

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 18/09383
Issue Number: 1

Date: 22 November, 2018

Client: ROCP LIMITED
Commercial Wharf 6 Commercial Street
Castlefield
Manchester
M15 4PZ

Project Manager: Elizabeth Stewart
Project Name: THG
Project Ref: 3647
Order No: 1367
Date Samples Received: 08/11/18
Date Instructions Received: 09/11/18
Date Analysis Completed: 22/11/18

Prepared by:


Melanie Marshall
Laboratory Coordinator

Approved by:


Richard Wong
Client Manager

Envirolab Job Number: 18/09383

Client Project Name: THG

Client Project Ref: 3647

Lab Sample ID	18/09383/1	18/09383/2	18/09383/3	18/09383/4	18/09383/5	18/09383/6	18/09383/7	18/09383/8	Units	Method ref
Client Sample No										
Client Sample ID	WS106	WS101	WS105	WS103	WS104	WS201	WS202A	WS203		
Depth to Top	0.30	0.20	0.20	0.30	0.20	1.00	1.40	1.20		
Depth To Bottom										
Date Sampled	06-Nov-18	06-Nov-18	06-Nov-18	06-Nov-18	07-Nov-18	07-Nov-18	07-Nov-18	07-Nov-18		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	4A	4A	4AE	6AE	6AE	6E	6AE	6		
% Stones >10mm _A	33.3	<0.1	6.2	2.8	<0.1	<0.1	11.8	<0.1	% w/w	A-T-044
pH _D ^{M#}	8.34	7.59	7.88	7.83	8.11	7.86	8.07	8.15	pH	A-T-031s
Sulphate BRE (water sol 2:1) _D ^{M#}	<20	30	<10	<10	19	411	<10	18	mg/l	A-T-026s
Cyanide (total) _A ^{M#}	<1	<1	<1	4	<1	<1	1	13	mg/kg	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	A-T-050s
Fraction of organic carbon _D [#]	0.0030	0.0223	0.0461	0.0394	0.0402	0.0171	0.0430	0.0139	N/A	A-T-032 FOC
Antimony _D	<5	<5	<5	<5	<5	<5	<5	<5	mg/kg	A-T-024s
Arsenic _D ^{M#}	<1	<1	<1	7	6	<1	4	<1	mg/kg	A-T-024s
Barium _D	47	154	83	318	282	157	230	144	mg/kg	A-T-024s
Beryllium _D [#]	<0.5	0.8	0.7	1.1	0.9	0.5	0.8	0.9	mg/kg	A-T-024s
Boron (water soluble) _D ^{M#}	<1.0	<1.0	1.3	<1.0	1.3	1.2	<1.0	<1.0	mg/kg	A-T-027s
Cadmium _D ^{M#}	1.1	1.5	1.5	2.2	2.6	1.4	2.3	1.8	mg/kg	A-T-024s
Copper _D ^{M#}	5	18	22	70	66	22	77	27	mg/kg	A-T-024s
Chromium _D ^{M#}	15	34	26	117	47	25	42	41	mg/kg	A-T-024s
Chromium (hexavalent) _D	<2	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-040s
Chromium (trivalent)	15	34	26	117	47	25	42	41	mg/kg	Calc
Lead _D ^{M#}	5	30	22	371	177	52	215	66	mg/kg	A-T-024s
Mercury _D	<0.17	<0.17	<0.17	1.54	0.45	<0.17	0.49	0.34	mg/kg	A-T-024s
Molybdenum _D ^{M#}	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024s
Nickel _D ^{M#}	19	23	24	24	28	20	26	30	mg/kg	A-T-024s
Selenium _D [#]	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024s
Vanadium _D ^{M#}	13	38	28	38	43	26	28	37	mg/kg	A-T-024s
Zinc _D ^{M#}	31	75	379	202	269	97	180	93	mg/kg	A-T-024s

Envirolab Job Number: 18/09383

Client Project Name: THG

Client Project Ref: 3647

Lab Sample ID	18/09383/1	18/09383/2	18/09383/3	18/09383/4	18/09383/5	18/09383/6	18/09383/7	18/09383/8	Units	Method ref
Client Sample No										
Client Sample ID	WS106	WS101	WS105	WS103	WS104	WS201	WS202A	WS203		
Depth to Top	0.30	0.20	0.20	0.30	0.20	1.00	1.40	1.20		
Depth To Bottom										
Date Sampled	06-Nov-18	06-Nov-18	06-Nov-18	06-Nov-18	07-Nov-18	07-Nov-18	07-Nov-18	07-Nov-18		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	4A	4A	4AE	6AE	6AE	6E	6AE	6		
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	NAD	NAD	NAD	NAD	Chrysotile	NAD	NAD		A-T-045
Asbestos Matrix (microscope) _A	-	-	-	-	-	Loose fibres	-	-		A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

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Lab Sample ID	18/09383/1	18/09383/2	18/09383/3	18/09383/4	18/09383/5	18/09383/6	18/09383/7	18/09383/8	Units	Method ref
Client Sample No										
Client Sample ID	WS106	WS101	WS105	WS103	WS104	WS201	WS202A	WS203		
Depth to Top	0.30	0.20	0.20	0.30	0.20	1.00	1.40	1.20		
Depth To Bottom										
Date Sampled	06-Nov-18	06-Nov-18	06-Nov-18	06-Nov-18	07-Nov-18	07-Nov-18	07-Nov-18	07-Nov-18		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	4A	4A	4AE	6AE	6AE	6E	6AE	6		
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01	0.01	mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Anthracene _A ^{M#}	<0.02	<0.02	<0.02	0.09	0.09	<0.02	<0.02	0.05	mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	<0.04	<0.04	<0.04	0.44	0.24	<0.04	0.09	0.25	mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	<0.04	<0.04	<0.04	0.50	0.29	<0.04	0.11	0.36	mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	<0.05	<0.05	0.07	0.69	0.43	<0.05	0.18	0.54	mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	<0.05	<0.05	0.36	0.30	<0.05	0.11	0.42	mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	<0.07	<0.07	0.26	0.11	<0.07	<0.07	0.19	mg/kg	A-T-019s
Chrysene _A ^{M#}	<0.06	<0.06	<0.06	0.54	0.30	<0.06	0.13	0.36	mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04	<0.04	0.06	<0.04	<0.04	<0.04	0.07	mg/kg	A-T-019s
Fluoranthene _A ^{M#}	<0.08	<0.08	<0.08	0.81	0.50	<0.08	0.13	0.43	mg/kg	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	<0.01	0.01	0.03	<0.01	<0.01	0.01	mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	<0.03	<0.03	<0.03	0.39	0.34	<0.03	0.11	0.42	mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	mg/kg	A-T-019s
Phenanthrene _A ^{M#}	<0.03	<0.03	0.03	0.27	0.26	<0.03	0.04	0.18	mg/kg	A-T-019s
Pyrene _A ^{M#}	<0.07	<0.07	<0.07	0.75	0.44	<0.07	0.13	0.43	mg/kg	A-T-019s
Total PAH-16MS _A ^{M#}	<0.08	<0.08	0.10	5.20	3.34	<0.08	1.03	3.77	mg/kg	A-T-019s

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Client Sample No										
Client Sample ID	WS106	WS101	WS105	WS103	WS104	WS201	WS202A	WS203		
Depth to Top	0.30	0.20	0.20	0.30	0.20	1.00	1.40	1.20		
Depth To Bottom										
Date Sampled	06-Nov-18	06-Nov-18	06-Nov-18	06-Nov-18	07-Nov-18	07-Nov-18	07-Nov-18	07-Nov-18		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	4A	4A	4AE	6AE	6AE	6E	6AE	6		
TPH UKCWG										
Ali >C5-C6 _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Ali >C6-C8 _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Ali >C8-C10 _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Ali >C10-C12 _A [#]	<0.1	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Ali >C12-C16 _A [#]	<0.1	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Ali >C16-C21 _A [#]	<0.1	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Ali >C21-C35 _A [#]	<0.1	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Ali >C35-C44 _A	<0.1	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Total Aliphatics _A	<0.1	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C5-C7 _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C7-C8 _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C8-C9 _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C9-C10 _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C10-C12 _A [#]	<0.1	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C12-C16 _A [#]	<0.1	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C16-C21 _A [#]	<0.1	-	-	-	-	<0.1	<0.1	0.1	mg/kg	A-T-023s
Aro >C21-C35 _A [#]	<0.1	-	-	-	-	<0.1	<0.1	0.1	mg/kg	A-T-023s
Aro >C35-C44 _A	<0.1	-	-	-	-	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Total Aromatics _A	<0.1	-	-	-	-	<0.1	<0.1	0.2	mg/kg	A-T-023s
TPH (Ali & Aro) _A	<0.1	-	-	-	-	<0.1	<0.1	0.2	mg/kg	A-T-023s
BTEX - Benzene _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - Toluene _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - Ethyl Benzene _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - m & p Xylene _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - o Xylene _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s
MTBE _A [#]	<0.01	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	A-T-022s

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Client Project Name: THG

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Lab Sample ID	18/09383/9	18/09383/10	18/09383/11						Units	Method ref
Client Sample No										
Client Sample ID	WS204	WS204A	WS103							
Depth to Top	0.80	1.30	0.60							
Depth To Bottom										
Date Sampled	07-Nov-18	07-Nov-18	07-Nov-18							
Sample Type	Solid - Fragment / Tile	Soil - ES	Soil - ES							
Sample Matrix Code	8	6E	6EA							
% Stones >10mm _A	-	<0.1	4.4						% w/w	A-T-044
pH _D ^{M#}	-	7.93	8.10						pH	A-T-031s
Sulphate BRE (water sol 2:1) _D ^{M#}	-	46	62						mg/l	A-T-026s
Cyanide (total) _A ^{M#}	-	5	<1						mg/kg	A-T-042sTCN
Phenols - Total by HPLC _A	-	<0.2	<0.2						mg/kg	A-T-050s
Fraction of organic carbon _D [#]	-	0.0523	0.0197						N/A	A-T-032 FOC
Antimony _D	-	<5	<5						mg/kg	A-T-024s
Arsenic _D ^{M#}	-	15	2						mg/kg	A-T-024s
Barium _D	-	237	136						mg/kg	A-T-024s
Beryllium _D [#]	-	1.5	0.9						mg/kg	A-T-024s
Boron (water soluble) _D ^{M#}	-	1.2	<1.0						mg/kg	A-T-027s
Cadmium _D ^{M#}	-	2.6	1.7						mg/kg	A-T-024s
Copper _D ^{M#}	-	92	27						mg/kg	A-T-024s
Chromium _D ^{M#}	-	40	42						mg/kg	A-T-024s
Chromium (hexavalent) _D	-	<1	<1						mg/kg	A-T-040s
Chromium (trivalent)	-	40	42						mg/kg	Calc
Lead _D ^{M#}	-	254	88						mg/kg	A-T-024s
Mercury _D	-	<0.17	0.43						mg/kg	A-T-024s
Molybdenum _D ^{M#}	-	2	<1						mg/kg	A-T-024s
Nickel _D ^{M#}	-	35	24						mg/kg	A-T-024s
Selenium _D [#]	-	<1	<1						mg/kg	A-T-024s
Vanadium _D ^{M#}	-	43	33						mg/kg	A-T-024s
Zinc _D ^{M#}	-	233	87						mg/kg	A-T-024s

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Lab Sample ID	18/09383/9	18/09383/10	18/09383/11						Units	Method ref
Client Sample No										
Client Sample ID	WS204	WS204A	WS103							
Depth to Top	0.80	1.30	0.60							
Depth To Bottom										
Date Sampled	07-Nov-18	07-Nov-18	07-Nov-18							
Sample Type	Solid - Fragment / Tile	Soil - ES	Soil - ES							
Sample Matrix Code	8	6E	6EA							
Asbestos in Soil (inc. matrix)										
Asbestos in soil _A [#]	-	NAD	NAD							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	-	N/A	N/A							
Bulk Fibre ID (inc. matrix)										
Bulk Fibre Identification _A [#]	Crocidolite & chrysotile	-	-							A-T-045
Bulk Fibre Identification Matrix (visual) _A	Cement	-	-							A-T-045
Bulk Fibre Identification - Suitable for Water Absorption Test? _D	Yes	-	-							Gravimetry

