JABATAN PENGAIRAN & SALIRAN, SABAH

KAJIAN PELAN INDUK SALIRAN BANDAR SEMPORNA, SABAH

Contract No: JPS/N/SAB/PP/108/2019

(The Drainage Master Plan Study for Semporna Town, Sabah)

Volume 3b: Technical Appendices (Summary Of Site Data Collection)

FINAL REPORT

December 2021

In association with:

DHI

Submitted by:

MEGAMAS

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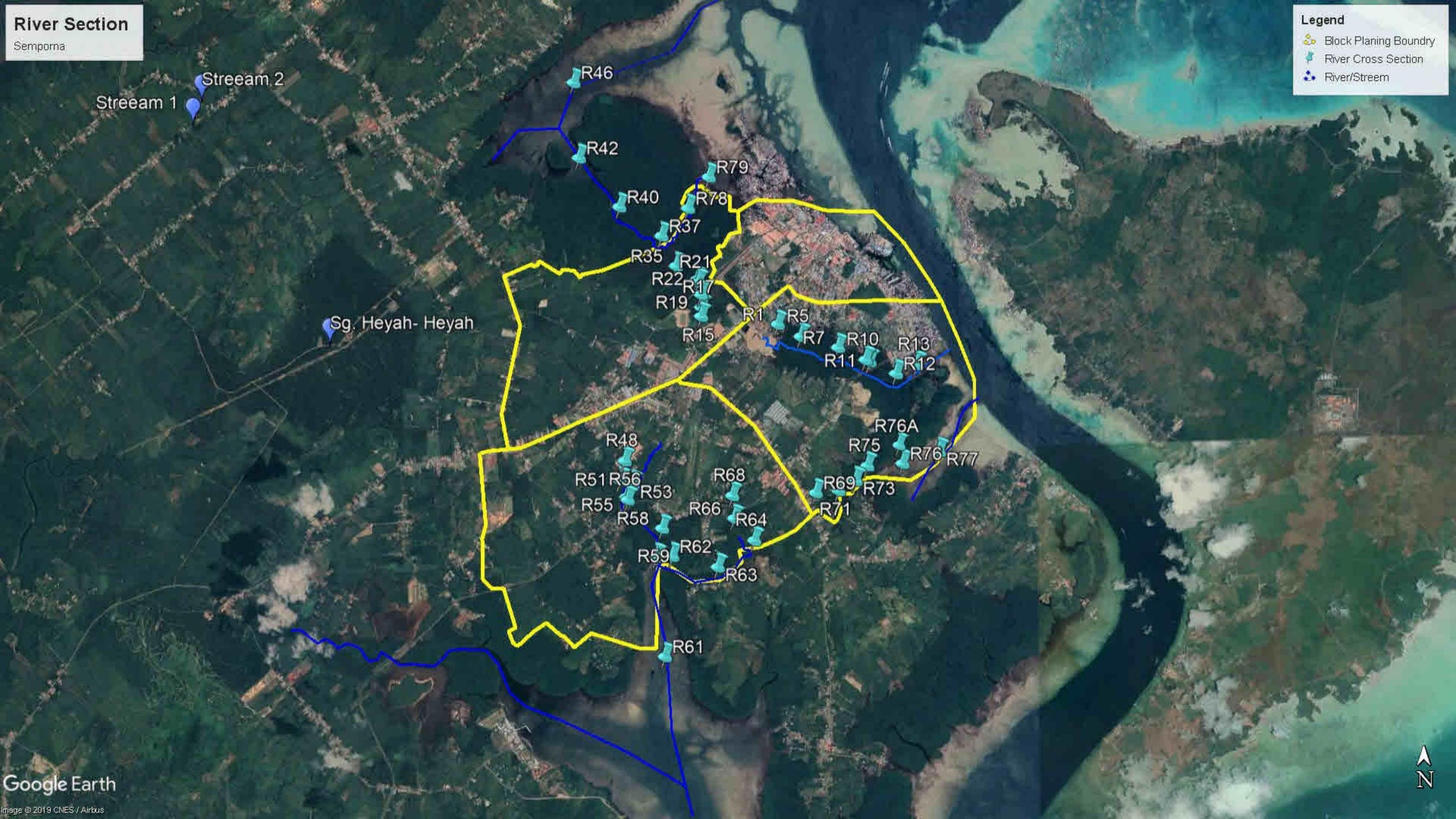
APPENDICES

Appendix C……...River Sections
Appendix D……...Water Quality Sampling
Appendix E……..Observed Water Quality
Appendix F……...Soil Investigation
Appendix G……Logger
Appendix H……Drainage Assets
Appendix I……Gross Pollutant Trap (GPT)

APPENDIX C:

RIVER SECTIONS


River Section
Semporna
Legend
Block Planing Boundry
River Cross Section
River/Streem
Streeam 2
Streeam 1
Sg. Heyah- Heyah
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Google Earth
Image © 2019 CNES / Airbus
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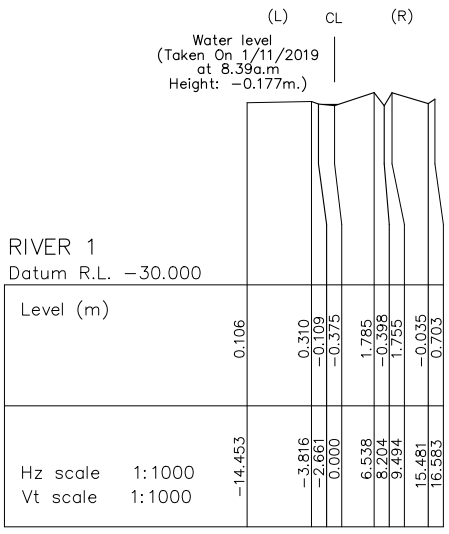
RIVER 1

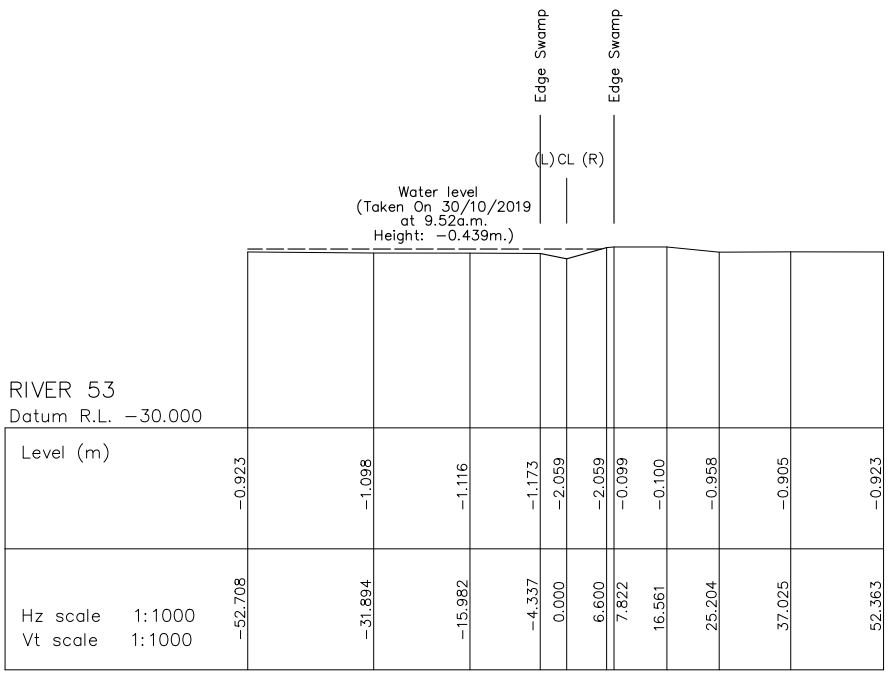
Datum R.L. −30.000



Level (m)	0.106	0.310	−0.109	−0.375	1.785	−0.398	1.755	−0.035	0.703
Hz scale 1:1000 Vt scale 1:1000	−14.453	−3.816	−2.661	0.000	6.538	8.204	9.494	15.481	16.583

RIVER 53

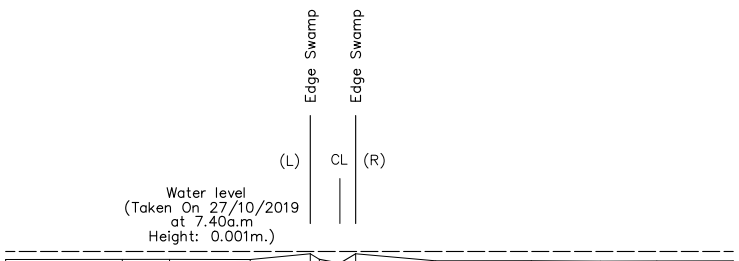
Datum R.L. −30.000



Level (m)	−0.923	−1.098	−1.116	−1.173	−2.059	−2.059	−0.099	−0.100	−0.958	−0.905	−0.923
Hz scale 1:1000 Vt scale 1:1000	−52.708	−31.894	−15.982	−4.337	0.000	6.600	7.822	16.561	25.204	37.025	52.363

RIVER 5

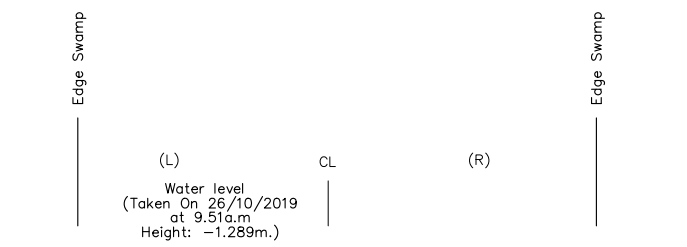
Datum R.L. −30.000



Level (m)	−1.322	−1.305	−1.299	−1.330	−0.377	−1.294	−1.927	−1.535	−1.544	−1.530	−1.599	−1.571	−1.550
Hz scale 1:1000 Vt scale 1:1000	−55.235	−38.958	−28.150	−14.822	−4.894	−3.394	0.000	3.163	15.846	31.637	43.033	52.378	65.000

RIVER 7

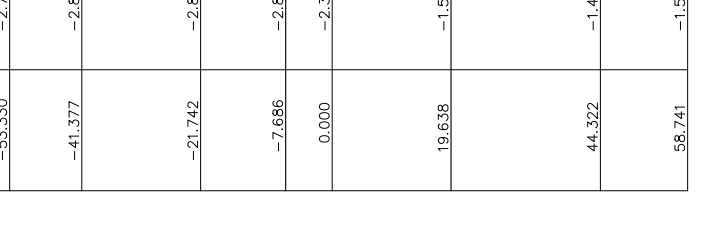
Datum R.L. −30.000



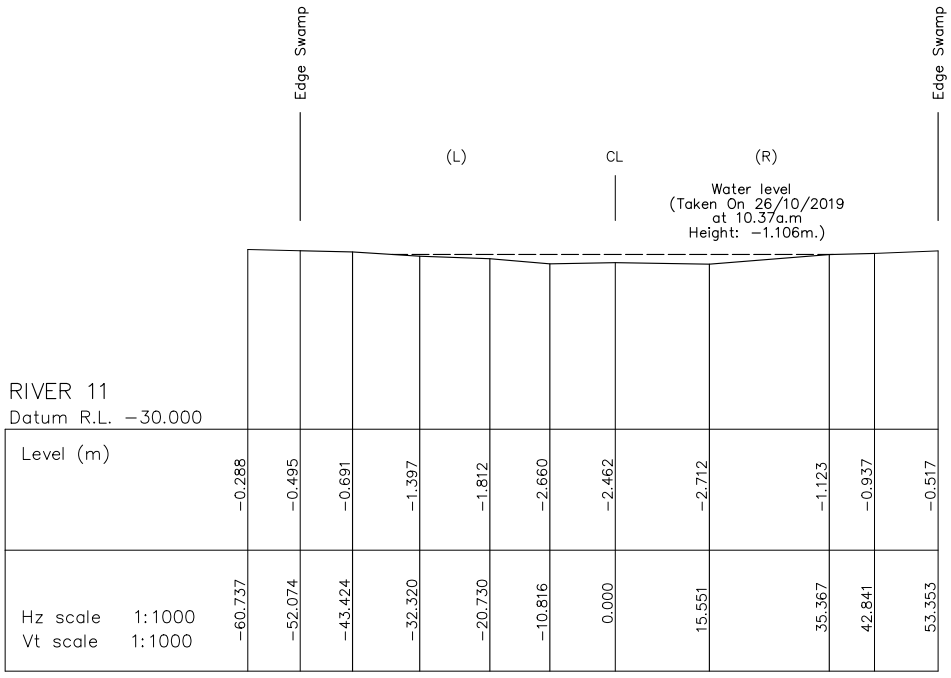
Level (m)	−2.755	−2.810	−2.810	−2.864	−2.300	−1.572	−1.457	−1.500
Hz scale 1:1000 Vt scale 1:1000	−53.330	−41.377	−21.742	−7.686	0.000	19.638	44.322	58.741

RIVER 10

Datum R.L. −30.000

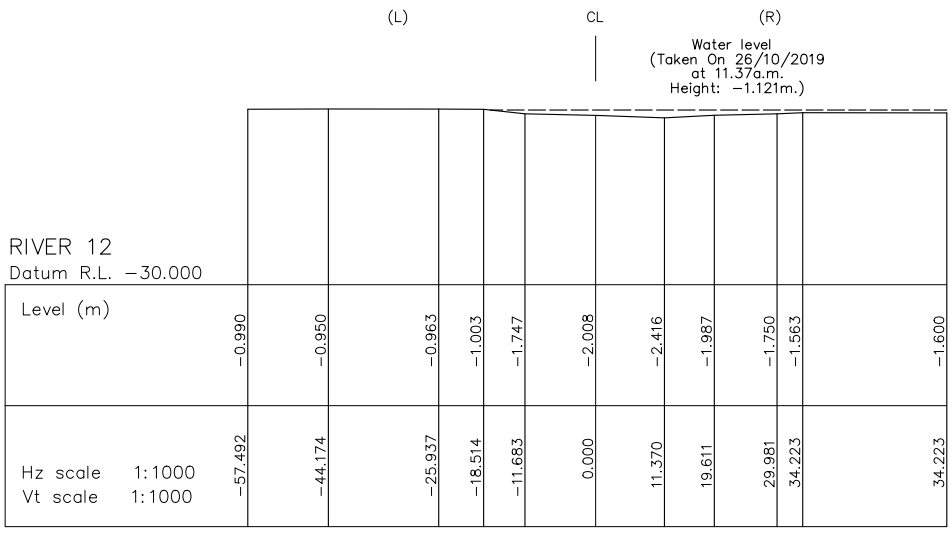


Level (m)	0.299	−0.312	−1.136	−3.091	−2.603	−3.409	−3.119	−2.639	−1.130	−0.659	−0.412	0.136
Hz scale 1:1000 Vt scale 1:1000	−63.802	−57.811	−53.163	−35.633	−24.823	−14.067	−7.178	0.000	14.021	24.915	39.858	50.984



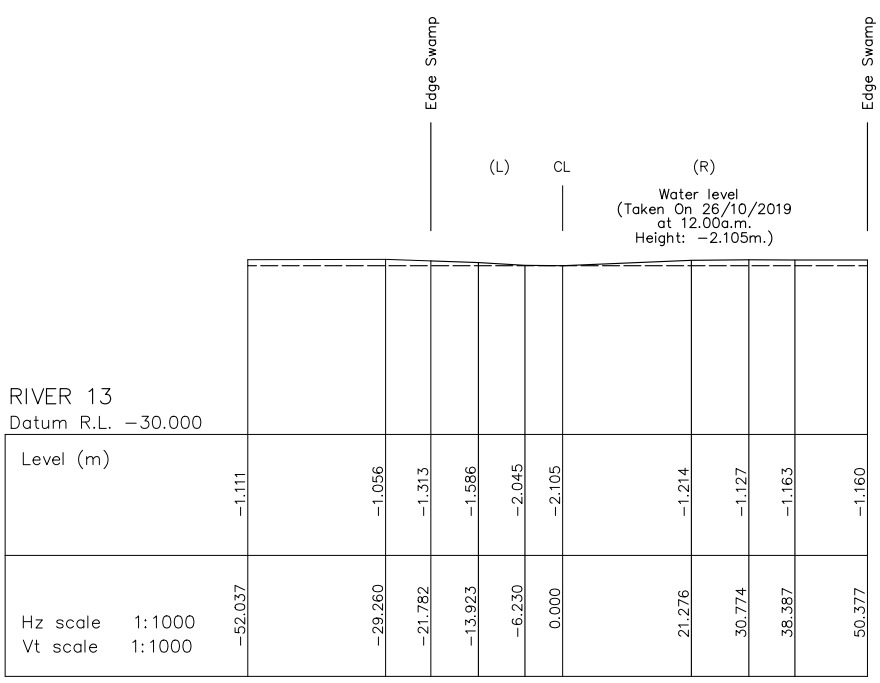
RIVER 11
Datum R.L. −30.000

Level (m)		−0.288	−0.495	−0.691	−1.397	−1.812	−2.660	−2.462	−2.712	−1.123	−0.937	−0.517
Hz scale 1:1000 Vt scale 1:1000	−60.737	−52.074	−43.424	−32.320	−20.730	−10.816	0.000	15.551	35.367	42.841	53.353	



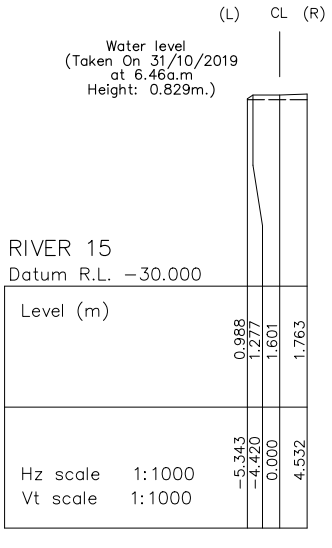
RIVER 12
Datum R.L. −30.000

Level (m)		−0.990	−0.950	−0.963	−1.003	−1.747	−2.008	−2.416	−1.987	−1.750	−1.563	−1.600
Hz scale 1:1000 Vt scale 1:1000	−57.492	−44.174	−25.937	−18.514	−11.683	0.000	11.370	19.611	29.981	34.223	34.223	



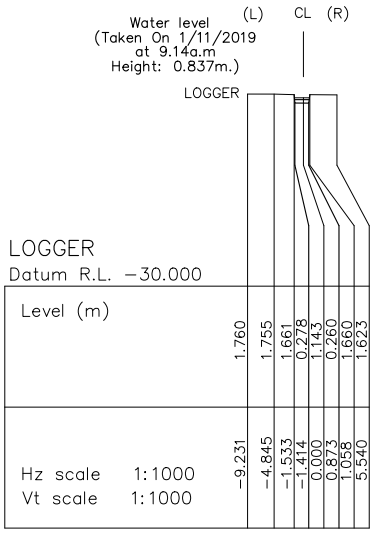
RIVER 13
Datum R.L. −30.000

Level (m)		−1.111	−1.056	−1.313	−1.586	−2.045	−2.105	−1.214	−1.127	−1.163	−1.160
Hz scale 1:1000 Vt scale 1:1000	−52.037	−29.260	−21.782	−13.923	−6.230	0.000	21.276	30.774	38.387	50.377	



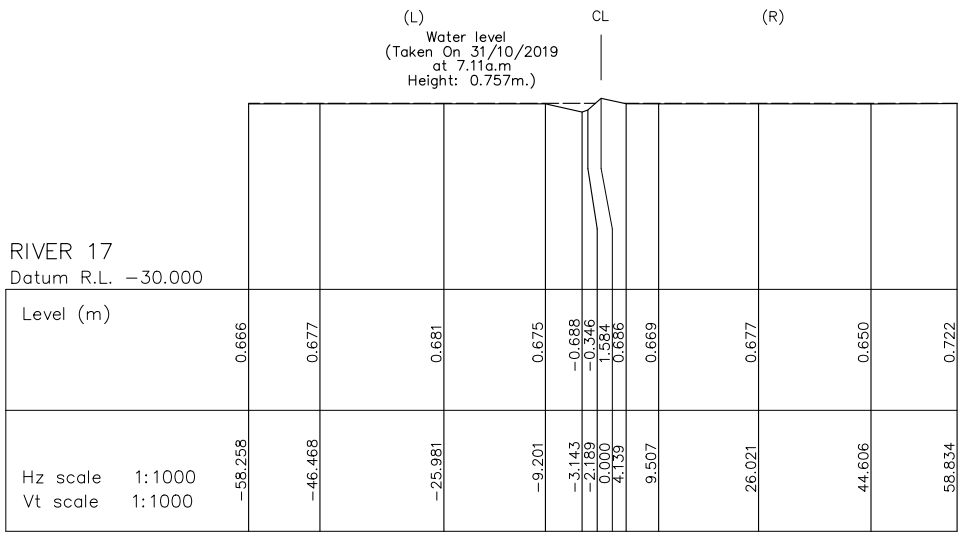
RIVER 15
Datum R.L. −30.000

Level (m)		0.988	1.277	1.601	1.763
Hz scale 1:1000 Vt scale 1:1000	−5.343	−4.420	0.000	4.532	



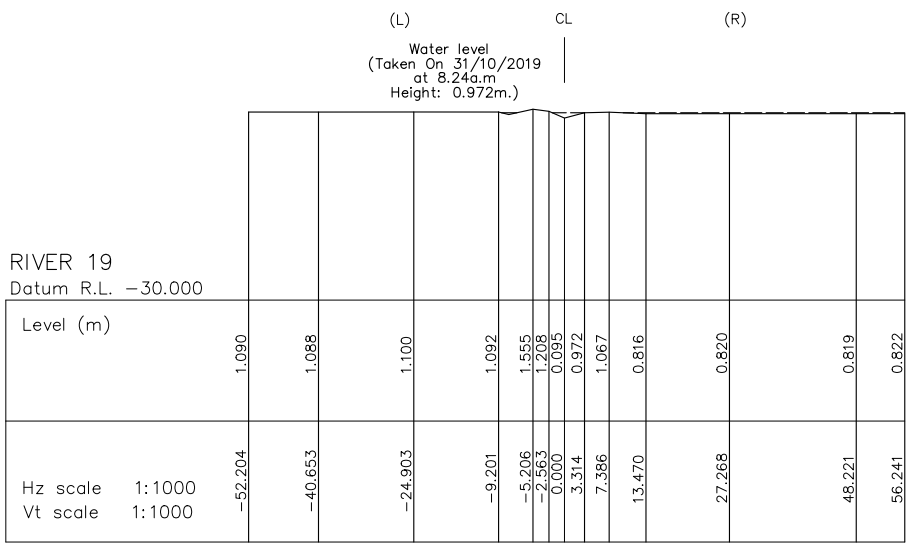
LOGGER
Datum R.L. −30.000

Level (m)		1.760	1.755	1.661	0.278	1.143	0.260	1.660	1.623
Hz scale 1:1000 Vt scale 1:1000	−9.231	−4.845	−1.533	−1.414	0.000	0.873	1.058	5.540	



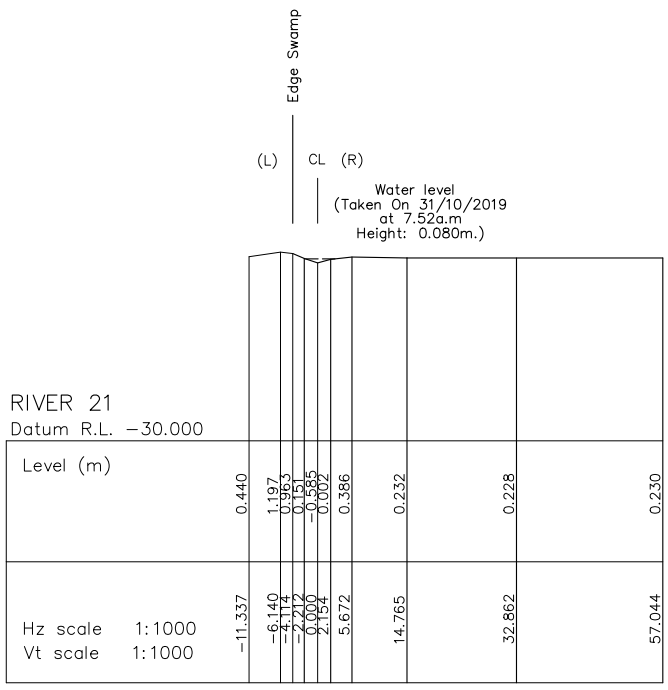
RIVER 17
Datum R.L. −30.000

Level (m)	0.666	0.677	0.681	0.675	−0.688	−0.346	1.584	0.686	0.669	0.677	0.650	0.722
Hz scale 1:1000 Vt scale 1:1000	−58.258	−46.468	−25.981	−9.201	−3.143	−2.189	0.000	4.139	9.507	26.021	44.606	58.834



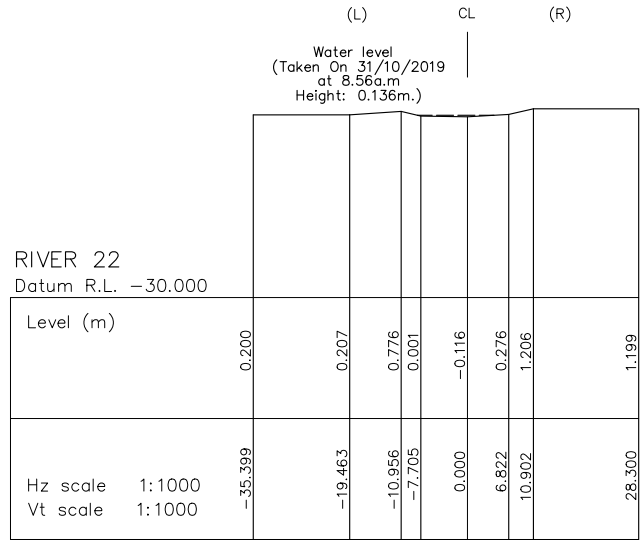
RIVER 19
Datum R.L. −30.000

Level (m)	1.090	1.088	1.100	1.092	1.555	1.208	0.095	0.972	1.067	0.816	0.820	0.819	0.822
Hz scale 1:1000 Vt scale 1:1000	−52.204	−40.653	−24.903	−9.201	−5.206	−2.563	0.000	3.314	7.386	13.470	27.268	48.221	56.241



RIVER 21
Datum R.L. −30.000

Level (m)	0.440	1.197	0.963	0.151	−0.585	0.002	0.386	0.232	0.228	0.230
Hz scale 1:1000 Vt scale 1:1000	−11.337	−6.140	−4.114	−2.212	0.000	2.154	5.672	14.765	32.862	57.044



RIVER 22
Datum R.L. −30.000

Level (m)	0.200	0.207	0.776	0.001	−0.116	0.276	1.206	1.199
Hz scale 1:1000 Vt scale 1:1000	−35.399	−19.463	−10.956	−7.705	0.000	6.822	10.902	28.300

RIVER 35
Datum R.L. −30.000

Level (m)	
−0.770	−62.103
−0.713	−40.879
−0.160	44.558
−0.155	54.634

Hz scale 1:1000
Vt scale 1:1000

(L) CL (R)

Water level
(Taken On 31/10/2019
at 10.40a.m
Height: −0.425m.)

−0.136	0.000
−0.324	−10.374
−0.844	−13.398
−0.769	−16.557
−0.162	12.104

RIVER 37
Datum R.L. −30.000

Level (m)	
−1.550	−59.223
−1.562	−40.937
−1.450	−28.947
−1.488	−18.941
−1.520	−13.512
−1.524	−5.207
−1.156	−2.729
−2.097	0.000
−2.086	4.524
−2.535	9.253
−2.500	16.409
−2.485	22.011
−2.460	29.992
−2.461	35.844
−2.389	47.378
−2.401	57.034

Hz scale 1:1000
Vt scale 1:1000

(L)
Water level
(Taken On 29/10/2019
at 9.56a.m
Height: −0.970m.)

Edge Swamp
CL
Edge Swamp
(R)

RIVER 5
Datum R.L. −30.000

Level (m)	
−1.290	−54.704
−1.340	−45.102
−1.300	−29.474
−1.444	−21.180
−1.375	−12.546
−1.155	−10.332
−1.716	−7.694
−2.206	0.000
−2.467	9.166
−2.576	15.336
−2.618	18.076
−2.443	27.879
−2.321	41.596
−2.444	53.751

Hz scale 1:1000
Vt scale 1:1000

(L)
Water level
(Taken On 27/10/2019
at 7.40a.m
Height: −1.004a.m.)

Edge Swamp
CL
Edge Swamp
(R)

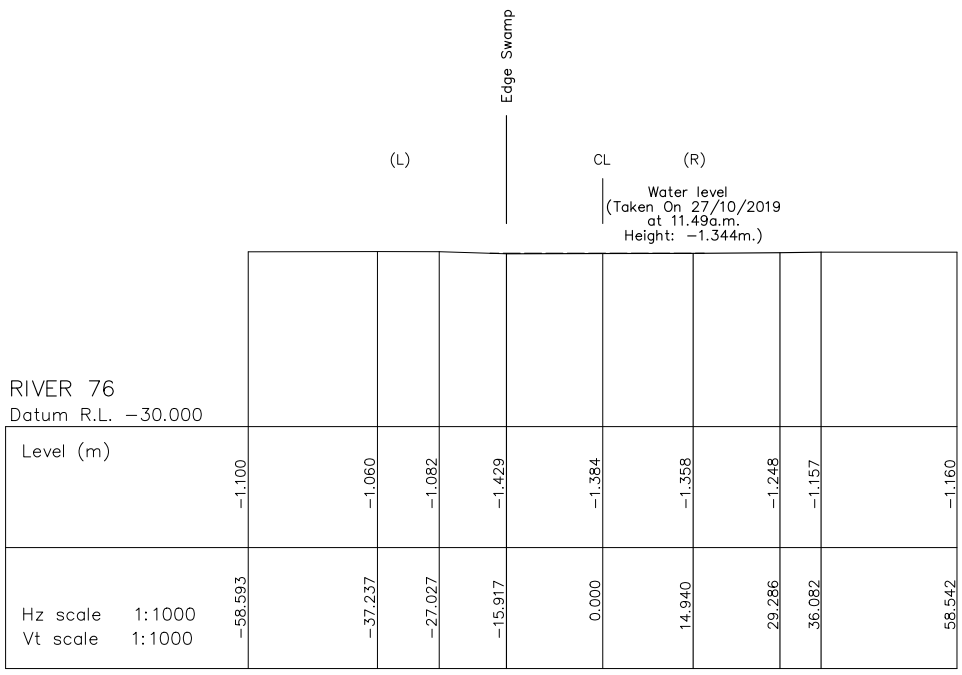
RIVER 78
Datum R.L. −30.000

Level (m)	
−1.600	−57.475
−1.663	−42.209
−1.552	−35.845
−1.565	−23.944
−1.620	−15.161
−1.661	−8.382
−1.720	−6.143
−1.728	0.000
−1.673	10.744
−1.674	12.901
−1.751	16.853
−1.733	26.653
−1.711	32.600
−1.698	37.615
−1.705	45.930
−1.695	59.073

Hz scale 1:1000
Vt scale 1:1000

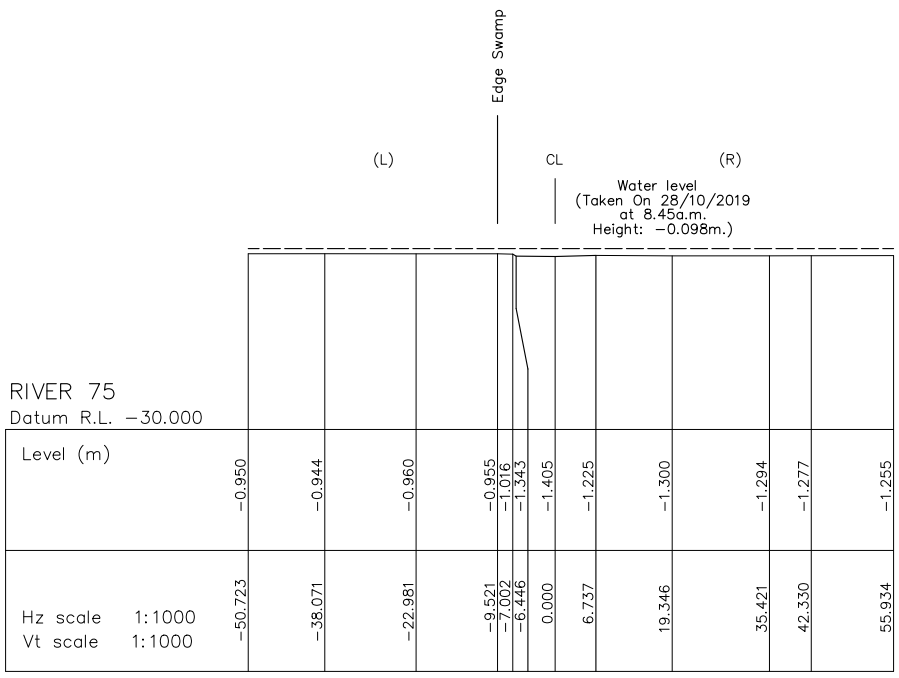
Water level
(Taken On 29/10/2019
at 9.26a.m
Height: −1.500m.)

Edge Swamp
(L) CL (R)
Edge Swamp



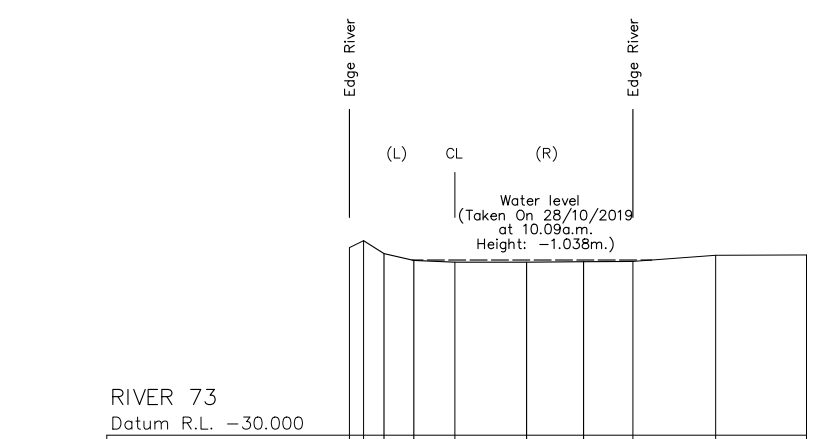
RIVER 76
Datum R.L. −30.000

Level (m)	−1.100	−1.060	−1.082	−1.429	−1.384	−1.358	−1.248	−1.157	−1.160
Hz scale 1:1000 Vt scale 1:1000	−58.593	−37.237	−27.027	−15.917	0.000	14.940	29.286	36.082	58.542



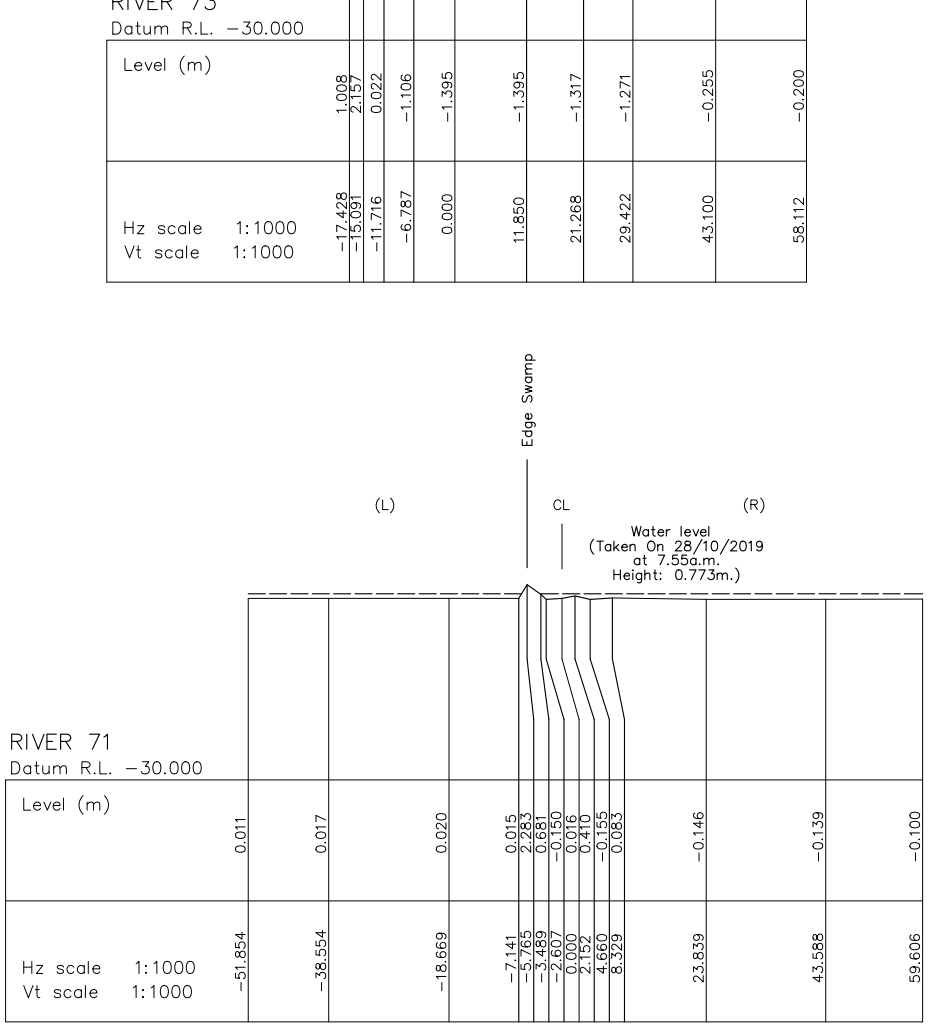
RIVER 75
Datum R.L. −30.000

Level (m)	−0.950	−0.944	−0.960	−0.955	−1.016	−1.343	−1.405	−1.225	−1.300	−1.294	−1.277	−1.255
Hz scale 1:1000 Vt scale 1:1000	−50.723	−38.071	−22.981	−9.521	−7.002	−6.446	0.000	6.737	19.346	35.421	42.330	55.934



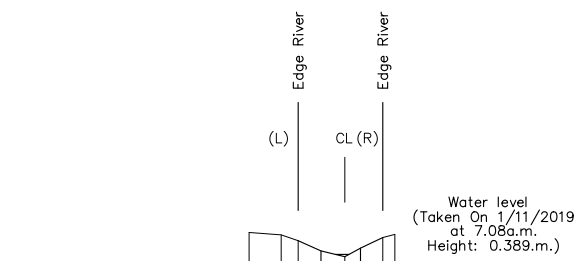
RIVER 73
Datum R.L. −30.000

Level (m)	1.008	2.157	0.022	−1.106	−1.395	−1.395	−1.317	−1.271	−0.255	−0.200
Hz scale 1:1000 Vt scale 1:1000	−17.428	−15.091	−11.716	−6.787	0.000	11.850	21.268	29.422	43.100	58.112



RIVER 71
Datum R.L. −30.000

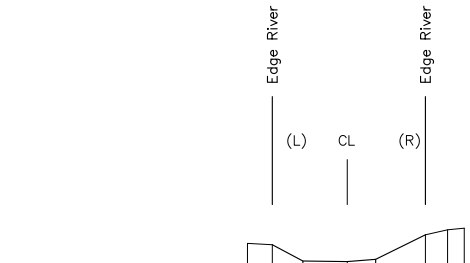
Level (m)	0.011	0.017	0.020	0.015	2.283	0.681	−0.150	0.016	0.410	−0.155	0.083	−0.146	−0.139	−0.100
Hz scale 1:1000 Vt scale 1:1000	−51.854	−38.554	−18.669	−7.141	−5.765	−3.489	−2.607	0.000	2.152	4.660	8.329	23.839	43.588	59.606



RIVER 69

Datum R.L. −30.000

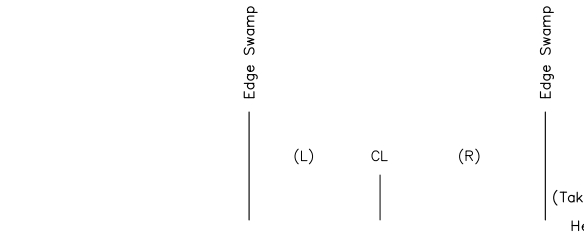
Level (m)	4.015	3.619	2.656	0.968	0.012	1.426	3.177	3.698
Hz scale 1:1000 Vt scale 1:1000	−15.823	−10.519	−7.711	−3.943	0.000	2.588	6.273	8.266



RIVER 68A

Datum R.L. −30.000

Level (m)	2.544	2.319	−0.373	−0.466	−0.094	3.960	4.788	5.055
Hz scale 1:1000 Vt scale 1:1000	−16.493	−12.387	−7.333	0.000	4.695	12.916	16.579	19.334



RIVER 64

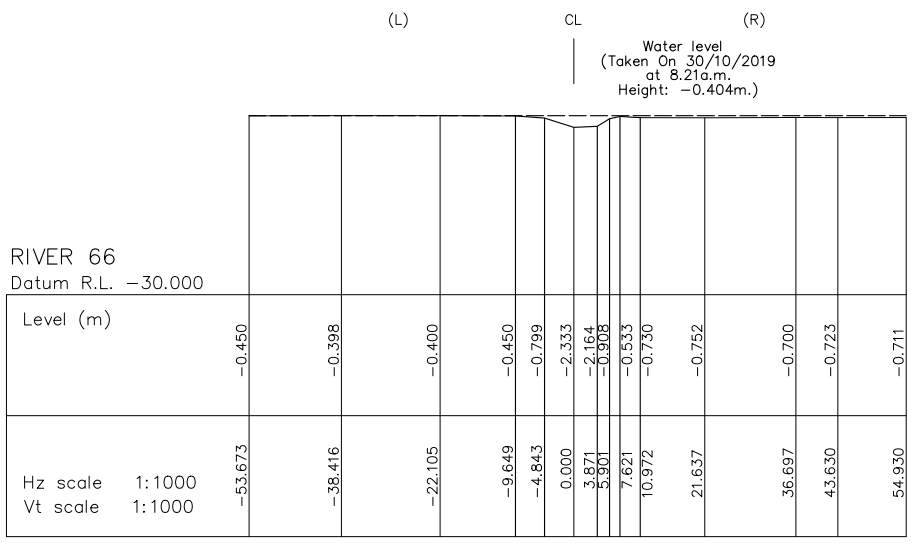
Datum R.L. −30.000

Level (m)	−0.100	−2.333	−1.546	0.085	−1.300	−0.005
Hz scale 1:1000 Vt scale 1:1000	−21.646	−10.823	−8.132	0.000	14.357	27.314

