Appendix C – Summary laboratory data

Table C-1-1 Summary of investigation SPT results

Investigation ID	Depth (mbgl)	Material Description	Material Origin	SPT Value (uncorrected)	In-situ Consistency / Density
A1-BH05	2.5 - 2.95	Sandy CLAY with gravel	Alluvium	4	Soft to Firm
A1-BH05	3.5 - 3.95	Clayey SAND with gravel	Alluvium	5	Loose
A1-BH05	0.5 - 0.95	Silty SAND with gravel	Fill	9	
A1-BH05	1.5 - 1.95	SAND/Silty SAND	Fill	8	
A1-BH05	4.5 - 4.95	Clayey SAND	Residual	5	Medium Dense
A1-BH06	1.5 - 1.95	Sandy GRAVEL with silt	Fill	6	
A1-BH06	2.5 - 2.95	CLAY with sand	Alluvium	2	Soft
A1-BH06	3.5 - 3.95	CLAY with sand	Alluvium	2	Soft
A1-BH06	4.5 - 4.95	Sandy CLAY	Alluvium	2	Soft
A1-BH06	0.5 - 0.95	Clayey SAND with gravel	Fill	14	
A1-BH07	3 - 3.45	CLAY with gravel	Alluvium	0	Very Soft
A1-BH07	4.5 - 4.95	Sandy CLAY	Alluvium	0	Very Soft
A1-BH07	0.5 - 0.65	Clayey SAND with gravel	Fill	Refusal	
A1-BH07	7.5 - 7.95	Clayey SAND	Residual	8	Stiff
A2-BH02	2.5 - 2.95	Sandy CLAY	Residual	9	Stiff
A2-BH02	3.5 - 3.95	Sandy CLAY	Residual	13	Stiff

Investigation ID	Depth (mbgl)	Material Description	Material Origin	SPT Value (uncorrected)	In-situ Consistency / Density
A2-BH02	0.5 - 0.95	Silty SAND with gravel	Fill	5	
A2-BH02	1.5 - 1.95	Clayey SAND	Residual	9	Loose
A2-BH02	4.5 - 4.65	SANDSTONE	Bedrock	Refusal	
A2D-BH04	0.5 - 0.95	Gravelly Sandy CLAY	Fill	13	
A2D-BH04	1.5 - 1.95	CLAY	Residual	8	Firm
A2D-BH04	2.5 - 2.95	Sandy CLAY	Residual	15	Stiff
A2D-BH05	0.5 - 0.95	Gravelly SAND	Fill	36	
A2D-BH05	1.5 - 1.95	CLAY with sand	Residual	8	Firm
A2D-BH05	2.5 - 2.79	SANDSTONE	Bedrock	R	
A2D-BH06	1.5 - 1.95	Sandy CLAY	Fill	5	
A2D-BH06	0.5 - 0.95	Sandy CLAY	Fill	9	
A2D-BH06	2.5 - 2.64	SANDSTONE	Bedrock	Refusal	
A2D-BH07	0.5 - 0.95	Sandy CLAY with gravel	Fill	7	
A2D-BH07	2.5 - 2.95	Sandy CLAY	Residual	6	Firm
A2D-BH07	1.5 - 1.73	Sandy CLAY with gravel	Fill	Refusal	
A2D-BH07	3.1 - 3.2	SANDSTONE	Bedrock	Refusal	
A2D-LD01	1 - 1.45	Gravelly Sandy SILT	Fill	10	
A2D-LD01	2 - 2.45	Gravelly SAND	Fill	28	

Investigation ID	Depth (mbgl)	Material Description	Material Origin	SPT Value (uncorrected)	In-situ Consistency / Density
A2D-LD01	3 - 3.45	Gravelly SAND	Fill	16	
A2D-LD01	4 - 4.24	SANDSTONE	Bedrock	Refusal	
A2D-LD02	0.5 - 0.95	Gravelly Sandy SILT with ballast cobbles	Fill	12	
A2D-LD02	1.5 - 1.95	Gravelly SAND with silt	Fill	9	
A2D-LD03	0.5 - 0.95	CLAY with sand	Residual	23	Very Stiff
A2D-LD03	1.5 - 1.95	CLAY	Residual	29	Very Stiff
A2D-LD04	1.5 - 1.95	Sandy CLAY	Fill	12	
A2D-LD04	2.5 - 2.95	Sandy CLAY	Fill	16	
A2D-LD04	3.5 - 3.95	Sandy CLAY	Fill	22	
A2D-LD04	4.5 - 4.95	Sandy CLAY	Fill	23	
A2D-LD04	5.5 - 5.95	Sandy CLAY	Fill	17	
A2D-LD04	6.5 - 6.95	Sandy CLAY	Fill	14	
A2D-LD04	0.5 - 0.95	Silty SAND with gravel	Fill	18	
A2D-LD04	7.5 - 7.95	CLAY with sand	Fill	4	
A2D-LD04	9 - 9.45	CLAY	Alluvium	10	Firm
A2D-LD04	11 - 11.45	Sandy CLAY	Residual	8	Firm
A3-BH04	0.5 - 0.95	Sandy CLAY	Fill	13	
A3-BH04	1.5 - 1.95	Gravelly CLAY with sand	Residual	18	Very Stiff

Investigation ID	Depth (mbgl)	Material Description	Material Origin	SPT Value (uncorrected)	In-situ Consistency / Density
A3-BH04	2.5 - 2.95	Gravelly CLAY with sand	Residual	17	Very Stiff
A3-BH04	3.5 - 3.95	CLAY	Residual	16	Very Stiff
A3-BH04	4.5 - 4.95	CLAY	Residual	24	Very Stiff
A3-BH04	5.5 - 5.55	SANDSTONE	Bedrock	Refusal	
A3-BH05	0.5 - 0.95	Silty Clayey SAND with gravel	Fill	9	
A3-BH05	1.5 - 1.95	Silty Clayey SAND with gravel	Fill	6	
A3-BH05	2.5 - 2.95	CLAY	Residual	15	Very Stiff
A3-BH05	3.5 - 3.95	CLAY	Residual	14	Very Stiff
A3-BH05	4.5 - 4.7	SANDSTONE	Bedrock	Refusal	
A3-BH06	1.5 - 1.95	Clayey SAND	Fill	12	
A3-BH06	2.5 - 2.95	Clayey SAND	Fill	9	
A3-BH06	3.5 - 3.95	CLAY with gravel	Fill	10	
A3-BH06	4.5 - 4.95	CLAY with gravel	Fill	6	
A3-BH06	0.5 - 0.95	Gravelly Sandy CLAY	Fill	8	
A3-BH06	5.5 - 5.95	CLAY	Residual	11	Stiff
A3-BH06	6.5 - 6.95	CLAY	Residual	14	Stiff
A3-BH08	2.5 - 2.95	CLAY	Residual	17	Very Stiff
A3-BH08	0.5 - 0.95	Silty SAND	Fill	18	

Investigation ID	Depth (mbgl)	Material Description	Material Origin	SPT Value (uncorrected)	In-situ Consistency / Density
A3-BH08	1.5 - 1.95	Sandy CLAY	Fill	8	
A3-BH08	3.5 - 3.95	CLAY	Residual	18	Very Stiff
A3-BH08	4.5 - 4.95	CLAY	Residual	19	Very Stiff
A3-BH08	6.8 - 6	CLAY	Residual	Refusal	Very Stiff
A3-BH09	1.5 - 1.95	CLAY	Residual	39	Very Stiff
A3-BH09	2 - 2.28	Gravelly CLAY	Residual	Refusal	Very Stiff
A3-BH09	0.5 - 0.95	CLAY	Residual	15	Very Stiff
A3-BH09	4.5 - 4.77	SHALE	Bedrock	Refusal	
A3-BH10	0.5 - 0.95	Gravelly SAND	Fill	12	
A3-BH10	1.5 - 1.95	Gravelly CLAY	Fill	13	
A3-BH10	2.5 - 2.95	Gravelly CLAY	Fill	18	
A3-BH10	3.5 - 3.95	Gravelly CLAY	Fill	6	
A3-BH10	4.5 - 4.79	SHALE	Bedrock	Refusal	
A3-BH11	0.5 - 0.95	Gravelly CLAY with sand	Fill	8	
A3-BH11	1.5 - 1.95	CLAY with gravel	Residual	8	Stiff
A3-BH11	2.5 - 2.95	Silty CLAY	Residual	22	Very Stiff
A3-LD/BH01	2.5 - 2.95	CLAY with gravel	Fill	15	
A3-LD/BH01	4.5 - 4.95	CLAY with gravel	Fill	12	

Investigation ID	Depth (mbgl)	Material Description	Material Origin	SPT Value (uncorrected)	In-situ Consistency / Density
A3-LD/BH01	0.5 - 0.95	Silty SAND	Fill	14	
A3-LD/BH01	1.5 - 1.95	CLAY	Fill	8	
A3-LD/BH01	3.5 - 3.95	CLAY with gravel	Fill	18	
A3-LD/BH01	7.28 - 7.73	CLAY	Residual	16	Very Stiff
A3-LD/BH01	8 - 8.29	Gravelly CLAY	Residual	Refusal	Very Stiff
A3-LD/BH01	9.2 - 9.65	Clayey SAND	Residual	20	Medium Dense
A3-LD/BH01	10.4 - 10.63	SANDSTONE	Bedrock	Refusal	
A3-LD02	0.5 - 0.95	Sandy CLAY with gravel	Fill	4	
A3-LD02	1.5 - 1.95	Sandy CLAY with gravel	Fill	17	
A3-LD02	2.5 - 2.95	CLAY	Residual	10	Stiff
A3-LD02	3.5 - 3.95	CLAY	Residual	13	Stiff
A3-LD02	4.5 - 4.95	Sandy CLAY	Residual	17	Very Stiff
A3-LD02	5.5 - 5.56	SANDSTONE	Bedrock	Refusal	
A4-BH01	1.5 - 1.95	CLAY with sand	Residual	12	Stiff
A4-BH01	0.5 - 0.95	SAND with clay	Fill	4	
A4-BH01	2.5 - 2.83	SANDSTONE	Bedrock	Refusal	
A4-BH02	0.5 - 0.95	Sandy CLAY	Fill	5	
A4-BH02	1.5 - 1.85	SANDSTONE	Bedrock	Refusal	

Investigation ID	Depth (mbgl)	Material Description	Material Origin	SPT Value (uncorrected)	In-situ Consistency / Density
A4-BH03	0.5 - 0.95	Gravelly Silty SAND with ballast cobbles	Fill	7	
A4-BH03	1.5 - 1.95	SAND	Fill	6	
A4-BH03	2.5 - 2.95	SAND	Fill	3	
A4-BH03	3.5 - 3.83	SANDSTONE	Bedrock	Refusal	
A4-BH04	2.5 - 2.95	Clayey GRAVEL with sand	Fill	41	
A4-BH04	3.5 - 3.95	Clayey GRAVEL with sand	Fill	9	
A4-BH04	0.5 - 0.95	Gravelly Silty SAND with ballast cobbles	Fill	33	
A4-BH04	1.5 - 1.95	Clayey GRAVEL with sand	Fill	16	
A4-BH04	4.5 - 4.95	Sandy CLAY	Fill	7	
A4-BH05	0.5 - 0.95	GRAVEL with ballast cobbles	Fill	43	
A4-BH05	1.5 - 1.95	GRAVEL with ballast cobbles	Fill	48	
A4-BH06	0.5 - 0.75	GRAVEL with ballast cobbles	Fill	Refusal	
A4-BH07	0.5 - 0.95	Gravelly Silty SAND	Fill	10	
A4-BH07	1.5 - 1.95	Sandy CLAY	Residual	12	Stiff
A4-BH07	2.5 - 2.95	Sandy CLAY	Residual	12	Stiff
A4-BH07	3.5 - 3.95	Clayey SAND	Residual	16	Medium Dense
A4-BH07	4.5 - 4.95	SAND with clay	Residual	20	Medium Dense
A4-BH09	0.5 - 0.95	Sandy CLAY	Residual	7	Stiff

Investigation ID	Depth (mbgl)	Material Description	Material Origin	SPT Value (uncorrected)	In-situ Consistency / Density
A4-BH09	1.5 - 1.95	Sandy CLAY	Residual	17	Stiff
A4-BH09	2.5 - 2.6	SANDSTONE	Bedrock	Refusal	
A4-BH10	0.5 - 0.95	Clayey Gravelly SAND	Fill	12	
A4-BH10	1.5 - 1.95	Clayey Gravelly SAND	Fill	9	
A4-BH10	2.6 - 2.67	SANDSTONE	Bedrock	Refusal	
A4-BH11	0.5 - 0.87	Clayey SAND	Residual	Refusal	Medium Dense to Dense
A4-BH11	1.2 - 1.22	SANDSTONE	Bedrock	Refusal	
A4-BH12	0.5 - 0.95	Silty SAND	Fill	8	
A4-BH12	1.1 - 1.14	SANDSTONE	Bedrock	Refusal	
A4-HAC01	1 - 1.45	Silty SAND with gravel	Fill	9	
A4-HAC01	3 - 3.03	SANDSTONE	Bedrock	Refusal	
A4-HAC02	0.5 - 0.95	Clayey SAND	Fill	4	
A4-HAC02	1.5 - 1.6	SANDSTONE	Bedrock	Refusal	
A4-LD01	0.5 - 0.95	Silty SAND	Fill	9	
A4-LD01	1.5 - 1.95	SAND	Fill	3	
A4-LD01	3 - 3.3	SANDSTONE	Bedrock	Refusal	

Table C-1-2 Summary of investigation DCP results

Investigation ID	Type of Investigation	Termination depth (mbgl)	Reason for termination
A1-BH01	Augered Borehole	2.5	Refusal
A1-BH02	Augered Borehole	3	Target depth
A1-HA01	Hand Auger	2	Target depth
A1-LD01	Large Diameter Augered Borehole	2	Target depth
A1-LD02	Large Diameter Augered Borehole	2	Target depth
A1-LD03	Large Diameter Augered Borehole	1.75	Refusal
A1-LD04	Large Diameter Augered Borehole	2	Target depth
A1-LD05	Large Diameter Augered Borehole	2	Target depth
A1-LD06	Large Diameter Augered Borehole	1.8	Refusal
A1-LD07	Large Diameter Augered Borehole	2	Target depth
A1-LD08	Large Diameter Augered Borehole	2	Target depth
A1-LD09	Large Diameter Augered Borehole	2	Target depth
A1-LD10	Large Diameter Augered Borehole	2	Target depth
A1-LD11	Large Diameter Augered Borehole	2	Target depth
A2D-BH08	Cored Borehole	2.3	Refusal
A2D-BH09	Cored Borehole	3.25	Refusal
A2-HA01	Hand Auger	1.95	Target depth
A2-HA02	Hand Auger	1.95	Target depth

Investigation ID	Type of Investigation	Termination depth (mbgl)	Reason for termination
A2-HA03	Hand Auger	0.15	Refusal
A2-BH03	Augered Borehole	1.19	Refusal
A2-BH04	Augered Borehole	0.83	Refusal
A2-HAC03	Hand Auger	1	Target depth
A3-HA01	Hand Auger	2	Target depth
A3-HA02	Hand Auger	2	Target depth
A3-HA03	Hand Auger	2	Target depth
A3-HA04	Hand Auger	2	Target depth
A3-HA05	Hand Auger	2	Target depth
A3-LD01	Large Diameter Augered Borehole	2	Target depth
A3-BH01	Augered Borehole	2	Target depth
A3-BH02	Augered Borehole	2	Target depth
A3-BH03	Augered Borehole	2	Target depth
A3-BH07	Cored Borehole	2.45	Refusal
A4-BH08	Augered Borehole	0.68	Refusal
A4-HAC05	Hand Auger	1.85	Target depth
A4-HAC06	Hand Auger	1.5	Target depth
A3-HA06	Hand Auger	1.36	Refusal
A3-HA07	Hand Auger	1.11	Refusal

Table C-1-3 FMC and Atterberg test results

Investigation ID	Depth (mbgl)	Material Description	Material Origin	FMC (%)	LL (%)	PL (%)	PI
A1-BH01	2.20 - 2.30	Clayey SAND with gravel	Alluvium	20.3	24	15	9
A1-BH05	2.50 - 2.95	Sandy CLAY with gravel	Alluvium	17.4	27	15	12
A1-BH05	3.50 - 3.95	Clayey SAND with gravel	Alluvium	23	28	19	9
A1-BH06	2.50 - 2.95	CLAY with sand	Alluvium	55.7	46	21	25
A1-BH06	4.50 - 4.95	Sandy CLAY	Alluvium	26.8	26	14	12
A1-BH07	3.00 - 3.45	CLAY with gravel	Alluvium	45.9	57	25	32
A1-BH07	7.30 - 7.40	Clayey SAND	Residual	24	28	15	13
A1-LD04	1.80 - 1.90	CLAY	Alluvium	30.9	46	21	25
A1-LD06	1.10 - 1.50	CLAY	Alluvium	45.3	48	25	23
A2-BH02	3.50 - 3.95	Sandy CLAY	Residual	15.9	40	14	26
A2-BH03	0.70 - 0.90	CLAY	Residual	11.9	49	21	28
A2-BH04	0.30 - 0.50	Clayey SAND	Fill	10	23	13	10
A2D-BH07	2.50 - 2.95	Sandy CLAY	Residual	16.3	30	13	17
A2D-BH08	1.00 - 1.20	Sandy CLAY	Fill	16.4	32	15	17
A2D-BH09	2.40 - 2.65	Sandy CLAY with gravel	Residual	20.4	39	15	24
A2D-LD03	1.00 - 2.00	CLAY	Residual	16	52	17	35
A2D-LD04	1.50 - 3.95 combined	Sandy CLAY	Fill	9.5	28	16	12

Investigation ID	Depth (mbgl)	Material Description	Material Origin	FMC (%)	LL (%)	PL (%)	PI
A2D-LD04	4.10 - 4.40	Sandy CLAY	Fill	9.9	32	16	16
A2D-LD04	4.50 - 6.95 combined	Sandy CLAY	Fill	10.1	29	16	13
A3-BH01	1.20 - 1.30	CLAY	Residual	17.4	63	27	36
A3-BH03	1.70 - 1.80	CLAY	Residual	17.9	65	25	40
A3-BH04	0.50 - 0.95	Sandy CLAY	Fill	14.5	31	17	14
A3-BH04	1.50 - 1.95	Gravelly CLAY with sand	Residual	14.7	37	16	21
A3-BH05	0.50 - 1.95 combined	Silty Clayey SAND with gravel	Fill	13.8	25	20	5
A3-BH05	2.50 - 2.95	CLAY	Residual	16.9	55	20	35
A3-BH06	1.5 - 1.95	Clayey SAND	Fill	12.5	28	15	13
A3-BH06	3.50-4.95 combined	CLAY with gravel	Fill		35	19	16
A3-BH07	1.50 - 1.70	CLAY	Fill	14.4	32	18	14
A3-BH08	2.50 - 2.95	CLAY	Residual	13.2	74	22	52
A3-BH09	1.5 - 1.95	CLAY	Residual	17.1	62	26	36
A3-BH10	4.10 - 4.20	CLAY	Residual	21.5	49	24	25
A3-HA02	1.10 - 1.20	CLAY	Fill	24.9	35	21	14
A3-HA04	0.80-0.90	CLAY	Fill	22.9	52	21	31
A3-HA05	1.30-1.50	CLAY	Residual	19.7	42	20	22

Investigation ID	Depth (mbgl)	Material Description	Material Origin	FMC (%)	LL (%)	PL (%)	PI
A3-HA06	1.00-1.15	SHALE	Bedrock	4.3	24	21	3
A3-LD/BH01	2.50 - 2.95	CLAY with gravel	Fill	12.7	46	17	29
A3-LD/BH01	4.10 - 4.40	CLAY	Fill	15	44	16	28
A3-LD/BH01	4.50 - 4.95	CLAY with gravel	Fill	13.7	42	16	26
A3-LD01	1.10 - 1.40	CLAY	Residual	19.1	61	26	35
A3-LD02	0.50 - 1.95 combined	Sandy CLAY with gravel	Fill	16.8	36	17	19
A4-BH01	1.50 - 1.95	CLAY with sand	Residual	14.7	53	20	33
A4-BH09	0.50 - 0.95	Sandy CLAY	Residual	18.8	46	18	28
A4-TP01	2.0 - 2.60	CLAY with sand	Residual	15.4	41	16	25

Table C-1-4 PSD test results

Investigation ID	Depth (mbgl)	Material Description	Material Origin	Gravel content (% > 2.36 mm)	Sand content (% < 2.36 & > 0.075 mm)	Fines content (% < 0.075 mm)
A1-BH01	2.20 - 2.30	Clayey SAND with gravel	Alluvium	17	60	23
A1-BH05	2.30 - 2.40	Sandy CLAY with gravel	Alluvium	9	56	35
A1-BH05	3.50 - 3.95	Clayey SAND with gravel	Alluvium	25	55	20
A1-BH06	3.50 - 3.95	CLAY with sand	Alluvium	1	55	44
A1-BH07	4.50 - 4.95	Sandy CLAY	Alluvium	4	46	50

Investigation ID	Depth (mbgl)	Material Description	Material Origin	Gravel content (% > 2.36 mm)	Sand content (% < 2.36 & > 0.075 mm)	Fines content (% < 0.075 mm)
A1-BH07	7.30 - 7.40	Clayey SAND	Residual	0	70	30
A2-BH02	2.50 - 2.95	Sandy CLAY	Residual	1	38	61
A2D-BH09	1.25 - 1.40	Clayey Sandy GRAVEL	Fill	45	41	14
A2D-LD04	1.50 - 3.95 combined	Sandy CLAY	Fill	14	33	53
A2D-LD04	4.50 - 6.95 combined	Sandy CLAY	Fill	14	42	45
A3-BH04	2.50 - 2.95	Gravelly CLAY with sand	Residual	31	19	51
A3-BH05	0.50 - 1.95 combined	Silty Clayey SAND with gravel	Fill	20	47	33
A3-HA01	0.50-0.65	Clayey Sandy GRAVEL	Fill	44	37	19
A3-HA03	0.60 - 0.70	CLAY	Fill	16	26	58
A3-HA05	0.3 - 0.4	Clayey Sandy GRAVEL	Fill	49	32	19
A3-LD01	0.00 - 0.50	Silty SAND	Fill	20	24	56
A3-LD02	0.50 - 1.95 combined	Sandy CLAY with gravel	Fill	21	31	48
A4-BH04	2.50 - 3.95 combined	Clayey GRAVEL with sand	Fill	44	27	29
A4-BH05/06	Combined sample	GRAVEL with ballast cobbles	Fill	49	32	19
A4-BH08	0.30 - 0.40	Clayey SAND	Fill	2	64	34
A4-BH10	0.50 - 1.95	Clayey Gravelly SAND	Fill	40	41	19

Investigation ID	Depth (mbgl)	Material Description	Material Origin	Gravel content (% > 2.36 mm)	Sand content (% < 2.36 & > 0.075 mm)	Fines content (% < 0.075 mm)
A4-TP02	0.3 - 0.5	Silty SAND with cobbles and boulders	Fill	55	34	11

Table C-1-5 Compaction and CBR test results

Investigation ID	Depth (mbgl)	Material Description	Material Origin	FMC (%)	MDD (t/m³)	OMC (%)	CBR
A1-LD03	0.50 - 1.00	Silty SAND	Fill	14.2	1.902	12.5	6.1
A1-LD05	0.70 - 1.00	Silty CLAY with sand	Fill	30.1	1.658	18.7	3.9
A1-LD06	1.10 - 1.50	CLAY	Alluvium	45.3	1.423	28.2	3
A1-LD07	0.50 - 1.00	Silty SAND with gravel	Fill	11.1	1.923	11.2	6.8
A1-LD10	1.20 - 1.50	Clayey SAND with gravel	Fill	28	1.534	25.2	2.3
A2D-LD02	1.10 - 1.40	Gravelly Sandy SILT	Fill	9.6	1.755	13.8	7.7
A2D-LD03	0.20 - 1.00	CLAY with sand	Residual	13.2	1.813	14.6	3.6
A2D-LD04	4.10 - 4.40	Sandy CLAY	Fill	9.9	1.867	13.3	
A3-LD/BH01	4.10 - 4.40	CLAY	Fill	15	1.736	16.6	
A3-LD01	0.00 - 0.50	Silty SAND	Fill		1.675	20.5	4.4

Table C-1-6 Point load test results

Investigation ID	Depth (mbgl)	Material Description	Axial Is50 (MPa)	Diametral Is50 (MPa)
A1-BH06	9.5	Sandstone	0.16	0.14
A1-BH06	10.5	Sandstone	0.26	0.33
A1-BH06	11.48	Sandstone	0.50	0.38
A1-BH07	11.86	Sandstone	0.05	0.04
A1-BH07	12.7	Sandstone	0.77	0.52
A1-BH07	13.4	Sandstone	0.47	0.32
A1-BH07	14.35	Sandstone	1.61	1.20
A2-BH02	5.36	Sandstone	0.56	0.41
A2-BH02	6.31	Sandstone	0.32	0.11
A2-BH02	7.41	Sandstone	0.65	0.44
A2-BH02	8.56	Sandstone	1.52	1.08
A2D-BH04	4.23	Sandstone	0.67	0.43
A2D-BH04	5.16	Sandstone	1.41	1.09
A2D-BH04	6.08	Sandstone	1.33	1.41
A2D-BH04	7.05	Sandstone	0.22	1.30
A2D-BH05	3.7	Sandstone	1.07	0.37
A2D-BH05	4.75	Sandstone	1.39	0.83
A2D-BH05	5.67	Sandstone	0.95	1.12

Investigation ID	Depth (mbgl)	Material Description	Axial Is50 (MPa)	Diametral Is50 (MPa)
A2D-BH05	6.67	Sandstone	2.50	1.17
A2D-BH06	3.55	Sandstone	2.03	1.56
A2D-BH06	4.46	Sandstone	1.47	1.14
A2D-BH06	5.61	Sandstone	1.46	1.12
A2D-BH06	6.59	Sandstone	0.93	1.09
A2D-BH06	7.18	Sandstone	1.71	1.39
A2D-BH07	3.82	Sandstone	1.76	1.22
A2D-BH07	4.97	Sandstone	0.85	1.16
A2D-BH07	5.62	Sandstone	1.27	1.18
A2D-BH08	2.53	Sandstone	0.80	0.59
A2D-BH08	3.95	Sandstone	0.64	0.80
A2D-BH08	4.56	Sandstone	1.30	1.15
A2D-BH08	5.53	Sandstone	1.21	1.07
A2D-BH08	6.78	Sandstone	1.59	1.28
A2D-BH09	3.72	Sandstone	1.21	0.84
A2D-BH09	4.8	Sandstone	1.26	1.34
A2D-BH09	5.84	Sandstone	1.21	1.20
A2D-BH09	6.8	Sandstone	1.66	1.26
A2D-LD01	4.58	Sandstone	1.01	0.86

Investigation ID	Depth (mbgl)	Material Description	Axial Is50 (MPa)	Diametral Is50 (MPa)
A2D-LD01	5.57	Sandstone	1.34	1.44
A2D-LD01	6.58	Sandstone	1.97	1.75
A2D-LD01	7.35	Sandstone	1.21	1.38
A3-BH04	6.42	Sandstone	0.95	1.19
A3-BH04	7.44	Sandstone	0.59	0.61
A3-BH04	8.51	Sandstone	0.73	0.86
A3-BH04	9.51	Sandstone	0.78	0.79
A3-BH05	4.91	Sandstone	1.12	0.89
A3-BH05	5.55	Sandstone	0.89	0.56
A3-BH05	6.61	Sandstone	1.01	0.96
A3-BH05	7.5	Sandstone	1.13	1.09
A3-BH05	8.33	Sandstone	0.55	0.43
A3-BH06	7.85	Sandstone	1.90	0.54
A3-BH06	8.13	Sandstone	0.09	0.04
A3-BH06	8.3	Sandstone	0.53	0.47
A3-BH06	9.29	Sandstone	0.74	0.68
A3-BH06	10.32	Sandstone	0.52	0.54
A3-BH06	11.43	Sandstone	1.43	1.41
A3-BH07	3.69	Siltstone	0.32	0.50

Investigation ID	Depth (mbgl)	Material Description	Axial Is50 (MPa)	Diametral Is50 (MPa)
A3-BH07	4.74	Sandstone	0.06	0.07
A3-BH07	5.73	Sandstone	0.37	0.24
A3-BH07	6.6	Sandstone	0.47	0.24
A3-BH08	6.37	Sandstone	1.11	0.65
A3-BH08	7.7	Sandstone	0.21	0.25
A3-BH08	8.81	Sandstone	0.17	0.30
A3-BH08	9.86	Sandstone	2.38	1.75
A3-BH09	5.45	Siltstone	0.18	0.03
A3-BH09	6.42	Siltstone	0.09	0.03
A3-BH09	7.41	Sandstone	0.36	0.01
A3-BH09	7.89	Sandstone	0.20	0.03
A3-BH09	8.21	Sandstone	0.23	0.26
A3-BH10	5.73	Sandstone	0.28	0.05
A3-BH10	6.25	Sandstone	1.22	0.66
A3-BH10	7.4	Sandstone	0.20	0.19
A3-BH10	7.95	Sandstone	0.61	0.33
A3-BH10	8.29	Sandstone	0.39	0.11
A3-BH10	9.16	Sandstone	1.59	1.81
A3-BH10	10.59	Sandstone	1.59	1.65

Investigation ID	Depth (mbgl)	Material Description	Axial Is50 (MPa)	Diametral Is50 (MPa)
A3-BH10	11.74	Sandstone	3.36	2.47
A3-BH10	12.6	Sandstone	2.96	2.19
A3-BH10	13.16	Sandstone	1.86	2.90
A3-BH11	4.73	Sandstone	0.32	0.09
A3-BH11	5.92	Sandstone	1.84	1.14
A3-BH11	6.83	Sandstone	1.37	1.22
A3-BH11	7.93	Sandstone	1.38	1.38
A3-BH11	8.94	Sandstone	1.85	1.65
A3-BH11	9.52	Sandstone	1.02	0.91
A3-BH11	10.2	Sandstone	0.20	0.22
A3-LD/BH01	11.25	Sandstone	0.71	0.87
A3-LD/BH01	12.19	Sandstone	1.20	1.00

Table C-1-7 Soil aggressivity suite test results

Investigation ID	Depth (mbgl)	Material Description	Material Origin	pH	Cl^- (mg/kg)	SO_4^{2-} (mg/kg)	Ece (µS/cm)	Ece (dS/m)
A1-BH01	2.2 - 2.3	Clayey SAND with gravel	Alluvium	8.4	2800	540	2000	2.000
A1-BH02	0.8 - 0.9	Sandy GRAVEL with silt	Fill	8.8	1700	480	1400	1.400
A1-BH06	1.5 - 1.95	Sandy GRAVEL with silt	Fill	10.9	5900	780	3900	3.900

Investigation ID	Depth (mbgl)	Material Description	Material Origin	pH	Cl^- (mg/kg)	SO_4^{2-} (mg/kg)	Ece (µS/cm)	Ece (dS/m)
A1-BH06	3.5 - 3.95	CLAY with sand	Alluvium	8.3	9000	2900	6400	6.400
A1-BH07	3 - 3.45	CLAY with gravel	Alluvium	8.2	8700	2700	6000	6.000
A1-BH07	6.5 - 6.7	Sandy CLAY	Residual	8.4	2800	710	2200	2.200
A1-LD01	1.1 - 1.5	Sandy CLAY	Fill	9	890	180	790	0.790
A1-LD03	0.5 - 1	Silty SAND	Fill	7.8	1300	2100	1600	1.600
A1-LD04	1.8 - 1.9	CLAY	Alluvium	7.8	1800	3500	2500	2.500
A1-LD05	0.7 - 1	Silty CLAY with sand	Fill	7.8	67	7900	2400	2.400
A1-LD06	1.1 - 1.5	CLAY	Alluvium	8.1	1000	2800	2000	2.000
A1-LD07	0.5 - 1	Silty SAND with gravel	Fill	7.1	340	310	400	0.400
A1-LD09	0.3 - 0.5	Sandy CLAY with gravel with rubble	Fill	8.4	850	1200	1200	1.200
A1-LD10	1.2 - 1.5	Clayey SAND with gravel	Fill	7.2	240	290	350	0.350
A2-BH02	2.5 - 2.95	Sandy CLAY	Residual	5	<10	58	44	0.044
A2-BH03	0.7 - 0.9	CLAY	Residual	5.1	35	91	83	0.083
A2-BH04	0.3 - 0.5	Clayey SAND	Fill	6.8	<10	79	72	0.072
A2D-BH06	1.5 - 1.95	Sandy CLAY	Fill	7.2	<10	10	29	0.029
A2D-BH07	0.5 - 0.95	Sandy CLAY with gravel	Fill	8.4	10	30	120	0.120
A2D-BH07	2.5 - 2.95	Sandy CLAY	Residual	7.8	24	36	67	0.067
A2D-BH08	1 - 1.2	Sandy CLAY	Fill	8.1	25	20	54	0.054

Investigation ID	Depth (mbgl)	Material Description	Material Origin	pH	Cl^- (mg/kg)	SO_4^{2-} (mg/kg)	Ece (µS/cm)	Ece (dS/m)
A2D-BH09	1.25 - 1.4	Clayey Sandy GRAVEL	Fill	8.3	<10	10	66	0.066
A2D-BH09	2.4 - 2.65	Sandy CLAY with gravel	Residual	5.1	10	30	31	0.031
A2D-LD01	0.5 - 0.8	Gravelly Sandy SILT	Fill	6.9	41	50	160	0.160
A2D-LD02	0.5 - 0.95	Gravelly Sandy SILT with ballast cobbles	Fill	7.3	31	72	160	0.160
A2D-LD03	1 - 2	CLAY	Residual	5.4	44	89	89	0.089
A2D-LD04	1.5 - 3.95 combined	Sandy CLAY	Fill	7.8	10	130	120	0.120
A2D-LD04	4.5 - 6.95 combined	Sandy CLAY	Fill	8.3	25	410	300	0.300
A2-HA02	0.4 - 0.5	Sandy GRAVEL	Fill	7.2	20	10	54	0.054
A2-TP01	0.3 - 0.6	Gravelly SAND	Fill	7.3	10	10	42	0.042
A3-BH01	1.2 - 1.3	CLAY	Residual	5	42	110	100	0.100
A3-BH03	1.7 - 1.8	CLAY	Residual	4.7	10	79	61	0.061
A3-BH04	0.5 - 0.95	Sandy CLAY	Fill	7.4	<10	71	100	0.100
A3-BH04	2.5 - 2.95	Gravelly CLAY with sand	Residual	4.9	<10	94	66	0.066
A3-BH05	0.5 - 1.95	Silty Clayey SAND with gravel	Fill	6.9	10	58	65	0.065
A3-BH06	1.5 - 2.95	Clayey SAND	Fill	6.5	20	81	70	0.070
A3-BH06	3.5 - 4.95 combined	CLAY with gravel	Fill	5.5	10	330	200	0.200
A3-BH07	1.5 - 1.7	CLAY	Fill	5.5	20	160	110	0.110

Investigation ID	Depth (mbgl)	Material Description	Material Origin	pH	Cl^- (mg/kg)	SO_4^{2-} (mg/kg)	Ece (µS/cm)	Ece (dS/m)
A3-BH08	2.5 - 2.95	CLAY	Residual	4.6	170	97	180	0.180
A3-BH10	4.1 - 4.2	CLAY	Residual	4.8	<10	130	91	0.091
A3-HA01	0.5 - 0.65	Clayey Sandy GRAVEL	Fill	7.9	23	<10	57	0.057
A3-HA02	0.3 - 0.5	Gravelly SAND with rubble	Fill	8.7	26	200	190	0.190
A3-HA04	0.8 - 0.9	CLAY	Fill	5.4	20	42	46	0.046
A3-HA05	0.3 - 0.4	Clayey Sandy GRAVEL	Fill	6.7	10	10	35	0.035
A3-HA05	1.3 - 1.5	CLAY	Residual	7.3	310	160	340	0.340
A3-HA06	0.3 - 0.4	Silty SAND with cobbles	Fill	8.1	120	42	230	0.230
A3-HA06	1 - 1.15	SHALE	Bedrock	8.3	10	76	110	0.110
A3-HA07	0.6 - 0.7	Silty Sandy GRAVEL	Fill	7.3	20	10	39	0.039
A3-LD/BH01	2.5 - 2.95	CLAY with gravel	Fill	7.2	<10	36	40	0.040
A3-LD02	0.5 - 1.95 combined	Sandy CLAY with gravel	Fill	7.5	<10	38	74	0.074
A4-BH02	0.7 - 0.9	Sandy CLAY	Fill	6.9	<10	20	24	0.024
A4-BH04	2.5 - 3.95	Clayey GRAVEL with sand	Fill	8.2	10	190	220	0.220
A4-BH05	0.5 - 1.95	GRAVEL with ballast cobbles	Fill	8.5	20	100	150	0.150
A4-BH08	0.3 - 0.4	Clayey SAND	Fill	7.2	20	51	33	0.033
A4-BH09	0.5 - 0.95	Sandy CLAY	Residual	4.7	10	170	110	0.110
A4-BH10	0.5 - 1.95	Clayey Gravelly SAND	Fill	7.8	<10	25	58	0.058

Investigation ID	Depth (mbgl)	Material Description	Material Origin	pH	Cl^- (mg/kg)	SO_4^{2-} (mg/kg)	Ece (µS/cm)	Ece (dS/m)
A4-BH12	0.5 - 0.95	Silty SAND	Fill	7.2	<10	25	56	0.056
A4-TP02	0.3 - 0.5	Silty SAND with cobbles and boulders	Fill	5.6	<10	<10	29	0.029

Appendix D – Laboratory certificates

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Aggregate/Soil Test Report

Report No: SYD1902705
Issue No: 1
This report replaces all previous issues of report no 'SYD1902705'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0497-01
Date Sampled	10/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-BH01
Depth (m)	2.20 - 2.30m
Soil Description	Clayey SAND with Gravel : grey/brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	20.3	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
	AS 1289.3.4.1		
Linear Shrinkage (%)		Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	24	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	15	
Plasticity Index (%)	AS 1289.3.3.1	9	
Date Tested		26/11/2019	

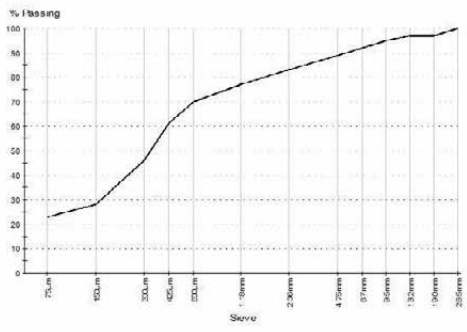
Particle Size Distribution

Method: AS 1289.3.6.1
Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
26.5mm	100	
19.0mm	97	
13.2mm	97	
9.5mm	95	
6.7mm	92	
4.75mm	89	
2.36mm	83	
1.18mm	77	
600µm	70	
425µm	61	
300µm	46	
150µm	28	
75µm	23	

Chart



Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902706
Issue No: 1
This report replaces all previous issues of report no 'SYD1902706'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0497-02
Date Sampled	10/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-BH05
Depth (m)	2.30 - 2.40m
Soil Description	Clayey SAND / Sandy CLAY trace Gravel brown

Other Test Results

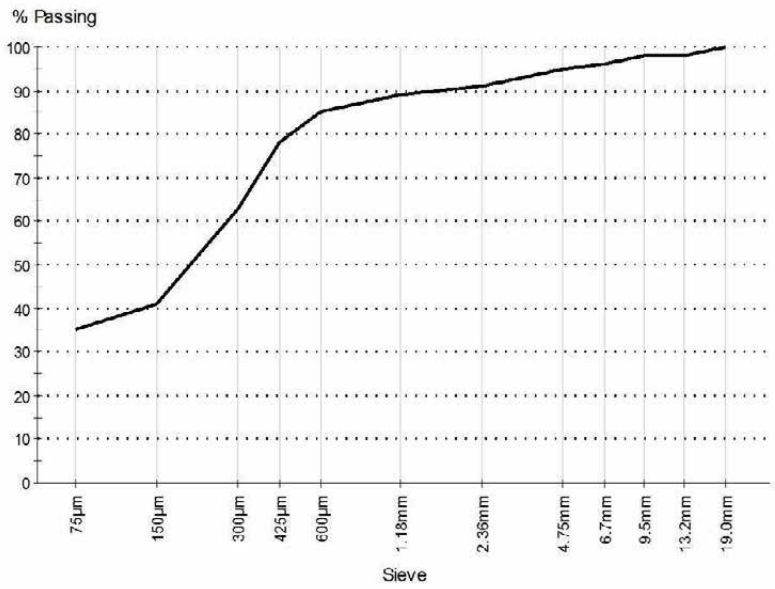
Description	Method	Result	Limits

Particle Size Distribution

AS 1289.3.6.1

Drying by: Oven
Date Tested: 22/11/2019

Note: Sample Washed



Sieve Size	% Passing	Limits
19.0mm	100	
13.2mm	98	
9.5mm	98	
6.7mm	96	
4.75mm	95	
2.36mm	91	
1.18mm	89	
600µm	85	
425µm	78	
300µm	63	
150µm	41	
75µm	35	

Comments

Small sample - Insufficient sample mass to comply with minimum mass requirements AS1289 1.1

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Aggregate/Soil Test Report

Report No: SYD1902707
Issue No: 1
This report replaces all previous issues of report no 'SYD1902707'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0497-03
Date Sampled	10/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-BH05
Depth (m)	2.50 - 2.95m
Soil Description	Gravelly CLAY with sand brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	17.4	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	27	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	15	
Plasticity Index (%)	AS 1289.3.3.1	12	
Date Tested		26/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902708
Issue No: 1
This report replaces all previous issues of report no 'SYD1902708'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0497-04
Date Sampled	10/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-BH05
Depth (m)	3.50 - 3.95m
Soil Description	Clayey SAND with Gravel: grey brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	23.0	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
	AS 1289.3.4.1		
Linear Shrinkage (%)		Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	28	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	19	
Plasticity Index (%)	AS 1289.3.3.1	9	
Date Tested		26/11/2019	

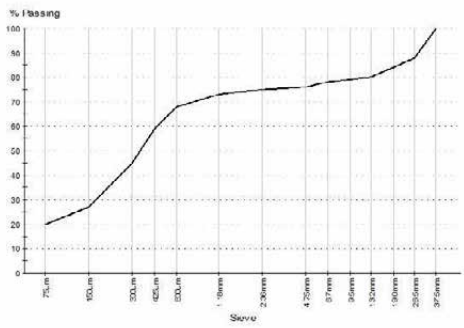
Particle Size Distribution

Method: AS 1289.3.6.1
Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
37.5mm	100	
26.5mm	88	
19.0mm	84	
13.2mm	80	
9.5mm	79	
6.7mm	78	
4.75mm	76	
2.36mm	75	
1.18mm	73	
600µm	68	
425µm	59	
300µm	45	
150µm	27	
75µm	20	

Chart



Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902709
Issue No: 1
This report replaces all previous issues of report no 'SYD1902709'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0497-05
Date Sampled	10/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-BH06
Depth (m)	2.50 - 2.95m
Soil Description	CLAY with Sand: dark grey/brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	55.5	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	46	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	21	
Plasticity Index (%)	AS 1289.3.3.1	25	
Date Tested		21/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902710
Issue No: 1
This report replaces all previous issues of report no 'SYD1902710'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

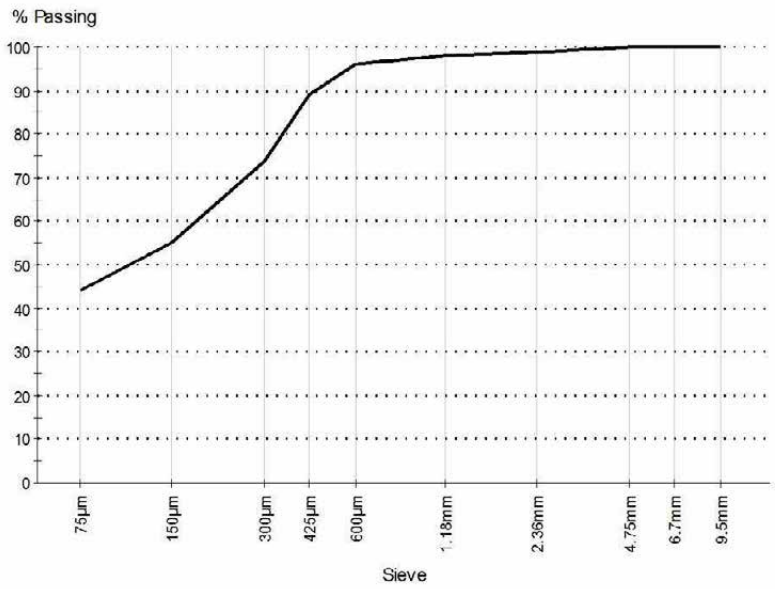
GHD Sample No	SYD19-0497-06
Date Sampled	16/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-BH06
Depth (m)	3.50 - 3.95m
Soil Description	Sandy CLAY: dark grey/brown

Other Test Results

Description	Method	Result	Limits

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 22/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
9.5mm	100	
6.7mm	100	
4.75mm	100	
2.36mm	99	
1.18mm	98	
600µm	96	
425µm	89	
300µm	74	
150µm	55	
75µm	44	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902711
Issue No: 1
This report replaces all previous issues of report no 'SYD1902711'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0497-07
Date Sampled	16/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-BH06
Depth (m)	4.50 - 4.95m
Soil Description	Sandy CLAY: grey/brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	26.8	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	26	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	14	
Plasticity Index (%)	AS 1289.3.3.1	12	
Date Tested		22/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902712
Issue No: 1
This report replaces all previous issues of report no 'SYD1902712'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0497-08
Date Sampled	22/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-BH07
Depth (m)	3.00 - 3.45m
Soil Description	CLAY with Sand: dark grey/brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	45.9	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	57	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	25	
Plasticity Index (%)	AS 1289.3.3.1	32	
Date Tested		22/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902713
Issue No: 1
This report replaces all previous issues of report no 'SYD1902713'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0497-09
Date Sampled	22/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-BH07
Depth (m)	4.50 - 4.95m
Soil Description	Sandy CLAY: trace gravel dark grey/brown

Other Test Results

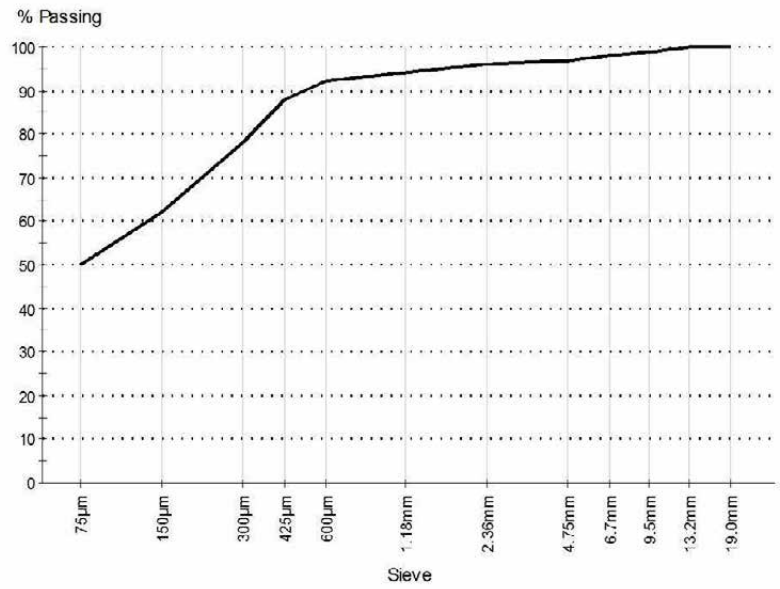
Description	Method	Result	Limits

Particle Size Distribution

AS 1289.3.6.1

Drying by: Oven
Date Tested: 22/11/2019

Note: Sample Washed



Sieve Size	% Passing	Limits
19.0mm	100	
13.2mm	100	
9.5mm	99	
6.7mm	98	
4.75mm	97	
2.36mm	96	
1.18mm	94	
600µm	92	
425µm	88	
300µm	78	
150µm	62	
75µm	50	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902714
Issue No: 1
This report replaces all previous issues of report no 'SYD1902714'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

GHD Sample No	SYD19-0498-01
Date Sampled	08/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-BH07
Depth (m)	7.30 - 7.40
Soil Description	Clayey SAND mottled orange grey & brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	24.0	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
	AS 1289.3.4.1		
Linear Shrinkage (%)		Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	28	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	15	
Plasticity Index (%)	AS 1289.3.3.1	13	
Date Tested		26/11/2019	

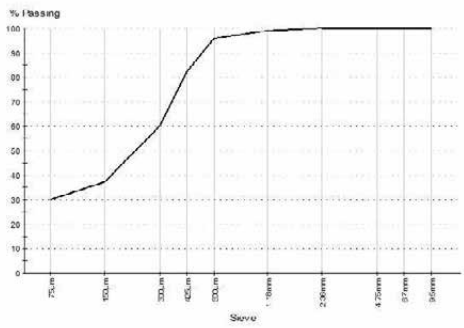
Particle Size Distribution

Method: AS 1289.3.6.1
Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
9.5mm	100	
6.7mm	100	
4.75mm	100	
2.36mm	100	
1.18mm	99	
600µm	96	
425µm	82	
300µm	60	
150µm	37	
75µm	30	

Chart



Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902715
Issue No: 1
This report replaces all previous issues of report no 'SYD1902715'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

GHD Sample No	SYD19-0498-02
Date Sampled	08/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-LD03
Depth (m)	0.50 - 1.00
Soil Description	Gravelly sandy CLAY: dark brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	14.2	
Date Tested		19/11/2019	
Standard Maximum Dry Density (t/m³)	AS 1289.5.1.1	1.90	
Standard Optimum Moisture Content (%)		12.5	
Retained Sieve 19mm (%)		5	
Compactive Effort		Standard	
Date Tested		21/11/2019	
CBR At 2.5mm (%)	AS 1289.6.1.1 - 2014	**6**	
CBR At 5.0mm (%)		**6**	
Maximum Dry Density (t/m³)		1.90	
Optimum Moisture Content (%)		12.5	
Dry Density before Soaking (t/m³)		1.80	
Density Ratio before Soaking (%)		95.0	
Moisture Content before Soaking (%)		12.7	
Moisture Ratio before Soaking (%)		101.0	
Dry Density after Soaking (t/m³)		1.80	
Density Ratio after Soaking (%)		94.5	
Swell (%)		0.0	
Moisture Content of Top 30mm (%)		14.9	
Moisture Content of Remaining Depth (%)		15.2	
Compactive Effort		Standard	
Surcharge Mass (kg)		4.50	
Period of Soaking (Days)		4	
Oversize Material		Excluded	
Oversize Material (%)		5.5	
Date Tested		29/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902716
Issue No: 1
This report replaces all previous issues of report no 'SYD1902716'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

GHD Sample No	SYD19-0498-03
Date Sampled	08/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-LD04
Depth (m)	1.80 - 1.90
Soil Description	CLAY with sand dark grey brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	30.9	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	46	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	21	
Plasticity Index (%)	AS 1289.3.3.1	25	
Date Tested		22/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902717
Issue No: 1
This report replaces all previous issues of report no 'SYD1902717'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

GHD Sample No	SYD19-0498-04
Date Sampled	08/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-LD05
Depth (m)	0.70 - 1.00
Soil Description	CLAY with sand trace gravel dark grey brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	30.1	
Date Tested		20/11/2019	
Standard Maximum Dry Density (t/m³)	AS 1289.5.1.1	1.66	
Standard Optimum Moisture Content (%)		18.5	
Retained Sieve 19mm (%)		2	
Compactive Effort		Standard	
Date Tested		25/11/2019	
CBR At 2.5mm (%)	AS 1289.6.1.1 - 2014	**4.0**	
CBR At 5.0mm (%)		**3.5**	
Maximum Dry Density (t/m³)		1.66	
Optimum Moisture Content (%)		18.7	
Dry Density before Soaking (t/m³)		1.58	
Density Ratio before Soaking (%)		95.0	
Moisture Content before Soaking (%)		18.7	
Moisture Ratio before Soaking (%)		100.0	
Dry Density after Soaking (t/m³)		1.56	
Density Ratio after Soaking (%)		94.0	
Swell (%)		1.0	
Moisture Content of Top 30mm (%)		24.2	
Moisture Content of Remaining Depth (%)		23.7	
Compactive Effort		Standard	
Surcharge Mass (kg)		4.50	
Period of Soaking (Days)		4	
Oversize Material		Excluded	
Oversize Material (%)		2.3	
Date Tested		2/12/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902718
Issue No: 1
This report replaces all previous issues of report no 'SYD1902718'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 9/12/2019

Sample Details

GHD Sample No	SYD19-0498-05
Date Sampled	08/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-LD06
Depth (m)	1.10 - 1.50
Soil Description	CLAY with sand dark grey brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	45.3	
Date Tested		20/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	48	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	25	
Plasticity Index (%)	AS 1289.3.3.1	23	
Date Tested		22/11/2019	
Standard Maximum Dry Density (t/m³)	AS 1289.5.1.1	1.42	
Standard Optimum Moisture Content (%)		28.0	
Retained Sieve 19mm (%)		3	
Compactive Effort		Standard	
Date Tested		29/11/2019	
CBR At 2.5mm (%)	AS 1289.6.1.1 - 2014	**3.0**	
CBR At 5.0mm (%)		**3.0**	
Maximum Dry Density (t/m³)		1.42	
Optimum Moisture Content (%)		28.2	
Dry Density before Soaking (t/m³)		1.35	
Density Ratio before Soaking (%)		95.0	
Moisture Content before Soaking (%)		28.2	
Moisture Ratio before Soaking (%)		100.0	
Dry Density after Soaking (t/m³)		1.34	
Density Ratio after Soaking (%)		94.0	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902718
Issue No: 1
This report replaces all previous issues of report no 'SYD1902718'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 9/12/2019

Sample Details

GHD Sample No	SYD19-0498-05
Date Sampled	08/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-LD06
Depth (m)	1.10 - 1.50
Soil Description	CLAY with sand dark grey brown

Test Results

Description	Method	Result	Limits
Swell (%)		0.5	
Moisture Content of Top 30mm (%)		31.7	
Moisture Content of Remaining Depth (%)		31.5	
Compactive Effort		Standard	
Surcharge Mass (kg)		4.50	
Period of Soaking (Days)		4	
Oversize Material		Excluded	
Oversize Material (%)		2.8	
Date Tested		6/12/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902719
Issue No: 1
This report replaces all previous issues of report no 'SYD1902719'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

GHD Sample No	SYD19-0498-06
Date Sampled	09/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-LD07
Depth (m)	0.50 - 1.00
Soil Description	Gravelly clayey SAND yellow brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	11.1	
Date Tested		19/11/2019	
Standard Maximum Dry Density (t/m³)	AS 1289.5.1.1	1.92	
Standard Optimum Moisture Content (%)		11.0	
Retained Sieve 19mm (%)		6	
Compactive Effort		Standard	
Date Tested		21/11/2019	
CBR At 2.5mm (%)	AS 1289.6.1.1 - 2014	**7**	
CBR At 5.0mm (%)		**6**	
Maximum Dry Density (t/m³)		1.92	
Optimum Moisture Content (%)		11.2	
Dry Density before Soaking (t/m³)		1.82	
Density Ratio before Soaking (%)		95.0	
Moisture Content before Soaking (%)		11.3	
Moisture Ratio before Soaking (%)		100.0	
Dry Density after Soaking (t/m³)		1.82	
Density Ratio after Soaking (%)		94.5	
Swell (%)		0.5	
Moisture Content of Top 30mm (%)		13.8	
Moisture Content of Remaining Depth (%)		14.5	
Compactive Effort		Standard	
Surcharge Mass (kg)		4.50	
Period of Soaking (Days)		4	
Oversize Material		Excluded	
Oversize Material (%)		5.9	
Date Tested		29/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902720
Issue No: 1
This report replaces all previous issues of report no 'SYD1902720'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

GHD Sample No	SYD19-0498-07
Date Sampled	09/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A1-LD10
Depth (m)	1.20 - 1.50
Soil Description	CLAY with sand brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	28.0	
Date Tested		20/11/2019	
Standard Maximum Dry Density (t/m³)	AS 1289.5.1.1	1.53	
Standard Optimum Moisture Content (%)		25.0	
Retained Sieve 19mm (%)		0	
Compactive Effort		Standard	
Date Tested		25/11/2019	
CBR At 2.5mm (%)	AS 1289.6.1.1 - 2014	**2.5**	
CBR At 5.0mm (%)		**2.0**	
Maximum Dry Density (t/m³)		1.53	
Optimum Moisture Content (%)		25.2	
Dry Density before Soaking (t/m³)		1.46	
Density Ratio before Soaking (%)		95.0	
Moisture Content before Soaking (%)		25.1	
Moisture Ratio before Soaking (%)		99.5	
Dry Density after Soaking (t/m³)		1.44	
Density Ratio after Soaking (%)		94.0	
Swell (%)		1.0	
Moisture Content of Top 30mm (%)		28.8	
Moisture Content of Remaining Depth (%)		28.0	
Compactive Effort		Standard	
Surcharge Mass (kg)		4.50	
Period of Soaking (Days)		4	
Oversize Material		Excluded	
Oversize Material (%)		0.2	
Date Tested		2/12/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902721
Issue No: 1
This report replaces all previous issues of report no 'SYD1902721'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

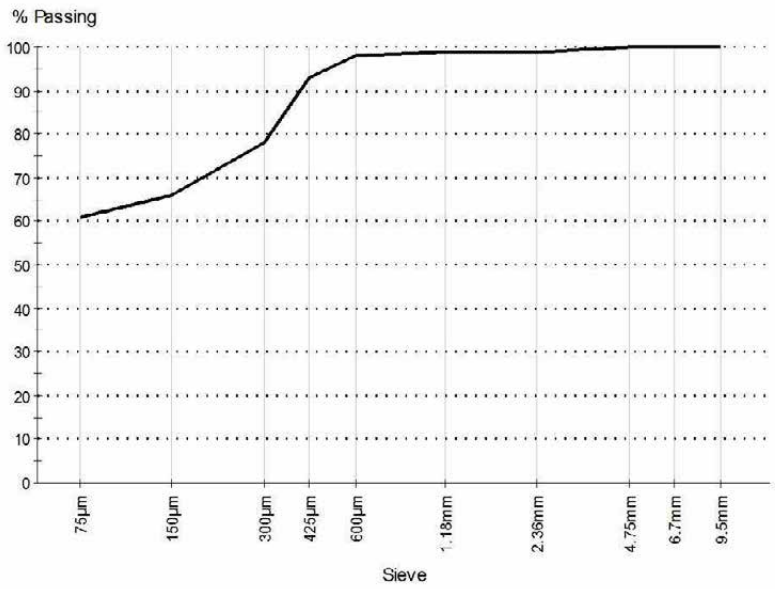
GHD Sample No	SYD19-0498-08
Date Sampled	18/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2-BH02
Depth (m)	2.50 - 2.95
Soil Description	Sandy CLAY mottled red, grey & brown

Other Test Results

Description	Method	Result	Limits

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 22/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
9.5mm	100	
6.7mm	100	
4.75mm	100	
2.36mm	99	
1.18mm	99	
600µm	98	
425µm	93	
300µm	78	
150µm	66	
75µm	61	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902722
Issue No: 1
This report replaces all previous issues of report no 'SYD1902722'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

GHD Sample No	SYD19-0498-09
Date Sampled	18/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2-BH02
Depth (m)	3.50 - 3.95
Soil Description	CLAY with sand mottled red, grey & brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	15.9	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	40	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	14	
Plasticity Index (%)	AS 1289.3.3.1	26	
Date Tested		21/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902723
Issue No: 1
This report replaces all previous issues of report no 'SYD1902723'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

GHD Sample No	SYD19-0498-10
Date Sampled	16/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2-BH03
Depth (m)	0.70 - 0.90
Soil Description	Sandy CLAY red brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	11.9	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	49	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	21	
Plasticity Index (%)	AS 1289.3.3.1	28	
Date Tested		22/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902724
Issue No: 1
This report replaces all previous issues of report no 'SYD1902724'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0499-01
Date Sampled	11/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2-BH04
Depth (m)	0.30 - 0.50m
Soil Description	CLAY with sand dark grey

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	10.0	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	N/A	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	23	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	13	
Plasticity Index (%)	AS 1289.3.3.1	10	
Date Tested		25/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902725
Issue No: 1
This report replaces all previous issues of report no 'SYD1902725'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0499-02
Date Sampled	14/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2D-BH07
Depth (m)	2.50 - 2.95m
Soil Description	CLAY with sand brown speckled red

