticity, red brown, with silt		
				7.00						
				455.96	SPT 6.80-7.25 m 8, 14, 18 N=32		CH	CLAY high plasticity, grey, red brown, with silt, trace fine grained sand		
			7							
			8		SPT 8.30-8.75 m 8, 12, 16 N=28					
			9							
			10							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2347

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 379008 m E 6950198 m N MGA94 56
SURFACE RL: 463.0 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 20.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 5/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
RD	L		10		SPT 9.80-10.25 m 9, 15, 18 N=33			CH	CLAY high plasticity, grey, red brown, with silt, trace fine grained sand		VSt		COLLUVIUM	
			11		SPT 11.30-11.75 m 11, 11, 16 N=27									
			12											
			12.80	450.16	SPT 12.80-13.25 m 11, 16, 21 N=37			CH	CLAY high plasticity, dark brown mottled orange, with silt, trace fine to medium grained sand				MAIN RANGE VOLCANICS	
			13		U63 13.30-13.68 m									
			13.60	449.36	13.68 m PP >500 kPa			CH	CLAY high plasticity, grey, red brown, with silt					
			14		SPT 14.30-14.75 m 9, 20, 26 N=46									
			15	15.00 447.96	SPT 15.80-16.25 m 13, 17, 24 N=41			CI	Sandy CLAY high plasticity, grey, red brown, fine to medium grained sand, trace fine grained, sub-angular to sub-rounded gravel, of crystalline rock					W (-PL)
			16											
			17		SPT 17.30-17.75 m 12, 19, 24 N=43									
18														
18.50	444.46	SPT 18.80-19.07 m 16, 30/120mm N>30			ML-MH	Gravelly SILT low to high liquid limit, yellow brown, fine to medium grained, angular to sub-angular gravel, with clay, trace fine to medium grained sand								
19														
20														
END OF BOREHOLE @ 20.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.20 m DEPTH STANDPIPE INSTALLED														

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GAP gINT FN. F01a
RL3



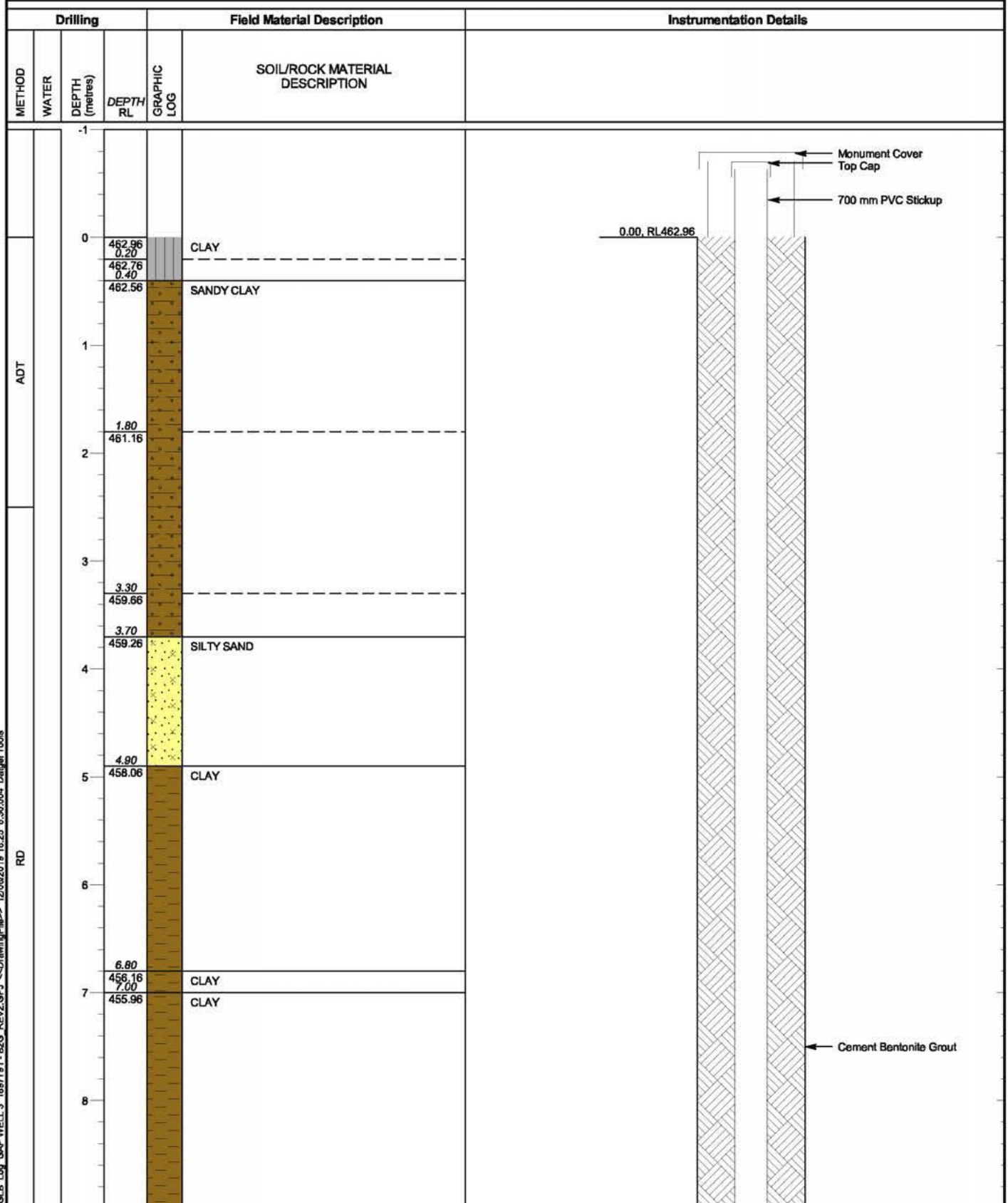
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2347

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 379008 m E 6950198 m N MGA94 56
SURFACE RL: 463.0 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 20.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 5/9/18
CHECKED: IT DATE: 13/9/18



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GAP gINT FN. F17
RL1



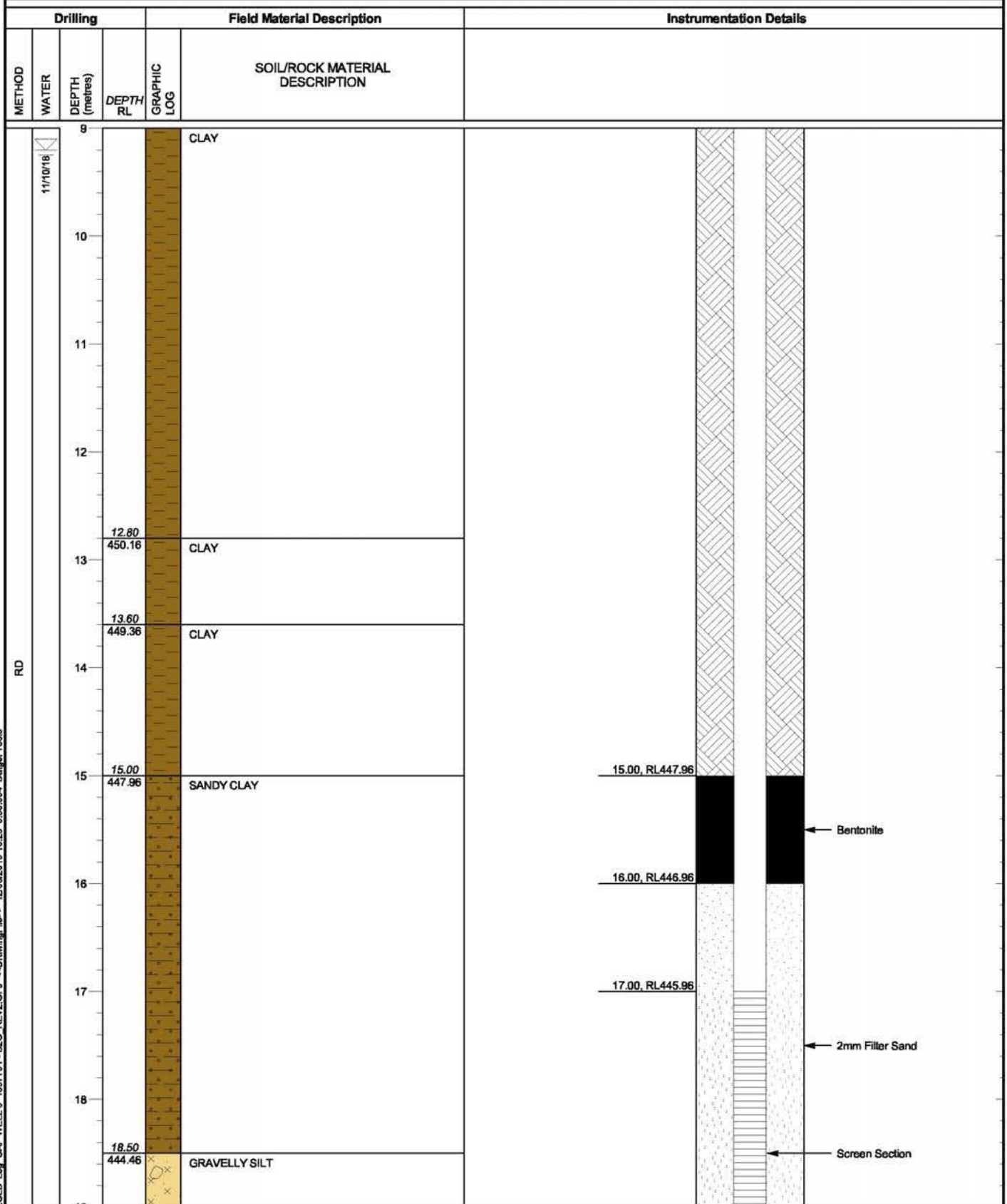
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2347

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 379008 m E 6950198 m N MGA94 56
SURFACE RL: 463.0 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 20.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 5/9/18
CHECKED: IT DATE: 13/9/18



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GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2347

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 379008 m E 6950198 m N MGA94 56

SURFACE RL: 463.0 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 20.00 m

SHEET: 3 OF 3

DRILL RIG: DB520

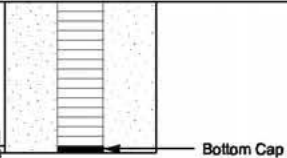
CONTRACTOR: NUMAC

LOGGED: EA

DATE: 5/9/18

CHECKED: IT

DATE: 13/9/18

Drilling				Field Material Description	Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION
RD		19			
		20	20.00		
		21			
		22			
		23			
		24			
		25			
		26			
		27			
		28			
		29			

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GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2350

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 379847 m E 6954461 m N MGA94 56
SURFACE RL: 429.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 14.70 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 10/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	429.54			MH	SILT high liquid limit, dark grey-black		Residual Soil (MAIN RANGE VOLCANICS)
			1		SPT 0.50-0.95 m 2, 5, 5 N=10					
			2	2.00 427.54	SPT 2.00-2.45 m 3, 4, 6 N=10		MH	Sandy SILT high liquid limit, red brown, fine to coarse grained sand, trace fine to medium grained, angular gravel to 20 mm		
			3							
			4		SPT 3.80-4.25 m 3, 4, 6 N=10					
RD			5	4.50 425.04				interbedded with sandy and gravelly clay, and clayey sand	w < PL	
			6		SPT 5.30-5.75 m 4, 9, 8 N=17					
			7	7.00 422.54	SPT 6.80-7.25 m 4, 17, 19 N=36			becoming grey brown		
			8							
			9		SPT 8.30-8.75 m 10, 12, 10 N=22					
M-H			10	9.50 420.04	SPT 9.80-9.83 m			Clayey GRAVEL fine to coarse grained, to 21 mm, angular, crystalline, dark grey, medium plasticity clay, with medium to coarse grained sand, low to medium strength	W VD	

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GAP gINT FN. F01a
RL3



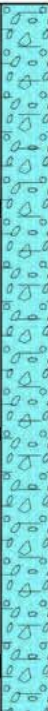
GOLDER

REPORT OF BOREHOLE: 310-01-BH2350

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 379847 m E 6954461 m N MGA94 56
 SURFACE RL: 429.5 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 94/140 mm HOLE DEPTH: 14.70 m

SHEET: 2 OF 2
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: EA DATE: 10/9/18
 CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M-H	GROUNDWATER NOT OBSERVED	10		30/30mm N=R				Clayey GRAVEL fine to coarse grained, to 21 mm, angular, crystalline, dark grey, medium plasticity clay, with medium to coarse grained sand, low to medium strength	W	VD	Residual Soil (MAIN RANGE VOLCANICS)
			11		SPT 11.30-11.33 m 30/30mm N=R							
12												
13		SPT 12.80-12.88 m 30/80mm N=R										
14		SPT 14.30-14.45 m 30/150mm N=R										
			414.84						END OF BOREHOLE @ 14.70 m REFUSAL GROUNDWATER NOT OBSERVED BACKFILLED			
			15									
			16									
			17									
			18									
			19									
			20									

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GAP gINT FN. F01a
 RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2352

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 382647 m E 6956629 m N MGA94 56
SURFACE RL: 487.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 13/1/19
CHECKED: AL DATE: 30/1/19

Drilling				Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M		0	487.34 0.42				CH	CLAY high plasticity, dark brown	W (< PL)	TOPSOIL
	M-H		0	486.92	SPT 0.50-0.95 m 11, 11, 24 N=35			GC	Clayey GRAVEL fine grained, to 5 mm, dark grey mottled red brown, medium to high plasticity clay, with medium to coarse grained sand, subrounded	M	EXTREMELY WEATHERED Basalt
			2		SPT 2.00-2.45 m 12, 26, 33 N=59					VD	
			4						For Continuation Refer to Sheet 2		MAIN RANGE VOLCANICS
			6								
			8								
			10								
			12								
			14								
			16								
			18								
			20								

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2352

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 382647 m E 6956629 m N MGA94 56
SURFACE RL: 487.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 13/1/19
CHECKED: AL DATE: 30/1/19

Drilling					Field Material Description						Defect Information			
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
					0									
					2									
					2.70			Continuation of Sheet 1						
		100	0		3.20			Clayey GRAVEL (EXTREMELY WEATHERED BASALT (GC)	XW			2.70-15.00 m: MAIN RANGE VOLCANICS		
					484.14			fine grained, dark brown, medium to high plasticity clay	HW					
					4			BASALT	HW					
		100						fine grained, massive, dark brown						
								CORE LOSS						
					5.25			BASALT						
					5.50			fine grained, massive, dark grey, pale brown mottled orange brown						
					5.50			CORE LOSS	HW					
					481.84			BASALT						
					6			fine grained, massive, dark grey and orange brown	HW					
									HW					
									MW					
					8									
					10									
					10.55			CORE LOSS						
					10.90			CORE LOSS	XW					
					476.44			Clayey GRAVEL (EXTREMELY WEATHERED Basalt)	HW					
					11.35			fine grained, dark brown, medium to high plasticity clay	HW					
					475.84			BASALT						
					12			fine grained, massive, dark grey						
								CORE LOSS						
								BASALT						
								fine grained, massive, dark grey	MW					
					14				SW					
					15.00			END OF BOREHOLE @ 15.00 m	MW					
		100			472.34			TARGET DEPTH						
								GROUNDWATER ENCOUNTERED @ 9.79 m						
								DEPTH						
								STANDPIPE INSTALLED						
					16									
					18									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2352

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 382647 m E 6956629 m N MGA94 56
SURFACE RL: 487.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 13/1/19
CHECKED: AL DATE: 30/1/19



310-01-BH2352 2.70 - 6.00 m



310-01-BH2352 6.00 - 10.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2352

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 382647 m E 6956629 m N MGA94 56
SURFACE RL: 487.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 13/1/19
CHECKED: AL DATE: 30/1/19



310-01-BH2352 10.00 - 14.00 m



310-01-BH2352 14.00 - 15.00 m

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GAP gINT FN. F28
RL1



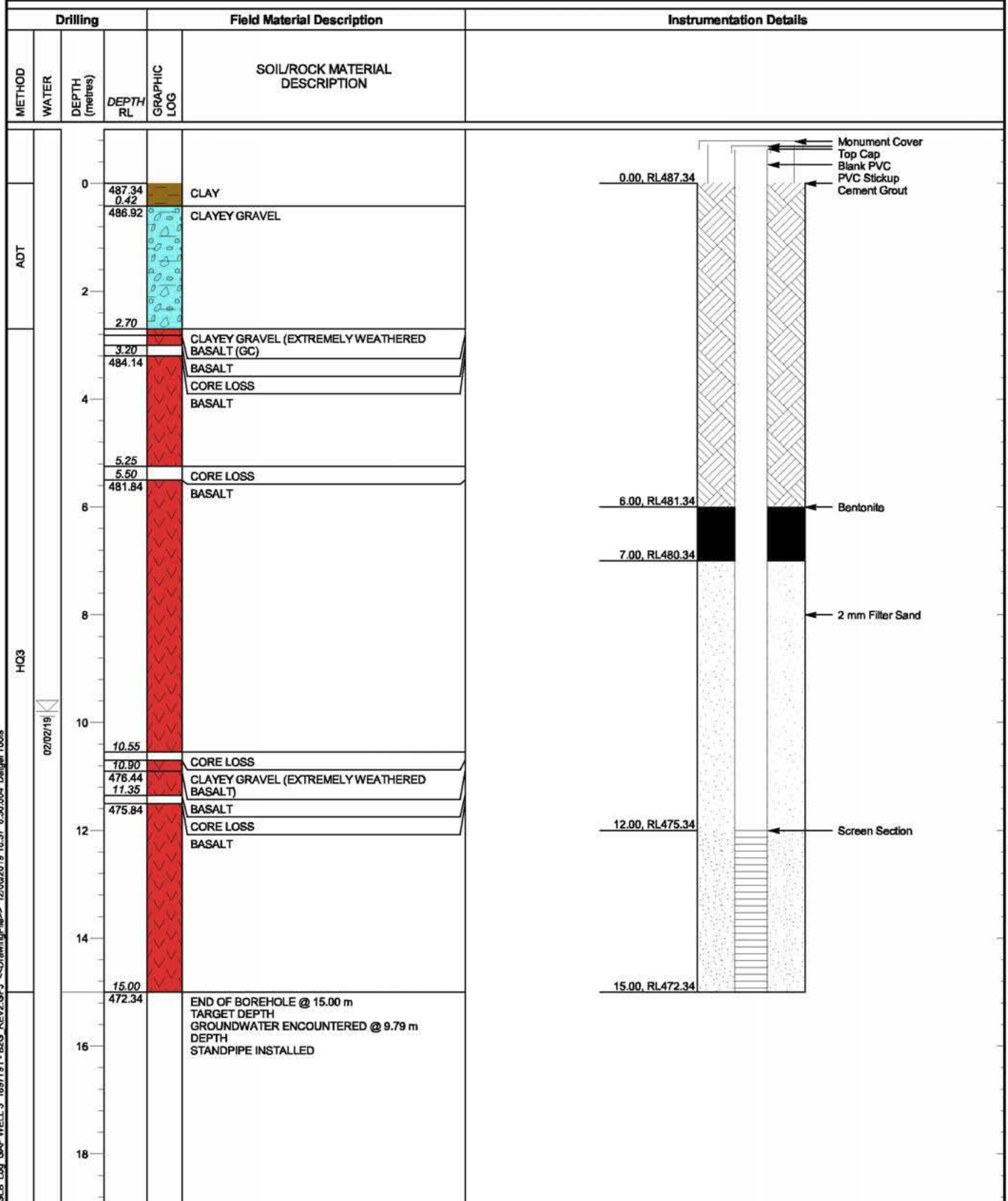
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2352

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 382647 m E 6956629 m N MGA94 56
SURFACE RL: 487.3 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 15.00 m

SHEET: 1 OF 1
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 13/1/19
CHECKED: AL DATE: 30/1/19



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2353

SHEET: 1 OF 3

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 305293 m E 6856182 m N MGA94 56
SURFACE RL: 334.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 20.10 m

DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 28/11/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
ADT			L	GROUNDWATER NOT OBSERVED	0			SM	TOPSOIL: Silty SAND	D	L	TOPSOIL	
					0.10			SM	fine to medium grained, pale grey-brown, trace rootlets			COLLUVIUM	
					0.40				Silty SAND	VSt	W (< PL)	H	WALLOON COAL MEASURES
					0.40			CL	fine to medium grained, pale grey-brown				
					333.91	SPT 0.50-0.95 m 7, 5, 13 N=18			Sandy CLAY (EXTREMELY WEATHERED sandstone) low plasticity, orange-brown, fine to medium grained sand				
					1	1.10			CH	CLAY (EXTREMELY WEATHERED sandstone) high plasticity, pale orange-brown, with fine to medium grained sand			
					333.21								
					2								
						SPT 2.00-2.10 m 30/100mm HB							
					3								
	SPT 3.50-3.58 m 30/75mm HB												
4													
	4.50						CI	Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, pale orange-brown, fine to medium grained sand					
5													
	SPT 5.00-5.08 m 30/80mm HB												
6													
	6.40												
	327.91												
	SPT 6.50-6.56 m 30/60mm HB												
7													
	7.20												
	327.11												
	7.90												
	326.41												

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2353

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 305293 m E 6856182 m N MGA94 56
SURFACE RL: 334.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 20.10 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 28/11/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M		10	10.20	SPT 11.00-11.10 m 30/100mm HB			CH	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale grey mottled orange-brown, high plasticity clay, trace coarse grained sand		H	WALLOON COAL MEASURES
			324.11	SC								
RD	L	GROUNDWATER NOT OBSERVED	11		SPT 12.80-12.86 m 30/60mm HB					M	VD	
			12									
			13		SPT 14.30-14.37 m 31/70mm HB							
			14									
			15	13.60	SPT 15.80-15.88 m 30/80mm HB							
			320.71	SC								
			16		SPT 17.30-17.48 m 28, 30/30mm HB							
			17									
			18	16.80	SPT 18.80-18.86 m 30/60mm HB							
			317.51									
			19									
			20									
			21	19.40								
			314.91	SC								
			22									
			23									
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			226									

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2353

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 305293 m E 6856182 m N MGA94 56
SURFACE RL: 334.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/120 mm HOLE DEPTH: 20.10 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 28/11/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			20									
			314.21		SPT 20.00-20.10 m 30/100mm HB				END OF BOREHOLE @ 20.10 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED			
			21									
			22									
			23									
			24									
			25									
			26									
			27									
			28									
			29									
			30									