RIVER 64A

Datum R.L. −30.000

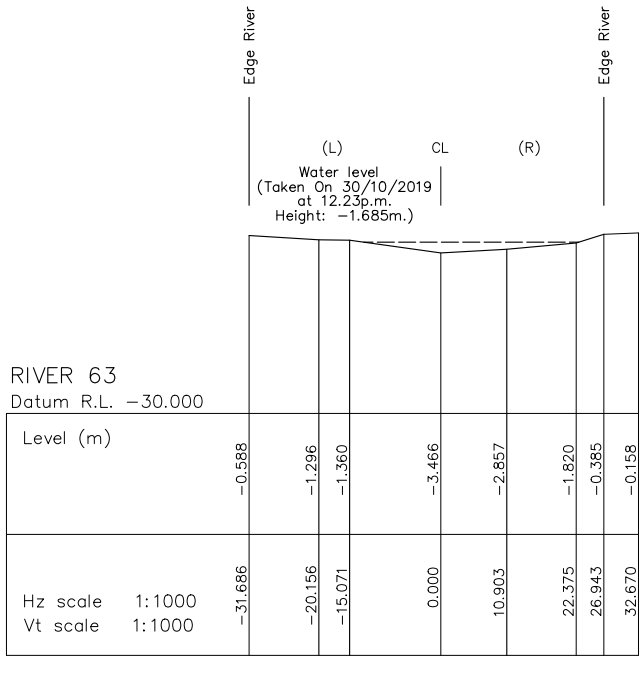
Level (m)	−1.408	−1.339	−1.418	−2.677	−1.628	−1.615	0.085
Hz scale 1:1000 Vt scale 1:1000	−52.189	−36.803	−25.224	−21.180	−11.504	−2.763	0.000



RIVER 66

Datum R.L. −30.000

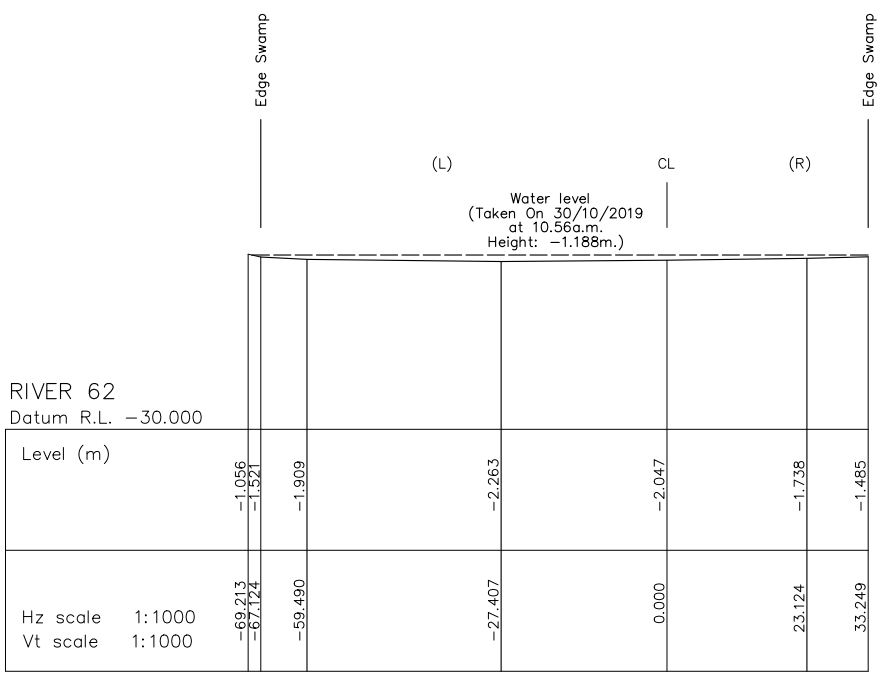
Level (m)	−0.450	−0.398	−0.400	−0.450	−0.799	−2.333	−2.164	−0.908	−0.533	−0.730	−0.752	−0.700	−0.723	−0.711
Hz scale 1:1000 Vt scale 1:1000	−53.673	−38.416	−22.105	−9.649	−4.843	0.000	3.871	5.901	7.621	10.972	21.637	36.697	43.630	54.930



RIVER 63

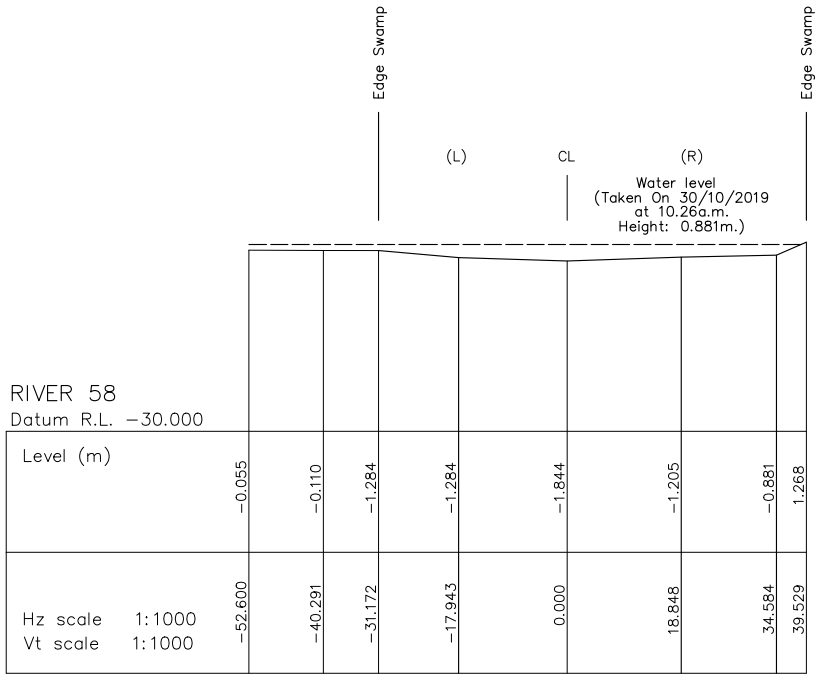
Datum R.L. −30.000

Level (m)	−0.588	−1.296	−1.360	−3.466	−2.857	−1.820	−0.385	−0.158
Hz scale 1:1000 Vt scale 1:1000	−31.686	−20.156	−15.071	0.000	10.903	22.375	26.943	32.670



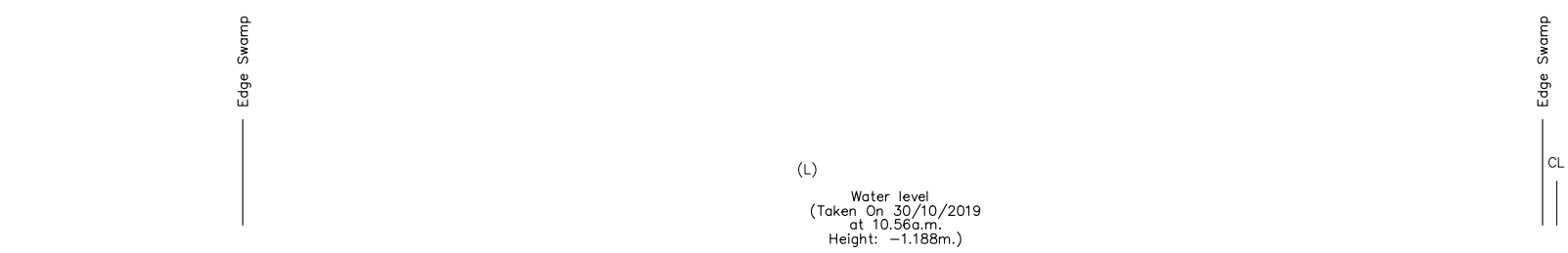
RIVER 62
Datum R.L. −30.000

Level (m)	−1.056	−1.521	−1.909	−2.263	−2.047	−1.738	−1.485
Hz scale 1:1000 Vt scale 1:1000	−69.213 −67.124		−59.490	−27.407	0.000	23.124	33.249



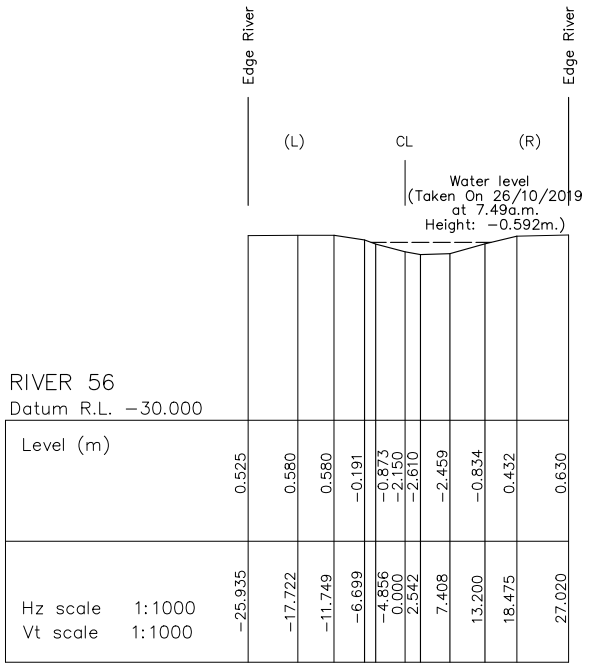
RIVER 58
Datum R.L. −30.000

Level (m)	−0.055	−0.110	−1.284	−1.284	−1.844	−1.205	−0.881	1.268
Hz scale 1:1000 Vt scale 1:1000	−52.600	−40.291	−31.172	−17.943	0.000	18.848	34.584	39.529



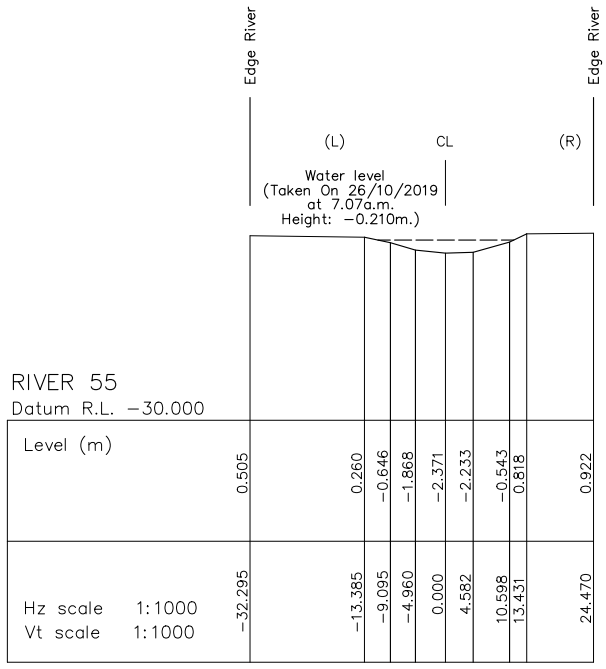
RIVER 59
Datum R.L. −30.000

Level (m)	−1.543	−1.543	−1.822	−4.613	−1.484	−1.940	−0.509	−1.056
Hz scale 1:1000 Vt scale 1:1000	−222.007	−212.538	−174.856	−135.794	−90.509	−28.060	−2.411	0.000



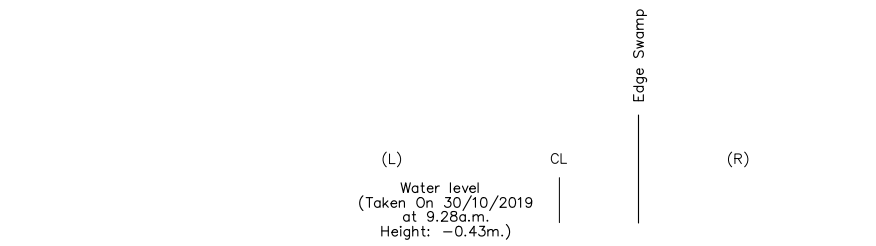
RIVER 56
Datum R.L. −30.000

Level (m)	0.525	0.580	0.580	−0.191	−0.873	−2.150	−2.610	−2.459	−0.834	0.432	0.630
Hz scale 1:1000 Vt scale 1:1000	−25.935	−17.722	−11.749	−6.699	−4.856 0.000	2.542	7.408	13.200	18.475	27.020



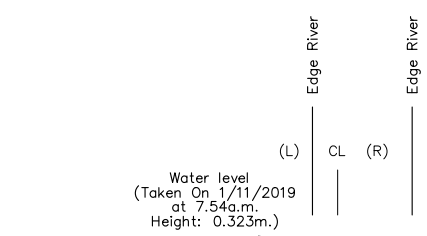
RIVER 55
Datum R.L. −30.000

Level (m)	0.505	0.260	−0.646	−1.868	−2.371	−2.233	−0.543	0.818	0.922
Hz scale 1:1000 Vt scale 1:1000	−32.295	−13.385	−9.095	−4.960	0.000	4.582	10.598	13.431	24.470



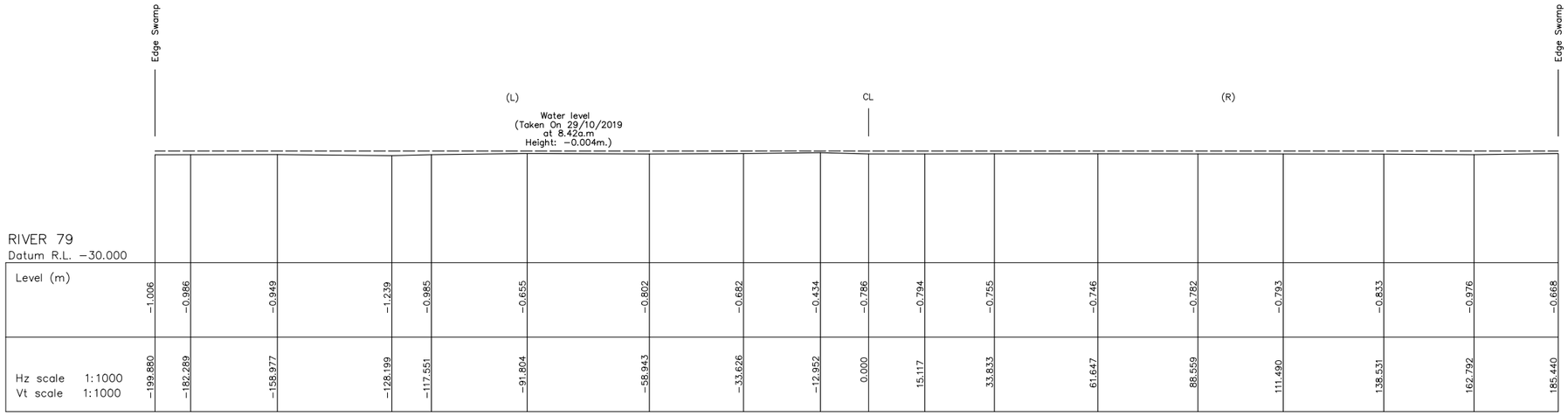
RIVER 51
Datum R.L. −30.000

Level (m)	−0.190	−0.193	−0.200	−0.205	−0.211	−0.305	−1.613	−2.223	−0.010	0.053	0.060	0.048	0.050
Hz scale 1:1000 Vt scale 1:1000	−51.278	−43.540	−30.250	−17.506	−6.873 −4.752	0.000	8.404	13.073	18.759	31.702	42.490	50.807



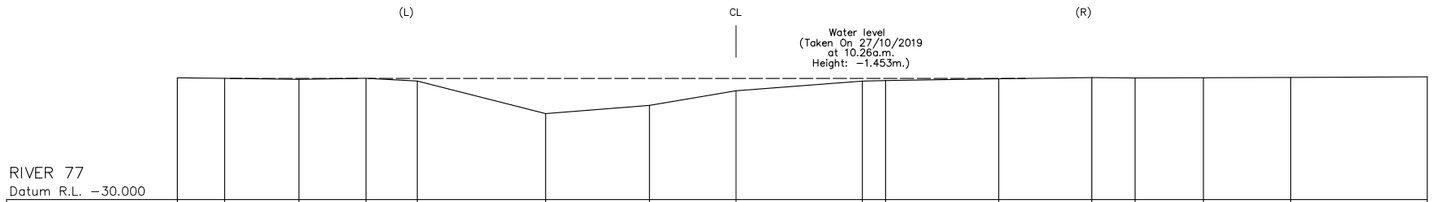
RIVER 48
Datum R.L. −30.000

Level (m)	2.551	1.744	1.056	0.238	0.398	1.107
Hz scale 1:1000 Vt scale 1:1000	−13.051	−7.035	−4.163	0.000	4.128	12.313



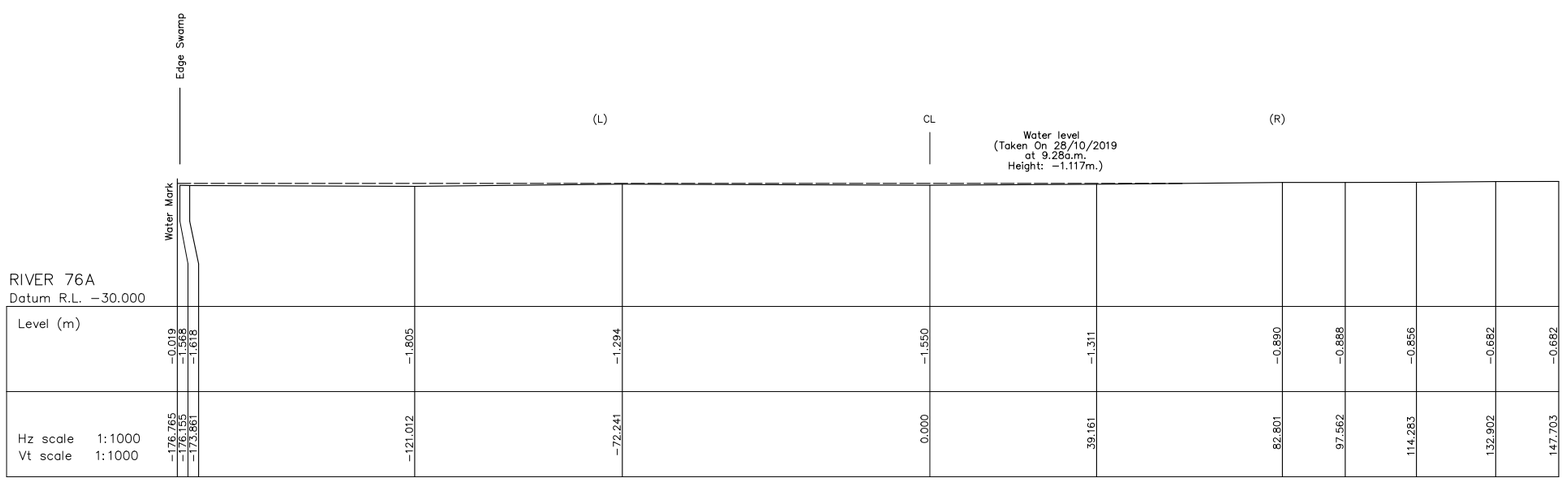
RIVER 79
Datum R.L. −30.000

Level (m)	−1.006	−0.986	−0.949	−1.239	−0.985	−0.655	−0.802	−0.682	−0.434	−0.786	−0.794	−0.755	−0.746	−0.782	−0.793	−0.833	−0.976	−0.668
Hz scale 1:1000 Vt scale 1:1000	−199.880	−182.289	−158.977	−128.199	−117.551	−91.804	−58.943	−33.626	−12.952	0.000	15.117	33.833	61.647	88.559	111.490	138.531	162.792	185.440



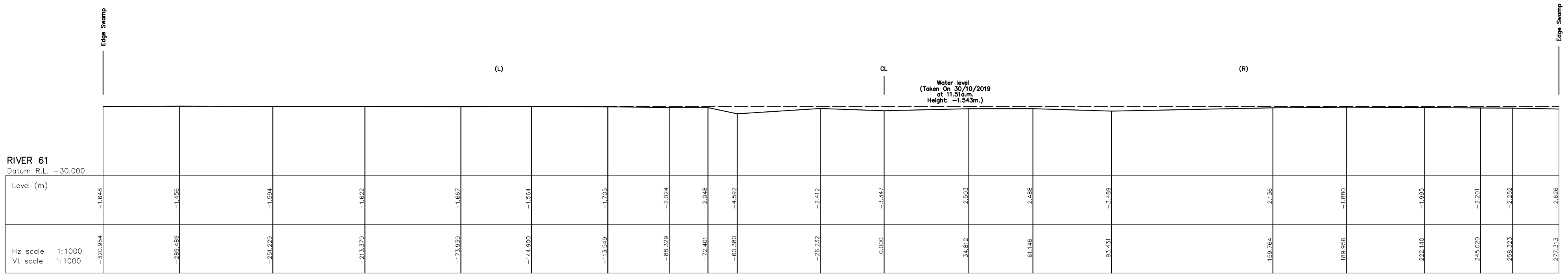
RIVER 77
Datum R.L. −30.000

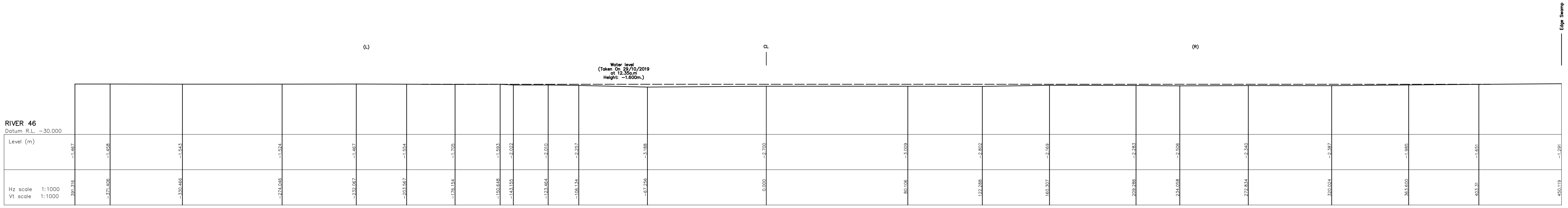
Level (m)	−1.396	−1.525	−1.760	−1.511	−2.153	−9.805	−7.876	−4.441	−2.171	−2.041	−1.622	−1.347	−1.430	−1.386	−1.315	−1.165		
Hz scale 1:1000 Vt scale 1:1000	−131.232	−120.200	−102.680	−86.904	−74.868	−44.724	−20.330	0.000	29.674	35.129	61.703	83.565	93.742	109.780	130.287	162.356		

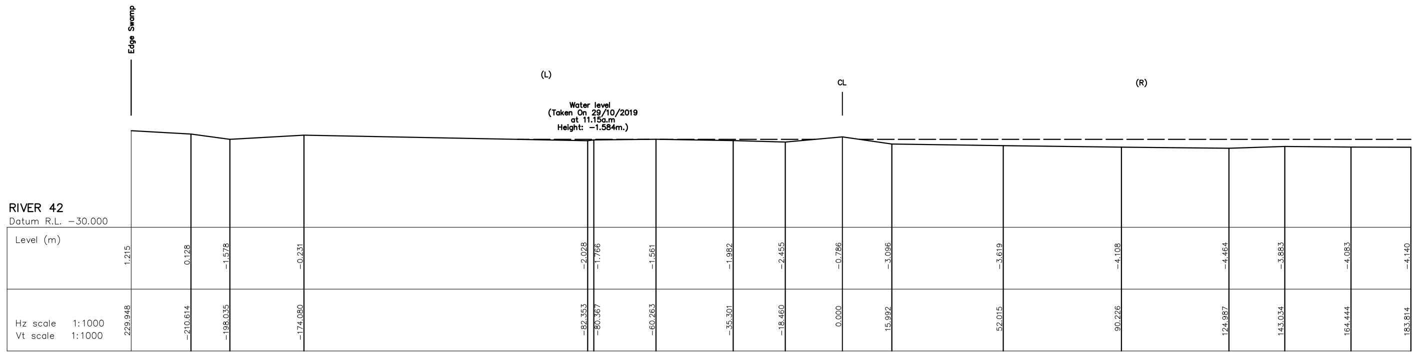


RIVER 76A
Datum R.L. −30.000

Level (m)	−0.019	−1.568	−1.618	−1.805	−1.294	−1.550	−1.311	−0.890	−0.888	−0.856	−0.682	−0.682
Hz scale 1:1000 Vt scale 1:1000	−176.765	−176.155	−173.861	−121.012	−72.241	0.000	39.161	82.801	97.562	114.283	132.902	147.703


Edge Swamp
(L)
CL
Water level
(Taken On 30/10/2019
at 11.51a.m.
Height: −1.543m.)
(R)
Edge Swamp
RIVER 61
Datum R.L. −30.000
Level (m)
Hz scale 1:1000
Vt scale 1:1000

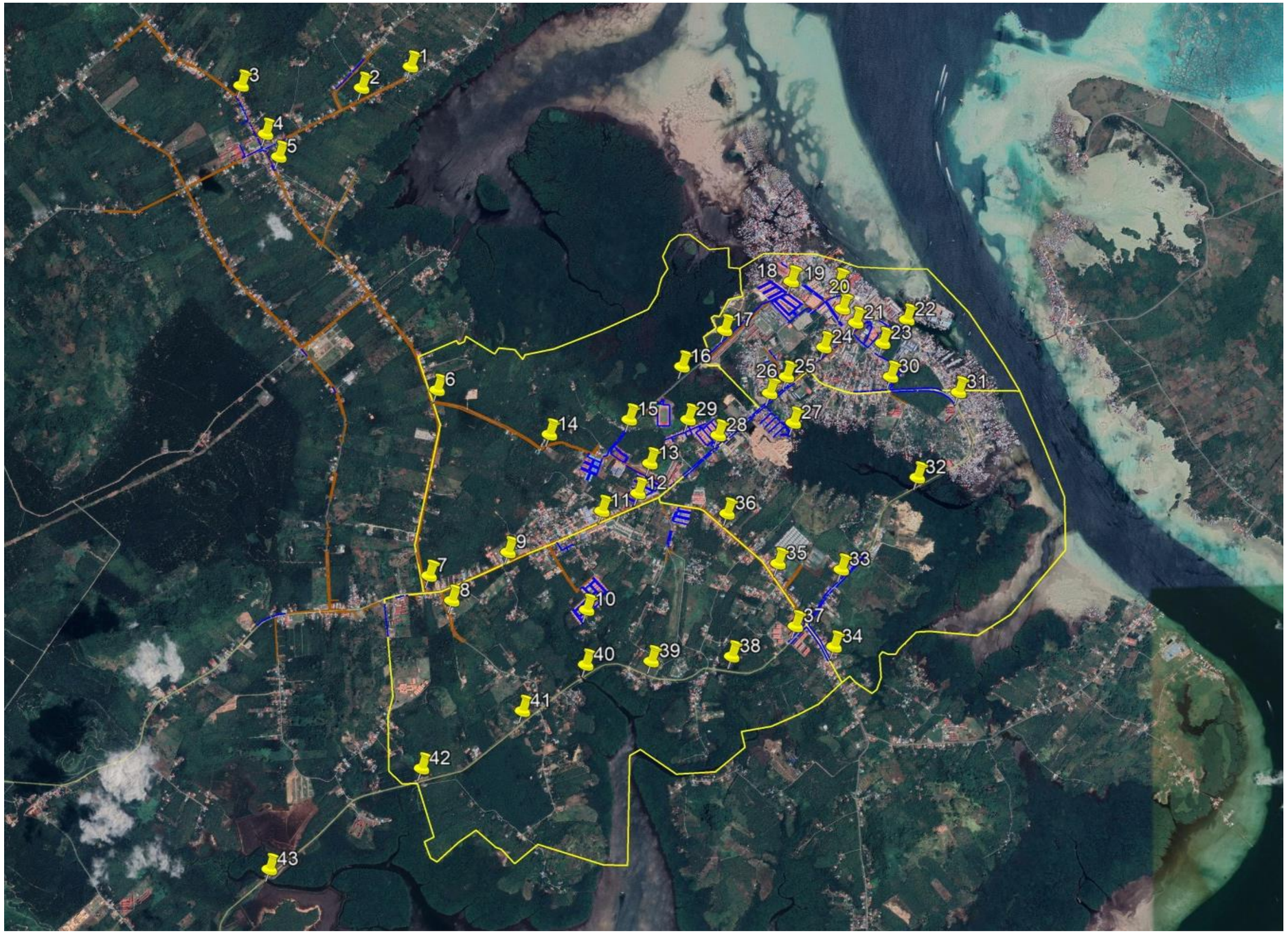

(L)
CL
Water level
(Taken On 29/10/2019
at 12.35p.m.
Height: −1.600m.)
(R)
Edge Swamp
RIVER 46
Datum R.L. −30.000
Level (m)
Hz scale 1:1000
Vt scale 1:1000


Edge Swamp
(L)
CL
Water level
(Taken On 29/10/2019
at 11.15a.m.
Height: −1.584m.)
(R)
RIVER 42
Datum R.L. −30.000
Level (m)
Hz scale 1:1000
Vt scale 1:1000

APPENDIX D:

WATER QUALITY

SAMPLING



LEGEND:

- Study Area
- R.C Drain
- Earth Drain
- Road
- Location of Water Sample

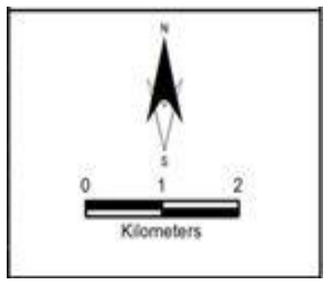


FIGURE 1: LOCATION OF WATER QUALITY SAMPLING STATION

Semporna Water Sampling Test

Date : 9th October 2019

Points	Time	Sample taken	Remarks
29	11.33am	Yes	
28	11.37am	Yes	
1	11.53am	No	Dry drain
2	11.54am	No	Dry drain
3	12.00pm	No	Dry drain
4	12.02pm	No	Concealed drain
5	12.07pm	Yes	
6	12.22pm	No	Dry drain
7	12.24pm	No	Dry drain
8	12.27pm	No	Dry drain
9	2.50pm	Yes	
10	2.43pm	Yes	
11	12.53pm	Yes	
12	12.57pm	Yes	
13	1.01pm	Yes	
14	1.07pm	No	Dry drain
15	1.11pm	Yes	
16	1.16pm	Yes	
17	1.18pm	No	Dry drain
18	1.21pm	Yes	
19	4.22pm	Yes	
20	4.19pm	No	Dry drain
21	2.16pm	No	Concealed drain
22	4.11pm	No	Dry drain
23	4.06pm	Yes	
24	2.18pm	Yes	
25	2.25pm	No	Dry drain
26	2.27pm	Yes	
27	2.31pm	No	Dry drain
30	4.02pm	No	Dry drain
31	4.00pm	No	Dry drain
32	3.53pm	Yes	
33	3.49pm	Yes	
34	3.44pm	Yes	
35	3.41pm	No	Concealed drain
36	3.39pm	No	Dry drain
37	3.35pm	No	Dry drain
38	3.31pm	Yes	
39	3.27pm	Yes	
40	3.15pm	Yes	
41	3.12pm	No	Dry drain
42	3.11pm	No	Dry drain
43	3.04pm	Yes	

Weather : Fine

Weather : Starting to rain

Weather : Post heavy rain

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TEST REPORT

NOT FOR ADVERTISEMENT PURPOSES

Customer	:	Megamas Konsult Sdn Bhd Lot 26, 3rd Floor, Block C Heritage Plaza, Off Jalan Lintas 88300 Kota Kinabalu.	Lab No.	:	CK/CL405/3919/19
			Type (No.) of Sample	:	Water (22)
			Date Received	:	10th October 2019
			Date of Report	:	21st November 2019
Attn	:	Mr Ng Chien Faan Donald	Service Order	:	MKSB/PO-067 Dated 11.11.2019

Lab No.	3919-1	3919-2	3919-3	*Test Method*
Parameter(s)	5	9	10	
Dissolved Oxygen, mg/L	2.03	2.57	2.67	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	3,030	14.0	31.0	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	58.9	16.4	12.6	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500 P D, 2017*
Nitrate (as NO_3), mg/L	2.19	74.3	6.79	*APHA 4500-NO_3^-E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	9.75	1.39	4.74	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	7.63	8.07	7.11	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	110	56.6	49.7	*APHA 5220 C, 2017*

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Lab No.: CK/CL405/3919/19

Lab No.	3919-4	3919-5	3919-6	*Test Method*
Parameter(s)	11	12	13	
Dissolved Oxygen, mg/L	2.03	2.43	2.30	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	113	297	150	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	16.0	16.0	39.4	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500 P D, 2017*
Nitrate (as NO_3), mg/L	18.2	7.80	17.5	*APHA 4500-NO_3^-E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	3.90	1.67	1.95	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	7.71	7.75	6.91	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	115	120	135	*APHA 5220 C, 2017*

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Lab No.: CK/CL405/3919/19

Lab No.	3919-7	3919-8	3919-9	*Test Method*
Parameter(s)	15	16	18	
Dissolved Oxygen, mg/L	2.57	2.60	2.63	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	39.0	33.0	238	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	10.8	6.60	64.6	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500 P D, 2017*
Nitrate (as NO_3), mg/L	5.95	6.64	66.9	*APHA 4500-NO_3^-E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	0.83	1.39	27.9	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	7.69	7.74	7.01	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	111	82.3	757	*APHA 5220 C, 2017*

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Lab No.: CK/CL405/3919/19

Lab No.	3919-10	3919-11	3919-12	*Test Method*
Parameter(s)	19	23	24	
Dissolved Oxygen, mg/L	2.33	2.53	2.63	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	266	3,660	44.0	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	334	689	33.5	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500 P D, 2017*
Nitrate (as NO_3), mg/L	1.71	1.55	0.95	*APHA 4500-NO_3^-E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	81.9	82.5	7.80	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	7.11	7.09	6.64	*APHA 4500-H+ B, 2017*
Chemical Oxygen Demand, mg/L	1,140	1,530	68.6	*APHA 5220 C, 2017*

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Lab No.: CK/CL405/3919/19

Lab No.	3919-13	3919-14	3919-15	*Test Method*
Parameter(s)	26	28	29	
Dissolved Oxygen, mg/L	2.63	2.60	2.73	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	1,550	11.0	14.0	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	28.2	30.1	3.64	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	0.25	0.21	0.03	*APHA 4500 P D, 2017*
Nitrate (as NO_3), mg/L	15.0	79.0	5.90	*APHA 4500-NO_3^- E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	3.34	19.8	1.11	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	7.85	5.06	8.06	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	537	77.4	<10.0	*APHA 5220 C, 2017*

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Lab No.: CK/CL405/3919/19

Lab No.	3919-16	3919-17	3919-18	*Test Method*
Parameter(s)	32	33	34	
Dissolved Oxygen, mg/L	2.60	2.63	2.63	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	148	55.0	567	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	<2.00	7.08	24.6	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500 P D, 2017*
Nitrate (as NO_3), mg/L	1.53	7.74	78.0	*APHA 4500-NO_3^-E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	0.56	0.28	8.36	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	7.62	8.40	8.06	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	22.9	75.7	86.2	*APHA 5220 C, 2017*

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Lab No.	3919-19	3919-20	3919-21	*Test Method*
Parameter(s)	38	39	40	
Dissolved Oxygen, mg/L	2.37	2.60	2.60	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	41.0	34.0	62.0	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	5.88	11.5	<2.00	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500 P D, 2017*
Nitrate (as NO_3), mg/L	16.8	83.7	6.00	*APHA 4500-NO_3^-E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	0.56	9.19	0.56	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	8.19	8.67	7.67	*APHA 4500-H B, 2017*
Chemical Oxygen Demand, mg/L	26.4	128	33.4	*APHA 5220 C, 2017*

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Lab No.: CK/CL405/3919/19

Lab No.	3547-22	*Test Method*
Parameter(s)	43	
Dissolved Oxygen, mg/L	2.43	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	63.0	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	<2.00	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	*APHA 4500 P D, 2017*
Nitrate (as NO_3), mg/L	20.0	*APHA 4500-NO_3^- E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	0.56	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	7.73	*APHA 4500-H B, 2017*
Chemical Oxygen Demand, mg/L	29.9	*APHA 5220 C, 2017*

Date of commencement of BOD_5 analysis: 10th October 2019

---------- *End* ----------

CHEMSAIN KONSULTANT SDN. BHD. Laboratory Kota Kinabalu (130904-U)

ChM. ZAYDIE LEONG @ DINO OSMAN
B. Sc. (Hons)
MMIC (3133/5377/08/11)
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TEST REPORT

NOT FOR ADVERTISEMENT PURPOSES

Customer	:	Megamas Konsult Sdn Bhd Lot 26, 3rd Floor, Block C Heritage Plaza, Off Jalan Lintas 88300 Kota Kinabalu.	Lab No. Type (No.) of Sample Date Received Date of Report	: : : :	CK/ML405/3920/19 Water (22) 10th October 2019 22nd October 2019
Attn	:	Mr Ng Chien Faan Donald	Purchase Order	:	MKSB/PO-050 Dated 06.09.2019

Lab No.	Sample(s) Identification	Feacal Coliform Count (MPN/100 mL 35±0.5°C/48h) *Test Method: APHA 9221 E, 2005*
3920-1	5	>1.6 x 10^4
3920-2	9	>1.6 x 10^4
3920-3	10	>1.6 x 10^4
3920-4	11	>1.6 x 10^4
3920-5	12	>1.6 x 10^4
3920-6	13	>1.6 x 10^4
3920-7	15	>1.6 x 10^4
3920-8	16	1.7 x 10^3
3920-9	18	>1.6 x 10^4
3920-10	19	>1.6 x 10^4
3920-11	23	>1.6 x 10^4
3920-12	24	>1.6 x 10^4
3920-13	26	>1.6 x 10^4
3920-14	28	>1.6 x 10^4

CHEMSAIN KONSULTANT SDN BHD *(130904-U)*

Lots 2 & 7, Lorong Suria, Off Lorong Buah Duku 1, Taman Perindustrian Suria,
Jalan Kolombong, 88450, Kota Kinabalu, Sabah, Malaysia.
Tel: +60-88-389671 / 381278 **Fax:** +60-88-381280
Email: laboratory.kk@chemsain.com
www.chemsain.com

MS ISO/IEC 17025
TESTING
SAMM NO. 238

TEST REPORT

NOT FOR ADVERTISEMENT PURPOSES

Lab No.: CK/ML405/3920/19

Lab No.	Sample(s) Identification	Feacal Coliform Count (MPN/100 mL 35±0.5°C/48h) *Test Method: APHA 9221 E, 2005*
3920-15	29	$>1.6 \times 10^4$
3920-16	32	2.4×10^3
3920-17	33	1.7×10^3
3920-18	34	$>1.6 \times 10^4$
3920-19	38	2.8×10^3
3920-20	39	$>1.6 \times 10^4$
3920-21	40	4.9×10^2
3920-22	43	70

---------- *End* ----------

STEPFANIE EVERT JOLE
M. Sc.
MJMM0369
MICROBIOLOGIST

CHEMSAIN KONSULTANT SDN. BHD. Laboratory Kota Kinabalu (130904-U)

Water Sampling (Semporna)

Date : 9-10-2019

Point : 1

Time : 11.53am

Unable to take water sampling due to dry drain

Point : 2

Time : 11.54am

Unable to take water sampling due to dry drain

Point : 3

Time : 12.00pm

Unable to take water sampling due to dry drain

Point : 4

Time : 12.02pm

Unable to take water sampling due to concealed drain

Point : 5

Time : 12.07pm

Point : 6

Time : 12.22pm

Unable to take water sampling due to dry drain

Point : 7

Time : 12.24pm

Unable to take water sampling due to dry drain

Point : 8

Time : 12.27pm

Unable to take water sampling due to dry drain

Point : 9

Time : 2.50pm

Point : 10

Time : 2.43pm

Point : 11

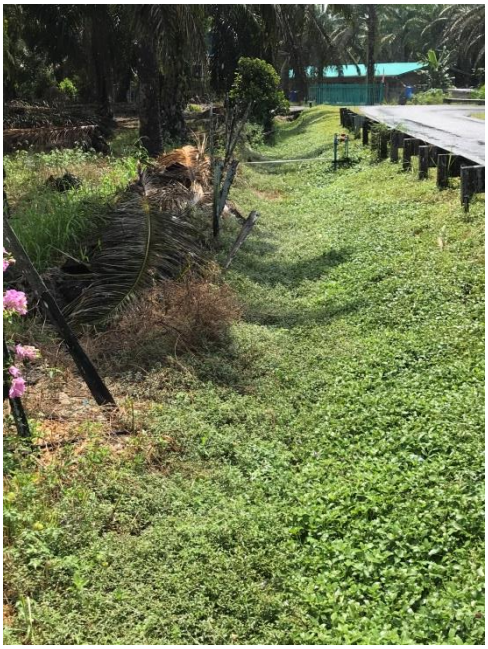
Time : 12.53pm

Point : 12

Time : 12.57pm

Point : 13

Time : 1.01pm



Point : 14

Time : 1.07pm

Unable to take water sampling due to dry drain

Point : 15

Time : 1.11pm

Point : 16

Time : 1.16pm

Point : 17

Time : 1.18pm

Unable to take water sampling due to dry drain

Point : 18

Time : 1.21pm

Point : 19

Time : 4.22pm

Point : 20

Time : 4.19pm

Unable to take water sampling due to dry drain

Point : 21

Time : 2.16pm

Unable to take water sampling due to concealed drain

Point : 22

Time : 4.11pm

Unable to take water sampling due to dry drain

Point : 23

Time : 4.06pm

Point : 24

Time : 2.18pm

Point : 25

Time : 2.25pm

Unable to take water sampling due to dry drain

Point : 26

Time : 2.27pm

Point : 27

Time : 2.31pm

Unable to take water sampling due to dry drain

Point : 28

Time : 11.37am

Point : 29

Time : 11.33am

Point : 30

Time : 4.02pm

Unable to take water sampling due to dry drain

Point : 31

Time : 4.00pm

Unable to take water sampling due to dry drain

Point : 32

Time : 3.53pm

Point : 33

Time : 3.49pm

Point : 34

Time : 3.44pm

Point : 35

Time : 3.41pm

Unable to take water sampling due to concealed drain

Point : 36

Time : 3.39pm

Unable to take water sampling due to dry drain

Point : 37

Time : 3.35pm

Unable to take water sampling due to dry drain

Point : 38

Time : 3.31pm

Point : 39

Time : 3.27pm

Point : 40

Time : 3.15pm

Point : 41

Time : 3.12pm

Unable to take water sampling due to dry drain

Point : 42

Time : 3.11pm

Unable to take water sampling due to dry drain

Point : 43

Time : 3.04pm

Semporna Water Sampling

Date : 19th November 2019

Point	Time	Weather	Temperature (°C)	Sample taken	Remarks
1	11.02am	Cloudy	_	X	Dry drain
2	11.15am	Cloudy	_	X	Dry drain
3	11.22am	Cloudy	32	✓	
4	11.26am	Cloudy	_	X	Concealed drain
5	11.27am	Cloudy	_	X	Not enough drain water to do water sampling
6	11.30am	Cloudy	_	X	Dry drain
7	11.32am	Cloudy	_	X	Dry drain
8	11.34am	Cloudy	_	X	Dry drain
9	11.37am	Cloudy	_	X	Dry drain
10	11.44am	Cloudy	30	✓	
11	11.5am	Cloudy	34	✓	
12	12.00pm	Cloudy	32	✓	
13	10.50am	Cloudy	29	✓	
14	10.54am	Cloudy	_	X	Dry drain
15	12.07pm	Cloudy	_	X	Dry drain
16	12.19pm	Cloudy	30	✓	
17	12.22pm	Cloudy	_	X	Dry drain
18	12.31pm	Cloudy	_	X	Dry drain
19	4.07pm	Clear	29	✓	
20	4.04pm	Clear	_	X	Dry drain
21	1.22pm	Cloudy	_	X	Concealed drain
22	3.59pm	Clear	_	X	Dry drain
23	3.53pm	Clear	30	✓	