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	16.3	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	30	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	13	
Plasticity Index (%)	AS 1289.3.3.1	17	
Date Tested		25/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902726
Issue No: 1
This report replaces all previous issues of report no 'SYD1902726'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0499-03
Date Sampled	11/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2D-BH08
Depth (m)	1.00 - 1.20m
Soil Description	CLAY with sand trace gravel mottled red, grey, brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	16.4	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	32	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	15	
Plasticity Index (%)	AS 1289.3.3.1	17	
Date Tested		21/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902728
Issue No: 1
This report replaces all previous issues of report no 'SYD1902728'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0499-05
Date Sampled	11/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2D-BH09
Depth (m)	2.40 - 2.65m
Soil Description	CLAY mottled yellow, grey, brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	20.4	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	39	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	15	
Plasticity Index (%)	AS 1289.3.3.1	24	
Date Tested		26/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902727
Issue No: 1
This report replaces all previous issues of report no 'SYD1902727'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

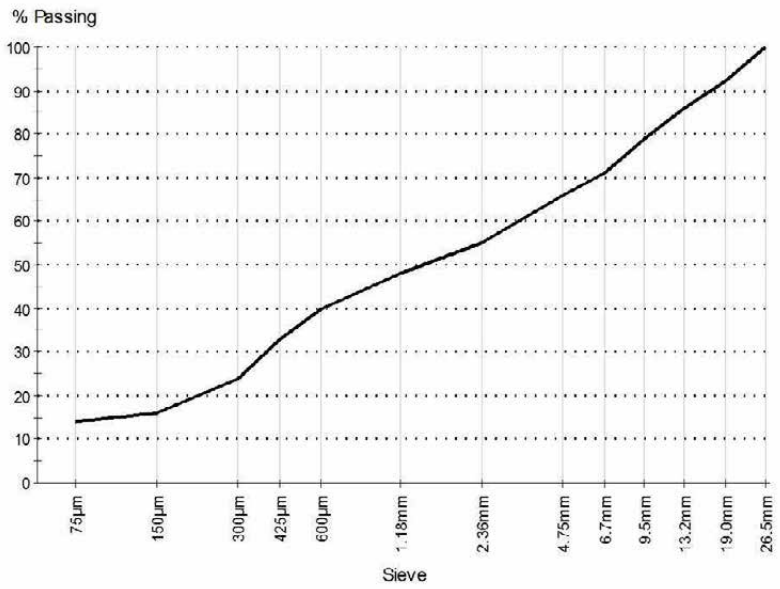
GHD Sample No	SYD19-0499-04
Date Sampled	11/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2D-BH09
Depth (m)	1.25 - 1.40m
Soil Description	Clayey SANDY GRAVEL red brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	11.5	
Date Tested		19/11/2019	

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 22/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
26.5mm	100	
19.0mm	92	
13.2mm	86	
9.5mm	79	
6.7mm	71	
4.75mm	66	
2.36mm	55	
1.18mm	48	
600µm	40	
425µm	33	
300µm	24	
150µm	16	
75µm	14	

Comments

Small sample - Insufficient sample mass to comply with minimum mass requirements AS1289 1.1

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Aggregate/Soil Test Report

Report No: SYD1902729
Issue No: 1
This report replaces all previous issues of report no 'SYD1902729'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0499-06
Date Sampled	11/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2D-LD02
Depth (m)	1.10 - 1.40m
Soil Description	Sandy CLAY dark brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	9.6	
Date Tested		21/11/2019	
Standard Maximum Dry Density (t/m³)	AS 1289.5.1.1	1.75	
Standard Optimum Moisture Content (%)		14.0	
Retained Sieve 19mm (%)		2	
Compactive Effort		Standard	
Date Tested		21/11/2019	
CBR At 2.5mm (%)	AS 1289.6.1.1 - 2014	**8**	
CBR At 5.0mm (%)		**6**	
Maximum Dry Density (t/m³)		1.75	
Optimum Moisture Content (%)		13.8	
Dry Density before Soaking (t/m³)		1.66	
Density Ratio before Soaking (%)		94.5	
Moisture Content before Soaking (%)		13.8	
Moisture Ratio before Soaking (%)		100.0	
Dry Density after Soaking (t/m³)		1.66	
Density Ratio after Soaking (%)		94.5	
Swell (%)		0.5	
Moisture Content of Top 30mm (%)		18.1	
Moisture Content of Remaining Depth (%)		17.3	
Compactive Effort		Standard	
Surcharge Mass (kg)		4.50	
Period of Soaking (Days)		4	
Oversize Material		Excluded	
Oversize Material (%)		2.4	
Date Tested		29/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902730
Issue No: 1
This report replaces all previous issues of report no 'SYD1902730'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0499-07
Date Sampled	11/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2D-LD03
Depth (m)	0.20 - 1.00m
Soil Description	CLAY with sand pale grey brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	13.2	
Date Tested		19/11/2019	
Standard Maximum Dry Density (t/m³)	AS 1289.5.1.1	1.81	
Standard Optimum Moisture Content (%)		14.5	
Retained Sieve 19mm (%)		0	
Compactive Effort		Standard	
Date Tested		21/11/2019	
CBR At 2.5mm (%)	AS 1289.6.1.1 - 2014	**3.5**	
CBR At 5.0mm (%)		**3.0**	
Maximum Dry Density (t/m³)		1.81	
Optimum Moisture Content (%)		14.6	
Dry Density before Soaking (t/m³)		1.70	
Density Ratio before Soaking (%)		94.0	
Moisture Content before Soaking (%)		14.6	
Moisture Ratio before Soaking (%)		99.5	
Dry Density after Soaking (t/m³)		1.69	
Density Ratio after Soaking (%)		93.0	
Swell (%)		0.5	
Moisture Content of Top 30mm (%)		18.3	
Moisture Content of Remaining Depth (%)		18.2	
Compactive Effort		Standard	
Surcharge Mass (kg)		4.50	
Period of Soaking (Days)		4	
Oversize Material		Excluded	
Oversize Material (%)		0.3	
Date Tested		29/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902731
Issue No: 1
This report replaces all previous issues of report no 'SYD1902731'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0500-01
Date Sampled	11/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2D-LD03
Depth (m)	1.00 - 2.00
Soil Description	CLAY: mottled red/pale grey

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	16.0	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	52	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	17	
Plasticity Index (%)	AS 1289.3.3.1	35	
Date Tested		25/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902732
Issue No: 1
This report replaces all previous issues of report no 'SYD1902732'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0500-02
Date Sampled	16/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2D-LD04
Depth (m)	1.50 - 3.95 combined
Soil Description	Sandy CLAY trace gravel mottled red/pale grey/brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	9.5	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
	AS 1289.3.4.1		
Linear Shrinkage (%)		Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	28	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	16	
Plasticity Index (%)	AS 1289.3.3.1	12	
Date Tested		26/11/2019	

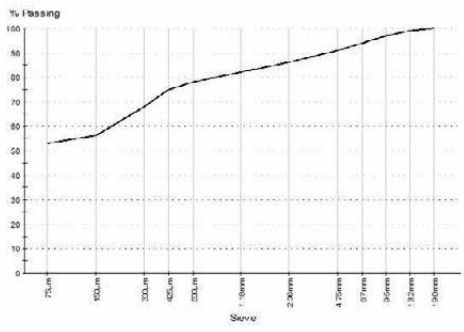
Particle Size Distribution

Method: AS 1289.3.6.1
Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
19.0mm	100	
13.2mm	99	
9.5mm	97	
6.7mm	94	
4.75mm	91	
2.36mm	86	
1.18mm	82	
600µm	78	
425µm	75	
300µm	68	
150µm	56	
75µm	53	

Chart



Comments

N/A

Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902763.1
		Job No.:	12515105
Project:	The GreenWay Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-04
		Test Date:	03.12.2019
Client Id.:	n/av	**Borehole No.:** A2D-LD04	**Depth (m):** 4.10 to 4.40
Description:	CLAY with sand, trace gravel, pale brown		
Sample History:	Sampled by GHD	**Sample Type:**	Remoulded

SAMPLE INFORMATION

Specimen No.:	1		
Initial Height (mm):	125.5		
Initial Diameter (mm):	63.5		
Initial Wet Density (t/m³):	2.04		
Initial Dry Density (t/m³):	1.80	MDD (t/m³):	1.87
Initial Moisture Content (%):	13.3	OMC (%):	13.3
Final Moisture Content: Top (%):	16.5		
Middle (%):	15.5	**Note:**	Material passing 9.5mm used for sample
Bottom (%):	16.4		
B Response (%):	97.8		

TEST DATA (Multi-Stage Test)

Stage No.:	**1**	**2**	**3**
Back Pressure (kPa):	500	500	500
Effective Consolidation Stress (kPa):	50	100	200
Rate of Strain (mm/min):	0.00122	0.00122	0.00122
Deviator Stress at Failure (kPa):	75	127	231
Pore Water Pressure at Failure (kPa):	15	38	84
Consolidation Volume Change (ml):	5.4	9.3	14.8
Strain at Failure (%):	1.4	2.5	6.7
σ'_1 (kPa):	110	187	344
σ'_3 (kPa):	35	61	112

Test Comments: Side drains not used
No visible shear failure plane

Remarks:

Tested By: S. Ihnativ

Checked By: TSH

Approved Signatory:

D. Brooke

Date: 19/12/2019

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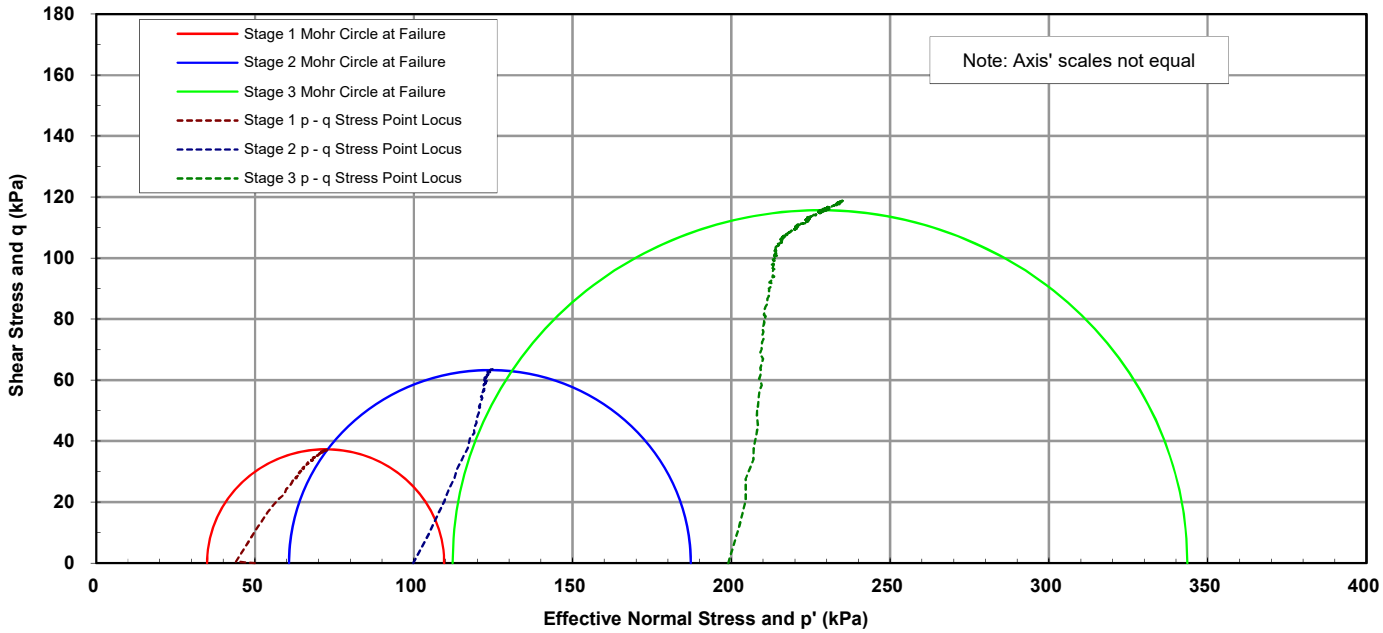
Accredited for compliance with ISO/IEC 17025 - Testing
Laboratory Accreditation Number 679

Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

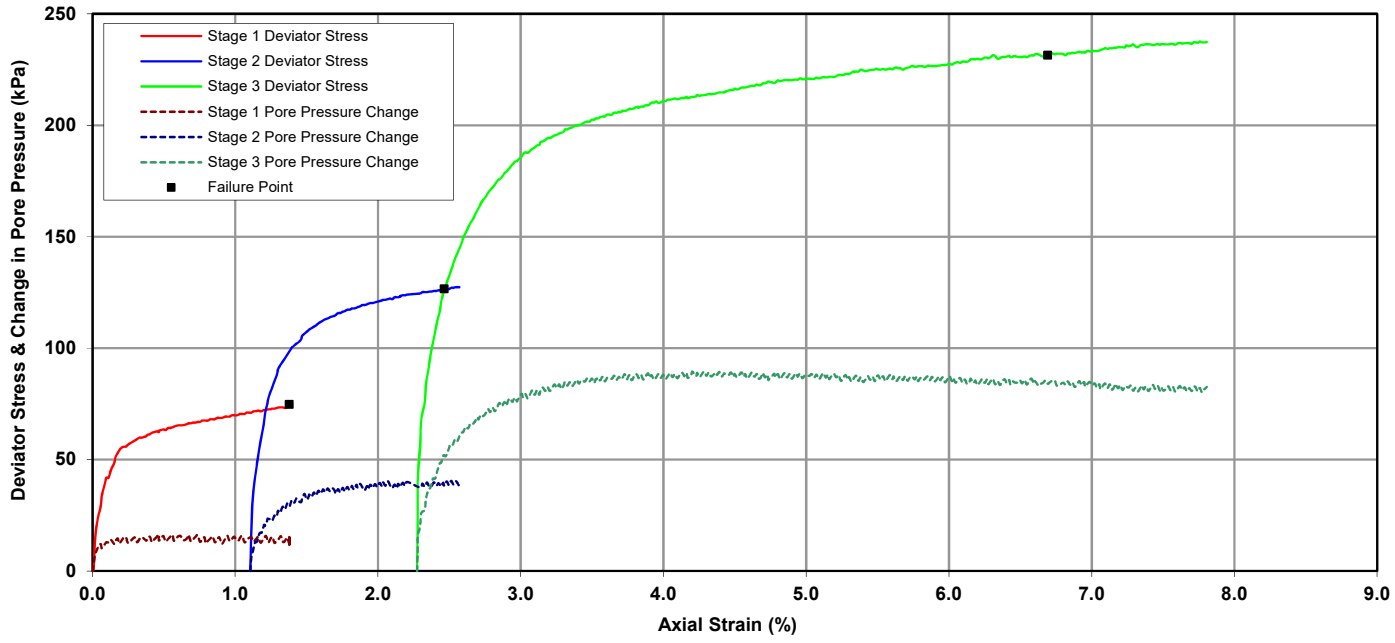
Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902763.1
		Job No.:	12515105
Project:	The GreenWay Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-04
		Test Date:	03.12.2019
Client Id.:	n/av	**Borehole No.:**	A2D-LD04
		Depth (m):	4.10 to 4.40



Interpretation between stages :	**1 to 2**	**2 to 3**	**3 to 4**	**4 to 5**	**1 to 3**
Effective Cohesion c' (kPa) :	**1**	**1**			**1**
Angle of effective internal friction Φ' (Degrees) :	**30**	**30**			**30**

Angle of effective internal friction and effective cohesion for this result calculated by linear regression.
Geotechnical Engineer should appraise result.



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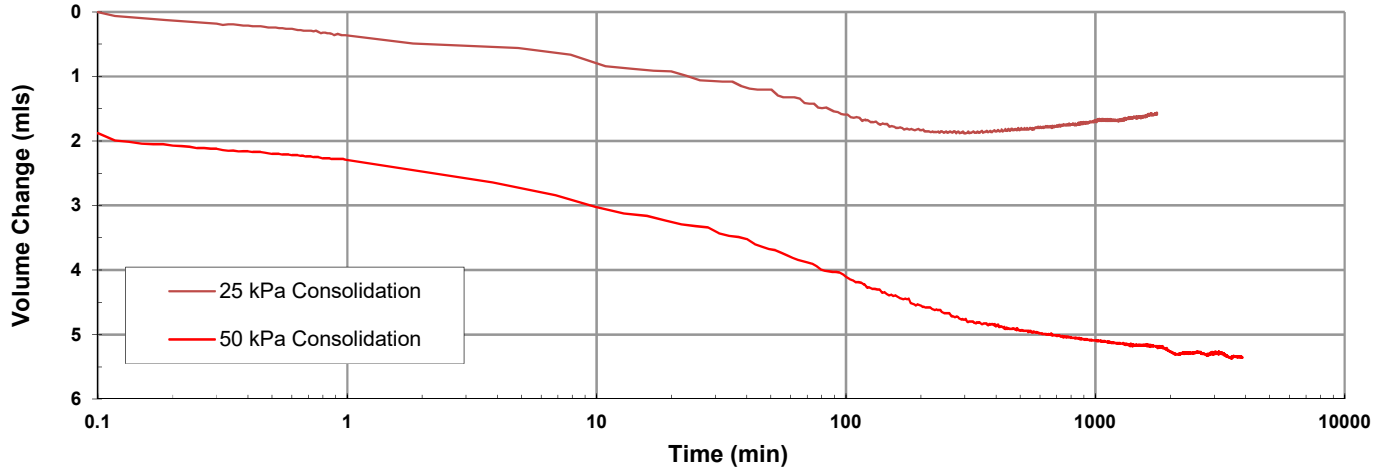
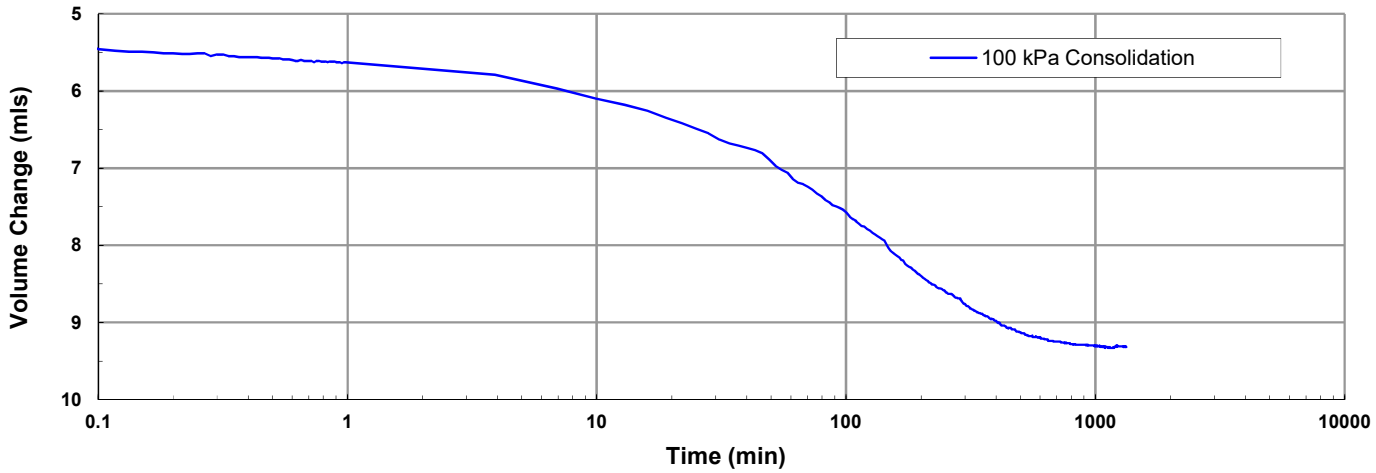
Geotechnical Testing Services

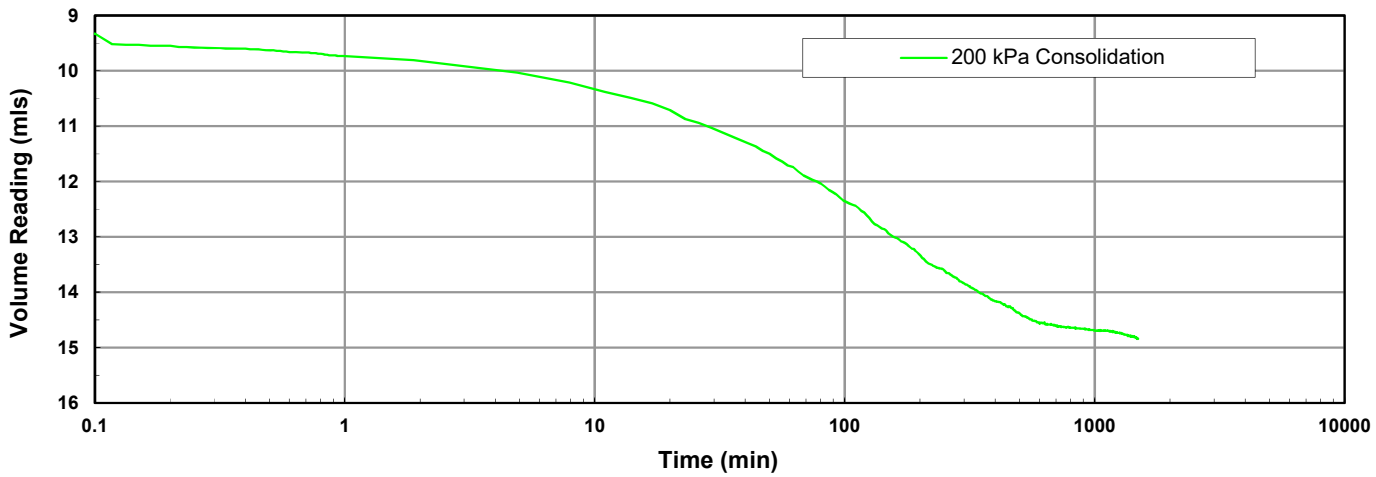
Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902763.1
		Job No.:	12515105
Project:	The GreenWay Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-04
		Test Date:	03.12.2019
Client Id.:	n/av	**Borehole No.:** A2D-LD04	**Depth (m):** 4.10 to 4.40







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Aggregate/Soil Test Report

Report No: SYD1902763
Issue No: 1
This report replaces all previous issues of report no 'SYD1902763'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

GHD Sample No	SYD19-0504-04
Date Sampled	16/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2D-LD04
Depth (m)	4.10 - 4.40
Soil Description	CLAY with sand trace gravel pale brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	9.9	
Date Tested		20/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	32	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	16	
Plasticity Index (%)	AS 1289.3.3.1	16	
Date Tested		3/12/2019	
Standard Maximum Dry Density (t/m³)	AS 1289.5.1.1	1.87	
Standard Optimum Moisture Content (%)		13.5	
Retained Sieve 19mm (%)		0	
Compactive Effort		Standard	
Date Tested		25/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902733
Issue No: 1
This report replaces all previous issues of report no 'SYD1902733'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0500-03
Date Sampled	16/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A2D-LD04
Depth (m)	4.50 - 6.95 combined
Soil Description	Sandy CLAY trace Gravel mottled red/pale grey/brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	10.1	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
	AS 1289.3.4.1		
Linear Shrinkage (%)		Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	29	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	16	
Plasticity Index (%)	AS 1289.3.3.1	13	
Date Tested		26/11/2019	

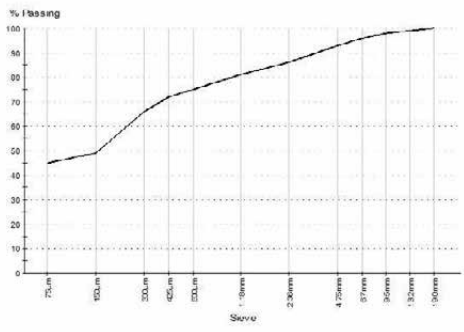
Particle Size Distribution

Method: AS 1289.3.6.1
Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
19.0mm	100	
13.2mm	99	
9.5mm	98	
6.7mm	96	
4.75mm	93	
2.36mm	86	
1.18mm	81	
600µm	75	
425µm	72	
300µm	66	
150µm	49	
75µm	45	

Chart



Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902734
Issue No: 1
This report replaces all previous issues of report no 'SYD1902734'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0500-04
Date Sampled	10/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH01
Depth (m)	1.20 - 1.30
Soil Description	CLAY with Sand trace gravel: red

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	17.4	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	63	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	27	
Plasticity Index (%)	AS 1289.3.3.1	36	
Date Tested		26/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902735
Issue No: 1
This report replaces all previous issues of report no 'SYD1902735'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0500-05
Date Sampled	10/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH03
Depth (m)	1.70 - 1.80
Soil Description	CLAY: mottled pale grey/red/brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	17.9	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	65	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	25	
Plasticity Index (%)	AS 1289.3.3.1	40	
Date Tested		27/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902736
Issue No: 1
This report replaces all previous issues of report no 'SYD1902736'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0500-06
Date Sampled	10/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH04
Depth (m)	0.50 - 0.95
Soil Description	CLAY with Sand: brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	14.5	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	31	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	17	
Plasticity Index (%)	AS 1289.3.3.1	14	
Date Tested		27/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902737
Issue No: 2
This report replaces all previous issues of report no 'SYD1902737'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 11/12/2019

Sample Details

GHD Sample No	SYD19-0501-01
Date Sampled	11/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH04
Depth (m)	1.50 - 1.95
Soil Description	CLAY with Sand: orange/brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	14.7	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	37	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	16	
Plasticity Index (%)	AS 1289.3.3.1	21	
Date Tested		28/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902738
Issue No: 1
This report replaces all previous issues of report no 'SYD1902738'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0501-02
Date Sampled	11/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH04
Depth (m)	2.50 - 2.95m
Soil Description	Gravelly CLAY: with sand mottled red/pale grey/brown

Other Test Results

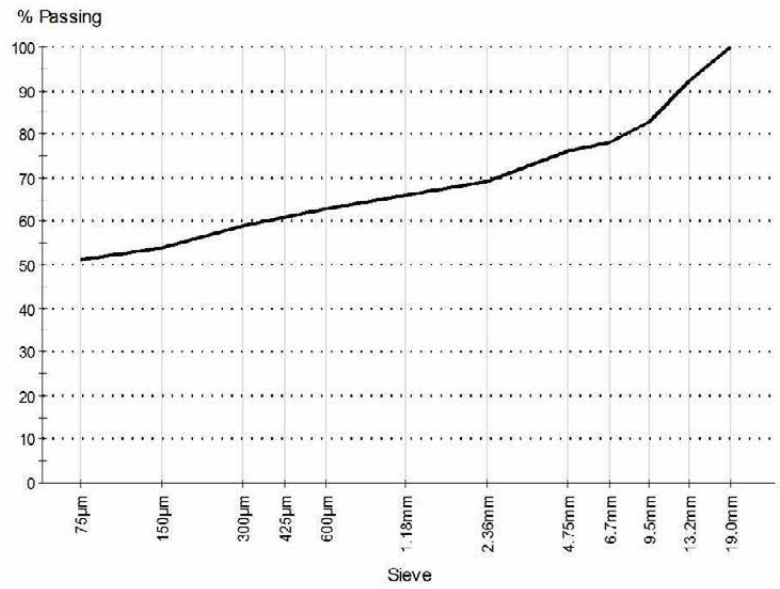
Description	Method	Result	Limits

Particle Size Distribution

AS 1289.3.6.1

Drying by: Oven
Date Tested: 22/11/2019

Note: Sample Washed



Sieve Size	% Passing	Limits
19.0mm	100	
13.2mm	92	
9.5mm	83	
6.7mm	78	
4.75mm	76	
2.36mm	69	
1.18mm	66	
600µm	63	
425µm	61	
300µm	59	
150µm	54	
75µm	51	

Comments

Small sample - Insufficient sample mass to comply with minimum mass requirements AS1289 1.1

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Aggregate/Soil Test Report

Report No: SYD1902739
Issue No: 1
This report replaces all previous issues of report no 'SYD1902739'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0501-03
Date Sampled	11/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH05
Depth (m)	0.50 - 1.95 combined
Soil Description	Silty-clayey SAND with Gravel: brown/red

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	13.8	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
	AS 1289.3.4.1		
Linear Shrinkage (%)		Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	25	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	20	
Plasticity Index (%)	AS 1289.3.3.1	5	
Date Tested		27/11/2019	

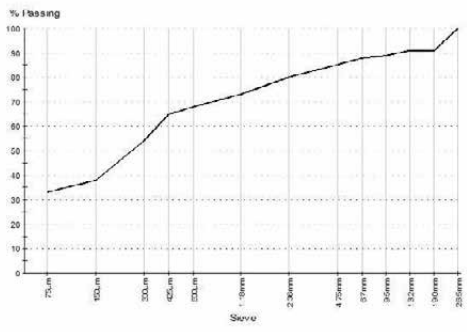
Particle Size Distribution

Method: AS 1289.3.6.1
Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
26.5mm	100	
19.0mm	91	
13.2mm	91	
9.5mm	89	
6.7mm	88	
4.75mm	85	
2.36mm	80	
1.18mm	73	
600µm	68	
425µm	65	
300µm	54	
150µm	38	
75µm	33	

Chart



Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902740
Issue No: 1
This report replaces all previous issues of report no 'SYD1902740'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0501-04
Date Sampled	21/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH05
Depth (m)	2.50 - 2.95m
Soil Description	CLAY: red/pale grey

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	16.9	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	55	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	20	
Plasticity Index (%)	AS 1289.3.3.1	35	
Date Tested		27/11/2019	

Comments

N/A

Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902764.1
		Job No.:	12515105
Project:	The Greenway Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-05
		Test Date:	21.11.2019
Client Id.:	n/av	**Borehole No.:** A3-BH06	**Depth (m):** 1.50 to 2.95 (Combined)
Description:	mottled red brown and grey CLAY		
Sample History:	Sampled by GHD	**Sample Type:**	SPT Combined Sample

SAMPLE INFORMATION

Specimen No.:	**1**
Initial Height (mm):	101.6
Initial Diameter (mm):	50.4
Initial Wet Density (t/m³):	2.06
Initial Dry Density (t/m³):	1.83
Initial Moisture Content (%):	12.5
Final Moisture Content: Top (%):	16.5
Middle (%):	16.7
Bottom (%):	17.1
B Response (%):	98.6

Note: Sample remoulded to an approximate medium relative density SPT N value of 10 (Bulk density 2000 kg/m³)
Material passing 4.75mm used for sample

TEST DATA (Multi-Stage Test)

Stage No.:	**1**	**2**	**3**
Back Pressure (kPa):	500	500	500
Effective Consolidation Stress (kPa):	50	100	200
Rate of Strain (mm/min):	0.00122	0.00122	0.00122
Deviator Stress at Failure (kPa):	105	180	301
Pore Water Pressure at Failure (kPa):	12	32	87
Consolidation Volume Change (ml):	6.3	8.4	10.9
Strain at Failure (%):	1.4	2.4	4.9
σ'_1 (kPa):	144	247	413
σ'_3 (kPa):	39	67	112

Test Comments: Side drains not used
No visible shear failure plane

Remarks:

Tested By: S. Ihnativ

Checked By: TSH

Approved Signatory:

D. Brooke
Date: 20/12/2019

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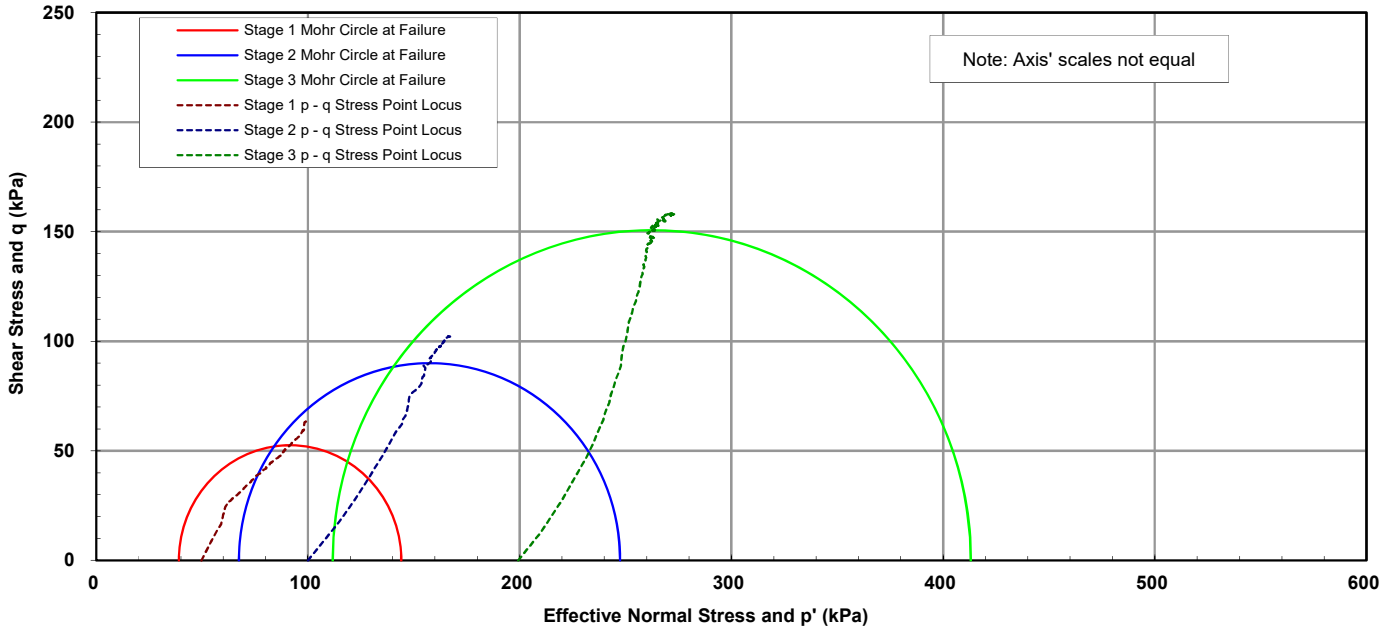
Geotechnical Testing Services

Accredited for compliance with ISO/IEC 17025 - Testing
Laboratory Accreditation Number 679

Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

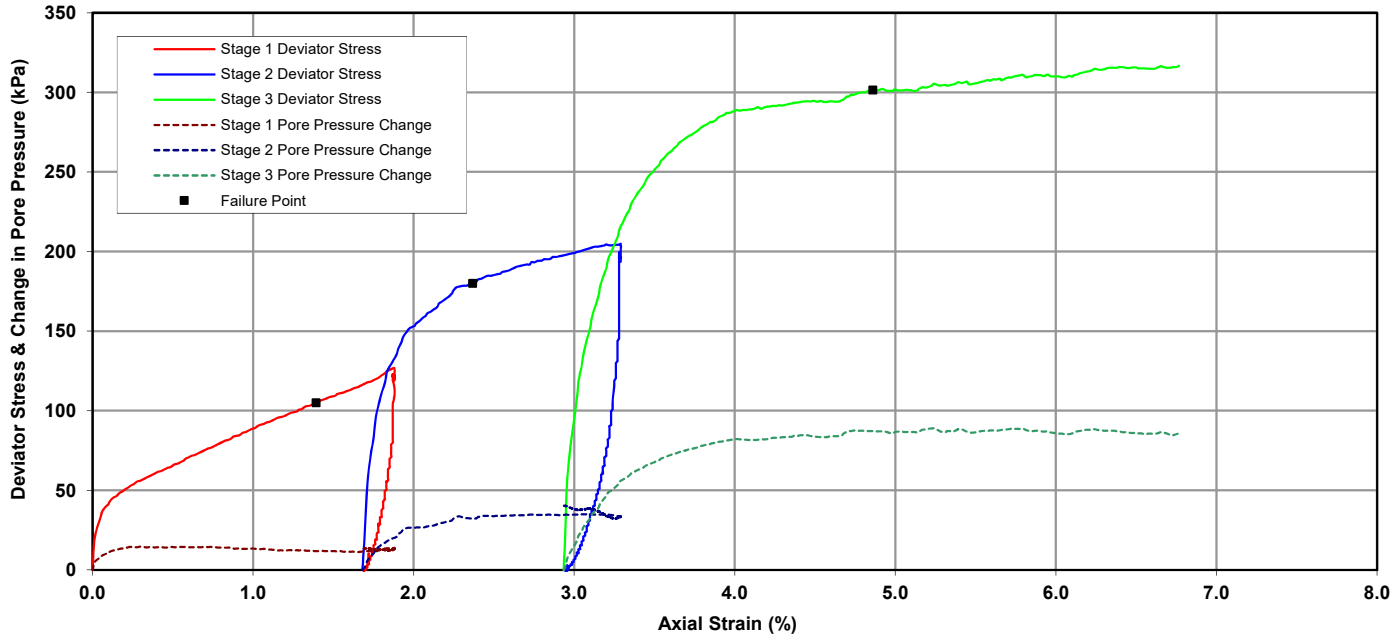
Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902764.1
		Job No.:	12515105
Project:	The Greenway Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-05
		Test Date:	21.11.2019
Client Id.:	n/av	**Borehole No.:**	A3-BH06
		Depth (m):	1.50 to 2.95 (Combined)



Interpretation between stages :	**1 to 2**	**2 to 3**	**3 to 4**	**4 to 5**	**1 to 3**
Effective Cohesion c' (kPa) :	**1**	**0**			**0**
Angle of effective internal friction Φ' (Degrees) :	**35**	**35**			**35**

Angle of effective internal friction and effective cohesion for this result calculated by linear regression.
Geotechnical Engineer should appraise result.



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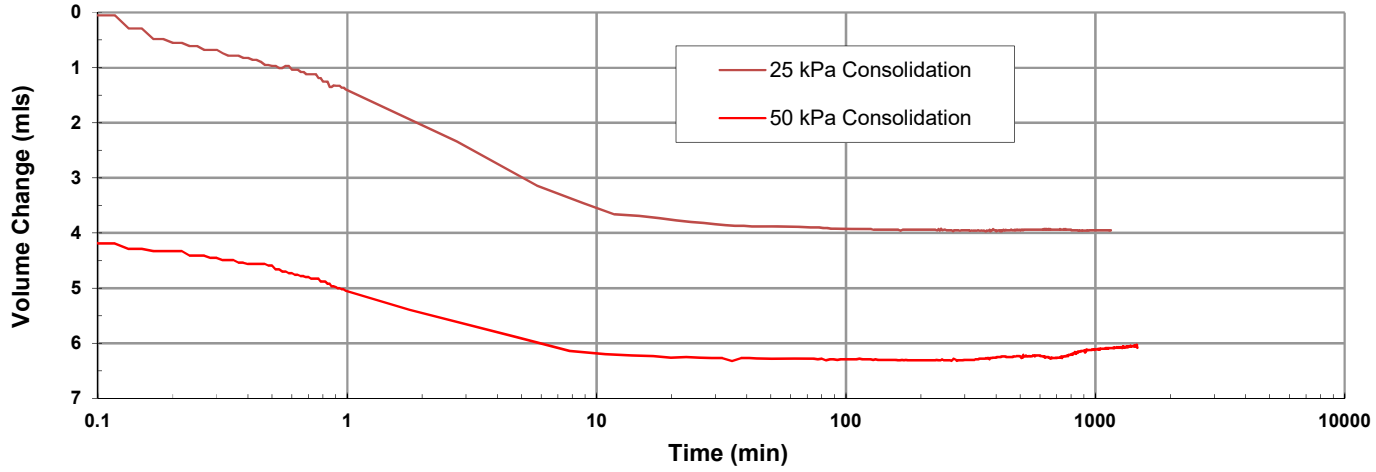
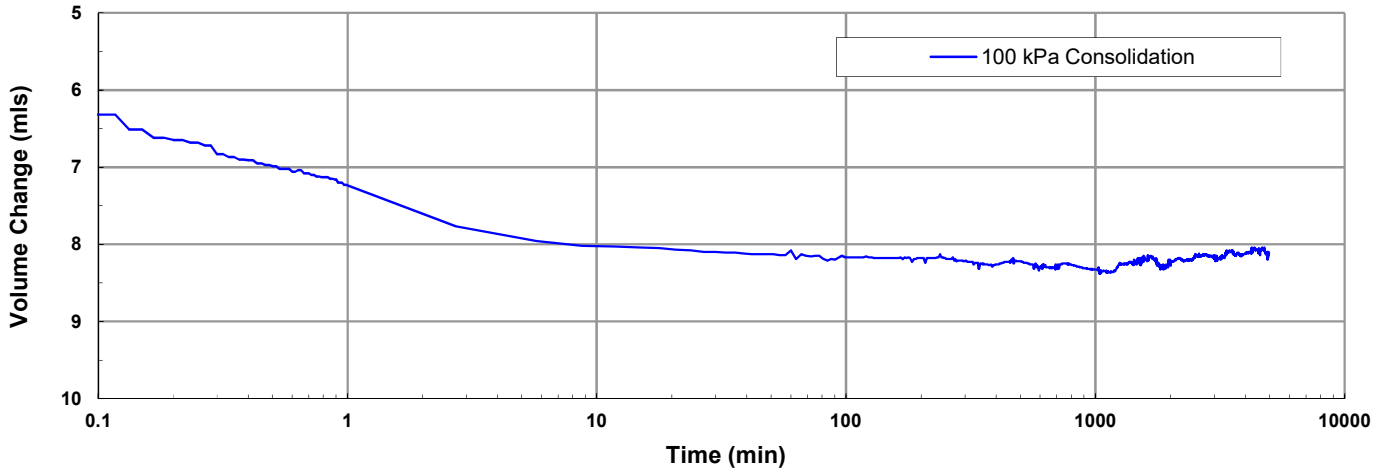
Geotechnical Testing Services

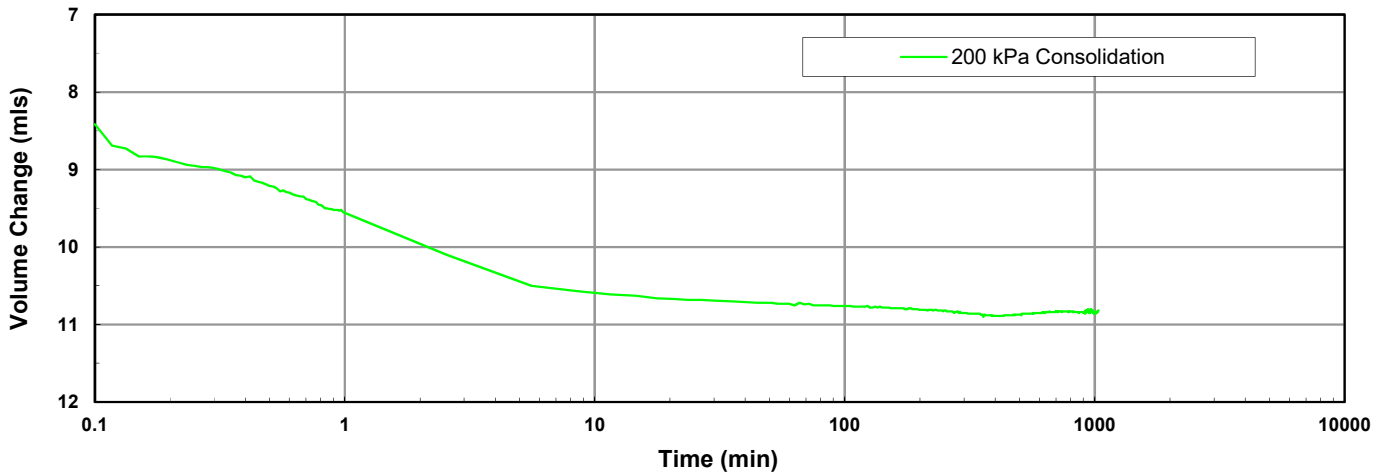
Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902764.1
		Job No.:	12515105
Project:	The Greenway Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-05
		Test Date:	21.11.2019
Client Id.:	n/av	**Borehole No.:** A3-BH06	**Depth (m):** 1.50 to 2.95 (Combined)







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Aggregate/Soil Test Report

Report No: SYD1902764
Issue No: 1
This report replaces all previous issues of report no 'SYD1902764'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 16/01/2020

Sample Details

GHD Sample No	SYD19-0504-05
Date Sampled	17/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH06
Depth (m)	1.5 - 1.95
Soil Description	CLAY: mottled red brown & grey

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	12.5	
Date Tested		3/12/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	28	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	15	
Plasticity Index (%)	AS 1289.3.3.1	13	
Date Tested		18/12/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902765
Issue No: 1
This report replaces all previous issues of report no 'SYD1902765'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 20/12/2019

Sample Details

GHD Sample No	SYD19-0504-06
Date Sampled	17/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH06
Depth (m)	3.50-4.95 combined
Soil Description	CLAY: with gravel grey

Test Results

Description	Method	Result	Limits
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	35	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	19	
Plasticity Index (%)	AS 1289.3.3.1	16	
Date Tested		3/12/2019	

Comments

N/A

Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902765.1
		Job No.:	1251505
Project:	The GreenWay Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-06
		Test Date:	05.01.2020
Client Id.:	n/av	**Borehole No.:** A3-BH06	**Depth (m):** 3.50 to 4.95 (Combined)
Description:	CLAY with gravel: grey		
Sample History:	Sampled by GHD	**Sample Type:**	SPT Combined Sample

SAMPLE INFORMATION

Specimen No.:	1
Initial Height (mm):	99.6
Initial Diameter (mm):	51.2
Initial Wet Density (t/m³):	1.92
Initial Dry Density (t/m³):	1.55
Initial Moisture Content (%):	24.0
Final Moisture Content: Top (%):	23.0
Middle (%):	23.6
Bottom (%):	22.3
B Response (%):	98.3

Note: Sample remoulded to an approximate medium relative density SPT N value of 10 (Bulk density 2000 kg/m³)
Material passing 4.75mm used for sample

TEST DATA (Multi-Stage Test)

Stage No.:	**1**	**2**	**3**
Back Pressure (kPa):	500	500	500
Effective Consolidation Stress (kPa):	50	100	200
Rate of Strain (mm/min):	0.0024	0.0024	0.0024
Deviator Stress at Failure (kPa):	111	195	308
Pore Water Pressure at Failure (kPa):	24	36	80
Consolidation Volume Change (ml):	1.3	3.1	5.9
Strain at Failure (%):	2.1	4.7	7.5
σ'_1 (kPa):	135	257	427
σ'_3 (kPa):	25	63	119

Test Comments: Side drains not used
No visible shear failure plane

Remarks:

Tested By: S. Ihnativ

Checked By: TSH

Approved Signatory:

D. Brooke

Date: 3/02/2020

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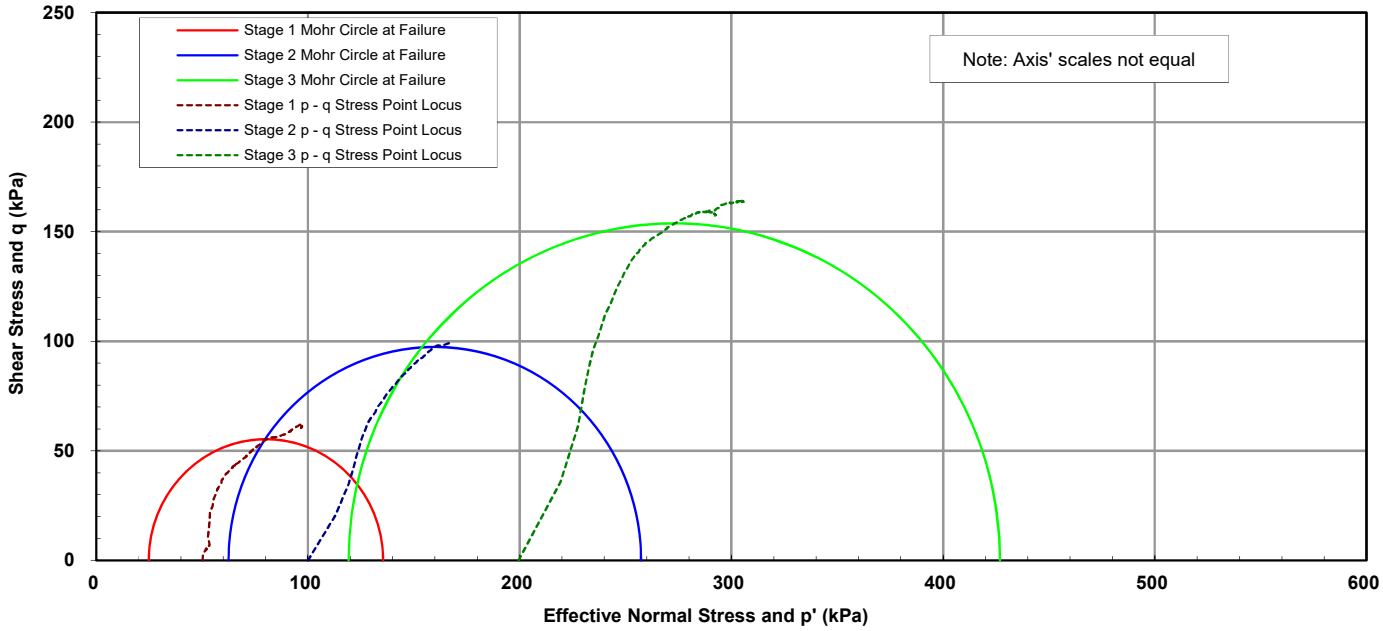
Geotechnical Testing Services

Accredited for compliance with ISO/IEC 17025 - Testing
Laboratory Accreditation Number 679

Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

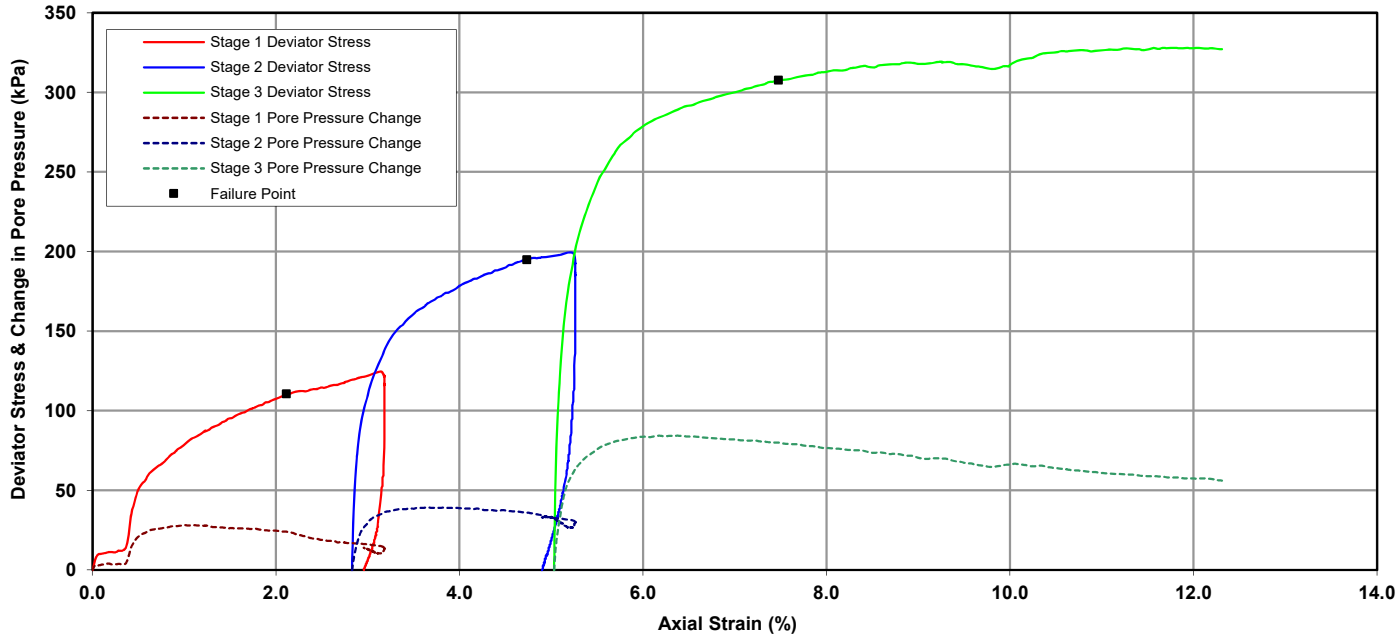
Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902765.1
		Job No.:	1251505
Project:	The GreenWay Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-06
		Test Date:	05.01.2020
Client Id.:	n/av	**Borehole No.:**	A3-BH06
		Depth (m):	3.50 to 4.95 (Combined)



	1 to 2	2 to 3	3 to 4	4 to 5	1 to 3
Interpretation between stages :					
Effective Cohesion c' (kPa) :	15	20			17
Angle of effective internal friction Φ' (Degrees) :	32	30			31

Angle of effective internal friction and effective cohesion for this result calculated by linear regression.
Geotechnical Engineer should appraise result.