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GAP gINT FN. F01a
RL3



SHEET: 1 OF 3

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: OM DATE: 11/12/18

CHECKED: IT DATE: 8/1/19

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 324741 m E 6902636 m N MGA94 56

SURFACE RL: 477.5 m DATUM: AHD

INCLINATION: -90°

HOLE DEPTH: 20.00 m

ADT

GAP 8 16.7 LIB.GLB Log GAP NON-CORED FULL PAGE 1997791 - B2G REV2.GPJ <<DrawingFile>> 12/06/2019 16:38 8.30.004 Datgei Tools

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RI 3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2355

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324741 m E 6902636 m N MGA94 56
SURFACE RL: 477.5 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 20.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/12/18
CHECKED: IT DATE: 8/1/19

Drilling					Field Material Description							Defect Information					
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)				
					0												
					2												
					4												
					6												
					8												
					10												
					12	12.00		Continuation of Sheet 1									
					12	465.50		BASALT fine grained, dark grey, trace coarse grained crystalline (phenocrysts)	MW								
					14												
					14												
					14												
					14												
					14												
					14												
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This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2355

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324741 m E 6902636 m N MGA94 56
SURFACE RL: 477.5 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 20.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/12/18
CHECKED: IT DATE: 8/1/19

Drilling						Field Material Description						Defect Information									
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa					LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)				
HQ3		100	0		16			BASALT fine grained, dark grey, trace coarse grained crystalline (phenocrysts)	MW					120-700 mm, Un 14.18 m: DZ, 30°, Un, Ro, <=30 mm 14.33 m: J, 60°, Un, Ro, orange Sn 14.55-14.75 m: FZ, Un, Ro, fine to coarse grained, angular gravel rock fragments orange Sn 15.00 m: J, 10°, Un, Ro, orange Sn 15.01-16.12 m: FZ, Un, Ro, fine to coarse grained, angular gravel rock fragments orange Sn 16.12-16.38 m: J(x2), 50-60°, sp = 260 mm, Un, Ro, orange Sn, <=10 mm 16.39-17.75 m: FZ, Un, Ro, fine to coarse grained, angular gravel rock fragments orange Sn							
		100	0			16.36		BASALT fine grained, vesicular, massive, grey	HW												
		100	0			461.14															
		100	0																		
		100	0																		
		100	0																		
		100	0																		
		100	0																		
		100	0																		
		100	0																		
	75	45	(75)		18.88			CORE LOSS													
	100	0			19.15			BASALT fine grained, vesicular, massive, grey	HW												
	100	100			458.35				MW												
	100	100						BASALT fine grained, dark grey, trace coarse grained crystalline (phenocrysts)	HW				19.45-19.86 m: J(x13), 30-50°, sp = 20-80 mm, Un								
	100	0			20.00			END OF BOREHOLE @ 20.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 9.79 m DEPTH STANDPIPE INSTALLED													
	100	0			457.50																
	100	0																			
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	100	0																			
	100	0																			
	100	0</																			

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324741 m E 6902636 m N MGA94 56
SURFACE RL: 477.5 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 20.00 m

SHEET: 1 OF 1
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/12/18
CHECKED: IT DATE: 8/1/19



310-01-BH2355 12.00 - 16.00 m



310-01-BH2355 16.00 - 20.00 m

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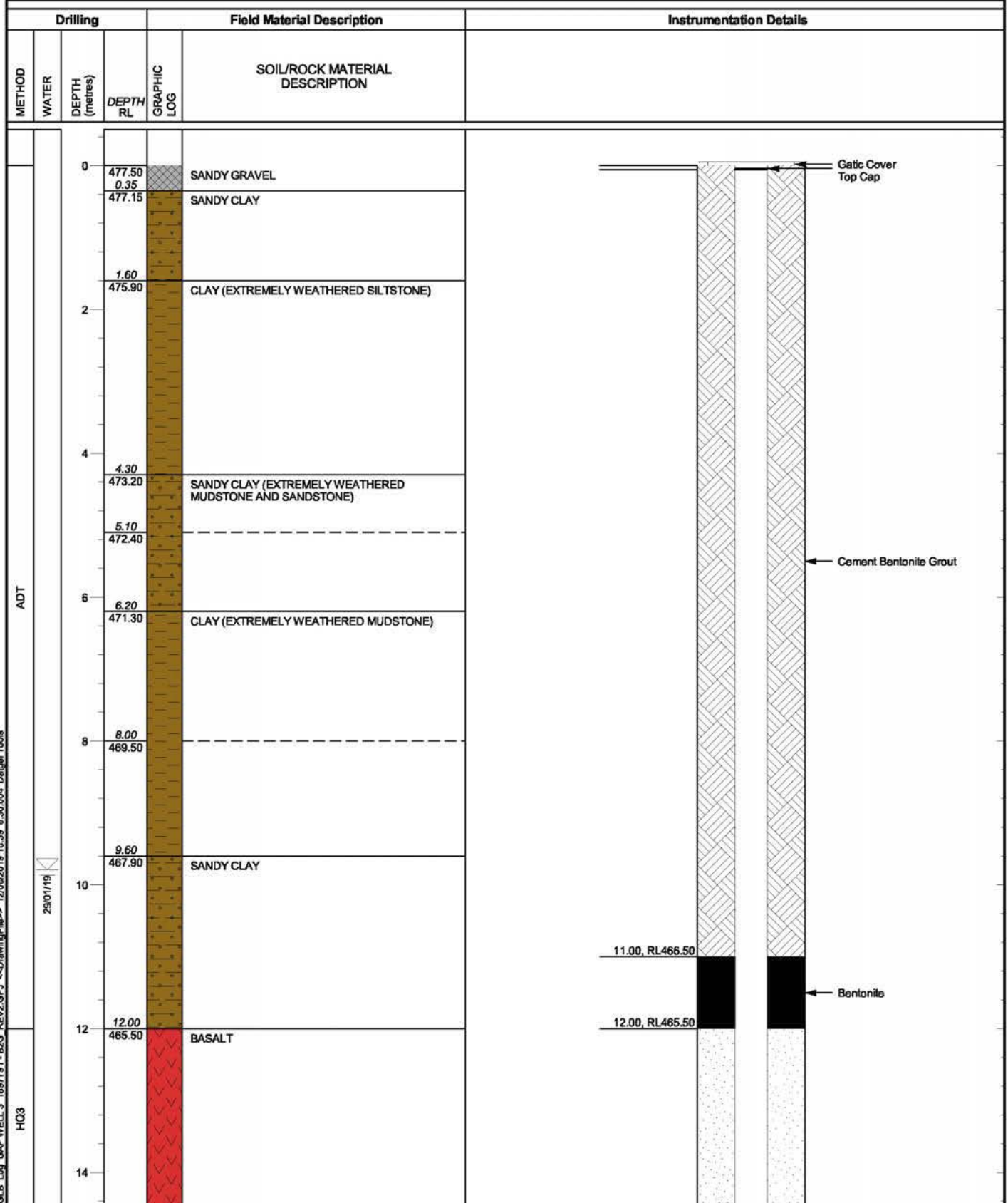
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2355

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324741 m E 6902636 m N MGA94 56
SURFACE RL: 477.5 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 20.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/12/18
CHECKED: IT DATE: 8/1/19



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



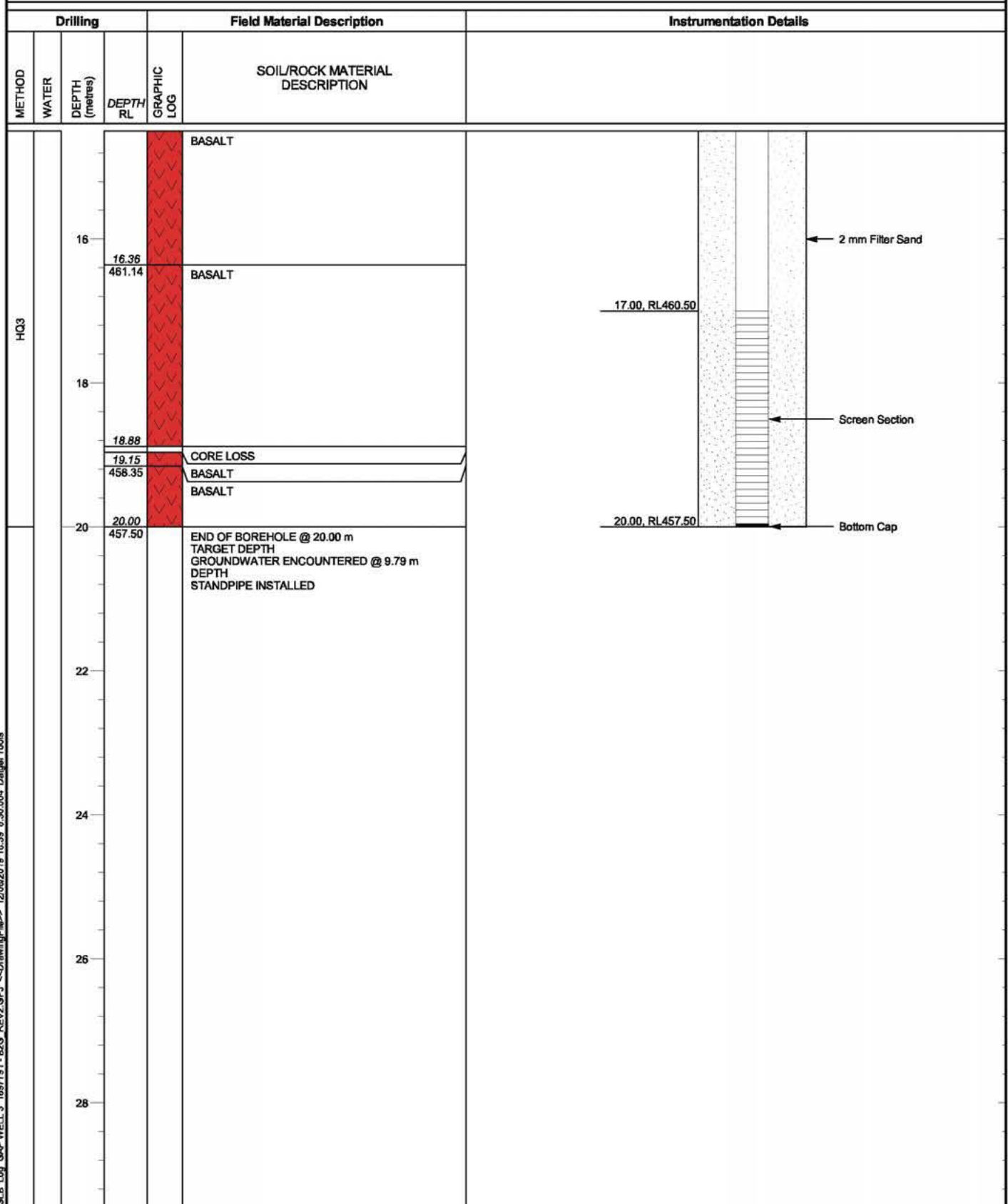
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2355

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324741 m E 6902636 m N MGA94 56
SURFACE RL: 477.5 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 20.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 11/12/18
CHECKED: IT DATE: 8/1/19



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2356

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 304192 m E 6855275 m N MGA94 56
SURFACE RL: 323.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 86/94/120 mm HOLE DEPTH: 20.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 28/11/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L		0	0.15 323.34	SPT 0.50-0.95 m 9, 11, 23 N=34			SM	TOPSOIL: Silty SAND fine to medium grained, pale grey-brown, trace rootlets	D	L	TOPSOIL WALLOON COAL MEASURES
	M-H		0.55 322.94	SM				Silty SAND (RESIDUAL SOIL) fine to medium grained, pale grey-brown				
RD	L-M	GROUNDWATER NOT OBSERVED	2	2.40 321.09	SPT 2.00-2.02 m 12/20mm HB			CH	CLAY (EXTREMELY WEATHERED sandstone) high plasticity, pale grey mottled orange-brown, with fine to medium grained sand	W (< PL)	H	
			4		SPT 3.80-3.92 m 30/120mm HB				becoming with fine to coarse grained sand			
			6	5.30 318.19	SPT 5.30-5.32 m 30/20mm HB			SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale grey mottled orange, medium plasticity clay	D	VD	
			8						For Continuation Refer to Sheet 2			
			10									
			12									
			14									

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2356

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 304192 m E 6855275 m N MGA94 56
SURFACE RL: 323.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 86/94/120 mm HOLE DEPTH: 20.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 28/11/18
CHECKED: CB DATE: 11/12/18

Drilling					Field Material Description							Defect Information									
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa					LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)				
										0.5	1	2	3	4			5	10	15	20	25
					0																
					2																
					4																
					6																
					6.80			Continuation of Sheet 1													
			100	80 (100)	316.69			SANDSTONE medium grained, pale grey mottled orange brown, apparently massive (structureless)	HW							PLI(A)=0.39 PLI(D)=0.28	SPT 6.80-6.88 m: 30/75mm HB 6.88 m: J, 20°, Un, Ro, Sn, <=2 mm 6.92 m: IS, 30°, Un, Ro, mudstone Ct, <=20 mm				
			100	85 (100)	7.61 315.88			becoming pale purple in colour from 7.61 m to 7.72 m									7.31 m: J, 10°, Un, Ro, Cn, <=5 mm 7.58-8.90 m: Jx9, 5-20°, sp = 45-380 mm, Un, Ro, Sn, <=4 mm				
			100	100 (100)	9.20 314.29			becoming orange-brown in colour from 9.2 m								UCS=4.99	9.20-15.39 m: Jx26, 5-20°, sp = 50-440 mm, Un, Ro, Sn, <=5 mm				
			100	75 (90)	11.60			becoming pale purple in colour from 11.60 m									11.05 m: DS, 10°, Un, Ro, clayey sand, fine to medium grained, <=20 mm				
			100	90 (95)	11.87 12.02 311.47 311.39			SANDSTONE medium grained, pale grey mottled orange brown, apparently massive (structureless) becoming orange-brown in colour from 12.1 m	HW												
			100	85 (90)	13.47 309.97			SANDSTONE medium grained, pale grey mottled orange brown, apparently massive (structureless)	HW							PLI(A)=0.34 PLI(D)=0.35					
					14.88																

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2356

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 304192 m E 6855275 m N MGA94 56
SURFACE RL: 323.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 86/94/120 mm HOLE DEPTH: 20.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 28/11/18
CHECKED: CB DATE: 11/12/18

Drilling					Field Material Description					Defect Information						
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)			
HQ3			100	15 (100)	16	308.46		becoming orange-brown in colour from 15.02 m to 18.10 m	HW			15.07-15.14 m: FZ				
			100	(55)												
			100	75 (95)												
			100	100 (100)	20	19.55			SANDSTONE medium grained, pale grey mottled orange brown, apparently massive (structureless)	HW		PLI(A)=0.29 PLI(D)=0.21				
					20	303.89 20.00 303.49		END OF BOREHOLE @ 20.00 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED								
					22											
					24											
					26											
					28											

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2356

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 304192 m E 6855275 m N MGA94 56
SURFACE RL: 323.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 86/94/120 mm HOLE DEPTH: 20.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 28/11/18
CHECKED: CB DATE: 11/12/18



310-01-BH2356 6.80 - 10.00 m



310-01-BH2356 10.00 - 14.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2356

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 304192 m E 6855275 m N MGA94 56
SURFACE RL: 323.5 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 86/94/120 mm HOLE DEPTH: 20.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 28/11/18
CHECKED: CB DATE: 11/12/18



310-01-BH2356 14.00 - 18.00 m



310-01-BH2356 18.00 - 20.00 m

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GAP gINT FN. F28
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2612

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 319382 m E 6864344 m N MGA94 56
SURFACE RL: 309.7 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 120 mm HOLE DEPTH: 15.25 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 6/12/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description									
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS			
ADT	L		0	309.68	SPT 0.50-0.95 m 6, 5, 9 N=14			SC	TOPSOIL: Clayey SAND fine to medium grained, orange-brown, medium plasticity clay, trace fine to coarse grained, sub-angular, to 25 mm with chert gravel, trace rootlets	D	MD	TOPSOIL			
			0.20	SC						WALLOON COAL MEASURES					
			0.30	CL				Clayey SAND fine to medium grained, orange-brown, medium plasticity clay							
			1	309.38				SPT 2.00-2.22 m 16, 30/70mm HB				Sandy CLAY (EXTREMELY WEATHERED sandstone) medium plasticity, pale grey mottled orange-brown, fine to medium grained sand, with coarse grained sand sand		VSt	
			2												
			3												
			4	3.30				SPT 3.50-3.95 m 22, 18, 34 N=52			CL	Sandy CLAY (EXTREMELY WEATHERED sandstone) low plasticity, pale orange-brown mottled grey, fine to medium grained sand	W (< PL)		
			5	306.38										H	
			6												
			7	6.10				SPT 6.50-6.70 m 30, 30/50mm HB				becoming pale red-brown			
8	303.58														
9															
L-M		GROUNDWATER NOT ENCOUNTERED	10	7.20	SPT 8.00-8.10 m 30/100mm HB			SP	SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale orange-brown and grey, with silt, grading to highly weathered sandstone						
			11	302.48											
			12												
					SPT 9.50-9.60 m 30/100mm HB										

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2612

CLIENT: Future Freight JV
 PROJECT: Inland Rail, B2G Project, Phase 2
 LOCATION: NSW/QLD Border to Gowrie (Section 310)
 JOB NO: 1897791

COORDS: 319382 m E 6864344 m N MGA94 56
 SURFACE RL: 309.7 m DATUM: AHD
 INCLINATION: -90°
 HOLE DIA: 120 mm HOLE DEPTH: 15.25 m

SHEET: 2 OF 2
 DRILL RIG: DB520
 CONTRACTOR: NUMAC
 LOGGED: OM DATE: 6/12/18
 CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
SPT	ADT	L-M	GROUNDWATER NOT ENCOUNTERED	10			SP	SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, pale orange-brown and grey, with silt, grading to highly weathered sandstone	D	WALLOON COAL MEASURES
				11	SPT 11.00-11.06 m 30/60mm HB					
				11.80 297.88				becoming orange-brown mottled pale grey		
				12	SPT 12.50-12.63 m 30/130mm HB				D - M VD	
				13						
SPT	ADT	L-M	GROUNDWATER NOT ENCOUNTERED	14	SPT 14.00-14.06 m 30/60mm HB					WALLOON COAL MEASURES
				15	SPT 15.00-15.25 m 15, 30/100mm HB					
				294.43				END OF BOREHOLE @ 15.25 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED		
				16						
				17						
SPT	ADT	L-M	GROUNDWATER NOT ENCOUNTERED	18						WALLOON COAL MEASURES
				19						
				20						

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GAP gINT FN. F01a
 RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2613

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 319181 m E 6874684 m N MGA94 56
SURFACE RL: 327.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 120 mm HOLE DEPTH: 15.45 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 3/12/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
L		GROUNDWATER NOT ENCOUNTERED	0	0.15			SP	TOPSOIL: SAND	L	TOPSOIL
				327.00			SC	fine to medium grained, pale brown, trace medium plasticity clay, trace rootlets		ALLUVIUM (QUATERNARY)
					SPT 0.50-0.95 m 16, 18, 24 N=42			Clayey SAND		
			1					fine to medium grained, grey mottled orange and red-brown, medium plasticity clay, grading to sand with clay in places	D	
			2		SPT 2.00-2.45 m 22, 28, 28 N=56				D	
			3							
			4	3.90	SPT 3.50-3.95 m 23, 29, 32 N=61					
				323.25				becoming dark brown in colour		
			5	5.00	SPT 5.00-5.42 m 22, 30, 30/120mm HB N>60			becoming fine to coarse grained sand and grey mottled dark brown in colour		
				322.15						
L-M		GROUNDWATER NOT ENCOUNTERED	6						VD	
			7		SPT 6.50-6.95 m 18, 30, 33 N=63					
			8		SPT 8.00-8.13 m 31/130mm HB				D - M	
			9							
L		GROUNDWATER NOT ENCOUNTERED	10		SPT 9.50-9.78 m 22, 30/130mm HB					

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2613

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 319181 m E 6874684 m N MGA94 56
SURFACE RL: 327.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 120 mm HOLE DEPTH: 15.45 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: OM DATE: 3/12/18
CHECKED: CB DATE: 11/12/18

Drilling				Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT L-M SPT		GROUNDWATER NOT ENCOUNTERED	10	10.20 316.95			SC			D - M	ALLUVIUM (QUATERNARY)
							CH	CLAY (EXTREMELY WEATHERED sandstone) high plasticity, grey mottled red-brown, with fine to coarse grained sand		VD	WALLOON COAL MEASURES
			11		SPT 11.00-11.45 m 19, 19, 15 N=34						
			12		SPT 12.50-12.95 m 6, 12, 17 N=29					W (< PL)	H
			14	14.00 313.15	SPT 14.00-14.45 m 7, 11, 15 N=26			with carbonaceous inclusions			
			15		SPT 15.00-15.45 m 10, 13, 18 N=31						
			16	311.70				END OF BOREHOLE @ 15.45 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
			17								
			18								
			19								
			20								

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2617

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 322633 m E 6882372 m N MGA94 56
SURFACE RL: 323.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 27/8/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	323.22			CI	TOPSOIL: CLAY medium plasticity, dark brown, with fine to coarse grained sand, trace rootlets		TOPSOIL ALLUVIUM
			1		SPT 0.50-0.95 m 10, 11, 12 N=23		CI	CLAY medium plasticity, dark brown	W (< PL) VSt	
			2	321.52	SPT 2.00-2.45 m 7, 9, 11 N=20		SP	SAND medium to coarse grained, yellow-brown, with high plasticity clay		
			4		SPT 3.90-4.35 m 5, 9, 12 N=21				M MD	
			5	318.22	SPT 5.40-5.85 m 5, 7, 11 N=18		CH	CLAY high plasticity, pale grey, yellow-brown, trace fine to coarse grained sand		QUATERNARY TO TERTIARY SEDIMENTARY SEQUENCE (Lateritised)
RD			7		SPT 6.80-7.35 m 4, 5, 7 N=12					
			8		U 7.40-7.85 m PP >500 kPa				W (< PL) St	
			9		SPT 8.40-8.85 m 3, 6, 7 N=13					
			10	313.82			CI	Sandy CLAY medium plasticity, pale grey, yellow-brown, fine to medium grained sand	W (~ PL) VSt	

