

APPENDIX

INLAND
RAIL 

G

Geotechnical Investigation Results

Part 2 of 4

INLAND RAIL—BORDER TO GOWRIE ENVIRONMENTAL IMPACT STATEMENT

APPENDIX

G

DCP Reports



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



This report of penetrometer 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. F04a
RL3



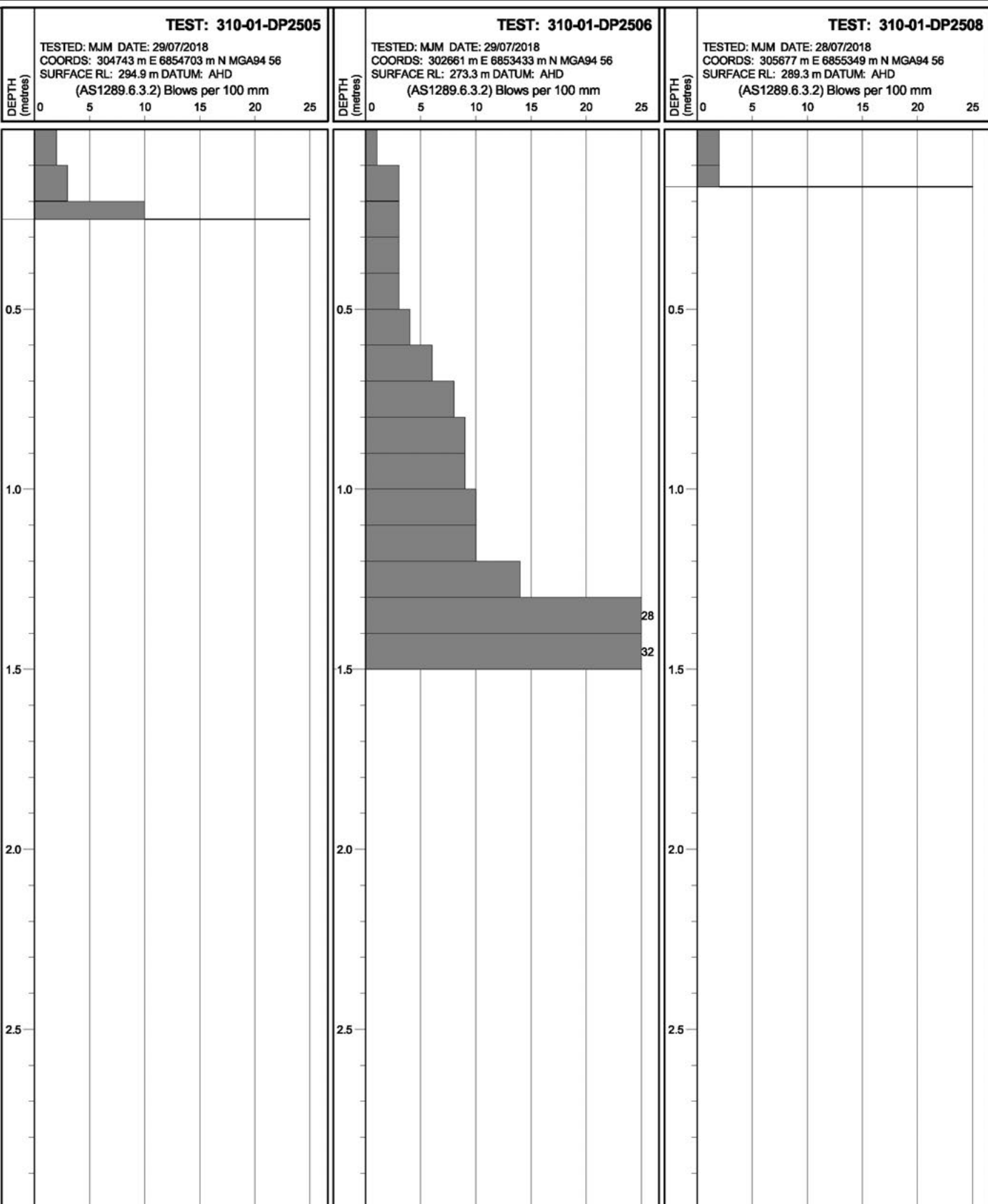
GOLDER

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



This report of penetrometer 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. F04a
RL3



GOLDER

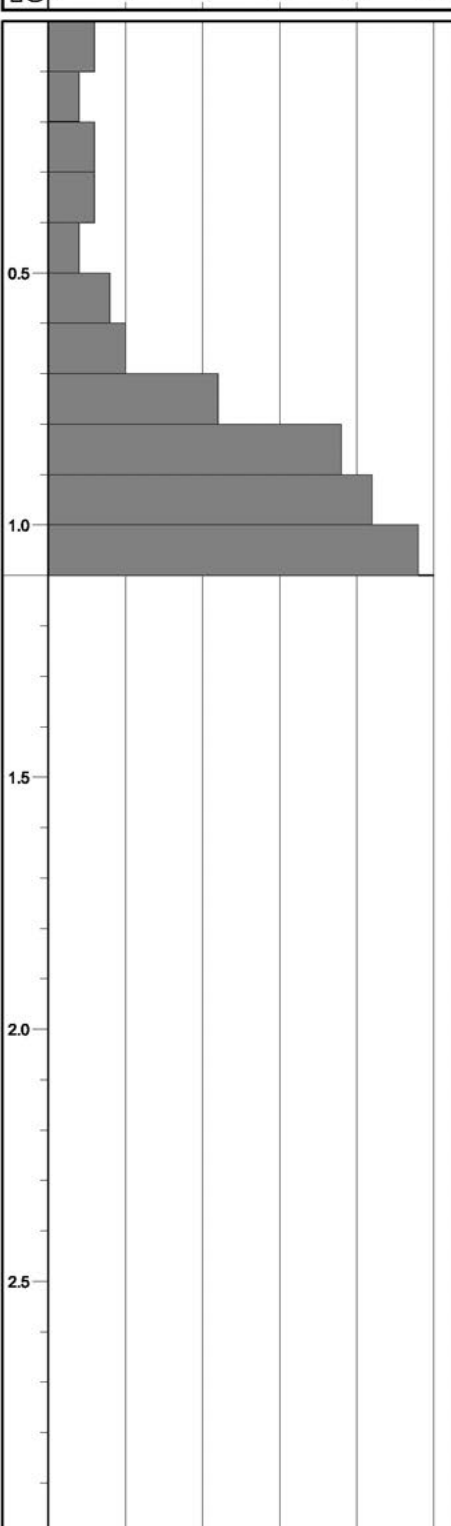
REPORT OF DCP TESTS

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

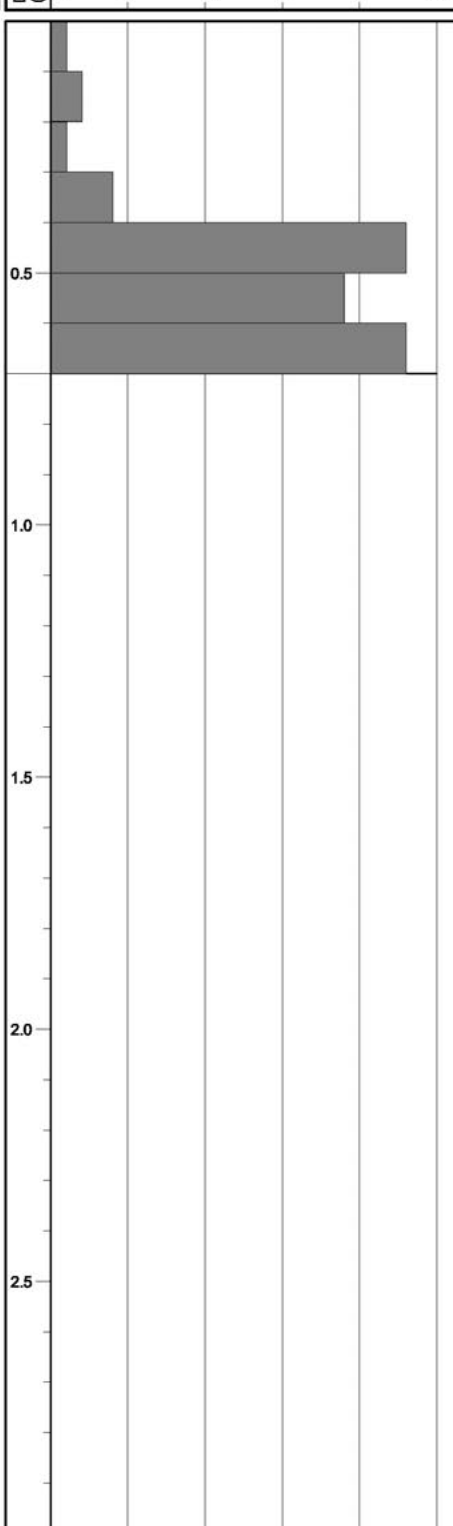
SHEET: 3 OF 10

CHECKED: CL DATE: 2/8/18

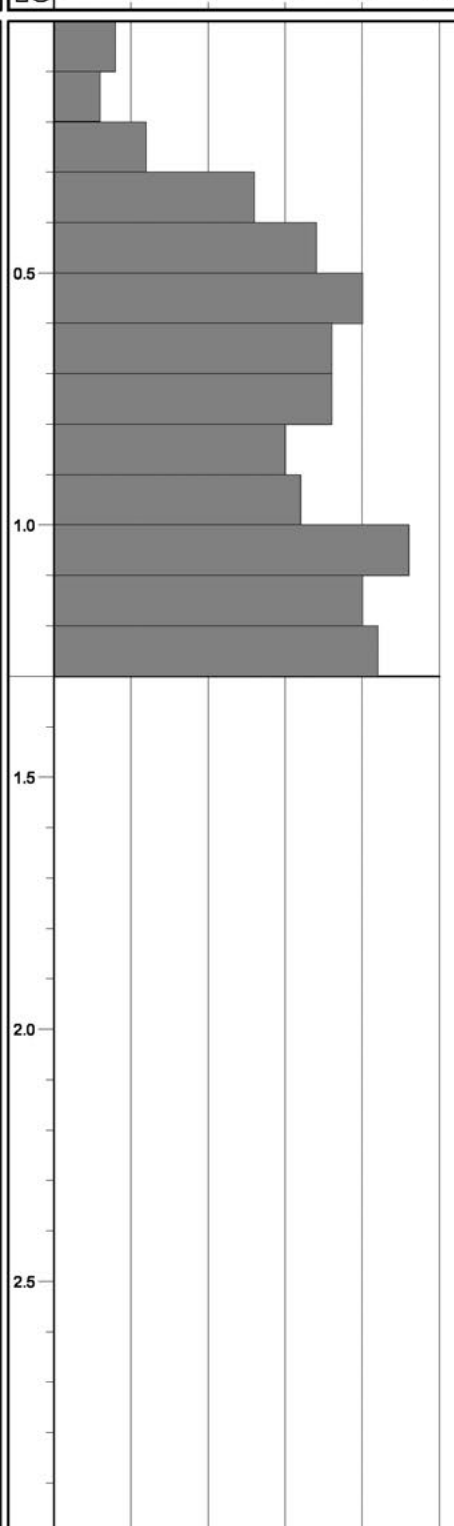
TEST: 310-01-DP2509
TESTED: MJM DATE: 28/07/2018
COORDS: 306111 m E 6855709 m N MGA94 56
SURFACE RL: 294.6 m DATUM: AHD
(AS1289.6.3.2) Blows per 100 mm



TEST: 310-01-DP2510
TESTED: MJM DATE: 28/07/2018
COORDS: 306456 m E 6856051 m N MGA94 56
SURFACE RL: 288.6 m DATUM: AHD
(AS1289.6.3.2) Blows per 100 mm



TEST: 310-01-DP2511
TESTED: MJM DATE: 28/07/2018
COORDS: 306823 m E 6856379 m N MGA94 56
SURFACE RL: 280.5 m DATUM: AHD
(AS1289.6.3.2) Blows per 100 mm



This report of penetrometer 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. F04a
RL3



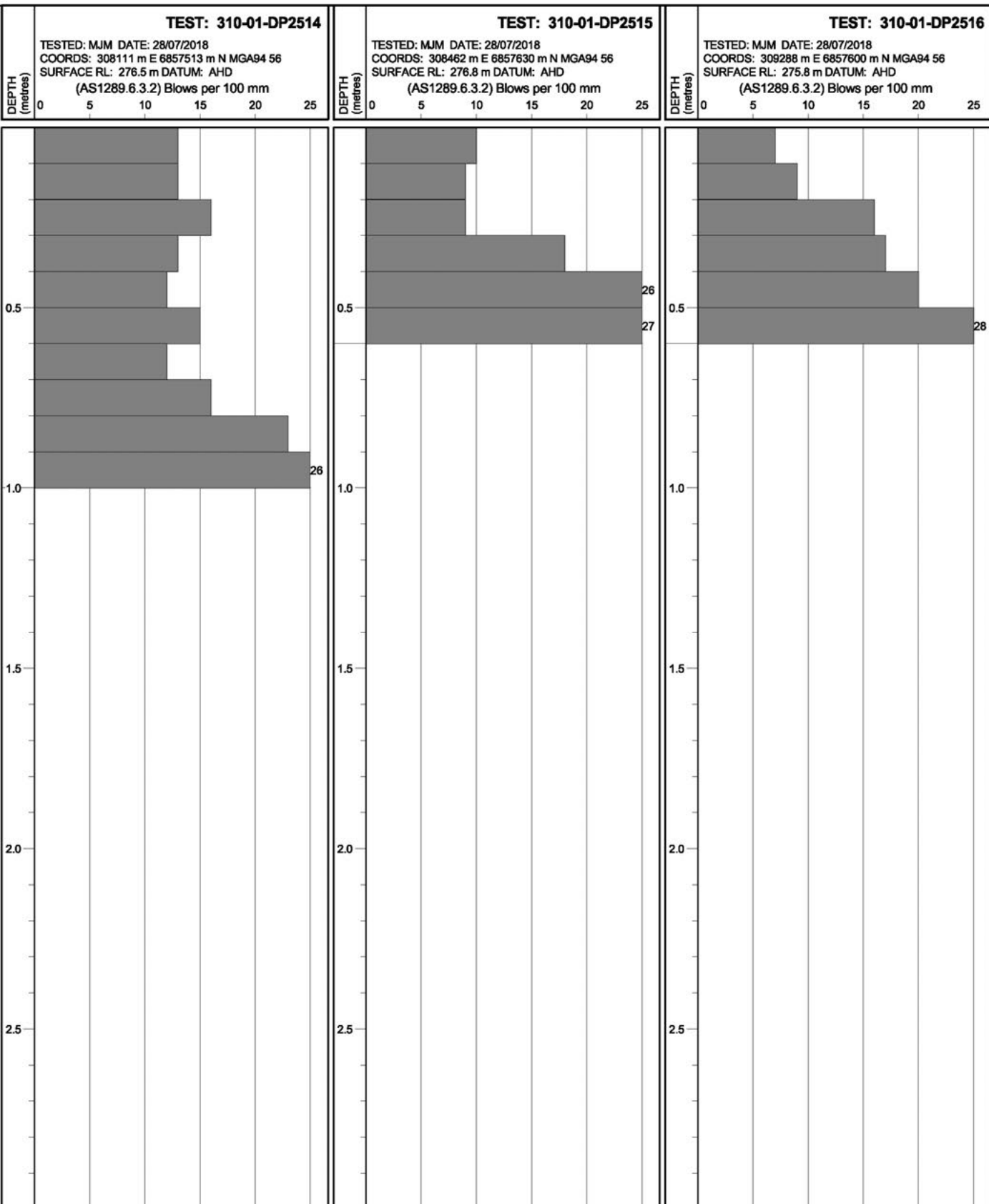
GOLDER

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



This report of penetrometer 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. F04a
RL3



GOLDER

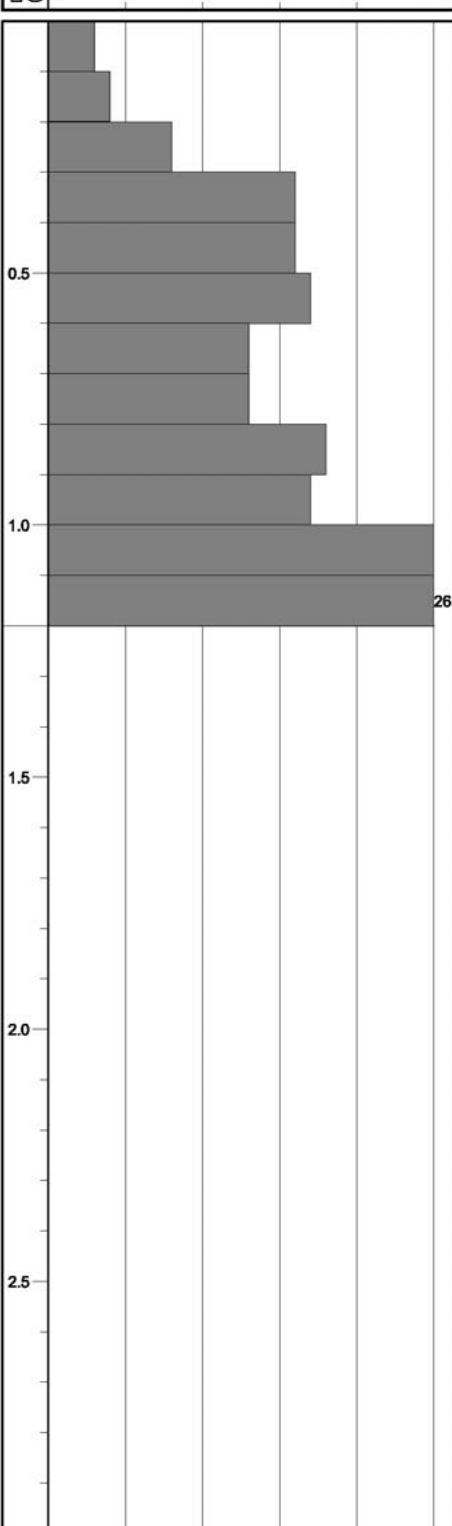
REPORT OF DCP TESTS

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

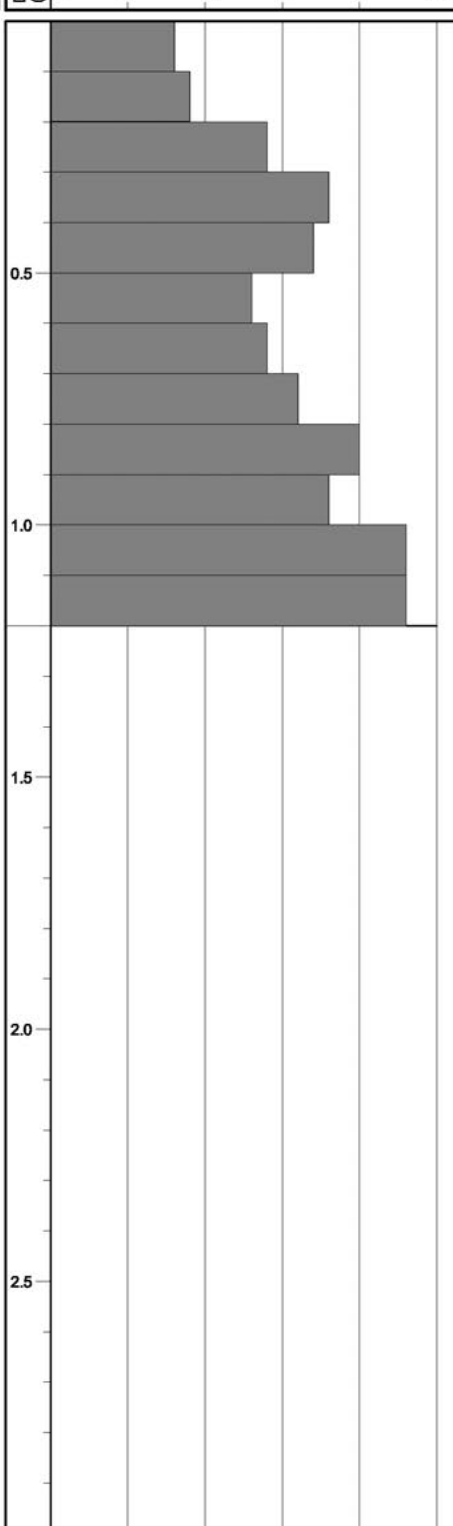
SHEET: 5 OF 10

CHECKED: CL DATE: 2/8/18

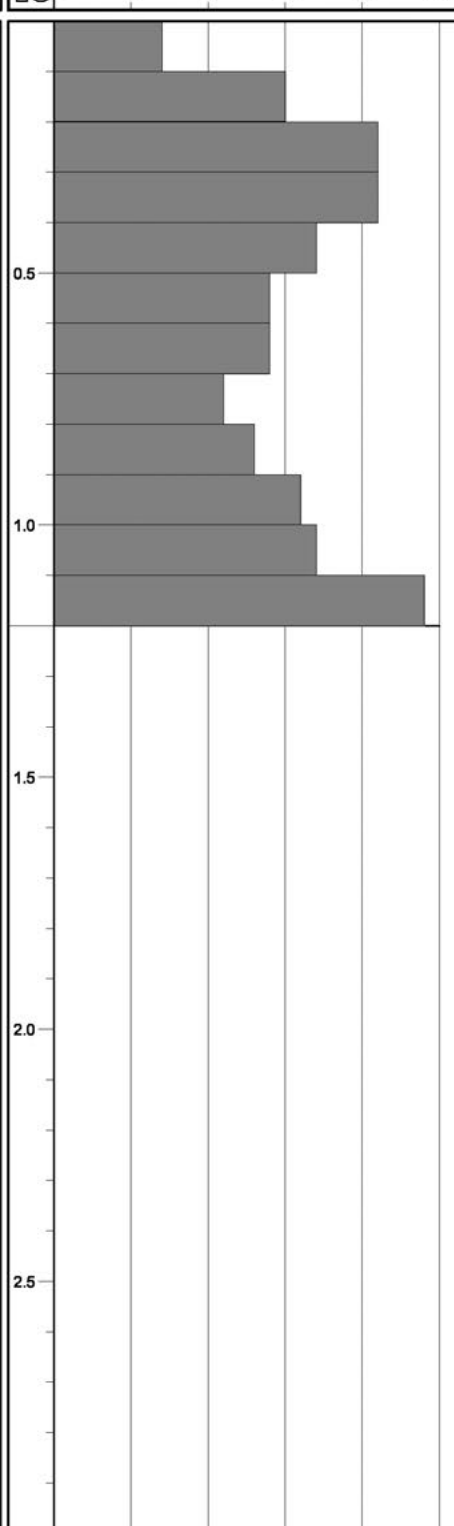
TEST: 310-01-DP2517
TESTED: MJM DATE: 28/07/2018
COORDS: 310525 m E 6857440 m N MGA94 56
SURFACE RL: 294.0 m DATUM: AHD
(AS1289.6.3.2) Blows per 100 mm



TEST: 310-01-DP2518
TESTED: MJM DATE: 28/07/2018
COORDS: 312639 m E 6858211 m N MGA94 56
SURFACE RL: 284.1 m DATUM: AHD
(AS1289.6.3.2) Blows per 100 mm



TEST: 310-01-DP2519
TESTED: MJM DATE: 27/07/2018
COORDS: 312973 m E 6858474 m N MGA94 56
SURFACE RL: 284.0 m DATUM: AHD
(AS1289.6.3.2) Blows per 100 mm



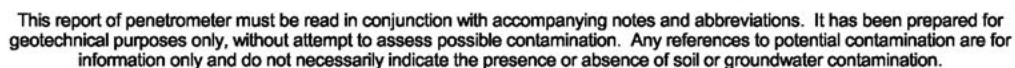
This report of penetrometer must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate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

GAP gINT FN. F04a
RL3



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

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



This report of penetrometer 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. F04a
RL3



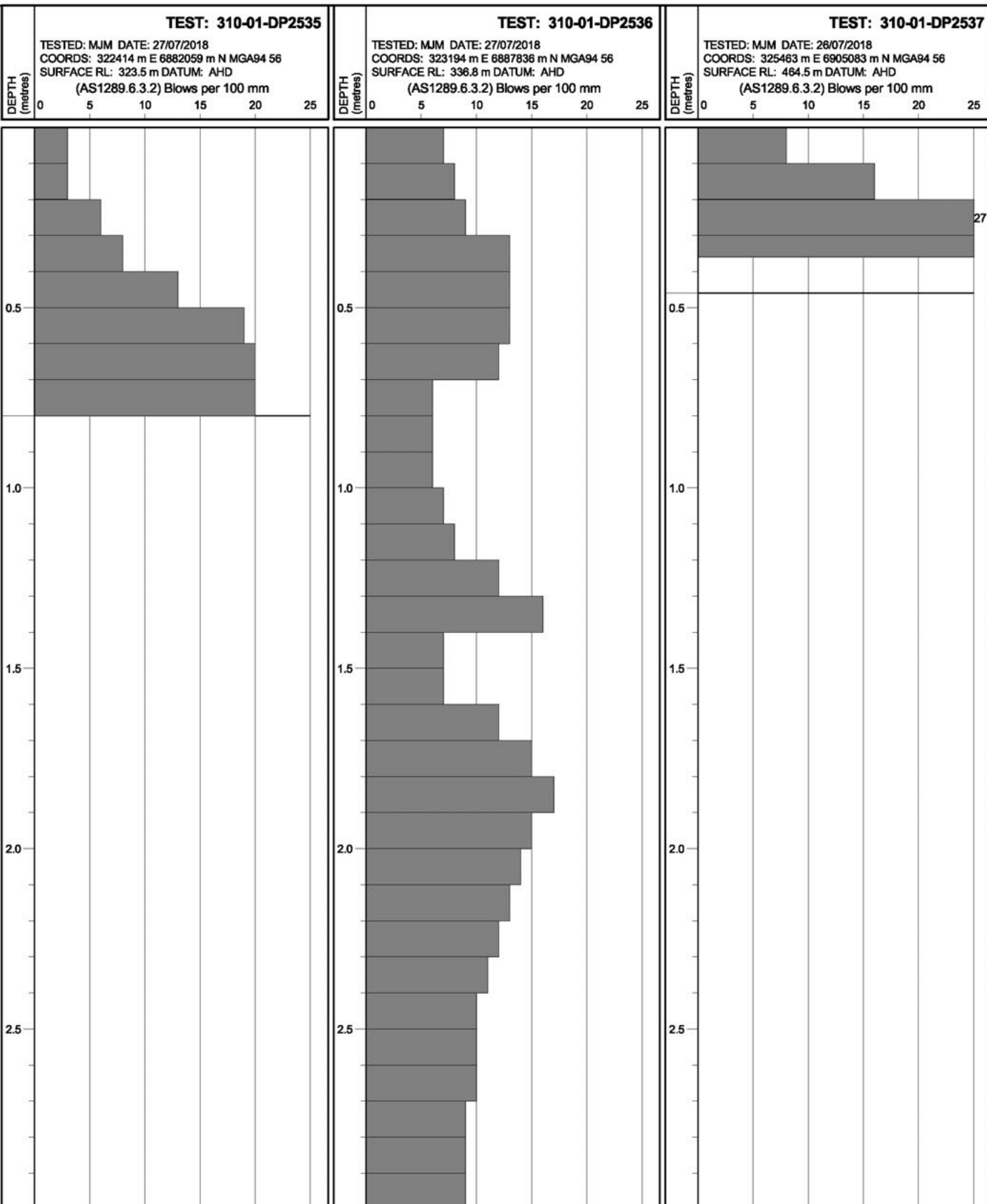
GOLDER

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





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: 9 OF 10

CHECKED: CL DATE: 2/8/18



This report of penetrometer 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.

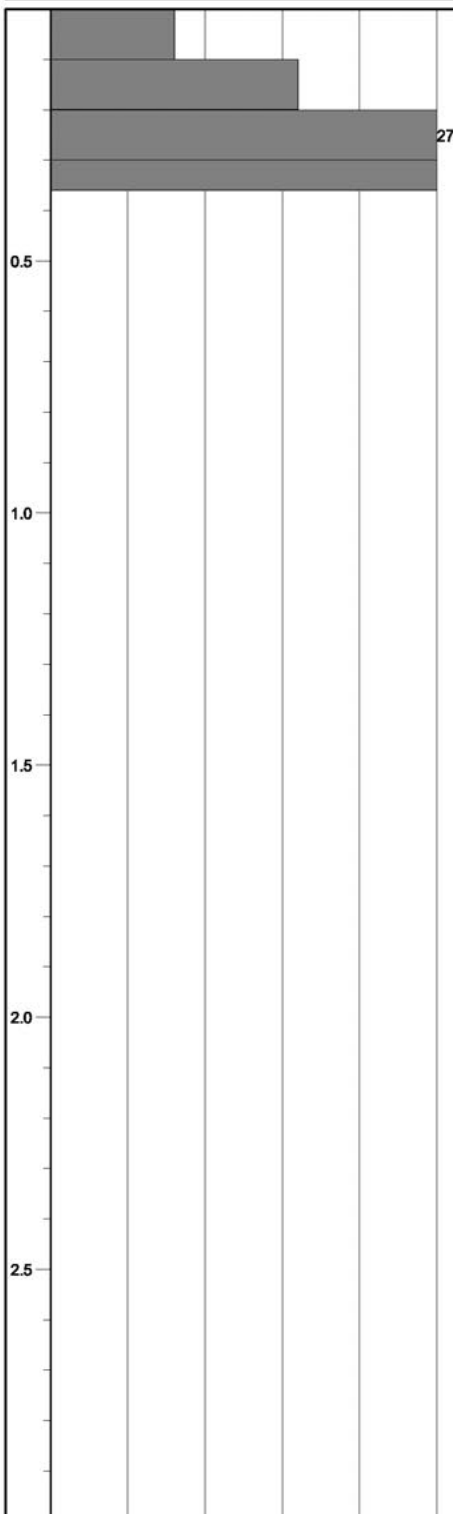
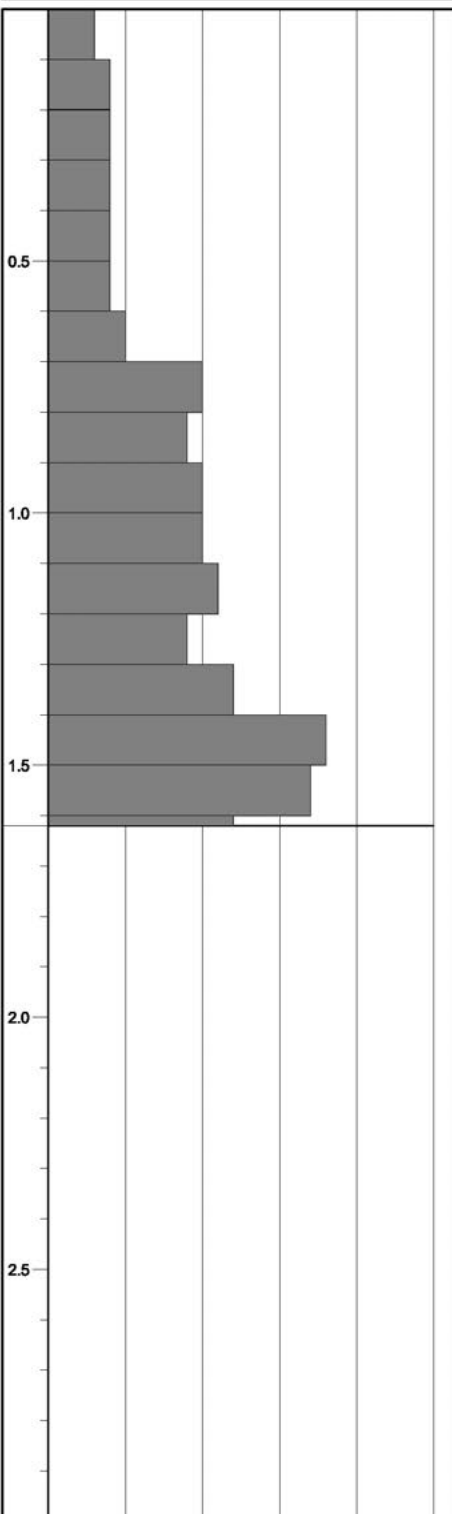
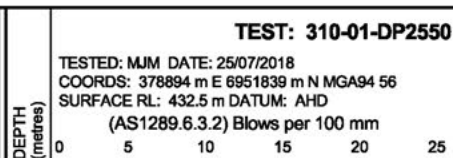
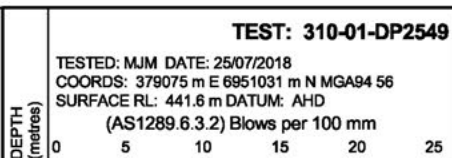
GAP gINT FN. F04a
RL3



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



This report of penetrometer 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.



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

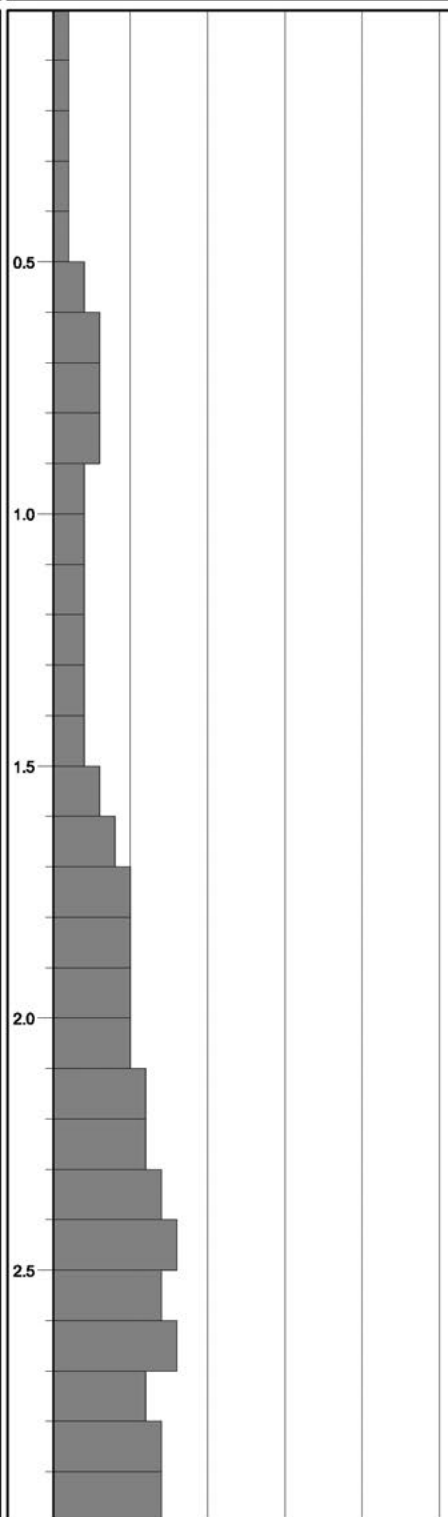
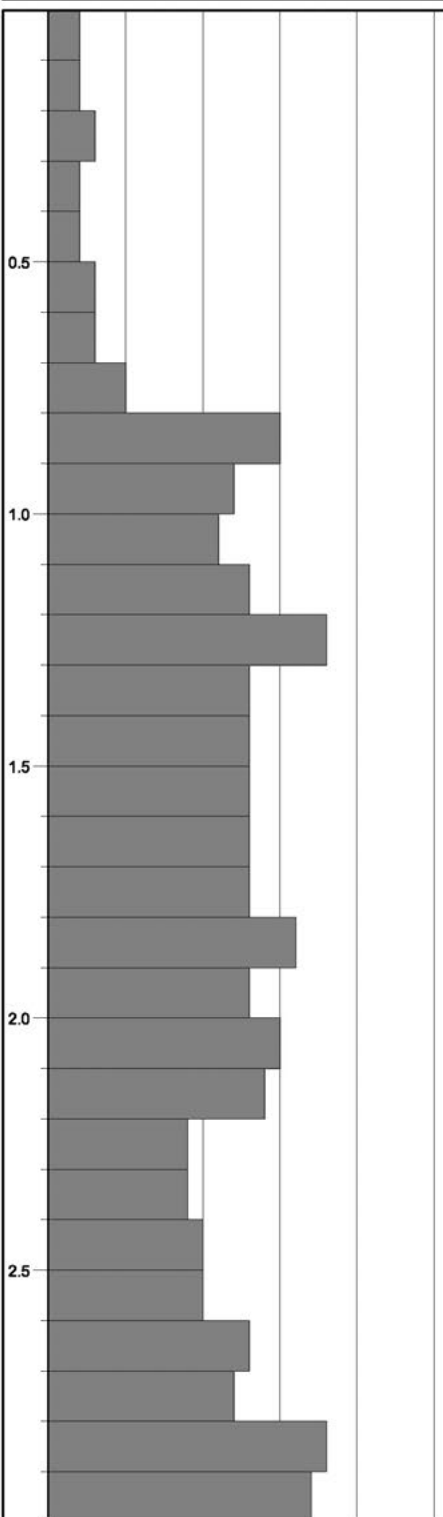
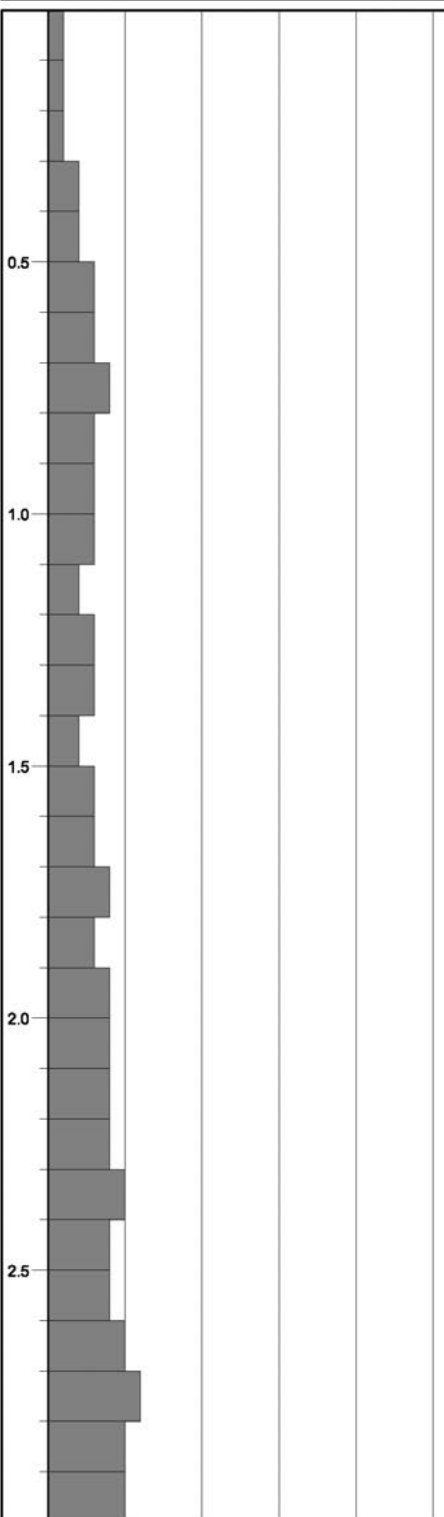
TESTED: MJM DATE: 05/04/2018 **310-01-DP2541**
COORDS: 339364 m E 6919714 m N MGA94 56
SURFACE RL: 379.8 m DATUM: AHD

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)
0 5 10 15 20 25
(AS1289.6.3.2) Blows per 100 mm

DEPTH (metres)
0 5 10 15 20 25
(AS1289.6.3.2) Blows per 100 mm

DEPTH (metres)
0 5 10 15 20 25
(AS1289.6.3.2) Blows per 100 mm



This report of penetrometer 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. 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

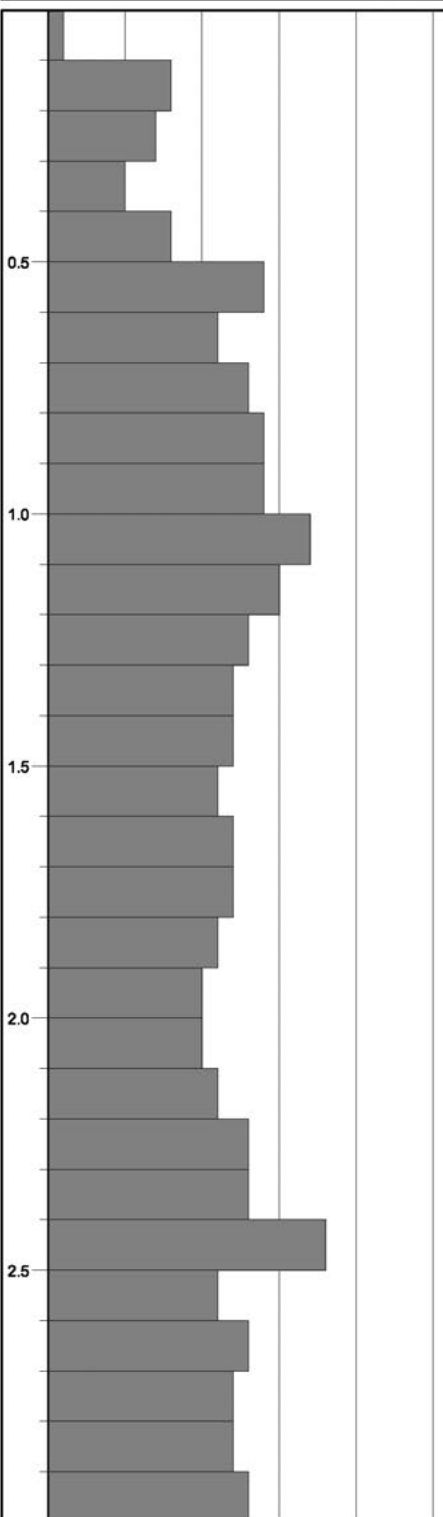
CHECKED: CL DATE: 2/8/18

TESTED: MJM DATE: 04/04/2018 **310-01-DP2543**
COORDS: 340102 m E 6921165 m N MGA94 56
SURFACE RL: 379.0 m DATUM: AHD

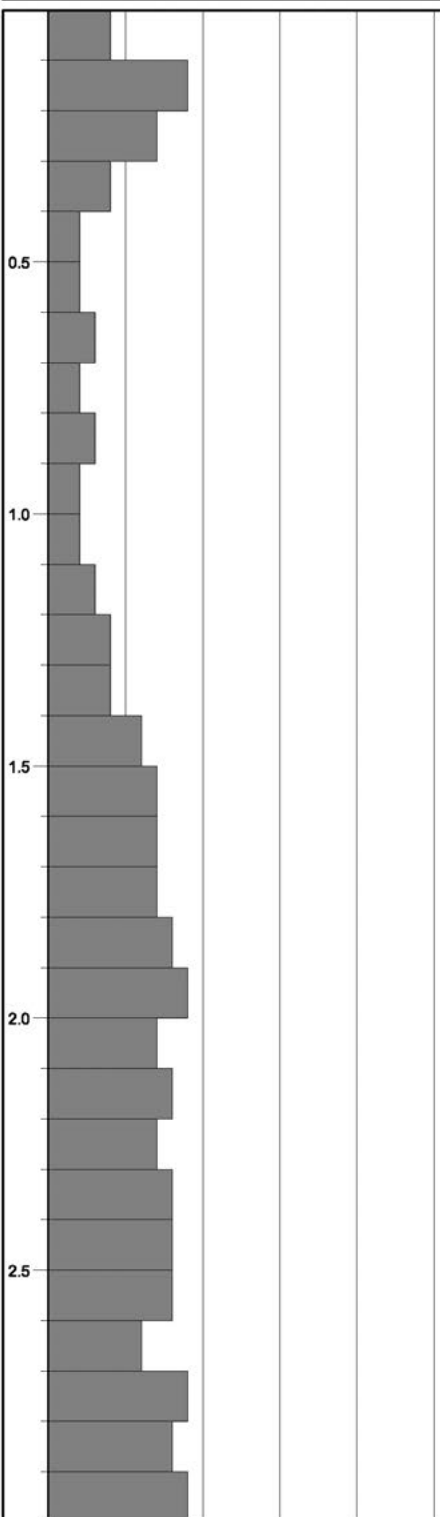
TESTED: MJM DATE: 04/04/2018 **310-01-DP2544**
COORDS: 340896 m E 6922623 m N MGA94 56
SURFACE RL: 379.3 m DATUM: AHD

TESTED: MJM DATE: 04/04/2018 **310-01-DP2545**
COORDS: 344278 m E 6925537 m N MGA94 56
SURFACE RL: 381.5 m DATUM: AHD

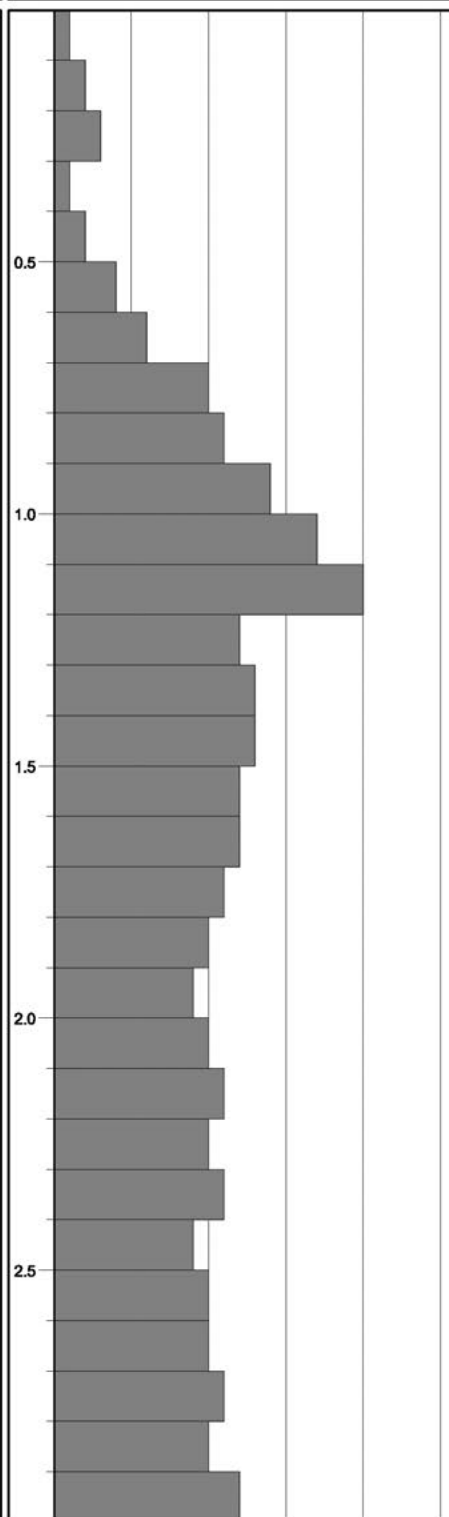
DEPTH (metres)
(AS1289.6.3.2) Blows per 100 mm
0 5 10 15 20 25



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



This report of penetrometer 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. F04a
RL3



GOLDER

REPORT OF DCP TESTS

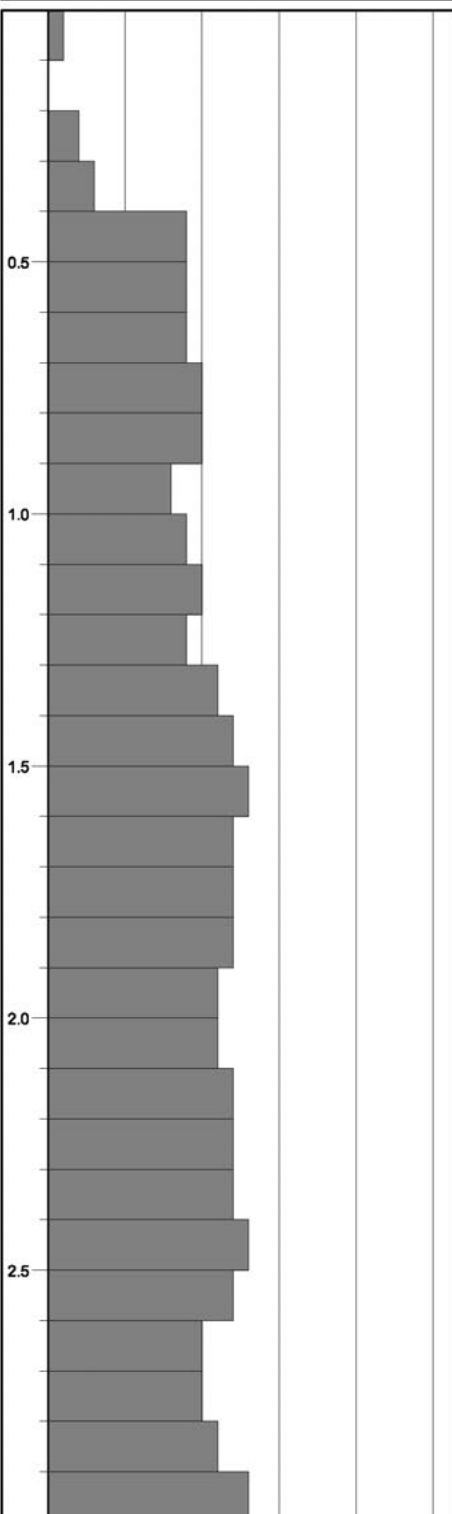
CLIENT: FFJV
PROJECT: Inland Rail, Phase 2
LOCATION: Condamine Valley (B2G)
JOB NO: 1897791

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



This report of penetrometer 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. F04a
RL3

APPENDIX

G

Geotechnical Laboratory Results Summary

Borehole	Sample ID	Depth (m)		USC	Material Description	Moisture Content					RMS T103	Grading										Compaction				California Bearing Ratio ¹	Oedometer					Hand Vane Shear	Triaxial Test (UU)		Aggressivity			Emerson	Permeability (Falling Head Test)	Slake Durability		Uniaxial Compressive Strength & Deformation			Point Load		Petrographic Analysis																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
						Plasticity																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
		LL	PL			PI	LS	Clay	Silt	Clay/Silt		Sand			Sand			Gravel			Gravel	Shrink Swell Index	Max Dry Density	Achieved Dry Density	Achieved Moisture Content	OMC	4.5 kg Surcharge	P _c	C _u	C _{as}	C _u /I _{as}	C _c /C _u	Su (corrected for plasticity)	c'	φ'	Soluble Sulfate	Chloride	pH	Class number	Permeability [K _{sat}]	1st Cycle	2nd Cycle	UCS	Young's Modulus (Tangent)	Poisson Ratio (Tangent)	Axial Is(50)		Diametral Is(50)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		%	%			%	%	%	%	%		%	fine	med	coarse	%	fine	med	coarse	%	%	(t/m ³)	(t/m ³)	%	%	%	%	kPa	m ² /yr	%	-	-	kPa	kPa	degrees	mg/kg	mg/kg	-	-	m/sec	%	%	Mpa	Gpa	-	Mpa		Mpa																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
From	To					2um	60um	%	fine	med	coarse	%	fine	med	coarse	%	%						%	kPa	m ² /yr	%	-	-	kPa	kPa	degrees	mg/kg	mg/kg	-	-	m/sec	%	%	Mpa	Gpa	-	Mpa	Mpa																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
310-01-BH2201	310-01-BH2201-S00200	2,00	2,29	SC	Clayey SAND	12,8	36	24	12	5,0				28	16	26	27	69	3	0	0	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							</

[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								Compaction					California Bearing Ratio ¹	Hand Vane Shear	Triaxial Test (UU)		Aggressivity			Emerson			
							LL	PL	PI	LS	Clay/Silt	Sand			Sand	Gravel			Gravel	Shrink Swell Index	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-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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	See Report		-	-	-	-	
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	10	8.4	3
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	See Report		-	-	-	-	
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-BH21																																	

Borehole	Sample ID	Depth (m)		USC	Material Description	Moisture Content	Plasticity				Grading									Compaction					California Bearing Ratio ¹	Hand Vane Shear	Triaxial Test (UU)		Aggressivity			Emerson		
							LL	PL	PI	LS	Clay/Silt	Sand			Sand	Gravel				Gravel	Shrink Swell Index	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

APPENDIX

G

Geotechnical Investigation Results

Geotechnical Laboratory Results Certificates

Part 1 of 3

INLAND RAIL—BORDER TO GOWRIE ENVIRONMENTAL IMPACT STATEMENT

SLAKE DURABILITY INDEX TEST REPORT

Test Method: AS 4133.3.4

Client	Golder Associates Pty Limited	Report No.	GA101174-SD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	24/10/2018
Project No	1897791	Report Date	29/10/2018
		Client Sample No.	310-01-BH2322

Sample No.	101174
BoreHole	310-01-BH2322-C00860
Depth From (m)	8.6
Depth To (m)	9.1
Description	C
Slake Durability (1st cycle) (%)	83.4
Slake Durability (2nd cycle) (%)	63.2
Slake Durability (3rd cycle) (%)	-
Slake Durability (4th cycle) (%)	-
Water Used	Tap Water
Temperature (°C)	21.9
Appearance of fragments retained in the drum	Moderate Deterioration
Appearance of fragments passing through the drum	Fragments & Fines

NOTES/REMARKS:

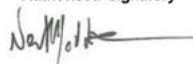
Sample/s supplied by the client

Page 1 of 1 REP02402

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in
 this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.1

Client	Golder Associates Pty Limited	Report No.	GA101175-MOD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	25/10/2018
Project No.	1897791	Client Sample No.	310-01-BH2322
Bore Hole	310-01-BH2322-C	Depth From (m)	10.6
		Depth To (m)	10.88
Description	C		
Sample Type	Single Individual Rock Core Specimen		

Uniaxial Compressive Strength 42.7 MPa

Young's Modulus

Tangent 17.1 GPa

Secant 17.1 GPa

Poisson Ratio

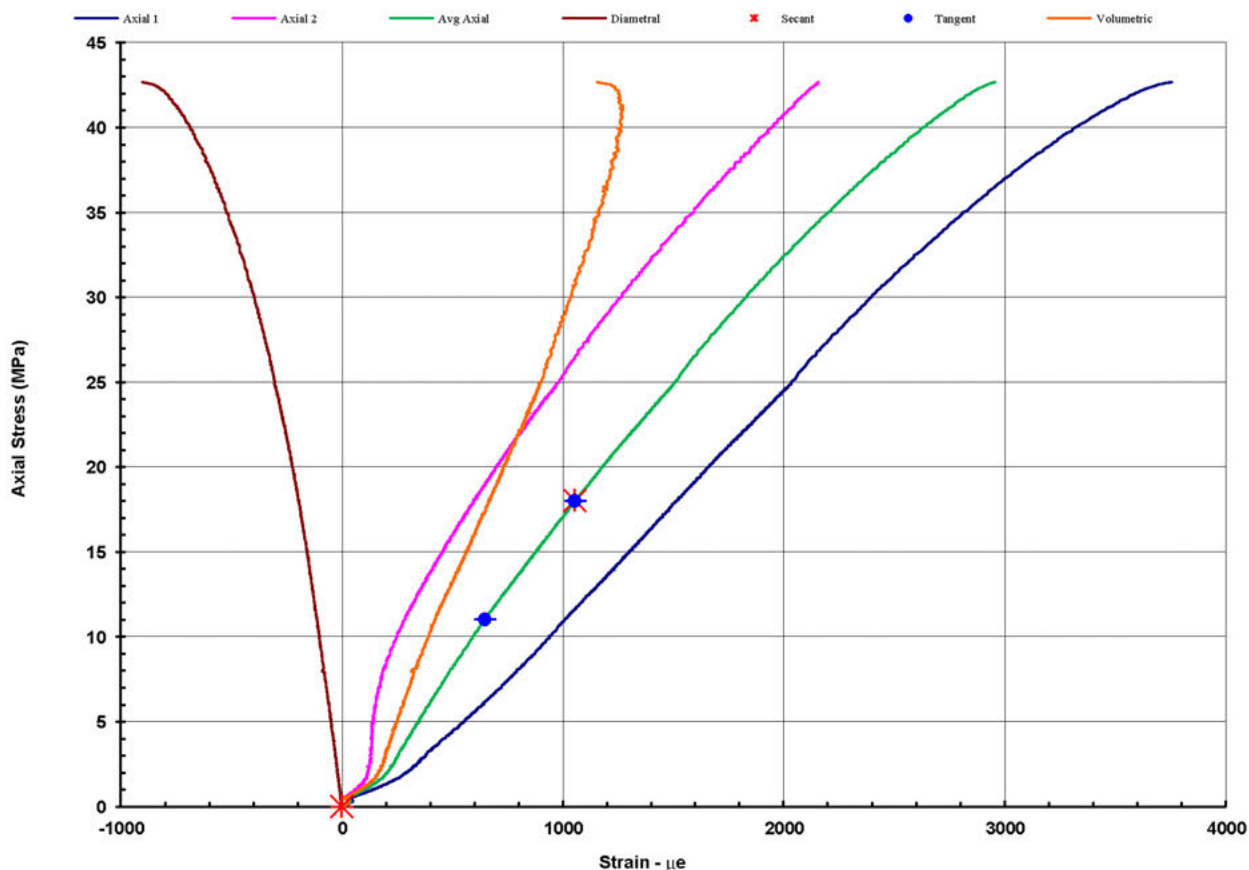
0.183

0.183

from 26 % to 42 % of Max UCS

from 0 % to 42 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

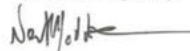
Tested as received.

Page 1 of 2 REP03603

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.1

Client	Golder Associates Pty Limited	Report No.	GA101175-MOD
Average Sample Diameter (mm)	60.7	Moisture Content (%)	2.0
Sample Height (mm)	161.8	Wet Density (t/m ³)	2.58
Duration of Test (min)	9.03	Dry Density (t/m ³)	2.53
Rate of Loading (MPa/min)	4.72	Bedding (°)	5
Mode of Failure	Conical	Test Apparatus	Kelba 1000kN Load Cell

CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	BEFORE TEST
LAB SAMPLE No.	101175	DATE: 25/10/13
BOREHOLE:	310-01-BH2322-C01060	DEPTH: 10.6



CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	AFTER TEST
LAB SAMPLE No.	101175	DATE: 25/10/13
BOREHOLE:	310-01-BH2322-C01060	DEPTH: 10.6



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

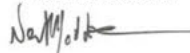
Tested as received.

Page 2 of 2 REP03603

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

POINT LOAD TEST REPORT

Test Method: AS 4133.4.1

Client	Golder Associates Pty Limited	Report No.	GA101175-101177-PL
		Request No	R3_BH_Rev1_4060
Address	PO Box 1734 MILTON BC QLD 4064	Test Date	25/10/2018
		Report Date	26/10/2018
Project	Inland Rail B2G		
Project No	1897791		

Trilab Sample No.	101175	101176	101177	101175
Client Sample No	310-01-BH2322	310-01-BH2322	310-01-BH2322	310-01-BH2322
Bore Hole	310-01-BH2322-C01060	310-01-BH2322-C01090	310-01-BH2322-C01400	310-01-BH2322-C01060
Depth From/To (m)	10.60-10.88	10.90-11.20	14.00-15.00	10.60-10.88
Description	C	C	C	C
Is (MPa)	3.34	0.57	0.02	3.19
Is(50) (MPa)	3.52	0.58	0.02	3.01
Load Direction	Axial	Axial	Axial	Diametral

Trilab Sample No.	101176	14.00-15.00		
Client Sample No	310-01-BH2322	310-01-BH2322		
Bore Hole	310-01-BH2322-C01090	310-01-BH2322-C01400		
Depth From/To (m)	10.90-11.20	14.00-15.00		
Description	C	C		
Is (MPa)	2.02	0.00		
Is(50) (MPa)	2.17	0.00		
Load Direction	Diametral	Diametral		

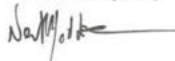
NOTES/REMARKS: Tested as received + Irregular Lump

Sample/s supplied by the client

Page 1 of 1 REP02102

This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
 Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101176-MOD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	25/10/2018
Project No.	1897791	Report Date	26/10/2018
Client Sample No.	310-01-BH2322		
Bore Hole	310-01-BH232	Depth From (m)	10.9
		Depth To (m)	11.2
Description	C		
Sample Type	Single Individual Rock Core Specimen		

Uniaxial Compressive Strength 6.73 MPa

Young's Modulus

Tangent 0.777 GPa

Secant 0.783 GPa

Poisson Ratio

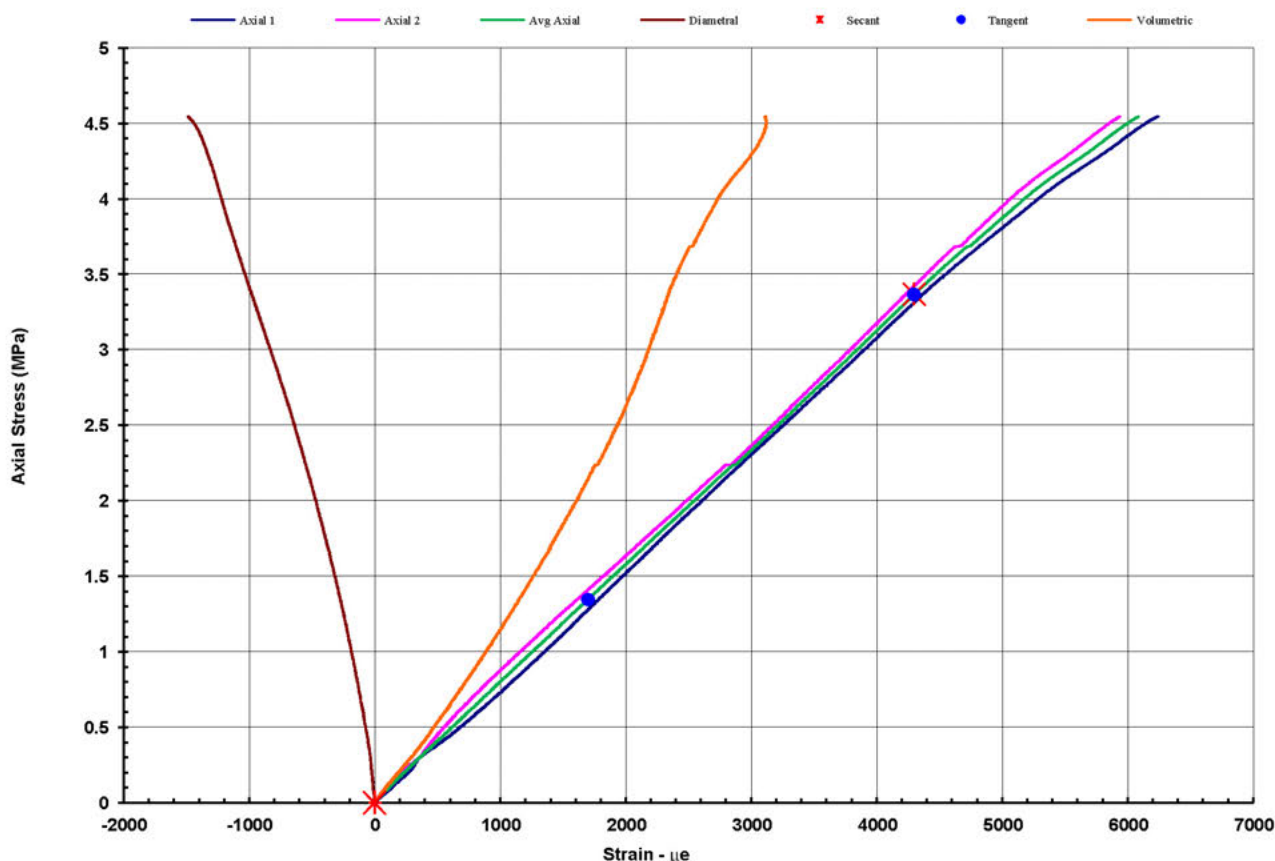
0.227

0.228

from 20 % to 50 % of Max UCS

from 0 % to 50 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

The length to diameter ratio falls outside the test method limits of 2.5:1 to 3.0:1.

Sample/s supplied by client

Graph not to scale

Tested as received.

Page 1 of 2:P13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101176-MOD
Average Sample Diameter (mm)	60.7	Moisture Content (%)	6.9
Sample Height (mm)	148.9	Wet Density (t/m ³)	2.37
Duration of Test (min)	27.25	Dry Density (t/m ³)	2.22
Rate of Displacement (mm/min)	0.10	Bedding (°)	Nil
Mode of Failure	Conical	Test Apparatus	100kN Compression Machine

CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	BEFORE TEST
LAB SAMPLE No.	101176	DATE: 25/10/18
BOREHOLE:	310-01-BH2322-C01090	DEPTH: 10.9



CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	AFTER TEST
LAB SAMPLE No.	101176	DATE: 25/10/18
BOREHOLE:	310-01-BH2322-C01090	DEPTH: 10.9



Notes/Remarks:

The length to diameter ratio falls outside the test method limits of 2.5:1 to 3.0:1.

Sample/s supplied by client

Photo not to scale

Tested as received.

Page 2 of 2 REP13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101177-MOD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	25/10/2018
Project No.	1897791	Report Date	26/10/2018
Bore Hole	310-01-BH232	Client Sample No.	310-01-BH2322
Depth From (m)	14	Depth To (m)	15
Description	C		
Sample Type	Single Individual Rock Core Specimen		

Uniaxial Compressive Strength 0.349 MPa

Young's Modulus

Tangent 0.027 GPa

Secant 0.014 GPa

Poisson Ratio

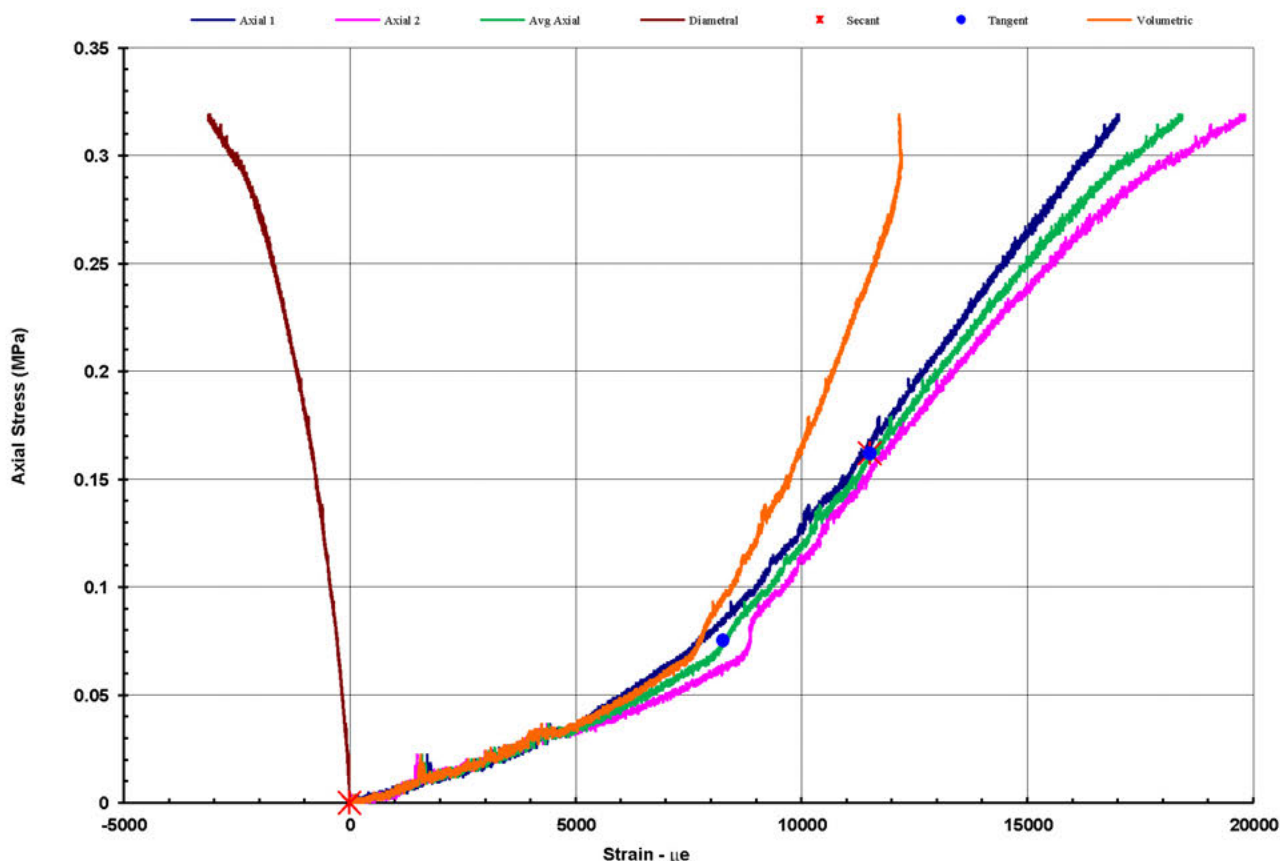
0.070

0.070

from 21 % to 46 % of Max UCS

from 0 % to 46 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

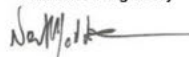
Tested as received.