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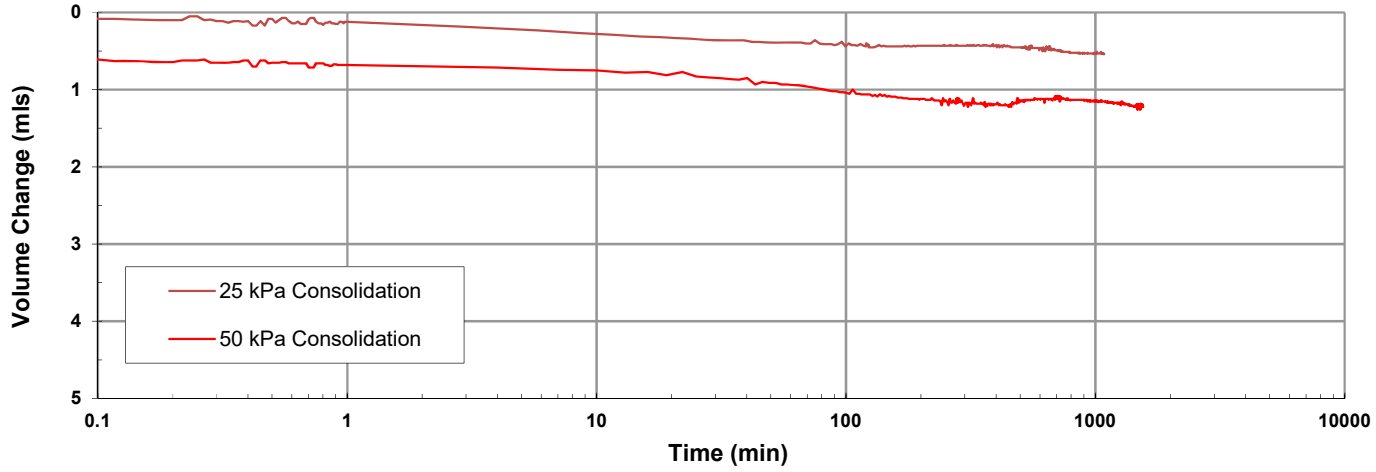
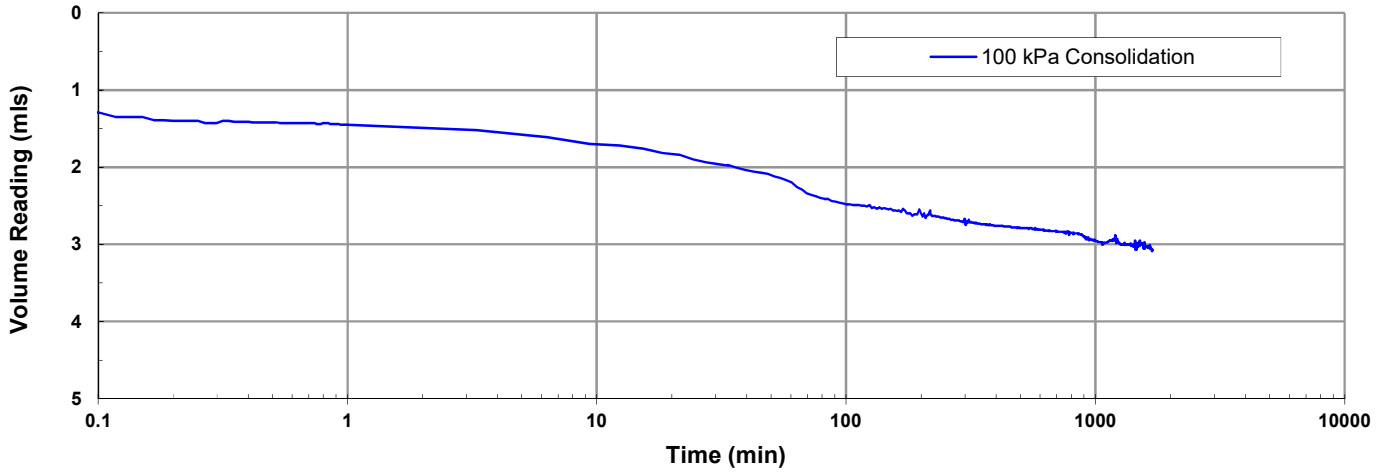
Geotechnical Testing Services

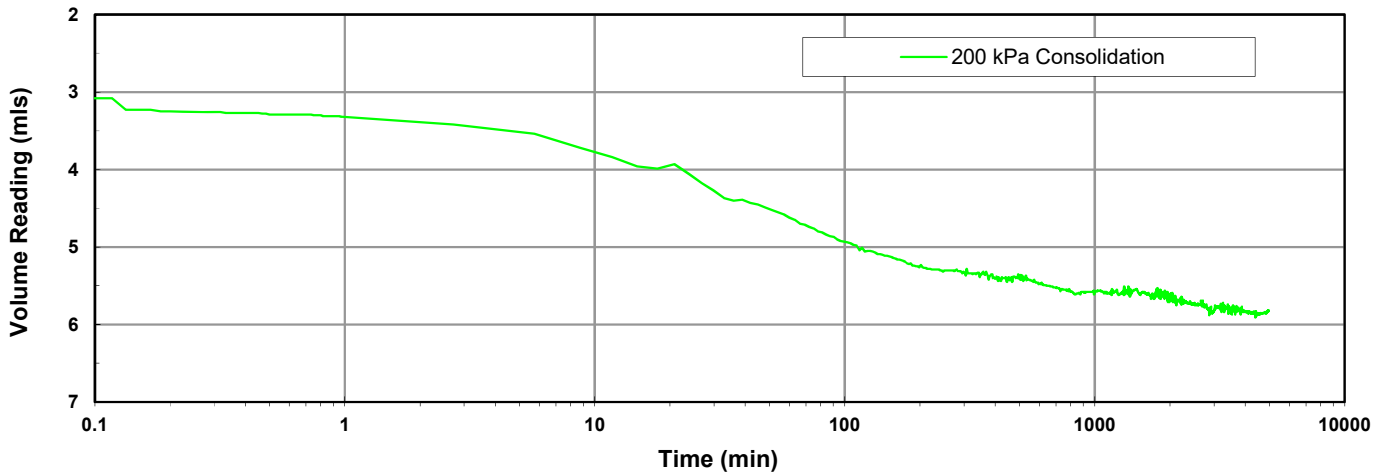
Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902765.1
		Job No.:	1251505
Project:	The GreenWay Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-06
		Test Date:	05.01.2020
Client Id.:	n/av	**Borehole No.:** A3-BH06	**Depth (m):** 3.50 to 4.95 (Combined)







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NATA

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Aggregate/Soil Test Report

Report No: SYD1902742
Issue No: 1
This report replaces all previous issues of report no 'SYD1902742'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0501-06
Date Sampled	30/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH07
Depth (m)	1.50 - 1.70m
Soil Description	CLAY with Sand: brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	14.4	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	32	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	18	
Plasticity Index (%)	AS 1289.3.3.1	14	
Date Tested		27/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902743
Issue No: 1
This report replaces all previous issues of report no 'SYD1902743'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0501-07
Date Sampled	17/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH08
Depth (m)	2.50 - 2.95m
Soil Description	CLAY with Sand and Gravel: orange/brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	13.2	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	74	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	22	
Plasticity Index (%)	AS 1289.3.3.1	52	
Date Tested		28/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902744
Issue No: 2
This report replaces all previous issues of report no 'SYD1902744'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 11/12/2019

Sample Details

GHD Sample No	SYD19-0501-08
Date Sampled	23/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH09
Depth (m)	1.5 - 1.95
Soil Description	CLAY with sand pale red brown white & brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	17.1	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	62	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	26	
Plasticity Index (%)	AS 1289.3.3.1	36	
Date Tested		28/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902745
Issue No: 1
This report replaces all previous issues of report no 'SYD1902745'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0502-01
Date Sampled	24/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-BH10
Depth (m)	4.10 - 4.20m
Soil Description	CLAY with sand pale brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	21.5	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	49	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	24	
Plasticity Index (%)	AS 1289.3.3.1	25	
Date Tested		28/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902746
Issue No: 1
This report replaces all previous issues of report no 'SYD1902746'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

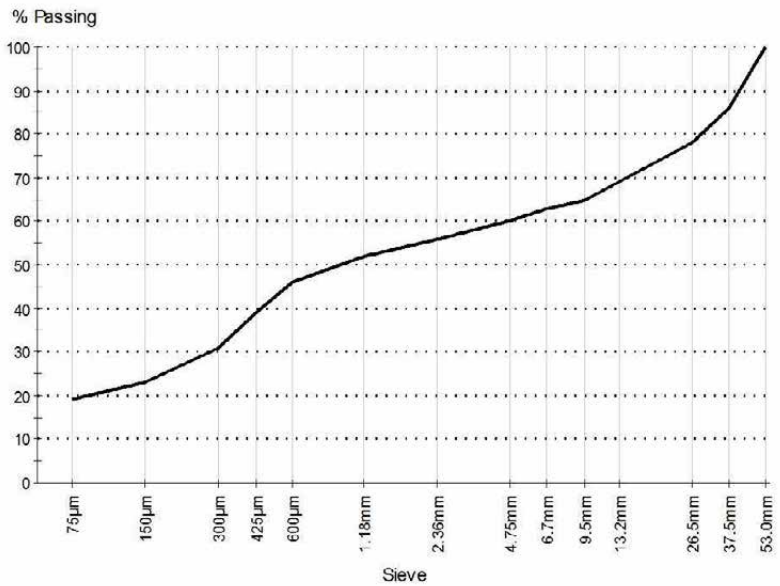
GHD Sample No	SYD19-0502-02
Date Sampled	25/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-HA01
Depth (m)	0.50-0.65m
Soil Description	Clayey SANDY GRAVEL grey brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	8.8	
Date Tested		19/11/2019	

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 22/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
53.0mm	100	
37.5mm	86	
26.5mm	78	
13.2mm	69	
9.5mm	65	
6.7mm	63	
4.75mm	60	
2.36mm	56	
1.18mm	52	
600µm	46	
425µm	39	
300µm	31	
150µm	23	
75µm	19	

Comments

Small sample - Insufficient sample mass to comply with minimum mass requirements AS1289 1.1

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Aggregate/Soil Test Report

Report No: SYD1902747
Issue No: 1
This report replaces all previous issues of report no 'SYD1902747'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0502-03
Date Sampled	21/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-HA02
Depth (m)	1.10 - 1.20m
Soil Description	CLAY with sand pale brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	24.9	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	35	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	21	
Plasticity Index (%)	AS 1289.3.3.1	14	
Date Tested		29/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902748
Issue No: 1
This report replaces all previous issues of report no 'SYD1902748'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

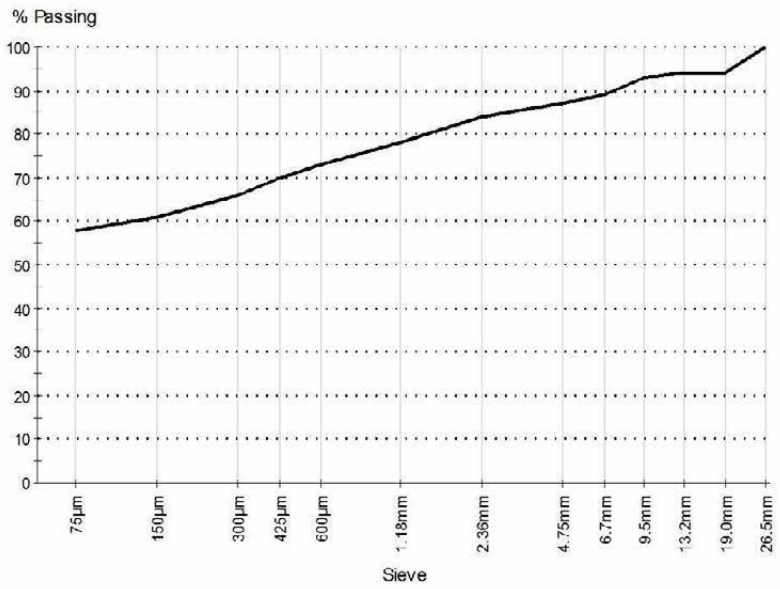
GHD Sample No	SYD19-0502-04
Date Sampled	21/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-HA03
Depth (m)	0.60 - 0.70m
Soil Description	CLAY with sand & gravel mottled red, brown & grey

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	21.3	
Date Tested		19/11/2019	

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 22/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
26.5mm	100	
19.0mm	94	
13.2mm	94	
9.5mm	93	
6.7mm	89	
4.75mm	87	
2.36mm	84	
1.18mm	78	
600µm	73	
425µm	70	
300µm	66	
150µm	61	
75µm	58	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902749
Issue No: 1
This report replaces all previous issues of report no 'SYD1902749'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0502-05
Date Sampled	21/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-HA04
Depth (m)	0.80-0.90m
Soil Description	Gravelly CLAY

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	22.9	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	52	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	21	
Plasticity Index (%)	AS 1289.3.3.1	31	
Date Tested		28/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902750
Issue No: 2
This report replaces all previous issues of report no 'SYD1902750'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 11/12/2019

Sample Details

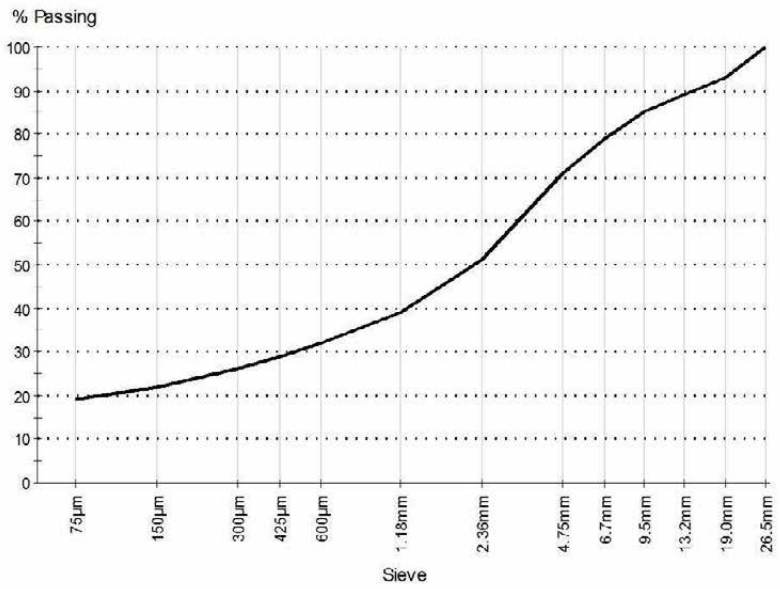
GHD Sample No	SYD19-0502-06
Date Sampled	21/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-HA05
Depth (m)	0.3 - 0.4
Soil Description	Clayey sandy GRAVEL grey

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	11.4	
Date Tested		19/11/2019	

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 22/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
26.5mm	100	
19.0mm	93	
13.2mm	89	
9.5mm	85	
6.7mm	79	
4.75mm	71	
2.36mm	51	
1.18mm	39	
600µm	32	
425µm	29	
300µm	26	
150µm	22	
75µm	19	

Comments

Small sample - Insufficient sample mass to comply with minimum mass requirements AS1289 1.1

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Aggregate/Soil Test Report

Report No: SYD1902751
Issue No: 1
This report replaces all previous issues of report no 'SYD1902751'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0502-07
Date Sampled	15/11/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-HA05
Depth (m)	1.30-1.50m
Soil Description	CLAY mottled pale grey, orange, brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	19.7	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	42	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	20	
Plasticity Index (%)	AS 1289.3.3.1	22	
Date Tested		29/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902752
Issue No: 1
This report replaces all previous issues of report no 'SYD1902752'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0502-08
Date Sampled	15/11/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-HA06
Depth (m)	1.00-1.15m
Soil Description	SAND with gravel & silt yellow brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	4.3	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	24	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	21	
Plasticity Index (%)	AS 1289.3.3.1	3	
Date Tested		29/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902755
Issue No: 1
This report replaces all previous issues of report no 'SYD1902755'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0503-03
Date Sampled	18/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-LD/BH01
Depth (m)	2.50 - 2.95m
Soil Description	CLAY with sand mottled red, grey & brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	12.7	
Date Tested		20/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	46	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	17	
Plasticity Index (%)	AS 1289.3.3.1	29	
Date Tested		2/12/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902756
Issue No: 1
This report replaces all previous issues of report no 'SYD1902756'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0503-04
Date Sampled	18/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-LD/BH01
Depth (m)	4.50 - 4.95m
Soil Description	CLAY with sand grey brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	13.7	
Date Tested		20/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	N/A	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	42	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	16	
Plasticity Index (%)	AS 1289.3.3.1	26	
Date Tested		2/12/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902753
Issue No: 1
This report replaces all previous issues of report no 'SYD1902753'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0503-01
Date Sampled	09/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-LD01
Depth (m)	0.00 - 0.50m
Soil Description	CLAY with sand & gravel brown

Other Test Results

Description	Method	Result	Limits
Standard Maximum Dry Density (t/m³)	AS 1289.5.1.1	1.67	
Standard Optimum Moisture Content (%)		20.5	
Retained Sieve 19mm (%)		3	
Compactive Effort		Standard	
Date Tested		21/11/2019	
CBR At 2.5mm (%)	AS 1289.6.1.1 - 2014	**4.5**	
CBR At 5.0mm (%)		**4.0**	
Maximum Dry Density (t/m³)		1.67	
Optimum Moisture Content (%)		20.5	
Dry Density before Soaking (t/m³)		1.59	
Density Ratio before Soaking (%)		95.0	
Moisture Content before Soaking (%)		20.4	
Moisture Ratio before Soaking (%)		99.5	
Dry Density after Soaking (t/m³)		1.58	
Density Ratio after Soaking (%)		94.0	
Swell (%)		0.5	
Moisture Content of Top 30mm (%)		24.2	
Moisture Content of Remaining Depth (%)		23.0	
Compactive Effort		Standard	
Surcharge Mass (kg)		4.50	
Period of Soaking (Days)		4	
Oversize Material		Excluded	
Oversize Material (%)		3.3	
Date Tested		29/11/2019	

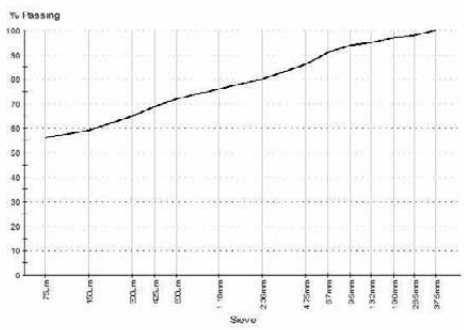
Particle Size Distribution

Method: AS 1289.3.6.1
Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
37.5mm	100	
26.5mm	98	
19.0mm	97	
13.2mm	95	
9.5mm	94	
6.7mm	91	
4.75mm	86	
2.36mm	80	
1.18mm	76	
600µm	72	
425µm	69	
300µm	65	
150µm	59	
75µm	56	

Chart



Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902754
Issue No: 1
This report replaces all previous issues of report no 'SYD1902754'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0503-02
Date Sampled	09/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-LD01
Depth (m)	1.10 - 1.40m
Soil Description	CLAY with sand & gravel mottled grey, red & brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	19.1	
Date Tested		20/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	61	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	26	
Plasticity Index (%)	AS 1289.3.3.1	35	
Date Tested		25/11/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902741
Issue No: 1
This report replaces all previous issues of report no 'SYD1902741'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0501-05
Date Sampled	21/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-LD02
Depth (m)	0.50 - 1.95 combined
Soil Description	Sandy CLAY with Gravel: mottled orange/red/brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	16.8	
Date Tested		19/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
	AS 1289.3.4.1		
Linear Shrinkage (%)		Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	36	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	17	
Plasticity Index (%)	AS 1289.3.3.1	19	
Date Tested		27/11/2019	

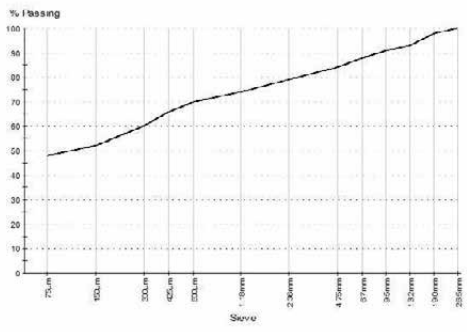
Particle Size Distribution

Method: AS 1289.3.6.1
Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
26.5mm	100	
19.0mm	98	
13.2mm	93	
9.5mm	91	
6.7mm	88	
4.75mm	84	
2.36mm	79	
1.18mm	74	
600µm	70	
425µm	66	
300µm	60	
150µm	52	
75µm	48	

Chart



Comments

Small sample - Insufficient sample mass to comply with minimum mass requirements AS1289 1.1

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Aggregate/Soil Test Report

Report No: SYD1902766
Issue No: 1
This report replaces all previous issues of report no 'SYD1902766'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/02/2020

Sample Details

GHD Sample No	SYD19-0504-07
Date Sampled	18/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A3-LD/BH01
Depth (m)	4.10 - 4.40
Soil Description	CLAY with sand orange brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	15.0	
Date Tested		20/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	44	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	16	
Plasticity Index (%)	AS 1289.3.3.1	28	
Date Tested		3/12/2019	
Standard Maximum Dry Density (t/m³)	AS 1289.5.1.1	1.74	
Standard Optimum Moisture Content (%)		16.5	
Retained Sieve 19mm (%)		0	
Compactive Effort		Standard	
Date Tested		25/11/2019	

Comments

N/A

Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

Test Method: AS1289.6.4.2

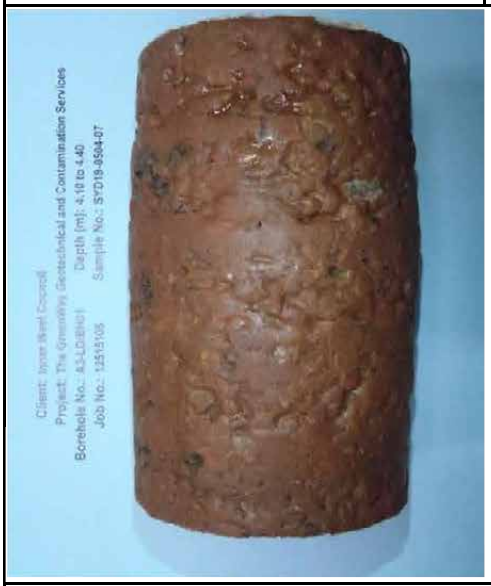
Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902766.1
		Job No.:	12515105
Project:	The GreenWay Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham, and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-07
		Test Date:	02.12.2019
Client Id.:	n/av	**Borehole No.:**	A3-LD/BH01
		Depth (m):	4.10 to 4.40
Description:	CLAY with sand: orange brown		
Sample History:	Sampled by GHD	**Sample Type:**	Remoulded (-9.5mm)

SAMPLE INFORMATION

Specimen No.:	**1**
Initial Height (mm):	125.5
Initial Diameter (mm):	63.5
Initial Wet Density (t/m³):	1.93
Initial Dry Density (t/m³):	1.66
Initial Moisture Content (%):	16.7
Final Moisture Content: Top (%):	19.2
Middle (%):	19.2
Bottom (%):	18.9
B Response (%):	96.3

TEST DATA (Multi-Stage Test)

Stage No.:	**1**	**2**	**3**		
Back Pressure (kPa):	500	500	500		
Effective Consolidation Stress (kPa):	50	100	200		
Rate of Strain (mm/min):	0.00122	0.00122	0.00122		
Deviator Stress at Failure (kPa):	65	101	155		
Pore Water Pressure at Failure (kPa):	22	52	118		
Consolidation Volume Change (ml):	1.8	4.8	8.9		
Strain at Failure (%):	0.7	2.6	5.5		
σ'_1 (kPa):	92	149	235		
σ'_3 (kPa):	28	49	80		



Test Comments: Side drains not used
No visible shear failure plane

Remarks:

Tested By: S. Ihnativ

Checked By: TSH

Approved Signatory:

D. Brooke

Date: 24/01/2020

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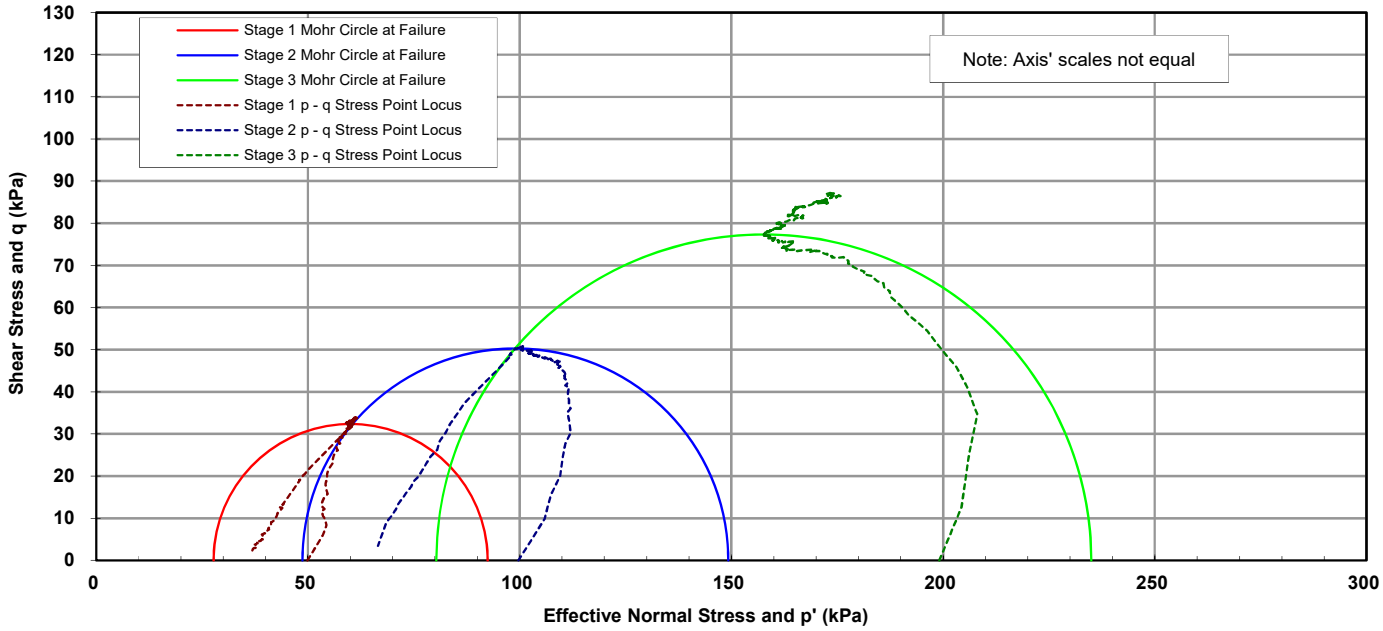
Accredited for compliance with ISO/IEC 17025 - Testing
Laboratory Accreditation Number 679

Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

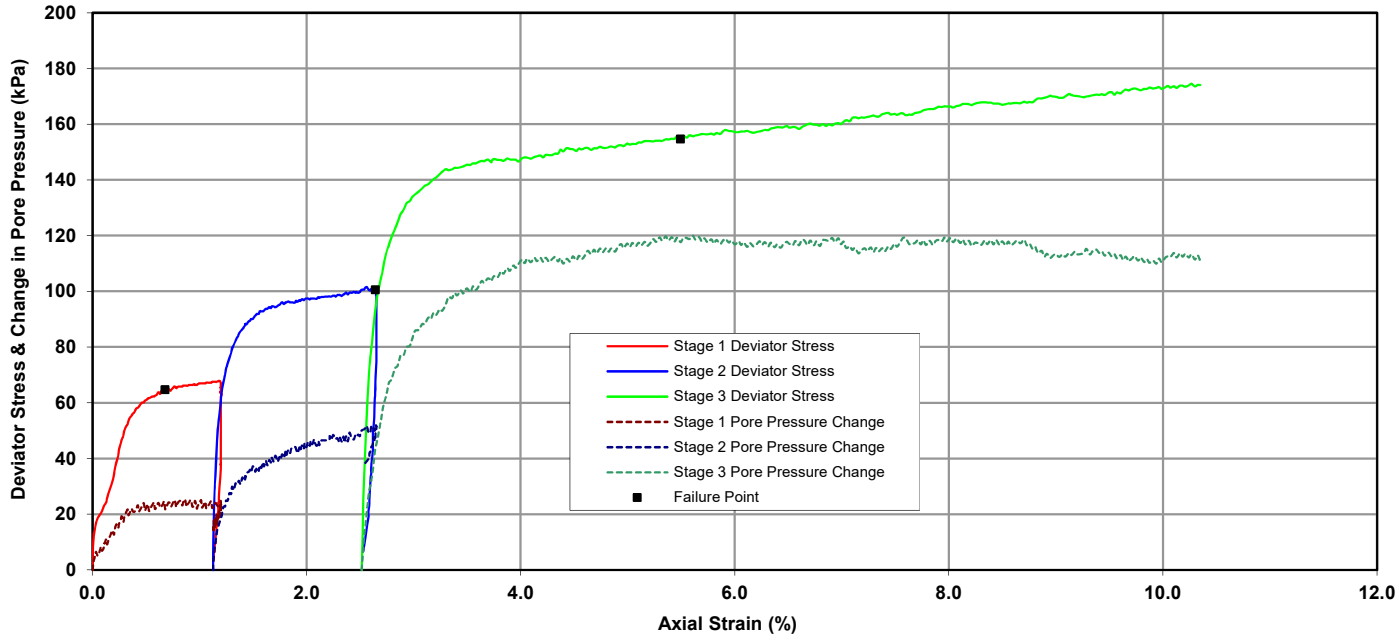
Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902766.1
		Job No.:	12515105
Project:	The GreenWay Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham, and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-07
		Test Date:	02.12.2019
Client Id.:	n/av	**Borehole No.:**	A3-LD/BH01
		Depth (m):	4.10 to 4.40



Interpretation between stages :	**1 to 2**	**2 to 3**	**3 to 4**	**4 to 5**	**1 to 3**
Effective Cohesion c' (kPa) :	**5**	**5**			**5**
Angle of effective internal friction Φ' (Degrees) :	**27**	**27**			**27**

Angle of effective internal friction and effective cohesion for this result calculated by linear regression.
Geotechnical Engineer should appraise result.



GHD
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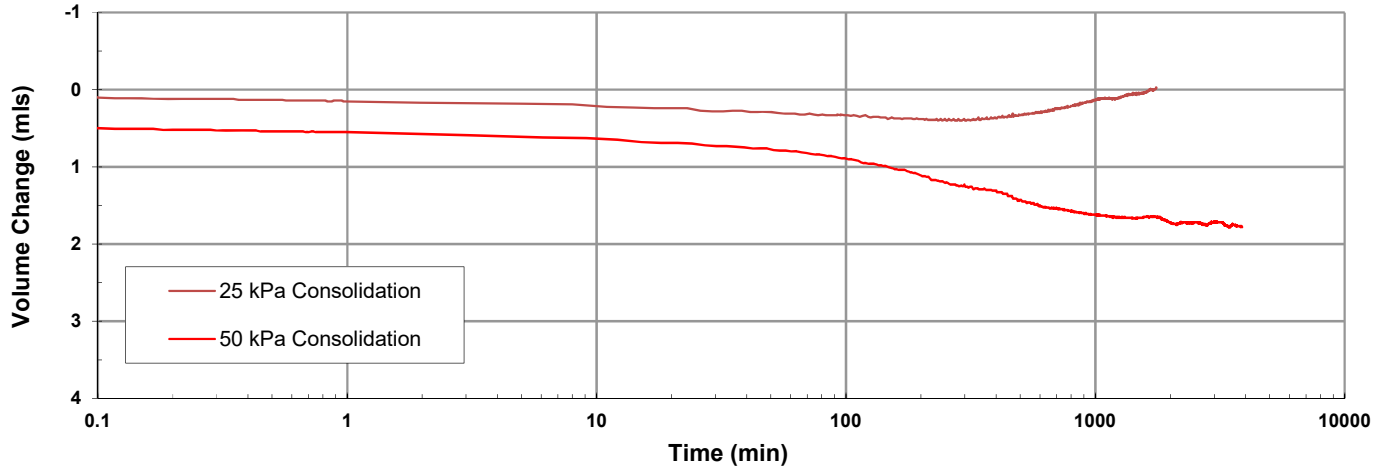
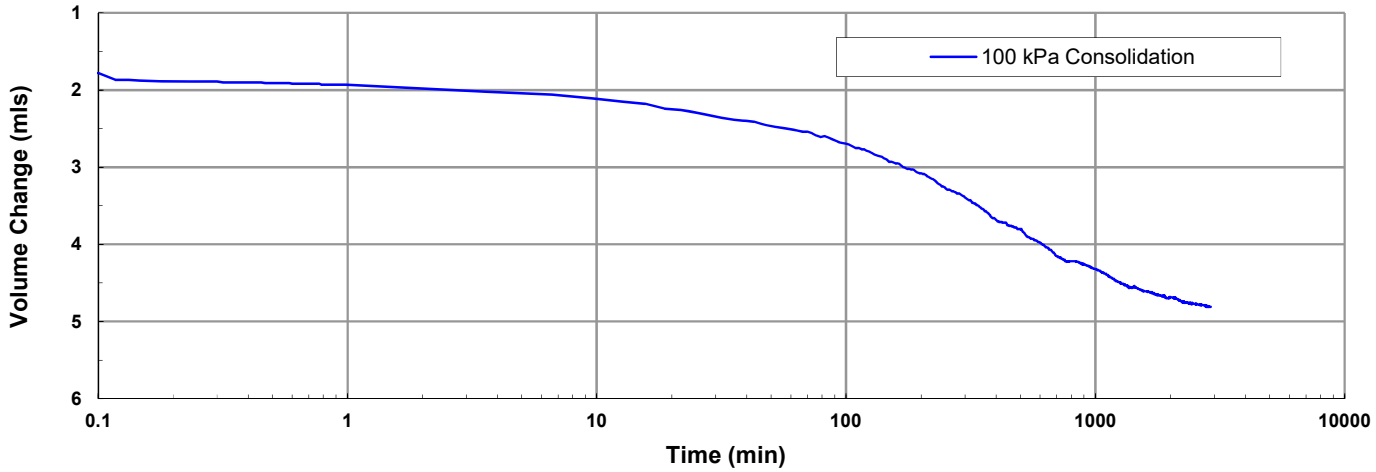
Geotechnical Testing Services

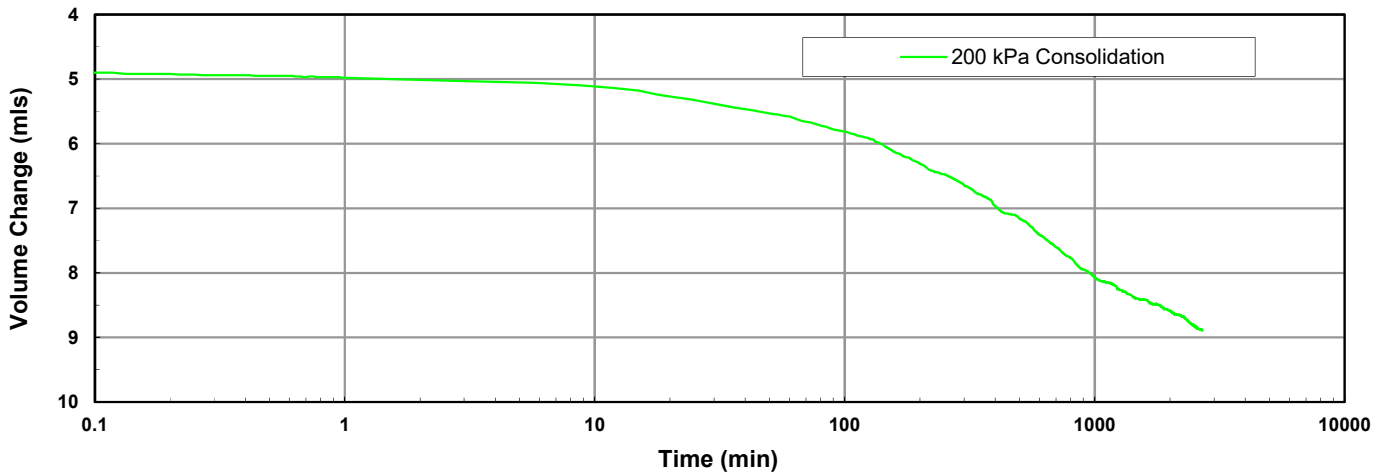
Consolidated Undrained Triaxial (CU) with measurement of pore water pressure

Test Method: AS1289.6.4.2

Client:	Inner West Council PO Box 14 Petersham NSW 2049	**Report No.:**	SYD1902766.1
		Job No.:	12515105
Project:	The GreenWay Geotechnical and Contamination Services Haberfield, Summer Hill, Lewisham, and Dulwich Hill, NSW	**Sample No.:**	SYD19-0504-07
		Test Date:	02.12.2019
Client Id.:	n/av	**Borehole No.:** A3-LD/BH01	**Depth (m):** 4.10 to 4.40







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Aggregate/Soil Test Report

Report No: SYD1902757
Issue No: 1
This report replaces all previous issues of report no 'SYD1902757'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

GHD Sample No	SYD19-0503-05
Date Sampled	21/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A4-BH01
Depth (m)	1.50 - 1.95m
Soil Description	CLAY with sand & gravel mottled red, orange & brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	14.7	
Date Tested		20/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	53	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	20	
Plasticity Index (%)	AS 1289.3.3.1	33	
Date Tested		2/12/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902758
Issue No: 1
This report replaces all previous issues of report no 'SYD1902758'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

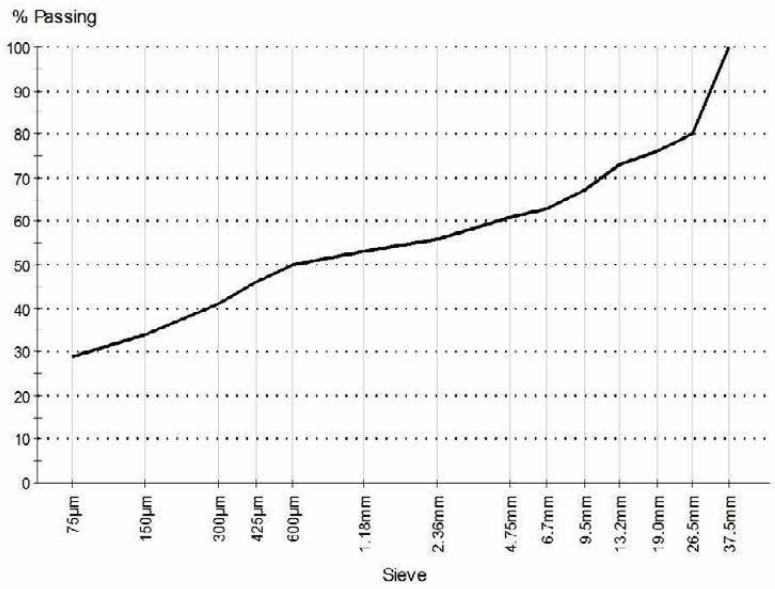
GHD Sample No	SYD19-0503-06
Date Sampled	22/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A4-BH04
Depth (m)	2.50 - 3.95 combined
Soil Description	Clayey GRAVEL with sand grey

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	7.7	
Date Tested		20/11/2019	

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
37.5mm	100	
26.5mm	80	
19.0mm	76	
13.2mm	73	
9.5mm	67	
6.7mm	63	
4.75mm	61	
2.36mm	56	
1.18mm	53	
600µm	50	
425µm	46	
300µm	41	
150µm	34	
75µm	29	

Comments

Small sample - Insufficient sample mass to comply with minimum mass requirements AS1289 1.1

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Aggregate/Soil Test Report

Report No: SYD1902759
Issue No: 1
This report replaces all previous issues of report no 'SYD1902759'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 4/12/2019

Sample Details

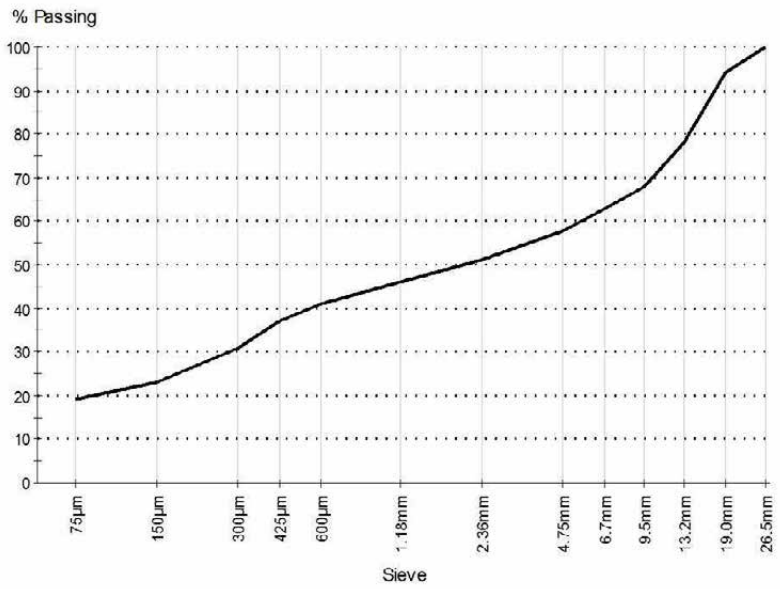
GHD Sample No	SYD19-0503-07
Date Sampled	22/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A4-BH05/06
Depth (m)	Combined sample
Soil Description	Clayey SANDY GRAVEL grey

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	5.0	
Date Tested		20/11/2019	

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
26.5mm	100	
19.0mm	94	
13.2mm	78	
9.5mm	68	
6.7mm	63	
4.75mm	58	
2.36mm	51	
1.18mm	46	
600µm	41	
425µm	37	
300µm	31	
150µm	23	
75µm	19	

Comments

Combined samples. A4-BH04 0.5-0.95m, A4-BH05 1.5-1.95m, A4-BH06 0.5-0.75m
Small sample - Insufficient sample mass to comply with minimum mass requirements AS1289 1.1

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Aggregate/Soil Test Report

Report No: SYD1902760
Issue No: 2
This report replaces all previous issues of report no 'SYD1902760'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 11/12/2019

Sample Details

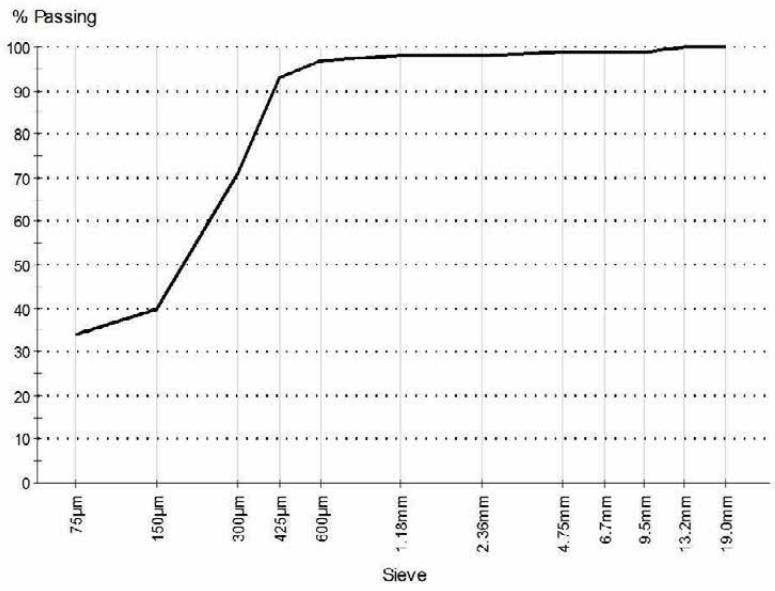
GHD Sample No	SYD19-0504-01
Date Sampled	17/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A4-BH08
Depth (m)	0.30 - 0.40
Soil Description	Clayey SANDmottled pale brown & dark brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	11.0	
Date Tested		20/11/2019	

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
19.0mm	100	
13.2mm	100	
9.5mm	99	
6.7mm	99	
4.75mm	99	
2.36mm	98	
1.18mm	98	
600µm	97	
425µm	93	
300µm	71	
150µm	40	
75µm	34	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902761
Issue No: 1
This report replaces all previous issues of report no 'SYD1902761'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

GHD Sample No	SYD19-0504-02
Date Sampled	22/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A4-BH09
Depth (m)	0.50 - 0.95
Soil Description	CLAY with sand orange brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	18.8	
Date Tested		20/11/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	46	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	18	
Plasticity Index (%)	AS 1289.3.3.1	28	
Date Tested		3/12/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1902762
Issue No: 1
This report replaces all previous issues of report no 'SYD1902762'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 5/12/2019

Sample Details

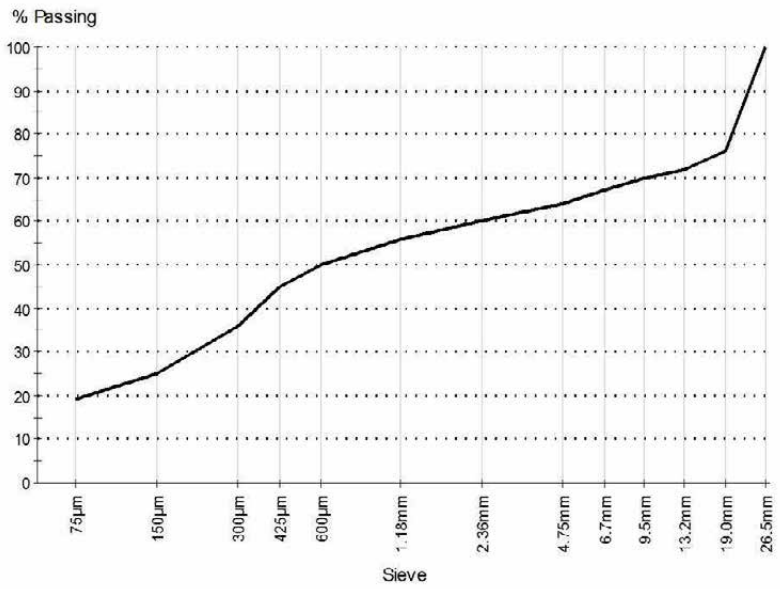
GHD Sample No	SYD19-0504-03
Date Sampled	22/10/2019
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A4-BH10
Depth (m)	0.50 - 1.95
Soil Description	Clayey GRAVELLY SAND pale brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	6.2	
Date Tested		20/11/2019	

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 26/11/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
26.5mm	100	
19.0mm	76	
13.2mm	72	
9.5mm	70	
6.7mm	67	
4.75mm	64	
2.36mm	60	
1.18mm	56	
600µm	50	
425µm	45	
300µm	36	
150µm	25	
75µm	19	

Comments

Small sample - Insufficient sample mass to comply with minimum mass requirements AS1289 1.1

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Aggregate/Soil Test Report

Report No: SYD1903047
Issue No: 1
This report replaces all previous issues of report no 'SYD1903047'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 20/12/2019

Sample Details

GHD Sample No	SYD19-0556-01
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A4-TP01
Depth (m)	2.0 - 2.60
Soil Description	Sandy CLAY yellow brown

Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	15.4	
Date Tested		17/12/2019	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	Not Tested	
Mould Length (mm)		0	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	41	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	16	
Plasticity Index (%)	AS 1289.3.3.1	25	
Date Tested		19/12/2019	

Comments

N/A

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Aggregate/Soil Test Report

Report No: SYD1903048
Issue No: 1
This report replaces all previous issues of report no 'SYD1903048'.

Client: Inner West Council

Project: 12515105

Accredited for compliance with ISO / IEC 17025 - Testing

NATA Accredited Laboratory Number: 679

Approved Signatory: D.P Brooke (Sydney Laboratory Manager)

Date of Issue: 20/12/2019

Sample Details

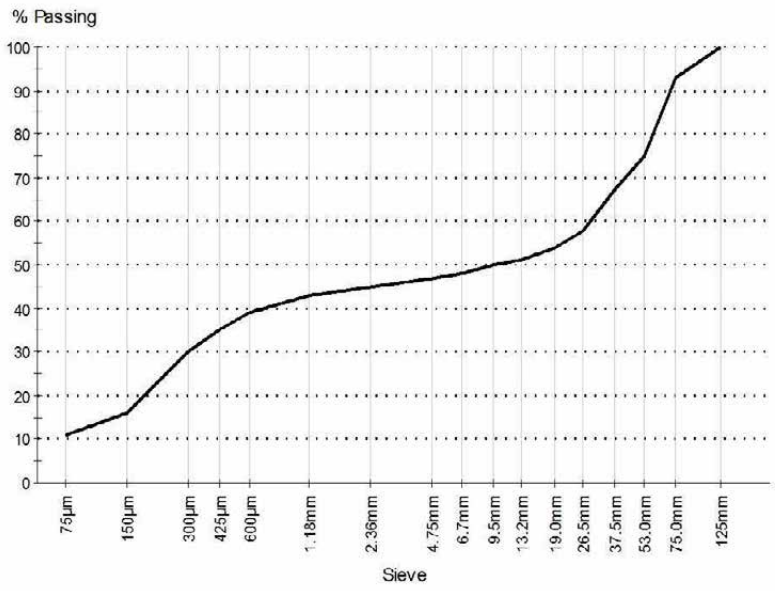
GHD Sample No	SYD19-0556-02
Sampled By	Sampled by GHD
Location	The Greenway
BH / TP No.	A4-TP02
Depth (m)	0.3 - 0.5
Soil Description	Sandy GRAVEL with silt or clay yellow brown

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	8.9	
Date Tested		17/12/2019	

Particle Size Distribution

AS 1289.3.6.1



Drying by: Oven
Date Tested: 19/12/2019

Note: Sample Washed

Sieve Size	% Passing	Limits
125mm	100	
75.0mm	93	
53.0mm	75	
37.5mm	67	
26.5mm	58	
19.0mm	54	
13.2mm	51	
9.5mm	50	
6.7mm	48	
4.75mm	47	
2.36mm	45	
1.18mm	43	
600µm	39	
425µm	35	
300µm	30	
150µm	16	
75µm	11	

Comments

N/A

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GHD GEOTECHNICS

Report No: SYD1902658.1
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	The Bay Run, Haberfield, NSW
Job No.:	12515105
Borehole / Sample No.:	A1-BH06
Test Method:	AS4133.4.1

NATA

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
9.50	D	51.5	40.7		51.5	0.36	2	0.14	**0.14**	SS	BE	Moist
9.50	A	40.7		51.5	51.7	0.426	3	0.16	**0.16**	SS	BE	Moist
10.50	D	52.0	46.8		52.0	0.88	2	0.32	**0.33**	SS	BE	Moist
10.50	A	46.8		52.0	55.7	0.782	3	0.25	**0.26**	SS	BE	Moist
11.48	D	51.8	38.7		51.8	1.006	2	0.37	**0.38**	SS	BE	Moist
11.48	A	38.7		51.8	50.5	1.283	3	0.50	**0.50**	SS	BE	Moist

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

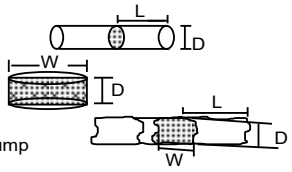
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 1 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: LM
Date Sampled: 16/10/2019
Tested By: LM
Date Tested: 17/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.2
Issue No:

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	The Bay Run, Haberfield, NSW
Job No.:	12515105
Borehole / Sample No.:	A1-BH07
Test Method:	AS4133.4.1

NATA
Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
11.86	D	51.8	43.5		51.8	0.11	2	0.04	**0.04**	SS	BE	Moist
11.86	A	43.5		51.8	53.6	0.15	3	0.05	**0.05**	SS	BE	Moist
12.70	D	51.6	38.2		51.6	1.36	2	0.51	**0.52**	SS	BE	Moist
12.70	A	38.1		51.6	50.1	1.94	3	0.77	**0.77**	SS	BE	Moist
13.40	D	51.7	49.6		51.7	0.85	2	0.32	**0.32**	SS	BE	Moist
13.40	A	49.6		51.7	57.1	1.43	3	0.44	**0.47**	SS	BE	Moist
14.35	D	51.9	46.0		51.9	3.18	2	1.18	**1.20**	SS	BE	Moist
14.35	A	46.0		51.9	55.1	4.69	3	1.55	**1.61**	SS	BE	Moist

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

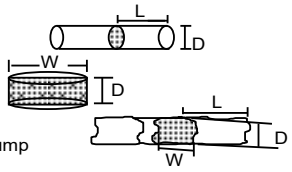
ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D
A = Axial — 0.6W < D < W
I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 5 Days

Storage:
[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: LM
Date Sampled: 23/10/2019
Tested By: LM
Date Tested: 28/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.3
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	IWLR Corridor,Lewisham, NSW
Job No.:	12515105
Borehole / Sample No.:	A2-BH02
Test Method:	AS4133.4.1

NATA
Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions D (mm)	L (mm)	W (mm)	De (mm)	Results Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Sample Description Rock Type	Structure	Moisture
5.36	D	52.0	43.8		52.0	1.09	2	0.40	**0.41**			
5.36	A	43.8		52.0	53.8	1.58	3	0.55	**0.56**			
6.31	D	51.5	40.5		51.5	0.29	2	0.11	**0.11**			
6.31	A	40.5		51.5	51.5	0.85	3	0.32	**0.32**			
7.41	D	51.4	35.5		51.4	1.14	2	0.43	**0.44**			
7.41	A	35.5		51.4	48.2	1.54	3	0.66	**0.65**			
8.56	D	51.7	40.9		51.7	2.85	2	1.07	**1.08**			
8.56	A	40.9		51.7	51.9	4.04	3	1.50	**1.52**			

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

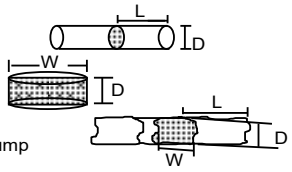
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 10 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: LM
Date Sampled: 18/10/2019
Tested By: LM
Date Tested: 28/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.3
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	The GreenWay Footpath, Summer Hill, N
Job No.:	12515105
Borehole / Sample No.:	A2D-BH04
Test Method:	AS4133.4.1

NATA

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
4.23	D	51.6	31.1		51.6	1.134	2	0.43	**0.43**	SS	BE	Moist
4.23	A	31.1		51.6	45.2	1.435	1	0.70	**0.67**	SS	BE	Moist
5.16	D	52.3	34.6		52.3	2.931	2	1.07	**1.09**	SS	BE	Moist
5.16	A	34.6		52.3	48.0	3.305	1	1.43	**1.41**	SS	BE	Moist
6.08	D	51.6	36.0		51.6	3.715	2	1.39	**1.41**	SS	BE	Moist
6.08	A	36.0		51.6	48.7	3.182	1	1.34	**1.33**	SS	BE	Moist
7.05	D	51.7	39.7		51.7	3.432	2	1.28	**1.30**	SS	BE	Moist
7.05	A	39.7		51.7	51.1	0.564	2	0.22	**0.22**	SS	BE	Moist

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

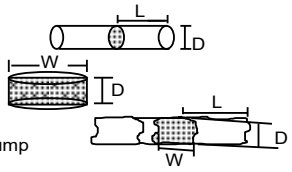
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 2 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: JS
Date Sampled: 15/10/2019
Tested By: LM
Date Tested: 17/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.4
Issue No:

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	The GreenWay Footpath, Summer Hill, N
Job No.:	12515105
Borehole / Sample No.:	A2D-BH05
Test Method:	AS4133.4.1

NATA

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
3.70	D	51.5	33.1		51.5	0.956	2	0.36	**0.37**	SS	BE	Moist
3.70	A	33.1		51.5	46.6	2.397	1	1.10	**1.07**	SS	BE	Moist
4.75	D	51.6	35.2		51.6	2.174	2	0.82	**0.83**	SS	BE	Moist
4.75	A	35.2		51.6	48.0	3.273	1	1.42	**1.39**	SS	BE	Moist
5.67	D	51.8	30.6		51.8	2.967	2	1.11	**1.12**	SS	BE	Moist
5.67	A	30.6		51.8	44.9	2.009	1	0.99	**0.95**	SS	BE	Moist
6.67	D	51.6	32.6		51.6	3.061	2	1.15	**1.17**	SS	BE	Moist
6.67	A	32.6		51.6	46.3	5.555	1	2.59	**2.50**	SS	BE	Moist

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

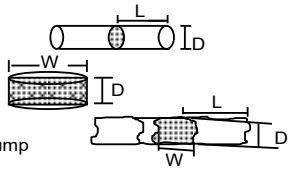
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 2 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: JS
Date Sampled: 15/10/2019
Tested By: LM
Date Tested: 17/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.5
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	Gadigal Reserve, Summer Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A2D-BH06
Test Method:	AS4133.4.1

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
3.55	D	51.6	40.3		51.6	4.09	3	1.54	**1.56**	SS	BE	As Drilled
3.55	A	40.3		51.6	51.5	5.31	3	2.01	**2.03**	SS	BE	As Drilled
4.46	D	51.5	41.9		51.5	2.99	3	1.13	**1.14**	SS	BE	As Drilled
4.46	A	41.9		51.5	52.4	3.95	3	1.44	**1.47**	SS	BE	As Drilled
5.61	D	51.5	40.4		51.5	2.93	3	1.10	**1.12**	SS	BE	As Drilled
5.61	A	40.4		51.5	51.5	3.83	3	1.45	**1.46**	SS	BE	As Drilled
6.59	D	51.7	37.2		51.7	2.86	3	1.07	**1.09**	SS	BE	As Drilled
6.59	A	37.2		51.7	49.5	2.3	3	0.94	**0.93**	SS	BE	As Drilled
7.18	D	51.7	35.7		51.7	3.67	3	1.37	**1.39**	SS	BE	As Drilled
7.18	A	35.7		51.7	48.5	4.07	3	1.73	**1.71**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

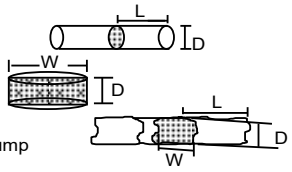
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 10 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: VW
Date Sampled: 14/10/2019
Tested By: JS
Date Tested: 24/10/2019

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GHD GEOTECHNICS

Report No: SYD1902568.6
Issue No:

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	The GreenWay Footpath, Summer Hill, N
Job No.:	12515105
Borehole / Sample No.:	A2D-BH07
Test Method:	AS4133.4.1

NATA

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
3.82	D	51.5	49.1		51.5	3.2	3	1.21	**1.22**	SS	BE	As Drilled
3.82	A	49.1		51.5	56.7	5.36		1.66	**1.76**	SS	BE	As Drilled
4.97	D	51.6	47.2		51.6	3.05		1.15	**1.16**	SS	BE	As Drilled
4.97	A	47.2		51.6	55.7	2.5		0.81	**0.85**	SS	BE	As Drilled
5.62	D	51.6	40.0		51.6	3.1		1.16	**1.18**	SS	BE	As Drilled
5.62	A	40.0		51.6	51.3	3.29		1.25	**1.27**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

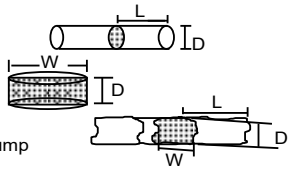
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 10 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: VW
Date Sampled: 14/10/2019
Tested By: JS
Date Tested: 24/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.7
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	Gadigal Reserve, Summer Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A2D-BH08
Test Method:	AS4133.4.1

NATA
Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions D (mm)	L (mm)	W (mm)	De (mm)	Results Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Sample Description Rock Type	Structure	Moisture
2.53	D	51.9	37.1		51.9	1.57	2	0.58	**0.59**	SS	BE	As Drilled
2.53	A	37.1		51.9	49.5	1.96	3	0.80	**0.80**	SS	BE	As Drilled
3.95	D	52.2	37.0		52.2	2.15	2	0.79	**0.80**	SS	BE	As Drilled
3.95	A	37.0		52.2	49.6	1.57	3	0.64	**0.64**	SS	BE	As Drilled
4.56	D	52.0	46.1		52.0	3.05	2	1.13	**1.15**	SS	BE	As Drilled
4.56	A	46.1		52.0	55.2	3.78	3	1.24	**1.30**	SS	BE	As Drilled
5.53	D	51.8	47.0		51.8	2.83	2	1.05	**1.07**	SS	BE	As Drilled
5.53	A	47.0		51.8	55.7	3.58	3	1.15	**1.21**	SS	BE	As Drilled
6.78	D	51.8	46.0		51.8	3.37	2	1.26	**1.28**	SS	BE	As Drilled
6.78	A	46.0		51.8	55.0	4.62		1.53	**1.59**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

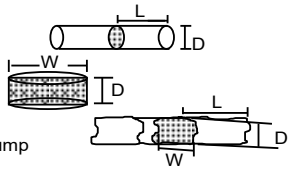
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 0 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: LM
Date Sampled: 28/10/2019
Tested By: LM
Date Tested: 28/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.8
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	IWLR Corridor, Summer Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A2D-BH09
Test Method:	AS4133.4.1

NATA

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
3.72	D	50.1	36.1		50.1	2.11	2	0.84	**0.84**	SS	BE	As Drilled
3.72	A	36.1		50.1	48.0	2.84	3	1.23	**1.21**	SS	BE	As Drilled
4.80	D	51.0	42.9		51.0	3.45	2	1.33	**1.34**	SS	BE	As Drilled
4.80	A	42.9		51.0	52.8	3.42	3	1.23	**1.26**	SS	BE	As Drilled
5.84	D	50.2	40.2		50.2	3.02	2	1.20	**1.20**	SS	BE	As Drilled
5.84	A	40.2		50.2	50.7	3.09	3	1.20	**1.21**	SS	BE	As Drilled
6.80	D	50.7	42.8		50.7	3.23	2	1.26	**1.26**	SS	BE	As Drilled
6.80	A	42.8		50.7	52.6	4.5	3	1.63	**1.66**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

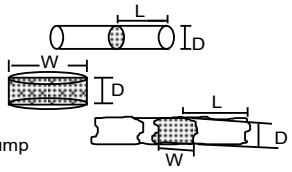
ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D
A = Axial — 0.6W < D < W
I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 2 Days

Storage:
[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: LM
Date Sampled: 29/10/2019
Tested By: LM
Date Tested: 31/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.9
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	Gadigal Reserve, Summer Hill
Job No.:	12515105
Borehole / Sample No.:	A2D-LD01
Test Method:	AS4133.4.1

NATA

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
4.58	D	51.9	42.9		51.9	2.29	3	0.85	**0.86**	SS	BE	Moist
4.58	A	42.9		51.9	53.2	2.78	3	0.98	**1.01**	SS	BE	Moist
5.57	D	51.7	43.2		51.7	3.78	3	1.41	**1.44**	SS	BE	Moist
5.57	A	43.2		51.7	53.3	3.69	3	1.30	**1.34**	SS	BE	Moist
6.58	D	52.1	38.2		52.1	4.65	3	1.71	**1.75**	SS	BE	Moist
6.58	A	38.2		52.2	50.3	4.98	3	1.96	**1.97**	SS	BE	Moist
7.35	D	52.1	42.2		52.1	3.67	3	1.35	**1.38**	SS	BE	Moist
7.35	A	42.2		52.1	52.9	3.29	3	1.18	**1.21**	SS	BE	Moist

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

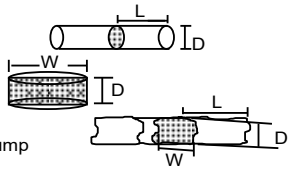
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 3 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: JS
Date Sampled: 25/10/2019
Tested By: JS
Date Tested: 28/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.10
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	Johnson Park, Dulwich Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A3-BH04
Test Method:	AS4133.4.1

NATA

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions D (mm)	L (mm)	W (mm)	De (mm)	Results Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Sample Description Rock Type	Structure	Moisture
6.42	D	51.8	36.8		51.8	3.14	3	1.17	**1.19**	SS	BE	As Drilled
6.42	A	36.8		51.8	49.3	2.31	3	0.95	**0.95**	SS	BE	As Drilled
7.44	D	51.4	37.6		51.4	1.58	3	0.60	**0.61**	SS	BE	As Drilled
7.44	A	37.6		51.4	49.6	1.45	3	0.59	**0.59**	SS	BE	As Drilled
8.51	D	39.4	51.4		39.4	1.48	3	0.95	**0.86**	SS	BE	As Drilled
8.51	A	51.4		39.4	50.8	1.86	3	0.72	**0.73**	SS	BE	As Drilled
9.51	D	51.4	38.7		51.4	2.07	3	0.78	**0.79**	SS	BE	As Drilled
9.51	A	38.7		51.4	50.3	1.98	3	0.78	**0.78**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

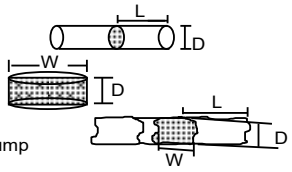
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 13 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: JS
Date Sampled: 11/10/2019
Tested By: JS
Date Tested: 24/10/2019

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GHD GEOTECHNICS

Report No: SYD02658.11
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	Johnson Park, Dulwich Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A3-BH05
Test Method:	AS4133.4.1

NATA
Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
4.91	D	51.5	44.0		51.5	2.34	3	0.88	**0.89**	SS	BE	As Drilled
4.91	A	44.0		51.5	53.7	3.14	3	1.09	**1.12**	SS	BE	As Drilled
5.55	D	51.4	37.0		51.4	1.45	3	0.55	**0.56**	SS	BE	As Drilled
5.55	A	37.0		51.4	49.2	2.16	3	0.89	**0.89**	SS	BE	As Drilled
6.61	D	51.5	37.8		51.5	2.5	3	0.94	**0.96**	SS	BE	As Drilled
6.61	A	37.8		51.5	49.8	2.52	3	1.02	**1.01**	SS	BE	As Drilled
7.50	D	50.8	34.7		50.8	2.79	3	1.08	**1.09**	SS	BE	As Drilled
7.50	A	34.7		50.8	47.4	2.59	3	1.15	**1.13**	SS	BE	As Drilled
8.33	D	51.4	41.0		51.4	1.11	3	0.42	**0.43**	SS	BE	As Drilled
8.33	A	41.0		51.4	51.8	1.45	3	0.54	**0.55**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

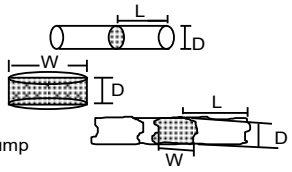
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 13 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: JS
Date Sampled: 11/10/2019
Tested By: JS
Date Tested: 24/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.12
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	Constitution Rd, Dulwich Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A3-BH06
Test Method:	AS4133.4.1

NATA

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
7.85	D	51.5	42.6		51.5	1.41	3	0.53	**0.54**	SS	BE	As Drilled
7.85	A	42.6		51.5	52.9	5.17	3	1.85	**1.90**	SS	BE	As Drilled
8.13	D	51.5	40.6		51.5	0.1	3	0.04	**0.04**	SS	BE	As Drilled
8.13	A	40.6		51.5	51.6	0.24	3	0.09	**0.09**	SS	BE	As Drilled
8.30	D	51.6	38.7		51.6	1.23	3	0.46	**0.47**	SS	BE	As Drilled
8.30	A	38.7		51.6	50.4	1.34	3	0.53	**0.53**	SS	BE	As Drilled
9.29	D	51.6	36.2		51.6	1.79	3	0.67	**0.68**	SS	BE	As Drilled
9.29	A	36.2		51.6	48.8	1.77	3	0.74	**0.74**	SS	BE	As Drilled
10.32	D	51.6	37.0		51.6	1.42	3	0.53	**0.54**	SS	BE	As Drilled
10.32	A	37.0		51.6	49.3	1.28	3	0.53	**0.52**	SS	BE	As Drilled
11.43	D	51.7	40.2		51.7	3.7	3	1.38	**1.41**	SS	BE	As Drilled
11.43	A	40.2		51.7	51.4	3.74	3	1.42	**1.43**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

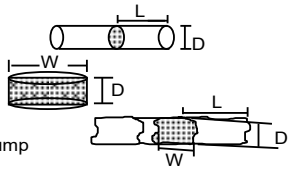
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 7 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: JS
Date Sampled: 17/10/2019
Tested By: JS
Date Tested: 24/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.13
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	IWLR Corridor, Dulwich Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A3-BH07
Test Method:	AS4133.4.1

NATA
Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
3.69	D	48.5	42.1		48.5	1.18	4(J)	0.50	**0.50**	BR	MA	As Drilled
3.69	A	42.1		48.5	51.0	0.82	4(J)	0.32	**0.32**	BR	MA	As Drilled
4.74	D	49.1	46.3		49.1	0.17	2	0.07	**0.07**	SS	BE	As Drilled
4.74	A	46.3		49.1	53.8	0.17	3	0.06	**0.06**	SS	BE	As Drilled
5.73	D	51.1	39.2		51.1	0.63	2	0.24	**0.24**	SS	BE	As Drilled
5.73	A	39.2		51.1	50.5	0.95	3	0.37	**0.37**	SS	BE	As Drilled
6.60	D	51.3	39.3		51.3	0.62	2	0.24	**0.24**	SS	BE	As Drilled
6.60	A	39.3		51.3	50.6	1.19	3	0.46	**0.47**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(BR) Breccia
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

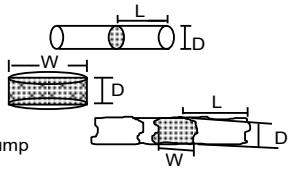
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 1 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: LM
Date Sampled: 30/10/2019
Tested By: LM
Date Tested: 31/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.14
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	1-3 Williams Parade, Dulwich Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A3-BH08
Test Method:	AS4133.4.1