24	1.24pm	Cloudy	31	✓	
25	1.30pm	Cloudy	_	X	Dry drain
26	1.34pm	Cloudy	32	✓	
27	1.39pm	Cloudy	_	X	Dry drain
28	10.39pm	Cloudy	29	✓	
29	10.37pm	Cloudy	29	✓	
30	3.45pm	Clear	_	X	Dry drain
31	3.44pm	Clear	_	X	Dry drain
32	3.42pm	Clear	32	✓	
33	3.35pm	Clear	33	✓	
34	3.30pm	Clear	31	✓	
35	2,52pm	Cloudy	_	X	Concealed drain
36	2.50pm	Cloudy	_	X	Dry drain
37	2.47pm	Cloudy	_	X	Dry drain
38	2.44pm	Cloudy	34	✓	
39	2.36pm	Cloudy	_	X	Dry drain
40	2.32pm	Cloudy	30	✓	
41	2.30pm	Cloudy	_	X	Dry drain
42	2.27pm	Cloudy	_	X	Dry drain
43	2.24pm	Cloudy	30	✓	

Customer	:	Megamas Konsult Sdn Bhd Lot 26, 3rd Floor, Block C Heritage Plaza, Off Jalan Lintas 88300 Kota Kinabalu.	Lab No.	:	CK/CL405/4557/19
Attn	:	Mr Ng Chien Faan Donald	Type (No.) of Sample	:	Water (18)
			Date Received	:	20th November 2019
			Date of Report	:	06th December 2019
			Service Order	:	MKSB/PO-067 Dated 11.11.2019

Lab No.	4557-1	4557-2	4557-3	*Test Method*
Parameter(s)	3	10	11	
Dissolved Oxygen, mg/L	4.60	3.57	4.57	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	74.0	15.0	172	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	6.26	41.6	9.32	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500-P D, 2017*
Nitrate (as NO_3), mg/L	0.51	0.44	0.48	*APHA 4500-NO_3^- E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	0.56	19.7	19.1	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	7.57	7.27	7.73	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	19.1	83.9	95.7	*APHA 5220 C, 2017*

Lab No.: CK/CL405/4557/19

Lab No.	4557-4	4557-5	4557-6	*Test Method*
Parameter(s)	12	13	16	
Dissolved Oxygen, mg/L	4.30	1.90	4.20	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	<5.00	18.0	14.0	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	9.82	24.5	3.71	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500-P D, 2017*
Nitrate (as NO_3), mg/L	0.51	0.53	0.55	*APHA 4500-NO_3^- E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	7.60	23.9	3.38	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	7.97	7.37	8.20	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	<10.0	30.6	47.8	*APHA 5220 C, 2017*

Lab No.: CK/CL405/4557/19

Lab No.	4557-7	4557-8	4557-9	*Test Method*
Parameter(s)	19	23	24	
Dissolved Oxygen, mg/L	4.13	4.53	4.60	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	80.0	471	47.0	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ $20^{o}C$, mg/L	66.1	375	147	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500-P D, 2017*
Nitrate (as NO_3), mg/L	0.48	0.44	0.40	*APHA 4500-NO_3^- E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	39.9	42.2	13.2	*APHA 4500 NH_3 C, 2017*
pH Value @ $25^{o}C$	7.20	6.38	6.74	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	161	605	195	*APHA 5220 C, 2017*

Lab No.: CK/CL405/4557/19

Lab No.	4557-10	4557-11	4557-12	*Test Method*
Parameter(s)	26	28	29	
Dissolved Oxygen, mg/L	4.50	3.43	4.03	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	520	23.0	17.0	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	3.92	31.0	3.77	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500-P D, 2017*
Nitrate (as NO_3), mg/L	0.42	0.48	0.51	*APHA 4500-NO_3^- E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	0.84	21.1	1.12	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	7.37	7.16	8.17	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	<10.0	49.7	11.5	*APHA 5220 C, 2017*

Lab No.: CK/CL405/4557/19

Lab No.	4557-13	4557-14	4557-15	*Test Method*
Parameter(s)	32	33	34	
Dissolved Oxygen, mg/L	4.33	3.60	4.23	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	120	18.0	32.0	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ $20^{o}C$, mg/L	2.21	3.24	35.8	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500-P D, 2017*
Nitrate (as NO_3), mg/L	0.44	0.48	0.51	*APHA 4500-NO_3^- E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	0.56	0.56	7.32	*APHA 4500 NH_3 C, 2017*
pH Value @ $25^{o}C$	7.38	8.48	7.58	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	45.9	13.4	62.9	*APHA 5220 C, 2017*

Lab No.: CK/CL405/4557/19

Lab No.	4557-16	4557-17	4557-18	*Test Method*
Parameter(s)	38	40	43	
Dissolved Oxygen, mg/L	2.33	4.53	4.30	*APHA 4500-O G, 2017*
Total Suspended Solids, mg/L	116	127	183	*APHA 2540 D, 2017*
Biochemical Oxygen Demand in 5 days @ 20°C, mg/L	5.92	2.61	2.10	*APHA 5210 B & 4500-O G, 2017*
Phosphorus (as P), mg/L	<0.02	<0.02	<0.02	*APHA 4500-P D, 2017*
Nitrate (as NO_3), mg/L	0.50	0.48	0.51	*APHA 4500-NO_3^- E, 2017*
Ammoniacal Nitrogen (as NH_3-N), mg/L	0.56	0.56	0.56	*APHA 4500 NH_3 C, 2017*
pH Value @ 25°C	8.12	7.98	7.89	*APHA 4500-H^+ B, 2017*
Chemical Oxygen Demand, mg/L	44.0	<10.0	<10.0	*APHA 5220 C, 2017*

Date of commencement of BOD_5 analysis: 20th November 2019

---------- *End* ----------

……..
ChM. ZAYDIE LEONG @ DINO OSMAN
B. Sc. (Hons)
MMIC (3133/5377/08/11)
SENIOR CHEMIST

Customer	:	Megamas Konsult Sdn Bhd Lot 26, 3rd Floor, Block C Heritage Plaza, Off Jalan Lintas 88300 Kota Kinabalu.	Lab No.	:	CK/ML405/4558/19
			Type (No.) of Sample	:	Water (22)
			Date Received	:	20th November 2019
			Date of Report	:	26th November 2019
Attn	:	Mr Ng Chien Faan Donald	Purchase Order	:	MKSB/PO-050 Dated 06.09.2019

Lab No.	Sample(s) Identification	Feacal Coliform Count (MPN/100 mL 35±0.5°C/48h) *Test Method: APHA 9221 E, 2005*
4558-1	3	>1.6 x 10^4
4558-2	10	>1.6 x 10^4
4558-3	11	>1.6 x 10^4
4558-4	12	>1.6 x 10
4558-5	13	>1.6 x 10
4558-6	16	>1.6 x 10
4558-7	19	>1.6 x 10
4558-8	23	>1.6 x 10
4558-9	24	>1.6 x 10
4558-10	26	>1.6 x 10
4558-11	28	>1.6 x 10
4558-12	29	>1.6 x 10
4558-13	32	4.9 x 10^2
4558-14	33	3.5 x 10^3

Lab No.: CK/ML405/4558/19

Lab No.	Sample(s) Identification	Feacal Coliform Count (MPN/100 mL 35±0.5°C/48h) *Test Method: APHA 9221 E, 2005*
4558-15	34	>1.6 x 10
4558-16	38	2.3×10^2
4558-17	40	9.2×10^3
4558-18	43	2.3×10^2

---------- *End* ----------

.....……..

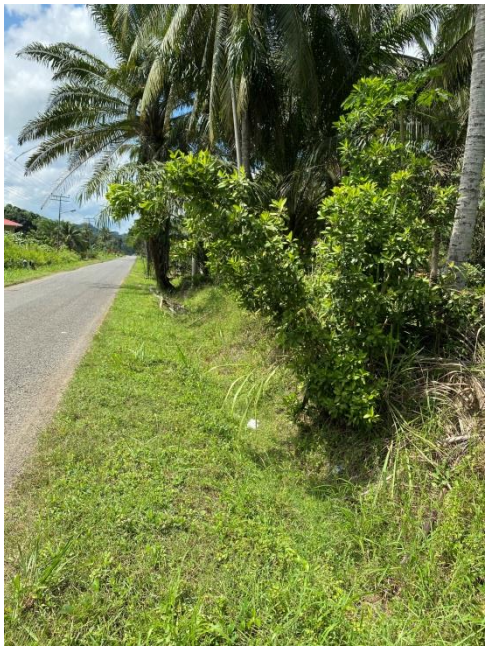
STEPFANIE EVERT JOLE
M. Sc.
MJMM0369
MICROBIOLOGIST

Water Quality Sampling (Semporna)

Date : 19th November 2019

Point : 1

Time : 11.02am



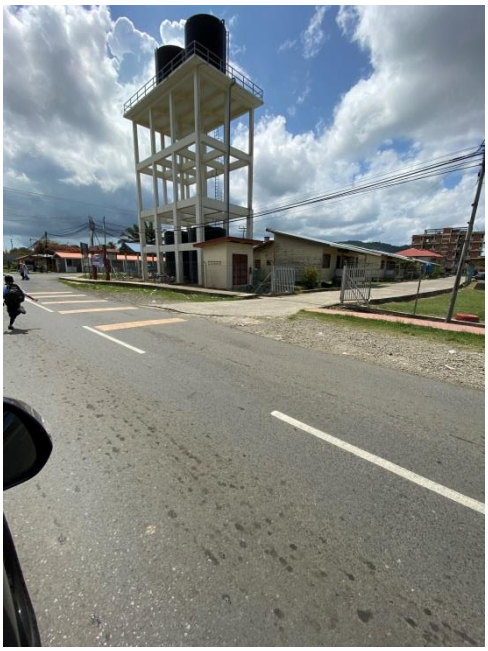
Point : 2

Time : 11.15am



Point : 3

Time : 11.22am



Point : 4

Time : 11.26am

Point : 5
Time : 11.27am

Point : 6
Time : 11.30am

Point : 7

Time : 11.32am

Point : 8

Time : 11.34am

Point : 9

Time : 11.37am

Point : 10

Time : 11.44am

Point : 11

Time : 11.55am

Point : 12

Time : 12.00pm

Point : 13

Time : 10.50am

Point : 14

Time : 10.54am

Point : 15

Time : 12.07pm

Point : 16

Time : 12.19pm

Point : 17

Time : 12.22pm

Point : 18

Time : 12.31pm

Point : 19
Time : 4.07pm

Point : 20
Time : 4.04pm

Point : 21

Time : 1.22pm

Point : 22

Time : 3.59pm



Point : 23

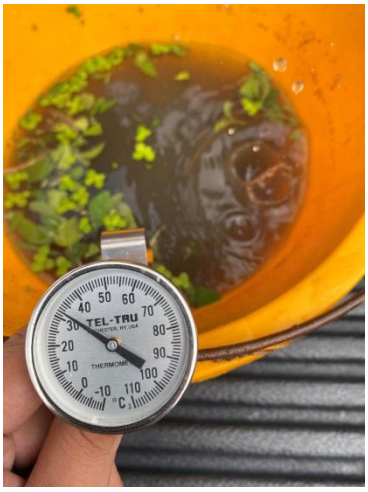
Time : 3.53pm


Point : 24

Time : 1.24pm

Point : 25

Time : 1.30pm



Point : 26

Time : 1.34pm

Point : 27

Time : 1.39pm

Point : 28

Time : 10.39am

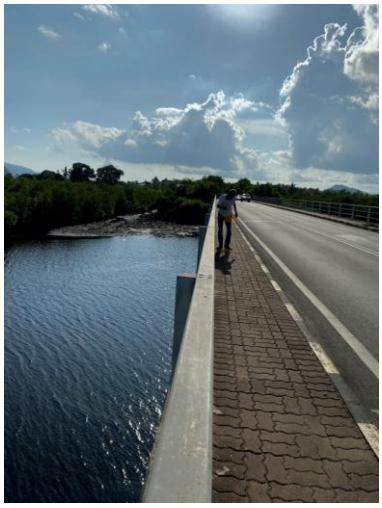


Point : 29
Time : 10.37am

Point : 30
Time : 3.45pm

Point : 31

Time : 3.44pm



Point : 32

Time : 3.42pm



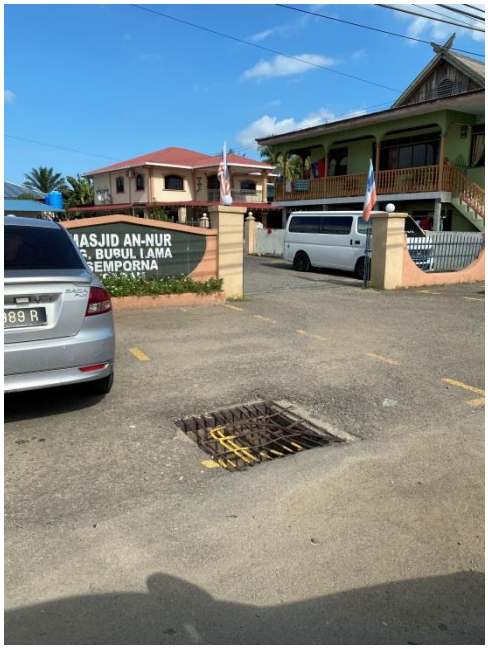
Point : 33

Time : 3.35pm



Point : 34

Time : 3.30pm



Point : 35

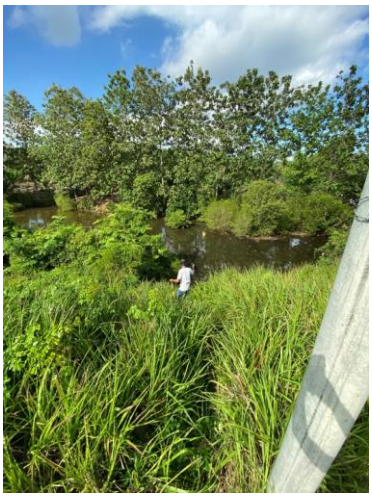
Time : 2.52pm

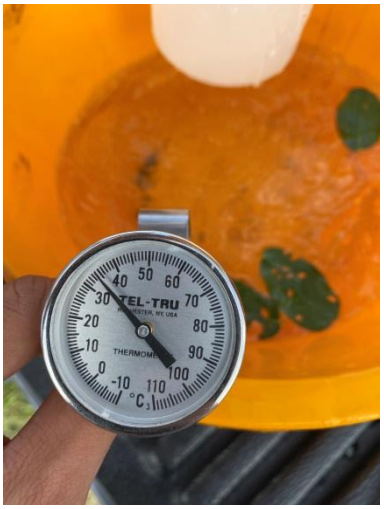
Point : 36

Time : 2.50pm

Point : 37

Time : 2.47pm





Point : 38

Time : 2.44pm

Point : 39

Time : 2.36pm

Point : 40

Time : 2.32pm

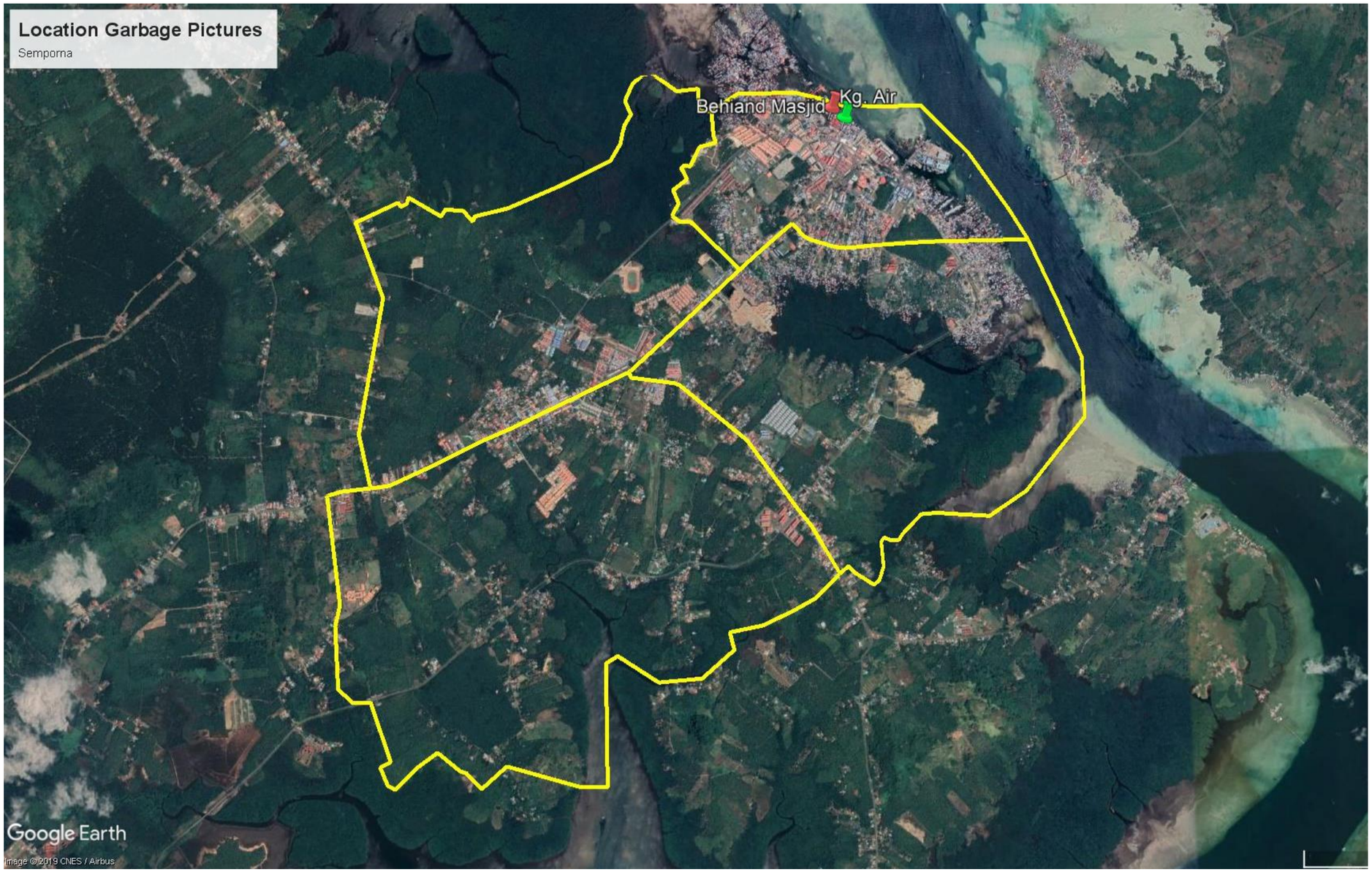
Point : 41
Time : 2.30pm

Point : 42
Time : 2.27pm

Point : 43

Time : 2.24pm

APPENDIX E: OBSERVED WATER QUALITY



LEGEND:

- Study Area
- R.C Drain
- Earth Drain
- Road
- Location of Garbage Picture

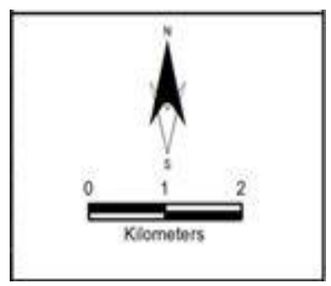


FIGURE 1: LOCATION OF OBSERVED WATER QUALITY

Semporna 2019				Location : Behind Masjid Pekan Semporna						
Date	**Time**	**Weather**	**Water Colour / Condition**							
17-Sep	4.32pm	Fine	Dark	**Area**	1 m x 1 m					
				Object	Bottle	Bucket	Plastic	Paper	Wood	_	_
				Numbers	17	5	40	17	10	_	_
17-Sep	08.15am	Fine	Dark	**Area**	1 m x 1 m					
				Object	Bottle	Bucket	Plastic	Tyre	Paper	Wood	_
				Numbers	15	3	36	1	15	10	_
15-Oct	8.05am	Fine	Dark	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Slipper	Wood	_	_
				Numbers	7	3	54	1	6	_	_
15-Oct	4.35pm	Fine	Dark	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Tyre	Wood	_	_
				Numbers	17	6	55	1	5	_	_
18-Oct	9.38am	Fine	Dark	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Wood	Paper	_	_
				Numbers	10	5	57	8	10	_	_
18-Oct	4.04pm	Fine	Dark	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Cloth
				Numbers	12	5	60	8	1	8	1
20-Oct	6.21pm	Drizzle	Dry	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Styrofoam
				Numbers	15	5	55	10	1	10	5
21-Oct	8.01am	Cloudy	Dry	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Styrofoam
				Numbers	17	6	58	7	2	12	6
21-Oct	4.25pm	Fine	Dry	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Styrofoam
				Numbers	12	6	65	9	2	10	5
22-Oct	8.12am	Fine	Dry	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Styrofoam
				Numbers	15	6	68	9	2	12	5
22-Oct	4.12pm	Fine	Dry	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Styrofoam
				Numbers	20	6	70	9	2	15	5
25-Oct	8.14am	Fine	Dry	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Styrofoam
				Numbers	17	5	70	11	2	11	3
27-Oct	4.32pm	Cloudy	Dark	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Styrofoam
				Numbers	5	_	15	3	_	1	4
29-Oct	8.20am	Fine	Dark	**Area**	1m x 1m					
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Styrofoam
				Numbers	10	4	50	5	1	7	2

12-Nov	8.05am	Cloudy	Dark	**Area**	1m x 1m							
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Styrofoam	
				Numbers	20	3	25	13	1	12	10	
12-Nov	4.06pm	Fine	Dark	**Area**	1m x 1m							
				Object	Bottle	Bucket	Plastic	Paper	Tyre	Wood	Styrofoam	
				Numbers	20	3	20	10	1	4	8	

Location : Behind Masjid Pekan Semporna

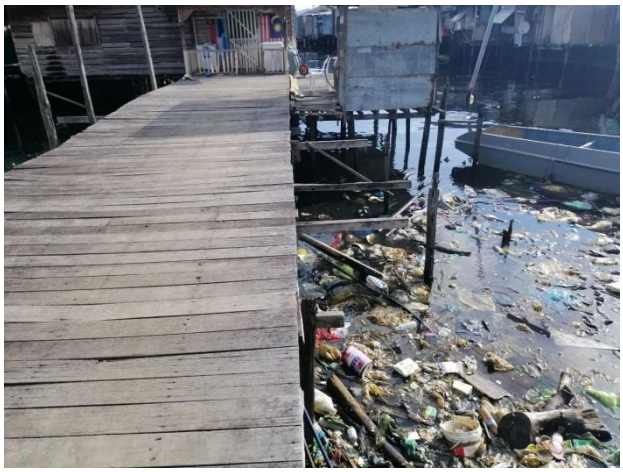
Date : 15-10-2019

Time : 8.05am

Weather : Clear

Tidal : Hide Tide

Water Colour / Condition: Blackish



Location : Kg Air Rest House

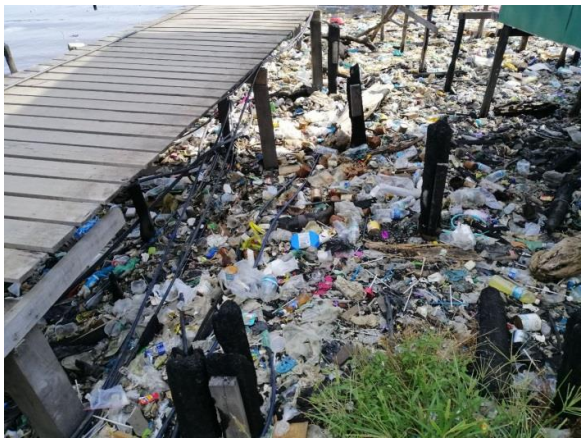
Date : 15-10-2019

Time : 8.15am

Weather : Clear

Tidal : Hide Tide

Water Colour / Condition: Clear



Location : Behind Masjid Pekan Semporna

Date : 15-10-2019

Time : 4.37pm

Weather : Clear

Tidal : Hide Tide

Water Colour / Condition: Blackish

Location : Kg Air Rest House

Date : 15-10-2019

Time : 4.24pm

Weather : Clear

Tidal : Hide Tide

Water Colour / Condition: Clear

Location : Behind Masjid Pekan Semporna

Date : 18-10-2019

Time : 9.38am

Weather : Clear

Tidal : starting to Low Tide

Water Colour / Condition: Blackish

Location : Kg Air Rest House

Date : 18-10-2019

Time : 9.28am

Weather : Clear

Tidal : starting to Low Tide

Water Colour / Condition: Blackish

Location : Behind Masjid Pekan Semporna

Date : 18-10-2019

Time : 4.04pm

Weather : Clear

Tidal : Low Tide

Water Colour / Condition : Dry

Location : Kg Air Rest House

Date : 18-10-2019

Time : 4.23pm

Weather : Clear

Tidal : Hide Tide

Water Colour / Condition : Clear

Location : Behind Masjid Pekan Semporna

Date : 20-10-2019

Time : 6.28pm

Weather : Cloudy

Tidal : Low Tide

Water Colour / Condition: Clear

Location : Kg Air Rest House

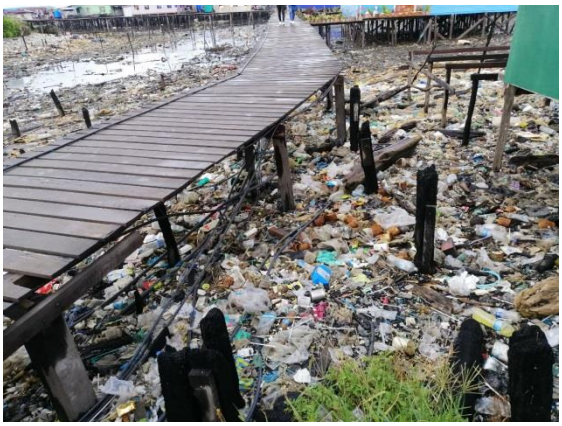
Date : 20-10-2019

Time : 6.20pm

Weather : Cloudy

Tidal : Low Tide

Water Colour / Condition: Blackish



Location : Behind Masjid Pekan Semporna

Date : 21-10-2019

Time : 8.01am

Weather : Clear

Tidal : Low Tide

Water Colour / Condition: Dry

Location : Kg Air Rest House

Date : 21-10-2019

Time : 8.08am

Weather : Clear

Tidal : Low Tide

Water Colour / Condition: Clear

Water Village Picture

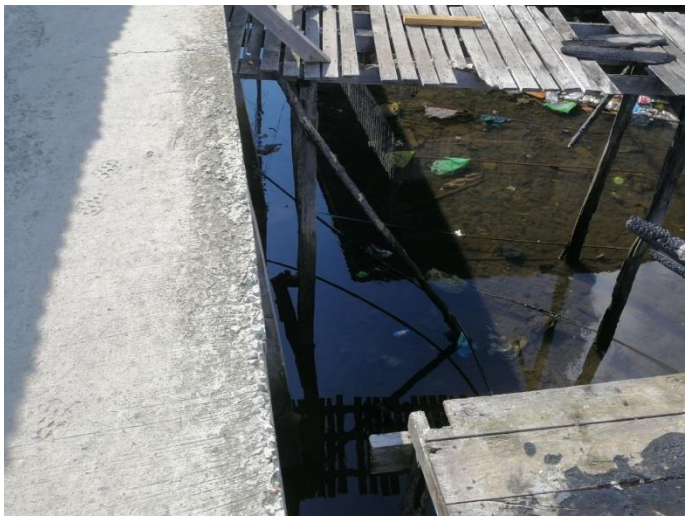
Date : 9-10-2019

Point 44

Location : Kg Rambo Tan

Point 45

Location : Kg Panji



Point 46

Location : Kg Bangau-Bangau

Point 47

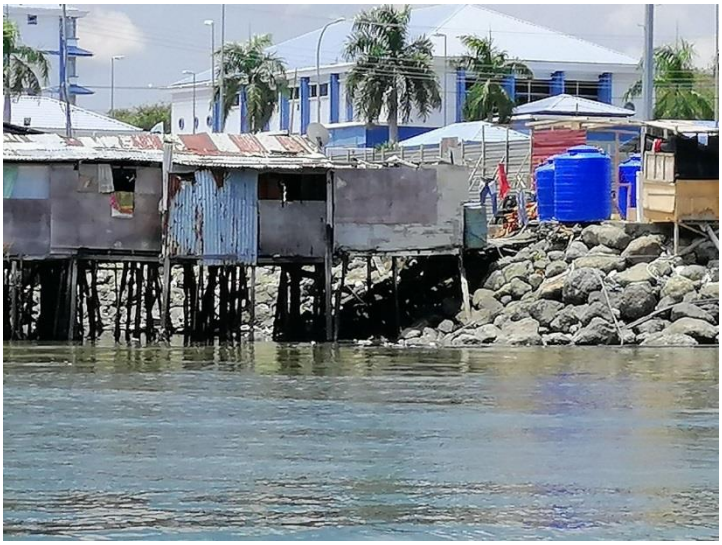
Location : Kg Air (Resthouse)

Point 48

Location : Dragon Inn / Jeti Awam

Point 49

Location : Kg Ice Box / Jeti Marin

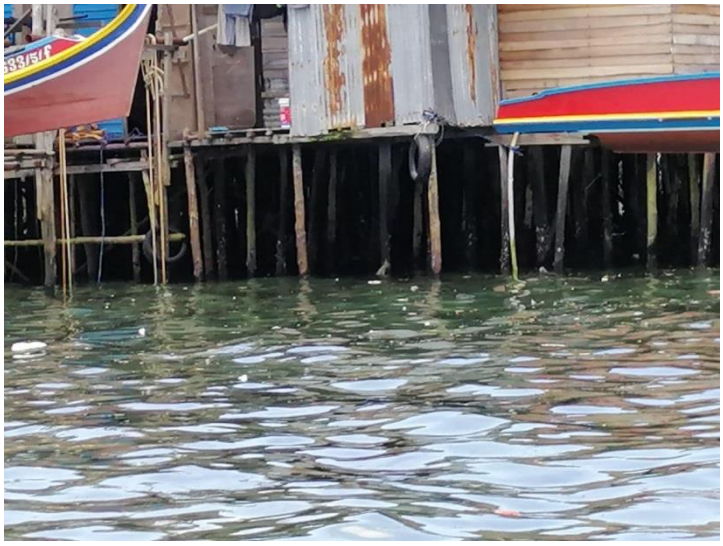


Point 50

Location : Kg Simunul

Point 51

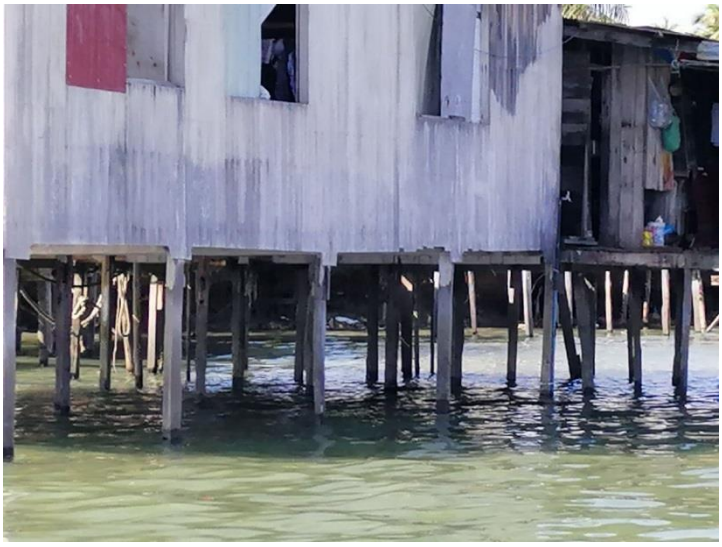
Location : Kg Selamat

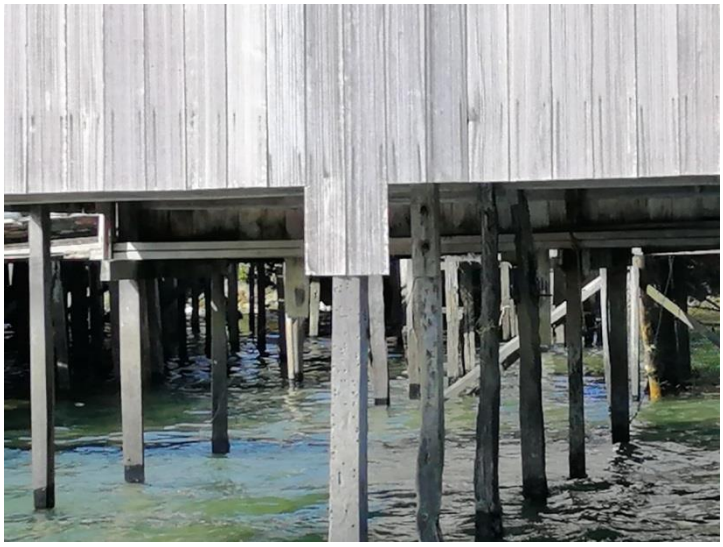


Point 52

Location : Kg Sri Aman

Point 53



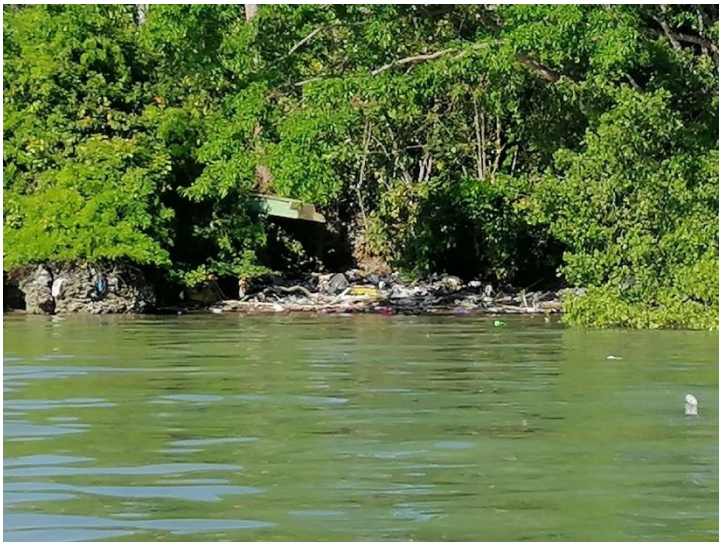


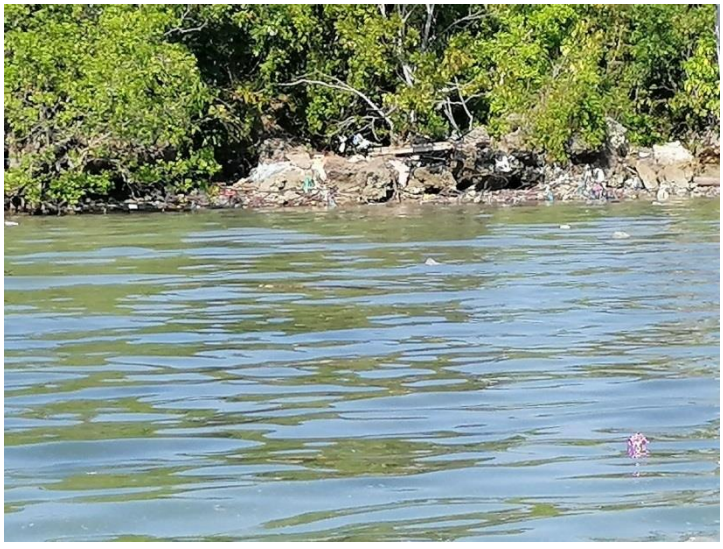
Point 54

Location : Kg Bangau-Bangau

Point 55

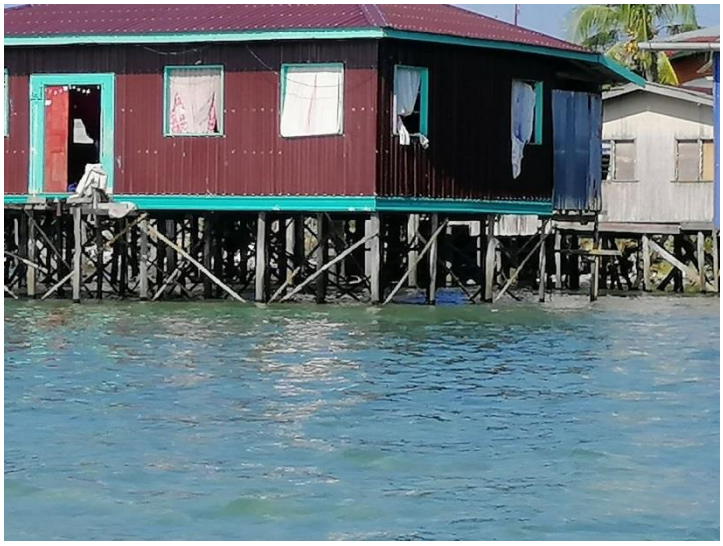
Point 56





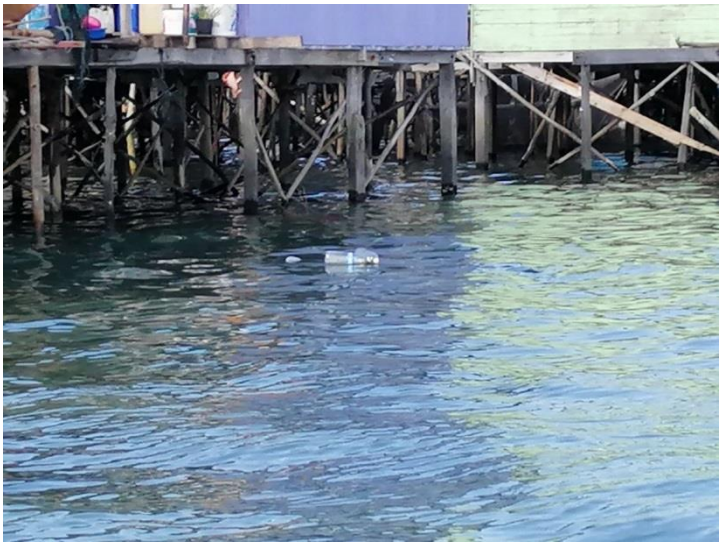
Point 57

Point 58

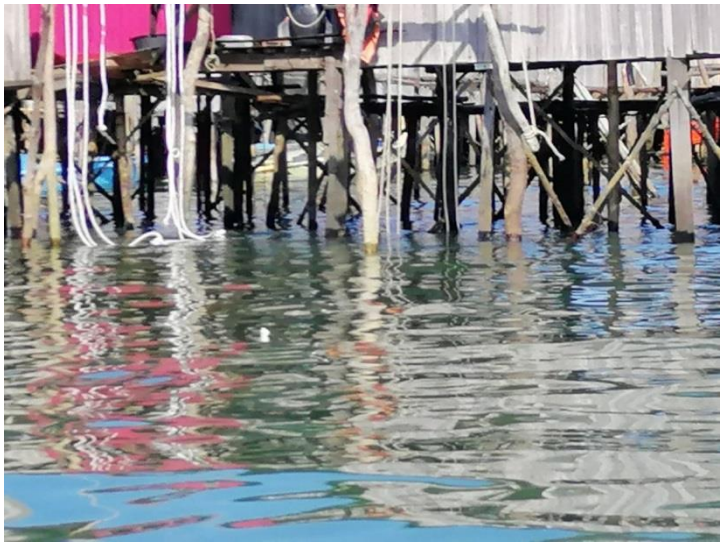


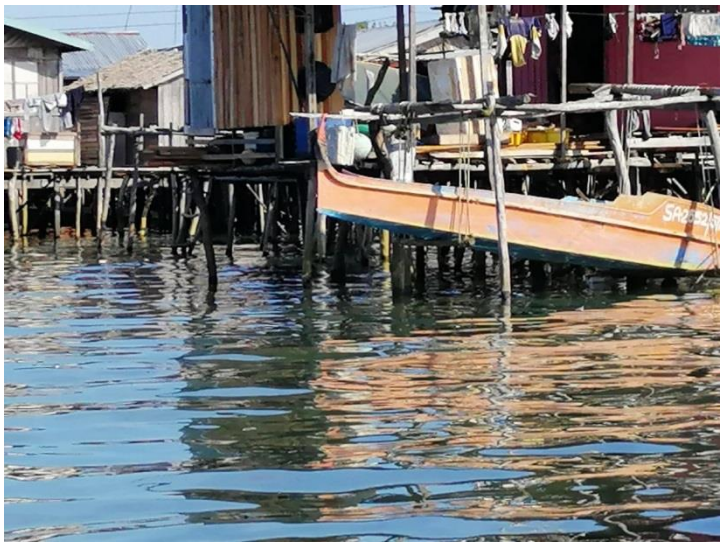
Point 59

Point 60



Point 61





APPENDIX F:

SOIL INVESTIGATION

PETA HIDROGEOLOGI SABAH DAN PULAU LABUAN
EDISI KEDUA, 2008

HYDROGEOLOGICAL MAP OF SABAH AND LABUAN ISLAND
SECOND EDITION, 2008

SCALE 1 : 500,000

30 24 18 12 6 0 30 60
Kilometer

115°00'E 116°00'E 117°00'E 118°00'E 119°00'E
7°00'N 6°00'N 5°00'N

LEGEND

GENERALISED AQUIFER POTENTIAL

- Very high
- High
- Medium
- Low

LITHOLOGY

- Terrace sand, gravel and coral
- Coastal and riverine alluvium mainly clay, silt and sand
- Well-bedded tuffaceous sandstone and conglomerate with minor clay, shale and plant remains
- Massive algal and foraminiferal limestone
- Coral limestone, marl, sandstone, calcareous grit and foraminiferal limestone
- Massive, red calcareous sandstone interbedded with mudstone and rare chert
- Sandstone interbedded with mudstone, siltstone, conglomerate chert, limestone and rare bed of coal seam
- Thick-bedded sandstone and thin mudstone and shale beds
- Clay, sand, lignitic clay and conglomerate
- Flysch-type sandstone, shale, siltstone with rare tuff, limestone, breccia and agglomerate
- Sandstone, mudstone and shale
- Slump breccia and sequence of interbedded mudstone, tuff, tuffaceous sandstone, shale and conglomerate with minor chert and limestone
- Marine clay, silt and carbonaceous material with less fresh water potential
- Clay-shale with minor intercalation of thinly-bedded sandstone or siltstone
- Mudstone with some sandstone, conglomerate and limestone
- Shale and phyllite with some siltstone and sandstone
- Mudstone and shale with rare tuff and limestone

METAMORPHIC AND IGNEOUS ROCKS

- Acid to intermediate extrusive andesitic and dacitic pyroclastic rocks, (a) silicified volcanic rocks
- Basic extrusive: basalt
- Acid to intermediate intrusive: adamellite and granodiorite
- Basic to ultrabasic intrusive: gabbro, dolerite, serpentinite, peridotite, dunite and pyroxenite
- Metamorphic rocks

HYDROGEOLOGICAL SYMBOLS

Groundwater and springs

- Area of sea-water intrusion or brackish zone
- Salt spring
- Hot spring
- Well Field

Tube well with yield (meter^3/hour)

- 0 - < 5.0
- > 5.0 - < 10.0
- > 10.0 - < 20.0
- > 20.0

Well status

- Active
- Inactive
- Abandoned /not found/unknown

Well usage

- Agriculture
- Domestic
- Industrial
- Monitoring
- Natural mineral water/bottled drinking water

Quality and potability of water (based on TDS only)

- Fresh, generally potable (TDS < 1,500 mg/l)
- Slight saline, marginally potable (TDS 1,500 - 5,000 mg/l)
- Moderately saline, suitable for live stock (TDS 5,000 - 10,000 mg/l)
- Highly saline, generally unsuitable (TDS >10,000 mg/l)
- No water analysis

HYDROLOGY SYMBOLS

Surface water

- River
- Flood-prone area
- 1) Gauging station with range of observation in m^3/s
  2) Catchment area in km^2
- Water divide
- Isohyets

Artificial works

- Dam, storage capacity in 10^6 m^3
- Reservoir for surface water
- Pipeline for water supply

GEOLOGICAL SYMBOLS

- Geological boundary
- Fault
- Syncline with plunge
- Anticline with plunge
- Structure trend or strike ridge
- Mud volcano

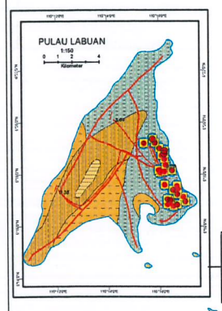
TOPOGRAPHIC SYMBOLS

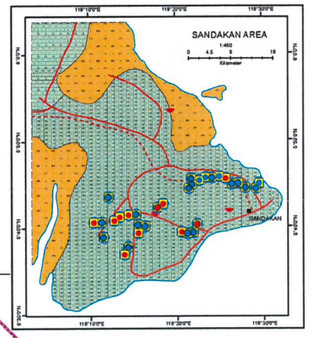
- Village
- Town
- Main road
- Gravel road
- State boundary
- International boundary

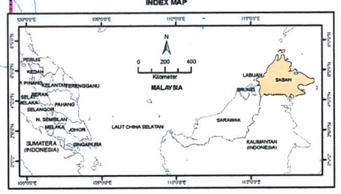
Abbreviations

S.	Sungai
K.	Kuala
Bt.	Bukit
G.	Gunung
P.	Pulau
Tg.	Tanjung

- Summit of mountain or hill (in meter)
- Marine contour with depth in fathom







LAUT CHINA SELATAN
LAUT SULU
PHILIPPINES
SARAWAK
KALIMANTAN (INDONESIA)
LAUT SULAWESI

Published by

DIRECTOR GENERAL
MINERALS AND GEOSCIENCE DEPARTMENT MALAYSIA
(Ministry of Natural Resources and Environment)

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20th Floor, Tabung Haji Building
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50658 Kuala Lumpur

Prepared by
Minerals and Geoscience Department Malaysia Sabah

Notes: This hydrogeological map incorporates information available as at end of 2006. The geological information is mainly based on the Geological Map of Sabah 3rd. edition 1985. This hydrogeological information shown on the map has been derived from unpublished data compiled by David Lee T.C. et al in 1997, Hydrogeological Map of Sabah and Labuan P. T. first edition, 2004, as well as from other related reports, such as Sandakan Groundwater Resources Report, 1974 by Binnie and Rakan (M); the Sandakan Water Supply Extension Scheme Report, Vol. I - IV, 1980 by JICA (Japanese International Co-operation Agency); The Dent Peninsular Water Resources Study Report, 1983 by Blumi - Watson (M) and unpublished data collected and compiled by the Hydrogeological Activity, Geoscience Unit, Minerals and Geoscience Department Sabah untill the 8th Malaysian Plan.

DISCLAIMER

The data on which this study is based on is not comprehensive and its quality is variable and the results reflect the limitation of that data. Localised or anomalous features and conditions may not be represented and boundaries shown on this maps are only approximate. This study provides only general indications of hydrogeological information and must not be relied upon as a source of detailed information about specific area. Professional advice and/or hydrogeological investigations may be necessary.

[Rujukan peta : HidroSabah2_07.mxd - (HidHlm07)]

A

115° E

116°

117°

I

II

III

IVa

IVb

V

VI

VII

VIII

IXa

IXb

X

Northwest Borneo Trough

South China Sea

East Baram Delta

Labuan

Brunei Bay

Kota Kinabalu

Kota Belud

Balabac Strait

Banggi

Kudat

East Crocker (Sulu Trend)

West Crocker (N.W. Borneo trend)

Mt Kinabalu

Ranau

Telupid

Cagayan Volcanic Ridge

Sandakan

Sulu Sea

Dent Group

Bukit Garam Basin

Lahad Datu

Tungku

Segama Highlands

Darvel Bay

Maliau Basin

Malibau Basin

Semporna

Kalimantan

Tawau

Celebes Sea

7°

6°

5°

N

118°

119°

B

Volcanic rocks, Miocene to Pliocene

Middle to Upper Miocene Sandakan and Tanjong Formations; Pliocene Dent Group

Early to Middle Miocene melange with names e.g. Garinono and Ayer Formation

Eocene to Oligocene Kulapis Formation, white sandstone / chocolate red mudstone

Eocene to Oligocene Labang Formation locally with Gomantong Limestone

Mesozoic ophiolitic basement and cover of oceanic sediments

Glaucophane locality

Town

50 Km

Major lineament

Antiform axis

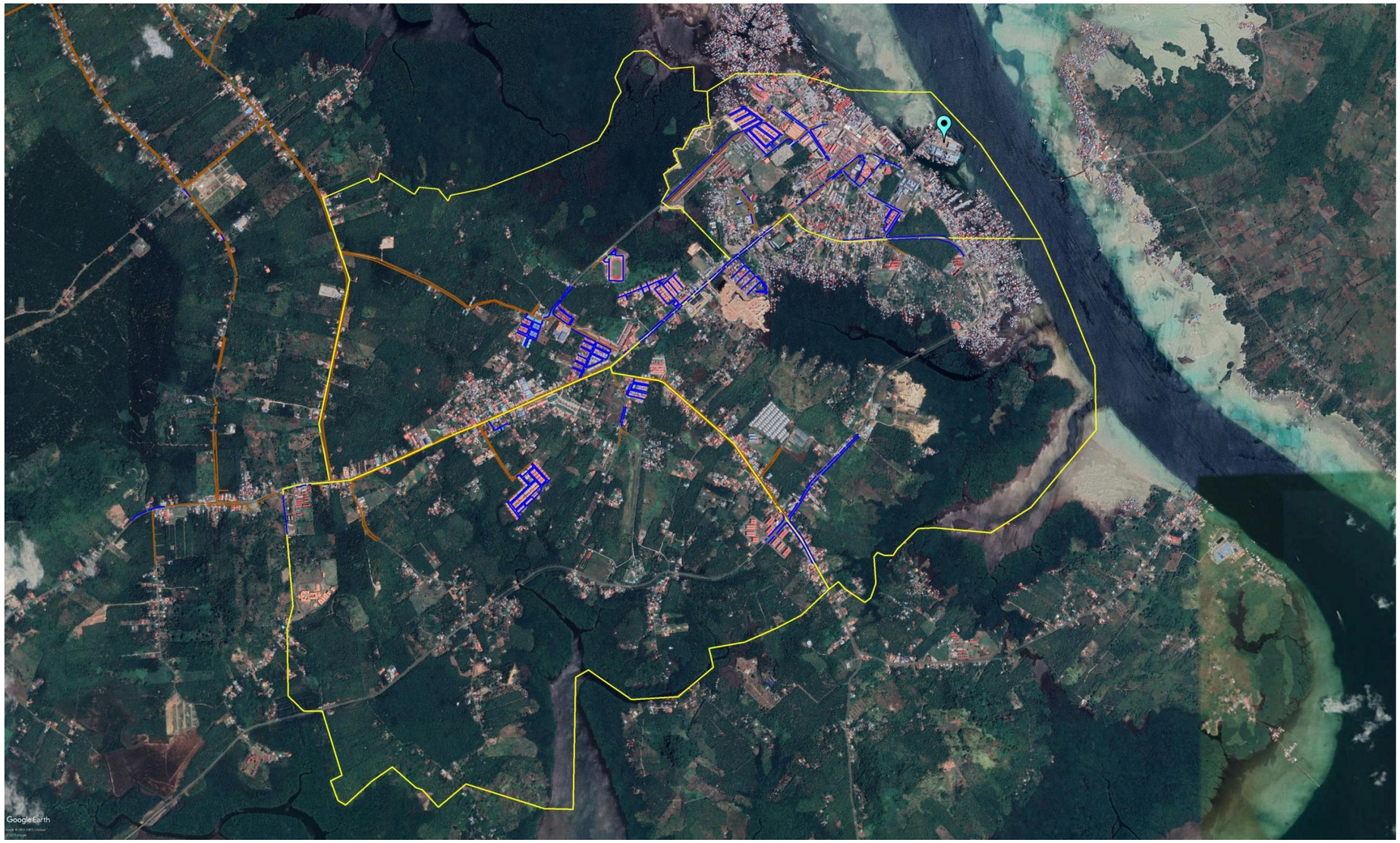
Synform axis

Normal fault (dip)

Reverse fault

West Crocker Formation. Unmetamorphic Oligocene to Lower Miocene. East Crocker Formation

Trusmadi, Crocker (undifferentiated) & Rajang Group formations. Eocene to Lower Oligocene, greenschist facies



LEGEND:

- Study Area
- R.C Drain
- Earth Drain
- Road
- Location of Soil Investigation

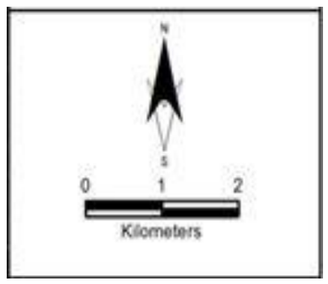


FIGURE 1: LOCATION OF 1st SOIL INVESTIGATION

JARABUMI BERGABUNG SDN. BHD. (647710-P)

DEEP BORING LOG

PROJECT :

Borehole No. :	BH-2	Reduced Level :	E. G. L (Flat / Fill)	Driller :	Mul
Sheet No. :	1 of 2	Type of Drill :	Rotary (YWE-D45)	Date :	29/08/2013 - 12/09/2013

(m)	DESCRIPTION OF SOIL Consistency, Colour, Relative Density, Grain Size, Texture Etc.	DEPTH (m)	SAMPLE NO.	Standard Penetration Test (N) 75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	N	Rec. cm	Time min	RQD %
0.00	Very loose, SAND and coral with SANDSTONE fragment. (Fill)	1.50 - 1.95	UD 1	Thick Wall (8 blows)							Nil		
		1.95 - 2.40	D 1	1	1	1	0	1	1	3	19		
3.45	Loose, fine SAND mix with coral and sea shell fragments.	3.45 - 3.90	D 2	2	4	2	1	2	2	7	24		
		4.50 - 4.95	UD 2	Thick Wall							Nil		
		4.95 - 5.40	D 3	2	2	2	1	2	2	7	15		
6.45	Medium dense clayey, fine SAND mixed with coral and sea shell fragments.	6.45 - 6.90	D 4	2	2	3	4	4	3	14	21		
		7.95 - 8.40	D 5	2	3	4	4	4	5	17	25		
9.45	Medium dense clayey coarse SAND mixed with white fractured coral and sea shell fragments .	9.45 - 9.90	D 6	3	3	4	4	5	5	18	22		
		10.95 - 11.40	D 7	3	4	4	4	3	3	14	23		
		12.45 - 12.90	D 8	2	2	3	4	4	3	14	20		
		13.95 - 14.40	D 9	2	2	3	3	4	4	14	25		
		15.45 - 15.90	D 10	2	3	3	3	4	4	14	21		
		16.95 - 17.40	D 11	3	3	3	4	3	4	14	23		
		18.45 - 18.90	D 12	3	3	4	4	5	8	21	22		
		19.95 - 20.40	D 13	3	4	4	4	8	8	24	34		
		21.45 - 21.90	D 14	4	4	5	6	6	7	24	13		
22.95	Hard, whitish grey to white CLAY with coral fragment.	22.95 - 23.40	D 15	6	7	7	8	9	14	38	15		
24.45	Very stiff, bluish grey to white grey silty sandy CLAY with coral fragment.	24.45 - 24.90	D 16	3	4	4	6	7	9	26	21		
		25.95 - 26.40	D 17	3	3	3	4	6	8	21	25		
		27.45 - 27.90	D 18	2	2	3	3	4	5	15	19		
		28.95 - 29.40	D 19	2	3	4	4	4	5	17	22		
		30.45 - 30.90	D 20	4	4	4	5	7	7	23	24		
		31.95 - 32.40	D 21	3	4	4	5	6	7	22	22		
		33.45 - 33.90	D 22	4	4	5	6	6	6	23	15		
34.95	Very stiff, bluish grey to whitish grey silty CLAY with a trace of sea shell fragment.	34.95 - 35.40	D 23	3	3	4	4	5	6	19	23		
		36.45 - 36.90	D 24	3	4	4	6	6	7	23	25		
		37.95 - 38.40	D 25	3	3	4	5	5	5	19	24		

NOTES

N	Standard Penetration Test (SPT)
P	50 mm dia. undisturbed piston sample
UD	50 mm dia. undisturbed sample
D	Disturbed sample
VS	Vane shear test
W	Water sample
C	Core sample
RQD	Rock Quality Description (%)
Rr	Recovery rates
WL	Water level
MZ	= Mazier Samples

COHESIVE SOIL (N)

0 - 2	:	VERY SOFT
2 - 4	:	SOFT
4 - 8	:	MEDIUM STIFF (FIRM)
8 - 15	:	STIFF
15 - 30	:	VERY STIFF
> 30	:	HARD

NON-COHESIVE SOIL (N)

0 - 4	:	VERY LOOSE
4 - 10	:	LOOSE
10 - 30	:	MEDIUM DENSE
30 - 50	:	DENSE
> 50	:	VERY DENSE

SUPERVISOR

Watin

JARABUMI BERGABUNG SDN. BHD. (647710-P)

DEEP BORING LOG

PROJECT :

Borehole No. :	BH-2	Reduced Level :	E. G. L (Flat / Fill)	Driller :	Mul
Sheet No. :	2 of 2	Type of Drill :	Rotary (YWE-D45)	Date :	29/08/2013 - 12/09/2013

(m)	DESCRIPTION OF SOIL Consistency, Colour, Relative Density, Grain Size, Texture Etc.	DEPTH (m)	SAMPLE NO.	Standard Penetration Test (N) 75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	N	Rec. cm	Time min	RQD %
	Same As Above	39.45 - 39.90	D 26	3	3	4	4	5	5	18	27		
		40.95 - 41.40	D 27	3	3	4	4	5	6	19	20		
		42.45 - 42.90	D 28	3	3	4	5	6	7	22	18		
		43.95 - 44.40	D 29	3	3	4	4	5	6	19	17		
		45.45 - 45.90	D 30	3	4	4	5	6	7	22	19		
		46.95 - 47.40	D 31	3	4	4	5	6	6	21	21		
		48.45 - 48.90	D 32	3	4	6	6	7	8	27	20		
49.95	Hard, grey silty CLAY.	49.95 - 50.40	D 33	4	6	7	9	11	13	40	19		
		51.45 - 51.84	D 34	5	7	10	13	13	14/ 10mm	50/235 mm	17		
		52.95 - 53.40	D 35	5	6	7	7	8	8	30	10		
		54.45 - 54.90	D 36	5	7	7	8	9	10	34	11		
55.95	Very stiff, grey CLAY.	55.95 - 56.40	D 37	5	5	6	7	7	8	28	20		
57.45	Very stiff to hard, grey silty CLAY.	57.45 - 57.90	D 38	5	6	7	9	9	10	35	21		
		58.95 - 59.40	D 39	4	4	5	7	8	9	29	22		
		60.45 - 60.90	D 40	4	5	7	8	8	10	33	23		
60.90	End of Borehole Log Casing Sunk (NW) : 36.00 m Water Level Below Existing Ground Level : 30/08/2013 : 1.60 m 31/08/2013 : 1.90 m 02/09/2013 : 2.10 m 05/09/2013 : 2.00 m 08/09/2013 : 1.70 m 10/09/2013 : 1.90 m 13/09/2013 : 2.10 m												

NOTES

N	=	Standard Penetration Test (SPT)
P	=	50 mm dia. undisturbed piston sample
UD	=	50 mm dia. undisturbed sample
D	=	Disturbed sample
VS	=	Vane shear test
W	=	Water sample
C	=	Core sample
RQD	=	Rock Quality Description (%)
Rr	=	Recovery rates
WL	=	Water level
MZ	=	Mazier Samples
MZ	=	Mazier Samples

COHESIVE SOIL (N)

0 - 2	:	VERY SOFT
2 - 4	:	SOFT
4 - 8	:	MEDIUM STIFF (FIRM)
8 - 15	:	STIFF
15 - 30	:	VERY STIFF
> 30	:	HARD

NON-COHESIVE SOIL (N)

0 - 4	:	VERY LOOSE
4 - 10	:	LOOSE
10 - 30	:	MEDIUM DENSE
30 - 50	:	DENSE
> 50	:	VERY DENSE

SUPERVISOR

Vatin

JARABUMI BERGABUNG SDN. BHD. (647710-P)

DEEP BORING LOG

PROJECT :

Borehole No. :	BH-4	Reduced Level :	E. G. L	Driller :	Mul
Sheet No. :	1 of 2	Type of Drill :	Rotary (YWE-D45)	Date :	25/09/2013 - 28/09/2013

(m)	DESCRIPTION OF SOIL Consistency, Colour, Relative Density, Grain Size, Texture Etc.	DEPTH (m)	SAMPLE NO.	Standard Penetration Test (N) 75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	N	Rec. cm	Time min	RQD %
0.00	Very loose, brown silty sandy GRAVEL.	1.95 - 2.40	D 1	1	0	1	0	1	0	2	5		
		3.45 - 3.90	D 2	1	0	1	0	1	0	2	12		
4.95	Very stiff, brownish grey, silty sandy GRAVEL mixed with CORAL.	4.95 - 5.40	D 3	3	3	4	5	6	7	22	14		
		6.45 - 6.90	D 4	4	6	7	7	8	9	31	15		
		7.95 - 8.40	D 5	3	4	6	7	7	8	28	17		
9.45	Dense, whitish grey to white, silty sandy CORAL.	9.45 - 9.90	D 6	4	5	7	8	11	13	39	19		
		10.95 - 11.40	D 7	4	4	6	7	9	9	31	17		
		12.45 - 12.90	D 8	5	6	6	7	9	10	32	23		
13.95	Firm, whitish grey to white sandy silty CLAY and very weak CORAL.	13.95 - 14.40	D 9	2	2	1	2	2	3	8	7		
		15.45 - 15.90	D 10	1	1	1	1	1	2	5	5		
16.95	Medium dense, whitish grey to white, coral mixed with coarse SAND and some CLAY.	16.95 - 17.40	D 11	2	3	3	4	4	5	16	15		
		18.45 - 18.90	D 12	2	2	3	4	4	5	16	19		
		19.95 - 20.40	D 13	2	2	3	3	4	5	15	20		
		21.45 - 21.90	D 14	4	5	5	6	7	7	25	18		
		22.95 - 23.40	D 15	5	6	6	7	8	8	29	20		
24.45	Very stiff to hard, brownish grey very sandy clayey SILT with some CORAL.	24.45 - 24.90	D 16	5	5	6	7	7	9	29	21		
		25.95 - 26.40	D 17	5	6	6	7	8	10	31	23		
		27.45 - 27.90	D 18	6	7	7	8	10	12	37	25		
		28.95 - 29.40	D 19	5	6	6	7	8	9	30	21		
		30.45 - 30.90	D 20	5	5	6	7	9	11	33	19		
		31.95 - 32.40	D 21	6	6	7	8	8	10	33	17		
33.45	Very stiff, grey clayey SILT mixed with coral and fine SAND.	33.45 - 33.90	D 22	3	3	4	5	5	6	20	19		
		34.95 - 35.40	D 23	3	3	3	4	4	5	16	20		
		36.45 - 36.90	D 24	3	3	4	4	5	6	19	19		
		37.95 - 38.40	D 25	2	2	3	4	4	5	16	20		
39.45	Stiff, grey silty CLAY mixed with coral and sea shell fragments.	39.45 - 39.90	D 26	2	2	2	3	3	4	12	23		
		40.95 - 41.40	D 27	2	2	2	3	3	4	12	22		

NOTES

N	Standard Penetration Test (SPT)
P	50 mm dia. undisturbed piston sample
UD	50 mm dia. undisturbed sample
D	Disturbed sample
VS	Vane shear test
W	Water sample
C	Core sample
RQD	Rock Quality Description (%)
Rr	Recovery rates
WL	Water level
MZ =	Mazier Samples

COHESIVE SOIL (N)

0 - 2	:	VERY SOFT
2 - 4	:	SOFT
4 - 8	:	MEDIUM STIFF (FIRM)
8 - 15	:	STIFF
15 - 30	:	VERY STIFF
> 30	:	HARD

NON-COHESIVE SOIL (N)

0 - 4	:	VERY LOOSE
4 - 10	:	LOOSE
10 - 30	:	MEDIUM DENSE
30 - 50	:	DENSE
> 50	:	VERY DENSE

SUPERVISOR

Watin

JARABUMI BERGABUNG SDN. BHD. (647710-P)

DEEP BORING LOG

PROJECT :

Borehole No. :	BH-4	Reduced Level :	E. G. L	Driller :	Mul
Sheet No. :	2 of 2	Type of Drill :	Rotary (YWE-D45)	Date :	25/09/2013 - 28/09/2013

(m)	DESCRIPTION OF SOIL Consistency, Colour, Relative Density, Grain Size, Texture Etc.	DEPTH (m)	SAMPLE NO.	Standard Penetration Test (N) 75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	N	Rec. cm	Time min	RQD %
	Same As Above	42.45 - 42.90	D 28	2	1	2	3	3	4	12	23		
		43.95 - 44.40	D 29	1	2	2	2	3	3	10	21		
45.45	Firm, grey to bluish grey, silty CLAY with some sea shell fragments.	45.45 - 45.90	D 30	1	1	1	2	2	2	7	19		
		46.95 - 47.40	D 31	1	1	1	1	2	2	6	21		
		48.45 - 48.90	D 32	1	1	2	3	3	3	11	18		
		49.95 - 50.40	D 33	1	1	1	1	2	2	6	20		
50.40	End of Borehole Log Casing Sunk (NW) : 36.00 m Water Level Below Existing Ground Level : 26/09/2013 : 2.00 m 27/09/2013 : 1.80 m 28/09/2013 : 1.90 m												

NOTES

N	Standard Penetration Test (SPT)
P	50 mm dia. undisturbed piston sample
UD	50 mm dia. undisturbed sample
D	Disturbed sample
VS	Vane shear test
W	Water sample
C	Core sample
RQD	Rock Quality Description (%)
Rr	Recovery rates
WL	Water level
MZ =	Mazier Samples
MZ =	Mazier Samples

COHESIVE SOIL (N)

0 - 2	:	VERY SOFT
2 - 4	:	SOFT
4 - 8	:	MEDIUM STIFF (FIRM)
8 - 15	:	STIFF
15 - 30	:	VERY STIFF
> 30	:	HARD

NON-COHESIVE SOIL (N)

0 - 4	:	VERY LOOSE
4 - 10	:	LOOSE
10 - 30	:	MEDIUM DENSE
30 - 50	:	DENSE
> 50	:	VERY DENSE

SUPERVISOR

Watin

JARABUMI BERGABUNG SDN. BHD. (647710-P)

DEEP BORING LOG

PROJECT :

Borehole No. :	BH-6	Reduced Level :	E. G. L (Fill / Flat)	Driller :	Mul
Sheet No. :	1 of 1	Type of Drill :	Rotary (YWE-D45)	Date :	22/09/2013 - 25/09/2013

(m)	DESCRIPTION OF SOIL Consistency, Colour, Relative Density, Grain Size, Texture Etc.	DEPTH (m)	SAMPLE NO.	Standard Penetration Test (N) 75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	N	Rec. cm	Time min	RQD %
0.00	Medium dense, brownish grey clayey coarse SAND with some coral fragment.	1.95 - 2.40	D 1	2	3	3	4	4	6	17	19		
		3.45 - 3.90	D 2	2	2	3	3	4	5	15	20		
4.95	Loose, light grey CORAL with clayey fine SAND.	4.95 - 5.40	D 3	2	2	1	2	2	2	7	6		
		6.45 - 6.90	D 4	2	1	1	1	2	2	6	8		
		7.95 - 8.40	D 5	2	1	2	2	1	2	7	9		
		9.45 - 9.90	D 6	2	2	1	2	2	2	7	10		
10.95	Firm, grey very sandy clayey SILT.	10.95 - 11.40	D 7	2	2	2	1	2	2	7	22		
		12.45 - 12.90	D 8	2	2	1	2	3	2	8	24		
13.95	Loose to medium dense, whitish grey to light grey, *clayey silty SAND with some CORAL.*	13.95 - 14.40	D 9	2	1	1	2	2	1	6	7		
		15.45 - 15.90	D 10	2	2	1	2	1	2	6	5		
		16.95 - 17.40	D 11	3	3	4	4	5	6	19	22		
		18.45 - 18.90	D 12	4	4	5	5	6	7	23	25		
19.95	Dense to very dense, whitish grey coral mixed with very sandy CLAY.	19.95 - 20.40	D 13	5	6	7	8	10	11	36	21		
		21.45 - 21.70	D 14	10	11	22	28/ 20mm			50/95 mm	20		
		22.95 - 23.19	D 15	11	13	21	29/ 10mm			50/85 mm	19		
		24.45 - 24.71	D 16	13	14	24	26/ 30mm			50/105 mm	17		
25.95	Dense, brown to yellowish brown, coarse to medium silty SAND.	25.95 - 26.40	D 17	6	7	7	8	9	11	35	19		
		27.45 - 27.90	D 18	5	6	6	7	8	10	31	21		
28.95	Very stiff, bluish grey CLAY mixed with coral fragment and coarse SAND.	28.95 - 29.40	D 19	3	3	4	4	5	6	19	23		
		30.45 - 30.90	D 20	4	4	5	6	6	7	24	21		
30.90	End of Borehole Log Casing Sunk (NW) : 27.00 m Water Level Below Existing Ground Level : 22/09/2013 : 2.20 m 23/09/2013 . 1.90 m 24/09/2013 : 2.30 m 25/09/2013 : 2.10 m												

NOTES

N	Standard Penetration Test (SPT)
P	50 mm dia. undisturbed piston sample
UD	50 mm dia. undisturbed sample
D	Disturbed sample
VS	Vane shear test
W	Water sample
C	Core sample
RQD	Rock Quality Description (%)
Rr	Recovery rates
WL	Water level
MZ	= Mazier Samples

COHESIVE SOIL (N)

0 - 2	:	VERY SOFT
2 - 4	:	SOFT
4 - 8	:	MEDIUM STIFF (FIRM)
8 - 15	:	STIFF
15 - 30	:	VERY STIFF
> 30	:	HARD

NON-COHESIVE SOIL (N)

0 - 4	:	VERY LOOSE
4 - 10	:	LOOSE
10 - 30	:	MEDIUM DENSE
30 - 50	:	DENSE
> 50	:	VERY DENSE

SUPERVISOR

Watin

JARABUMI BERGABUNG SDN. BHD.

(Company No. 647710-P)

Project No. : JBSB/PF/2013/36	LABORATORY TEST RESULTS SUMMARY	Page : 2 of 7
Project :		

Borehole No.		BH-2	BH-2	BH-2	BH-2	BH-2	BH-3	BH-3	BH-3
Depth (m)		38.40	45.90	50.40	54.90	59.40	2.40	5.40	8.40
Sample No.		D-25	D-30	D-33	D-36	D-39	D-1	D-3	D-5
Classification	BS 5930	CH	CH	CH	CH	CH			
Clay	< 0.002 mm (%)	57	69	75	70	63			
Silt	0.002 - 0.063 mm (%)	36	27	23	26	35	8	22	11
Sand	0.063 - 2.000 mm (%)	6	2	2	3	2	37	77	50
Gravel	2.000 - 63.000 mm (%)	1	2	0	1	0	54	1	39
Particle Size Distribution (% Passing)	37.500 mm (%)								
	28.000 mm (%)								
	20.000 mm (%)								
	14.000 mm (%)						100.00		100.00
	10.000 mm (%)						99.08		97.41
	6.300 mm (%)		100.00				84.74		84.37
	5.000 mm (%)		99.60				73.93	100.00	76.17
	3.350 mm (%)	100.00	99.26		100.00	100.00	60.56	99.51	69.46
	2.000 mm (%)	99.33	98.38		98.86	99.58	45.82	99.41	61.26
	1.180 mm (%)	98.52	97.13	100.00	97.39	99.29	33.65	99.33	49.79
	0.600 mm (%)	97.31	96.44	99.29	96.67	98.99	23.18	99.17	34.66
	0.425 mm (%)	96.68	96.26	98.79	96.51	98.89	19.04	98.92	28.27
	0.300 mm (%)	95.95	96.12	98.50	96.43	98.79	15.62	98.23	23.01
	0.212 mm (%)	95.33	96.03	98.32	96.38	98.71	13.08	92.70	19.17
	0.150 mm (%)	94.75	95.96	98.12	96.27	98.59	10.77	67.34	15.60
	0.063 mm (%)	93.53	95.83	97.87	96.05	98.34	7.53	21.55	10.78
Liquid Limit	LL (%)	66	95	82	78	72			
Plastic Limit	PL (%)	28	33	23	18	18			
Plastic Index	PI (%)	38	62	59	60	54			
Natural Moisture Content	MC (%)	35	37	35	30	33			
Specific Gravity	SG								
Unit Weight	Kg/m³								
One Dimensional Consolidation Test	m_v (m²/MN)								
	Void Ratio								
	Eff. Overburden, P_o								

Trixial Compression Test

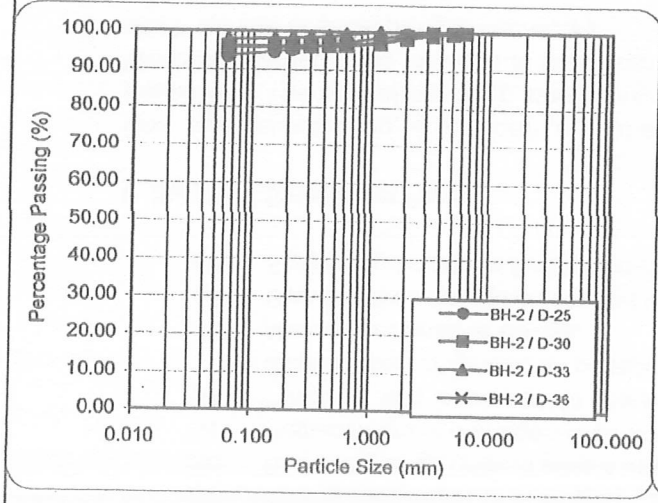
Unsaturated Unconsolidated Undrained	C_u kN/m²								
	ϕ°								
Consolidated Isotropic Undrained	c' kN/m²								
	ϕ°								
Unconfined Compression	C_u kN/m²								

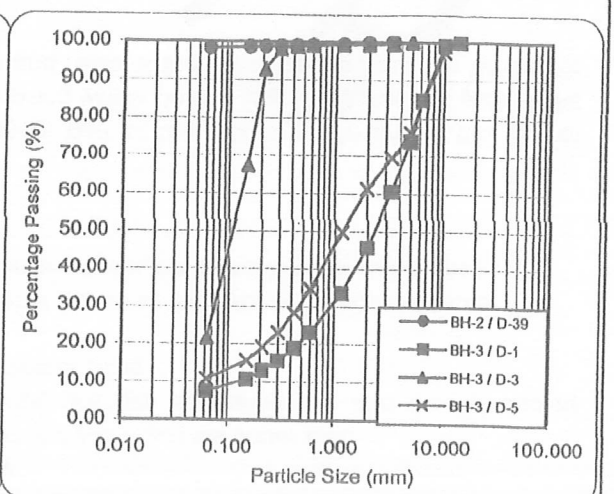
Rock Strength Test

Unconfined Compression	kN/m²								
Point Load Strength Index	Is(50)(mpa)								

Chemical Test

pH									
Water Soluble Sulphate	(%)								
Water Soluble Sulphate	g/L								
Organic Content	(%)								





LAPORAN DISEDIAKAN OLEH :	LAPORAN DISAHKAN OLEH :
LU P. T.	S. F. HO

JARABUMI BERGABUNG SDN. BHD.

(Company No. 647710-P)

Project No. : JBSB/PF/2013/36	LABORATORY TEST RESULTS SUMMARY	Page : 3 of 7
Project :		

Borehole No.		BH-3	BH-3	BH-3	BH-3	BH-3	BH-3	BH-3	BH-3
Depth (m)		12.71	15.76	18.90	21.90	26.40	30.90	35.40	42.90
Sample No.		D-8	D-10	D-12	D-14	D-17	D-20	D-23	D-28
Classification	BS 5930				CL	CH	CH	CH	CH
Clay	< 0.002 mm (%)				28	33	62	75	69
Silt	0.002 - 0.063 mm (%)	21	15	34	53	22	35	25	30
Sand	0.063 - 2.000 mm (%)	37	39	34	12	19	2	0	1
Gravel	2.000 - 63.000 mm (%)	42	46	32	7	26	1	0	0
Particle Size Distribution (% Passing)	37.500 mm (%)								
	28.000 mm (%)								
	20.000 mm (%)								
	14.000 mm (%)	100.00	100.00	100.00					
	10.000 mm (%)	95.60	90.88	95.96	100.00	100.00			
	6.300 mm (%)	84.44	75.93	88.86	98.53	94.61			
	5.000 mm (%)	75.64	69.87	84.11	97.78	91.20	100.00		
	3.350 mm (%)	66.05	62.86	77.30	96.32	84.36	99.47		
	2.000 mm (%)	58.19	54.25	68.05	93.38	73.67	99.26		
	1.180 mm (%)	49.96	45.63	60.75	90.76	66.76	99.05		100.00
	0.600 mm (%)	38.95	33.42	53.26	88.16	62.14	98.81		99.78
	0.425 mm (%)	34.85	28.11	49.77	86.81	60.41	98.66		99.64
	0.300 mm (%)	31.15	23.83	46.13	85.33	58.98	98.51		99.58
	0.212 mm (%)	28.14	20.86	42.66	84.03	57.92	98.37	100.00	99.53
	0.150 mm (%)	25.35	18.20	39.10	82.78	56.96	98.15	99.96	99.49
	0.063 mm (%)	21.26	14.63	33.60	81.82	55.17	97.54	99.89	99.40
Liquid Limit	LL (%)				33	52	73	81	79
Plastic Limit	PL (%)				*16*	*14*	*18*	*21*	*19*
Plastic Index	PI (%)				17	38	55	60	60
Natural Moisture Content	MC (%)				26	17	30	39	41
Specific Gravity	SG								
Unit Weight	Kg/m^3								
One Dimensional Consolidation Test	m_v (m^2/MN)								
	Void Ratio								
	Eff. Overburden, P_o								

Trixial Compression Test

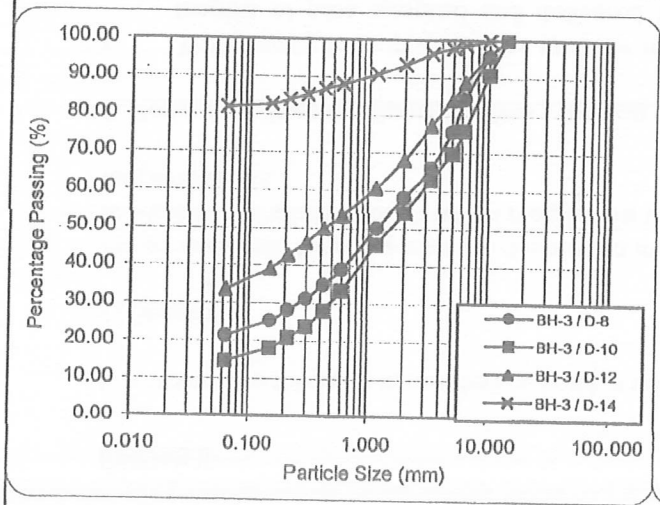
Unsaturated Unconsolidated Undrained	C_u kN/m^2								
	$\phi°$								
Consolidated Isotropic Undrained	c' kN/m^2								
	$\phi°$								
Unconfined Compression	C_u kN/m^2								

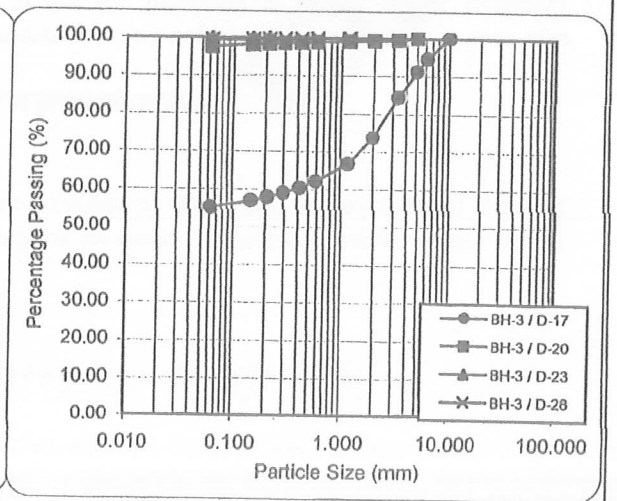
Rock Strength Test

Unconfined Compression	kN/m^2								
Point Load Strength Index	Is(50)(mpa)								

Chemical Test

pH									
Water Soluble Sulphate	(%)								
Water Soluble Sulphate	g/L								
Organic Content	(%)								





LAPORAN DISEDIAKAN OLEH :	LAPORAN DISAHKAN OLEH :
LU P. T.	S. F. HO

JARABUMI BERGABUNG SDN. BHD.