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2617

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 322633 m E 6882372 m N MGA94 56
SURFACE RL: 323.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 27/8/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L		10		SPT 9.90-10.35 m 6, 8, 12 N=20		CI	Sandy CLAY medium plasticity, pale grey, yellow-brown, fine to medium grained sand		QUATERNARY TO TERTIARY SEDIMENTARY SEQUENCE (Lateritised)
			11		SPT 11.40-11.85 m 6, 11, 15 N=26					
			12						W (-PL) Vst	
			13		SPT 12.90-13.35 m 6, 10, 16 N=26					
			14	14.10 309.22	SPT 14.40-14.85 m 6, 12, 18 N=30		SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to coarse grained, pale grey, yellow-brown, high plasticity clay	M D	WALLOON COAL MEASURES
			15	308.32				END OF BOREHOLE @ 15.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 5.04 m DEPTH STANDPIPE INSTALLED		
			16							
			17							
			18							
			19							
			20							

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GAP gINT FN. F01a
RL3



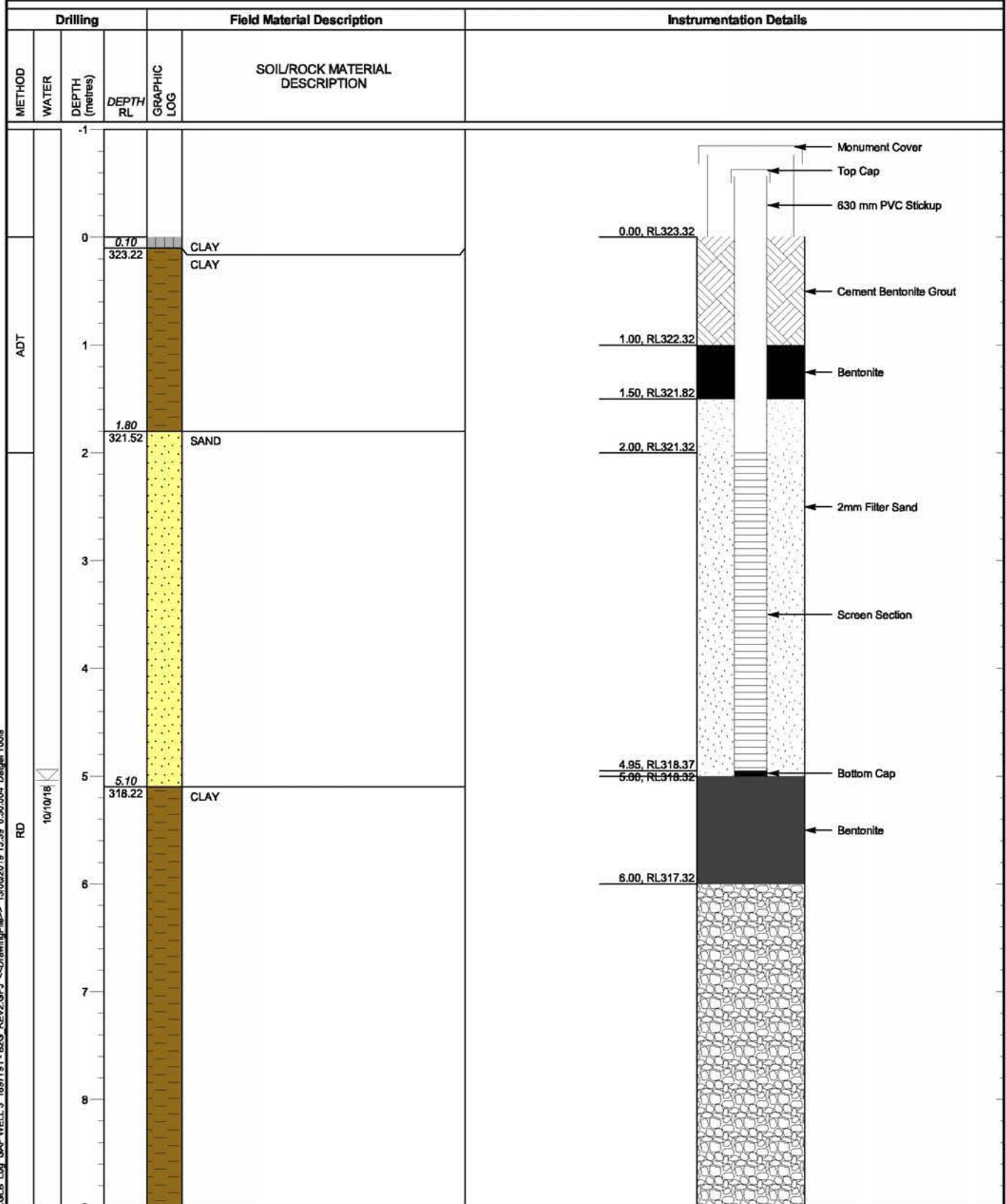
GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2617

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 322633 m E 6882372 m N MGA94 56
SURFACE RL: 323.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 27/8/18
CHECKED: IT DATE: 13/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF STANDPIPE INSTALLATION: 310-01-BH2617

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: NSW/QLD Border to Gowrie (Section 310)

JOB NO: 1897791

COORDS: 322633 m E 6882372 m N MGA94 56

SURFACE RL: 323.3 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 15.00 m

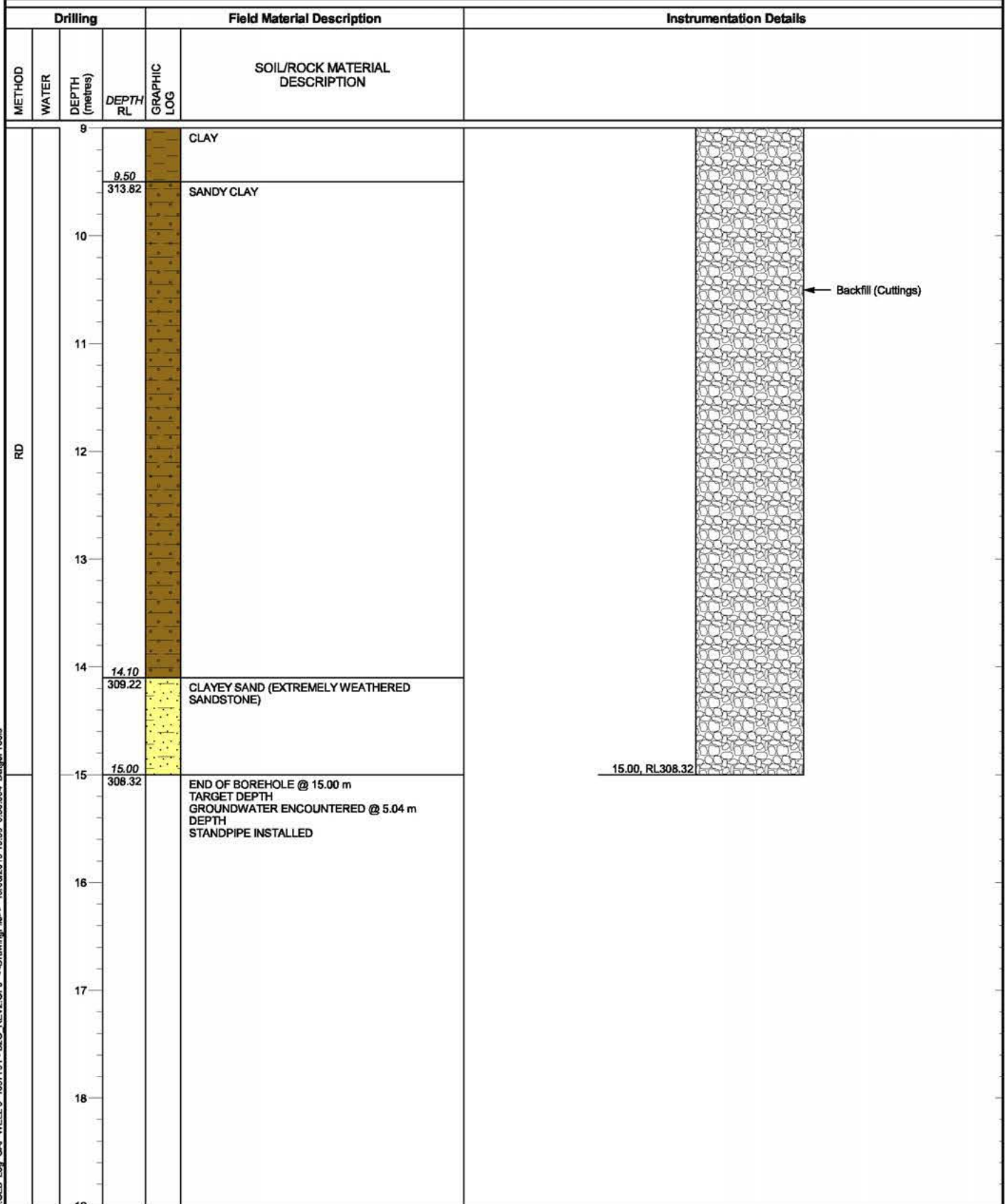
SHEET: 2 OF 2

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: FZ DATE: 27/8/18

CHECKED: IT DATE: 13/9/18



This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F17
RL1



GOLDER

REPORT OF BOREHOLE: 310-01-BH2624

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324676 m E 6901750 m N MGA94 56
SURFACE RL: 453.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 120 mm HOLE DEPTH: 15.35 m

SHEET: 1 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 10/12/18
CHECKED: IT DATE: 8/1/19

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT L-M GROUNDWATER NOT ENCOUNTERED			0	453.80	SPT 0.50-0.95 m 5, 3, 4 N=7			CH	TOPSOIL: CLAY high plasticity, dark brown, trace fine to coarse grained sand, trace fine grained, sub-rounded gravel, trace rootlets	F			TOPSOIL
			0.40	453.20		CH	CLAY high plasticity, dark brown, trace fine to coarse grained sand, trace fine grained, sub-rounded gravel		ALLUVIUM				
			1	452.55			becoming with fine to medium grained sand						
			2	451.55	SPT 2.00-2.45 m 7, 10, 10 N=20			CI	Sandy CLAY medium plasticity, brown, fine to coarse grained, sub-rounded to sub-angular sand, with silt, trace fine to medium grained (to <10 mm), sub-angular to angular gravel of sandstone	St - VSt		RESIDUAL SOIL	
			3	450.60		CH	Sandy CLAY high plasticity, brown, fine to coarse grained, sub-angular sand, with fine to medium grained (to <20 mm), sub-angular gravel of sandstone						
			4	449.90	SPT 3.50-3.95 m 8, 18, 12 N=30			CI	CLAY (EXTREMELY WEATHERED siltstone) medium plasticity, grey mottled orange-brown, trace sand, trace fine grained gravel of sandstone, trace carbonaceous laminations	W (< PL)		WALLOON COAL MEASURES	
			5							VSt - H			
			6	447.60		SPT 6.50-6.95 m 13, 20, 24 N=44			CI-CH	Sandy CLAY (EXTREMELY WEATHERED siltstone and sandstone) medium to high plasticity, pale brown, fine to medium grained, sub-angular to angular sand, trace fine to medium grained, sub-angular to angular gravel of sandstone, partly ferruginous, trace carbonaceous (coal) laminations (to 20 mm)	H		
			6.65	446.95	CH		CLAY (EXTREMELY WEATHERED siltstone) high plasticity, grey mottled orange-brown, trace sand, trace fine grained gravel, partly ferruginous, trace carbonaceous laminations						
			7										
			8	445.35	SPT 8.00-8.25 m 20, 30/100mm HB N>30			SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to coarse grained, sub-angular to angular, brown, medium plasticity clay	D		D - VD	
			8.25	445.60			becoming grey						
			9	444.60		CI	CLAY (EXTREMELY WEATHERED siltstone) medium plasticity, brown, trace fine to medium grained sand, carbonaceous clay / decomposed coal laminations	W (< PL)	VSt - H				
			10		SPT 9.50-9.65 m 30/145mm HB N=R			SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, sub-angular, pale grey mottled orange-brown, medium to high plasticity clay, laminated	D		D - VD	

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2624

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

COORDS: 324676 m E 6901750 m N MGA94 56
SURFACE RL: 453.6 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 120 mm HOLE DEPTH: 15.35 m

SHEET: 2 OF 2
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 10/12/18
CHECKED: IT DATE: 8/1/19

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M	GROUNDWATER NOT ENCOUNTERED	10		SPT 11.00-11.12 m 30/115mm HB N=R			SC	Clayey SAND (EXTREMELY WEATHERED sandstone) fine to medium grained, sub-angular, pale grey mottled orange-brown, medium to high plasticity clay, laminated	D	D - VD	WALLOON COAL MEASURES
			10.50	443.10				CI	Sandy CLAY (EXTREMELY WEATHERED siltstone) medium plasticity, grey mottled orange-brown, fine to medium grained, sub-angular sand, with silt, laminated			
			11									
			12									
			12.80	440.80		SPT 12.50-12.79 m 19, 30/140mm HB N>30			CI	Sandy CLAY (EXTREMELY WEATHERED siltstone) medium plasticity, grey, fine to medium grained, angular sand, trace silt	W (< PL)	
ADT	M-H	GROUNDWATER NOT ENCOUNTERED	13		SPT 14.00-14.40 m 19, 30, 30/100mm HB N>60			SC	Clayey SAND (EXTREMELY WEATHERED sandstone) low to medium plasticity, pale grey, low to medium plasticity clay, with silt, laminated			M
			14					SM	Sandy CLAY (EXTREMELY WEATHERED sandstone) low plasticity, grey, fine to medium grained sand, with silt, trace coarse grained sand			
			14.50	439.10								
SPT		GROUNDWATER NOT ENCOUNTERED	15		SPT 15.00-15.34 m 5, 7, 30/40mm HB N>37			CI	Sandy CLAY (EXTREMELY WEATHERED sandstone) low plasticity, pale grey, fine to coarse grained sand, trace fine to medium grained, rounded gravel END OF BOREHOLE @ 15.35 m TARGET DEPTH GROUNDWATER NOT ENCOUNTERED BACKFILLED			
			15.30	438.25								
			16									
			17									
			18									
			19									
			20									

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2230

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 337956 m E 6918543 m N MGA94 56
SURFACE RL: 379.0 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 75/80/94 mm HOLE DEPTH: 30.10 m

SHEET: 1 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 19/5/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L-M		0	0.15			CH	TOPSOIL: Gravelly CLAY		TOPSOIL
			378.81				CH	high plasticity, dark grey, brown, fine grained, sub-angular gravel, woody organics present		ALLUVIUM
					SPT 0.50-0.95 m			CLAY		
					10, 14, 15			high plasticity, dark brown		
					N=29					
			1							
					U50 2.00-2.45 m					
				2.25				trace fine to medium grained sand		
				376.71						
					PP >500 kPa					
RD	L		2							
					SPT 3.50-3.95 m		CI	Sandy CLAY		
					3, 7, 10			medium plasticity, brown grey, fine grained sand		
					N=17					
			3							
				3.30						
				375.66						
					U50 5.00-5.45 m					
				5.25				fine to medium grained sand		
				373.71						
			4							
					SPT 6.50-6.95 m					
					11, 29, 30			becoming pale brown		
					N=59					
			5							
				6.50						
				372.46						
					U50 7.80-8.25 m					
				7.90						
				371.06			SM	Silty SAND		
			6							
					fine grained, pale brown and grey with some orange brown					
			7							
					SPT 9.30-9.75 m					
					18, 20, 24					
					N=44					
			8							
				9.00			CI	Sandy CLAY		
				369.96				medium plasticity, orange brown, fine to coarse grained sand, trace of fine to medium grained, sub-rounded gravel		
					U50 9.30-9.75 m					
			9							
					CLAY			high plasticity, pale grey, trace fine grained sand		
					CL-CL					
					CL					
					CL					
					CL					
					CL					
					CL					
					CL					
					CL					
					CL					
			10							
					CLAY			high plasticity, pale grey, trace fine grained sand		
					CL					
					CL					
					CL					
					CL					
					CL					
					CL					
					CL					
					CL					
					CL					

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2230

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 337956 m E 6918543 m N MGA94 56
SURFACE RL: 379.0 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 75/80/94 mm HOLE DEPTH: 30.10 m

SHEET: 2 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 19/5/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
L	2005/18	L	10				CL-CI	Sandy CLAY low to medium plasticity, brown to red brown, fine to medium grained sand, trace sub-rounded, fine grained gravel	w < PL	TERTIARY TO QUATERNARY SEDIMENTARY SEQUENCE (Lateritised)
			11	10.80 368.16	SPT 10.80-11.09 m 16, 30/140mm		SC	Clayey SAND fine to coarse grained, orange brown, low plasticity clay		
M		M	12	12.00 366.96			GP	GRAVEL fine to medium grained, to 15 mm, sub-rounded, orange brown, with fine to coarse grained sand, with clay	w	D - VD
			13	12.60 366.36	SPT 12.30-12.75 m 9, 18, 25 N=43		SP	SAND fine to medium grained, orange brown, with silt, with clay		
			14	13.60 365.36			GP	Sandy GRAVEL fine to medium grained, to 18 mm, sub-rounded, pale orange brown, fine to coarse grained sand		
			15	14.15 364.81	SPT 13.80-14.24 m 10, 28, 30/140mm		CI	Sandy CLAY medium plasticity, yellow brown, fine to medium grained sand		
L	RD	L	16	14.80 364.16			MH	SILT (EXTREMELY WEATHERED siltstone) high liquid limit, pale grey, with fine grained sand		EURAMBAH BEDS (Lateritised)
			17		SPT 15.80-16.25 m 8, 13, 16 N=29					
			18							
			19		SPT 17.30-17.75 m 6, 8, 13 N=21				w < PL	
			20		SPT 18.80-19.25 m 6, 10, 13 N=23				VSt	

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2230

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 337956 m E 6918543 m N MGA94 56
SURFACE RL: 379.0 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 75/80/94 mm HOLE DEPTH: 30.10 m

SHEET: 3 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 19/5/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description										
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS				
RD			20				MH	SILT (EXTREMELY WEATHERED siltstone) high liquid limit, pale grey, with fine grained sand becoming grey with dark grey laminae		VSt		EURAMBAH BEDS (Lateritised)				
			20.30	358.66												
			21													
			22	U50 21.80-22.25 m												
				PP >500 kPa												
			23													
			23.50	SPT 23.30-23.55 m 18, 30/100mm												
			23.50	355.46									MH	SILT (EXTREMELY WEATHERED siltstone) high liquid limit (some low plasticity clay), pale grey to white, fine to medium grained sand, locally intensely orange stained and weakly (ferruginous) cemented	w < PL	H
			24													
			25	SPT 24.80-25.06 m 23, 30/110mm												
26																
			SPT 26.30-26.57 m 21, 30/120mm													
			27													
			28					For Continuation Refer to Sheet 4								
			29													
			30													

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2230

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 337956 m E 6918543 m N MGA94 56
SURFACE RL: 379.0 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 75/80/94 mm HOLE DEPTH: 30.10 m

SHEET: 4 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 19/5/18
CHECKED: IT DATE: 13/9/18

Drilling					Field Material Description							Defect Information									
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa					LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)				
										0.4	0.5	0.6	0.7	0.8			5	10	15	20	25
					20																
					21																
					22																
					23																
					24																
					25																
					26																
					27																
					27.80																
					351.16																

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2230

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 337956 m E 6918543 m N MGA94 56
SURFACE RL: 379.0 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 75/80/94 mm HOLE DEPTH: 30.10 m

SHEET: 5 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 19/5/18
CHECKED: IT DATE: 13/9/18

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa	LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)	
					30	348.86								

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2230

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 337956 m E 6918543 m N MGA94 56
SURFACE RL: 379.0 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 75/80/94 mm HOLE DEPTH: 30.10 m

SHEET: 1 OF 1
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 19/5/18
CHECKED: IT DATE: 13/9/18



310-01-BH2230 27.80 - 30.10 m



GOLDER

REPORT OF BOREHOLE: 310-01-BH2231

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 338076 m E 6918598 m N MGA94 56
SURFACE RL: 377.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 7/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	377.79			CH	TOPSOIL: CLAY high plasticity, dark grey, trace rootlets	w < PL	TOPSOIL
				0.20			CH	CLAY high plasticity, dark grey and brown		ALLUVIUM
				377.59	SPT 0.50-0.95 m 6, 8, 9 N=17					
			1							
				1.80				becoming grey, trace calcium carbonate		
				375.99	SPT 2.00-2.45 m 7, 11, 15 N=26				St - VSt	
			2							
				3.30			CH	CLAY high plasticity, pale grey, with silt	w ~ PL	
				374.49	SPT 4.00-4.45 m 5, 8, 11 N=19					
			4							
RD					U50 5.50-6.00 m					
					PP >300-400 kPa				VSt	
			6							
				6.60			SW	SAND fine to coarse grained, yellow brown, with high plasticity clay, with fine to coarse grained, sub-angular to sub-rounded gravel		TERTIARY TO QUATERNARY SEDIMENTARY SEQUENCE
				371.19	SPT 7.00-7.45 m 14, 27, 25 N=52				VD	
			7							
L-M				8.00			SW	Gravelly SAND fine to coarse grained, yellow brown, fine to coarse grained, sub-angular to sub-rounded gravel of siliceous rock (river gravel)	W	
				369.79	SPT 8.50-8.95 m 5, 9, 9 N=18					
			9						MD	
				9.80			GP			
				367.99						
			10							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2231

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 338076 m E 6918598 m N MGA94 56
SURFACE RL: 377.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 7/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
L-M			10		SPT 10.00-10.45 m 8, 9, 9 N=18		GP	Sandy GRAVEL fine to medium grained, sub-rounded to sub-angular, brown, grey, white, fine to coarse grained sand	MD	TERTIARY TO QUATERNARY SEDIMENTARY SEQUENCE
			11							
			12		SPT 11.50-11.95 m 6, 8, 10 N=18					
			13		SPT 13.00-13.45 m 11, 12, 19 N=31					
			14				SW	Gravelly SAND fine to coarse grained, yellow brown, fine to medium grained, sub-angular to sub-rounded gravel, with high plasticity clay		
			15				SC	Clayey SAND fine to coarse grained, brown, yellow brown, orange brown, high plasticity clay, with fine to medium grained, sub-angular to sub-rounded gravel		
			16		SPT 16.00-16.45 m 12, 15, 13 N=28		CH	CLAY high plasticity, pale grey, with fine to medium grained sand		
			17					with silt		
			18		SPT 17.50-17.95 m 6, 8, 12 N=20					
			19					becoming pale grey with yellow brown		
L			20		SPT 19.00-19.45 m 8, 10, 13 N=23				VSt	EURAMBAH BEDS (Lateritised)