Page 1 of 2:P13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client Golder Associates Pty Limited

Report No. GA101177-MOD

Average Sample Diameter (mm)	60.6	Moisture Content (%)	13.4
Sample Height (mm)	162.1	Wet Density (t/m ³)	2.20
Duration of Test (min)	49.58	Dry Density (t/m ³)	1.94
Rate of Displacement (mm/min)	0.10	Bedding (°)	5
Mode of Failure	Disintegration	Test Apparatus	100kN Compression Machine



Notes/Remarks:

Sample/s supplied by client

Photo not to scale

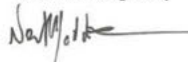
Tested as received.

Page 2 of 2 REP13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

SLAKE DURABILITY INDEX TEST REPORT

Test Method: AS 4133.3.4

Client	Golder Associates Pty Limited	Report No.	GA101177-SD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	24/10/2018
Project No	1897791	Report Date	29/10/2018
		Client Sample No.	310-01-BH2322

Sample No.	101177
BoreHole	310-01-BH2322-C01400
Depth From (m)	14
Depth To (m)	15
Description	C
Slake Durability (1st cycle) (%)	73.2
Slake Durability (2nd cycle) (%)	14.6
Slake Durability (3rd cycle) (%)	-
Slake Durability (4th cycle) (%)	-
Water Used	Tap Water
Temperature (°C)	22.6
Appearance of fragments retained in the drum	High Deterioration
Appearance of fragments passing through the drum	Fragments & Fines

NOTES/REMARKS:

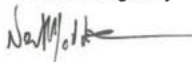
Sample/s supplied by the client

Page 1 of 1 REP02402

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in
 this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

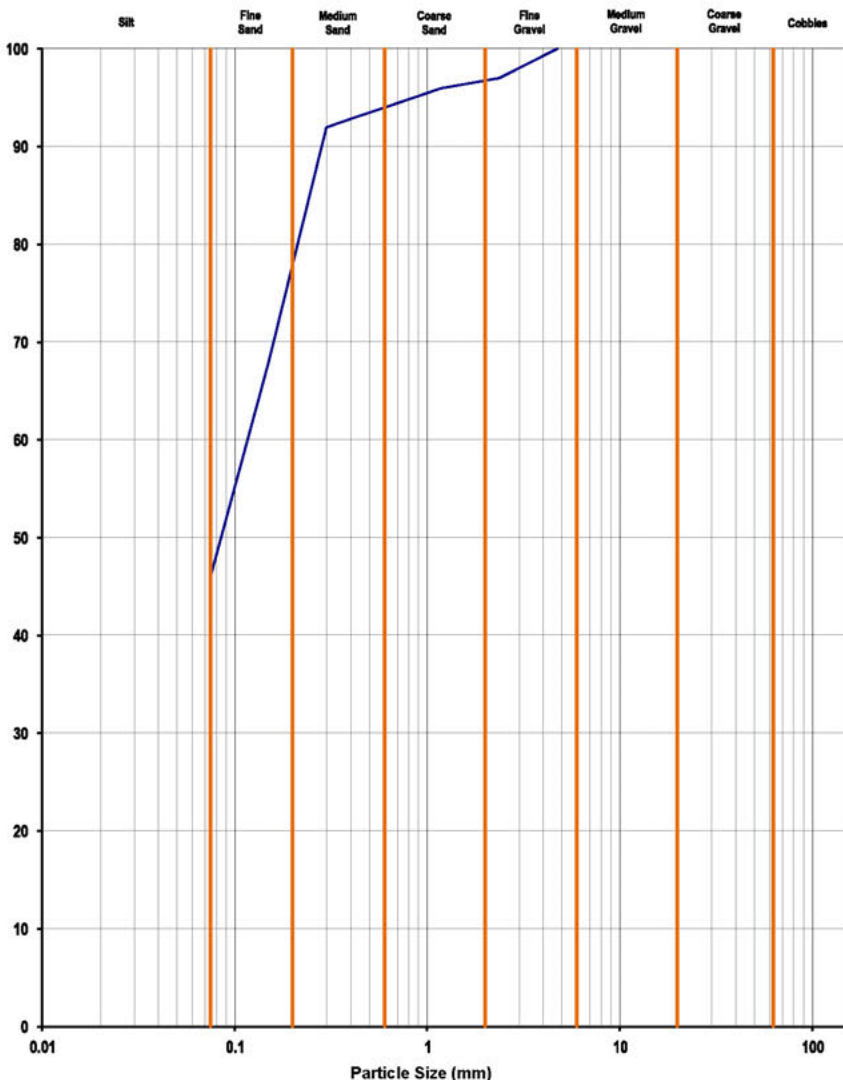
ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

Test Method: AS 1289 3.8.1

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101171-G			
Address	PO Box 1734 MILTON BC QLD 4064			Request No	R3_BH_Rev1_4060			
Project	Inland Rail B2G							
Project No	1897791		Client Sample No	310-01-BH2322				
Bore Hole	310-01-BH2322-S00050		Depth From (m)	0.5		Depth To (m)	0.95	
Description	SPT							
Sieve Size (mm)	Passing %							
150.0								
75.0								
63.0								
53.0								
37.5								
26.5								
19.0								
13.2								
9.5								
6.7								
4.75	100							
2.36	97							
1.18	96							
0.600	94							
0.425	93							
0.300	92							
0.150	68							
0.075	46							
NOTES/REMARKS:		- Moisture Content 14.8% Sample/s supplied by the client						

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

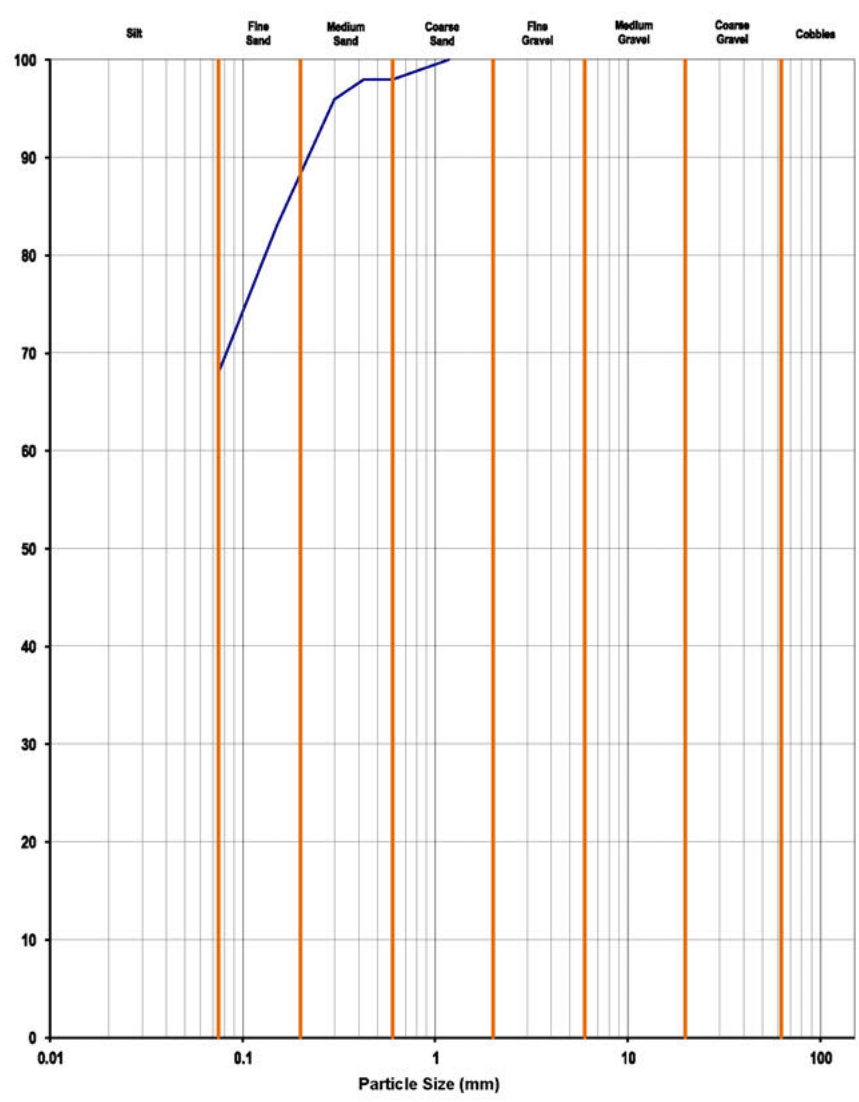
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101172-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4060
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2322		
Bore Hole	310-01-BH2322-S00200	Depth From (m)	2	Depth To (m)	2.45
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	98
0.425	98
0.300	96
0.150	83
0.075	68



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 68% passing for 0.075 mm and rises to 100% passing at 1.18 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 24.5%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

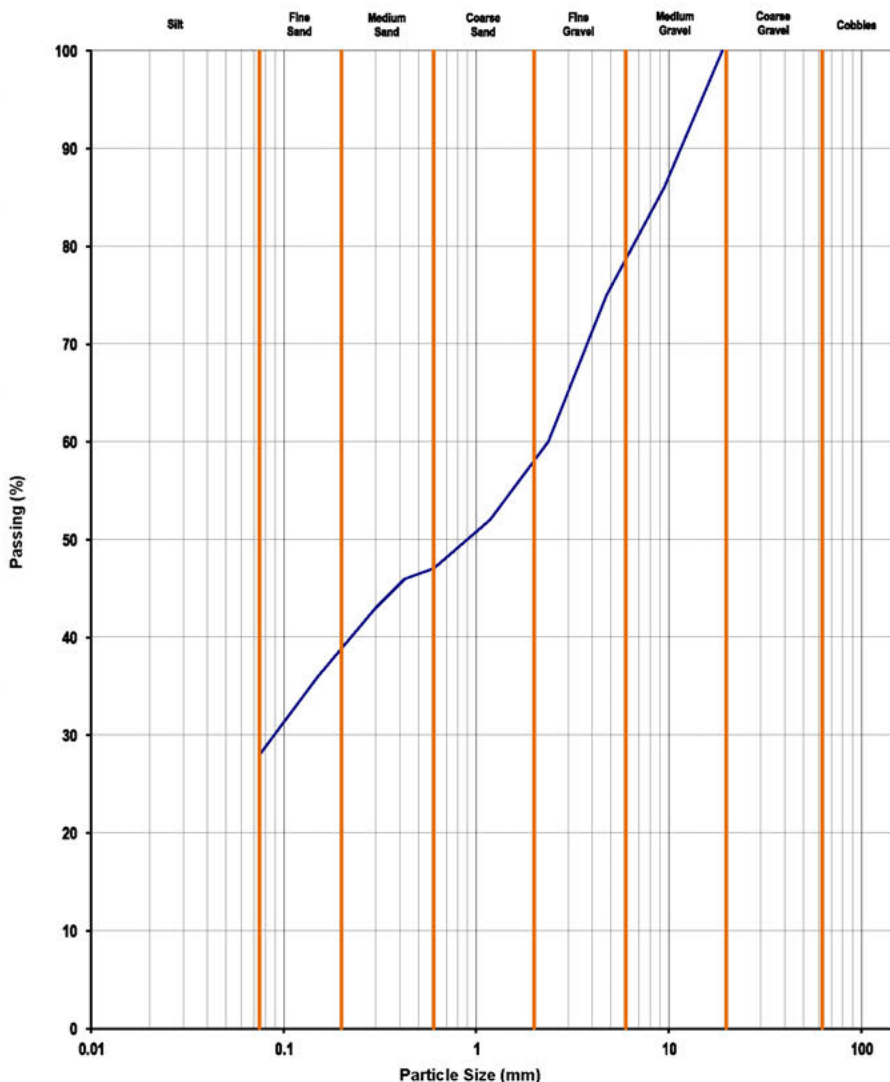
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101173-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	23/10/18-31/10/18
Project No	1897791	Report Date	31/10/2018
Bore Hole	310-01-BH2322-S00380	Client Sample No	310-01-BH2322
Depth From (m)	3.8	Depth To (m)	3.945

Description	SPT
Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	100
13.2	86
9.5	86
6.7	82
4.75	75
2.36	60
1.18	52
0.600	47
0.425	46
0.300	43
0.150	36
0.075	28



NOTES/REMARKS:

-
Moisture Content 15.6%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory

C. Park

C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

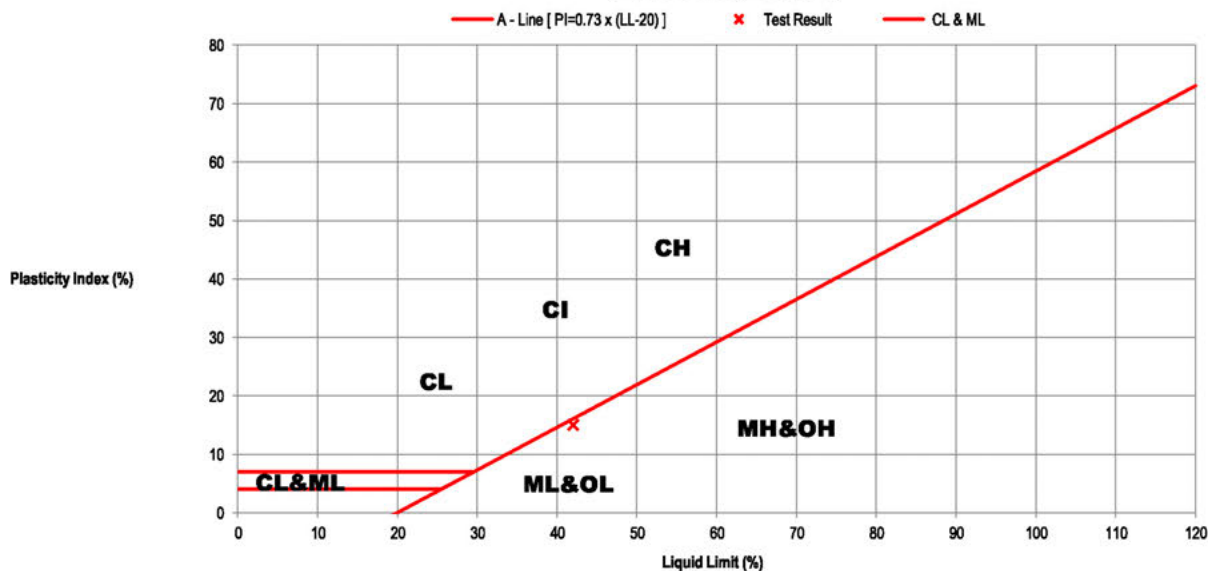
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101081-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project	Inland Rail B2G	Test Date	2/11/2018
Project No.	1897791	Report Date	8/11/2018
Bore Hole	310-01-DH2446-B00020	Client Sample No.	310-01-DH2446
Description	BDS	Depth From (m)	0.2
		Depth To (m)	0.6

RESULTS OF TESTING

Liquid Limit (%)	42	
Plastic Limit (%)	27	
Plasticity Index (%)	15	
Linear Shrinkage (%)	6.5	Cracking & Curling Occurred
Moisture Content (%)	9.9	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

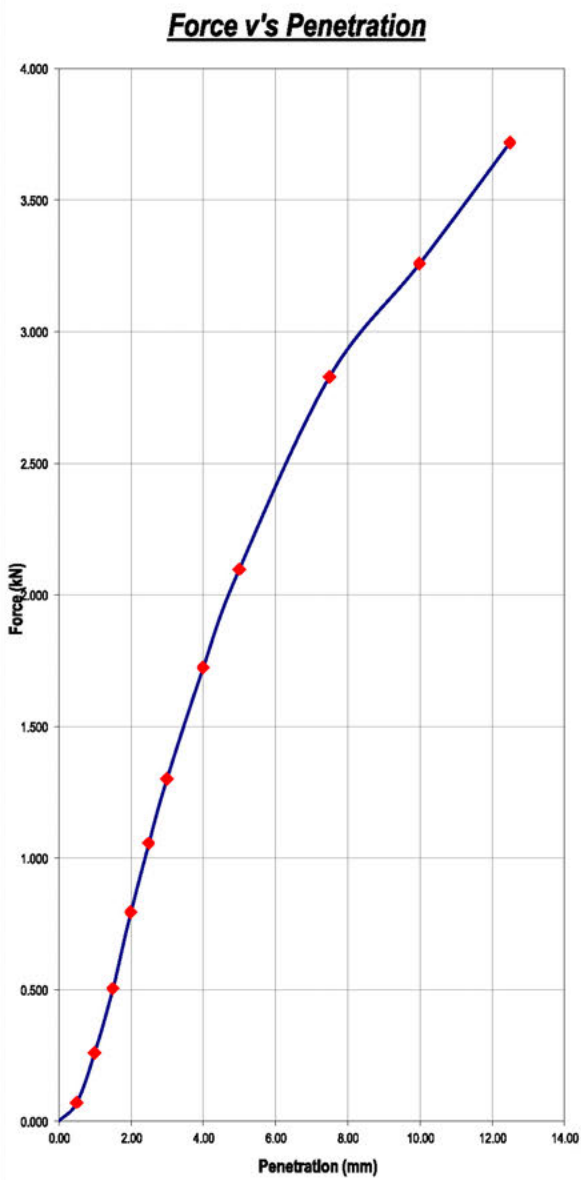
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

CALIFORNIA BEARING RATIO TEST REPORT

Test Method: AS 1289.6.1.1 & AS 1289.2.1.1

Client	Golder Associates Pty Limited	Report No.	GA101081-CBR
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project No.	1897791	Test Date	3/11/18-9/11/18
Project	Inland Rail B2G	Report Date	12/11/2018

Test Results

Bore Hole/Test Pit	310-01-DH2446-B00020	 Force v's Penetration
Client Sample No.	310-01-DH2446	
Depth From/To(m)	0.20-0.60	
Description	Sandy CLAY - brown	
Compaction Criteria	Standard	
Condition of Specimen	Soaked	
Field Moisture Content (%)	9.9	
Maximum Dry Density (t/m³)	1.78	
Optimum Moisture Content (%)	16.0	
Nominated/Achieved Dry Density (t/m³)	1.69 / 1.69	
Nominated/Achieved Moisture Content (%)	16.0 / 16.3	
Laboratory Density Ratio (%)	94.7	
Laboratory Moisture Ratio (%)	101.8	
Percentage Retained 19 mm (%) (Not Included in Sample)	0	
Period of Soak (Days)	4	
Surcharge (kg)	4.5	
Swell (%)	0.8	
Moisture Content of Top 30 mm (%)	22.4	
Moisture Content of Remainder (%)	19.4	
CBR Penetration (mm)	5.0	
CBR VALUE (%)	12	

Notes/Remarks :

Sample/s supplied by the client

Page: 1 of 1 REP00304

Accredited for compliance with ISO/IES 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.
 Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

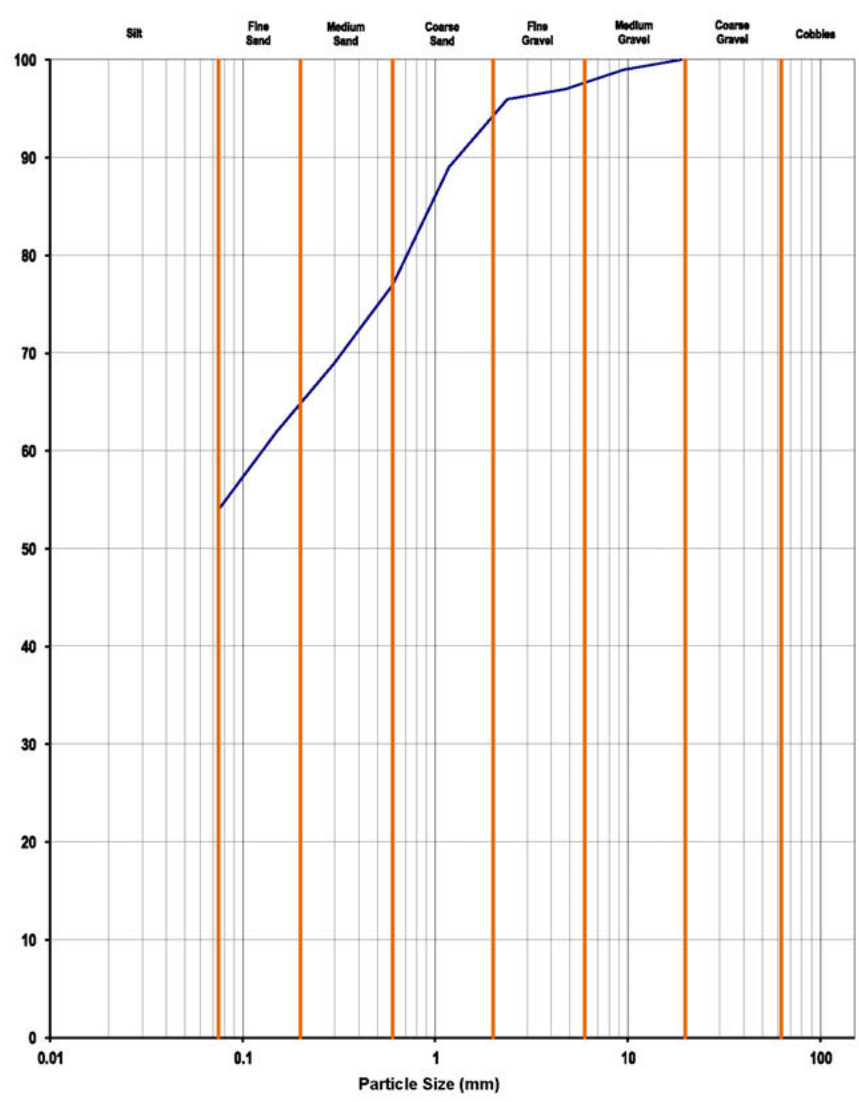
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited		Report No.	GA101081-G
Address	PO Box 1734 MILTON BC	QLD 4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G			
Project No	1897791	Client Sample No	310-01-DH2446	
Bore Hole	310-01-DH2446-B00020	Depth From (m)	0.2	Depth To (m) 0.6
Description	BDS			

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	100
13.2	99
9.5	99
6.7	98
4.75	97
2.36	96
1.18	89
0.600	77
0.425	73
0.300	69
0.150	62
0.075	54



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 54% passing for 0.075 mm and rises to 100% passing at 19.0 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 9.9%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

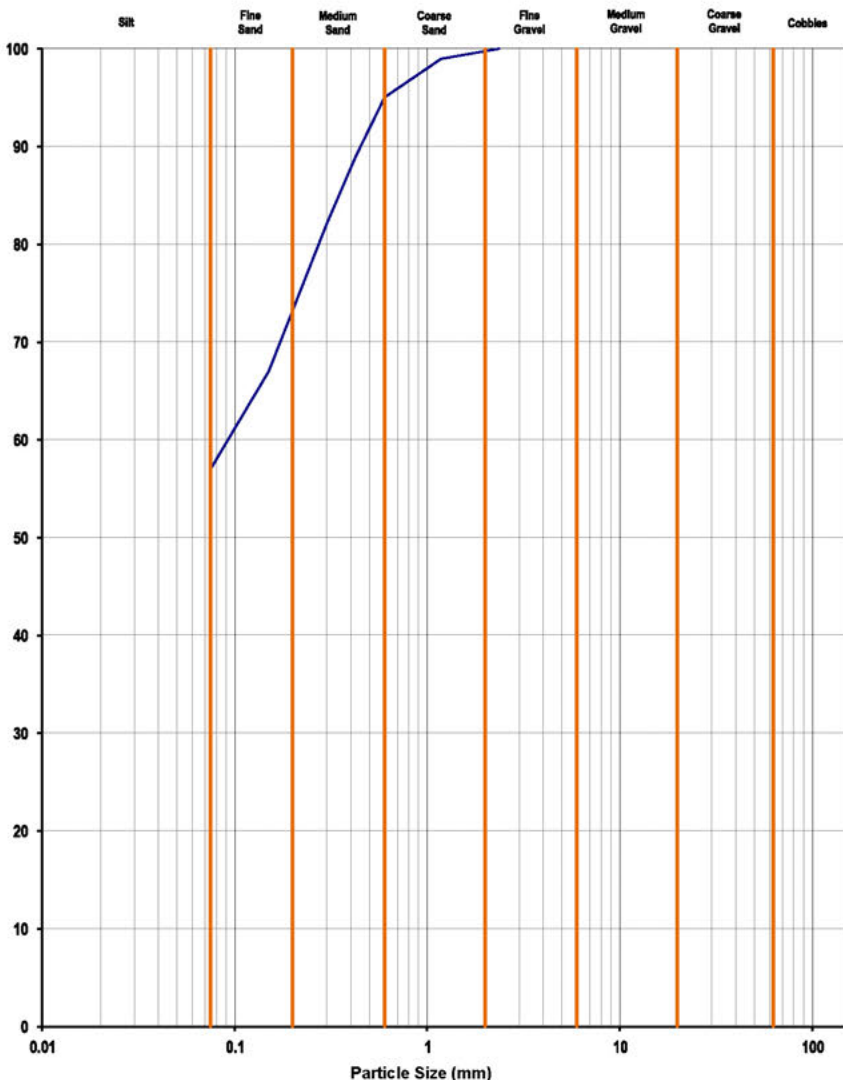
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101083-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-DH2508		
Bore Hole	310-01-DH2508-S00050	Depth From (m)	0.5	Depth To (m)	0.95
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	95
0.425	89
0.300	82
0.150	67
0.075	57



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 57% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 7.2%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

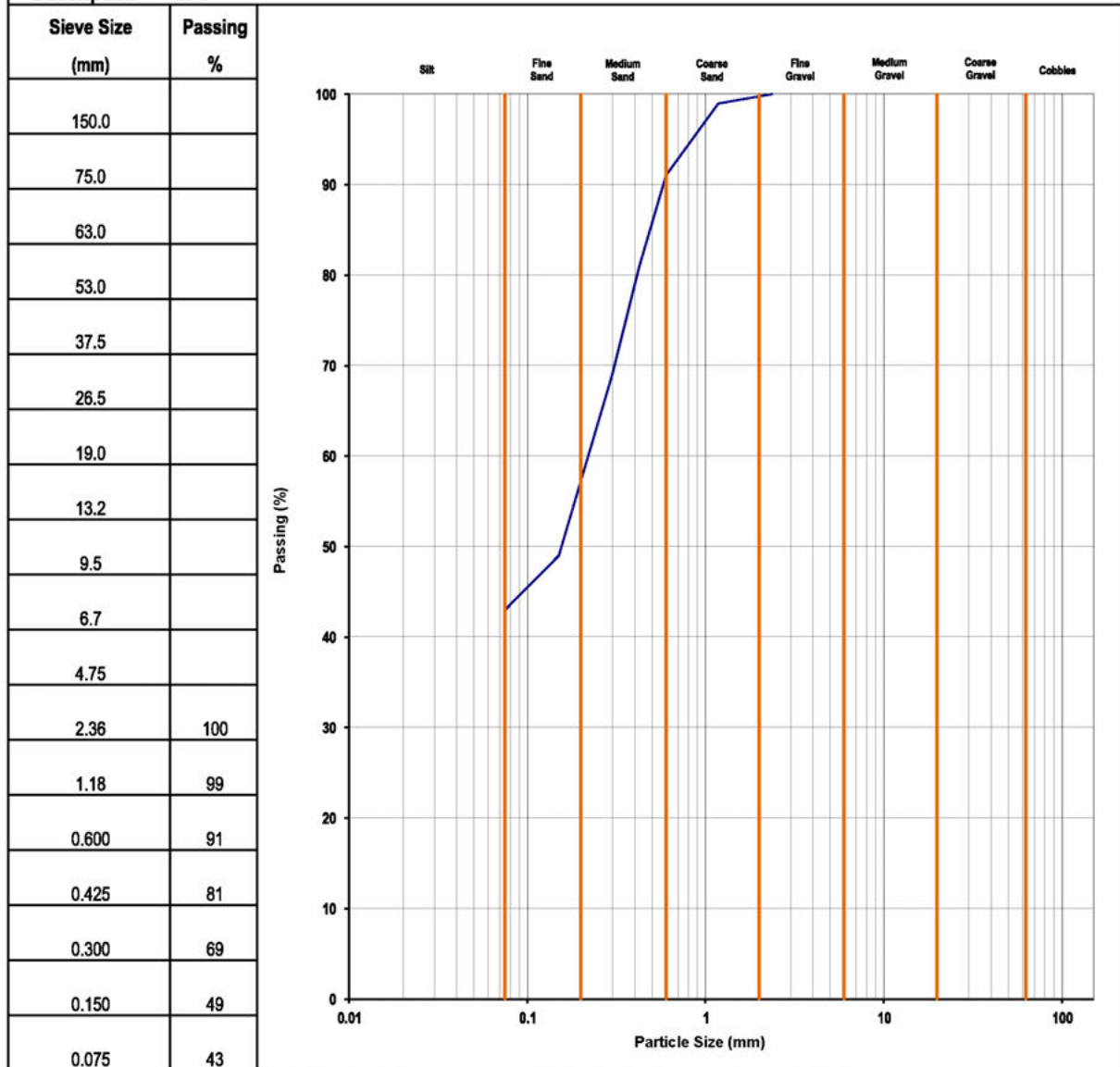
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101084-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4030
		Test Date	25/10/18-30/10/18
		Report Date	30/10/2018

Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-DH2508		
Bore Hole	310-01-DH2508-S00250	Depth From (m)	2.5	Depth To (m)	2.645

Description	SPT
--------------------	-----



NOTES/REMARKS:	-
	Moisture Content 6.3%
	Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

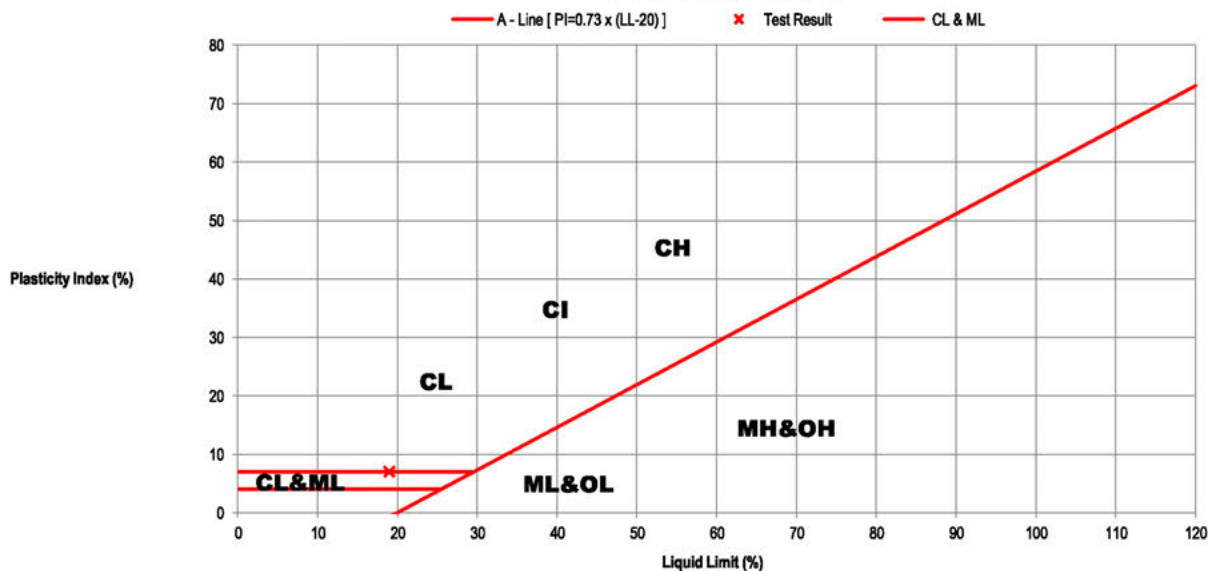
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101085-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project	Inland Rail B2G	Test Date	2/11/2018
Project No.	1897791	Report Date	8/11/2018
Bore Hole	310-01-DH2509-S00050	Client Sample No.	310-01-DH2509
Description	SPT	Depth From (m)	0.5
		Depth To (m)	0.95

RESULTS OF TESTING

Liquid Limit (%) 19
Plastic Limit (%) 12
Plasticity Index (%) 7
Linear Shrinkage (%) 3.0 **Cracking & Curling Occurred**
Moisture Content (%) 3.7
Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

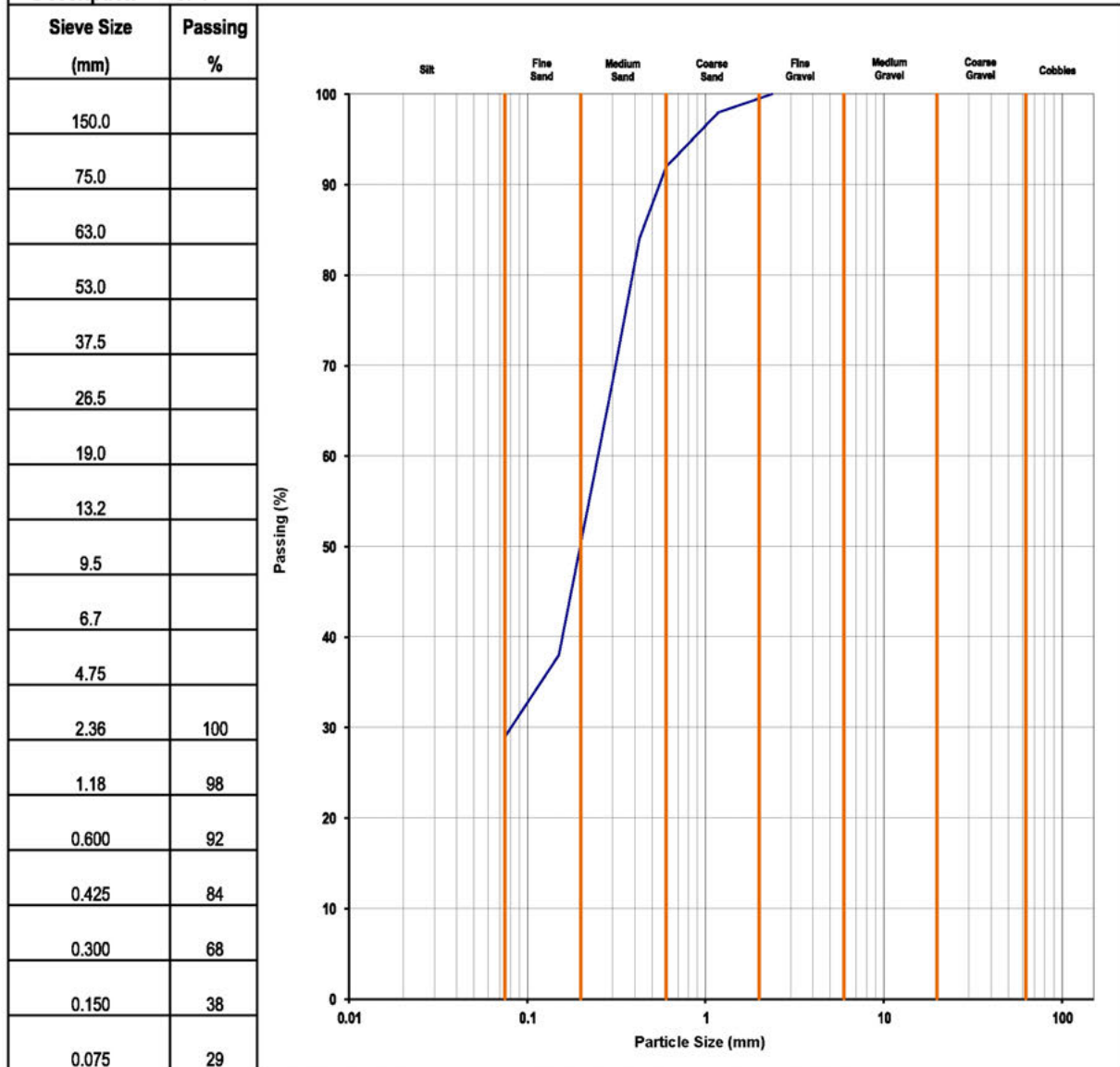
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited		Report No.	GA101085-G
Address	PO Box 1734 MILTON BC	QLD 4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G		Test Date	25/10/18-30/10/18
Project No	1897791	Client Sample No	310-01-DH2509	
Bore Hole	310-01-DH2509-S00050	Depth From (m)	0.5	Depth To (m) 0.95

Description SPT



NOTES/REMARKS:

-
Moisture Content 3.7%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

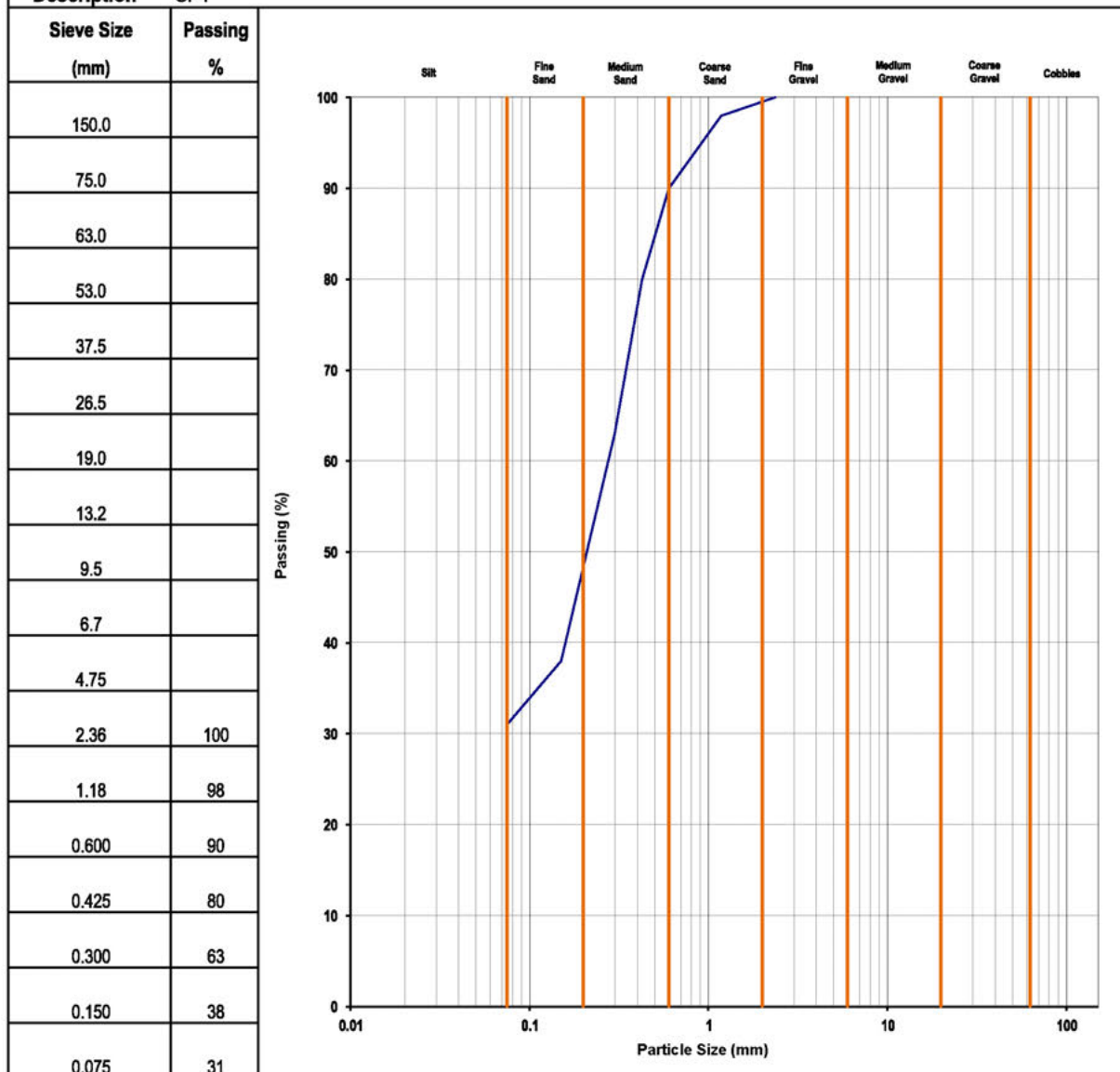
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101086-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G	Test Date	25/10/18-30/10/18
Project No	1897791	Client Sample No	310-01-DH2509
Bore Hole	310-01-DH2509-S00650	Depth From (m)	6.5
		Depth To (m)	6.7

Description SPT



NOTES/REMARKS:

-
Moisture Content 8.4%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

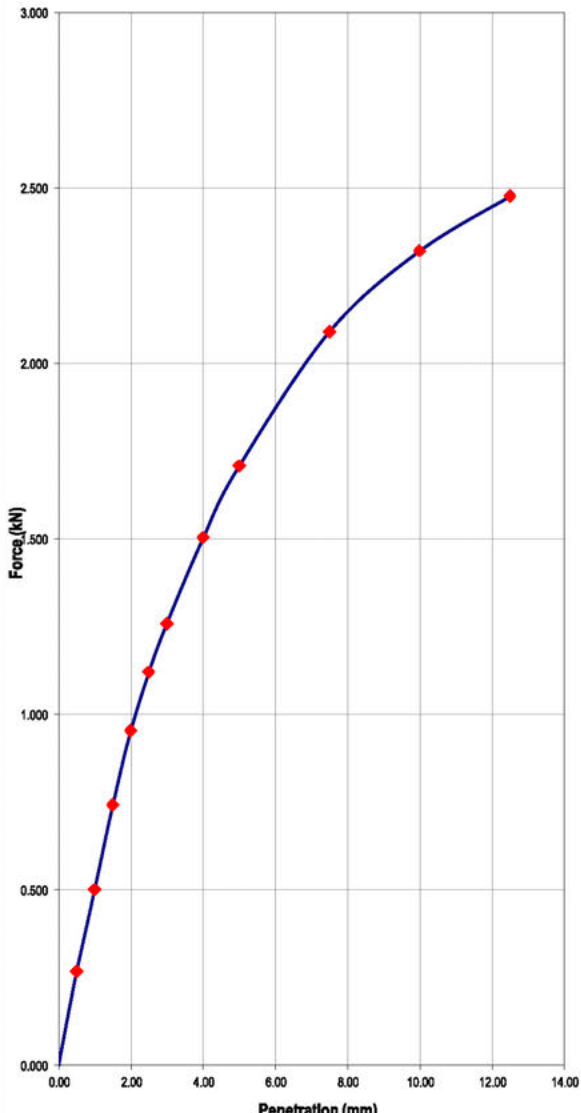
Trilab Pty Ltd ABN 25 065 630 506

CALIFORNIA BEARING RATIO TEST REPORT

Test Method: AS 1289.6.1.1 & AS 1289.2.1.1

Client	Golder Associates Pty Limited	Report No.	GA101087-CBR
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project No.	1897791	Test Date	3/11/18-9/11/18
Project	Inland Rail B2G	Report Date	12/11/2018

Test Results

Bore Hole/Test Pit	310-01-DH2510-B00020	Force v's Penetration 
Client Sample No.	310-01-DH2510	
Depth From/To(m)	0.20-0.60	
Description	Silty SAND - pale brown/grey	
Compaction Criteria	Standard	
Condition of Specimen	Soaked	
Field Moisture Content (%)	3.3	
Maximum Dry Density (t/m³)	1.99	
Optimum Moisture Content (%)	9.7	
Nominated/Achieved Dry Density (t/m³)	1.89 / 1.89	
Nominated/Achieved Moisture Content (%)	9.7 / 9.8	
Laboratory Density Ratio (%)	94.8	
Laboratory Moisture Ratio (%)	101.3	
Percentage Retained 19 mm (%) (Not Included in Sample)	0	
Period of Soak (Days)	4	
Surcharge (kg)	4.5	
Swell (%)	0.2	
Moisture Content of Top 30 mm (%)	12.5	
Moisture Content of Remainder (%)	11.9	
CBR Penetration (mm)	5.0	
CBR VALUE (%)	9	

Notes/Remarks :

Sample/s supplied by the client

Page: 1 of 1 REP00304

Accredited for compliance with ISO/IES 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.
Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

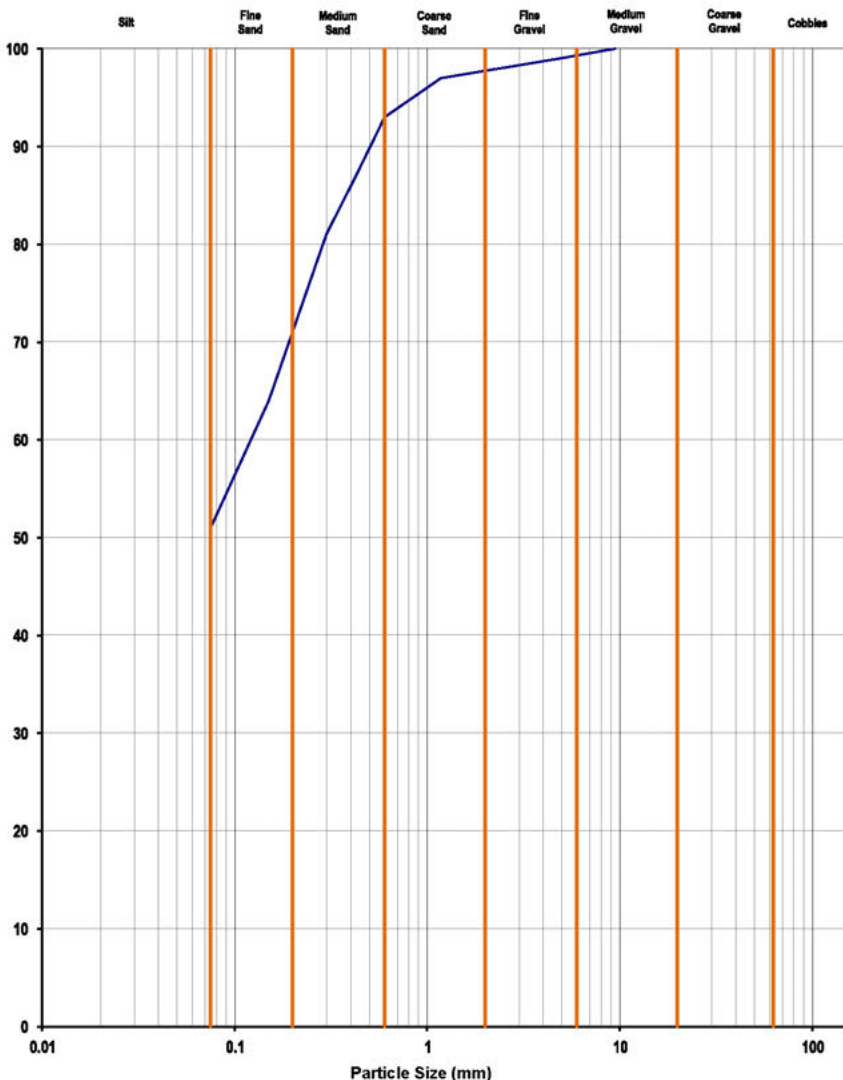
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101087-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-DH2510		
Bore Hole	310-01-DH2510-B00020	Depth From (m)	0.2	Depth To (m)	0.6
Description	BDS				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	100
4.75	99
2.36	98
1.18	97
0.600	93
0.425	87
0.300	81
0.150	64
0.075	51



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 51% passing for 0.075 mm and rises to 100% passing at 6.7 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 3.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

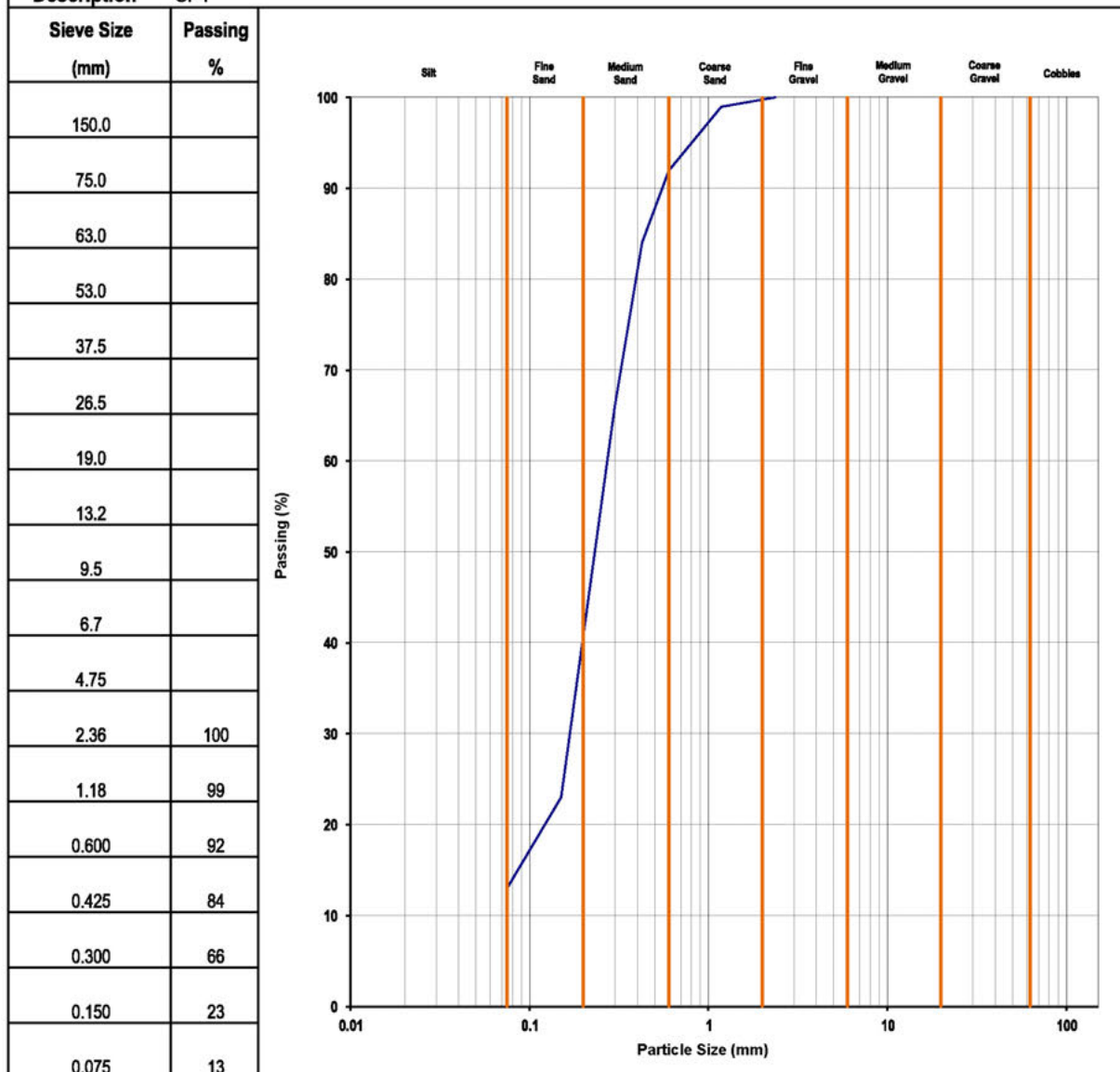
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited		Report No.	GA101088-G
Address	PO Box 1734 MILTON BC	QLD 4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G		Test Date	26/1018-30/10/18
Project No	1897791	Client Sample No	310-01-DH2510	
Bore Hole	310-01-DH2510-S00050	Depth From (m)	0.5	Depth To (m) 0.95

Description SPT



NOTES/REMARKS:

-
Moisture Content 3.2%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

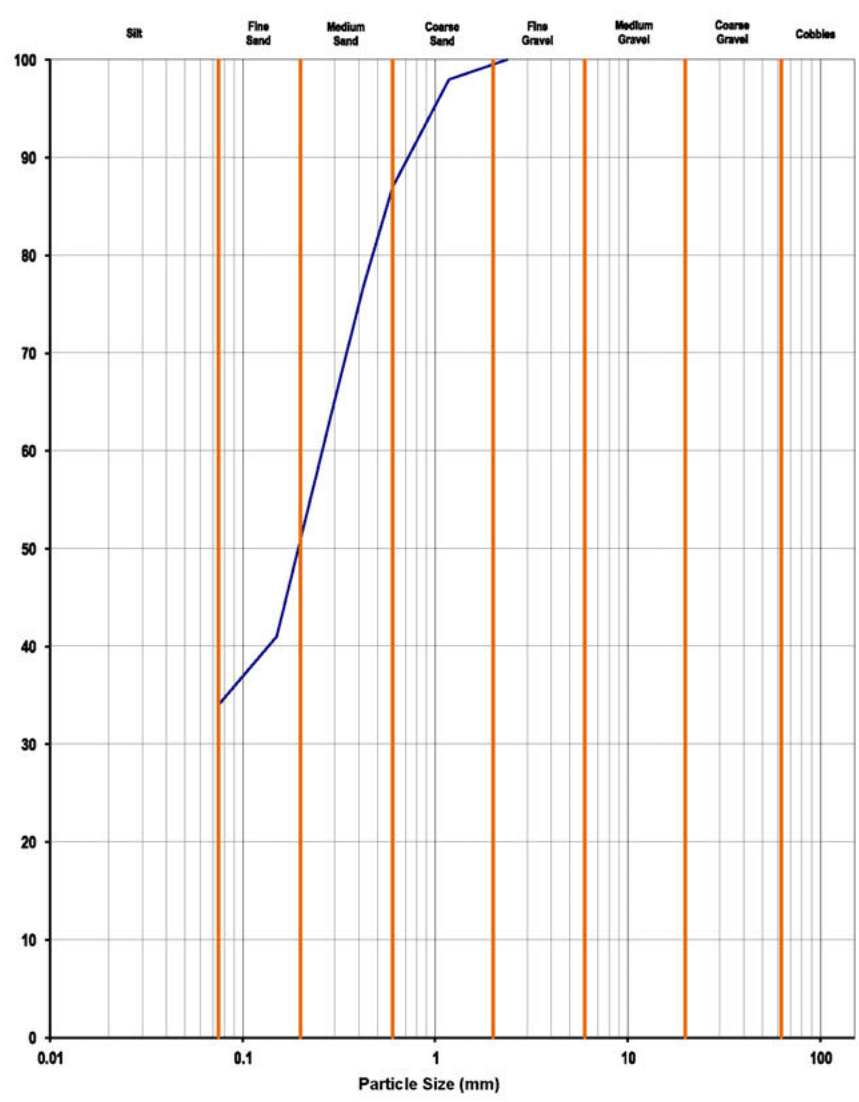
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101089-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-DH2510		
Bore Hole	310-01-DH2510-S00250	Depth From (m)	2.5	Depth To (m)	2.95
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	98
0.600	87
0.425	77
0.300	65
0.150	41
0.075	34



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 34% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 5.6%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

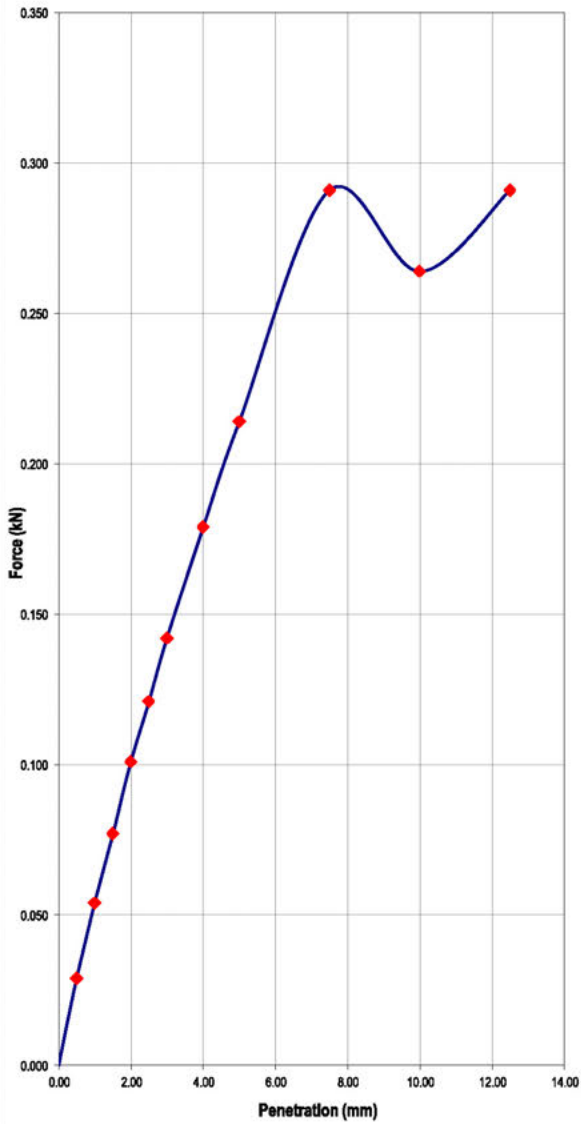
Trilab Pty Ltd ABN 25 065 630 506

CALIFORNIA BEARING RATIO TEST REPORT

Test Method: AS 1289.6.1.1 & AS 1289.2.1.1

Client	Golder Associates Pty Limited	Report No.	GA101090-CBR
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project No.	1897791	Test Date	3/11/18-9/11/18
Project	Inland Rail B2G	Report Date	12/11/2018

Test Results

Bore Hole/Test Pit	310-01-DH2516-B00020	Force v's Penetration 
Client Sample No.	310-01-DH2516	
Depth From/To(m)	0.20-0.60	
Description	Sandy Silty CLAY - black	
Compaction Criteria	Standard	
Condition of Specimen	Soaked	
Field Moisture Content (%)	16.6	
Maximum Dry Density (t/m³)	1.53	
Optimum Moisture Content (%)	20.3	
Nominated/Achieved Dry Density (t/m³)	1.45 / 1.45	
Nominated/Achieved Moisture Content (%)	20.3 / 20.2	
Laboratory Density Ratio (%)	95.0	
Laboratory Moisture Ratio (%)	99.5	
Percentage Retained 19 mm (%) (Not Included in Sample)	0	
Period of Soak (Days)	4	
Surcharge (kg)	4.5	
Swell (%)	9.8	
Moisture Content of Top 30 mm (%)	42.3	
Moisture Content of Remainder (%)	25.4	
CBR Penetration (mm)	5.0	
CBR VALUE (%)	1	

Notes/Remarks :

Sample/s supplied by the client

Page: 1 of 1 REP00304

Accredited for compliance with ISO/IES 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.
Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

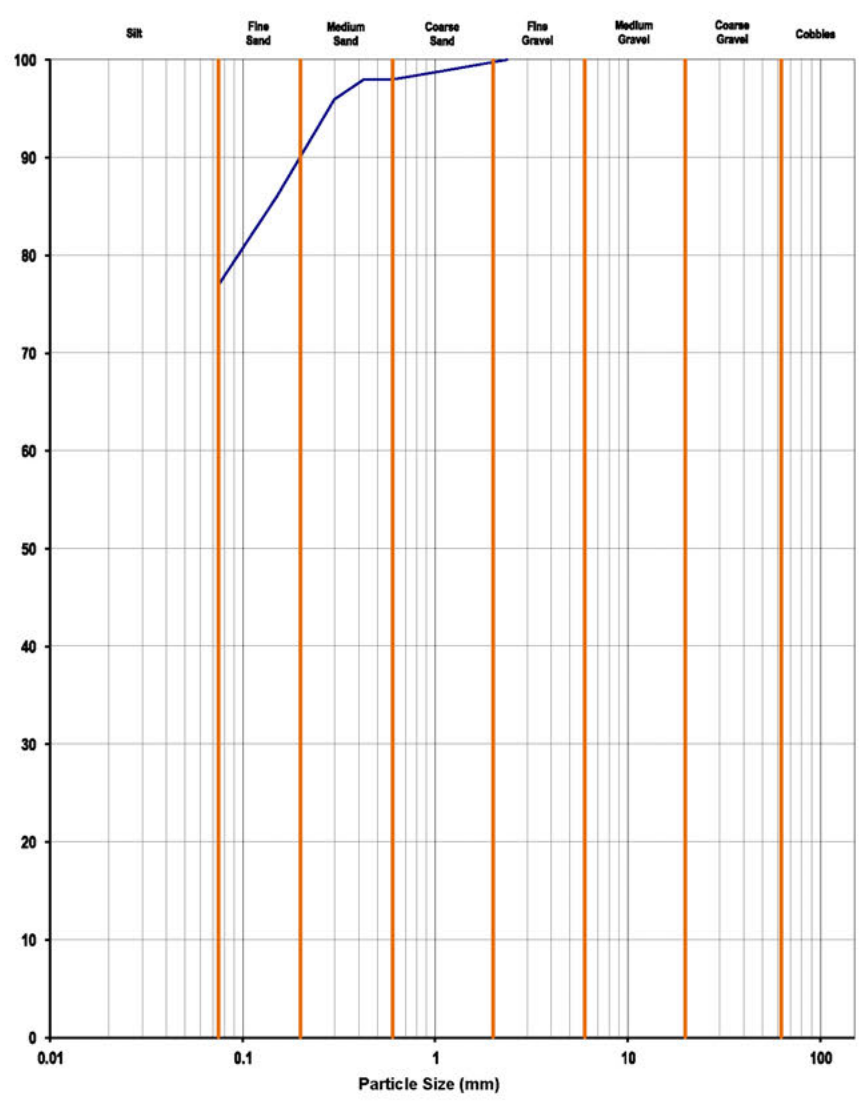
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101090-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-DH2516		
Bore Hole	310-01-DH2516-B00020	Depth From (m)	0.2	Depth To (m)	0.6
Description	BDS				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	98
0.425	98
0.300	96
0.150	86
0.075	77



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 77% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 16.6%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

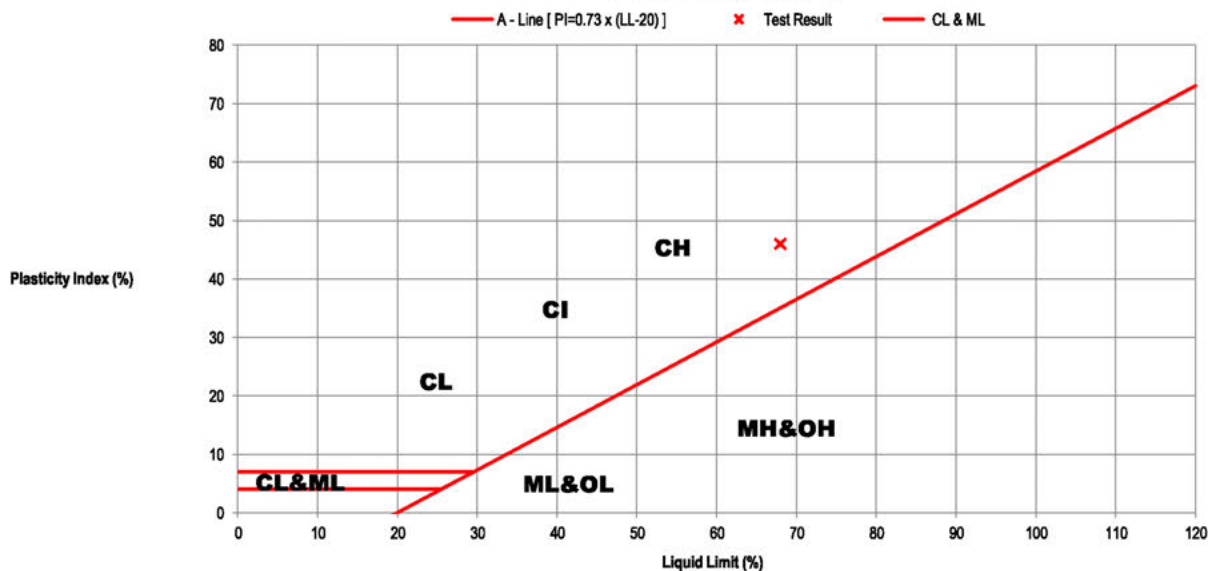
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101092-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project	Inland Rail B2G	Test Date	2/11/2018
Project No.	1897791	Report Date	10/11/2018
Bore Hole	310-01-DH2516-S00100	Client Sample No.	310-01-DH2516
Description	SPT	Depth From (m)	1
		Depth To (m)	1.45

RESULTS OF TESTING

Liquid Limit (%)	68	
Plastic Limit (%)	22	
Plasticity Index (%)	46	
Linear Shrinkage (%)	17.0	Cracking & Curling Occurred
Moisture Content (%)	16.1	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

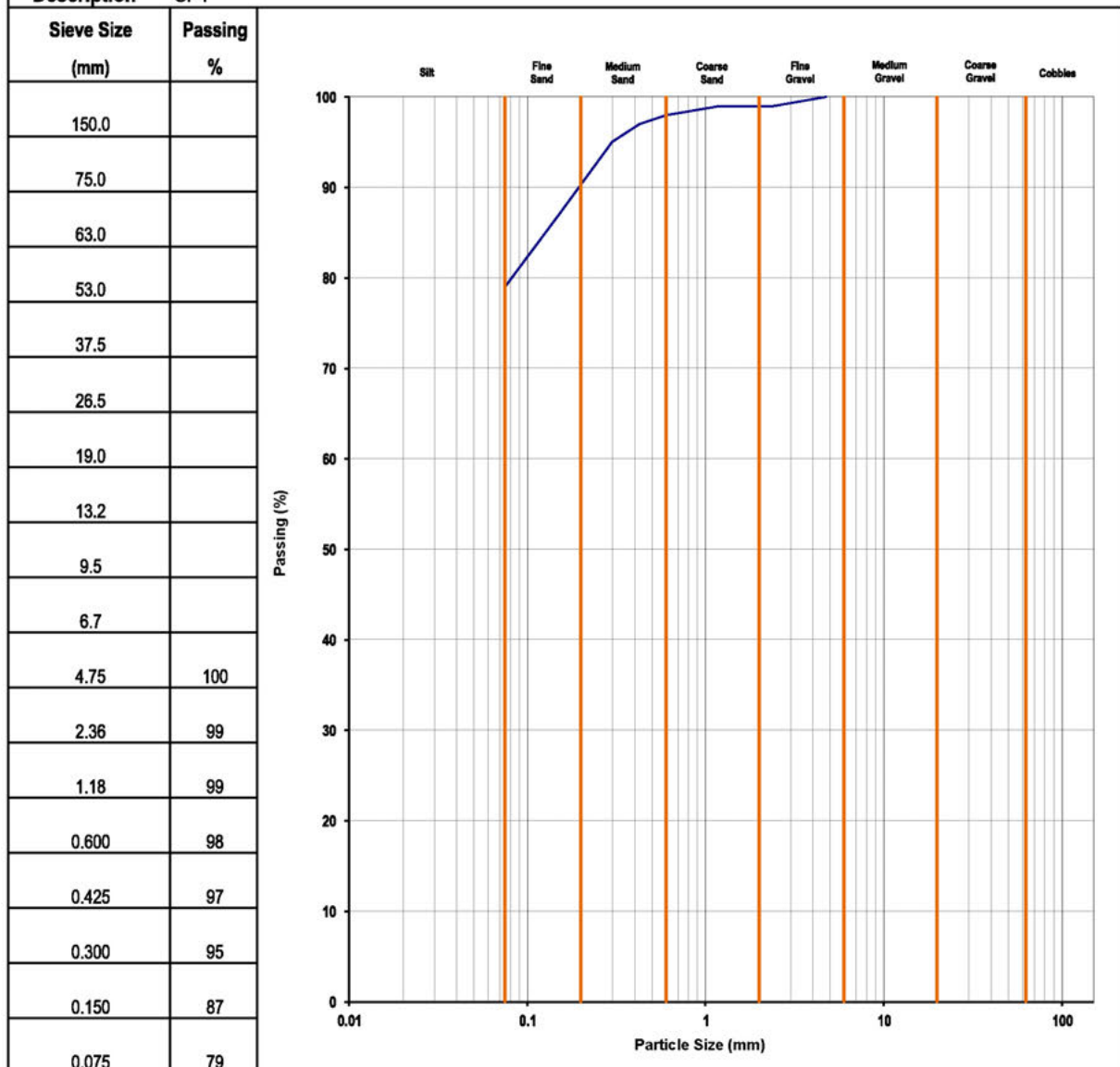
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101092-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G	Test Date	25/10/18-30/10/18
Project No	1897791	Client Sample No	310-01-DH2516
Bore Hole	310-01-DH2516-S00100	Depth From (m)	1
		Depth To (m)	1.45