NATA
Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
6.37	D	51.8	49.9		51.8	1.73	2	0.64	**0.65**	SS	BE	As Drilled
6.37	A	49.9		51.8	57.4	3.43	3	1.04	**1.11**	SS	BE	As Drilled
7.70	D	51.7	41.6		51.7	0.66	2	0.25	**0.25**	SS	BE	As Drilled
7.70	A	41.6		51.7	52.3	0.55	3	0.20	**0.21**	SS	BE	As Drilled
8.81	D	51.8	43.8		51.8	0.8	2	0.30	**0.30**	SS	BE	As Drilled
8.81	A	43.8		51.8	53.8	0.48	4(J)	0.17	**0.17**	SS	BE	As Drilled
9.86	D	51.6	40.3		51.6	4.59	2	1.73	**1.75**	SS	BE	As Drilled
9.86	A	40.3		51.6	51.4	6.22	3	2.35	**2.38**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

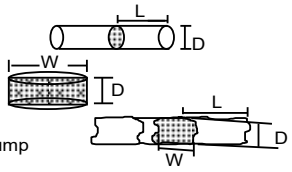
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 11 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: LM
Date Sampled: 17/10/2019
Tested By: LM
Date Tested: 28/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.15
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	IWLR Corridor, Dulwich Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A3-BH09
Test Method:	AS4133.4.1

NATA
Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions D (mm)	L (mm)	W (mm)	De (mm)	Results Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Sample Description Rock Type	Structure	Moisture
5.45	D	51.4	32.6		51.4	0.07	2	0.03	**0.03**	ST	LA	As Drilled
5.45	A	32.6		51.4	46.2	0.4	3	0.19	**0.18**	ST	LA	As Drilled
6.42	D	51.4	31.5		51.4	0.07	2	0.03	**0.03**	ST	LA	As Drilled
6.42	A	31.5		51.4	45.4	0.2	3	0.10	**0.09**	ST	LA	As Drilled
7.41	D	51.2	31.5		51.2	0.02	2	0.01	**0.01**	SS	BE	As Drilled
7.41	A	31.5		51.2	45.3	0.78	3	0.38	**0.36**	SS	BE	As Drilled
7.89	D	51.2	36.5		51.2	0.07	3	0.03	**0.03**	SS	BE	As Drilled
7.89	A	36.5		51.2	48.8	0.47	3	0.20	**0.20**	SS	BE	As Drilled
8.21	D	51.0	37.5		51.0	0.66	3	0.25	**0.26**	SS	BE	As Drilled
8.21	A	37.5		51.0	49.3	0.57	3	0.23	**0.23**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

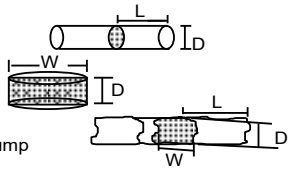
ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D
A = Axial — 0.6W < D < W
I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 1 Days
Storage:
[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: JS
Date Sampled: 23/10/2019
Tested By: JS
Date Tested: 24/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.16
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	IWLR Corridor, Dulwich Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A3-BH10
Test Method:	AS4133.4.1

NATA
Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
5.73	D	51.2	40.8		51.2	0.14	3	0.05	**0.05**	SS	BE	As Drilled
5.73	A	40.8		51.2	51.6	0.74		0.28	**0.28**	SS	BE	As Drilled
6.25	D	51.7	44.2		51.7	1.73		0.65	**0.66**	SS	BE	As Drilled
6.25	A	44.2		51.2	53.7	3.4		1.18	**1.22**	SS	BE	As Drilled
7.40	D	51.9	37.7		51.9	0.51		0.19	**0.19**	SS	BE	As Drilled
7.40	A	37.7		51.9	49.9	0.5		0.20	**0.20**	SS	BE	As Drilled
7.95	D	51.9	41.6		51.9	0.87		0.32	**0.33**	SS	BE	As Drilled
7.95	A	41.6		51.9	52.4	1.64		0.60	**0.61**	SS	BE	As Drilled
8.29	D	51.8	35.4		51.8	0.28		0.10	**0.11**	SS	BE	As Drilled
8.29	A	35.4		51.8	48.3	0.92		0.39	**0.39**	SS	BE	As Drilled
9.16	D	51.6	37.5		51.6	4.76		1.79	**1.81**	SS	BE	As Drilled
9.16	A	37.5		51.6	49.6	3.93		1.60	**1.59**	SS	BE	As Drilled
10.59	D	51.8	46.1		51.8	4.35		1.62	**1.65**	SS	BE	As Drilled
10.59	A	46.1		51.8	55.1	4.63		1.52	**1.59**	SS	BE	As Drilled
11.74	D	51.7	40.8		51.7	6.51		2.44	**2.47**	SS	BE	As Drilled
11.74	A	40.8		51.7	51.8	8.89		3.31	**3.36**	SS	BE	As Drilled
12.60	D	51.8	37.4		51.8	5.79		2.16	**2.19**	SS	BE	As Drilled
12.60	A	37.4		51.8	49.7	7.33		2.97	**2.96**	SS	BE	As Drilled
13.16	D	51.9	32.8		51.9	7.69		2.85	**2.90**	SS	BE	As Drilled
13.16	A	32.8		51.9	46.6	4.16		1.92	**1.86**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

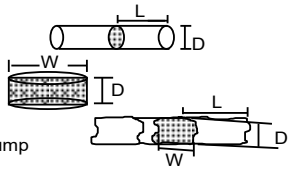
ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral
A = Axial
I = Irregular Lump



L > 0.5 D
0.6W < D < W
0.6W < D < W

Time Since Sampling = 0 Days
Storage:
[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: JS
Date Sampled: 24/10/2019
Tested By: JS
Date Tested: 24/10/2019

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GHD GEOTECHNICS

Report No: SYD1902658.17
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	Dulwich Grove Footpath, Duwlich Hill, NS
Job No.:	12515105
Borehole / Sample No.:	A3-BH11
Test Method:	AS4133.4.1

NATA

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
4.73	D	51.1	41.9		51.1	0.23	2	0.09	**0.09**	SS	LA	As Drilled
4.73	A	41.9		51.1	52.2	0.85	3	0.31	**0.32**	SS	LA	As Drilled
5.92	D	52.1	35.0		52.1	3.03	2	1.12	**1.14**	SS	BE	As Drilled
5.92	A	35.0		52.1	48.2	4.34	3	1.87	**1.84**	SS	BE	As Drilled
6.83	D	52.0	42.9		52.0	3.24	2	1.20	**1.22**	SS	BE	As Drilled
6.83	A	42.9		52.0	53.3	3.79	3	1.34	**1.37**	SS	BE	As Drilled
7.93	D	52.0	40.7		52.0	3.66	2	1.35	**1.38**	SS	BE	As Drilled
7.93	A	40.7		52.0	51.9	3.65	3	1.36	**1.38**	SS	BE	As Drilled
8.94	D	52.0	50.4		52.0	4.4	2	1.62	**1.65**	SS	BE	As Drilled
8.94	A	50.4		52.0	57.8	5.8	3	1.74	**1.85**	SS	BE	As Drilled
9.52	D	51.6	36.9		51.6	2.38	2	0.89	**0.91**	SS	BE	As Drilled
9.52	A	36.9		51.6	49.2	2.5	3	1.03	**1.02**	SS	BE	As Drilled
10.20	D	51.2	37.0		51.2	0.56	2	0.21	**0.22**	SS	BE	As Drilled
10.20	A	37.0		51.2	49.1	0.49	3	0.20	**0.20**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

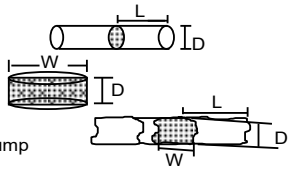
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 1 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: LM
Date Sampled: 24/10/2019
Tested By: LM
Date Tested: 25/10/2019

Sydney Laboratory
Unit 5 / 43 Herbert St
Artarmon NSW 2064
email: artarmon@ghd.com.au
web: ghd.com.au/ghdgeotechnics
Tel: (02) 9462 4860
Fax: (02) 9462 4710

CLIENTS | PEOPLE | PERFORMANCE

GHD GEOTECHNICS

Report No: SYD1902658.18
Issue No: 1

Point Load Strength Index - Report

Client:	Inner West Council
Project:	The GreenWay Geotech and Contam SI
Location:	Davis Street, Dulwich Hill, NSW
Job No.:	12515105
Borehole / Sample No.:	A3-LD_BH01
Test Method:	AS4133.4.1

Accredited for compliance with ISO / IEC 17025 - Testing
Laboratory Accreditation No. 679

Authorised Signatory: D. Brooke

Date of issue : 5/12/19

Test Results

Depth (m)	Test Type (D,A,I)	Dimensions				Results				Sample Description		
		D (mm)	L (mm)	W (mm)	De (mm)	Load, P (kN)	Failure Mode (1,2,3..)	Is (MPa)	Is_{50} (MPa)	Rock Type	Structure	Moisture
11.25	D	51.1	33.0		51.1	2.26	3	0.87	**0.87**	SS	BE	As Drilled
11.25	A	33.0		51.1	46.3	1.57	3	0.73	**0.71**	SS	BE	As Drilled
12.19	D	51.9	48.5		51.9	2.66	3	0.99	**1.00**	SS	BE	As Drilled
12.19	A	48.5		51.9	56.6	3.63	3	1.13	**1.20**	SS	BE	As Drilled

Comments (if applicable):

MOISTURE
(W) Wet
(M) Moist
(D) Dry
(AD) As Drilled
(AR) As Received

ROCK TYPE
(SS) Sandstone
(ST) Siltstone
(SH) Shale
(G) Granitic
(MSS) Meta Sandtone
(MST) Meta Siltstone

STRUCTRUE
(MA) Massive
(BE) Bedded
(IB) Interbedded
(LA) Laminated
(CR) Crystalline

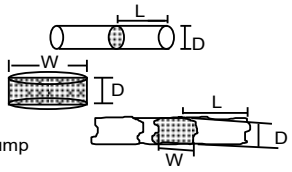
FAILURE MODE
1 = Fracture through fabric oblique to bedding
2 = Fracture along bedding
3 = Fracture through rock mass
4 = Fracture influenced by pre-existing:
(J) Joint plane, (M) Microfracture, (F) Foliation, (V) Vein
5 = Partial fracture or chip (Invalid result)

TEST TYPES

D = Diametral — L > 0.5 D

A = Axial — 0.6W < D < W

I = Irregular Lump — 0.6W < D < W



Time Since Sampling = 7 Days

Storage:

[X] CORE BOX [X] UNDER COVER
[ ] WRAPPED [ ] OPEN AIR
[ ] UNWRAPPED [ ] UNKNOWN

Sampled By: JS
Date Sampled: 18/10/2019
Tested By: JS
Date Tested: 26/10/2019

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 231488

Client Details

Client	GHD Pty Ltd
Attention	David Brooke
Address	57-63 Herbert Street, Artarmon, NSW, 2064

Sample Details

Your Reference	**12515105**
Number of Samples	16 SOIL
Date samples received	25/11/2019
Date completed instructions received	25/11/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	02/12/2019
Date of Issue	12/12/2019
Reissue Details	This report replaces R00 created on 29/11/2019 due to: Sample ID Amended (Client Request)

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Misc Inorg - Soil						
Our Reference		231488-1	231488-2	231488-3	231488-4	231488-5
Your Reference	UNITS	A2_BH04	A2D_BH06	A2D_BH07	A2D_BH07	A2D_BH08
Depth		0.30-0.50	1.50-1.95	0.50-0.95	2.50-2.95	1.00-1.20
Composite Reference		.	.	.	.	.
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019	26/11/2019
Date analysed	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019	26/11/2019
pH 1:5 soil:water	pH Units	6.8	7.2	8.4	7.8	8.1
Electrical Conductivity 1:5 soil:water	µS/cm	72	29	120	67	54
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10	10	24	25
Sulphate, SO4 1:5 soil:water	mg/kg	79	10	30	36	20

Misc Inorg - Soil						
Our Reference		231488-6	231488-7	231488-8	231488-9	231488-10
Your Reference	UNITS	A2D_BH09	A2D_BH09	A2D_LD01	A2D-LD02	A2D_LD03
Depth		1.25-1.40	2.40-2.65	0.50-0.80	0.50-0.95	1.00-2.00
Composite Reference		.	.	.	.	.
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019	26/11/2019
Date analysed	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019	26/11/2019
pH 1:5 soil:water	pH Units	8.3	5.1	6.9	7.3	5.4
Electrical Conductivity 1:5 soil:water	µS/cm	66	31	160	160	89
Chloride, Cl 1:5 soil:water	mg/kg	<10	10	41	31	44
Sulphate, SO4 1:5 soil:water	mg/kg	10	30	50	72	89

Misc Inorg - Soil						
Our Reference		231488-11	231488-12	231488-13	231488-14	231488-15
Your Reference	UNITS	A2_TP01	A3_BH01	A3_BH03	A3_BH04	A2D_LD04
Depth		0.30-0.60	1.20-1.30	1.70-1.80	0.50-0.95	.
Composite Reference		.	.	.	.	(1.50-1.95, 2.50-2.95, 3.5-3.95)
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019	26/11/2019
Date analysed	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019	26/11/2019
pH 1:5 soil:water	pH Units	7.3	5.0	4.7	7.4	7.8
Electrical Conductivity 1:5 soil:water	µS/cm	42	100	61	100	120
Chloride, Cl 1:5 soil:water	mg/kg	10	42	10	<10	10
Sulphate, SO4 1:5 soil:water	mg/kg	10	110	79	71	130

Misc Inorg - Soil		
Our Reference		231488-16
Your Reference	UNITS	A2D_LD04
Depth		.
Composite Reference		(4.50-4.95, 5.50-5.95, 6.50-6.95)
Type of sample		SOIL
Date prepared	-	26/11/2019
Date analysed	-	26/11/2019
pH 1:5 soil:water	pH Units	8.3
Electrical Conductivity 1:5 soil:water	µS/cm	300
Chloride, Cl 1:5 soil:water	mg/kg	25
Sulphate, SO4 1:5 soil:water	mg/kg	410

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	231488-4
Date prepared	-			26/11/2019	2	26/11/2019	26/11/2019		26/11/2019	26/11/2019
Date analysed	-			26/11/2019	2	26/11/2019	26/11/2019		26/11/2019	26/11/2019
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	2	7.2	7.2	0	102	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	2	29	29	0	108	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	2	<10	<10	0	104	92
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	2	10	10	0	109	109

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	13	26/11/2019	26/11/2019		[NT]	[NT]
Date analysed	-			[NT]	13	26/11/2019	26/11/2019		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	13	4.7	4.7	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	13	61	68	11	[NT]	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	13	10	20	67	[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	13	79	84	6	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 231489

Client Details

Client	GHD Pty Ltd
Attention	David Brooke
Address	57-63 Herbert Street, Artarmon, NSW, 2064

Sample Details

Your Reference	**12515105**
Number of Samples	14 Soil
Date samples received	25/11/2019
Date completed instructions received	25/11/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	02/12/2019
Date of Issue	02/12/2019

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Misc Inorg - Soil						
Our Reference		231489-1	231489-2	231489-3	231489-4	231489-5
Your Reference	UNITS	A1_BH01	A1_BH02	A1_BH06	A1_BH06	A1_BH07
Depth		2.20-2.30	0.80-0.90	1.50-1.95	3.50-3.95	3.00-3.45
Date Sampled		10/10/2019	10/10/2019	16/10/2019	16/10/2019	22/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019	26/11/2019
Date analysed	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019	26/11/2019
pH 1:5 soil:water	pH Units	8.4	8.8	10.9	8.3	8.2
Electrical Conductivity 1:5 soil:water	µS/cm	2,000	1,400	3,900	6,400	6,000
Chloride, Cl 1:5 soil:water	mg/kg	2,800	1,700	5,900	9,000	8,700
Sulphate, SO4 1:5 soil:water	mg/kg	540	480	780	2,900	2,700

Misc Inorg - Soil						
Our Reference		231489-6	231489-7	231489-8	231489-9	231489-10
Your Reference	UNITS	A1_LD03	A1_LD04	A1_LD05	A1_LD06	A1_LD07
Depth		0.50-1.00	1.80-1.90	0.70-1.00	1.10-1.50	0.50-1.00
Date Sampled		08/10/2019	08/10/2019	08/10/2019	08/10/2019	09/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019	26/11/2019
Date analysed	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019	26/11/2019
pH 1:5 soil:water	pH Units	7.8	7.8	7.8	8.1	7.1
Electrical Conductivity 1:5 soil:water	µS/cm	1,600	2,500	2,400	2,000	400
Chloride, Cl 1:5 soil:water	mg/kg	1,300	1,800	67	1,000	340
Sulphate, SO4 1:5 soil:water	mg/kg	2,100	3,500	7,900	2,800	310

Misc Inorg - Soil					
Our Reference		231489-11	231489-12	231489-13	231489-14
Your Reference	UNITS	A1_LD09	A1_LD10	A2_BH02	A2_BH03
Depth		0.30-0.50	1.20-1.50	2.50-2.95	0.70-0.90
Date Sampled		09/10/2019	09/10/2019	18/10/2019	16/10/2019
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019
Date analysed	-	26/11/2019	26/11/2019	26/11/2019	26/11/2019
pH 1:5 soil:water	pH Units	8.4	7.2	5.0	5.1
Electrical Conductivity 1:5 soil:water	µS/cm	1,200	350	44	83
Chloride, Cl 1:5 soil:water	mg/kg	850	240	<10	35
Sulphate, SO4 1:5 soil:water	mg/kg	1,200	290	58	91

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	231489-8
Date prepared	-			26/11/2019	6	26/11/2019	26/11/2019		26/11/2019	26/11/2019
Date analysed	-			26/11/2019	6	26/11/2019	26/11/2019		26/11/2019	26/11/2019
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	6	7.8	8.0	3	102	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	6	1600	1900	17	106	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	6	1300	1400	7	107	99
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	6	2100	2200	5	112	#

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	12	26/11/2019	26/11/2019		[NT]	[NT]
Date analysed	-			[NT]	12	26/11/2019	26/11/2019		[NT]	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	12	7.2	7.2	0	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	12	350	420	18	[NT]	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	12	240	300	22	[NT]	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	12	290	340	16	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
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Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
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Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

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Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

pH/ EC have exceeded the recommended technical holding times, Envirolab Group form 347 "Recommended Preservation and Holding Times" can be provided on request (available on the Envirolab website)

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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 231739

Client Details

Client	GHD Pty Ltd
Attention	David Brooke
Address	57-63 Herbert Street, Artarmon, NSW, 2064

Sample Details

Your Reference	**12515105**
Number of Samples	26 Soil
Date samples received	27/11/2019
Date completed instructions received	27/11/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	04/12/2019
Date of Issue	12/12/2019
Reissue Details	This report replaces R00 created on 02/12/2019 due to: Sample ID Amended (Client Request)

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Misc Inorg - Soil						
Our Reference		231739-1	231739-2	231739-3	231739-4	231739-5
Your Reference	UNITS	A3_LD/BH01	A4_BH02	A4_BH04	A4_BH05	A4_BH09
Depth		2.50-2.95	0.70-0.90	2.50-2.95+3.50-3.95	0.50-0.95+1.50-1.95	0.50-0.95
Sample ID		-	-	-	A4-BH06 0.5-0.75m	-
Date Sampled		18/10/2019	22/10/2019	22/10/2019	22/10/2019	22/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2019	28/11/2019	28/11/2019	28/11/2019	28/11/2019
Date analysed	-	28/11/2019	28/11/2019	28/11/2019	28/11/2019	28/11/2019
pH 1:5 soil:water	pH Units	7.2	6.9	8.2	8.5	4.7
Electrical Conductivity 1:5 soil:water	µS/cm	40	24	220	150	110
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10	10	20	10
Sulphate, SO4 1:5 soil:water	mg/kg	36	20	190	100	170

Misc Inorg - Soil						
Our Reference		231739-6	231739-7	231739-8	231739-9	231739-10
Your Reference	UNITS	A4_BH10	A4_BH12	A1_BH07	A1_LD01	A3_HA05
Depth		0.50-0.95+1.50-1.95	0.50-0.95	6.50-6.70	1.10-1.50	1.3-1.50
Sample ID		-	-	-	-	-
Date Sampled		22/10/2019	22/10/2019	22/10/2019	08/10/2019	31/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2019	28/11/2019	28/11/2019	28/11/2019	28/11/2019
Date analysed	-	28/11/2019	28/11/2019	28/11/2019	28/11/2019	28/11/2019
pH 1:5 soil:water	pH Units	7.8	7.2	8.4	9.0	7.3
Electrical Conductivity 1:5 soil:water	µS/cm	58	56	2,200	790	340
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10	2,800	890	310
Sulphate, SO4 1:5 soil:water	mg/kg	25	25	710	180	160

Misc Inorg - Soil						
Our Reference		231739-11	231739-12	231739-13	231739-14	231739-15
Your Reference	UNITS	A3_HA05	A3_BH04	A3_BH05	A3_LD02	A3_BH07
Depth		0.30-0.40	2.50-2.95	0.50-0.95+1.50-1.95	0.50-0.95+1.50-1.95	1.50-1.70
Sample ID		-	-	-	-	-
Date Sampled		31/10/2019	22/10/2019	11/10/2019	21/10/2019	30/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2019	28/11/2019	28/11/2019	28/11/2019	28/11/2019
Date analysed	-	28/11/2019	28/11/2019	28/11/2019	28/11/2019	28/11/2019
pH 1:5 soil:water	pH Units	6.7	4.9	6.9	7.5	5.5
Electrical Conductivity 1:5 soil:water	µS/cm	35	66	65	74	110
Chloride, Cl 1:5 soil:water	mg/kg	10	<10	10	<10	20
Sulphate, SO4 1:5 soil:water	mg/kg	10	94	58	38	160

Misc Inorg - Soil						
Our Reference		231739-16	231739-17	231739-18	231739-19	231739-20
Your Reference	UNITS	A3_BH08	A3_BH10	A3_HA01	A3_HA02	A3_HA04
Depth		2.50-2.95	4.10-4.20	0.50-0.65	0.30-0.50	0.80-0.90
Sample ID		-	-	-	-	-
Date Sampled		17/10/2019	24/10/2019	25/10/2019	21/10/2019	22/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2019	28/11/2019	28/11/2019	28/11/2019	28/11/2019
Date analysed	-	28/11/2019	28/11/2019	28/11/2019	28/11/2019	28/11/2019
pH 1:5 soil:water	pH Units	4.6	4.8	7.9	8.7	5.4
Electrical Conductivity 1:5 soil:water	µS/cm	180	91	57	190	46
Chloride, Cl 1:5 soil:water	mg/kg	170	<10	23	26	20
Sulphate, SO4 1:5 soil:water	mg/kg	97	130	<10	200	42

Misc Inorg - Soil						
Our Reference		231739-21	231739-22	231739-23	231739-24	231739-25
Your Reference	UNITS	A3_HA06	A3_HA06	A3_HA07	A3_BH06	A4_BH08
Depth		0.30-0.40	1.00-1.15	0.60-0.70	1.50-1.95+2.50-2.95	0.30-0.40
Sample ID		-	-	-	-	-
Date Sampled		15/10/2019	15/10/2019	15/10/2019	17/10/2019	17/10/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2019	28/11/2019	28/11/2019	28/11/2019	28/11/2019
Date analysed	-	28/11/2019	28/11/2019	28/11/2019	28/11/2019	28/11/2019
pH 1:5 soil:water	pH Units	8.1	8.3	7.3	6.5	7.2
Electrical Conductivity 1:5 soil:water	µS/cm	230	110	39	70	33
Chloride, Cl 1:5 soil:water	mg/kg	120	10	20	20	20
Sulphate, SO4 1:5 soil:water	mg/kg	42	76	10	81	51

Misc Inorg - Soil		
Our Reference		231739-26
Your Reference	UNITS	A3_BH06
Depth		3.5-3.95+4.50-4.95
Sample ID		-
Date Sampled		17/10/2019
Type of sample		Soil
Date prepared	-	28/11/2019
Date analysed	-	28/11/2019
pH 1:5 soil:water	pH Units	5.5
Electrical Conductivity 1:5 soil:water	µS/cm	200
Chloride, Cl 1:5 soil:water	mg/kg	10
Sulphate, SO4 1:5 soil:water	mg/kg	330

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	231739-2
Date prepared	-			28/11/2019	1	28/11/2019	28/11/2019		28/11/2019	29/11/2019
Date analysed	-			28/11/2019	1	28/11/2019	28/11/2019		28/11/2019	29/11/2019
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	1	7.2	7.3	1	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	1	40	41	2	101	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	<10	<10	0	106	90
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	36	37	3	109	107

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	231739-8
Date prepared	-			[NT]	16	28/11/2019	28/11/2019		29/11/2019	29/11/2019
Date analysed	-			[NT]	16	28/11/2019	28/11/2019		29/11/2019	29/11/2019
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	16	4.6	4.6	0	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	16	180	180	0	101	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	16	170	150	12	114	92
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	16	97	71	31	120	84

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	231739-25
Date prepared	-			[NT]	24	28/11/2019	28/11/2019		[NT]	29/11/2019
Date analysed	-			[NT]	24	28/11/2019	28/11/2019		[NT]	29/11/2019
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	24	6.5	6.2	5	[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	24	70	80	13	[NT]	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	24	20	22	10	[NT]	73
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	24	81	89	9	[NT]	122

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

pH EC have exceeded the recommended technical holding times, Envirolab Group form 347 "Recommended Preservation and Holding Times" can be provided on request (available on the Envirolab website)

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CERTIFICATE OF ANALYSIS 233334

Client Details

Client	GHD Pty Ltd
Attention	David Brooke
Address	57-63 Herbert Street, Artarmon, NSW, 2064

Sample Details

Your Reference	**12515105**
Number of Samples	2 Soil
Date samples received	17/12/2019
Date completed instructions received	17/12/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	20/12/2019
Date of Issue	20/12/2019

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Results Approved By
Nick Sarlamis, Inorganics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Misc Inorg - Soil			
Our Reference		233334-1	233334-2
Your Reference	UNITS	A4-TP02	A2-HA02
Depth		0.3-0.5	0.4-0.5
Type of sample		Soil	Soil
Date prepared	-	18/12/2019	18/12/2019
Date analysed	-	18/12/2019	18/12/2019
pH 1:5 soil:water	pH Units	5.6	7.2
Electrical Conductivity 1:5 soil:water	µS/cm	29	54
Chloride, Cl 1:5 soil:water	mg/kg	<10	20
Sulphate, SO4 1:5 soil:water	mg/kg	<10	10

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
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QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			18/12/2019	[NT]	[NT]	[NT]	[NT]	18/12/2019	[NT]
Date analysed	-			18/12/2019	[NT]	[NT]	[NT]	[NT]	18/12/2019	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	[NT]	[NT]	83	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	[NT]	[NT]	85	[NT]

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In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

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Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Appendix E – Historic investigation logs

Borehole No: BH9

Engineering Log - Borehole

SHEET 1 OF 1

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	FG
Location	Lilyfield - Dulwich Hill	Checked By	RR

Started Drilling	1.8.12	Northing	6248606.00	Slope	90°	Equipment	Multidrill
Completed Drilling	1.8.12	Easting	328468.28	Bearing	---	Ground Level	4.261 AHD

DRILLING				MATERIAL DESCRIPTION					TESTING, SAMPLING & OTHER INFORMATION			
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Tests	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	Well Details
AD/T		4	0			ASPHALT: black				ES	ROAD SURFACE	
						FILL: Gravelly SAND: fine to coarse grained, yellow, brown, subrounded to sub-angular gravel					FILL Appears moderately compacted	
						FILL: Sandy CLAY: low plasticity, brown mottled red, with fine to medium subrounded gravel and crushed sandstone	~PL			ES		
			1						SPT 3, 6, 10 N=16	D		
		3								ES		
						FILL: Silty CLAY: grey, brown mottled yellow and red, with coarse grained sand and fine to medium subrounded to sub-angular gravel			SPT 8, 6, 7 N=13	D		
			2				<PL			ES		
		2										
			3									
		1				FILL: Silty CLAY: medium plasticity, brown mottled yellow, with fine grained sand	<PL		SPT 3, 5, 5 N=10	ES D	pp=170, 220, 270kPa	
			4		CH	Silty CLAY: high plasticity, dark grey					ALLUVIUM	
		0			CH	Silty CLAY: high plasticity, grey mottled brown	>PL	S		ES		
						SANSTONE: pink			SPT 12/100mm N=Refusal	D	BEDROCK	
		-1	5			Borehole BH9 Terminated at 4.90 m					Target depth	
			6									
		-2										
			7									
		-3										
			8									

Remarks: CH10125.000 Borehole undertaken in the footpath. Inclinometer installed.

Well Legend:

Cement Seal

aurecon

Borehole No: BH11

Engineering Log - Borehole

SHEET 1 OF 3

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	FG
Location	Lilyfield - Dulwich Hill	Checked By	RR

Started Drilling	26.7.12	Northing	6248558.48	Slope	90°	Equipment	
Completed Drilling	26.7.12	Easting	328484.77	Bearing	---	Ground Level	12.094 AHD

DRILLING				MATERIAL DESCRIPTION					TESTING, SAMPLING & OTHER INFORMATION			
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Tests	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	Well Details
AD/T		12	0			FILL: Gravelly Silty CLAY: low plasticity, grey, brown, medium to coarse sub-rounded gravel, with coarse grained sand	~PL			ES	FILL	
										ES		
		11	1			FILL: Silty CLAY: low plasticity, grey, brown, with coarse grained sand and medium to coarse sub-rounded gravel (ballast)				ES		
		10	2			FILL: Silty CLAY: low plasticity, grey, brown mottled orange and red, with coarse grained sand and medium to coarse sub-rounded gravel (crushed sandstone)			SPT 3, 3, 5 N=8	D		
		9	3			FILL: Silty CLAY: low plasticity, grey, brown mottled orange and yellow, with coarse grained sand, medium sub-rounded gravel, black ash and crushed shale			SPT 2, 2, 3 N=5	ES D		
		8	4							ES	Hard to drill, perhaps boulder	
		7	5			FILL: Silty CLAY: high plasticity, grey, brown mottled dark orange, with crushed shale, ironstone (sub-angular coarse gravel) and grey ash			SPT 4, 4, 7 N=11	D		
		6	6			FILL: Silty CLAY: medium to high plasticity, grey, brown mottled red and yellow, with coarse grained sand and fine sub-angular ironstone gravel			SPT 4, 4, 6 N=10	D		
		5	7		CI-CH	Silty CLAY: medium to high plasticity, grey mottled yellow, with fine grained sand		F to S		ES	ALLUVIUM	
			8			As above	>PL		SPT 1, 3, 7/110mm N>10	D	pp=70,20, 70kPa	

Remarks: CH10188.000 Borehole undertaken in the six foot. Logging started below 0.7m thick ballast layer. Inclinometer installed.

Well Legend:

Cement Seal

Engineering Log - Borehole

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	FG
Location	Lilyfield - Dulwich Hill	Checked By	RR

Started Drilling	26.7.12	Northing	6248558.48	Slope	90°	Equipment	
Completed Drilling	26.7.12	Easting	328484.77	Bearing	---	Ground Level	12.094 AHD

DRILLING				MATERIAL DESCRIPTION					TESTING, SAMPLING & OTHER INFORMATION			
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Tests	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	Well Details
		4				Continued as Cored Drill Hole						
		3	9									
		2	10									
		1	11									
		0	12									
		-1	13									
		-2	14									
		-3	15									
			16									

Remarks: CH10188.000 Borehole undertaken in the six foot. Logging started below 0.7m thick ballast layer. Inclinometer installed.

Well Legend:

Cement Seal

aurecon

aurecon	Client : John Holland Project : Sydney Light Rail - Inner West Extension	Core Photograph BH11

Engineering Log - Borehole

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	FG
Location	Lilyfield - Dulwich Hill	Checked By	RR

Started Drilling	26.7.12	Northing	6248558.48	Slope	90°	Equipment	
Completed Drilling	26.7.12	Easting	328484.77	Bearing	---	Ground Level	12.094 AHD

DRILLING				ROCK MASS CHARACTERISTICS						DISCONTINUITIES			
Method	Water	RL (m)	Depth (m)	Graphic Log	Description of Rock (rock type: colour, grain size, structure, minor components)	Weathering	Strength Is_{50} (× Axial, ○ Diametral, □ Lump) EL VL L M H VH EH -0.03 -0.1 -0.3 -1 -3 -10	IS_{50} (MPa) D L A	Defect Spacing (mm) 20 40 100 300 1000	Core Rec'y (%)	RQD (%)	Description of Defects (defect type, inclination, roughness, thickness, infilling)	Well Details
		4			START CORING AT 8.10m								
NMLC			9		SANDSTONE: pale white, pink mottled red, fractured, thinly laminated with clay seams	DW		0.18 0.3 0.25 0.37		100	56	8.16: Be, 0-5°, p, r, cn 8.22: Be, 0-5°, p, r, cn 8.25: Be, 0-5°, p, r, vn 8.32: Be, 0-5°, p, r, vn 8.35: Jo, 55-60°, p, r, cg 8.39: Jo, 0-10°, p, r, vn 8.44-8.48: Cs 8.63: Jo, 20-30°, p, r, cn 9.04: Be, 0-5°, p, r, vn 9.09-9.10: Ds	
		3	10		SANDSTONE: pale white, pink, yellow, slightly fractured, thinly laminated	SW		1.33 1.68 0.19 0.46		100	100	9.95: Jo, 20-30°, p, r, cn 10.18: Be, 0-5°, p, r, vn 10.61: Be, 0-5°, p, r, cn 10.75: Be, 0-5°, p, r, cg	Sand
		2	11										
		1			Borehole BH11 Terminated at 11.15 m Target depth			1.19 1.45					
		0	12										
		-1	13										
		-2	14										
		-3	15										
			16										

Remarks: CH10188.000 Borehole undertaken in the six foot. Logging started below 0.7m thick ballast layer. Inclinometer installed.

Well Legend:

Cement Seal Cement: Bottom of hole

aurecon

Borehole No: BH12

Engineering Log - Borehole

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	FG
Location	Lilyfield - Dulwich Hill	Checked By	JD/RR

Started Drilling	11.7.12	Northing	6248396.90	Slope	90°	Equipment	Multidrill
Completed Drilling	11.7.12	Easting	328473.71	Bearing	---	Ground Level	11.327 AHD

DRILLING				MATERIAL DESCRIPTION					TESTING, SAMPLING & OTHER INFORMATION			
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Tests	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)	Well Details
AD/T	Not Encountered	11	0			FILL: Silty Clayey SAND: medium grained, brown, with fine subrounded gravel				ES	FILL Appears moderately compacted	
						FILL: As above				ES		
			1							D		
		10								ES		
						FILL: Silty CLAY: low to medium plasticity, brown, dark brown, with black ash			SPT 2, 3, 3 N=6	D		
			2									
		9										
			3			FILL: Silty CLAY: medium to high plasticity, grey, brown mottled yellow, with fine sub-angular gravel	M		SPT 4, 2, 4 N=6	ES D		
		8										
			4									
		7				FILL: Silty CLAY: low plasticity, grey, brown mottled red, with ash and crushed sandstone			SPT 3, 2, 3 N=5	D		
			5			As above, but black in colour and with strong odour						
		6										
			6		Cl-CH	CLAY: medium to high plasticity, grey, brown mottled red, with rootlets	~PL	F - St	SPT 3, 4, 6 N=10	ES D	ALLUVIUM	
		5	7									
		4				SANDSTONE: fine grained, white, extremely weathered, extremely low strength			SPT 16/60mm HB N=Refusal	D	EXTREMELY WEATHERED ROCK	
			8			Continued as Cored Drill Hole						

Remarks: CH10340.000 Borehole undertaken in the six foot. Logging started below 0.7m thick ballast layer. Piezometer installed.

Well Legend:

Cement Seal | No Backfill (just pipe): 1 pipe group, 1 pipe | Slotted PVC Pipe with Sand Backfill | Bentonite: Bottom of hole

aurecon

aurecon	Client : John Holland Project : Sydney Light Rail - Inner West Extension	Core Photograph BH12

Engineering Log - Borehole

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	FG
Location	Lilyfield - Dulwich Hill	Checked By	JD/RR

Started Drilling	11.7.12	Northing	6248396.90	Slope	90°	Equipment	Multidrill
Completed Drilling	11.7.12	Easting	328473.71	Bearing	---	Ground Level	11.327 AHD

DRILLING				ROCK MASS CHARACTERISTICS						DISCONTINUITIES			
Method	Water	RL (m)	Depth (m)	Graphic Log	Description of Rock (rock type: colour, grain size, structure, minor components)	Weathering	Strength Is_{50} (× Axial, ○ Diametral, □ Lump) EL VL L M H VH EH (-0.03 -0.1 -0.3 -1 -3 -10)	IS_{50} (MPa) D L A	Defect Spacing (mm) (20 40 100 300 1000)	Core Rec'y (%)	RQD (%)	Description of Defects (defect type, inclination, roughness, thickness, infilling)	Well Details
		11	0										
			1										
		10											
			2										
		9											
			3										
		8											
			4										
		7											
			5										
		6											
			6										
		5											
			7										
		4											
			8		START CORING AT 7.90m					100	95	7.95: Jo, 30-35°, p, r, cn	

Remarks: CH10340.000 Borehole undertaken in the six foot. Logging started below 0.7m thick ballast layer. Piezometer installed.

Well Legend:

aurecon

Engineering Log - Borehole

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	FG
Location	Lilyfield - Dulwich Hill	Checked By	JD/RR

Started Drilling	11.7.12	Northing	6248396.90	Slope	90°	Equipment	Multidrill
Completed Drilling	11.7.12	Easting	328473.71	Bearing	---	Ground Level	11.327 AHD

DRILLING				ROCK MASS CHARACTERISTICS						DISCONTINUITIES			
Method	Water	RL (m)	Depth (m)	Graphic Log	Description of Rock (rock type: colour, grain size, structure, minor components)	Weathering	Strength Is_{50} (× Axial, ○ Diametral, □ Lump) EL -0.03, VL -0.1, L -0.3, M -1, H -3, VH -10, EH	IS_{50} (MPa) D L A	Defect Spacing (mm) 20, 40, 100, 300, 1000	Core Rec'y (%)	RQD (%)	Description of Defects (defect type, inclination, roughness, thickness, infilling)	Well Details
NMLC	100% Water RETURN	3	9		SANDSTONE: pale brown, white, fractured to slightly fractured, with extremely weathered bands *(continued)*	DW	0					7.96: Jo, 30-35°, p, r, cn	
						DW				100	95	8.79: Be, 0°, u, r, cg 8.90: Be, 0°, p, r, vn	
		2	10		SANDSTONE: pale brown, white, fractured to slightly fractured, thinly laminated		0.66	0.65				9.20: Be, 40°, p, r, cn	
		1	11			DW - SW	1.36	1.31		100	90	9.40: Be, 0°, p, r, cn 9.45: Jo, 30-40°, p, r, cn 9.49: Jo, 30-40°, p, r, cn 9.65: Jo, 30-40°, p, r, cn 9.79: Jo, 25-30°, p, r, cn 9.87: Jo, 45°, p, r, cn 10.02: Be, 0-5°, p, r, cn 10.03: Be, 0°, p, r, cn 10.17: Jo, 40°, p, r, cn 10.26: Jo, 40°, p, r, cn 10.37: Jo, 40°, p, r, cn 10.52: Jo, 40-45°, p, r, cn 10.66: Jo, 30-40°, s, r, cn 10.83: Jo, 45°, p, r, cn	
		0	12				1.54	1.61					
							1.43	1.5				11.12: Jo, 40-45°, p, r, cn	
		-1	13		Borehole BH12 Terminated at 12.00 m Target depth								
		-2	14										
		-3	15										
		-4	16										

Remarks: CH10340.000 Borehole undertaken in the six foot. Logging started below 0.7m thick ballast layer. Piezometer installed.

Well Legend:

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Borehole No: BH13

Engineering Log - Borehole

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	FG
Location	Lilyfield - Dulwich Hill	Checked By	JD/RR

Started Drilling	12.7.12	Northing	6248304.43	Slope	90°	Equipment	Multidrill
Completed Drilling	12.7.12	Easting	328454.79	Bearing	---	Ground Level	10.311 AHD

DRILLING				MATERIAL DESCRIPTION					TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Tests	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)
AD/T	Not Encountered	10	0			FILL: Sandy Silty CLAY: low plasticity, brown, with sub-angular fine gravel	M			ES	FILL Appears moderately compacted
										ES	
			1			FILL: Silty CLAY: low plasticity, brown, with fine grained sand and crushed sandstone	<PL		SPT 2, 4, 5 N=9	D	
		9								ES	
			2			FILL: Silty Clayey SAND: fine grained, grey, pale brown, with crushed sandstone, shale and rootlets	D		SPT 4, 3, 5 N=8	D	
		8									
			3			FILL: Sandy Silty CLAY: medium to high plasticity, grey, pale brown mottled red	~PL		SPT 3, 0, 3/150mm N>3	D	
		7									
			4							ES	
		6									
			5		CH	Silty CLAY: high plasticity, grey mottled red and yellow, with ironstone bands or pockets	~PL	St	SPT 2, 7, 7 N=14		RESIDUAL SOIL Approximate 150mm thick of very soft material
		5								U	
			6			SANDSTONE: brown, extremely weathered, extremely low strength			SPT 10/30mm N=Refusal	D	WEATHERED ROCK
		4				Continued as Cored Drill Hole					
			7								
		3									
			8								

Remarks: CH10430.000 Borehole undertaken in the six foot. Logging started below 0.7m thick ballast layer.

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aurecon	Client : John Holland Project : Sydney Light Rail - Inner West Extension	Core Photograph BH13

Engineering Log - Borehole

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	FG
Location	Lilyfield - Dulwich Hill	Checked By	JD/RR

Started Drilling	12.7.12	Northing	6248304.43	Slope	90°	Equipment	Multidrill
Completed Drilling	12.7.12	Easting	328454.79	Bearing	---	Ground Level	10.311 AHD

DRILLING				ROCK MASS CHARACTERISTICS							DISCONTINUITIES		
Method	Water	RL (m)	Depth (m)	Graphic Log	Description of Rock (rock type: colour, grain size, structure, minor components)	Weathering	Strength Is_{50} (× Axial, ○ Diametral, □ Lump) EL -0.03, VL -0.1, L -0.3, M -1, H -3, VH -10, EH	IS_{50} (MPa) D L A	Defect Spacing (mm) 20, 40, 100, 300, 1000	Core Rec'y (%)	RQD (%)	Description of Defects (defect type, inclination, roughness, thickness, infilling)
		10	0									
		9	1									
		8	2									
		7	3									
		6	4									
		5	5									
			6		START CORING AT 6.20m							
NMLC	100% Water RETURN	4			SANDSTONE: brown and white, slightly fractured, thinly laminated			0.3				6.30: Jo, 25-30°, p, r, cn
								0.32				6.32: Jo, 25°, p, r, cn
												6.46: Jo, 70-75°, p, r, cg
		7				DW		0.06		100	100	6.81: Jo, 30-35°, p, r, cn
		3										
					SANDSTONE: pale white, pale brown, fractured to slightly fractured, thinly laminated							7.48: Be, 10-15°, p, r, cg
												7.50: Jo, 5°, p, s, cn
												7.54: Jo, 80-85°, p, s, cn
					CORE LOSS 0.08m (7.74-7.82)					97	80	7.57: Be, 0-5°, p, s, cn
		8				SW		0.45				7.60: Jo, 45-50°, p, r, vn
												7.63: Be, 0°, p, r, vn

Remarks: CH10430.000 Borehole undertaken in the six foot. Logging started below 0.7m thick ballast layer.

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Engineering Log - Borehole

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	FG
Location	Lilyfield - Dulwich Hill	Checked By	JD/RR

Started Drilling	12.7.12	Northing	6248304.43	Slope	90°	Equipment	Multidrill
Completed Drilling	12.7.12	Easting	328454.79	Bearing	---	Ground Level	10.311 AHD

DRILLING				ROCK MASS CHARACTERISTICS						DISCONTINUITIES		
Method	Water	RL (m)	Depth (m)	Graphic Log	Description of Rock (rock type: colour, grain size, structure, minor components)	Weathering	Strength Is_{50} (EL -0.03, VL -0.1, L -0.3, M -1, H -3, VH -10, EH; X - Axial, O - Diametral, □ - Lump)	IS_{50} (MPa) D L A	Defect Spacing (mm) (20, 40, 100, 300, 1000)	Core Rec'y (%)	RQD (%)	Description of Defects (defect type, inclination, roughness, thickness, infilling)
NMLC	100% Water RETURN	2	9		SANDSTONE: pale white, pale brown, fractured to slightly fractured, thinly laminated *(continued)*	SW		0.61 1.38 1.53 1.98 1.65 1.99		97	80	7.70: Be, 0-5°, p, r, cg 7.73: Be, 0°, p, r, cg 8.13: Be, 0°, p, r, cn 8.44: Jo, 45°, p, r, cn 9.25: Be, 0-3°, p, r, cn 9.29: Be, 0°, p, r, vn 9.37: Be, 0°, p, r, cn 9.82: Jo, 10-15°, p, r, cn 10.25: Jo, 10-15°, p, r, cn 10.30: Jo, 20-25°, p, r, cn
		1	10									
		0	11		Borehole BH13 Terminated at 10.40 m Target depth			1.65				
		-1	12									
		-2	13									
		-3	14									
		-4	15									
		-5	16									

Remarks: CH10430.000 Borehole undertaken in the six foot. Logging started below 0.7m thick ballast layer.

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Test Pit at 4,0 m (cutting)

aurecon	John Holland Group Sydney Light Rail Inner West Extension Geotechnical Investigation	**Pit Photograph** **TP06**

Test Pit No: TP6

Engineering Log - Test Pit

SHEET 1 OF 1

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	JD
Location	Lilyfield - Dulwich Hill	Checked By	RR

Started Excavation	27.7.12	Northing	6246943.83	Slope	90°	Equipment	>6t Excavator
Completed Excavation	27.7.12	Easting	327877.13	Bearing	---	Ground Level	20.765 AHD

EXCAVATION				MATERIAL DESCRIPTION					TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Tests DCP Results (blows/ 100mm)	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)
	Dry	20	0			SILT: dark brown, [TOPSOIL]	D	VSt to H			RESIDUAL SOIL
					CI	Silty CLAY: grey, with fine to medium sand				B	
		19	1			White to light grey extremely weathered thinly laminated class V/IV SHALE. Recovered as clayey SILT				B	BEDROCK
		18	2			Dark grey mottled red-brown/yellow brown thinly laminated extremely weathered class IV/V SHALE. Recovered as friable clayey SILT					
		17	3			Yellow extremely weathered fractured fine to medium grained SANDSTONE.					
		16	4			Test Pit TP6 Terminated at 4.00 m					Target depth
		15	5								
		14	6								
		13	7								
			8								

Remarks: CH12000.000 Trial pit excavated in up line cutting slope.

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Test Pit No: TT15

Engineering Log - Test Pit

SHEET 1 OF 1

Client	John Holland	Project No.	230391-003-001
Project	Sydney Light Rail Inner West Extension	Logged By	JD
Location	Lilyfield - Dulwich Hill	Checked By	RR

Started Excavation	11.7.12	Northing	6248082.27	Slope	90°	Equipment	4-6t Excavator
Completed Excavation	11.7.12	Easting	328340.45	Bearing	---	Ground Level	10.201 AHD

EXCAVATION				MATERIAL DESCRIPTION					TESTING, SAMPLING & OTHER INFORMATION		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Description of Soil (soil type: plasticity/grainsize, colour and other components)	Moisture Condition	Consistency	Tests DCP Results (blows/ 100mm)	Samples	Additional Comments (material origin, pocket penetrometer values, investigation observations)
	Minor seepage at 0.70m bgl	10	0		GP	FILL: GRAVEL: coarse grained, angular, grey, [BALLAST]	D		0 9 5 2 3		FILL
					GP	FILL: Sandy GRAVEL: medium grained, angular, grey, with fine to coarse sand, [CAPPING LAYER]	M to W		3 3	ES B	Appears well compacted.
		9	1		ML-MH	FILL: Clayey SILT: orange brown mottled brown, with sand	M		3 10 12 9	ES B	
					SM	FILL: Clayey Silty SAND: fine to medium grained, orange brown mottled red brown and pale grey, with angular to sub-angular medium to coarse of very low strength gravel			3 20	ES	
						Test Pit TT15 Terminated at 1.50 m					Target depth

Remarks: CH10675.000 Trial pit excavated in the down line cess

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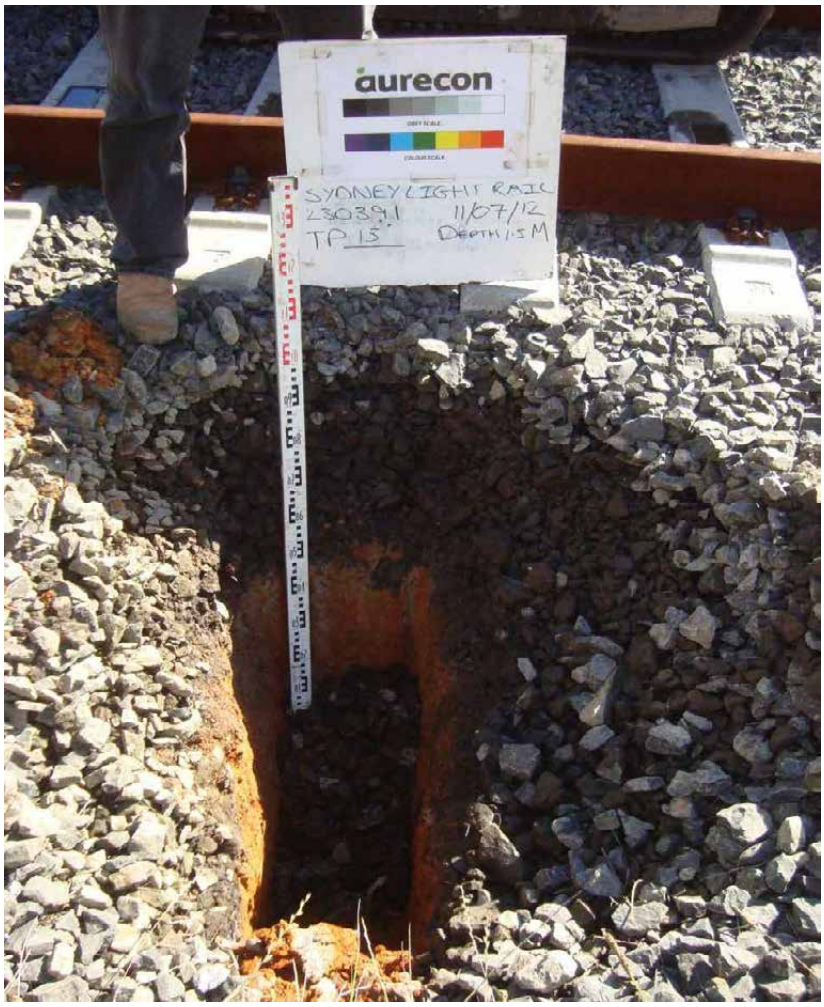

Trial Trench at 1,5 m

Trial Trench TT15 (spoil)

aurecon	John Holland Group Sydney Light Rail Inner West Extension Geotechnical Investigation	**Trial Trench Photograph** **TT15**

coffey environments

Environmental Log - Borehole

Borehole No. **BH7**

Sheet 1 of 1

Office Job No.: **ENAURHOD04175AA**

Client: ***Transport NSW***

Date started: ***28.9.2011***

Principal:

Date completed: ***28.9.2011***

Project: ***SLRE Inner West***

Logged by: ***PD***

Borehole Location: ***Lewisham West Stop***

Checked by: ***MD***

drill model and mounting: Geoprobe Truck | Easting: | slope: -90° | R.L. Surface:

hole diameter: 100 mm | Northing | bearing: | datum:

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
				E+1.3ppm					**TOPSOIL:** Sandy Gravelly Silt: Grey to brown.	D	F		No odour, no staining.
									FILL: Clayey gravelly SAND: Medium to coarse grained, grey to brown.				
									FILL: Silty Gravelly SAND: Medium grained, dark grey. Gravel is 1-2mm (diameter), crushed sandstone, highly weathered.				
									Becomes red brown.				
				E, Dup4+1.3ppm		0.5		CL	**Sandy CLAY**: Medium plasticity, yellow to brown. Minor sandstone.		S		
				E+1.3ppm					**SANDSTONE** Medium grained, grey, highly weathered.		H		
						1.0							
						1.5							Terminated at target depth.
									Borehole BH7 terminated at 1.5m				
						2.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration

1 2 3 4 no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE ENAURHOD04175AA.GPJ COFFEY.GDT 17.11.11

Form GEO 5.3 Issue 3 Rev.2

coffey environments

Environmental Log - Borehole

Borehole No.	**BH11**
Sheet	1 of 1
Office Job No.:	**ENAURHOD04175AA**
Client:	**Transport NSW**
Date started:	**28.9.2011**
Principal:	
Date completed:	**28.9.2011**
Project:	**SLRE Inner West**
Logged by:	**PD**
Borehole Location:	**Lewisham West Stop**
Checked by:	**MD**

drill model and mounting: Geoprobe Truck | Easting: | slope: -90° | R.L. Surface:

hole diameter: 100 mm | Northing | bearing: | datum:

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
				E+1.1ppm					**FILL:** Gravelly Silty CLAY: Low plasticity, dark brown. Gravel 1cm-8cm (diameter).	D	L		No odour, no staining
						0.5		SM	**Silty SAND:** Fine to medium grained, grey to orange.		F		
				E+1.1ppm									
				E+1.2ppm		1.0		CL	**Gravelly Sandy CLAY** Medium plasticity, dark orange to brown. Sandstone gravel 1mm - 10cm (diameter).				
				E+1.1ppm		1.5							Terminated at target depth.
						2.0			Borehole BH11 terminated at 1.9m				
						2.5							
						3.0							
						3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil
C casing

penetration

1 2 3 4 no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Environmental Log - Borehole

Borehole No. **BH12**

Sheet 1 of 1

Office Job No.: **ENAURHOD04175AA**

Client: ***Transport NSW***

Date started: ***28.9.2011***

Principal:

Date completed: ***28.9.2011***

Project: ***SLRE Inner West***

Logged by: ***PD***

Borehole Location: ***Lewisham West Stop***

Checked by: ***MD***

drill model and mounting: Geoprobe Truck | Easting: | slope: -90° | R.L. Surface:

hole diameter: 100 mm | Northing | bearing: | datum:

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
				E+1.2ppm					**FILL:** Gravelly Sandy CLAY: Medium plasticity, dark grey to brown. Sandstone gravel 1cm - 10cm (diameter) grey and orange.	D	F		No odour, no staining.
				E+1.2ppm		1							
				E+1.1ppm						M			
				E+1.1ppm		2							
				E+1.2ppm		3							
				E+1.3ppm				CH	**CLAY:** High plasticity, orange to grey.	D			Terminated at target depth.
						4			Borehole BH12 terminated at 3.9m				
						5							
						6							

BOREHOLE ENAURHOD04175AA.GPJ COFFEY.GDT 17.11.11

Form GEO 5.3 Issue 3 Rev.2

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit

*bit shown by suffix e.g. ADT

support

M mud N nil

C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown

water inflow

water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Environmental Log - Borehole

Borehole No.	**BH13**
Sheet	1 of 1
Office Job No.:	**ENAURHOD04175AA**
Client:	**Transport NSW**
Date started:	**28.9.2011**
Principal:	
Date completed:	**28.9.2011**
Project:	**SLRE Inner West**
Logged by:	**PD**
Borehole Location:	**Lewisham West Stop**
Checked by:	**MD**

drill model and mounting: Geoprobe Truck | Easting: | slope: -90° | R.L. Surface:

hole diameter: 100 mm | Northing | bearing: | datum:

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetro-meter kPa 100 200 300 400	structure and additional observations
									Concrete Slab				
				E+1.3ppm					**FILL:** Gravelly Sandy CLAY: Medium plasticity, dark grey to brown. Sandstone gravel 1cm-5cm (diameter), white and black ash.	D	F		No odour, no staining
				E+1.2ppm		0.5		SM	**Silty SAND:** Medium grained, grey to orange, highly weathered.				
								CL	**Sandy CLAY:** Medium plasticity, dark orange to brown.				
				E+1.3ppm		1.0							
						1.5							
				E, Dup6+1.2ppm		2.0							Terminated at target depth.
									Borehole BH13 terminated at 2.3m				
						2.5							
						3.0							
						3.5							
						4.0							

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description
based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey environments

Environmental Log - Borehole

Borehole No. **BH25**

Sheet 1 of 1

Office Job No.: **ENAURHOD04175AA**

Client: ***Transport NSW***

Date started: ***4.10.2011***

Principal:

Date completed: ***4.10.2011***

Project: ***SLRE Inner West***

Logged by: ***PD***

Borehole Location: ***Warath Mills***

Checked by: ***MD***

drill model and mounting: Geoprobe Truck | Easting: | slope: -90° | R.L. Surface:

hole diameter: 100 mm | Northing | bearing: | datum:

drilling information | **material substance**

method	penetration 1 2 3	support	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	pocket penetrometer kPa 100 200 300 400	structure and additional observations
									TOPSOIL: Clayey SILT: Dark brown.	D	S		No odour or staining.
				E, DUP10					**FILL:** Silty CLAY: Low plasticity, dark brown.		F		
									Becoming low to medium plasticity, red.				
				E		0.5							
									Becoming sandy, dark grey to brown.				
				E		1.0							
								GC	**Gravelly CLAY:** High plasticity, grey mottled red. Gravel 5cm-8cm (diameter), red sandstone pieces.				
						1.5							
						2.0							
				E									
						2.5			Becomes gravelly, red to orange. Gravel red sandstone pieces.				
						3.0							
				E									
								CL	**Sandy CLAY:** Low plasticity, yellow to orange.				
						3.5							Terminated at target depth.
						4.0			Borehole BH25 terminated at 3.7m				

method

AS	auger screwing*
AD	auger drilling*
RR	roller/tricone
W	washbore
CT	cable tool
HA	hand auger
DT	diatube
B	blank bit
V	V bit
T	TC bit
*bit shown by suffix e.g.	ADT

support

M mud N nil
C casing

penetration

1 2 3 4 — no resistance ranging to refusal

water

10/1/98 water level on date shown
water inflow
water outflow

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
N	standard penetration test (SPT)
N*	SPT - sample recovered
Nc	SPT with solid cone
V	vane shear (kPa)
P	pressuremeter
Bs	bulk sample
E	environmental sample
R	refusal

classification symbols and soil description

based on unified classification system

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
W_L	liquid limit

consistency/density index

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 21202534 SLR.GPJ GHD_GEO_TEMPLATE.GDT 16/11/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH107**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		SHEET 1 OF 4
Location :	LILYFIELD TO DULWICH HILL, NSW		
Position :	328480.0 E 6248469.0 N MGA94/ 56 **Surface RL:** 12.5m appox AHD **Angle from Horiz. :** 90°		**Processed :** CRS
Rig Type :	Intertech 550 **Mounting:** 4wd truck **Contractor :** RailCorp **Driller :** D. Gordon		**Checked :** RAC
Date Started : 1/9/11	**Date Completed :** 2/9/11 **Logged by :** SHH		**Date :** 14/11/11

DRILLING					MATERIAL						PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
			Nil					BALLAST, dark grey, medium to coarse gravel, small cobble size, angular, basaltic (ballast - fill).	-	-			End Cap Ballast and gravel fill
					0.80		CI-CH	CLAY, mottled light and dark grey, orange and black, medium to high plasticity, with fine to medium sub-rounded and angular slag and shale gravel, with fine to coarse grained sand, with silt, trace black ash, trace rootlets (fill).	M	F			Bentonite
1				D									
				SPT 3/4/2 N=6									
2				D									
	V/TC-bit auger	Nil											
				SPT 2/4/4 N=8									
3													2mm graded sand backfill
				SPT 4/5/4 N=9				3.80m, low plasticity fines, band of black sand, medium grained.					
4								4.50m, increasing weathered shale gravel content.					
				SPT 4/3/5 N=8									
5													

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258-34

BOREHOLE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_BOREHOLE 212026834_SLR.GPJ GHD_GEO_TEMPLATE.GDT 16/11/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH107**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		SHEET 2 OF 4
Location :	LILYFIELD TO DULWICH HILL, NSW		
Position :	328480.0 E 6248469.0 N MGA94/ 56 **Surface RL:** 12.5m appox AHD **Angle from Horiz. :** 90°		**Processed :** CRS
Rig Type :	Intertech 550 **Mounting:** 4wd truck **Contractor :** RailCorp **Driller :** D. Gordon		**Checked :** RAC
Date Started : 1/9/11	**Date Completed :** 2/9/11 **Logged by :** SHH		**Date :** 14/11/11

DRILLING					MATERIAL							PIEZOMETER	
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations	Piezometer Log	Components
6	V/TC-bit auger	Nil		SPT 2/3/5 N=8				From 5.0m, CLAY as previous, glass fragments evident to coarse gravel size and ceramic plate fragments. 5.50m-5.95m, orange and red, with ferriferous indurated / cemented nodules to coarse gravel size.	M	F			6m slotted screen and filtersock cover
				D	6.00		CI	CLAY, brown to dark brown, medium plasticity, with fine to medium grained sand (topsoil).	M	F			50mm PVC casing
					6.40		CH	CLAY, mottled light grey, yellow and orange, high plasticity, with rootlets, vesicles and associated ferriferous staining (residual).	M	St-VSt			
7				SPT 3/6/9 N=15						VSt			
					7.25		SC	Clayey SAND, light grey with mottled orange and yellow, medium grained, weak ferriferous indurated features red in colour, typically with sub-vertical orientation (residual).	M	MD			
8				SPT 5/9/13 N=22	8.20			SANDSTONE inferred, light grey orange and red, highly weathered, low strength.			8.20m, increased drilling resistance		Base of piezo @ 8.4m
				SPT 3 for 0mm HB N=ref	8.50			Start of coring at 8.5 metres. For Cored interval, see Core Log Sheet.			Borehole is dry on completion of augering		
9													
10													

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258-34

CORE LOG SHEET WITH STANDPIPE PIEZOMETER

Client :	PYRMONT LIGHT RAIL COMPANY			**HOLE No. BH107**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION			SHEET 3 OF 4	
Location :	LILYFIELD TO DULWICH HILL, NSW				
Position :	328480.0 E 6248469.0 N MGA94/ 56	**Surface RL:** 12.5m approx AHD		**Angle from Horiz. :** 90°	**Processed :** CRS
Rig Type :	Intertech 550	**Mounting:** 4wd truck	**Contractor :** RailCorp	**Driller :** D. Gordon	**Checked :** RAC
Casing Dia. :	HQ	**Barrel (m) :** NMLC (3.6m)	**Bit :** Diamond (stepfaced)	**Bit Condition :** Fair	**Date :** 14/11/11
Date Started :	1/9/11	**Date Completed :** 2/9/11	**Logged by :** SHH	**Date Logged :** 1-2/09/2011	

DRILLING						MATERIAL					NATURAL FRACTURES				
Progress															
SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)	Weathering	Estimated Strength $Is_{(50)}$ MPa EL 0.03 VL 0.1 L 0.3 M 1 H 3 VH 10 EH	Spacing (mm) 20 40 100 300 1000	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.	Piezometer Log	COMPONENTS
6															
7															
8						8.50									
9	NMLC coring + HQ casing to 8.50m			(0)				SANDSTONE, banded light grey, orange and dark red, medium to coarse grained, thinly bedded, bedding inclination typically sub-horizontal to 20°, dark red ferriferous indicated bands, with less indicated orange bands.	HW EW-HW HW				9.42, BP, 0°, FE, PLN, RF 9.76, BP, 10°, CLAY, PLN, VR, TI 9.78, BP, 10°, CLAY 9.80, BP, 10°, CLAY 9.83, BP, 5°, CLAY, PLN, VR, TI 9.85, BP, 5°, CLAY		Bentonite
10															

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258-34

CORE LOG SHEET WITH STANDPIPE PIEZOMETER

GEO_CORE_ONLY 21202834_SLR.GPJ GHD GEO TEMPLATE.GDT 16/11/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH107**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		SHEET 4 OF 4
Location :	LILYFIELD TO DULWICH HILL, NSW		
Position :	328480.0 E 6248469.0 N MGA94/ 56 **Surface RL:** 12.5m approx AHD	**Angle from Horiz. :** 90°	**Processed :** CRS
Rig Type :	Intertech 550 **Mounting:** 4wd truck **Contractor :** RailCorp	**Driller :** D. Gordon	**Checked :** RAC
Casing Dia. :	HQ **Barrel (m) :** NMLC (3.6m) **Bit :** Diamond (stepfaced)	**Bit Condition :** Fair	**Date :** 14/11/11
Date Started :	1/9/11 **Date Completed :** 2/9/11 **Logged by :** SHH	**Date Logged :** 1-2/09/2011	

DRILLING

Progress

SCALE (m) | Drilling & Casing | Water | Drill Depth (m) | (Core Loss / Run %) | SAMPLES & TESTS

MATERIAL

Depth / (RL) metres | Graphic Log | **Description** (ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)) | Weathering | **Estimated Strength $Is_{(50)}$ MPa** (EL 0.03, VL 0.1, L 0.3, M 1, H 3, VH 10, EH)

NATURAL FRACTURES

Spacing (mm) (20, 40, 100, 300, 1000) | Visual | **Additional Data** (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.