(Company No. 647710-P)

Project No. : JBSB/PF/2013/36	LABORATORY TEST RESULTS SUMMARY	Page : 4 of 7
Project :		

Borehole No.		BH-3	BH-4	BH-4	BH-4	BH-4	BH-4	BH-4	BH-4
Depth (m)		47.40	3.90	6.90	11.40	15.90	18.90	24.90	29.40
Sample No.		D-31	D-2	D-4	D-7	D-10	D-12	D-16	D-19
Classification	BS 5930	CH						CL	CL
Clay	< 0.002 mm (%)	70					7	12	21
Silt	0.002 - 0.063 mm (%)	29	15	20	12	40	20	44	37
Sand	0.063 - 2.000 mm (%)	1	38	46	38	28	36	26	35
Gravel	2.000 - 63.000 mm (%)	0	47	34	50	32	37	18	7
Particle Size Distribution (% Passing)	37.500 mm (%)								
	28.000 mm (%)								
	20.000 mm (%)								
	14.000 mm (%)		100.00						
	10.000 mm (%)		93.66	100.00	100.00	100.00	100.00		
	6.300 mm (%)		74.19	96.46	78.24	93.59	95.87	100.00	
	5.000 mm (%)		68.02	88.07	71.54	85.76	86.88	97.68	100.00
	3.350 mm (%)		61.23	75.31	62.60	76.56	73.94	91.23	98.08
	2.000 mm (%)		53.17	65.54	50.33	68.16	62.59	81.87	92.87
	1.180 mm (%)		46.44	58.70	39.57	61.83	54.88	73.84	86.67
	0.600 mm (%)		40.14	51.97	29.73	55.67	47.70	68.27	78.34
	0.425 mm (%)	100.00	37.51	49.04	25.53	52.55	43.91	66.04	74.15
	0.300 mm (%)	99.97	34.53	45.54	21.82	49.32	39.74	63.86	70.14
	0.212 mm (%)	99.92	30.57	40.41	18.80	46.51	35.92	61.77	66.96
	0.150 mm (%)	99.78	24.33	31.91	15.92	43.79	32.24	59.58	63.92
	0.063 mm (%)	99.70	14.70	19.63	12.00	39.66	26.95	56.66	58.79
Liquid Limit	LL (%)	81						30	31
Plastic Limit	PL (%)	21					N/P	19	16
Plastic Index	PI (%)	60						11	15
Natural Moisture Content	MC (%)	41					27	17	23
Specific Gravity	SG								
Unit Weight	Kg/m³								
One Dimensional Consolidation Test	m_v (m²/MN)								
	Void Ratio								
	Eff. Overburden, P_o								

Trixial Compression Test

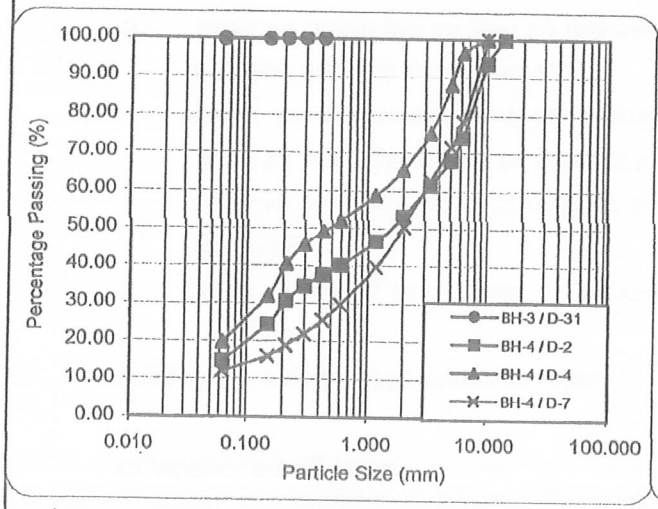
Unsaturated Unconsolidated	C_u kN/m²								
Undrained	ϕ°								
Consolidated Isotropic	c' kN/m²								
Undrained	ϕ°								
Unconfined Compression	C_u kN/m²								

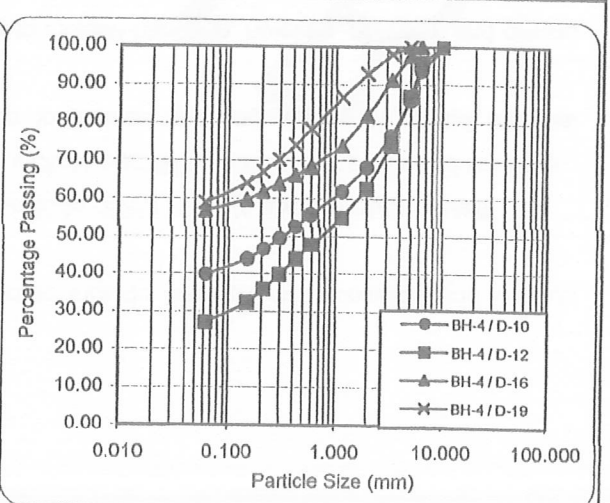
Rock Strength Test

Unconfined Compression	kN/m²								
Point Load Strength Index	Is(50)(mpa)								

Chemical Test

pH									
Water Soluble Sulphate	(%)								
Water Soluble Sulphate	g/L								
Organic Content	(%)								





LAPORAN DISEDIAKAN OLEH :	LAPORAN DISAHKAN OLEH :
LU P. T.	S. F. HO

JARABUMI BERGABUNG SDN. BHD.

(Company No. 647710-P)

Project No. : JBSB/PF/2013/36	LABORATORY TEST RESULTS SUMMARY	Page : 1 of 7
Project :		

Borehole No.		BH-2	BH-2	BH-2	BH-2	BH-2	BH-2	BH-2	BH-2
Depth (m)		3.90	8.40	11.40	15.90	20.40	24.90	29.40	33.90
Sample No.		D-2	D-5	D-7	D-10	D-13	D-16	D-19	D-22
Classification	BS 5930						CH	CH	CH
Clay	< 0.002 mm (%)						47	53	46
Silt	0.002 - 0.063 mm (%)	8	16	15	22	31	13	27	36
Sand	0.063 - 2.000 mm (%)	42	44	41	37	37	16	15	16
Gravel	2.000 - 63.000 mm (%)	50	40	44	41	32	24	5	2
Particle Size Distribution (% Passing)	37.500 mm (%)								
	28.000 mm (%)								
	20.000 mm (%)								
	14.000 mm (%)	100.00	100.00	100.00		100.00			
	10.000 mm (%)	98.14	97.22	95.13	100.00	98.78	100.00		
	6.300 mm (%)	82.35	81.61	90.83	93.94	95.34	94.67	100.00	
	5.000 mm (%)	74.03	76.97	82.74	85.54	88.55	92.18	99.65	
	3.350 mm (%)	63.08	69.16	70.30	72.24	79.21	83.85	97.88	100.00
	2.000 mm (%)	49.91	59.76	55.60	59.30	67.83	76.06	94.68	97.75
	1.180 mm (%)	39.10	52.21	43.95	49.77	59.09	70.72	91.76	91.87
	0.600 mm (%)	29.19	45.18	33.50	40.54	50.48	66.46	89.73	86.06
	0.425 mm (%)	24.94	42.03	29.25	36.33	46.24	64.74	88.79	84.86
	0.300 mm (%)	20.98	38.55	25.33	32.31	42.04	63.23	87.83	83.99
	0.212 mm (%)	17.51	33.77	22.11	29.09	38.42	62.16	86.89	83.36
	0.150 mm (%)	13.57	26.31	18.97	26.24	35.15	61.22	85.35	82.77
	0.063 mm (%)	7.84	16.16	14.73	22.46	30.92	60.06	80.50	81.90
Liquid Limit	LL (%)						61	65	63
Plastic Limit	PL (%)						25	26	25
Plastic Index	PI (%)						36	39	38
Natural Moisture Content	MC (%)						25	34	50
Specific Gravity	SG								
Unit Weight	Kg/m³								
One Dimensional Consolidation Test	m_v (m²/MN)								
	Void Ratio								
	Eff. Overburden, P_o								

Trixial Compression Test

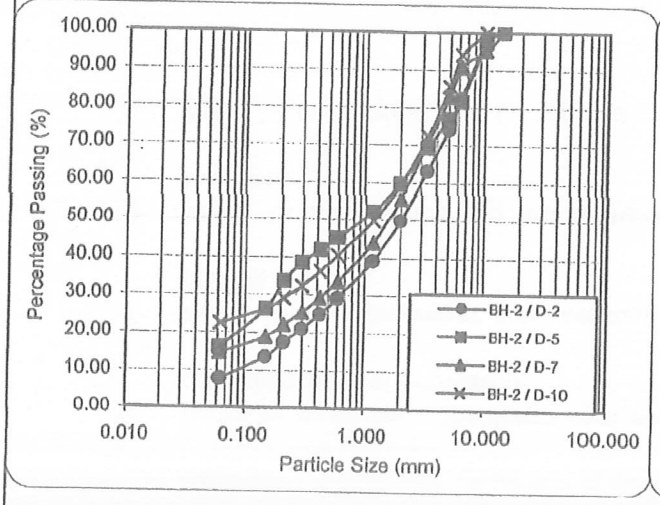
Unsaturated Unconsolidated Undrained	C_u kN/m²								
	$\phi°$								
Consolidated Isotropic Undrained	c' kN/m²								
	$\phi°$								
Unconfined Compression	C_u kN/m²								

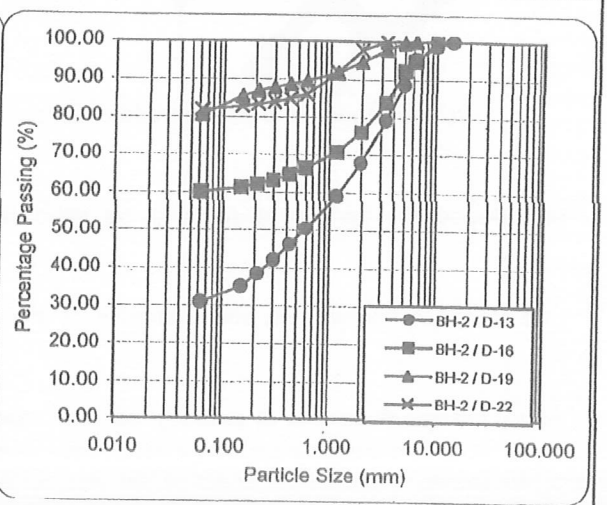
Rock Strength Test

Unconfined Compression	kN/m²								
Point Load Strength Index	Is(50)(mpa)								

Chemical Test

pH				4.90				5.79	
Water Soluble Sulphate	(%)			0.05				0.04	
Water Soluble Sulphate	g/L			0.28				0.25	
Chloride Content	(%)			0.36				0.48	





LAPORAN DISEDIAKAN OLEH :	LAPORAN DISAHKAN OLEH :
LU P. T.	S. F. HO

JARABUMI BERGABUNG SDN. BHD.

(Company No. 647710-P)

Project No. : JBSB/PF/2013/36 | LABORATORY TEST RESULTS SUMMARY | Page : 5 of 7

Project :

Borehole No.		BH-4	BH-4	BH-4	BH-5	BH-5	BH-5	BH-5	BH-5
Depth (m)		36.90	41.40	47.40	2.40	8.40	11.40	15.90	20.40
Sample No.		D-24	D-27	D-31	D-1	D-5	D-7	D-10	D-13
Classification	BS 5930	CH	CH	CH					
Clay	< 0.002 mm (%)	39	67	67					
Silt	0.002 - 0.063 mm (%)	43	29	24	16	24	31	49	29
Sand	0.063 - 2.000 mm (%)	14	3	5	59	41	31	28	41
Gravel	2.000 - 63.000 mm (%)	4	1	4	25	35	38	23	30
Particle Size Distribution (% Passing)	37.500 mm (%)								
	28.000 mm (%)								
	20.000 mm (%)								
	14.000 mm (%)				100.00		100.00	100.00	
	10.000 mm (%)				97.60	100.00	96.61	97.07	100.00
	6.300 mm (%)				94.85	97.59	79.34	91.82	97.41
	5.000 mm (%)	100.00		100.00	92.93	90.72	73.25	89.54	92.25
	3.350 mm (%)	99.23	100.00	99.12	85.43	77.72	67.57	83.57	79.29
	2.000 mm (%)	96.15	99.11	96.22	74.73	65.39	61.95	76.84	70.11
	1.180 mm (%)	91.61	98.51	94.67	62.41	55.69	56.86	70.87	62.90
	0.600 mm (%)	86.85	97.69	93.42	48.78	45.89	51.70	63.58	54.69
	0.425 mm (%)	85.23	97.32	93.04	42.42	41.63	49.27	59.75	50.03
	0.300 mm (%)	84.23	97.06	92.73	36.16	37.66	46.56	56.17	44.86
	0.212 mm (%)	83.72	96.90	92.46	30.54	34.11	43.23	53.45	40.11
	0.150 mm (%)	83.27	96.74	92.18	24.38	30.36	38.52	51.14	35.56
	0.063 mm (%)	82.21	96.50	91.71	15.68	24.00	30.89	48.52	29.39
Liquid Limit	LL (%)	73	63	74					
Plastic Limit	PL (%)	23	26	23					
Plastic Index	PI (%)	50	37	51					
Natural Moisture Content	MC (%)	39	37	36					
Specific Gravity	SG								
Unit Weight	Kg/m³								
One Dimensional Consolidation Test	m_v (m²/MN)								
	Void Ratio								
	Eff. Overburden, P_o								

Trixial Compression Test

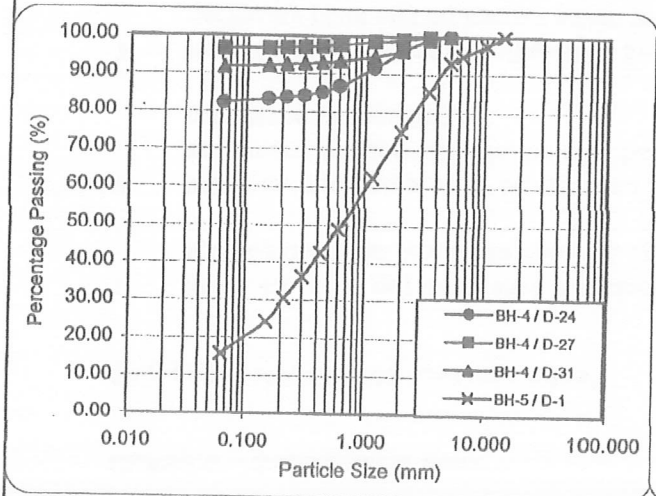
Unsaturated Unconsolidated Undrained	C_u kN/m²								
	ϕ°								
Consolidated Isotropic Undrained	c' kN/m²								
	ϕ°								
Unconfined Compression	C_u kN/m²								

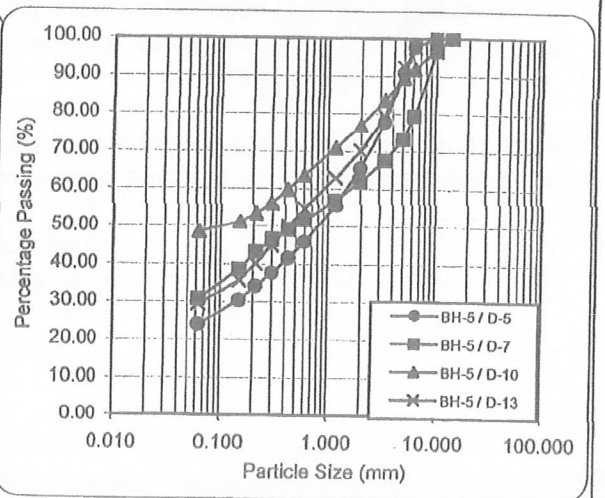
Rock Strength Test

Unconfined Compression	kN/m²								
Point Load Strength Index	Is(50)(mpa)								

Chemical Test

pH						4.90			
Water Soluble Sulphate	(%)					0.10			
Water Soluble Sulphate	g/L					0.63			
Chloride Content	(%)					0.48			





LAPORAN DISEDIAKAN OLEH :	LAPORAN DISAHKAN OLEH :
LU P. T.	S. F. HO

JARABUMI BERGABUNG SDN. BHD.

(Company No. 647710-P)

Project No. : JBSB/PF/2013/36	LABORATORY TEST RESULTS SUMMARY	Page : 6 of 7
Project :		

Borehole No.		BH-5	BH-5	BH-5	BH-5	BH-6	BH-6	BH-6	BH-6
Depth (m)		24.90	29.40	35.40	41.40	3.90	5.40	8.40	11.40
Sample No.		D-16	D-19	D-23	D-27	D-2	D-3	D-5	D-7
Classification	BS 5930			CH	CH				CL
Clay	< 0.002 mm (%)			62	51				19
Silt	0.002 - 0.063 mm (%)	32	47	37	27	14	12	20	33
Sand	0.063 - 2.000 mm (%)	35	24	1	8	67	37	38	48
Gravel	2.000 - 63.000 mm (%)	33	29	0	14	19	51	42	0
Particle Size Distribution (% Passing)	37.500 mm (%)								
	28.000 mm (%)								
	20.000 mm (%)								
	14.000 mm (%)						100.00	100.00	
	10.000 mm (%)	100.00	100.00			100.00	86.54	97.24	
	6.300 mm (%)	92.14	97.44		100.00	97.11	73.54	84.66	
	5.000 mm (%)	85.73	90.40		95.71	93.89	65.15	74.74	
	3.350 mm (%)	75.96	80.28		89.97	89.52	56.99	65.22	100.00
	2.000 mm (%)	67.16	71.16	100.00	85.52	81.39	48.80	57.54	99.69
	1.180 mm (%)	*59.33*	*64.87*	*99.81*	*83.03*	*69.67*	*42.40*	*50.64*	*97.04*
	0.600 mm (%)	50.91	58.64	99.61	81.30	54.21	36.25	43.15	88.50
	0.425 mm (%)	46.77	55.95	99.53	80.71	46.86	33.28	39.55	83.12
	0.300 mm (%)	42.63	53.64	99.42	80.17	39.13	29.76	35.85	76.72
	0.212 mm (%)	39.12	51.76	99.34	79.75	31.91	25.72	31.95	70.36
	0.150 mm (%)	36.01	49.87	99.23	79.33	24.46	20.54	26.91	63.09
	0.063 mm (%)	32.33	47.20	99.06	78.26	13.96	12.40	19.72	52.92
Liquid Limit	LL (%)			79	66				40
Plastic Limit	PL (%)			23	18				23
Plastic Index	*PI (%)*			56	48				17
Natural Moisture Content	MC (%)			43	31				47
Specific Gravity	SG								
Unit Weight	Kg/m³								
One Dimensional Consolidation Test	m_v (m²/MN)								
	Void Ratio								
	Eff. Overburden, P_o								

Trixial Compression Test

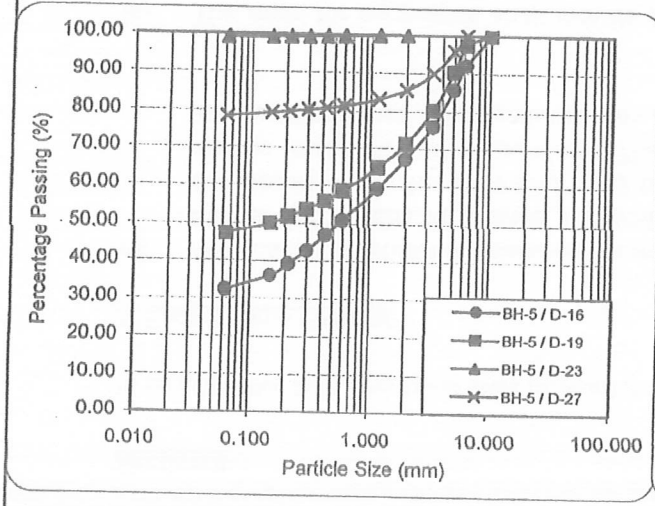
Unsaturated Unconsolidated Undrained	C_u kN/m²								
	ϕ°								
Consolidated Isotropic Undrained	c' kN/m²								
	ϕ°								
Unconfined Compression	C_u kN/m²								

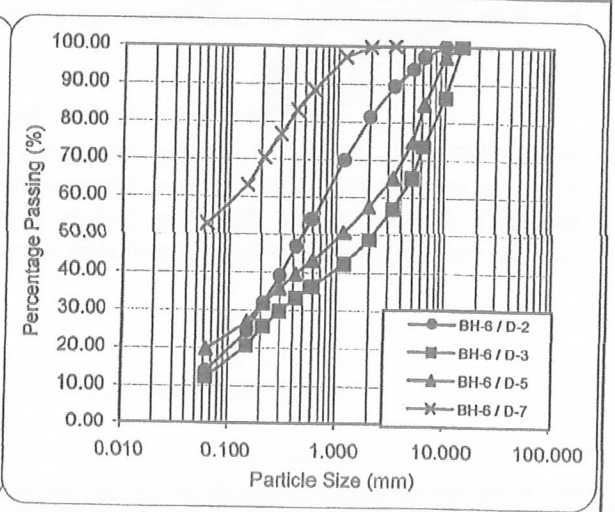
Rock Strength Test

Unconfined Compression	kN/m²								
Point Load Strength Index	Is(50)(mpa)								

Chemical Test

pH									*5.79*
Water Soluble Sulphate	(%)								0.22
Water Soluble Sulphate	g/L								1.33
Organic Content	(%)								0.67





LAPORAN DISEDIAKAN OLEH :	LAPORAN DISAHKAN OLEH :
LU P. T.	S. F. HO

JARABUMI BERGABUNG SDN. BHD.

(Company No. 647710-P)

Project No. : JBSB/PF/2013/36	LABORATORY TEST RESULTS SUMMARY	Page : 7 of 7
Project :		

Borehole No.			BH-6	BH-6	BH-6	BH-6
Depth (m)			17.40	21.70	27.90	29.40
Sample No.			D-11	D-14	D-18	D-19
Classification		BS 5930				
Clay	< 0.002 mm	(%)	16	9	13	41
Silt	0.002 - 0.063 mm	(%)	28	29		
Sand	0.063 - 2.000 mm	(%)	46	55	86	34
Gravel	2.000 - 63.000 mm	(%)	10	7	1	25
Particle Size Distribution (% Passing)	37.500 mm	(%)				
	28.000 mm	(%)				
	20.000 mm	(%)				
	14.000 mm	(%)				100.00
	10.000 mm	(%)				96.76
	6.300 mm	(%)	100.00			88.91
	5.000 mm	(%)	99.33	100.00	100.00	84.59
	3.350 mm	(%)	97.15	98.81	99.60	81.30
	2.000 mm	(%)	90.18	93.29	98.70	74.90
	1.180 mm	(%)	79.02	83.48	96.54	61.63
	0.600 mm	(%)	65.66	69.57	75.69	46.17
	0.425 mm	(%)	60.22	63.12	59.22	43.81
	0.300 mm	(%)	55.70	56.70	42.00	42.78
	0.212 mm	(%)	52.32	51.16	29.08	42.26
	0.150 mm	(%)	49.19	45.85	19.92	41.86
	0.063 mm	(%)	44.69	38.48	12.76	41.31
Liquid Limit	LL	(%)	N/P	N/P		
Plastic Limit	PL	(%)				
Plastic Index	PI	(%)				
Natural Moisture Content	MC	(%)	15	13		
Specific Gravity	SG					
Unit Weight		Kg/m³				
One Dimensional Consolidation Test		m_v (m²/MN)				
		Void Ratio				
	Eff. Overburden, P_o					

Trixial Compression Test

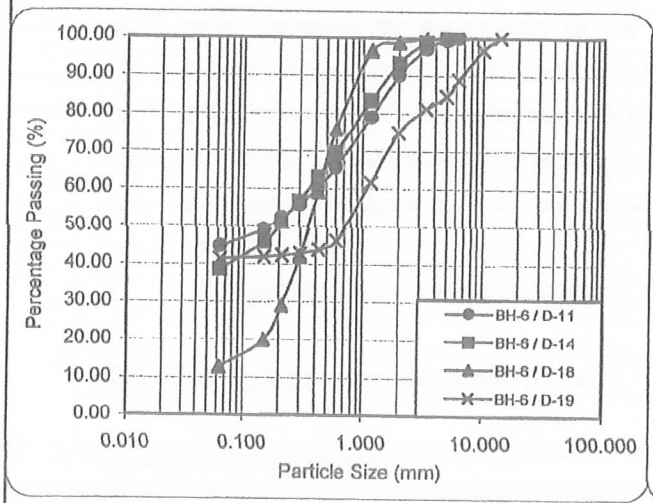
Unsaturated Unconsolidated Undrained	C_u kN/m²									
	ϕ°									
Consolidated Isotropic Undrained	c' kN/m²									
	ϕ°									
Unconfined Compression	C_u kN/m²									

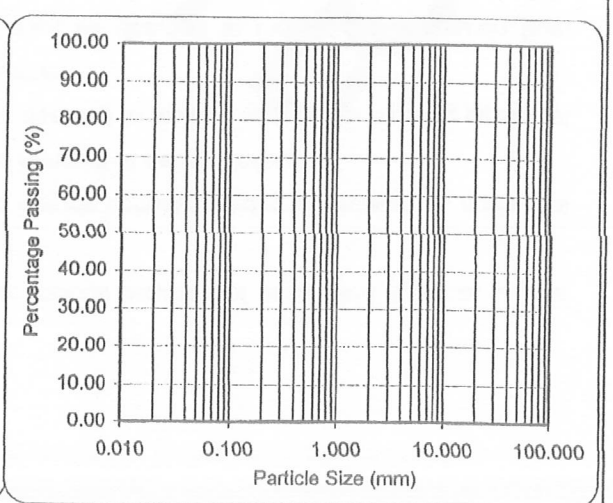
Rock Strength Test

Unconfined Compression	kN/m²									
Point Load Strength Index	Is(50)(mpa)									

Chemical Test

pH										
Water Soluble Sulphate	(%)									
Water Soluble Sulphate	g/L									
Organic Content	(%)									





LAPORAN DISEDIAKAN OLEH :	LAPORAN DISAHKAN OLEH :
LU P. T.	S. F. HO

Determination of Moisture Content

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project:

Client:

Tested By: Eddie Date: 03/10/2013

Remarks:

DETERMINATION OF MOISTURE CONTENT

Lab. Sample No.	Field Sample No.	Container No.	Wt. of Container & Wet Soil gm (W_2)	Wt. of Container & Dry Soil gm (W_3)	Wt. of Container gm (W_1)	Wt. of Moisture gm (W_2-W_3)	Wt. of Dry Soil gm (W_3-W_1)	Moisture Content $\frac{(W_2-W_3)}{(W_3-W_1)}$ X 100%
MC/2013/149	BH2/D16	S16	436.77	360.09	59.17	76.68	300.92	25.48
MC/2013/150	BH2/D19	S15	266.86	214.10	60.70	52.76	153.40	34.39
MC/2013/151	BH2/D22	S1	250.53	186.89	59.82	63.64	127.07	50.08
MC/2013/152	BH2/D25	S12	473.05	367.16	62.21	105.89	304.95	34.72
MC/2013/153	BH2/D30	S7	348.81	271.98	63.16	76.83	208.82	36.79
MC/2013/154	BH2/D33	S9	517.23	398.08	57.75	119.15	340.33	35.01
MC/2013/155	BH2/D36	S11	327.93	265.10	58.10	62.83	207.00	30.35
MC/2013/156	BH2/D39	S8	362.09	287.22	58.78	74.87	228.44	32.77
MC/2013/157	BH3/D14	S6	456.29	376.05	63.32	80.24	312.73	25.66
MC/2013/158	BH3/D17	S14	566.00	491.13	57.10	74.87	434.03	17.25
MC/2013/159	BH3/D20	S10	374.63	301.41	59.00	73.22	242.41	30.21
MC/2013/160	BH3/D23	S13	336.57	258.23	58.00	78.34	200.23	39.13
MC/2013/161	BH3/D28	S2	479.54	358.62	62.11	120.92	296.51	40.78
MC/2013/162	BH3/D31	S5	470.67	350.68	60.63	119.99	290.05	41.37

Our Ref.: AJM01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project:

Client:

Tested By: Eddie

Remarks:

Date: 16/10/2013

DETERMINATION OF MOISTURE CONTENT

Lab. Sample No.	Field Sample No.	Container No.	Wt. of Container & Wet Soil gm (W_2)	Wt. of Container & Dry Soil gm (W_3)	Wt. of Container gm (W_1)	Wt. of Moisture gm (W_2-W_3)	Wt. of Dry Soil gm (W_3-W_1)	Moisture Content $\frac{(W_2-W_3)}{(W_3-W_1)}$ X 100%
MC/2013/163	BH4/D12	S9	639.55	515.87	57.75	123.68	458.12	27.00
MC/2013/164	BH4/D16	S16	350.85	308.16	59.17	42.69	248.99	17.15
MC/2013/165	BH4/D19	S1	374.99	317.00	59.82	57.99	257.18	22.55
MC/2013/166	BH4/D24	S6	359.84	276.77	63.32	83.07	213.45	38.92
MC/2013/167	BH4/D27	S14	387.34	297.38	57.10	89.96	240.28	37.44
MC/2013/168	BH4/D31	S11	395.37	305.34	58.10	90.03	247.24	36.41
MC/2013/169	BH5/D23	S13	345.08	258.58	58.97	86.50	199.61	43.33
MC/2013/170	BH5/D27	S7	463.06	368.23	63.16	94.83	305.07	31.08
MC/2013/171	BH6/D7	S15	313.10	232.94	60.70	80.16	172.24	46.54
MC/2013/172	BH6/D11	S8	412.31	365.42	58.78	46.89	306.64	15.29
MC/2013/173	BH6/D14	S10	338.64	307.57	59.00	31.07	248.57	12.50

Our Ref.: AJM02

Atterberg Limits

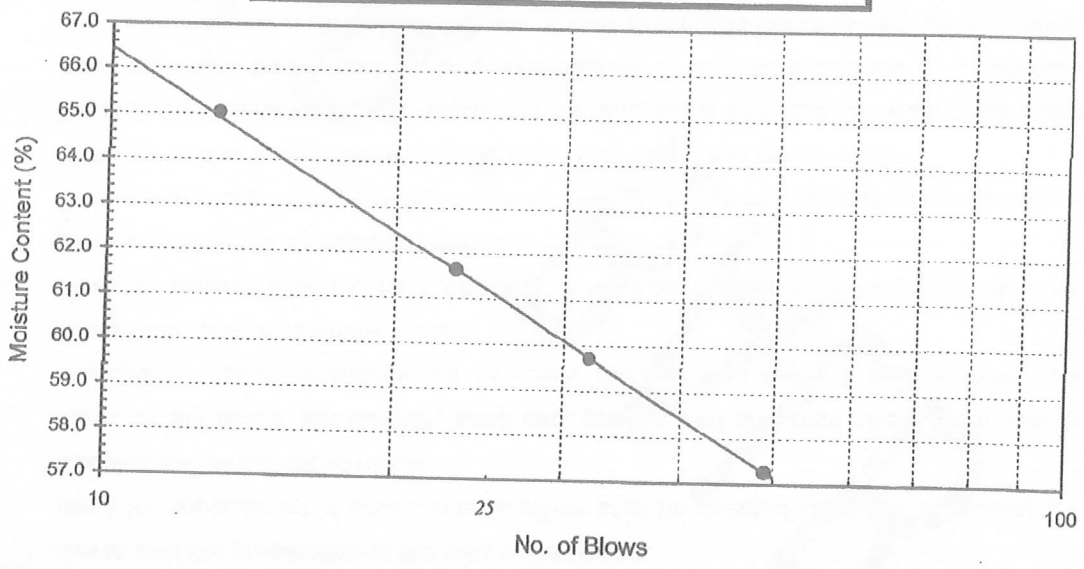
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/144
Client:	Field Sample No. : BH2/D16
	Depth : 24.90 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		13	23	32	49		
Container No.		A7	A20	A10	A15	A4	A12
Wt. of Soil + Container	(gm)	19.63	18.61	17.58	16.25	41.38	39.98
Wt. of Dry Soil + Container	(gm)	14.03	13.66	12.94	12.47	40.36	39.00
Wt. of Container	(gm)	5.42	5.63	5.17	5.87	36.22	35.07
Wt. of Dry Soil	(gm)	8.61	8.03	7.77	6.60	4.14	3.93
Wt. of Moisture	(gm)	5.60	4.95	4.64	3.78	1.02	0.98
Moisture Content	(%)	65.04	61.64	59.72	57.27	24.64	24.94

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	25
Liquid Limit	(%)	61
Plastic Limit	(%)	25
Plasticity Index	(%)	36
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJA01

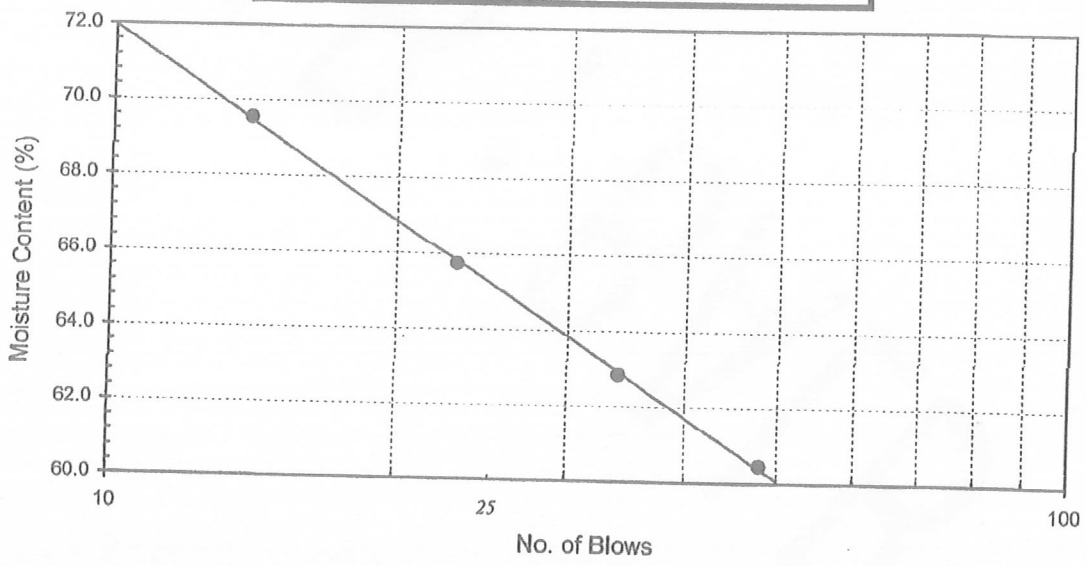
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/145
	Field Sample No. : BH2/D19
Client:	Depth : 24.90 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		14	23	34	48		
Container No.		A3	A16	A19	A1	J7	J3
Wt. of Soil + Container	*(gm)*	*19.66*	*18.29*	*17.25*	*16.43*	*38.19*	*42.41*
Wt. of Dry Soil + Container	(gm)	13.61	12.96	12.43	12.21	36.99	41.27
Wt. of Container	(gm)	4.91	4.85	4.76	5.23	32.44	36.96
Wt. of Dry Soil	(gm)	8.70	8.11	7.67	6.98	4.55	4.31
Wt. of Moisture	(gm)	6.05	5.33	4.82	4.22	1.20	1.14
Moisture Content	(%)	69.54	65.72	62.84	60.46	26.37	26.45

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	34
Liquid Limit	(%)	65
Plastic Limit	(%)	26
Plasticity Index	(%)	39
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJA02

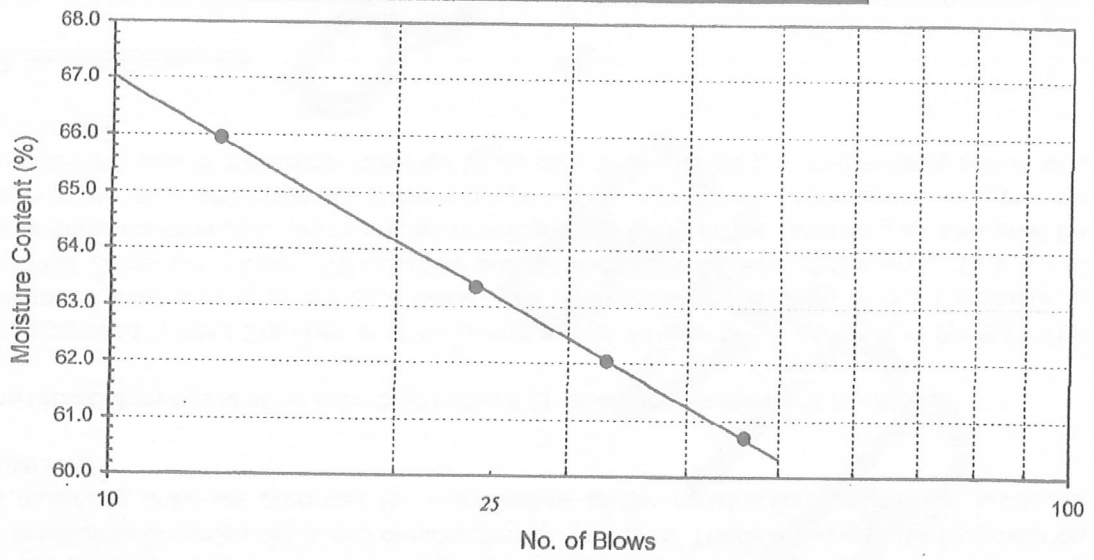
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/146
	Field Sample No. : BH2/D22
Client:	Depth : 33.90 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		13	24	33	46		
Container No.		A13	A17	A6	A18	J5	J1
Wt. of Soil + Container	(gm)	19.84	18.21	17.78	16.50	39.80	41.40
Wt. of Dry Soil + Container	(gm)	14.30	13.15	13.09	12.61	38.80	40.42
Wt. of Container	(gm)	5.90	5.16	5.53	6.20	34.82	36.54
Wt. of Dry Soil	(gm)	8.40	7.99	7.56	6.41	3.98	3.88
Wt. of Moisture	(gm)	5.54	5.06	4.69	3.89	1.00	0.98
Moisture Content	(%)	65.95	63.33	62.04	60.69	25.13	25.26

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	50
Liquid Limit	(%)	63
Plastic Limit	(%)	25
Plasticity Index	(%)	38
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJA03

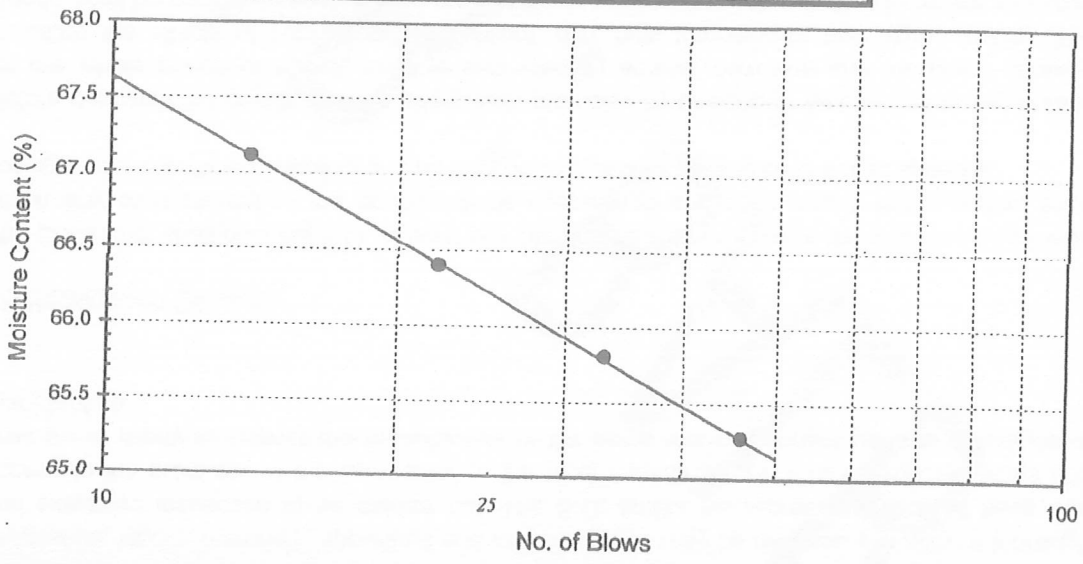
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/147
Client:	Field Sample No. : BH2/D25
	Depth : 38.40 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		14	22	33	46		
Container No.		A9	A11	A5	A12	J8	J10
Wt. of Soil + Container	(gm)	19.37	19.47	17.83	16.45	36.92	39.45
Wt. of Dry Soil + Container	(gm)	13.86	13.72	13.00	12.09	35.79	38.35
Wt. of Container	(gm)	5.65	5.06	5.66	5.41	31.78	34.47
Wt. of Dry Soil	(gm)	8.21	8.66	7.34	6.68	4.01	3.88
Wt. of Moisture	(gm)	5.51	5.75	4.83	4.36	1.13	1.10
Moisture Content	(%)	67.11	66.40	65.80	65.27	28.18	28.35

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	35
Liquid Limit	(%)	66
Plastic Limit	(%)	28
Plasticity Index	(%)	38
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJA04

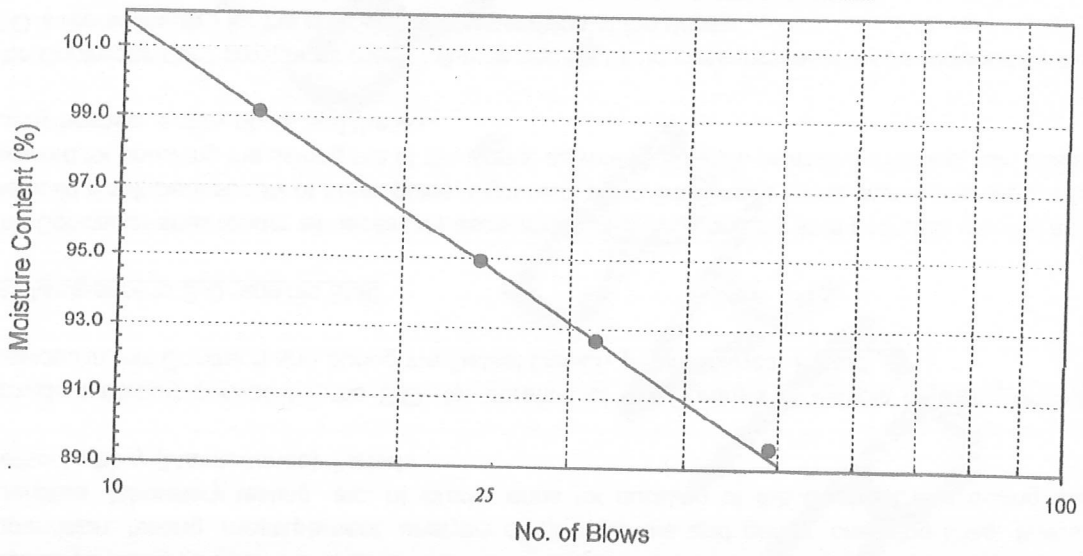
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :		Lab Sample No.	: AT2013/148
		Field Sample No.	: BH2/D30
Client:		Depth	: 45.90 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		Liquid Limit				Plastic Limit	
No. of Blows		14	24	32	49		
Container No.		A2	A8	A14	A4	J4	J2
Wt. of Soil + Container	(gm)	19.70	18.55	17.38	16.56	39.81	36.21
Wt. of Dry Soil + Container	(gm)	12.78	12.19	11.32	11.05	38.54	34.96
Wt. of Container	(gm)	5.80	5.49	4.78	4.90	34.73	31.24
Wt. of Dry Soil	(gm)	6.98	6.70	6.54	6.15	3.81	3.72
Wt. of Moisture	(gm)	6.92	6.36	6.06	5.51	1.27	1.25
Moisture Content	(%)	99.14	94.93	92.66	89.59	33.33	33.60