Description SPT



NOTES/REMARKS:

-
Moisture Content 16.1%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

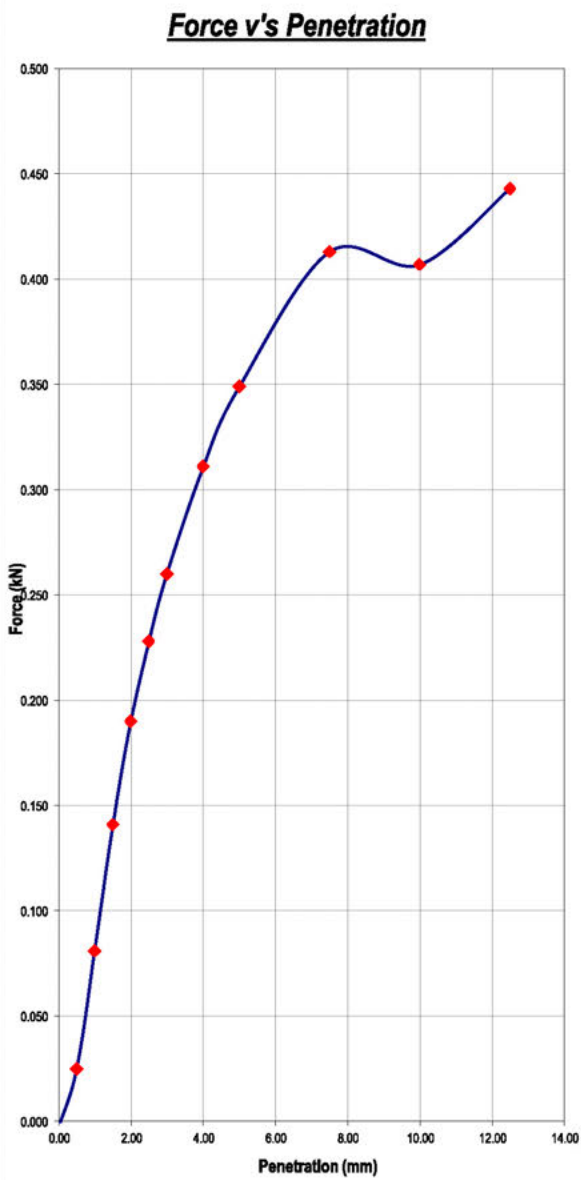
Trilab Pty Ltd ABN 25 065 630 506

CALIFORNIA BEARING RATIO TEST REPORT

Test Method: AS 1289.6.1.1 & AS 1289.2.1.1

Client	Golder Associates Pty Limited	Report No.	GA101093-CBR
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project No.	1897791	Test Date	3/11/18-9/11/18
Project	Inland Rail B2G	Report Date	12/11/2018

Test Results

Bore Hole/Test Pit	310-01-DH2517-B00020	 Force v's Penetration
Client Sample No.	310-01-DH2517	
Depth From/To(m)	0.20-0.60	
Description	Sandy Silty CLAY - dark brown	
Compaction Criteria	Standard	
Condition of Specimen	Soaked	
Field Moisture Content (%)	13.2	
Maximum Dry Density (t/m³)	1.60	
Optimum Moisture Content (%)	20.9	
Nominated/Achieved Dry Density (t/m³)	1.52 / 1.52	
Nominated/Achieved Moisture Content (%)	20.9 / 20.7	
Laboratory Density Ratio (%)	95.2	
Laboratory Moisture Ratio (%)	98.9	
Percentage Retained 19 mm (%) (Not Included in Sample)	0	
Period of Soak (Days)	4	
Surcharge (kg)	4.5	
Swell (%)	3.9	
Moisture Content of Top 30 mm (%)	37.1	
Moisture Content of Remainder (%)	26.4	
CBR Penetration (mm)	2.5	
CBR VALUE (%)	2	

Notes/Remarks :

Sample/s supplied by the client

Page: 1 of 1 REP00304

Accredited for compliance with ISO/IES 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.
 Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

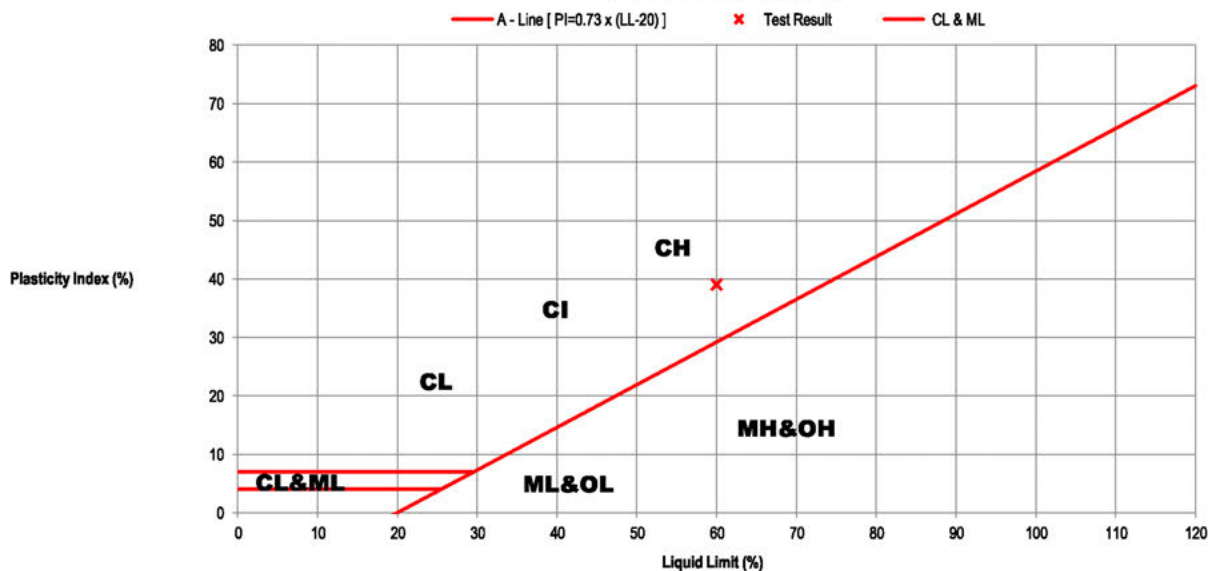
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101095-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project	Inland Rail B2G	Test Date	2/11/2018
Project No.	1897791	Report Date	8/11/2018
Bore Hole	310-01-DH2517-S00100	Client Sample No.	310-01-DH2517
Description	SPT	Depth From (m)	1
		Depth To (m)	1.45

RESULTS OF TESTING

Liquid Limit (%)	60	
Plastic Limit (%)	21	
Plasticity Index (%)	39	
Linear Shrinkage (%)	15.0	Curling Occurred
Moisture Content (%)	13.0	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

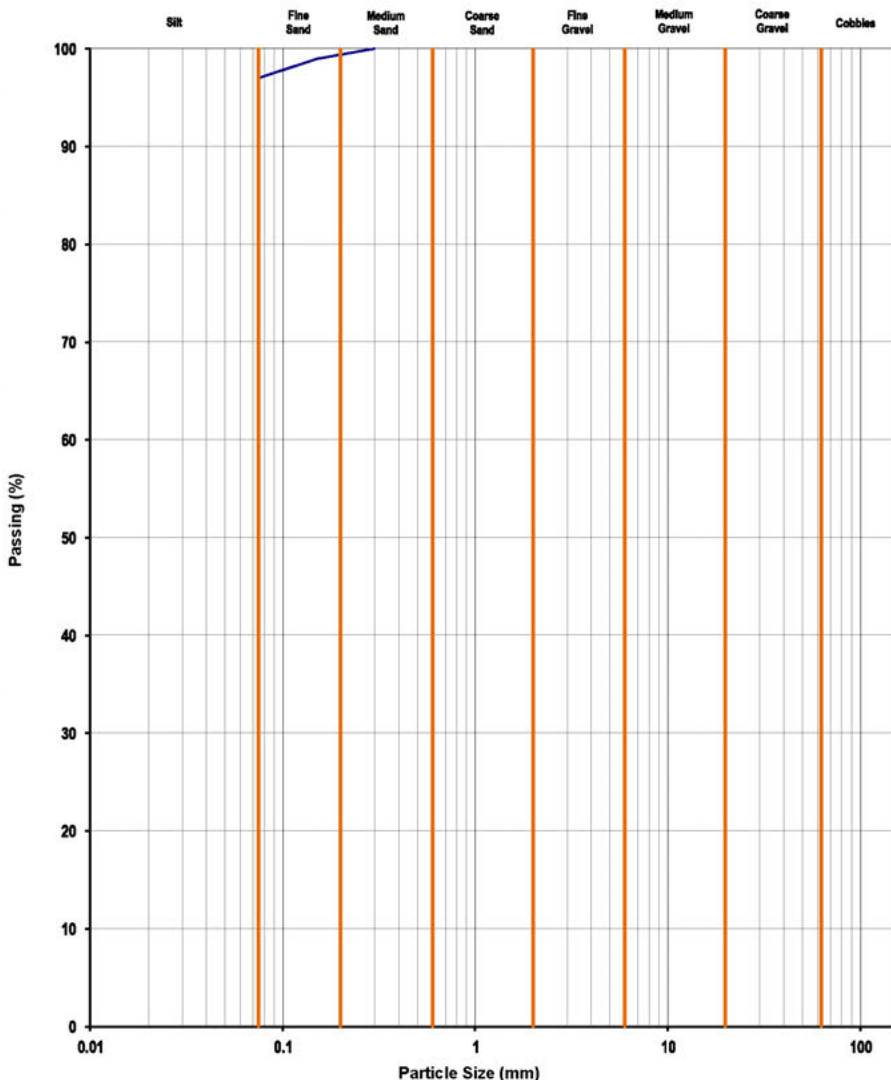
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101095-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-DH2517		
Bore Hole	310-01-DH2517-S00100	Depth From (m)	1	Depth To (m)	1.45
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	
0.600	
0.425	
0.300	100
0.150	99
0.075	97



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at 100% passing for 0.075 mm and remains at 100% until 0.300 mm, where it drops to 100%. It then continues to drop to 99% at 0.150 mm and 97% at 0.075 mm. The graph is divided into regions for different soil types: Silt, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 13%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory

C. Park

C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

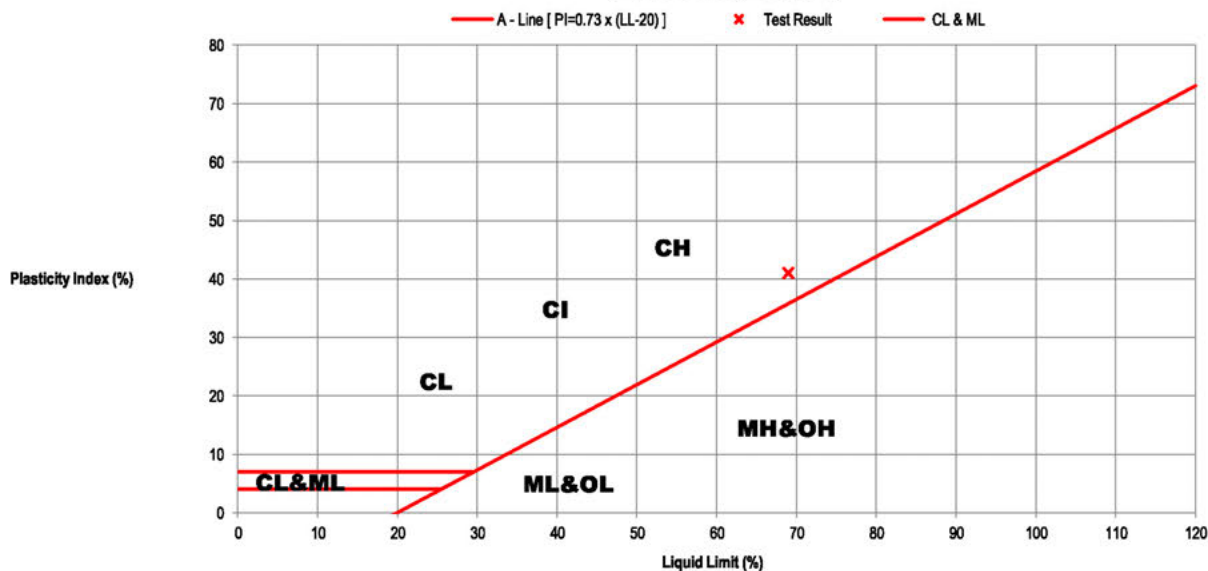
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101096-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project	Inland Rail B2G	Test Date	2/11/2018
Project No.	1897791	Report Date	7/11/2018
Bore Hole	310-01-DH2518-B00020	Client Sample No.	310-01-DH2518
Description	BDS	Depth From (m)	0.2
		Depth To (m)	0.6

RESULTS OF TESTING

Liquid Limit (%)	69	
Plastic Limit (%)	28	
Plasticity Index (%)	41	
Linear Shrinkage (%)	18.0	Cracking & Curling Occurred
Moisture Content (%)	25.3	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

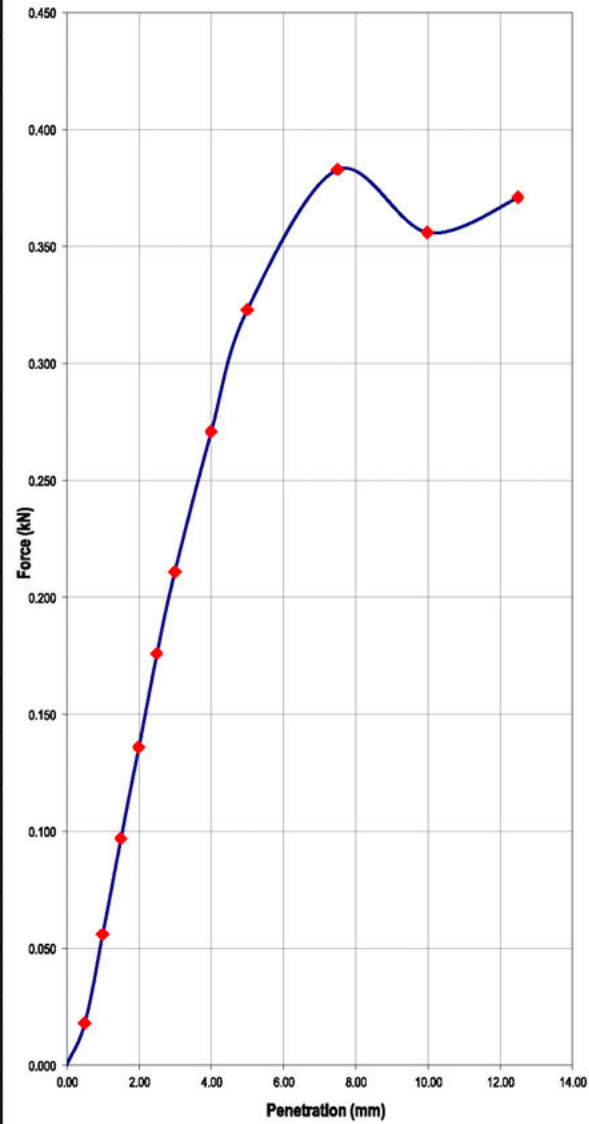
Trilab Pty Ltd ABN 25 065 630 506

CALIFORNIA BEARING RATIO TEST REPORT

Test Method: AS 1289.6.1.1 & AS 1289.2.1.1

Client	Golder Associates Pty Limited	Report No.	GA101096-CBR
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project No.	1897791	Test Date	3/11/18-9/11/18
Project	Inland Rail B2G	Report Date	12/11/2018

Test Results

Bore Hole/Test Pit	310-01-DH2518-B00020	Force v's Penetration 
Client Sample No.	310-01-DH2518	
Depth From/To(m)	0.20-0.60	
Description	Silty CLAY - black	
Compaction Criteria	Standard	
Condition of Specimen	Soaked	
Field Moisture Content (%)	25.3	
Maximum Dry Density (t/m³)	1.51	
Optimum Moisture Content (%)	25.3	
Nominated/Achieved Dry Density (t/m³)	1.43 / 1.43	
Nominated/Achieved Moisture Content (%)	25.3 / 25.4	
Laboratory Density Ratio (%)	94.8	
Laboratory Moisture Ratio (%)	100.3	
Percentage Retained 19 mm (%) (Not Included in Sample)	0	
Period of Soak (Days)	4	
Surcharge (kg)	4.5	
Swell (%)	6.3	
Moisture Content of Top 30 mm (%)	42.3	
Moisture Content of Remainder (%)	27.3	
CBR Penetration (mm)	5.0	
CBR VALUE (%)	1.5	

Notes/Remarks :

Sample/s supplied by the client

Page: 1 of 1 REP00304

Accredited for compliance with ISO/IES 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.
Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

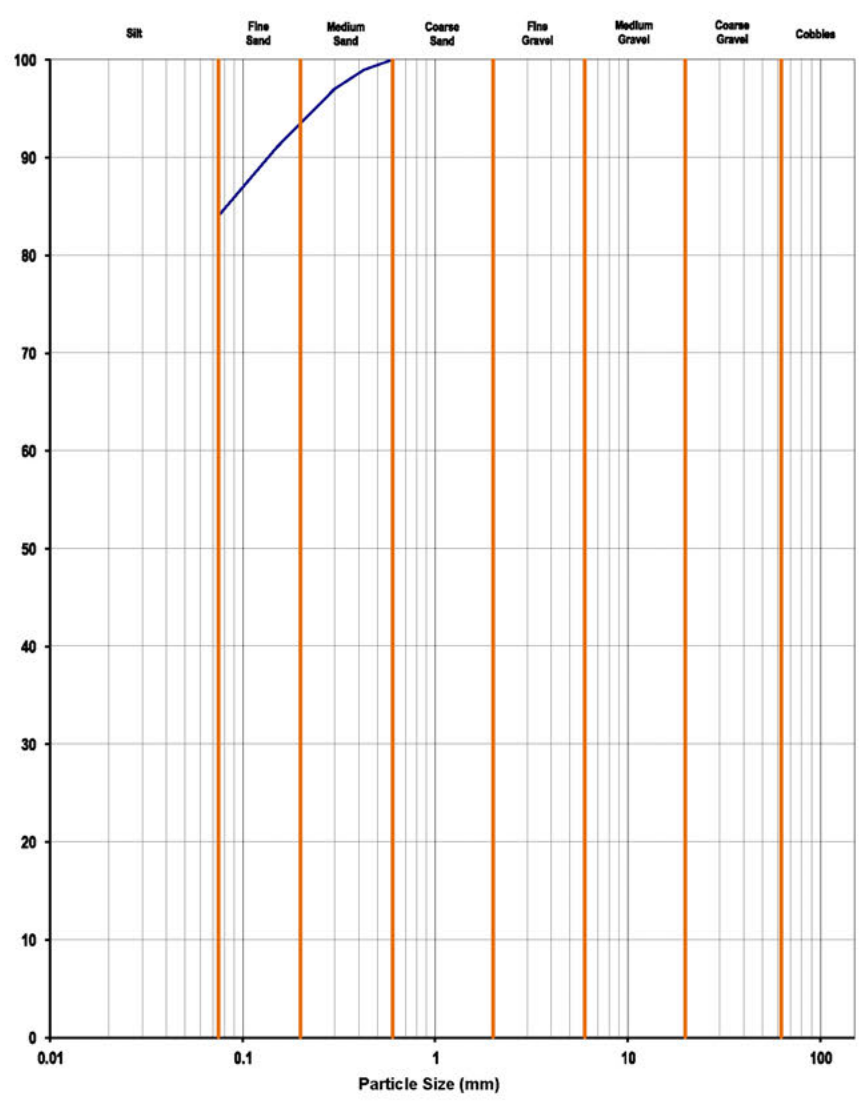
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101096-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-DH2518		
Bore Hole	310-01-DH2518-B00020	Depth From (m)	0.2	Depth To (m)	0.6
Description	BDS				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	
0.600	100
0.425	99
0.300	97
0.150	91
0.075	84



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 84% passing for 0.075 mm and reaches 100% passing at 0.600 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.850 mm), Coarse Sand (0.850 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 25.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

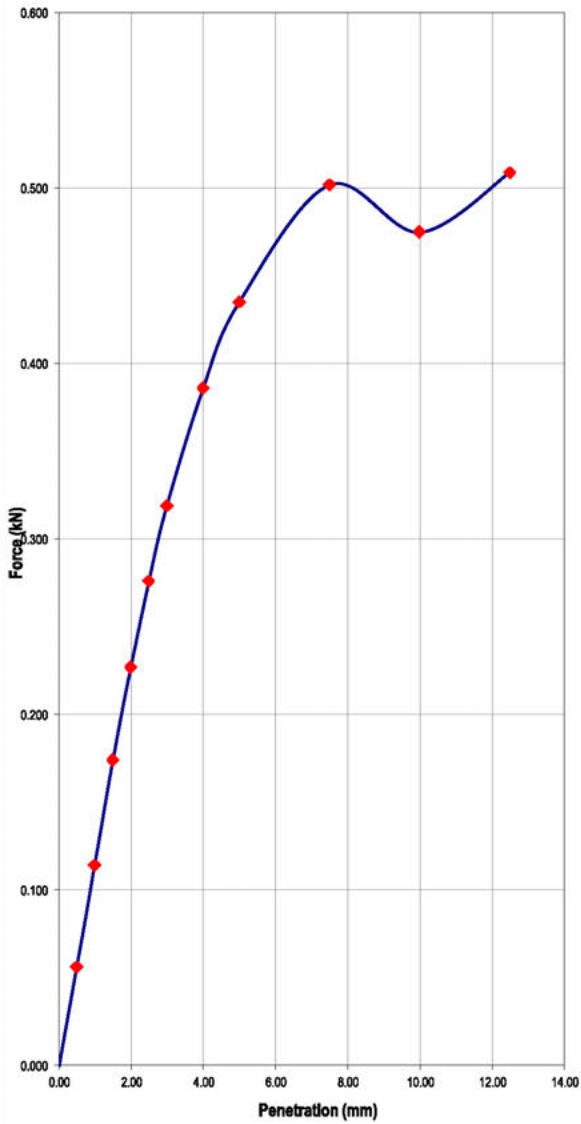
Trilab Pty Ltd ABN 25 065 630 506

CALIFORNIA BEARING RATIO TEST REPORT

Test Method: AS 1289.6.1.1 & AS 1289.2.1.1

Client	Golder Associates Pty Limited	Report No.	GA101099-CBR
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project No.	1897791	Test Date	3/11/18-9/11/18
Project	Inland Rail B2G	Report Date	12/11/2018

Test Results

Bore Hole/Test Pit	310-01-DH2521-B00020	Force v's Penetration 
Client Sample No.	310-01-DH2521	
Depth From/To(m)	0.20-0.60	
Description	Sandy Silty CLAY - dark brown	
Compaction Criteria	Standard	
Condition of Specimen	Soaked	
Field Moisture Content (%)	13.6	
Maximum Dry Density (t/m³)	1.68	
Optimum Moisture Content (%)	18.2	
Nominated/Achieved Dry Density (t/m³)	1.60 / 1.60	
Nominated/Achieved Moisture Content (%)	18.2 / 18.2	
Laboratory Density Ratio (%)	95.0	
Laboratory Moisture Ratio (%)	99.7	
Percentage Retained 19 mm (%) (Not Included in Sample)	0	
Period of Soak (Days)	4	
Surcharge (kg)	4.5	
Swell (%)	3.2	
Moisture Content of Top 30 mm (%)	31.0	
Moisture Content of Remainder (%)	24.4	
CBR Penetration (mm)	5.0	
CBR VALUE (%)	2	

Notes/Remarks :

Sample/s supplied by the client

Page: 1 of 1 REP00304

Accredited for compliance with ISO/IES 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.
Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101100-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G	Test Date	30/10/18-6/10/18
Project No	1897791	Report Date	6/11/2018
Bore Hole	310-01-DH2521-U00050	Client Sample No	310-01-DH2521
Depth From (m)	0.5	Depth To (m)	0.75

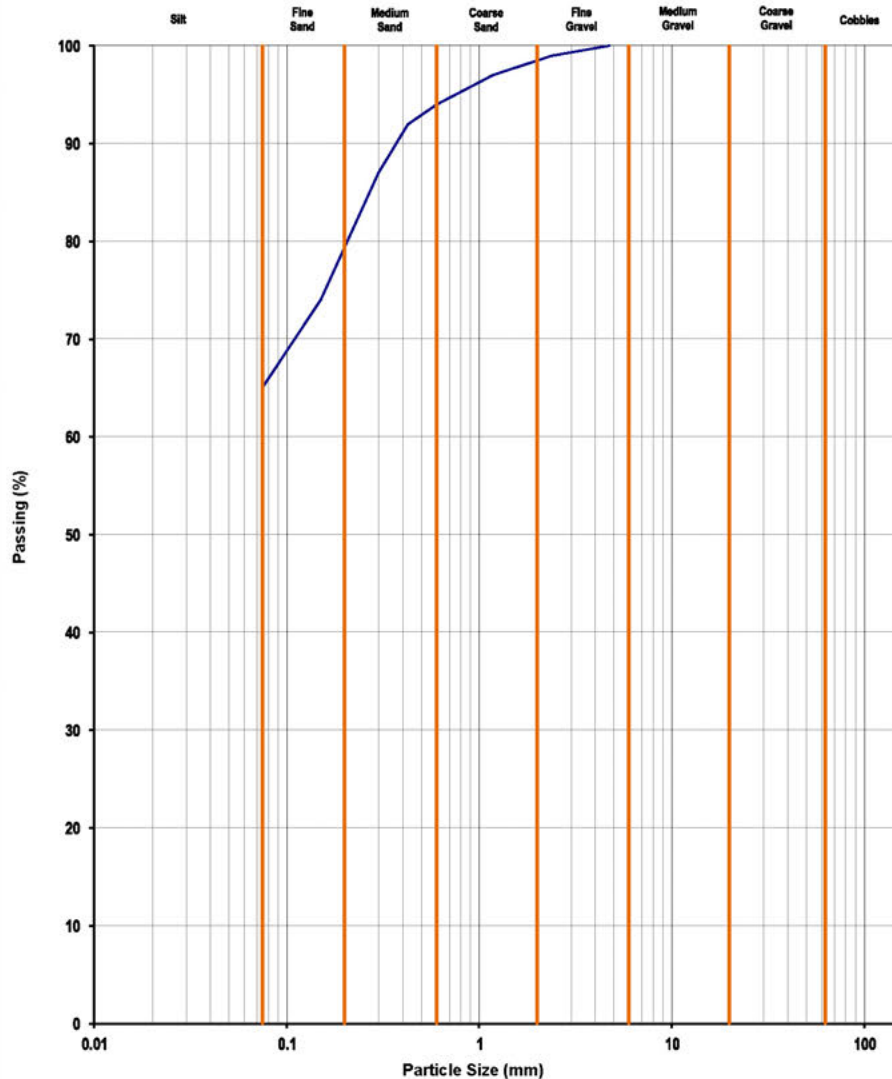
Description		U
Sieve Size (mm)	Passing %	
150.0		
75.0		
63.0		
53.0		
37.5		
26.5		
19.0		
13.2		
9.5		
6.7		
4.75	100	
2.36	99	
1.18	97	
0.600	94	
0.425	92	
0.300	87	
0.150	74	
0.075	65	

Soil Texture Classification:

- Silt: 0.0075 mm to 0.075 mm
- Fine Sand: 0.075 mm to 0.425 mm
- Medium Sand: 0.425 mm to 0.85 mm
- Coarse Sand: 0.85 mm to 2.0 mm
- Fine Gravel: 2.0 mm to 4.75 mm
- Medium Gravel: 4.75 mm to 20 mm
- Coarse Gravel: 20 mm to 60 mm
- Cobbles: 60 mm to 100 mm

Particle Size Distribution Data:

Particle Size (mm)	Passing (%)
0.075	65
0.150	74
0.300	87
0.425	92
0.600	94
1.18	97
2.36	99
4.75	100



NOTES/REMARKS:

-
Moisture Content 14.4%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

SHRINK SWELL INDEX TEST REPORT

Test Method AS 1289 7.1.1

Client Golder Associates Pty Limited		Report No. GA101100-ISS
		Request No. R3_BH_Rev1_4030
Address PO Box 1734 MILTON BC QLD 4064		Test Date 30/10/18-5/11/18
		Report Date 5/11/2018
Project Inland Rail B2G		
Description CLAY-brown		
Sample No.	310-01-DH2521	
Client ID	310-01-DH2521-U00050	
Depth (m)	0.5-0.75	
RESULTS OF TESTING		
SWELL SPECIMEN		
Swell Pressure (kPa) *	800	
Wet Density (t/m³)	2.15	
Initial Moisture Content (%)	14.4	
Final Moisture Content (%)	23.2	
Swell (%)	11.2	
SHRINKAGE SPECIMEN		
Estimated Inert Inclusions (%)	10-20	
Extent of Crumbling	Nil	
Extent of Cracking	Slight	
Moisture (%)	15.3	
Shrinkage (%)	2.3	
SHRINK SWELL INDEX (Iss) (%)		4.4
Notes/Remarks:		
* Swell pressure determination in accordance with test method AS4133.3.3 Sample/s supplied by client Tested as received		

Page: 1 of 1 REP02304

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

ATTERBERG LIMITS TEST REPORT

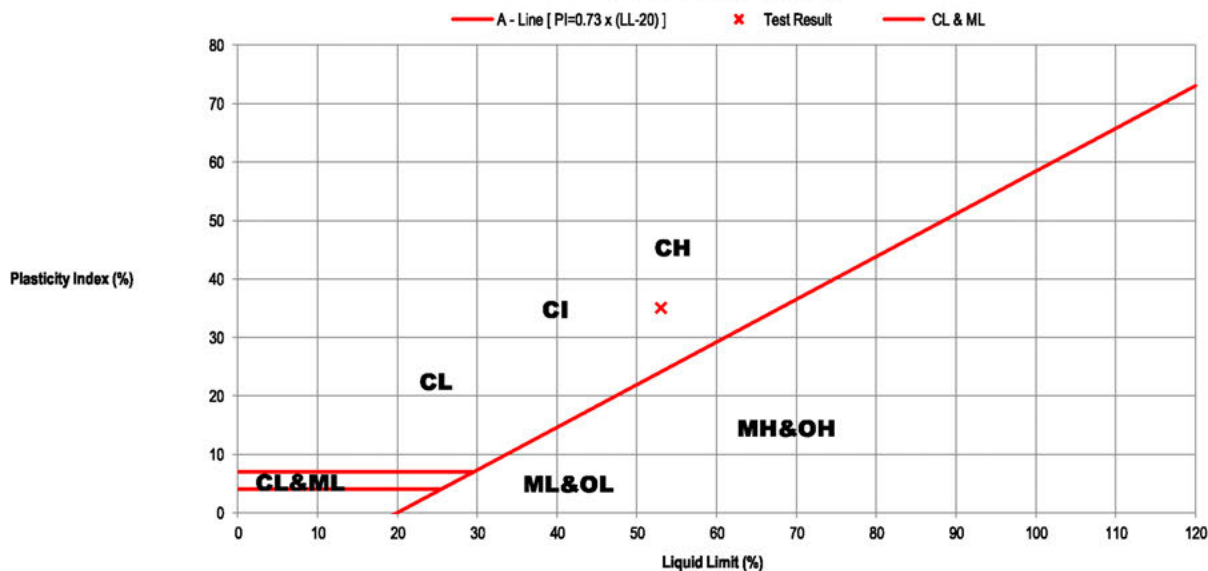
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101102-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4030
Project	Inland Rail B2G	Test Date	2/11/2018
Project No.	1897791	Report Date	7/11/2018
Bore Hole	310-01-DH2521-S00250	Client Sample No.	310-01-DH2521
Description	SPT	Depth From (m)	2.5
		Depth To (m)	2.95

RESULTS OF TESTING

Liquid Limit (%)	53	
Plastic Limit (%)	18	
Plasticity Index (%)	35	
Linear Shrinkage (%)	14.5	Curling Occurred
Moisture Content (%)	14.5	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

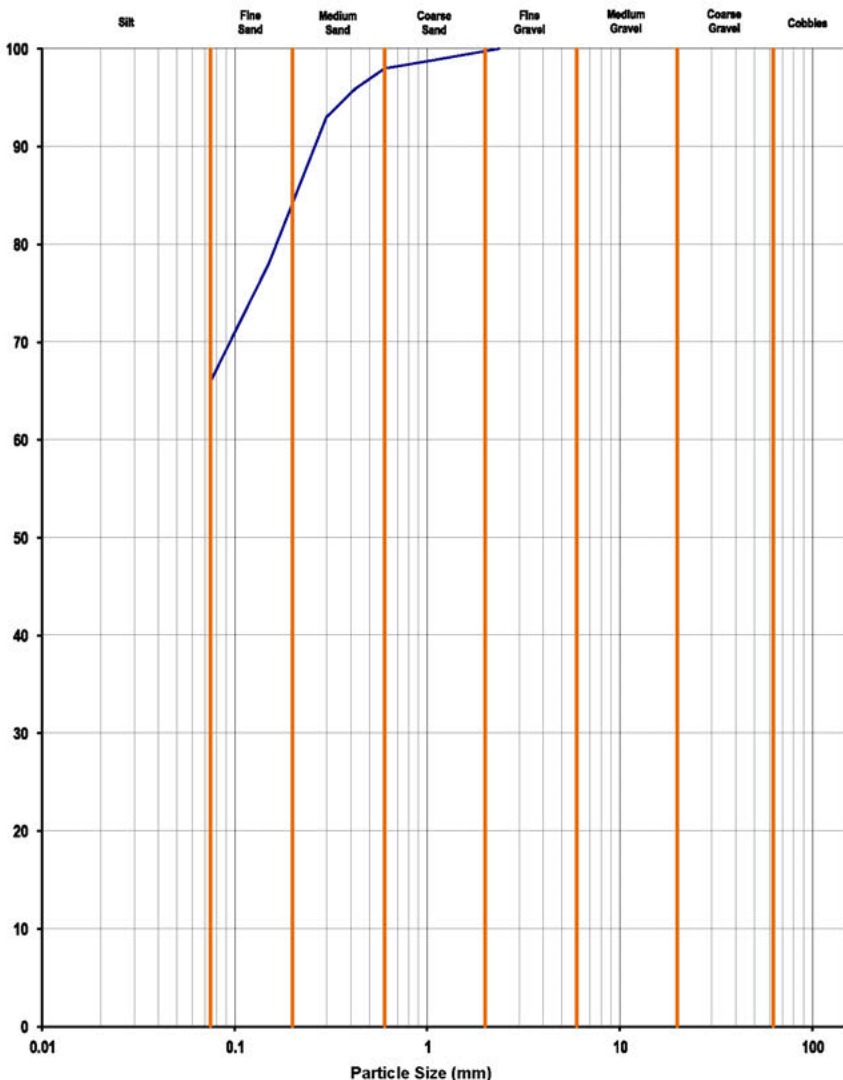
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101102-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-DH2521		
Bore Hole	310-01-DH2521-S00250	Depth From (m)	2.5	Depth To (m)	2.95
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	98
0.425	96
0.300	93
0.150	78
0.075	66



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm). The curve starts at approximately 66% passing for 0.075 mm and reaches 100% passing at 2.36 mm.

NOTES/REMARKS:

-
Moisture Content 14.5%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

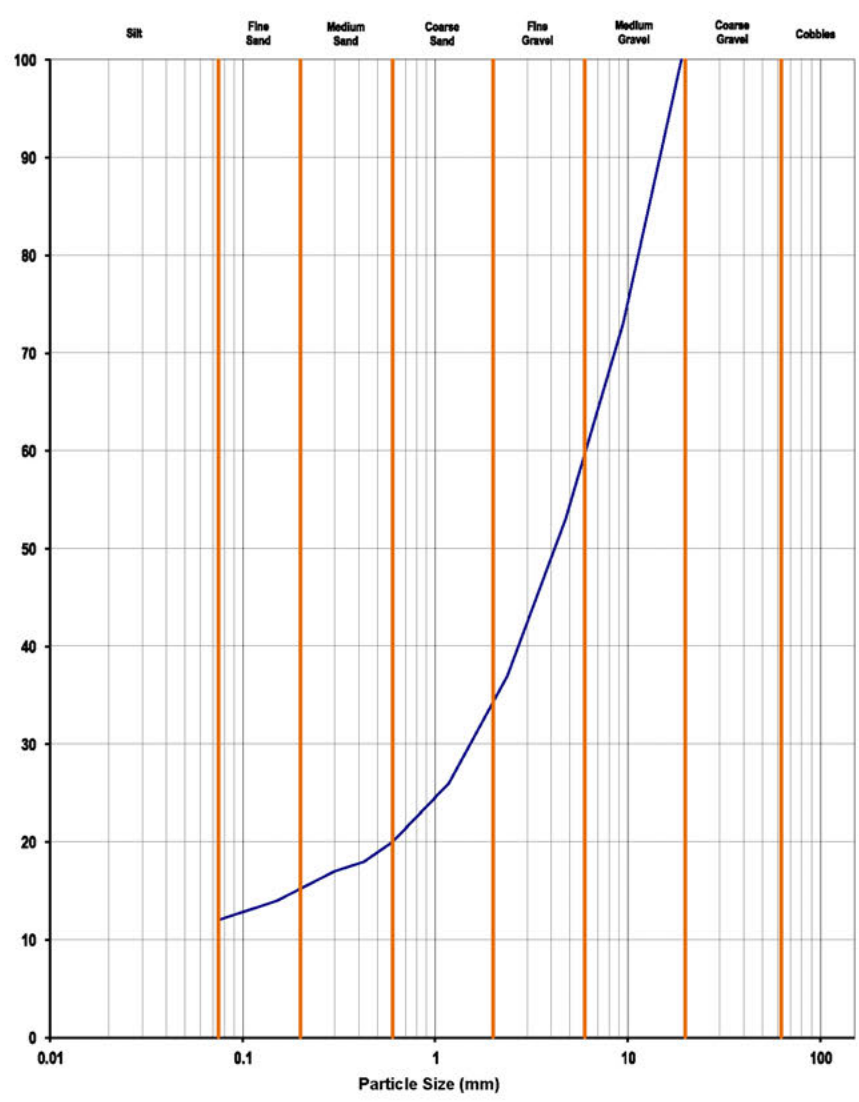
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101103-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-DH2541		
Bore Hole	310-01-DH2541-S00050	Depth From (m)	0.5	Depth To (m)	0.58
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	100
13.2	81
9.5	73
6.7	61
4.75	53
2.36	37
1.18	26
0.600	20
0.425	18
0.300	17
0.150	14
0.075	12



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 12% passing for 0.075 mm and rises to 100% passing at 19.0 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 4.7%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

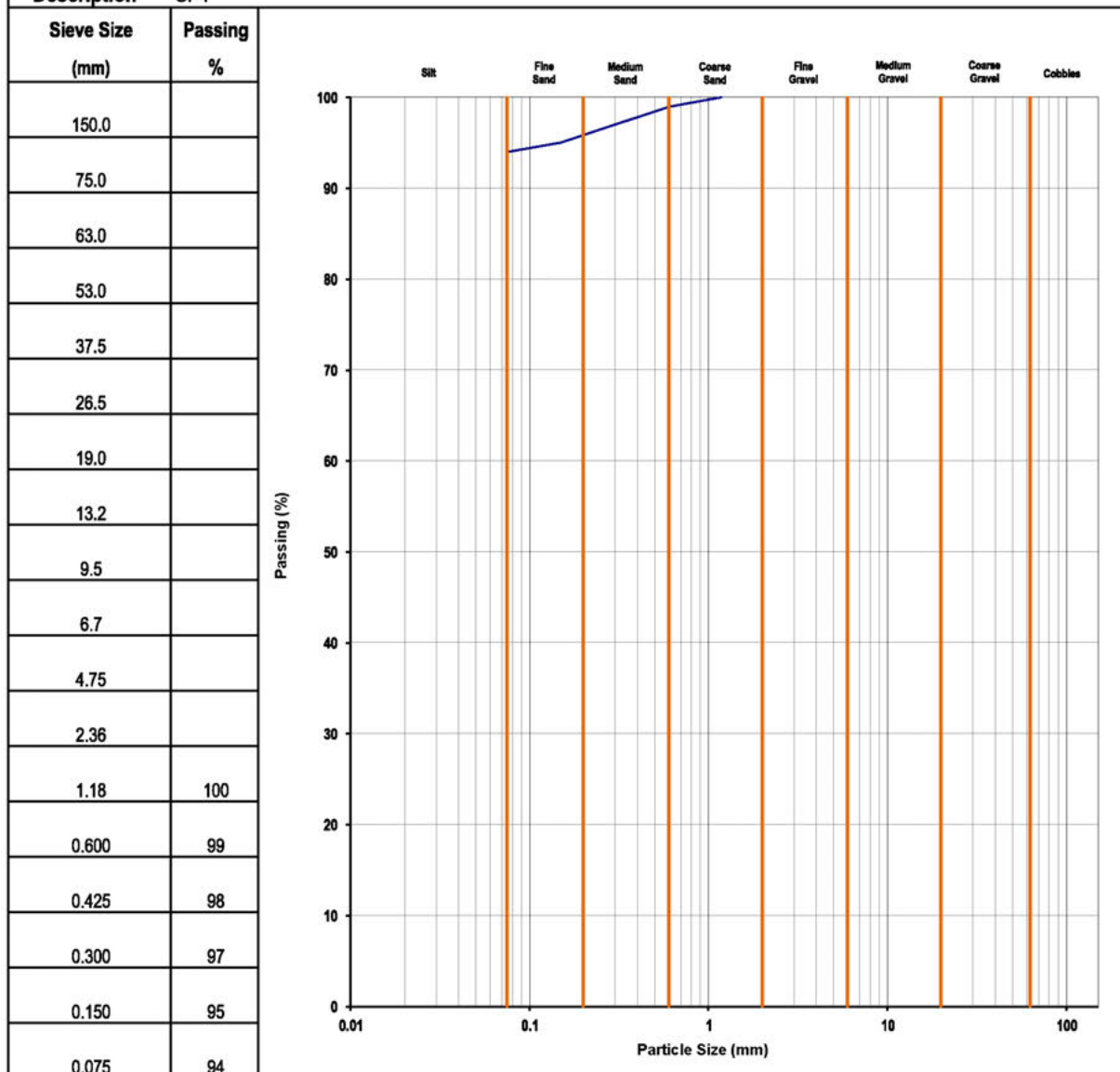
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101104-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4030
Project	Inland Rail B2G	Test Date	26/10/18-6/11/18
Project No	1897791	Client Sample No	310-01-DH2543
Bore Hole	310-01-DH2543-S00050	Depth From (m)	0.5
		Depth To (m)	0.95

Description SPT



NOTES/REMARKS:

-
Moisture Content 22.6%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

POINT LOAD TEST REPORT

Test Method: AS 4133.4.1

Client Golder Associates Pty Limited		Report No. GA100992-101012-PL	
		Request No R2_BH_Rev1_4040	
Address PO Box 1734 MILTON BC QLD 4064		Test Date 31/10/2018	
		Report Date 2/11/2018	
Project Inland Rail B2G			
Project No 1897791			
Trilab Sample No.	100992	100993	100997
Client Sample No	310-01-BH2203	310-01-BH2203	310-01-BH2203
Bore Hole	310-01-BH2203-C00400	310-01-BH2203-C01100	310-01-BH2203-C01660
Depth From/To (m)	4.00-4.40	11.00-11.50	16.60-17.00
Description	C	C	C
Is (MPa)	0.02	0.00	0.08
Is(50) (MPa)	0.03	0.00	0.09
Load Direction	Axial	Axial	Axial
Trilab Sample No.	100999	101009	101012
Client Sample No	310-01-BH2203	310-01-BH2210	310-01-BH2210
Bore Hole	310-01-BH2203-C02620	310-01-BH2210-C01150	310-01-BH2210-C02150
Depth From/To (m)	26.20-28.00	11.50-12.00	21.50-22.00
Description	C	C	C
Is (MPa)	0.03	0.03	0.03
Is(50) (MPa)	0.04	0.03	0.04
Load Direction	Axial	Axial	Diametral
NOTES/REMARKS: Tested as received			
Sample/s supplied by the client			

Page 1 of 2 REP02102

This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Authorised Signatory

 N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
 Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

POINT LOAD TEST REPORT

Test Method: AS 4133.4.1

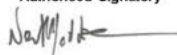
Client	Golder Associates Pty Limited			Report No.	GA100992-101012-PL
				Request No	R2_BH_Rev1_4040
Address	PO Box 1734 MILTON BC QLD 4064			Test Date	31/10/2018
				Report Date	2/11/2018
Project	Inland Rail B2G				
Project No	1897791				
Trilab Sample No.	100994	100997	100998	100999	
Client Sample No	310-01-BH2203	310-01-BH2203	310-01-BH2203	310-01-BH2203	
Bore Hole	310-01-BH2203-C01100	310-01-BH2203-C01660	310-01-BH2203-C02150	310-01-BH2203-C02620	
Depth From/To (m)	11.00-11.50	16.60-17.00	21.50-24.60	26.20-28.00	
Description	C	C	C	C	
Is (MPa)	0.02	0.17	0.10	0.20	
Is(50) (MPa)	0.02	0.18	0.11	0.19	
Load Direction	Diametral	Diametral	Diametral	Diametral	
Trilab Sample No.	101009	101012			
Client Sample No	310-01-BH2210	310-01-BH2210			
Bore Hole	310-01-BH2210-C01150	310-01-BH2210-C02150			
Depth From/To (m)	11.50-12.00	21.50-22.00			
Description	C	C			
Is (MPa)	0.05	0.01			
Is(50) (MPa)	0.05	0.01			
Load Direction	Diametral	Diametral			
NOTES/REMARKS: Tested as received					
Sample/s supplied by the client					

Page 2 of 2

REP02102

This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA100997-MOD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	31/10/2018
Project No.	1897791	Report Date	2/11/2018
Bore Hole	310-01-BH2203	Client Sample No.	310-01-BH2203
Depth From (m)	16.6	Depth To (m)	17
Description	C		
Sample Type	Single Individual Rock Core Specimen		

Uniaxial Compressive Strength 0.663 MPa

Young's Modulus

Tangent 1.93 GPa

Secant 1.69 GPa

Poisson Ratio

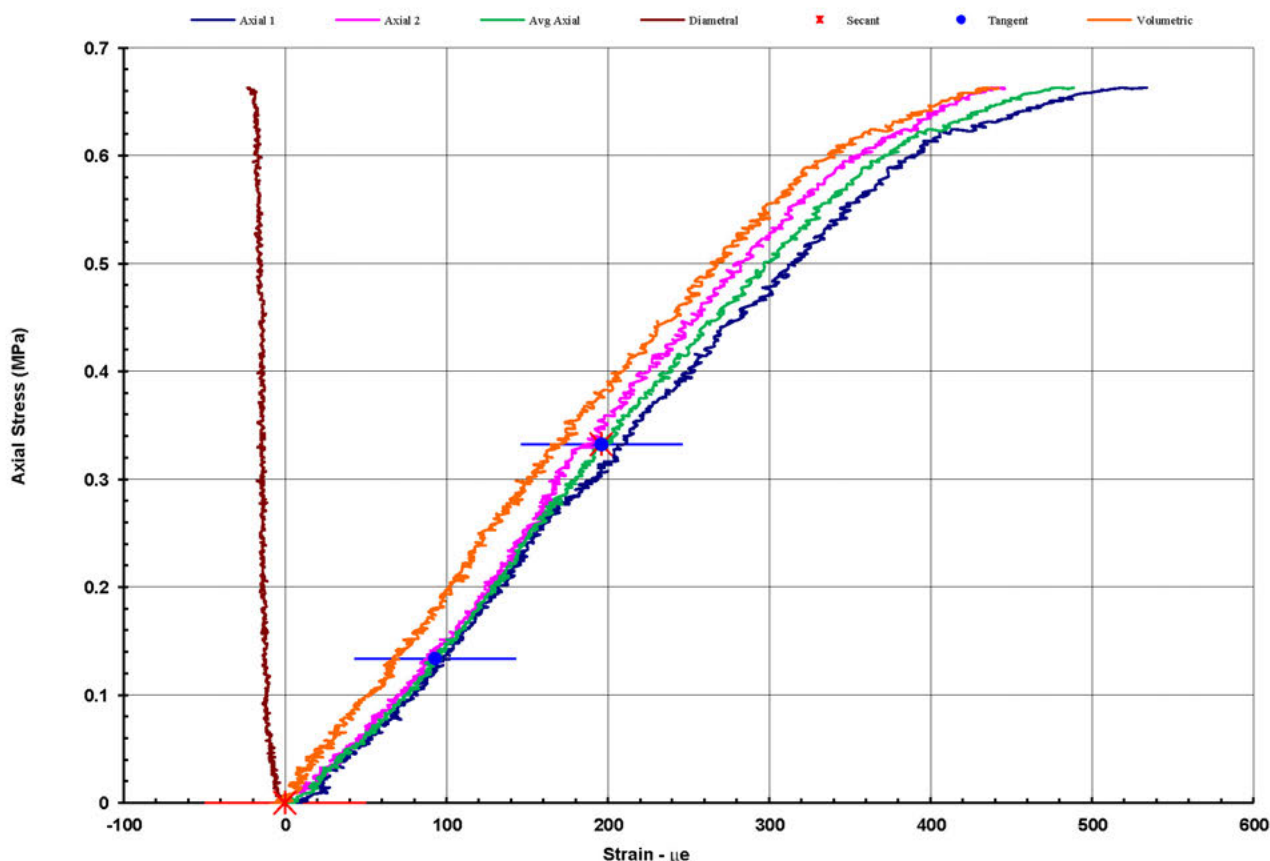
0.080

0.080

from 20 % to 50 % of Max UCS

from 0 % to 50 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

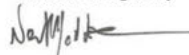
Tested as received.

Page 1 of 2:P13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited		Report No.	GA100997-MOD
Average Sample Diameter (mm)	60.3	Moisture Content (%)	13.3	
Sample Height (mm)	163.2	Wet Density (t/m ³)	2.19	
Duration of Test (min)	8.72	Dry Density (t/m ³)	1.93	
Rate of Displacement (mm/min)	0.10	Bedding (°)	Nil	
Mode of Failure	Shear	Test Apparatus	100kN Compression Machine	

CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	BEFORE TEST
LAB SAMPLE No.	100997	DATE: 31/10/18
BOREHOLE:	310-01-BH2203-C01660	DEPTH: 16.6



CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	AFTER TEST
LAB SAMPLE No.	100997	DATE: 31/10/18
BOREHOLE:	310-01-BH2203-C01660	DEPTH: 16.6



Notes/Remarks:

Sample/s supplied by client

Photo not to scale

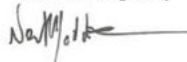
Tested as received.

Page 2 of 2 REP13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

SLAKE DURABILITY INDEX TEST REPORT

Test Method: AS 4133.3.4

Client	Golder Associates Pty Limited	Report No.	GA101010-SD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	29/10/2018
Project No	1897791	Report Date	02/11/2018
		Client Sample No.	310-01-BH2210

Sample No.	101010
BoreHole	310-01-BH2210-C01600
Depth From (m)	16
Depth To (m)	16.5
Description	C
Slake Durability (1st cycle) (%)	78.7
Slake Durability (2nd cycle) (%)	60.7
Slake Durability (3rd cycle) (%)	-
Slake Durability (4th cycle) (%)	-
Water Used	Tap Water
Temperature (°C)	20.4
Appearance of fragments retained in the drum	Moderate Deterioration
Appearance of fragments passing through the drum	Fragments & Fines

NOTES/REMARKS:

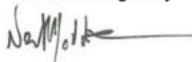
Sample/s supplied by the client

Page 1 of 1 REP02402

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in
 this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited			Report No.	GA101012-MOD
Address	PO Box 1734 MILTON BC	QLD	4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G			Test Date	31/10/2018
Project No.	1897791			Report Date	2/11/2018
Bore Hole	310-01-BH2210	Depth From (m)	21.5	Client Sample No.	310-01-BH2210
Description	C			Depth To (m)	22
Sample Type	Single Individual Rock Core Specimen				

Uniaxial Compressive Strength 0.045 MPa

Young's Modulus

Tangent 0.010 GPa

Secant 0.013 GPa

Poisson Ratio

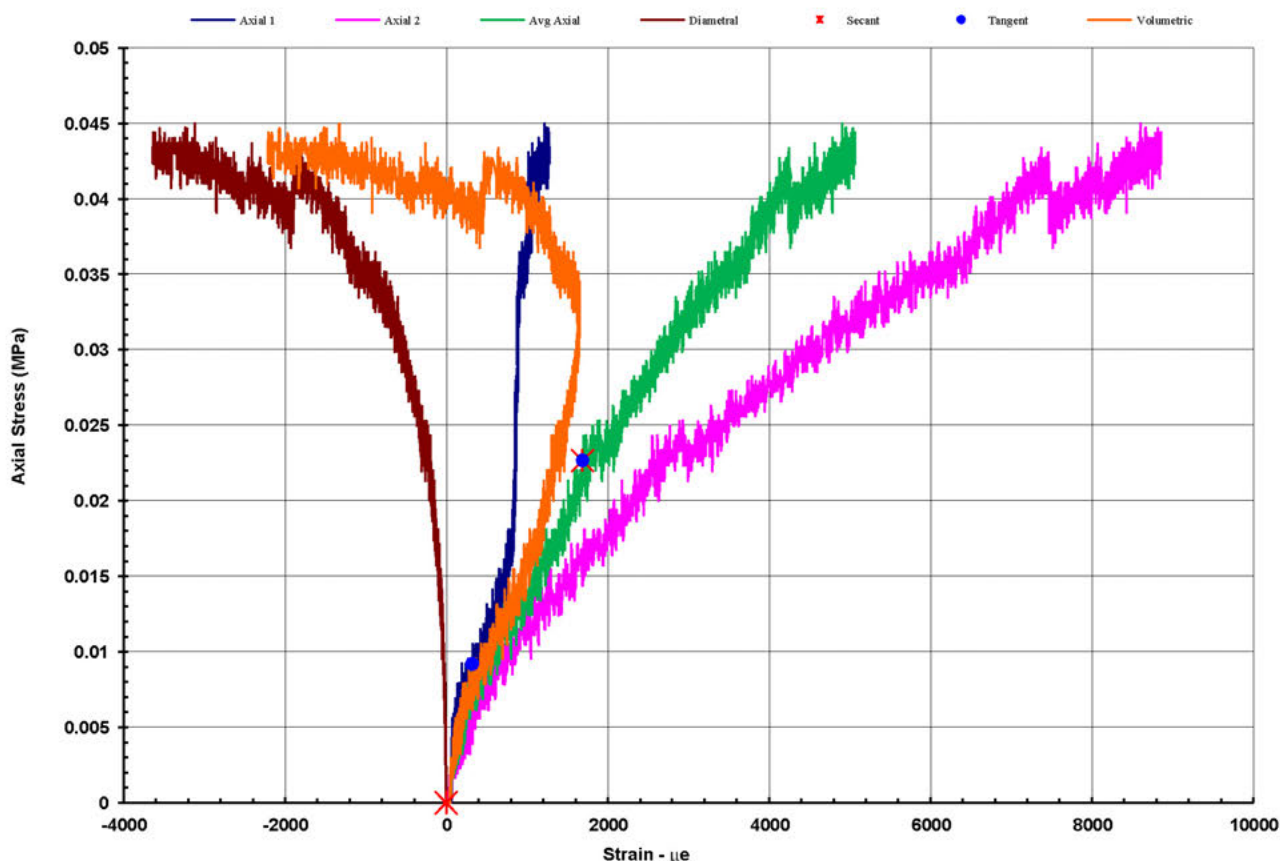
0.115

0.115

from 20 % to 50 % of Max UCS

from 0 % to 50 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

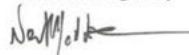
Tested as received.

Page 1 of 2:P13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101012-MOD
Average Sample Diameter (mm)	62.3	Moisture Content (%)	#DIV/0!
Sample Height (mm)	156.0	Wet Density (t/m ³)	1.99
Duration of Test (min)	18.50	Dry Density (t/m ³)	#DIV/0!
Rate of Displacement (mm/min)	0.10	Bedding (°)	Nil
Mode of Failure	Shear	Test Apparatus	100kN Compression Machine

CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	BEFORE TEST
LAB SAMPLE No.	101012	DATE: 31/10/18
BOREHOLE:	310-01-BH2210-C02150	DEPTH: 21.5



CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	AFTER TEST
LAB SAMPLE No.	101012	DATE: 31/10/18
BOREHOLE:	310-01-BH2210-C02150	DEPTH: 21.5



Notes/Remarks:

Sample/s supplied by client

Photo not to scale

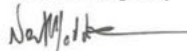
Tested as received.