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Client Sample No										
Client Sample ID	WS204	WS204A	WS103							
Depth to Top	0.80	1.30	0.60							
Depth To Bottom										
Date Sampled	07-Nov-18	07-Nov-18	07-Nov-18							
Sample Type	Solid - Fragment / Tile	Soil - ES	Soil - ES							
Sample Matrix Code	8	6E	6EA							
PAH-16MS										
Acenaphthene _A ^{M#}	-	0.05	0.02						mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	-	0.01	<0.01						mg/kg	A-T-019s
Anthracene _A ^{M#}	-	0.14	0.05						mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	-	0.63	0.13						mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	-	0.66	0.15						mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	-	0.96	0.22						mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	-	0.57	0.10						mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	-	0.30	<0.07						mg/kg	A-T-019s
Chrysene _A ^{M#}	-	0.75	0.17						mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	-	0.11	<0.04						mg/kg	A-T-019s
Fluoranthene _A ^{M#}	-	1.21	0.31						mg/kg	A-T-019s
Fluorene _A ^{M#}	-	0.04	0.01						mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	-	0.61	0.10						mg/kg	A-T-019s
Naphthalene _A ^{M#}	-	<0.03	<0.03						mg/kg	A-T-019s
Phenanthrene _A ^{M#}	-	0.51	0.18						mg/kg	A-T-019s
Pyrene _A ^{M#}	-	1.10	0.27						mg/kg	A-T-019s
Total PAH-16MS _A ^{M#}	-	7.65	1.71						mg/kg	A-T-019s

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Lab Sample ID	18/09383/9	18/09383/10	18/09383/11						Units	Method ref
Client Sample No										
Client Sample ID	WS204	WS204A	WS103							
Depth to Top	0.80	1.30	0.60							
Depth To Bottom										
Date Sampled	07-Nov-18	07-Nov-18	07-Nov-18							
Sample Type	Solid - Fragment / Tile	Soil - ES	Soil - ES							
Sample Matrix Code	8	6E	6EA							
TPH UKCWG										
Ali >C5-C6 _A [#]	-	<0.01	-						mg/kg	A-T-022s
Ali >C6-C8 _A [#]	-	<0.01	-						mg/kg	A-T-022s
Ali >C8-C10 _A [#]	-	<0.01	-						mg/kg	A-T-022s
Ali >C10-C12 _A [#]	-	<0.1	-						mg/kg	A-T-023s
Ali >C12-C16 _A [#]	-	<0.1	-						mg/kg	A-T-023s
Ali >C16-C21 _A [#]	-	<0.1	-						mg/kg	A-T-023s
Ali >C21-C35 _A [#]	-	<0.1	-						mg/kg	A-T-023s
Ali >C35-C44 _A	-	<0.1	-						mg/kg	A-T-023s
Total Aliphatics _A	-	<0.1	-						mg/kg	A-T-023s
Aro >C5-C7 _A [#]	-	<0.01	-						mg/kg	A-T-022s
Aro >C7-C8 _A [#]	-	<0.01	-						mg/kg	A-T-022s
Aro >C8-C9 _A [#]	-	<0.01	-						mg/kg	A-T-022s
Aro >C9-C10 _A [#]	-	<0.01	-						mg/kg	A-T-022s
Aro >C10-C12 _A [#]	-	<0.1	-						mg/kg	A-T-023s
Aro >C12-C16 _A [#]	-	<0.1	-						mg/kg	A-T-023s
Aro >C16-C21 _A [#]	-	0.3	-						mg/kg	A-T-023s
Aro >C21-C35 _A [#]	-	2.0	-						mg/kg	A-T-023s
Aro >C35-C44 _A	-	<0.1	-						mg/kg	A-T-023s
Total Aromatics _A	-	2.2	-						mg/kg	A-T-023s
TPH (Ali & Aro) _A	-	2.2	-						mg/kg	A-T-023s
BTEX - Benzene _A [#]	-	<0.01	-						mg/kg	A-T-022s
BTEX - Toluene _A [#]	-	<0.01	-						mg/kg	A-T-022s
BTEX - Ethyl Benzene _A [#]	-	<0.01	-						mg/kg	A-T-022s
BTEX - m & p Xylene _A [#]	-	<0.01	-						mg/kg	A-T-022s
BTEX - o Xylene _A [#]	-	<0.01	-						mg/kg	A-T-022s
MTBE _A [#]	-	<0.01	-						mg/kg	A-T-022s

REPORT NOTES

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Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

FINAL ANALYTICAL TEST REPORT

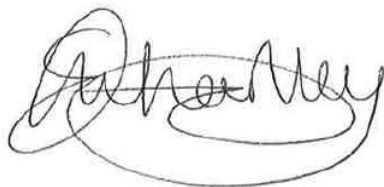
Envirolab Job Number: 18/09148
Issue Number: 1

Date: 15 November, 2018

Client: ROCP LIMITED
Commercial Wharf 6 Commercial Street
Castlefield
Manchester
M15 4PZ

Project Manager: Elizabeth Stewart
Project Name: THG
Project Ref: 3647
Order No: 1367
Date Samples Received: 01/11/18
Date Instructions Received: 02/11/18
Date Analysis Completed: 15/11/18

Prepared by:



Elisha Hartley
Admin Assistant

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 18/09148

Client Project Name: THG

Client Project Ref: 3647

Lab Sample ID	18/09148/1	18/09148/2	18/09148/3	18/09148/4	18/09148/5				Units	Method ref
Client Sample No										
Client Sample ID	BH103	BH105	BH106	BH104	BH104					
Depth to Top	0.30	0.20	0.50	0.30	2.50					
Depth To Bottom										
Date Sampled	29-Oct-18	30-Oct-18	31-Oct-18	31-Oct-18	31-Oct-18					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6E	6E	6A	5					
% Stones >10mm _A	23.1	<0.1	<0.1	6.3	<0.1				% w/w	A-T-044
pH _D ^{M#}	8.54	5.84	7.46	7.97	7.32				pH	A-T-031s
Sulphate BRE (water sol 2:1) _D ^{M#}	417	73	26	73	17				mg/l	A-T-026s
Cyanide (total) _A ^{M#}	<1	3	5	<1	2				mg/kg	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2	<0.2	<0.2	<0.2				mg/kg	A-T-050s
Fraction of organic carbon _D [#]	0.0182	0.0423	0.0319	0.0106	0.0172				N/A	A-T-032 FOC
Antimony _D	<5	7	<5	<5	<5				mg/kg	A-T-024s
Arsenic _D ^{M#}	3	22	21	5	2				mg/kg	A-T-024s
Barium _D	155	336	485	141	62				mg/kg	A-T-024s
Beryllium _D [#]	0.7	1.2	1.1	0.9	0.6				mg/kg	A-T-024s
Boron (water soluble) _D ^{M#}	1.8	<1.0	<1.0	<1.0	<1.0				mg/kg	A-T-027s
Cadmium _D ^{M#}	0.9	2.7	2.4	1.4	1.1				mg/kg	A-T-024s
Copper _D ^{M#}	22	89	86	27	16				mg/kg	A-T-024s
Chromium _D ^{M#}	24	112	143	46	21				mg/kg	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	<1				mg/kg	A-T-040s
Chromium (trivalent)	24	112	143	46	21				mg/kg	Calc
Lead _D ^{M#}	80	342	574	109	19				mg/kg	A-T-024s
Mercury _D	0.19	2.10	3.58	0.26	<0.17				mg/kg	A-T-024s
Molybdenum _D ^{M#}	<1	<1	<1	<1	<1				mg/kg	A-T-024s
Nickel _D ^{M#}	18	27	27	22	16				mg/kg	A-T-024s
Selenium _D [#]	<1	<1	<1	<1	<1				mg/kg	A-T-024s
Vanadium _D ^{M#}	25	35	34	32	21				mg/kg	A-T-024s
Zinc _D ^{M#}	70	265	280	86	56				mg/kg	A-T-024s

Envirolab Job Number: 18/09148

Client Project Name: THG

Client Project Ref: 3647

Lab Sample ID	18/09148/1	18/09148/2	18/09148/3	18/09148/4	18/09148/5				Units	Method ref
Client Sample No										
Client Sample ID	BH103	BH105	BH106	BH104	BH104					
Depth to Top	0.30	0.20	0.50	0.30	2.50					
Depth To Bottom										
Date Sampled	29-Oct-18	30-Oct-18	31-Oct-18	31-Oct-18	31-Oct-18					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6E	6E	6A	5					
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	NAD	NAD	NAD	-					A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A	N/A	-					

Envirolab Job Number: 18/09148

Client Project Name: THG

Client Project Ref: 3647

Lab Sample ID	18/09148/1	18/09148/2	18/09148/3	18/09148/4	18/09148/5				Units	Method ref
Client Sample No										
Client Sample ID	BH103	BH105	BH106	BH104	BH104					
Depth to Top	0.30	0.20	0.50	0.30	2.50					
Depth To Bottom										
Date Sampled	29-Oct-18	30-Oct-18	31-Oct-18	31-Oct-18	31-Oct-18					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6E	6E	6A	5					
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	<0.01	0.08	0.02	0.42				mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	0.03	<0.01	<0.01				mg/kg	A-T-019s
Anthracene _A ^{M#}	0.04	0.04	0.21	0.04	0.21				mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.10	0.27	0.94	0.19	0.18				mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.08	0.29	0.96	0.17	0.14				mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.08	0.38	1.08	0.20	0.15				mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	0.18	0.68	0.10	<0.05				mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	0.13	0.36	<0.07	<0.07				mg/kg	A-T-019s
Chrysene _A ^{M#}	0.12	0.37	1.09	0.23	0.20				mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04	0.13	<0.04	<0.04				mg/kg	A-T-019s
Fluoranthene _A ^{M#}	0.19	0.41	1.67	0.33	0.38				mg/kg	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	0.05	0.01	1.07				mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.05	0.23	0.76	0.11	0.06				mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.06				mg/kg	A-T-019s
Phenanthrene _A ^{M#}	0.09	0.14	0.15	0.15	1.97				mg/kg	A-T-019s
Pyrene _A ^{M#}	0.19	0.38	1.54	0.32	0.42				mg/kg	A-T-019s
Total PAH-16MS _A ^{M#}	0.94	2.82	9.73	1.87	5.20				mg/kg	A-T-019s

Envirolab Job Number: 18/09148

Client Project Name: THG

Client Project Ref: 3647

Lab Sample ID	18/09148/1	18/09148/2	18/09148/3	18/09148/4	18/09148/5				Units	Method ref
Client Sample No										
Client Sample ID	BH103	BH105	BH106	BH104	BH104					
Depth to Top	0.30	0.20	0.50	0.30	2.50					
Depth To Bottom										
Date Sampled	29-Oct-18	30-Oct-18	31-Oct-18	31-Oct-18	31-Oct-18					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6E	6E	6A	5					
TPH UKCWG										
Ali >C5-C6 _A [#]	-	-	-	-	<0.01				mg/kg	A-T-022s
Ali >C6-C8 _A [#]	-	-	-	-	0.18				mg/kg	A-T-022s
Ali >C8-C10 _A [#]	-	-	-	-	0.93				mg/kg	A-T-022s
Ali >C10-C12 _A [#]	-	-	-	-	15.3				mg/kg	A-T-023s
Ali >C12-C16 _A [#]	-	-	-	-	125				mg/kg	A-T-023s
Ali >C16-C21 _A [#]	-	-	-	-	168				mg/kg	A-T-023s
Ali >C21-C35 _A [#]	-	-	-	-	21.4				mg/kg	A-T-023s
Ali >C35-C44 _A	-	-	-	-	<0.1				mg/kg	A-T-023s
Total Aliphatics _A	-	-	-	-	331				mg/kg	A-T-023s
Aro >C5-C7 _A [#]	-	-	-	-	<0.01				mg/kg	A-T-022s
Aro >C7-C8 _A [#]	-	-	-	-	<0.01				mg/kg	A-T-022s
Aro >C8-C9 _A [#]	-	-	-	-	<0.01				mg/kg	A-T-022s
Aro >C9-C10 _A [#]	-	-	-	-	0.31				mg/kg	A-T-022s
Aro >C10-C12 _A [#]	-	-	-	-	6.9				mg/kg	A-T-023s
Aro >C12-C16 _A [#]	-	-	-	-	72.9				mg/kg	A-T-023s
Aro >C16-C21 _A [#]	-	-	-	-	116				mg/kg	A-T-023s
Aro >C21-C35 _A [#]	-	-	-	-	14.0				mg/kg	A-T-023s
Aro >C35-C44 _A	-	-	-	-	<0.1				mg/kg	A-T-023s
Total Aromatics _A	-	-	-	-	210				mg/kg	A-T-023s
TPH (Ali & Aro) _A	-	-	-	-	540				mg/kg	A-T-023s
BTEX - Benzene _A [#]	-	-	-	-	<0.01				mg/kg	A-T-022s
BTEX - Toluene _A [#]	-	-	-	-	<0.01				mg/kg	A-T-022s
BTEX - Ethyl Benzene _A [#]	-	-	-	-	<0.01				mg/kg	A-T-022s
BTEX - m & p Xylene _A [#]	-	-	-	-	<0.01				mg/kg	A-T-022s
BTEX - o Xylene _A [#]	-	-	-	-	<0.01				mg/kg	A-T-022s
MTBE _A [#]	-	-	-	-	<0.01				mg/kg	A-T-022s

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Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed.

Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

FINAL ANALYTICAL TEST REPORT

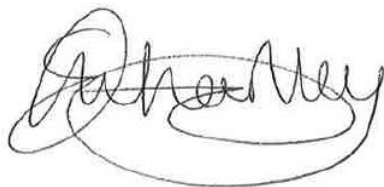
Envirolab Job Number: 18/09271
Issue Number: 1

Date: 19 November, 2018

Client: ROCP LIMITED
Commercial Wharf 6 Commercial Street
Castlefield
Manchester
M15 4PZ

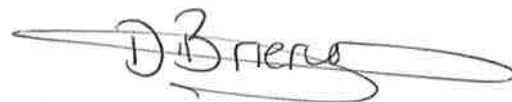
Project Manager: Elizabeth Stewart
Project Name: THG
Project Ref: 3647
Order No: 1367
Date Samples Received: 06/11/18
Date Instructions Received: 07/11/18
Date Analysis Completed: 19/11/18

Prepared by:



Elisha Hartley
Admin Assistant

Approved by:



Danielle Brierley
Client Manager

Envirolab Job Number: 18/09271

Client Project Name: THG

Client Project Ref: 3647

Lab Sample ID	18/09271/1	18/09271/2							Units	Method ref
Client Sample No										
Client Sample ID	BH101	BH102								
Depth to Top	1.20	0.30								
Depth To Bottom										
Date Sampled	01-Nov-18	02-Nov-18								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	4A								
% Stones >10mm _A	8.0	19.3							% w/w	A-T-044
pH _D ^{M#}	8.10	8.36							pH	A-T-031s
Sulphate BRE (water sol 2:1) _D ^{M#}	29	<10							mg/l	A-T-026s
Cyanide (total) _A ^{M#}	1	<1							mg/kg	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2							mg/kg	A-T-050s
Fraction of organic carbon _D [#]	0.0120	0.0100							N/A	A-T-032 FOC
Antimony _D	<5	<5							mg/kg	A-T-024s
Arsenic _D ^{M#}	<1	<1							mg/kg	A-T-024s
Barium _D	77	60							mg/kg	A-T-024s
Beryllium _D [#]	0.6	<0.5							mg/kg	A-T-024s
Boron (water soluble) _D ^{M#}	<1.0	<1.0							mg/kg	A-T-027s
Cadmium _D ^{M#}	1.2	0.7							mg/kg	A-T-024s
Copper _D ^{M#}	19	9							mg/kg	A-T-024s
Chromium _D ^{M#}	18	13							mg/kg	A-T-024s
Chromium (hexavalent) _D	<1	<1							mg/kg	A-T-040s
Chromium (trivalent)	18	13							mg/kg	Calc
Lead _D ^{M#}	28	8							mg/kg	A-T-024s
Mercury _D	<0.17	0.19							mg/kg	A-T-024s
Molybdenum _D ^{M#}	<1	<1							mg/kg	A-T-024s
Nickel _D ^{M#}	17	11							mg/kg	A-T-024s
Selenium _D [#]	<1	<1							mg/kg	A-T-024s
Vanadium _D ^{M#}	20	17							mg/kg	A-T-024s
Zinc _D ^{M#}	46	28							mg/kg	A-T-024s

Envirolab Job Number: 18/09271

Client Project Name: THG

Client Project Ref: 3647

Lab Sample ID	18/09271/1	18/09271/2							Units	Method ref
Client Sample No										
Client Sample ID	BH101	BH102								
Depth to Top	1.20	0.30								
Depth To Bottom										
Date Sampled	01-Nov-18	02-Nov-18								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	4A								
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	NAD								A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A								

Envirolab Job Number: 18/09271

Client Project Name: THG

Client Project Ref: 3647

Lab Sample ID	18/09271/1	18/09271/2							Units	Method ref
Client Sample No										
Client Sample ID	BH101	BH102								
Depth to Top	1.20	0.30								
Depth To Bottom										
Date Sampled	01-Nov-18	02-Nov-18								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	4A								
PAH-16MS										
Acenaphthene _A ^{M#}	0.06	<0.01							mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01							mg/kg	A-T-019s
Anthracene _A ^{M#}	0.20	<0.02							mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.33	<0.04							mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.21	<0.04							mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.28	<0.05							mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.09	<0.05							mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	0.10	<0.07							mg/kg	A-T-019s
Chrysene _A ^{M#}	0.33	<0.06							mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04							mg/kg	A-T-019s
Fluoranthene _A ^{M#}	0.96	<0.08							mg/kg	A-T-019s
Fluorene _A ^{M#}	0.06	<0.01							mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.13	<0.03							mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03							mg/kg	A-T-019s
Phenanthrene _A ^{M#}	0.67	<0.03							mg/kg	A-T-019s
Pyrene _A ^{M#}	0.74	<0.07							mg/kg	A-T-019s
Total PAH-16MS _A ^{M#}	4.16	<0.08							mg/kg	A-T-019s

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For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed.

Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 789204-2

Date of Report: 31-Dec-2018

Customer: RoC Consulting
Commercial Wharf
6 Commercial Street
Manchester
M15 4PZ

Customer Contact: Mr Jason Bradley

Customer Job Reference: 3647

Customer Purchase Order: 1380

Customer Site Reference: The Hut Group

Date Job Received at Concept: 11-Dec-2018

Date Analysis Started: 12-Dec-2018

Date Analysis Completed: 31-Dec-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



Report checked
and authorised by :
Jack Nagy
Customer Service Advisor

Issued by :
Jack Nagy
Customer Service Advisor



Concept Reference: 789204							
Project Site: The Hut Group							
Customer Reference: 3647							
Water				Analysed as Water			
Misc Inorganic							
Concept Reference					789204 001	789204 002	789204 003
Customer Sample Reference					BH103	BH106	BH102
Date Sampled					11-DEC-2018	11-DEC-2018	11-DEC-2018
Sample Received (ml)					2100	2100	2100
Determinand	Method	Test Sample	LOD	Units			
pH	T7	AR			7.24	7.01	7.05
Hardness expressed as CaCO3	T6	AR	10	mg/l	1200	990	1600
Sulphate	T686	F	0.5	mg/l	1000	610	1400

Concept Reference: 789204							
Project Site: The Hut Group							
Customer Reference: 3647							
Water				Analysed as Water			
Heavy Metals(9)							
Concept Reference				789204 001	789204 002	789204 003	
Customer Sample Reference				BH103	BH106	BH102	
Date Sampled				11-DEC-2018	11-DEC-2018	11-DEC-2018	
Sample Received (ml)				2100	2100	2100	
Determinand	Method	Test Sample	LOD	Units			
As (Dissolved)	T281	F	0.2	µg/l	3.2	1.4	1.5
Cd (Dissolved)	T281	F	0.02	µg/l	0.06	0.13	0.53
Cr (Dissolved)	T281	F	1	µg/l	<1	1	1
Cu (Dissolved)	T281	F	0.5	µg/l	1.1	3.5	8.4
Pb (Dissolved)	T281	F	0.3	µg/l	<0.3	<0.3	<1.5 ⁽⁹⁾
Hg (Dissolved)	T281	F	0.05	µg/l	<0.05	<0.05	<0.25 ⁽⁹⁾
Ni (Dissolved)	T281	F	1	µg/l	4	3	9
Se (Dissolved)	T281	F	0.5	µg/l	3.8	22	0.9
Zn (Dissolved)	T281	F	2	µg/l	4	3	3

Concept Reference: 789204							
Project Site: The Hut Group							
Customer Reference: 3647							
Water				Analysed as Water			
PAH US EPA 16 (B and K split)							
Concept Reference					789204 001	789204 002	789204 003
Customer Sample Reference					BH103	BH106	BH102
Date Sampled					11-DEC-2018	11-DEC-2018	11-DEC-2018
Sample Received (ml)					2100	2100	2100
Determinand	Method	Test Sample	LOD	Units			
Naphthalene	T149	AR	0.01	µg/l	<0.01 ^(131,13)	<0.01 ^(13,131)	<0.01 ^(13,131)
Acenaphthylene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
Acenaphthene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
Fluorene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	0.01 ⁽¹³⁾
Phenanthrene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	0.01 ⁽¹³⁾
Anthracene	T149	AR	0.01	µg/l	0.01 ⁽¹³⁾	0.01 ⁽¹³⁾	0.01 ⁽¹³⁾
Fluoranthene	T149	AR	0.01	µg/l	0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
Pyrene	T149	AR	0.01	µg/l	0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
Benzo(a)Anthracene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
Chrysene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
Benzo(b)fluoranthene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
Benzo(k)fluoranthene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
Benzo(a)Pyrene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	0.01 ⁽¹³⁾
Indeno(123-cd)Pyrene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
Dibenzo(ah)Anthracene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
Benzo(ghi)Perylene	T149	AR	0.01	µg/l	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾	<0.01 ⁽¹³⁾
PAH(total)	T149	AR	0.01	ug/l	0.03	0.01	0.04

Water	Analysed as Water
TPH (CWG) with BTEX	

Index to symbols used in 789204-2

Notes

We did not receive any vials for Volatile analysis by GC/MS (Headspace). We have taken them here and can continue the analysis, but the volatile results may be compromised and this will need to be taken into account when reviewing the results. Let me know if you require any further information.

Method Index

Produced by Concept Life Sciences, Hadfield House, Hadfield Street, Cornbrook, Manchester, M16 9FE

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Hardness expressed as CaCO ₃	T6	AR	10	mg/l	N	001-003
pH	T7	AR			U	001-003
Sulphate	T686	F	0.5	mg/l	U	001-003
Benzene	T54	AR	1	µg/l	U	001-003
Toluene	T54	AR	1	µg/l	U	001-003
EthylBenzene	T54	AR	1	µg/l	U	001-003
M/P Xylene	T54	AR	1	µg/l	U	001-003
O Xylene	T54	AR	1	µg/l	U	001-003
Methyl tert-Butyl Ether	T54	AR	1	µg/l	U	001-003
TPH (C5-C6 aliphatic)	T215	AR	0.010	mg/l	N	001-003
TPH (C6-C8 aliphatic)	T215	AR	0.010	mg/l	N	001-003
TPH (C8-C10 aliphatic)	T215	AR	0.010	mg/l	N	001-003
TPH (C10-C12 aliphatic)	T910	AR	0.01	mg/l	N	001-003
TPH (C12-C16 aliphatic)	T910	AR	0.01	mg/l	N	001-003
TPH (C16-C21 aliphatic)	T910	AR	0.01	mg/l	N	001-003
TPH (C21-C35 aliphatic)	T910	AR	0.01	mg/l	N	001-003
TPH (Aliphatic) total	T85	AR		mg/l	N	001-003
TPH (C6-C7 aromatic)	T215	AR	0.010	mg/l	N	001-003
TPH (C7-C8 aromatic)	T215	AR	0.010	mg/l	N	001-003
TPH (C8-C10 aromatic)	T215	AR	0.010	mg/l	N	001-003
TPH (C10-C12 aromatic)	T910	AR	0.01	mg/l	N	001-003
TPH (C12-C16 aromatic)	T910	AR	0.01	mg/l	N	001-003
TPH (C16-C21 aromatic)	T910	AR	0.01	mg/l	N	001-003
TPH (C21-C35 aromatic)	T910	AR	0.01	mg/l	N	001-003
TPH (Aromatic) total	T85	AR		mg/l	N	001-003
TPH (Aliphatic+Aromatic) (sum)	T85	AR		mg/l	N	001-003
As (Dissolved)	T281	F	0.2	µg/l	U	001-003
Cd (Dissolved)	T281	F	0.02	µg/l	U	001-003
Cr (Dissolved)	T281	F	1	µg/l	U	001-003
Cu (Dissolved)	T281	F	0.5	µg/l	U	001-003
Pb (Dissolved)	T281	F	0.3	µg/l	U	001-003
Hg (Dissolved)	T281	F	0.05	µg/l	U	001-003
Ni (Dissolved)	T281	F	1	µg/l	U	001-003
Se (Dissolved)	T281	F	0.5	µg/l	U	001-003
Zn (Dissolved)	T281	F	2	µg/l	U	001-003
Naphthalene	T149	AR	0.01	µg/l	U	001-003
Acenaphthylene	T149	AR	0.01	µg/l	U	001-003
Acenaphthene	T149	AR	0.01	µg/l	U	001-003
Fluorene	T149	AR	0.01	µg/l	U	001-003
Phenanthrene	T149	AR	0.01	µg/l	U	001-003
Anthracene	T149	AR	0.01	µg/l	U	001-003
Fluoranthene	T149	AR	0.01	µg/l	U	001-003
Pyrene	T149	AR	0.01	µg/l	U	001-003
Benzo(a)Anthracene	T149	AR	0.01	µg/l	U	001-003
Chrysene	T149	AR	0.01	µg/l	U	001-003
Benzo(b)fluoranthene	T149	AR	0.01	µg/l	U	001-003
Benzo(k)fluoranthene	T149	AR	0.01	µg/l	U	001-003
Benzo(a)Pyrene	T149	AR	0.01	µg/l	U	001-003
Indeno(123-cd)Pyrene	T149	AR	0.01	µg/l	U	001-003
Dibenzo(ah)Anthracene	T149	AR	0.01	µg/l	U	001-003
Benzo(ghi)Perylene	T149	AR	0.01	µg/l	U	001-003
PAH(total)	T149	AR	0.01	µg/l	U	001-003