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	37
Liquid Limit	(%)	95
Plastic Limit	(%)	33
Plasticity Index	(%)	62
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJA05

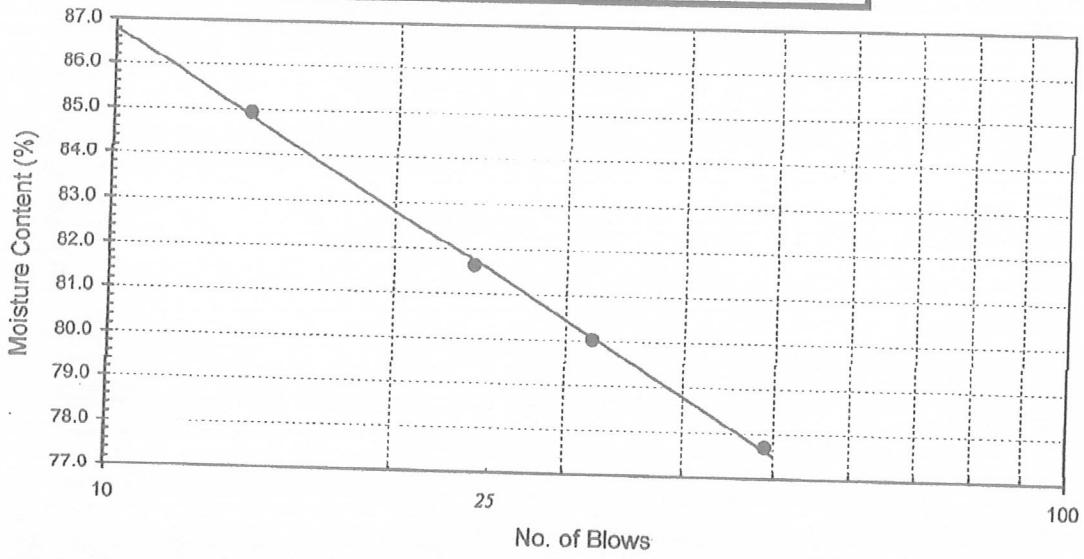
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/149
	Field Sample No. : BH2/D33
Client:	Depth : 50.40 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		14	24	32	49		
Container No.		A6	A3	A18	A12	J3	J8
Wt. of Soil + Container	(gm)	19.53	18.55	17.38	16.41	41.34	36.31
Wt. of Dry Soil + Container	(gm)	13.10	12.42	12.41	11.60	40.53	35.48
Wt. of Container	(gm)	5.53	4.91	6.20	5.41	36.96	31.78
Wt. of Dry Soil	(gm)	7.57	7.51	6.21	6.19	3.57	3.70
Wt. of Moisture	(gm)	6.43	6.13	4.97	4.81	0.81	0.83
Moisture Content	(%)	84.94	81.62	80.03	77.71	22.69	22.43

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	35
Liquid Limit	(%)	82
Plastic Limit	(%)	23
Plasticity Index	(%)	59
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 09/10/2013

Our Ref. : AJA06

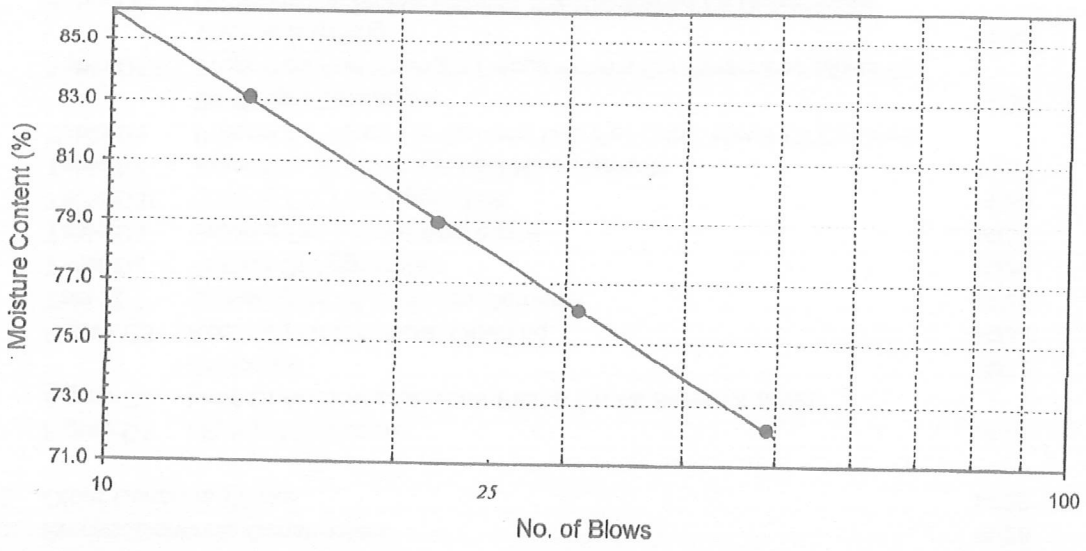
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :		Lab Sample No.	: AT2013/150
		Field Sample No.	: BH2/D36
Client:		Depth	: 54.90 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		14	22	31	49		
Container No.		A5	A14	A20	A8	J2	J10
Wt. of Soil + Container	(gm)	19.43	18.42	17.71	16.82	35.86	39.15
Wt. of Dry Soil + Container	(gm)	13.18	12.40	12.49	12.07	35.15	38.43
Wt. of Container	(gm)	5.66	4.78	5.63	5.49	31.24	34.47
Wt. of Dry Soil	(gm)	7.52	7.62	6.86	6.58	3.91	3.96
Wt. of Moisture	(gm)	6.25	6.02	5.22	4.75	0.71	0.72
Moisture Content	(%)	83.11	79.00	76.09	72.19	18.16	18.18

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	30
Liquid Limit	(%)	78
Plastic Limit	(%)	18
Plasticity Index	(%)	60
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 09/10/2013

Our Ref. : AJA07

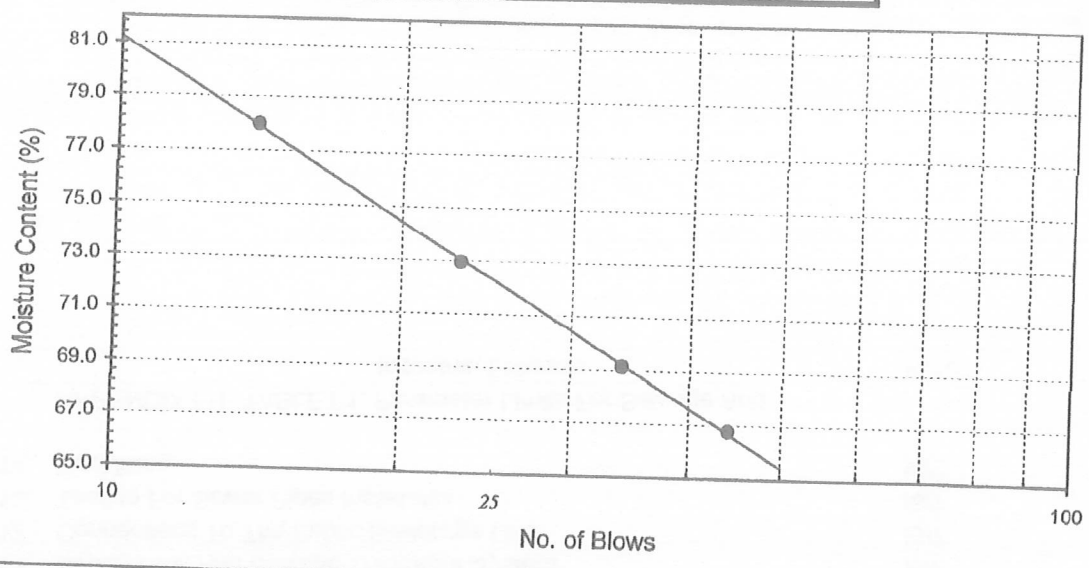
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/151
Client:	Field Sample No. : BH2/D39
	Depth : 59.40 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		14	23	34	44		
Container No.		A11	A19	A16	A9	J1	J5
Wt. of Soil + Container	(gm)	19.44	18.32	17.35	16.74	41.73	39.95
Wt. of Dry Soil + Container	(gm)	13.14	12.60	12.24	12.30	40.93	39.15
Wt. of Container	(gm)	5.06	4.76	4.85	5.65	36.54	34.82
Wt. of Dry Soil	(gm)	8.08	7.84	7.39	6.65	4.39	4.33
Wt. of Moisture	(gm)	6.30	5.72	5.11	4.44	0.80	0.80
Moisture Content	(%)	77.97	72.96	69.15	66.77	18.22	18.48

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	33
Liquid Limit	(%)	72
Plastic Limit	(%)	18
Plasticity Index	(%)	54
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 09/10/2013

Our Ref. : AJA08

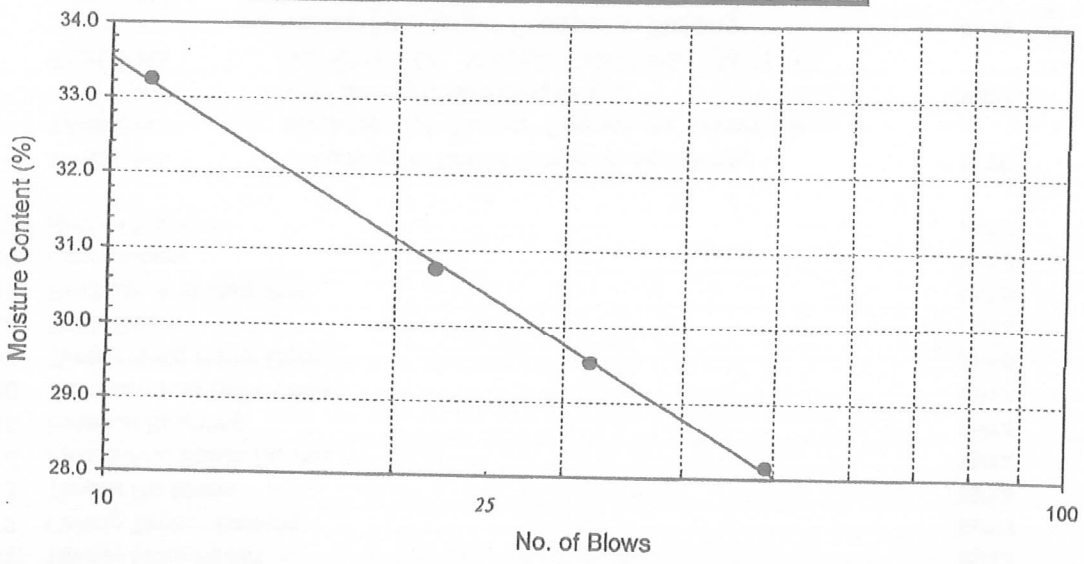
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/158
	Field Sample No. : BH4/D16
Client:	Depth : 24.90 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		11	22	32	49		
Container No.		A9	A15	A12	A4	J4	J2
Wt. of Soil + Container	*(gm)*	*19.32*	*18.67*	*17.43*	*16.60*	*41.58*	*38.13*
Wt. of Dry Soil + Container	(gm)	15.91	15.66	14.69	14.03	40.49	37.02
Wt. of Container	(gm)	5.65	5.87	5.41	4.90	34.73	31.24
Wt. of Dry Soil	(gm)	10.26	9.79	9.28	9.13	5.76	5.78
Wt. of Moisture	(gm)	3.41	3.01	2.74	2.57	1.09	1.11
Moisture Content	(%)	33.24	30.75	29.53	28.15	18.92	19.20

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	17
Liquid Limit	(%)	30
Plastic Limit	(%)	19
Plasticity Index	(%)	11
Classification		CL

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Our Ref. : AJA15

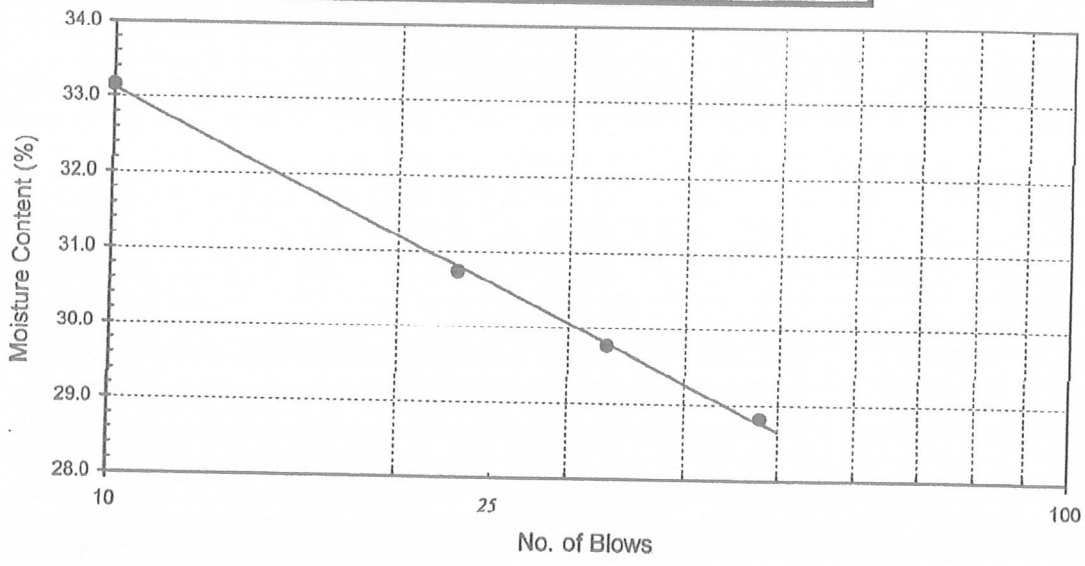
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/159
	Field Sample No. : BH4/D19
Client:	Depth : 29.40 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		10	23	33	48		
Container No.		A10	A7	A5	A8	J7	J9
Wt. of Soil + Container	(gm)	19.71	18.31	17.78	16.62	39.47	42.15
Wt. of Dry Soil + Container	(gm)	16.09	15.28	15.00	14.13	38.50	41.15
Wt. of Container	(gm)	5.17	5.42	5.66	5.49	32.44	35.07
Wt. of Dry Soil	(gm)	10.92	9.86	9.34	8.64	6.06	6.08
Wt. of Moisture	(gm)	3.62	3.03	2.78	2.49	0.97	1.00
Moisture Content	(%)	33.15	30.73	29.76	28.82	16.01	16.45

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	23
Liquid Limit	(%)	31
Plastic Limit	(%)	16
Plasticity Index	(%)	15
Classification		CL

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Our Ref. : AJA16

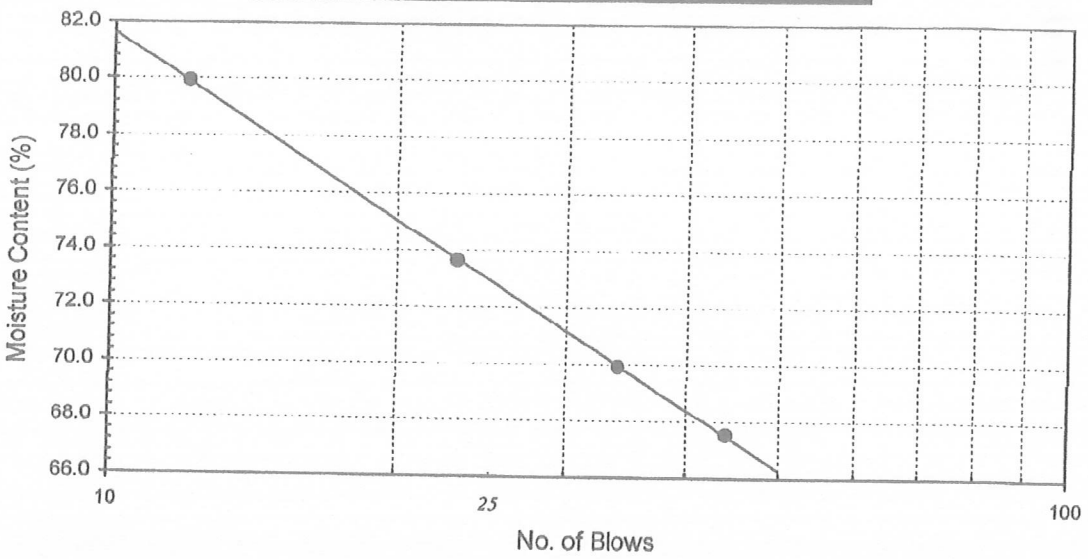
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :		Lab Sample No.	: AT2013/160
		Field Sample No.	: BH4/D24
Client:		Depth	: 36.90 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		12	23	34	44		
Container No.		A3	A11	A4	A1	J5	J1
Wt. of Soil + Container	(gm)	19.52	18.36	17.44	16.89	40.49	42.22
Wt. of Dry Soil + Container	(gm)	13.03	12.72	12.28	12.19	39.44	41.16
Wt. of Container	(gm)	4.91	5.06	4.90	5.23	34.82	36.54
Wt. of Dry Soil	(gm)	8.12	7.66	7.38	6.96	4.62	4.62
Wt. of Moisture	(gm)	6.49	5.64	5.16	4.70	1.05	1.06
Moisture Content	(%)	79.93	73.63	69.92	67.53	22.73	22.94

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	39
Liquid Limit	(%)	73
Plastic Limit	(%)	23
Plasticity Index	(%)	50
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Our Ref. : AJA17

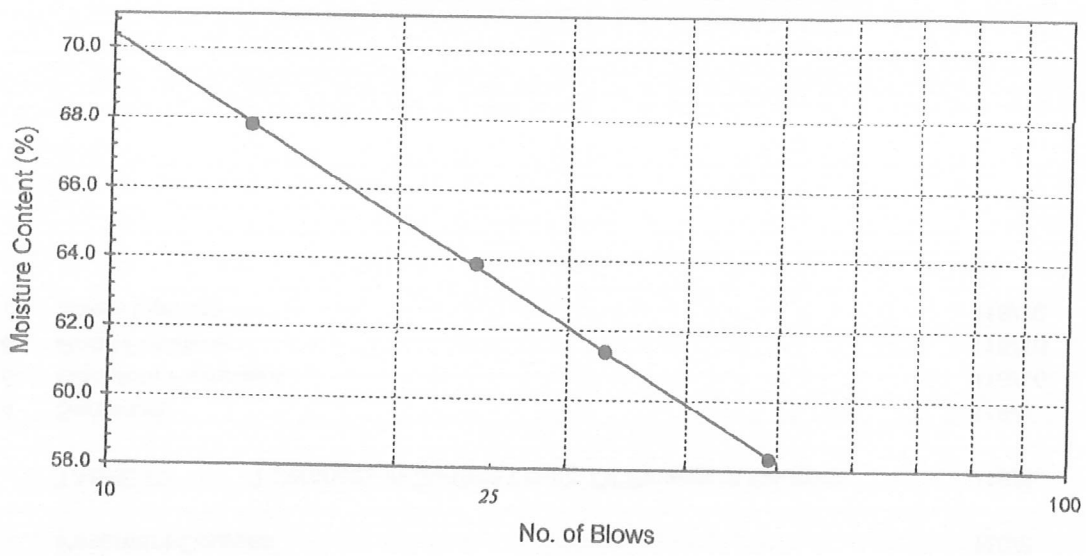
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/161
	Field Sample No. : BH4/D27
Client:	Depth : 41.40 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		14	24	33	49		
Container No.		A17	A2	A6	A19	J8	J3
Wt. of Soil + Container	(gm)	19.49	18.58	17.81	16.24	36.56	41.70
Wt. of Dry Soil + Container	(gm)	13.70	13.60	13.14	12.00	35.58	40.73
Wt. of Container	(gm)	5.16	5.80	5.53	4.73	31.78	36.96
Wt. of Dry Soil	(gm)	8.54	7.80	7.61	7.27	3.80	3.77
Wt. of Moisture	(gm)	5.79	4.98	4.67	4.24	0.98	0.97
Moisture Content	(%)	67.80	63.85	61.37	58.32	25.79	25.73

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	37
Liquid Limit	(%)	63
Plastic Limit	(%)	26
Plasticity Index	(%)	37
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Our Ref. : AJA18

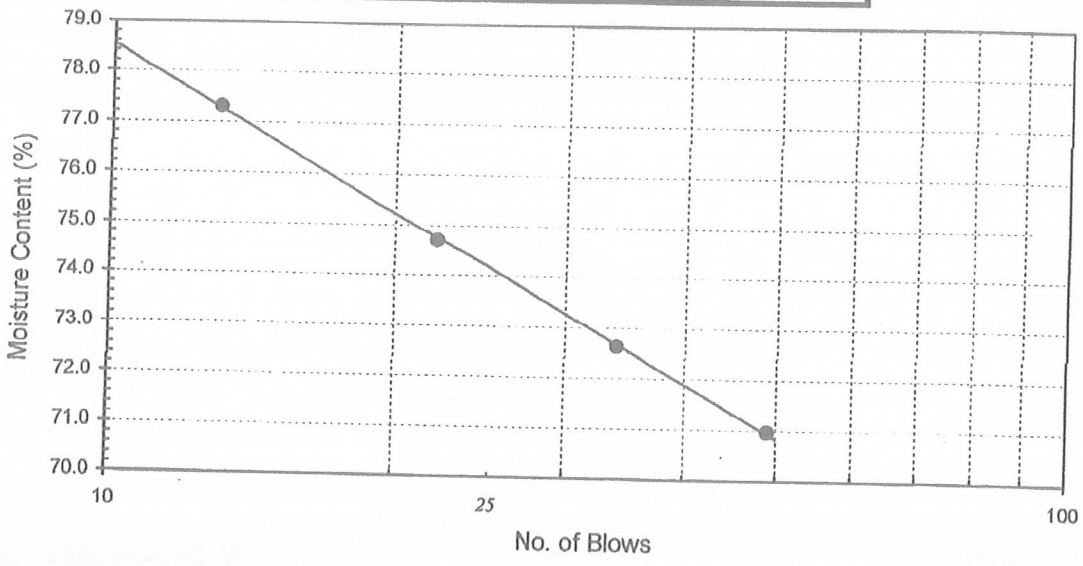
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/162
	Field Sample No. : BH4/D31
Client:	Depth : 47.40 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		13	22	34	49		
Container No.		A11	A12	A10	A15	J6	J4
Wt. of Soil + Container	(gm)	19.28	18.60	17.41	16.47	41.76	39.30
Wt. of Dry Soil + Container	(gm)	13.08	12.96	12.26	12.07	40.73	38.46
Wt. of Container	(gm)	5.06	5.41	5.17	5.87	36.22	34.73
Wt. of Dry Soil	(gm)	8.02	7.55	7.09	6.20	4.51	3.73
Wt. of Moisture	(gm)	6.20	5.64	5.15	4.40	1.03	0.84
Moisture Content	(%)	77.31	74.70	72.64	70.97	22.84	22.52

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	36
Liquid Limit	(%)	74
Plastic Limit	(%)	23
Plasticity Index	(%)	51
Classification		CH

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 18/10/2013

Our Ref. : AJA19

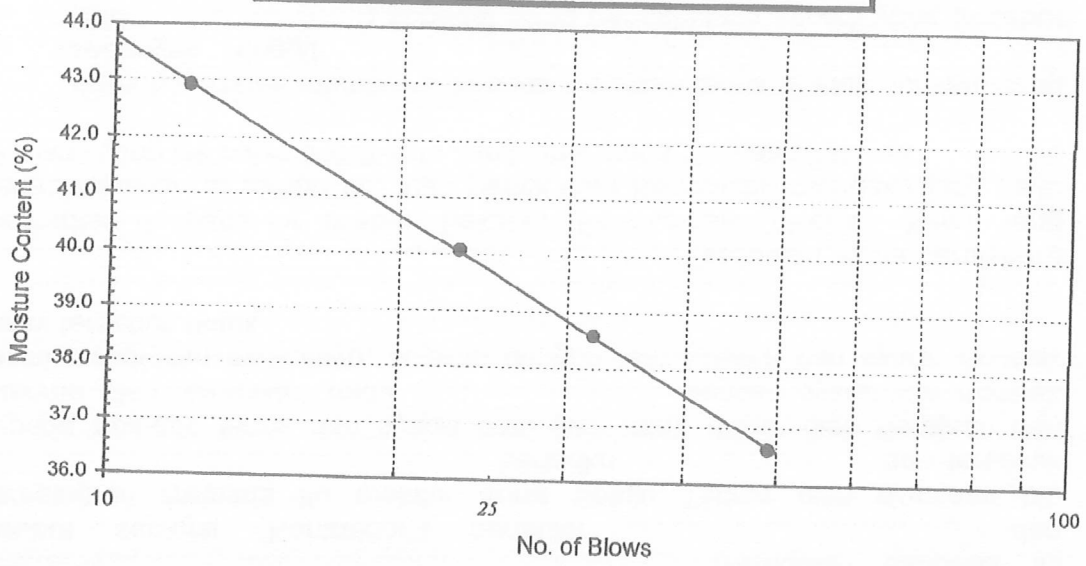
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT2013/165
Client:	Field Sample No. : BH6/D7
	Depth : 11.40 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		12	23	32	49		
Container No.		A8	A2	A12	A18	J3	J6
Wt. of Soil + Container	(gm)	19.41	18.28	17.55	16.31	43.30	42.51
Wt. of Dry Soil + Container	(gm)	15.23	14.71	14.17	13.60	42.13	41.36
Wt. of Container	(gm)	5.49	5.80	5.41	6.20	36.96	36.22
Wt. of Dry Soil	(gm)	9.74	8.91	8.76	7.40	5.17	5.14
Wt. of Moisture	(gm)	4.18	3.57	3.38	2.71	1.17	1.15
Moisture Content	(%)	42.92	40.07	38.58	36.62	22.63	22.37

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	47
Liquid Limit	(%)	40
Plastic Limit	(%)	23
Plasticity Index	(%)	17
Classification		CL

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 19/10/2013

Our Ref. : AJA22

Particle Size Distribution

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/27
	Field Sample No. : BH2/D2
Client:	Depth : 3.90 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000	0.00	0.00	100.00
10.000	1.89	1.86	98.14
6.300	16.07	17.65	82.35
5.000	8.46	25.97	74.03
3.350	11.14	36.92	63.08
2.000	13.40	50.09	49.91
1.180	11.00	60.90	39.10
0.600	10.08	70.81	29.19
0.425	4.33	75.06	24.94
0.300	4.02	79.02	20.98
0.212	3.54	82.49	17.51
0.150	4.00	86.43	13.57
0.063	5.83	92.16	7.84
-0.063 mm dry	0.82		
-0.063 mm wet	7.16		
-0.063 mm total	7.98		
TOTAL	*101.74*		

WET SIEVE

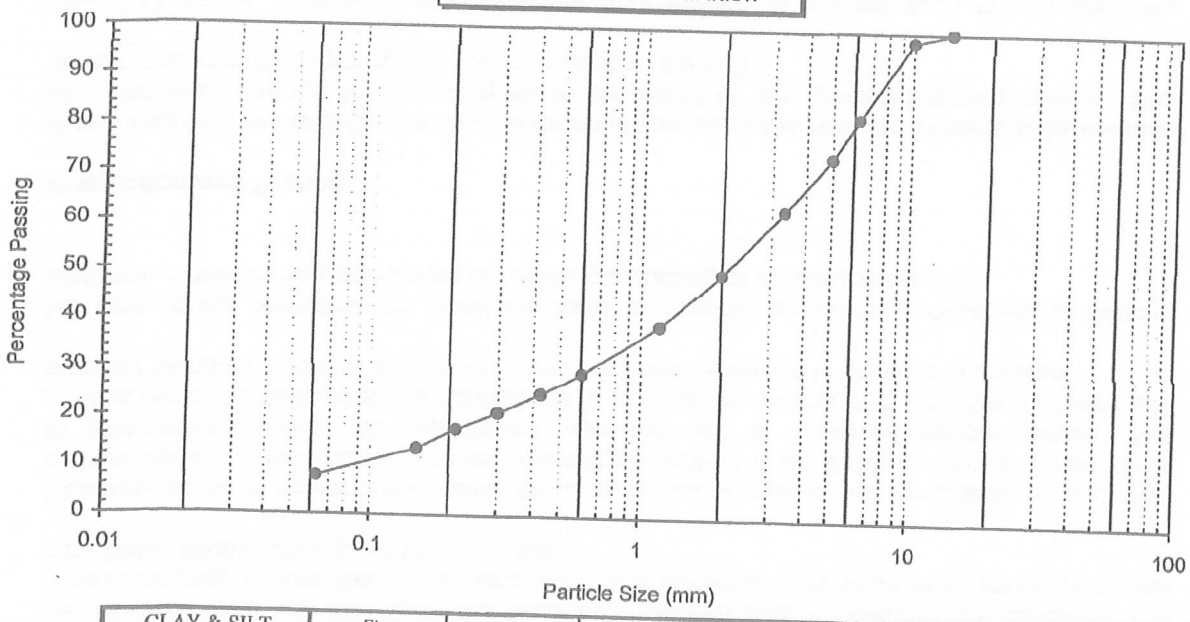
Weight of dried sample before washing through 0.063 mm sieve	(gm)	101.74
Weight of dried sample after washing through 0.063 mm sieve	(gm)	94.58
Weight of material washed through 0.063 mm sieve	(gm)	7.16
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	14/10/2013

Particle Size Distribution



CLAY & SILT	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*
8%		SAND	42%		GRAVEL	50%

Our Ref. : AJS01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/28
	Field Sample No. : BH2/D5
Client:	Depth : 8.40 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000	0.00	0.00	100.00
10.000	2.90	2.78	97.22
6.300	16.27	18.39	81.61
5.000	4.83	23.03	76.97
3.350	8.14	30.84	69.16
2.000	9.80	40.24	59.76
1.180	7.67	47.79	52.21
0.600	7.32	54.82	45.18
0.425	3.29	57.97	42.03
0.300	3.62	61.45	38.55
0.212	4.99	66.23	33.77
0.150	7.77	73.69	26.31
0.063	10.58	83.84	16.16
-0.063 mm dry	0.75		
-0.063 mm wet	16.09		
-0.063 mm total	16.84		
TOTAL	*104.22*		

WET SIEVE

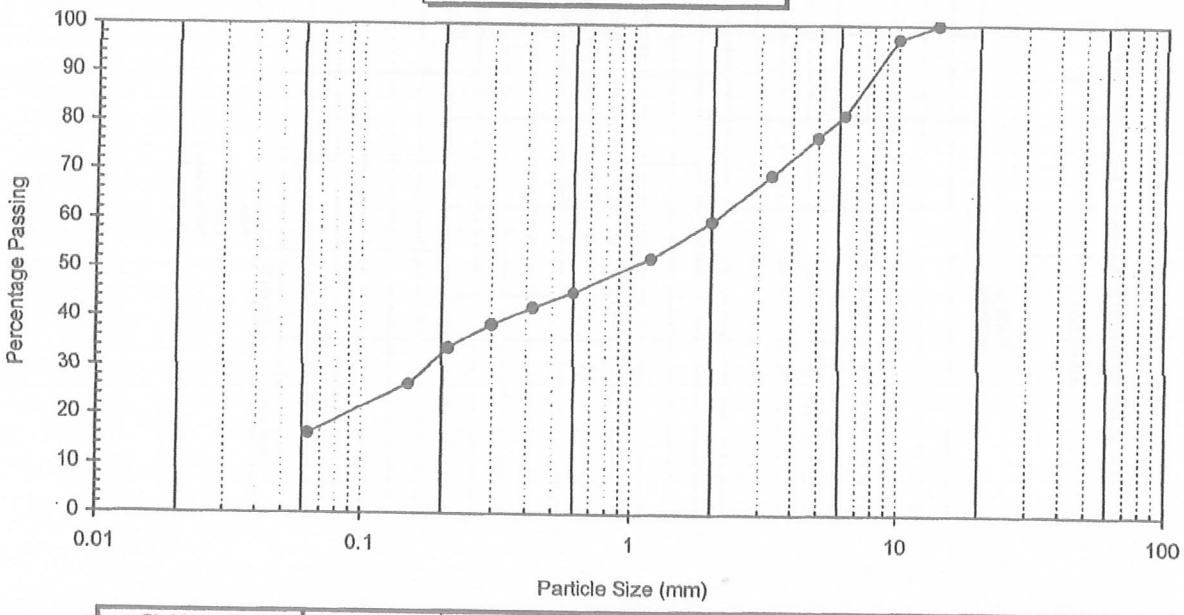
Weight of dried sample before washing through 0.063 mm sieve	(gm)	104.22
Weight of dried sample after washing through 0.063 mm sieve	(gm)	88.13
Weight of material washed through 0.063 mm sieve	(gm)	16.09
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By : Eddie
Checked By : Tommie
Date : 14/10/2013

Particle Size Distribution



CLAY & SILT	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*
16%		SAND	44%		GRAVEL	40%

Our Ref. : AJS02

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/29
	Field Sample No. : BH2/D7
Client:	Depth : 11.40 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000	0.00	0.00	100.00
10.000	5.27	4.87	95.13
6.300	4.65	9.17	90.83
5.000	8.75	17.26	82.74
3.350	13.45	29.70	70.30
2.000	15.90	44.40	55.60
1.180	12.60	56.05	43.95
0.600	11.31	66.50	33.50
0.425	4.59	70.75	29.25
0.300	4.24	74.67	25.33
0.212	3.49	77.89	22.11
0.150	3.39	81.03	18.97
0.063	4.59	85.27	14.73
-0.063 mm dry	0.37		
-0.063 mm wet	15.56		
-0.063 mm total	15.93		
TOTAL	*108.16*		

WET SIEVE

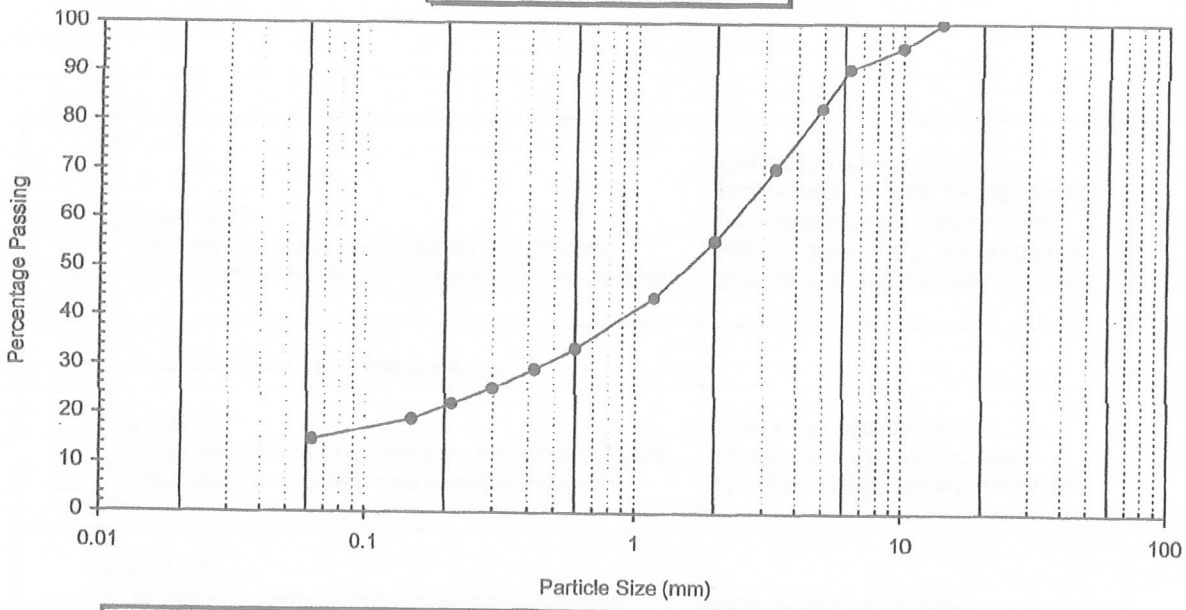
Weight of dried sample before washing through 0.063 mm sieve	(gm)	108.16
Weight of dried sample after washing through 0.063 mm sieve	(gm)	92.60
Weight of material washed through 0.063 mm sieve	(gm)	15.56
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	14/10/2013

Particle Size Distribution



CLAY & SILT	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*
15%		SAND	41%		GRAVEL	44%

Our Ref. : AJS03

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/30
	Field Sample No. : BH2/D10
Client:	Depth : 15.90 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000	0.00	0.00	100.00
6.300	6.51	6.06	93.94
5.000	9.03	14.46	85.54
3.350	14.30	27.76	72.24
2.000	13.90	40.70	59.30
1.180	10.25	50.23	49.77
0.600	9.92	59.46	40.54
0.425	4.52	63.67	36.33
0.300	4.32	67.69	32.31
0.212	3.46	70.91	29.09
0.150	3.07	73.76	26.24
0.063	4.06	77.54	22.46
-0.063 mm dry	0.43		
-0.063 mm wet	23.71		
-0.063 mm total	24.14		
TOTAL	107.48		

WET SIEVE

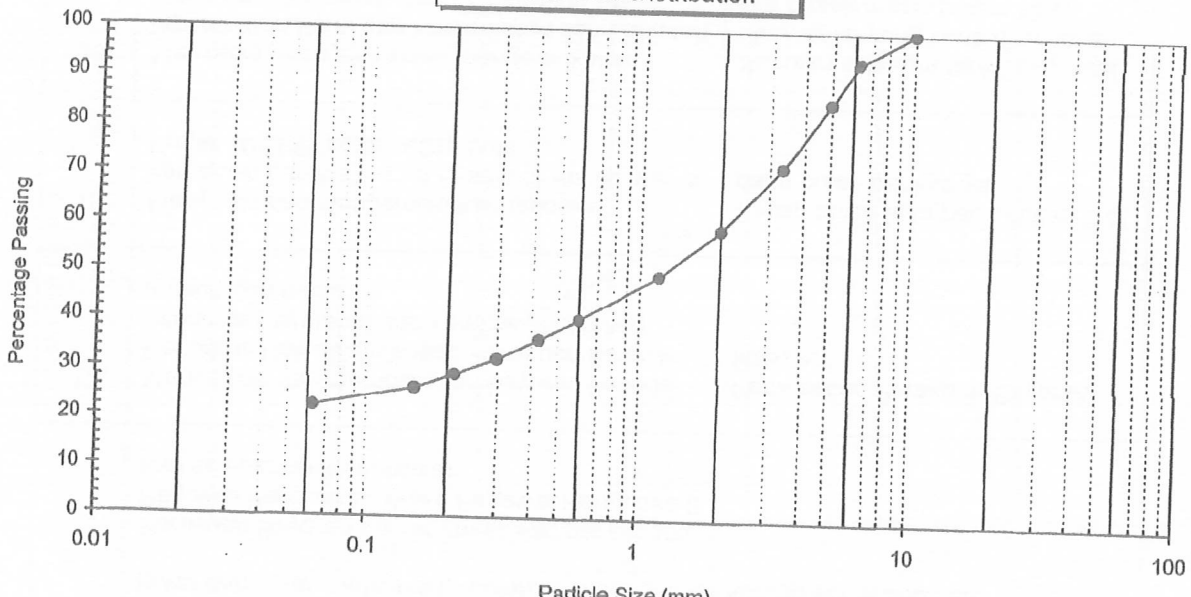
Weight of dried sample before washing through 0.063 mm sieve	(gm)	107.48
Weight of dried sample after washing through 0.063 mm sieve	(gm)	83.77
Weight of material washed through 0.063 mm sieve	(gm)	23.71
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	14/10/2013

Particle Size Distribution



CLAY & SILT	Fine	Medium	Coarse	Fine	Medium	Coarse
22%		SAND	37%		GRAVEL	41%

Our Ref. : AJS04

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/39
Client:	Field Sample No. : BH4/D4
	Depth : 6.90 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000	0.00	0.00	100.00
6.300	3.94	3.54	96.46
5.000	9.35	11.93	88.07
3.350	14.21	24.69	75.31
2.000	10.89	34.46	65.54
1.180	7.62	41.30	58.70
0.600	7.49	48.03	51.97
0.425	3.27	50.96	49.04
0.300	3.90	54.46	45.54
0.212	5.71	59.59	40.41
0.150	9.47	68.09	31.91
0.063	13.68	80.37	19.63
-0.063 mm dry	1.19		
-0.063 mm wet	20.68		
-0.063 mm total	21.87		
TOTAL	*111.40*		