Page 2 of 2 REP13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

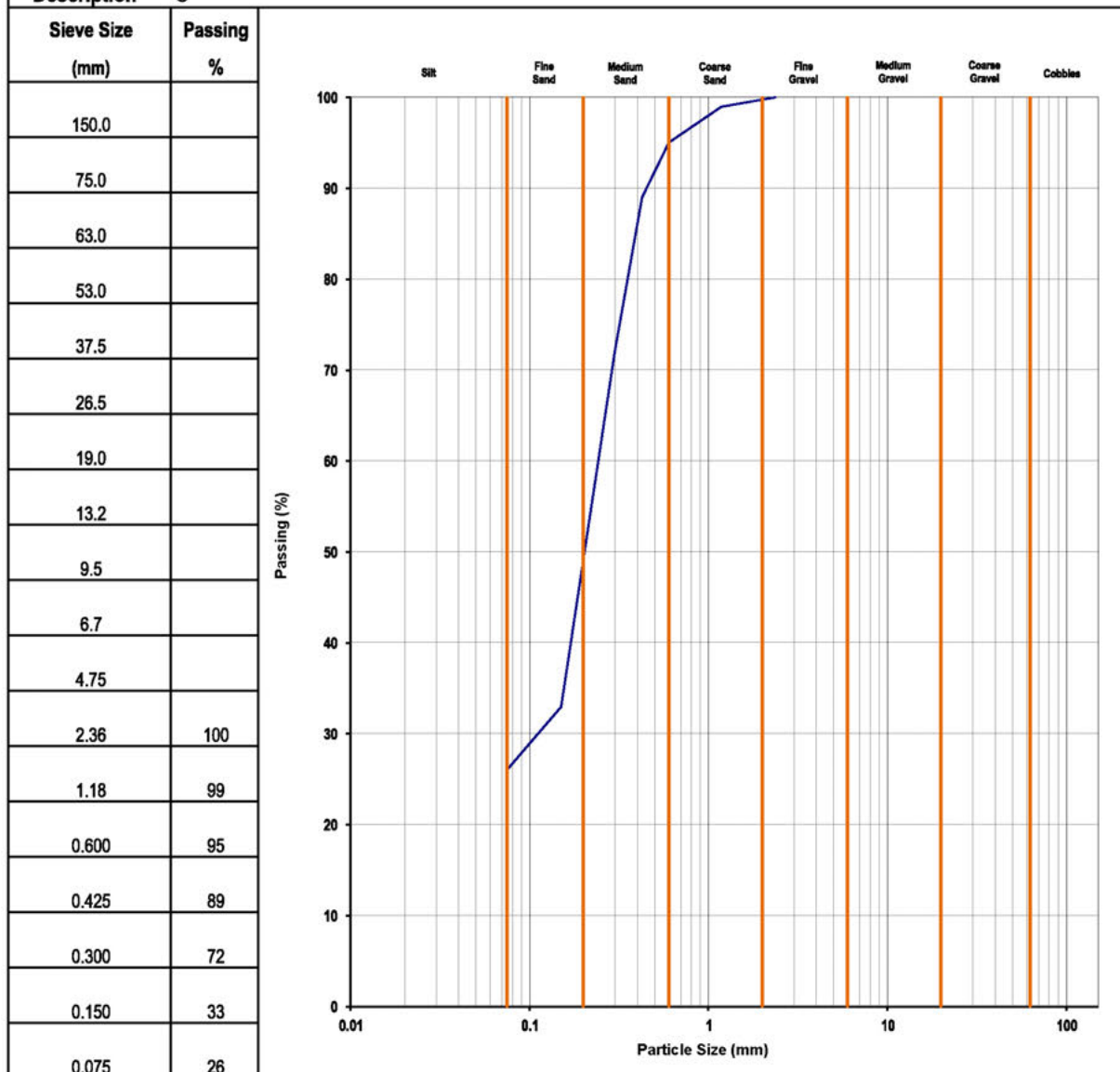
ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA100995-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	30/10/18-8/11/18
Project No	1897791	Client Sample No	310-01-BH2203
Bore Hole	310-01-BH2203-C01200	Depth From (m)	12
		Depth To (m)	12.5

Description C



NOTES/REMARKS:

-
Moisture Content 12.7%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

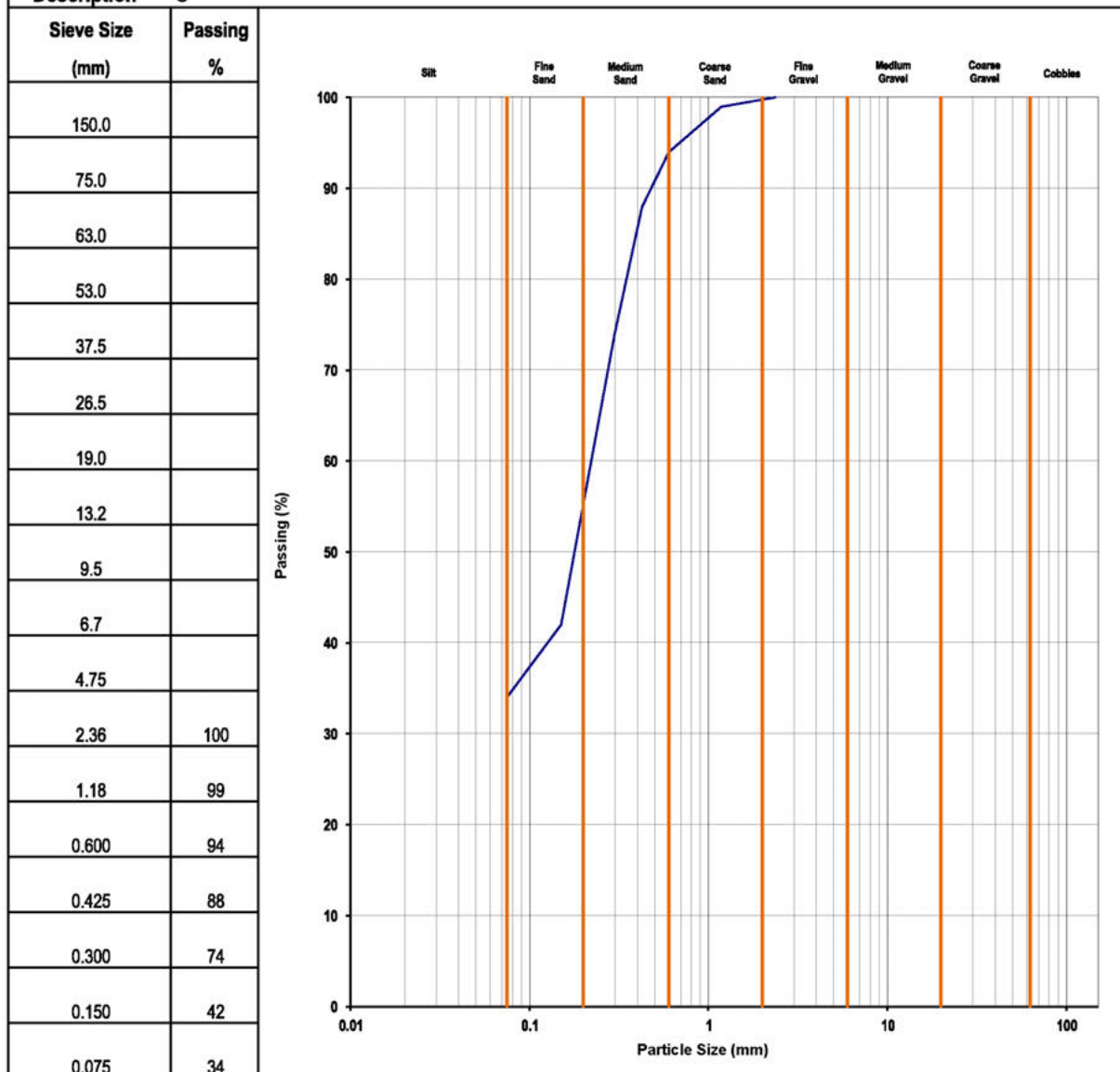
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA100996-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	30/10/18-8/11/18
Project No	1897791	Report Date	8/11/2018
Bore Hole	310-01-BH2203-C01300	Client Sample No	310-01-BH2203
Depth From (m)	13	Depth To (m)	13.5

Description C



NOTES/REMARKS:

-
Moisture Content 11.5%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

Test Method: AS 1289 3.6.1, 2.1.1

NOTES/REMARKS:	-		
	Moisture Content 11%		
	Sample/s supplied by the client		
		Page 1 of 1	REP0390

Laboratory No. 9926

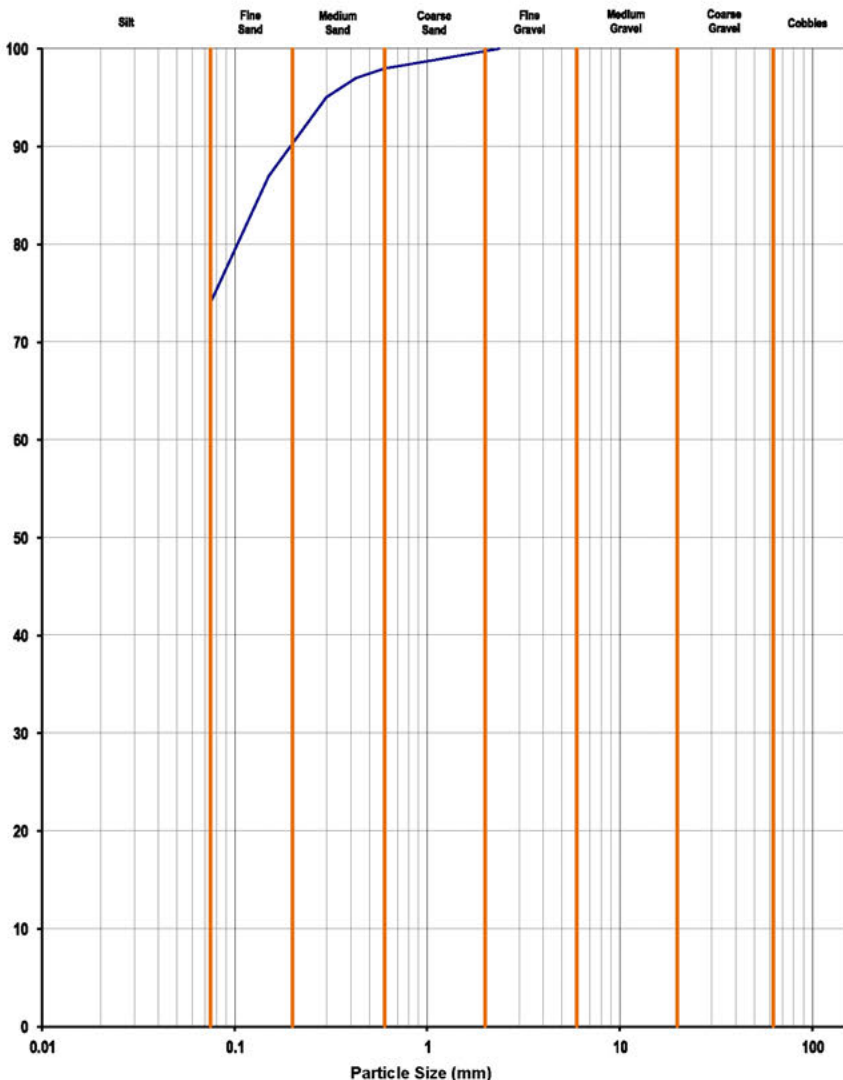
ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101001-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2206		
Bore Hole	310-01-BH2206-S00680	Depth From (m)	6.8	Depth To (m)	7.25
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	98
0.425	97
0.300	95
0.150	87
0.075	74



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 74% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.36 mm), Fine Gravel (2.36 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 18.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

CERTIFICATE OF ANALYSIS

Work Order : **EB1826674**
Client : **TRILAB PTY LTD**
Contact : **MR CHRIS CHANNON**
Address : **346A BILSEN RD**
GEEBUNG QLD, AUSTRALIA 4031
Telephone : **+61 07 3265 5656**
Project : **1897791 - Inland Rail B2G**
Order number : **BNE 1911001**
C-O-C number : **---**
Sampler : **---**
Site : **---**
Quote number : **EN/333**
No. of samples received : **7**
No. of samples analysed : **7**

Page : **1 of 4**
Laboratory : **Environmental Division Brisbane**
Contact : **Customer Services EB**
Address : **2 Byth Street Stafford QLD Australia 4053**
Telephone : **+61-7-3243 7222**
Date Samples Received : **02-Nov-2018 11:20**
Date Analysis Commenced : **05-Nov-2018**
Issue Date : **09-Nov-2018 15:12**



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				101002 / 310-01-BH2206-S0113 0 / 11.30-11.613m	101005 / 310-01-BH2206-S0248 0 / 24.80-25.25m	101008 / 310-01-BH2210-C0105 0 / 10.50-11.00m	101016 / 310-01-BH2216-S0098 0 / 9.80-10.25m	101017 / 310-01-BH2216-S0143 0 / 14.30-14.75m
Client sampling date / time				02-Nov-2018 00:00	02-Nov-2018 00:00	02-Nov-2018 00:00	02-Nov-2018 00:00	02-Nov-2018 00:00
Compound	CAS Number	LOR	Unit	EB1826674-001	EB1826674-002	EB1826674-003	EB1826674-004	EB1826674-005
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	7.4	6.2	8.8	8.3	8.4
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	17.9	19.3	17.4	27.9	19.7
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	60	10	40	80	20
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	40	20	280	770	380



Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Client sample ID

				101025 / 310-01-BH2219-S0072 2 / 7.22-7.67m	101028 / 310-01-BH2219-S0130 0 / 13.00-13.40m	----	----	----
Client sampling date / time				02-Nov-2018 00:00	02-Nov-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB1826674-006	EB1826674-007	-----	-----	-----
				Result	Result	---	---	---
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	7.0	8.2	---	---	---
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	18.3	16.4	---	---	---
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	<10	20	---	---	---
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	360	670	---	---	---

ATTERBERG LIMITS TEST REPORT

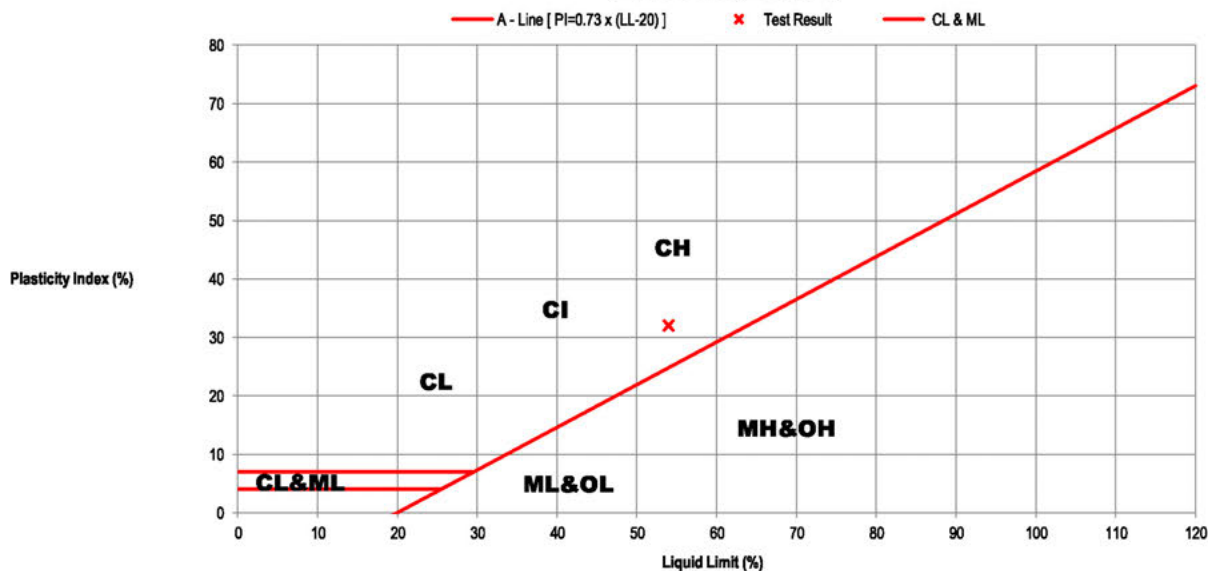
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101003-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	3/11/2018
Project No.	1897791	Report Date	10/11/2018
Bore Hole	310-01-BH2206-S01880	Client Sample No.	310-01-BH2206
Description	SPT	Depth From (m)	18.8
		Depth To (m)	19.25

RESULTS OF TESTING

Liquid Limit (%) 54
 Plastic Limit (%) 22
 Plasticity Index (%) 32
 Linear Shrinkage (%) 9.5 Curling Occurred
 Moisture Content (%) 31.0
 Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

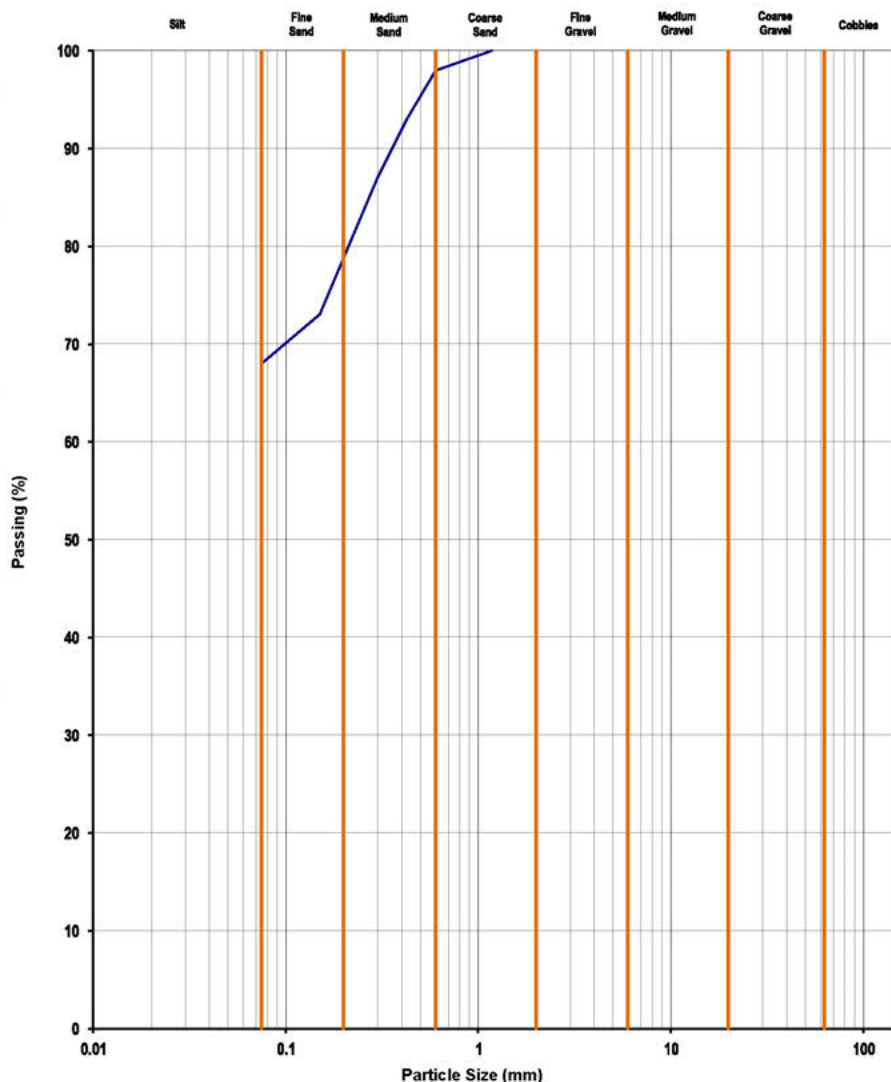
Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101003-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	29/10/18-8/11/18
Project No	1897791	Report Date	8/11/2018
Bore Hole	310-01-BH2206-S01880	Client Sample No	310-01-BH2206
Depth From (m)	18.8	Depth To (m)	19.25

Description		SPT
Sieve Size	Passing	
(mm)	%	
150.0		
75.0		
63.0		
53.0		
37.5		
26.5		
19.0		
13.2		
9.5		
6.7		
4.75		
2.36		
1.18	100	
0.600	98	
0.425	93	
0.300	87	
0.150	73	
0.075	68	

Soil texture labels: Silt, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, Cobbles

Sieve Size (mm)	Passing (%)
0.075	68
0.150	73
0.300	87
0.425	93
0.600	98
1.18	100



NOTES/REMARKS:

-
Moisture Content 31%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

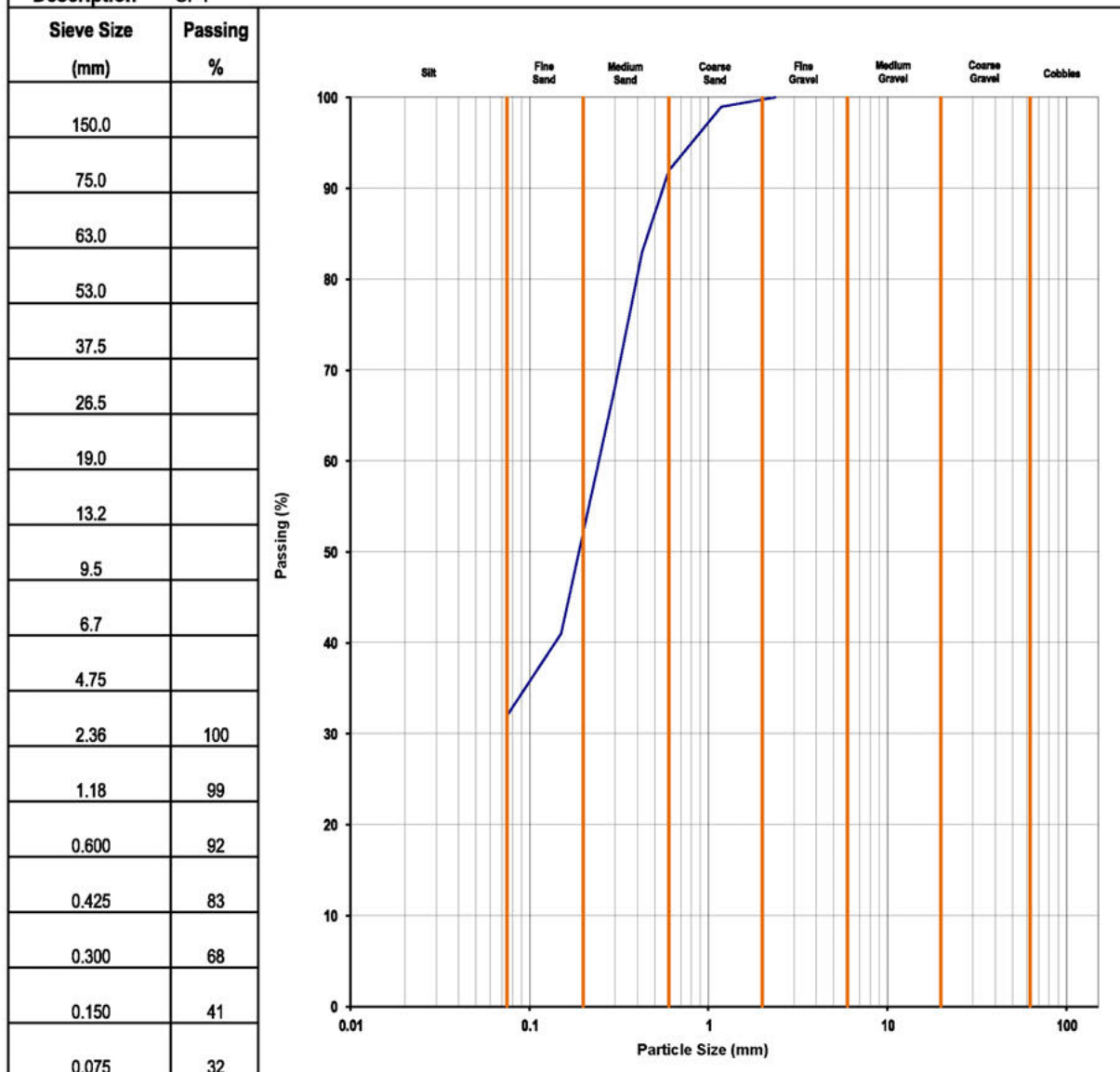
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101004-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	30/10/18-8/11/18
Project No	1897791	Report Date	8/11/2018
Bore Hole	310-01-BH2206-S02180	Client Sample No	310-01-BH2206
Depth From (m)	21.8	Depth To (m)	22.1

Description SPT



NOTES/REMARKS:

-
Moisture Content 15.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

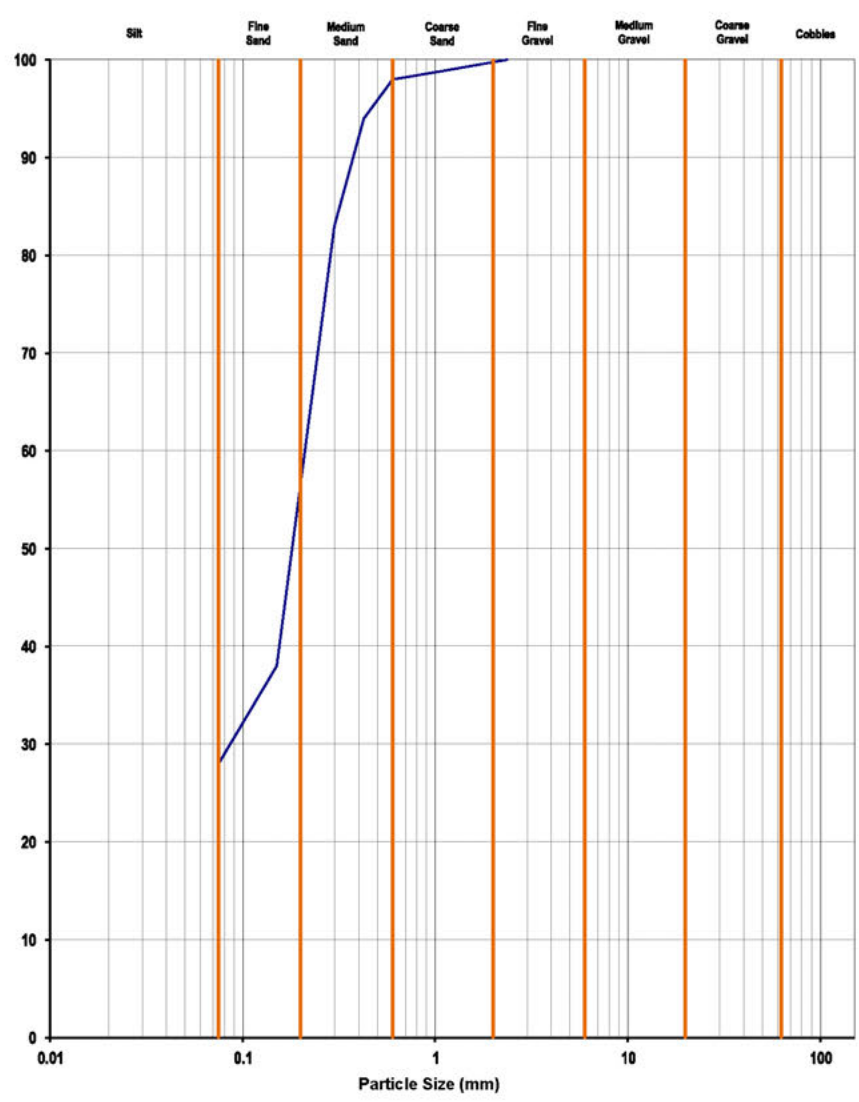
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101006-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2210		
Bore Hole	310-01-BH2210-S00200	Depth From (m)	2	Depth To (m)	2.12
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	98
0.425	94
0.300	83
0.150	38
0.075	28



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 28% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 2.8%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

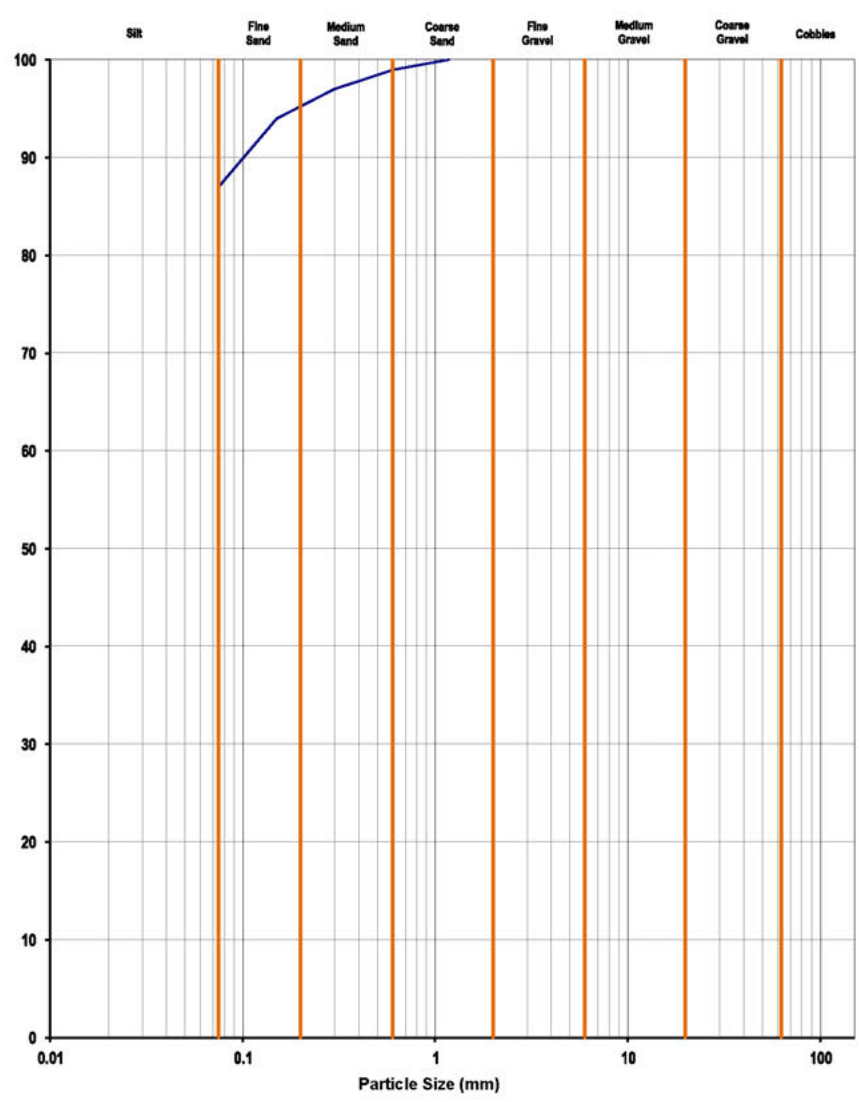
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101011-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2210		
Bore Hole	310-01-BH2210-S01550	Depth From (m)	15.5	Depth To (m)	15.95
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	99
0.425	98
0.300	97
0.150	94
0.075	87



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 87% passing for 0.075 mm and reaches 100% passing at 1.18 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 38%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

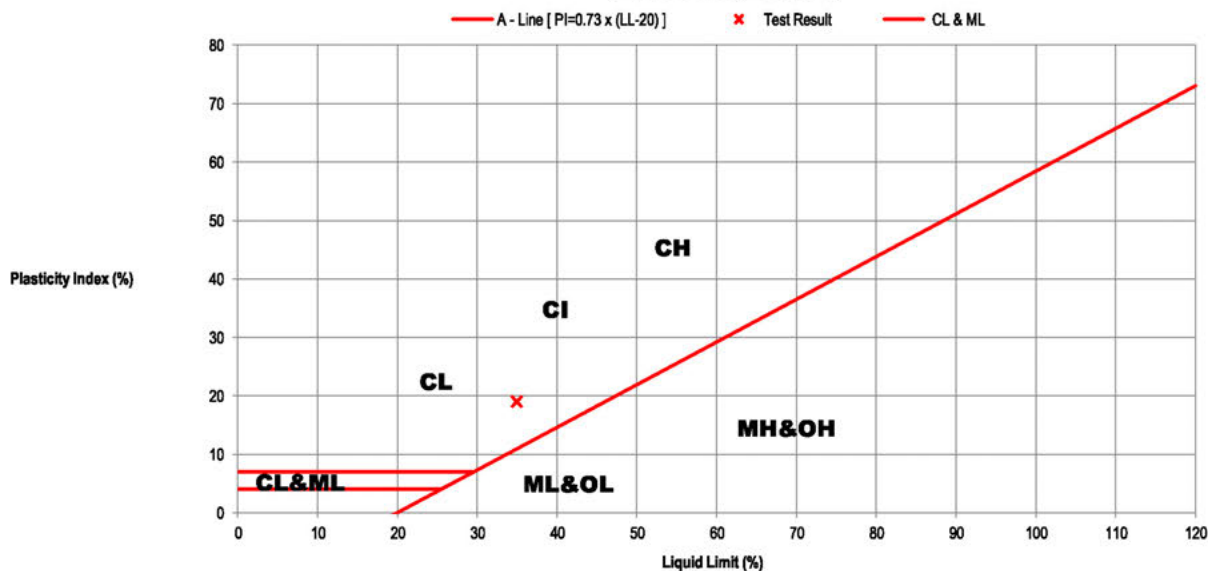
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101013-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2210-S02750	Client Sample No.	310-01-BH2210
Description	SPT	Depth From (m)	27.5
		Depth To (m)	27.77

RESULTS OF TESTING

Liquid Limit (%) 35
 Plastic Limit (%) 16
 Plasticity Index (%) 19
 Linear Shrinkage (%) 8.5 Curling Occurred
 Moisture Content (%) 18.0
 Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

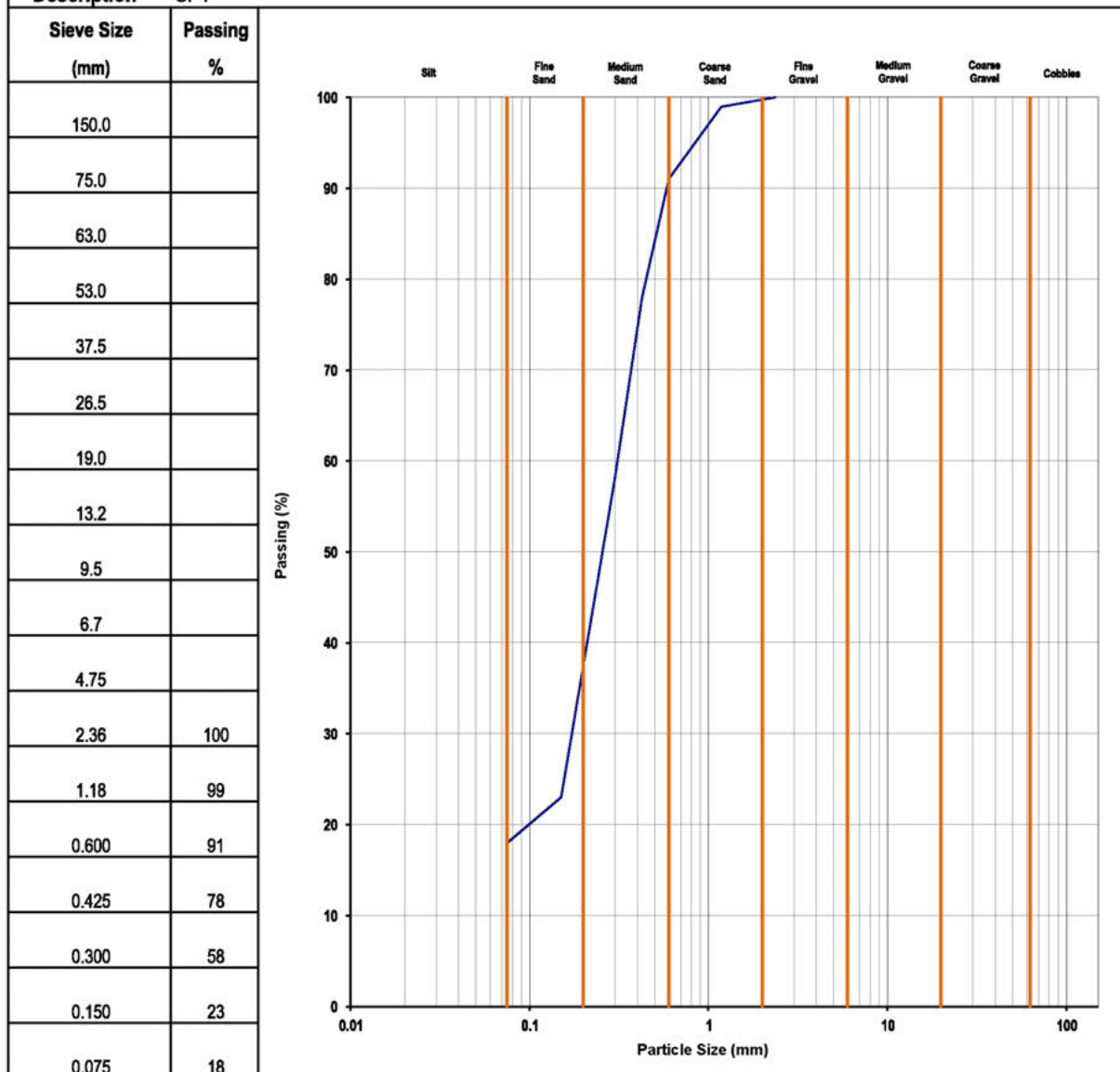
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101014-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4040
		Test Date	29/10/18-8/11/18
		Report Date	8/11/2018

Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2216		
Bore Hole	310-01-BH2216-S00200	Depth From (m)	2	Depth To (m)	2.45

Description	SPT
--------------------	-----



NOTES/REMARKS:	-
	Moisture Content 4.2%
	Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

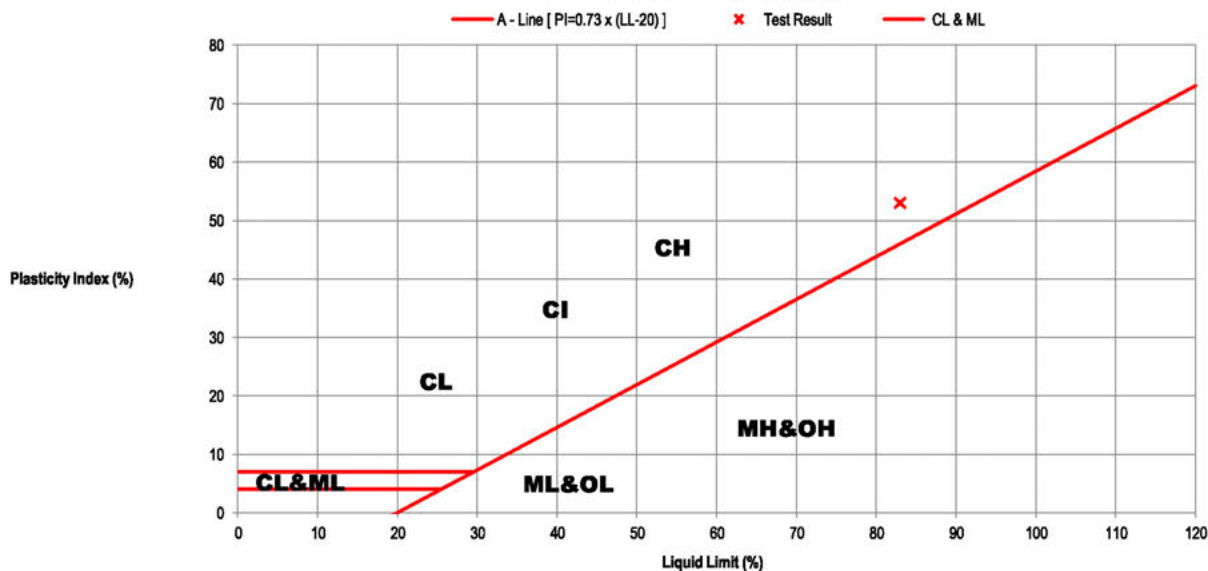
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101015-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2216-S00680	Client Sample No.	310-01-BH2216
Description	SPT	Depth From (m)	6.8
		Depth To (m)	7.25

RESULTS OF TESTING

Liquid Limit (%) 83
Plastic Limit (%) 30
Plasticity Index (%) 53
Linear Shrinkage (%) 19.5 **Curling Occurred**
Moisture Content (%) 27.2
Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

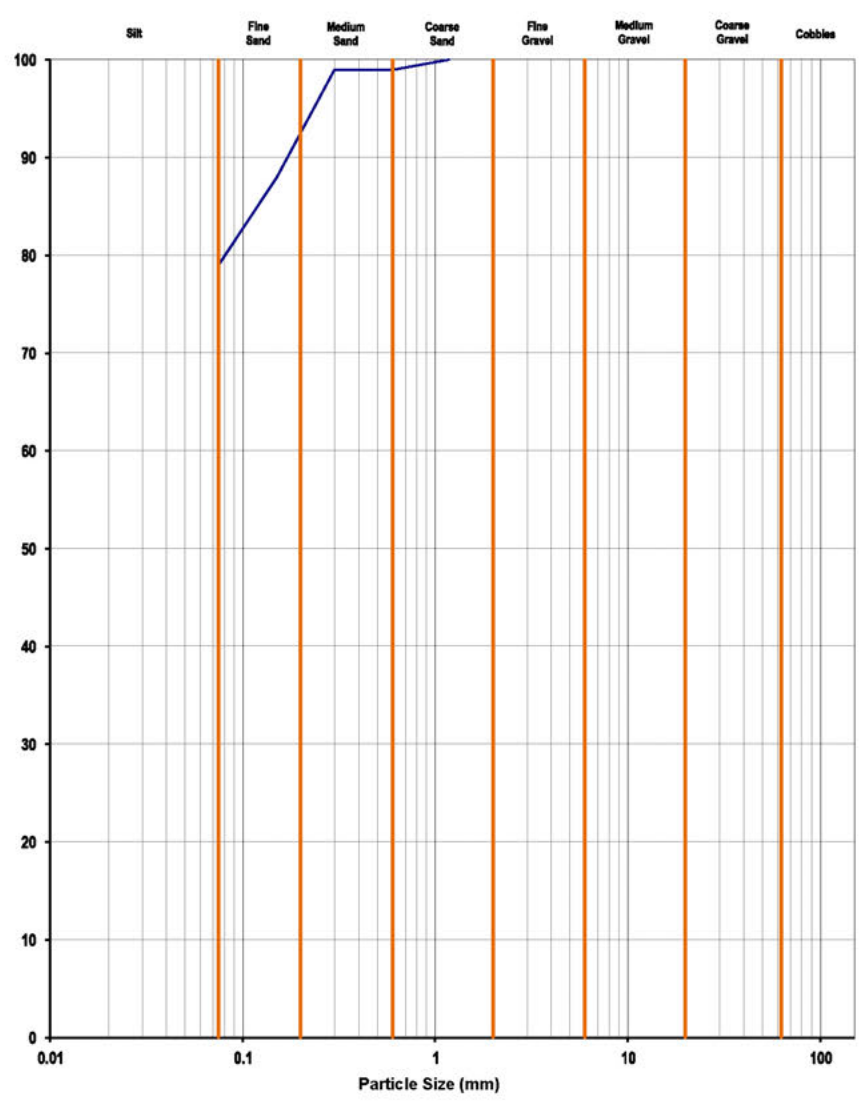
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101015-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2216		
Bore Hole	310-01-BH2216-S00680	Depth From (m)	6.8	Depth To (m)	7.25
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	99
0.425	99
0.300	99
0.150	88
0.075	79



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at 100% passing for 1.18 mm and decreases to 79% passing at 0.075 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 27.2%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

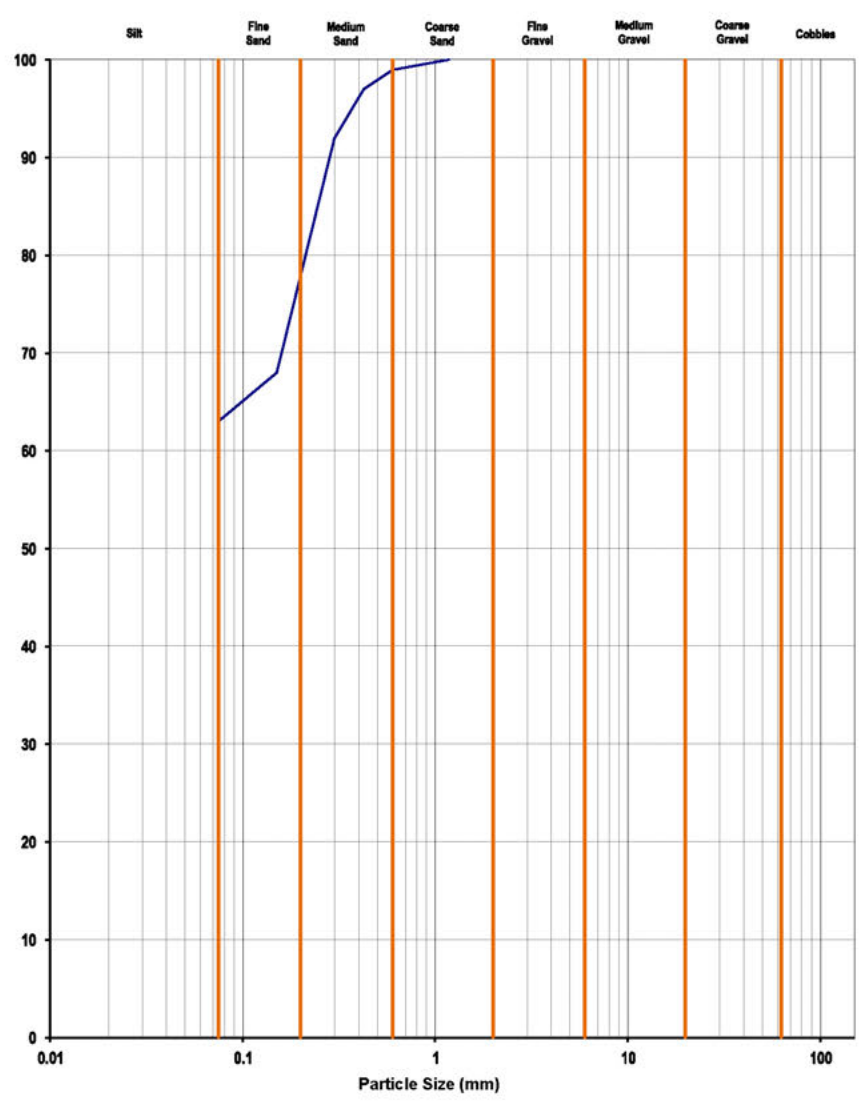
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101018-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2216		
Bore Hole	310-01-BH2216-U01480	Depth From (m)	14.8	Depth To (m)	15.1
Description	U				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	99
0.425	97
0.300	92
0.150	68
0.075	63



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 63% passing for 0.075 mm, rises to 92% at 0.300 mm, 97% at 0.425 mm, and reaches 100% at 1.18 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.850 mm), Coarse Sand (0.850 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 26.7%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

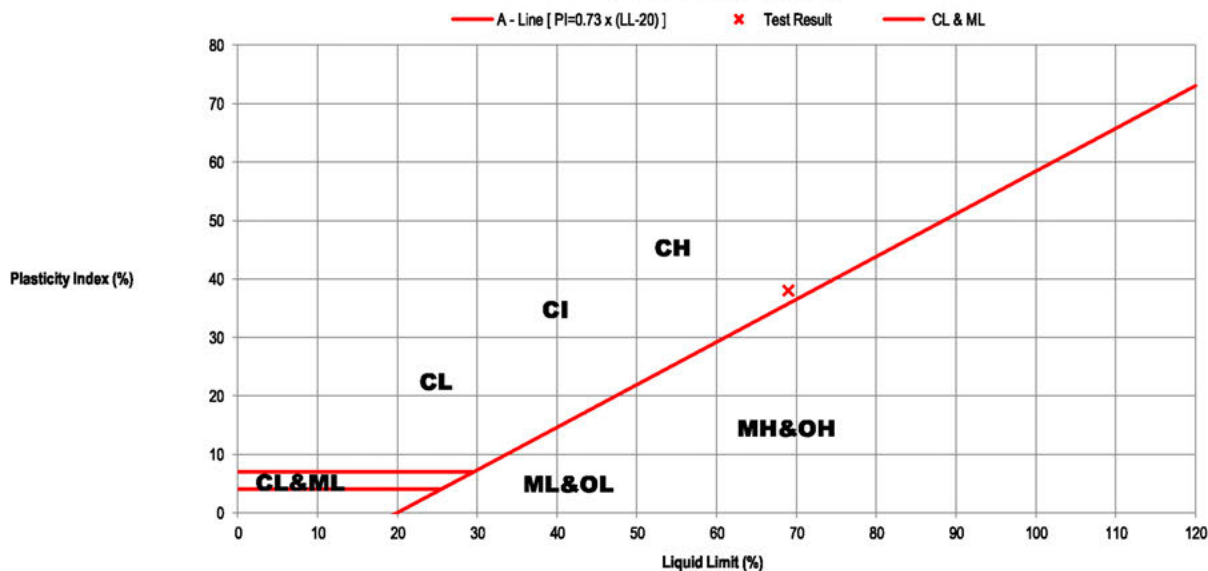
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101019-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2216-S01580	Client Sample No.	310-01-BH2216
Description	SPT	Depth From (m)	15.8
		Depth To (m)	16.25

RESULTS OF TESTING

Liquid Limit (%) 69
Plastic Limit (%) 31
Plasticity Index (%) 38
Linear Shrinkage (%) 15.5 **Curling Occurred**
Moisture Content (%) 25.8
Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

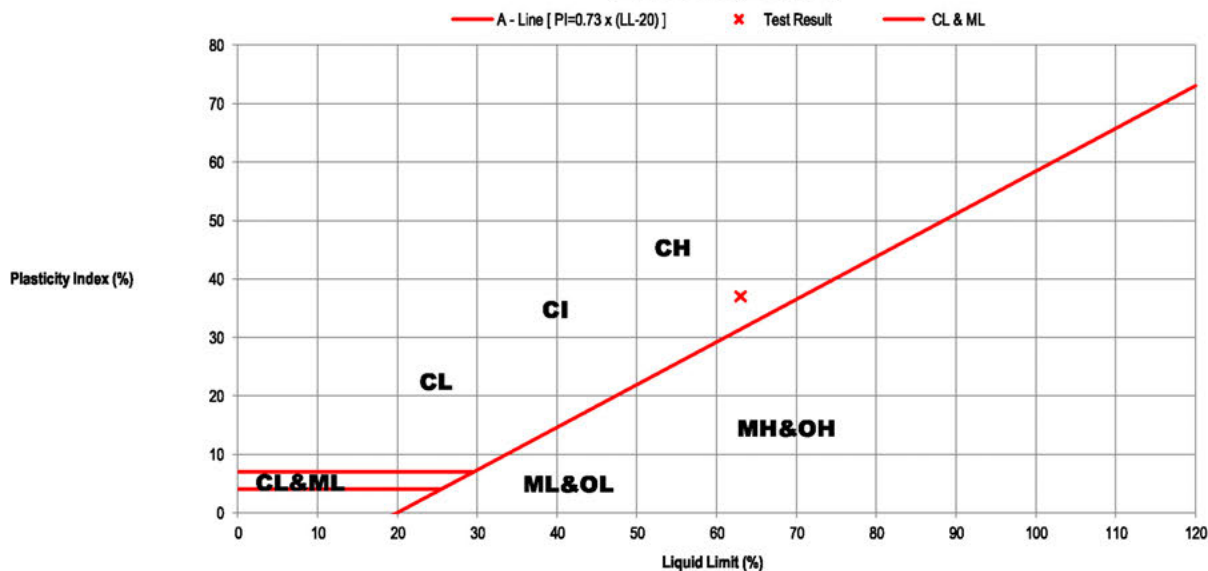
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101020-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2216-S01880	Client Sample No.	310-01-BH2216
Description	SPT	Depth From (m)	18.8
		Depth To (m)	19.25

RESULTS OF TESTING

Liquid Limit (%) 63
Plastic Limit (%) 26
Plasticity Index (%) 37
Linear Shrinkage (%) 15.5 **Curling Occurred**
Moisture Content (%) 24.4
Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

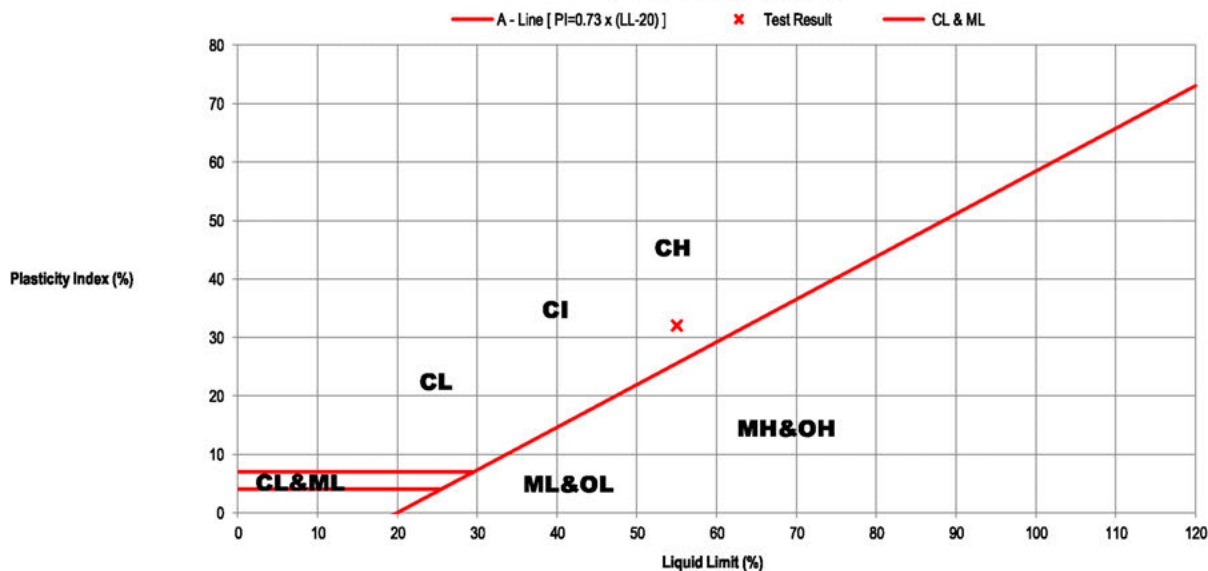
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101021-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2216-S02630	Client Sample No.	310-01-BH2216
Description	SPT	Depth From (m)	26.3
		Depth To (m)	26.71

RESULTS OF TESTING

Liquid Limit (%) 55
 Plastic Limit (%) 23
 Plasticity Index (%) 32
 Linear Shrinkage (%) 13.5 Curling Occurred
 Moisture Content (%) 19.1
 Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

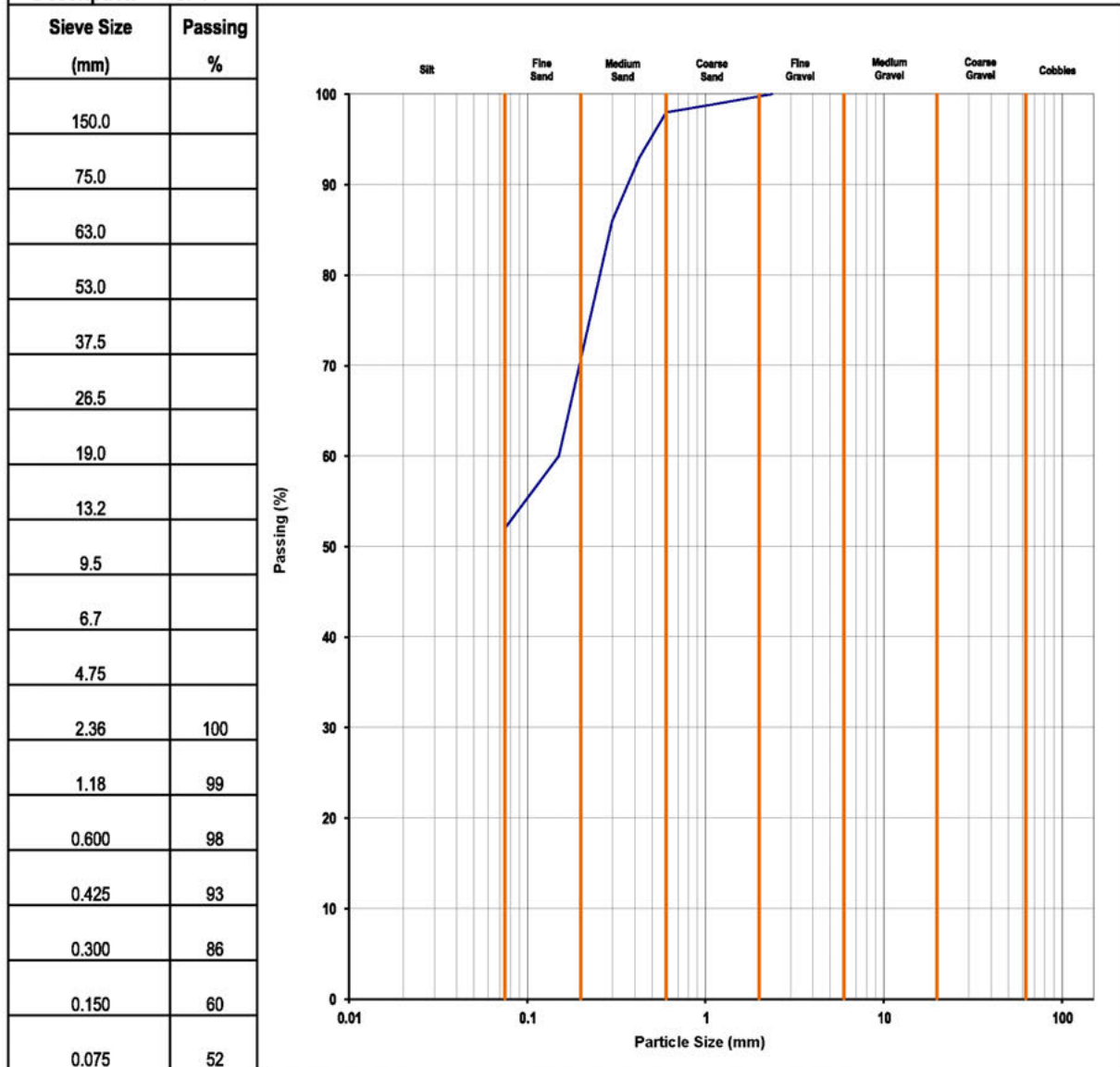
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101021-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4040
		Test Date	30/11/18-8/11/18
		Report Date	8/11/2018

Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2216		
Bore Hole	310-01-BH2216-S02630	Depth From (m)	26.3	Depth To (m)	26.71

Description	SPT
--------------------	-----



NOTES/REMARKS:	-
	Moisture Content 19.1%
	Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

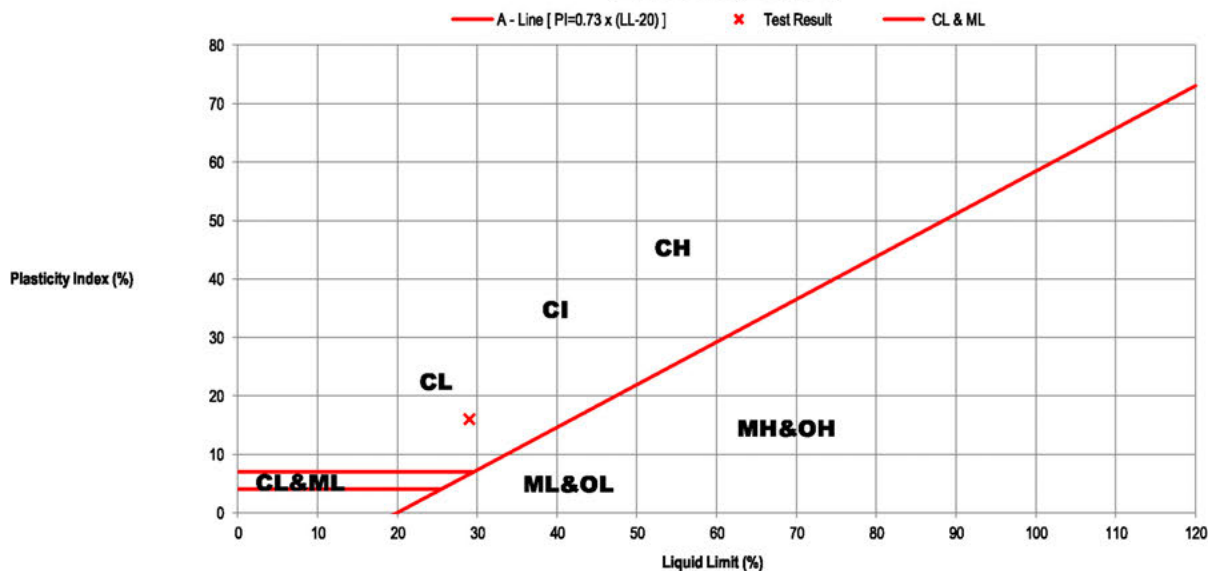
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101023-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	10/11/2018
Bore Hole	310-01-BH2219-S00300	Client Sample No.	310-01-BH2219
Description	SPT	Depth From (m)	3
		Depth To (m)	3.45

RESULTS OF TESTING

Liquid Limit (%) 29
Plastic Limit (%) 13
Plasticity Index (%) 16
Linear Shrinkage (%) 6.5 **Curling Occurred**
Moisture Content (%) 13.0
Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

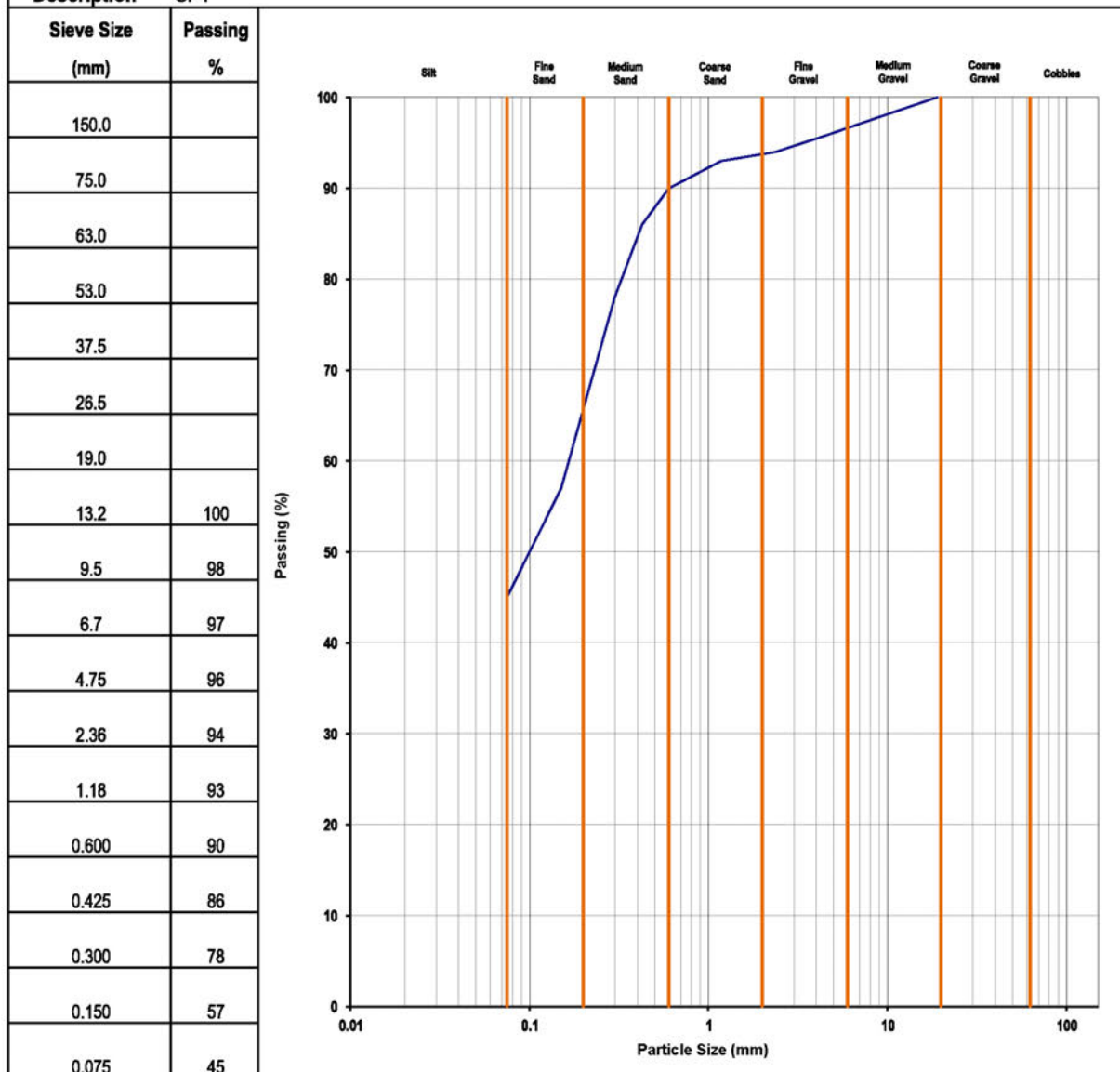
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101023-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	29/10/18-8/11/18
Project No	1897791	Client Sample No	310-01-BH2219
Bore Hole	310-01-BH2219-S00300	Depth From (m)	3
		Depth To (m)	3.45

Description SPT



NOTES/REMARKS:

-
Moisture Content 13%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

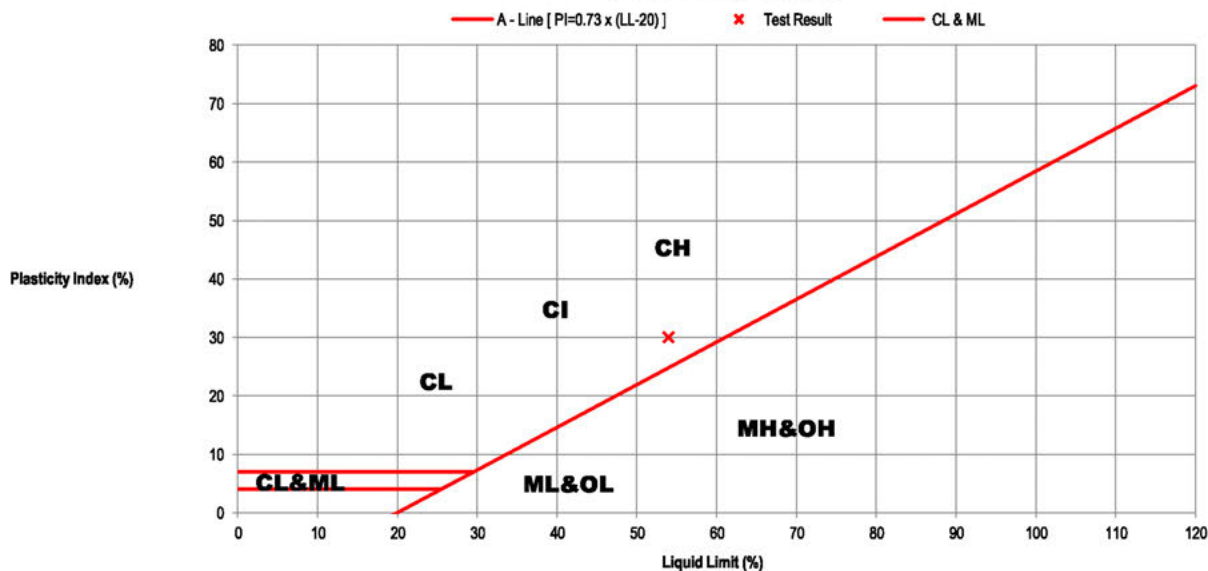
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101024-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2219-U00700	Client Sample No.	310-01-BH2219
Description	U	Depth From (m)	7
		Depth To (m)	7.22

RESULTS OF TESTING

Liquid Limit (%) 54
 Plastic Limit (%) 24
 Plasticity Index (%) 30
 Linear Shrinkage (%) 13.0 Curling Occurred
 Moisture Content (%) 21.5
 Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

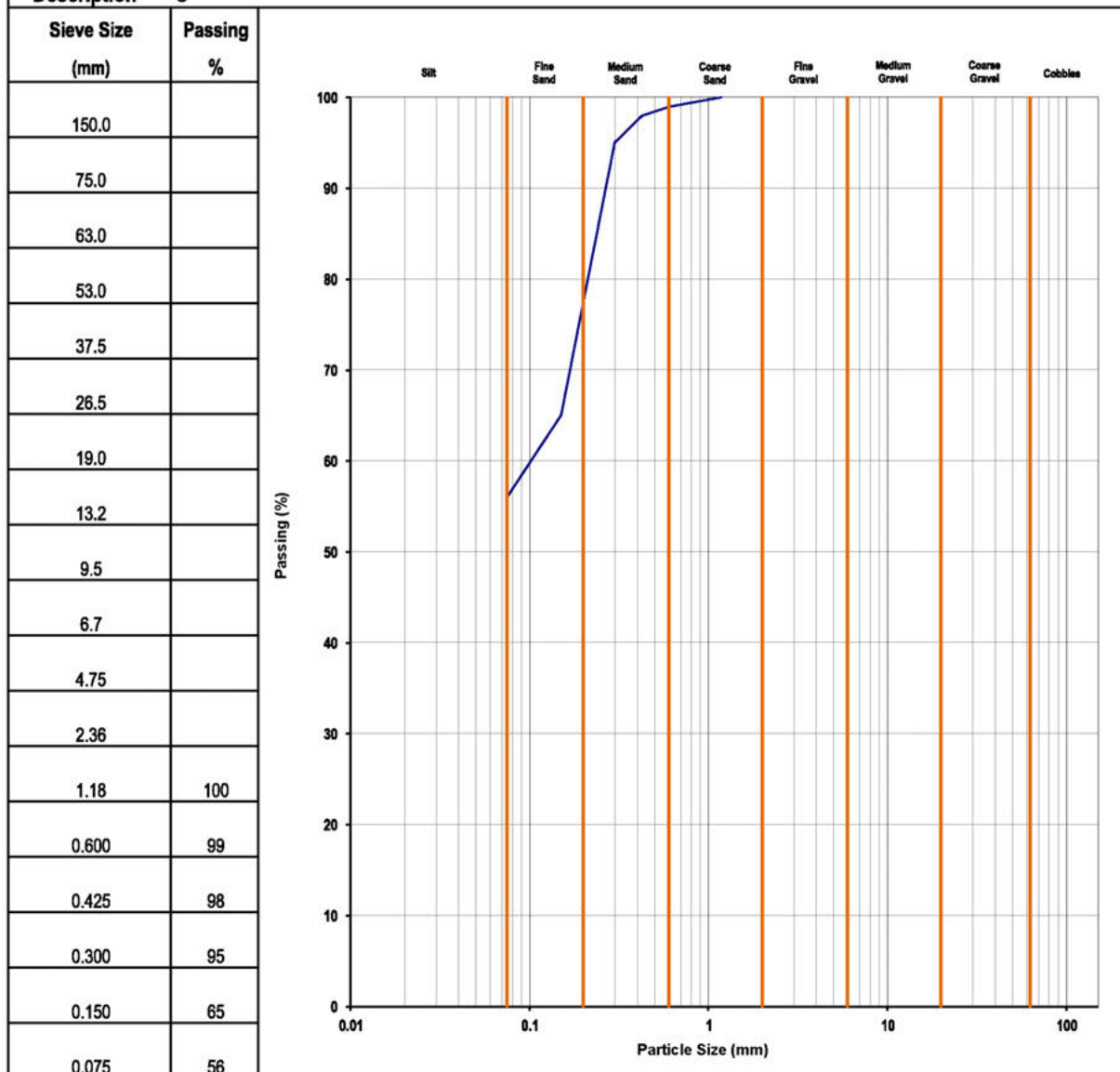
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited		Report No.	GA101024-G
Address	PO Box 1734 MILTON BC	QLD 4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G		Test Date	30/10/18-6/11/18
Project No	1897791	Client Sample No	310-01-BH2219	
Bore Hole	310-01-BH2219-U00700	Depth From (m)	7	Depth To (m) 7.22

Description U



NOTES/REMARKS:

-
Moisture Content 21.5%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

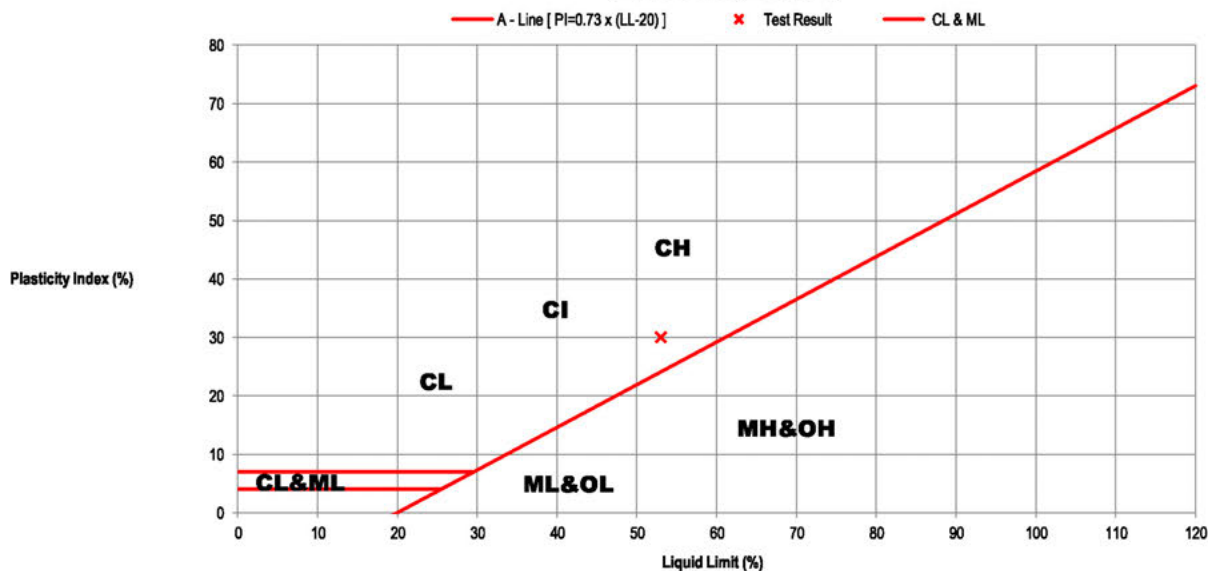
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101026-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2219-U00850	Client Sample No.	310-01-BH2219
Description	U	Depth From (m)	8.5
		Depth To (m)	8.88

RESULTS OF TESTING

Liquid Limit (%)	53	
Plastic Limit (%)	23	
Plasticity Index (%)	30	
Linear Shrinkage (%)	14.5	Cracking & Curling Occurred
Moisture Content (%)	20.2	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon

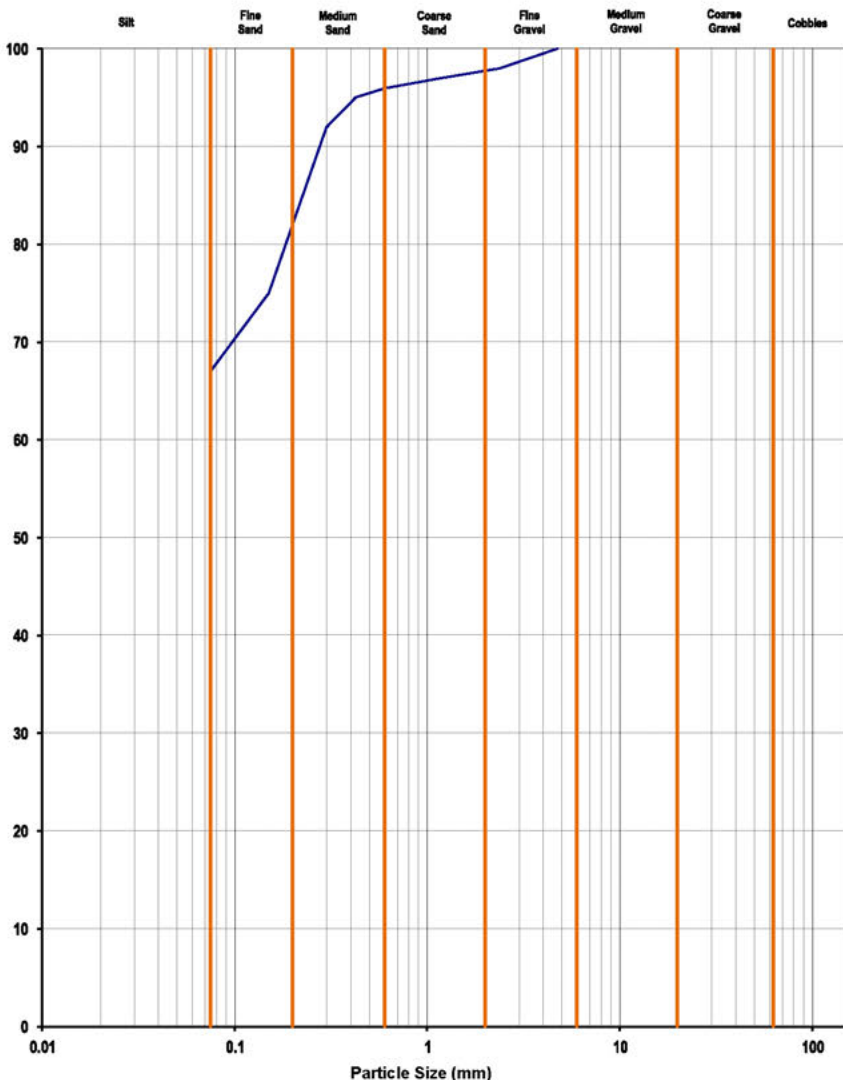


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101026-G			
Address	PO Box 1734 MILTON BC QLD 4064			Request No	R2_BH_Rev1_4040			
Project	Inland Rail B2G							
Project No	1897791		Client Sample No	310-01-BH2219				
Bore Hole	310-01-BH2219-U00850		Depth From (m)	8.5		Depth To (m)	8.88	
Description	U							
Sieve Size (mm)	Passing %							
150.0								
75.0								
63.0								
53.0								
37.5								
26.5								
19.0								
13.2								
9.5								
6.7								
4.75	100							
2.36	98							
1.18	97							
0.600	96							
0.425	95							
0.300	92							
0.150	75							
0.075	67							
NOTES/REMARKS:		- Moisture Content 20.2% Sample/s supplied by the client						