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2231

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 338076 m E 6918598 m N MGA94 56
SURFACE RL: 377.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 7/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
L			20	20.20	SPT 20.50-20.95 m 9, 14, 16 N=30		CH	CLAY high plasticity, pale grey, with fine to medium grained sand grading to sandy clay	Vst	EURAMBAH BEDS (Lateritised)
				357.59						
			21							
			22	22.20			CL-CI	Sandy CLAY (EXTREMELY WEATHERED sandstone) low to medium plasticity, pale grey, fine to medium grained sand		
RD				355.59	SPT 22.00-22.43 m 15, 24, 30/130mm HB N>54				w~PL	H
			23	23.10				becoming with medium and coarse grained sand		
				354.69						
			24							
L-M			25		SPT 23.50-23.91 m 12, 25, 30/110mm					
			26	26.20			CI	CLAY (EXTREMELY WEATHERED mudstone) medium plasticity, white grey and pale grey, mottled yellow brown, yellow brown		
				351.59						
			27		SPT 26.50-26.76 m 28, 30/110mm HB					
			28	27.80			CI	Gravelly CLAY (EXTREMELY WEATHERED pebbly sandstone) medium plasticity, pale grey mottled yellow brown, fine to coarse grained, angular to -sub-angular gravel, with fine to medium grained sand		
				349.99						
			29		SPT 28.00-28.11 m 30/110mm HB					
			30		SPT 29.50-29.81 m 30/110mm HB			END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 13.11 m DEPTH STANDPIPE INSTALLED		

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2231

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 338076 m E 6918598 m N MGA94 56
SURFACE RL: 377.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 7/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Field Material Description and Instrumentation				
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 377.79 m AHD
ADT		-1						
		0	377.79 0.20 377.59		TOPSOIL: CLAY high plasticity, dark grey, trace rootlets, Moist, dry of plastic limit, stiff to very stiff CLAY high plasticity, dark grey and brown, Moist, near plastic limit to Moist, dry of plastic limit, stiff to very stiff	0.00: TOPSOIL 0.20: ALLUVIUM		
RD		1						
		2	1.80 375.99		becoming grey, trace calcium carbonate			
		3						
		4	3.30 374.49		CLAY high plasticity, pale grey, with silt, Moist, near plastic limit, stiff to very stiff			
		5						
		6						
		7	6.60 371.19		SAND fine to coarse grained, yellow brown, with high plasticity clay, with fine to coarse grained, sub-angular to sub-rounded gravel, wet, very dense	6.60: TERTIARY TO QUATERNARY SEDIMENTARY SEQUENCE		
		8	8.00 369.79		Gravelly SAND fine to coarse grained, yellow brown, fine to coarse grained, sub-angular to sub-rounded gravel of siliceous rock (river gravel) gravel, wet, medium dense			
		9						

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GAP gINT FN. F06
RL3



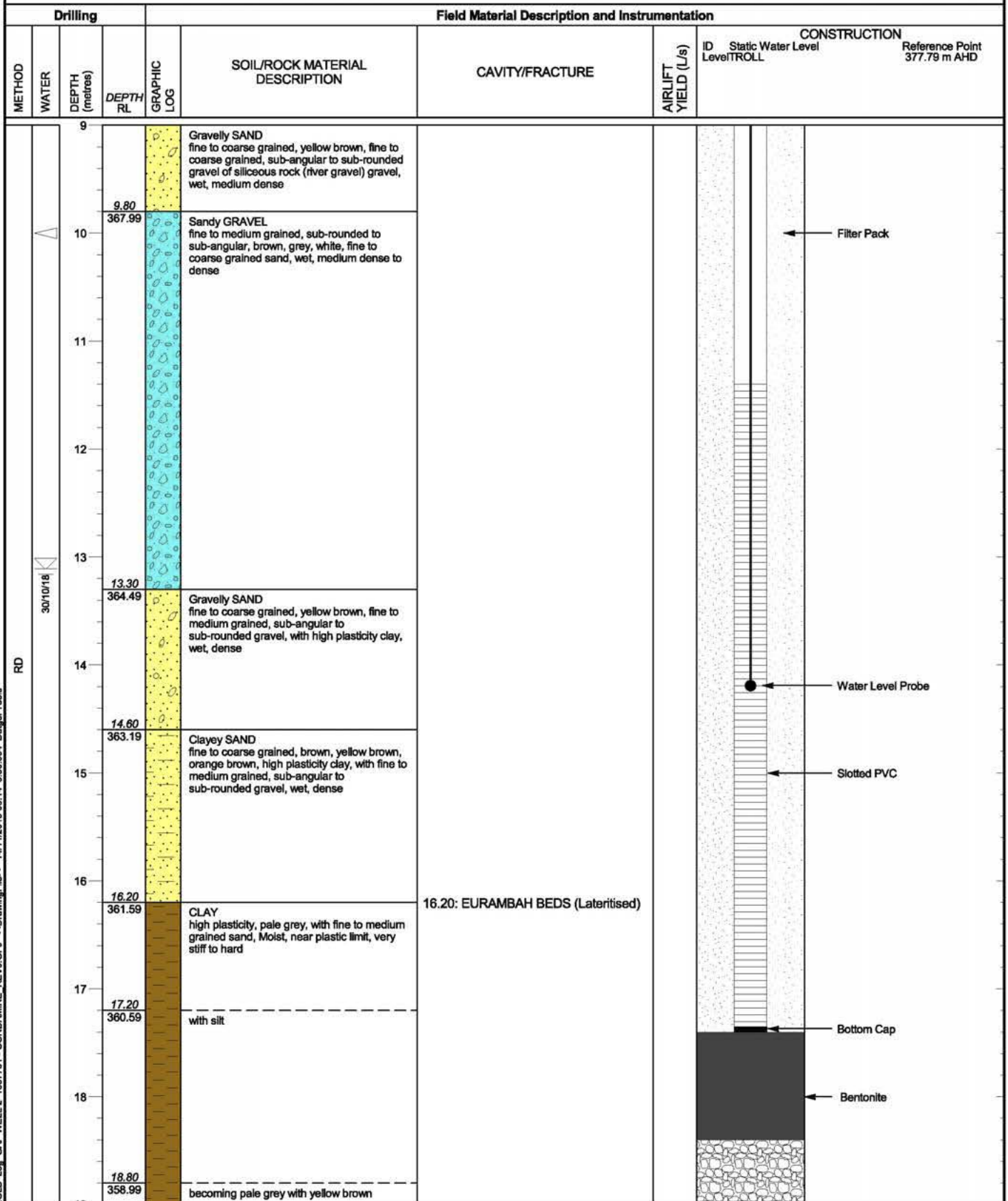
GOLDER

REPORT OF BOREHOLE: 310-01-BH2231

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 338076 m E 6918598 m N MGA94 56
SURFACE RL: 377.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 2 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 7/9/18
CHECKED: IT DATE: 14/9/18



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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2231

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 338076 m E 6918598 m N MGA94 56
SURFACE RL: 377.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 3 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 7/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Field Material Description and Instrumentation			
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)
RD		19			CLAY high plasticity, pale grey, with fine to medium grained sand, Moist, near plastic limit, very stiff to hard		
		20	20.20 357.59		grading to sandy clay		
		21					
		22	22.20 355.59		Sandy CLAY (EXTREMELY WEATHERED sandstone) low to medium plasticity, pale grey, fine to medium grained sand, Moist, near plastic limit, hard		
		23	23.10 354.69		becoming with medium and coarse grained sand		
		24					
		25					
		26	26.20 351.59		CLAY (EXTREMELY WEATHERED mudstone) medium plasticity, white grey and pale grey, mottled yellow brown, yellow brown, Moist, near plastic limit, hard		
		27					
		28	27.80 349.99		Gravelly CLAY (EXTREMELY WEATHERED pebbly sandstone) medium plasticity, pale grey mottled yellow brown, fine to coarse grained, angular to -sub-angular gravel, with fine to medium grained sand, Moist, near plastic limit, hard		
		29					

Backfill (Cuttings)

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GAP gINT FN. F06
RL3



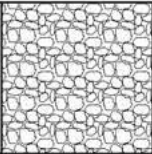
GOLDER

REPORT OF BOREHOLE: 310-01-BH2231

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 338076 m E 6918598 m N MGA94 56
SURFACE RL: 377.8 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 4 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 7/9/18
CHECKED: IT DATE: 14/9/18

Drilling					Field Material Description and Instrumentation			
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 377.79 m AHD
RD		29			Gravelly CLAY (EXTREMELY WEATHERED pebbly sandstone) medium plasticity, pale grey mottled yellow brown, fine to coarse grained, angular to -sub-angular gravel, with fine to medium			
		30	30.00		END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 13.11 m DEPTH STANDPIPE INSTALLED			
		31						
		32						
		33						
		34						
		35						
		36						
		37						
		38						
		39						

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GAP g/INT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2232

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 338406 m E 6918694 m N MGA94 56
SURFACE RL: 379.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/94 mm HOLE DEPTH: 30.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/5/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	L		0	379.05				CH	TOPSOIL: CLAY			TOPSOIL
			0.20				CH	high plasticity, dark grey, trace fine grained, sub-rounded to sub-angular gravel, with silt, trace of woody organics			ALLUVIUM	
			378.85	SPT 0.50-0.95 m 3, 3, 4 N=7			CLAY	high plasticity, dark grey, with silt	F			
			1	1.20				trace fine grained sand				
			377.85	U50 1.50-1.95 m								
			2		PP =250 kPa							
			3	3.00								
			376.05	SPT 3.00-3.45 m 3, 5, 7 N=12			becoming dark grey, brown	St				
			4									
			4.50									
374.55	U50 4.50-4.95 m			becoming pale grey to grey								
5		PP >400 kPa			w < PL	H						
5.50												
373.55												
6		SPT 6.00-6.45 m 4, 7, 9 N=16										
7		SPT 6.80-7.25 m 4, 5, 7 N=12					St					
8												
8.50		U75 8.30-8.75 m										
370.55	PP >500 kPa		CI	Sandy CLAY			TERTIARY TO QUATERNARY SEDIMENTARY SEQUENCE					
				medium plasticity, pale grey to grey, fine to medium grained sand								
9							H					
9.90												
10												

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2232

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 338406 m E 6918694 m N MGA94 56
SURFACE RL: 379.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/94 mm HOLE DEPTH: 30.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/5/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L	2705/8	10	369.05	SPT 9.80-10.25 m 9, 16, 16 N=32		SC	trace fine grained rounded gravel	M	MD - D
			10.50	368.55			SC	Clayey SAND fine to coarse grained, orange brown and grey, medium plasticity clay, trace fine grained, sub-rounded to sub-angular gravel		
			11					Clayey SAND fine to medium grained, pale brown, medium plasticity clay		
			12		SPT 12.00-12.45 m 6, 8, 17 N=25					
			12.30	366.75			GP	Sandy GRAVEL fine to medium grained, sub-rounded, pale grey and orange brown, fine to coarse grained sand, trace clay		Hole collapse to 12.5 m bgl.
			13		SPT 12.80-13.25 m 12, 26, 0 N=26					
			14						W	MD
			14.40	364.65	SPT 14.30-14.75 m 10, 7, 5 N=12		CI	CLAY medium plasticity, pale grey, trace fine grained sand, trace silt		
			15						St	
			15.50	363.55			CI	CLAY medium plasticity, orange brown, trace fine to medium grained sand		
			16		SPT 15.80-16.25 m 15, 11, 11 N=22				w ~ PL	VSt
			16.80	362.25			CH	Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, pale grey mottled orange brown, fine to medium grained sand, interbedded with clayey sand		
			17		SPT 17.30-17.75 m 7, 11, 14 N=25					
			18							
			19		SPT 18.80-19.25 m 8, 11, 15 N=26					
			20							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2232

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 338406 m E 6918694 m N MGA94 56
SURFACE RL: 379.1 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 84/94 mm HOLE DEPTH: 30.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 22/5/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
RD	L		20		SPT 20.30-20.75 m 6, 7, 10 N=17			CH	Sandy CLAY (EXTREMELY WEATHERED sandstone) high plasticity, pale grey mottled orange brown, fine to medium grained sand, interbedded with clayey sand		Vst	TERTIARY TO QUATERNARY SEDIMENTARY SEQUENCE	
			21		U50 20.80-21.25 m PP >500 kPa								
			22		SPT 21.80-22.25 m 11, 13, 17 N=30						Vst - H		
			23										
			23.30 355.75		SPT 23.30-23.75 m 12, 22, 29 N=51			CI	Sandy CLAY (EXTREMELY WEATHERED sandstone) medium plasticity, grey and orange brown, fine to medium grained sand, becoming interbedded with orange brown fine to medium grained sand between 23.3m and 25.2m		H - Fb	MARBURG SUBGROUP	
			24										
			25		SPT 24.80-24.93 m 30/130								
			25.20 353.85						SANDSTONE fine to medium grained, pale grey, very low strength, highly weathered, localised extremely weathered layers (clay and silty sand)		M		
			26		SPT 26.30-26.56 m 26, 30/110mm								
			27										
			28		SPT 27.80-28.09 m 27, 30/140mm								
L-M			29		SPT 29.30-29.75 m 16, 26, 29 N=55								
			30						END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 12.40 m DEPTH BACKFILLED				

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2233

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340530 m E 6922012 m N MGA94 56
SURFACE RL: 378.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 10/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	378.90			CH	TOPSOIL: CLAY high plasticity, black brown, topsoil with rootlets		TOPSOIL
				378.70			CH	Sandy CLAY high plasticity, black brown, fine to coarse grained sand becoming dark brown, with fine to medium grained sand		ALLUVIUM
			0.60	378.30	SPT 0.50-0.95 m 5, 8, 13 N=21					
			1							
			1.80	377.10				becoming brown, with trace calcium carbonate		
			2		SPT 2.00-2.45 m 4, 9, 14 N=23				w < PL	VSt
			3							
			3.50	375.40			CI	Sandy CLAY medium plasticity, pale yellow brown, fine to medium grained sand		
			4		SPT 4.00-4.45 m 7, 12, 14 N=26					
			5							
L-M			5.20	373.70			SC	Sandy CLAY high plasticity, pale yellow brown, fine to coarse grained sand		
			6		SPT 5.50-5.95 m 9, 12, 17 N=29				M	MD
			6.80	372.10			CH	Sandy CLAY high plasticity, pale yellow brown, grey, fine to coarse grained sand, with fine to coarse grained, sub-angular to sub-rounded gravel	w < PL	VSt
			7		SPT 7.00-7.45 m 12, 13, 19 N=32					
			8							
			8.60	370.30	SPT 8.50-8.95 m 12, 14, 13 N=27		SW	SAND fine to coarse grained, yellow brown, trace high plasticity clay, with fine to coarse grained, sub-angular to sub-rounded gravel		
			9						M	D
			9.50	369.40			GW	GRAVEL fine to coarse grained, sub-rounded to sub-angular, pale grey, white, pale red brown, with fine to coarse grained sand, trace high plasticity clay		
			10							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2233

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340530 m E 6922012 m N MGA94 56
SURFACE RL: 378.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 10/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L-M	30/10/18	10		SPT 10.00-10.45 m 4, 11, 12 N=23			GW				ALLUVIUM
			10.30	368.60			SC	Clayey SAND fine to coarse grained, yellow brown, high plasticity clay, with fine to coarse grained, sub-angular to sub-rounded gravel				
			11		SPT 11.50-11.95 m 5, 14, 19 N=33			M	D			
			12									
			13	13.20 365.70	SPT 13.00-13.45 m 5, 12, 18 N=28		CI	Sandy CLAY medium plasticity, pale yellow brown, fine to coarse grained sand, with silt				
			14	14.00 364.90			becoming yellow brown					
			15		SPT 14.50-14.95 m 5, 10, 13 N=23				VSt			
			16		SPT 16.00-16.45 m 5, 8, 12 N=20			w < PL				
			17									
			18		U50 17.50-17.89 m 17.89 m PP >500 kPa					VSt - H		
RD	L-M	30/10/18	18	18.50 360.40			becoming yellow brown with pale grey, becoming high plasticity					
			19	19.40 359.50	SPT 19.00-19.45 m 11, 13, 20 N=33		SC	Clayey SAND fine to coarse grained, brown, low plasticity clay	W	D		
20												

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2233

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340530 m E 6922012 m N MGA94 56
SURFACE RL: 378.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 10/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			20				SC	Clayey SAND fine to coarse grained, brown, low plasticity clay		ALLUVIUM
					SPT 20.50-20.95 m 12, 19, 18 N=37				W	D
			21							
				21.60 357.30			CH	CLAY high plasticity, pale grey, pale yellow brown		TERTIARY SEDIMENTARY SEQUENCE (Lateritised)
			22		SPT 22.00-22.45 m 8, 9, 11 N=20				w < PL	St - VSt
			23							
				23.60 355.30	SPT 23.50-23.78 m 23, 30/130mm		SW	SAND fine to coarse grained, high plasticity, yellow brown, with silt, with fine to medium grained sand	W	D - VD
			24							
				24.60 354.30			CI	CLAY medium plasticity, pale grey, pale yellow brown, trace fine to coarse grained sand		Possible MARBURG SUBGROUP (Lateritised)
			25		SPT 25.00-25.45 m 11, 14, 19 N=33					
			26					becoming white grey with yellow brown, trace red brown fine to coarse grained, angular to sub-angular sandstone gravel		
				26.00 352.90	SPT 26.50-26.95 m 15, 25, 30 N=55				w < PL	H
			27							
			28		SPT 28.00-28.28 m 25, 30/130mm					
			29							
					SPT 29.50-29.93 m 15, 28, 30/130mm			END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 14.18 m DEPTH STANDPIPE INSTALLED		
			30							

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2233

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340530 m E 6922012 m N MGA94 56
SURFACE RL: 378.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 1 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 10/9/18
CHECKED: IT DATE: 14/9/18

Drilling					Field Material Description and Instrumentation				
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	ID Static Water Level Level/TROLL	CONSTRUCTION Reference Point 378.90 m AHD
ADT		-1							
		0	378.90 0.20 378.70		TOPSOIL: CLAY high plasticity, black brown, topsoil with rootlets, Moist, dry of plastic limit., very stiff	0.00: TOPSOIL 0.20: ALLUVIUM			Monument Cover Top Cap
RD		1	0.60 378.30		Sandy CLAY high plasticity, black brown, fine to coarse grained sand, Moist, dry of plastic limit., very stiff becoming dark brown, with fine to medium grained sand				900 mm PVC Stickup
		2	1.80 377.10		becoming brown, with trace calcium carbonate				
		3	3.50 375.40		Sandy CLAY medium plasticity, pale yellow brown, fine to medium grained sand, Moist, dry of plastic limit., very stiff				Cement/Bentonite Grout
		4							
		5	5.20 373.70		Sandy CLAY high plasticity, pale yellow brown, fine to coarse grained sand, moist, medium dense				
		6							
		7	6.80 372.10		Sandy CLAY high plasticity, pale yellow brown, grey, fine to coarse grained sand, with fine to coarse grained, sub-angular to sub-rounded gravel, Moist, dry of plastic limit., very stiff				Bentonite
		8							
		9	8.60 370.30						

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2233

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340530 m E 6922012 m N MGA94 56
SURFACE RL: 378.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 2 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 10/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Field Material Description and Instrumentation				
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 378.90 m AHD
		9			SAND fine to coarse grained, yellow brown, trace high plasticity clay, with fine to coarse grained, sub-angular to sub-rounded gravel, moist, dense			
		9.50	369.40		GRAVEL fine to coarse grained, sub-rounded to sub-angular, pale grey, white, pale red brown, with fine to coarse grained sand, trace high plasticity clay, moist, dense			
		10						
		10.30	368.60		Clayey SAND fine to coarse grained, yellow brown, high plasticity clay, with fine to coarse grained, sub-angular to sub-rounded gravel, moist, dense			
		11						
		12						
		13						
		13.20	365.70		Sandy CLAY medium plasticity, pale yellow brown, fine to coarse grained sand, with silt, Moist, dry of plastic limit., very stiff to hard			
		14						
		14.00	364.90		becoming yellow brown			
		15						
		16						
		17						
		18						
		18.50	360.40		becoming yellow brown with pale grey, becoming high plasticity			
		19						

Filter Pack

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2233

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340530 m E 6922012 m N MGA94 56
SURFACE RL: 378.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 3 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 10/9/18
CHECKED: IT DATE: 14/9/18

Drilling				Field Material Description and Instrumentation			
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)
		19					
			19.40				
			359.50		Clayey SAND fine to coarse grained, brown, low plasticity clay, wet, dense		
		20					
		21					
			21.60			21.60: TERTIARY SEDIMENTARY SEQUENCE (Lateritised)	
			357.30		CLAY high plasticity, pale grey, pale yellow brown, Moist, dry of plastic limit., stiff to very stiff		
		22					
		23					
			23.60				
			355.30		SAND fine to coarse grained, high plasticity, yellow brown, with silt, with fine to medium grained sand, wet, dense to very dense		
		24					
			24.60			24.60: Possible MARBURG SUBGROUP (Lateritised)	
			354.30		CLAY medium plasticity, pale grey, pale yellow brown, trace fine to coarse grained sand, Moist, dry of plastic limit., hard		
		25					
		26					
			26.00		becoming white grey with yellow brown, trace red brown fine to coarse grained, angular to sub-angular sandstone gravel		
			352.90				
		27					
		28					
		29					

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GAP gINT FN. F06
RL3



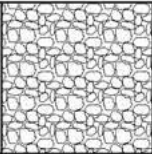
GOLDER

REPORT OF BOREHOLE: 310-01-BH2233

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340530 m E 6922012 m N MGA94 56
SURFACE RL: 378.9 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 4 OF 4
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 10/9/18
CHECKED: IT DATE: 14/9/18

Drilling					Field Material Description and Instrumentation			
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 378.90 m AHD
RD		29			CLAY medium plasticity, pale grey, pale yellow brown, trace fine to coarse grained sand, Moist, dry of plastic limit, hard			
		30	30.00					
					END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 14.18 m DEPTH STANDPIPE INSTALLED			
		31						
		32						
		33						
		34						
		35						
		36						
		37						
		38						
		39						