APPENDIX D - GEOTECHNICAL TESTING RESULTS



SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Borehole / Trial Pit	Depth (m)	Sample Ref	Type	Description	WC (%)	LL (%)	PL (%)	PI (%)	<425 µm (%)	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 (g/L)	W/S Mg (mg/L)	
BH102	1.20-1.65		U	Firm multicoloured CLAY with some grey silt and fine sand pockets.	26.6					2.01	1.59	Undisturbed	24	160	80				One Dimensional Consolidation
BH102	3.00-3.45		D	Grey and reddish brown silty CLAY with rare fine to medium siltstone gravel.		36	21	15	98										
BH103	1.50-1.95		D	Reddish brown mottled grey silty CLAY.		40	23	17	100										
BH103	2.00-2.45		U	Firm friable reddish brown mottled grey silty CLAY.	23.3					2.11	1.71	Undisturbed	40	200	100				One Dimensional Consolidation
BH103	4.00		U	Firm reddish brown silty CLAY															One Dimensional Consolidation
BH104	6.00-6.45		D	Reddish brown silty CLAY.		32	21	11	100										
BH104	7.50-7.95		D	Reddish brown silty CLAY.		29	22	7.0	100										
BH105	1.20-1.65		D	Reddish brown mottled grey silty CLAY.		32	21	11	100										
BH105	4.00-4.45		D	Reddish brown clayey SILT.		28	23	5.0	100										
BH106	1.20		U	Firm reddish brown silty CLAY															One Dimensional Consolidation

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by  J Sturges - Operations Manager 04/12/2018	Project Number:	GEO / 28352 THE HUT GROUP 3647	
	Project Name:		

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Borehole / Trial Pit	Depth (m)	Sample Ref	Type	Description	WC	LL	PL	PI	<425 µm	Bulk	Dry	Condition	Cell Pressure	Deviator Stress	Shear Stress	pH	2:1 W/S SO4	W/S Mg	
					(%)	(%)	(%)	(%)	(%)	Mg/m³	Mg/m³		kPa	kPa	kPa		(g/L)	(mg/L)	
BH106	2.00-2.45		D	Reddish brown mottled grey silty CLAY.		29	20	9.0	100										
BH106	3.00-3.45		U	Firm reddish brown mottled blue grey silty CLAY.	21.7					2.13	1.75	Undisturbed	60	128	64				One Dimensional Consolidation
BH106	5.00-5.45		D	Reddish brown silty CLAY.		28	20	8.0	100										

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by  J Sturges - Operations Manager 04/12/2018	Project Number:	GEO / 28352 THE HUT GROUP 3647	
	Project Name:		

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No BH102
 Depth (m) 1.20-1.65
 Sample Type U

Description:

Stiff mottled blue grey and red brown silty CLAY.

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	202.0
Diameter	(mm)	103.0
Moisture Content	(%)	26.6
Bulk Density	(Mg/m ³)	2.01
Dry Density	(Mg/m ³)	1.59
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	1.1
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	24
Strain at failure	(%)	19.8
Maximum Deviator Stress	(kPa)	160
Shear Stress Cu	(kPa)	80

Mode of failure

Orientation of the sample	Vertical
Distance from top of tube mm	120

Checked and Approved by:

J Sturges - Operations Manager
 04/12/2018

Project Number:

GEO / 28352

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GEOLABS

QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No BH103
 Depth (m) 2.00-2.45
 Sample Type U

Description:

Firm reddish brown silty CLAY.

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	202.0
Diameter	(mm)	101.7
Moisture Content	(%)	23.3
Bulk Density	(Mg/m ³)	2.11
Dry Density	(Mg/m ³)	1.71
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	1.1
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	40
Strain at failure	(%)	19.8
Maximum Deviator Stress	(kPa)	200
Shear Stress Cu	(kPa)	100

Mode of failure

Orientation of the sample	Vertical
Distance from top of tube mm	150

Checked and Approved by:

J Sturges - Operations Manager
04/12/2018

Project Number:

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QUICK UNDRAINED TRIAXIAL COMPRESSION TEST

BH/TP No BH106
 Depth (m) 3.00-3.45
 Sample Type U

Description:

Firm reddish brown mottled blue grey silty CLAY.

Specimen Details

Specimen conditions		Undisturbed
Length	(mm)	202.0
Diameter	(mm)	103.2
Moisture Content	(%)	21.7
Bulk Density	(Mg/m ³)	2.13
Dry Density	(Mg/m ³)	1.75
Test Details		
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	1.1
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	60
Strain at failure	(%)	19.8
Maximum Deviator Stress	(kPa)	128
Shear Stress Cu	(kPa)	64

Mode of failure

Orientation of the sample	Vertical
Distance from top of tube mm	250

Checked and Approved by:

J Sturges - Operations Manager
 04/12/2018

Project Number:

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Project Name:

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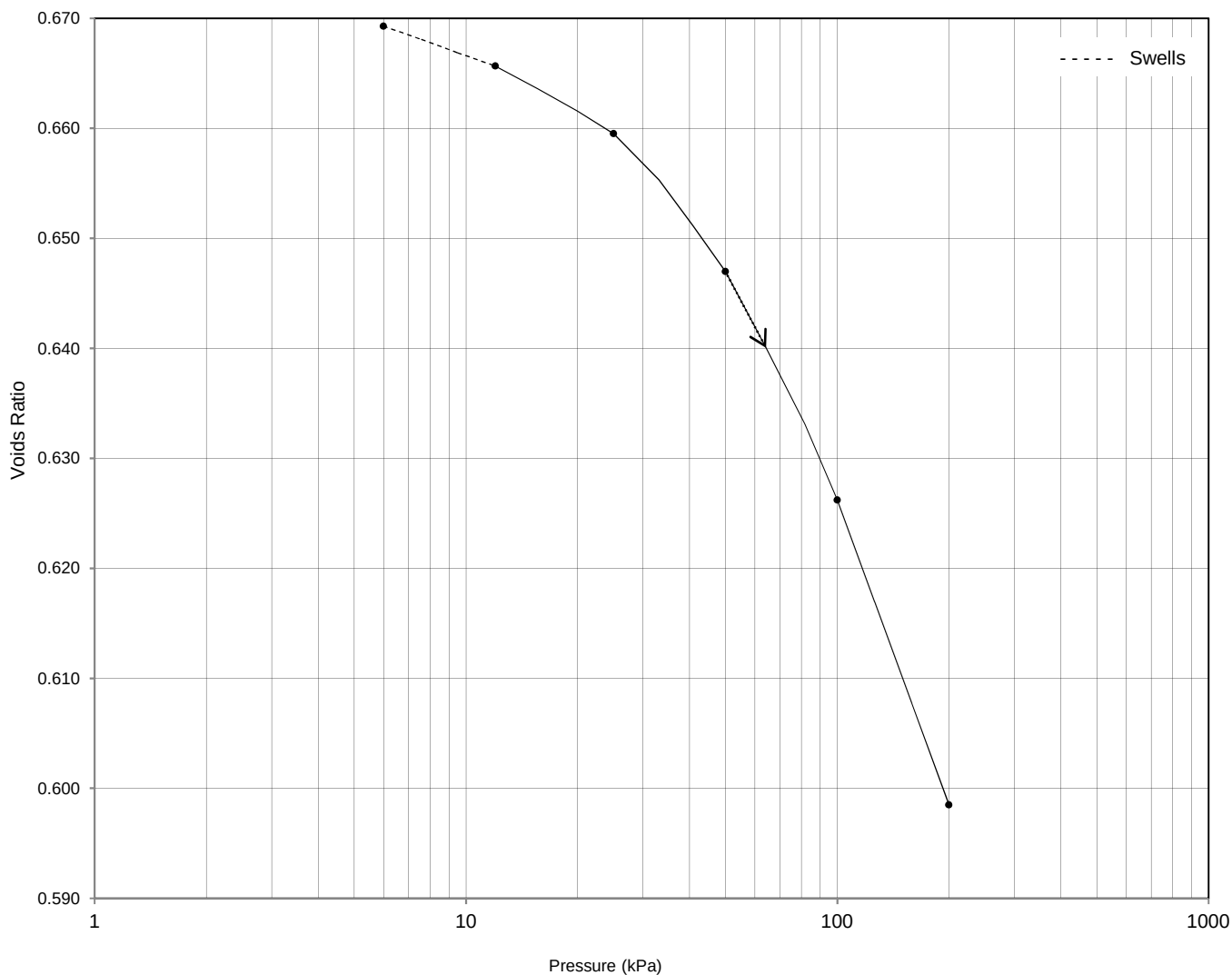
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INCREMENTAL LOADING OEDOMETER TEST

BH / TP BH102
 Depth (m) 1.20-1.65
 Sample Type U
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Firm multicoloured CLAY with some grey silt and fine sand pockets.



Initial Conditions:

Height	(mm)	19.00	Water Content	(%)	25.5	(from trimmings)
Diameter	(mm)	74.98	Voids Ratio		0.678	
Area	(mm ²)	4416	Bulk Density	(Mg/m ³)	2.02	
Volume	(cm ³)	83.89	Dry Density	(Mg/m ³)	1.61	
Laboratory Temperature	(°C)	19.0	Particle density	(Mg/m ³)	2.70 (Assumed)	
			Degree of Saturation	(%)	100.0	

Results have been corrected for equipment deformation

Checked and Approved by

J Sturges - Operations Manager
 04/12/2018

Project Number:

GEO / 28352

Project Name:

THE HUT GROUP
3647

GEOLABS

INCREMENTAL LOADING OEDOMETER TEST

BH / TP BH102
 Depth (m) 1.20-1.65
 Sample Type U
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Firm multicoloured CLAY with some grey silt and fine sand pockets.

Pressure Range (kPa)	m_v (m ² /MN)	c_v (m ² /year)	Time Fitting		Voids Ratio
			Method	minutes	
0 - 6	-	Specimen swelled	-	-	0.669
6 - 12	0.36	4.8	t50	1.93	0.666
12 - 25	0.28	1.4	t50	6.70	0.660
25 - 50	0.30	0.98	t50	9.29	0.647
50 - 100	0.25	0.89	t50	10.1	0.626
100 - 200	0.17	0.95	t50	9.10	0.598

Checked and Approved by



J Sturges - Operations Manager
04/12/2018

Project Number:

GEO / 28352

Project Name:

THE HUT GROUP
3647

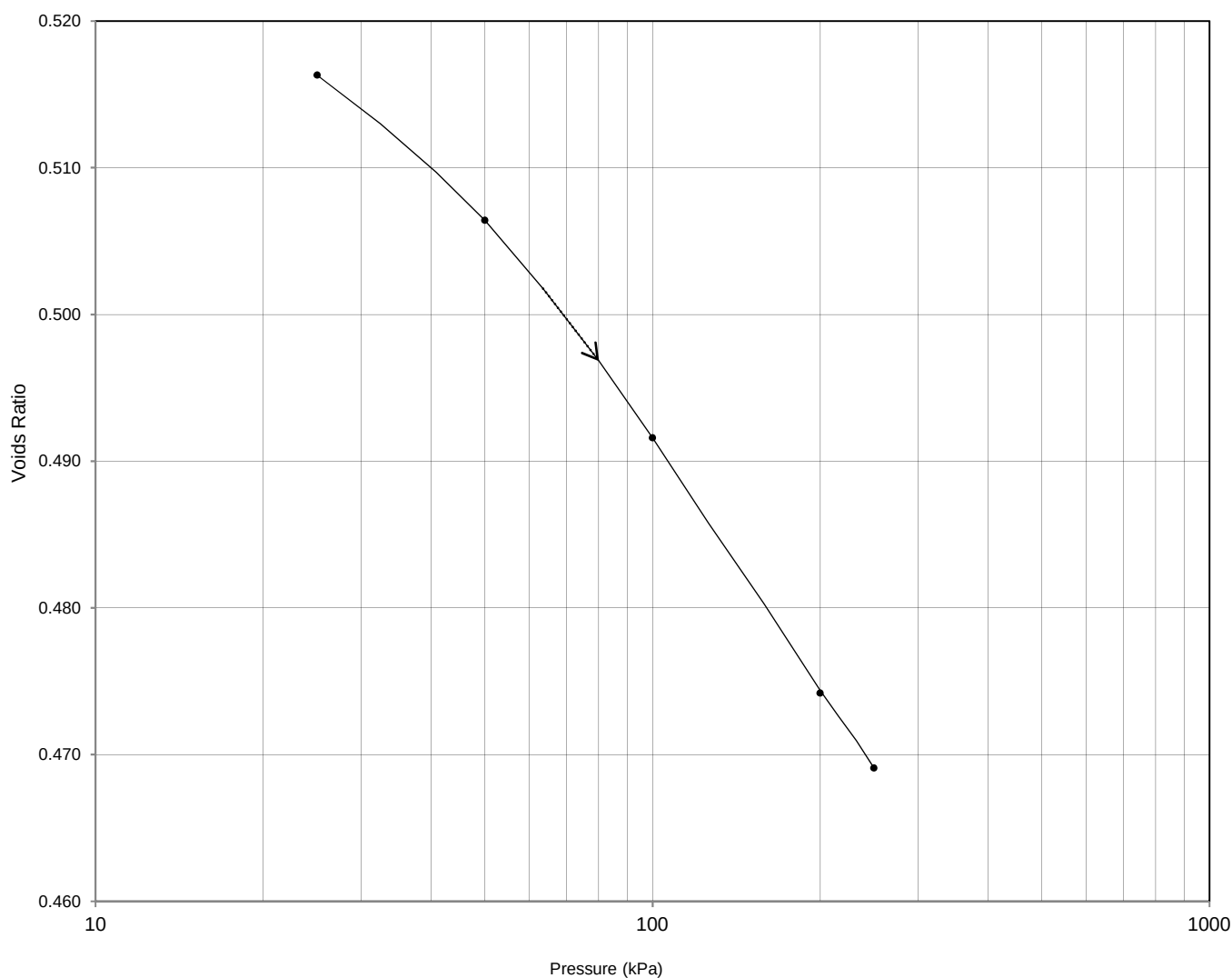
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INCREMENTAL LOADING OEDOMETER TEST

BH / TP	BH103
Depth (m)	2.00-2.45
Sample Type	U
Orientation within original	Vertical
Specimen preparation	Undisturbed

Description:

Firm friable reddish brown mottled grey silty CLAY.