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

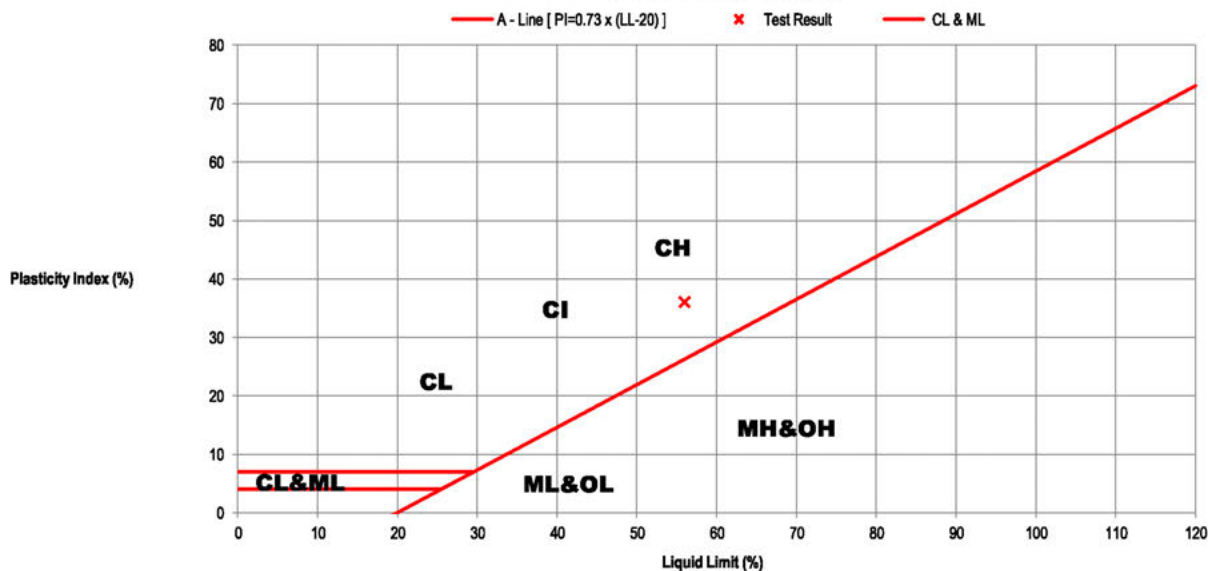
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101027-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2219-U01000	Client Sample No.	310-01-BH2219
Description	U	Depth From (m)	10
		Depth To (m)	10.2

RESULTS OF TESTING

Liquid Limit (%)	56	
Plastic Limit (%)	20	
Plasticity Index (%)	36	
Linear Shrinkage (%)	15.0	Curling Occurred
Moisture Content (%)	19.9	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

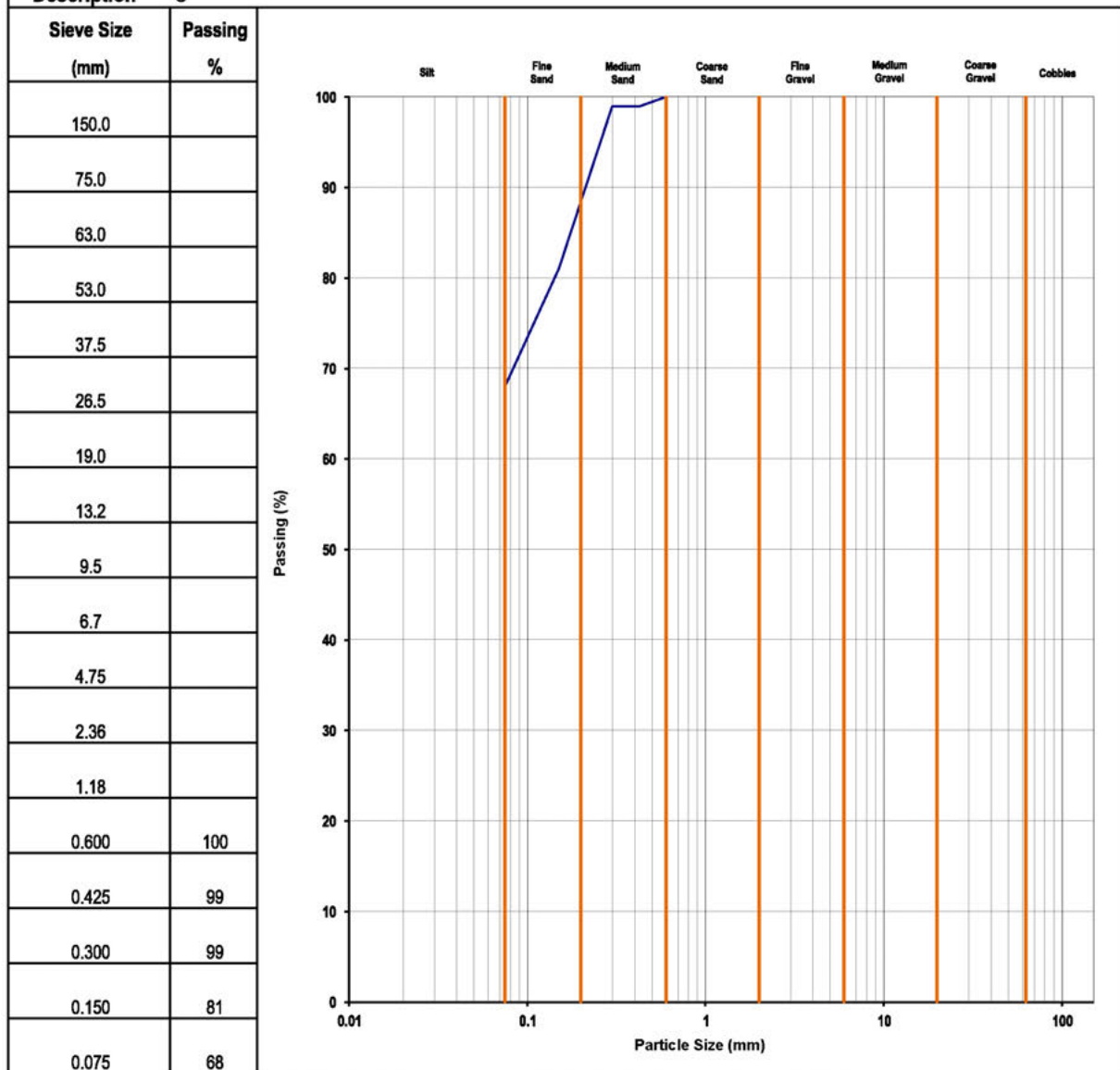
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101027-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4040
		Test Date	30/10/18-6/11/18
		Report Date	6/11/2018

Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2219		
Bore Hole	310-01-BH2219-U01000	Depth From (m)	10	Depth To (m)	10.2
Description	U				



NOTES/REMARKS:

-
Moisture Content 19.9%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

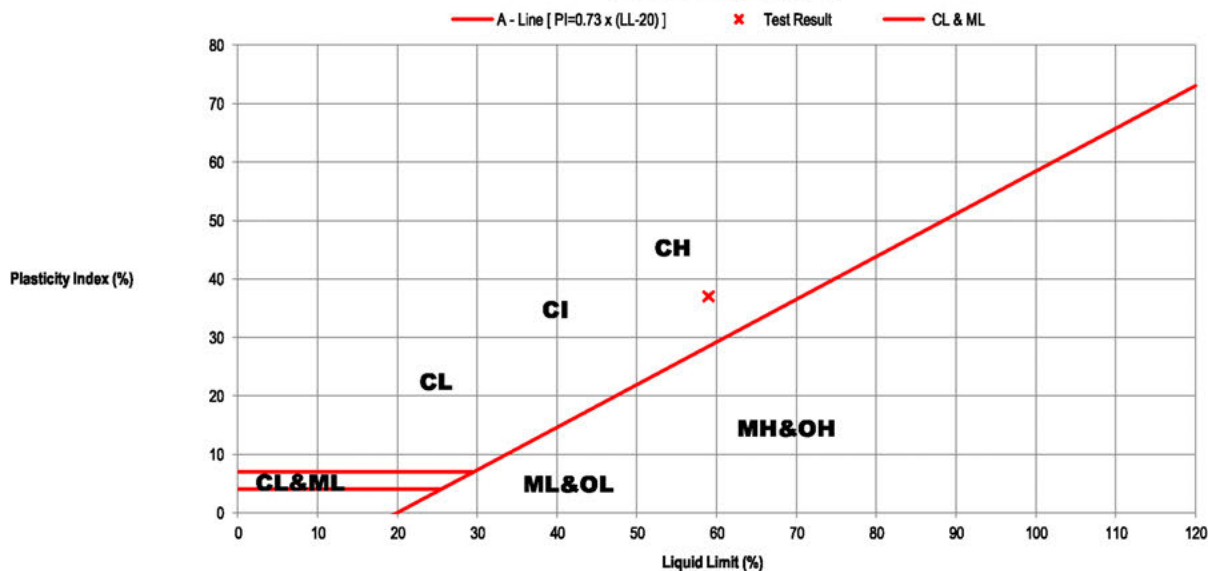
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101029-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2219-S01600	Client Sample No.	310-01-BH2219
Description	SPT	Depth From (m)	16
		Depth To (m)	16.25

RESULTS OF TESTING

Liquid Limit (%)	59
Plastic Limit (%)	22
Plasticity Index (%)	37
Linear Shrinkage (%)	15.0
Moisture Content (%)	20.0
Preparation Method	Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



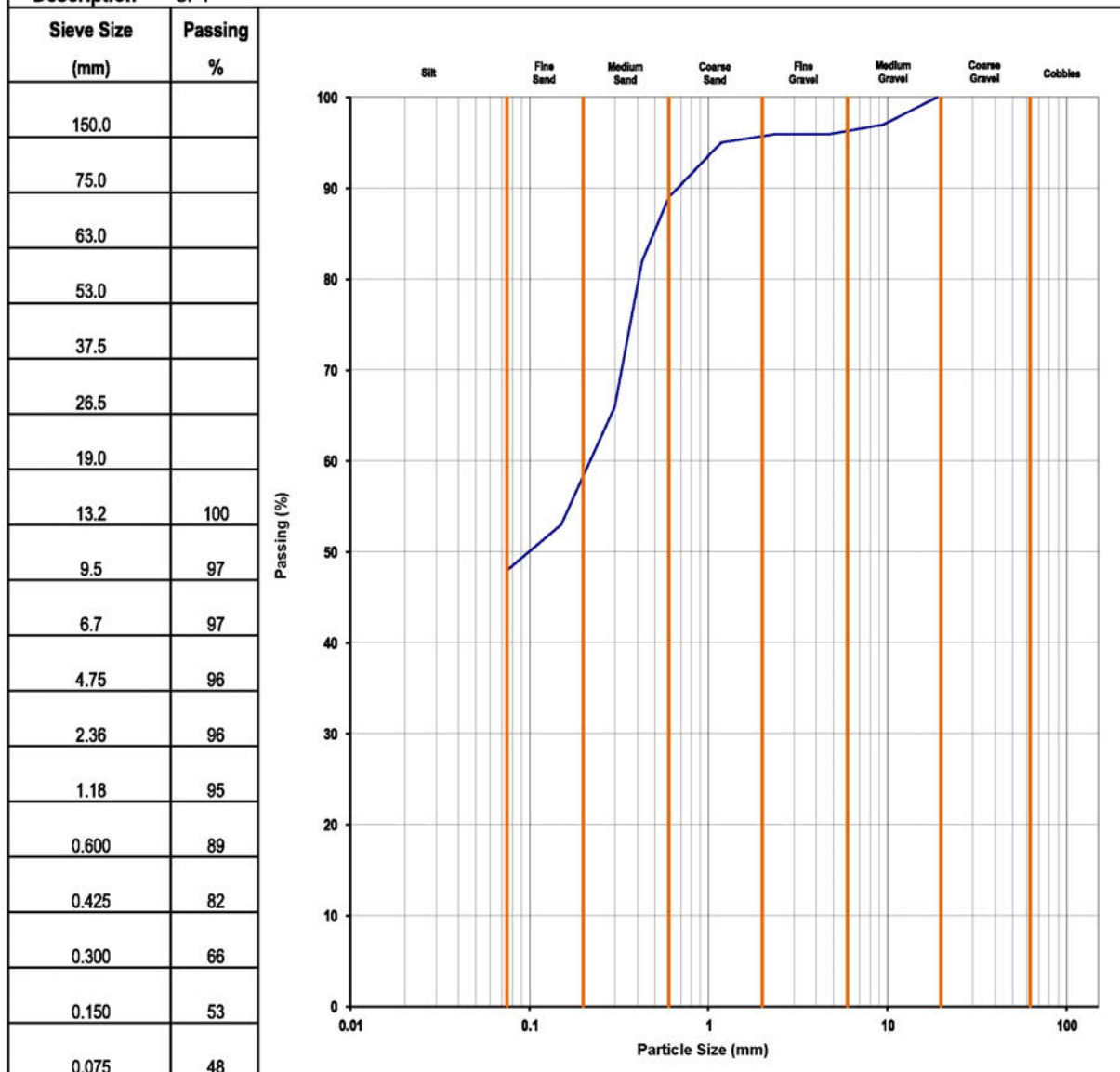
Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited		Report No.	GA101029-G
Address	PO Box 1734 MILTON BC	QLD 4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G		Test Date	29/10/18-8/11/18
Project No	1897791	Client Sample No	310-01-BH2219	
Bore Hole	310-01-BH2219-S01600	Depth From (m)	16	Depth To (m) 16.25
Description	SPT			



NOTES/REMARKS:

-
Moisture Content 20%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

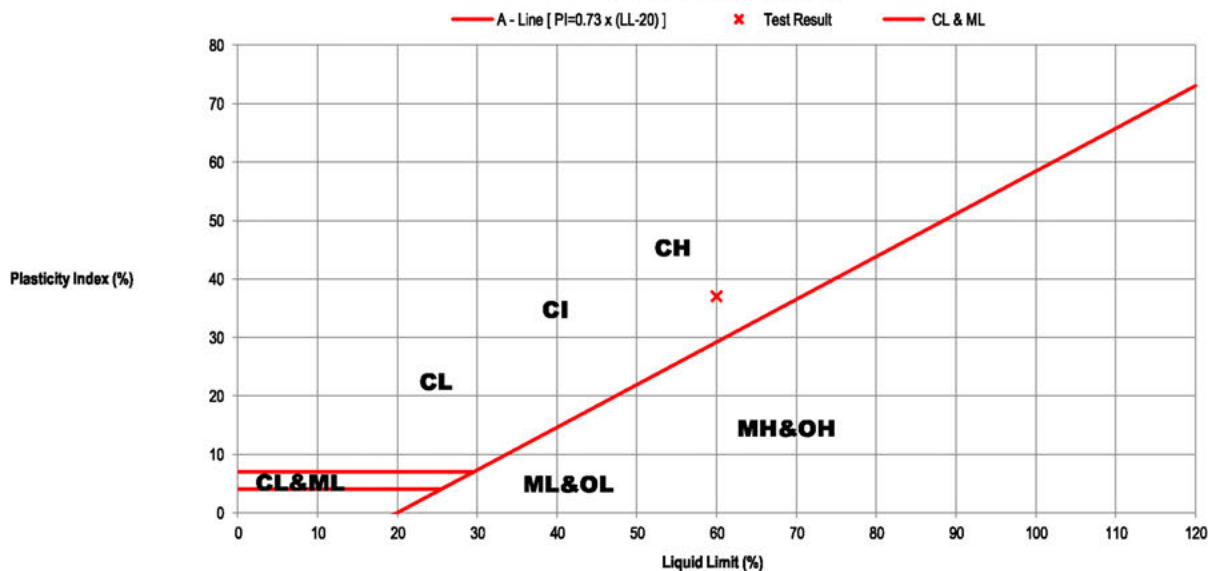
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101030-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2219-S02050	Client Sample No.	310-01-BH2219
Description	SPT	Depth From (m)	20.5
		Depth To (m)	20.79

RESULTS OF TESTING

Liquid Limit (%) 60
 Plastic Limit (%) 23
 Plasticity Index (%) 37
 Linear Shrinkage (%) 16.0 Curling Occurred
 Moisture Content (%) 19.5
 Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

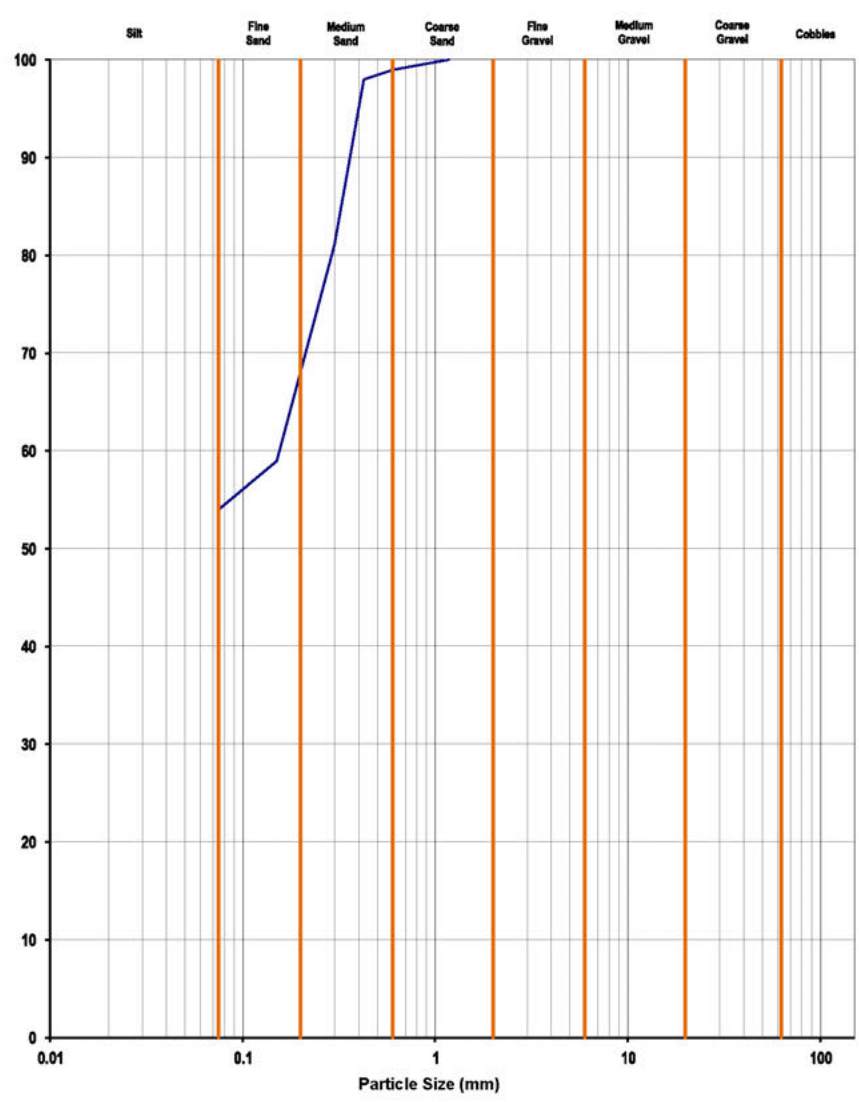
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101030-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2219		
Bore Hole	310-01-BH2219-S02050	Depth From (m)	20.5	Depth To (m)	20.79
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	99
0.425	98
0.300	81
0.150	59
0.075	54



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 54% passing for 0.075 mm and rises to 100% passing at 1.18 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 19.5%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

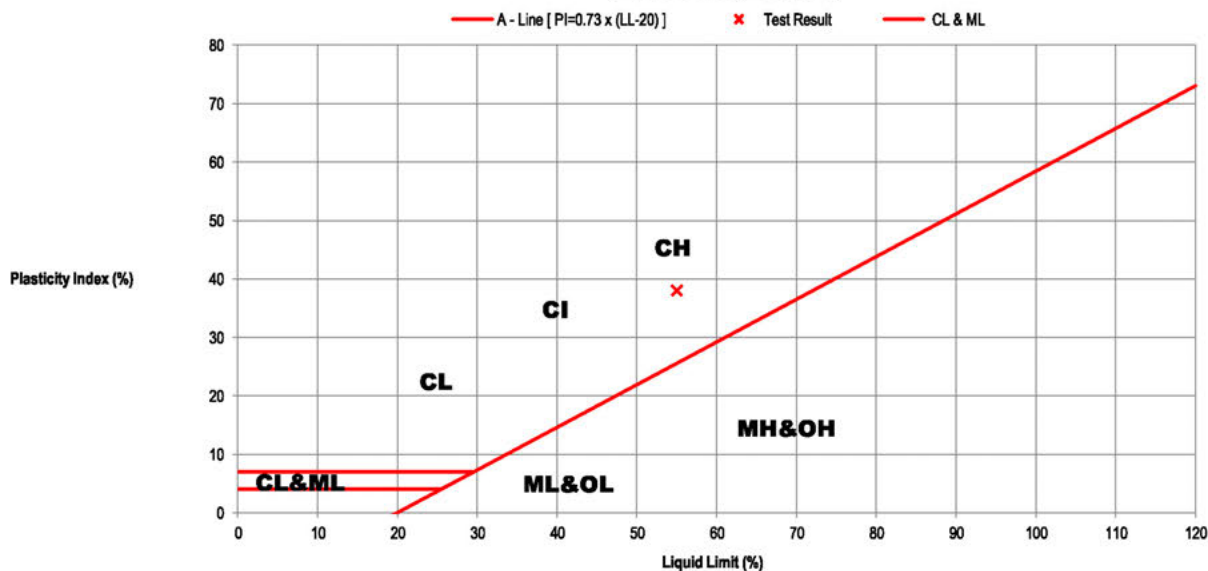
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101031-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2219-S02650	Client Sample No.	310-01-BH2219
Description	SPT	Depth From (m)	26.5
		Depth To (m)	26.79

RESULTS OF TESTING

Liquid Limit (%) 55
 Plastic Limit (%) 17
 Plasticity Index (%) 38
 Linear Shrinkage (%) 14.0 Curling Occurred
 Moisture Content (%) 19.3
 Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

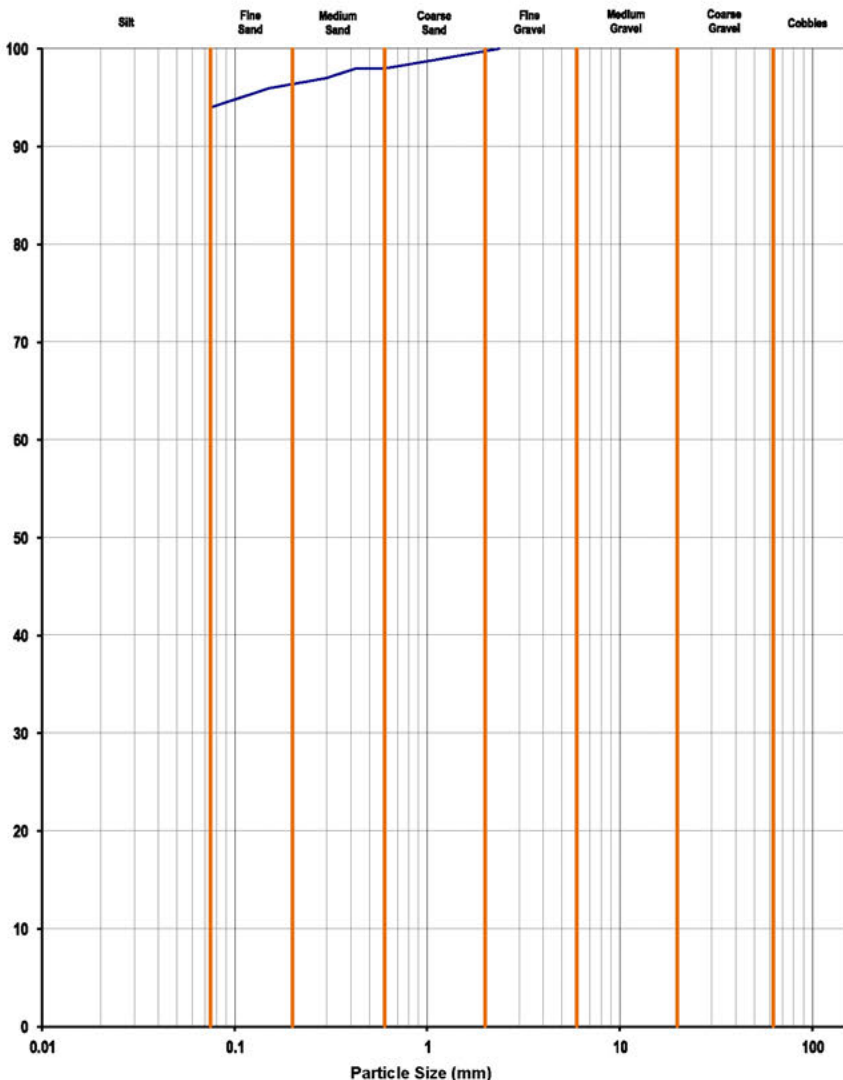
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101031-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2219		
Bore Hole	310-01-BH2219-S02650	Depth From (m)	26.5	Depth To (m)	26.79
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	98
0.425	98
0.300	97
0.150	96
0.075	94



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at 100% passing for 0.075 mm and remains at 100% until approximately 2.36 mm, where it begins to drop. The curve passes through approximately 94% at 0.075 mm, 96% at 0.150 mm, 97% at 0.300 mm, 98% at 0.425 mm, 98% at 0.600 mm, 99% at 1.18 mm, and 100% at 2.36 mm. The graph is divided into soil texture regions: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 19.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

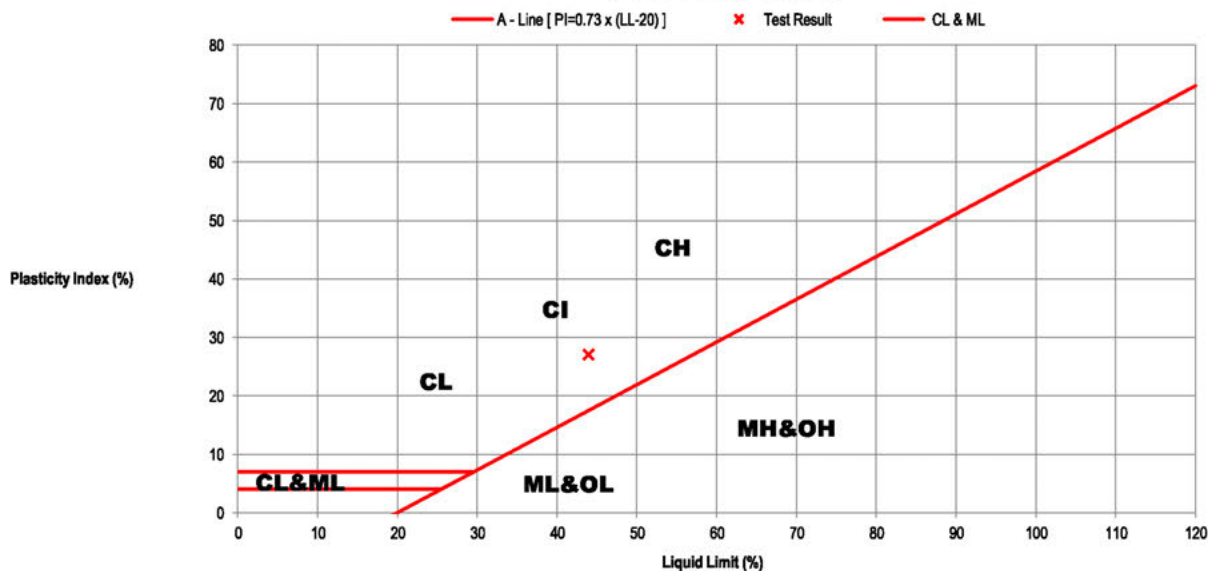
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101126-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2233-S00400	Client Sample No.	310-01-BH2233
Description	SPT	Depth From (m)	4
		Depth To (m)	4.45

RESULTS OF TESTING

Liquid Limit (%) 44
 Plastic Limit (%) 17
 Plasticity Index (%) 27
 Linear Shrinkage (%) 12.0 Curling Occurred
 Moisture Content (%) 20.1
 Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

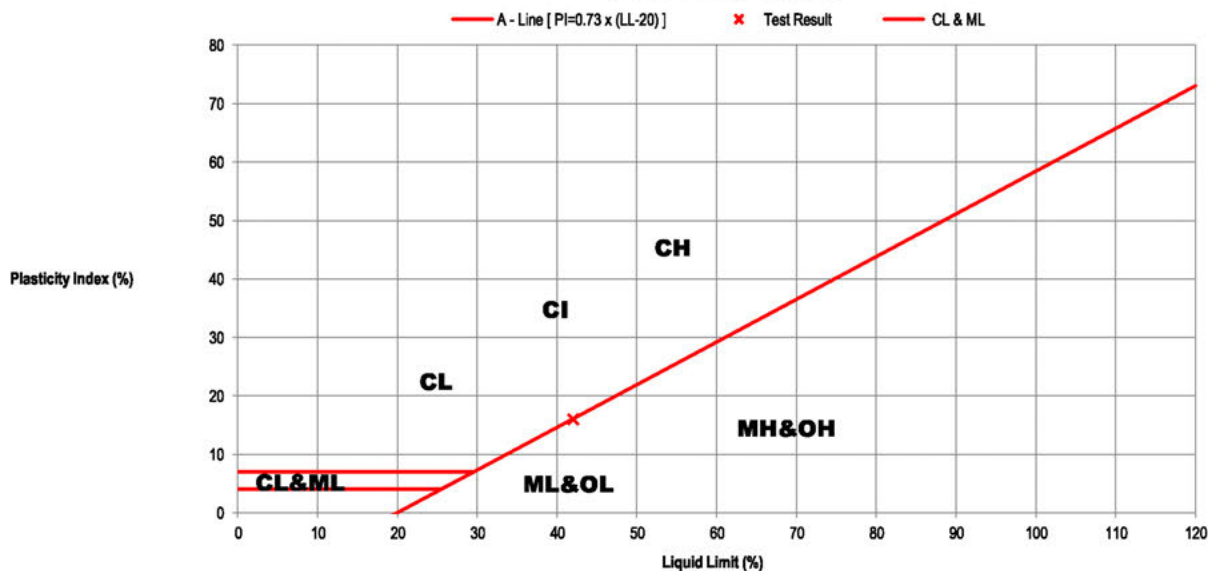
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101131-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2233-S01450	Client Sample No.	310-01-BH2233
Description	SPT	Depth From (m)	14.5
		Depth To (m)	14.95

RESULTS OF TESTING

Liquid Limit (%)	42	
Plastic Limit (%)	26	
Plasticity Index (%)	16	
Linear Shrinkage (%)	8.0	Cracking & Curling Occurred
Moisture Content (%)	34.8	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

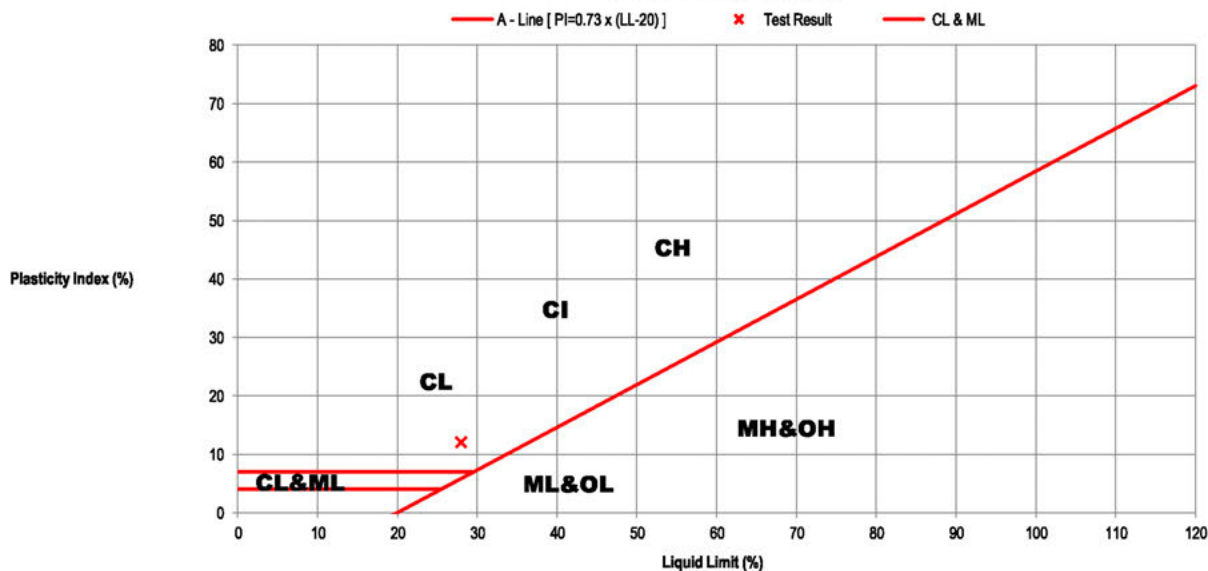
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101133-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	6/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2233-S02050	Client Sample No.	310-01-BH2233
Description	SPT	Depth From (m)	20.5
		Depth To (m)	20.95

RESULTS OF TESTING

Liquid Limit (%) 28
Plastic Limit (%) 16
Plasticity Index (%) 12
Linear Shrinkage (%) 5.5 **Curling Occurred**
Moisture Content (%) 18.0
Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Channon



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

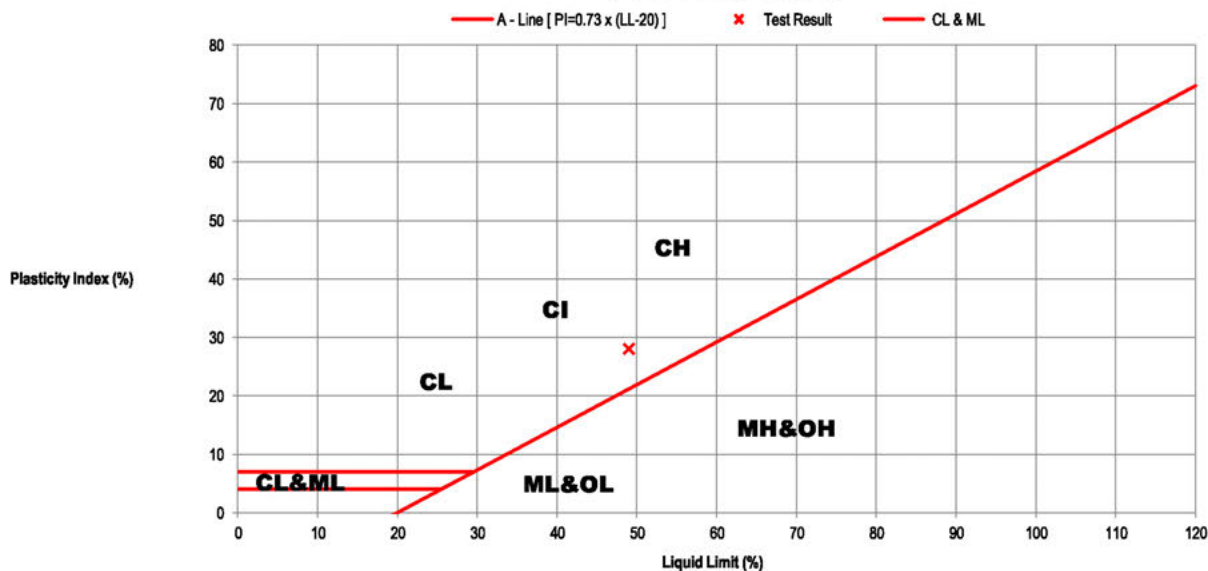
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101134-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	8/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2233-S02650	Client Sample No.	310-01-BH2233
Description	SPT	Depth From (m)	26.5
		Depth To (m)	26.95

RESULTS OF TESTING

Liquid Limit (%) 49
Plastic Limit (%) 21
Plasticity Index (%) 28
Linear Shrinkage (%) 11.0 **Curling Occurred**
Moisture Content (%) 20.3
Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

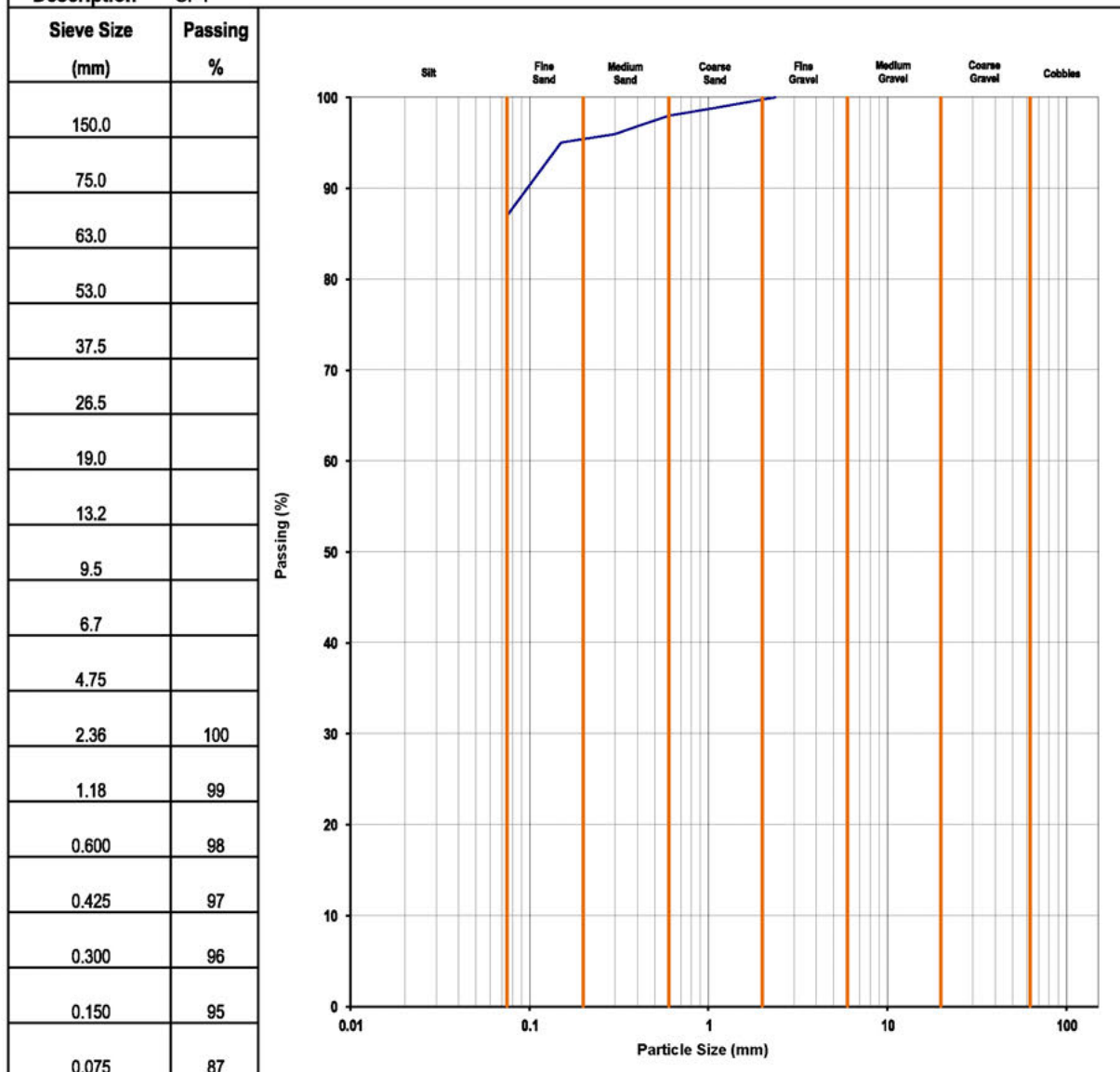
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101134-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	31/10/18-7/11/18
Project No	1897791	Client Sample No	310-01-BH2233
Bore Hole	310-01-BH2233-S02650	Depth From (m)	26.5
		Depth To (m)	26.95

Description SPT



NOTES/REMARKS:

-
Moisture Content 20.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

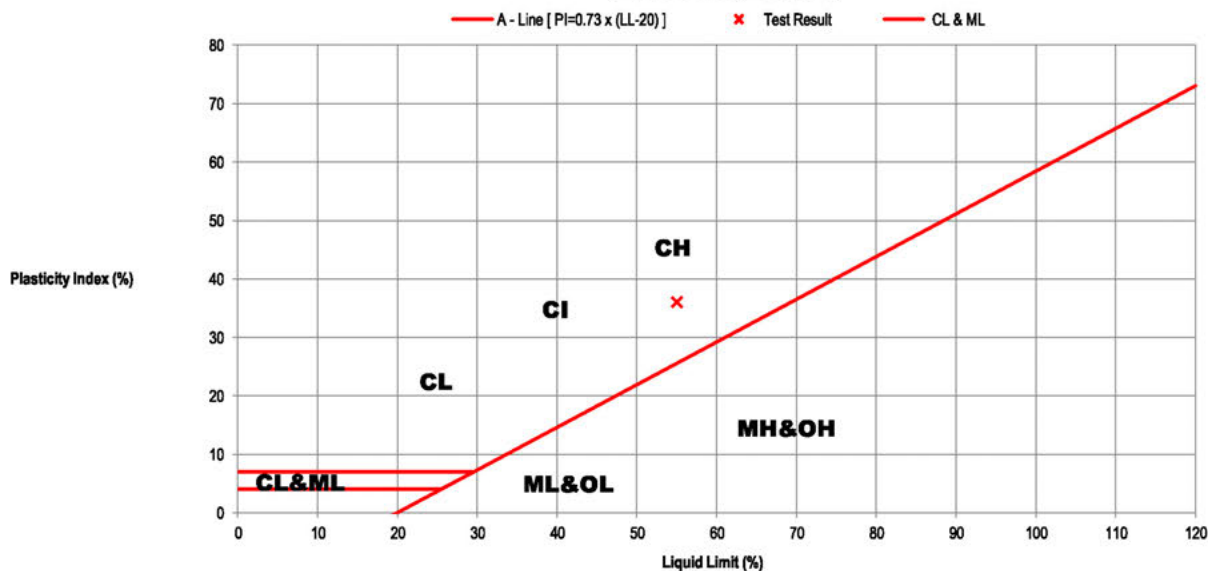
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101135-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	8/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2235-S00380	Client Sample No.	310-01-BH2235
Description	SPT	Depth From (m)	3.8
		Depth To (m)	4.25

RESULTS OF TESTING

Liquid Limit (%)	55	
Plastic Limit (%)	19	
Plasticity Index (%)	36	
Linear Shrinkage (%)	14.5	Cracking & Curling Occurred
Moisture Content (%)	26.7	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

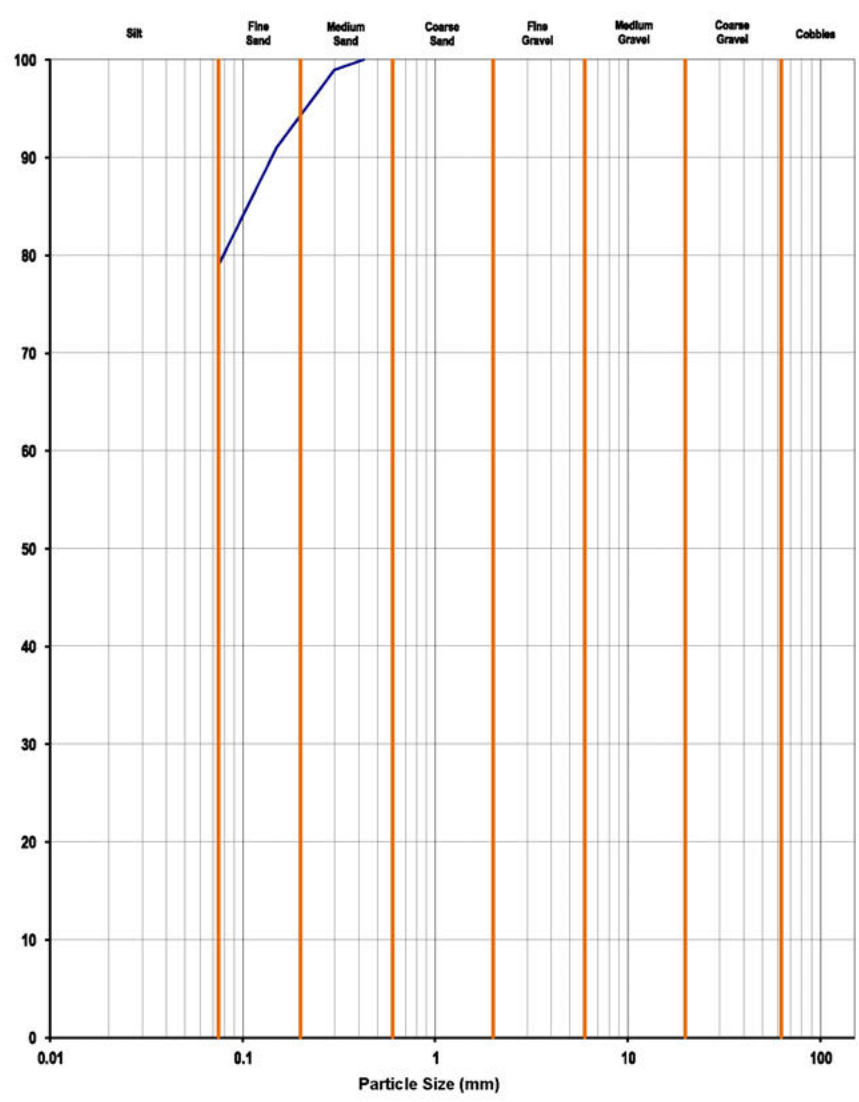
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101135-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2235		
Bore Hole	310-01-BH2235-S00380	Depth From (m)	3.8	Depth To (m)	4.25
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	
0.600	
0.425	100
0.300	99
0.150	91
0.075	79



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 79% passing for 0.075 mm and reaches 100% passing at 0.425 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 26.7%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

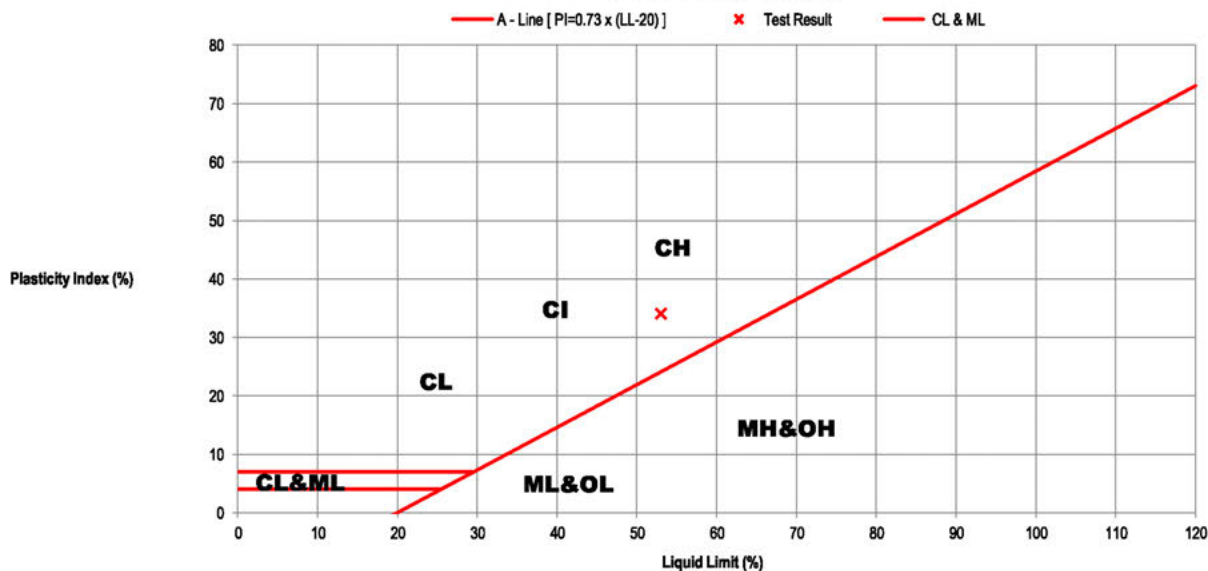
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101136-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	8/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2235-S00530	Client Sample No.	310-01-BH2235
Description	SPT	Depth From (m)	5.3
		Depth To (m)	5.75

RESULTS OF TESTING

Liquid Limit (%) 53
Plastic Limit (%) 19
Plasticity Index (%) 34
Linear Shrinkage (%) 15.0 **Curling Occurred**
Moisture Content (%) 16.2
Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

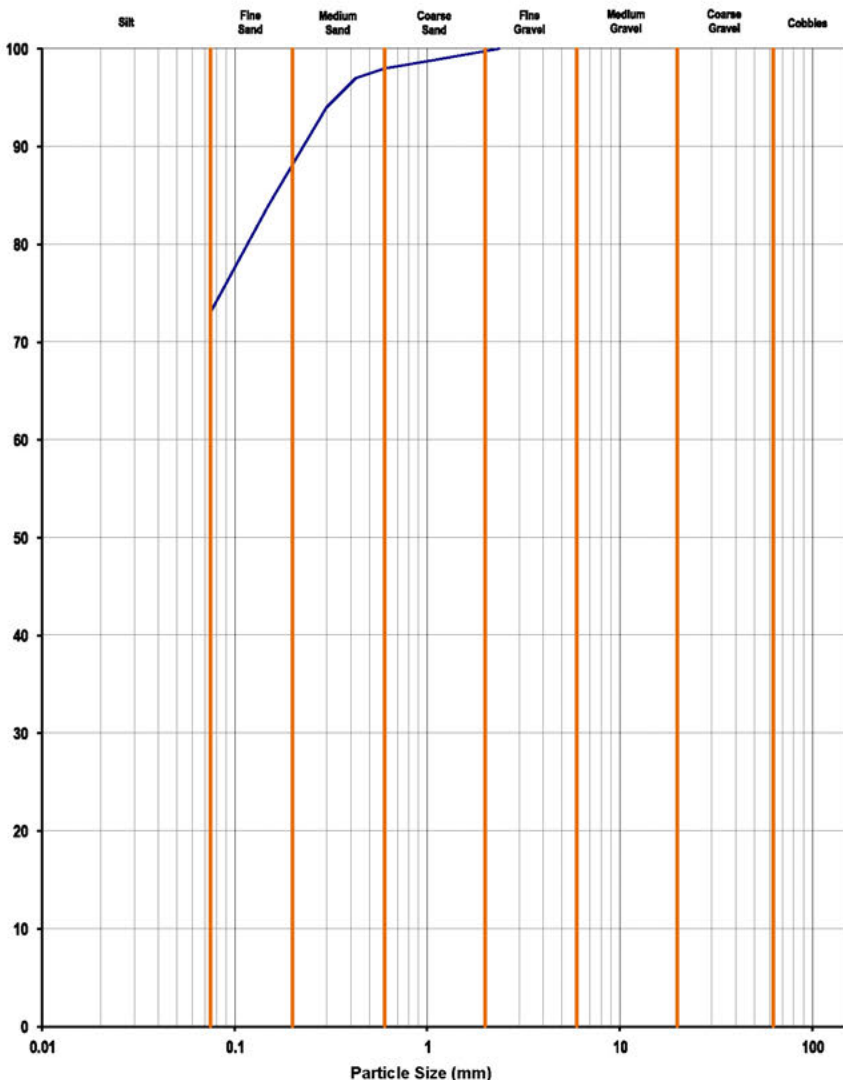
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101136-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2235		
Bore Hole	310-01-BH2235-S00530	Depth From (m)	5.3	Depth To (m)	5.75
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	98
0.425	97
0.300	94
0.150	84
0.075	73



The graph plots 'Passing (%)' on the y-axis (0 to 100) against 'Particle Size (mm)' on a logarithmic x-axis (0.01 to 100). Vertical lines mark sieve sizes: 0.075, 0.150, 0.300, 0.425, 0.600, 1.18, 2.36, 4.75, 6.7, 9.5, 13.2, 19.0, 26.5, 37.5, 53.0, 63.0, 75.0, 150.0. The curve starts at approximately 73% passing for 0.075 mm and rises to 100% passing at 2.36 mm, remaining at 100% for all larger sieves.

NOTES/REMARKS:

-
Moisture Content 16.2%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



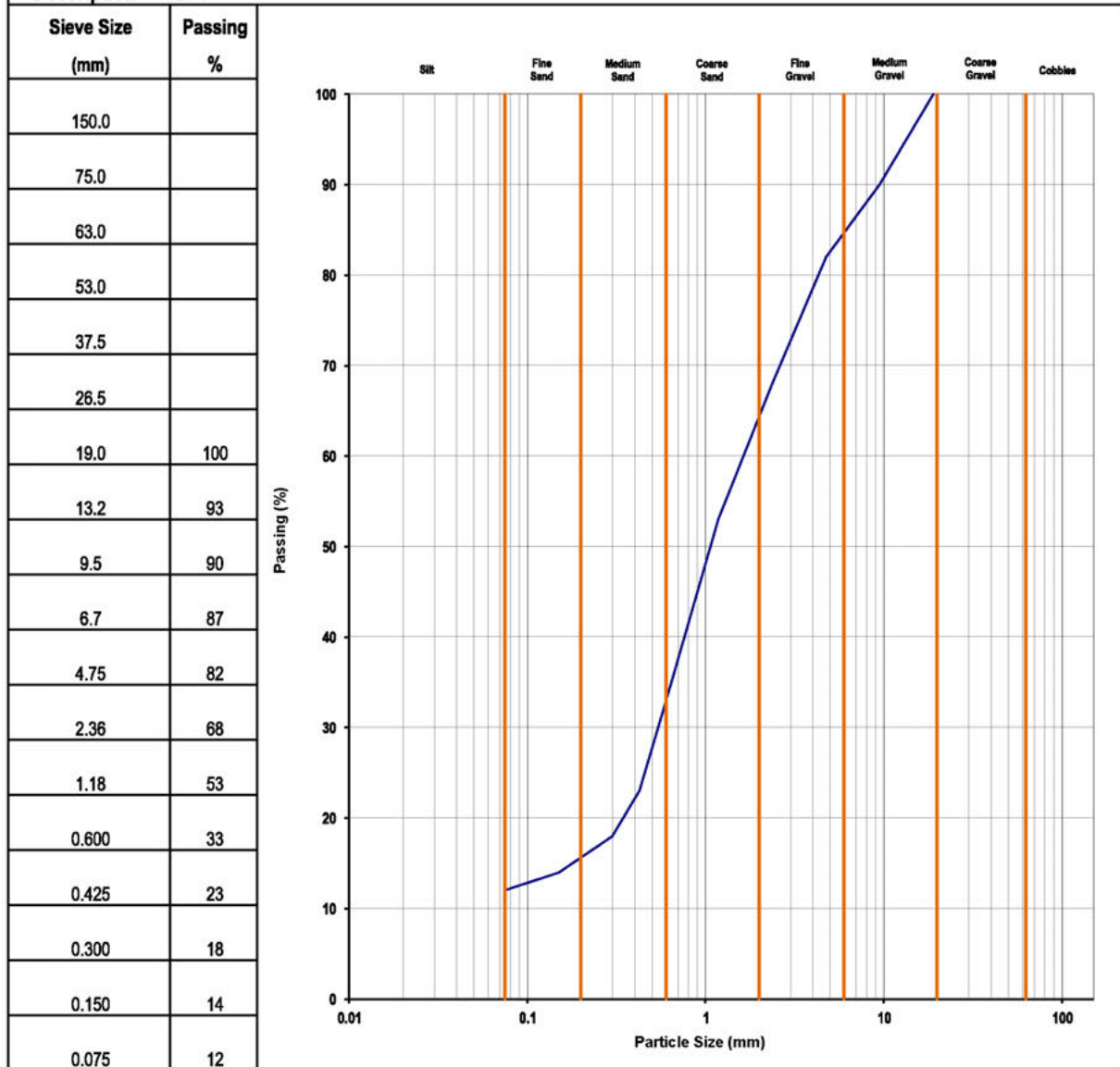
Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101138-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	31/10/18-7/11/18
Project No	1897791	Client Sample No	310-01-BH2235
Bore Hole	310-01-BH2235-S00830	Depth From (m)	8.3
Description	SPT	Depth To (m)	8.75



NOTES/REMARKS:

-
Moisture Content 10.4%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

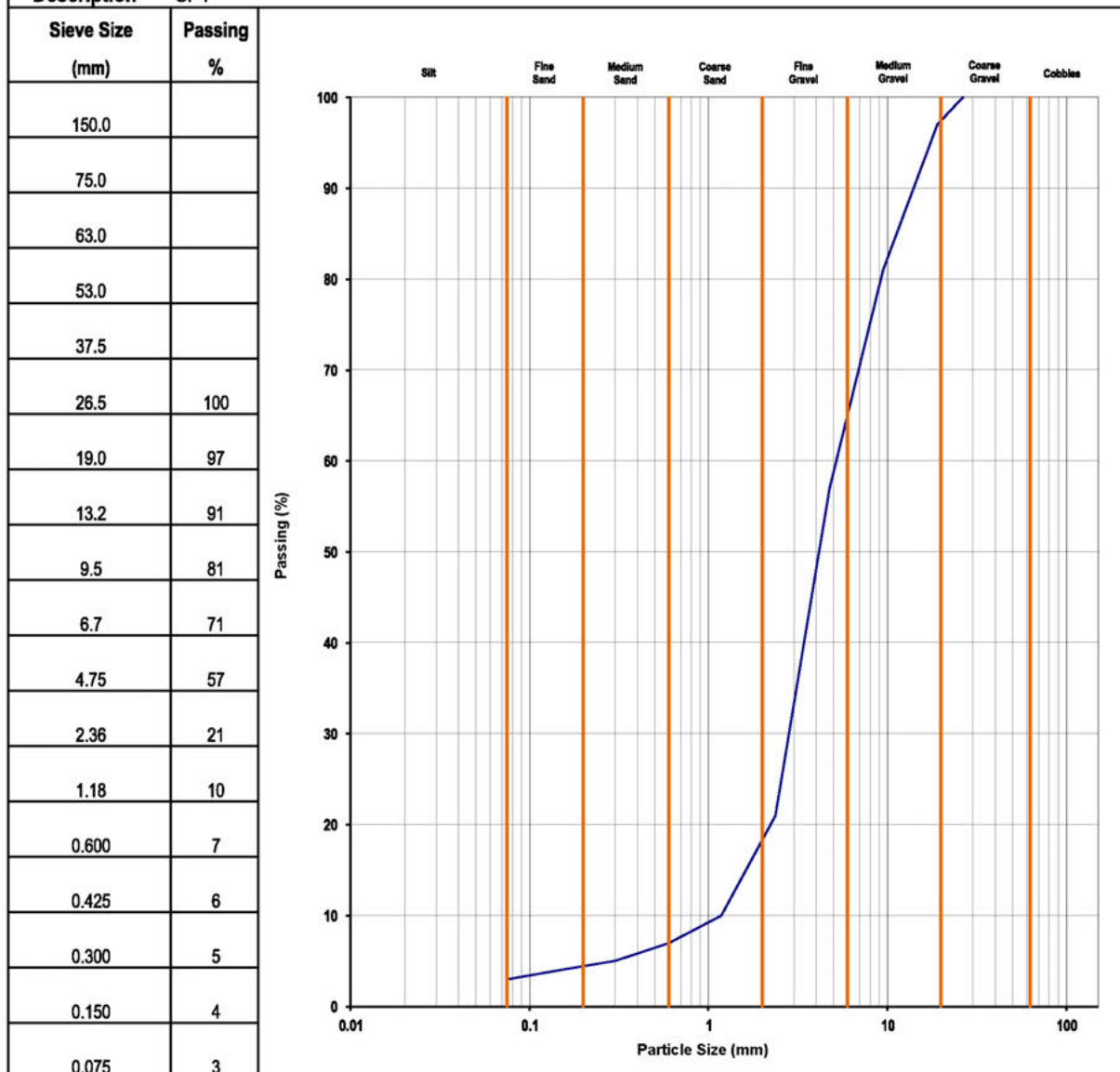
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101139-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	31/10/18-8/11/18
Project No	1897791	Report Date	8/11/2018
Bore Hole	310-01-BH2235-S00980	Client Sample No	310-01-BH2235
Depth From (m)	9.8	Depth To (m)	10.25

Description SPT



NOTES/REMARKS:

-
Moisture Content 8.5%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

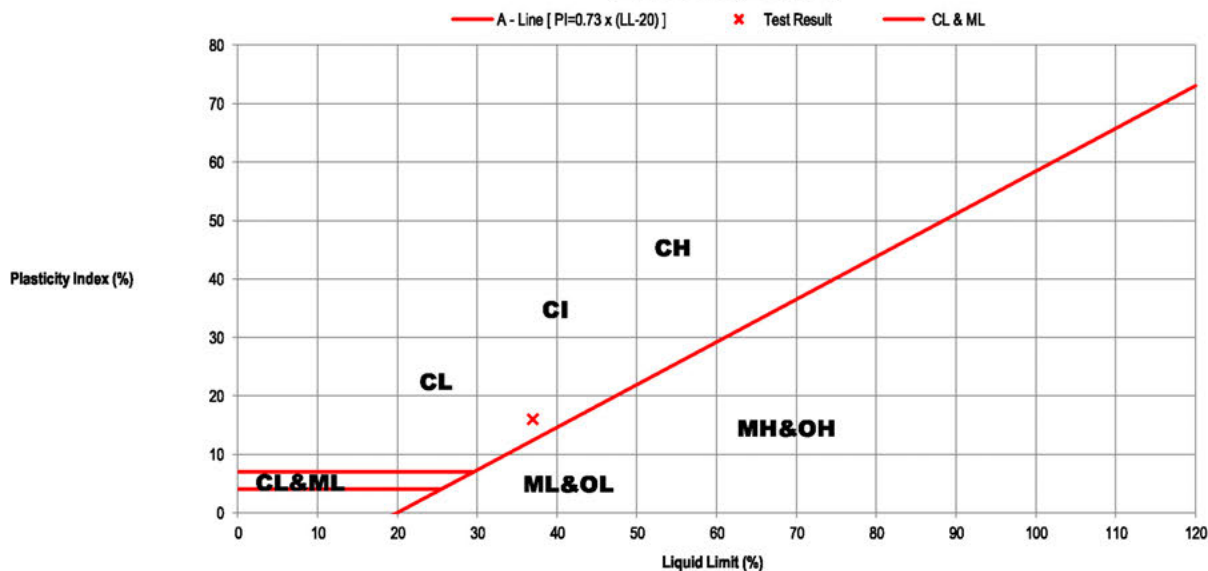
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101142-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	8/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2235-S01880	Client Sample No.	310-01-BH2235
Description	SPT	Depth From (m)	18.8
		Depth To (m)	19.25

RESULTS OF TESTING

Liquid Limit (%)	37	
Plastic Limit (%)	21	
Plasticity Index (%)	16	
Linear Shrinkage (%)	6.0	Cracking & Curling Occurred
Moisture Content (%)	23.0	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



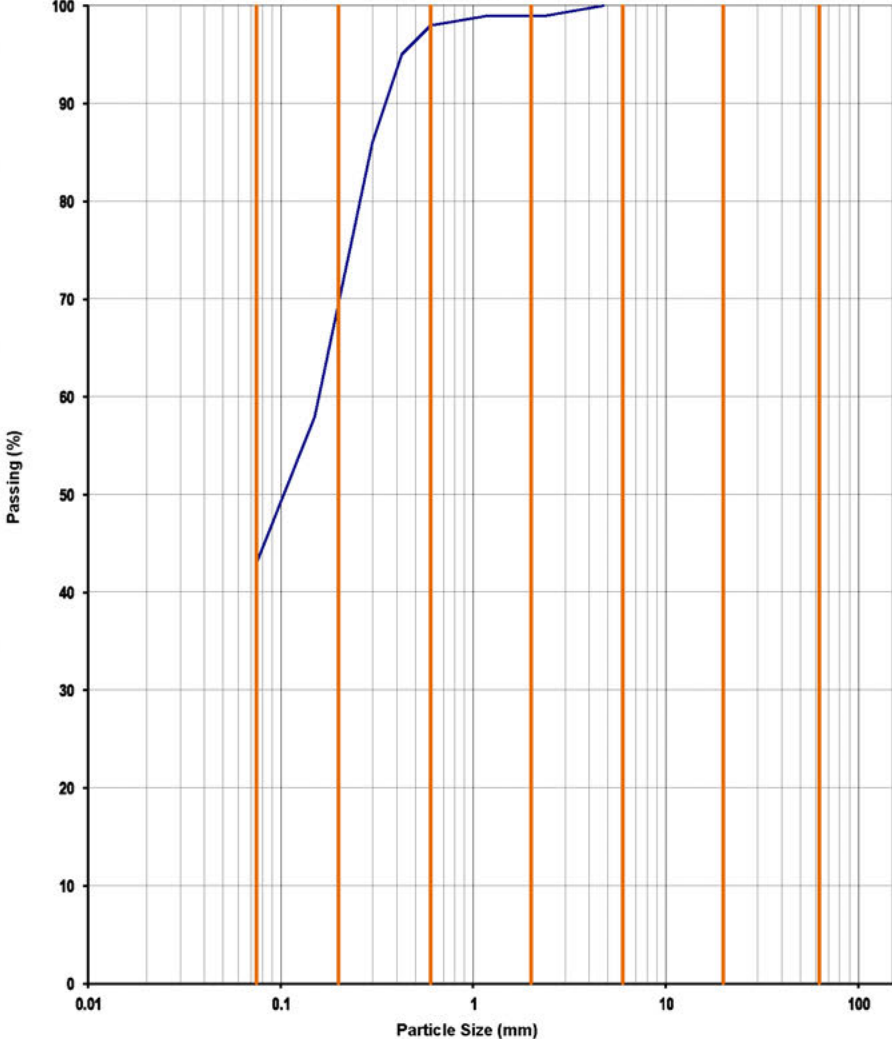
Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101142-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	31/10/18-8/11/18
Project No	1897791	Report Date	8/11/2018
Bore Hole	310-01-BH2235-S01880	Client Sample No	310-01-BH2235
Depth From (m)	18.8	Depth To (m)	19.25

Description		SPT
Sieve Size	Passing	 The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 43% passing for 0.075 mm, rises to 58% at 0.150 mm, 86% at 0.300 mm, 95% at 0.425 mm, 98% at 0.600 mm, and reaches 100% at 0.75 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.
(mm)	%	
150.0		
75.0		
63.0		
53.0		
37.5		
26.5		
19.0		
13.2		
9.5		
6.7		
4.75	100	
2.36	99	
1.18	99	
0.600	98	
0.425	95	
0.300	86	
0.150	58	
0.075	43	