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 1 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	379.22			CH	TOPSOIL: Gravelly CLAY	w < PL	TOPSOIL
				0.20			CH	high plasticity, dark brown, fine grained, sub-angular gravel, with fine to medium grained sand, trace woody organics		ALLUVIUM
				379.02	SPT 0.50-0.95 m 4, 4, 5 N=9			CLAY high plasticity, dark brown, trace fine to medium grained sand		
			1							
				1.70						
				377.52	SPT 2.00-2.45 m 5, 8, 12 N=20		CH	CLAY high plasticity, dark brown, trace fine to coarse grained sand		
			2							
			3							
					SPT 3.50-3.95 m 5, 8, 10 N=18					
			4							
L				5.00				becoming brown		
				374.22	SPT 5.00-5.45 m 8, 11, 17 N=28					
			5							
			6							
				6.70	SPT 6.50-6.95 m 8, 21, 29 N=50		CI	Sandy CLAY medium plasticity, orange brown, fine to coarse grained sand, trace fine grained, sub-rounded, stained gravel		
			7							
				7.80			SC	Clayey SAND fine to coarse grained, orange brown, medium plasticity clay		
				371.42	SPT 8.00-8.45 m 14, 16, 19 N=35					
			8							
				9.75	SPT 9.50-9.95 m 9, 14, 13 N=27		SP	SAND fine to coarse grained, yellow brown		
				369.47						
RD			9							
			10							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 2 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L	L-M	10					SP	SAND fine to coarse grained, yellow brown			ALLUVIUM
			10.50	368.72			SC	Clayey SAND fine to coarse grained, brown, medium plasticity clay				
			11		SPT 11.30-11.75 m 9, 13, 12 N=25					MD		
			12									
			12.70	366.52			GP	Sandy GRAVEL fine to medium grained, sub-rounded, grey brown, fine to coarse grained sand, with clay	W		VD	
			13		SPT 12.80-13.25 m 23, 35, 29 N=64							
			14									
			14.00	365.22			SP	SAND fine to medium grained, orange brown			MD	
			15		SPT 14.30-14.75 m 7, 7, 8 N=15							
			15.60	363.62			CI	Sandy CLAY medium plasticity, brown to pale brown, fine to medium grained sand			St	
L			16		SPT 15.80-16.25 m 4, 6, 9 N=15							
			17		SPT 17.30-17.75 m 8, 12, 15 N=27				w ~ PL			
			18							St - VSt		
			18.30	360.92				becoming yellow brown				
			19		SPT 18.80-19.25 m 6, 8, 12 N=20							
			19.90	359.32					W	MD		

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 3 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description												
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS					
RD	L		20	20.10 359.12	SPT 20.30-20.75 m 9, 10, 12 N=22			SC	Clayey SAND		VSt		TERTIARY SEDIMENTARY SEQUENCE					
			CI	fine to medium grained, orange brown, medium plasticity clay														
				Sandy CLAY														
				medium plasticity, orange brown, fine to coarse grained sand														
			21															
			22					SPT 21.80-22.25 m 16, 20, 24 N=44										
			23															
			24	24.20 355.02				SPT 23.30-23.75 m 13, 19, 20 N=39										
			25	24.70 354.52 25.00 354.22				SPT 24.80-25.25 m 13, 18, 15 N=33	SW					Gravelly SAND	W	D		
									CI					fine to coarse grained, yellow brown, fine to medium grained, sub-rounded gravel				
				CLAY														
				medium plasticity, brown, with silt														
26	26.30 352.92	SPT 26.30-26.75 m 7, 10, 14 N=24																
27	27.40 351.82																	
28	27.80 351.82	SPT 27.80-28.25 m 9, 10, 14 N=24																
29	29.00 350.22 29.50 349.72	SPT 29.30-29.75 m 10, 13, 19 N=32																

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 4 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L		30				CI	CLAY (EXTREMELY WEATHERED mudstone) medium plasticity, pale grey mottled orange brown, trace fine grained sand		MARBURG SUBGROUP (Lateritised)
			31		SPT 30.80-31.25 m 16, 18, 21 N=39					
			32	32.00 347.22				becoming pale grey, locally weakly cemented	Vst	
			33		SPT 32.30-32.75 m 7, 13, 17 N=30					
			34		SPT 33.80-34.25 m 13, 18, 23 N=41				W~PL	
			35		SPT 35.30-35.75 m 6, 15, 27 N=42					
			36							
			37		SPT 36.80-37.25 m 14, 25, 27 N=52				H	
			38					For Continuation Refer to Sheet 5		
			39							
			40							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 5 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18

Drilling					Field Material Description							Defect Information									
METHOD	WATER	TCR	RQD (SCR)	RECOVERED	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH UCS MPa					LABORATORY STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations	FRACTURE FREQUENCY (Defects per unit metre length)				
										0.5	1	2.5	5	10		0	5	10	15	20	25
					30																
					31																
					32																
					33																
					34																
					35																
					36																
					37																
					37.30			Continuation of Sheet 4													
					341.92			CLAY (EXTREMELY WEATHERED mudstone) (CI)	XW												
								medium plasticity, pale grey mottled orange brown, trace fine grained sand													
					37.85																
					38.00			CORE LOSS													
					341.22			SILTSTONE	HW												
								fine grained, pale grey, apparently massive, trace black lenses													
					39																
								END OF BOREHOLE @ 40.00 m													
								TARGET DEPTH													
								GROUNDWATER ENCOUNTERED @ 16.22 m													
								DEPTH													
					40.00			STANDPIPE INSTALLED													

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GAP gINT FN. F02b
RL3



GOLDER

REPORT OF CORE PHOTOGRAPHS: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 1 OF 1
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18



310-01-BH2234 37.30 - 40.00 m

This report of core photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F28
RL1



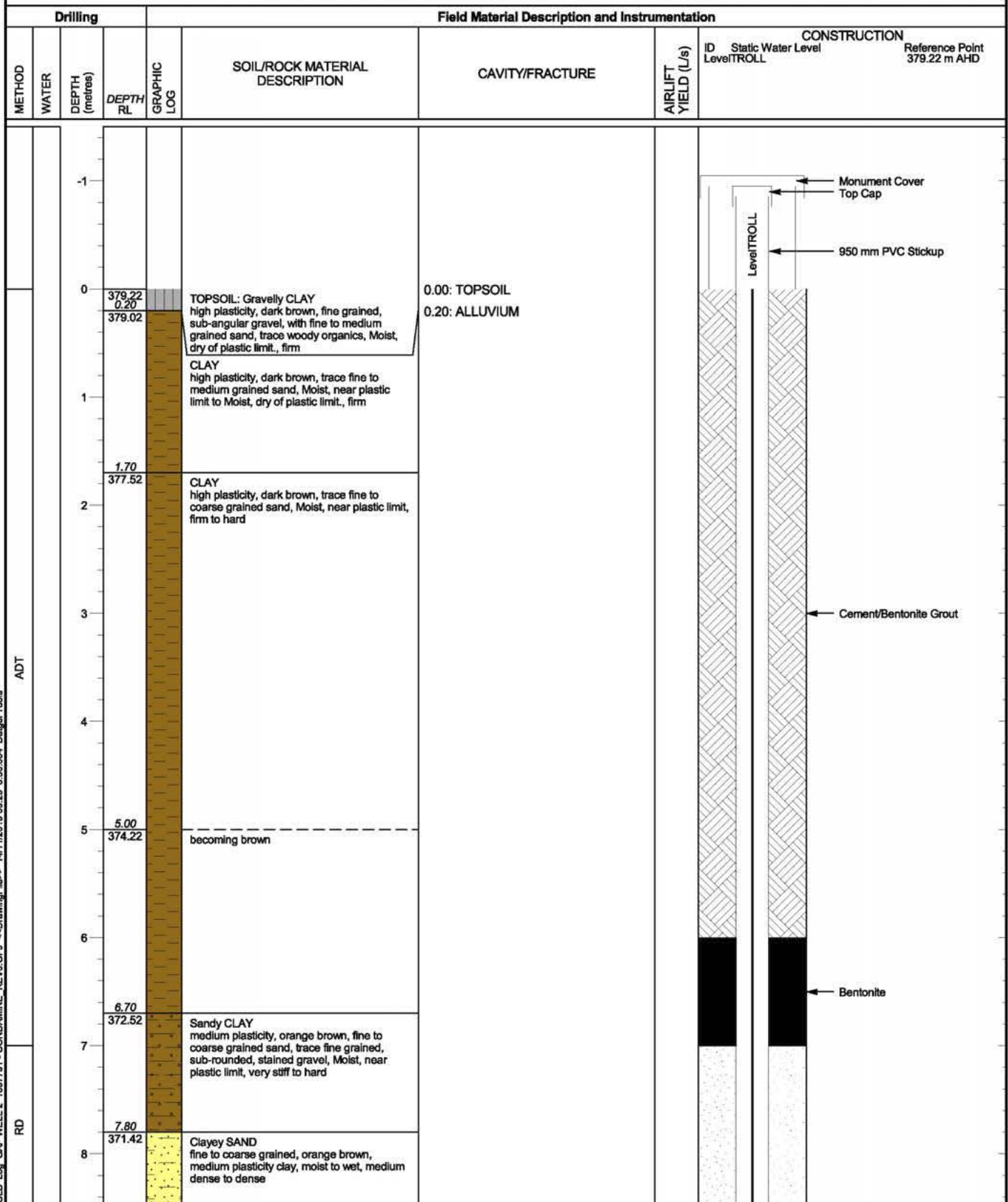
GOLDER

REPORT OF BOREHOLE: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 1 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18



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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 2 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18

Drilling				Field Material Description and Instrumentation				
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 379.22 m AHD
RD		9			Clayey SAND fine to coarse grained, orange brown, medium plasticity clay, moist to wet, medium dense to dense			
		9.75	369.47		SAND fine to coarse grained, yellow brown, wet, medium dense			
		10						
		10.50	368.72		Clayey SAND fine to coarse grained, brown, medium plasticity clay, wet, medium dense			
		11						
		12						
		12.70	366.52		Sandy GRAVEL fine to medium grained, sub-rounded, grey brown, fine to coarse grained sand, with clay, wet, very dense			
		13						
		14.00	365.22		SAND fine to medium grained, orange brown, wet, medium dense			
		14						
02/11/18		15						
		15.60	363.62		Sandy CLAY medium plasticity, brown to pale brown, fine to medium grained sand, Moist, near plastic limit, stiff to very stiff			
		16						
		17						
		18						
		18.30	360.92		becoming yellow brown			

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F06
RL3



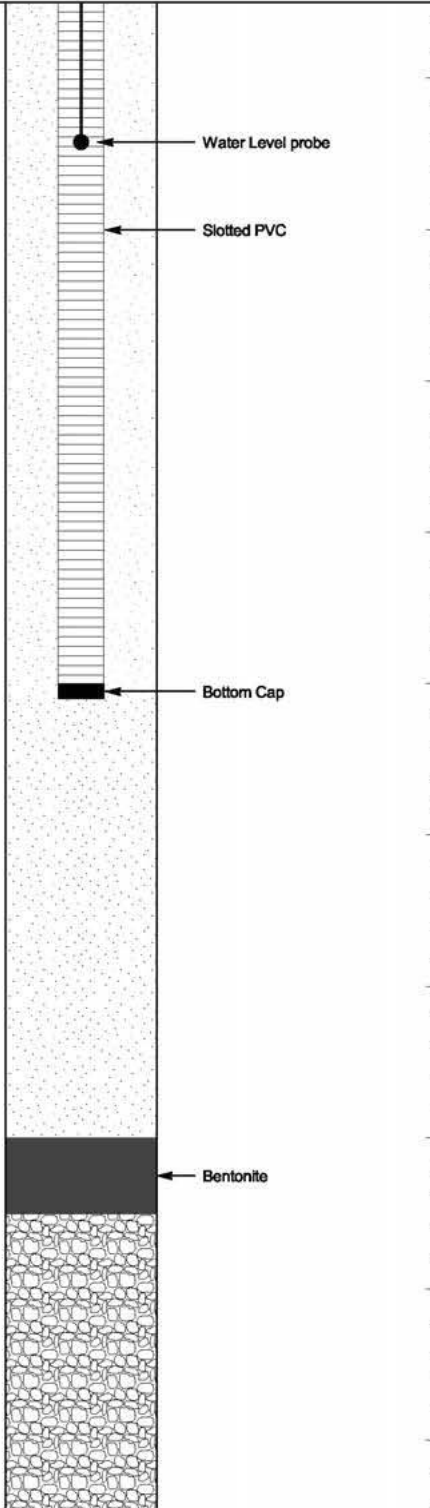
GOLDER

REPORT OF BOREHOLE: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 3 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18

Drilling				Field Material Description and Instrumentation			
METHOD	WATER	DEPTH (metres)	DEPTH RL	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 379.22 m AHD
RD		19		Sandy CLAY medium plasticity, brown to pale brown, fine to medium grained sand, Moist, near plastic limit, stiff to very stiff	20.10: TERTIARY SEDIMENTARY SEQUENCE		
		20	19.90 359.32 20.10 359.12	Clayey SAND fine to medium grained, orange brown, medium plasticity clay, wet, medium dense			
		21		Sandy CLAY medium plasticity, orange brown, fine to coarse grained sand, Moist, near plastic limit, very stiff to hard			
		22					
		23					
		24	24.20 355.02	trace fine to medium, grained sub-angular gravel			
		25	24.70 354.52 25.00 354.22	Gravelly SAND fine to coarse grained, yellow brown, fine to medium grained, sub-rounded gravel, wet, dense			
		26	26.30 352.92	CLAY medium plasticity, brown, with silt, Moist, near plastic limit, very stiff			
		27	27.40 351.82	CLAY medium plasticity, pale brown and grey, trace fine grained sand, Moist, near plastic limit, very stiff			
		28					

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 4 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18

Drilling				Field Material Description and Instrumentation			
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)
RD		29.00	350.22		CLAY medium plasticity, pale brown and grey, trace fine grained sand, Moist, near plastic limit, very stiff	29.00: MARBURG SUBGROUP (Lateritised)	
		29.50	349.72		CLAY (EXTREMELY WEATHERED mudstone) medium plasticity, pale grey mottled orange brown, trace fine grained sand, Moist, near plastic limit, very stiff to hard becoming pale grey		
		32.00	347.22		becoming pale grey, locally weakly cemented		
HQ3		37.30	341.92		CLAY (EXTREMELY WEATHERED mudstone) medium plasticity, pale grey mottled orange brown, trace fine grained sand		
		37.85					
		38.00			CORE LOSS		
		38.22	341.22		SILTSTONE fine grained, pale grey, apparently massive, trace black lenses, very low strength, highly weathered		

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2234

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 340696 m E 6922345 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 76/84/94 mm HOLE DEPTH: 40.00 m

SHEET: 5 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: RA DATE: 17/5/18
CHECKED: IT DATE: 14/9/18

Drilling				Field Material Description and Instrumentation			
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)
HQ3		39			SILTSTONE fine grained, pale grey, apparently massive, trace black lenses, very low strength, highly weathered		
		40	40.00		END OF BOREHOLE @ 40.00 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 16.22 m DEPTH STANDPIPE INSTALLED		
		41					
		42					
		43					
		44					
		45					
		46					
		47					
		48					

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2235

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 344710 m E 6926073 m N MGA94 56
SURFACE RL: 381.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 40.25 m

SHEET: 1 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 7/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	381.29				CH	TOPSOIL: CLAY high plasticity, dark brown, with silt, trace fine grained, sub-angular gravel			TOPSOIL
				0.20				CH	CLAY high plasticity, dark brown, with silt, trace fine grained, sub-angular gravel			ALLUVIUM
				381.09	SPT 0.50-0.95 m 7, 10, 11 N=21							
			1	1.50				CH	CLAY high plasticity, pale brown, with silt, trace fine grained sand			
				379.79								
			2		SPT 2.00-2.45 m 7, 9, 10 N=19							
			3									
			4	3.80	SPT 3.80-4.25 m 6, 9, 10 N=19			CH	CLAY high plasticity, brown, with fine to medium grained sand			
RD				377.49								
			5		SPT 5.30-5.75 m 8, 10, 11 N=21							
			6	5.75				CI	Sandy CLAY medium plasticity, brown, fine grained sand, with silt			
				375.54								
			7	6.80	SPT 6.80-7.25 m 12, 17, 21 N=38			SP	Gravelly SAND medium to coarse grained, sub-angular to angular, brown, fine to medium grained, sub-angular gravel, with medium plasticity clay			TERTIARY SEDIMENTARY SEQUENCE
				374.49								
M-H			8		SPT 8.30-8.75 m 11, 24, 21 N=45							
			9									
H			9.80					GP				
				371.49								

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2235

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 344710 m E 6926073 m N MGA94 56
SURFACE RL: 381.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 40.25 m

SHEET: 2 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 7/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
RD	M		10		SPT 9.80-10.25 m 11, 19, 28 N=47			GP	GRAVEL fine to medium grained, to 18 mm, sub-angular to angular, siliceous and quartzose, brown and white, with coarse grained sand, trace silt	M	D	TERTIARY SEDIMENTARY SEQUENCE	
			10.50 370.79			SM	Silty SAND fine to coarse grained, brown, trace fine grained, sub-rounded gravel						
			11		SPT 11.30-11.75 m 3, 4, 5 N=9			CH	CLAY high plasticity, dark grey and brown, with silt, trace fine to medium grained, angular gravel to 15 mm		St - VSt		
			11.30 369.99										
			12		U63 11.75-12.00 m PP >=400 kPa								
			13		SPT 12.80-13.25 m 6, 8, 10 N=18								
			14										
			14.00 367.29			trace nodular calcium carbonate					H		
			15		SPT 14.30-14.75 m 24, 25, 20 N=45	w < PL							
			16		SPT 15.80-16.25 m 7, 8, 14 N=22					VSt			
			17							H			
			17.55 363.74		SPT 17.30-17.70 m 10, 29, 30/100mm HB								
18				SC	Clayey SAND fine to coarse grained, brown, medium plasticity clay, with fine to medium grained, angular gravel, to 12 mm, with silt	M	VD						
18.80 362.49		SPT 18.80-19.25 m 10, 16, 18 N=34		CI	Sandy CLAY medium plasticity, brown mottled dark grey and yellow brown, medium grained sand, trace fine to medium grained, sub-angular gravel to 6 mm	w < PL	VSt						

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2235

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 344710 m E 6926073 m N MGA94 56
SURFACE RL: 381.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 40.25 m

SHEET: 3 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 7/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			20		SPT 20.30-20.75 m 10, 15, 21 N=36		CI	Sandy CLAY medium plasticity, brown mottled dark grey and yellow brown, medium grained sand, trace fine to medium grained, sub-angular gravel to 6 mm		TERTIARY SEDIMENTARY SEQUENCE
			21							
			22	21.80 359.49	SPT 21.80-22.25 m 8, 11, 14 N=25		CH	CLAY high plasticity, dark grey and brown, with fine to medium grained sand		
			23							
			24		SPT 23.30-23.75 m 10, 12, 14 N=26				VSt	w < PL
			25		SPT 24.80-25.25 m 6, 8, 9 N=17					
			26	25.30 355.99	U63 25.30-25.68 m PP =230-260 kPa		CH	CLAY high plasticity, dark grey and brown, trace silt		
			27	26.30 354.99	SPT 26.30-26.75 m 12, 12, 15 N=27		CH	CLAY high plasticity, brown, trace fine grained, sub-angular gravel to 4 mm, trace fine grained sand		
			28		SPT 27.80-28.25 m 6, 6, 8 N=14				St	RESIDUAL SOIL WALLOON COAL MEASURES (Lateritised)
			29	29.30 351.99	SPT 29.30-29.75 m 7, 10, 16 N=26		CI	Sandy CLAY medium plasticity, brown mottled yellow brown and pale grey, fine to medium grained sand	VSt	
			30							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2235

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 344710 m E 6926073 m N MGA94 56
SURFACE RL: 381.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 40.25 m

SHEET: 4 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 7/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	M		30					CI	Sandy CLAY medium plasticity, brown mottled yellow brown and pale grey, fine to medium grained sand			RESIDUAL SOIL WALLOON COAL MEASURES (Lateritised)
			31		SPT 30.80-31.25 m 8, 11, 15 N=26							
			32							w < PL	VSt	
			33		SPT 32.30-32.75 m 6, 9, 14 N=23							
			34	33.80 347.49	SPT 33.80-34.25 m 8, 10, 17 N=27		SC	Clayey SAND fine to medium grained, brown mottled yellow brown, medium plasticity clay, with silt, interbedded with high plasticity clay lenses up to 20 mm thick		MD		
			35						M			
			36	35.70 345.59	SPT 35.30-35.55 m 12, 30/100mm HB		SW	Gravelly SAND fine to coarse grained, brown, fine to medium grained, sub-rounded to sub-angular to 15 mm gravel, with silt		VD		
			37	36.80 344.49	SPT 36.80-37.25 m 7, 8, 11 N=19		CI-CH	CLAY medium to high plasticity, brown mottled grey and yellow brown, with silt				
			38							w < PL	St - VSt	
			39	39.10 342.19	SPT 38.30-38.75 m 7, 9, 12 N=21		SC	Clayey SAND fine to medium grained, brown mottled pale grey, medium plasticity clay, with silt		MD		

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2235

SHEET: 5 OF 5

DRILL RIG: DB520

CONTRACTOR: NUMAC

LOGGED: EA DATE: 7/9/18

CHECKED: IT DATE: 13/9/18

CLIENT: Future Freight JV

PROJECT: Inland Rail, B2G Project, Phase 2

LOCATION: Condamine Valley (Section 310)

JOB NO: 1897791

COORDS: 344710 m E 6926073 m N MGA94 56

SURFACE RL: 381.3 m DATUM: AHD

INCLINATION: -90°

HOLE DIA: 94/140 mm HOLE DEPTH: 40.25 m

Drilling				Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	STRUCTURE AND ADDITIONAL OBSERVATIONS
SPT			40		SPT 39.80-40.25 m 8, 8, 9 N=17			SC	END OF BOREHOLE @ 40.25 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 22.55 m DEPTH STANDPIPE INSTALLED	W	
			341.04								
			41								
			42								
			43								
			44								
			45								
			46								
			47								
			48								
			49								
			50								