WET SIEVE

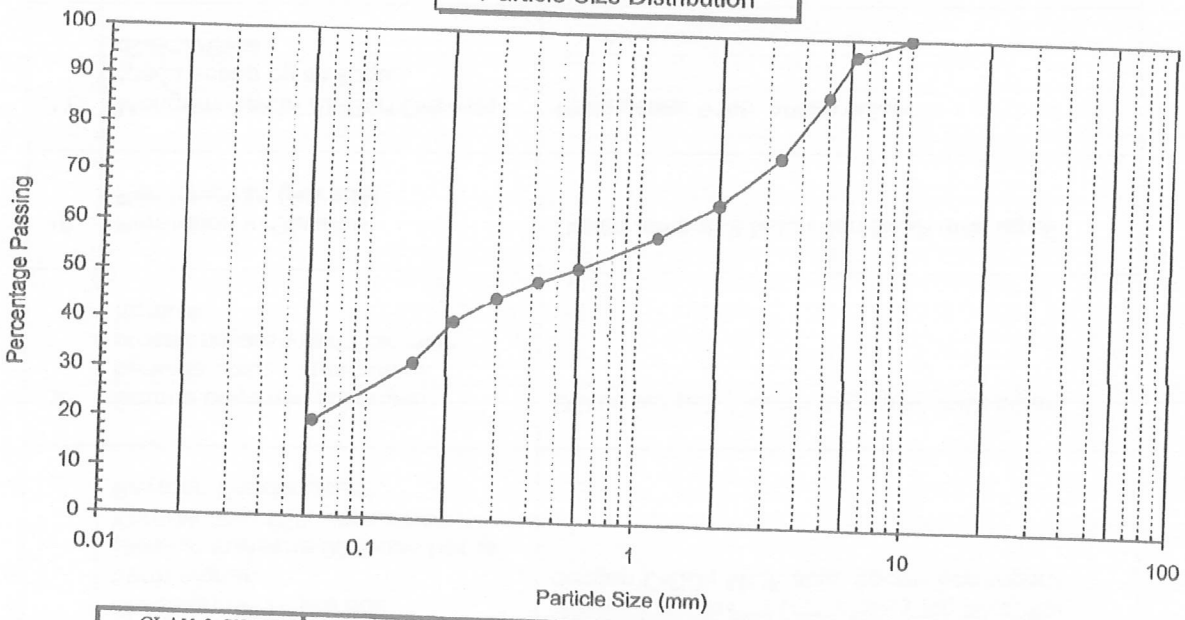
Weight of dried sample before washing through 0.063 mm sieve	(gm)	111.40
Weight of dried sample after washing through 0.063 mm sieve	(gm)	90.72
Weight of material washed through 0.063 mm sieve	(gm)	20.68
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	16/10/2013

Particle Size Distribution



CLAY & SILT	Fine	Medium	Coarse	Fine	Medium	Coarse
20%		SAND	46%		GRAVEL	34%

Our Ref. : AJS13

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/40
	Field Sample No. : BH4/D7
Client:	Depth : 11.40 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000	0.00	0.00	100.00
6.300	21.88	21.76	78.24
5.000	6.74	28.46	71.54
3.350	8.99	37.40	62.60
2.000	12.34	49.67	50.33
1.180	10.82	60.43	39.57
0.600	9.80	70.27	29.73
0.425	4.22	74.47	25.53
0.300	3.74	78.18	21.82
0.212	3.03	81.20	18.80
0.150	2.90	84.08	15.92
0.063	3.94	88.00	12.00
-0.063 mm dry	0.42		
-0.063 mm wet	11.65		
-0.063 mm total	12.07		
TOTAL	100.57		

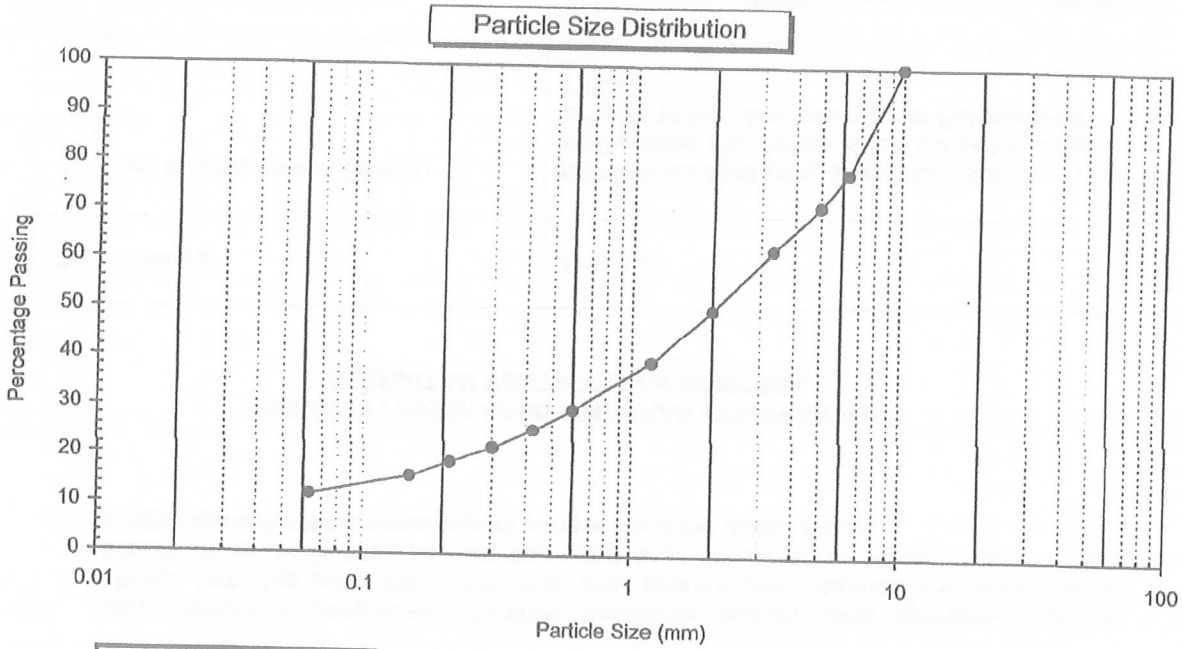
WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	100.57
Weight of dried sample after washing through 0.063 mm sieve	(gm)	88.92
Weight of material washed through 0.063 mm sieve	(gm)	11.65
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	10/10/2013



CLAY & SILT	Fine	Medium	Coarse	Fine	Medium	Coarse
12%		SAND	38%		GRAVEL	50%

Our Ref. : AJS14

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/41
Client:	Field Sample No. : BH4/D10
	Depth : 15.90 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000	0.00	0.00	100.00
6.300	7.10	6.41	93.59
5.000	8.67	14.24	85.76
3.350	10.20	23.44	76.56
2.000	9.30	31.84	68.16
1.180	7.01	38.17	61.83
0.600	6.82	44.33	55.67
0.425	3.46	47.45	52.55
0.300	3.58	50.68	49.32
0.212	3.11	53.49	46.51
0.150	3.01	56.21	43.79
0.063	4.58	60.34	39.66
-0.063 mm dry	0.56		
-0.063 mm wet	43.37		
-0.063 mm total	43.93		
TOTAL	*110.77*		

WET SIEVE

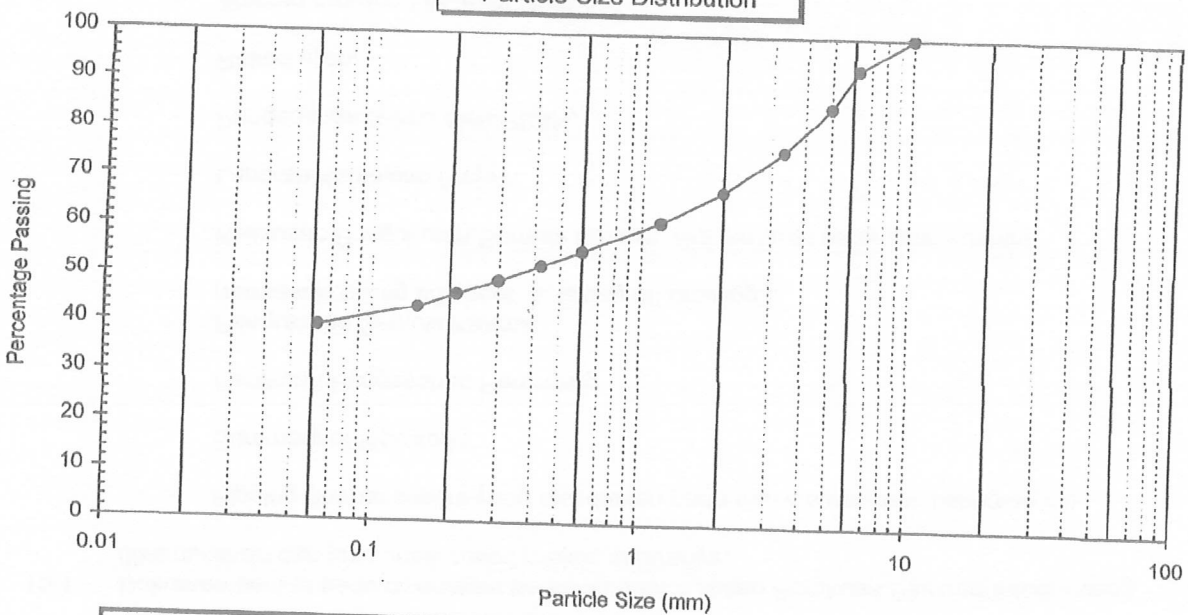
Weight of dried sample before washing through 0.063 mm sieve	(gm)	110.77
Weight of dried sample after washing through 0.063 mm sieve	(gm)	67.40
Weight of material washed through 0.063 mm sieve	(gm)	43.37
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	16/10/2013

Particle Size Distribution



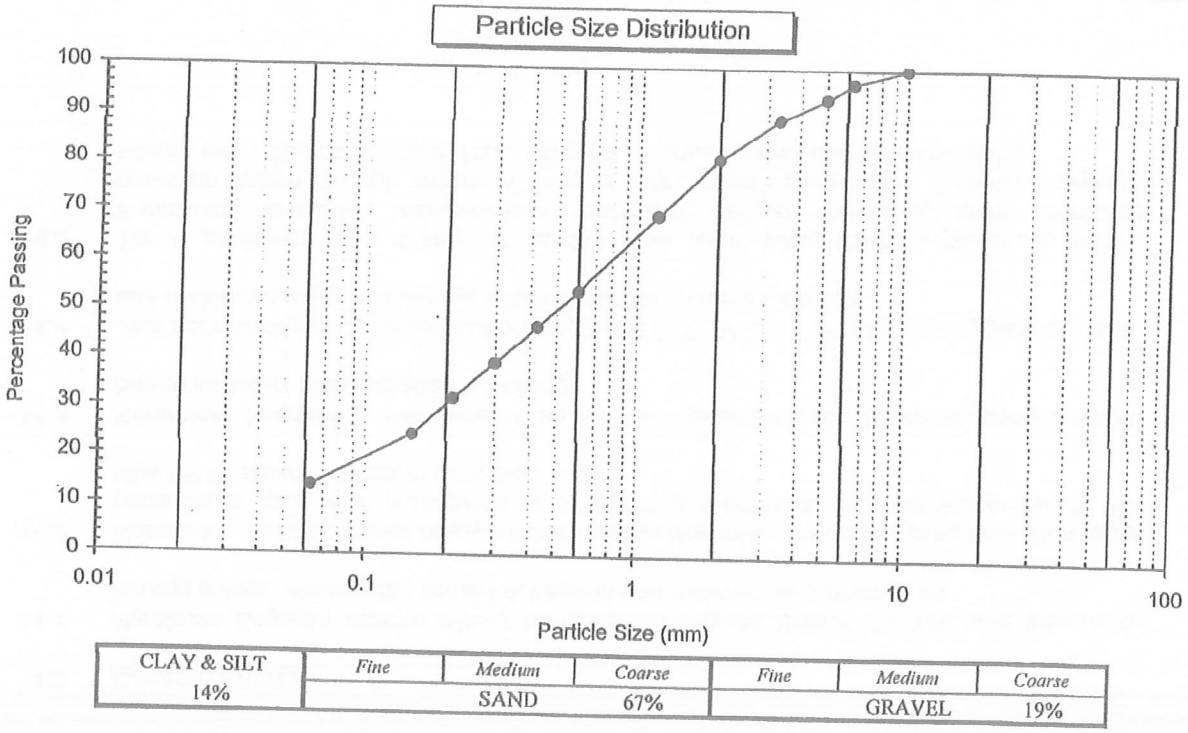
CLAY & SILT	Fine	Medium	Coarse	Fine	Medium	Coarse
40%		SAND	28%		GRAVEL	32%

Our Ref. : AJS15

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/49
	Field Sample No. : BH6/D2
Client:	Depth : 3.90 m

DRY SIEVING				WET SIEVE	
B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)	Weight of dried sample before washing through 0.063 mm sieve (gm)	108.27
75.000				Weight of dried sample after washing through 0.063 mm sieve (gm)	94.25
63.000				Weight of material washed through 0.063 mm sieve (gm)	14.02
50.000				Natural Moisture Content (%)	
37.500					
28.000				Sample Description : Refer to Borehole Log.	
20.000					
14.000					
10.000	0.00	0.00	100.00		
6.300	3.13	2.89	97.11		
5.000	3.48	6.11	93.89		
3.350	4.74	10.48	89.52		
2.000	8.80	18.61	81.39		
1.180	12.69	30.33	69.67		
0.600	16.74	45.79	54.21	Remarks :	
0.425	7.95	53.14	46.86		
0.300	8.37	60.87	39.13		
0.212	7.82	68.09	31.91		
0.150	8.07	75.54	24.46		
0.063	11.37	86.04	13.96		
-0.063 mm dry	1.09				
-0.063 mm wet	14.02				
-0.063 mm total	15.11			Tested By : Eddie	
TOTAL	108.27			Checked By : Tommie	
				Date : 19/10/2013	



CLAY & SILT	SAND			GRAVEL		
	Fine	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*
14%			67%			19%

Our Ref. : AJS23

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/50
	Field Sample No. : BH6/D3
Client:	Depth : 5.40 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000	0.00	0.00	100.00
10.000	11.26	13.46	86.54
6.300	10.88	26.46	73.54
5.000	7.02	34.85	65.15
3.350	6.83	43.01	56.99
2.000	6.85	51.20	48.80
1.180	5.36	57.60	42.40
0.600	5.15	63.75	36.25
0.425	2.48	66.72	33.28
0.300	2.95	70.24	29.76
0.212	3.38	74.28	25.72
0.150	4.33	79.46	20.54
0.063	6.81	87.60	12.40
-0.063 mm dry	*0.61*		
-0.063 mm wet	9.77		
-0.063 mm total	10.38		
TOTAL	*83.68*		

WET SIEVE

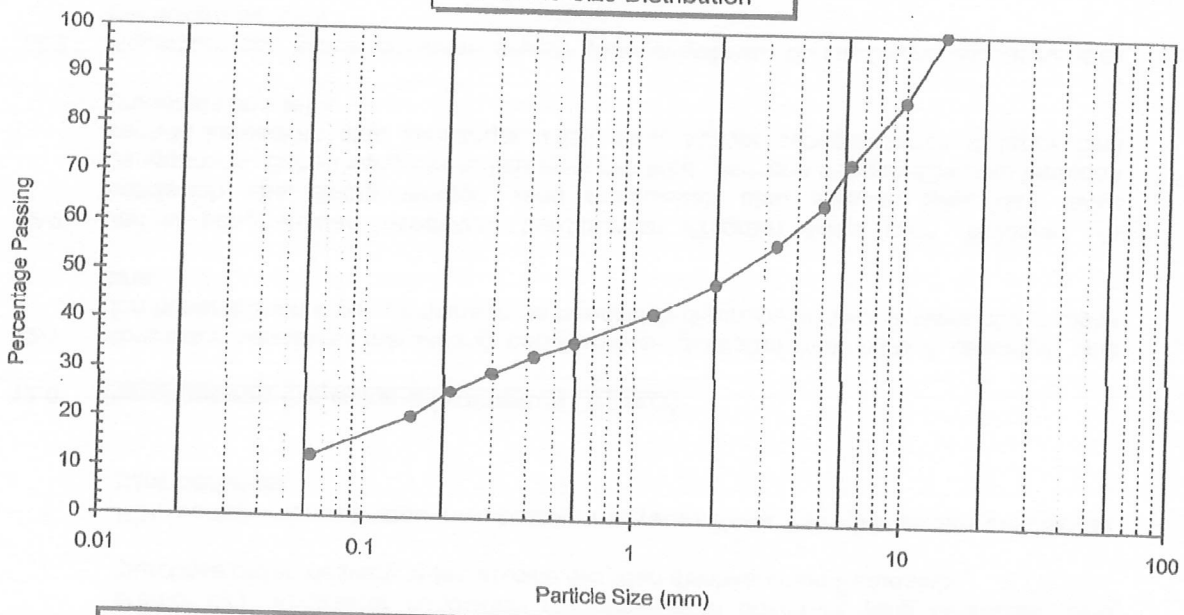
Weight of dried sample before washing through 0.063 mm sieve	(gm)	83.68
Weight of dried sample after washing through 0.063 mm sieve	(gm)	73.91
Weight of material washed through 0.063 mm sieve	(gm)	9.77
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	19/10/2013

Particle Size Distribution



CLAY & SILT	Fine	Medium	Coarse	Fine	Medium	Coarse
12%		SAND	37%		GRAVEL	51%

Our Ref. : AJS24

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/51
	Field Sample No. : BH6/D5
Client:	Depth : 8.40 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000	0.00	0.00	100.00
10.000	3.45	2.76	97.24
6.300	15.71	15.34	84.66
5.000	12.38	25.26	74.74
3.350	11.89	34.78	65.22
2.000	9.59	42.46	57.54
1.180	8.61	49.36	50.64
0.600	9.30	56.65	43.15
0.425	4.50	60.45	39.55
0.300	4.62	64.15	35.85
0.212	4.87	68.05	31.95
0.150	6.29	73.09	26.91
0.063	8.97	80.28	19.72
-0.063 mm dry	0.92		
-0.063 mm wet	23.71		
-0.063 mm total	24.63		
TOTAL	124.87		

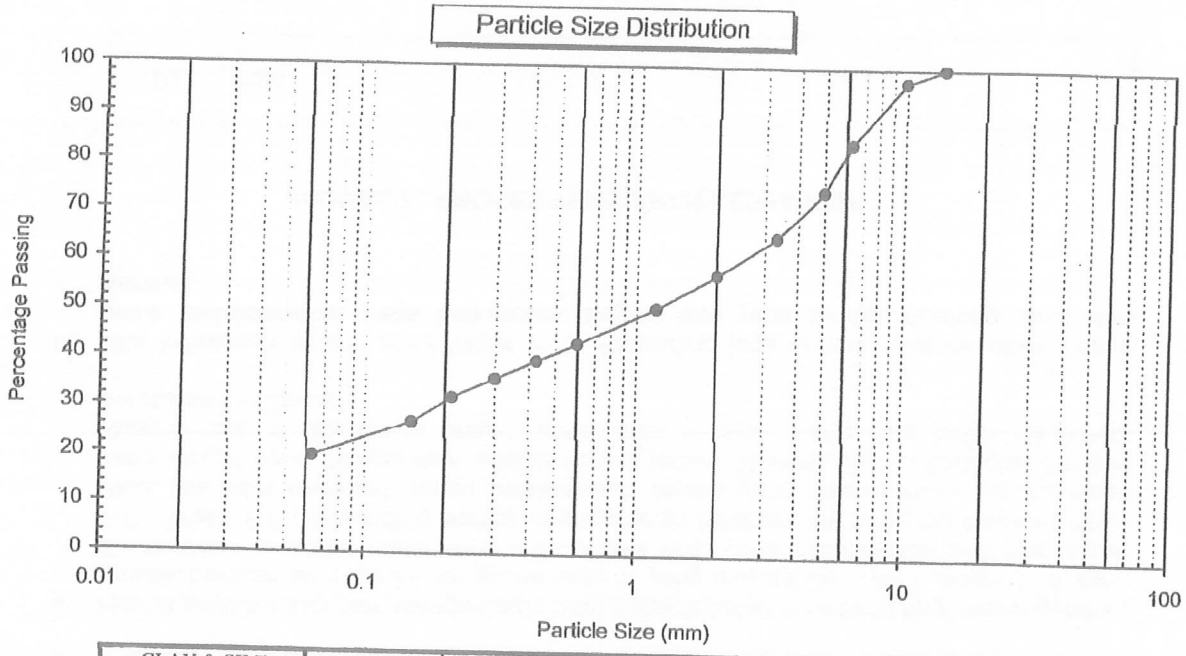
WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	124.87
Weight of dried sample after washing through 0.063 mm sieve	(gm)	101.16
Weight of material washed through 0.063 mm sieve	(gm)	23.71
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	19/10/2013



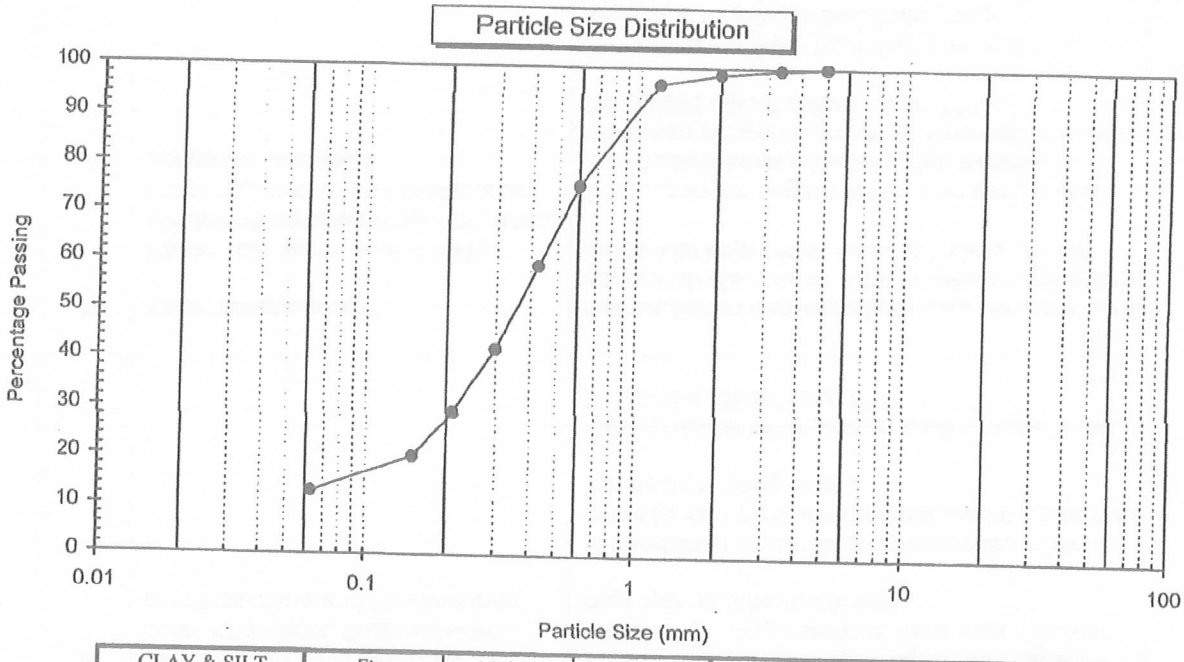
CLAY & SILT	Fine	Medium	Coarse	Fine	Medium	Coarse
20%		SAND	38%		GRAVEL	42%

Our Ref. : AJS25

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :		Lab Sample No. :	SV/2013/52
		Field Sample No. :	BH6/D18
Client:		Depth :	27.90 m

DRY SIEVING				WET SIEVE		
B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)			
75.000				Weight of dried sample before washing through 0.063 mm sieve	(gm)	106.55
63.000				Weight of dried sample after washing through 0.063 mm sieve	(gm)	93.66
50.000				Weight of material washed through 0.063 mm sieve	(gm)	12.89
37.500				Natural Moisture Content	(%)	
28.000						
20.000						
14.000				Sample Description : Refer to Borehole Log.		
10.000						
6.300						
5.000	0.00	0.00	100.00			
3.350	0.43	0.40	99.60			
2.000	0.96	1.30	98.70			
1.180	2.30	3.46	96.64			
0.600	22.21	24.31	75.69	Remarks :		
0.425	17.55	40.78	59.22			
0.300	18.35	58.00	42.00			
0.212	13.77	70.92	29.08			
0.150	9.75	80.08	19.92			
0.063	7.63	87.24	12.76			
-0.063 mm dry	0.71					
-0.063 mm wet	12.89			Tested By : Eddie		
-0.063 mm total	13.60			Checked By : Tommie		
TOTAL	106.55			Date : 19/10/2013		



CLAY & SILT	Fine	Medium	Coarse	Fine	Medium	Coarse
13%		SAND	86%		GRAVEL	1%

Our Ref. : AJS26

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/53
	Field Sample No. : BH6/D19
Client:	Depth : 29.40 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000	0.00	0.00	100.00
10.000	4.02	3.24	96.76
6.300	9.75	11.09	88.91
5.000	5.36	15.41	84.59
3.350	4.09	18.70	81.30
2.000	7.95	25.10	74.90
1.180	16.48	38.37	61.63
0.600	18.19	53.83	46.17
0.425	2.94	56.19	43.81
0.300	1.28	57.22	42.78
0.212	0.64	57.74	42.26
0.150	0.50	58.14	41.86
0.063	0.68	58.69	41.31
-0.063 mm dry	0.25		
-0.063 mm wet	51.05		
-0.063 mm total	51.30		
TOTAL	124.18		

WET SIEVE

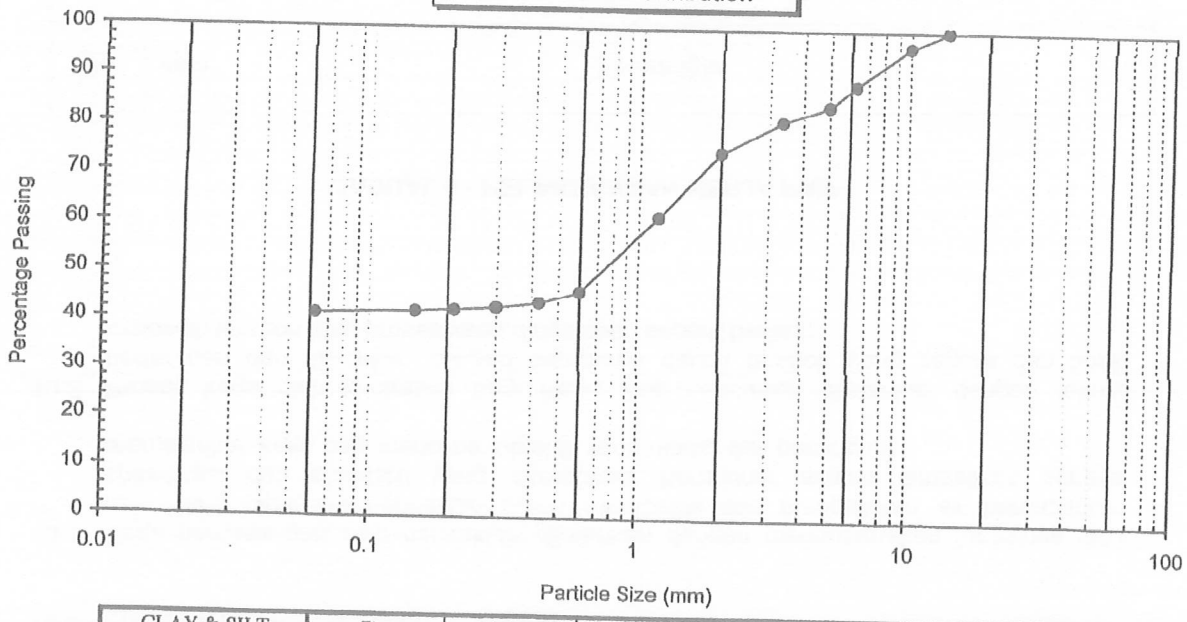
Weight of dried sample before washing through 0.063 mm sieve	(gm)	124.18
Weight of dried sample after washing through 0.063 mm sieve	(gm)	73.13
Weight of material washed through 0.063 mm sieve	(gm)	51.05
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	19/10/2013

Particle Size Distribution



CLAY & SILT	Fine	Medium	Coarse	Fine	Medium	Coarse
41%		SAND	34%		GRAVEL	25%

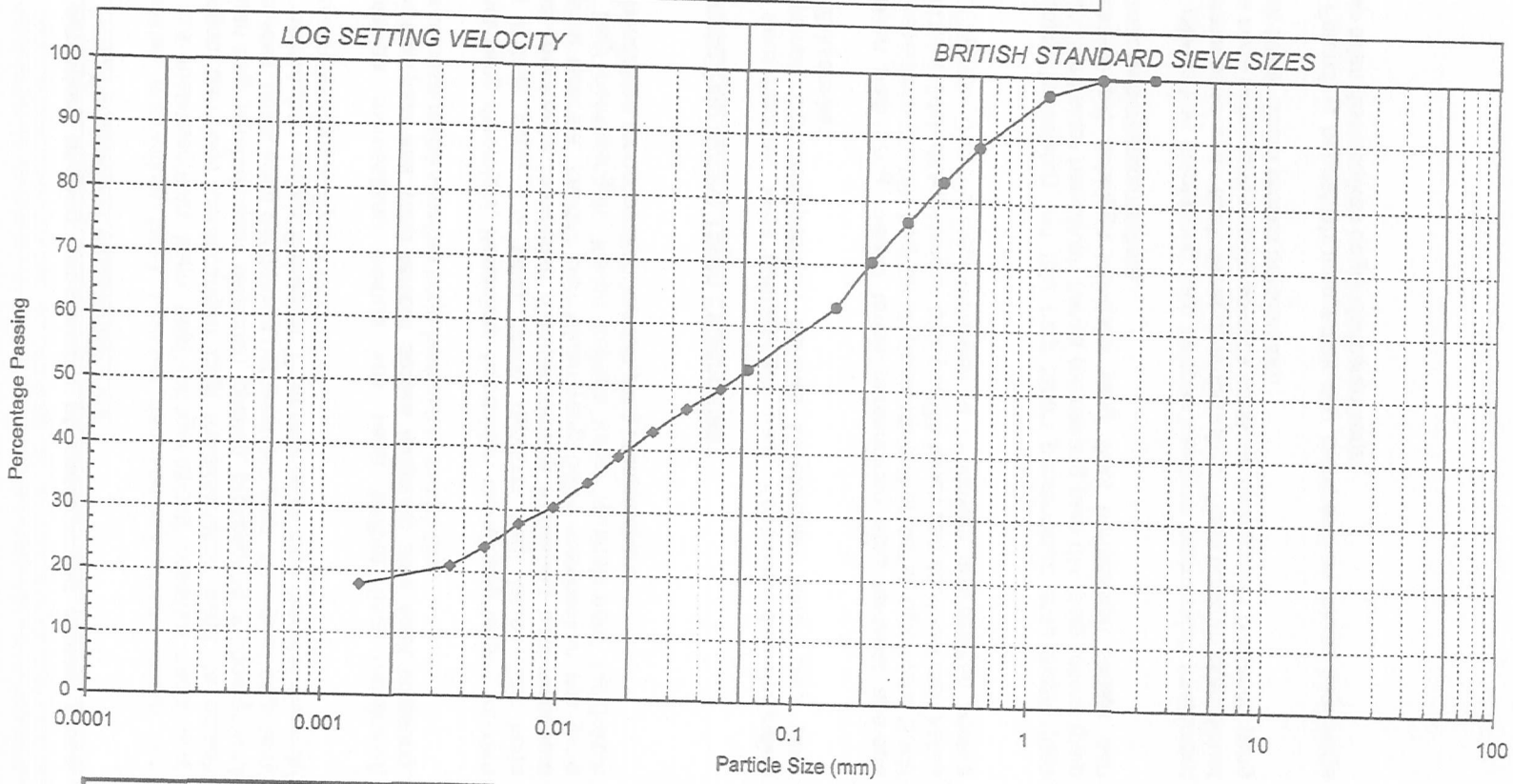
Our Ref. : AJS27

Particle Size Analysis Hydrometer

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/169
	Field Sample No. : BH6/D7
Client :	Depth : 11.40 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 21/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		
←	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*

RESULTS		
Gravel	(%)	0
Sand	(%)	48
Silt	(%)	33
Clay	(%)	19

Our Ref. : AJH23

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/169
Client :	Field Sample No. : BH6/D7
	Depth : 11.40 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 21/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	1
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	49.50
Weight after pre-treatment (gm)	48.28
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
21/10/2013	0900 hrs	26	30 secs	15	15.5	13.6	9.80	0.45461	0.06674	16.78	55.69
21/10/2013		26	1 min	13.2	13.7	14.4	9.80	0.24001	0.04849	14.98	49.72
21/10/2013		26	2 mins	12.2	12.7	14.8	9.80	0.12353	0.03479	13.98	46.40
21/10/2013		26	4 mins	11.1	11.6	15.3	9.80	0.06371	0.02498	12.88	42.75
21/10/2013		26	8 mins	9.9	10.4	15.8	9.80	0.03291	0.01796	11.68	38.77
21/10/2013		26	15 mins	8.6	9.1	16.3	9.80	0.01816	0.01334	10.38	34.45
21/10/2013		26	30 mins	7.4	7.9	16.9	9.80	0.00936	0.00958	9.18	30.47
21/10/2013	1000 hrs	26	1 hour	6.6	7.1	17.2	9.80	0.00478	0.00684	8.38	27.81
21/10/2013	1100 hrs	26	2 hours	5.4	5.9	17.7	9.80	0.00246	0.00491	7.18	23.83
21/10/2013	1300 hrs	26	4 hours	4.5	5.0	18.1	9.80	0.00126	0.00351	6.28	20.84
22/10/2013	0900 hrs	26	24 hours	3.6	4.1	18.5	9.80	0.00021	0.00145	5.38	17.86

Our Ref. : AJH23

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/169
	Field Sample No. : BH6/D7
Client :	Depth : 11.40 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	48.28
Weight of dried sample after washing through 0.063 mm sieve	(gm)	23.64
Weight of material washed through 0.063 mm sieve	(gm)	24.64

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000			
3.350	0.00	0.00	100.00
2.000	0.15	0.31	99.69
1.180	1.28	2.96	97.04
0.600	4.12	11.50	88.50
0.425	2.60	16.88	83.12
0.300	3.09	23.28	76.72
0.212	3.07	29.64	70.36
0.150	3.51	36.91	63.09
0.063	4.91	47.08	52.92
- 0.063 mm dry	0.91		
- 0.063 mm wet	24.64		
- 0.063 mm total	25.55		
TOTAL	***48.28***		

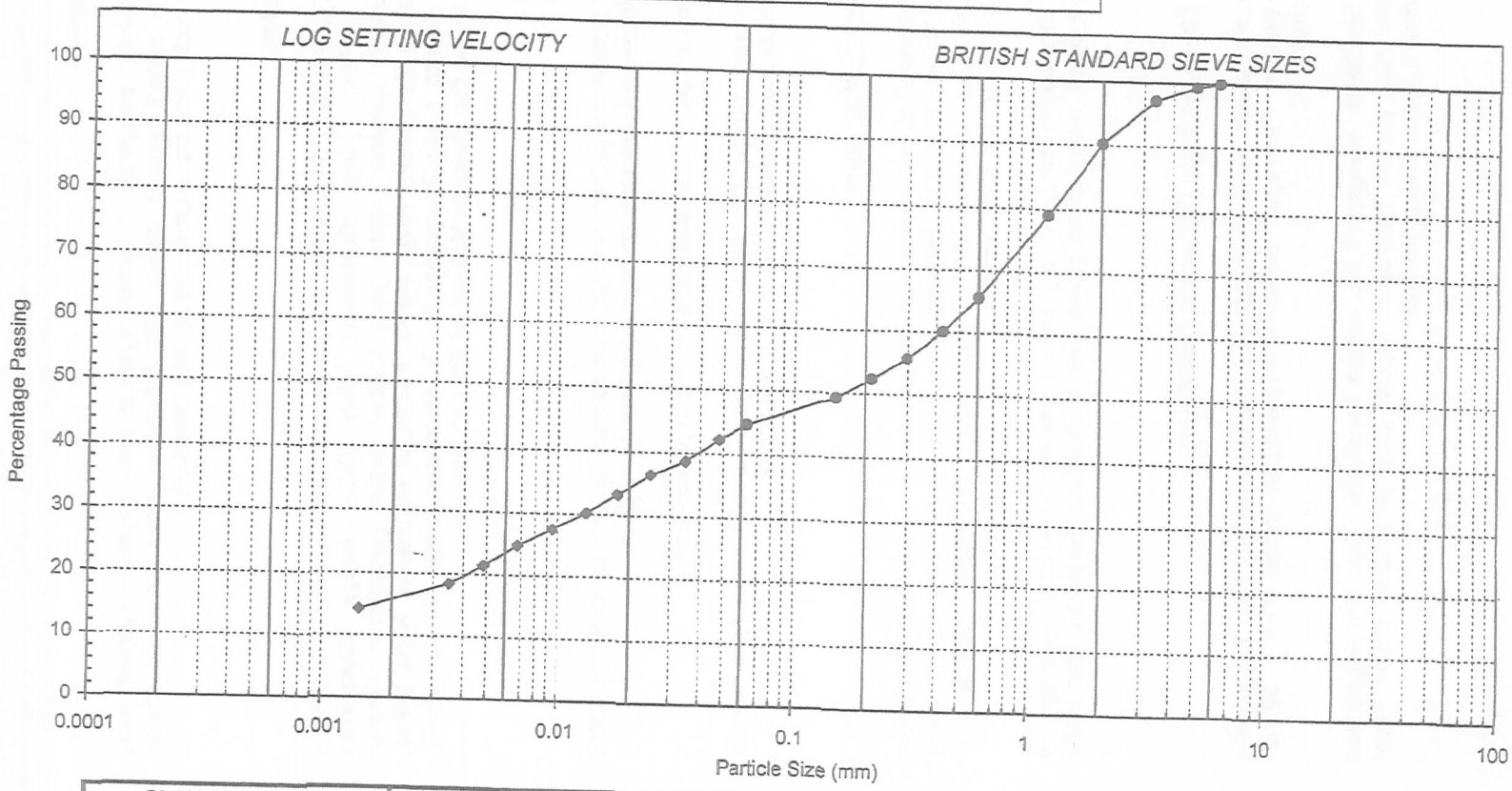
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 21/10/2013

Our Ref. : AJH23

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/170
	Field Sample No. : BH6/D11
Client :	Depth : 17.40 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 21/10/2013

PARTICLE SIZE DISTRIBUTION



RESULTS		
Gravel	(%)	10
Sand	(%)	46
Silt	(%)	28
Clay	(%)	16

Our Ref. : AJH24

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/170
Client :	Field Sample No. : BH6/D11
	Depth : 17.40 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 21/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	2
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	59.50
Weight after pre-treatment (gm)	58.24
Specific Gravity, G_s	2.67

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
21/10/2013	0903 hrs	26	30 secs	15	15.5	13.6	9.74	0.45461	0.06654	16.78	46.06
21/10/2013		26	1 min	13.6	14.1	14.2	9.74	0.23718	0.04806	15.38	42.22
21/10/2013		26	2 mins	12.3	12.8	14.8	9.74	0.12318	0.03463	14.08	38.65
21/10/2013		26	4 mins	11.5	12.0	15.1	9.74	0.06300	0.02477	13.28	36.46
21/10/2013		26	8 mins	10.3	10.8	15.6	9.74	0.03256	0.01781	12.08	33.16
21/10/2013		26	15 mins	9.2	9.7	16.1	9.74	0.01788	0.01320	10.98	30.14
21/10/2013		26	30 mins	8.2	8.7	16.5	9.74	0.00918	0.00945	9.98	27.40
21/10/2013	1003 hrs	26	1 hour	7.2	7.7	16.9	9.74	0.00471	0.00677	8.98	24.65
21/10/2013	1103 hrs	26	2 hours	6	6.5	17.4	9.74	0.00242	0.00486	7.78	21.36
21/10/2013	1303 hrs	26	4 hours	4.9	5.4	17.9	9.74	0.00124	0.00348	6.68	18.34
22/10/2013	0903 hrs	26	24 hours	3.4	3.9	18.5	9.74	0.00021	0.00145	5.18	14.22

Our Ref. : AJH24

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/170
Client : [illegible]	Field Sample No. : BH6/D11
	Depth : 17.40 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	58.24
Weight of dried sample after washing through 0.063 mm sieve	(gm)	32.63
Weight of material washed through 0.063 mm sieve	(gm)	25.61

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300	0.00	0.00	100.00
5.000	0.39	0.67	99.33
3.350	1.27	2.85	97.15
2.000	4.06	9.82	90.18
1.180	6.50	20.98	79.02
0.600	7.78	34.34	65.66
0.425	3.17	39.78	60.22
0.300	2.63	44.30	55.70
0.212	1.97	47.68	52.32
0.150	1.82	50.81	49.19
0.063	2.62	55.31	44.69
- 0.063 mm dry	0.42		
- 0.063 mm wet	25.61		
- 0.063 mm total	26.03		
TOTAL	***58.24***		