Piezometer Log | COMPONENTS

Depth / (RL)	Description	Weathering	Drill Depth	(Core Loss / Run %)	Additional Data	Piezometer Log / COMPONENTS
10.09	SANDSTONE, as previous.	HW	10.09			
10.25	CORE LOSS 160mm.					
	SANDSTONE, as above.			(8)	10.31, BP, 5°, CN, PLN, VR, TI 10.33, BP, 5°, CN 10.41-10.43, SM, CLAY, IR, VR 10.44, BP, 20°, CLAY/rootlets, PLN, RF 10.45, BP, 20°, CLAY 10.48, BP, 20°, CLAY 10.52, BP, 20°, CLAY 10.76, BP, 20°, FE, PLN, RF 10.84, BP, 20°, CLAY/rootlets, PLN, RF 10.93, BP, 15°, CLAY/rootlets, PLN, RF 11.03, BP, 15°, CLAY, PLN, RF 11.08, BP, 15° 11.14, BP, 15° 11.05, BP, 15°	
11.60	Grading to	HW				
	SANDSTONE, light orange, medium to coarse grained, thinly bedded, bedding inclination typically sub-horizontal to 20°.		12.00		11.53, BP, 20°, CLAY, PLN, RF 11.56, BP, 20°, CLAY 11.82, BP, 5°, CLAY, PLN, RF 12.20, BP, 0°, CLAY, PLN, RF 12.31, BP, 10°, CLAY, UN 12.34, BP, 0°, CN, UN, RF	Gravel fill
					12.55, BP, 20°, CLAY, PLN 12.75, BP, 20°, CLAY, RF 12.88, BP, 10°, CN, UN, RF	
	13.0-13.18m, as above, fine grained sized inclusions.	MW		(0)	13.18, BP, 0°-5°, CN, UN, VR 13.25, BP, 25°, CN, PLN, RF 13.60, BP, 0°-5°, CLAY, UN, VR 13.71, BP, 15°-20°, CLAY, PLN, RF 13.73, BP, 15°-20°, CLAY 13.78, BP, 15°-20°, CLAY 13.86, BP, 15°-20°, CLAY 13.98, BP, 15°-20°, CLAY 14.00, BP, 15°-20°, CLAY	
	14.64m, as above, grading to light grey with light orange bands.				14.48, BP, 15°-20°, CLAY 14.64, BP, 30°, CLAY, PLN, RF 14.66, BP, 30°	
15.00	End of Borehole at 15.00 metres.		15.00		14.94, BP, 0°, CLAY, UN, RF	

NMLC coring + HQ casing to 8.50m

See standard sheets for details of abbreviations & basis of descriptions

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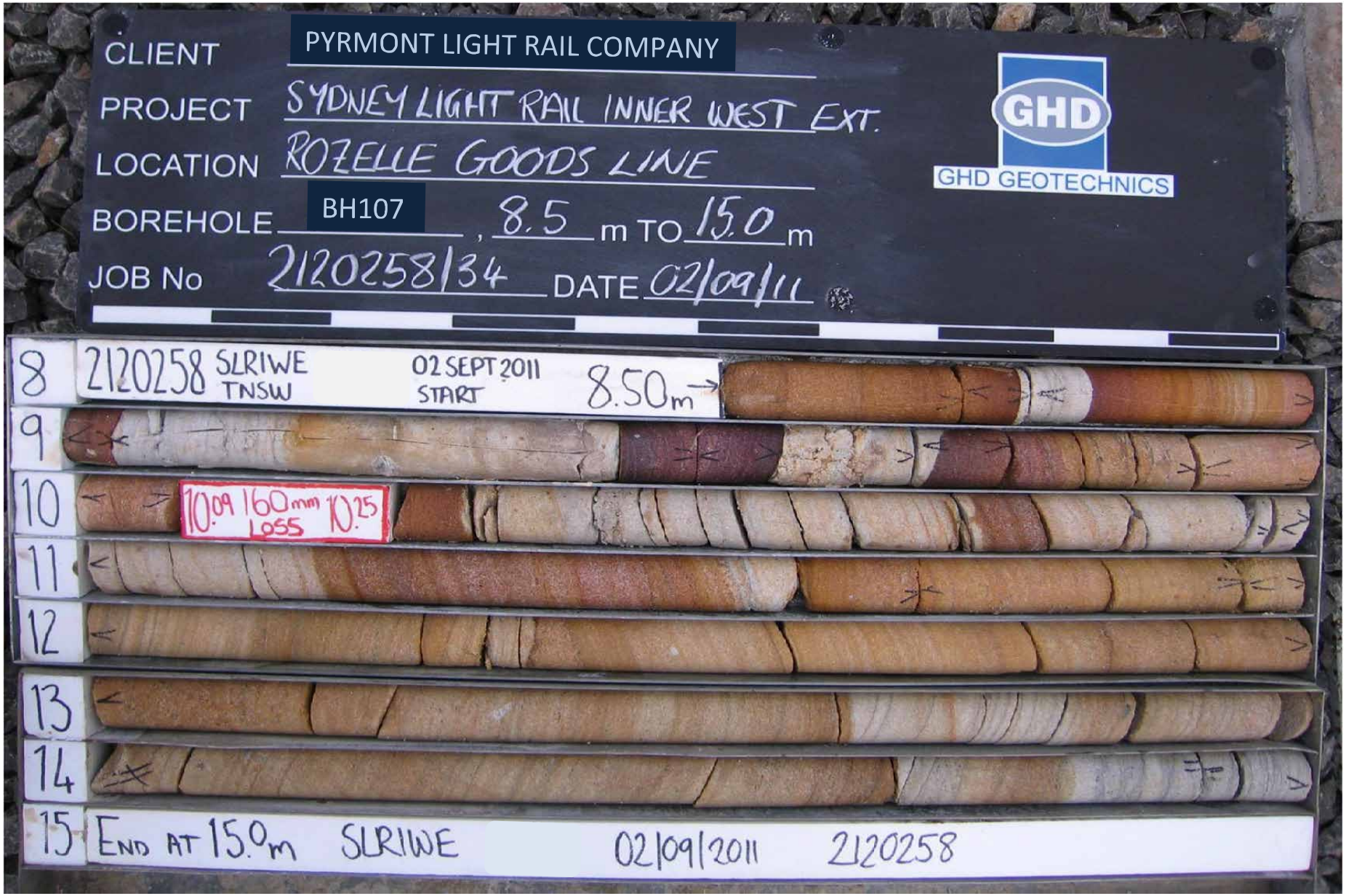

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BOREHOLE LOG SHEET

GEO_BOREHOLE 21202834 SLR.GPJ GHD_GEO_TEMPLATE.GDT 16/11/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH108**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 1 OF 4**
Location :	LILYFIELD TO DULWICH HILL, NSW		
Position :	328418.0 E 6248214.0 N MGA94/ 56 **Surface RL:** 9.6m appox AHD **Angle from Horiz. :** 90°		**Processed :** MK
Rig Type :	Intertech 550 **Mounting:** 4wd truck **Contractor :** RailCorp **Driller :** D. Gordon		**Checked :** RAC
Date Started : 31/8/11	**Date Completed :** 31/8/11 **Logged by :** SHH		**Date :** 14/11/11

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
								BALLAST, dark grey, medium to coarse gravel to small cobble size, angular, basaltic (ballast - fill).	-	-	Back-packing to stabilise ballast to 0.8m
					0.80		CI-CH	Sandy CLAY, mottled grey, orange and light yellow brown, medium to high plasticity, medium grained sand (fill).	M-VM	S-F	0.80-1.4m, capping layer?
1				D	1.40		CI	CLAY, brown/grey, medium plasticity, with fine grained sand and silt, trace charcoal fragments (alluvium / topsoil?).	M	S-F	1.40-1.55m, organic odour
					1.55		CH	CLAY, light brown and grey with mottled red, high plasticity, trace red weakly ferric indurated nodules (residual).	SM	St	1.5-1.95, SPT material split into two samples
				SPT 3/4/7 N=11							
2	V/TC-bit auger	Nil						2.2m, grading to red / dark red, trace grey streaks and mottling, ferric indurated bands.	SM	St-VSt	
				SPT 5/10/15 N=25							
3				D	3.20		SC	Clayey SAND / Sandy CLAY, mottled red and grey, medium grained, medium plasticity fines (residual).	M-VM	MD	
								3.5m, as above, grading to light grey, trace orange/yellow mottling.			
				SPT 4/5/7 N=12				3.85m - 3.95m, grey clay band.			3.80m, root 5mm diameter
4					4.20			SANDSTONE, light grey, trace orange staining, medium grained, appears massive, extremely weathered, extremely low strength, trace roots up to 5mm diameter.			
				SPT 4/8/15 N=23							
5											

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258-34

BOREHOLE LOG SHEET

GEO_BOREHOLE 21025834_SLR.GPJ GHD_GEO TEMPLATE.GDT 16/11/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH108**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 2 OF 4**
Location :	LILYFIELD TO DULWICH HILL, NSW		
Position :	328418.0 E 6248214.0 N MGA94/ 56 **Surface RL:** 9.6m appox AHD	**Angle from Horiz. :** 90°	**Processed :** MK
Rig Type :	Intertech 550 **Mounting:** 4wd truck **Contractor :** RailCorp	**Driller :** D. Gordon	**Checked :** RAC
Date Started :	31/8/11 **Date Completed :** 31/8/11	**Logged by :** SHH	**Date :** 14/11/11

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
	V/TC-bit		▽					SANDSTONE, as previous.			
	V-bit			SPT 15 for 105mm N=ref	5.60			5.5m, becoming extremely low to very low strength.			5.60m, V-bit auger refusal
								Start of coring at 5.6 metres. For Cored interval, see Core Log Sheet.			
6											
7											
8											
9											
10											

See standard sheets for details of abbreviations & basis of descriptions

GHD GEOTECHNICS
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CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 21-20258-34

CORE LOG SHEET

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH108**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		SHEET 3 OF 4
Location :	LILYFIELD TO DULWICH HILL, NSW		
Position :	328418.0 E 6248214.0 N MGA94/ 56 **Surface RL:** 9.6m appoxHD	**Angle from Horiz. :** 90°	**Processed :** MK
Rig Type :	Intertech 550 **Mounting:** 4wd truck **Contractor :** RailCorp	**Driller :** D. Gordon	**Checked :** RAC
Casing Dia. :	HQ **Barrel (m) :** NMLC (3.6m) **Bit :** Diamond (stepfaced)	**Bit Condition :** Fair	**Date :** 14/11/11
Date Started :	31/8/11 **Date Completed :** 31/8/11 **Logged by :** SHH	**Date Logged :** 31/08/2011	

GEO_CORE_ONLY 212025834_SLR.GPJ GHD_GEO_TEMPLATE.GDT 16/11/11

DRILLING

Progress

SCALE (m) | Drilling & Casing | Water | Drill Depth (m) | (Core Loss / Run %) | SAMPLES & TESTS

Drilling & Casing: NMLC coring + Polymer added + HQ casing to 5.6m

Drill Depth (m): 7.30

(Core Loss / Run %): (0) (0)

MATERIAL

Depth / (RL) metres | Graphic Log | **Description** (ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)) | Weathering | **Estimated Strength $Is_{(50)}$ MPa** (EL 0.03, VL 0.1, L 0.3, M 1, H 3, VH 10, EH)

5.60

SANDSTONE, interbedded light grey and orange/red, medium grained, thinly bedded, bedding inclination is typically sub-horizontal to 15°, ferriferous indurated bands.

Weathering: EW-HW

8.00

SANDSTONE, light grey with dark laminations, medium to coarse grained, thickly bedded, bedding inclination is sub-horizontal to 20°.

Weathering: EW | EW HW | SW

NATURAL FRACTURES

Spacing (mm) (20, 40, 100, 300, 1000) | Visual | **Additional Data** (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.

6.55, BP, 0°, CN, PLN, RF
6.57, BP, 0°, CN, PLN, RF
7.75, BP, 10°, PLN, RF
7.90, BP, 0°, CLAY, PLN, RF

6 7 8 9 10

See standard sheets for details of abbreviations & basis of descriptions

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CORE LOG SHEET

Client :	PYRMONT LIGHT RAIL COMPANY			**HOLE No. BH108**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION			SHEET 4 OF 4	
Location :	LILYFIELD TO DULWICH HILL, NSW				
Position :	328418.0 E 6248214.0 N MGA94/ 56	**Surface RL:** 9.6m appoAHD		**Angle from Horiz. :** 90°	**Processed :** MK
Rig Type :	Intertech 550	**Mounting:** 4wd truck	**Contractor :** RailCorp	**Driller :** D. Gordon	**Checked :** RAC
Casing Dia. :	HQ	**Barrel (m) :** NMLC (3.6m)	**Bit :** Diamond (stepfaced)	**Bit Condition :** Fair	**Date :** 14/11/11
Date Started :	31/8/11	**Date Completed :** 31/8/11	**Logged by :** SHH	**Date Logged :** 31/08/2011	

DRILLING					MATERIAL				NATURAL FRACTURES		
Progress											
SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)	Weathering	Estimated Strength $Is_{(50)}$ MPa EL 0.03 VL 0.1 L 0.3 M 1 H 3 VH 10 EH	Spacing (mm) 20 40 100 300 1000	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.
11	NMLC coring + Polymer added + HQ casing to 5.6m		10.28					SANDSTONE, as previous.					
12				(0)					SW				11.44, BP, 20°, CLAY, PLN, RF 12.09, BP, 5°, CN, PLN, RF 12.12, BP, 5°, CN, PLN, RF 12.65, BP, 20°, CLAY, PLN, RF
13			13.30			13.30		End of borehole at 13.3 metres. Standpipe piezometer installed.					
14													
15													

See standard sheets for details of abbreviations & basis of descriptions

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BOREHOLE LOG SHEET

GEC_BOREHOLE 212025834_SLR.GPJ GHD_GEO_TEMPLATE.GDT 16/11/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH112**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 1 OF 1**
Location :	LILYFIELD TO DULWICH HILL, NSW		
Position :	328429.0 E 6248295.0 N MGA94/ 56 **Surface RL:** 4.5m appox AHD	**Angle from Horiz. :** 90°	**Processed :** HW
Rig Type :	Easy Probe **Mounting:** Tracked 'Ding **Contractor :** RailCorp	**Driller :** P. Gall	**Checked :** RAC
Date Started :	17/10/11 **Date Completed :** 17/10/11	**Logged by :** SHH	**Date :** 14/11/11

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
	V/TC-bit auger (110mm)	Nil	Nil	D	0.20		SC	Clayey SAND, dark brown, medium grained, with rootlets and fine angular gravel (fill / topsoil).	SM	L	
							CI-CH	CLAY, red brown, medium to high plasticity, with fine to medium gravel (ironstone and rail ballast), trace shale gravel, possible cobble sized material (fill).	SM	F	0.50m, fill material appears well compacted, difficult drilling
				D	0.60		CH	CLAY, red with brown and grey laminations, high plasticity (residual).	SM	St	
1				D	1.30		CH	CLAY, red with grey mottling and laminations, high plasticity, weak ferruginous cemented clasts (residual). Grading to	SM	St	
2				D	2.00		CH	CLAY, light orange with grey laminations and mottling, high plasticity, weak ferruginous cementations (residual). Grading to	SM	St-VSt VSt	2.0m, poor return of cuttings, water added to improve recovery 2.8m, increasing drilling resistance, slow progress
3				D	3.00		CI-CH	CLAY, grey with light orange staining, medium to high plasticity, with fine to medium grained sand (residual).	SM	VSt	
4				D	4.00			End of borehole at 4.0 metres. Dry on completion.			4.0m, machine refusal on very stiff material
5											

See standard sheets for details of abbreviations & basis of descriptions

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BOREHOLE LOG SHEET

GEO_BOREHOLE 212025834_SLR.GPJ GHD_GEO_TEMPLATE.GDT 16/11/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH113**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		
Location :	LILYFIELD TO DULWICH HILL, NSW	**SHEET 1 OF 1**	
Position :	328455.0 E 6248401.0 N MGA94/ 56 **Surface RL:** 4.9m appox AHD **Angle from Horiz. :** 90°		**Processed :** HW
Rig Type :	Easy Probe **Mounting:** Tracked 'Dingo **Contractor :** RailCorp	**Driller :** P. Gall	**Checked :** RAC
Date Started :	17/10/11 **Date Completed :** 17/10/11	**Logged by :** SHH	**Date :** 14/11/11

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
	V/TC-bit auger (110mm)	Nil	Nil					SAND with clay / clayey SAND, brown, fine to medium grained sand, trace rootlets (fill / topsoil).	SM	L	Water added to improve return of cuttings
				D	0.40			Sandy CLAY / GRAVEL / COBBLES mixture, dark grey and black, low plasticity clay, fine grained sand, with fine to medium sub-rounded railway ballast gravel, trace brick and glass fragments to fine gravel size ballast cobbles to 100mm size, ash gravel (fill).	SM	VSt	From 0.50m, increased drilling resiatance, fill material appears well compacted
1					1.00		SC	Clayey SAND, dark brown, fine to medium grained, with fine to coarse, sub-angular gravel including brick fragments and brick bats, occasional iron nais, trace ceramic plate fragments (fill).	SM	MD	
				D							
2				D	2.00		CH	Clayey SAND & COBBLES, light brown and light orange sandstone cobbles, dark brown sand, fine to medium grained, sandstone rock pieces are highly weathered and low strength, trace fine gravels (fill).	SM	MD	
3				D	3.20		Cl	CLAY, light grey and light orange laminations, medium plasticity (residual).	SM M	St	
				D	4.00			End of borehole at 4.0 metres. Dry on completion.			
4											
5											

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258-34

JK Geotechnics
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 25
1 / 2

BOREHOLE LOG

Client: INNER WEST COUNCIL

Project: PROPOSED GREENWAY CYCLEWAY

Location: WESTON STREET, SUMMER HILL TO TAVERNERS HILL LIGHT RAIL STATION, LEICHHARDT

Job No.: 30320ZR **Method:** SPIRAL AUGER **R.L. Surface:** ~3.9 m

Date: 5/7/17 **Datum:** AHD

Plant Type: JK308 **Logged/Checked By:** M.E./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
ON COMPLETION OF CORING					N = 4 2,2,2	3	1			FILL: Silty sandy clay, low plasticity, grey brown, fine to medium grained sand, trace of fine to medium grained ironstone and sandstone gravel, brick and concrete fragments.	MC>PL			APPEARS POORLY COMPACTED
ON COMPLETION OF AUGERING					N = 2 0,1,1	2	2		CL	SILTY SANDY CLAY: low plasticity, brown, fine to medium grained sand, trace of fine to medium grained ironstone and sandstone gravel.	MC>PL	S - F	30 60 60	ALLUVIAL
						1	3			SANDSTONE: fine to medium grained, light brown and brown.	SW	M - H		MODERATE TO HIGH 'TC' BIT RESISTANCE
						0	4			REFER TO CORED BOREHOLE LOG				
						-1	5							
						-2	6							
						-3								

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GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 25 2 / 2

CORED BOREHOLE LOG

Client: INNER WEST COUNCIL

Project: PROPOSED GREENWAY CYCLEWAY

Location: WESTON STREET, SUMMER HILL TO TAVERNERS HILL LIGHT RAIL STATION, LEICHHARDT

Job No.: 30320ZR **Core Size:** NMLC **R.L. Surface:** ~3.9 m

Date: 5/7/17 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** M.E./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ EL .03 VL .1 L .3 M 1 H 3 VH 10 EH	DEFECT DETAILS DEFECT SPACING (mm) 500 300 100 50 30 10	DESCRIPTION Type, inclination, thickness, planarity, roughness, coating. Specific / General
					START CORING AT 2.60m					
100% RETURN		1 0 -1	3 4 5		SANDSTONE: fine to medium grained, light brown and brown, bedded at 15-25°.	DW	H L - M			(2.99m) CS, 15°, 10 mm.t
					CORE LOSS 0.13m					
					SANDSTONE: fine to medium grained, light brown and brown, bedded at 0-15°.	SW	M			(3.28m) CS, 0°, 2 mm.t (3.30m) CS, 0°, 5 mm.t
					SANDSTONE: fine to medium grained, light brown, bedded at 0-15°.	FR	H			(4.05m) XWS, 15°, 30 mm.t (4.45m) CS, 10°, 5 mm.t
		-2 -3 -4 -5	6 7 8		END OF BOREHOLE AT 5.60 m					


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JOB NO. 30320ZR BH25 START CORING AT 2·60m
2
3
CORE LOSS
0·13m
4
5
END OF BOREHOLE AT 5·60m

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GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 39
1 / 2

BOREHOLE LOG

Client: INNER WEST COUNCIL

Project: PROPOSED GREENWAY CYCLEWAY

Location: WESTON STREET, SUMMER HILL TO TAVERNERS HILL LIGHT RAIL STATION, LEICHHARDT

Job No.: 30320ZR **Method:** SPIRAL AUGER **R.L. Surface:** ~4.9 m

Date: 6/7/17 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** M.E./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING										CONCRETE: 110mm.t				NO OBSERVED REINFORCEMENT
									-	FILL: Silty sandy gravel, fine to coarse grained igneous, dark grey, fine to coarse grained sand, trace of medium to coarse grained sandstone gravel, root fibres and fibrous cement.	M			APPEARS POORLY COMPACTED
					N = 4 5,2,2									
▼ ON COMPLETION OF CORING						4	1		CL	SILTY CLAY: low plasticity, grey and grey brown, with fine to medium grained sand, trace of root fibres.	MC>PL	St	110 180 130	ALLUVIAL
					N = 7 2,3,4	3	2					VSt	370 320 320	
						2	3			SILTY CLAY: medium plasticity, grey mottled brown and red brown, trace of fine to coarse grained ironstone gravel.		St - VSt		
					N = 8 2,3,5	1	4						170 210 180	
										SILTY SANDY CLAY: low to medium plasticity, light grey and light brown, fine to medium grained sand.				
					N=SPT 4/ 120mm REFUSAL	0	5			SANDSTONE: fine to coarse grained, light grey.	DW	M	260 220 140	MODERATE 'TC' BIT RESISTANCE
										REFER TO CORED BOREHOLE LOG				
						-1	6							
						-2								

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GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 39 2 / 2

CORED BOREHOLE LOG

Client: INNER WEST COUNCIL

Project: PROPOSED GREENWAY CYCLEWAY

Location: WESTON STREET, SUMMER HILL TO TAVERNERS HILL LIGHT RAIL STATION, LEICHHARDT

Job No.: 30320ZR **Core Size:** NMLC **R.L. Surface:** ~4.9 m

Date: 6/7/17 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK205 **Bearing:** N/A **Logged/Checked By:** M.E./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ (EL .03, VL .1, L .3, M 1, H 3, VH 10, EH)	DEFECT DETAILS: DEFECT SPACING (mm) (500, 300, 100, 50, 30, 10)	DEFECT DETAILS: DESCRIPTION Type, inclination, thickness, planarity, roughness, coating. Specific / General
					START CORING AT 4.72m					
100% RETURN		0	5		CORE LOSS 0.09m					
					SANDSTONE: fine to coarse grained, light brown and light grey, with VH strength iron indurated bands, trace of fine to medium grained gravel sized inclusions, bedded at 0-20°.	DW	M			(4.84m) CS, 0°, 60 mm.t
						SW				(5.31m) XWS, 15°, 10 mm.t
		-1	6							
					SANDSTONE: fine to medium grained, light grey, bedded at 0-15°.	FR				(6.35m) Be, 15°, P, R, CLAY 1mm.t
										(6.55m) XWS, 0°, 20 mm.t
		-2	7							(6.83m) XWS, 0°, 15 mm.t
										(7.11m) XWS, 0°, 15 mm.t
							H			(7.45m) CS, 0°, 10 mm.t
		-3	8		END OF BOREHOLE AT 7.81 m					
		-4	9							
		-5	10							
		-6								


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JOB No. 30320ZR BH39 START CORING AT 4.72m
4
CORE LOSS
0.09m
5
6
7
END OF BOREHOLE AT 7.81m

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GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No.
40
1 / 2

BOREHOLE LOG

Client: INNER WEST COUNCIL

Project: PROPOSED GREENWAY CYCLEWAY

Location: WESTON STREET, SUMMER HILL TO TAVERNERS HILL LIGHT RAIL STATION, LEICHHARDT

Job No.: 30320ZR **Method:** SPIRAL AUGER **R.L. Surface:** ~7.4 m

Date: 7/7/17 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** M.E./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING										CONCRETE: 170mm.t				12,20 & 8mm DIA. REINFORCEMENT, 60,70 & 120mm TOP COVER
									-	VOID: 300mm.t				
						7				FILL: Silty clay, low to medium plasticity, grey, with fine to coarse grained shale and igneous gravel, trace of fine to coarse grained sand and crushed concrete.	MC<PL			APPEARS POORLY TO MODERATLEY COMPACTED
				■	N = 15 8,8,7	6	1							
						5	2							
ON COMPLETION OF CORING				■	N = 7 4,3,4	4	3							
						3	4		CL	SILTY SANDY CLAY: low plasticity, brown and grey, fine to medium grained sand.	MC>PL	F		ALLUVIAL
				■	N = 2 0,0,2								80 70 60	
						2	5		CL	as above, but with fine to coarse grained sandstone and ironstone gravel.				
									CL	SILTY SANDY CLAY: low plasticity, light grey and brown, fine to coarse grained sand.				
							6						60	
				■	N = 21 10,9,12	1				SANDSTONE: fine to medium grained, light grey, with L strength bands.	XW	EL	60 >600 >600 >600	
											DW	M		MODERATE 'TC' BIT RESISTANCE
										REFER TO CORED BOREHOLE LOG				

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Borehole No.
40
2 / 2

CORED BOREHOLE LOG

Client: INNER WEST COUNCIL

Project: PROPOSED GREENWAY CYCLEWAY

Location: WESTON STREET, SUMMER HILL TO TAVERNERS HILL LIGHT RAIL STATION, LEICHHARDT

Job No.: 30320ZR | **Core Size:** NMLC | **R.L. Surface:** ~7.4 m

Date: 7/7/17 | **Inclination:** VERTICAL | **Datum:** AHD

Plant Type: JK205 | **Bearing:** N/A | **Logged/Checked By:** M.E./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ EL .03 / VL .1 / L .3 / M 1 / H 3 / VH 10 / EH	DEFECT DETAILS DEFECT SPACING (mm) 500 300 100 50 30 10	DESCRIPTION Type, inclination, thickness, planarity, roughness, coating. Specific / General
		1			START CORING AT 6.55m					
100% RETURN		0 -1 -2	7 8 9		SANDSTONE: fine to medium grained, light brown and light grey, with iron indurated bands. SANDSTONE :fine to coarse grained, light brown, trace of fine to medium grained alluvial gravel, bedded at 0-20°. SANDSTONE: fine to medium grained, light grey and grey, bedded at 0-5°.	DW SW	M H M H			(7.29m) XWS, 5°, 50 mm.t (9.39m) XWS, 0°, 30 mm.t (9.45m) XWS, 0°, 5 mm.t (9.55m) XWS, 0°, 90 mm.t
		-3 -4 -5	10 11 12		END OF BOREHOLE AT 9.66 m					


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JOB No. 30320ZR BH40 START CORING AT 6·55m
6
7
8
9
END OF BOREHOLE AT 9·66m

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GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 41
1 / 2

BOREHOLE LOG

Client: INNER WEST COUNCIL

Project: PROPOSED GREENWAY CYCLEWAY

Location: WESTON STREET, SUMMER HILL TO TAVERNERS HILL LIGHT RAIL STATION, LEICHHARDT

Job No.: 30320ZR **Method:** SPIRAL AUGER **R.L. Surface:** ~6.5 m

Date: 7/7/17 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** M.E./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
										ASPHALTIC CONCRETE: 80mm.t				
									-	FILL: Silty sandy gravel, fine to medium grained, dark grey, fine to medium grained sand.	M MC<PL			APPEARS POORLY TO MODERATELY COMPACTED
					N = 16 5,8,8	6	1			FILL: Silty clay, low plasticity, grey and brown, with fine to medium grained sand and fine to coarse grained shale gravel, trace of glass fragments and root fibres.				
▼ ON COMPLETION OF CORING					N = 23 10,12,11	5	2							
					N = 7 2,4,3	4	3							
▼ ON COMPLETION OF AUGERING						3			CL	SILTY SANDY CLAY: low plasticity, grey and brown, fine to medium grained sand, trace of fine grained ironstone gravel.	MC<PL	VSt	220 210 270	ALLUVIAL
							4				MC>PL	F		
					N > 1 0,0,1/ 100mm REFUSAL	2							50 50 50	
							5		SC	CLAYEY SAND: fine to coarse grained, brown, with silt fines.	W	VL		
										SANDSTONE: fine to coarse grained, brown.	DW	M		MODERATE 'TC' BIT RESISTANCE
						1				REFER TO CORED BOREHOLE LOG				
						6								
						0								

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GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 41 2 / 2

CORED BOREHOLE LOG

Client: INNER WEST COUNCIL
Project: PROPOSED GREENWAY CYCLEWAY
Location: WESTON STREET, SUMMER HILL TO TAVERNERS HILL LIGHT RAIL STATION, LEICHHARDT

Job No.: 30320ZR | **Core Size:** NMLC | **R.L. Surface:** ~6.5 m
Date: 7/7/17 | **Inclination:** VERTICAL | **Datum:** AHD
Plant Type: JK205 | **Bearing:** N/A | **Logged/Checked By:** M.E./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ (EL .03, VL .1, L .3, M 1, H 3, VH 10, EH)	DEFECT SPACING (mm) (500, 300, 100, 50, 30, 10)	DEFECT DETAILS: DESCRIPTION Type, inclination, thickness, planarity, roughness, coating. Specific / General
		2	5		START CORING AT 5.04m					
100% RETURN		1	6		SANDSTONE: fine to coarse grained, brown and light brown, trace of fine grained gravel size inclusions, bedded at 0-10°.	DW	M			(5.64m) J, 40°, P, R, IS
		0				SW	H			(6.19m) XWS, 0°, 20 mm.t
			7							(6.80m) CS, 5°, 15 mm.t
					CORE LOSS 0.14m					
		-1			SANDSTONE: fine to medium grained, light grey and grey, bedded at 5-20°.	DW	M			(7.50m) XWS, 0°, 40 mm.t
			8			FR	H			(7.80m) CS, 5°, 30 mm.t
		-2								
			9		END OF BOREHOLE AT 8.84 m					
		-3								
			10							
		-4								

JK_LIB_CURRENT - V8.00.GLB Log J & K CORED BOREHOLE - MASTER 30320ZR SUMMER HILL.GPJ <<DrawingFile>> 25/08/2017 13:21 Produced by gINT Professional, Developed by Datgel


JK Geotechnics
JOB No. 30320ZR BH41 START CORING AT 5·04m
5
6
7
8
CORE LOSS
0·14m
END OF BOREHOLE AT 8·84

JK Geotechnics
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 42
1 / 2

BOREHOLE LOG

Client: INNER WEST COUNCIL

Project: PROPOSED GREENWAY CYCLEWAY

Location: WESTON STREET, SUMMER HILL TO TAVERNERS HILL LIGHT RAIL STATION, LEICHHARDT

Job No.: 30320ZR **Method:** SPIRAL AUGER **R.L. Surface:** ~6.0 m

Date: 10/7/17 **Datum:** AHD

Plant Type: JK205 **Logged/Checked By:** M.E./P.R.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING									-	ASPHALTIC CONCRETE: 80mm.t				
										FILL: Silty sandy gravel, fine to medium grained igneous, dark grey, fine to coarse grained sand.	M MC<PL			APPPEARS MODERATELY COMPACTED
				■	N = 11 3,4,7					FILL: Silty clay, low plasticity, grey and brown, with fine to coarse grained shale and igneous gravel, trace of fine to coarse grained sand.				
						5	1							
				■	N = 13 6,7,6					FILL: Clayey gravel, fine to coarse grained shale and igneous, grey and dark grey.	D			
						4	2							
										FILL: Silty sandy clay, low plasticity, brown, fine to medium grained sand, trace of medium to coarse grained sandstone and ironstone gravel and brick fragments.	MC<PL			
▼ ON COMPLETION OF CORING				■	N = 8 3,3,5	3	3							
									CL	SILTY CLAY: low plasticity, grey and brown, trace of fine to medium grained sand.	MC>PL	St		ALLUVIAL
						2	4							
				■	N > 5 1,1,4/ 70mm REFUSAL								130 160 110	
						1	5			SANDSTONE: fine to medium grained, light grey and light brown.	DW	M		MODERATE 'TC' BIT RESISTANCE
										REFER TO CORED BOREHOLE LOG				
						0	6							

JK_LIB_CURRENT - V8.00.GLB Log J & K AUGERHOLE - MASTER 30320ZR SUMMER HILL.GPJ <<DrawingFile>> 25/08/2017 13:21 Produced by gINT Professional, Developed by Datgel

JK Geotechnics
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No.
42
2 / 2

CORED BOREHOLE LOG

Client: INNER WEST COUNCIL

Project: PROPOSED GREENWAY CYCLEWAY

Location: WESTON STREET, SUMMER HILL TO TAVERNERS HILL LIGHT RAIL STATION, LEICHHARDT

Job No.: 30320ZR | **Core Size:** NMLC | **R.L. Surface:** ~6.0 m

Date: 10/7/17 | **Inclination:** VERTICAL | **Datum:** AHD

Plant Type: JK205 | **Bearing:** N/A | **Logged/Checked By:** M.E./P.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION: Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$ (EL .03, VL .1, L .3, M 1, H 3, VH 10, EH)	DEFECT DETAILS: DEFECT SPACING (mm) (500, 300, 100, 50, 30, 10)	DESCRIPTION: Type, inclination, thickness, planarity, roughness, coating. Specific / General
		1	5		START CORING AT 5.05m					
100% RETURN		0	6		SANDSTONE: fine to coarse grained, light brown, with iron indurated bands, bedded at 10-25°.	DW	M			(5.58m) Be, 25°, P, R, IS
							M - H			(6.25m) J, 60°, P, R (6.34m) XWS, 20°, 80 mm.t
		-1	7			SW				(6.60m) J, 65°, Un, R, IS (6.94m) XWS, 0°, 70 mm.t (7.14m) CS, 20°, 10 mm.t
					SANDSTONE: fine to medium grained, light grey, bedded at 5-20°.	FR				(7.28m) CS, 15°, 5 mm.t (7.31m) XWS, 10°, 2 mm.t (7.34m) XWS, 10°, 5 mm.t
		-2	8				H			
					END OF BOREHOLE AT 8.16 m					
		-3	9							
		-4	10							


JK Geotechnics
JOB No. 30320ZR BH42 START CORING AT 5·05m
5
6
7
8
END OF BOREHOLE AT 8·16m

JK Geotechnics
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

BOREHOLE LOG

Borehole No. 1
1/2

Client: INNER WEST COUNCIL

Project: PROPOSED NEW NETBALL COURTS AND AMENITIES BUILDING

Location: RICHARD MURDEN RESERVE, HAWTHRONE PARADE, HABERFIELD, NSW

Job No. 31321V
Date: 22/3/18
Method: SPIRAL AUGER JK300
Logged/Checked by: C.A./F.V.
R.L. Surface: N/A
Datum:

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
						0			FILL: Silty sand, fine to medium grained, brown, trace of coarse grained cobbles, and root fibres.				GRASS COVER
					N = 6 2,3,3	1		CI	Silty CLAY: medium plasticity, dark green grey, with fine to medium grained sand.	w>PL	St		ALLUVIAL
▼ ON COMPLET-ION								GP	Sandy GRAVEL: medium to coarse grained, grey brown, sub rounded sandstone.	W	(L)		
					N = 0 0,0,0	2		CI	Silty CLAY: medium plasticity, dark green grey, trace of shell fragments.	w>PL	VS		NO SAMPLE RECOVERED FROM SPT SUNK UNDER ITS OWN WEIGHT
					N = 0 0,0,0	3							NO SAMPLE RECOVERED FROM SPT
					N = 0 0,0,0	5							NO SAMPLE RECOVERED FROM SPT
					N = 0 0,0,0	6							NO SAMPLE RECOVERED FROM SPT
						7							

JK Geotechnics
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

BOREHOLE LOG

Borehole No. 1 2/2

Client: INNER WEST COUNCIL

Project: PROPOSED NEW NETBALL COURTS AND AMENITIES BUILDING

Location: RICHARD MURDEN RESERVE, HAWTHRONE PARADE, HABERFIELD, NSW

Job No. 31321V **Method:** SPIRAL AUGER JK300 **R.L. Surface:** N/A

Date: 22/3/18 **Datum:**

Logged/Checked by: C.A./F.V.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
						8			Silty CLAY: medium plasticity, dark green grey, trace of shell fragments.	w>PL	VS		ALLUVIAL
						9							
						10							
						11							
						12		-	SANDSTONE: fine to coarse grained, orange brown and light grey, iron indurated.	DW	VL-L		VERY LOW 'TC' BIT RESISTANCE WITH LOW BANDS
				■		13					M-H		HIGH RESISTANCE
									END OF BOREHOLE AT 13.0m				
						14							

JK Geotechnics
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

BOREHOLE LOG

Borehole No. **2** 1/1

Client: INNER WEST COUNCIL

Project: PROPOSED NEW NETBALL COURTS AND AMENITIES BUILDING

Location: RICHARD MURDEN RESERVE, HAWTHRONE PARADE, HABERFIELD, NSW

Job No. 31321V **Method:** SPIRAL AUGER JK300 **R.L. Surface:** N/A

Date: 22/3/18 **Datum:**

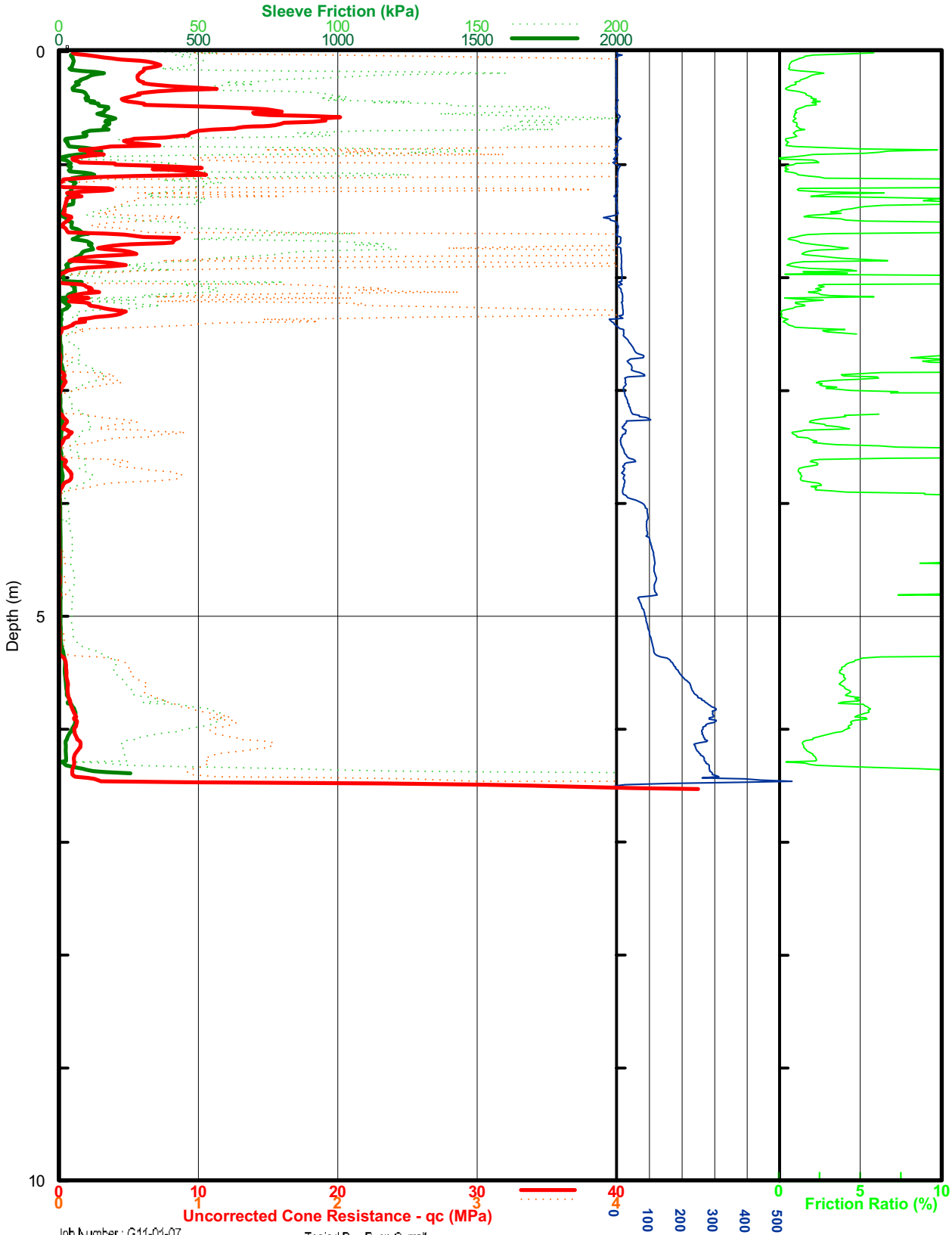
Logged/Checked by: C.A./F.V.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	■					0			FILL: Silty clayey sand, fine to medium grained, brown.	M			GRASS COVER
				■	N = SPT 14/120mm REFUSAL				FILL: Gravelly sand, fine to coarse grained, orange brown and light grey.				APPEARS MODERATELY COMPACTED
▼ ON COMPLET-ION						1			FILL: Gravelly sand, fine to coarse grained, brown, light grey and dark grey, medium to coarse grained, sub rounded sandstone gravel, with clay, and sandstone cobbles.	W			
				■	N = 18 4,5,13								
						2			as above, but with bands of clay.				POSSIBLY ALLUVIAL
						3							
						4							
				■	N = SPT 13/150mm REFUSAL			-	PROBABLE BOULDER OF SANDSTONE: medium to coarse grained, light grey.	M	(H)		SOLID CONE ATTEMPTED AT 4.65m, REFUSAL
						5			END OF BOREHOLE AT 5.0m				HIGH 'TC' BIT RESISTANCE POSSIBLY BEDROCK 'TC' BIT REFUSAL
						6							
						7							

CONE PENETROMETER TEST RESULT

RTA NSW
Greenway Shared Pathway - G4202
Haberfield NSW

CPT-04



Job Number : G11-01-07
Test Date : 20/01/2011
DGPS Position : 56H 0328459, 6249441
DGPS Format : GDA

Tested By : Ryan Currall
Test Class : IGS-1
Checked By : Russell Vincenzi

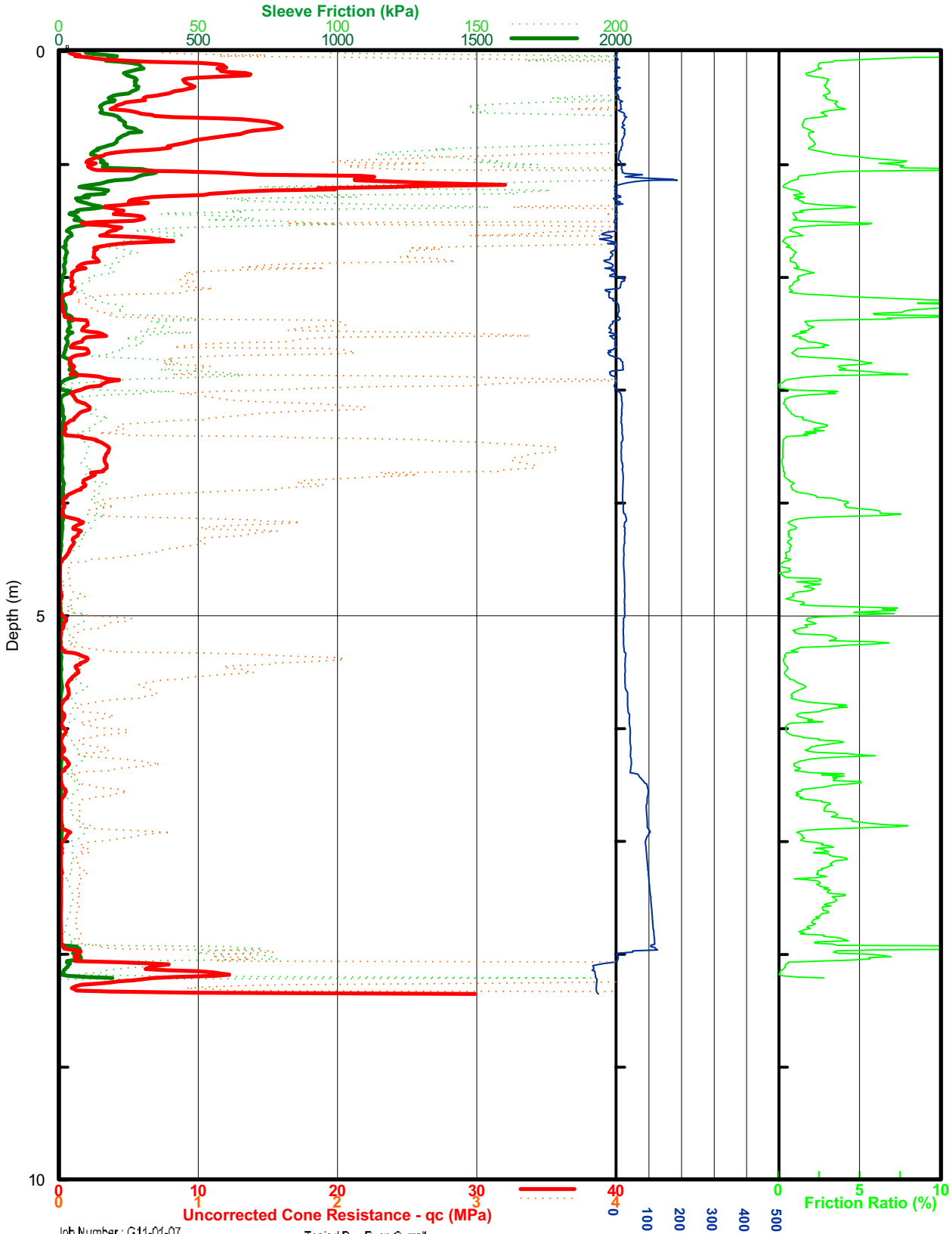
Cone Number : C10CFIIP.G56
Predrill Depth : 0.00m
Dissipation Tests @ : N/A
Terminated Due To : Equipment at Risk

Insitu Geotech Services Pty Ltd
IGS

CONE PENETROMETER TEST RESULT

RTA NSW
Greenway Shared Pathway - G4202
Haberfield NSW

CPT-07



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Test Date : 20/01/2011
DGPS Position : 56H 0328543, 6249629
DGPS Format : GDA

Tested By : Ryan Currall
Test Class : IGS-1
Checked By : Russell Vincenzi

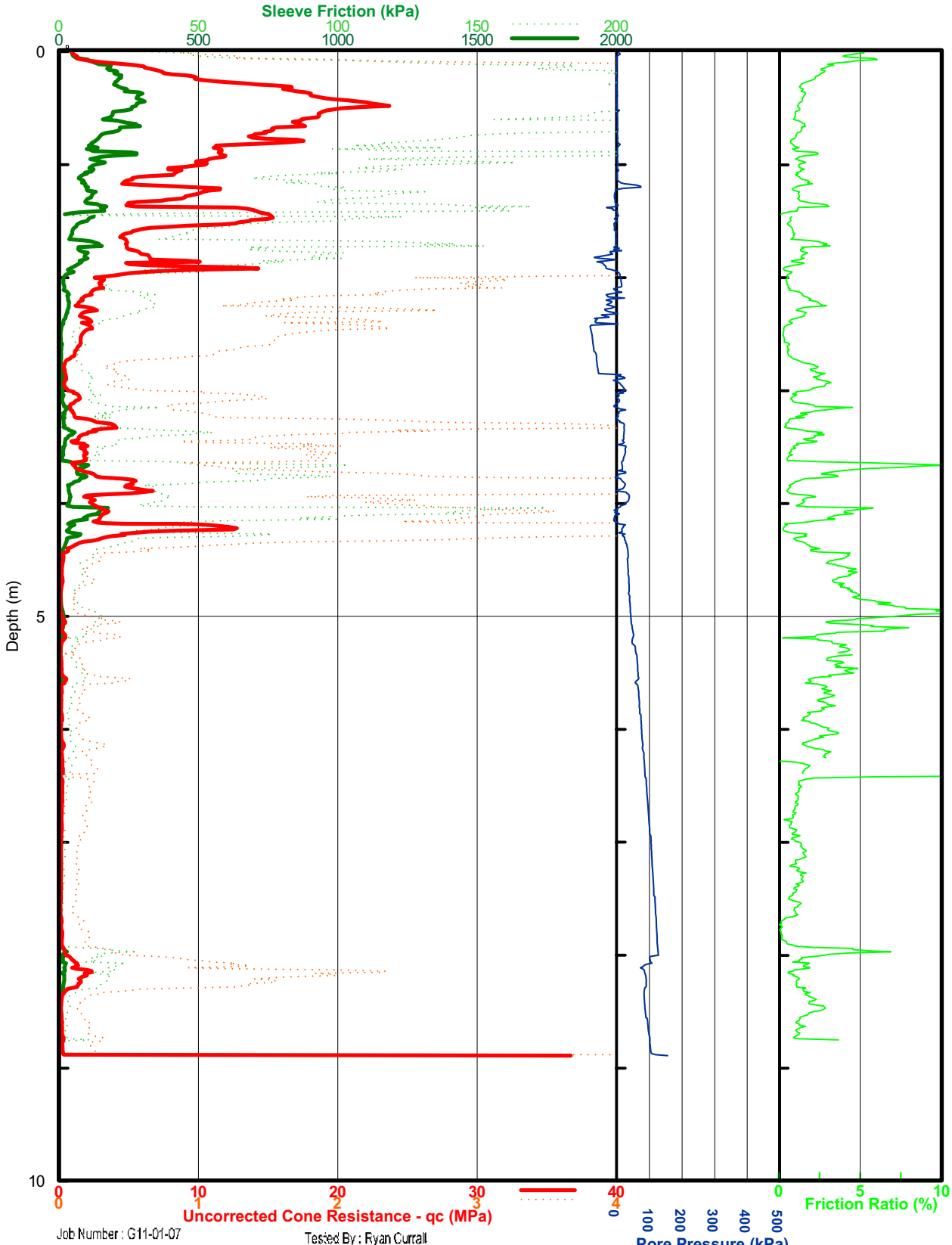
Cone Number : C10CFIIP.G56
Predrill Depth : 0.00m
Dissipation Tests @ : N/A
Terminated Due To : Equipment at Risk

Insitu Geotech Services Pty Ltd
IGS

CONE PENETROMETER TEST RESULT

RTA NSW
Greenway Shared Pathway - G4202
Haberfield NSW

CPT-10



Job Number : G11-01-07
Test Date : 19/01/2011
DGPS Position : 56H 0328604, 6249758
DGPS Format : GDA

Tested By : Ryan Currall
Test Class : IGS-1
Checked By : Russell Vincenzi

Cone Number : C10CFIIP.G54
Predrill Depth : 0.00m
Dissipation Tests @ : N/A
Terminated Due To : Equipment at Risk

Insitu Geotech Services Pty Ltd
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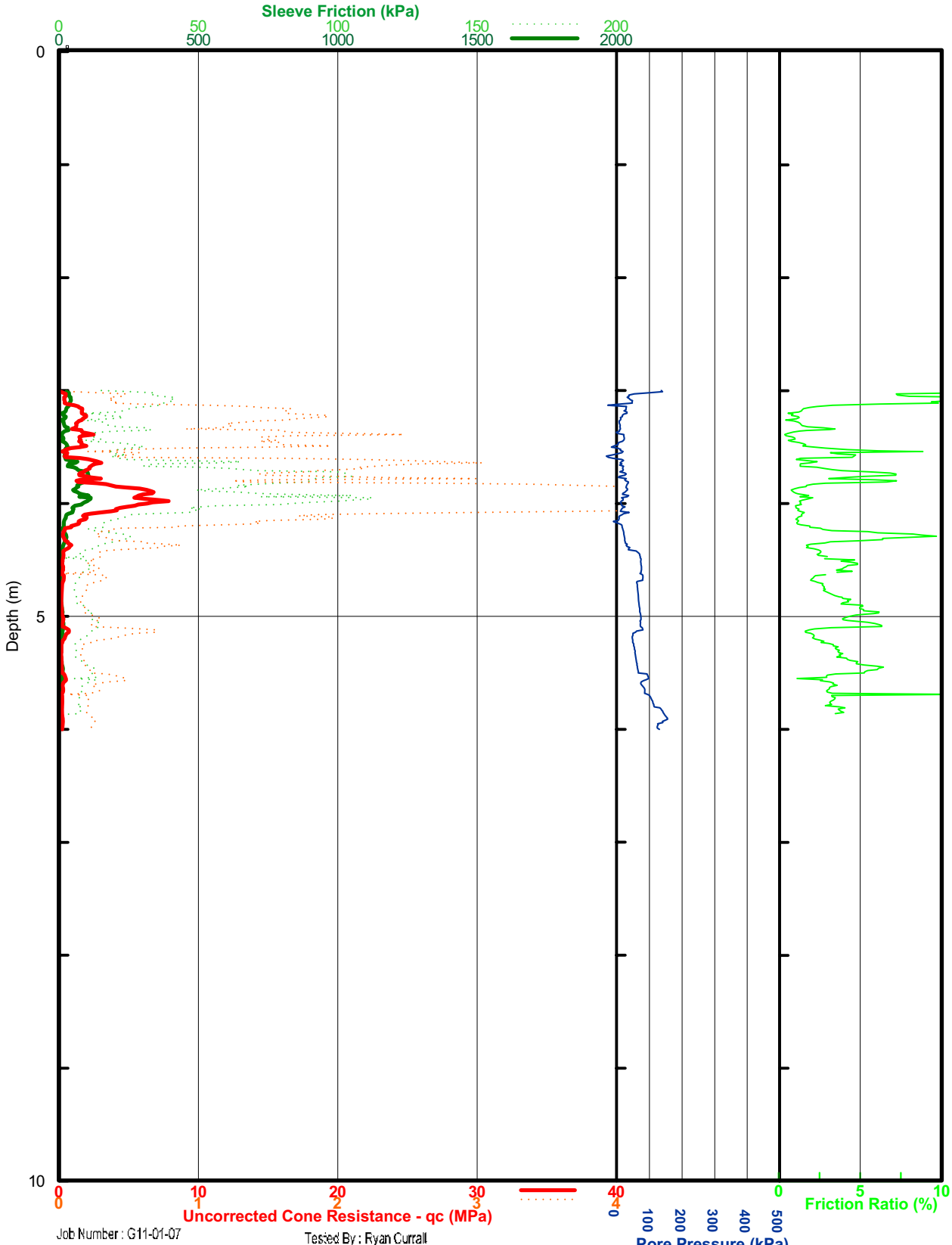
CONE PENETROMETER TEST RESULT

RTA NSW
Greenway Shared Pathway - G4202
Haberfield NSW

CPT-10a



Job Number : G11-01-07
Test Date : 20/01/2011
DGPS Position : 56H 0328604, 6249758
DGPS Format : GDA