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GAP gINT FN. F01a
RL3



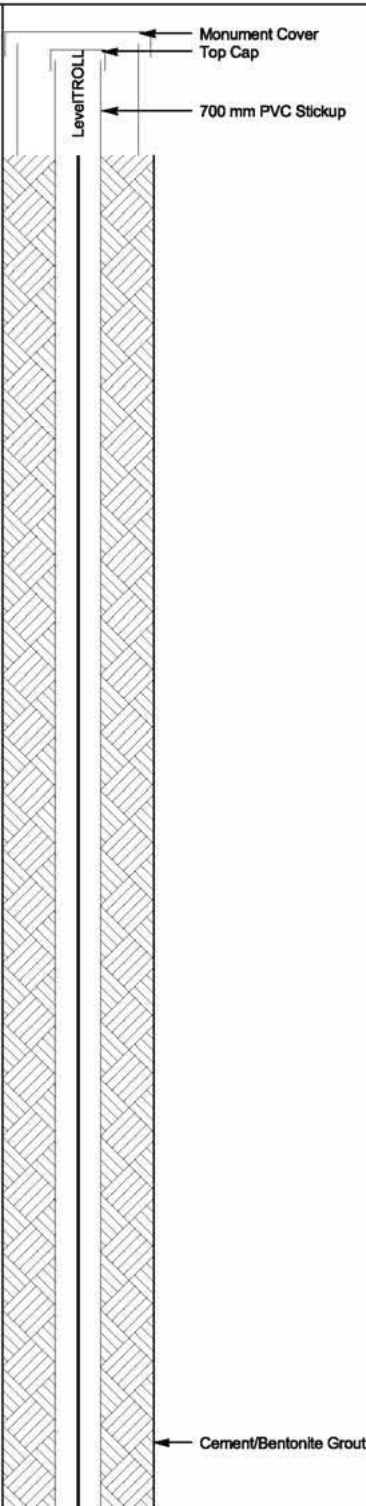
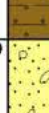
GOLDER

REPORT OF BOREHOLE: 310-01-BH2235

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 344710 m E 6926073 m N MGA94 56
SURFACE RL: 381.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 40.25 m

SHEET: 1 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 7/9/18
CHECKED: IT DATE: 13/9/18

Drilling					Field Material Description and Instrumentation			
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 381.29 m AHD
ADT		-1						
		0	381.29 0.20 381.09		TOPSOIL: CLAY high plasticity, dark brown, with silt, trace fine grained, sub-angular gravel, Moist, dry of plastic limit., stiff to very stiff CLAY high plasticity, dark brown, with silt, trace fine grained, sub-angular gravel, Moist, dry of plastic limit., stiff to very stiff	0.00: TOPSOIL 0.20: ALLUVIUM		
RD		1	1.50 379.79		CLAY high plasticity, pale brown, with silt, trace fine grained sand, Moist, dry of plastic limit., stiff to very stiff			
		2						
		3						
		4	3.80 377.49		CLAY high plasticity, brown, with fine to medium grained sand, Moist, dry of plastic limit., stiff to very stiff			
		5						
		6	5.75 375.54		Sandy CLAY medium plasticity, brown, fine grained sand, with silt, Moist, dry of plastic limit., stiff to very stiff			
		7	6.80 374.49		Gravelly SAND medium to coarse grained, sub-angular to angular, brown, fine to medium grained, sub-angular gravel, with medium plasticity clay, moist, dense	6.80: TERTIARY SEDIMENTARY SEQUENCE		
		8						
		9						

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2235

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 344710 m E 6926073 m N MGA94 56
SURFACE RL: 381.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 40.25 m

SHEET: 2 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 7/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Field Material Description and Instrumentation				
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 381.29 m AHD
RD		9			Gravelly SAND medium to coarse grained, sub-angular to angular, brown, fine to medium grained, sub-angular gravel, with medium plasticity clay, moist, dense			
		9.80	371.49		GRAVEL fine to medium grained, to 18 mm, sub-angular to angular, siliceous and quartzose, brown and white, with coarse grained sand, trace silt, moist to wet, dense			
		10.50	370.79		Silty SAND fine to coarse grained, brown, trace fine grained, sub-rounded gravel, moist, dense			
		11.30	369.99		CLAY high plasticity, dark grey and brown, with silt, trace fine to medium grained, angular gravel to 15 mm, Moist, dry of plastic limit, stiff to hard			
		12						
		13						
		14	14.00 367.29		trace nodular calcium carbonate			
		15						
		16						
		17						
		17.55	363.74		Clayey SAND fine to coarse grained, brown, medium plasticity clay, with fine to medium grained, angular gravel, to 12 mm, with silt, moist, very dense			
		18						
		18.80	362.49					
		19						

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2235

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 344710 m E 6926073 m N MGA94 56
SURFACE RL: 381.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 40.25 m

SHEET: 3 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 7/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Field Material Description and Instrumentation				
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 381.29 m AHD
RD		19			Sandy CLAY medium plasticity, brown mottled dark grey and yellow brown, medium grained sand, trace fine to medium grained, sub-angular gravel to 6 mm, Moist, dry of plastic limit, very stiff			
		20						
		21						
		22	21.80 359.49		CLAY high plasticity, dark grey and brown, with fine to medium grained sand, Moist, dry of plastic limit, very stiff			
		23						
RD		24						
		25	25.30 355.99		CLAY high plasticity, dark grey and brown, trace silt, Moist, dry of plastic limit, very stiff			
		26						
		27	26.30 354.99		CLAY high plasticity, brown, trace fine grained, sub-angular gravel to 4 mm, trace fine grained sand, Moist, dry of plastic limit, stiff to very stiff			
		28						
RD		29						

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2235

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 344710 m E 6926073 m N MGA94 56
SURFACE RL: 381.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 40.25 m

SHEET: 4 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 7/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Field Material Description and Instrumentation			
METHOD	WATER	DEPTH (metres)	DEPTH RL	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 381.29 m AHD
RD		29					
		29.30 351.99		Sandy CLAY medium plasticity, brown mottled yellow brown and pale grey, fine to medium grained sand, Moist, dry of plastic limit., very stiff	29.30: RESIDUAL SOIL WALLOON COAL MEASURES (Lateritised)		
		30					
		31					
		32					
		33					
		34					
		35					
		36					
		37					
		38					
		39					

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2235

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 344710 m E 6926073 m N MGA94 56
SURFACE RL: 381.3 m DATUM: AHD
INCLINATION: -90°
HOLE DIA: 94/140 mm HOLE DEPTH: 40.25 m

SHEET: 5 OF 5
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: EA DATE: 7/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Field Material Description and Instrumentation				
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	CAVITY/FRACTURE	AIRLIFT YIELD (L/s)	CONSTRUCTION ID Static Water Level Level/TROLL Reference Point 381.29 m AHD
RD		39	39.10 342.19		Clayey SAND fine to medium grained, brown mottled pale grey, medium plasticity clay, with silt, wet, medium dense			
SPT		40	40.25 341.04		END OF BOREHOLE @ 40.25 m TARGET DEPTH GROUNDWATER ENCOUNTERED @ 22.55 m DEPTH STANDPIPE INSTALLED			
		41						
		42						
		43						
		44						
		45						
		46						
		47						
		48						
		49						

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GAP gINT FN. F06
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2236

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 347908 m E 6928867 m N MGA94 56
SURFACE RL: 390.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 1 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 11/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT			0	0.10 390.45				CI	TOPSOIL: CLAY medium plasticity, dark brown, trace rootlets				TOPSOIL
							CH	CLAY high plasticity, dark brown, trace fine to medium grained sand				ALLUVIUM	
			1	0.80 389.75	SPT 1.00-1.45 m 6, 10, 15 N=25			becoming brown, trace of calcium carbonate nodules					
			2	2.20 388.35	SPT 2.50-2.95 m 5, 9, 12 N=21		CH	CLAY high plasticity, brown, trace calcium carbonate nodules			QUATERNARY TO TERTIARY SEDIMENTARY SEQUENCE (Lateritised)		
			3										
			4		SPT 4.00-4.45 m 6, 10, 13 N=23								
			5	5.00 385.55	SPT 5.50-5.95 m 7, 11, 14 N=25			becoming pale yellow brown	w < PL VSt - H				
			6										
			7		SPT 7.00-7.45 m 8, 11, 13 N=24								
			8		SPT 8.50-8.95 m 8, 11, 15 N=26								
RD			GROUNDWATER NOT OBSERVED										
			9										

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2236

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 347908 m E 6928867 m N MGA94 56
SURFACE RL: 390.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 2 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 11/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD	L	GROUNDWATER NOT OBSERVED	10		SPT 10.00-10.45 m 9, 14, 26 N=40		CH	CLAY high plasticity, brown, trace calcium carbonate nodules	w < PL	QUATERNARY TO TERTIARY SEDIMENTARY SEQUENCE (Lateritised)
			10.30	380.25			CH	Gravelly CLAY high plasticity, pale yellow brown, fine to coarse grained, sub-angular to angular gravel, with fine to coarse grained sand		
			11	11.00			CH	CLAY high plasticity, pale yellow brown		
			379.55		SPT 11.50-11.95 m 8, 12, 15 N=27					
			12							
			13		SPT 13.00-13.45 m 11, 14, 18 N=32					
			14							
			15		SPT 14.50-14.95 m 9, 14, 18 N=32					
			16		SPT 16.00-16.45 m 8, 14, 19 N=33					
			17							
RD	L	GROUNDWATER NOT OBSERVED	18		SPT 17.50-17.95 m 12, 19, 24 N=43				w ~ PL	Vst-H
			19		SPT 19.00-19.45 m 11, 15, 20 N=35					
			20							

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GAP gINT FN. F01a
RL3



GOLDER

REPORT OF BOREHOLE: 310-01-BH2236

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: Condamine Valley (Section 310)
JOB NO: 1897791

COORDS: 347908 m E 6928867 m N MGA94 56
SURFACE RL: 390.6 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 30.00 m

SHEET: 3 OF 3
DRILL RIG: DB520
CONTRACTOR: NUMAC
LOGGED: FZ DATE: 11/9/18
CHECKED: IT DATE: 13/9/18

Drilling				Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
L			20				CH	CLAY high plasticity, pale yellow brown		RESIDUAL SOIL WALLOON COAL MEASURES (Lateritised)
			20.50							
			370.05		SPT 20.50-20.95 m 12, 14, 27 N=41			trace fine to coarse grained sand		
			21							
			22		SPT 22.00-22.45 m 12, 18, 23 N=41					
			23							
			24		SPT 23.50-23.95 m 13, 22, 28 N=50					
			25		SPT 25.00-25.25 m 18, 30/100mm HB					
			25.20							
			365.35							
M			26				CI-CH	Sandy Gravelly CLAY medium to high plasticity, pale yellow brown, fine to coarse grained, sub-angular to angular gravel, fine to coarse grained sand		w ~ PL H
			26.20							
			364.35		SPT 26.50-26.95 m 15, 22, 27 N=49		CI-CH	CLAY medium to high plasticity, pale yellow brown, with silt		
			27							
			27.60							
			362.95					becoming with fine to coarse grained sand		
			28		SPT 28.00-28.45 m 11, 19, 20 N=39					
			29							
			30		SPT 29.50-29.95 m 12, 14, 18 N=32			END OF BOREHOLE @ 30.00 m TARGET DEPTH GROUNDWATER NOT OBSERVED BACKFILLED		