Initial Conditions:

Height	(mm)	19.07	Water Content	(%)	20.9	(from trimmings)
Diameter	(mm)	74.94	Voids Ratio		0.536	
Area	(mm ²)	4411	Bulk Density	(Mg/m ³)	2.12	
Volume	(cm ³)	84.11	Dry Density	(Mg/m ³)	1.76	
Laboratory Temperature	(°C)	20.0	Particle density	(Mg/m ³)	2.70 (Assumed)	
			Degree of Saturation	(%)	100.0	

Results have been corrected for equipment deformation

Checked and Approved by

J Sturges - Operations Manager
04/12/2018

Project Number:

GEO / 28352

Project Name:

THE HUT GROUP
3647

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INCREMENTAL LOADING OEDOMETER TEST

BH / TP BH103
 Depth (m) 2.00-2.45
 Sample Type U
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Firm friable reddish brown mottled grey silty CLAY.

Pressure Range (kPa)	m_v (m ² /MN)	c_v (m ² /year)	Time Fitting		Voids Ratio
			Method	minutes	
0 - 25	0.52	3.2	t50	2.93	0.516
25 - 50	0.26	4.5	t50	2.05	0.506
50 - 100	0.20	8.7	t50	1.03	0.492
100 - 200	0.12	11	t50	0.786	0.474
200 - 250	0.069	3.6	t50	2.44	0.469

Checked and Approved by



J Sturges - Operations Manager
04/12/2018

Project Number:

GEO / 28352

Project Name:

THE HUT GROUP
3647

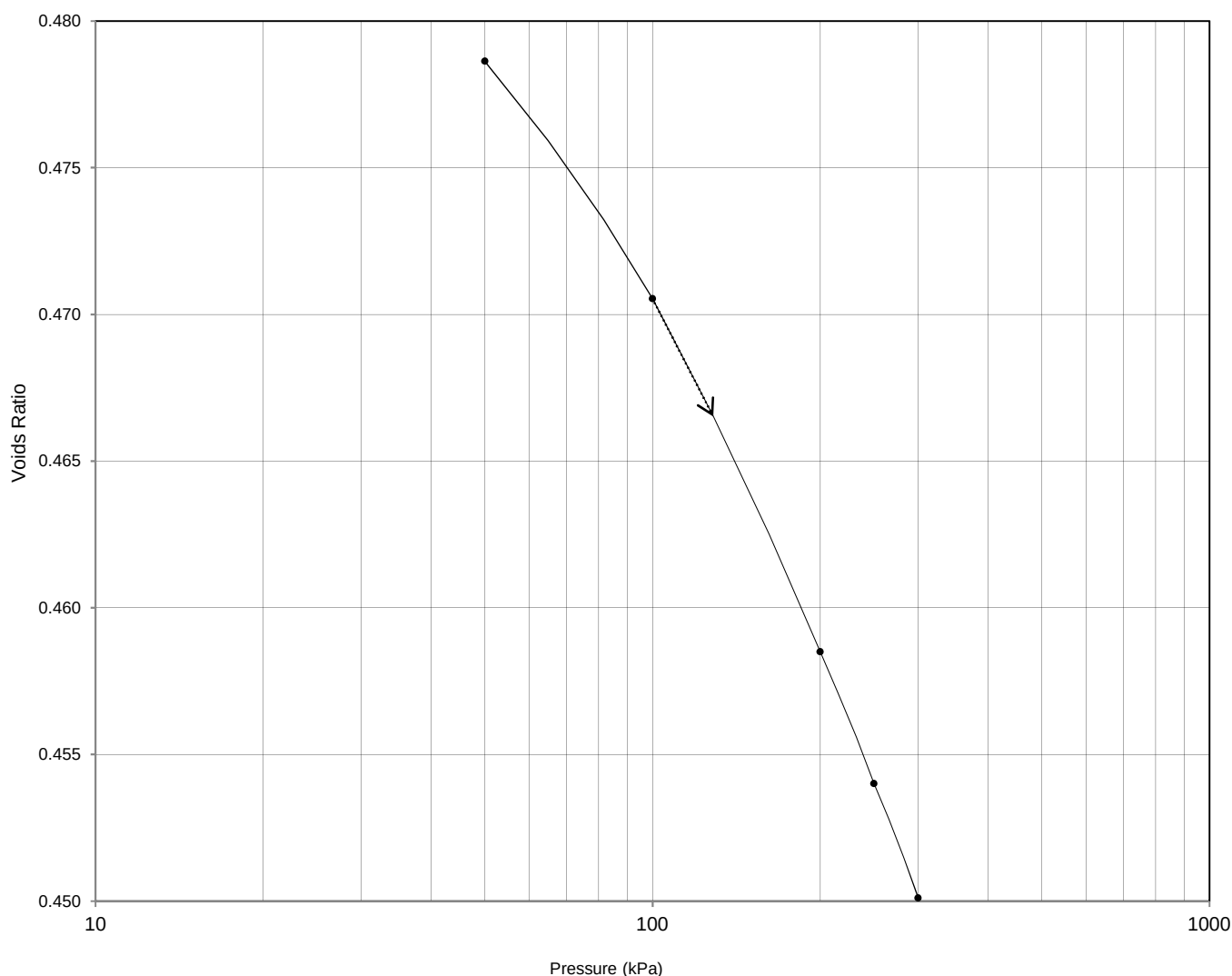
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INCREMENTAL LOADING OEDOMETER TEST

BH / TP BH103
 Depth (m) 4.00
 Sample Type U
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Firm reddish brown mottled grey silty CLAY with rare hard clay nodules.



Initial Conditions:

Height	(mm)	19.07	Water Content	(%)	19.9	(from trimmings)
Diameter	(mm)	74.94	Voids Ratio		0.499	
Area	(mm ²)	4411	Bulk Density	(Mg/m ³)	2.16	
Volume	(cm ³)	84.11	Dry Density	(Mg/m ³)	1.80	
Laboratory Temperature	(°C)	20.0	Particle density	(Mg/m ³)	2.70 (Assumed)	
			Degree of Saturation	(%)	100.0	

Results have been corrected for equipment deformation

Checked and Approved by

J Sturges - Operations Manager
 04/12/2018

Project Number:

GEO / 28352

Project Name:

THE HUT GROUP
3647

GEOLABS®

INCREMENTAL LOADING OEDOMETER TEST

BH / TP BH103
 Depth (m) 4.00
 Sample Type U
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Firm reddish brown mottled grey silty CLAY with rare hard clay nodules.

Pressure Range (kPa)	m_v (m ² /MN)	c_v (m ² /year)	Time Fitting		Voids Ratio
			Method	minutes	
0 - 50	0.28	7.1	t50	1.32	0.479
50 - 100	0.11	15	t90	2.68	0.471
100 - 200	0.082	14	t90	2.84	0.458
200 - 250	0.062	3.8	t90	9.93	0.454
250 - 300	0.054	7.8	t90	4.85	0.450

Checked and Approved by



J Sturges - Operations Manager
04/12/2018

Project Number:

GEO / 28352

Project Name:

THE HUT GROUP
3647

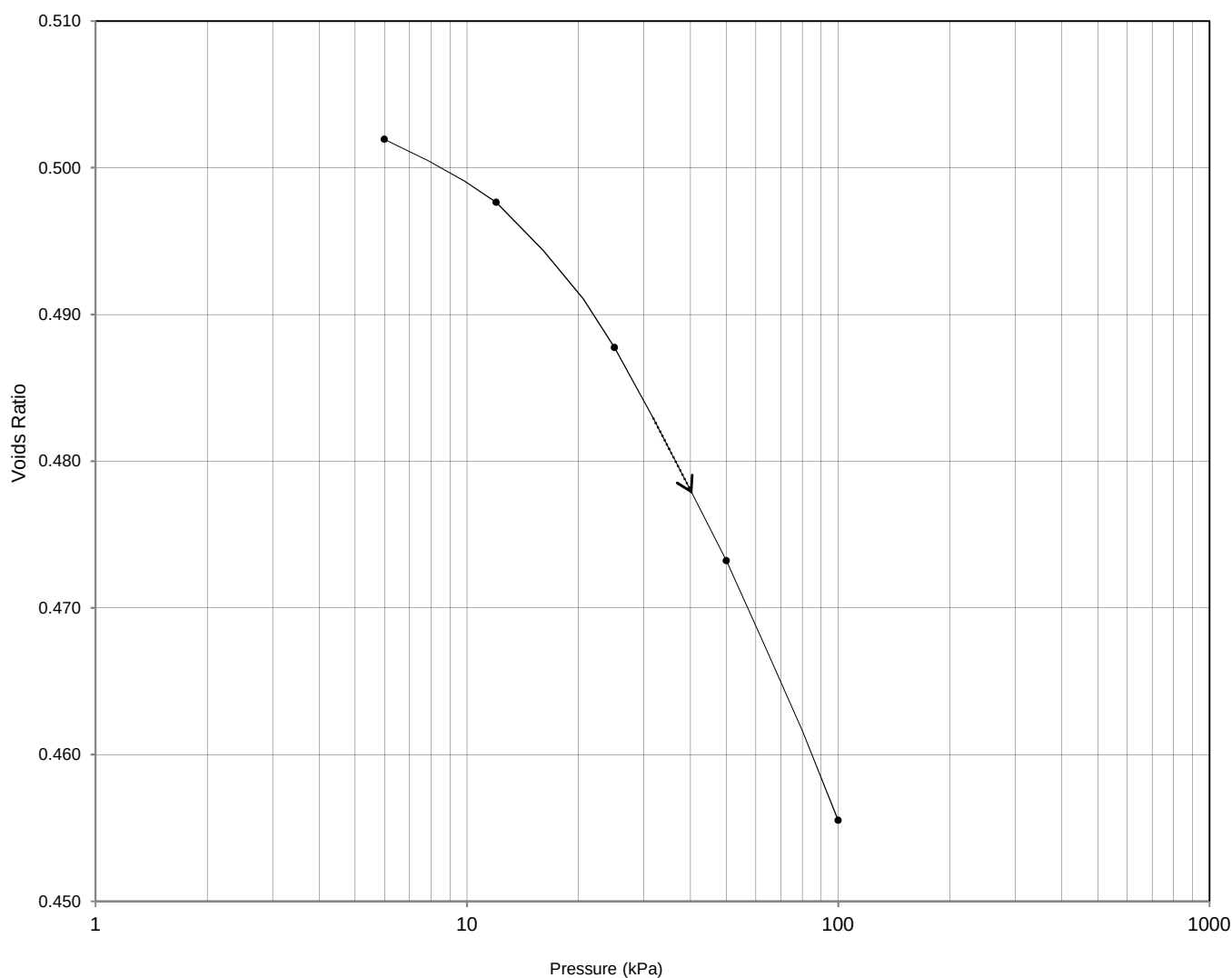
GEOLABS®

INCREMENTAL LOADING OEDOMETER TEST

BH / TP BH106
 Depth (m) 1.20
 Sample Type U
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Firm brown to orangish brown mottled grey slightly sandy CLAY



Initial Conditions:

Height	(mm)	19.00	Water Content	(%)	19.5	(from trimmings)
Diameter	(mm)	76.00	Voids Ratio		0.510	
Area	(mm ²)	4536	Bulk Density	(Mg/m ³)	2.14	
Volume	(cm ³)	86.19	Dry Density	(Mg/m ³)	1.79	
Laboratory Temperature	(°C)	19.0	Particle density	(Mg/m ³)	2.70 (Assumed)	
			Degree of Saturation	(%)	100.0	

Results have been corrected for equipment deformation

Checked and Approved by

J Sturges - Operations Manager
 04/12/2018

Project Number:

GEO / 28352

Project Name:

THE HUT GROUP
 3647



INCREMENTAL LOADING OEDOMETER TEST

BH / TP BH106
 Depth (m) 1.20
 Sample Type U
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Firm brown to orangish brown mottled grey slightly sandy CLAY

Pressure Range (kPa)	m_v (m ² /MN)	c_v (m ² /year)	Time Fitting		Voids Ratio
			Method	minutes	
0 - 6	0.94	26	t90	1.55	0.502
6 - 12	0.48	4.4	t50	2.10	0.498
12 - 25	0.51	7.0	t50	1.30	0.488
25 - 50	0.39	8.9	t50	1.02	0.473
50 - 100	0.24	6.6	t50	1.33	0.456

Checked and Approved by



J Sturges - Operations Manager
04/12/2018

Project Number:

GEO / 28352

Project Name:

THE HUT GROUP
3647

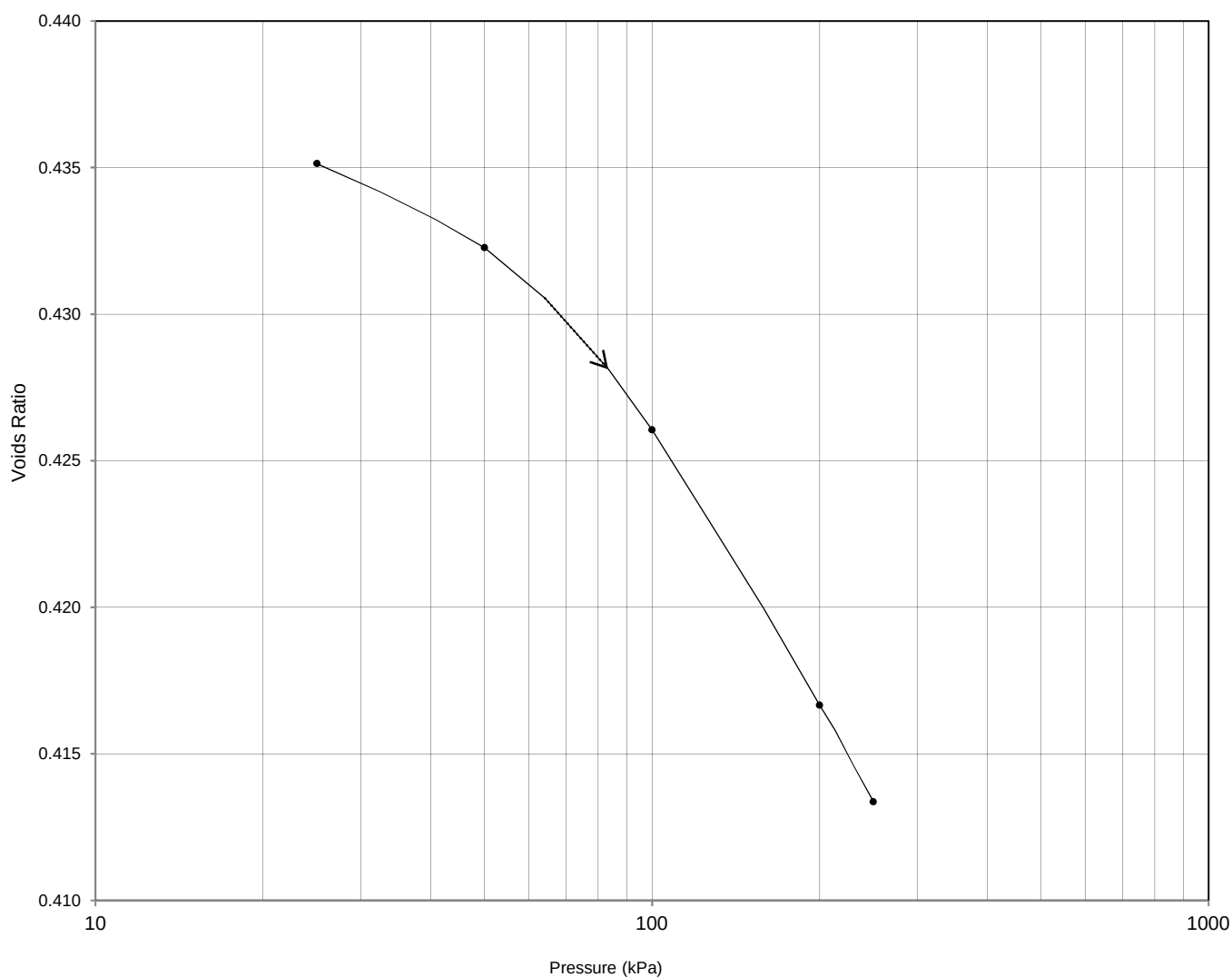
GEOLABS®

INCREMENTAL LOADING OEDOMETER TEST

BH / TP	BH106
Depth (m)	3.00-3.45
Sample Type	U
Orientation within original	Vertical
Specimen preparation	Undisturbed

Description:

Firm brown to orangish brown CLAY



Initial Conditions:

Height	(mm)	18.57	Water Content	(%)	18.7	(from trimmings)
Diameter	(mm)	75.92	Voids Ratio		0.445	
Area	(mm ²)	4527	Bulk Density	(Mg/m ³)	2.22	
Volume	(cm ³)	84.06	Dry Density	(Mg/m ³)	1.87	
Laboratory Temperature	(°C)	19.0	Particle density	(Mg/m ³)	2.70 (Assumed)	
			Degree of Saturation	(%)	100.0	

Results have been corrected for equipment deformation

Checked and Approved by

J Sturges - Operations Manager
04/12/2018

Project Number:

GEO / 28352

Project Name:

**THE HUT GROUP
3647****GEOLABS**

INCREMENTAL LOADING OEDOMETER TEST

BH / TP BH106
 Depth (m) 3.00-3.45
 Sample Type U
 Orientation within original Vertical
 Specimen preparation Undisturbed

Description:

Firm brown to orangish brown CLAY

Pressure Range (kPa)	m_v (m ² /MN)	c_v (m ² /year)	Time Fitting		Voids Ratio
			Method	minutes	
0 - 25	0.27	35	t90	1.09	0.435
25 - 50	0.080	38	t90	0.996	0.432
50 - 100	0.087	12	t90	3.01	0.426
100 - 200	0.066	12	t90	3.00	0.417
200 - 250	0.046	19	t90	1.98	0.413

Checked and Approved by



J Sturges - Operations Manager
04/12/2018

Project Number:

GEO / 28352

Project Name:

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GEOLABS®

Combined SPT N Value Vs Depth

Borehole No.