Tested By : Ryan Currall
Test Class : IGS-S
Checked By : Russell Vincenzi

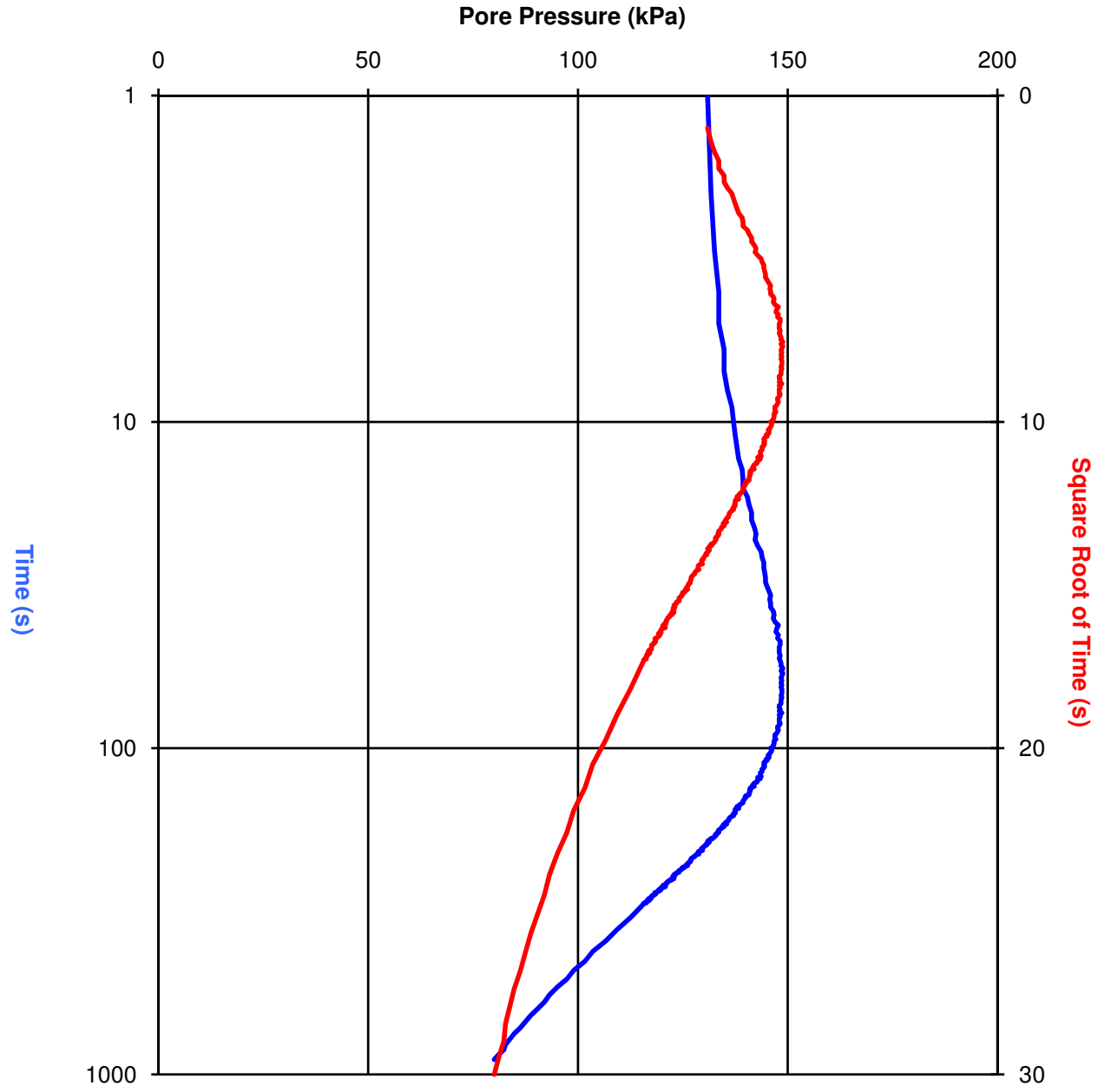
Cone Number : C10CFIIP.G56
Predrill Depth : 3.00m
Dissipation Tests @ : 6.00m
Terminated Due To : Required Depth Reached

Insitu Geotech Services Pty Ltd
IGS

PORE PRESSURE DISSIPATION TEST RESULT

RTA NSW
Greenway Shared Pathway - G4202
Haberfield NSW

CPT-10a
Depth: 6m



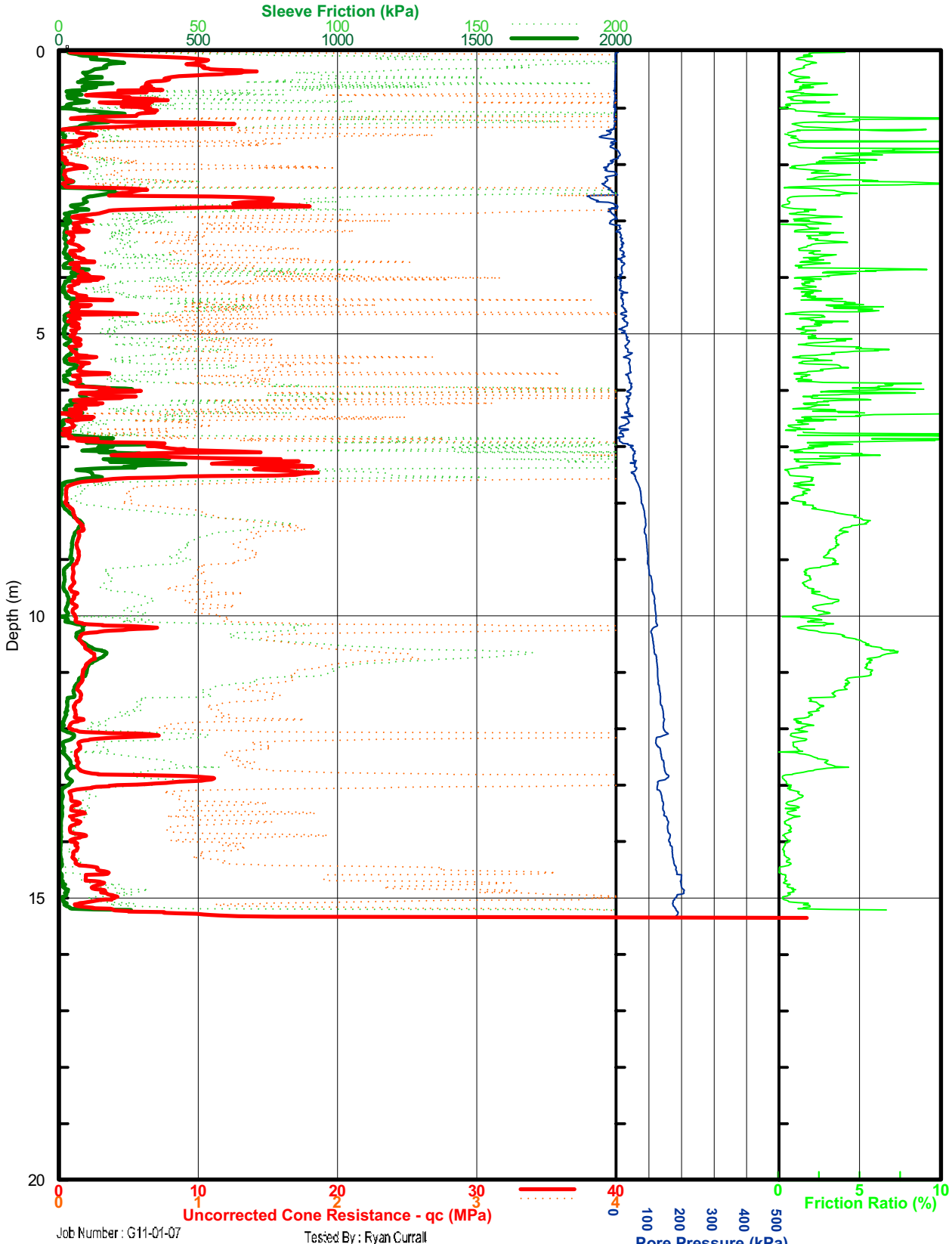
Tested By: Ryan Currall
Test Duration: 0 Hours, 15 Minutes
Test Date: 20/01/2011
Job No: G11-01-07
Cone: C10CFIIP.G56

Insitu Geotech Services Pty Ltd IGS

CONE PENETROMETER TEST RESULT

RTA NSW
Greenway Shared Pathway - G4202
Haberfield NSW

CPT-14



Job Number : G11-01-07
Test Date : 19/01/2011
DGPS Position : 56H 0328769, 6250118
DGPS Format : GDA

Tested By : Ryan Currall
Test Class : IGS-1
Checked By : Russell Vincenzi

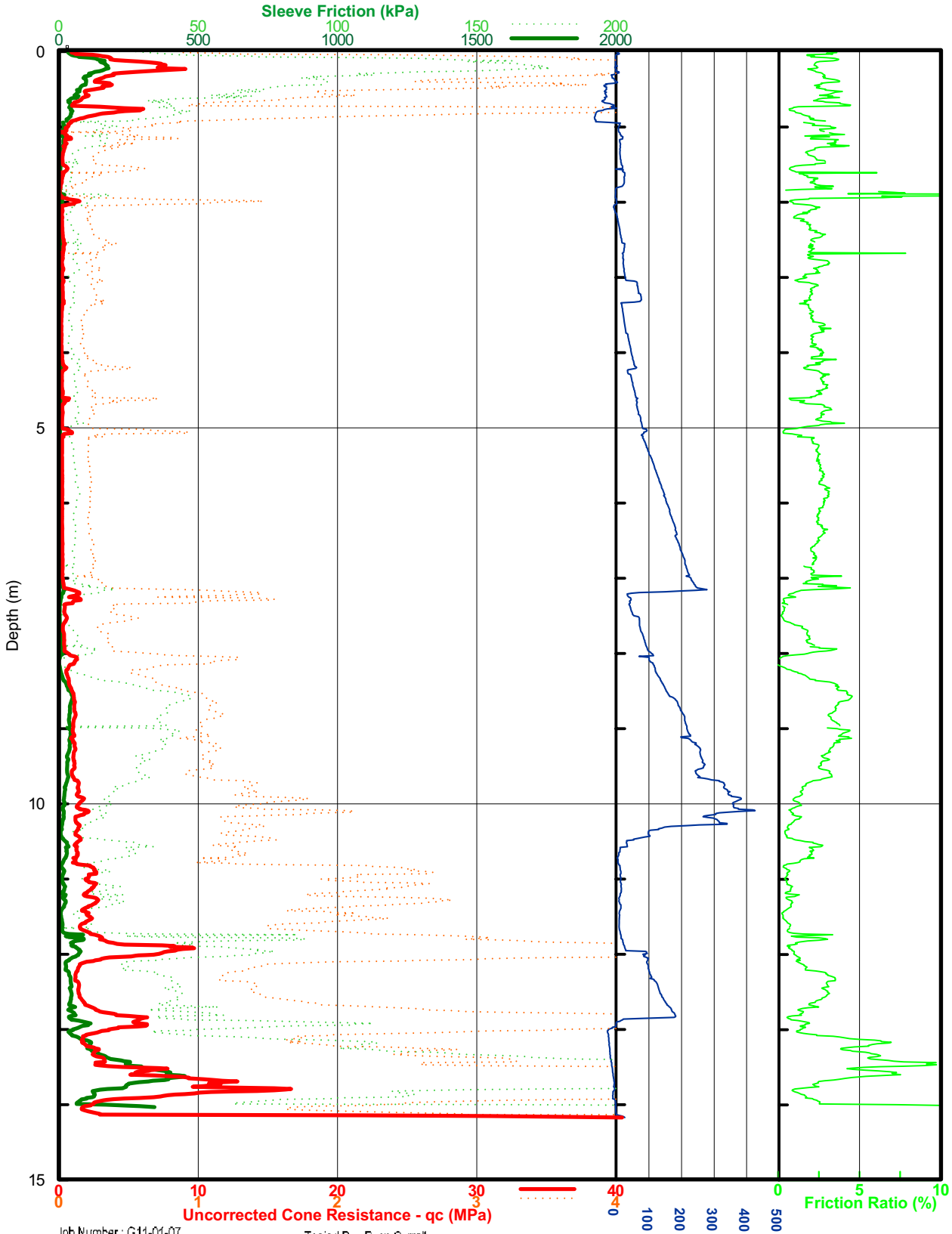
Cone Number : C10CFIIP.G56
Predrill Depth : 0.00m
Dissipation Tests @ : N/A
Terminated Due To : Equipment at Risk

Insitu Geotech Services Pty Ltd
IGS

CONE PENETROMETER TEST RESULT

RTA NSW
Greenway Shared Pathway - G4202
Haberfield NSW

CPT-17



Job Number : G11-01-07
Test Date : 19/01/2011
DGPS Position : 56H 0328820, 6250237
DGPS Format : GDA

Tested By : Ryan Currall
Test Class : IGS-1
Checked By : Russell Vincenzi

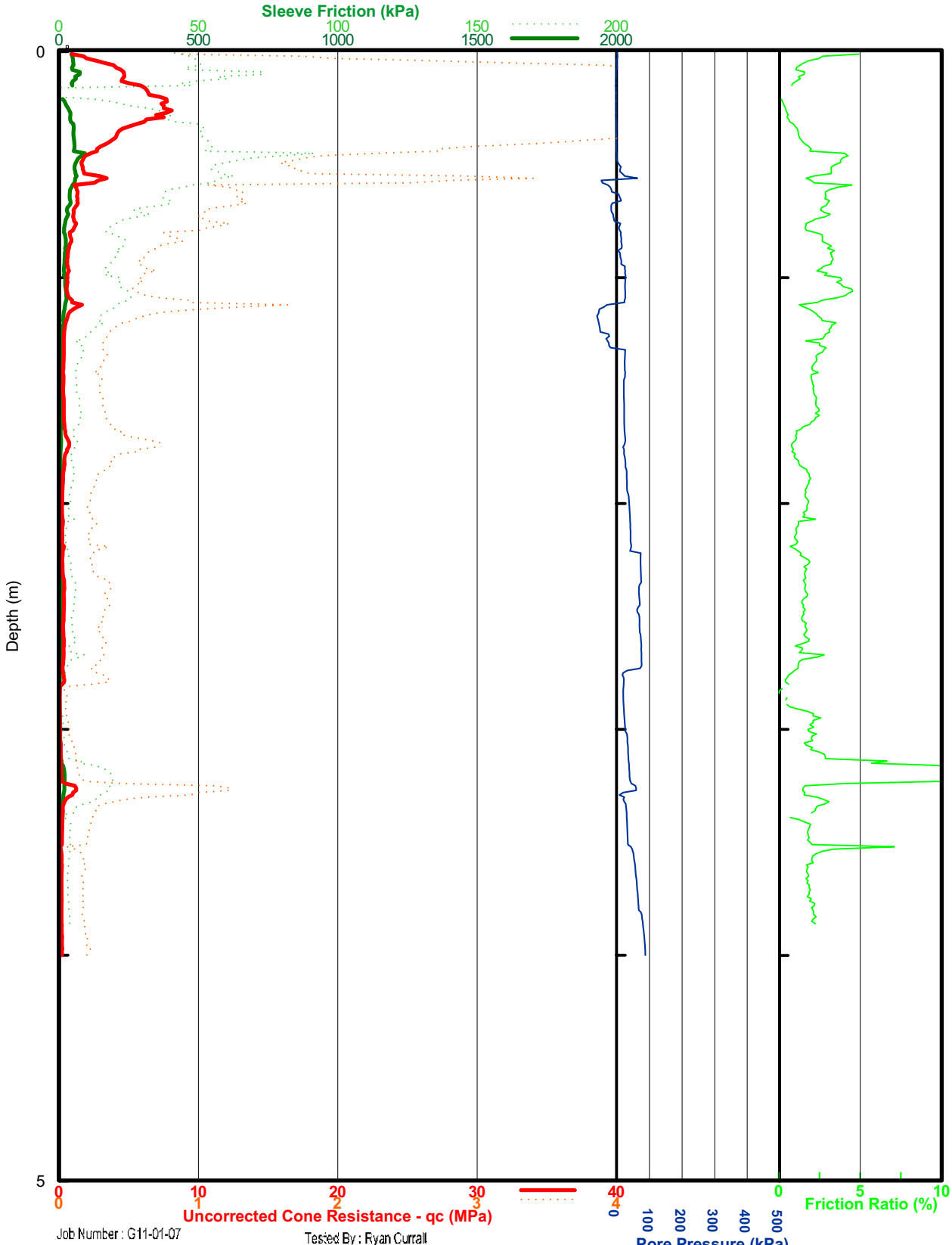
Cone Number : C10CFIIP.G56
Predrill Depth : 0.00m
Dissipation Tests @ : N/A
Terminated Due To : Equipment at Risk

Insitu Geotech Services Pty Ltd
IGS

CONE PENETROMETER TEST RESULT

RTA NSW
Greenway Shared Pathway - G4202
Haberfield NSW

CPT-17a



Job Number : G11-01-07
Test Date : 20/01/2011
DGPS Position : 56H 0328820, 6250237
DGPS Format : GDA

Tested By : Ryan Currall
Test Class : IGS-S
Checked By : Russell Vincenzi

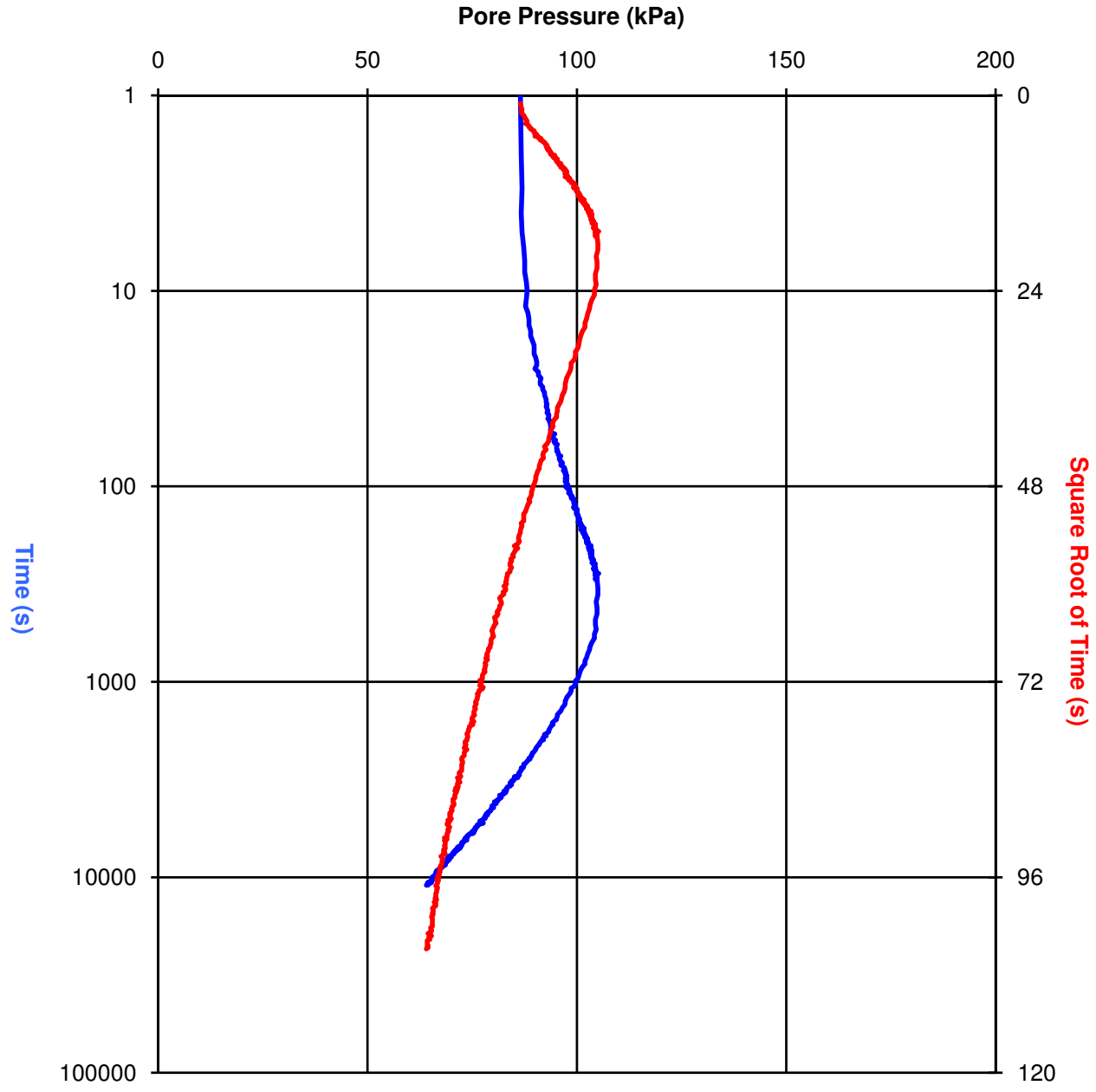
Cone Number : C10CFIIP.G56
Predrill Depth : 0.00m
Dissipation Tests @ : 4.00m
Terminated Due To : Required Depth Reached

Insitu Geotech Services Pty Ltd IGS

PORE PRESSURE DISSIPATION TEST RESULT

RTA NSW
Greenway Shared Pathway - G4202
Haberfield NSW

CPT-17a
Depth: 4m



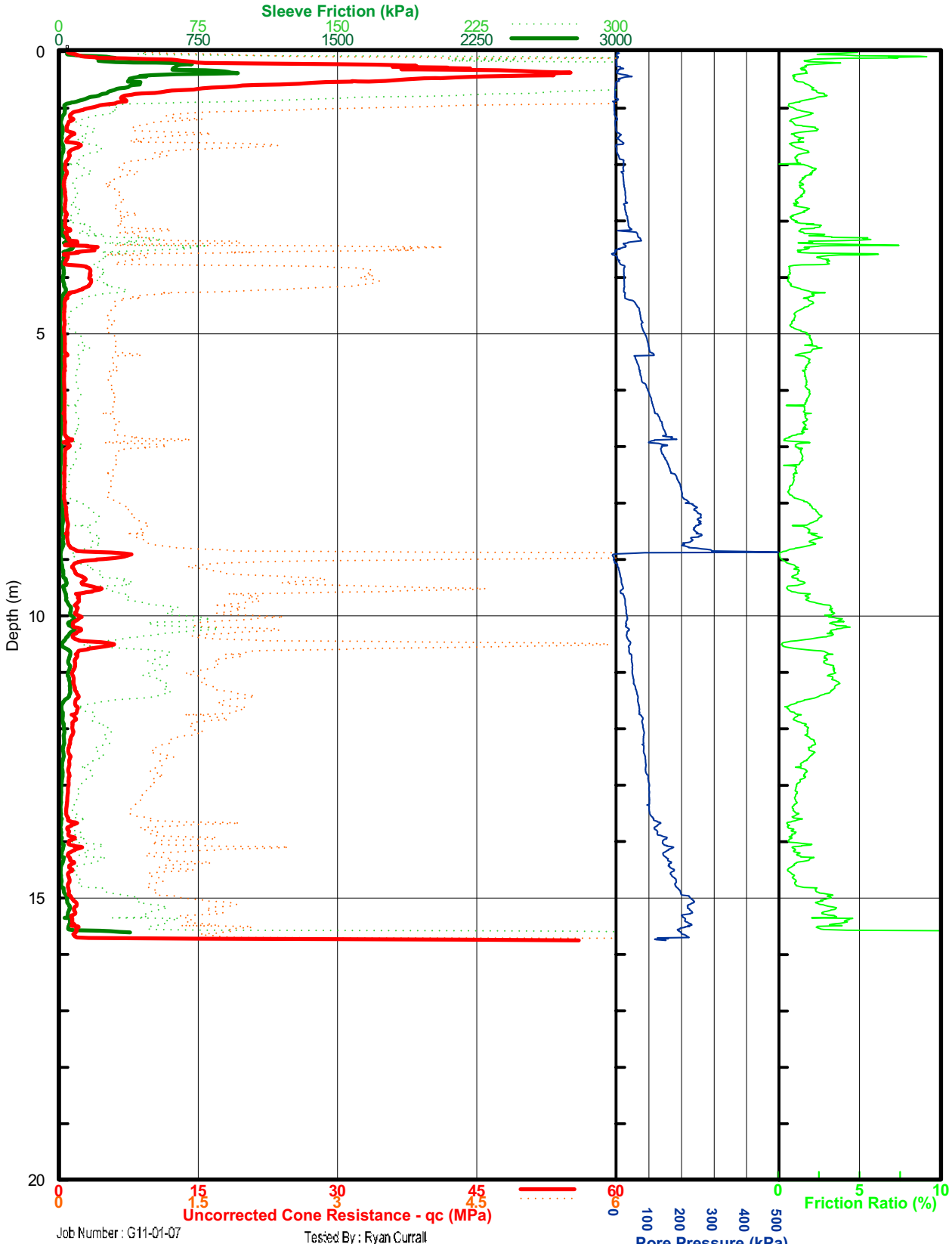
Tested By: Ryan Currall
Test Duration: 3 Hours, 2 Minutes
Test Date: 20/01/2011
Job No: G11-01-07
Cone: C10CFIIP.G56

Insitu Geotech Services Pty Ltd IGS

CONE PENETROMETER TEST RESULT

RTA NSW
Greenway Shared Pathway - G4202
Haberfield NSW

CPT-19



Job Number : G11-01-07
Test Date : 20/01/2011
DGPS Position : 56H 0328862, 6250367
DGPS Format : GDA

Tested By : Ryan Currall
Test Class : IGS-1
Checked By : Russell Vincenzi

Cone Number : C10CFIIP.G56
Predrill Depth : 0.00m
Dissipation Tests @ : N/A
Terminated Due To : Equipment at Risk

Insitu Geotech Services Pty Ltd
IGS

CLIENT DEPARTMENT OF MAIN ROADS

SITE CITY WEST LINK ROAD

LOCATION DOBROYD POINT

313771 E

1250488 N

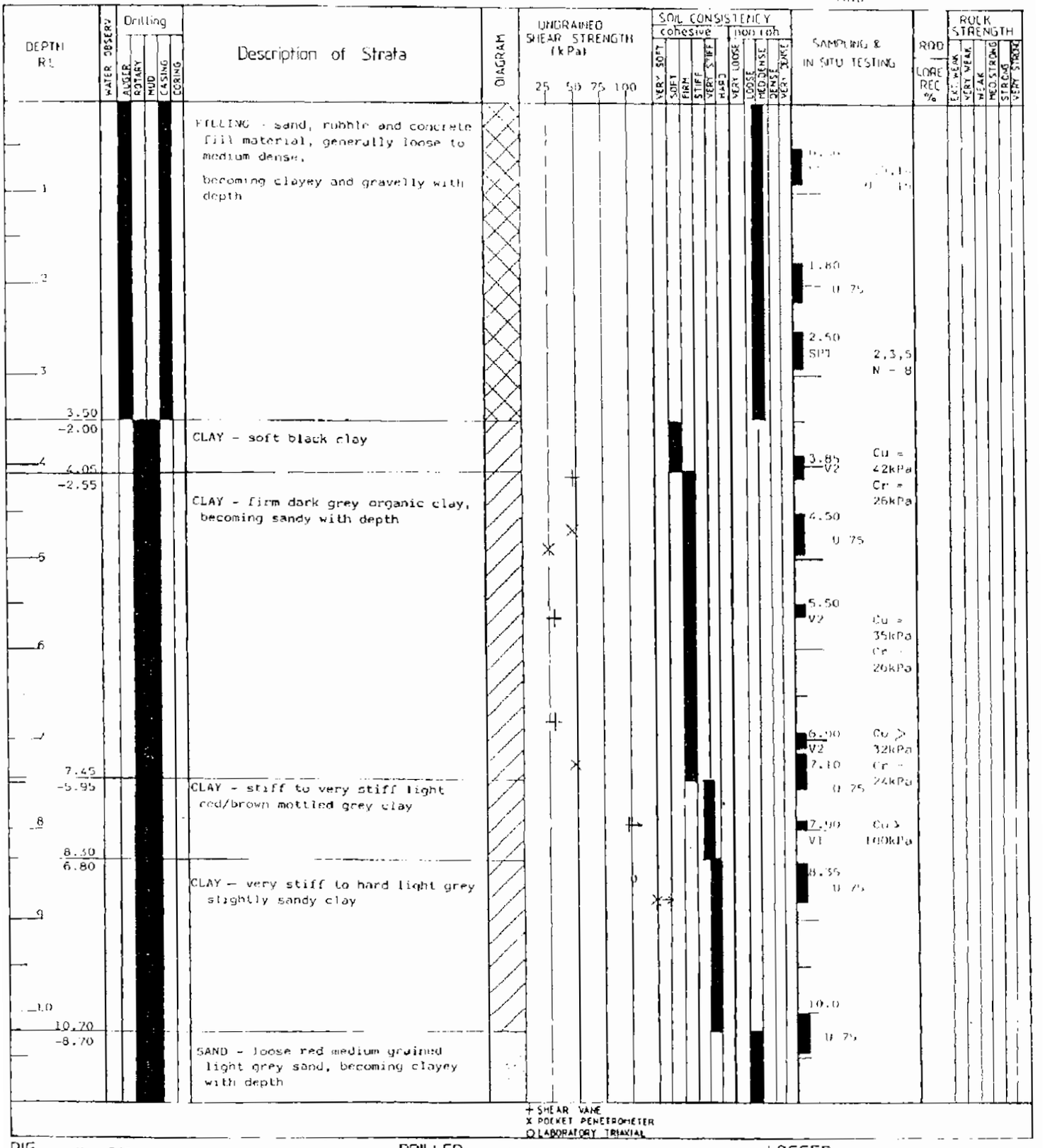
BORE No 4 PAGE 1 OF 2

DATE 11/2/87

CONTRACT No. SS1/10.097

SURFACE LEVEL 5 M

DATUM AHD



RIG Box 840 DRILLER T. Scholze LOGGED Lovenspier

REMARKS Water level not observed due to mud drilling

core type NMLC

dip of hole Vertical

azimuth

Sampling and in situ testing

A AUGER
S STANDARD PENETRATION TEST
U mm TUBE
V1 VANE SHEAR TEST - (140 x 70mm)
V2 VANE SHEAR TEST - (100 x 50mm)
P PRESSUREHETER TEST
W WATER PRESSURE TEST

Water observations

Free water observed

standing water level after hwrs.

D.J.Douglas & Partners

CLIENT DEPARTMENT OF MAIN ROADS

SITE CITY WEST LINK ROAD

LOCATION DOBROYD POINT

TEST BORE hcrun1

BORE No. 1 PAGE 2 OF 2

DATE 11/2/87

CONTRACT No. SSI/10.097

SURFACE LEVEL 1.5 M

DATUM AHD

313771 E

1250488 N

DEPTH RL	Description of Strata	GRAPHIC LOG	UNDRAINED SHEAR STRENGTH (kPa) 25 50 75 100	SOIL CONSISTENCY cohesive: VERY SOFT, SOFT, FIRM, STIFF, VERY STIFF, HARD; non-coh: VERY LOOSE, LOOSE, MEDIUM DENSE, DENSE, VERY DENSE	SAMPLING & IN SITU TESTING	RQD / CORE REC %	ROCK STRENGTH: EXT. WEAK, VERY WEAK, WEAK, MED. STRONG, STRONG, VERY STRONG
11.40 / -9.90	CLAYEY SAND - [illegible] grey slightly [illegible]				11.00 SPT 1/200,4,4 N = 8		
12 / 12.20 / -10.70	SANDY CLAY - very stiff to hard grey /brown medium grained sandy clay				11.90 U 85		
13					13.00 U 85		
14 / 14.20 / -12.70	SANDY CLAY - soft to firm dark grey/ black medium grained sandy clay				14.50 No Recovery U 85		
15					14.90 U 75		
15.53 / -14.03	SANDSTONE - medium strong to strong slightly weathered slightly fractured, light grey and brown medium grained sandstone						
16 / 16.30 / -14.80							
17	SANDSTONE - medium strong to strong slightly weathered light grey laminated dark grey medium grained sandstone * 16.43 m: ferruginous sandstone band * 17.73 m: 10-20 mm black clay seam * 17.84 m: 80 mm very weak sandstone band					70 /93	
18							
18.53 / -19.03	END OF BOREHOLE AT 18.53 METRES.						

+ SHEAR VANE
X POCKET PENETROMETER
○ LABORATORY TRIAXIAL

RIG Fox BAO DRILLER Schulze LOGGED Levenspiel

REMARKS Water level not observed due to mud drilling

core type NMLC

dip of hole Vertical

azimuth

Sampling and in-situ testing
A AUGER
S STANDARD PENETRATION TEST
U mm TUBE
V VANE SHEAR TEST - (100 x 20mm)
V2 VANE SHEAR TEST - (100 x 50mm)
P PRESSUREMETER TEST
W WATER PRESSURE TEST

Water observations
free water observed
standing water level after hours

D.J.Douglas & Partners

CLIENT DEPARTMENT OF MAIN ROADS

SITE CITY WEST LINK ROAD

LOCATION DOBROYD POINT

313783 E

1250510 N

TEST BORE REPORT

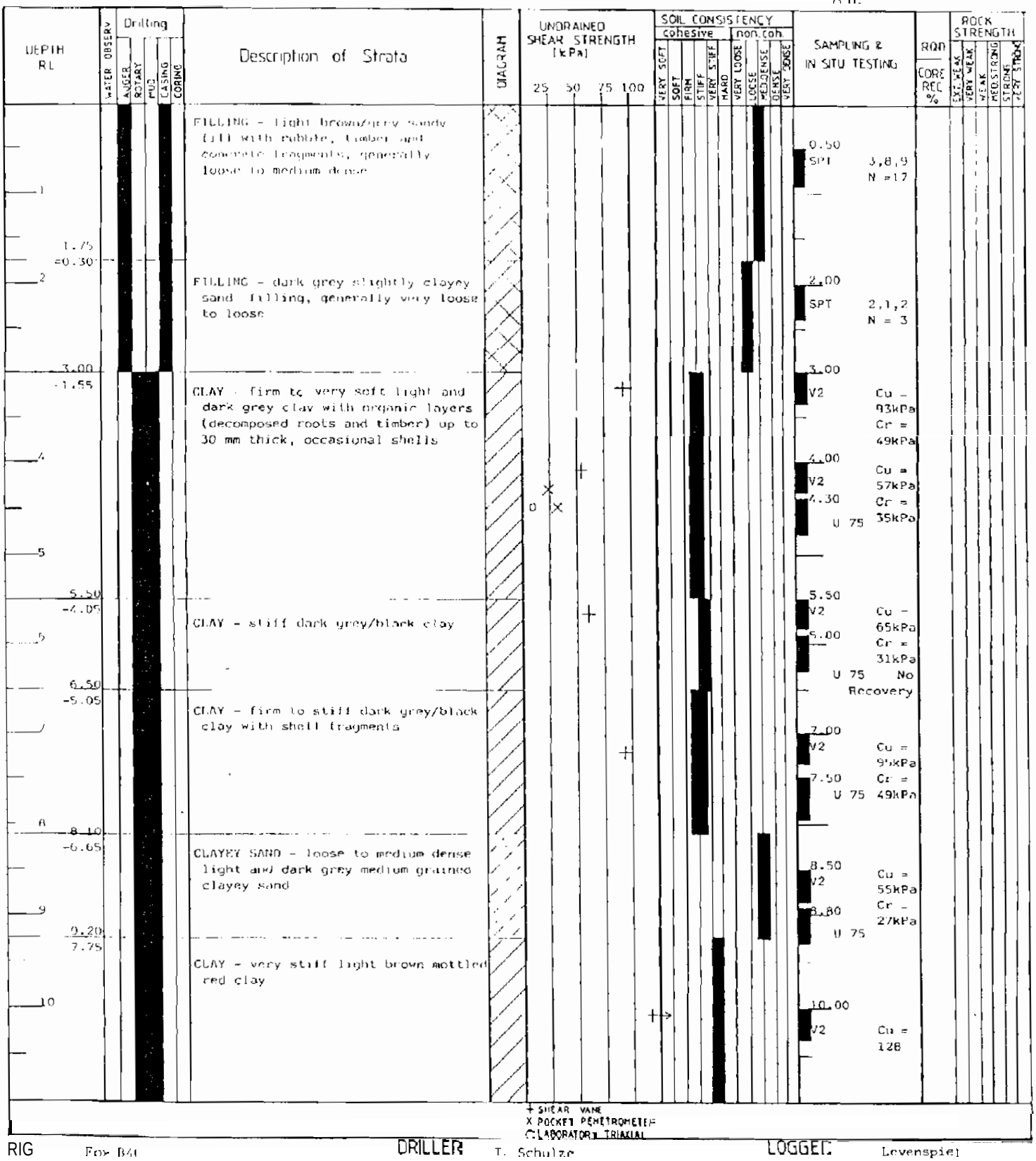
BORE No. 5 PAGE 1 OF 2

DATE 12/2/57 a 17/2/87

CONTRACT No. SS1/10.097

SURFACE LEVEL 1.45 M

DATUM AHD



RIG Fox B40 DRILLER T. Schulze LOGGED Levenspiel

REMARKS

core type NMLC

dip of hole Vertical

azimuth

Sampling and in situ testing

A AUGER
S STANDARD PENETRATION TEST
U mm TUBE
V: VANE SHEAR TEST – (140 x 70mm)
V2 VANE SHEAR TEST – (100 x 50mm)
P PRESSUREMETER TEST
WATER PRESSURE TEST

Water observations

free water observed

standing water level after hours.

D.J.Douglas & Partners

CLIENT DEPARTMENT OF MAIN ROADS

SITE CITY WEST LINK ROAD

LOCATION DOBROYD POINT

313733 E

1250510 N

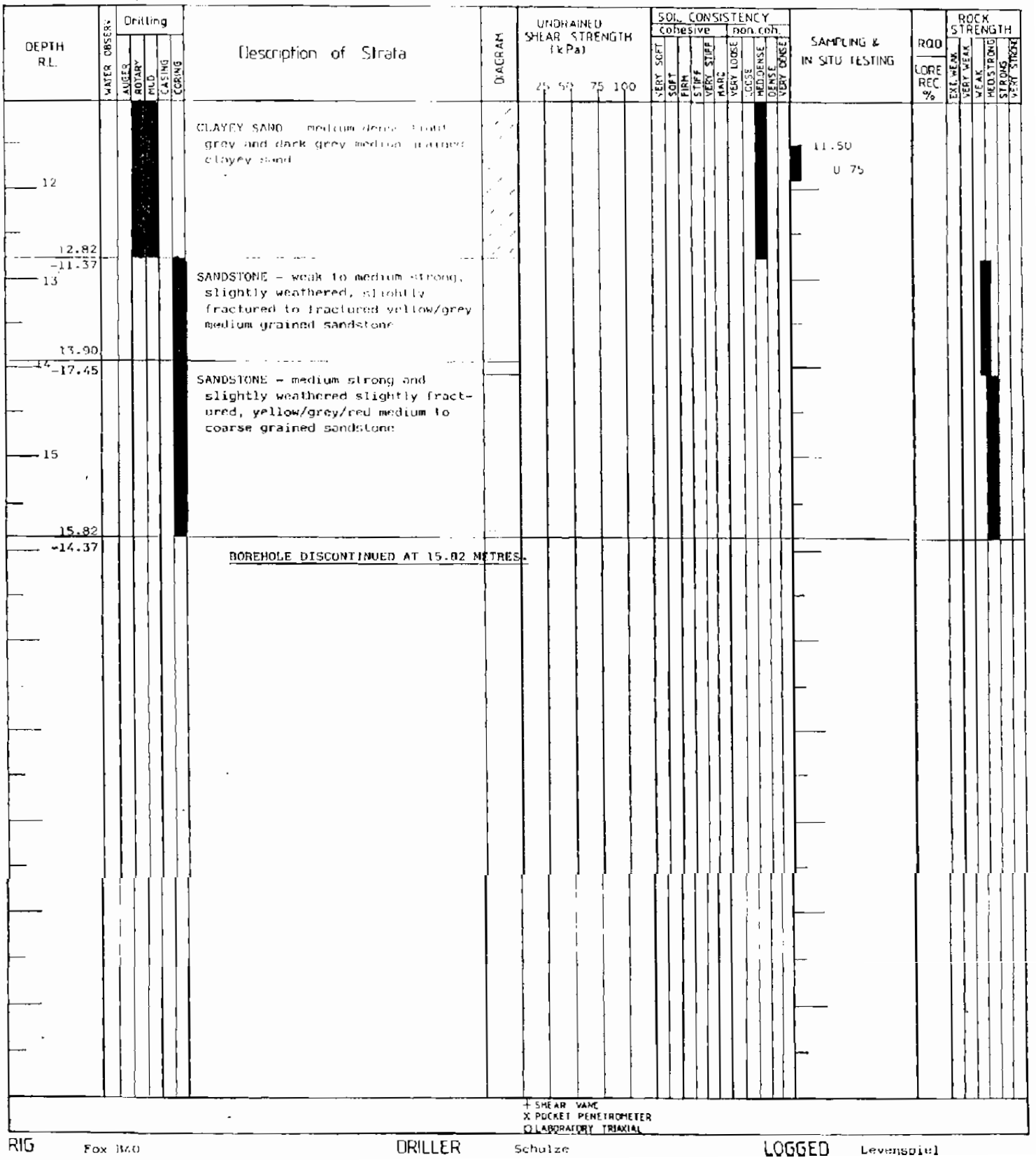
BORE No. 5 PAGE 2 OF 2

DATE 17/2/87

CONTRACT No. SSI/10.097

SURFACE LEVEL 1.45 m

DATUM AHD



RIG Fox 1140 DRILLER Schulze LOGGED Levenspiel

REMARKS

core type NMLC

dip of hole Vertical

azimuth

Sampling and in situ testing

A AUGER
S STANDARD PENETRATION TEST
L mm TUBE
V1 VANE SHEAR TEST - (140 x 70mm)
V2 VANE SHEAR TEST - (100 x 50mm)
P PRESSUREMETER TEST
W WATER PRESSURE TEST

Water observations

free water observed

standing water level after hours.

D.J.Douglas & Partners

TEST BORE REPORT

CLIENT DEPARTMENT OF MAIN ROADS

SITE CITY WEST LINK ROAD

LOCATION DOBROYD POINT

313757 E

1250593 N

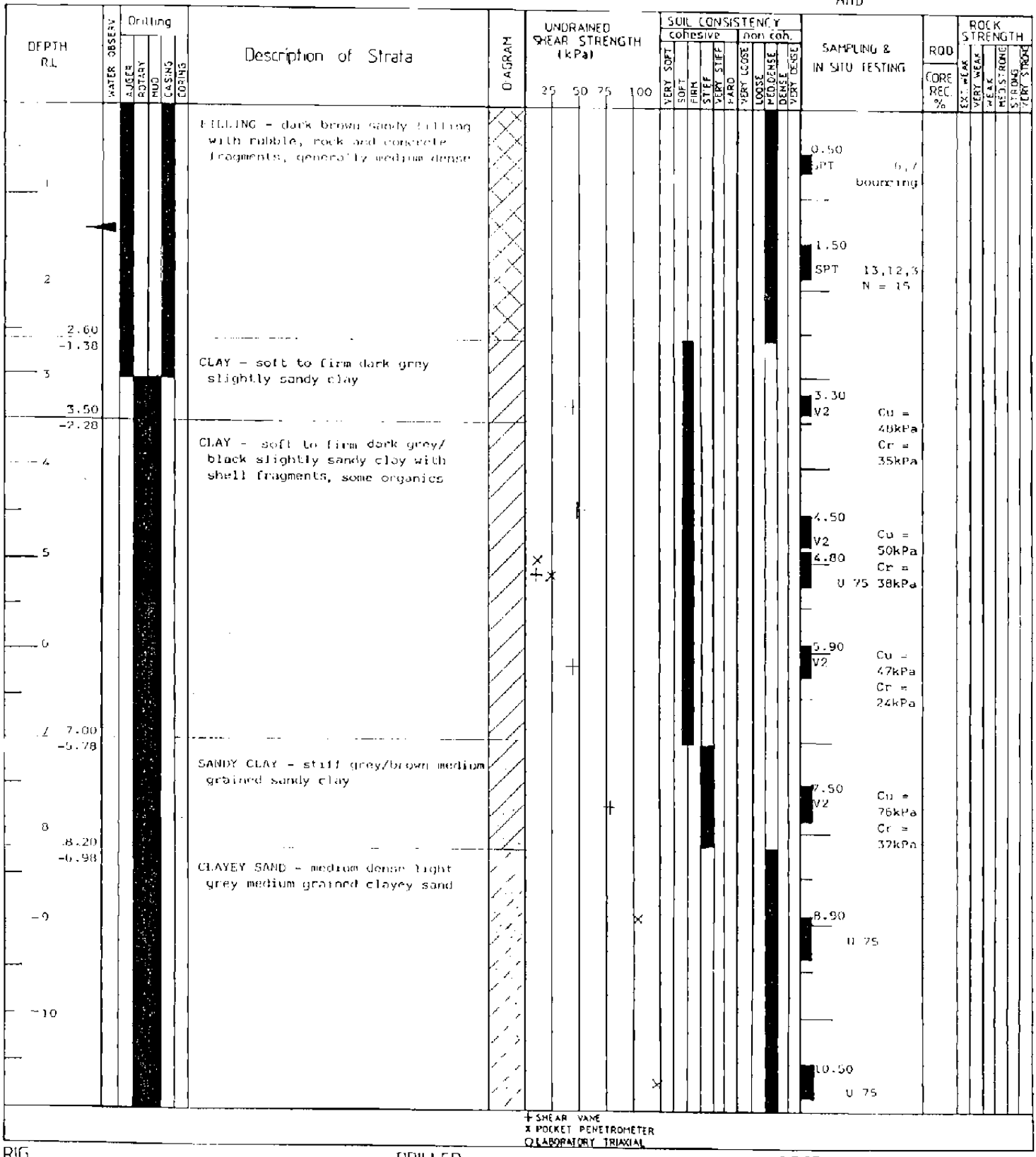
BORE No. E PAGE 1 OF 2

DATE 18/2/87

CONTRACT No. SSI/1C,097

SURFACE LEVEL 1.2 M

DATUM AHD



RIG Fox 860 DRILLER Schulze LOGGED Levenspiel

REMARKS Piezometer tube installed.

core type -

dip of hole -

azimuth

Sampling and in situ testing

A AUGER
S STANDARD PENETRATION TEST
U mm TUBE
V* VANE SHEAR TEST - (140 x 70mm
V2 VANE SHEAR TEST - (100 x 50mm)
P PRESSUREMETER TEST
W WATER PRESSURE TEST

Water observations

free water observed

standing water level after hours

D.J.Douglas & Partners

TEST BORE REPORT

CLIENT DEPARTMENT OF MAIN ROADS

SITE CITY WEST LINK ROAD

LOCATION DOBROYD POINT

313757 E

1250693 N

BORE No. 6 PAGE 2 OF 2

DATE 18/2/87

CONTRACT No. SSI/10.097

SURFACE LEVEL 1.2 M

DATUM AHD

DEPTH RL	WATER OBSERV	Drilling: AUGER	ROTARY MUD	CASING	CORING	Description of Strata	DIAGRAM	UNDRAINED SHEAR STRENGTH (kPa)	SOIL CONSISTENCY: cohesive: VERY SOFT	SOFT	FIRM	STIFF	VERY STIFF	HARD	non.coh.: VERY LOOSE	LOOSE	MED.DENSE	DENSE	VERY DENSE	SAMPLING & IN SITU TESTING	RQD	CORE REC. %	ROCK STRENGTH: EXT.WEAK	VERY WEAK	WEAK	MED.STRONG	STRONG	VERY STRONG
12						SANDY CLAY - very stiff to hard light grey medium grained sandy clay																					
12.12																				12.00 U 75							
-10.90						SANDSTONE - weak to medium strong yellow brown medium grained sandstone																					
13																											
13.10																											
-11.84						BOREHOLE DISCONTINUED AT 13.10 METRES.																					

| SHEAR VANE
X POCKET PENETROMETER
O LABORATORY TRIAXIAL

RIG Fox 820 DRILLER Schulze LOGGED Levenspiel

REMARKS Piezometer tube installed

core type -

dip of hole -

azimuth

Sampling and in situ testing

A AUGER
S STANDARD PENETRATION TEST
U mm TUBE
Vs VANE SHEAR TEST - (140 x 70mm)
Vs VANE SHEAR TEST - (100 x 50mm)
P PRESSUREMETER TEST
Wp WATER PRESSURE TEST

Water observations

free water observed

standing water level after hours.

D.J.Douglas & Partners

NON-CORE DRILL HOLE-GEOLOGICAL LOG

HOLE NO : 9
FILE / JOB NO : G2067
SHEET 1 OF 1

PROJECT : VIADUCT OVER HAWTHORNE CANAL.
LOCATION : DOBROYD POINT.
POSITION : PEG.9. SURFACE ELEVATION : ANGLE FROM VERTICAL : 0°
RIG TYPE : PIONEER MOUNTING : TRUCK CONTRACTOR : RTA DRILLER : R. BLAKE
DATE STARTED : 30.1.91 DATE COMPLETED : 31.1.91 DATE LOGGED : 30.1.91 LOGGED BY : MS CHECKED BY :

DRILLING

DEPTH	DRILLING & CASING	DRILLING FLUID TYPE & LOSS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES, TESTS, ETC	RL (m)
0	SPIRAL AUGER, OPEN HOLE		F			
1.08			E		SPT 3,1,1 N=2	
1.53						
2.58			E		SPT 0,1,3 N=3	
3.03						
4.08			E		SPT 4,4,1 N=5	
4.53						
6.74	WASH BORING ROCK ROLLER		E		SPT 0.0.0 N=0	
7.19			E-F			

MATERIAL

GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Colour, Plasticity or Particle Characteristic, Secondary & Minor Components)	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & other observations
		GRAVELLY CLAY: D. BROWN, LOW PLASTICITY, FINE-MED. GRAINED GRAVEL, 2 CONCRETE BOULDERS (200 x 50mm) AT TOP.	M	S	FILL.
		GRAVELLY CLAY: D. BROWN, LOW-MED. PLASTICITY, FINE GRAINED GRAVEL, SLIGHTLY SANDY FINE GRAINED SAND.	M	S-VS	SPT RECOVERY 20 cm.
	CL	CLAY: D. GRAY, MED-HIGH PLASTICITY, SLIGHTLY SANDY FINE SAND.			ALLUVIAL.
					2.40 WL (LOW TIDE TIME).
	CL - CH	SILTY CLAY: D. GREY, MED-HIGH PLASTICITY, FINE-MED, GRAVEL, ORGANIC.		VS	SPT RECOV. 10.0 cm
	CH - OH	CLAY: BLACK, HIGH PLAST., SHELLS, FEW FINE-MED, GRAVEL* (YELLOWISH GREY SANDSTONE) THROUGHOUT, SOME FINE-MED, GRAINED SAND, ORGANIC * (SOME OF THE GRAVEL MAY BE FROM CAVING).	W	VS-S	PP 30-60 kPa (BOTTOM OF SPT) TUBE SPT RECOV. 45.cm
					CAVING 0.50 m, CASING: 0.0 - 6.10 m.
					CASE DROPPED IN TO 6.60 m. DURING WASHING THE HOLE.
		SILTY - SANDY CLAY: D. GREY, HIGH PLAST., FINE GRAINED SAND, SHELLY, WHITE SILTY - SIZE MATERIAL AT BOTTOM		VS	* SPT TUBE PUSHED IN BY WEIGHT OF HUMMER. * SPT RECOV. 55 cm.
		7.40			
		CLAY: PALE RED & D. GREY, HIGH PLAST (INSPECTED FROM RETURNING MUD)			

See Standard Sheets for details of abbreviations & basis of descriptions

RTA

ROADS AND TRAFFIC AUTHORITY, NSW

GS 562 (2/89)

NON-CORE DRILL HOLE-GEOLOGICAL LOG

HOLE NO : 4
FILE / JOB NO C2067
SHEET 2 OF 3

PROJECT : VIADUCT OVER HAWTHORNE CANAL.
LOCATION : DOBROYD POINT.

POSITION : PEG 9 SURFACE ELEVATION : ANGLE FROM VERTICAL : 0°

RIG TYPE : PIONEER MOUNTING : TRUCK CONTRACTOR RTA DRILLER : R. BLAKE

DATE STARTED : 30.01.91 DATE COMPLETED : 31.01.91 DATE LOGGED : 31.01.91 LOGGED BY : MS CHECKED BY :

DRILLING

DEPTH	DRILLING & CASING	DRILLING FLUID TYPE & LOSS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES, TESTS, ETC	RL (m)
9	WASH BORING - ROCK ROLLER	8.24	F		SPT 3,5,6 N=11	
					8.69	
10		9.74			SPT 3,8,14 N=22	
					10.19	
11		11.24			SPT W.O.R.	
					11.69	
12		12.74			SPT 3,4,6 N=10	
					13.19	
13		14.24			SPT 3,4,4 N=8	
					14.69	
14		15.54				

MATERIAL

GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary & Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & other observations
		CLAY: LT REQ HIGH PLAST.			
		8.30			
		CLAY: GREY, HIGH PLAST., UNIFORM.	W	ST	PP. 150-210 kPa (on SPT SAMPLE) SPT RECOV. 45 cm.
	SC	CLAYEY SAND: D. GREY, LOW, PLAST., FINE-MED. GRAINED SAND.	W	MD	SPT RECOVERY 45.0 cm.
	CL	SILTY CLAY: D. GREY, MED. PLAST., SLIGHTLY SANDY, FINE GRAINED SAND.	W	S	SPT RECOVERY 45.0 CM PP: 70- 100 kPa.
	CH-OH	CLAY: D. GREY - BLACK, YELLOWISH Fe - STAINED IN PARTS, HIGH PLAST., ORGANIC	W	ST	PP: 150 - 220 kPa
		CLAYEY SAND: D. GREY, FINE-MED. GRAINED, SAND, LOW PLASTICITY.	W	L	SPT RECOV. 45 cm. PP 30 - 60 kPa
		15.54 END OF NON-CORE DRILLING.			
		FOR CORE-DRILL LOG SEE PAGE 3.			

See Standard Sheets for details of abbreviations & basis of descriptions

ROADS AND TRAFFIC AUTHORITY, NSW

GS 562 1288

CORED DRILL HOLE LOG

HOLE NO : 9
FILE / JOB NO : 02067
SHEET 3 OF 3

PROJECT : VIADUCT OVER HAWTHORNE CANAL.
LOCATION : DOBROYD POINT.
POSITION : PEG 9. SURFACE ELEVATION : ANGLE FROM HORIZONTAL : 90°
RIG TYPE : PIONEER MOUNTING : TRUCK CONTRACTOR : RTA DRILLER : R. BLAKE
CASING DIAMETER : NW BARREL (length) : 3.00 (NMLC) BIT : DIAM. IMPREG. BIT CONDITION : GOOD
DATE STARTED : 30.01.91 DATE COMPLETED : 31.01.91 DATE LOGGED : 31.01.91 LOGGED BY : MS CHECKED BY :

DRILLING

PROGRESS: DRILLING & CASING; WATER
CORE LOSS / RUN (%) — DRILL DEPTH
SAMPLES & FIELD TESTS
RL (m)

MATERIAL

GRAPHIC LOG

DESCRIPTION
ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)

WEATHERING

EST STRENGTH I_s (50) MPa: EL – 0.03 | VL – 0.1 | L – 0.3 | M – 1 | H – 3 | VH – 10 | EH

FRACTURES

NATURAL FRACTURE SPACING (mm): 20 | 60 | 100 | 300 | 1000

VISUAL

ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other

DEPTH

NMLC OPEN HOLE

15.54

FOR NONE-CORE DRILL LOG SEE PAGES 1 AND 2.

0%

SANDSTONE: WHITE- LT GREY, FINE-MED. GRAINED, MED. - THICKLY BEDDED. YELLOWISH Fe-STAINED FROM 15.70 - 16.40, CROSS BEDDING IN SOME PLACES, V. THIN CARBONACEOUS/MICACEOUS BANDS.

MW
HW
MW-SW

16.10
16.60

JT/BP: 3-5°, Fe, PR RF
HANDLING FRACTURE
JT/BP°, 3°, Fe PR RF
JT/BP: 5°, PR, RF
JT.5°, PR, SM, CLAY.

17.83

SANDSTONE: AS ABOVE, EXCEPT WHITE TO LT. GREY ONLY.

SW

17.7

CARBONACEOUS BAND (5mm)
HANDLING FRACTURE
JT: 5°, PR, RF
JT: 5°, PR, RF.

0%

HANDLING FRACTURE ALONG X-BED.
CLAY SEAM (50 mm).

20.83

AS ABOVE.

SW

20.9

HANDLING Fr. ALONG X- BED.
END OF RUN FRACTURE.

0%

CLAY SEAM (10 mm).
CLAY SEAM (10 mm).
JT: 5°, PR, RF.

22.70

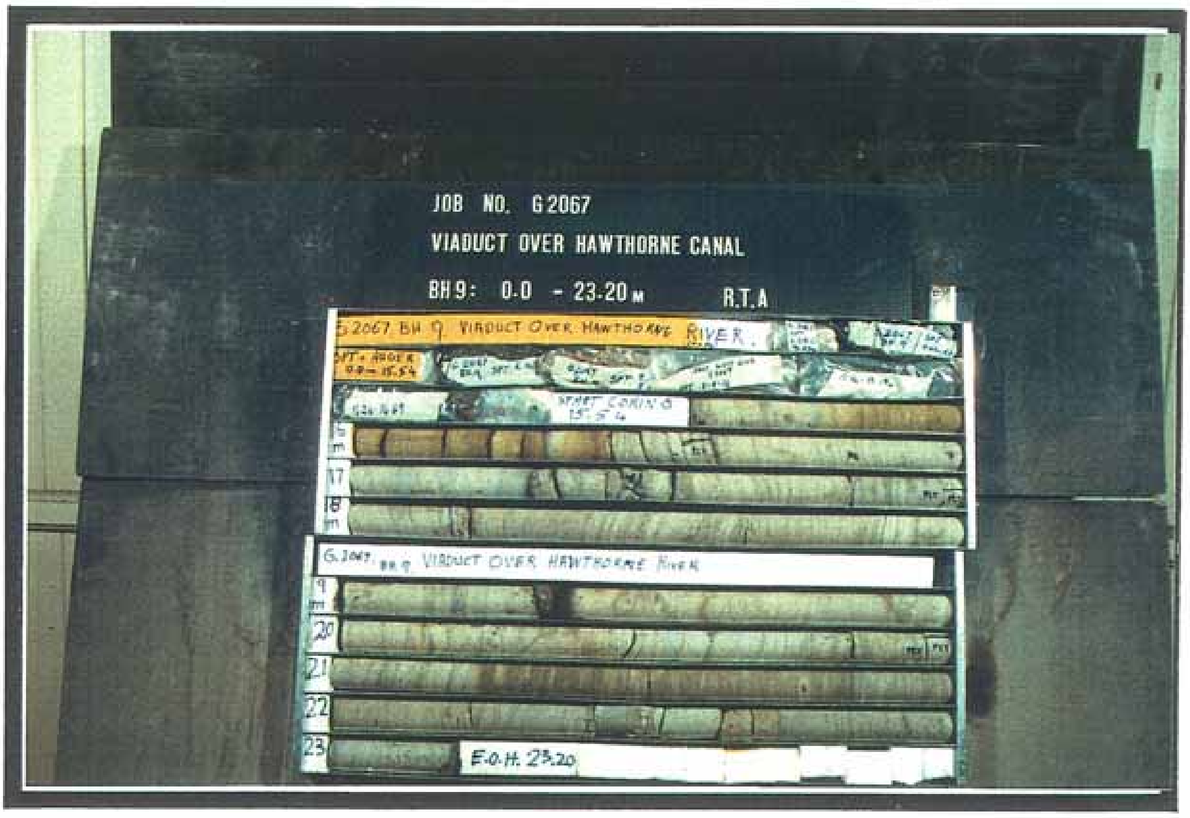
END OF HOLE 23.20 m

WATER TABLE: 1.80 1/2/91

See Standard Sheets for details of abbreviations & basis of descriptions

RTA ROADS AND TRAFFIC AUTHORITY, NSW

GS 563 1284


JOB NO. G 2067
VIADUCT OVER HAWTHORNE CANAL
BH 9: 0.0 - 23.20 M
R.T.A
START CORING 15.54
E.O.H. 23.20

NON-CORE DRILL HOLE-GEOLOGICAL LOG

HOLE NO : 10
FILE / JOB NO : G2067
SHEET 1 OF 4

PROJECT : CITY WEST LINK ROAD VIADUCT OVER HAWTHORNE CANAL.
LOCATION :
POSITION : SURFACE ELEVATION : ANGLE FROM VERTICAL : 0°
RIG TYPE : PIONEER P160 MOUNTING : TRAILER CONTRACTOR : RTA DRILLER : C.P.
DATE STARTED : 11/2/91 DATE COMPLETED : 12/2/91 DATE LOGGED : 11/2/91 LOGGED BY : JP CHECKED BY :

DRILLING

DEPTH (m)

DRILLING & CASING: NW CASING; V-BIT AUGER; WASH BORE FINGER BIT

DRILLING FLUID TYPE & LOSS: N/A; 100% POLYMER RETURN

DRILLING PENETRATION: E; F; E

GROUND WATER LEVELS: W.L. 1.60m 11.2.91

SAMPLES, TESTS, ETC:
- 2.13m SPT 0,0,1 N=1
- 2.58m
- 5.13m SPT 0,2,1 N=3
- 5.58m

RL (m)

MATERIAL

GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Colour, Plasticity or Particle Characteristic; Secondary & Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	STRUCTURE & other observations
		TOP SOIL: CLAY, DARK BROWN. 0.20m	D		FILL.
	CL	GRAVELLY CLAY: DARK BROWN. 0.60m	M		
		0.70m SANDSTONE PIECES.			
		GRAVELLY CLAY: DARK BROWN. 1.30m			
	CH	SILTY SANDY CLAY: DARK GREY, H. PLASTICITY, HIGH ORGANIC ODOUR.	W	VS	
				VS	SPT RECOVERY: 450 mm * WT OF RODS AND SPT HAMMER.
	CH			S	SPT RECOVERY = 200 mm RUN NW CASING TO 5.00 m

See Standard Sheets for details of abbreviations & basis of descriptions

DEPARTMENT OF MAIN ROADS, NSW

NON-CORE DRILL HOLE-GEOLOGICAL LOG

PROJECT : CITY WEST LINK ROAD VIADUCT OVER HAWTHORNE CANAL.
LOCATION :
HOLE NO : 10
FILE / JOB NO 62067
SHEET 2 OF 4

POSITION : SURFACE ELEVATION : ANGLE FROM VERTICAL : 0°
RIG TYPE : PIONEER P160 MOUNTING : trailer CONTRACTOR : RTA DRILLER :
DATE STARTED : 11/2/91 DATE COMPLETED : 12/2/91 DATE LOGGED : 11/2/91 LOGGED BY : JP CHECKED BY :

DRILLING

DEPTH	DRILLING & CASING	DRILLING FLUID TYPE & LOSS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES, TESTS, ETC	RL (m)
9	WASH BORE FINGER BIT	100% POLYMER RETURN	E		8.34m SPT 0,0,0* N=0 8.79m	
10						
11					11.34m SPT 1,1,0 N=1 11.79m	
12						
13			F			
14						
15						

MATERIAL

GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary & Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & other observations
	CH	SILTY SANDY CLAY: AS PREVIOUS.	W	VS	SPT RECOVERY = 300 mm * WT OF RODS AND HAMMER.
		11.60m			SPT RECOVERY = 300mm.
	SC	CLAYEY SAND: GREY. LOW PLASTICITY. FINE TO MEDIUM GRAINED.			
		13.20m			
		END NON CORE DRILLING AT 13.20m.			
		* SEE CORED DRILL HOLE SHEET FOR INFORMATION.			