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GAP gINT FN. F01a
RL3

APPENDIX G1

Geotechnical Reports—Investigation Results

DCP reports

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT



GOLDER

REPORT OF DCP TESTS

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

SHEET: 1 OF 10

CHECKED: CL DATE: 2/8/18



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GAP gINT FN. F04a
RL3



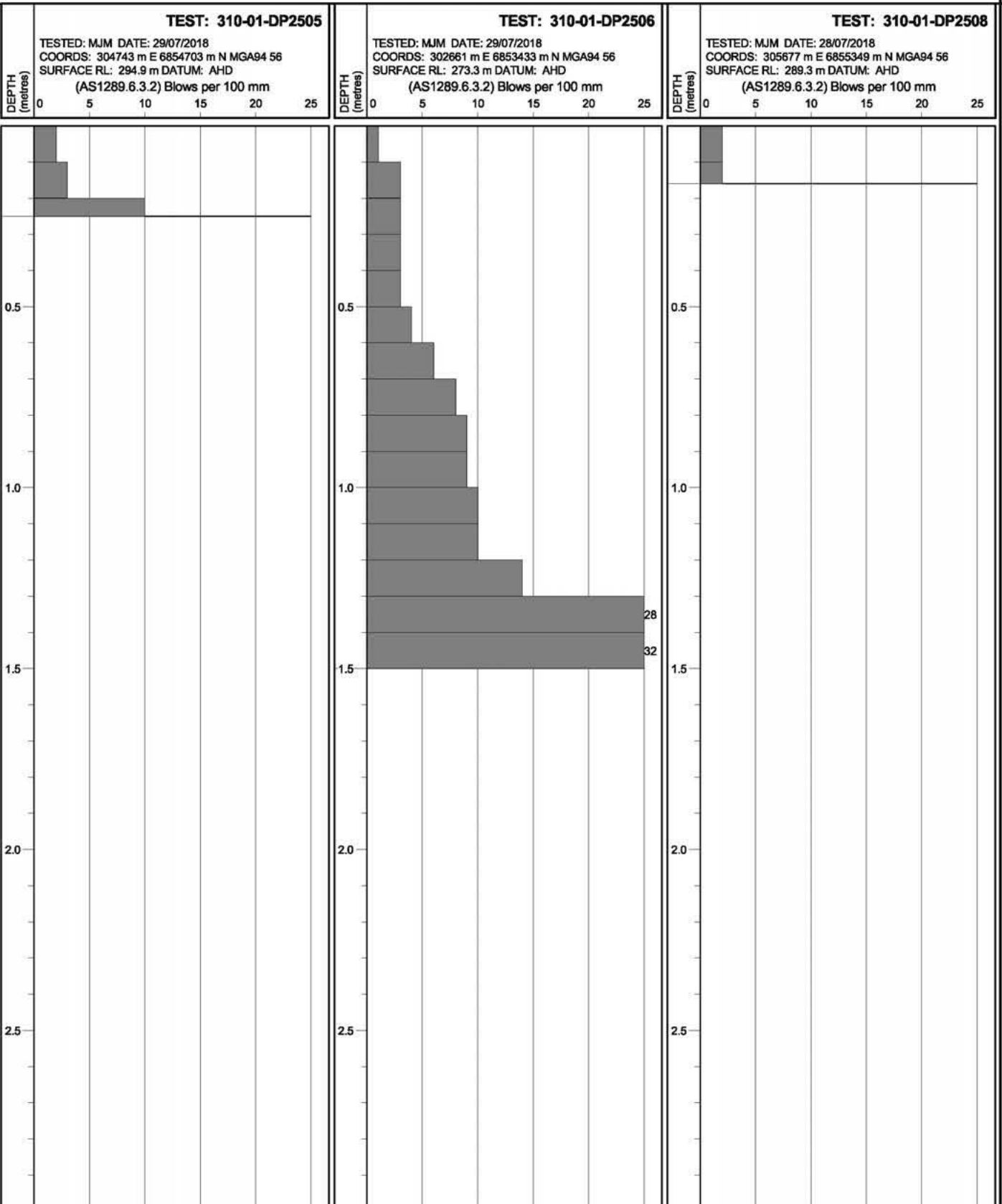
GOLDER

REPORT OF DCP TESTS

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

SHEET: 2 OF 10

CHECKED: CL DATE: 2/8/18



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GAP gINT FN. F04a
RL3



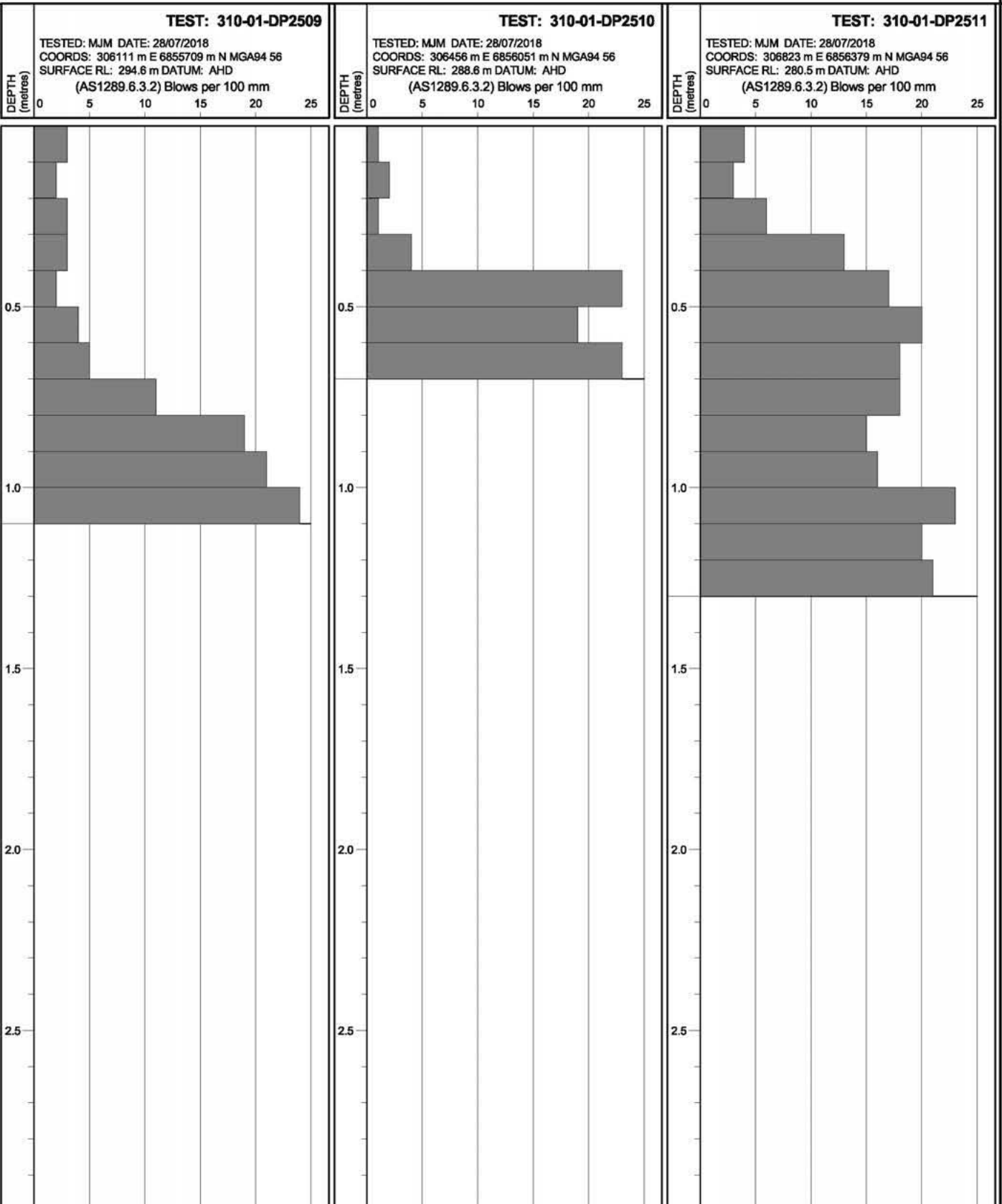
GOLDER

REPORT OF DCP TESTS

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

SHEET: 3 OF 10

CHECKED: CL DATE: 2/8/18



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GAP gINT FN. F04a
RL3



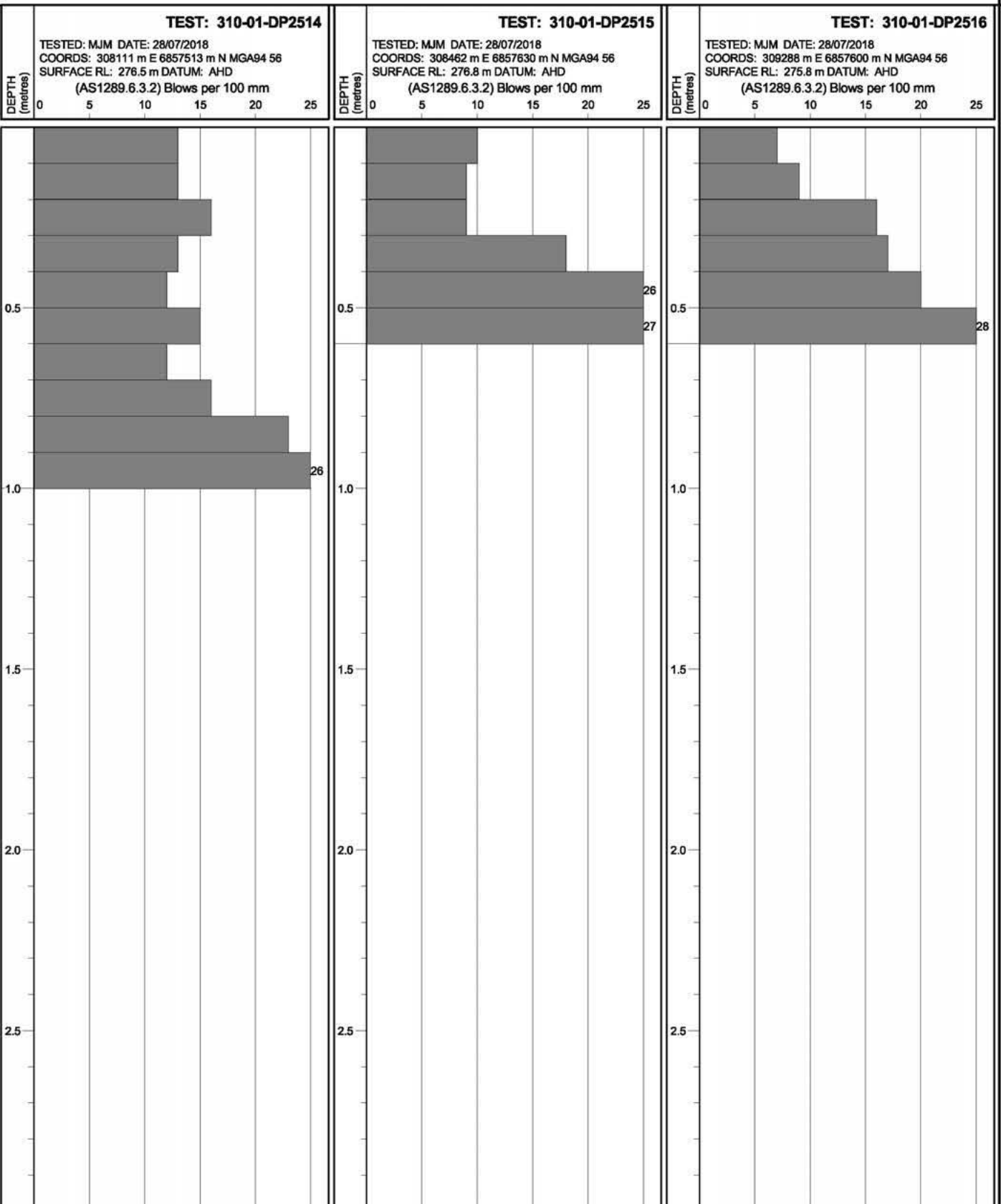
GOLDER

REPORT OF DCP TESTS

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

SHEET: 4 OF 10

CHECKED: CL DATE: 2/8/18



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GAP gINT FN. F04a
RL3



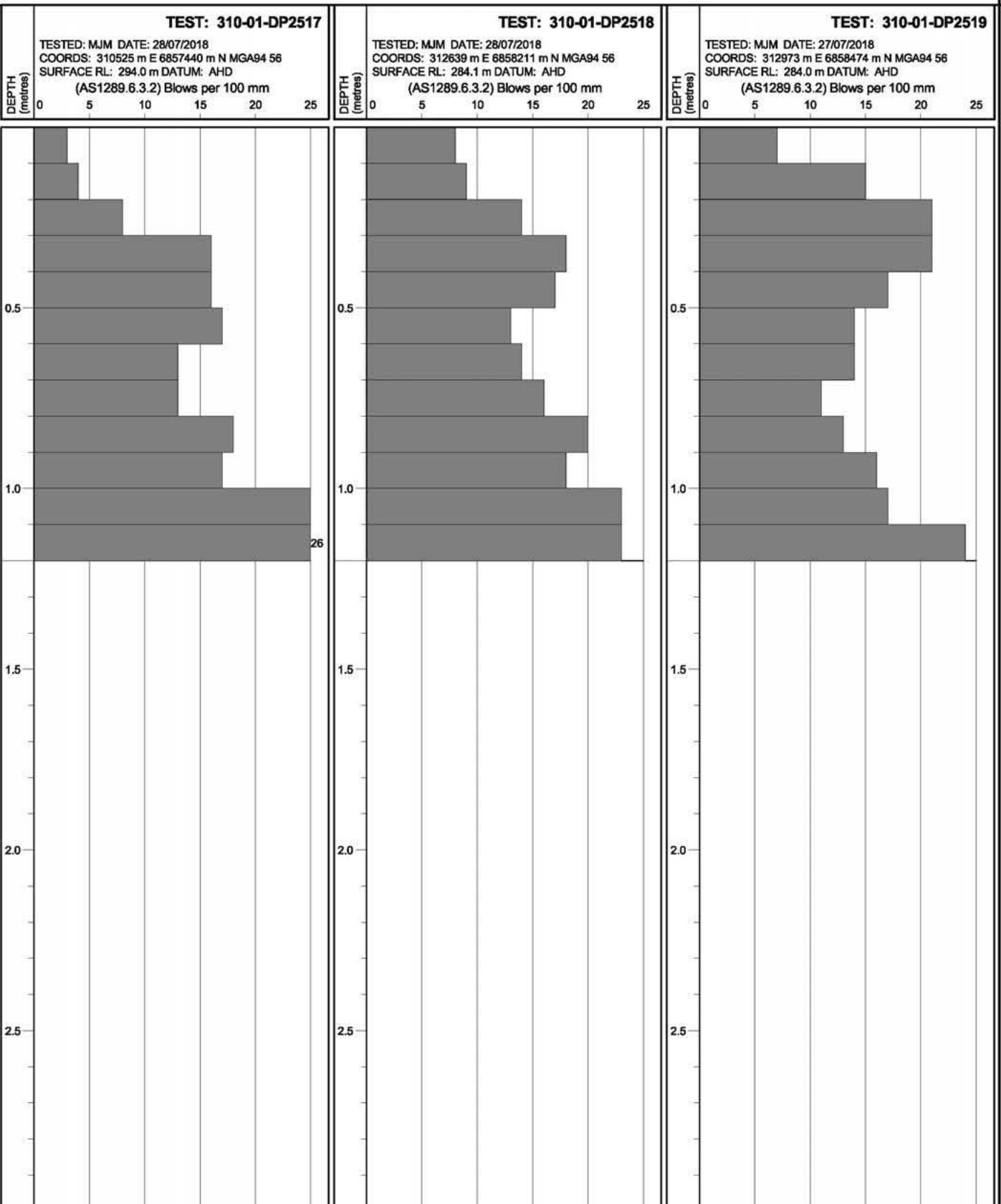
GOLDER

REPORT OF DCP TESTS

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

SHEET: 5 OF 10

CHECKED: CL DATE: 2/8/18





CHECKED: CL DATE: 2/8/18



GAP gINT FN. F04a
RL3



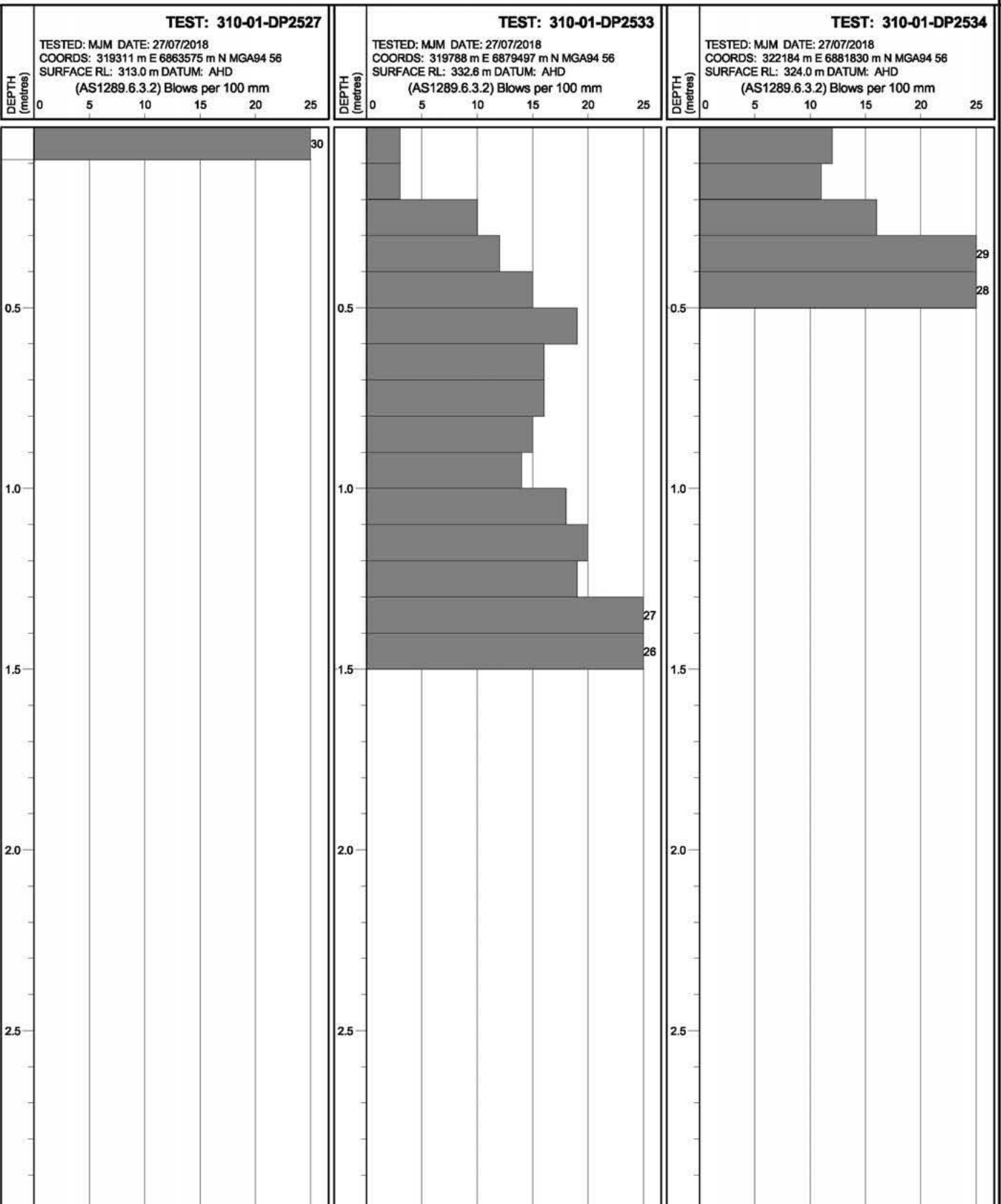
GOLDER

REPORT OF DCP TESTS

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

SHEET: 7 OF 10

CHECKED: CL DATE: 2/8/18



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GAP gINT FN. F04a
RL3



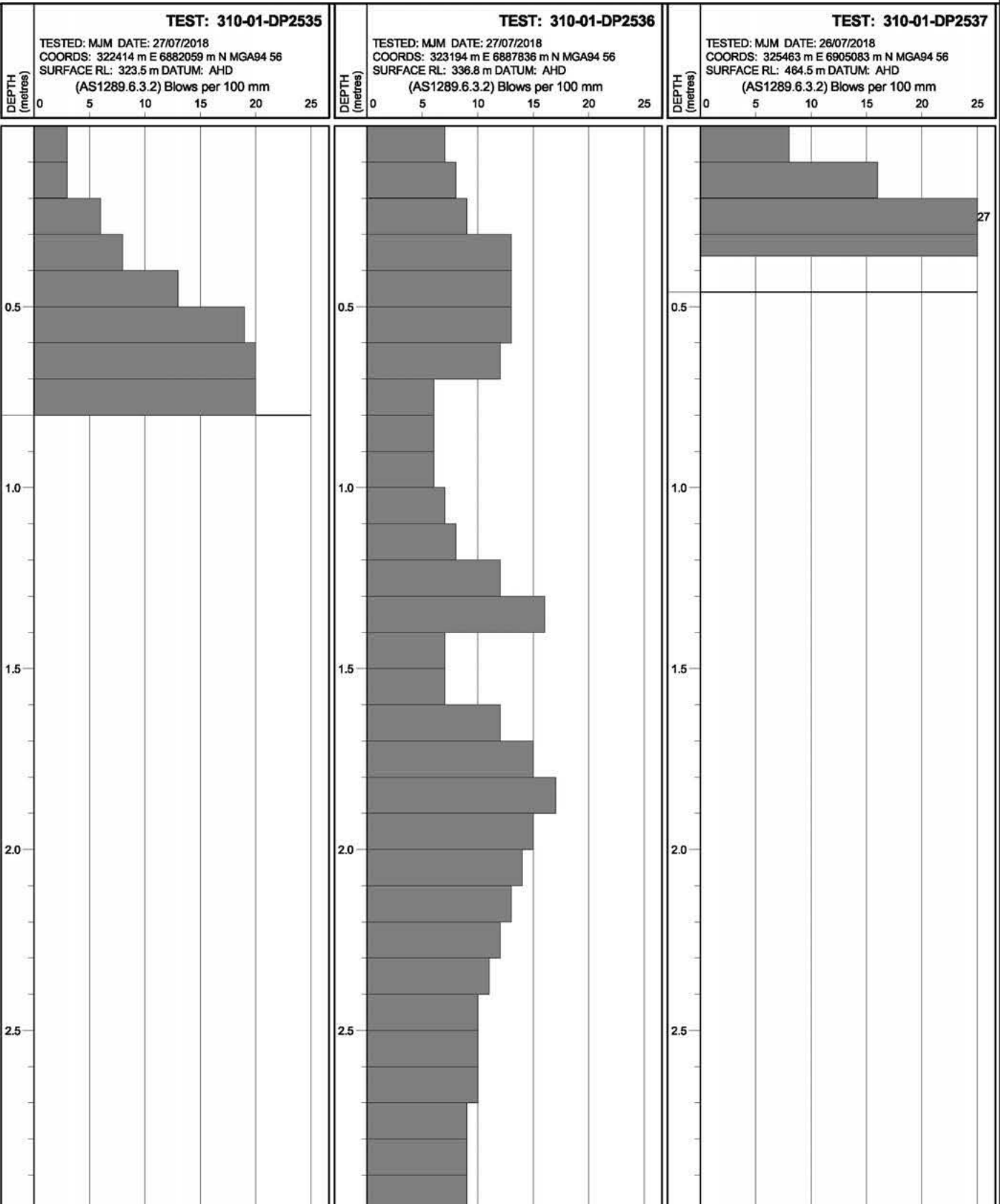
GOLDER

REPORT OF DCP TESTS

CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

SHEET: 8 OF 10

CHECKED: CL DATE: 2/8/18





CHECKED: CL DATE: 2/8/18

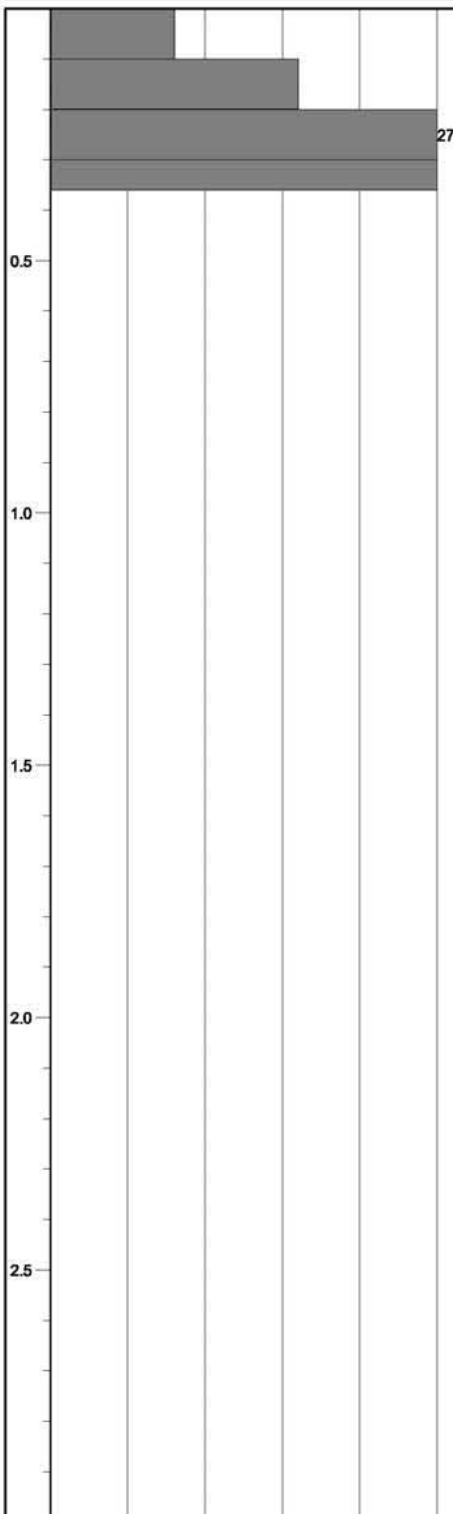
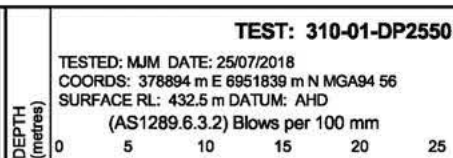
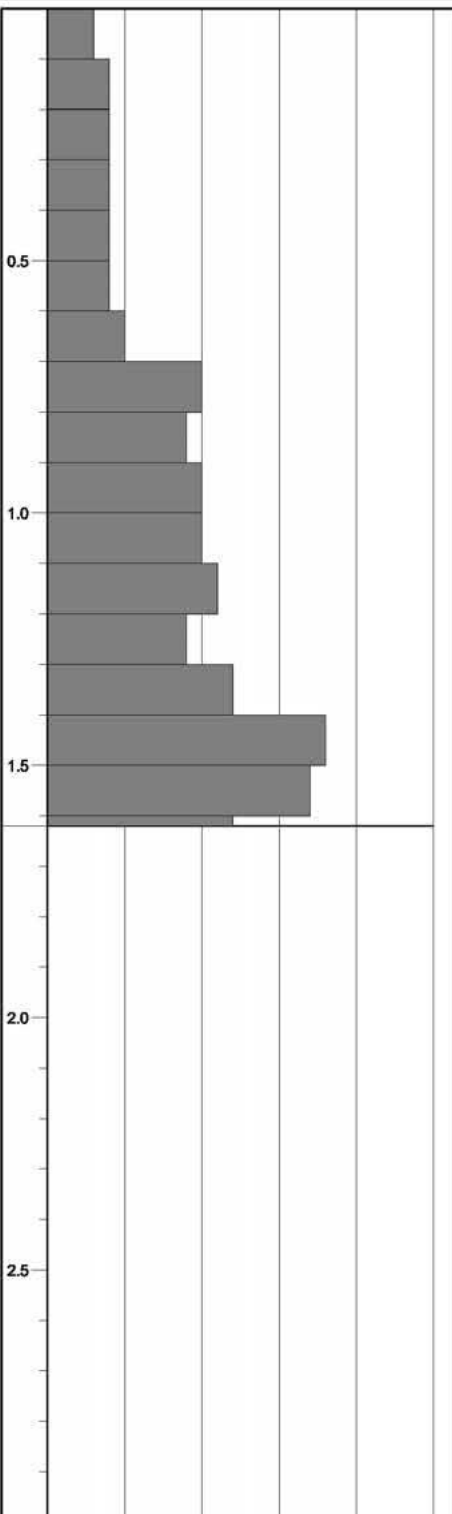
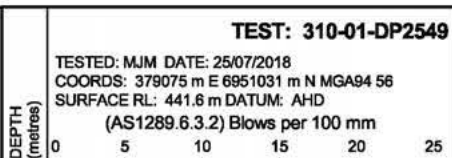




CLIENT: Future Freight JV
PROJECT: Inland Rail, B2G Project, Phase 2
LOCATION: NSW/QLD Border to Gowrie (Section 310)
JOB NO: 1897791

SHEET: 10 OF 10

CHECKED: CL DATE: 2/8/18



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GOLDER

REPORT OF DCP TESTS

CLIENT: FFJV
PROJECT: Inland Rail, Phase 2
LOCATION: Condamine Valley (B2G)
JOB NO: 1897791

SHEET: 1 OF 3

CHECKED: CL DATE: 2/8/18

TESTED: MJM DATE: 05/04/2018 **310-01-DP2540**
COORDS: 338854 m E 6919052 m N MGA94 56
SURFACE RL: 379.3 m DATUM: AHD

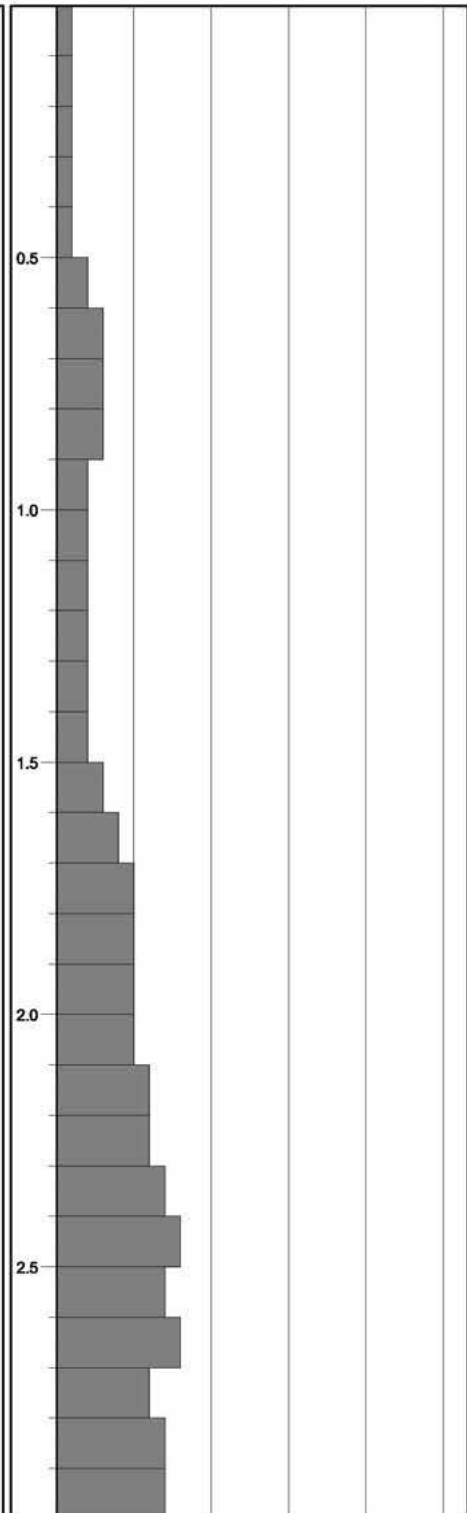
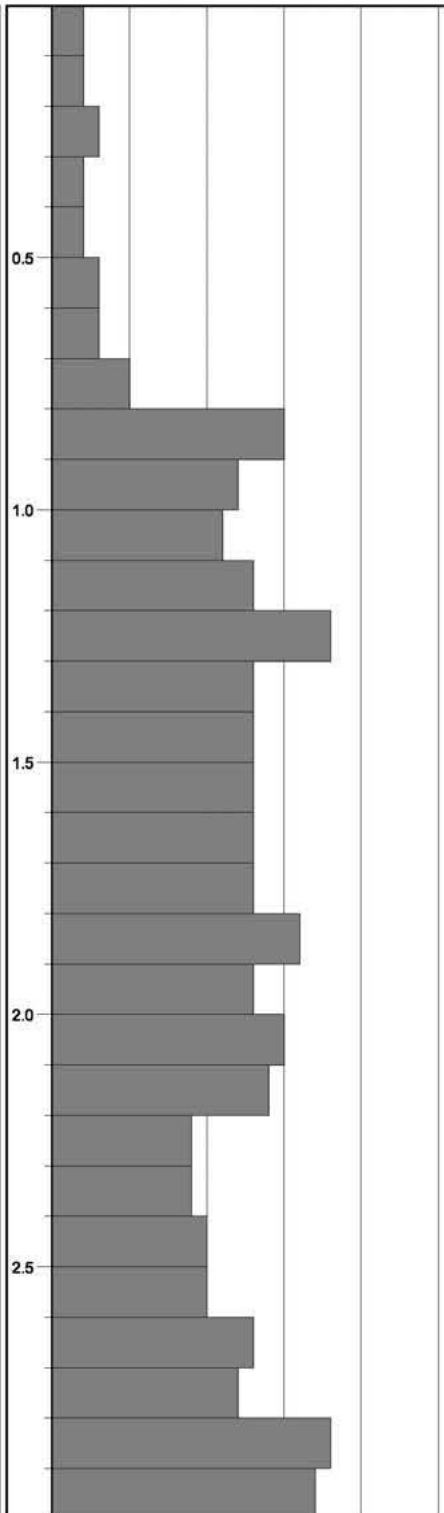
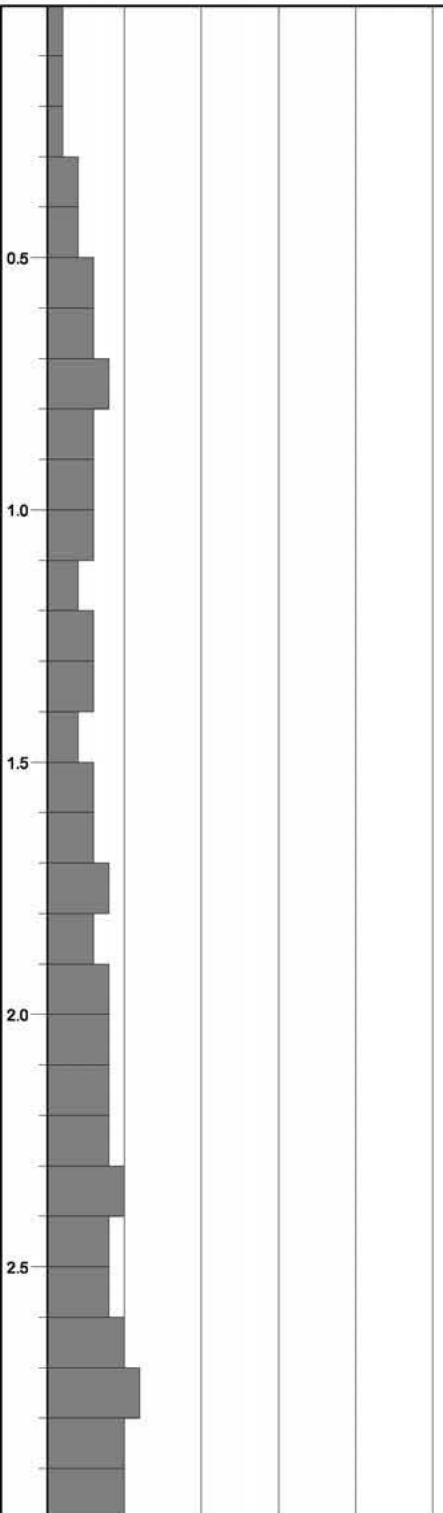
TESTED: MJM DATE: 05/04/2018 **310-01-DP2541**
COORDS: 339364 m E 6919714 m N MGA94 56
SURFACE RL: 379.8 m DATUM: AHD