NOTES/REMARKS:

-
Moisture Content 23%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

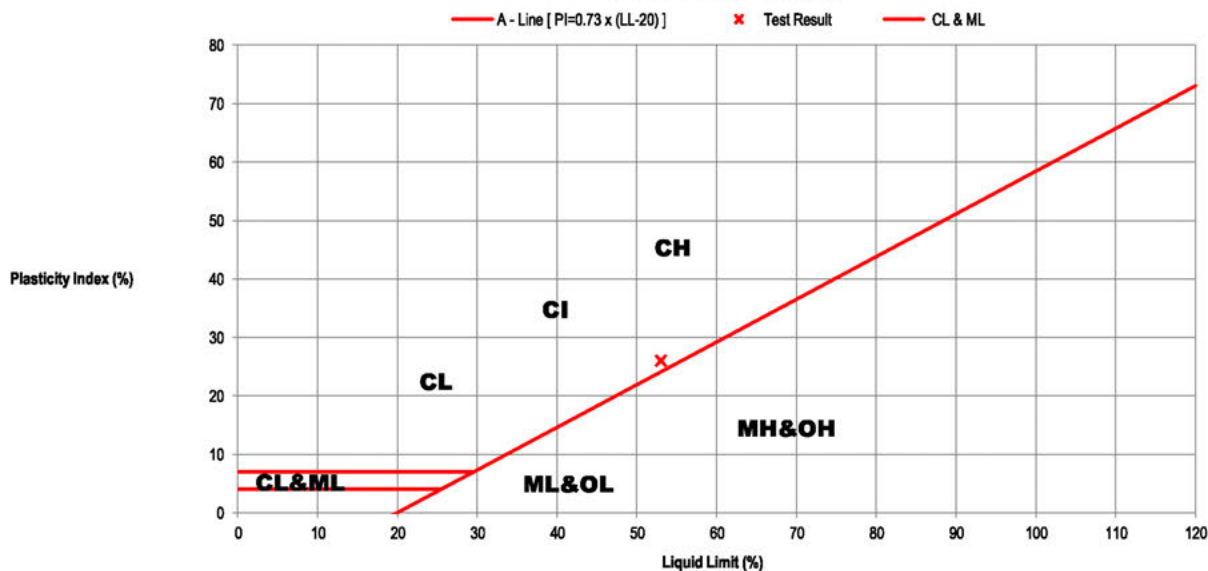
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101143-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	7/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2235-S02180	Client Sample No.	310-01-BH2235
Description	SPT	Depth From (m)	21.8
		Depth To (m)	22.25

RESULTS OF TESTING

Liquid Limit (%)	53	
Plastic Limit (%)	27	
Plasticity Index (%)	26	
Linear Shrinkage (%)	14.5	Curling Occurred
Moisture Content (%)	30.5	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

Test Method: AS 1289 3.6.1, 2.1.1

Description	SPT
-------------	-----

NOTES/REMARKS:	-		
	Moisture Content 30.5%		
	Sample/s supplied by the client		
		Page 1 of 1	REP0390

Laboratory No. 9926

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

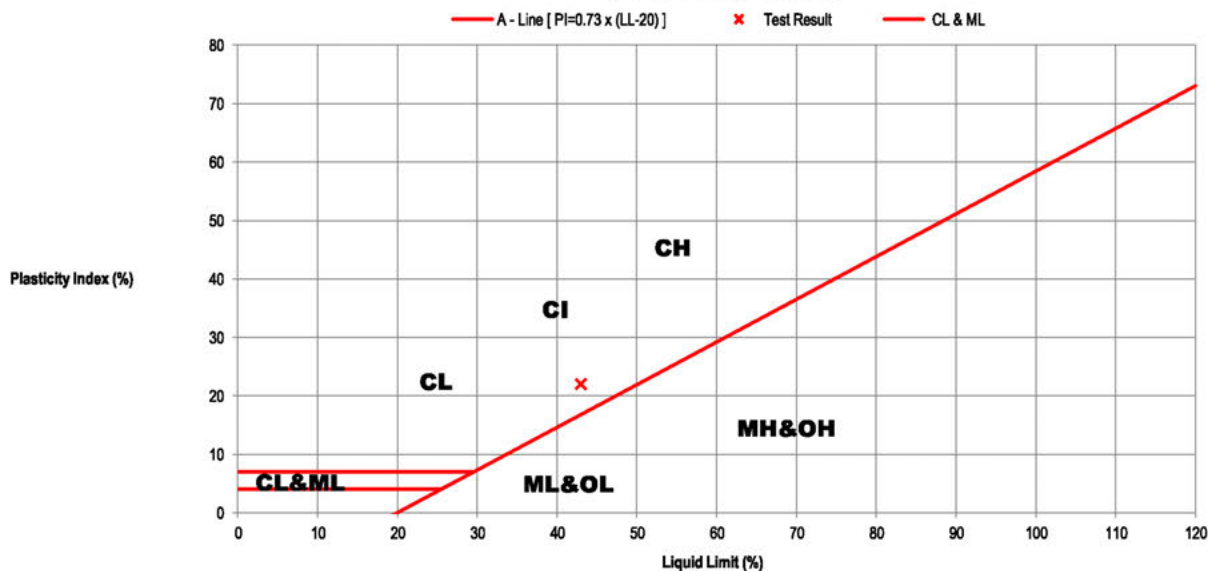
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101145-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	7/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2235-S03230	Client Sample No.	310-01-BH2235
Description	SPT	Depth From (m)	32.3
		Depth To (m)	32.75

RESULTS OF TESTING

Liquid Limit (%)	43	
Plastic Limit (%)	21	
Plasticity Index (%)	22	
Linear Shrinkage (%)	12.0	Cracking & Curling Occurred
Moisture Content (%)	25.4	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

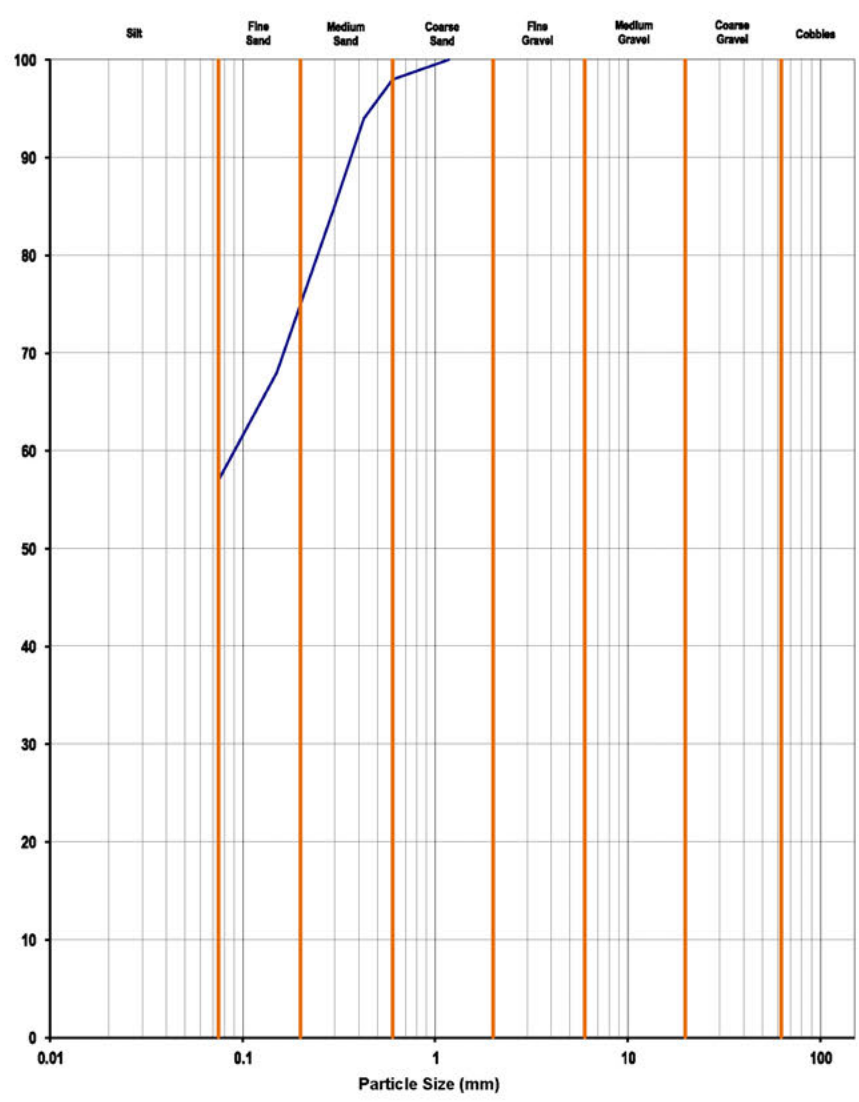
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101145-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2235		
Bore Hole	310-01-BH2235-S03230	Depth From (m)	32.3	Depth To (m)	32.75
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	98
0.425	94
0.300	85
0.150	68
0.075	57



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 57% passing for 0.075 mm and reaches 100% passing at 1.18 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.36 mm), Fine Gravel (2.36 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 25.4%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

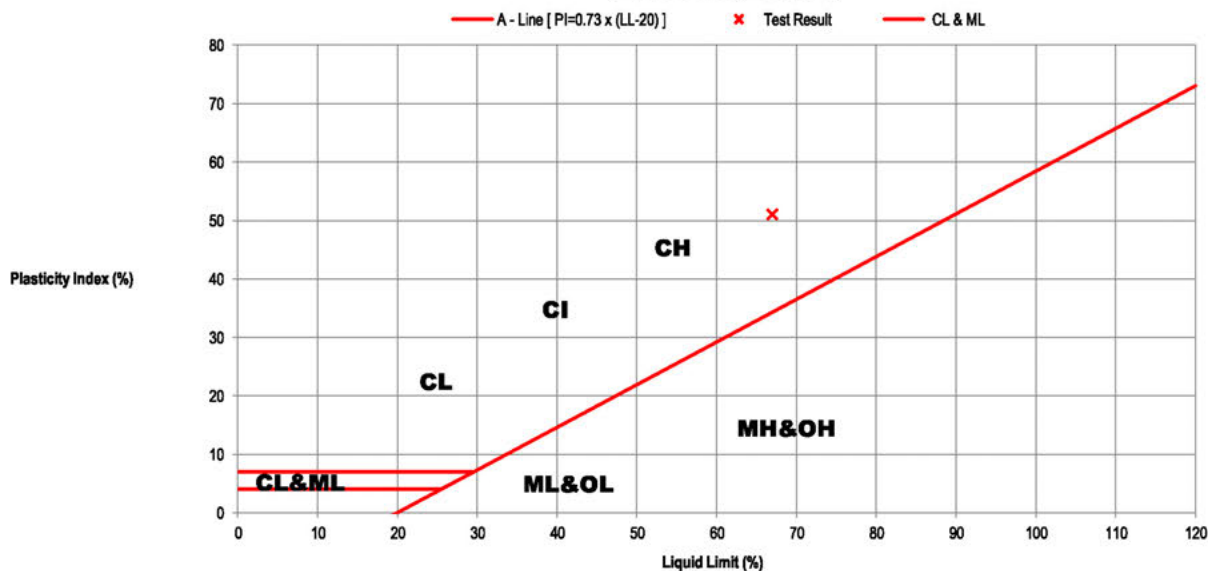
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101146-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	7/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2236-S00100	Client Sample No.	310-01-BH2236
Description	SPT	Depth From (m)	1
		Depth To (m)	1.45

RESULTS OF TESTING

Liquid Limit (%)	67	
Plastic Limit (%)	16	
Plasticity Index (%)	51	
Linear Shrinkage (%)	19.5	Cracking & Curling Occurred
Moisture Content (%)	19.2	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

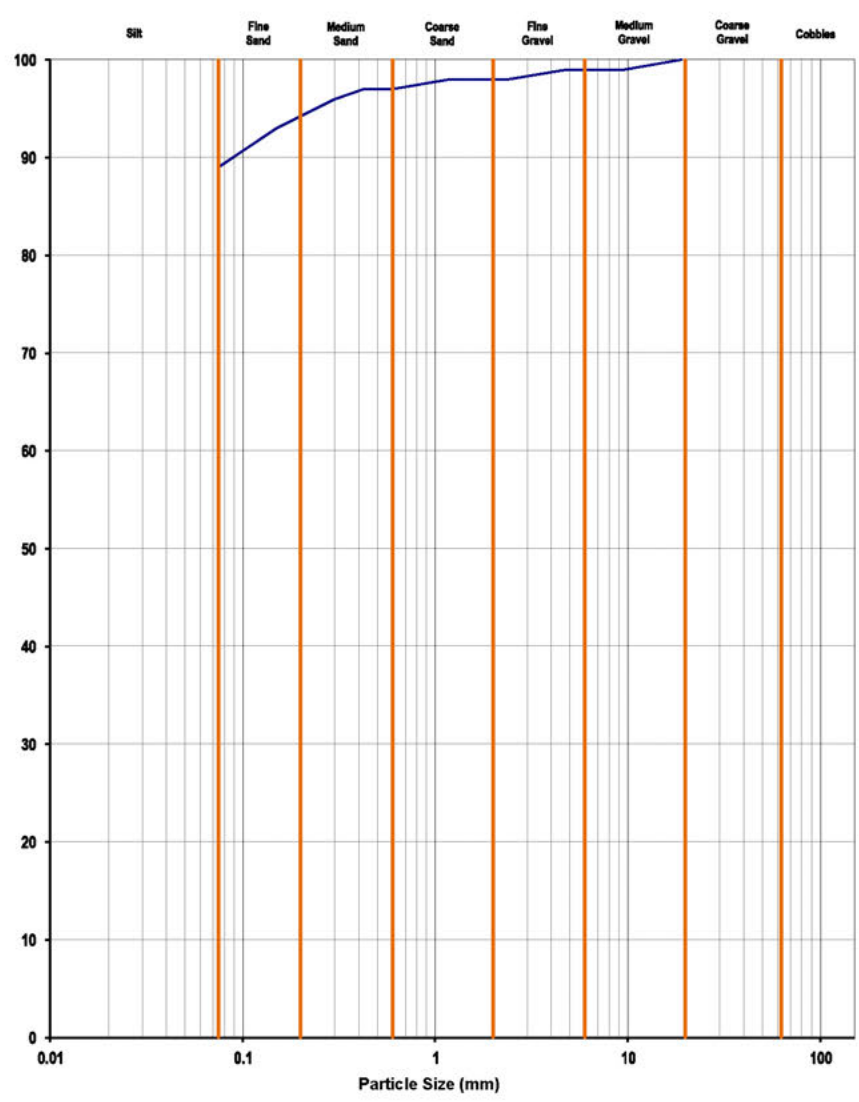
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101146-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2236		
Bore Hole	310-01-BH2236-S00100	Depth From (m)	1	Depth To (m)	1.45
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	100
9.5	99
6.7	99
4.75	99
2.36	98
1.18	98
0.600	97
0.425	97
0.300	96
0.150	93
0.075	89



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 89% passing for 0.075 mm and rises to 100% passing at 13.2 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 19.2%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

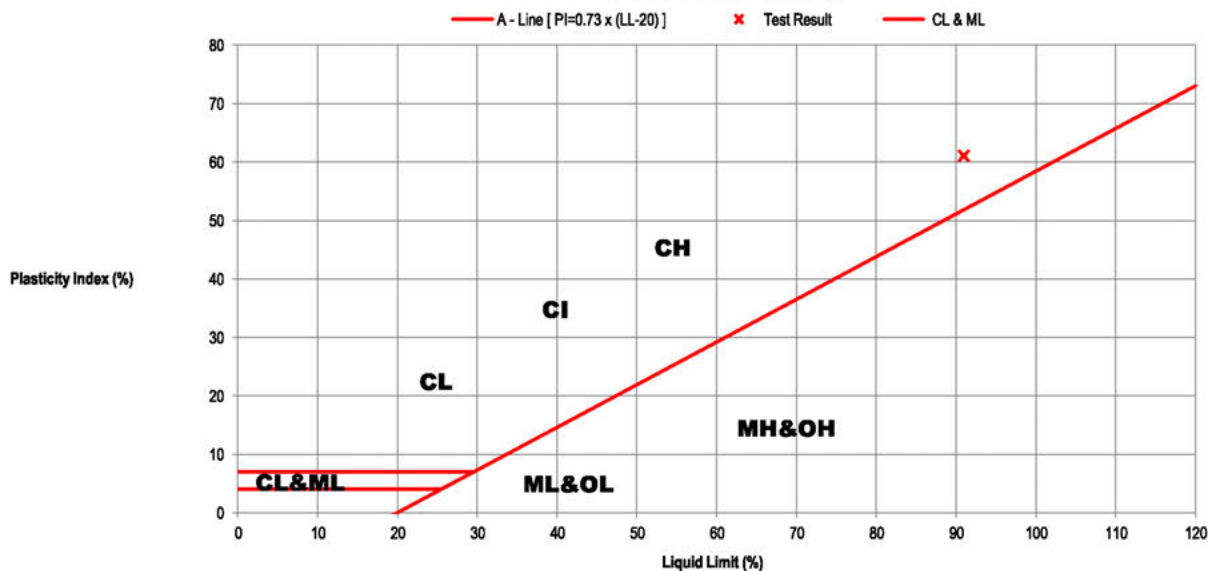
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101148-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	7/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2236-S00550	Client Sample No.	310-01-BH2236
Description	SPT	Depth From (m)	5.5
		Depth To (m)	5.95

RESULTS OF TESTING

Liquid Limit (%)	91	
Plastic Limit (%)	30	
Plasticity Index (%)	61	
Linear Shrinkage (%)	23.0	Cracking & Curling Occurred
Moisture Content (%)	34.1	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

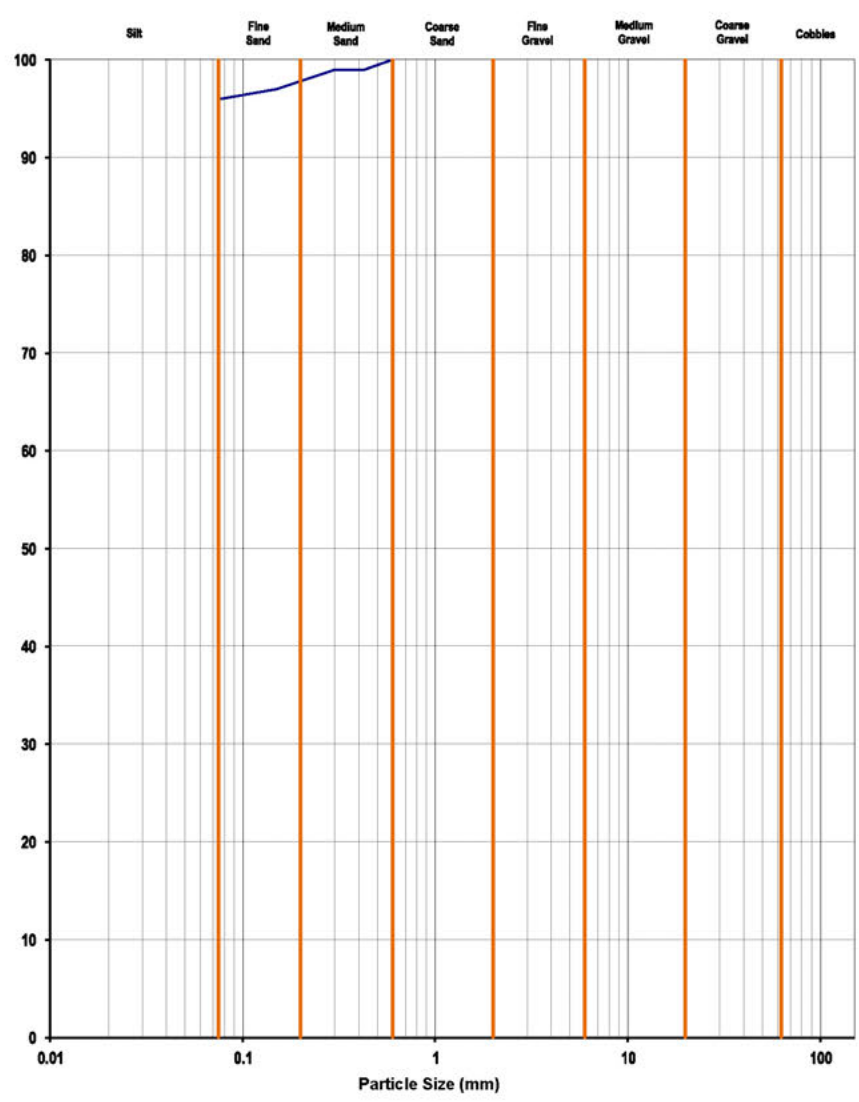
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101148-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2236		
Bore Hole	310-01-BH2236-S00550	Depth From (m)	5.5	Depth To (m)	5.95
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	
0.600	100
0.425	99
0.300	99
0.150	97
0.075	96



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at 100% passing for 0.075 mm and remains at 100% until approximately 0.15 mm, then drops to about 96% at 0.075 mm. The graph is divided into soil texture regions: Silt, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 34.1%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

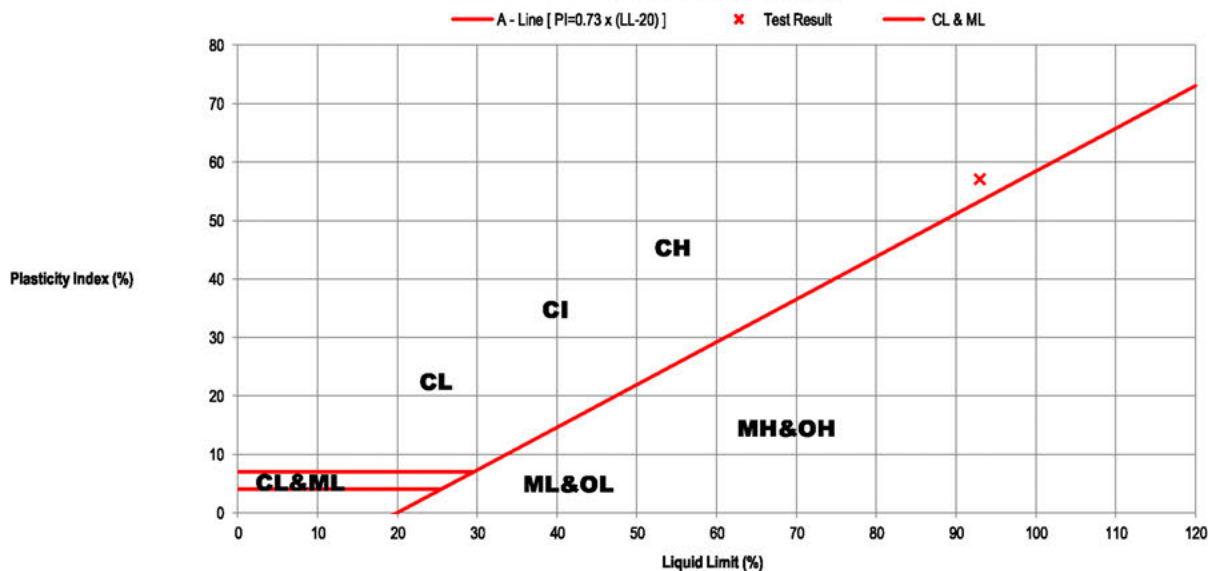
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101150-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	7/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2236-S01450	Client Sample No.	310-01-BH2236
Description	SPT	Depth From (m)	14.5
		Depth To (m)	14.95

RESULTS OF TESTING

Liquid Limit (%) 93
Plastic Limit (%) 36
Plasticity Index (%) 57
Linear Shrinkage (%) 22.5 **Cracking & Curling Occurred**
Moisture Content (%) 34.7
Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

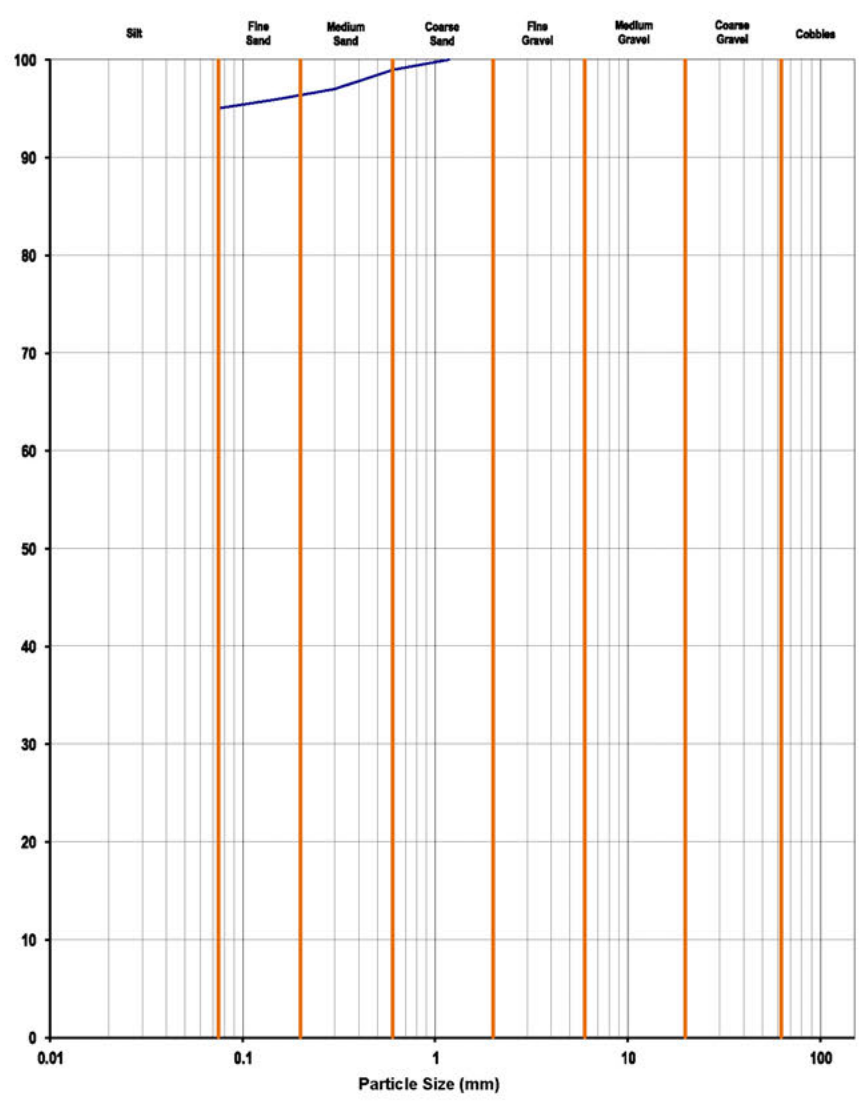
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101150-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2236		
Bore Hole	310-01-BH2236-S01450	Depth From (m)	14.5	Depth To (m)	14.95
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	99
0.425	98
0.300	97
0.150	96
0.075	95



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at 100% passing for 0.075 mm and remains at 100% until approximately 0.15 mm, then gradually decreases to about 95% passing at 0.6 mm, and continues to decrease slowly towards 0.3 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 34.7%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ATTERBERG LIMITS TEST REPORT

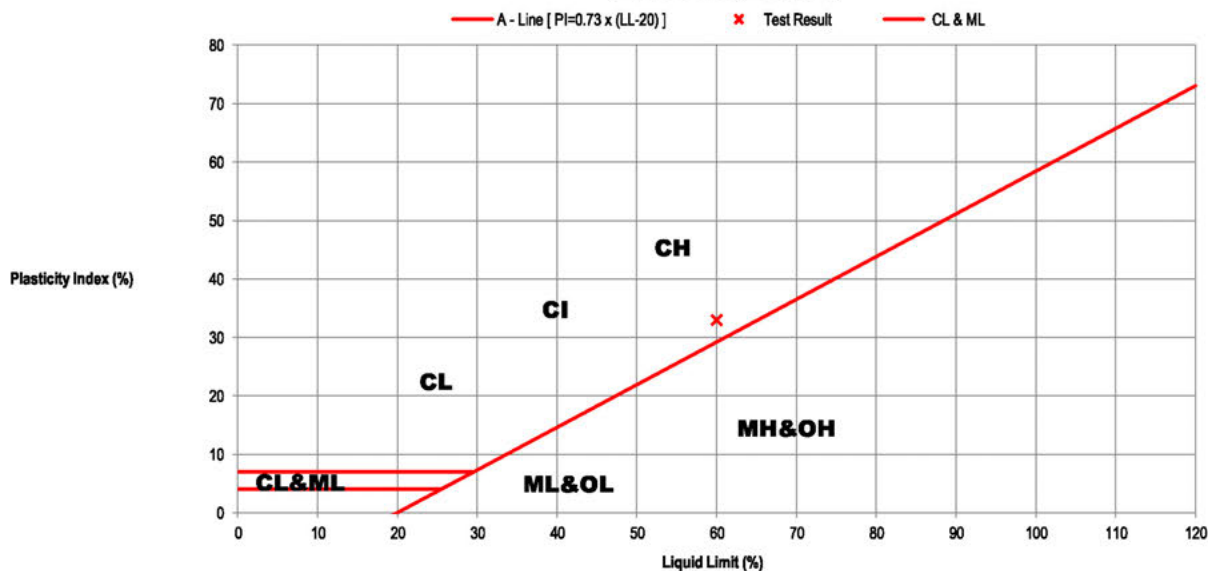
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101152-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4040
Project	Inland Rail B2G	Test Date	7/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2236-S02050	Client Sample No.	310-01-BH2236
Description	SPT	Depth From (m)	20.5
		Depth To (m)	20.95

RESULTS OF TESTING

Liquid Limit (%)	60	
Plastic Limit (%)	27	
Plasticity Index (%)	33	
Linear Shrinkage (%)	16.5	Cracking & Curling Occurred
Moisture Content (%)	30.5	
Preparation Method	Dry Sieved and Oven Dried	

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

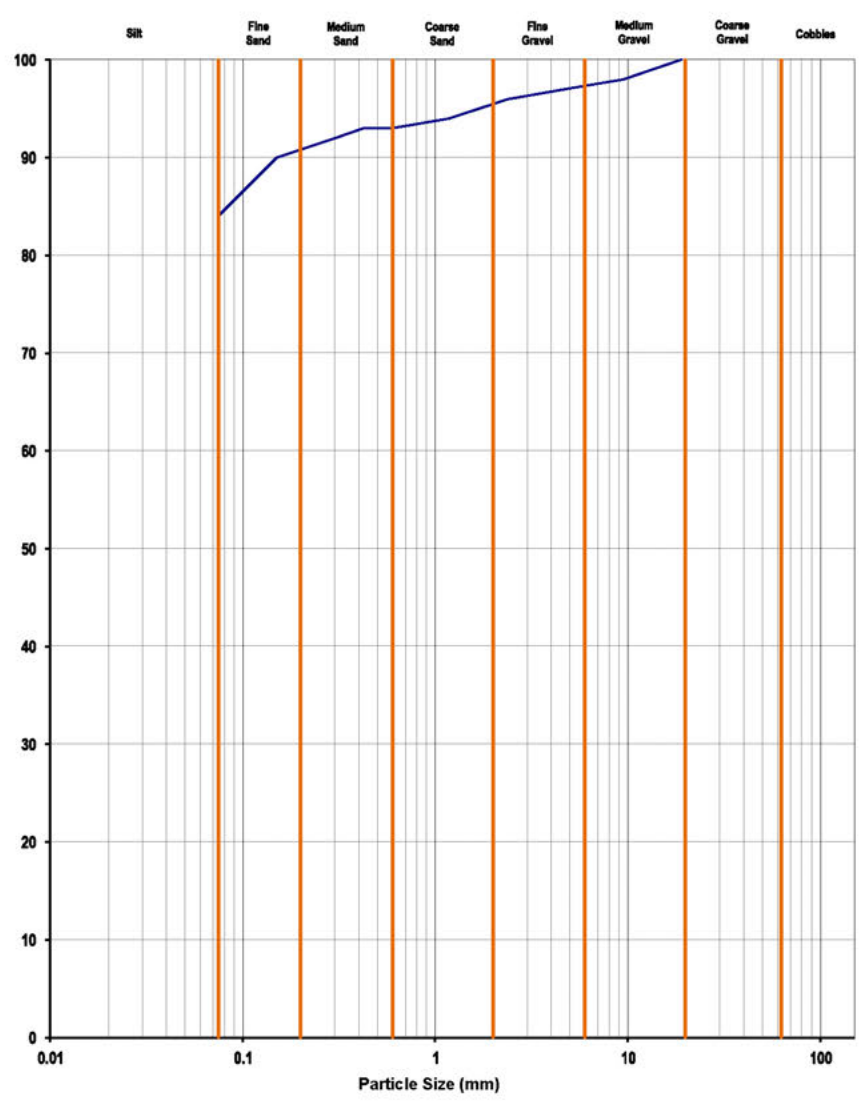
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101152-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4040
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2236		
Bore Hole	310-01-BH2236-S02050	Depth From (m)	20.5	Depth To (m)	20.95
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	100
13.2	98
9.5	98
6.7	97
4.75	97
2.36	96
1.18	94
0.600	93
0.425	93
0.300	92
0.150	90
0.075	84



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 84% passing for 0.075 mm and rises to 100% passing at 19.0 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 30.5%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.1

Client	Golder Associates Pty Limited	Report No.	GA101160-MOD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4050
Project	Inland Rail B2G	Test Date	25/10/2018
Project No.	1897791	Client Sample No.	310-01-BH2344
Bore Hole	310-01-BH2344-C	Depth From (m)	12.08
		Depth To (m)	12.29
Description	C		
Sample Type	Single Individual Rock Core Specimen		

Uniaxial Compressive Strength 39.1 MPa

Young's Modulus

Tangent 25.3 GPa

Secant 27.9 GPa

Poisson Ratio

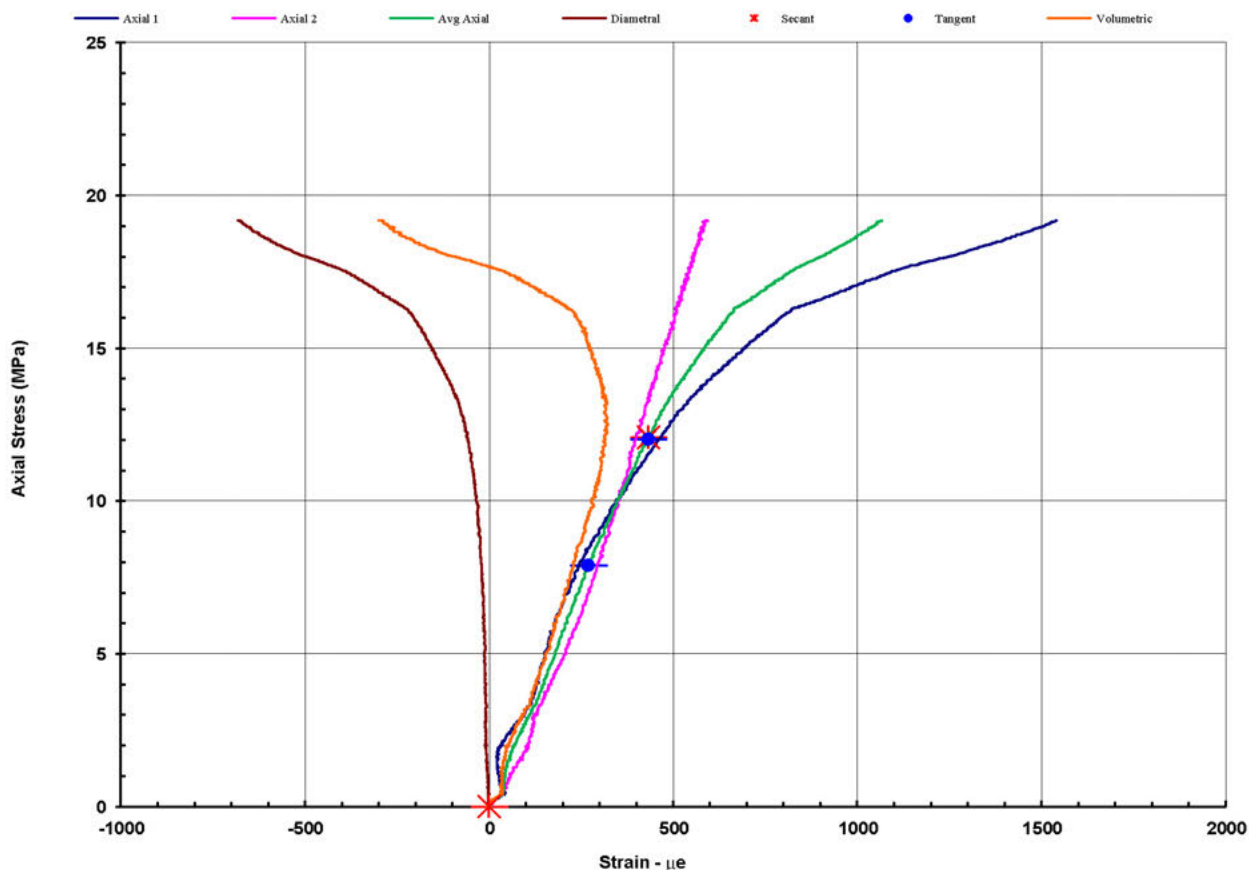
0.132

0.138

from 20 % to 31 % of Max UCS

from 0 % to 31 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

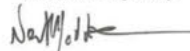
Tested as received.

Page 1 of 2 REP03603

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.1

Client Golder Associates Pty Limited		Report No. GA101160-MOD	
Average Sample Diameter (mm)	60.5	Moisture Content (%)	4.3
Sample Height (mm)	160.1	Wet Density (t/m ³)	2.61
Duration of Test (min)	7.62	Dry Density (t/m ³)	2.50
Rate of Loading (MPa/min)	5.14	Bedding (°)	Nil
Mode of Failure	Existing defect	Test Apparatus	Kelba 1000kN Load Cell

CLIENT: Golder Associates Pty Limited	
PROJECT: Inland Rail B2G	BEFORE TEST
LAB SAMPLE No. 101160	DATE: 25/10/18
BOREHOLE: 310-01-BH2344-C01208	DEPTH: 12.08



CLIENT: Golder Associates Pty Limited	
PROJECT: Inland Rail B2G	AFTER TEST
LAB SAMPLE No. 101160	DATE: 25/10/18
BOREHOLE: 310-01-BH2344-C01208	DEPTH: 12.08



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

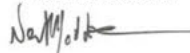
Tested as received.

Page 2 of 2 REP03603

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

POINT LOAD TEST REPORT

Test Method: AS 4133.4.1

Client	Golder Associates Pty Limited	Report No.	GA101161-101162-PL
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4050
		Test Date	24/10/2018
		Report Date	25/10/2018

Project	Inland Rail B2G
Project No	1897791

Trilab Sample No.	101161	101162	101161	101162
Client Sample No	310-01-BH2344	310-01-BH2344	310-01-BH2344	310-01-BH2344
Bore Hole	310-01-BH2344-C01230	310-01-BH2344-C01250	310-01-BH2344-C01230	310-01-BH2344-C01250
Depth From/To (m)	12.30-12.50	12.50-15.00	12.30-12.50	12.50-15.00
Description	C	C	C	C
Is (MPa)	0.81	3.16	2.40	4.30
Is(50) (MPa)	0.88	3.33	2.52	4.56
Load Direction	Diametral	Diametral	Axial	Axial

Trilab Sample No.				
Client Sample No				
Bore Hole				
Depth From/To (m)				
Description				
Is (MPa)				
Is(50) (MPa)				
Load Direction				

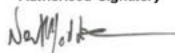
NOTES/REMARKS: Tested as received + Irregular Lump

Sample/s supplied by the client

Page 1 of 1 REP02102

This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
 Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

SHRINK SWELL INDEX TEST REPORT

Test Method AS 1289 7.1.1

Client Golder Associates Pty Limited	Report No. GA101166-ISS
	Request No. R3_BH_Rev1_4050
Address PO Box 1734 MILTON BC QLD 4064	Test Date 25/10/2018
	Report Date 30/10/2018
Project Inland Rail B2G	
Sample No.	310-01-BH2347
Client ID	310-01-BH2347-U00250
Depth (m)	2.5-3
RESULTS OF TESTING	
SWELL SPECIMEN	
Swell Pressure (kPa) *	-
Wet Density (t/m³)	1.84
Initial Moisture Content (%)	22.1
Final Moisture Content (%)	33.5
Swell (%)	1.7
SHRINKAGE SPECIMEN	
Estimated Inert Inclusions (%)	10-20
Extent of Crumbling	Slight
Extent of Cracking	High
Moisture (%)	25.9
Shrinkage (%)	1.9
 SHRINK SWELL INDEX (Iss) (%) 	
1.5	
<u>Notes/Remarks:</u>	
Sample/s supplied by client Tested as received Page: 1 of 1 REP02304	

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

Test Method: AS 1289 3.8.1

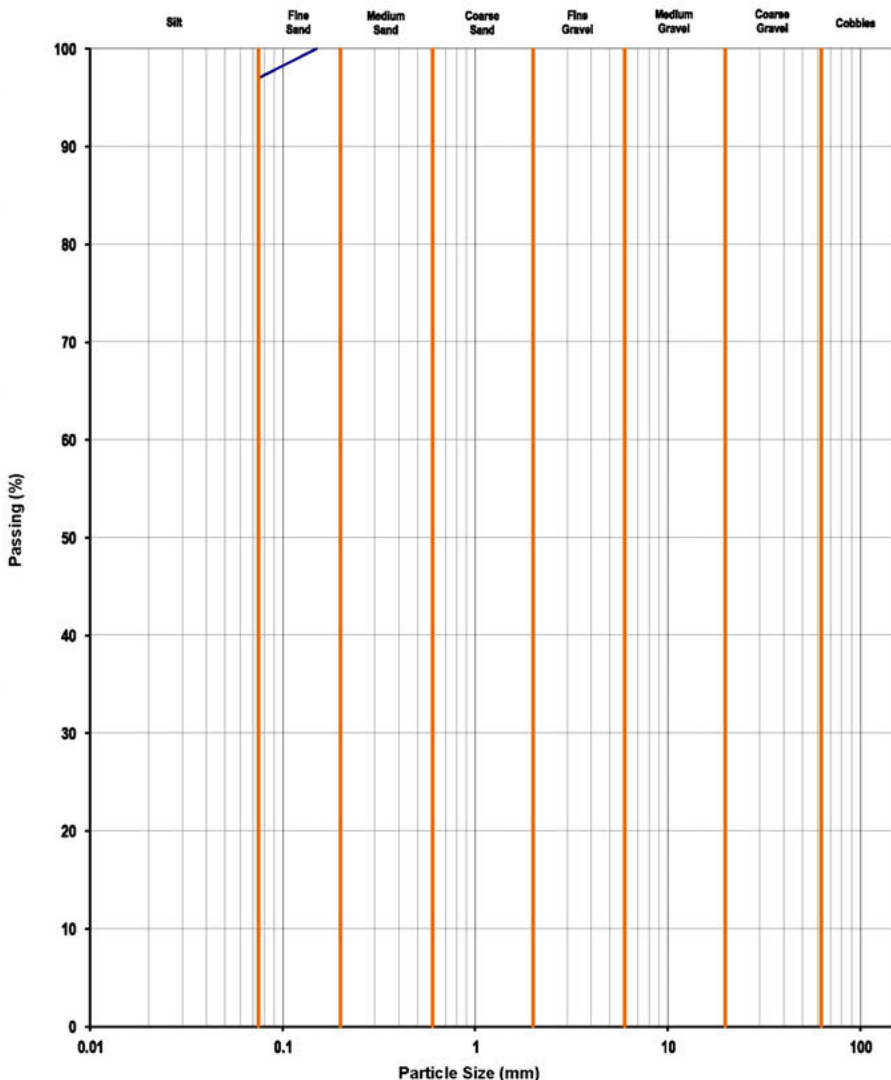
ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101033-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4050
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2323		
Bore Hole	310-01-BH2323-S00380	Depth From (m)	3.8	Depth To (m)	4.25
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	
0.600	
0.425	
0.300	
0.150	100
0.075	97



The graph shows the particle size distribution for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. Vertical lines indicate the boundaries between soil types: Silt, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles. The data points from the table are plotted, showing that 100% of the sample passes through a 0.150 mm sieve and 97% passes through a 0.075 mm sieve.

NOTES/REMARKS:

-
Moisture Content 15.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

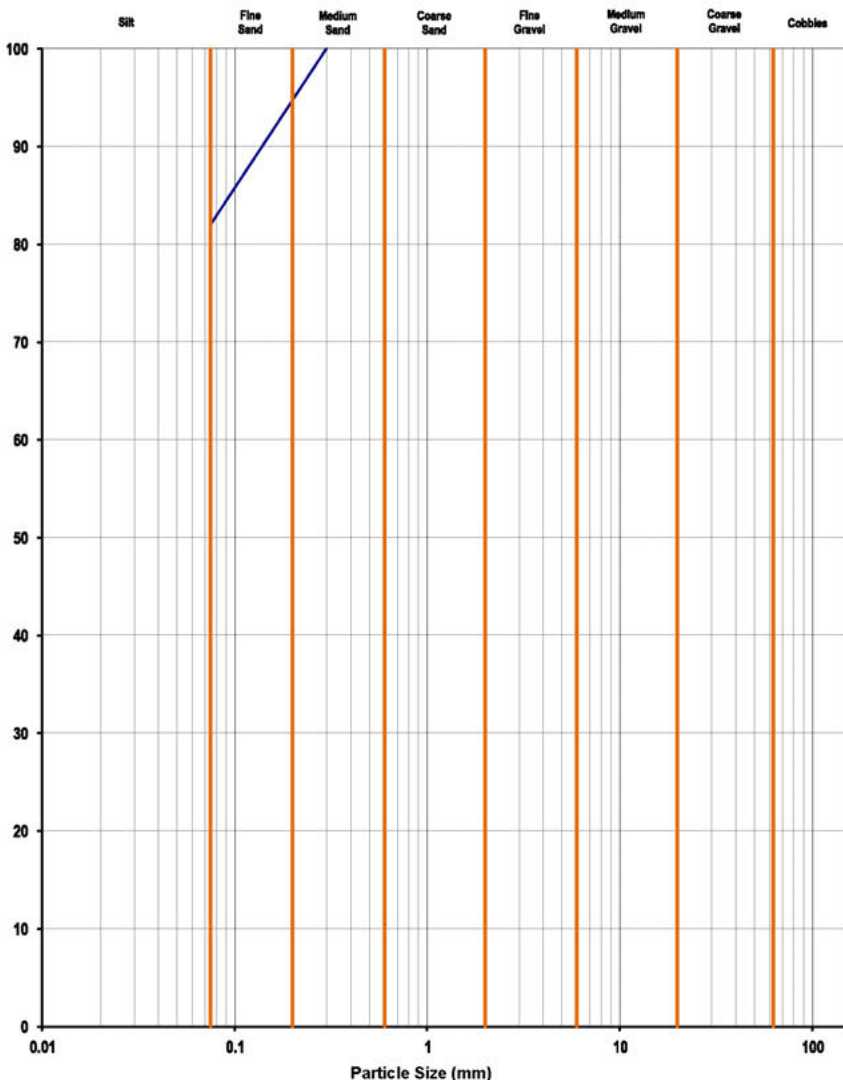
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101034-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4050
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2323		
Bore Hole	310-01-BH2323-S00680	Depth From (m)	6.8	Depth To (m)	7.22
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	
0.600	
0.425	
0.300	100
0.150	91
0.075	82



The graph shows the particle size distribution for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. Vertical lines indicate the boundaries between soil types: Silt, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles. A blue curve is plotted, starting at approximately 82% passing for 0.075 mm and reaching 100% passing at 0.300 mm.

NOTES/REMARKS:

-
Moisture Content 19.9%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

CERTIFICATE OF ANALYSIS

Work Order : **EB1825969**
Client : **TRILAB PTY LTD**
Contact : **THE ADMIN RESULTS**
Address : **346A BILSEN RD**
GEEBUNG QLD, AUSTRALIA 4031
Telephone : **+61 07 3265 5656**
Project : **1897791 Inland Rail B2G**
Order number : **BNE 1910018**
C-O-C number : **---**
Sampler : **---**
Site : **---**
Quote number : **EN/333**
No. of samples received : **1**
No. of samples analysed : **1**

Page : **1 of 2**
Laboratory : **Environmental Division Brisbane**
Contact : **Customer Services EB**
Address : **2 Byth Street Stafford QLD Australia 4053**
Telephone : **+61-7-3243 7222**
Date Samples Received : **26-Oct-2018 11:35**
Date Analysis Commenced : **26-Oct-2018**
Issue Date : **31-Oct-2018 09:09**



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 ^ = This result is computed from individual analyte detections at or above the level of reporting
 ø = ALS is not NATA accredited for these tests.
 ~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Client sample ID

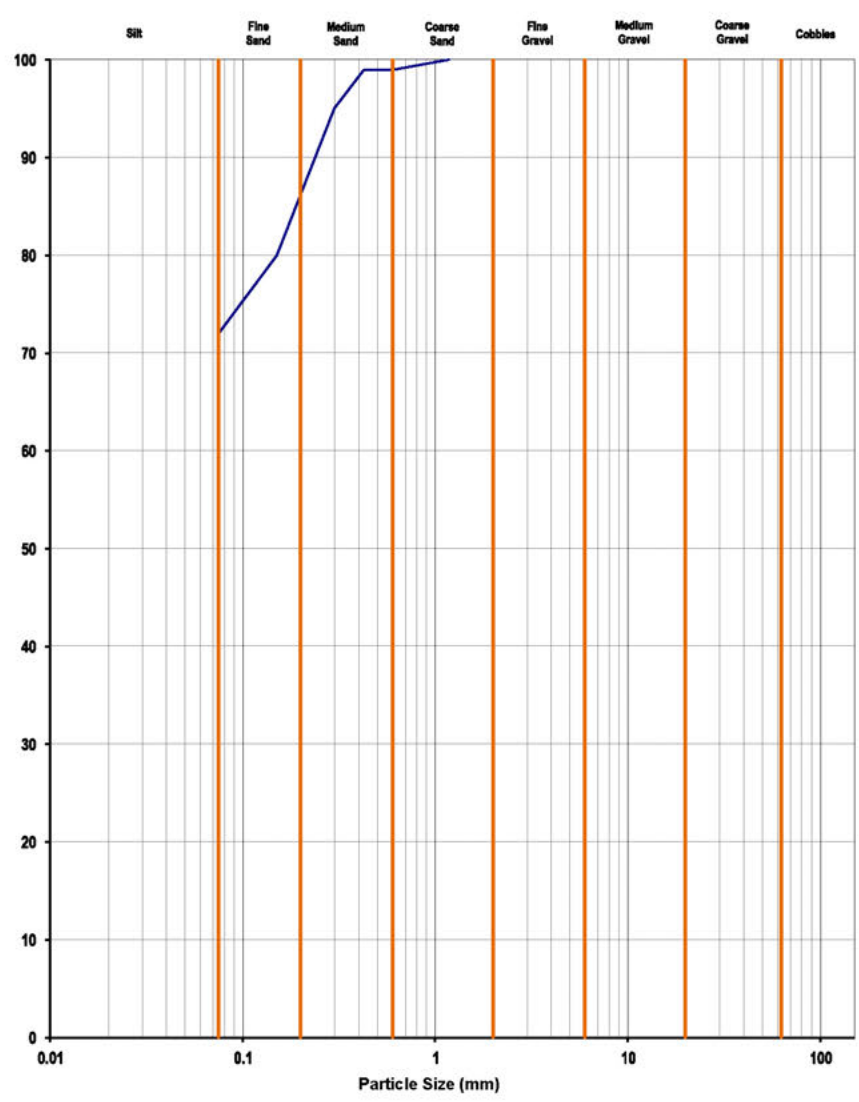
				101035 /	----	----	----	----
				310-01-BH2323-S0113				
				0 / 11.30-11.745m				
				Client sampling date / time	[26-Oct-2018]			
Compound	CAS Number	LOR	Unit	EB1825969-001				
				Result	----	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	9.5	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	18.5	----	----	----	----
ED040: Sulfur as SO4 2-								
Sulfate as SO4 2-	14808-79-8	100	mg/kg	<100	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	150	----	----	----	----

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101036-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4050
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2323		
Bore Hole	310-01-BH2323-S01280	Depth From (m)	12.8	Depth To (m)	13.19
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	99
0.425	99
0.300	95
0.150	80
0.075	72



The graph plots Passing (%) on the y-axis (0 to 100) against Particle Size (mm) on a logarithmic x-axis (0.01 to 100). Vertical lines indicate sieve sizes: 0.075, 0.150, 0.300, 0.425, 0.600, 1.18, 2.36, 4.75, 6.7, 9.5, 13.2, 19.0, 26.5, 37.5, 53.0, 63.0, 75.0, 150.0. The curve starts at 72% passing for 0.075 mm and rises to 100% passing for 1.18 mm and above.

NOTES/REMARKS:

-
Moisture Content 18%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

Test Method: AS 1289 3.8.1

RESULTS OF TESTING	
1. Visual Inspection	Visual inspection of the structure revealed no visible signs of damage, including cracks, spalls, or delamination.
2. Rebar Exposure	Rebar was exposed at several locations for inspection. The rebar was found to be in good condition, with no signs of corrosion or cracking.
3. Concrete Strength	Concrete strength was tested using a core sample. The results showed a compressive strength of 4,500 psi, which is within the specified range of 4,000 to 5,000 psi.
4. Rebar Spacing	Rebar spacing was measured at several locations. The spacing was found to be consistent with the design specifications, ranging from 12 to 18 inches.
5. Moisture Content	Moisture content was measured using a moisture meter. The results showed a moisture content of 4.5%, which is within the specified range of 4.0% to 5.0%.
6. Chloride Content	Chloride content was measured using a chloride meter. The results showed a chloride content of 0.15%, which is within the specified range of 0.10% to 0.20%.
7. Rebar Corrosion	Rebar corrosion was measured using a corrosion meter. The results showed a corrosion rate of 0.05 mm/year, which is within the specified range of 0.02 to 0.10 mm/year.
8. Concrete Cracking	Concrete cracking was measured using a crack width meter. The results showed a crack width of 0.05 mm, which is within the specified range of 0.02 to 0.10 mm.
9. Rebar Splicing	Rebar splicing was inspected at several locations. The splicing was found to be in good condition, with no signs of cracking or delamination.
10. Concrete Finish	Concrete finish was inspected at several locations. The finish was found to be in good condition, with no signs of cracking or delamination.

[illegible]

REP00402



NATA
ACCREDITED FOR
TECHNICAL
COMPETENCE

Laboratory No. 9926

Trilab Pty Ltd ABN 25 065 630 506

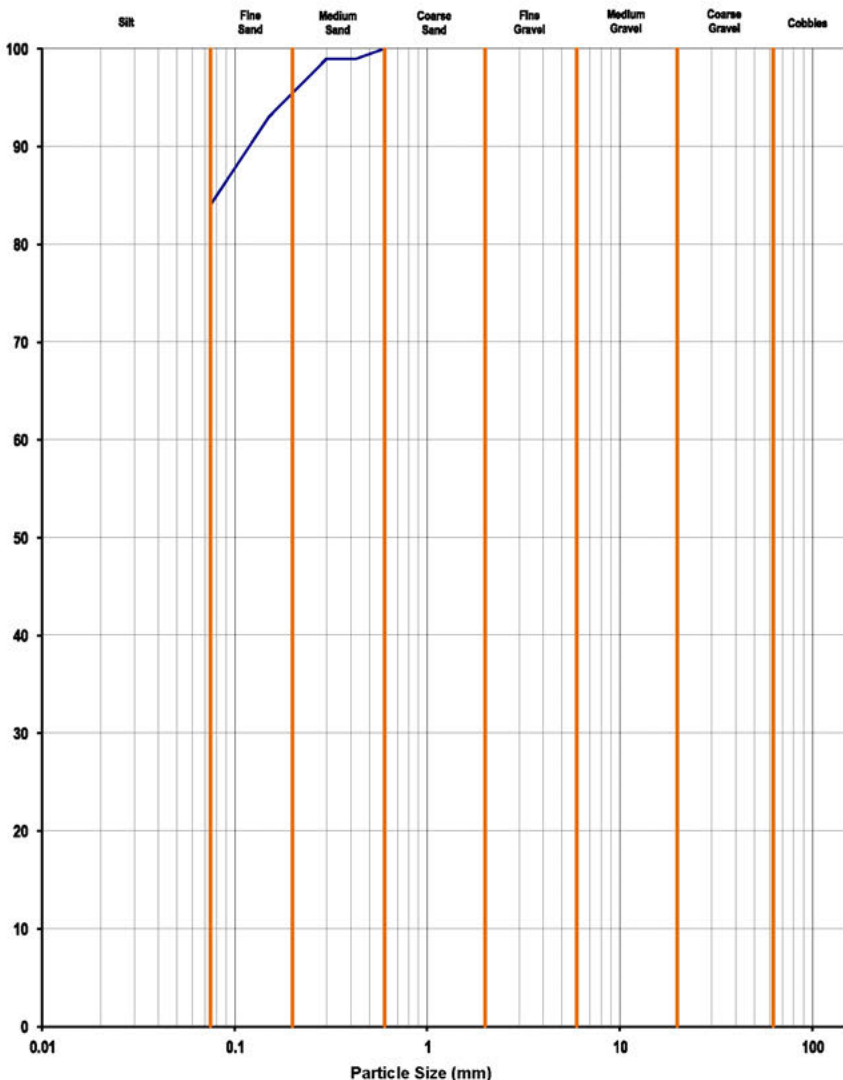
ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101153-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4050
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2326		
Bore Hole	310-01-BH2326-S00400	Depth From (m)	4	Depth To (m)	4.45
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	
0.600	100
0.425	99
0.300	99
0.150	93
0.075	84



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 84% passing for 0.075 mm and rises to 100% passing at 0.600 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.850 mm), Coarse Sand (0.850 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 18.8%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park

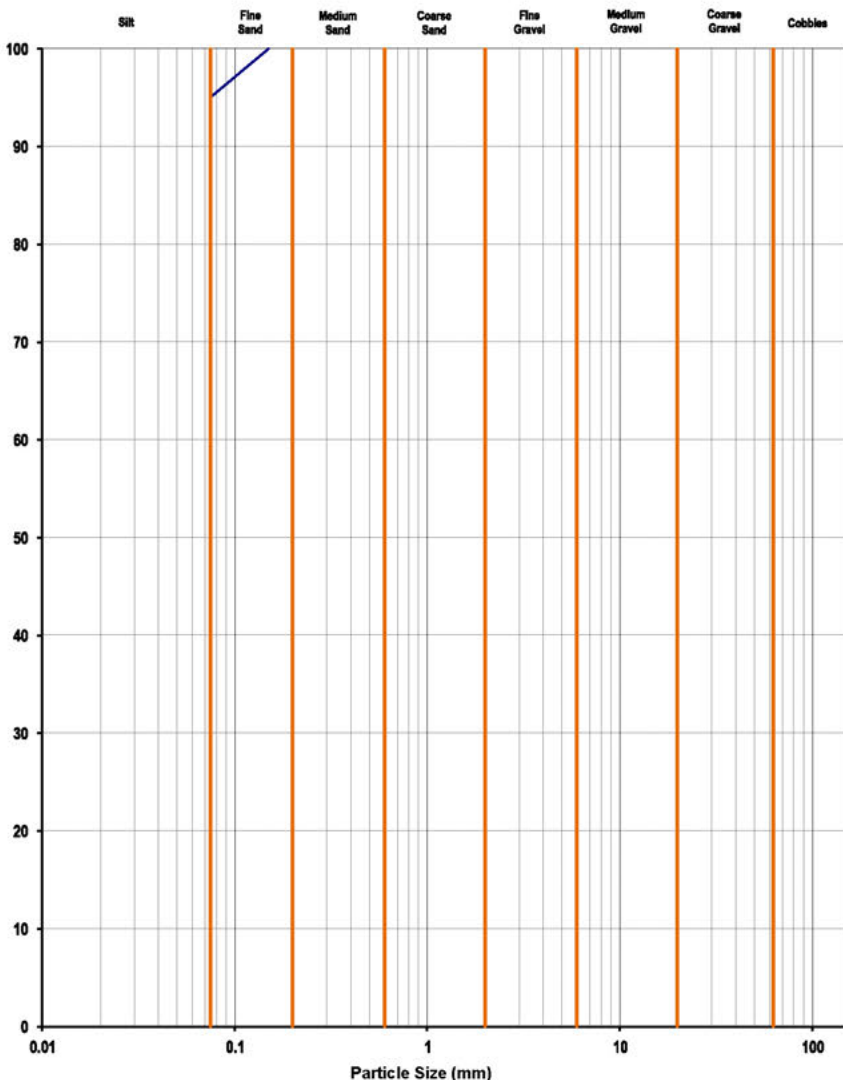


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101154-G		
Address	PO Box 1734 MILTON BC QLD 4064			Request No	R3_BH_Rev1_4050		
Project	Inland Rail B2G						
Project No	1897791		Client Sample No	310-01-BH2326			
Bore Hole	310-01-BH2326-S00800		Depth From (m)	8	Depth To (m)	8.25	
Description	SPT						
Sieve Size (mm)	Passing %	 The graph shows a semi-logarithmic plot of Particle Size (mm) on the x-axis (0.01 to 100) versus Passing (%) on the y-axis (0 to 100). Vertical lines indicate sieve sizes: 0.075, 0.150, 0.300, 0.425, 0.600, 1.18, 2.36, 4.75, 6.7, 9.5, 13.2, 19.0, 26.5, 37.5, 53.0, 63.0, 75.0, 150.0. A blue curve starts at 100% passing for 0.075 mm and drops to 95% at 0.075 mm, then continues to drop to 0% at 0.075 mm. The curve is labeled 'Fine Sand'.					
150.0							
75.0							
63.0							
53.0							
37.5							
26.5							
19.0							
13.2							
9.5							
6.7							
4.75							
2.36							
1.18							
0.600							
0.425							
0.300							
0.150							
0.075							
NOTES/REMARKS:		- Moisture Content 14.9% Sample/s supplied by the client					

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

CERTIFICATE OF ANALYSIS

Work Order : **EB1825967**
Client : **TRILAB PTY LTD**
Contact : **THE ADMIN RESULTS**
Address : **346A BILSEN RD**
GEEBUNG QLD, AUSTRALIA 4031
Telephone : **+61 07 3265 5656**
Project : **1897791 Inland Rail B2G**
Order number : **BNE 1910017**
C-O-C number : **---**
Sampler : **---**
Site : **---**
Quote number : **EN/333**
No. of samples received : **1**
No. of samples analysed : **1**

Page : **1 of 2**
Laboratory : **Environmental Division Brisbane**
Contact : **Customer Services EB**
Address : **2 Byth Street Stafford QLD Australia 4053**
Telephone : **+61-7-3243 7222**
Date Samples Received : **26-Oct-2018 11:35**
Date Analysis Commenced : **26-Oct-2018**
Issue Date : **31-Oct-2018 09:09**



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 ^ = This result is computed from individual analyte detections at or above the level of reporting
 ø = ALS is not NATA accredited for these tests.
 ~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Client sample ID

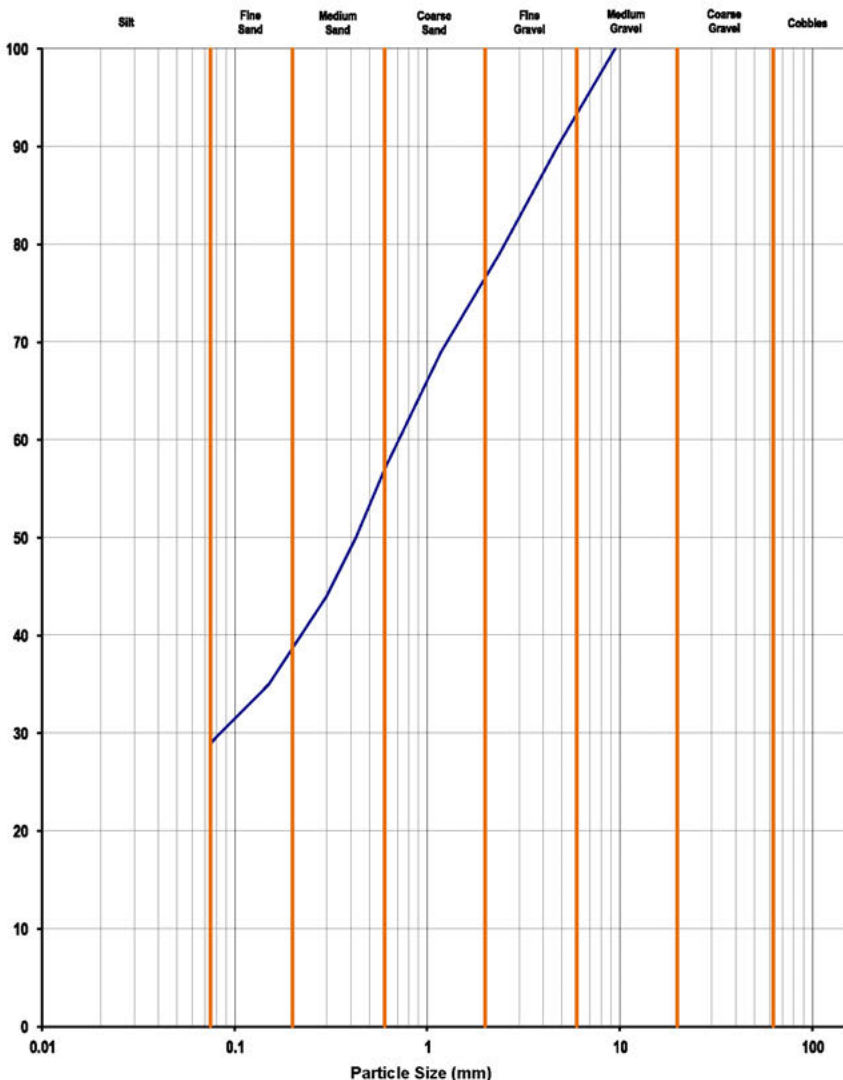
				101155 /	----	----	----	----
				310-01-BH2326-S0100				
				0 / 10.00-10.12m				
				[26-Oct-2018]	----	----	----	----
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	EB1825967-001	-----	-----	-----	-----
				Result	----	----	----	----
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	8.6	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	14.1	----	----	----	----
ED040: Sulfur as SO4 2-								
Sulfate as SO4 2-	14808-79-8	100	mg/kg	120	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	470	----	----	----	----

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101157-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4050
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2344		
Bore Hole	310-01-BH2344-S00550	Depth From (m)	5.5	Depth To (m)	5.93
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	100
6.7	95
4.75	90
2.36	79
1.18	69
0.600	57
0.425	50
0.300	44
0.150	35
0.075	29



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 29% passing for 0.075 mm and reaches 100% passing at 9.5 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 34.8%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