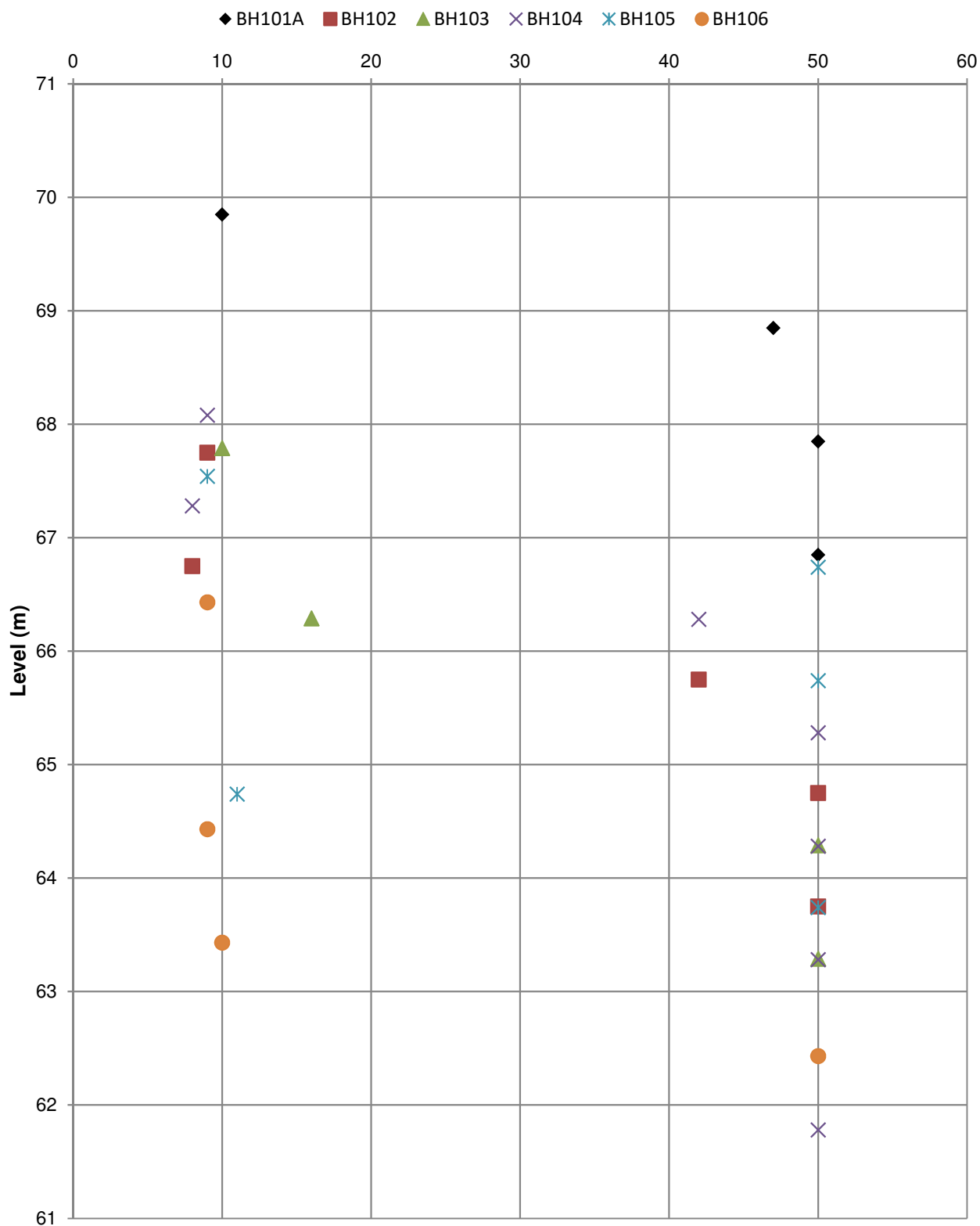
BH101A - BH106

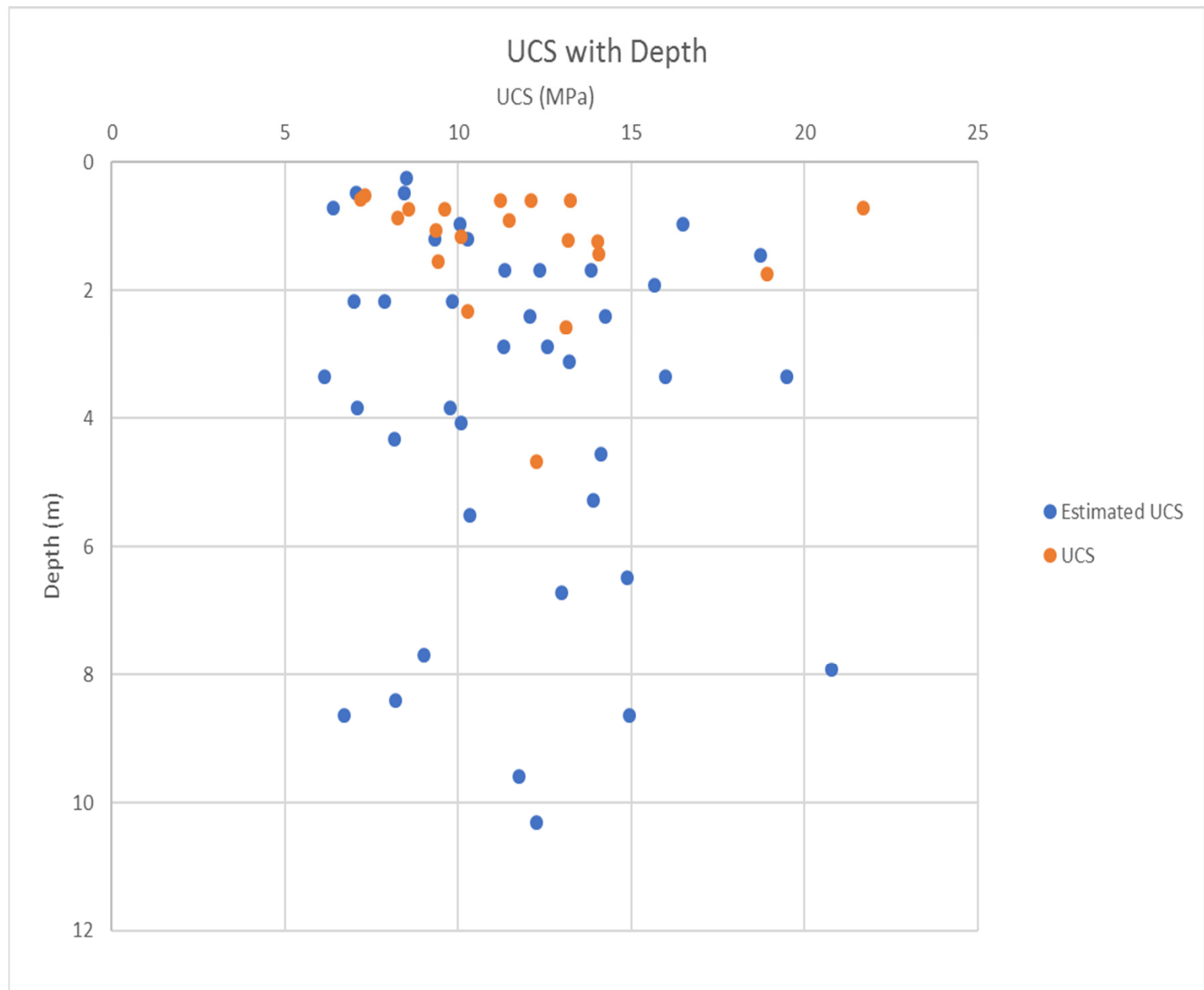
Project ID: **3647**

Project Title: **THG HIVE, Airport City North**

Client: **Airport City**

Location: **Manchester Airport**





Client: Airport City

Project Name: THG HIVE, Airport City North

Project No.: 3647

Commercial Wharf,
6 Commercial Street,
Manchester,
M15 4PZ
T 0161 214 5390
W roconconsulting.com

ROC
CONSULTING

Combined SPT N Value Vs Depth

Borehole No.

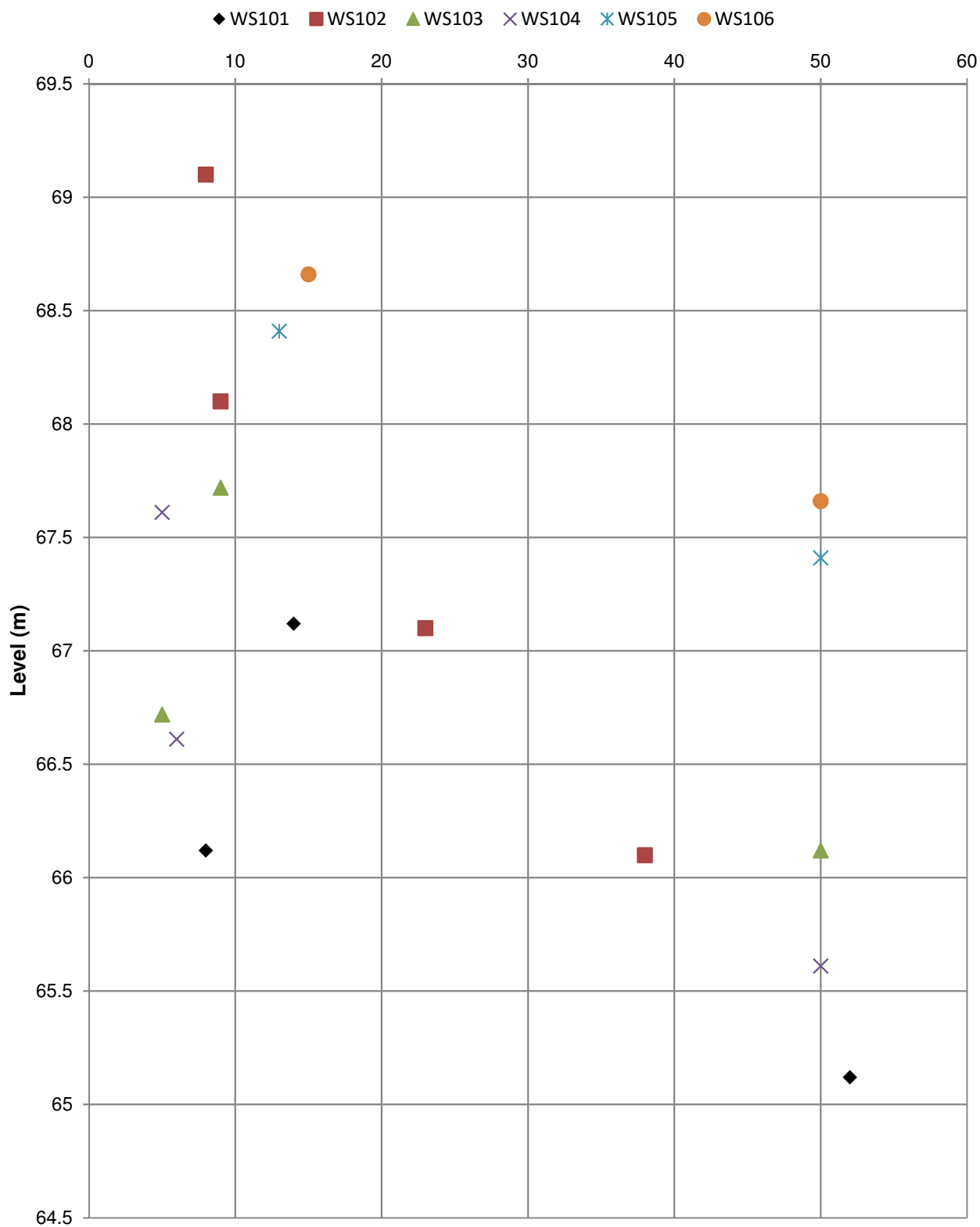
WS101 - WS106

Project ID: **3647**

Project Title: **THG HIVE, Airport City North**

Client: **Airport City**

Location: **Manchester Airport**



DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
BH101	-	6.72	Weak to very weak thinly laminated grey SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	87.6	35.5	30.1	-	57.9	1.14	0.34	1.07	0.36*
BH101	-	7.07	Weak to very weak thinly laminated grey SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.5	61.7	56.3	-	78.3	0.14	0.02	1.22	0.02
BH101	-	8.15	Weak to very weak thinly laminated grey SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	87.0	33.5	28.9	-	56.6	0.56	0.17	1.06	0.18*
BH101	-	9.78	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.3	42.1	36.6	-	63.4	0.56	0.14	1.11	0.16*
BH101	-	11.75	Weak to very weak thinly laminated grey SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.6	91.0	84.8	-	96.1	2.80	0.30	1.34	0.4*
BH101	-	12.25	Weak to very weak thinly laminated grey SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	84.8	62.8	56.2	-	77.9	2.13	0.35	1.22	0.43*
BH101	-	13.92	Weak to very weak thinly laminated grey SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	87.0	40.1	35.3	-	62.5	0.77	0.20	1.11	0.22
BH101	-	16	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	84.3	70.6	65.1	-	83.6	0.76	0.11	1.26	0.14*
BH102	-	7	Weak to very weak thinly laminated grey SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.6	71.2	64.5	-	83.8	0.48	0.07	1.26	0.09
BH102	-	9	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.5	65.7	59.1	-	80.2	1.66	0.26	1.24	0.32

(*) Sample failed on weakness

 Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 05/12/2018	Project Number: GEO / 28352 Project Name: THE HUT GROUP 3647	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
BH102	-	11.35	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.1	45.1	39.3	-	65.6	0.27	0.06	1.13	0.07
BH102	-	13.21	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.0	62.5	57.1	-	78.6	0.66	0.11	1.23	0.13
BH102	-	14.87	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.5	70.6	66.3	-	85.0	1.49	0.21	1.27	0.27
BH103	-	7.89	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.8	86.3	79.7	-	93.9	0.65	0.07	1.33	0.09
BH103	-	8.20	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	84.8	67.3	56.6	-	78.2	1.80	0.29	1.22	0.35
BH103	-	9.84	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.3	49.1	42.8	-	68.2	0.36	0.08	1.15	0.09
BH103	-	10.34	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.0	46.6	40.1	-	66.3	0.89	0.20	1.14	0.23
BH103	-	12.36	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	84.6	65.5	60.2	-	80.5	0.38	0.06	1.24	0.07
BH103	-	13.83	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	84.8	48.5	43.7	-	68.7	0.26	0.06	1.15	0.07
BH103	-	14.25	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.6	71.3	66.4	-	85.1	0.59	0.08	1.27	0.1

(*) Sample failed on weakness

 Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 05/12/2018	Project Number: GEO / 28352 Project Name: THE HUT GROUP 3647	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
BH104	-	8.50	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.6	60.5	54.6	-	77.6	0.09	0.01	1.22	0.01
BH104	-	10.27	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.4	76.5	72.3	-	89.2	0.29	0.04	1.30	0.05
BH104	-	12.98	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.1	53.6	48.7	-	73.1	1.29	0.24	1.19	0.28
BH104	-	14.96	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.5	57.4	51.3	-	75.2	1.72	0.30	1.20	0.36
BH104	-	15.67	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.0	45.7	39.5	-	65.8	0.32	0.07	1.13	0.08
BH104	-	16.48	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.5	60.4	53.9	-	76.6	0.19	0.03	1.21	0.04
BH104	-	18.72	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.6	60.6	52.4	-	75.6	0.27	0.05	1.20	0.06*
BH104	-	19.50	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	65.0	74.0	69.3	-	75.7	0.67	0.12	1.21	0.14*
BH104	-	20.79	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	83.3	40.1	35.2	-	61.1	1.12	0.30	1.09	0.33
BH105		6.15	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	85.1	66.6	60.0	-	80.6	0.70	0.11	1.24	0.14*

(*) Sample failed on weakness

 Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 05/12/2018

Project Number:

Project Name:

GEO / 28352

 THE HUT GROUP
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
BH105	-	8.43	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	895.0	80.6	74.3	-	291.0	0.53	0.01	2.21	0.02
BH105	-	10.08	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.7	38.8	33.1	-	60.4	0.59	0.16	1.09	0.17
BH105	-	12.07	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.0	47.5	42.6	-	68.3	0.42	0.09	1.15	0.1
BH105	-	14.13	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.1	39.3	34.4	-	61.4	0.63	0.17	1.10	0.19
BH106	-	6.39	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	66.0	57.2	50.6	-	65.2	0.14	0.03	1.13	0.03
BH106	-	7.10	Weak to very weak thinly laminated brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	64.6	57.6	51.3	-	65.0	0.61	0.14	1.12	0.16
BH106	-	9.33	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	64.3	58.0	54.5	-	66.8	0.18	0.04	1.14	0.05
BH106	-	10.05	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	84.8	66.3	60.2	-	80.6	0.16	0.03	1.24	0.04*
BH106	-	11.33	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	86.2	44.5	39.1	-	65.5	0.47	0.11	1.13	0.12*
BH106	-	12.59	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	84.9	35.3	30.8	-	57.7	0.37	0.11	1.07	0.12

(*) Sample failed on weakness

 Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 05/12/2018	Project Number: GEO / 28352 Project Name: THE HUT GROUP 3647	 
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test											
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction		Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/De ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
								Start D	End D'						
BH106	-	14.35	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately weathered	05/12/18	A	Pd	84.6	55.1	50.5	-	73.8	0.61	0.11	1.19	0.13*

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **L** - Irregular lump **Pd** - Perpendicular to planes of weakness **R** - Random or unknown orientation **PI** - Parallel to planes of weakness

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 05/12/2018

Project Number:

GEO / 28352

Project Name:

THE HUT GROUP
3647

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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details						Density		Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) 3 sig. fig.	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
BH101	-	9.42	Weak to very weak thinly laminated dark brown SILTSTONE. Moderately to highly weathered	8.2	99.9	2.35	2.17	86.50	185.50	2.1	9.1	1.55		04/12/18	Failed on weakness
BH101	-	10.08	Weak to very weak thinly laminated dark brown SILTSTONE/MUDSTONE. Highly weathered	10	100	2.31	2.10	86.50	199.30	2.3	6.8	1.16		04/12/18	Failed on weakness
BH102	-	8.25	Extremely weak dark brown SILTSTONE. Moderately to highly weathered	14	100	2.30	2.02	86.40	216.50	2.5	5.1	0.87		04/12/18	
BH102	-	10.26	Very weak dark brown CONGLOMERATE. Highly weathered. Rare gypsum veins up to 20 mm throughout the sample.	10	68.5	2.09	1.90	85.70	218.20	2.5	13.4	2.32		04/12/18	
BH102	-	12.26	Weak to very weak thinly laminated dark brown SILTSTONE. Moderately to highly weathered	9.4	97.2	2.30	2.10	83.40	228.40	2.7	25.5	4.67		04/12/18	
BH102	-	14.06	Weak to very weak thinly laminated dark brown SILTSTONE. Moderately to highly weathered	13	100	2.27	2.01	86.20	219.40	2.5	8.3	1.42		04/12/18	
BH103	-	7.17	Extremely weak brown and yellowish brown SILTSTONE. Completely weathered	13	96.0	2.20	1.94	86.30	224.50	2.6	3.4	0.581		04/12/18	
BH103	-	9.36	Extremely weak thinly laminated yellowish brown and dark brown SILTSTONE. Moderately to highly weathered	16	100	2.20	1.89	86.40	217.70	2.5	6.2	1.06		04/12/18	
BH103	-	11.46	Very weak yellowish brown and dark brown SILTSTONE/MUDSTONE. Highly weathered	14	100	2.27	2.00	86.50	222.70	2.6	5.3	0.902		04/12/18	
BH103	-	13.23	Extremely weak thinly laminated grey and dark brown SILTSTONE. Completely weathered	16	100	2.23	1.93	86.30	218.30	2.5	3.5	0.598		04/12/18	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are not met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 05/12/2018		Project Number: GEO / 28352 Project Name: THE HUT GROUP 3647		 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details						Density		Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Mean after prep.		H/D Ratio	Load at Failure (kN)	UCS (MPa) 3 sig. fig.	Failure Sketch	D. Tested	Remarks
								Diameter (mm)	Height (mm)						
BH104	-	14.02	Very weak thinly laminated grey and dark brown SILTSTONE/MUDSTONE. Highly to completely weathered	12	100	2.28	2.02	86.10	225.70	2.6	7.2	1.24		04/12/18	Failed on weakness
BH104	-	18.92	Weak to very weak thinly laminated grey and dark brown SILTSTONE. Moderately to highly weathered	11	100	2.27	2.04	86.40	192.70	2.2	10.2	1.74		04/12/18	Failed on weakness
BH104	-	21.71	Extremely weak thinly laminated grey and dark brown SILTSTONE. Moderately to highly weathered	16	100	2.25	1.95	86.30	216.40	2.5	4.1	0.701		04/12/18	Failed on weakness
BH105	-	7.32	Very weak thinly laminated grey and dark brown SILTSTONE/MUDSTONE. Highly weathered	13	95.1	2.20	1.96	87.40	190.70	2.2	3.1	0.517		04/12/18	
BH105	-	9.60	Very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately to highly weathered	14	100	2.22	1.96	86.50	218.40	2.5	4.3	0.732		04/12/18	Failed on weakness
BH105	-	11.22	Extremely weak thinly laminated grey and brown SILTSTONE. Highly to completely weathered	13	100	2.28	2.02	86.30	218.20	2.5	3.5	0.598		04/12/18	
BH105	-	13.19	Very weak thinly laminated grey and dark brown SILTSTONE. Moderately weathered	11	100	2.34	2.12	86.50	223.60	2.6	7.1	1.21		04/12/18	Failed on weakness
BH106	-	8.57	Very weak thinly laminated yellowish brown and dark brown SILTSTONE. Highly weathered	16	100	2.22	1.90	86.20	224.60	2.6	4.3	0.737		04/12/18	Failed on weakness
BH106	-	12.11	Weak to very weak thinly laminated grey and brown SILTSTONE/MUDSTONE. Moderately to highly weathered	14	100	2.28	2.00	85.40	221.70	2.6	3.4	0.594		04/12/18	
BH106	-	13.13	Weak to very weak thinly laminated yellowish brown and dark brown SILTSTONE. Highly weathered	9.6	100	2.40	2.19	86.40	221.70	2.6	15.1	2.58		04/12/18	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are not met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by  C Clergeaud (Snr. Geologist) Date: 05/12/2018		Project Number: Project Name: GEO / 28352 THE HUT GROUP 3647		 
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APPENDIX E - GROUND GAS / WATER MONITORING RESULTS



 Civil, Structural & Environmental Engineers Commercial Wharf, 6 Commercial St, MCR, M15 4PZ	Job No:	3647	Site:	THG
	Date:	11/12/2018	Client:	MAG
	Engineer:	LS	Equipment:	GFM 435

	2 Days Prior	1 Day Prior	On day of Monitoring
Weather Conditions:	Sunny spells	Drizzle	Overcast
Barometric Pressure Trend:	Falling	Rising	Falling
Surface Ground Conditions:			

VISIT ONE	Start	Finish
Time:	10.50	13.30
Barometric Pressure:	1016	1014
Background Oxygen:	20.6	20.1

Monitoring Point	Gas Concentration												Groundwater			Remarks
	Flow Rate (l/h)	Peak						Flow Rate (l/h)	Steady						Depth to Water	
BH N°		CH ₄ %	CO ₂ %	O ₂ %	LEL %	H ₂ S/C O (ppm)	CH ₄ %		CO ₂ %	O ₂ %	LEL %	H ₂ S/C O (ppm)				
BH101A	0.00	0.00	2.10	8.80	0.00	0/0	0.00	0.00	2.10	8.80	0.00	0/0	4.15	4.15	WAB	
BH102	0.00	0.00	0.00	14.60	<<<	0/11	0.00	0.00	0.00	14.60	<<<	0/10	2.12	4.30	2.18	
BH103	0.00	0.00	0.30	15.80	<<<	0/0	0.00	0.00	0.30	15.80	<<<	0/0	0.59	3.74	3.15	
BH104	0.00	0.00	4.00	1.30	<<<	0/0	0.00	0.00	4.00	1.30	<<<	0/0	2.57	2.66	0.09	Silty
BH106	0.00	0.00	0.60	19.70	<<<	0/0	0.00	0.00	0.60	19.70	<<<	0/0	0.95	3.70	2.75	

Comments:



Civil, Structural & Environmental Engineers

Commercial Wharf, 6 Commercial St, MCR, M15 4PZ

Job No:

3647

Site:

THG

Date:

04/01/2019

Client:

MAG

Engineer:

LS

Equipment:

GFM 435

2 Days Prior

1 Day Prior

On day of Monitoring

Weather Conditions:

Overcast

Overcast

Dry

Barometric Pressure Trend:

Rising

Rising

Rising

Surface Ground Conditions:

Wet

VISIT TWO	Start	Finish
Time:	10.40	11.40
Barometric Pressure:	1033	1031
Background Oxygen:	20.6	20.1

Monitoring Point	Gas Concentration												Groundwater			Remarks
	Flow Rate (l/h)	Peak					Flow Rate (l/h)	Steady								
		CH ₄ %	CO ₂ %	O ₂ %	LEL %	H2S/C O (ppm)		CH ₄ %	CO ₂ %	O ₂ %	LEL %	H2S/C O (ppm)	Depth to Water	Depth to Base	Head of water	
BH101A	0.00	1.00	6.10	0.50	22.80	0/10	0.00	1.00	6.10	0.50	22.80	0/10	4.15	4.15	WAB	
BH102	0.00	0.00	0.00	13.50	<<<	0/10	0.00	0.00	0.00	13.50	<<<	0/0	2.40	4.32	1.92	
BH103	62.50	0.00	0.70	13.40	<<<	0/10	0.00	0.00	0.70	12.90	<<<	0/10	1.08	3.67	2.59	Silty
BH104	0.00	2.20	6.10	0.60	50.90	0/12	0.00	2.20	6.10	0.60	50.70	0/10	2.56	2.65	0.09	
BH106	UNABLE TO LOCATE WELL															

Comments:



Civil, Structural & Environmental Engineers

Commercial Wharf, 6 Commercial St, MCR, M15 4PZ

Job No:

3647

Site:

THG

Date:

11/01/2019

Client:

MAG

Engineer:

LS

Equipment:

GFM 435

2 Days Prior

1 Day Prior

On day of Monitoring

Weather Conditions:

Cold / overcast

Cold / foggy

cold / overcast

Barometric Pressure Trend:

Stable

Rising

Rising

Surface Ground Conditions:

Wet

Wet

Wet

VISIT THREE

Start

Finish

Time:

14.15

Time:

15.00

Barometric Pressure:

1019

Barometric Pressure:

1020

Background Oxygen:

20.9

Background Oxygen:

20.5

Monitoring Point

Gas Concentration

Groundwater

BH N°

Flow Rate
(l/h)

Peak

CH₄
%

CO₂
%

O₂
%

LEL
%

H₂S/C
O
(ppm)

Flow Rate
(l/h)

Steady

CH₄
%

CO₂
%

O₂
%

LEL
%

H₂S/C
O
(ppm)

Depth to
Water

Depth to
Base

Head of
water

Remarks

BH101A

0.00

1.80

5.70

1.50

42.40

0/0

0.00

1.80

5.70

1.50

42.40

0/0

WAB

4.15

Silty

BH102

0.00

0.00

0.00

13.50

<<<

0/0

0.00

0.00

0.00

13.50

<<<

0/0

2.51

4.28

1.77

Silty

BH103

0.00

0.00

0.80

16.60

<<<

0/10

0.00

0.00

0.80

16.60

<<<

0/0

1.09

3.60

2.51

Silty

BH104

0.00

2.80

5.90

1.10

62.30

0/0

0.00

2.70

5.90

1.20

62.30

0/0

2.57

2.67

0.10

UNABLE TO LOCATE WELL

BH106

Comments:



Civil, Structural & Environmental Engineers

Commercial Wharf, 6 Commercial St, MCR, M15 4PZ

Job No:

3647

Site:

THG

Date:

23/01/2019

Client:

MAG

Engineer:

LS

Equipment:

GFM 435

2 Days Prior

1 Day Prior

On day of Monitoring

Weather Conditions:

Cold / overcast

Cold / Sleet

cold / overcast

Barometric Pressure Trend:

Falling

Falling

Falling

Surface Ground Conditions:

Wet

Wet

Wet

VISIT FOUR

Start

Finish

Time:

10.20

Time:

11.15

Barometric Pressure:

995

Barometric Pressure:

993

Background Oxygen:

20.7

Background Oxygen:

20.1

Monitoring Point

Gas Concentration

Groundwater

BH N°

Flow Rate
(l/h)

Peak

CH₄
%

CO₂
%

O₂
%

LEL
%

H₂S/C
O
(ppm)

Flow Rate
(l/h)

Steady

CH₄
%

CO₂
%

O₂
%

LEL
%

H₂S/C
O
(ppm)

Depth to
Water

Depth to
Base

Head of
water

Remarks

BH101A

0.00

2.30

3.60

3.00

53.60

0/10

0.00

2.30

3.60

3.00

53.60

0/0

WAB

4.14

WAB

BH102

0.00

0.00

0.00

14.60

<<<

0/0

0.00

0.00

0.00

14.60

<<<

0/0

2.04

4.27

2.23

BH103

86.90

0.00

0.50

18.60

<<<

0/12

0.00

0.00

0.50

18.60

<<<

0/0

0.90

3.59

2.69

BH104

0.00

3.30

6.10

2.30

76.10

0/0

0.00

3.30

6.10

2.30

76.10

0/0

2.55

2.65

0.10

BH106

UNABLE TO LOCATE WELL

Comments:



Civil, Structural & Environmental Engineers

Commercial Wharf, 6 Commercial St, MCR, M15 4PZ

Job No:

3647

Site:

THG

Date:

01/02/2019

Client:

MAG

Engineer:

LS

Equipment:

GFM 435

2 Days Prior

1 Day Prior

On day of Monitoring

Weather Conditions:

Light snow

cold, sunny spells

Cold, sunny spells

Barometric Pressure Trend:

Surface Ground Conditions:

Wet

Wet

Wet

VISIT FIVE

Start

Finish

Time:

10.40

Time:

11.20

Barometric Pressure:

984

Barometric Pressure:

982

Background Oxygen:

20.7

Background Oxygen:

20.5

Monitoring Point

Gas Concentration

Groundwater

Peak

Steady

BH N°

Flow Rate
(l/h)

CH₄
%

CO₂
%

O₂
%

LEL
%

H₂S/C
O
(ppm)

Flow Rate
(l/h)

CH₄
%

CO₂
%

O₂
%

LEL
%

H₂S/C
O
(ppm)

Depth to
Water

Depth to
Base

Head of
water

Remarks

BH101A

0.00

2.60

3.70

3.70

59.80

0/0

0.00

2.60

3.70

3.70

59.80

0/0

WAB

4.15

WAB

BH102

UNABLE TO LOCATE WELL

BH103

0.00

0.00

0.00

15.10

0.00

0/0

0.00

0.00

0.00

15.10

0.00

0/0

2.00

3.59

1.59

BH104

UNABLE TO LOCATE WELL

BH106

UNABLE TO LOCATE WELL

Comments:

ROC
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Civil Engineering



Structural Engineering



Earth Sciences



Strategic Land



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