TESTED: MJM DATE: 04/04/2018 **310-01-DP2542**
COORDS: 339792 m E 6920505 m N MGA94 56
SURFACE RL: 379.2 m DATUM: AHD

DEPTH (metres)
(AS1289.6.3.2) Blows per 100 mm
0 5 10 15 20 25

DEPTH (metres)
(AS1289.6.3.2) Blows per 100 mm
0 5 10 15 20 25

DEPTH (metres)
(AS1289.6.3.2) Blows per 100 mm
0 5 10 15 20 25



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GAP gINT FN. F04a
RL3



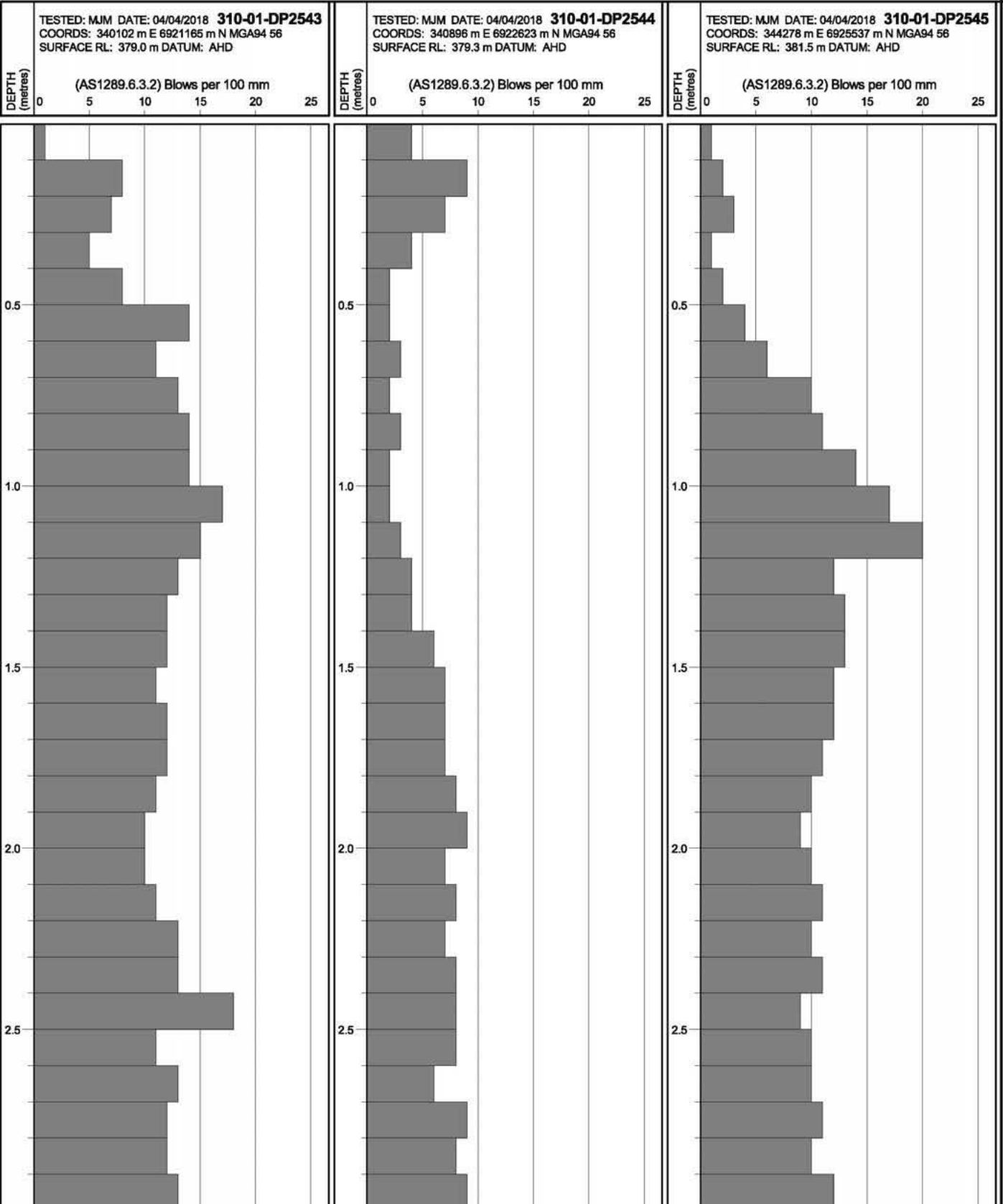
GOLDER

REPORT OF DCP TESTS

CLIENT: FFJV
PROJECT: Inland Rail, Phase 2
LOCATION: Condamine Valley (B2G)
JOB NO: 1897791

SHEET: 2 OF 3

CHECKED: CL DATE: 2/8/18



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GAP gINT FN. F04a
RL3



GOLDER

REPORT OF DCP TESTS

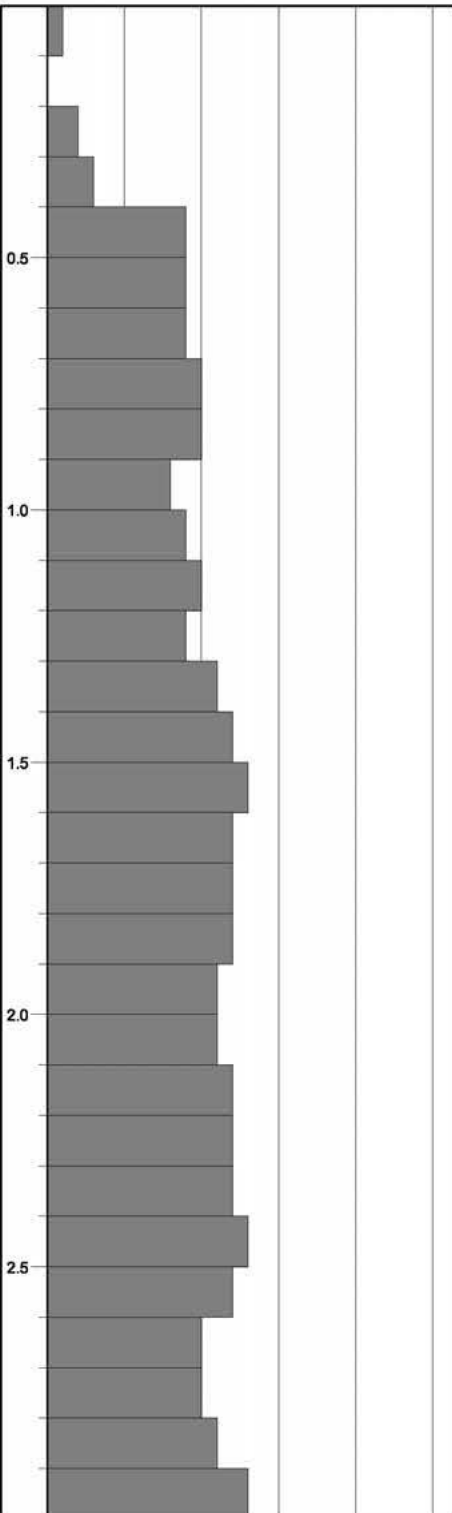
CLIENT: FFJV
PROJECT: Inland Rail, Phase 2
LOCATION: Condamine Valley (B2G)
JOB NO: 1897791

SHEET: 3 OF 3

CHECKED: CL DATE: 2/8/18

TESTED: MJM DATE: 04/04/2018 **310-01-DP2546**
COORDS: 344966 m E 6926432 m N MGA94 56
SURFACE RL: 381.6 m DATUM: AHD

DEPTH (metres)
0 (AS1289.6.3.2) Blows per 100 mm 25



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GAP gINT FN. F04a
RL3

APPENDIX G1

Geotechnical Reports—Investigation Results

Geotechnical laboratory results summary

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT

[illegible]

[illegible]

Notes

1. Refer to report for CBR testing specification used.
2. Testing completed after RMS T103 completed

Borehole	Sample ID	Depth (m)		USC	Material Description	Moisture Content	Plasticity				Grading								Shrink Swell Index	Compaction					California Bearing Ratio ¹	Hand Vane Shear	Triaxial Test (UU)		Aggressivity			Emerson	
							LL	PL	PI	LS	Clay/Silt	Sand			Sand	Gravel				Gravel	Max Dry Density	Achieved Dry Density	Achieved Moisture Content	Calculated Dry Density Ratio (or Relative Compaction)			OMC	4.5 kg	Su (corrected for plasticity)	c'	φ'		Soluble Sulfate
		%	%				%	%	%	fine	med	coarse	%	fine	med	coarse	%	%		(t/m ³)	(t/m ³)	%	%	%			%	%	kPa	kPa	degrees	mg/kg	mg/kg
310-01-BH2230	310-01-BH2230-S00930	9.30	9.75	CI	Sandy CLAY	19.7	-	-	-	-	40	3	14	15	32	25	3	0	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-
310-01-BH2230	310-01-BH2230-S01080	10.80	11.09	SC	Clayey SAND	13.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	130	8.0	-
310-01-BH2230	310-01-BH2230-S01230	12.30	12.75	GP	GRAVEL	15.5	-	-	-	-	12	2	5	19	26	53	8	0	61	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2230	310-01-BH2230-S01580	15.80	16.25	MH	SILT	18.6	55	30	25	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2230	310-01-BH2230-U00200	2.00	2.45	CH	CLAY	17.6	63	19	44	18.5	-	-	-	-	-	-	-	-	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2231	310-01-BH2231-S00200	2.00	2.45	CH	CLAY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	
310-01-BH2231	310-01-BH2231-S00400	4.00	4.45	CH	CLAY	34.4	78	26	52	20	92	3	4	1	8	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2231	310-01-BH2231-S00550	5.50	6.00	CH	CLAY	22.8	88	26	62	23.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2231	310-01-BH2231-S00700	7.00	7.45	SW	SAND	22.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2231	310-01-BH2231-S00850	8.50	8.95	SW	Gravelly SAND	13.8	-	-	-	-	10	4	8	25	37	28	20	5	53	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2231	310-01-BH2231-S01300	13.00	13.45	GP	Sandy GRAVEL	12.0	-	-	-	-	6	2	5	29	36	46	12	0	58	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2231	310-01-BH2231-S01450	14.50	14.95	SC	Clayey SAND	20.8	-	-	-	-	14	15	61	9	85	1	0	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2231	310-01-BH2231-S01750	17.50	17.95	CH	CLAY	23.8	71	10	51	18	90	9	1	0	10	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2231	310-01-BH2231-S01900	19.00	19.45	CH	CLAY	17.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2231	310-01-BH2231-S02050	20.50	20.95	CL	Sandy CLAY	16.7	30	14	16	8.5	53	27	20	0	47	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2231	310-01-BH2231-S02350	23.50	23.91	CL-CI	Sandy CLAY	16.5	35	18	17	9.5	39	21	32	8	61	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2232	310-01-BH2232-S00600	6.00	6.45	CH	CLAY	25.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	700	8.3	-	
310-01-BH2232	310-01-BH2232-S01280	12.80	13.25	GP	Sandy GRAVEL	24.3	-	-	-	-	17	1	9	24	34	30	19	0	49	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2232	310-01-BH2232-S01580	15.80	16.25	CI	CLAY	16.9	-	-	-	-	71	11	16	2	29	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2232	310-01-BH2232-S02180	21.80	22.25	CH	CLAY	19.8	52	21	31	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
310-01-BH2232	310-01-BH2232-U00150	1.50	1.95	CH	CLAY	34.9	115	36	79	19.5	-	-	-	-	-	-	-	-	9.1	-	-	-	-	-	-	-	-	-	-	-	-		
310-01-BH2233	310-01-BH2233-S00200	2.00	2.45	CH	Sandy CLAY	15.1	67	23	44	16.5	59	11	17	6	34	3	4	0	7	-	-	-	-	-	-	-	-	-	100	210	9.3	2	
310-01-BH2233	310-01-BH2233-S00400	4.00	4.45	CI	Sandy CLAY	20.1	44	17	27	12	50	20	28	2	50	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2233	310-01-BH2233-S00550	5.50	5.95	CH	Sandy CLAY	20.0	-	-	-	-	45	12	39	4	55	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2233	310-01-BH2233-S00700	7.00	7.45	CH	Sandy CLAY	13.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	130	8.9	-	
310-01-BH2233	310-01-BH2233-S01000	10.00	10.45	GP	GRAVEL	10.3	-	-	-	-	8	2	13	10	25	50	17	0	67	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2233	310-01-BH2233-S01300	13.00	13.45	SC	Clayey SAND	19.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	20	8	-	
310-01-BH2233	310-01-BH2233-S01450	14.50	14.95	CI	Sandy CLAY	34.8	42	26	16	8	58	25	14	3	42	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2233	310-01-BH2233-S01750	17.50	17.89	CI	CLAY	15.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2233	310-01-BH2233-S02050	20.50	20.95	SC	Clayey SAND	18.0	28	16	12	5.5	14	12	46	26	84	2	0	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2233	310-01-BH2233-S02650	26.50	26.95	CI	CLAY	20.3	49	21	28	11	87	8	3	2	13	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2234	310-01-BH2234-S00350	3.50	3.95	CH	CLAY	16.5	58	20	38	18.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2234	310-01-BH2234-S00650	6.50	6.95	CI	Sandy CLAY	14.0	-	-	-	-	52	11	36	1	48	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2234	310-01-BH2234-S01730	17.30	17.75	CI	Sandy CLAY	20.3	48	16	32	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2234	310-01-BH2234-S02030	20.30	20.75	CI	Sandy CLAY	18.5	-	-	-	-	70	8	20	2	30	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2235	310-01-BH2235-S00380	3.80	4.25	CH	CLAY	26.7	55	19	36	14.5	79	12	9	0	21	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2235	310-01-BH2235-S00530	5.30	5.75	CH	CLAY	16.2	53	19	34	15	73	11	14	2	27	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2235	310-01-BH2235-S00680	6.80	7.25	SP	Gravelly SAND	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	20	8.8	-	
310-01-BH2235	310-01-BH2235-S00830	8.30	8.75	SP	Gravelly SAND	10.4	-	-	-	-	12	2	19	35	56	19	13	0	32	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2235	310-01-BH2235-S00980	9.80	10.25	GP	GRAVEL	8.5	-	-	-	-	3	1	3	14	18	50	26	3	79	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2235	310-01-BH2235-S01175	11.75	12.00	CH	CLAY	25.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	10	8.6	-	
310-01-BH2235	310-01-BH2235-S01580	15.80	16.25	CH	CLAY	23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	10	8.7	-	
310-01-BH2235	310-01-BH2235-S01880	18.80	19.25	CI	Sandy CLAY	23.0	37	21	16	6	43	5	40	1	46	1	0	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2235	310-01-BH2235-S02180	21.80	22.25	CH	CLAY	30.5	53	27	26	14.5	76	12	11	0	23	1	0	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2235	310-01-BH2235-S02530	25.30	25.68	CH	CLAY	32.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2235	310-01-BH2235-S03230	32.30	32.75	CI	Sandy CLAY	25.4	43	21	22	12	57	11	30	2	43	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-BH2236	310-01-BH2236-S00100	1.00	1.45	CH	CLAY	19.2	67	16	51	19.5	89	4	4	1	9	1	1	0	2	-	-	-	-	-	-	-	-	-	-	-	-	6	
310-01-BH2236	310-01-BH2236-S00400	4.00	4.45	CH	CLAY	23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	230	440	8.7	-	
310-01-BH2236	310-01-BH2236-S00550	5.50	5.95	CH	CLAY	34.1	91	30	61	23	96	1	3	0	4	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	4	
310-01-BH2236	310-01-BH2236-S01000	10.00	10.45	CH	CLAY	25.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	370	320	8.7	-	
310-01-BH2236	310-01-BH2236-S01450	14.50	14.95	CH	CLAY	34.7	93	36	57	22.5	95	1	3	1	5	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	4	
310-01-BH2236	310-01-BH2236-S01600	16.00	16.45	CH	CLAY	26.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												

Borehole	Sample ID	Depth (m)		USC	Material Description	Moisture Content	Plasticity				Grading								Shrink Swell Index	Compaction					California Bearing Ratio ¹	Hand Vane Shear	Triaxial Test (UU)		Aggressivity			Emerson		
							LL	PL	PI	LS	Clay/Silt	Sand			Sand	Gravel				Gravel	Max Dry Density	Achieved Dry Density	Achieved Moisture Content	Calculated Dry Density Ratio (or Relative Compaction)	OMC	4.5 kg	Su (corrected for plasticity)	c'	φ'	Soluble Sulfate	Chloride	pH	Class number	
		%	%			%	%	%	fine	med	coarse	%	fine	med	coarse	%	%	(t/m ³)	(t/m ³)	%	%	%	%	%	%	kPa	kPa	degrees	mg/kg	mg/kg	-	-		
310-01-BH2236	310-01-BH2236-S02050	20.50	20.95	CH	CLAY	30.5	60	27	33	16.5	84	6	3	3	12	1	3	0	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-DH2524	310-01-DH2524-B00010	0.10	0.50	GC	Clayey GRAVEL	17.1	-	-	-	-	31	3	10	5	18	30	15	6	51	-	1.72	1.72	17.9	99.9	17.8	3.5	-	-	-	-	-	-	-	
310-01-DH2524	310-01-DH2524-S00500	5.00	5.45	CH	CLAY	18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	480	8.3	-	
310-01-DH2524	310-01-DH2524-U00350	3.50	3.95	CH	CLAY	21.8	66	26	40	19.5	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-DH2525	310-01-DH2525-B00010	0.10	0.50	CH	CLAY	27.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.41	1.41	27.2	99.9	27.1	1.5	-	-	-	-	-	-	-	
310-01-DH2525	310-01-DH2525-U00100	1.00	1.45	CH	CLAY	32.7	94	30	64	23.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	820	7.1	-	
310-01-DH2526	310-01-DH2526-B00010	0.10	0.50	CH	CLAY	20.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.35	1.35	27.1	100.1	27.2	3.0	-	-	-	-	40	60	7.4	-
310-01-DH2526	310-01-DH2526-S00050	0.50	0.95	CH	CLAY	23.1	103	32	71	22.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-DH2527	310-01-DH2527-B00010	0.10	0.40	CH	CLAY	32.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.42	1.42	27.6	100.3	27.5	2.0	-	-	-	-	-	-	-	-
310-01-DH2527	310-01-DH2527-S00050	0.50	0.95	CH	CLAY	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	20	8.6	-	
310-01-DH2527	310-01-DH2527-U00100	1.00	1.45	CH	CLAY	28.9	94	30	64	21.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-DH2528	310-01-DH2528-B00010	0.10	0.40	CH	CLAY	31.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.51	1.51	27.9	99.8	27.7	2.0	-	-	-	-	-	-	-	-
310-01-DH2528	310-01-DH2528-S00200	2.00	2.45	CH	CLAY	27.2	90	33	57	22.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-DH2528	310-01-DH2528-U00100	1.00	1.34	CH	CLAY	33.6	91	31	60	19.5	-	-	-	-	-	-	-	-	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
310-01-DH2529	310-01-DH2529-B00010	0.10	0.40	CH	CLAY	10.2	56	20	36	16.5	-	-	-	-	-	-	-	-	-	-	1.66	1.66	19.2	100.1	19.3	2.5	-	-	-	-	-	-	-	
310-01-DH2529	310-01-DH2529-S00050	0.50	0.95	CH	CLAY	10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380	340	9.0	-	
310-01-DH2529	310-01-DH2529-S00200	2.00	2.45	CH	CLAY	16.9	66	22	44	9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

¹ CBRs prepared at 100% standard maximum dry density