See Standard Sheets for details of abbreviations & basis of descriptions

DEPARTMENT OF MAIN ROADS, NSW

CORED DRILL HOLE LOG

HOLE NO : 10
FILE / JOB NO : G2067
SHEET 3 OF 4

PROJECT : CITY WEST LINK ROAD VIADUCT OVER HAWTHORNE CANAL.
LOCATION :
POSITION : SURFACE ELEVATION : ANGLE FROM HORIZONTAL : 90°
RIG TYPE : PIONEER P160 MOUNTING : TRAILER CONTRACTOR : RTA DRILLER : CP
CASING DIAMETER : NW BARREL (length) : 1.50m AND 3.00M BIT : STEPFACED BIT CONDITION : GOOD
DATE STARTED : 11/2/91 DATE COMPLETED : 12/2/91 DATE LOGGED : 11/2/91 LOGGED BY : JP CHECKED BY :

DRILLING

PROGRESS: DRILLING & CASING; WATER
CORE LOSS (CORE LOSS / RUN %)
DRILL DEPTH
SAMPLES & FIELD TESTS
RL (m)

MATERIAL

GRAPHIC LOG

DESCRIPTION
ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)

WEATHERING

EST STRENGTH I_s (50) MPa: EL – 0.03; VL – 0.1; L – 0.3; M – 1; H – 3; VH – 10; EH

FRACTURES

NATURAL FRACTURE SPACING (mm): 20; 40; 100; 300; 1000

VISUAL

ADDITIONAL DATA (joints, partings, seams, zones, etc)
Description, orientation, infilling or coating, shape, roughness, thickness, other

DEPTH m

9
10
11
12
13
14
15
16

* SEE NON-CORE DRILL HOLE SHEETS FOR INFORMATION.

START CORING AT 13.20m

13.26m SANDSTONE: LIGHT GREY.

SANDSTONE: YELLOW BROWN. FINE TO MEDIUM GRAINED. CROSS BEDDED. — MW

14.90m

SANDSTONE: LIGHT PINK RED, LIGHT GREY AND YELLOW BROWN. FINE TO MEDIUM GRAINED. CROSS BEDDED. — MW TO SW

Is(50)
Is(50)
Is(50)
Is(50)

NMLC CORING
100% POLYMER RETURN

JT 20° CLAY PR RF
BP 0° CN PR RF
BP 20° CLAY PR RF
Fe IRONSTONE SEAM 4mm
DRILLING INDUCED BREAK.
DRILLING INDUCED BREAK
BP 15° CN PR RF.

See Standard Sheets for details of abbreviations & basis of descriptions

DEPARTMENT OF MAIN ROADS, NSW

CORED DRILL HOLE LOG

PROJECT : CITY WEST LINK ROAD VIADUCT OVER HAWTHORNE CANAL.
LOCATION :
POSITION :
RIG TYPE : PIONEER P 160
CASING DIAMETER : NW
DATE STARTED : 11/2/91

HOLE NO : 10
FILE / JOB NO : G2067
SHEET 4 OF 4

SURFACE ELEVATION : -
ANGLE FROM HORIZONTAL : 90°
MOUNTING : TRAILER
CONTRACTOR : RTA
DRILLER : CP
BARREL (length) : 1.50m AND 3.00m
BIT : STEPFACED
BIT CONDITION : GOOD
DATE COMPLETED : 12/2/91
DATE LOGGED : 11/2 & 12/2/9 LOGGED BY : JP
CHECKED BY :

DRILLING

PROGRESS: DRILLING & CASING; WATER

DEPTH	(CORE LOSS / RUN %) DRILL DEPTH	SAMPLES & FIELD TESTS	RL (m)
16		Is(50)	
		Is(50)	
17		Is(50)	
18		Is(50)	
	18.27m		
	18.37m		
19	19.00m	Is(50)	
20			

NMLC CORING
100% POLYMER RETURN

MATERIAL

GRAPHIC LOG

DESCRIPTION
ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)

16.18m SANDSTONE: AS PREVIOUS.

SANDSTONE: LIGHT BROWN AND LIGHT GREY. FINE TO MEDIUM GRAINED.

16.76m

SANDSTONE: LIGHT GREY. FINE TO MEDIUM GRAINED. CROSS BEDDED.

19.00m

BORE HOLE DISCONTINUED AT 19.00 m

* ANGLES QUOTED ARE APPROXIMATE.

WEATHERING: MW TO SW

EST STRENGTH I_s (50) MPa: EL – 0.03 | VL – 0.1 | L – 0.3 | M – 1 | H – 3 | VH – 10 | EH

FRACTURES

NATURAL FRACTURE SPACING (mm): 20 | 40 | 100 | 300 | 1000

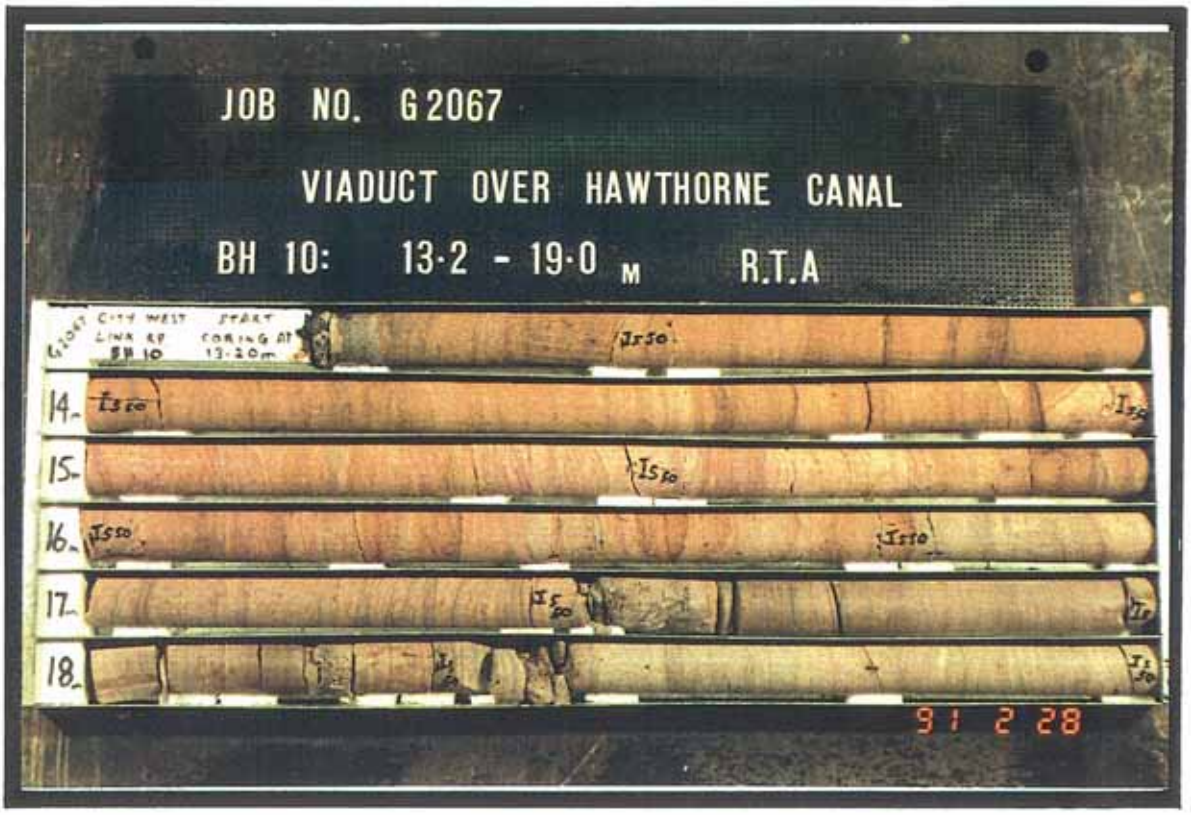
VISUAL

ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other

DRILLING INDUCED BREAKS.
SM CLAY 20mm
SM CLAY 25 mm
DRILLING INDUCED BREAKS.
SM SANDY CLAY 30mm
DRILLING INDUCED BREAKS.
DRILLING INDUCED BREAK.

See Standard Sheets for details of abbreviations & basis of descriptions

DEPARTMENT OF MAIN ROADS, NSW


JOB NO. G 2067
VIADUCT OVER HAWTHORNE CANAL
BH 10: 13·2 - 19·0 M R.T.A
G2067 CITY WEST LINK RP BH 10 START CORING AT 13·20m
14.
15.
16.
17.
18.
91 2 28

NON-CORE DRILL HOLE-GEOLOGICAL LOG

HOLE NO : 11
FILE / JOB NO G2N.1
SHEET 1 OF 1

PROJECT :
LOCATION : CITY WEST LINK ROAD VIADUCT OVER HAWTHORNE CANAL.

POSITION : SURFACE ELEVATION : ANGLE FROM VERTICAL : 0°

RIG TYPE : PIONEER P160 MOUNTING : TRAILER CONTRACTOR : RTA DRILLER : C P

DATE STARTED : 30/1/91 DATE COMPLETED : 31/1/91 DATE LOGGED : 30/1/91 LOGGED BY : JP CHECKED BY :

DRILLING

DEPTH (m)

DRILLING & CASING: V-BIT AUGER; NM CASING; WASH BORE PINDAR BIT; 100% POLYMER RETURN

DRILLING FLUID TYPE & LOSS

DRILLING PENETRATION: E; E

GROUND WATER LEVELS: W.L. 1.20m

SAMPLES, TESTS, ETC:
- 0.70m SPT 6,7,4 N=11
- 1.15m
- 2.20m SPT 0,1,1 N=2
- 2.65m
- 3.70m SPT 0,1,1 N=2
- 4.15m
- 5.20m SPT 1,1,2 N=3
- 5.65m
- 6.70m SPT 0,1,1 N=2
- 7.15m

RL (m)

MATERIAL

GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (Soil Type, Colour, Plasticity or Particle Characteristic; Secondary & Minor Components)	MOISTURE CONDITION	CONSISTENCY / RELATIVE DENSITY	STRUCTURE & other observations
		GRAVELLY CLAY: DARK BROWN.	D / M	M	FILL.
		1.50m			SPT RECOVERY = 200 mm
	CH	SILTY CLAY: DARK GREY/BLACK. HIGH PLASTICITY. HIGH ORGANIC ODOUR.	W	S	SPT RECOVERY = 450 mm.
					SPT RECOVERY = 450 mm.
				S	
	CH	SILTY CLAY: AS PREVIOUS BECOMING SHELLY.			SPT RECOVERY = 450 mm.
					SPT RECOVERY = 0 mm.
					RUN NW CASING TO 7.5m.

See Standard Sheets for details of abbreviations & basis of descriptions

DEPARTMENT OF MAIN ROADS, NSW

NON-CORE DRILL HOLE-GEOLOGICAL LOG

PROJECT : CITY WEST LINK ROAD VIADUCT OVER HAWTHORNE CANAL.
HOLE NO : 11
FILE / JOB NO : G2067
SHEET 2 OF 4

LOCATION :
POSITION :
SURFACE ELEVATION : -
ANGLE FROM VERTICAL : 0°
RIG TYPE : PIONEER P160 MOUNTING : TRAILER CONTRACTOR : RTA DRILLER : CP
DATE STARTED : 30/1/91 DATE COMPLETED : 31/1/91 DATE LOGGED : 31/1/91 LOGGED BY : JP CHECKED BY :

DRILLING

DEPTH (m)	DRILLING & CASING	DRILLING FLUID TYPE & LOSS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES, TESTS, ETC	RL (m)
9	NW CASING	100% POLYMER RETURN	E		8.35m SPT 5,4,2 N=6 8.80m 9.85m SPT 0,0,1 N=1 10.30m 11.35m SPT 1,3,4 N=7 11.80m	
10						
11	WASH BORE FINGER BIT					
12			E		12.85m	
13						

MATERIAL

GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary & Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & other observations
			W		
	CH	SILTY CLAY: DARK GREY/BLACK. HIGH PLASTICITY. TRACE SHELLS.		S	SPT RECOVERY = 250mm.
	CL	SANDY SILTY CLAY: DARK GREY/BLACK. LOW-MEDIUM PLASTICITY. FINE TO MEDIUM GRAINED SAND. SOME SHELLS THROUGHOUT.		S	SPT RECOVERY = 450 mm
	SM	SILTY SAND: GREY. FINE TO MEDIUM GRAINED. 12.85m		L	SPT RECOVERY = 450 mm
		END OF NON CORE DRILLING AT 12.85m. * FOR INFORMATION SEE CORED DRILL HOLE SHEETS.			

See Standard Sheets for details of abbreviations & basis of descriptions

DEPARTMENT OF MAIN ROADS, NSW

CORED DRILL HOLE LOG

PROJECT : CITY WEST LINK ROAD VIADUCT OVER HAWTHORNE CANAL.
LOCATION :
HOLE NO : 11
FILE / JOB NO : G2067
SHEET 3 OF 4

POSITION : SURFACE ELEVATION : - ANGLE FROM HORIZONTAL : 90°

RIG TYPE : PIONEER P160 MOUNTING : TRAILER CONTRACTOR : RTA DRILLER : C.P.

CASING DIAMETER : NW BARREL (length) : 1.50m AND 3.00m BIT : STEPPACED BIT CONDITION : GOOD

DATE STARTED : 30/1/91 DATE COMPLETED : 31/1/91 DATE LOGGED : 1/2/91 LOGGED BY : JP CHECKED BY : P.J.M.

DRILLING					MATERIAL			FRACTURES		
PROGRESS					DESCRIPTION					
DEPTH (m)	DRILLING & CASING	WATER	CORE LOSS / RUN % / DRILL DEPTH	SAMPLES & FIELD TESTS	RL (m)	GRAPHIC LOG	ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	WEATHERING	EST STRENGTH I_s (50) MPa (EL – 0.03, VL – 0.1, L – 0.3, M – 1, H – 3, VH – 10, EH)	NATURAL FRACTURE SPACING (mm) (20, 40, 100, 300, 1000)	VISUAL	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
9							* FOR INFORMATION SEE NON CORE DRILL HOLE SHEETS.					
10												
11												
12							START CORING AT 12.85m.					
13	NMLC CORING	100% POLYMER RETURN	13.28m	Is(50)			SANDSTONE : LIGHT BROWN, FINE TO MEDIUM GRAINED.	MW				BP 15° CN PR RF BP 5° CN PR RF JT 20° CLAY PR RF
14				Is(50)			14.24m					BP 10° CLAY PR RF
15				Is(50)			SANDSTONE : REDDISH PINK, FINE TO MEDIUM GRAINED, CROSS BEDDED.	MW TO SW				BP 25° CLAY PR RF BP 20° CLAY PR RF BP 20° CLAY PR RF BP 20° CLAY PR RF BP 20° CLAY PR RF
16				Is(50)			15.95m					

See Standard Sheets for details of abbreviations & basis of descriptions.

DMR DEPARTMENT OF MAIN ROADS, NSW

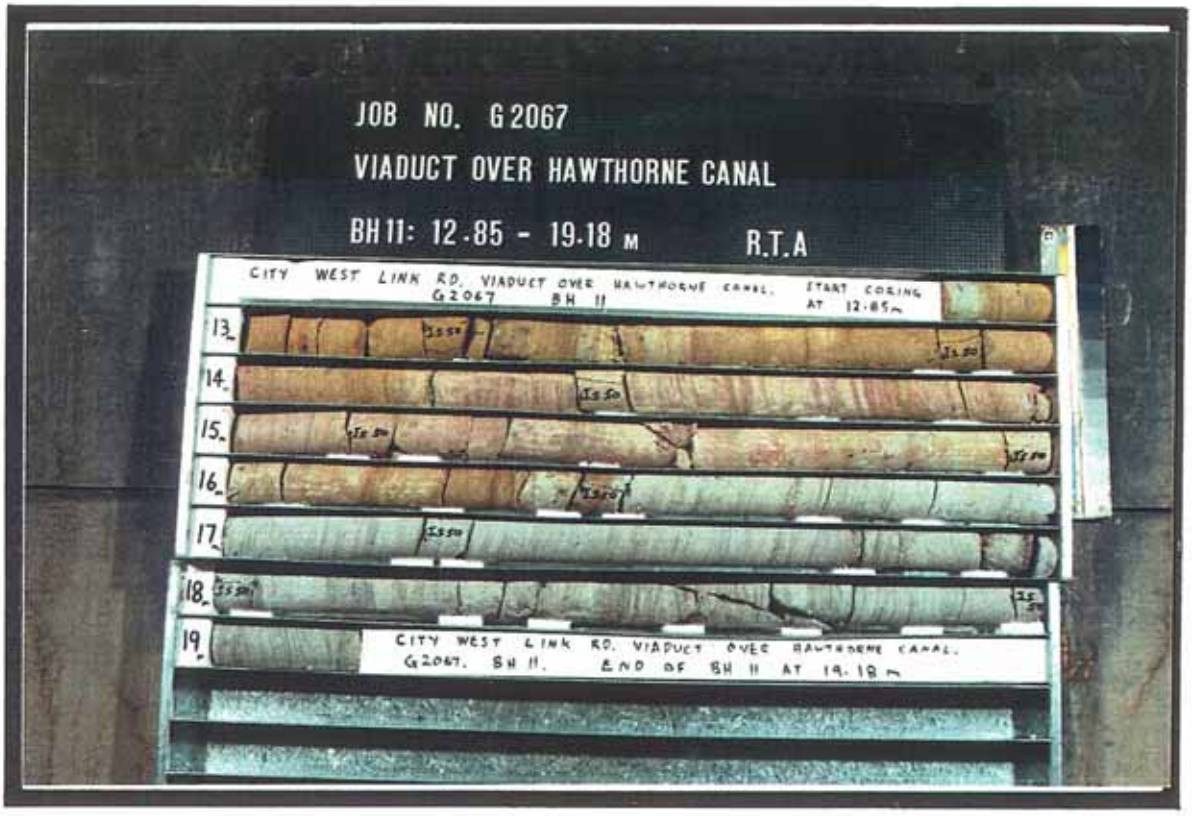
CORED DRILL HOLE LOG

PROJECT : CITY WEST LINK ROAD VIADUCT OVER HAWTHORNE CANAL.
LOCATION :
POSITION :
HOLE NO : 11
FILE / JOB NO : G2067
SHEET 4 OF 4
SURFACE ELEVATION : -
ANGLE FROM HORIZONTAL : 90°
RIG TYPE : PIONEER P160
MOUNTING : TRAILER
CONTRACTOR : RTA
DRILLER : C.P.
CASING DIAMETER : NW
BARREL (length) : 1.50m AND 3.00m
BIT : STEPFACED
BIT CONDITION : GOOD
DATE STARTED : 30/1/91
DATE COMPLETED : 31/1/91
DATE LOGGED : 1/2/91
LOGGED BY : J.P.
CHECKED BY:

DEPTH	DRILLING & CASING	WATER	CORE LOSS / DRILL DEPTH	SAMPLES & FIELD TESTS	DESCRIPTION	WEATHERING	ADDITIONAL DATA
16	NMLC CORING	100% POLYMER RETURN			SANDSTONE: LIGHT BROWN, FINE TO MEDIUM GRAINED.	MW TO SW	
			16.38m	Is(50)	16.35m SANDSTONE: LIGHT GREY, FINE TO MEDIUM GRAINED, CROSS BEDDED.	SW	BP 20° CN PR RF
17				Is(50)			
							BP 5° CLAY INFILLED 2mm PR RF; SM CLAY 7 mm; GROUND SURFACE ORIGIN UNCERTAIN
18				Is(50)			BP 5° X PR RF
							BP 5°, BP 10°] CLAY PR RF
							SM X 2mm; JT POSSIBLY DRILLING INDUCED.
19			19.18m	Is(50)	19.18m		
					BORE HOLE DISCONTINUED AT 19.18m.		
20					* ANGLES QUOTED ARE APPROXIMATE.		

See Standard Sheets for details of abbreviations & basis of descriptions

DEPARTMENT OF MAIN ROADS, NSW


JOB NO. G2067
VIADUCT OVER HAWTHORNE CANAL
BH 11: 12.85 - 19.18 m
R.T.A
CITY WEST LINK RD. VIADUCT OVER HAWTHORNE CANAL. START CORING AT 12.85m
G2067 BH 11
13
14
15
16
17
18
19
CITY WEST LINK RD. VIADUCT OVER HAWTHORNE CANAL.
G2067. BH 11. END OF BH 11 AT 19.18 m

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP6
FILE / JOB NO : G4202
SHEET : 1 OF 1

PROJECT : GREENWAY SHARED PATH HABERFIELD
LOCATION : RICHARD MURDEN RESERVE

POSITION : E: 328542.000, N: 6249622.000 (56 MGA94) | SURFACE ELEVATION : 1.600 (AHD)
EQUIPMENT TYPE : HITACHI 50U | METHOD : 300mm BUCKET
DATE EXCAVATED : 21/12/10 | LOGGED BY : BA | CHECKED BY : JW
EXCAVATION DIMENSIONS : 1.00 m LONG 0.30 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa	STRUCTURE & Other Observations
	N	Not Encountered	0.06m D 0.50m	0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5			0.06m SILTY SAND /SAND WITH SILT: 60mm. CLAY AND SAND: Variable clay, silt and sand content forming pockets and bands of silty clay, clay, sandy clay, silty sand, silty clay with fine sand. Clays low and low to medium plasticity. Fine and medium grained sand. With gravel and cobble size fragments, predominantly sandstone . Trace asphalt up to coarse gravel size. Trace bricks, glass, terracotta tiles. 0.50m EXCAVATION TP6 TERMINATED AT 0.50 m Note: HP readings in clay lumps and pit side walls 0.06 to 0.50m.	D M		100 200 300 400	FILL 0.08: HP Samp =300 - 330 kPa

PHOTOGRAPHS NOTES ☒ YES ☐ NO

METHOD
- N Natural Exposure
- E Existing Excavation
- BH Backhoe Bucket
- B Bulldozer Blade
- R Ripper

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U50 - Undisturbed Sample 50 mm diameter
- D - Disturbed Sample
- B - Bulk Disturbed Sample
- MC - Moisture Content
- HP - Hand Penetrometer (UCS kPa)
- VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D - Dry
- M - Moist
- W - Wet

CONSISTENCY/ RELATIVE DENSITY

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

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

ROADS AND TRAFFIC AUTHORITY, NSW

File: G4202 TP6 1 OF 1

Test Pit 6 (tape extended to 500mmm)

EXCAVATION - GEOLOGICAL LOG

PIT NO : TP16
FILE / JOB NO : G4202
SHEET : 1 OF 1

PROJECT : GREENWAY SHARED PATH HABERFIELD
LOCATION : RICHARD MURDEN RESERVE

POSITION : E: 328793.000, N: 6250175.000 (56 MGA94) | SURFACE ELEVATION : 1.500 (AHD)
EQUIPMENT TYPE : HITACHI 50U | METHOD : 300mm BUCKET
DATE EXCAVATED : 21/12/10 | LOGGED BY : BA | CHECKED BY : JW
EXCAVATION DIMENSIONS : 1.00 m LONG 0.30 m WIDE

DRILLING | MATERIAL

VE / PENETRATION E F H	SUPPORT	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	HAND PENETRO-METER kPa	STRUCTURE & Other Observations
	N	Not Encountered	D 0.50m	0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5			0.03m SAND: with silt, 30mm. SILTY SAND AND GRAVELLY SAND: variable clay, silt, sand and gravel forming bands of gravelly clayey sand, sandy clayey gravel and silty sand. Interspersed with bands of asphalt. Bands thickness variable between 0.07m and 0.15m. 0.40m 0.50m Mixture of all of above with trace of glass, terracotta pipe. Trace/with sandstone fragments up to cobble size. EXCAVATION TP16 TERMINATED AT 0.50 m	D - M M - D		100 200 300 400	FILL

PHOTOGRAPHS NOTES ☒ YES ☐ NO

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

SUPPORT
T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
U50 - Undisturbed Sample 50 mm diameter
D - Disturbed Sample
B - Bulk Disturbed Sample
MC - Moisture Content
HP - Hand Penetrometer (UCS kPa)
VS - Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
PBT - Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
D - Dry
M - Moist
W - Wet

CONSISTENCY/ RELATIVE DENSITY

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

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

ROADS AND TRAFFIC AUTHORITY, NSW

Test Pit 16 (tape extended to 500mmm)

BOREHOLE LOG SHEET

GEO_BOREHOLE 2'20258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH1**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 1 OF 3**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	327968.0 E 6246742.0 N MGA94 56 **Surface RL:** 26.8m AHD **Angle from Horiz. :** 90°		**Processed :** GBM
Rig Type :	XC **Mounting:** Rubber Track **Contractor :** Terratest	**Driller :** S.Pritchard	**Checked :**
Date Started :	15/2/11 **Date Completed :** 15/2/11	**Logged by :** SHH	**Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
			Nil		0.06 (26.74)			ASPHALTIC CONCRETE (60mm).	-	-	Coordinates and level inferred from H&F project survey
				D			-	GRAVEL, grey/brown, gravel is medium to coarse sub-angular igneous and angular sandstone with medium grained sand, trace clay. Includes cobble sized brick fragment and rubble to 150 mm size (fill).	SM	-	
				D							SPT affected by gravel and cobbles
				SPT 5/25/9 N=34				Between 0.7 to 0.8m, coarse sub-angular igneous gravel.			
1				D	1.00 (25.80)		SC/ CL	Clayey SAND / Sandy CLAY and bands of ORGANIC CLAY, grey brown, low plasticity. Variable zones of medium plasticity clay, organic clay with plant matter and rootlets, and sandstone-derived clayey sand, trace charcoal fragments (fill).	M	(S-F)	
				SPT 2/2/1 N=3							
2	TC-bit Auger (Ø125mm)	Nil		D						(F)	Organic clay has weak - medium odour
				SPT 3/3/2 N=5							
											2.7m: Variable drilling resistance
3				D						(S)	
				SPT 2/1/2 N=3							
				D	4.00 (22.80)		CL	Sandy CLAY, grey with orange and yellow mottling, low plasticity with iron indurated bands (residual).	VM	F	
4				SPT 2/1/7 N=8							
					4.50 (22.30)			SANDSTONE, light red with thin brown and white bands, fine to medium grained, extremely weathered, extremely low strength, bands of high plasticity brown clay.	M-VM	-	4.55m and 4.7m: local increased drilling resistance - stronger bands?
				D							
5											

See standard sheets for details of abbreviations & basis of descriptions

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CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 21-20258

BOREHOLE LOG SHEET

GEO_BOREHOLE 212258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client : PYRMONT LIGHT RAIL COMPANY
Project : SYDNEY LIGHT RAIL INNER WEST EXTENSION
Location : ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL

HOLE No. BH1

SHEET 2 OF 3

Position : 327968.0 E 6246742.0 N MGA94 56 **Surface RL:** 26.8m AHD **Angle from Horiz. :** 90° **Processed :** GBM
Rig Type : XC **Mounting:** Rubber Track **Contractor :** Terratest **Driller :** S.Pritchard **Checked :**
Date Started : 15/2/11 **Date Completed :** 15/2/11 **Logged by :** SHH **Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
		Nil		SPT 20 for 100mm N=ref	5.10			Sandy CLAY, as previous. Start of coring at 5.1 metres. For Cored interval, see Core Log Sheet.		-	

6
7
8
9
10

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258

CORE LOG SHEET

GEO_COREHOLE 212025B.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH1**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL	**SHEET 3 OF 3**	
Position :	327968.0 E 6246742.0 N MGA94 56 **Surface RL:** 26.8m AHD	**Angle from Horiz. :** 90°	**Processed :** GBM
Rig Type :	XC **Mounting:** Rubber Track **Contractor :** Terratest	**Driller :** S.Pritchard	**Checked :**
Casing Dia. :	HW **Barrel (m) :** 1.5m & 3m **Bit :** Diamond (stepfaced)	**Bit Condition :** Fair	**Date :**
Date Started :	15/2/11 **Date Completed :** 15/2/11 **Logged by :** SHH	**Date Logged :** 15/2/11	

DRILLING						MATERIAL					NATURAL FRACTURES		
Progress													
SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)	Weathering	Estimated Strength $Is_{(50)}$ MPa EL 0.03 VL 0.1 L 0.3 M 1 H 3 VH 10 EH	Spacing (mm) 20 40 100 300 1000	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.
						5.10		Start of coring at 5.1 metres. For Non Cored interval, see Borehole Log Sheet.					
6	NMLC coring + HW casing to 5.1m	0% Loss	6.35	(0)		(21.70)		SANDSTONE, pale brown with orange and red bands, fine grained, thickly bedded with laminated cross bedding, bands of ferruginous induration.	CW EW HW				5.65 BP, HZ, FE, IR, RF, TI 5.88 BP, HZ, FE, PLN, RF, CL 6.06 JT, 70°, FE, IR, VR, OP 6.1-6.12 SM, HZ, CLAY, UN, RF, TI 6.31-6.34, SM, 0-5°, CLAY, UN, RF, TI 6.37 BP, HZ, FE, UN, RF, OP, UN, RF, TI 6.39-6.45, SM, HZ, CLAY 6.46 JT, 45°, FE, IR, VR, TI 6.47 - 6.49 SM, 0-45°, CLAY, IR, RF, TI 6.58 BP, HZ, CLAY, UN, RF, TI
7													
8				(0)					SW				7.19 BP, 25°, CN, UN, RF, TI (Drill Break?) 7.44 BP, 18°, CN, IR, VR, TI (Drill Break?) 8.52, BP, HZ, FE, UN, VR, OP 8.7 BP, 5°, CN, UN, VR, TI (Drill Break?) 8.86 & 8.89, BP 0-5°, FE, UN, VR, OP
9			9.30			9.30							9.21-9.25, FZ, FE, IR, VR, OP
						(17.50)		End of Borehole at 9.3 metres.					
10													

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258

CLIENT: PYRMONT LIGHT RAIL COMPANY
PROJECT: SYDNEY LIGHT RAIL INNER WEST EXT
LOCATION: HERCULES ST
BOREHOLE: BH1, 5.1m - 9.3m
JOB NO: 21/20258 DATE 21/02/2011
GHD GEOTECHNICS
21/20258 SYDNEY LIGHT RAIL INNER WEST EXTENSION BH1 15/02/2011 START CORING AT 5.1m
5.0 5.1m
6.0
7.0
8.0
9.0
EOH AT 9.30m 15/02/2011

BOREHOLE LOG SHEET

GEO_BOREHOLE 212258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH3**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		**SHEET 1 OF 4**
Position :	327914.9 E 6246830.4 N MGA94 56	**Surface RL:** 29.6m AHD	**Angle from Horiz. :** 90°
Rig Type :	Geoprobe **Mounting:** Track	**Contractor :** Terratest	**Driller :** Jason Peisley
Date Started : 8/3/11	**Date Completed :** 8/3/11	**Logged by :** HDS	

Processed : RY
Checked
Date :

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
			Nil	D				CONCRETE, grey, fine and medium grained sand, medium gravel, angular, a few voids in lower 0.12m, steel reinforcement mesh 10mm thick.	-	-	Coordinates and level inferred from H&F project survey
	Diatube 200mm Ø				0.29 (29.31)		SP	SAND, brown, fine and medium grained, trace gravel (fill).	SM	(MD)	
				D	0.60						
				SPT 6/9/9 N=18	(29.00)		Cl	Sandy CLAY, brown and orange brown, medium plasticity, fine-grained sand, trace charcoal and root fibres, MC<<PL (fill).	SM	(St)	
1				D	1.00						
					(28.60)		SP	SAND, brown, fine and medium grained, trace clay (fill).	D	(L)	
					1.15						
	TC-bit auger	Nil		SPT 2/4/6 N=10	(28.45)		Cl	CLAY, grey mottled orange-brown, medium plasticity, trace fine grained sand and gravel, MC<<PL (residual).	D	St	1.15, completely weathered shale
2				D	2.07						
				SPT 5/6/7 N=13	(27.53)		SC	Clayey SAND, orange-brown, yellow-brown and red, fine grained sand, low plasticity clay, thinly laminated to laminated, remnant structure, trace ironstone nodules (residual).	SM	MD	2.07, completely weathered sandstone
					2.50 (27.10)						
					2.60			SANDSTONE, yellow-brown, fine and medium grained, highly weathered, low strength. Start of coring at 2.6 metres. For Cored interval, see Core Log Sheet.			2.5, slow progress
3											
4											
5											

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258

CORE LOG SHEET

GEO_COREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

Client :	PYRMONT LIGHT RAIL COMPANY			**HOLE No. BH3**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION				SHEET 2 OF 4
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL				
Position :	327914.9 E 6246830.4 N MGA94 56	**Surface RL:** 29.6m	AHD	**Angle from Horiz. :** 90°	**Processed :** RY
Rig Type :	Geoprobe	**Mounting:** Track	**Contractor :** Terratest	**Driller :** Jason Peisley	**Checked :**
Casing Dia. :	HQ	**Barrel (m) :** 3.60m	**Bit :** Semiround	**Bit Condition :** Fair	**Date :**
Date Started :	8/3/11	**Date Completed :** 8/3/11	**Logged by :** HDS	**Date Logged :** 8/3/11	

DRILLING						MATERIAL					NATURAL FRACTURES		
Progress													
SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)	Weathering	Estimated Strength $Is_{(50)}$ MPa EL 0.03 VL 0.1 L 0.3 M 1 H 3 VH 10 EH	Spacing (mm) 20 40 100 300 1000	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.
1								Start of coring at 2.6 metres. For Non Cored interval, see Borehole Log Sheet.					
						2.60 (27.00)		CORE LOSS 290mm thick.					
						2.89 (26.71)		Interbedded SANDSTONE and SILTSTONE (60:40), light grey and orange-brown, thinly laminated to very thinly bedded sandstone, cross-bedded, fine and medium grained, occasional iron-cemented zones (Mittagong Formation).	HW EW				2.94, BP, 2°, CN, PLN 2.97, BP, 12°, CLAY VE, PLN, RF, CL 3.04, BP, 3°, CN, PLN, RF, CL 3.07, BP, 12°, CN, PLN, RF, CL 3.10, BP, 5°, CLAY VE, PLN, RF, OP 3.19, BP, 5°, CN, PLN, RF, CL 3.28, SM, 0°, CLAY (1mm), PLN, RF, CL 3.31, JT, 70°, CLAY/roots (1mm), PLN, RF, CL 3.32, BP, 3°, CLAY VE, PLN, RF, CL 3.34, SM, 0°, CLAY VE, PLN, RF, CL 3.41, BP, 5°, CLAY (1mm), PLN, RF, CL 3.48, BP, 7°, CLAY/EW, PLN, RF, CL 3.50, JT, 70°, CLAY/ EW, PLN, RF, CL 3.57, BP, 5°, CN, PLN, RF, CL 3.69, BP, 0°, CN, PLN, VR, CL/TI 3.83, BP, 0°, CN/FE, PLN, RF, OP 3.83-3.86, BP's, 0-3°, CLAY/EW, PLN, RF, CL 3.91, BP, 3°, CN, PLN, RF, CL 4.02, BP, 5°, CN, PLN, RF, CL 4.09, BP, 0-10°, CN, UN, SO, CL 4.12, BP, 5-10°, CN, UN, RF, CL 4.13-4.23, BPs + SMs, 5-10°, CLAY (1mm), PLN, RF, CL 4.26, BP x2, 3°, FE VE, PLN, RF, CL 4.29, BP, 0°, CN, PLN, RF, CL
2													
3	NMLC coring + HQ casing to 2.7m	0% Loss		(20)									
4			4.04			4.30 (25.30)		SANDSTONE, light grey-brown, orange-brown and red, fine grained, thinly laminated to laminated, with thin silty flecks, partly iron-cemented (Mittagong Formation).	HW				
5						5.00							

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258

CORE LOG SHEET

GEO_COREHOLE_2120258.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

Client :	PYRMONT LIGHT RAIL COMPANY			**HOLE No. BH3**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION				
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL				SHEET 3 OF 4
Position :	327914.9 E 6246830.4 N MGA94 56	**Surface RL:** 29.6m	AHD	**Angle from Horiz. :** 90°	**Processed :** RY
Rig Type :	Geoprobe	**Mounting:** Track	**Contractor :** Terratest	**Driller :** Jason Peisley	**Checked :**
Casing Dia. :	HQ	**Barrel (m) :** 3.60m	**Bit :** Semiround	**Bit Condition :** Fair	**Date :**
Date Started :	8/3/11	**Date Completed :** 8/3/11	**Logged by :** HDS	**Date Logged :** 8/3/11	

DRILLING | **MATERIAL** | **NATURAL FRACTURES**

Progress: SCALE (m) | Drilling & Casing | Water

Drill Depth (m) | (Core Loss / Run %) | SAMPLES & TESTS | Depth / (RL) metres | Graphic Log

Description — ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)

Weathering | Estimated Strength $Is_{(50)}$ MPa (EL 0.03, VL 0.1, L 0.3, M 1, H 3, VH 10, EH)

Spacing (mm) (20, 40, 100, 300, 1000) | Visual

Additional Data — (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.

Depth / (RL)	Description	Weathering	Drill Depth (m)	(Core Loss / Run %)	Additional Data
(24.60)	SANDSTONE, light grey with red-brown iron-cemented bands and zones, fine to coarse grained, cross-bedded in parts, very thinly bedded at 5-15° (Hawkesbury Sandstone).	HW		(0)	4.34, BP, 0°, CN, PLN, RF, CL 4.39, BP, 0°, CN, PLN, RF, CL 4.41, BP, 0°, CN, PLN, RF, CL 4.44, BP, 0°, CN, PLN, RF, CL 4.46, BP, 18°, CN, UN, RF, CL 4.51, BP, 0°, CN, PLN, RF, CL 4.60, BP, 0°, FE, PLN, RF, CL 4.64, BP, 0°, CN, PLN, RF, CL 4.72, BP, 0°, FE, PLN, RF, CL 4.77, BP, 0°, CLAY VE, PLN, RF, CL 4.84, BP, 0°, CN, PLN, RF, CL 5.00, SM, 3°, CLAY (5mm), PLN, SO, OP 5.04, SM, 15°, CLAY VE, PLN, RF, OP 5.30, BP, 0°, CN, PLN, RF, CL 5.41, BP, 0°, CN, PLN, RF, CL 5.48, BP, 3°, CN, PLN, RF, CL 5.53, BP, 10°, CLAY/EW, PLN, RF, OP 5.61, SM, 10°, FE/CLAY (17mm), PLN, RF, CL 5.69, BP, 18°, CN, ST, RF, CL 5.73, BP, 3°, CN, PLN, RF, CL 5.79, BP, 0°, CN, PLN, RF, CL 5.85, BP, 10°, CN, PLN, RF, CL 5.91, BP, 10°, CN, UN, RF, CL 5.92, BP, 18°, FE/CLAY (2-10mm), PLN, RF, OP 5.98, BP, 5°, CN, UN, RF, CL 6.07, BP, 3°, CLAY VE, PLN, RF, CL 6.27, BP, 3°, CLAY VE, PLN, RF, CL 6.40, BP, 15°, CN, CU, RF, CL 6.47, BP, 10°, CN, PLN, RF, CL 6.52, BP, 5°, CN, PLN, RF, CL 7.13, BP, 20°, FE, PLN, RF, CL
	Below 6.60m, laminated and cross-bedded at 15-25°.	MW	6.52		
	Between 7.14 to 7.16m, iron-cemented.				
7.16 (23.44)	CORE LOSS, 80mm thick.				
7.24 (22.36)	SANDSTONE, as above.				7.35, BP, 0°, CN, PLN, VR, CL 7.36, BP, 0°, FE, PLN, RF, CL 7.42, BP, 0°, CN, PLN, RF, CL 7.47, BP, 20°, CN, PLN, RF, CL 7.49, BP, 20°, FE, PLN, RF, CL 7.53, BP, 20°, CN, PLN, RF, CL 7.64, BP, 20°, CN, PLN, RF, CL
				(3)	7.86, BP, 10°, FE, PLN, VR, CL
					8.23, BP, 10°, CN, PLN, RF, CL 8.33, BP, 5°, CN, PLN, RF, CL
		MW			8.51, BP, 10°, CN, PLN, RF, CL 8.60, BP, 5°, CN, PLN, RF, CL 8.66, BP, 10°, FE (1mm), PLN, RF, CL 8.77, BP, 10°, CN, PLN, RF, CL 8.79, BP, 20°, FE, PLN, RF, CL
			9.02		8.96, BP, 10°, CN, PLN, RF, CL 9.02, BP, 20°, FE, PLN, RF, CL 9.06, BP, 23°, FE (1mm), PLN, RF, CL 9.09, BP, 20°, FE/CLAY (1mm), PLN, RF, CL 9.33, BP, 5°, CN, PLN, RF, CL
	Below 9.52m, thinly bedded at 20-25°.			(0)	9.45, BP, 27°, CN, PLN, RF, CL 9.48, BP, 10°, FE/CLAY (1mm), PLN, RF, CL 9.51, BP, 20°, FE (1mm), PLN, RF, CL 9.85, BP, 20°, CN, PLN, RF, CL

NMLC coring + HQ casing to 2.7m

0% Loss

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258

GEO_COREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

CORE LOG SHEET

Client :	PYRMONT LIGHT RAIL COMPANY			**HOLE No. BH3**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION				
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL				SHEET 4 OF 4
Position :	327914.9 E 6246830.4 N MGA94 56	**Surface RL:** 29.6m	AHD	**Angle from Horiz. :** 90°	**Processed :** RY
Rig Type :	Geoprobe	**Mounting:** Track	**Contractor :** Terratest	**Driller :** Jason Peisley	**Checked :**
Casing Dia. :	HQ	**Barrel (m) :** 3.60m	**Bit :** Semiround	**Bit Condition :** Fair	**Date :**
Date Started :	8/3/11	**Date Completed :** 8/3/11	**Logged by :** HDS	**Date Logged :** 8/3/11	

DRILLING						MATERIAL				NATURAL FRACTURES			
Progress													
SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)	Weathering	Estimated Strength $Is_{(50)}$ MPa EL 0.03 / VL 0.1 / L 0.3 / M 1 / H 3 / VH 10 / EH	Spacing (mm) 20 / 40 / 100 / 300 / 1000	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.
			10.05			10.05 (19.55)		SANDSTONE, as previous End of Borehole at 10.05 metres.					
11													
12													
13													
14													
15													

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258


CLIENT: PYRMONT LIGHT RAIL COMPANY
PROJECT: SYDNEY LIGHT RAIL INNER WEST EXT
LOCATION: NEW CANTERBURY RD
BOREHOLE: BH3, 2.6 m - 6 m
JOB NO: 21/20258 9/03/2011
GHD GEOTECHNICS
21-20258 S.L.R. INNER WEST EXTENSION. BH3. NEW CANTERBURY ROAD
START CORING: 2.60 m
CORE LOSS: 0.29m
START CORING AT 2.60m
3
4
5


CLIENT: PYRMONT LIGHT RAIL COMPANY
PROJECT: SYDNEY LIGHT RAIL INNER WEST EXT
LOCATION: NEW CANTERBURY RD
BOREHOLE: BH3, 6 m - 10.05m
JOB NO: 21/20258 9/03/2011
GHD GEOTECHNICS
CORE LOSS 0.08m
END BOREHOLE BH3 AT 10.05m

BOREHOLE LOG SHEET

GEO_BOREHOLE 212258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH6**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 1 OF 3**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	327835.4 E 6247103.6 N MGA94 56	**Surface RL:** 24.3m AHD	**Angle from Horiz. :** 90°	**Processed :** RY
Rig Type :	MDT 5750 **Mounting:** 6x6 Ute	**Contractor :** Terratest	**Driller :** Pat Tapper	**Checked :**
Date Started : 9/3/11	**Date Completed :** 9/3/11	**Logged by :** HDS	**Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
0	TC-bit auger	Nil	Nil	D	0.25 (24.05)			SAND, light brown-grey, fine and medium grained, trace silt (fill).	D	(L)	Coordinates and level inferred from H&F project survey
				D SPT 2/4/6 N=10				SAND, grey, fine and medium grained, with fine and medium gravel, angular, trace clay and roots (fill).	SM	(L) (MD)	0.25, hole cave-in during initial auger drilling.
1				D	1.10 (23.20)			GRAVEL (Siltstone and Sandstone, 40:60), light grey, brown and orange-brown, Sandstone is fine and medium grained, iron-stained, indurated and highly weathered, Siltstone is thinly laminated, friable, extremely weathered and extremely low strength (fill).	SM	(MD)	1.1, reworked material, possibly drainage layer.
				SPT 7/8/12 N=20	1.77 (22.53)			Gravelly CLAY, orange-brown and brown, low plasticity, fine gravel, rounded and sub-rounded, with fine grained sand, trace charcoal and fine roots (fill). Below 2.0m, becoming mottled red and grey, fine to coarse gravel, with sand.	M	(VSt) (H)	
2				D SPT 9/10/10 N=20	2.29 (22.01)		CL	CLAY, yellow-brown, low plasticity, trace sand (colluvium).	M	VSt	
					2.80 (21.50)		CH	CLAY, mottled red and grey-brown, high plasticity, with fine grained sand, trace gravel, MC<PL (residual).	SM	H	
3				D SPT 7/13/23 N=36	3.15 (21.15)		CH	CLAY, red, high plasticity, with fine angular ironstone gravel and ferriferous induration (residual)	SM	H	
4				D	4.16 (20.14)			Medium sized Gravel at interface with Clay			
				SPT 17/12/8 N=20			CH	CLAY, grey and yellow-brown, high plasticity, trace sand, MC<PL (residual).	M	VSt	4.15, abundant medium gravel at interface with clay.
5				D							

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258

BOREHOLE LOG SHEET

GEO_BOREHOLE 2'20258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH6**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 2 OF 3**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	327835.4 E 6247103.6 N MGA94 56 **Surface RL:** 24.3m AHD **Angle from Horiz. :** 90°		**Processed :** RY
Rig Type :	MDT 5750 **Mounting:** 6x6 Ute **Contractor :** Terratest **Driller :** Pat Tapper		**Checked :**
Date Started :	9/3/11 **Date Completed :** 9/3/11 **Logged by :** HDS		**Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
6	TC-bit auger	Nil		SPT 3/5/10 N=15	5.13 (19.17)		CL	CLAY, as previous. Between 5.0 to 5.13m, increased gravel percentage.	M	VSt	
								Sandy CLAY, grey, occasional yellow-brown mottling, low plasticity, fine grained sand, MC>PL (residual).	M	St-VSt	
					5.50 (18.80)			SANDSTONE, grey and yellow-brown, fine and medium grained, extremely weathered, extremely low strength.			5.5, slow penetration with TC-bit auger.
				D SPT 20 for 75mm N=ref	6.10			Start of coring at 6.1 metres. For Cored interval, see Core Log Sheet.			
7											
8											
9											
10											

See standard sheets for details of abbreviations & basis of descriptions

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CORE LOG SHEET

GEO_COREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

Client :	PYRMONT LIGHT RAIL COMPANY			**HOLE No. BH6**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION				SHEET 3 OF 3
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL				
Position :	327835.4 E 6247103.6 N MGA94 56	**Surface RL:** 24.3m AHD	**Angle from Horiz. :** 90°		**Processed :** RY
Rig Type :	MDT 5750	**Mounting:** 6x6 Ute	**Contractor :** Terratest	**Driller :** Pat Tapper	**Checked :**
Casing Dia. :	HQ	**Barrel (m) :** 1.50m	**Bit :** 4-Step Surface Set	**Bit Condition :** Good	**Date :**
Date Started :	9/3/11	**Date Completed :** 9/3/11	**Logged by :** HDS	**Date Logged :** 9/3/11	

DRILLING					MATERIAL				NATURAL FRACTURES		
Progress											
SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)	Weathering	Estimated Strength $Is_{(50)}$ MPa EL 0.03 VL 0.1 L 0.3 M 1 H 3 VH 10 EH	Spacing (mm) 20 40 100 300 1000	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.
6						6.10 (18.20)		Start of coring at 6.1 metres. For Non Cored interval, see Borehole Log Sheet.					
7	NMLC coring + HQ casing to 6.1m	5% Loss (polymer)	6.35	(8)		6.33 (17.97)		SANDSTONE, orange-brown and grey, fine and medium grained, laminated and clayey.	EW HW				
								CORE LOSS 20mm thick.					6.35-6.37, SM, 0°, CLAY/rock fragments, PLN, RF, CL
								SANDSTONE, light grey and orange-brown, thickly bedded with thinly spaced cross-bedding at 20°, fine and medium grained, occasional iron-cemented zones.					6.42, BP, 3°, CLAY/FE, PLN, RF, CL 6.44, SM, 0°, CLAY/EW (30mm), PLN, RF, OP
				(0)					HW				6.84, BP, 10°, CN, PLN, RF, CL
			7.40						MW				6.99, JT, 40°, FE, PLN/UN, RF, OP 7.04, JT, 50°, CLAY/FE (3mm), PLN, RF, OP 7.09, BP, 12°, CLAY/FE, PLN, VR, OP 7.36, BP, 16°, FE, PLN, RF, OP
8				(0)				Below 7.67m, becoming fine to coarse grained and with thinly spaced cross-beds at 10°. Between 8.11 to 8.50m, with thin, dark grey silty drapes and lenses.	HW				7.62, BP, 20°, FE, PLN, RF, OP 7.63, JT, 35°, FE, PLN, RF, OP 7.65, BP, 20°, FE, PLN, RF, OP 7.85, JT, 45°, CLAY/FE (10mm), PLN, RF, OP 8.11, BP, 3°, CLAY/FE, PLN, RF, CL
			8.82			8.82 (15.48)		End of Borehole at 8.82 metres.	MW				8.50, SM, 20°, CLAY (20mm), PLN 8.54, BP, 10°, CLAY (3mm), PLN, TI 8.65, JT, 33°, CLAY VE/FE, PLN, RF, CL 8.77, BP, 5°, CN, PLN, RF, CL
9													
10													

See standard sheets for details of abbreviations & basis of descriptions

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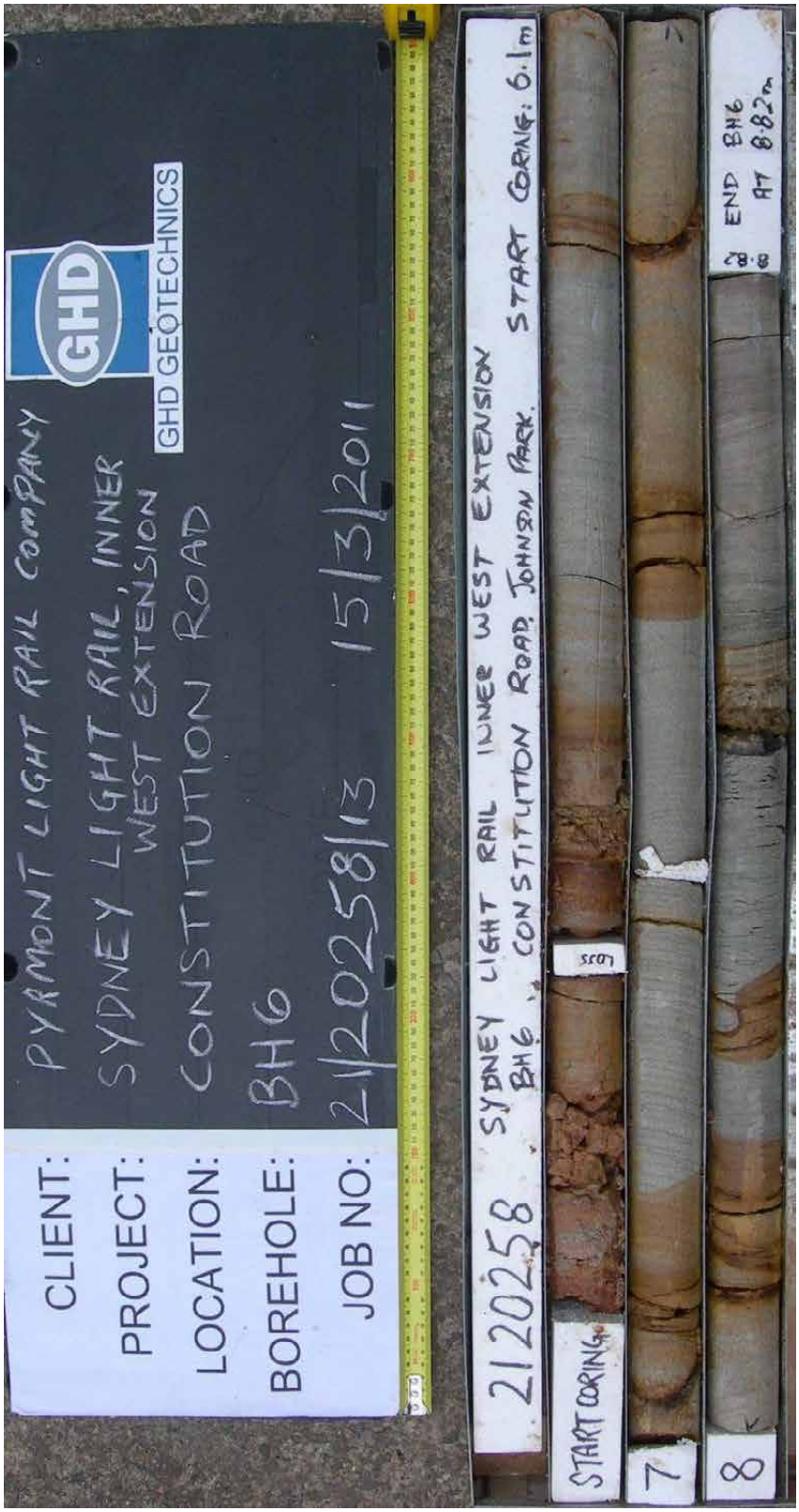
CLIENT: PYRMONT LIGHT RAIL COMPANY
PROJECT: SYDNEY LIGHT RAIL, INNER WEST EXTENSION
LOCATION: CONSTITUTION ROAD
BOREHOLE: BH6
JOB NO: 21/20258/13 15/3/2011
GHD GEOTECHNICS
21/20258 SYDNEY LIGHT RAIL INNER WEST EXTENSION
BH6 CONSTITUTION ROAD, JOHNSON PARK. START CORING: 6.1m
START CORING
7
8
END BH6 AT 8.82m

BOREHOLE LOG SHEET

GEO_BOREHOLE 2'20258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH7**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 1 OF 4**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	327981.0 E 6247481.0 N MGA94 56 **Surface RL:** 23.7m AHD **Angle from Horiz. :** 90°		**Processed :** RY
Rig Type :	Geoprobe **Mounting:** Rubber Track **Contractor :** Terratest **Driller :** Pal Singh		**Checked :**
Date Started :	8/2/11 **Date Completed :** 8/2/11 **Logged by :** SHH		**Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
			Nil		0.06 (23.64)			ASPHALTIC CONCRETE (pavement).	-	-	Coordinates and level inferred from H&F project survey
				D			SP	Gravelly SAND, grey, fine to coarse grained, fine to medium angular gravel, trace silt (road base).	D	(VD)	
				D	0.50 (23.20)		SM	Silty SAND, brown, medium to coarse angular grained sand (fill).	D	(MD)	
				SPT 5/6/12 N=18							
1				D	1.00 (22.70)		SC	Clayey SAND, mottled light brown, red and black, medium grained, with extremely weathered coarse angular sandstone gravel, (fill appears to be mainly sandstone derived) (fill).	SM	(MD)	1.00, increased drilling resistance
				D							
				SPT 6/5/6 N=11							
2											
	TC-bit Auger (Ø125mm)	Nil			2.50 (21.20)			Grading to:			
							CI	CLAY, mottled light and dark brown and red, low to medium plasticity, with fine grained sand with extremely weathered sandstone and shale fill bands, MC<PL (fill).	M	(St)	
				D							
3				SPT 5/5/6 N=11							
										(VSt)	
4				D							
				SPT 6/9/11 N=20							
5				D							

See standard sheets for details of abbreviations & basis of descriptions

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BOREHOLE LOG SHEET

GEO_BOREHOLE_212258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH7**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 2 OF 4**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	327981.0 E 6247481.0 N MGA94 56 **Surface RL:** 23.7m AHD **Angle from Horiz. :** 90°		**Processed :** RY
Rig Type :	Geoprobe **Mounting:** Rubber Track **Contractor :** Terratest	**Driller :** Pal Singh	**Checked :**
Date Started : 8/2/11	**Date Completed :** 8/2/11	**Logged by :** SHH	**Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
	TC-bit Auger (Ø125mm)	Nil		SPT 7/7/10 N=17			CI	CLAY, as previous.	M	(St)	5.0 to 6.0m, variable drilling resistance
6				D SPT 5/5/6 N=11				At 6.0m as above with completely weathered shale bands/ high plasticity clay bands.		(St)	
					6.35 (17.35)		SC	Clayey SAND, brown, fine to coarse grained, trace rootlets (alluvium).	M	MD	
					6.70 (17.00)		CI-CH	CLAY, mottled grey and red with orange, medium to high plasticity, with silt, trace rootlets (residual)	SM	VSt	
7				D SPT 5/8/11 N=19							
8				SPT 11/20/19 N=39				Below 8.0m, as previous with bands of ferriferous induration forming fine gravel ironstone clasts.	VM	H	
9				SPT 9/6/8 N=14	9.15 (14.55)			SANDSTONE, grey, medium grained, extremely low to low strength, extremely weathered.			
10					10.00			Start of coring at 10 metres. For coring interval, see Core Log Sheet.			