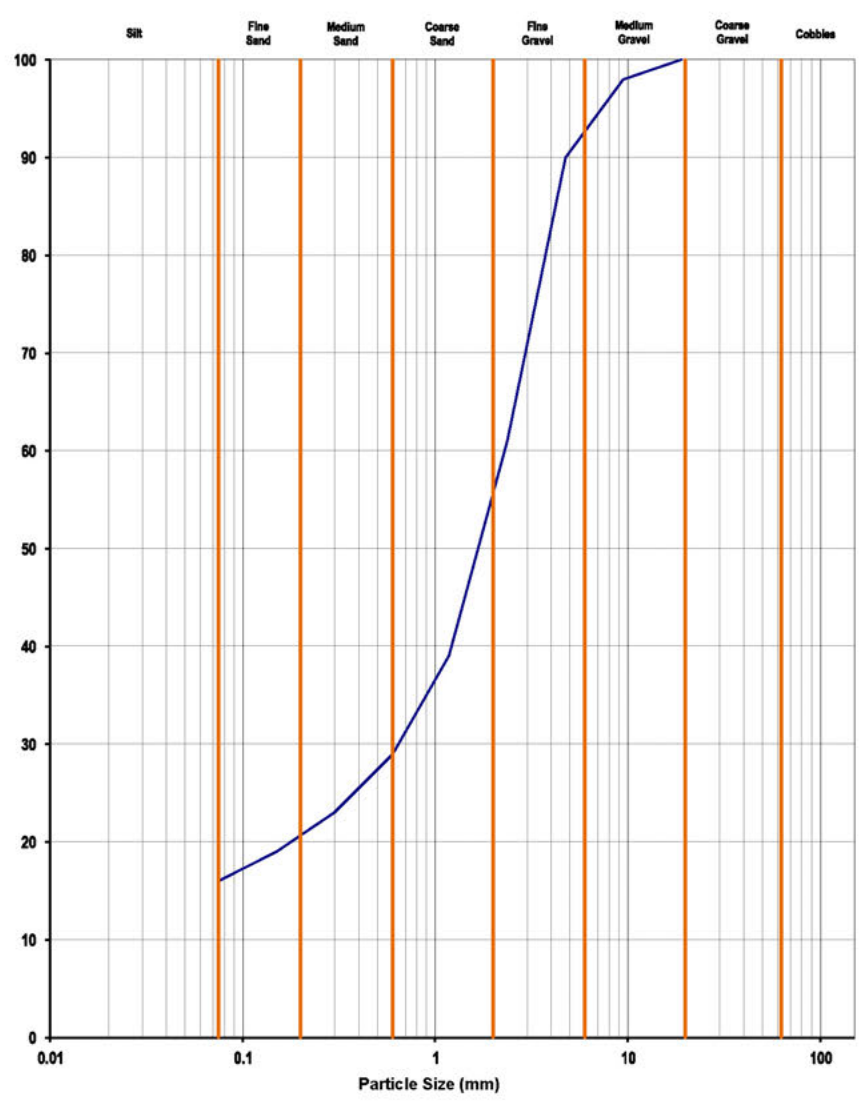
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101158-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4050
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2344		
Bore Hole	310-01-BH2344-S00700	Depth From (m)	7	Depth To (m)	7.1
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	100
9.5	98
6.7	94
4.75	90
2.36	61
1.18	39
0.600	29
0.425	26
0.300	23
0.150	19
0.075	16



NOTES/REMARKS:

-

Moisture Content 14.9%

Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

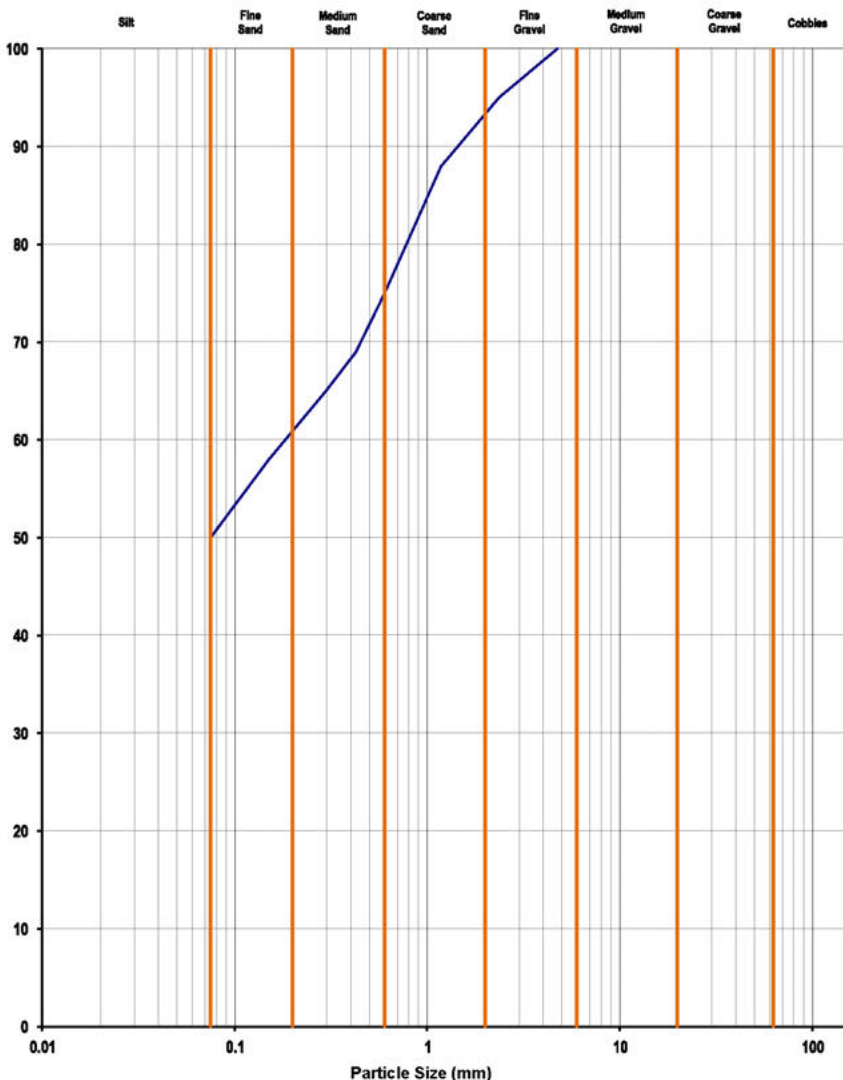
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101163-G			
Address	PO Box 1734 MILTON BC QLD 4064			Request No	R3_BH_Rev1_4050			
Project	Inland Rail B2G							
Project No	1897791		Client Sample No	310-01-BH2350				
Bore Hole	310-01-BH2350-S00205		Depth From (m)	2.05		Depth To (m)	2.45	
Description	SPT							
Sieve Size (mm)	Passing %							
150.0								
75.0								
63.0								
53.0								
37.5								
26.5								
19.0								
13.2								
9.5								
6.7								
4.75	100							
2.36	95							
1.18	88							
0.600	75							
0.425	69							
0.300	65							
0.150	58							
0.075	50							
NOTES/REMARKS:		- Moisture Content 17.9% Sample/s supplied by the client						

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

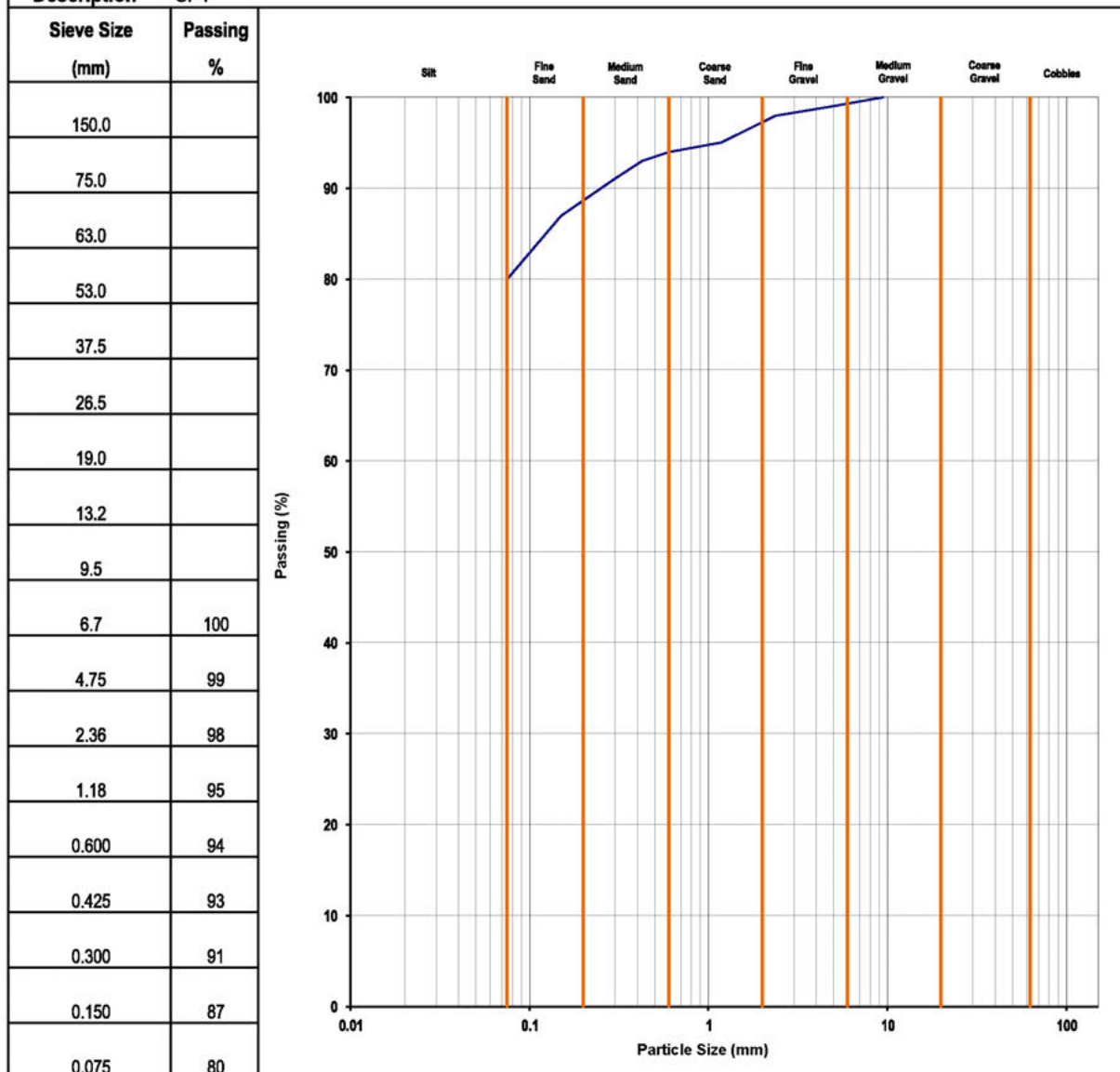
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101164-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R3_BH_Rev1_4050
Project	Inland Rail B2G	Test Date	23/10/18-29/10/18
Project No	1897791	Report Date	29/10/2018
Bore Hole	310-01-BH2350-S00547	Client Sample No	310-01-BH2350
Depth From (m)	5.47	Depth To (m)	5.58

Description SPT



NOTES/REMARKS:

-
Moisture Content 34.2%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

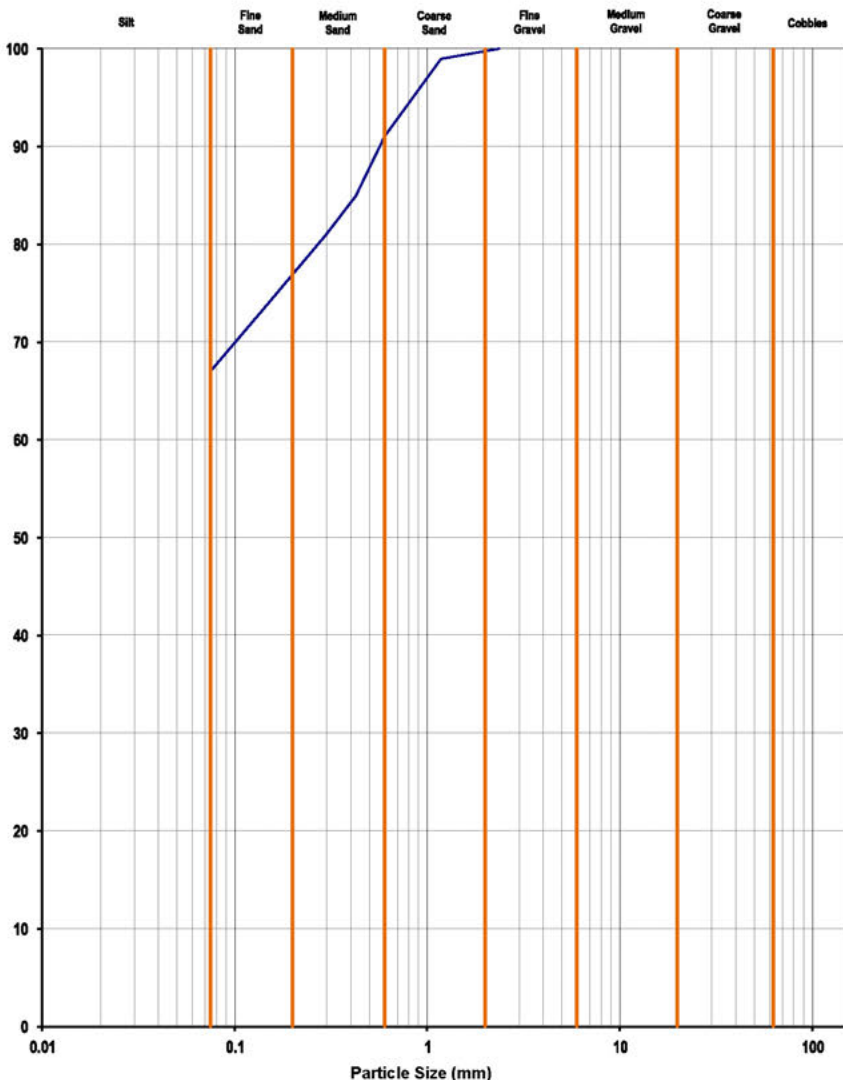
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101165-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4050
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2350		
Bore Hole	310-01-BH2350-S00850	Depth From (m)	8.5	Depth To (m)	8.75
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	91
0.425	85
0.300	81
0.150	74
0.075	67



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 67% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.36 mm), Fine Gravel (2.36 - 4.75 mm), Medium Gravel (4.75 - 9.5 mm), Coarse Gravel (9.5 - 20 mm), and Cobbles (> 20 mm).

NOTES/REMARKS:

-
Moisture Content 26.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

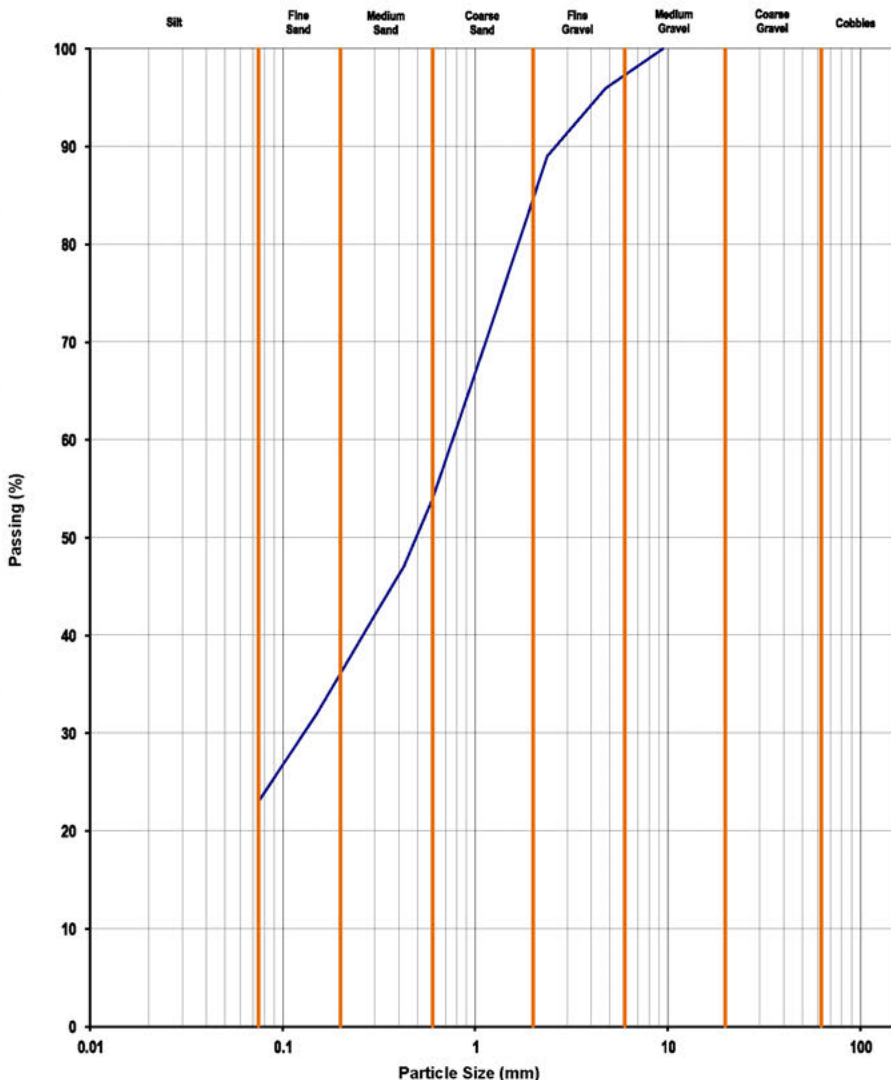
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101167-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4050
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2347		
Bore Hole	310-01-BH2347-S00380	Depth From (m)	3.8	Depth To (m)	4.25
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	100
4.75	96
2.36	89
1.18	71
0.600	54
0.425	47
0.300	42
0.150	32
0.075	23



NOTES/REMARKS:

-

Moisture Content 18.8%

Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

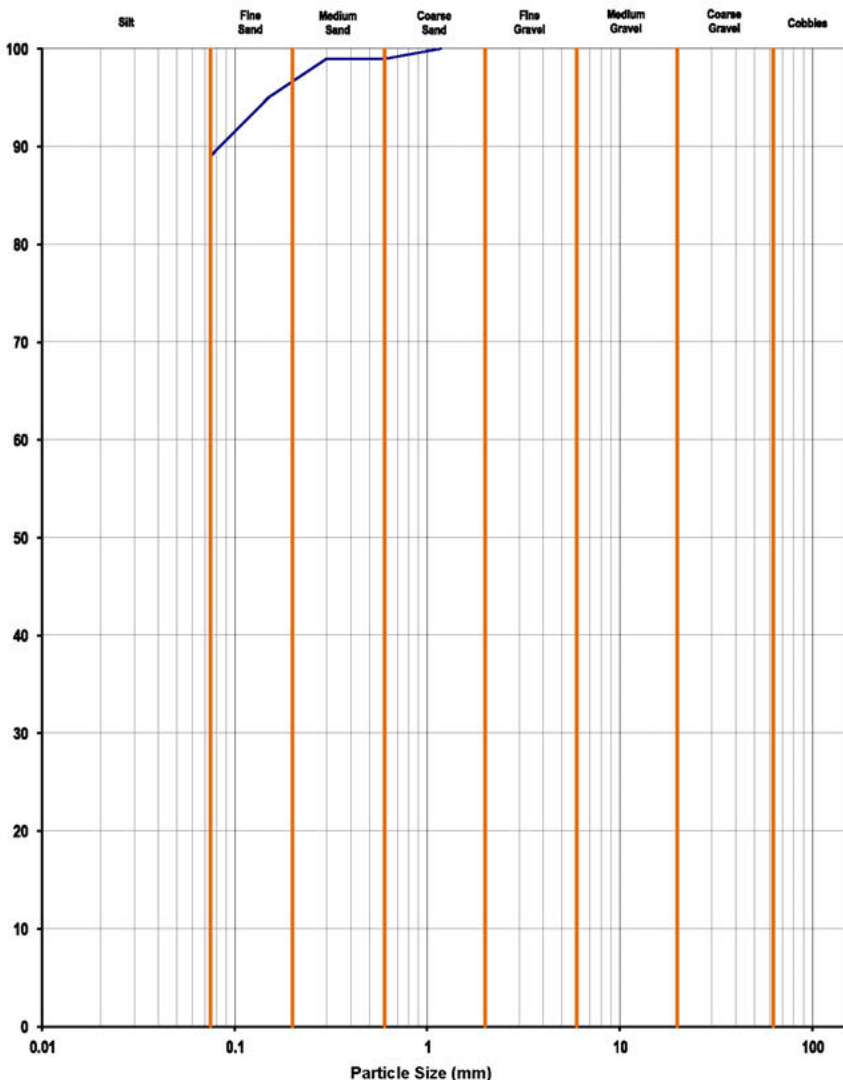
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101168-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4050
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2347		
Bore Hole	310-01-BH2347-S01280	Depth From (m)	12.8	Depth To (m)	13.25
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	99
0.425	99
0.300	99
0.150	95
0.075	89



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at 100% passing for 1.18 mm and decreases to 89% passing at 0.075 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 36.6%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

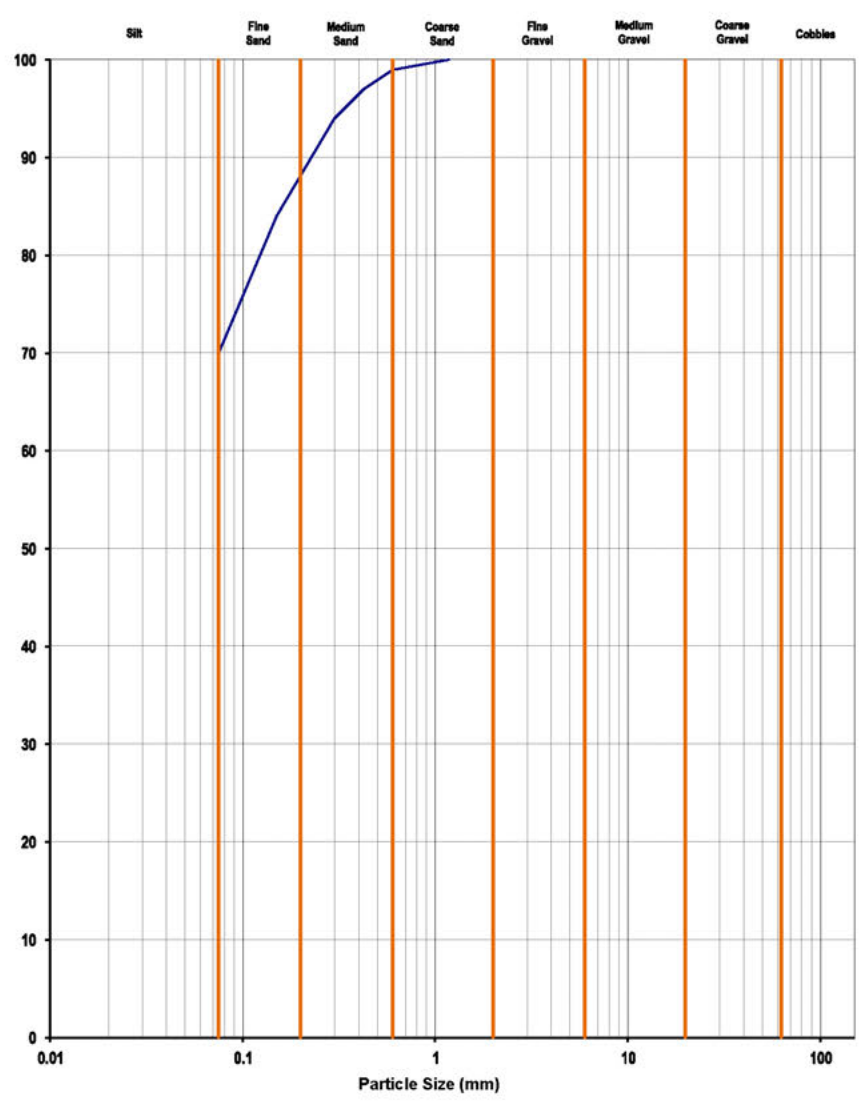
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101170-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R3_BH_Rev1_4050
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2347		
Bore Hole	310-01-BH2347-S01580	Depth From (m)	15.8	Depth To (m)	16.25
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	99
0.425	97
0.300	94
0.150	84
0.075	70



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 70% passing for 0.075 mm and reaches 100% passing at 1.18 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 29%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

POINT LOAD TEST REPORT

Test Method: AS 4133.4.1

Client	Golder Associates Pty Limited	Report No.	GA101038-101053-PL
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4060
		Test Date	24/10/2018
		Report Date	25/10/2018

Project	Inland Rail B2G
Project No	1897791

Trilab Sample No.	101038	101040	101045	101048
Client Sample No	310-01-BH2302	310-01-BH2302	310-01-BH2304	310-01-BH2305
Bore Hole	310-01-BH2302-C00470	310-01-BH2302-C01060	310-01-BH2304-C01140	310-01-BH2305-C01100
Depth From/To (m)	4.70-5.00	10.60-11.00	11.40-11.70	11.00-12.00
Description	C	C	C	C
Is (MPa)	0.12	0.17	0.01	0.07
Is(50) (MPa)	0.13	0.18	0.01	0.08
Load Direction	Axial	Axial	Axial	Axial

Trilab Sample No.	101053	4.70-5.00	130	0.21
Client Sample No	310-01-BH2307	310-01-BH2302	310-01-BH2302	310-01-BH2304
Bore Hole	310-01-BH2307-C00970	310-01-BH2302-C00470	310-01-BH2302-C01060	310-01-BH2304-C01140
Depth From/To (m)	9.70-10.00	4.70-5.00	10.60-11.00	11.40-11.70
Description	C	C	C	C
Is (MPa)	0.03	0.09	0.11	0.07
Is(50) (MPa)	0.03	0.10	0.12	0.07
Load Direction	Axial	Diametral	Diametral	Diametral

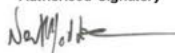
NOTES/REMARKS: Tested as received + Irregular Lump

Sample/s supplied by the client

Page 1 of 2 REP02102

This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
 Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

POINT LOAD TEST REPORT

Test Method: AS 4133.4.1

Client	Golder Associates Pty Limited	Report No.	GA101038-101053-PL
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4060
		Test Date	24/10/2018
		Report Date	25/10/2018

Project	Inland Rail B2G
Project No	1897791

Trilab Sample No.	101048	101053		
Client Sample No	310-01-BH2305	310-01-BH2307		
Bore Hole	310-01-BH2305-C01100	310-01-BH2307-C00970		
Depth From/To (m)	11.00-12.00	9.70-10.00		
Description	C	C		
Is (MPa)	0.07	0.02		
Is(50) (MPa)	0.08	0.03		
Load Direction	Diametral	Diametral		

Trilab Sample No.				
Client Sample No				
Bore Hole				
Depth From/To (m)				
Description				
Is (MPa)				
Is(50) (MPa)				
Load Direction				

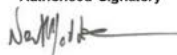
NOTES/REMARKS: Tested as received + Irregular Lump

Sample/s supplied by the client

Page 2 of 2 REP02102

This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

SLAKE DURABILITY INDEX TEST REPORT

Test Method: AS 4133.3.4

Client	Golder Associates Pty Limited	Report No.	GA101039-SD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	24/10/2018
Project No	1897791	Report Date	29/10/2018
		Client Sample No.	310-01-BH2302

Sample No.	101039
BoreHole	310-01-BH2302-C00800
Depth From (m)	8
Depth To (m)	8.5
Description	C
Slake Durability (1st cycle) (%)	58.2
Slake Durability (2nd cycle) (%)	42.0
Slake Durability (3rd cycle) (%)	-
Slake Durability (4th cycle) (%)	-
Water Used	Tap Water
Temperature (°C)	21.8
Appearance of fragments retained in the drum	Moderate Deterioration
Appearance of fragments passing through the drum	Fragments & Fines

NOTES/REMARKS:

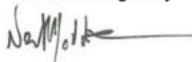
Sample/s supplied by the client

Page 1 of 1 REP02402

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in
 this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101040-MOD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	24/10/2018
Project No.	1897791	Client Sample No.	310-01-BH2302
Bore Hole	310-01-BH230	Depth From (m)	10.6
		Depth To (m)	11
Description	C		
Sample Type	Single Individual Rock Core Specimen		

Uniaxial Compressive Strength 1.82 MPa

Young's Modulus

Tangent 2.97 GPa

Secant 2.90 GPa

Poisson Ratio

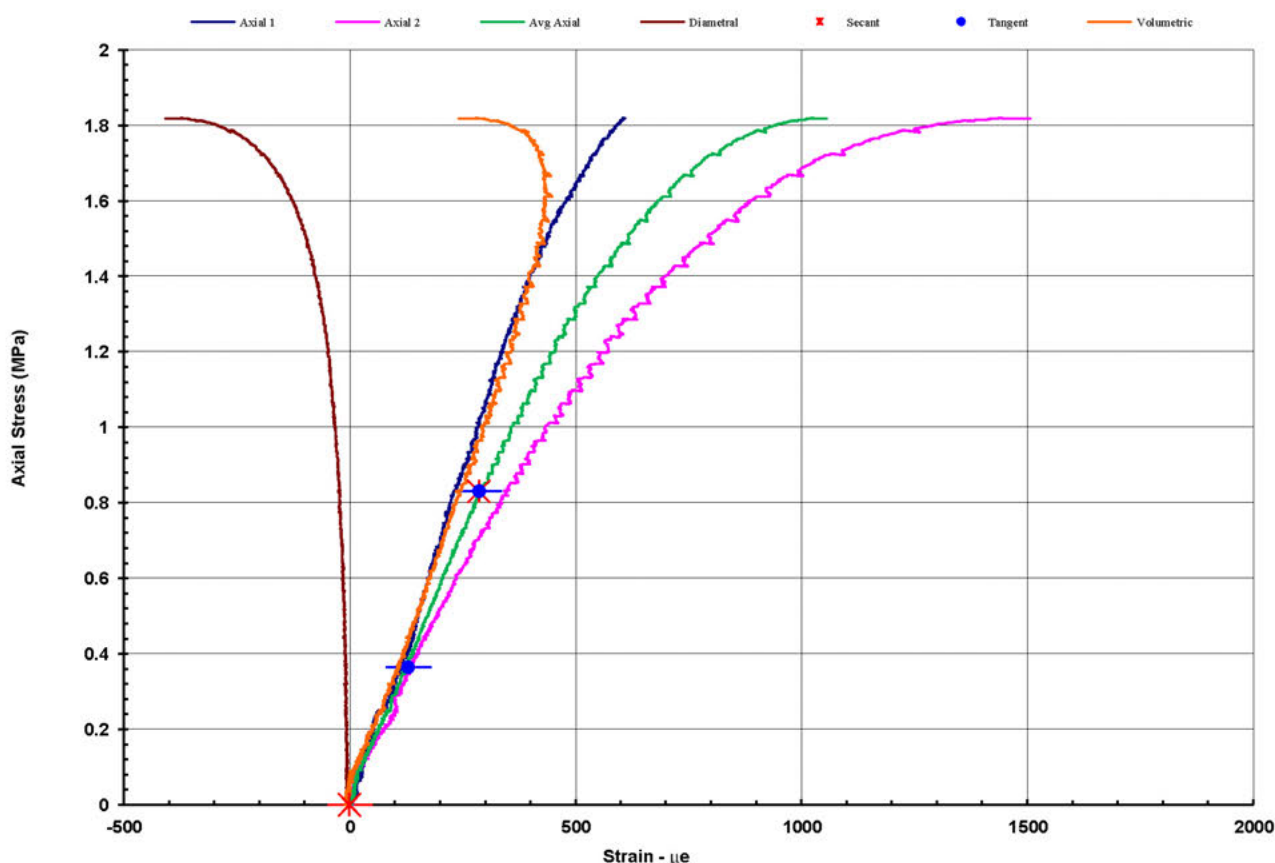
0.089

0.089

from 20 % to 46 % of Max UCS

from 0 % to 46 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

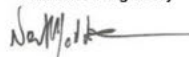
Tested as received.

Page 1 of 2:P13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101040-MOD
Average Sample Diameter (mm)	59.8	Moisture Content (%)	13.4
Sample Height (mm)	156.4	Wet Density (t/m ³)	1.93
Duration of Test (min)	8.92	Dry Density (t/m ³)	1.70
Rate of Displacement (mm/min)	0.10	Bedding (°)	Nil
Mode of Failure	Shear	Test Apparatus	100kN Compression Machine

CLIENT:	Golder Associates Pty Limited
PROJECT:	Inland Rail B2G
LAB SAMPLE No.	101040
BOREHOLE:	310-01-BH2302-C01060
BEFORE TEST	DATE: 24/10/18
	DEPTH: 10.6



CLIENT:	Golder Associates Pty Limited
PROJECT:	Inland Rail B2G
LAB SAMPLE No.	101040
BOREHOLE:	310-01-BH2302-C01060
AFTER TEST	DATE: 24/10/18
	DEPTH: 10.6



Notes/Remarks:

Sample/s supplied by client

Photo not to scale

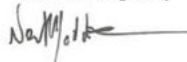
Tested as received.

Page 2 of 2 REP13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

SLAKE DURABILITY INDEX TEST REPORT

Test Method: AS 4133.3.4

Client	Golder Associates Pty Limited	Report No.	GA101042-SD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	24/10/2018
Project No	1897791	Report Date	29/10/2018
		Client Sample No.	310-01-BH2304

Sample No.	101042
BoreHole	310-01-BH2304-C00350
Depth From (m)	3.5
Depth To (m)	6.5
Description	C
Slake Durability (1st cycle) (%)	55.3
Slake Durability (2nd cycle) (%)	40.1
Slake Durability (3rd cycle) (%)	-
Slake Durability (4th cycle) (%)	-
Water Used	Tap Water
Temperature (°C)	21.8
Appearance of fragments retained in the drum	Moderate Deterioration
Appearance of fragments passing through the drum	Fragments & Fines

NOTES/REMARKS:

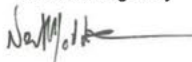
Sample/s supplied by the client

Page 1 of 1 REP02402

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in
 this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

SLAKE DURABILITY INDEX TEST REPORT

Test Method: AS 4133.3.4

Client	Golder Associates Pty Limited	Report No.	GA101043-SD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	24/10/2018
Project No	1897791	Report Date	29/10/2018
		Client Sample No.	310-01-BH2304

Sample No.	101043
BoreHole	310-01-BH2304-C00810
Depth From (m)	8.1
Depth To (m)	8.5
Description	C
Slake Durability (1st cycle) (%)	87.1
Slake Durability (2nd cycle) (%)	76.8
Slake Durability (3rd cycle) (%)	-
Slake Durability (4th cycle) (%)	-
Water Used	Tap Water
Temperature (°C)	21.8
Appearance of fragments retained in the drum	Moderate Deterioration
Appearance of fragments passing through the drum	Fragments & Fines

NOTES/REMARKS:

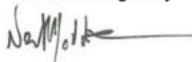
Sample/s supplied by the client

Page 1 of 1 REP02402

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in
 this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited			Report No.	GA101044-MOD
Address	PO Box 1734 MILTON BC	QLD	4064	Request No.	R2_BH_Rev1_4060
Project	Inland Rail B2G			Test Date	24/10/2018
Project No.	1897791	Client Sample No.	310-01-BH2304		
Bore Hole	310-01-BH230	Depth From (m)	11.1	Depth To (m)	12
Description	C				
Sample Type	Single Individual Rock Core Specimen				

Uniaxial Compressive Strength 0.244 MPa

Young's Modulus

Tangent 0.083 GPa

Secant 0.086 GPa

Poisson Ratio

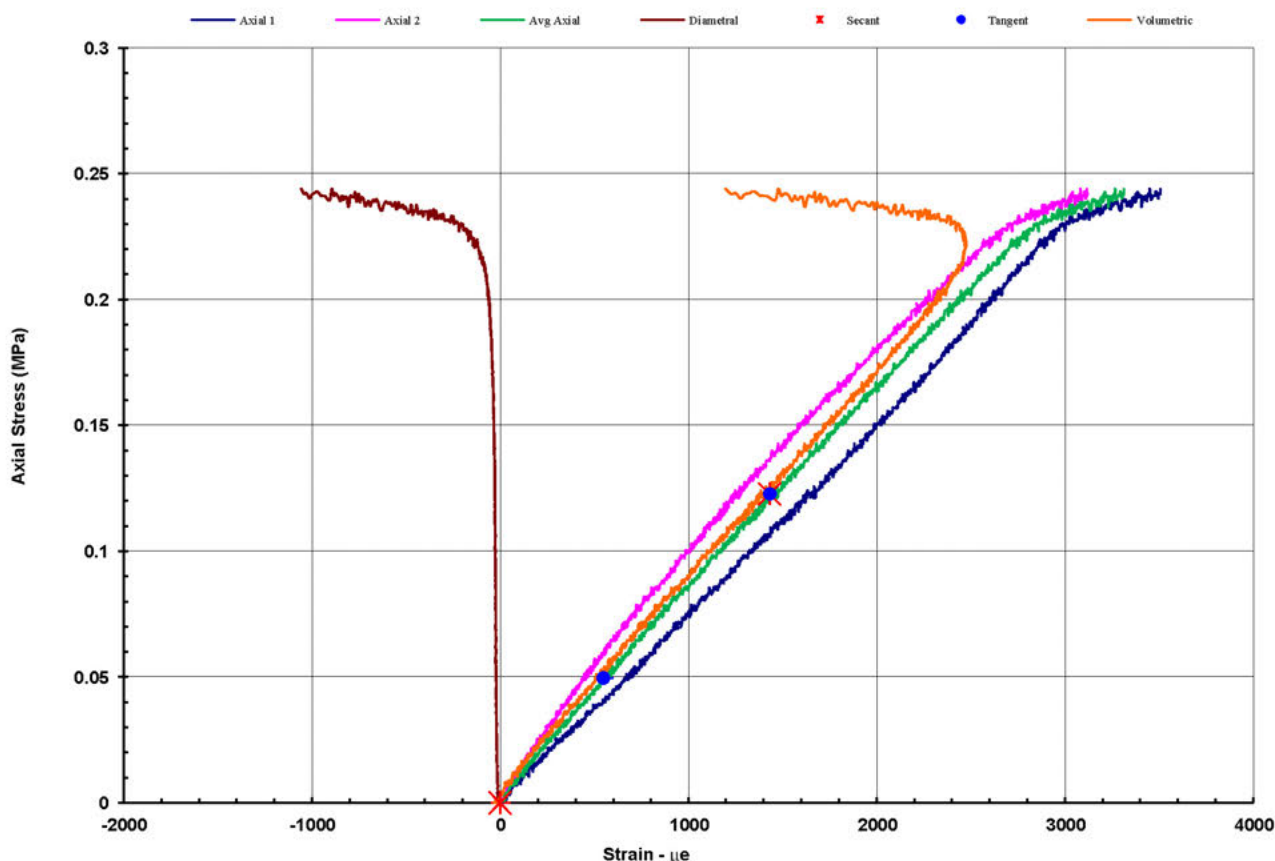
0.020

0.020

from 20 % to 50 % of Max UCS

from 0 % to 50 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

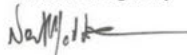
Tested as received.

Page 1 of 2:P13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101044-MOD
Average Sample Diameter (mm)	60.9	Moisture Content (%)	20.4
Sample Height (mm)	167.2	Wet Density (t/m ³)	1.83
Duration of Test (min)	15.73	Dry Density (t/m ³)	1.52
Rate of Displacement (mm/min)	0.10	Bedding (°)	Nil
Mode of Failure	Shear	Test Apparatus	100kN Compression Machine

CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	BEFORE TEST
LAB SAMPLE No.	101044	DATE: 24/10/18
BOREHOLE:	310-01-BH2304-C01110	DEPTH: 11.1



CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	AFTER TEST
LAB SAMPLE No.	101044	DATE: 24/10/18
BOREHOLE:	310-01-BH2304-C01110	DEPTH: 11.1



Notes/Remarks:

Sample/s supplied by client

Photo not to scale

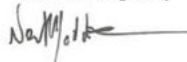
Tested as received.

Page 2 of 2 REP13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

SLAKE DURABILITY INDEX TEST REPORT

Test Method: AS 4133.3.4

Client	Golder Associates Pty Limited	Report No.	GA101047-SD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	24/10/2018
Project No	1897791	Report Date	29/10/2018
		Client Sample No.	310-01-BH2305

Sample No.	101047
BoreHole	310-01-BH2305-C00400
Depth From (m)	4
Depth To (m)	4.5
Description	C
Slake Durability (1st cycle) (%)	49.6
Slake Durability (2nd cycle) (%)	16.6
Slake Durability (3rd cycle) (%)	-
Slake Durability (4th cycle) (%)	-
Water Used	Tap Water
Temperature (°C)	23.8
Appearance of fragments retained in the drum	High Deterioration
Appearance of fragments passing through the drum	Fragments & Fines

NOTES/REMARKS:

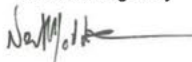
Sample/s supplied by the client

Page 1 of 1 REP02402

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in
 this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101049-MOD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	25/10/2018
Project No.	1897791	Client Sample No.	310-01-BH2305
Bore Hole	310-01-BH230	Depth From (m)	9.9
		Depth To (m)	12.8
Description	C		
Sample Type	Single Individual Rock Core Specimen		

Uniaxial Compressive Strength 0.325 MPa

Young's Modulus

Tangent 0.012 GPa

Secant 0.014 GPa

Poisson Ratio

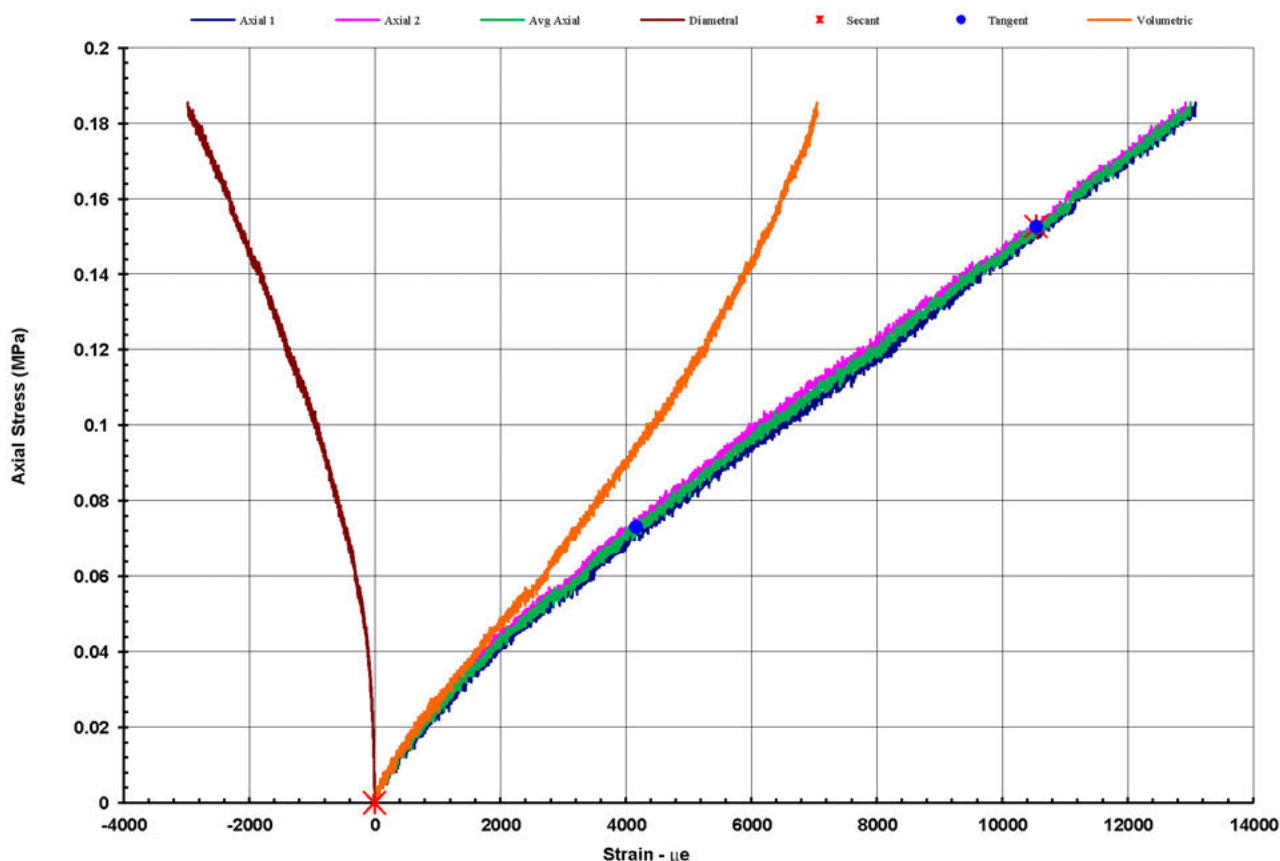
0.203

0.203

from 22 % to 47 % of Max UCS

from 0 % to 47 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

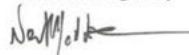
Tested as received.

Page 1 of 2:P13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101049-MOD
Average Sample Diameter (mm)	62.2	Moisture Content (%)	15.9
Sample Height (mm)	160.0	Wet Density (t/m ³)	2.13
Duration of Test (min)	51.10	Dry Density (t/m ³)	1.84
Rate of Displacement (mm/min)	0.10	Bedding (°)	Nil
Mode of Failure	Conical	Test Apparatus	100kN Compression Machine

CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	BEFORE TEST
LAB SAMPLE No.	101049	DATE: 25/10/18
BOREHOLE:	310-01-BH2305-C00990	DEPTH: 9.9



CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	AFTER TEST
LAB SAMPLE No.	101049	DATE: 25/10/18
BOREHOLE:	310-01-BH2305-C00990	DEPTH: 9.9



Notes/Remarks:

Sample/s supplied by client

Photo not to scale

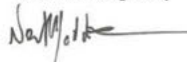
Tested as received.

Page 2 of 2 REP13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

SLAKE DURABILITY INDEX TEST REPORT

Test Method: AS 4133.3.4

Client	Golder Associates Pty Limited	Report No.	GA101052-SD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	24/10/2018
Project No	1897791	Report Date	29/10/2018
		Client Sample No.	310-01-BH2307

Sample No.	101052
BoreHole	310-01-BH2307-C00500
Depth From (m)	5
Depth To (m)	5.8
Description	C
Slake Durability (1st cycle) (%)	48.4
Slake Durability (2nd cycle) (%)	32.5
Slake Durability (3rd cycle) (%)	-
Slake Durability (4th cycle) (%)	-
Water Used	Tap Water
Temperature (°C)	23.8
Appearance of fragments retained in the drum	Moderate Deterioration
Appearance of fragments passing through the drum	Fragments & Fines

NOTES/REMARKS:

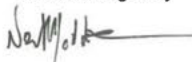
Sample/s supplied by the client

Page 1 of 1 REP02402

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in
 this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101054-MOD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	25/10/2018
Project No.	1897791	Report Date	26/10/2018
Bore Hole	310-01-BH230	Client Sample No.	310-01-BH2307
Depth From (m)	10	Depth To (m)	10.3
Description	C		
Sample Type	Single Individual Rock Core Specimen		

Uniaxial Compressive Strength 0.159 MPa

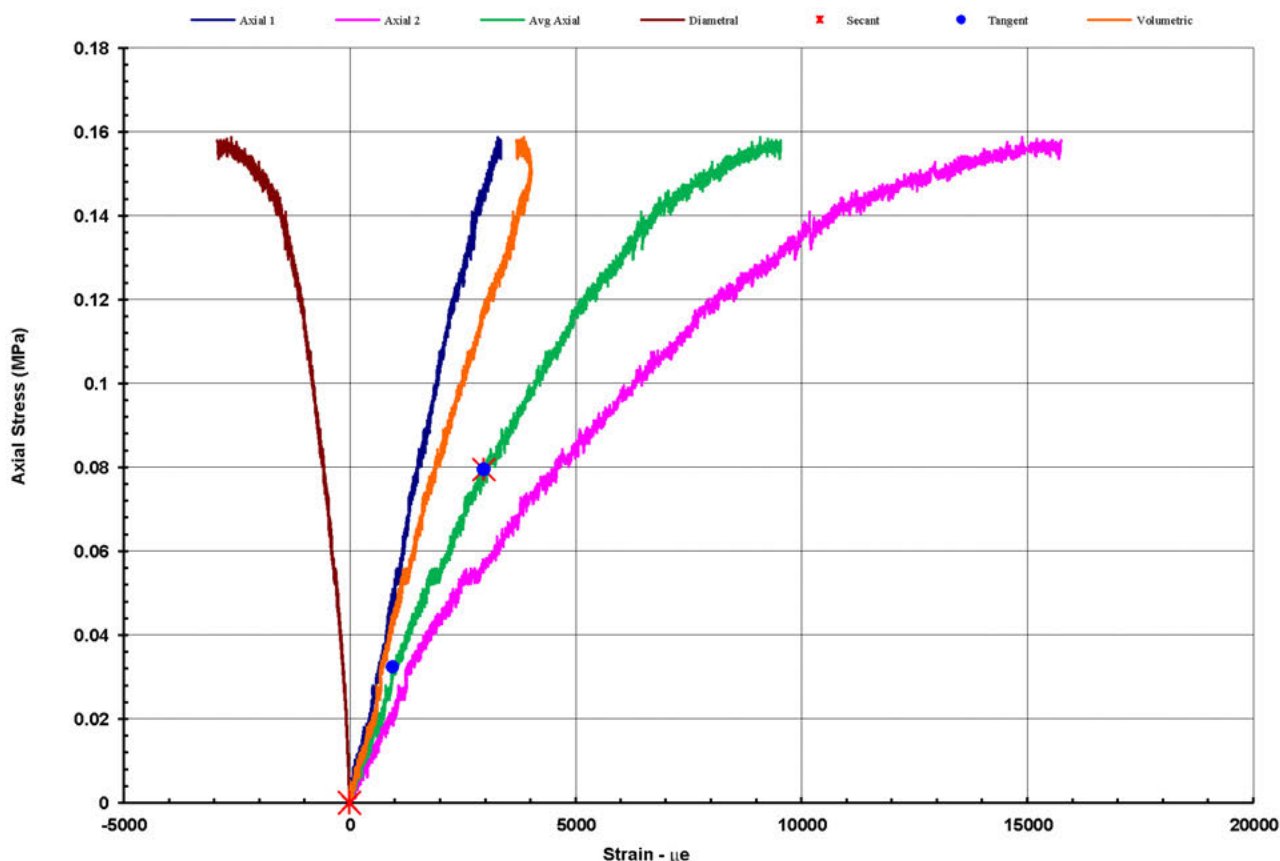
Young's Modulus

Tangent 0.023 GPa
Secant 0.027 GPa

Poisson Ratio

0.188 from 20 % to 50 % of Max UCS
0.188 from 0 % to 50 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

Sample/s supplied by client

Graph not to scale

Tested as received.

Page 1 of 2:P13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory

N. Maddison
N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd

ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.2 & AS 4133.1.1.1

Client	Golder Associates Pty Limited	Report No.	GA101054-MOD
Average Sample Diameter (mm)	61.1	Moisture Content (%)	14.3
Sample Height (mm)	159.6	Wet Density (t/m ³)	2.16
Duration of Test (min)	32.90	Dry Density (t/m ³)	1.89
Rate of Displacement (mm/min)	0.10	Bedding (°)	Nil
Mode of Failure	Shear	Test Apparatus	100kN Compression Machine

CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	BEFORE TEST
LAB SAMPLE No.	101054	DATE: 25/10/18
BOREHOLE:	310-01-BH2307-C01000	DEPTH: 10



CLIENT:	Golder Associates Pty Limited	
PROJECT:	Inland Rail B2G	AFTER TEST
LAB SAMPLE No.	101054	DATE: 25/10/18
BOREHOLE:	310-01-BH2307-C01000	DEPTH: 10



Notes/Remarks:

Sample/s supplied by client

Photo not to scale

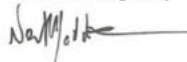
Tested as received.

Page 2 of 2 REP13402

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


N. Maddison



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

SLAKE DURABILITY INDEX TEST REPORT

Test Method: AS 4133.3.4

Client	Golder Associates Pty Limited	Report No.	GA101160-SD
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R3_BH_Rev1_4050
Project	Inland Rail B2G	Test Date	24/10/2018
Project No	1897791	Report Date	29/10/2018
		Client Sample No.	310-01-BH2344

Sample No.	101160
BoreHole	310-01-BH2344-C01208
Depth From (m)	12.08
Depth To (m)	12.29
Description	C
Slake Durability (1st cycle) (%)	97.1
Slake Durability (2nd cycle) (%)	95.7
Slake Durability (3rd cycle) (%)	-
Slake Durability (4th cycle) (%)	-
Water Used	Tap Water
Temperature (°C)	22.2
Appearance of fragments retained in the drum	Original Form
Appearance of fragments passing through the drum	Fragments & Fines

NOTES/REMARKS:

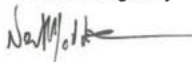
Sample/s supplied by the client

Page 1 of 1 REP02402

Accredited for compliance with ISO/IEC 17025 - Testing.
 The results of the tests, calibrations, and/or measurements included in
 this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory


 N. Maddison


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

ATTERBERG LIMITS TEST REPORT

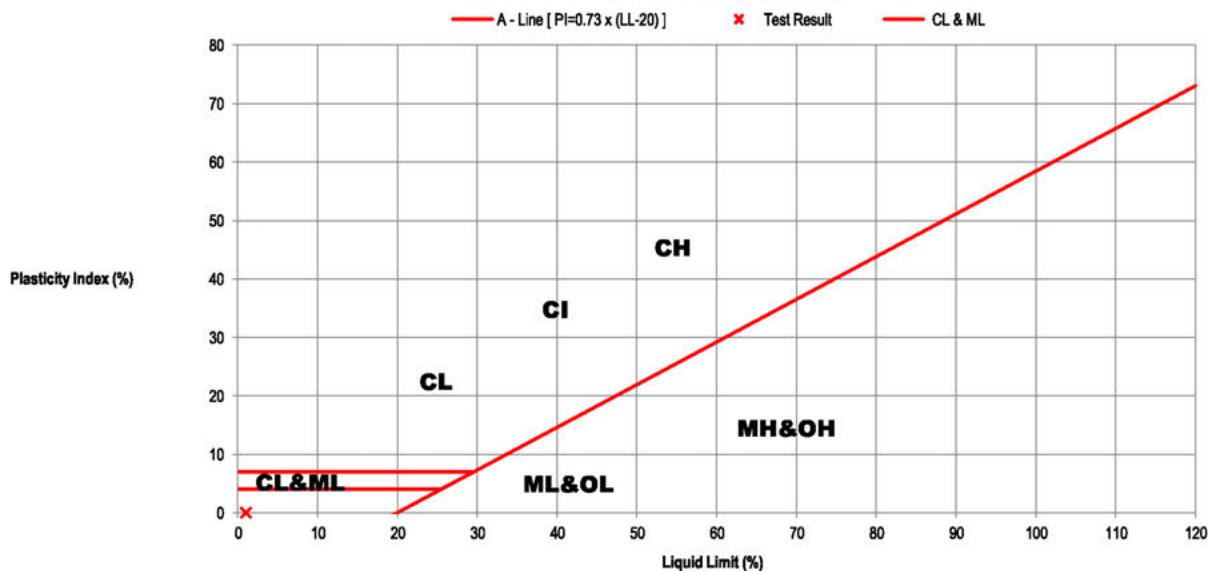
Test Method: AS 1289 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1

Client	Golder Associates Pty Limited	Report No.	GA101037-AL
Address	PO Box 1734 MILTON BC QLD 4064	Request No.	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	9/11/2018
Project No.	1897791	Report Date	12/11/2018
Bore Hole	310-01-BH2302-C00310	Client Sample No.	310-01-BH2302
Description	C	Depth From (m)	3.1
		Depth To (m)	4.6

RESULTS OF TESTING

Liquid Limit (%) Not Obtainable
Plastic Limit (%) Not Obtainable
Plasticity Index (%) Non Plastic
Linear Shrinkage (%) Not Obtainable
Moisture Content (%) 9.4
Preparation Method Dry Sieved and Oven Dried

Plasticity Chart



Remarks:

Sample/s supplied by client

Tested as received

Page: 1 of 1

REP00102

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

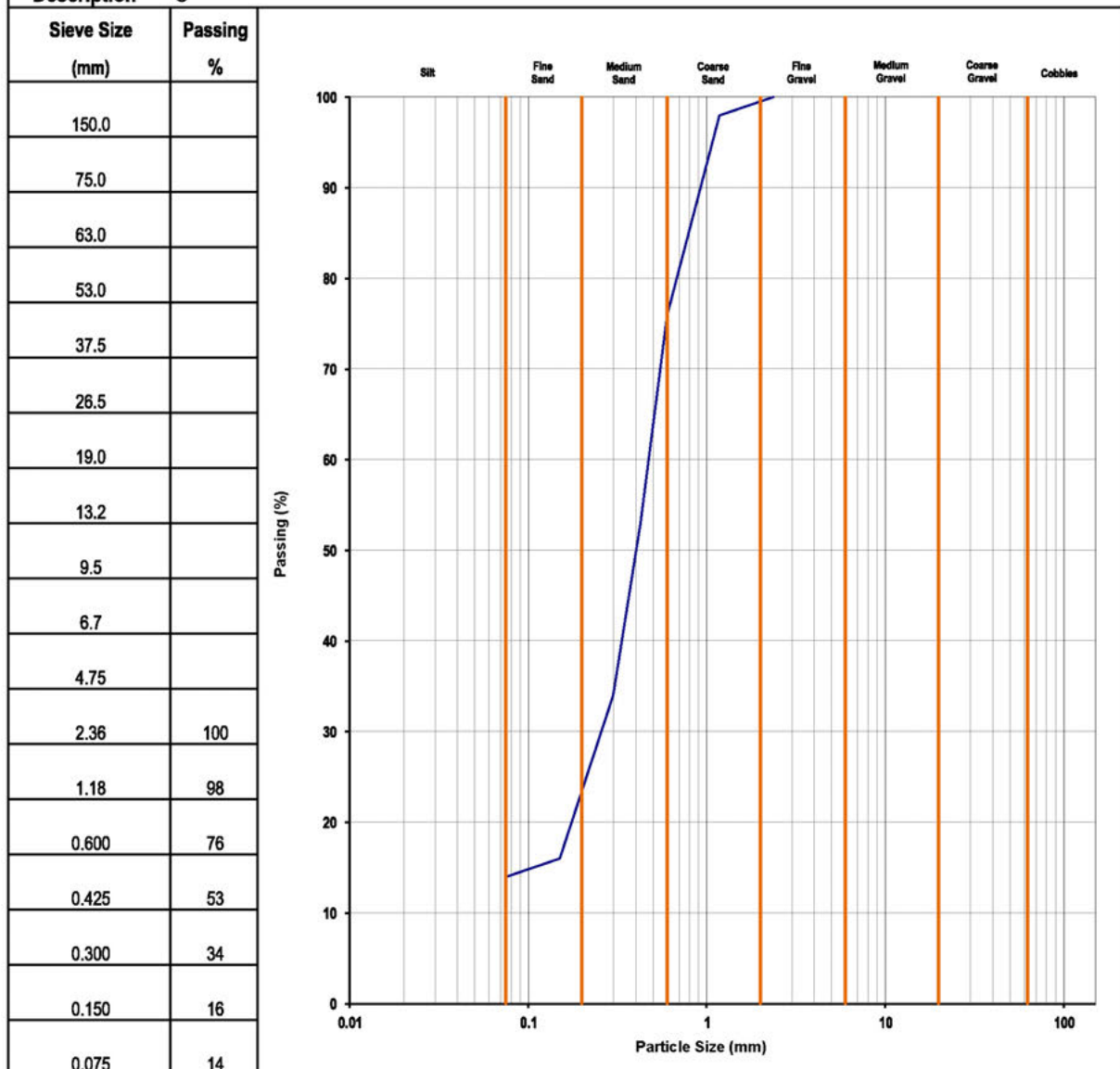
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101037-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4060
		Test Date	25/10/18-30/10/18
		Report Date	30/10/2018

Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2302		
Bore Hole	310-01-BH2302-C00310	Depth From (m)	3.1	Depth To (m)	4.6
Description	C				



NOTES/REMARKS:

-
Moisture Content 9.4%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

Test Method: AS 1289 3.8.1

RESULTS OF TESTING

Sample No	Bore Hole	Depth From (m)	Depth To (m)	Description	Emerson Class Number
-----------	-----------	----------------	--------------	-------------	----------------------

NOTES/REMARKS:									
----------------	--	--	--	--	--	--	--	--	--

REP00402



Laboratory No. 9926

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

Test Method: AS 1289 3.6.1, 2.1.1

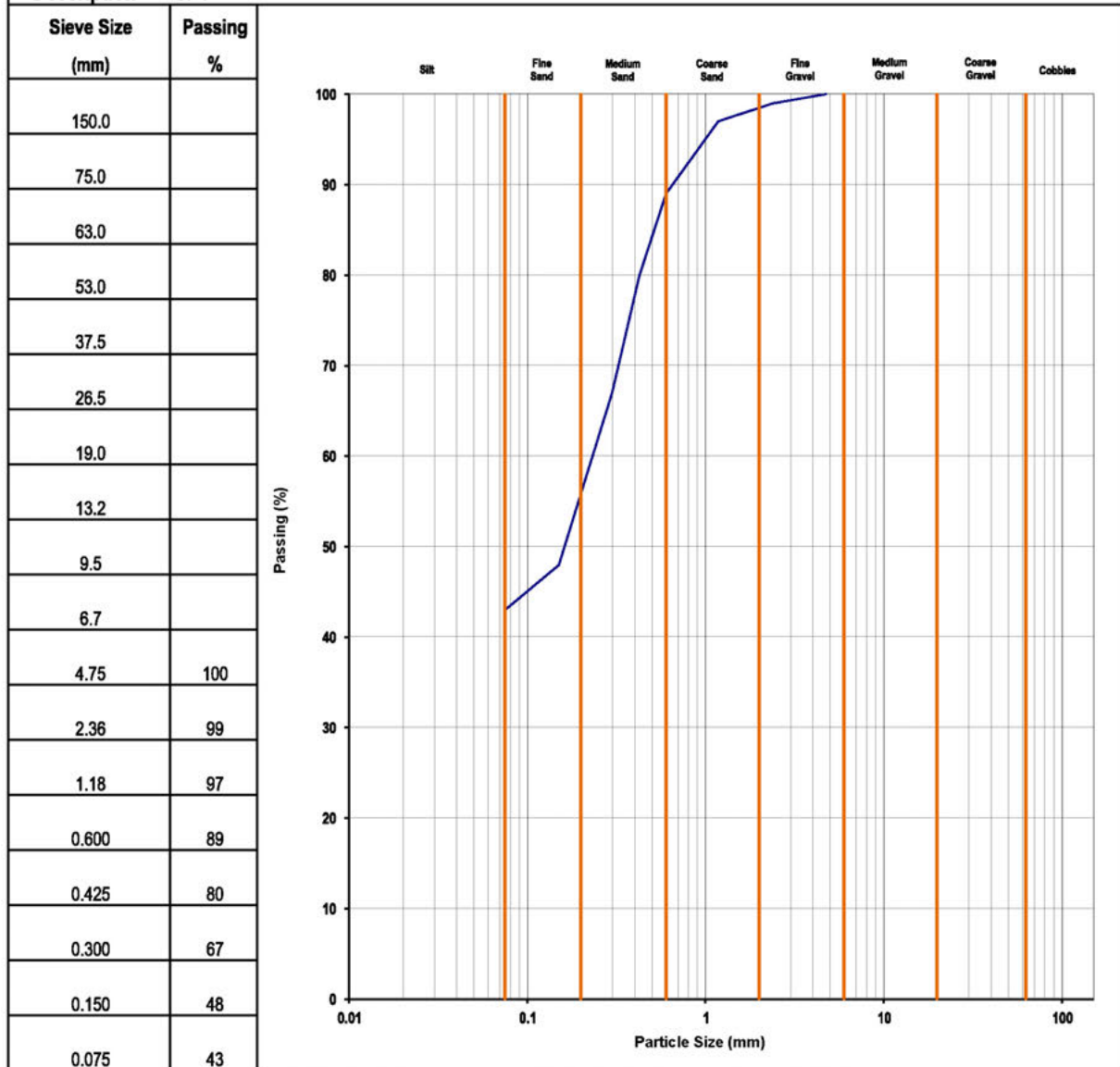
PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101046-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4060
		Test Date	22/10/18-31/10/18
		Report Date	31/10/2018

Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2305		
Bore Hole	310-01-BH2305-S00200	Depth From (m)	2	Depth To (m)	2.45

Description	SPT
--------------------	-----



NOTES/REMARKS:	-
	Moisture Content 9.5%
	Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park

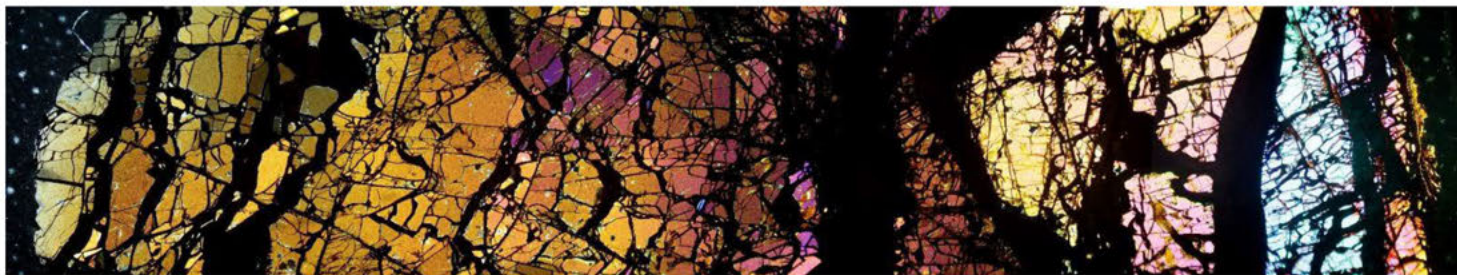


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506



Geochempet Services

ABN 980 6945 3445

PETROLOGICAL and GEOCHEMICAL CONSULTANTS

Principals: K.E. Spring B.Sc. (Hons), MAppSc and H.M. Spring B.Sc.



5/14 Redcliffe Gardens Drive
Clontarf, QLD 4019

Telephone: (07) 3284 0020

Email: info@geochempet.com
www.geochempet.com

PETROGRAPHIC REPORT ON A DRILL CORE SAMPLE (101049) FROM INLAND RAIL PROJECT

prepared for

**TRILAB PTY LTD
BRISBANE OFFICE**

Purchase Order: BNE 1910020
Invoice Number: 00008445
Client Ref: Chris Channon

Issued by

K. E. Spring B.Sc.(Hons), MAppSc
12 November 2018

NOVEMBER, 2018

TI181101

1 of 4

The material contained within this report may not be quoted other than in full. Extracts may be used only with expressed prior written approval of Geochempet Services.

GEOCHEMPET SERVICES, BRISBANE

<u>Sample Number:</u>	101049	<u>Date Sampled:</u>	Unknown
<u>Sample Type:</u>	Drill Core	<u>Date Received:</u>	26/10/2018
<u>Borehole:</u>	310-01-BH2305-C00990	<u>Depth:</u>	9.90 – 12.80 m
<u>Project ID:</u>	1897791 Inland Rail B2G	<u>Client:</u>	Golder Associates
Work Requested	Petrographic analysis		

Methods Account taken of ASTM C295 Standard Guide for *Petrographic Assessment of Aggregates for Concrete* and the AS2758.1 – 2014 *Aggregates and rock for engineering purposes part 1; Concrete aggregates (Appendix B)*

Identification Fine labile sandstone

Description

The sample consisted of a drill core specimen which is moderately to heavily weathered, argillized lithic sandstone which can be broken under mechanical force. The rock can be deeply gouged and scratched by a steel tool. The rock is greyish-orange in colour and variably stained by clayey secondary iron oxides. The core is showing signs of splitting along bedding laminations. When soaked in water, the rock expelled clays and collapsed.



Plate 1: Photograph of supplied drill core.