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258

CORE LOG SHEET

GEO_COREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH7**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		SHEET 3 OF 3
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	327981.0 E 6247481.0 N MGA94 56 **Surface RL:** 23.7m AHD	**Angle from Horiz. :** 90°	**Processed :** RY
Rig Type :	Geoprobe **Mounting:** Rubber Track **Contractor :** Terratest	**Driller :** Pal Singh	**Checked :**
Casing Dia. :	HQ **Barrel (m) :** 3.0m **Bit :** Diamond Step Face	**Bit Condition :** Fair	**Date :**
Date Started :	8/2/11 **Date Completed :** 8/2/11 **Logged by :** SHH	**Date Logged :** 08/2/11	

DRILLING					MATERIAL				NATURAL FRACTURES		
Progress											
SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)	Weathering	Estimated Strength $Is_{(50)}$ MPa EL 0.03 VL 0.1 L 0.3 M 1 H 3 VH 10 EH	Spacing (mm) 20 40 100 300 1000	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.
						(10.00)		Start of coring at 10 metres For Non Cored interval, see Borehole Log Sheet.					
						(13.70)		CORE LOSS 320mm thick.					
						10.32							
11	NMLC coring + HQ casing to 10.0m	0% Loss		(18)		(13.38)		SANDSTONE, light grey with light brown/ orange ferriferous stained bands, fine to coarse grained, sub-horizontally bedded. Between 10.32m to 10.7m, trace carbonaceous laminations.	HW MW-SW MW SW				10.34,11.36,11.39, BP's x 3, CN, PLN, RF, TI 10.41 & 10.43, BP's x 2, 0°, X, PLN, VR 10.44, 10.47, 10.50, JT, 15°, FE, IR, RF, OP 10.50-10.58, JT, 45-90°, RF, TI 10.61, BP, 0°, X, UN, RF, TI 10.63, JT, 30°, FE, RF, OP 10.94-11.09, JT, 80-90°, FE, IR, VR, OP 11.28, JT, 20°, FE, IR, VR, OP 11.34, JT, 0-16°, FE, IR, VR, TI 11.56-11.58, BP, 25°, FE, UN, RF, OP 11.60, JT, 5°, FE+CLAY, IR, VR, OP
			11.75			11.75							
						(11.95)		End of Borehole at 11.75 metres.					
12													
13													
14													
15													

See standard sheets for details of abbreviations & basis of descriptions

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Job No. **21-20258**


CLIENT: PYRMONT LIGHT RAIL COMPANY
PROJECT: S.L.R. INNER WEST EXT
LOCATION: DAVIS ST, DULWICH HILL
BOREHOLE: BH 7 10m TO 11.75m
JOB NO: 2120258 DATE 09/02/2011
GHD
GHD GEOTECHNICS
2120258 SYDNEY LIGHT RAIL INNER WEST EXTENSION BH 7 DAVIS ST, DULWICH HILL
START CORING AT 10.0m
10.0
10.0m 320mm CORE LOSS 10.32
11.0
EOH 11.75m 08/02/11

BOREHOLE LOG SHEET

GEO_BOREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH14**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 1 OF 5**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	328397.4 E 6248201.7 N MGA94 56	**Surface RL:** 15.2m AHD	**Angle from Horiz. :** 90°	**Processed :** RY
Rig Type :	Geoprobe **Mounting:** Track	**Contractor :** Terratest	**Driller :** Jason Peisley	**Checked :**
Date Started :	10/3/11 **Date Completed :** 11/3/11	**Logged by :** HDS		**Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
				D				SAND, grey, fine and medium grained, trace silt and gravel (fill).	SM	(MD)	Coordinates and level inferred from H&F project survey
					0.30 (14.90)			Sandy CLAY, grey-brown and orange-brown, low plasticity, fine grained sand, with fine and medium gravel, trace ash, MC<<PL (fill).	SM	(H)	Grass cover at surface.
	Air Lance										0.3, with pockets of sand and gravel.
1								At 1.0m, slag cobble.			
										(St)	
				SPT 6/6/7 N=13							
2				D							
		Nil						At 2.50m, pockets of Clayey SAND with gravel, grey.			
				SPT 5/8/6 N=14	2.78 (12.42)			2.65 to 2.80m, weathered siltstone gravel, thinly laminated, low strength.			
								Clayey SAND, grey, orange and black, fine and medium grained, with ash, slag and coal (fill).	SM	(MD)	
3	TC-bit auger										3.0, difficulty keeping hole open.
				D							
								3.57 to 3.78m, with sandstone and shale fragments and gravel.			
				SPT 4/6/5 N=11	3.78 (11.42)			CLAY, orange, brown and grey, medium plasticity, trace sand and gravel, trace charcoal (fill).	M	VSt	
4					4.20 (11.00)			Clayey SAND, brown, fine and medium grained, trace gravel (fill).	SM	(L)	
								4.58 to 4.68m, clayey SAND with gravel, trace charcoal and coal, fine and medium gravel.	M	(L)	
				D				4.78m, tree root, 10mm diameter.			
								4.79 to 4.88m, grey, brown and orange-brown, with gravel and sandstone fragments.			
				SPT 4/4/4 N=8	4.88 (10.32)			Clayey GRAVEL / Sandy CLAY, grey, orange and red, fine to	M	(MD/VSt)	
5											

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Job No. 21-20258

BOREHOLE LOG SHEET

GEO_BOREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH14**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 2 OF 5**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	328397.4 E 6248201.7 N MGA94 56	**Surface RL:** 15.2m AHD	**Angle from Horiz. :** 90°	**Processed :** RY
Rig Type :	Geoprobe **Mounting:** Track	**Contractor :** Terratest	**Driller :** Jason Peisley	**Checked :**
Date Started :	10/3/11 **Date Completed :** 11/3/11		**Logged by :** HDS	**Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
6	TC-bit auger	Nil		D SPT 6/6/5 N=11				coarse gravel, with coarse gravel comprised of ripped shale / siltstone, fine and medium grained sand, low plasticity clay, trace coal, glass and charcoal (fill).	M	(MD/VSt)	
					6.20 (9.00)			Clayey SAND, brown and grey, fine and medium grained, low plasticity clay, trace slag and charcoal (fill).	SM	(L)	
				D SPT 4/6/2 N=8	6.70 (8.50)			GRAVEL, grey, medium to coarse gravel, comprising ripped siltstone, thinly laminated, clay content increasing with depth (fill).	D	(L)	
7									M		
8				D				8.0 to 8.11m, dark grey to black, fine and medium grained, trace coal.			
				SPT 2/2/3 N=5	8.11 (7.09) 8.19 (7.01)			CLAY, grey and orange, high plasticity, with sandy pockets, MC>PL (fill). / GRAVEL, grey and orange-brown, medium to coarse derived from ripped siltstone (fill).	VM SM	(F) (L)	
9					9.10 (6.10)			Sandy CLAY, dark grey, medium plasticity, fine grained sand, with fine and medium gravel, trace slag (fill).	M	(F)	
				D SPT 2/1/2 N=3	9.66 (5.54)		CL	CLAY/SILT, dark brown, low plasticity, trace sand, charcoal and gravel, MC<PL (alluvium).	VM	S-F	9.5, very easy auger penetration.
10			11/3/11								

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Job No. 21-20258

BOREHOLE LOG SHEET

GEO_BOREHOLE 2'20258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH14**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 3 OF 5**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	328397.4 E 6248201.7 N MGA94 56 **Surface RL:** 15.2m AHD **Angle from Horiz. :** 90°		**Processed :** RY
Rig Type :	Geoprobe **Mounting:** Track **Contractor :** Terratest **Driller :** Jason Peisley		**Checked :**
Date Started :	10/3/11 **Date Completed :** 11/3/11 **Logged by :** HDS		**Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
11	TC-bit auger	Nil		D SPT 2/2/3 N=5 U50				CLAY/SILT, as previous.	VM M	S-F F	
								11.28m, sandy lens, 10mm thick. 11.33m, with organic matter.			
					11.90 (3.30)		SW	SAND, light brown, fine and medium grained (alluvium).	SM	MD	Vane shear strength (peak) = 64kPa Vane shear strength (residual) = 20kPa
12					12.20 (3.00)		CL	CLAY, mottled brown, grey and orange-brown, low plasticity, trace sand and fine roots (alluvium).	M	St	Vane shear strength (peak) = 66kPa Vane shear strength (residual) = 23kPa
				D SPT 3/4/5 N=9				12.63 to 12.72m, gravel band, red-brown.			
13											
				D SPT 8 for 100mm HB N=ref	13.55 (1.65)		CH	Gravelly CLAY, red-brown and grey, high plasticity, fine and medium gravel, sub-rounded to angular, trace roots (alluvium).	W	S-F	13.5m, SPT likely gravel affected.
					13.75 (1.45)			SANDSTONE, orange-brown and grey, fine and medium grained, highly weathered, extremely low to very low strength, with clayey bands, excavated as sand, trace clay.	M		
14											
15											

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BOREHOLE LOG SHEET

GEO_BOREHOLE 212258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH14**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 4 OF 5**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	328397.4 E 6248201.7 N MGA94 56 **Surface RL:** 15.2m AHD **Angle from Horiz. :** 90°		**Processed :** RY
Rig Type :	Geoprobe **Mounting:** Track **Contractor :** Terratest **Driller :** Jason Peisley		**Checked :**
Date Started :	10/3/11 **Date Completed :** 11/3/11 **Logged by :** HDS		**Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
		Nil			15.10			SANDSTONE, as previous.	M		15.1, difficult drilling using TC-bit auger.
								Start of coring at 15.1 metres. For Cored interval, see Core Log Sheet.			
16											
17											
18											
19											
20											

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CORE LOG SHEET

GEO_COREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH14**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		SHEET 5 OF 5
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	328397.4 E 6248201.7 N MGA94 56 **Surface RL:** 15.2m AHD	**Angle from Horiz. :** 90°	**Processed :** RY
Rig Type :	Geoprobe **Mounting:** Track **Contractor :** Terratest	**Driller :** Jason Peisley	**Checked :**
Casing Dia. :	HQ **Barrel (m) :** 3.60m **Bit :** Semiround	**Bit Condition :** Good	**Date :**
Date Started :	10/3/11 **Date Completed :** 11/3/11 **Logged by :** HDS	**Date Logged :** 11/3/11	

DRILLING						MATERIAL					NATURAL FRACTURES		
Progress													
SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)	Weathering	Estimated Strength $Is_{(50)}$ MPa EL 0.03 VL 0.1 L 0.3 M 1 H 3 VH 10 EH	Spacing (mm) 20 40 100 300 1000	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.
						15.10		Start of coring at 15.1 metres. For Non Cored interval, see Borehole Log Sheet.					
16	NMLC coring, HQ casing to 15.1m	0% Loss	15.80	(0)		(0.10)		SANDSTONE, light grey, fine to coarse grained, thinly bedded with cross-bedded laminations at 15°-20°. Between 15.30 to 15.92m, medium bedded. Between 15.67 to 15.72m, very thin coal / organic inclusions (<1mm thick). Between 15.92 to 17.57m, thickly bedded with cross-bedded laminations at 5°-10°, becoming 0°-5° below 17.51m.	Fr				15.19, SM, 5°, CLAY (5mm), PLN, RF, OP 15.25, BP, 3°, CN, PLN, RF, CL 15.75, BP, 10°, CN, PLN, RF, OP 16.30, BP, 15°, CN, PLN, RF, CL
17		0% 100% 100% LOSS		(1)		17.58		Between 17.51 to 17.58m, siltstone band.					
						(17.60) (-2.40)		CORE LOSS 20mm thick.					17.58, SM, 5°, CLAY (6mm), PLN, RF, CL
18			18.25			18.25 (-3.05)		SANDSTONE, as previous. Below 17.60m, thickly bedded with cross-bedded laminations at 20°-25°.	Fr				17.81, BP, 28°, CN, PLN, RF, CL 18.09, BP, 24°, CLAY VE, PLN, RF, CL
								End of Borehole at 18.25 metres. Hole backfilled with cuttings mixed with dry cement and bagged sand.					
19													
20													

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Job No. 21-20258

CLIENT: PYRMONT LIGHT RAIL COMPANY
PROJECT: SYDNEY LIGHT RAIL, INNER WEST EXTENSION
LOCATION: LONGPORT STREET
BOREHOLE: BH 14 15.1 to 18.25m
JOB NO: 21/20258/13 15/3/2011
GHD GEOTECHNICS
SYDNEY LIGHT RAIL INNER WEST EXTENSION
BH 14 - LONGPORT STREET
START CORING 15.1m
END BOREHOLE BH 14 AT 18.25m
START CORING: 15.1m
16
17
18

BOREHOLE LOG SHEET

GEO_BOREHOLE 212258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH15**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 1 OF 3**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	328473.0 E 6248504.0 N MGA94 56 **Surface RL:** 7.4m AHD **Angle from Horiz. :** 90°		**Processed :** GBM
Rig Type :	XC **Mounting:** Rubber Track **Contractor :** Terratest	**Driller :** S.Pritchard	**Checked :**
Date Started :	17/2/11 **Date Completed :** 17/2/11	**Logged by :** SHH	**Date :**

DRILLING					MATERIAL						
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
1	TC-bit Auger (Ø125mm)	Nil		D			SC	Clayey SAND and COBBLES, brown, medium grained sand with crushed sandstone and brick rubble (fill).	D	-	Coordinates and level inferred from H&F project survey
				D							
				D	1.00 (6.40)		SC	Clayey SAND and COBBLES, as above, with zones of clay and charcoal fragments, trace plastic tape (fill).	M	(L)	
				SPT 1/1/1 N=2							
2				D	1.80 (5.60)		CH	CLAY, light brown with red mottling, medium to high plasticity, zones of sandy clay, with medium grained sand, trace extremely weathered sandstone gravel, iron stained, some iron indurated nodules (fill ? - possible disturbed colluvium).	M	(S-F)	Clay appears near plastic limit
				SPT 3/2/3 N=5							
								Grading to			
				SPT 1/1/2 N=3	2.70 (4.70)		CH	Sandy CLAY, light brown with minor orange streaks, medium plasticity, medium grained sand, with bands of high strength black/blue ferriferous induration (fill).	M-VM	(S-F)	
3				D							
				SPT 1/1/3 N=4	3.20 (4.20)			SANDSTONE, light brown with orange and light brown mottling, medium grained, extremely weathered, extremely low strength.			3.5m, increased drilling resistance - low to medium strength? 4.0m, TC-bit auger refusal
4					4.00			Start of coring at 4 metres. For Cored interval, see Core Log Sheet.			
5											

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258

CORE LOG SHEET

GEO_COREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH15**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		SHEET 2 OF 3
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	328473.0 E 6248504.0 N MGA94 56 **Surface RL:** 7.4m AHD	**Angle from Horiz. :** 90°	**Processed :** GBM
Rig Type :	XC **Mounting:** Rubber Track **Contractor :** Terratest	**Driller :** S.Pritchard	**Checked :**
Casing Dia. :	HQ **Barrel (m) :** 1.5m **Bit :** Diamond (stepfaced)	**Bit Condition :** Fair	**Date :**
Date Started :	17/2/11 **Date Completed :** 17/2/11 **Logged by :** SHH	**Date Logged :** 17/2/11	

DRILLING						MATERIAL					NATURAL FRACTURES		
Progress													
SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)	Weathering	Estimated Strength $Is_{(50)}$ MPa EL 0.03 VL 0.1 L 0.3 M 1 H 3 VH 10 EH	Spacing (mm) 20 40 100 300 1000	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.
1													
2													
3													
4								Start of coring at 4 metres. For Non Cored interval, see Borehole Log Sheet.					
						4.00 (3.40)		SANDSTONE, orange and red, medium to coarse grained, thickly bedded with thinly spaced cross-beds dipping ~20°.	MW				4.10 BP, 20°, FE, PLN, VR, TI 4.20 & 4.21, BP's x 2, HZ, CN, UN, VR, TI 4.22 BP, 20°, CN, PLN, RF, TI 4.22 BP, 20°, roots, PLN, RF, OP 4.3 BP, 20°, FE, PLN, RF, TI
5		90% Loss		(0)				Below 4.9m, colour varying to off-white with red and orange zones.					4.92 BP, HZ, FE, PLN, VR, CL

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Job No. 21-20258

CORE LOG SHEET

GEO_COREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH15**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL	**SHEET 3 OF 3**	
Position :	328473.0 E 6248504.0 N MGA94 56 **Surface RL:** 7.4m AHD	**Angle from Horiz. :** 90°	**Processed :** GBM
Rig Type :	XC **Mounting:** Rubber Track **Contractor :** Terratest	**Driller :** S.Pritchard	**Checked :**
Casing Dia. :	HQ **Barrel (m) :** 1.5m **Bit :** Diamond (stepfaced)	**Bit Condition :** Fair	**Date :**
Date Started :	17/2/11 **Date Completed :** 17/2/11 **Logged by :** SHH	**Date Logged :** 17/2/11	

DRILLING | **MATERIAL** | **NATURAL FRACTURES**

Progress: SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description (ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin))	Weathering	Estimated Strength $Is_{(50)}$ MPa (EL 0.03, VL 0.1, L 0.3, M 1, H 3, VH 10, EH)	Spacing (mm) (20, 40, 100, 300, 1000)	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.
6	NMLC coring + HQ Casing to 4.2m	0% Loss	5.10	(16)		6.24 (1.16)		SANDSTONE, as previous.	MW				4.95-5.05 SM, HZ, CLAY, PLN, RF, TI 5.1 BP, 20°, FE, PLN, RF, TI 5.19 BP, 20°, FE, PLN, RF, TI 5.21 BP, 20°, FE, PLN, RF, TI 5.36 & 5.4 BP, HZ, FE, PLN, RF, TI
								CORE LOSS 210mm thick.					
			6.45			6.45 (0.95)		SANDSTONE, as above, except with orange staining.					6.46-6.49, SM HZ, CLAY, FE, UN, RF, TI 6.52 BP, 0°, FE, VR, TI
7				(0)					MW				7.03 & 7.08, BP's x 2, 20°, FE, PLN, RF, TI 7.16 BP, 20°, CLAY, PLN, VR, TI
			8.00			8.00 (-0.60)		End of Borehole at 8.0 metres.					7.82 BP, 5°, FE, PLN, VR, TI
8													
9													
10													

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Job No. 21-20258

CLIENT:
PYRMONT LIGHT RAIL COMPANY
PROJECT:
SYDNEY LIGHT RAIL INNER WEST EXT
LOCATION:
PARRAMATTA RD
BOREHOLE:
BH15, 4.0m - 8.0m
JOB NO:
21/20258 DATE 21/02/2011
GHD
GHD GEOTECHNICS
21/20258 SYDNEY LIGHT RAIL INNER WEST EXTENSION BH15 17/02/2011 START CORING 4.0m
CORE LOSS
624
645
4.0
5.0
6.0
7.0

BOREHOLE LOG SHEET

GEO_BOREHOLE 2'20258.GPJ GHD_GEO_TEMPLATE.GDT 7/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH16**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		**SHEET 1 OF 3**
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	328484.0 E 6248530.0 N MGA94 56 **Surface RL:** 7.6m AHD **Angle from Horiz. :** 90°		**Processed :** GBM
Rig Type :	XC **Mounting:** Rubber Track **Contractor :** Terratest	**Driller :** S.Pritchard	**Checked :**
Date Started :	16/2/11 **Date Completed :** 16/2/11	**Logged by :** SHH	**Date :**

DRILLING					MATERIAL					
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments/ Observations
0	TC Auger 125mm	Nil	▽ 16/02/11	D				Clayey SAND and GRAVEL, light and dark brown, fine to coarse grained sand, fine to medium sub-rounded and subangular gravel with zones of clay, trace charcoal fragments and plant matter (fill).	D	(VL)	Coordinates and level inferred from H&F project survey. Sandstone gravel, cobbles and glass fragments at surface
				D	0.50 (7.10)			Clayey SAND / Sandy CLAY, mottled light brown and brown, fine to medium grained (fill).	M	(VL/F)	0.5m, Possible disturbed slopewash and alluvium.
				SPT 2/2/2 N=4							
1				D					VM	(VL/S)	
				SPT 1/1/1 N=2							
									W	(VL/VS)	
2				D				Below 1.8m, mottled light brown with orange, weak ferruginous bands.			
				SPT 0/0/1 N=1							
3				D							
				U50							3.0m, U50 tube falling 300mm under weight of rods
					3.50 (4.10)			SANDSTONE, pale brown, white with orange bands, thickly bedded with thinly spaced cross bedding and ferruginous indurated bands, highly weathered, very low strength.			3.5m: Increased drilling resistance 3.9m: equivalent V-bit refusal for small drilling rig
					3.90			Start of coring at 3.9 metres. For Cored interval, see Core Log Sheet.			
4											
5											

See standard sheets for details of abbreviations & basis of descriptions

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CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 21-20258

CORE LOG SHEET

GEO_COREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

Client :	PYRMONT LIGHT RAIL COMPANY			**HOLE No. BH16**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION				SHEET 2 OF 3
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL				
Position :	328484.0 E 6248530.0 N MGA94 56	**Surface RL:** 7.6m	AHD	**Angle from Horiz. :** 90°	**Processed :** GBM
Rig Type :	XC	**Mounting:** Rubber Track	**Contractor :** Terratest	**Driller :** S.Pritchard	**Checked :**
Casing Dia. :	HW	**Barrel (m) :** 1.5m & 3m	**Bit :** Diamond (stepfaced)	**Bit Condition :** Good	**Date :**
Date Started :	16/2/11	**Date Completed :** 16/2/11	**Logged by :** SHH	**Date Logged :** 16/2/11	

DRILLING						MATERIAL					NATURAL FRACTURES		
Progress													
SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin)	Weathering	Estimated Strength $Is_{(50)}$ MPa EL 0.03 / VL 0.1 / L 0.3 / M 1 / H 3 / VH 10 / EH	Spacing (mm) 20 / 40 / 100 / 300 / 1000	Visual	Additional Data (joints, partings, seams, zones and veins) Fracture type, orientation, infilling or coating, shape, roughness, other.
1													
2													
3								Start of coring at 3.9 metres. For Non Cored interval, see Borehole Log Sheet.					
4	NMLC coring + HQ Casing to 3.9m	0% Loss	4.40	(0)		3.90 (3.70)		SANDSTONE, pale brown with bands of orange and pale red, coarse grained, sub-horizontal bedding, iron indurated bands.	MW				3.92 BP, 18°, CN, PLN, SO, TI 4.0 BP, 0-5°, CN, IR, VR, TI 4.05 & 4.06 BP, 20°, CLAY, PLN, RF, TI 4.08 BP, 20°, CLAY, PLN, RF, TI 4.16 BP, 0-10°, CLAY, UN, VR, TI 4.41 BP, 15°, FE, UN, VR, TI 4.55, 4.57, 4.58, 4.60 BPx4, 25°, CLAY, PLN, RF, TI 4.61 BP, 25°, FE, PLN, RF, TI
5			4.95	(0)									

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Job No. 21-20258

CORE LOG SHEET

GEO_COREHOLE 2120258.GPJ GHD_GEO_TEMPLATE.GDT 6/4/11

Client :	PYRMONT LIGHT RAIL COMPANY	**HOLE No. BH16**	
Project :	SYDNEY LIGHT RAIL INNER WEST EXTENSION		SHEET 3 OF 3
Location :	ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL		
Position :	328484.0 E 6248530.0 N MGA94 56 **Surface RL:** 7.6m AHD	**Angle from Horiz. :** 90°	**Processed :** GBM
Rig Type :	XC **Mounting:** Rubber Track **Contractor :** Terratest	**Driller :** S.Pritchard	**Checked :**
Casing Dia. :	HW **Barrel (m) :** 1.5m & 3m **Bit :** Diamond (stepfaced)	**Bit Condition :** Good	**Date :**
Date Started :	16/2/11 **Date Completed :** 16/2/11 **Logged by :** SHH	**Date Logged :** 16/2/11	

DRILLING | **MATERIAL** | **NATURAL FRACTURES**

Progress: SCALE (m)	Drilling & Casing	Water	Drill Depth (m)	(Core Loss / Run %)	SAMPLES & TESTS	Depth / (RL) metres	Graphic Log	Description (ROCK TYPE, colour, grain size, structure (texture, mineral composition, hardness, alteration, cementation, etc. as applicable) and SOIL TYPE, moisture, colour, consistency, structure, minor components (origin))	Weathering	Estimated Strength $Is_{(50)}$ MPa (EL 0.03, VL 0.1, L 0.3, M 1, H 3, VH 10, EH)	Spacing (mm) (20, 40, 100, 300, 1000)	Visual	Additional Data (joints, partings, seams, zones and veins; Fracture type, orientation, infilling or coating, shape, roughness, other.)
6	NMLC coring + HQ Casing to 3.9m	0% Loss		(0)				SANDSTONE, as previous.	MW				5.7 & 5.71 BP, 10°, FE, VR, TI 5.73-5.76 SM, 10°, CLAY, UN, RF, TI 5.96 BP, 10°, FE, CLAY, UN, RF, TI 6.17 & 6.20 BP, 20°, X, UN, VR, TI 6.21 - 6.22 SM, 10°, CLAY, UN, RF, TI 6.35 BP, 20°, CN, PLN, SO, OP 6.35-6.64 JT, 80°, FE, CLAY, IR, VR, OP
7		10% Loss	7.40										6.98 & 7.05 SM, 20°, CLAY, UN, RF, TI
8				(0)				Below 7.8m, Cross-bedding becoming indistinct.	SW				8.05 BP, 20°, FE, UN, VR, OP
9			9.00			9.00 (-1.40)		End of Borehole at 9.0 metres.					9.0 BP, 20°, FE, UN, VR, OP
10													

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Job No. 21-20258

CLIENT: PYRMONT LIGHT RAIL COMPANY
PROJECT: SYDNEY LIGHT RAIL INNER WEST EXT
LOCATION: PARRAMATTA RD
BOREHOLE: BH16, 3.90m - 9.0m
JOB NO: 21/20258 DATE 21/02/2011
GHD
GHD GEOTECHNICS
21/20258 SYDNEY LIGHT RAIL INNER WEST EXTENSION BH16 16/02/2011 START CORING AT 3.90m
4.0
5.0
6.0
7.0
8.0
9.0 EOH 9.0m 16/02/2011 PARRAMATTA RD, HABERFIELD

TEST PIT LOG SHEET

Client: PYRMONT LIGHT RAIL COMPANY

Project: SYDNEY LIGHT RAIL INNER WEST EXTENSION

Location: ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL

HOLE No. TP1

SHEET 1 **OF** 1

Position: 327897.0 E 6246859.0 N MGA94 56	**Surface RL:** 30.2m AHD		**Processed:** SHH
Method of Exploration: 5.5 tonne excavator	**Hole Size:** 4.0 x 1.0		**Checked:**
Date: 05/04/11	**Logged by:** SHH		**Date:**

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description (SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength)	Moisture Condition	Consistency / Density Index	Comments Observations
		D			-	COBBLES and Clayey SAND, dark grey, angular cobbles up to 100mm diameter (railway ballast), fine to coarse grained sand, trace ceramic roof tile and plastic wrapping (fill)	M	-	Fill appears poorly compacted
		D	0.40 (29.80)		-	Clayey SAND, brown, medium grained, with fine to coarse gravel of mixed origin, coarse gravel sized clay pockets, trace ceramic tiles and brick fragments (fill)	M	-	
		D							
			0.90 (29.30)			0.8m, band of coarse sand and gravel sized slag/ash			
		D			CH	CLAY, orange/light brown, high plasticity, indistinct slickensided features, with some relic shale structure (residual)	SM	VSt	Clay is dry of plastic limit
1		D							
						1.4m, As previous, becoming pale brown with orange mottling, with roots, rootlets and dessication related slickensided features			
		D	1.80 (28.40)			SHALE/SILTSTONE, pale brown with red bands, bands are ferric indurated/cemented, extremely weathered to highly weathered, very low strength			
2		D							
			2.50 (27.70)			End of Test Pit at 2.5m Slow progress excavator refusal Test pit is dry on completion			
3									

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258

Source: GHD Pty Ltd

TEST PIT LOG SHEET

Client: PYRMONT LIGHT RAIL COMPANY

Project: SYDNEY LIGHT RAIL INNER WEST EXTENSION

Location: ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL

HOLE No. TP4

SHEET 1 **OF** 1

Position:	328323.0 E 6248089.0 N MGA94 56	**Surface RL:**	10.1m AHD	**Processed:** SHH
Method of Exploration:	5.5 tonne excavator	**Hole Size:**	0.3 x 3.1	**Checked:**
Date:	04/04/11	**Logged by:**	SHH	**Date:**

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	Comments Observations
1		D D D D D			-	Clayey SAND, dark brown, fine to coarse grained, with bands of disturbed orange clay, coarse gravel, angular coarse coal and slag gravels, trace ceramic tile fragments (fill)	SM	-	Uncontrolled fill appears moderately compacted
		D	1.20 (8.90)		CH	CLAY, orange with grey mottling, high plasticity, with fine to coarse angular shale gravel, trace charcoal fragments (alluvium)	M VM	St	Clay appears disturbed shale derived
		D	1.60 (8.50) 1.70 (8.40)			SANDSTONE, pale brown and orange bands, highly weathered, extremely low to very low strength			
2						End of test pit at 1.7m Excavator refusal on sandstone bedrock Test pit is dry on completion			
3									

See standard sheets for details of abbreviations & basis of descriptions

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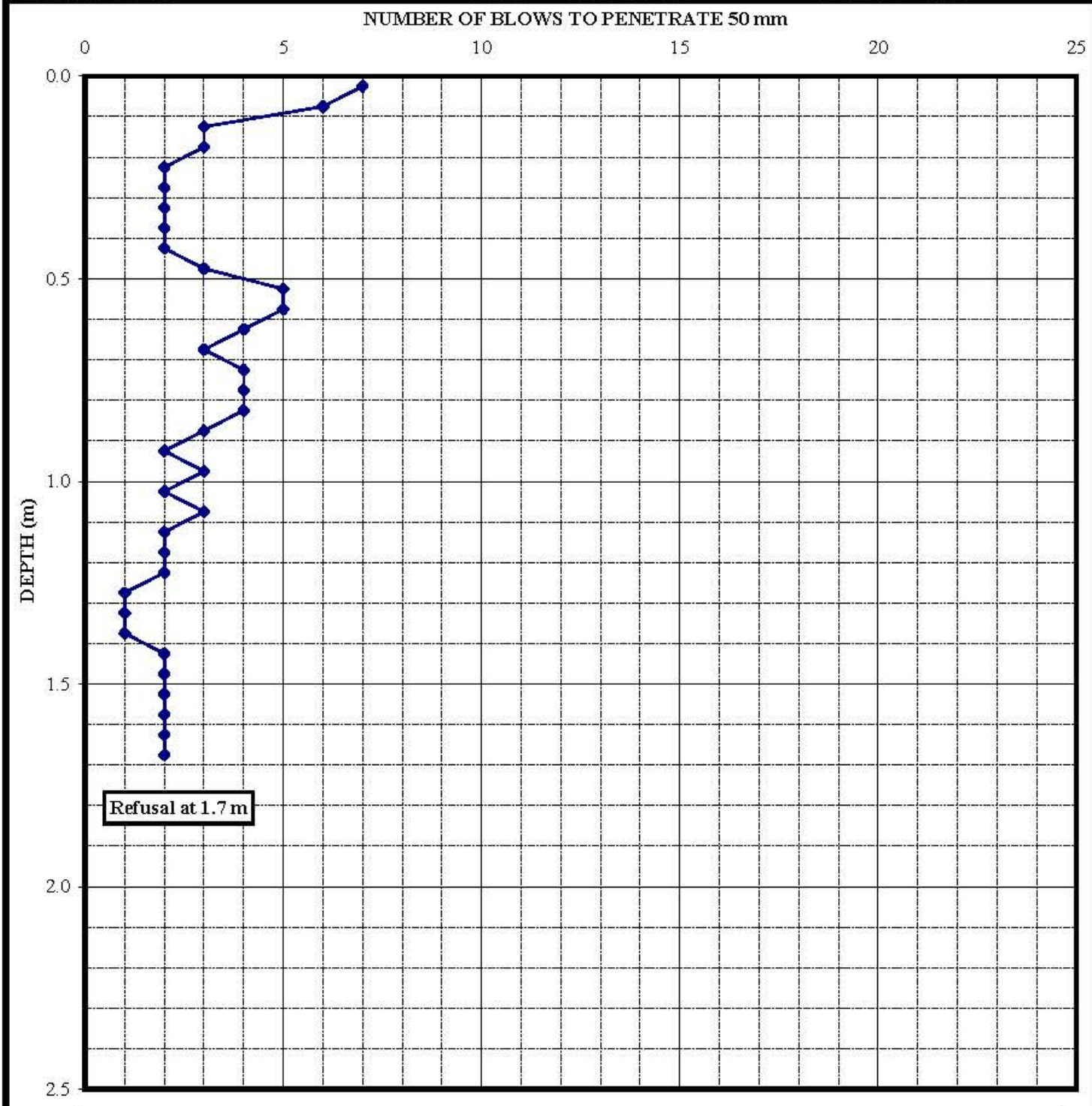
Job No. 21-20258

GEC_TEST PIT 212025B.GPJ GHD_GEO_TEMPLATE.GDT 28/4/11

DYNAMIC CONE PENETROMETER LOG SHEET

Client:	Pyrmont Light Rail Company			**PROBE No.**	**DCP01**
Project:	Sydney Light Rail Inner West Extension				
Location:	Rozelle Goods Line, Lilyfield to Dulwich Hill			AS1289 6.3.2 (Cone tip)	510 mm drop height
Position:	328323 E 6248089 N MGA94 56	**Chainage:**	near 10700	**Date:**	04/04/2011
Elevation:	RL 10.1	**Offset:**	1.0m from TP4	**Operator:**	SHH



Comments:

DCP conducted to 'hammer bounce' refusal at depth 1.7m
DCP may be affected by fill materials to depth 1.2m

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Job No. **21-20258-13**

File: DCP01.xls

Template: \\G:21\Geo_LAB\DCP Results\GHD_ATN_DCP2007.XLT
File:N:\AU\Artarmon\Projects\Geo_Lab\DCP Results\2120258_SLRIWE\DCP01.xls

TEST PIT LOG SHEET

Client: PYRMONT LIGHT RAIL COMPANY

Project: SYDNEY LIGHT RAIL INNER WEST EXTENSION

Location: ROZELLE GOODS LINE, LILYFIELD TO DULWICH HILL

HOLE No. TP5

SHEET 1 OF 1

Position: 328379.0 E 6248164.0 N MGA94 56	**Surface RL:** 9.2m AHD		**Processed:** SHH
Method of Exploration: 5.5 tonne excavator	**Hole Size:** 0.3 x 3.1		**Checked:**
Date: 04/04/11	**Logged by:** SHH		**Date:**

Scale (m)	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Material Description (SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength)	Moisture Condition	Consistency / Density Index	Comments Observations
1		D			-	COBBLES and Gravelly SAND, dark brown, fine to coarse grained, fine to coarse gravel, with highly disordered medium to high plasticity clay, cobbles and boulders up to 400mm diameter, brick fragments, ripped sandstone/siltstone (fill)	M	-	0.4m to 1.5m, Roots up to 25mm diameter Fill is uncontrolled and appears moderately compacted
		D							
		D							
		D							
		D							
		D	1.70 (7.50)		Cl/ SC	CLAY with sand and bands of Sandy CLAY, grey with mottled red, medium plasticity clay, medium grained sand, with ferric cemented gravel size clasts (alluvium)	M	F	
2		D							
		D						St	
						2.5m, increased ferriferous cementation			
		B						VSt	
			2.90 (6.30)			End of test pit at 2.9m Test pit is dry on completion			
3									

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 21-20258

Source: GHD Pty Ltd

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GHD GEOTECHNICS

Pyrmont Light Rail Company job no | 21- 20258 ©
Sydney Light Rail Inner West Extension
Test Pit Geotechnical Investigations
scale | as shown | date | 04 April 2011 **TP5**

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BOREHOLE LOG SHEET

CLIENT : John Holland Laing O'Rourke Joint Venture
PROJECT : Southwest Stations and Corridor (SSC) - Tranche 1b
LOCATION : Ewart St (cess) - Hurlstone Park NSW

HOLE NO : SSC-S3-BH01
SHEET : 1 OF 1

POSITION : E: 327848.9, N: 6246276.3 (MGA94 / 56) SURFACE RL : 12.37 (AHD) ANGLE FROM HORIZONTAL: 90°
RIG TYPE : D-4T MOUNTING : Ute CONTRACTOR : Stratacore DRILLER : CW
DATE STARTED : 25/2/19 DATE COMPLETED : 25/2/19 DATE LOGGED : 25/2/19 LOGGED BY : JM CHECKED BY : ICC/MG

DRILLING						MATERIAL					
PROGRESS: DRILLING & CASING	PROGRESS: WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH/ RL (m)	GRAPHIC LOG	USC SYMBOL	Description: SOIL TYPE, colour, structure, minor components (origin), and ROCK TYPE, colour, grain size, structure, weathering, strength	MOISTURE CONDITION	CONSISTENCY/ DENSITY INDEX	COMMENTS / OBSERVATIONS
120mm SOLID FLIGHT AUGER			Groundwater Not Encountered	SPT+ES 7/9/12 N=31	0.0			Silty SAND, brown, fine to medium grained sand, with medium to coarse gravel (ballast), trace clay, root fibres (fill)			FILL 0.00m appears loose PID=0.3ppm SPT no sample test on ballast; SPT Recovery: 0 m 0.20m PID=0.3ppm
				0.40m ES 0.50m SPT 6, 5, 4 N=9	12.0			0.30m Clayey Silty SAND, pale brown mottled red/yellow, fine to medium grained sand, trace fine to medium, sub-angular gravel, trace carbonaceous material			0.30m appears loose 0.50m SPT Recovery: 0.36 m
				0.90m ES 1.00m SPT 8, 9, 8 N=17	11.5 1.0			1.00m, becoming with trace clay.	M		0.90m PID=0.4ppm 1.00m SPT Recovery: 0 m
				1.40m ES 1.50m SPT 9, 9, 12 N=21	11.0		CL	1.50m Clayey Silty SAND, pale brown mottled yellow, low plasticity sand, trace fine gravel, trace carbonaceous material (residual)		VSt	1.40m PID=0.7ppm RESIDUAL 1.50m SPT Recovery: 0.4 m
				1.90m ES 1.95m	10.5 2.0			2.00m BOREHOLE SSC-S3-BH01 TERMINATED AT 2.00 m Target depth			1.90m PID=0.4ppm
					10.0						
					9.5 3.0						
					9.0						
					8.5 4.0						
					8.0						
					7.5 5.0						

See Standard Sheets for details of abbreviations & basis of descriptions

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ABN 70 856 896 413

Job No. 21-27058

BOREHOLE LOG

CLIENT: Sydney Metro
PROJECT: Sydney Metro Stage 2 (Central to Westmead)
LOCATION: Richard Murden Reserve, Haberfield

SURFACE LEVEL: 1.7 AHD
EASTING: 328620.7
NORTHING: 6249816.7
DIP/AZIMUTH: 90°/--

BORE No: 3103-220
PROJECT No: 71421
DATE: 27 - 28/1/2010
SHEET 1 OF 5

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		SILTY SAND - brown, silty sand filling with a trace of rootlets and gravel, damp							E			
	0.2	[FILL;mf]										
		SILTY CLAY - dark grey, slightly gravelly, silty clay filling with sandstone, ironstone and basalt gravel and some sand, damp							E*			
	0.5	[FILL;mf]										
1		SILTY CLAY - dark grey and black, silty clay filling with a trace of sand and gravel, damp							S			3,2,2 N = 4
	1	[FILL;mf]							E			
		- wet below 1.5m										
0									E			
	2	- with some sandstone cobbles below 2.2m							U			pp = 20kPa
-1	2.7	PEATY CLAY - very soft to soft, black peaty clay with a trace of shells and occasional silty sand bands, saturated, low plasticity, strong organic odour				▼			E			
	3	[CL;Qa]										
-2									U S/E			No soil sample recovered in U tube 1,0,0 N = 0
	4											
-3												

RIG: Explorer 2000 **DRILLER:** Terratest (R Welsh) **LOGGED:** PAV/BOK **CASING:** HW to 10.6m

TYPE OF BORING: Solid flight auger (TC-bit) to 10.6m; Rotary to 11.15m; HQ-Coring to 23.15m

WATER OBSERVATIONS: Free groundwater observed at 2.7m whilst augering

REMARKS: E = Environmental sample. *Field duplicate environmental sample taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Sydney Metro
PROJECT: Sydney Metro Stage 2 (Central to Westmead)
LOCATION: Richard Murden Reserve, Haberfield

SURFACE LEVEL: 1.7 AHD
EASTING: 328620.7
NORTHING: 6249816.7
DIP/AZIMUTH: 90°/--

BORE No: 3103-220
PROJECT No: 71421
DATE: 27 - 28/1/2010
SHEET 2 OF 5

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		PEATY CLAY - very soft to soft, black peaty clay with a trace of shells and occasional silty sand bands, saturated, low plasticity, strong organic odour [CL;Qa] *(continued)*							S/E			1,0,0 N = 0
-4	5.5	SILTY CLAY - very soft to soft, dark grey and yellow, silty clay with some silty sand bands, saturated, low plasticity [CL;Qa]										
	6								E			
-5									S/E			1,0,0 N = 0
	7											No SPT's undertaken below 7.0m due to collapsing soils
-6												
	8								E			
-7												
	9								E			
-8												

RIG: Explorer 2000 **DRILLER:** Terratest (R Welsh) **LOGGED:** PAV/BOK **CASING:** HW to 10.6m

TYPE OF BORING: Solid flight auger (TC-bit) to 10.6m; Rotary to 11.15m; HQ-Coring to 23.15m

WATER OBSERVATIONS: Free groundwater observed at 2.7m whilst augering

REMARKS: E = Environmental sample. *Field duplicate environmental sample taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Sydney Metro
PROJECT: Sydney Metro Stage 2 (Central to Westmead)
LOCATION: Richard Murden Reserve, Haberfield

SURFACE LEVEL: 1.7 AHD
EASTING: 328620.7
NORTHING: 6249816.7
DIP/AZIMUTH: 90°/--

BORE No: 3103-220
PROJECT No: 71421
DATE: 27 - 28/1/2010
SHEET 3 OF 5

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
-9		SILTY CLAY - very soft to soft, dark grey and yellow, silty clay with some silty sand bands, saturated, low plasticity [CL;Qa] *(continued)*							E			
	10.4	SANDY CLAY - very stiff, grey and yellow, medium to coarse grained sandy clay, wet, low plasticity [CL;res]							E			
	10.6	SANDSTONE - very low to low strength, grey and orange, medium to coarse grained sandstone [SST;Rh]										
	11											
-10	11.15	SANDSTONE - high strength, moderately weathered, unbroken, orange brown, medium grained sandstone [SST;Rh]							C	100	100	PL(A) = 1.17MPa PL(D) = 1.03MPa
	12											
	12.05	SANDSTONE - high strength, fresh, slightly fractured, light grey, medium to coarse grained sandstone. Indistinctly cross-bedded at 0°- 15° [SST;Rh]										PL(A) = 1.63MPa PL(D) = 1.54MPa
-11												
	13											PL(A) = 1.41MPa PL(D) = 1.66MPa
-12								13.49m: B5°, vn, cly, pl, sm	C	100	100	
	14											PL(A) = 1.38MPa PL(D) = 1.26MPa
-13								14.45m: B0°, inf, cly, pl, sm, 2mm thick				
								14.88m: B5°, vn, cly, pl,				

RIG: Explorer 2000 **DRILLER:** Terratest (R Welsh) **LOGGED:** PAV/BOK **CASING:** HW to 10.6m

TYPE OF BORING: Solid flight auger (TC-bit) to 10.6m; Rotary to 11.15m; HQ-Coring to 23.15m

WATER OBSERVATIONS: Free groundwater observed at 2.7m whilst augering

REMARKS: E = Environmental sample. *Field duplicate environmental sample taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Sydney Metro
PROJECT: Sydney Metro Stage 2 (Central to Westmead)
LOCATION: Richard Murden Reserve, Haberfield

SURFACE LEVEL: 1.7 AHD
EASTING: 328620.7
NORTHING: 6249816.7
DIP/AZIMUTH: 90°/--

BORE No: 3103-220
PROJECT No: 71421
DATE: 27 - 28/1/2010
SHEET 4 OF 5

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
-14		SANDSTONE - high strength, fresh, slightly fractured, light grey, medium to coarse grained sandstone. Indistinctly cross-bedded at 0°- 15° [SST;Rh] *(continued)*						sm				PL(A) = 1.45MPa PL(D) = 1.27MPa
								15.15m: B5°, vn, cly, pl, sm				
	16											PL(A) = 1.07MPa PL(D) = 1.38MPa
								16.12m: B0°, vn, cly, pl, sm				
-15									C	100	100	
	17											PL(A) = 1.46MPa PL(D) = 1.41MPa
								17.04m: B0°, vn, cly, pl, sm				
-16												
	18											PL(A) = 1.48MPa PL(D) = 1.48MPa
-17												
	19								C	100	99	
								19.06m: B0°, vn, cly, pl, sm				PL(A) = 1.88MPa PL(D) = 1.49MPa
								19.09m: B0°, inf, cly, pl, sm, 1mm thick				
								19.27m: J25°, cln, pl, sm				
-18												

RIG: Explorer 2000 **DRILLER:** Terratest (R Welsh) **LOGGED:** PAV/BOK **CASING:** HW to 10.6m

TYPE OF BORING: Solid flight auger (TC-bit) to 10.6m; Rotary to 11.15m; HQ-Coring to 23.15m

WATER OBSERVATIONS: Free groundwater observed at 2.7m whilst augering

REMARKS: E = Environmental sample. *Field duplicate environmental sample taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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BOREHOLE LOG

CLIENT: Sydney Metro
PROJECT: Sydney Metro Stage 2 (Central to Westmead)
LOCATION: Richard Murden Reserve, Haberfield

SURFACE LEVEL: 1.7 AHD
EASTING: 328620.7
NORTHING: 6249816.7
DIP/AZIMUTH: 90°/--

BORE No: 3103-220
PROJECT No: 71421
DATE: 27 - 28/1/2010
SHEET 5 OF 5

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
-19	21	SANDSTONE - high strength, fresh, slightly fractured, light grey, medium to coarse grained sandstone. Indistinctly cross-bedded at 0°- 15° [SST;Rh] *(continued)*							C	100	99	PL(A) = 1.64MPa PL(D) = 1.4MPa
-20	22	- distinctly cross-bedded at 5° from 21.1m to 21.55m							C	100	100	PL(A) = 1.85MPa PL(D) = 1.32MPa PL(A) = 1.96MPa PL(D) = 1.6MPa
-21	23											PL(A) = 1.55MPa PL(D) = 1.33MPa
-22	23.15	Bore discontinued at 23.15m										
-23	24											

RIG: Explorer 2000 **DRILLER:** Terratest (R Welsh) **LOGGED:** PAV/BOK **CASING:** HW to 10.6m

TYPE OF BORING: Solid flight auger (TC-bit) to 10.6m; Rotary to 11.15m; HQ-Coring to 23.15m

WATER OBSERVATIONS: Free groundwater observed at 2.7m whilst augering

REMARKS: E = Environmental sample. *Field duplicate environmental sample taken

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED
Initials:
Date:

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SYDNEY METRO STAGE 2

PROJECT 71421

BORE BH3103/220

11.15m to 14.00m

28 JANUARY 2010

BH3103/220 : 11.15m to 14.00m

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SYDNEY METRO STAGE 2

PROJECT 71421

BORE BH3103/220

14.00m to 18.00m

28 JANUARY 2010

BH3103/220 : 14.00m to 18.00m

SYDNEY METRO STAGE 2

PROJECT 71421

BORE BH3103/220

18.00m to 23.15m

28 JANUARY 2010

BH3103/220 : 18.00m to 23.15m

CONE PENETRATION TEST

CLIENT: SYDNEY METRO

PROJECT: SYDNEY METRO STAGE 2

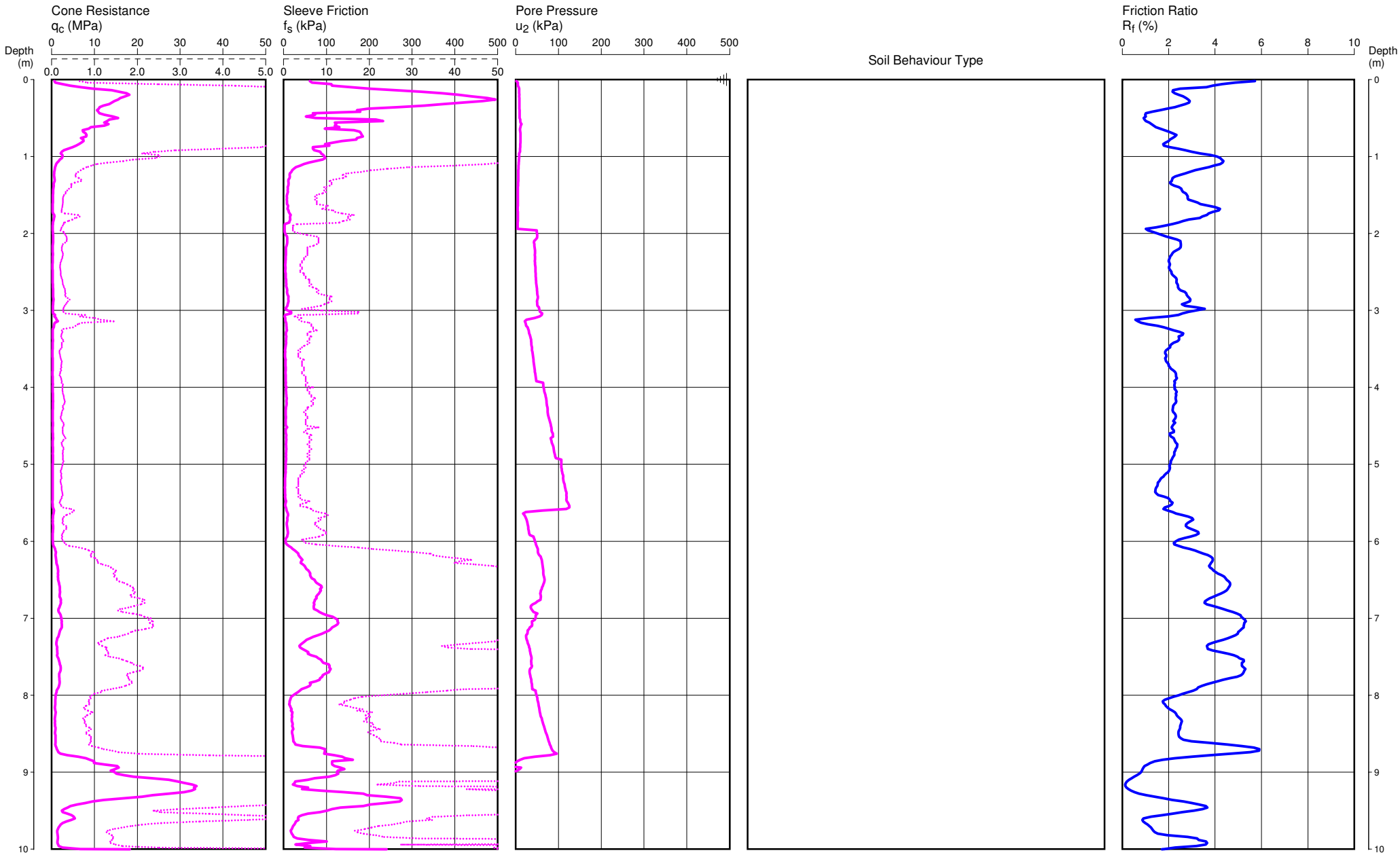
LOCATION: HAWTHORNE CANAL RESERVE, LEICHHARDT

PROJECT No: 71421

CPT 220

DATE 15/01/2010

SURFACE RL: 1.8



REMARKS: HOLE COLLAPSED AT 1.6 m AFTER WITHDRAWAL OF RODS

Date	
Plotted	
Checked	

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Cone ID: 1734 **Type:** 5 Piezocone

Dissipation Test

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CONE PENETRATION TEST

CLIENT: SYDNEY METRO

PROJECT: SYDNEY METRO STAGE 2

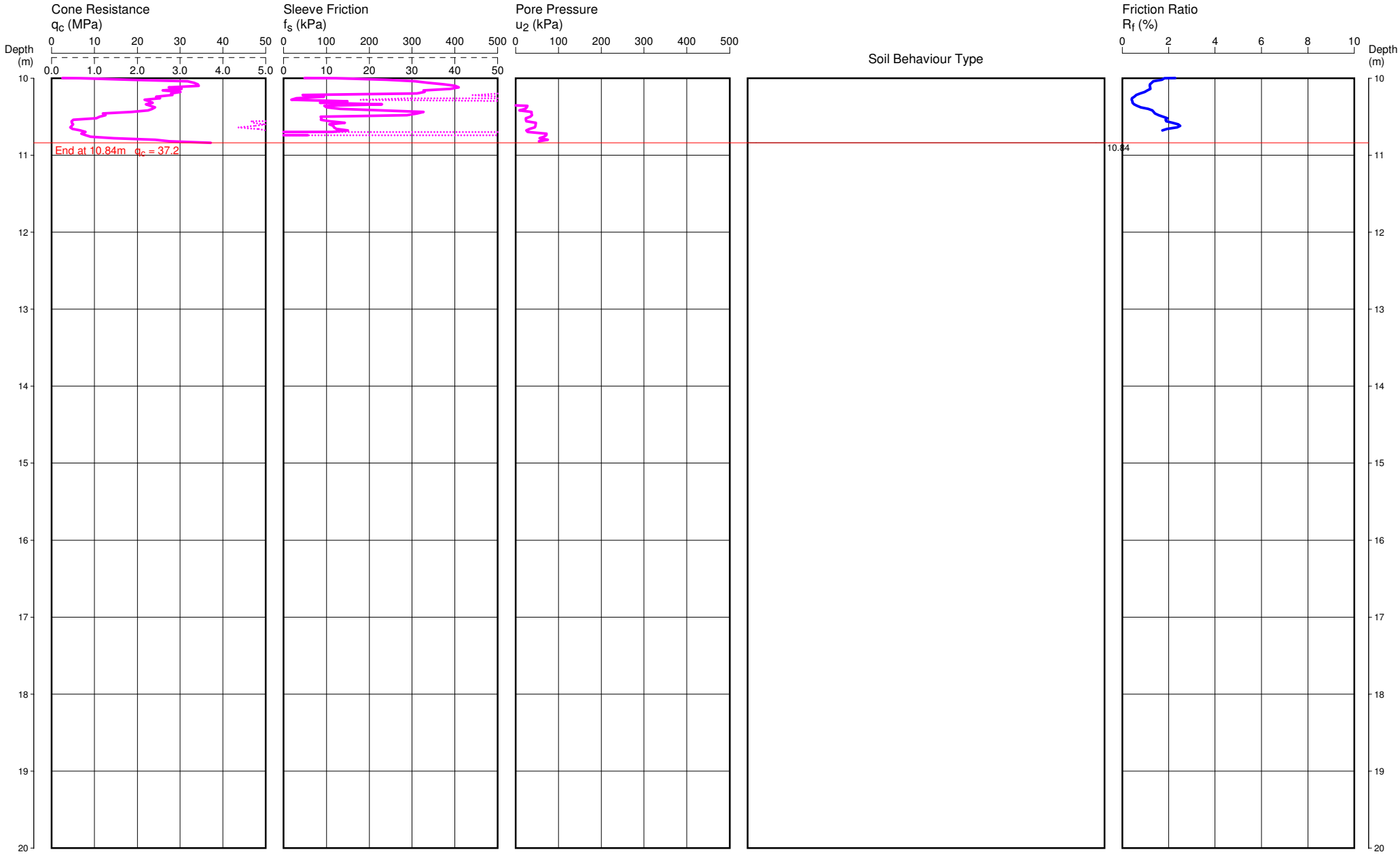
LOCATION: HAWTHORNE CANAL RESERVE, LEICHHARDT

PROJECT No: 71421

CPT 220

DATE 15/01/2010

SURFACE RL: 1.8



REMARKS: HOLE COLLAPSED AT 1.6 m AFTER WITHDRAWAL OF RODS

Date	
Plotted	
Checked	

File: P:\71421 WEST METRO, 3103 Detailed Geotechnical Si... ...ns PMO\Field\CPT\71421220.CP5

Cone ID: 1734 **Type:** 5 Piezocone

ConePlot Version 5.8.1

Dissipation Test

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BOREHOLE: SRT BH514

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SHEET: 1 OF 2 REV: C

CLIENT: Transport for NSW
PROJECT: Sydney Metro City and Southwest
LOCATION: Terrace Road - Hurlstone Park
PROJECT No: PCS 00013/10701

COORDS: 327828.8 m E 6246335.9 m N MGA94 56
SURFACE RL: 19.19 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 10.00 m

DRILL RIG: Komatsu
CONTRACTOR: Nealings Drilling
LOGGED: PGH DATE: 19/8/16
CHECKED: HB/SI DATE: 25/8/16

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
NDD			0	19.19					FILL: GRAVEL medium to coarse grained, angular, grey, with cobbles, (rail ballast)			FILL
				0.50 18.69					FILL: Clayey SAND pale brown, with some sandstone gravel			
ADT	L-H	GWNO	1		SPT 2.15 1.70 m SPT 1.70-2.15 m 5, 3, 4 N=7					M	L	
			2									
			3		SPT 3.45 3.00 m SPT 3.00-3.45 m 6, 1, 1 N=2							
	M		4									
	H			4.50 14.69	SPT 4.55 4.50 m SPT 4.50-4.55 m 10/50mm N=R				SANDSTONE medium to coarse grained, brown highly weathered, very low to low strength			WEATHERED ROCK
			5						For Continuation Refer to Sheet 2			
			6									
			7									
			8									
			9									
			10									

BOREHOLE: SRT BH514

Golder Associates | Douglas Partners Geotechnics / Environment / Groundwater

SHEET: 2 OF 2 REV: C

CLIENT: Transport for NSW
PROJECT: Sydney Metro City and Southwest
LOCATION: Terrace Road - Hurlstone Park
PROJECT No PCS 00013/10701

COORDS: 327828.8 m E 6246335.9 m N MGA94 56
SURFACE RL: 19.19 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 10.00 m

DRILL RIG: Komatsu
CONTRACTOR: Nealings Drilling
LOGGED: PGH DATE: 19/8/16
CHECKED: HB/SI DATE: 25/8/16

Drilling						Field Material Description				Defect Information	
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH $Is_{(50)}$ MPa (Ei 0.03, VL 0.1, L 0.3, M 1, H 3, VH 10, EH)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm) (10, 30, 100, 300, 1000, 3000)
				0							
				1							
				2							
				3							
				4							
					4.75		Continuation of Sheet 1				
NMLC	No Water Loss	100	99 (100)	5	14.44		SANDSTONE medium to coarse grained, orange brown, thickly bedded, with indistinct cross beds dipping between 0 and 8 degrees, iron stained	MW		4.95 m: D - 0.71MPa; A - 0.97MPa 5.18-5.19 m: Bx2, 15°, Pl, Ro, carbonaceous	
				6						5.86 m: DS, 5-15°, Pl, Ro, carbonaceous 5.95 m: D - 1.19MPa; A - 1.13MPa	
		100	100 (100)	7	6.67 12.52		from 6.67-8.87m : some iron-stained bands	SW MW SW		6.95 m: D - 0.93MPa S16691; 6.95 m	
		100	98 (100)	8	8.87 10.32		from 8.87-9.25m : leached pale-grey	FR		7.90 m: D - 0.75MPa; A - 0.61MPa 8.17 m: B, 5°, Pl, Ro, Cn 8.95 m: D - 1.06MPa; A - 0.74MPa	
		100	100 (100)	9	9.25 9.94		from 9.25-9.80m : iron-stained	MW		9.14-9.17 m: DS, 0°, sandy clay, 30mm thick 9.23 m: B, 5°, Pl, Ro, carbonaceous	
				10	10.00		END OF BOREHOLE @ 10.00 m TARGET DEPTH GROUTED	SW		9.54 m: B, 5°, Pl, Ro, carbonaceous Sn	

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

BOREHOLE: SRT BH514

SHEET: 3 OF 2 REV: C

CLIENT: Transport for NSW
PROJECT: Sydney Metro City and Southwest
LOCATION: Terrace Road - Hurlstone Park
PROJECT No PCS 00013/10701

COORDS: 327828.8 m E 6246335.9 m N MGA94 56
SURFACE RL: 19.19 m DATUM: AHD
INCLINATION: -90°
HOLE DEPTH: 10.00 m

DRILL RIG: Komatsu
CONTRACTOR: Nealings Drilling
LOGGED: PGH DATE: 19/8/16
CHECKED: HB/SI DATE: 25/8/16

Drilling						Field Material Description				Defect Information	
METHOD	WATER	TCR	RQD (SCR)	DEPTH (metres)	*DEPTH* RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH $Is_{(50)}$ MPa (EL 0.03, VL 0.1, L 0.3, M 1, H 3, VH 10, EH)	DEFECT DESCRIPTION & Additional Observations	AVERAGE DEFECT SPACING (mm) (10, 30, 100, 300, 1000, 3000)
				10						9.95 m: D - 1.11MPa; A - 1.08MPa	
				11							
				12							
				13							
				14							
				15							
				16							
				17							
				18							
				19							
				20							

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

CORE PHOTOGRAPHS: SRT BH514

		SHEET: 1 OF 1	REV: C
CLIENT: Transport for NSW	COORDS: 327828.8 m E 6246335.9 m N MGA94 56	DRILL RIG: Komatsu	
PROJECT: Sydney Metro City and Southwest	SURFACE RL: 19.19 m DATUM: AHD	CONTRACTOR: Nealings Drilling	
LOCATION: Terrace Road - Hurlstone Park	INCLINATION: -90°	LOGGED: PGH	DATE: 19/8/16
PROJECT No PCS 00013/10701	HOLE DEPTH: 10.00 m	CHECKED: HB/SI	DATE: 25/8/16

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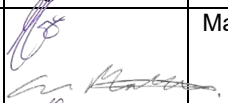
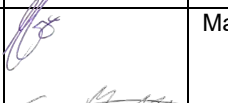
12515105-51798-46/https://projectsportal.ghd.com/sites/pp15_03/thegreenwaygeotechni/ProjectDocs/12515105-REP-1_Geotechnical Report.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	James Scognamiglio	Mark George Simon Mortimer		Mark George		20/2/2020
1	James Scognamiglio	Mark George Simon Mortimer		Mark George		26/3/2020

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