GEOCHEMPET SERVICES, BRISBANE

A thin section was prepared from the drill core for detailed microscopic examination in transmitted polarized light. An approximate mineralogical composition of the rock, expressed in volume percent and based on a brief count of 100 widely spaced observation points in thin section, is:

16%	quartz sand grains
14%	feldspar sand grains
1%	opaque oxide grains
1%	muscovite flakes
19%	acid tuffaceous/volcanic sand clasts – 6% fine quartz (now largely sericitized)
4%	intermediate volcanic clasts (largely argillized)
7%	argillized and sericitized clasts of uncertain origin
31%	interstitial sericite-smectite clays
6%	earthy secondary iron oxide
1%	carbonaceous matter
<1%	open partings

In thin section, the rock is a fine to medium-grained, labile sandstone with an average grainsize of about 0.1-0.2 mm. It is relatively well sorted, and shows a weak bedding defined by grainsize grading.

The framework grains are dominated by sub-rounded to sub-angular lithic clasts which are quite argillized, with a scattering of angular to equant detrital quartz and feldspar grains. Lithic clasts were very fine-grained quartzo-feldspathic grains with strong pale brown sericite-smectite alteration. Due to their fine grainsize, it is difficult to be sure that these were derived from formerly glassy rhyolite/dacite lava fragments along with minor intermediate volcanics. Equant to angular detrital quartz and blocky sub-rounded to euhedral feldspar grains are relatively common suggesting derivation from phenocrysts in felsic volcanic or explosive volcanoclastic rocks. Occasionally, there are detrital muscovite flakes (about 0.1 mm long) with long axes sub-parallel to the bedding along with some opaque oxides and carbonaceous specks.

The matrix of this rock is now composed of largely fine quartz and extremely fine-grained sericite/smectite clays.

Comments and Interpretations

The supplied drill core sample (labelled 101049) from the Inland Rail Project is identified as fine labile sandstone. The sandstone carries an abundance of argillized lithic clasts which indicate a felsic volcanic source.

For engineering purposes, the rock in the supplied drill core sample may be summarised as consisting of:

- **fine labile sandstone** (a sedimentary rock type)
- open fine partings along bedding planes (<1%)

GEOCHEMPET SERVICES, BRISBANE

- moderately to heavily weathered
- contains about 45% of soft, weak minerals as interstitial material and in altered lithic clasts
- **soft to moderately hard**
- **weak to moderately strong**

The rock is predicted to be **non-durable**, because it is anticipated that in exposed conditions, wetting and drying cycles will cause the rock to disintegrate.

Free Silica Content

The free silica content is estimated to be about 22%.

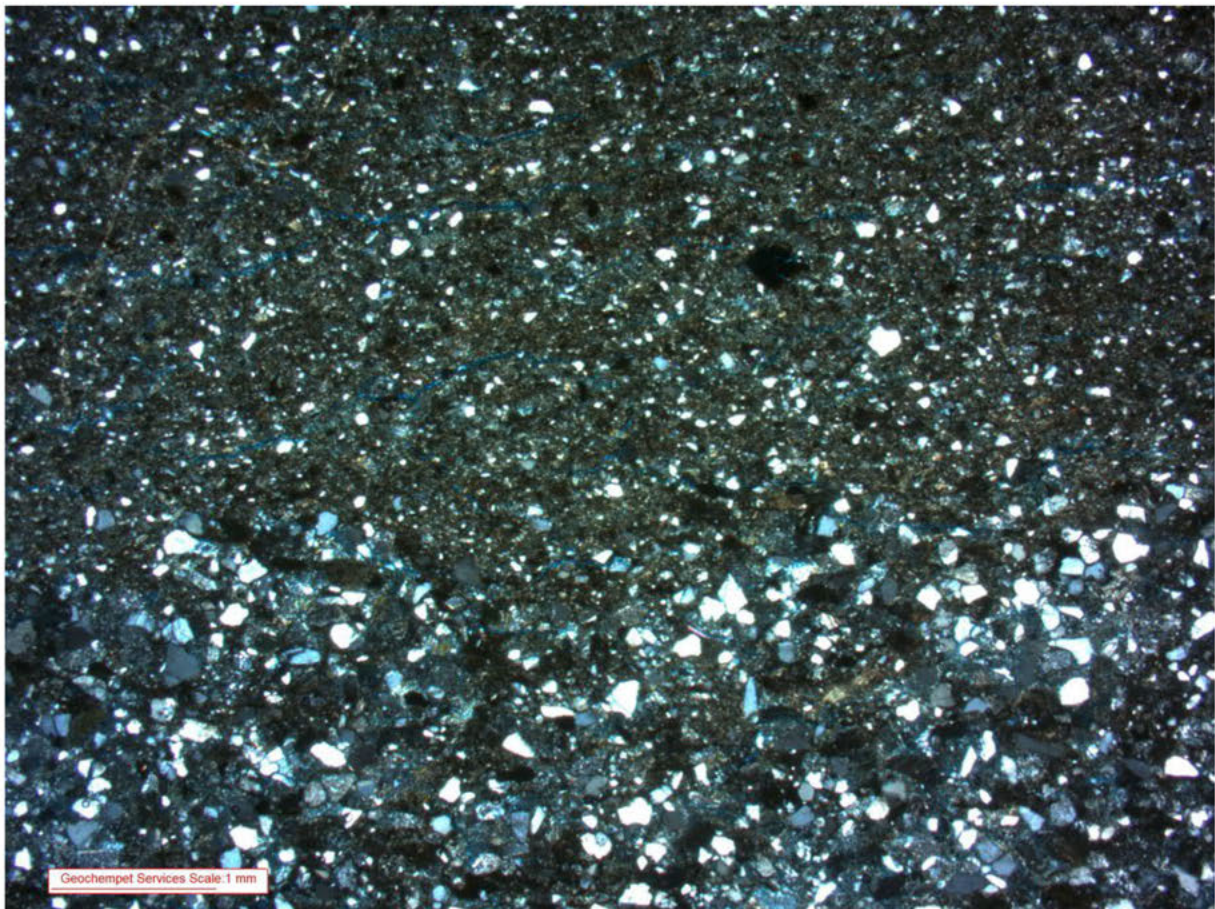


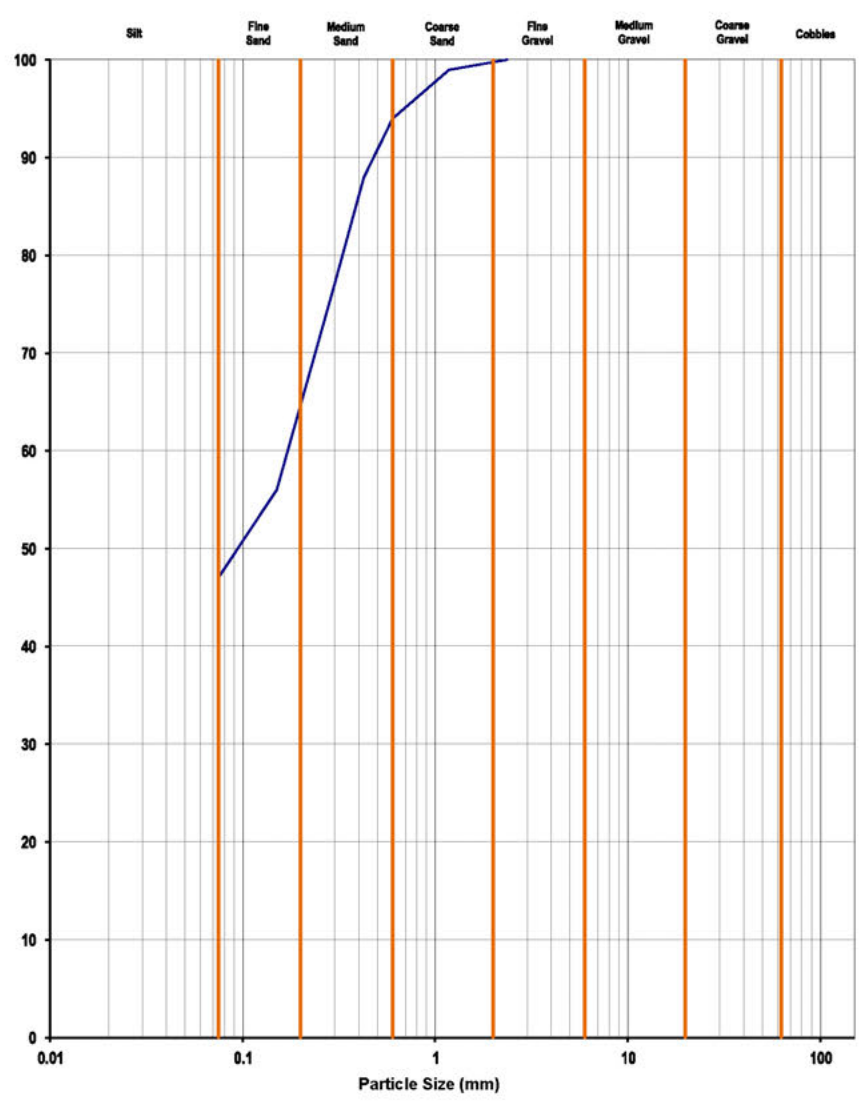
Plate 2: Low magnification, cross polarised light image of labile sandstone. View is dominated by quartz grains and feldspar grains with many argillized lithic clasts. Note the grain size grading of the bedding and fine parting along bedding plane.

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101050-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2307		
Bore Hole	310-01-BH2307-S00150	Depth From (m)	1.5	Depth To (m)	1.59
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	94
0.425	88
0.300	77
0.150	56
0.075	47



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 47% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 9.5%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

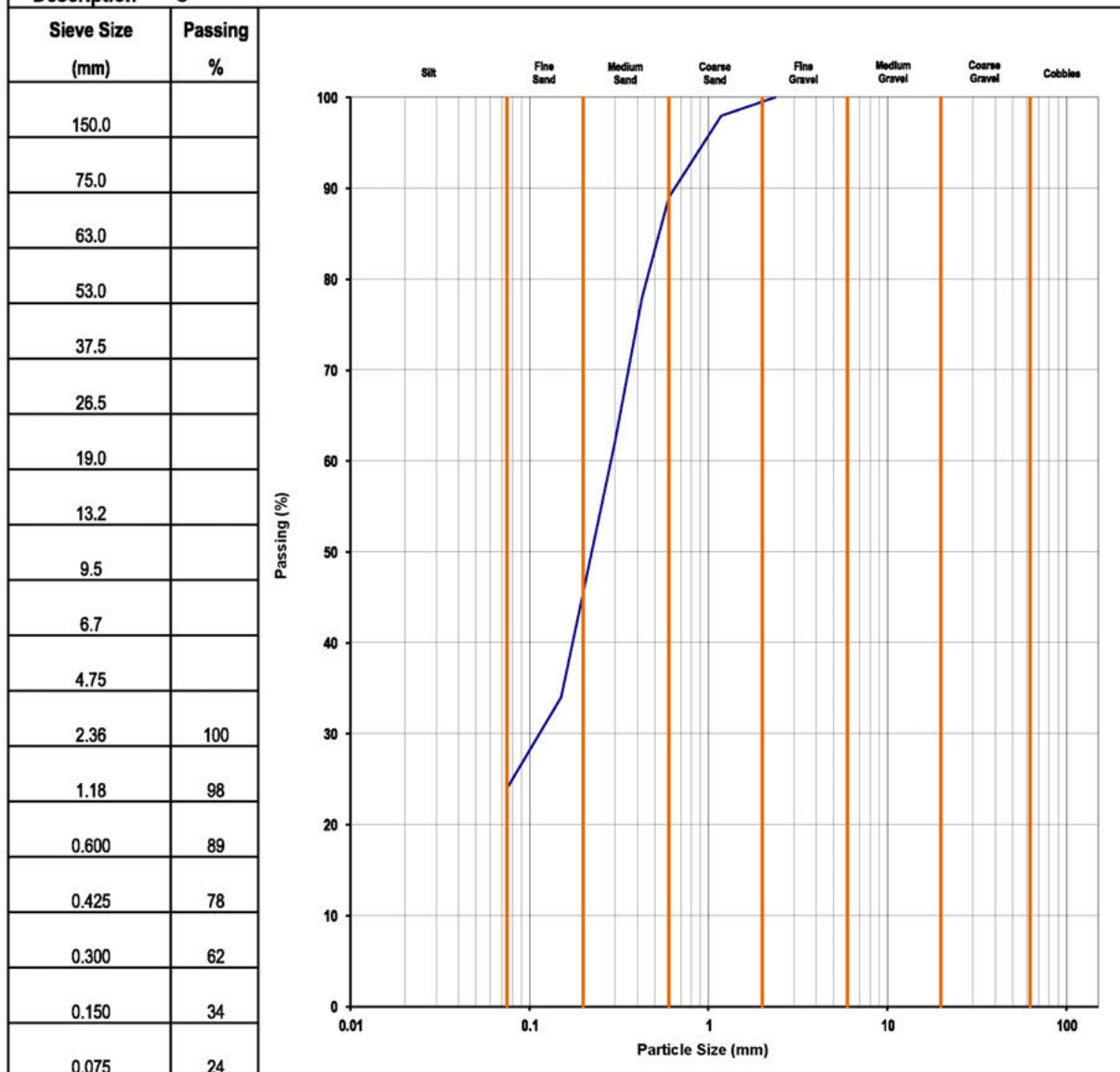
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited		Report No.	GA101051-G
Address	PO Box 1734 MILTON BC	QLD 4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G		Test Date	25/10/18-30/10/18
Project No	1897791	Client Sample No	310-01-BH2307	
Bore Hole	310-01-BH2307-C00200	Depth From (m)	2	Depth To (m) 3.1

Description C



NOTES/REMARKS:

-
Moisture Content 11%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park

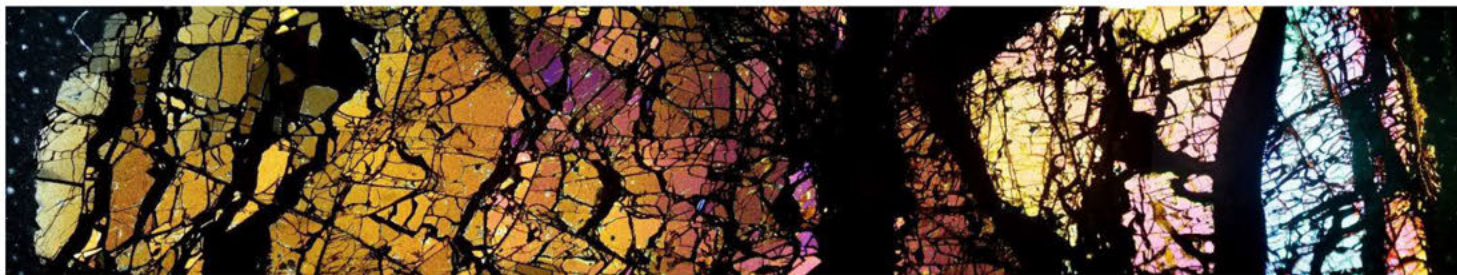


Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506



Geochempet Services

ABN 980 6945 3445

PETROLOGICAL and GEOCHEMICAL CONSULTANTS

Principals: K.E. Spring B.Sc. (Hons), MAppSc and H.M. Spring B.Sc.



5/14 Redcliffe Gardens Drive
Clontarf, QLD 4019

Telephone: (07) 3284 0020

Email: info@geochempet.com
www.geochempet.com

PETROGRAPHIC REPORT ON A DRILL CORE SAMPLE (101051) FROM INLAND RAIL PROJECT

prepared for

**TRILAB PTY LTD
BRISBANE OFFICE**

Purchase Order: BNE 1910020
Invoice Number: 00008445
Client Ref: Chris Channon

Issued by

K. E. Spring B.Sc.(Hons), MAppSc
12 November 2018

NOVEMBER, 2018

TI181102

1 of 4

The material contained within this report may not be quoted other than in full. Extracts may be used only with expressed prior written approval of Geochempet Services.

GEOCHEMPET SERVICES, BRISBANE

<u>Sample Number:</u>	101051	<u>Date Sampled:</u>	Unknown
<u>Sample Type:</u>	Drill Core	<u>Date Received:</u>	26/10/2018
<u>Borehole:</u>	310-01-BH2307-C00200	<u>Depth:</u>	2.00 – 3.10 m
<u>Project ID:</u>	1897791 Inland Rail B2G	<u>Client:</u>	Golder Associates
Work Requested	Petrographic analysis		

Methods Account taken of ASTM C295 Standard Guide for *Petrographic Assessment of Aggregates for Concrete* and the AS2758.1 – 2014 *Aggregates and rock for engineering purposes part 1; Concrete aggregates (Appendix B)*

Identification Clay-cemented quartz sandstone

Description

The sample consisted of a drill core specimen which slightly weathered, clay-cemented quartz sandstone which is easily broken under finger pressure. The rock can be deeply gouged by a steel tool. The rock is light grey in colour and patchily stained by secondary iron oxides. The rock mostly composed of medium to coarse quartz grains with some clays in the interstitial matrix. When soaked in water, the rock rapidly disaggregated.



Plate 1: Photograph of the supplied drill core.

GEOCHEMPET SERVICES, BRISBANE

A thin section was prepared from the drill core for detailed microscopic examination in transmitted polarized light. An approximate mineralogical composition of the rock, expressed in volume percent and based on a brief count of 100 widely spaced observation points in thin section, is:

Durable Minerals

77% quartz
4% feldspar
<1% rutile and zircon

Weak &/or Deleterious Components

19% smectite clay cement

In thin section, the sandstone displays textures of poorly sorted quartz grains in a medium to coarse-grained sandstone (mainly 0.1 to 2.5 mm in size). No preferred orientation of quartz grains is observed.

Most of the rock consists of simple but strained quartz grains (angular to sub-rounded in shape), a few seem to be composite grains of quartzite style, and there are minor blocky grains of clouded feldspars, as well as small detrital heavy mineral grains (zircon and rutile).

The sandstone is cemented by a thin connected, interstitial network of a high birefringent smectitic style of clay. Washouts of the clay matrix during thin section preparation has induced some porosity.

Comments and Interpretations

The supplied drill core sample (labelled 101051) from the Inland Rail Project is considered to consist of slightly weathered, clay-cemented quartz sandstone, a sedimentary rock type probably derived from a metamorphic terrain, because of the straining evident in quartz grains.

For engineering purposes, the rock represented in the supplied drill core sample may be summarised as:

- **quartz sandstone** (sedimentary rock type)
- siliceous but clay-cemented
- slightly weathered
- carries about 19% of weak, soft minerals as smectite clay cement
- **soft**
- **weak**

The rock is predicted to be **non-durable**; because it is anticipated that in exposed conditions, wetting and drying cycles will cause the rock to disintegrate.

Free Silica Content

The rock has an average free silica content of about 77%.

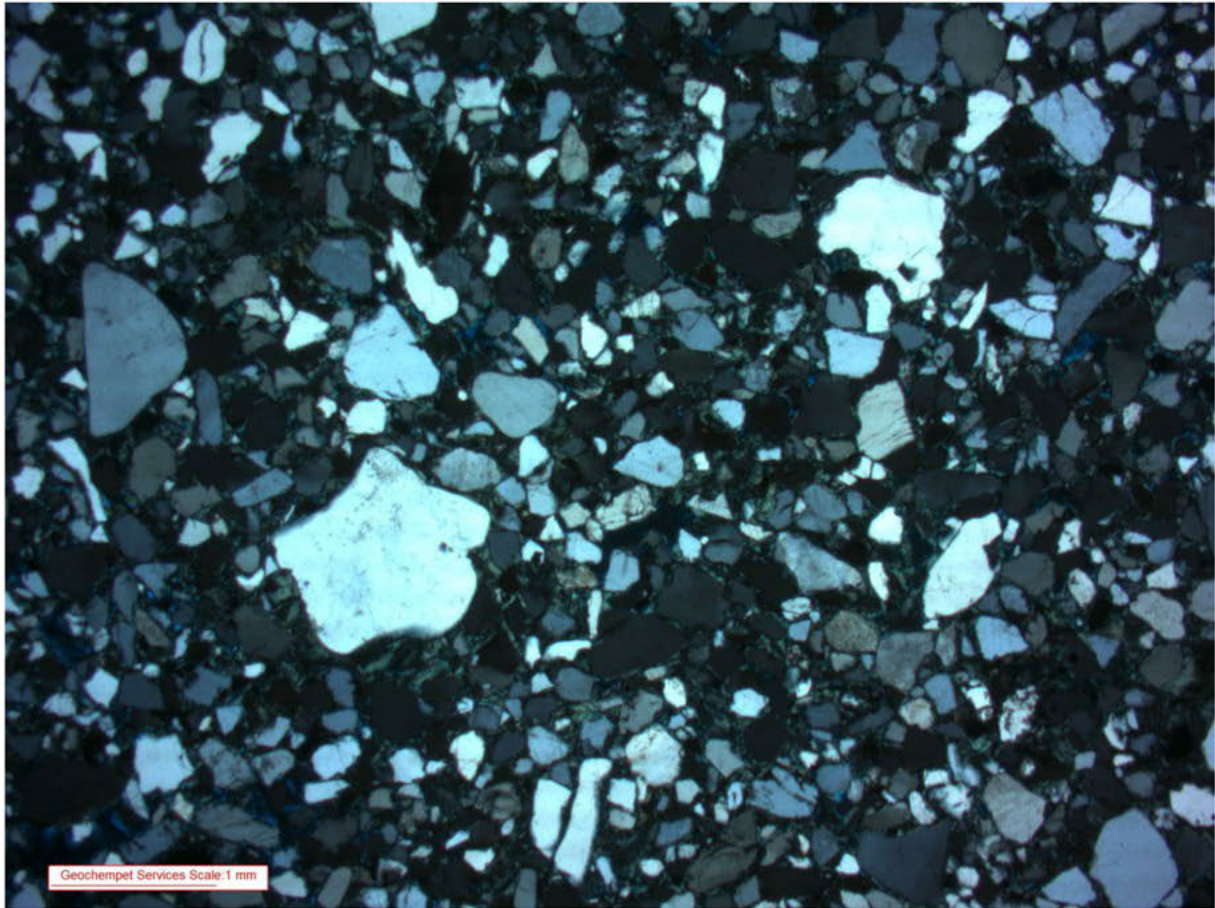
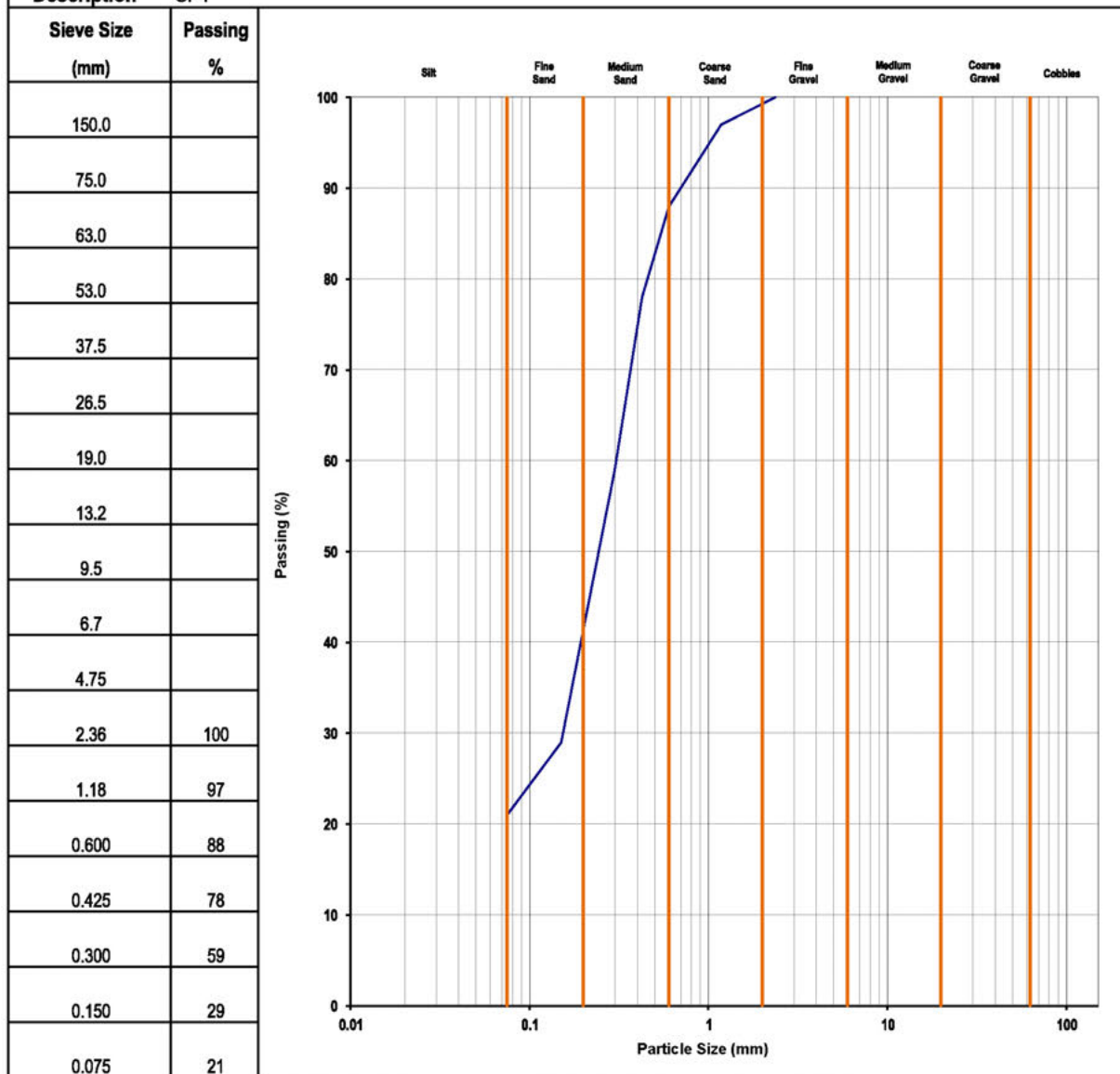


Plate 2: Low magnification, cross polarised light image of clay-cemented quartz sandstone. View is dominated by quartz grains with a thin interstitial clay cement between grains.

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101056-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	22/10/18-31/10/18
Project No	1897791	Report Date	31/10/2018
Bore Hole	310-01-BH2308-S00300	Client Sample No	310-01-BH2308
Description	SPT	Depth From (m)	3
		Depth To (m)	3.41



NOTES/REMARKS:

-
Moisture Content 10.1%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

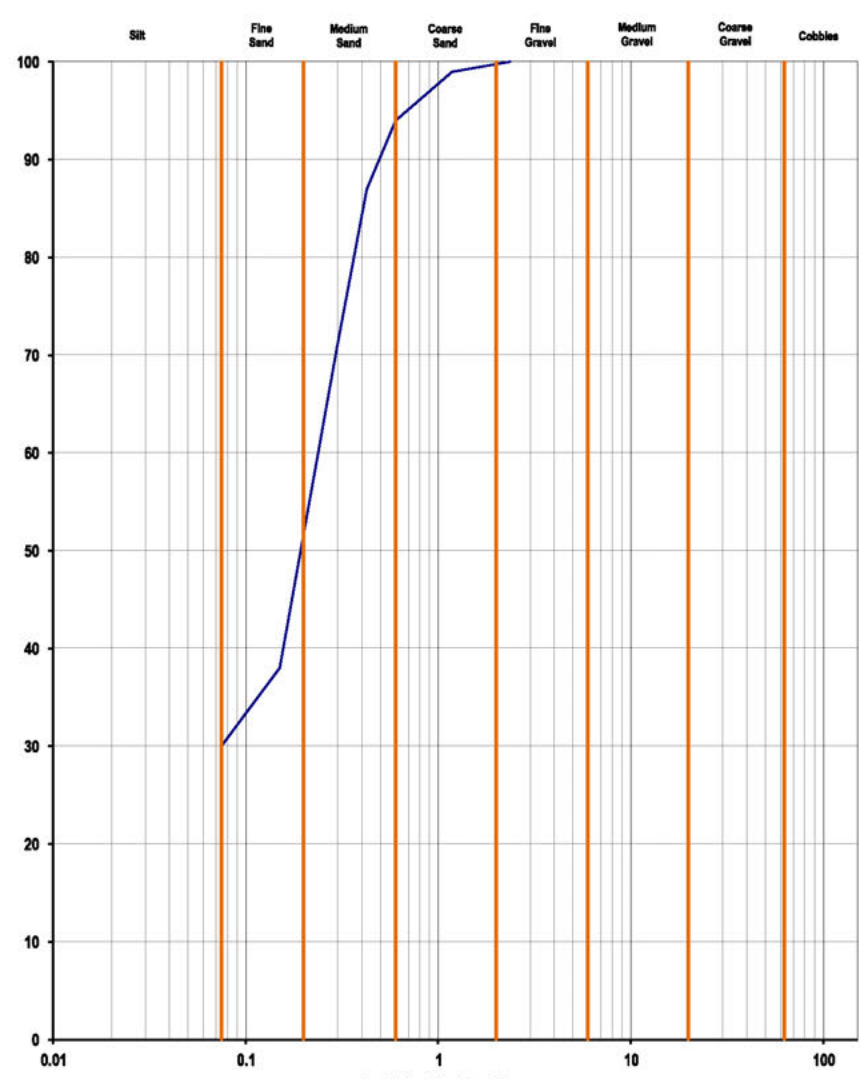
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101057-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	23/10/18-31/10/18
Project No	1897791	Report Date	31/10/2018
Bore Hole	310-01-BH2308-S00600	Client Sample No	310-01-BH2308
Depth From (m)	6	Depth To (m)	6.25

Description		SPT
Sieve Size	Passing	
(mm)	%	
150.0		
75.0		
63.0		
53.0		
37.5		
26.5		
19.0		
13.2		
9.5		
6.7		
4.75		
2.36	100	
1.18	99	
0.600	94	
0.425	87	
0.300	71	
0.150	38	
0.075	30	

NOTES/REMARKS:

-
Moisture Content 11.6%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

CERTIFICATE OF ANALYSIS

Work Order : **EB1825966**
Client : **TRILAB PTY LTD**
Contact : **THE ADMIN RESULTS**
Address : **346A BILSEN RD**
GEEBUNG QLD, AUSTRALIA 4031
Telephone : **+61 07 3265 5656**
Project : **1897791 Inland Rail B2G**
Order number : **BNE 910019**
C-O-C number : **---**
Sampler : **---**
Site : **---**
Quote number : **EN/333**
No. of samples received : **2**
No. of samples analysed : **2**

Page : **1 of 2**
Laboratory : **Environmental Division Brisbane**
Contact : **Customer Services EB**
Address : **2 Byth Street Stafford QLD Australia 4053**
Telephone : **+61-7-3243 7222**
Date Samples Received : **26-Oct-2018 11:35**
Date Analysis Commenced : **26-Oct-2018**
Issue Date : **31-Oct-2018 09:08**



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 ^ = This result is computed from individual analyte detections at or above the level of reporting
 ø = ALS is not NATA accredited for these tests.
 ~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

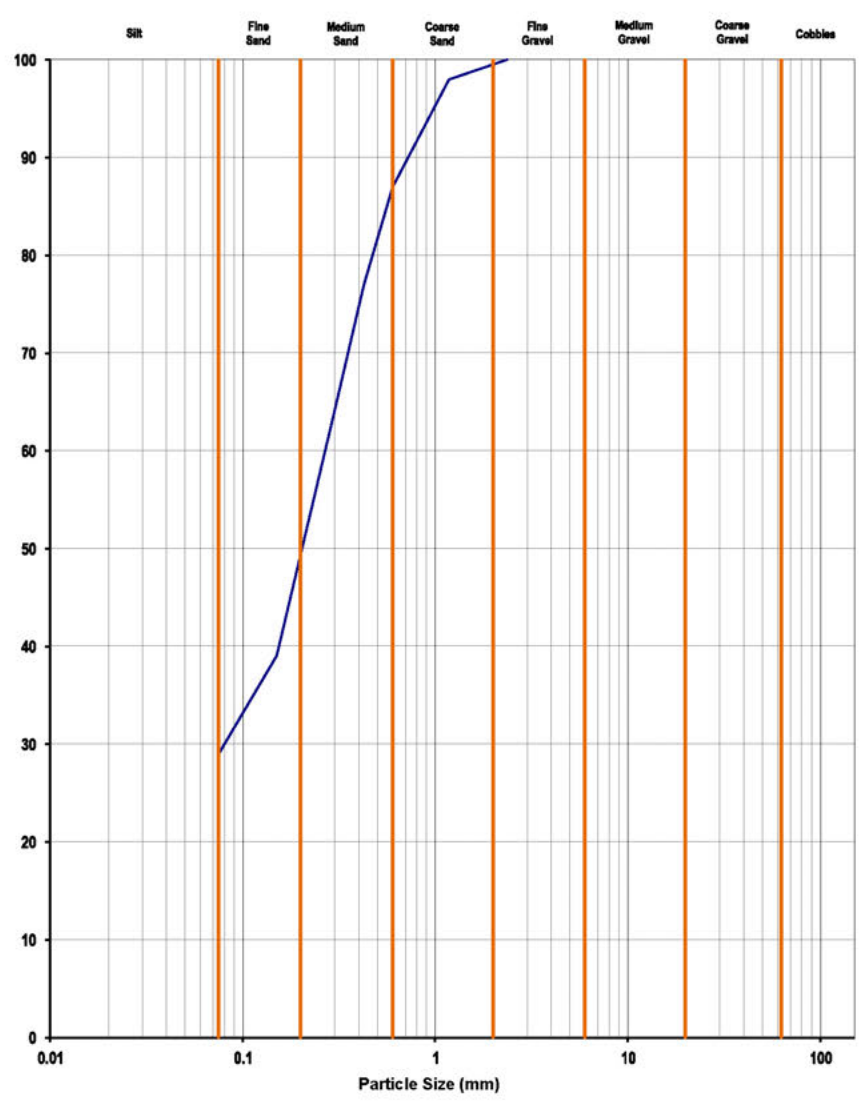
				101058 / 310-01-BH2308-S0075 0 / 7.50-7.68m	101069 - 310-01-BH2311-S0068 0 / 6.80-7.19m	----	----	----
Client sampling date / time				[26-Oct-2018]	[26-Oct-2018]	----	----	----
Compound	CAS Number	LOR	Unit	EB1825966-001	EB1825966-002	-----	-----	-----
				Result	Result	---	---	---
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	6.2	8.9	---	---	---
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	9.8	11.6	---	---	---
ED040: Sulfur as SO4 2-								
Sulfate as SO4 2-	14808-79-8	100	mg/kg	<100	330	---	---	---
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	190	30	---	---	---

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101059-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2308		
Bore Hole	310-01-BH2308-S01200	Depth From (m)	12	Depth To (m)	12.1
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	98
0.600	87
0.425	77
0.300	64
0.150	39
0.075	29



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 29% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.36 mm), Fine Gravel (2.36 - 4.75 mm), Medium Gravel (4.75 - 9.5 mm), Coarse Gravel (9.5 - 20 mm), and Cobbles (> 20 mm).

NOTES/REMARKS:

-
Moisture Content 11.9%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

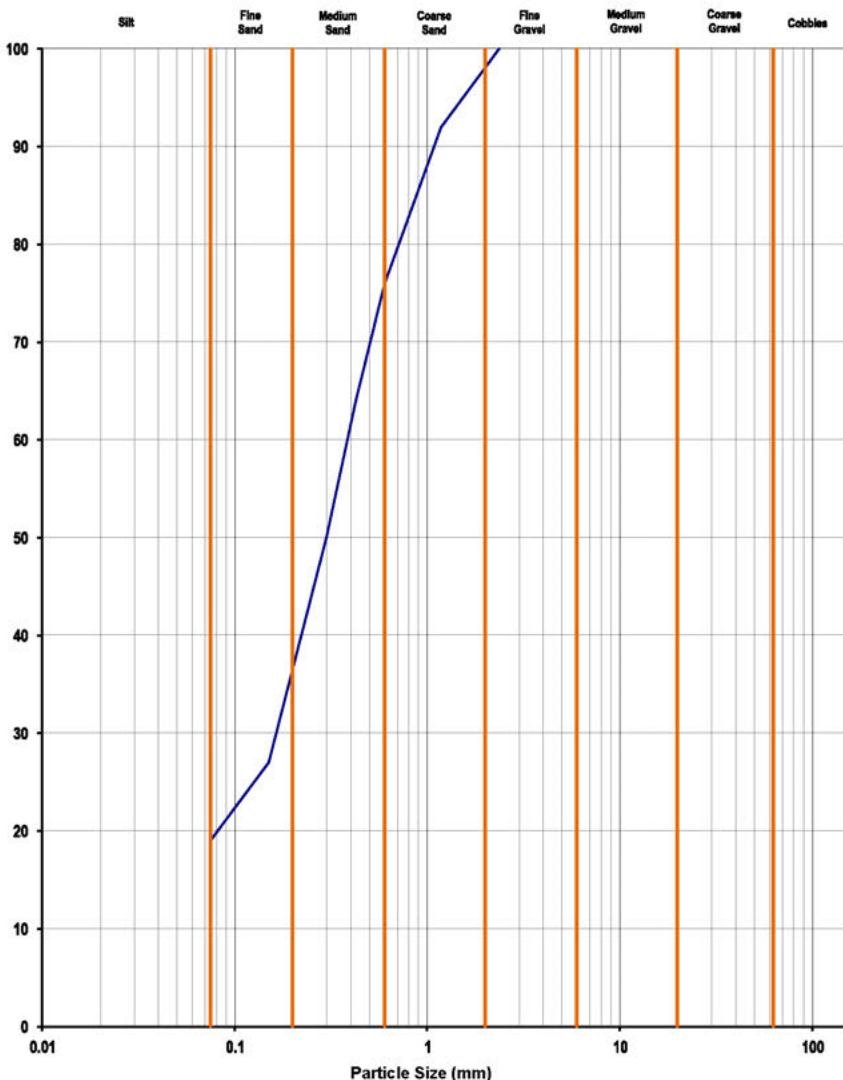
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101061-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2308		
Bore Hole	310-01-BH2308-S01500	Depth From (m)	15	Depth To (m)	15.45
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	92
0.600	76
0.425	64
0.300	50
0.150	27
0.075	19



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 19% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 14.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

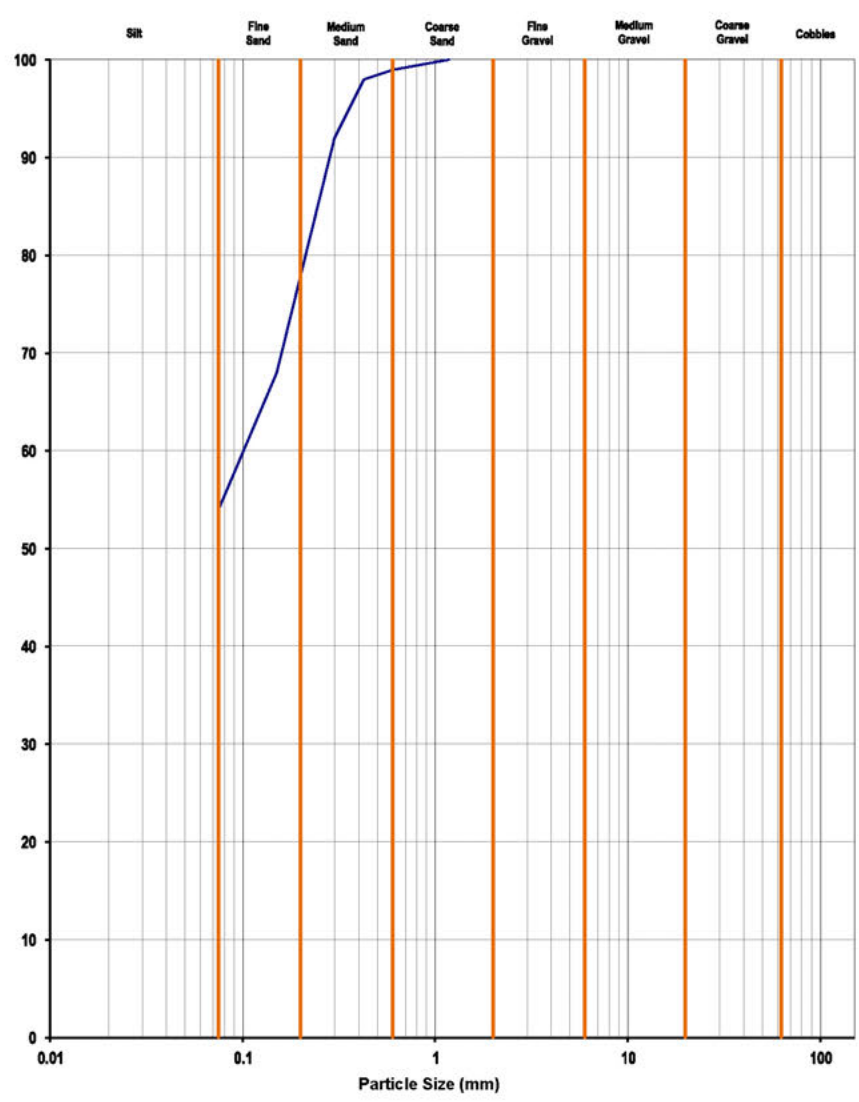
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101062-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2309		
Bore Hole	310-01-BH2309-S00050	Depth From (m)	0.5	Depth To (m)	0.95
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	
1.18	100
0.600	99
0.425	98
0.300	92
0.150	68
0.075	54



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 54% passing for 0.075 mm and rises to 100% passing at 1.18 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 7.4%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

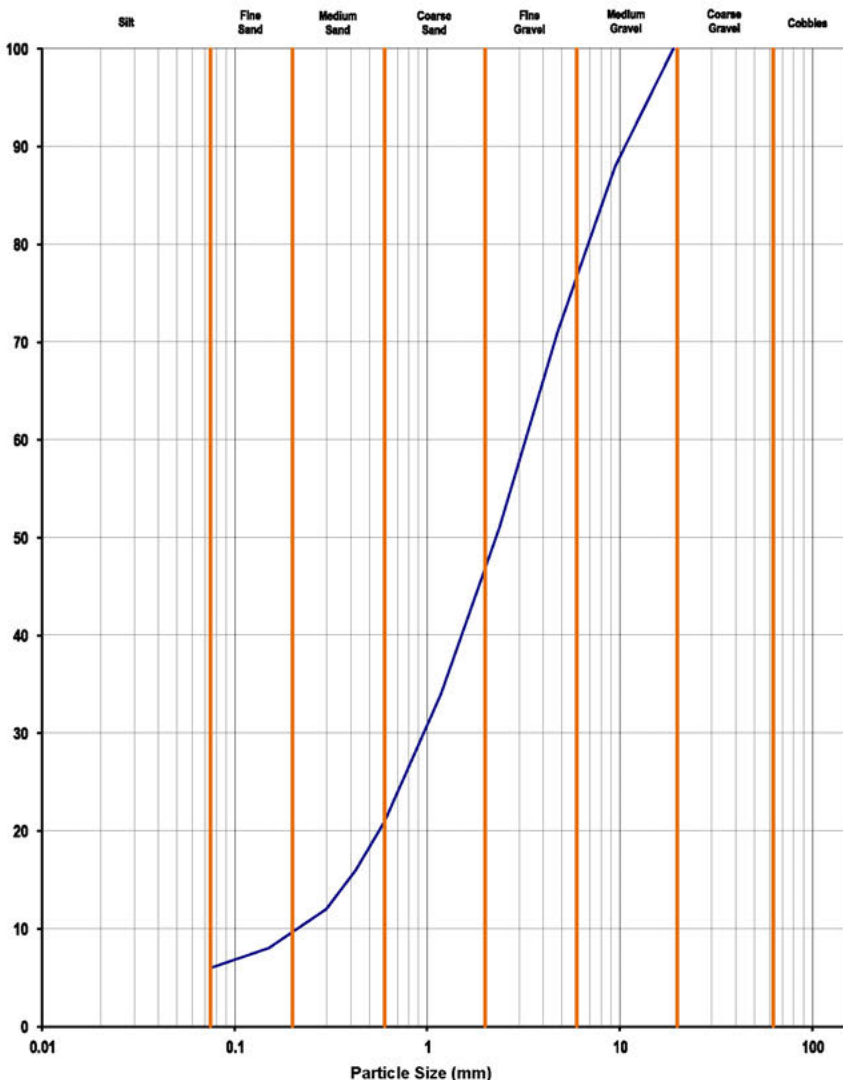
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101063-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2309		
Bore Hole	310-01-BH2309-S00380	Depth From (m)	3.8	Depth To (m)	4.25
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	100
13.2	95
9.5	88
6.7	79
4.75	71
2.36	51
1.18	34
0.600	21
0.425	16
0.300	12
0.150	8
0.075	6



NOTES/REMARKS:

-

Moisture Content 19.7%

Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

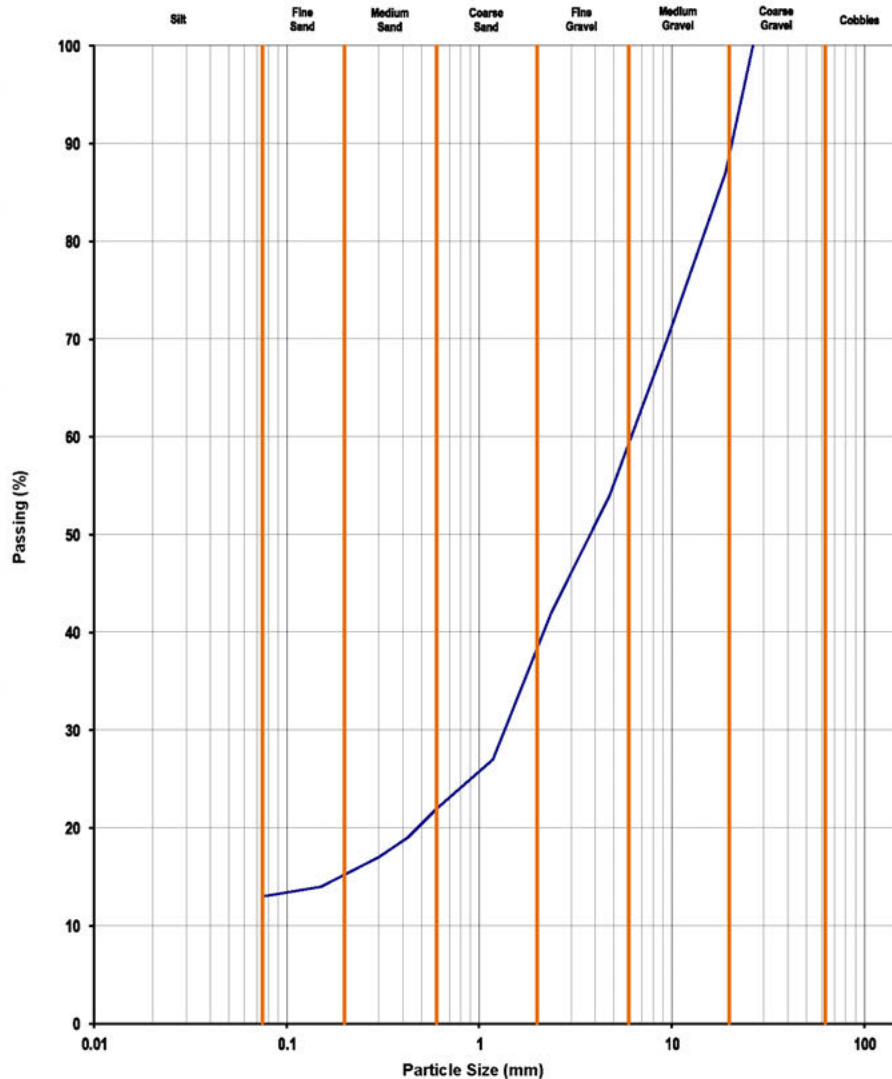
Client	Goldier Associates Pty Limited	Report No.	GA101064-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	23/10/18-31/10/18
Project No	1897791	Client Sample No	310-01-BH2309
Bore Hole	310-01-BH2309-S00680	Depth From (m)	6.8
		Depth To (m)	7.24

Description		SPT
Sieve Size (mm)	Passing %	
150.0		
75.0		
63.0		
53.0		
37.5		
26.5	100	
19.0	87	
13.2	79	
9.5	70	
6.7	61	
4.75	54	
2.36	42	
1.18	27	
0.600	22	
0.425	19	
0.300	17	
0.150	14	
0.075	13	

Soil Texture Classification:

- Silt: 0.002 mm to 0.075 mm
- Fine Sand: 0.075 mm to 0.25 mm
- Medium Sand: 0.25 mm to 0.6 mm
- Coarse Sand: 0.6 mm to 2 mm
- Fine Gravel: 2 mm to 4.75 mm
- Medium Gravel: 4.75 mm to 20 mm
- Coarse Gravel: 20 mm to 75 mm
- Cobbles: 75 mm to 200 mm

Particle Size (mm)	Passing (%)
0.075	13
0.150	14
0.300	17
0.425	19
0.600	22
1.18	27
2.36	42
4.75	54
6.7	61
9.5	70
13.2	79
19.0	87
26.5	100



NOTES/REMARKS:

-
Moisture Content 7.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory

C. Park

C. Park



Laboratory No. 9926

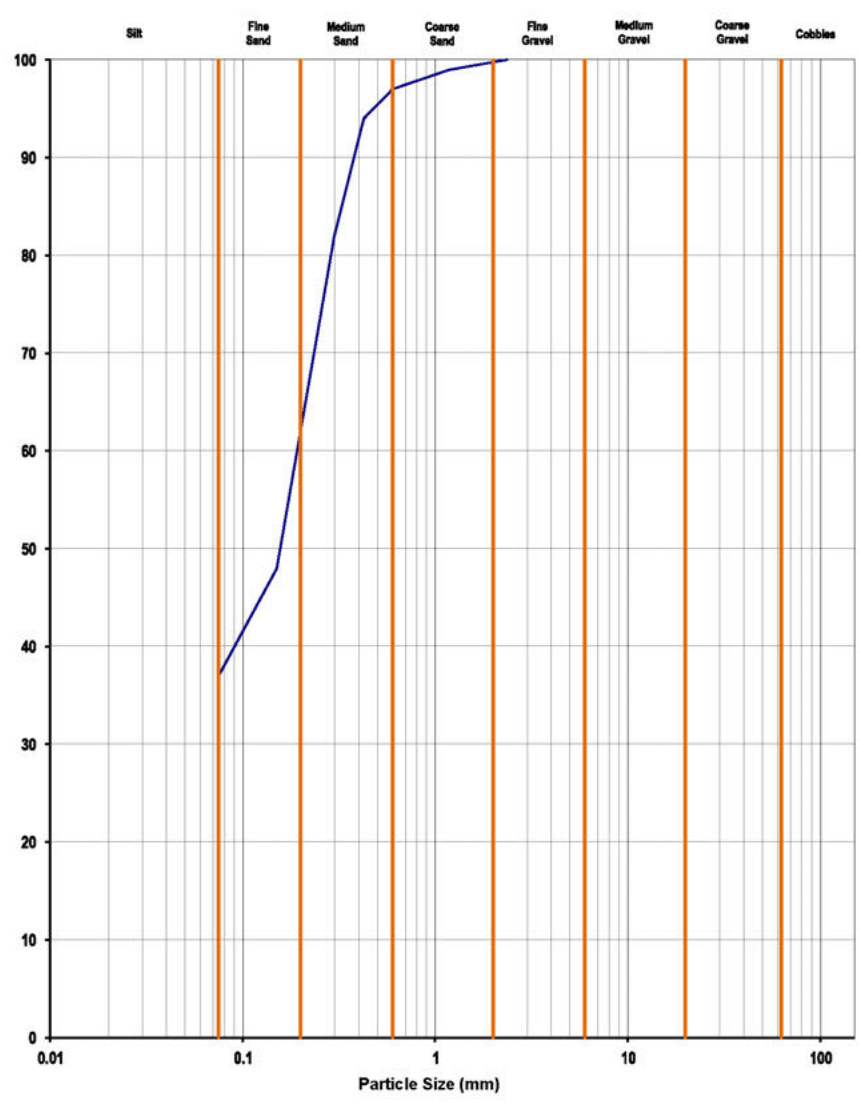
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101065-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2309		
Bore Hole	310-01-BH2309-S00830	Depth From (m)	8.3	Depth To (m)	8.73
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	97
0.425	94
0.300	82
0.150	48
0.075	37



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 37% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 12.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

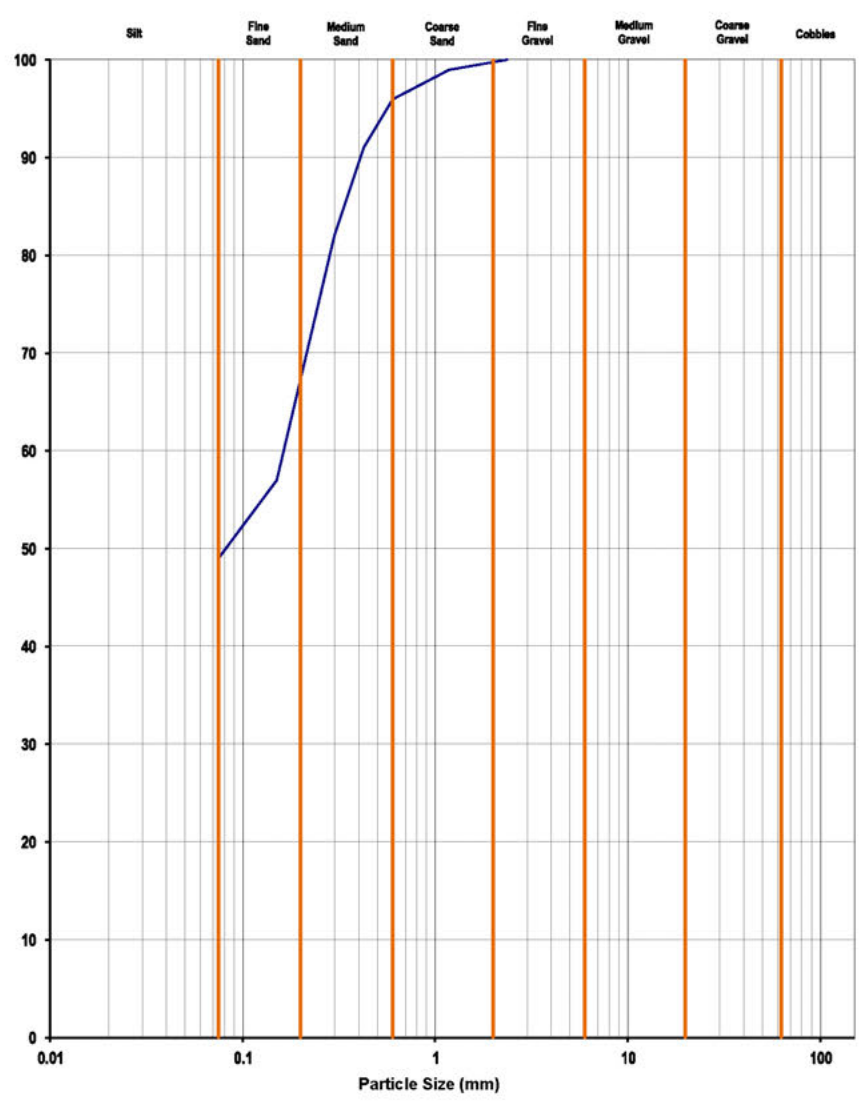
The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101067-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2311		
Bore Hole	310-01-BH2311-S00200	Depth From (m)	2	Depth To (m)	2.45
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	99
0.600	96
0.425	91
0.300	82
0.150	57
0.075	49



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 49% passing for 0.075 mm and rises to 100% passing at 2.36 mm. Vertical lines indicate the boundaries for Soil, Fine Sand, Medium Sand, Coarse Sand, Fine Gravel, Medium Gravel, Coarse Gravel, and Cobbles.

NOTES/REMARKS:

-
Moisture Content 12.6%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

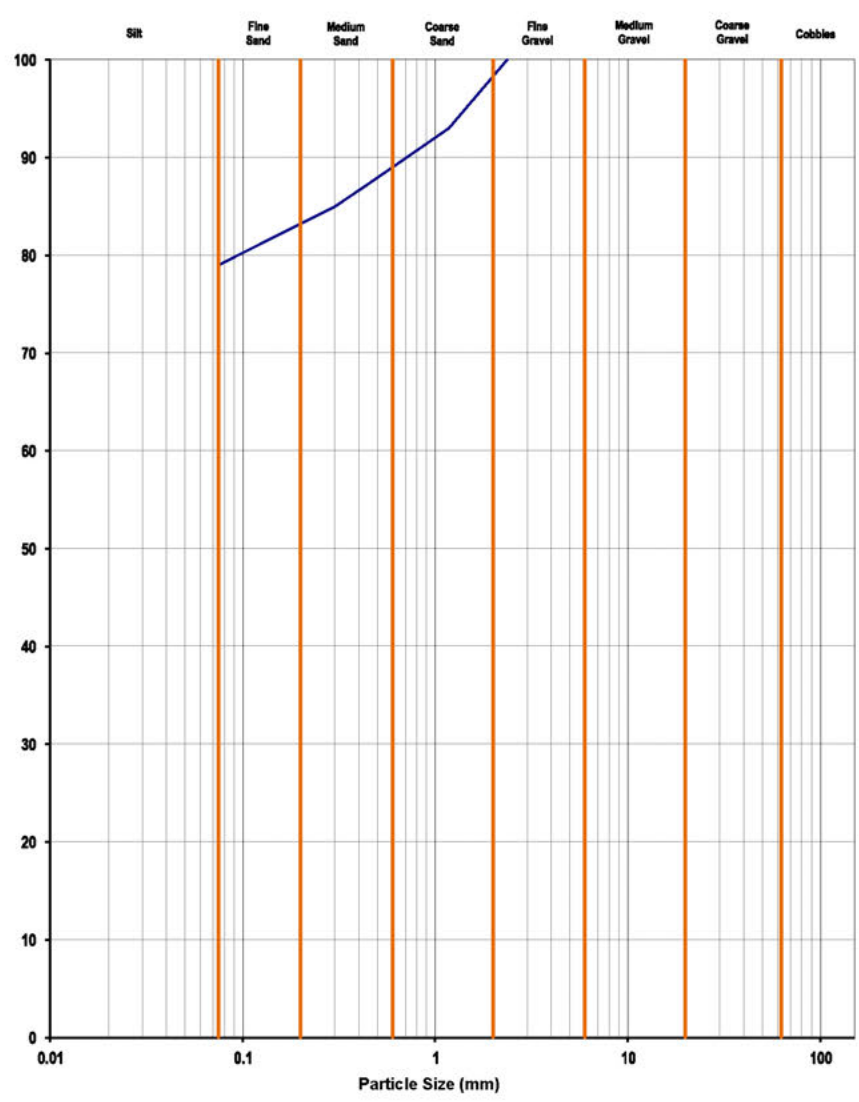
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101068-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2311		
Bore Hole	310-01-BH2311-S00350	Depth From (m)	3.5	Depth To (m)	3.95
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	
2.36	100
1.18	93
0.600	89
0.425	87
0.300	85
0.150	82
0.075	79



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 79% passing for 0.075 mm and reaches 100% passing at 2.36 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.36 mm), Fine Gravel (2.36 - 4.75 mm), Medium Gravel (4.75 - 9.5 mm), Coarse Gravel (9.5 - 20 mm), and Cobbles (> 20 mm).

NOTES/REMARKS:

-
Moisture Content 15%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

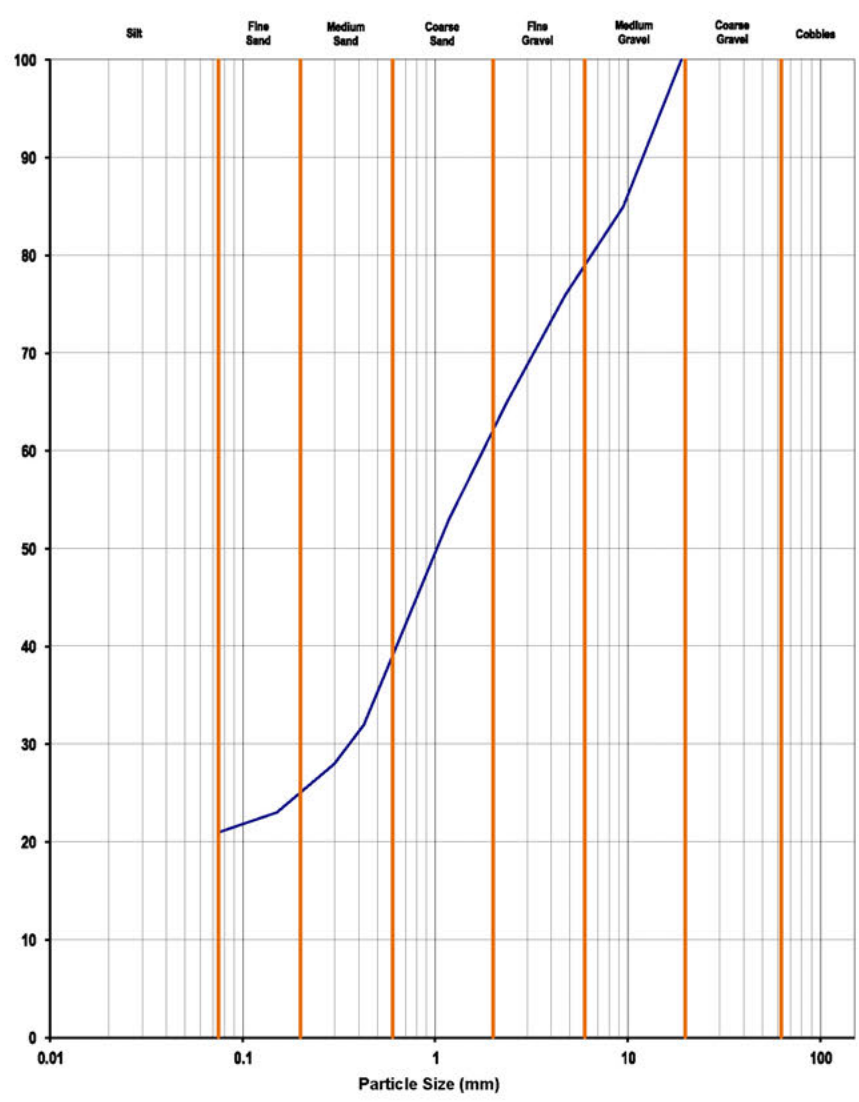
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Golder Associates Pty Limited			Report No.	GA101071-G
Address	PO Box 1734 MILTON BC	QLD	4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G				
Project No	1897791	Client Sample No	310-01-BH2311		
Bore Hole	310-01-BH2311-S01210	Depth From (m)	12.1	Depth To (m)	12.35
Description	SPT				

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	100
13.2	90
9.5	85
6.7	81
4.75	76
2.36	65
1.18	53
0.600	39
0.425	32
0.300	28
0.150	23
0.075	21



The graph shows the particle size distribution curve for the sample. The x-axis represents Particle Size (mm) on a logarithmic scale from 0.01 to 100. The y-axis represents Passing (%) from 0 to 100. The curve starts at approximately 21% passing for 0.075 mm and rises to 100% passing at 19.0 mm. Vertical lines indicate the boundaries for soil classification: Silt (< 0.075 mm), Fine Sand (0.075 - 0.425 mm), Medium Sand (0.425 - 0.85 mm), Coarse Sand (0.85 - 2.0 mm), Fine Gravel (2.0 - 4.75 mm), Medium Gravel (4.75 - 20 mm), Coarse Gravel (20 - 60 mm), and Cobbles (> 60 mm).

NOTES/REMARKS:

-
Moisture Content 16.9%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory



C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

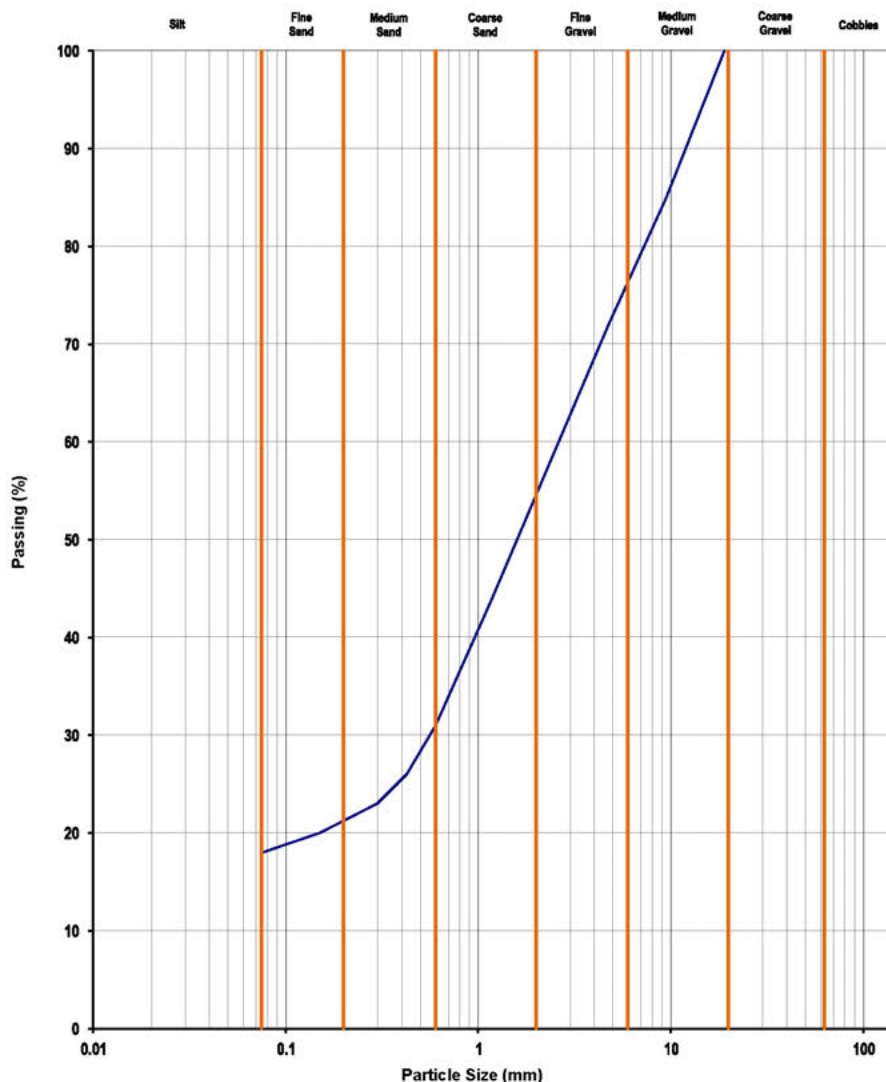
Trilab Pty Ltd ABN 25 065 630 506

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 2.1.1

Client	Goldier Associates Pty Limited	Report No.	GA101072-G
Address	PO Box 1734 MILTON BC QLD 4064	Request No	R2_BH_Rev1_4060
Project	Inland Rail B2G	Test Date	23/10/18-30/10/18
Project No	1897791	Report Date	30/10/2018
Bore Hole	310-01-BH2311-S01280	Client Sample No	310-01-BH2311
Depth From (m)	12.8	Depth To (m)	13.1

Description	SPT
Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	100
13.2	95
9.5	85
6.7	79
4.75	72
2.36	58
1.18	44
0.600	31
0.425	26
0.300	23
0.150	20
0.075	18



NOTES/REMARKS:

-
Moisture Content 14.3%
Sample/s supplied by the client

Page 1 of 1 REP03903

Accredited for compliance with ISO/IEC 17025 - Testing.
The results of the tests, calibrations, and/or measurements included in
this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory

C. Park

C. Park



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.
Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.
Trilab Pty Ltd ABN 25 065 630 506