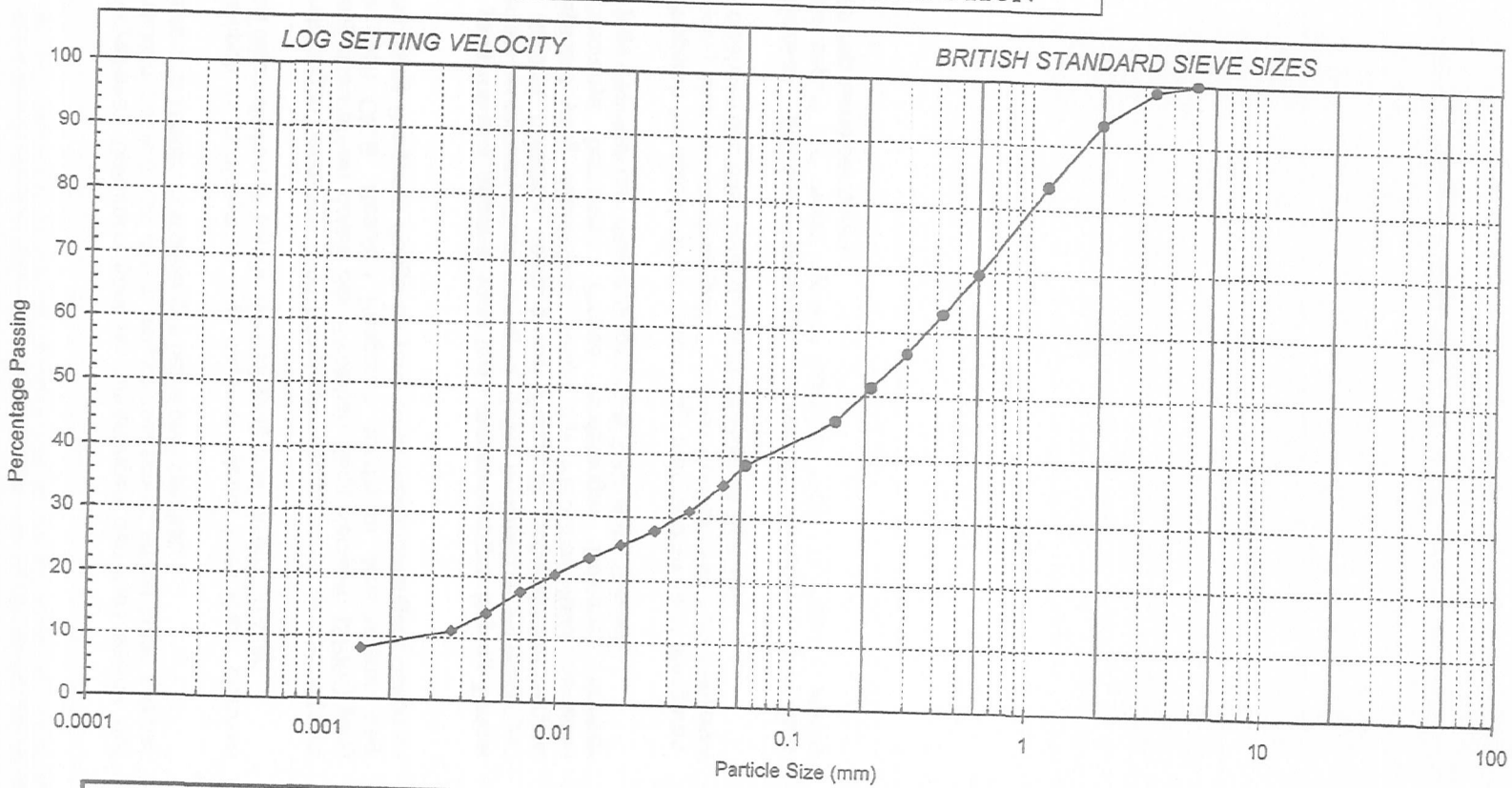
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 21/10/2013

Our Ref. : AJH24

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/171
Client :	Field Sample No. : BH6/D14
Sample Description : Refer to Borehole Log.	Depth : 21.70 m
Remarks :	Tested By : Eddie
	Checked By : Tommie
	Date : 21/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		
←	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*

RESULTS		
Gravel	(%)	7
Sand	(%)	55
Silt	(%)	29
Clay	(%)	9

Our Ref. : AJH25

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/171
Client :	Field Sample No. : BH6/D14
	Depth : 21.70 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 21/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	3
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	55.80
Weight after pre-treatment (gm)	54.55
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
21/10/2013	0906 hrs	26	30 secs	11	11.5	15.3	9.80	0.51106	0.07076	12.78	37.54
21/10/2013		26	1 min	10.2	10.7	15.7	9.80	0.26117	0.05058	11.98	35.19
21/10/2013		26	2 mins	8.8	9.3	16.3	9.80	0.13553	0.03644	10.58	31.08
21/10/2013		26	4 mins	7.7	8.2	16.7	9.80	0.06970	0.02613	9.48	27.85
21/10/2013		26	8 mins	6.9	7.4	17.1	9.80	0.03556	0.01866	8.68	25.50
21/10/2013		26	15 mins	6.1	6.6	17.4	9.80	0.01934	0.01377	7.88	23.15
21/10/2013		26	30 mins	5.2	5.7	17.8	9.80	0.00988	0.00984	6.98	20.50
21/10/2013	1006 hrs	26	1 hour	4.2	4.7	18.2	9.80	0.00506	0.00704	5.98	17.57
21/10/2013	1106 hrs	26	2 hours	3	3.5	18.7	9.80	0.00260	0.00505	4.78	14.04
21/10/2013	1306 hrs	26	4 hours	2	2.5	19.1	9.80	0.00133	0.00361	3.78	11.10
22/10/2013	0906 hrs	26	24 hours	1	1.5	19.6	9.80	0.00023	0.00149	2.78	8.17

Our Ref. : AJH25

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/171
	Field Sample No. : BH6/D14
Client :	Depth : 21.70 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	54.55
Weight of dried sample after washing through 0.063 mm sieve	(gm)	34.27
Weight of material washed through 0.063 mm sieve	(gm)	20.28

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000	0.00	0.00	100.00
3.350	0.65	1.19	98.81
2.000	3.01	6.71	93.29
1.180	5.35	16.52	83.48
0.600	7.59	30.43	69.57
0.425	3.52	36.88	63.12
0.300	3.50	43.30	56.70
0.212	3.02	48.84	51.16
0.150	2.90	54.15	45.85
0.063	4.02	61.52	38.48
- 0.063 mm dry	0.71		
- 0.063 mm wet	20.28		
- 0.063 mm total	20.99		
TOTAL	***54.55***		

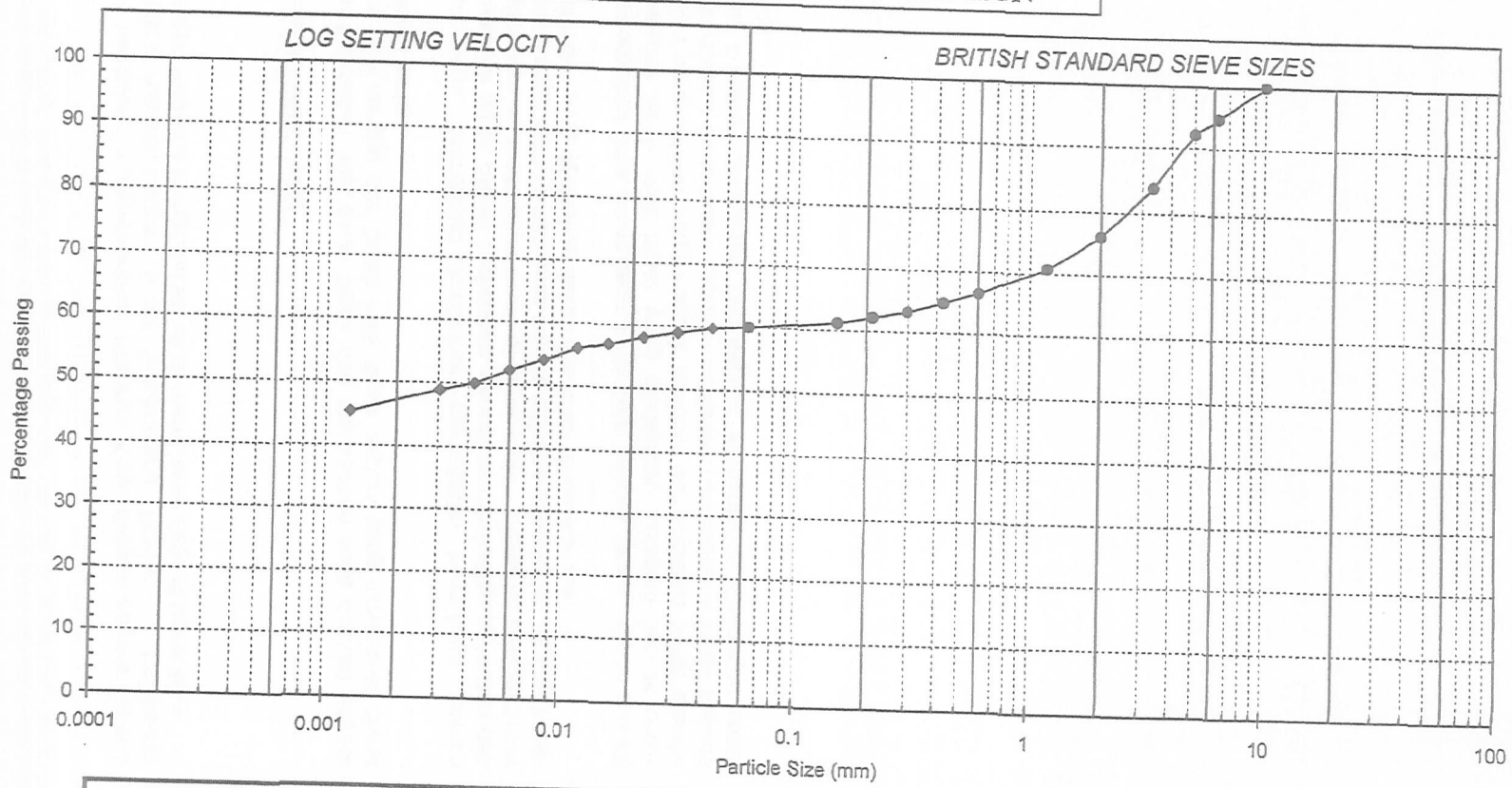
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 21/10/2013

Our Ref. : AJH25

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/147
	Field Sample No. : BH2/D16
Client :	Depth : 24.90 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		
←	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse

RESULTS		
Gravel	(%)	24
Sand	(%)	16
Silt	(%)	13
Clay	(%)	47

Our Ref. : AJH01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/147
Client :	Field Sample No. : BH2/D16
	Depth : 24.90 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	1
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	56.90
Weight after pre-treatment (gm)	55.73
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
07/10/2013	1135 hrs	26	30 secs	19.3	19.8	11.8	9.80	0.39393	0.06212	21.08	60.61
07/10/2013		26	1 min	19	19.5	11.9	9.80	0.19908	0.04416	20.78	59.75
07/10/2013		26	2 mins	18.7	19.2	12.1	9.80	0.10060	0.03139	20.48	58.89
07/10/2013		26	4 mins	18.4	18.9	12.2	9.80	0.05083	0.02232	20.18	58.02
07/10/2013		26	8 mins	18	18.5	12.4	9.80	0.02577	0.01589	19.78	56.87
07/10/2013		26	15 mins	17.7	18.2	12.5	9.80	0.01388	0.01166	19.48	56.01
07/10/2013		26	30 mins	17	17.5	12.8	9.80	0.00711	0.00834	18.78	54.00
07/10/2013	1235 hrs	26	1 hour	16.4	16.9	13.0	9.80	0.00362	0.00596	18.18	52.27
07/10/2013	1335 hrs	26	2 hours	15.6	16.1	13.4	9.80	0.00186	0.00427	17.38	49.97
07/10/2013	1535 hrs	26	4 hours	15.2	15.7	13.6	9.80	0.00094	0.00304	16.98	48.82
08/10/2013	1135 hrs	26	24 hours	14	14.5	14.1	9.80	0.00016	0.00126	15.78	45.37

Our Ref. : AJH01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/147
	Field Sample No. : BH2/D16
Client :	Depth : 24.90 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	55.73
Weight of dried sample after washing through 0.063 mm sieve	(gm)	22.40
Weight of material washed through 0.063 mm sieve	(gm)	33.33

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000	0.00	0.00	100.00
6.300	2.97	5.33	94.67
5.000	1.39	7.82	92.18
3.350	4.64	16.15	83.85
2.000	4.34	23.94	76.06
1.180	2.98	29.28	70.72
0.600	2.37	33.54	66.46
0.425	0.96	35.26	64.74
0.300	0.84	36.77	63.23
0.212	0.60	37.84	62.16
0.150	0.52	38.78	61.22
0.063	0.65	39.94	60.06
- 0.063 mm dry	0.14		
- 0.063 mm wet	33.33		
- 0.063 mm total	33.47		
TOTAL	***55.73***		

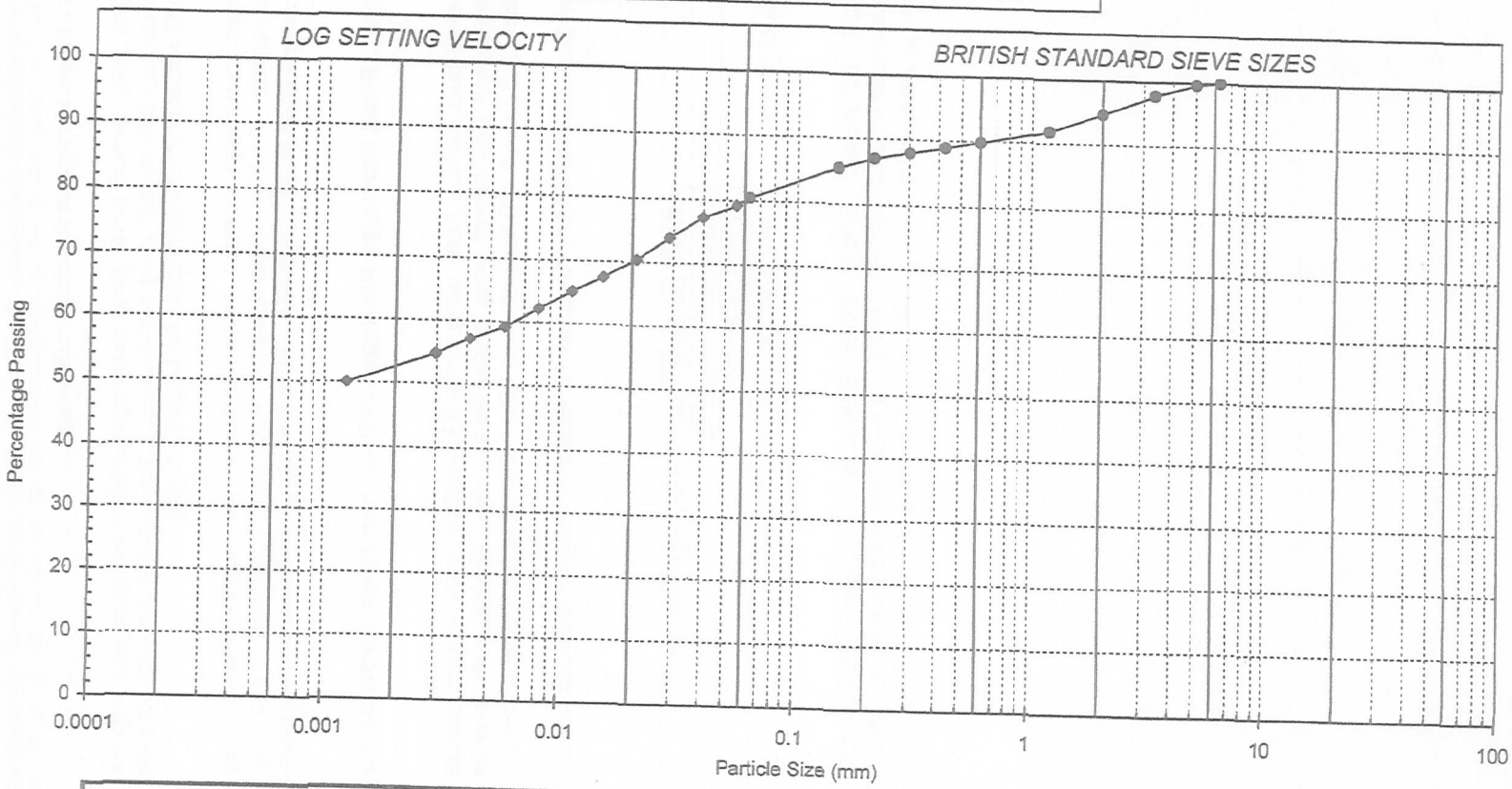
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJH01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/148
	Field Sample No. : BH2/D19
Client :	Depth : 29.40 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION			SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		
←	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*		

RESULTS		
Gravel	(%)	5
Sand	(%)	15
Silt	(%)	27
Clay	(%)	53

Our Ref. : AJH02

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project	Lab Sample No. : HD/2013/148
Client :	Field Sample No. : BH2/D19
	Depth : 29.40 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	2
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	55.20
Weight after pre-treatment (gm)	54.14
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
07/10/2013	1138 hrs	26	30 secs	25	25.5	9.4	9.80	0.31350	0.05542	26.78	79.26
07/10/2013		26	1 min	24.3	24.8	9.7	9.80	0.16169	0.03980	26.08	77.19
07/10/2013		26	2 mins	23.2	23.7	10.2	9.80	0.08473	0.02881	24.98	73.93
07/10/2013		26	4 mins	22	22.5	10.7	9.80	0.04448	0.02088	23.78	70.38
07/10/2013		26	8 mins	21	21.5	11.1	9.80	0.02312	0.01505	22.78	67.42
07/10/2013		26	15 mins	20.2	20.7	11.4	9.80	0.01271	0.01116	21.98	65.06
07/10/2013		26	30 mins	19.2	19.7	11.9	9.80	0.00659	0.00803	20.98	62.10
07/10/2013	1238 hrs	26	1 hour	18.2	18.7	12.3	9.80	0.00341	0.00578	19.98	59.14
07/10/2013	1338 hrs	26	2 hours	17.5	18.0	12.6	9.80	0.00175	0.00414	19.28	57.06
07/10/2013	1538 hrs	26	4 hours	16.7	17.2	12.9	9.80	0.00090	0.00296	18.48	54.70
08/10/2013	1138 hrs	26	24 hours	15.1	15.6	13.6	9.80	0.00016	0.00124	16.88	49.96

Our Ref. : AJH02

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/148
	Field Sample No. : BH2/D19
Client :	Depth : 29.40 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	54.14
Weight of dried sample after washing through 0.063 mm sieve	(gm)	11.34
Weight of material washed through 0.063 mm sieve	(gm)	42.80

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300	0.00	0.00	100.00
5.000	0.19	0.35	99.65
3.350	0.96	2.12	97.88
2.000	1.73	5.32	94.68
1.180	1.58	8.24	91.76
0.600	1.10	10.27	89.73
0.425	0.51	11.21	88.79
0.300	0.52	12.17	87.83
0.212	0.51	13.11	86.89
0.150	0.83	14.65	85.35
0.063	2.63	19.50	80.50
- 0.063 mm dry	0.78		
- 0.063 mm wet	42.80		
- 0.063 mm total	43.58		
TOTAL	***54.14***		

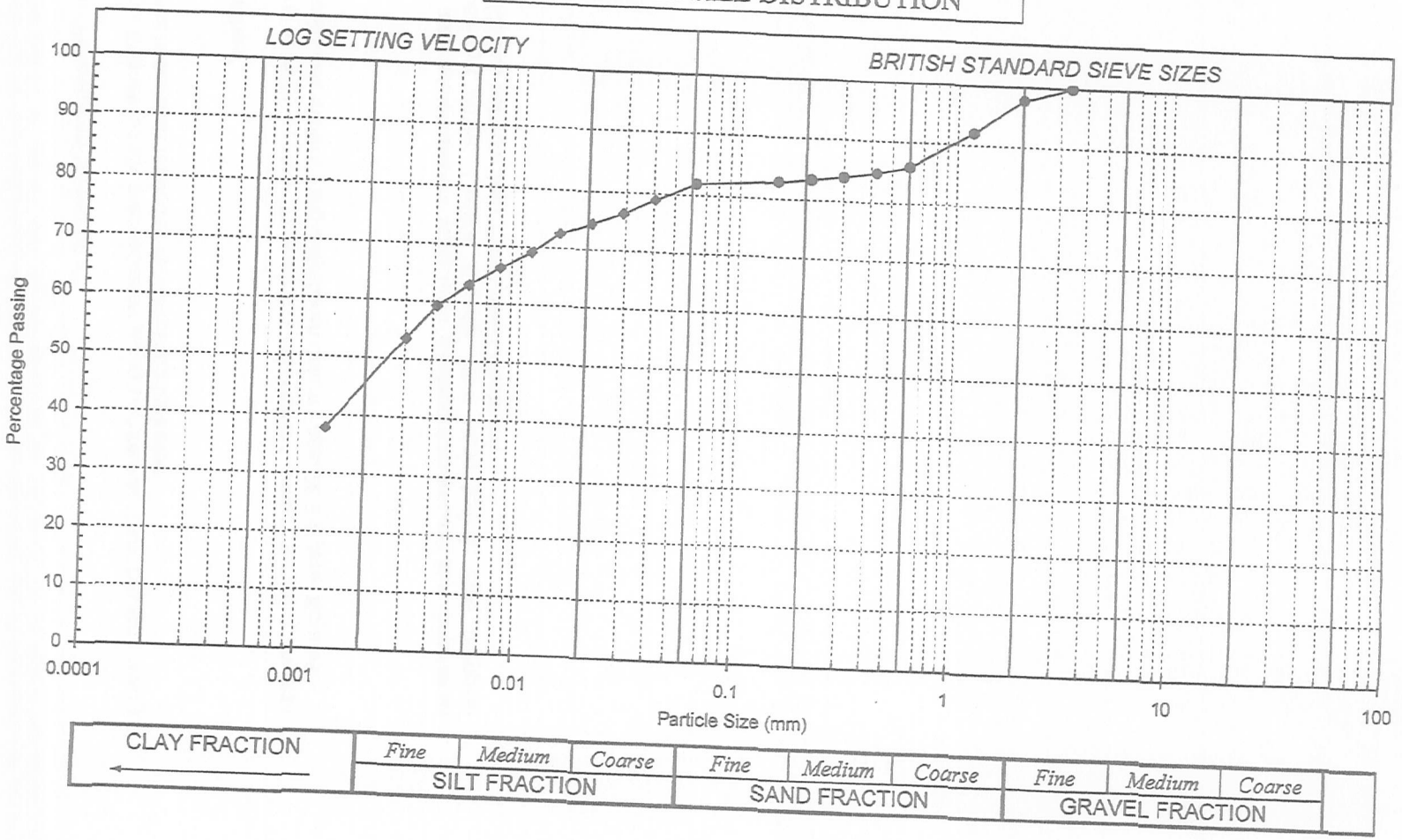
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJH02

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/149
(	Field Sample No. : BH2/D22
Client :	Depth : 33.90 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

PARTICLE SIZE DISTRIBUTION



RESULTS		
Gravel	(%)	2
Sand	(%)	16
Silt	(%)	36
Clay	(%)	46

Our Ref. : AJH03

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/149
Client :	Field Sample No. : BH2/D22
	Depth : 33.90 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	3
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	51.70
Weight after pre-treatment (gm)	50.66
Specific Gravity, G_s	2.67

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
07/10/2013	1141 hrs	26	30 secs	24.2	24.7	9.7	9.74	0.32479	0.05624	25.98	81.99
07/10/2013		26	1 min	23.2	23.7	10.2	9.74	0.16945	0.04062	24.98	78.84
07/10/2013		26	2 mins	22.4	22.9	10.5	9.74	0.08755	0.02920	24.18	76.31
07/10/2013		26	4 mins	21.8	22.3	10.8	9.74	0.04483	0.02089	23.58	74.42
07/10/2013		26	8 mins	21.2	21.7	11.0	9.74	0.02295	0.01495	22.98	72.52
07/10/2013		26	15 mins	20.1	20.6	11.5	9.74	0.01275	0.01115	21.88	69.05
07/10/2013		26	30 mins	19.2	19.7	11.9	9.74	0.00659	0.00801	20.98	66.21
07/10/2013	1241 hrs	26	1 hour	18.2	18.7	12.3	9.74	0.00341	0.00576	19.98	63.06
07/10/2013	1341 hrs	26	2 hours	17	17.5	12.8	9.74	0.00178	0.00416	18.78	59.27
07/10/2013	1541 hrs	26	4 hours	15.2	15.7	13.6	9.74	0.00094	0.00303	16.98	53.59
08/10/2013	1141 hrs	26	24 hours	10.2	10.7	15.7	9.74	0.00018	0.00133	11.98	37.81

Our Ref. : AJH03

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/149
	Field Sample No. : BH2/D22
Client :	Depth : 33.90 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	50.66
Weight of dried sample after washing through 0.063 mm sieve	(gm)	9.26
Weight of material washed through 0.063 mm sieve	(gm)	41.40

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000			
3.350	0.00	0.00	100.00
2.000	1.14	2.25	97.75
1.180	2.98	8.13	91.87
0.600	2.94	13.94	86.06
0.425	0.61	15.14	84.86
0.300	0.44	16.01	83.99
0.212	0.32	16.64	83.36
0.150	0.30	17.23	82.77
0.063	0.44	18.10	81.90
- 0.063 mm dry	0.09		
- 0.063 mm wet	41.40		
- 0.063 mm total	41.49		
TOTAL	***50.66***		

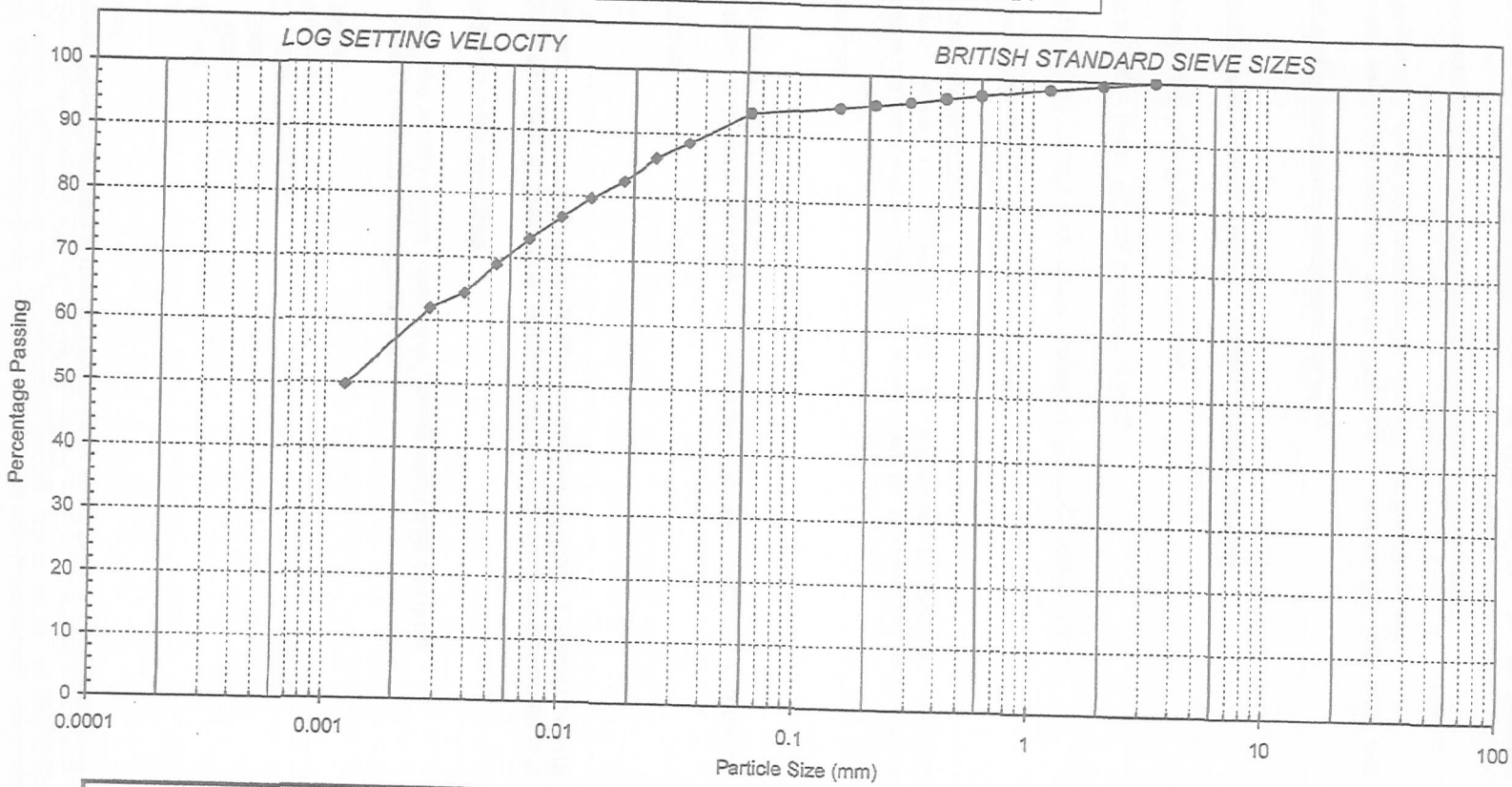
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJH03

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/150
Client :	Field Sample No. : BH2/D25
Sample Description : Refer to Borehole Log.	Depth : 38.40 m
	Tested By : Eddie
Remarks :	Checked By : Tommie
	Date : 07/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
←	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		

RESULTS		
Gravel	(%)	1
Sand	(%)	6
Silt	(%)	36
Clay	(%)	57

Our Ref. : AJH04

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/150
Client :	Field Sample No. : BH2/D25
	Depth : 38.40 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	4
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	59.10
Weight after pre-treatment (gm)	58.08
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
07/10/2013	1144 hrs	26	30 secs								
07/10/2013		26	1 min	30.3	30.8	7.2	9.80	0.11936	0.03420	32.08	88.51
07/10/2013		26	2 mins	29.4	29.9	7.5	9.80	0.06285	0.02481	31.18	86.02
07/10/2013		26	4 mins	28.1	28.6	8.1	9.80	0.03372	0.01818	29.88	82.44
07/10/2013		26	8 mins	27.1	27.6	8.5	9.80	0.01774	0.01318	28.88	79.68
07/10/2013		26	15 mins	26	26.5	9.0	9.80	0.00998	0.00989	27.78	76.64
07/10/2013		26	30 mins	24.7	25.2	9.5	9.80	0.00530	0.00720	26.48	73.06
07/10/2013	1244 hrs	26	1 hour	23.2	23.7	10.2	9.80	0.00282	0.00526	24.98	68.92
07/10/2013	1344 hrs	26	2 hours	21.5	22.0	10.9	9.80	0.00151	0.00385	23.28	64.23
07/10/2013	1544 hrs	26	4 hours	20.6	21.1	11.3	9.80	0.00078	0.00277	22.38	61.75
08/10/2013	1144 hrs	26	24 hours	16.2	16.7	13.1	9.80	0.00015	0.00122	17.98	49.61

Our Ref. : AJH04

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/150
	Field Sample No. : BH2/D25
Client :	Depth : 38.40 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	58.08
Weight of dried sample after washing through 0.063 mm sieve	(gm)	4.10
Weight of material washed through 0.063 mm sieve	(gm)	53.98

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000			
3.350	0.00	0.00	100.00
2.000	0.39	0.67	99.33
1.180	0.47	1.48	98.52
0.600	0.70	2.69	97.31
0.425	0.37	3.32	96.68
0.300	0.42	4.05	95.95
0.212	0.36	4.67	95.33
0.150	0.34	5.25	94.75
0.063	0.71	6.47	93.53
- 0.063 mm dry	0.34		
- 0.063 mm wet	53.98		
- 0.063 mm total	54.32		
TOTAL	***58.08***		

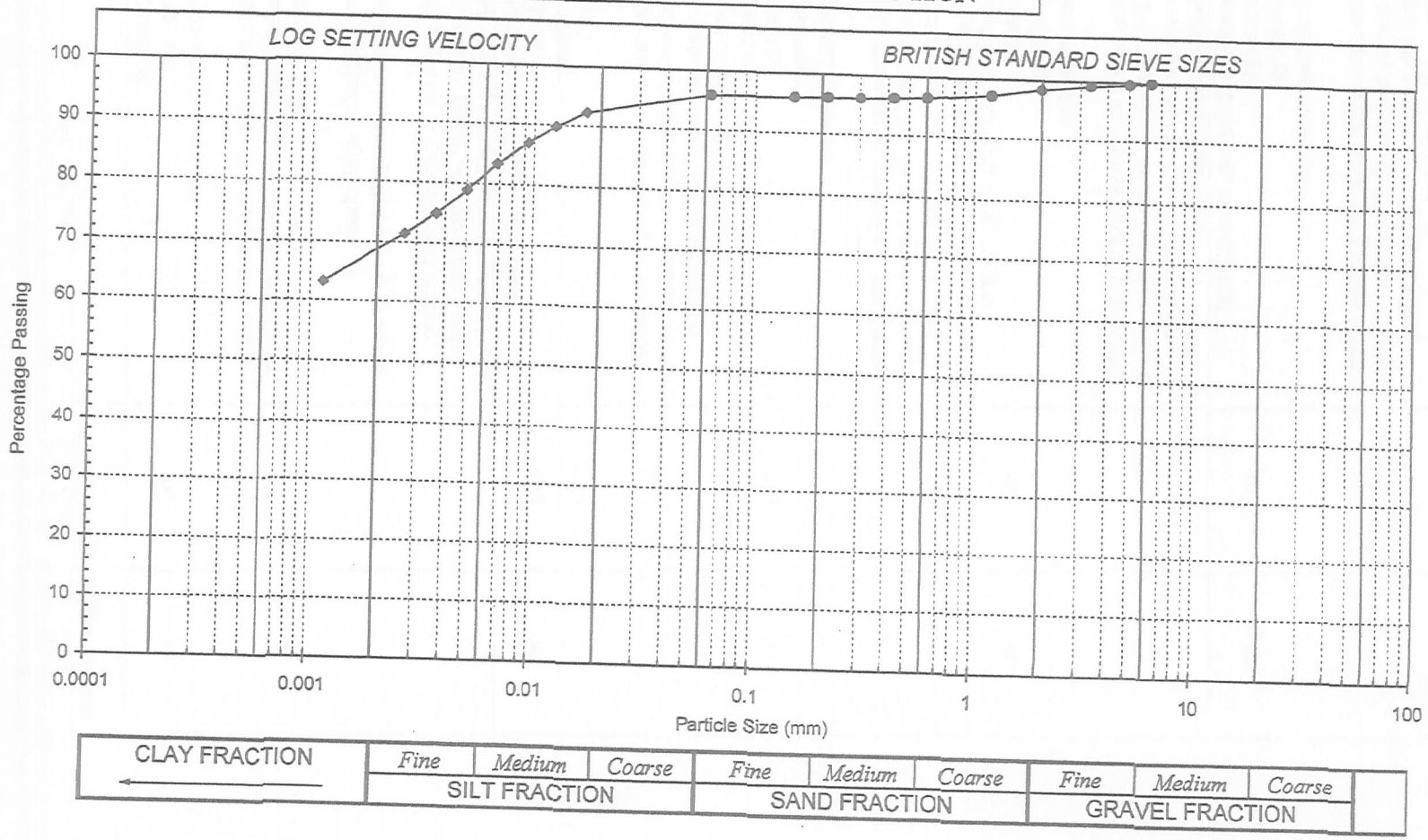
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJH04

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No.	: HD/2013/151
	Field Sample No.	: BH2/D30
Client :	Depth	: 45.90 m
Sample Description : Refer to Borehole Log.	Tested By	: Eddie
	Checked By	: Tommie
Remarks :	Date	: 07/10/2013

PARTICLE SIZE DISTRIBUTION



RESULTS		
Gravel	(%)	2
Sand	(%)	2
Silt	(%)	27
Clay	(%)	69

Our Ref. : AJH05

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/151
Client :	Field Sample No. : BH2/D30
	Depth : 45.90 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	5
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	56.60
Weight after pre-treatment (gm)	55.68
Specific Gravity, G_s	2.65

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
07/10/2013	1147 hrs	26	30 secs								
07/10/2013		26	1 min								
07/10/2013		26	2 mins								
07/10/2013		26	4 mins	30.2	30.7	7.2	9.86	0.03002	0.01720	31.98	92.24
07/10/2013		26	8 mins	29.3	29.8	7.6	9.86	0.01580	0.01248	31.08	89.65
07/10/2013		26	15 mins	28.3	28.8	8.0	9.86	0.00890	0.00936	30.08	86.76
07/10/2013		26	30 mins	27.1	27.6	8.5	9.86	0.00473	0.00683	28.88	83.30
07/10/2013	1247 hrs	26	1 hour	25.6	26.1	9.2	9.86	0.00254	0.00501	27.38	78.98
07/10/2013	1347 hrs	26	2 hours	24.2	24.7	9.7	9.86	0.00135	0.00365	25.98	74.94
07/10/2013	1547 hrs	26	4 hours	23	23.5	10.3	9.86	0.00071	0.00265	24.78	71.48
08/10/2013	1147 hrs	26	24 hours	20.1	20.6	11.5	9.86	0.00013	0.00114	21.88	63.11

Our Ref. : AJH05

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/151
	Field Sample No. : BH2/D30
Client :	Depth : 45.90 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	55.68
Weight of dried sample after washing through 0.063 mm sieve	(gm)	2.34
Weight of material washed through 0.063 mm sieve	(gm)	53.34

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300	0.00	0.00	100.00
5.000	0.22	0.40	99.60
3.350	0.19	0.74	99.26
2.000	0.49	1.62	98.38
1.180	0.70	2.87	97.13
0.600	0.38	3.56	96.44
0.425	0.10	3.74	96.26
0.300	0.08	3.88	96.12
0.212	0.05	3.97	96.03
0.150	0.04	4.04	95.96
0.063	0.07	4.17	95.83
- 0.063 mm dry	0.02		
- 0.063 mm wet	53.34		
- 0.063 mm total	53.36		
TOTAL	***55.68***		

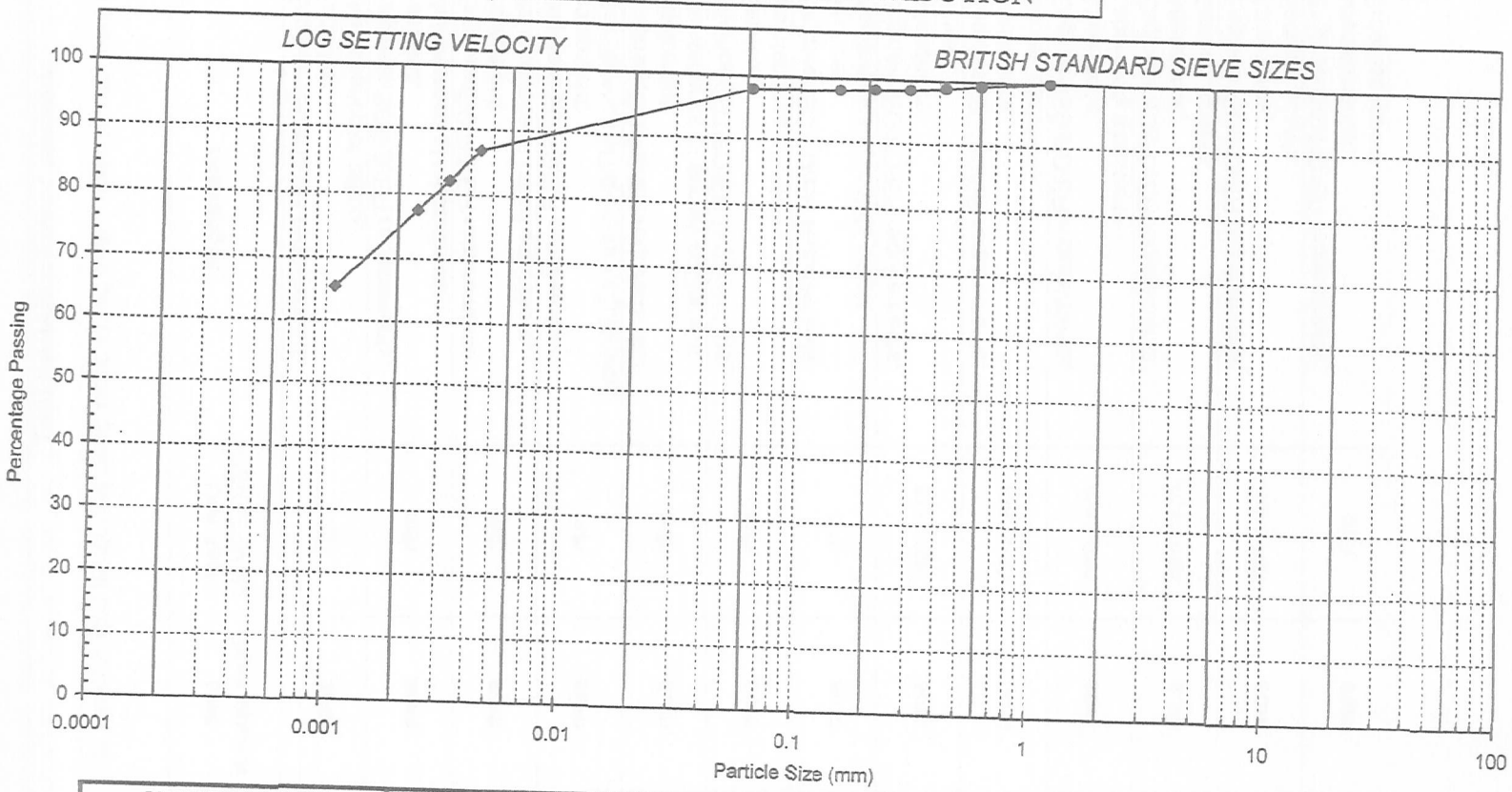
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJH05

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No.	: HD/2013/152
	Field Sample No.	: BH2/D33
Client :	Depth	: 50.40 m
Sample Description : Refer to Borehole Log.	Tested By	: Eddie
	Checked By	: Tommie
Remarks :	Date	: 07/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION			SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		
←	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*		

RESULTS		
Gravel	(%)	0
Sand	(%)	2
Silt	(%)	23
Clay	(%)	75

Our Ref. : AJH06

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/152
Client :	Field Sample No. : BH2/D33
	Depth : 50.40 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
Remarks :	Checked By : Tommie
	Date : 07/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	6
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	60.40
Weight after pre-treatment (gm)	59.50
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
07/10/2013	1150 hrs	26	30 secs								
07/10/2013		26	1 min								
07/10/2013		26	2 mins								
07/10/2013		26	4 mins								
07/10/2013		26	8 mins								
07/10/2013		26	15 mins								
07/10/2013		26	30 mins								
07/10/2013	1250 hrs	26	1 hour	30.4	30.9	7.1	9.80	0.00198	0.00440	32.18	86.66
07/10/2013	1350 hrs	26	2 hours	28.7	29.2	7.8	9.80	0.00109	0.00327	30.48	82.09
07/10/2013	1550 hrs	26	4 hours	27	27.5	8.6	9.80	0.00059	0.00241	28.78	77.51
08/10/2013	1150 hrs	26	24 hours	22.5	23.0	10.5	9.80	0.00012	0.00109	24.28	65.39

Our Ref. : AJH06

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/152
	Field Sample No. : BH2/D33
Client :	Depth : 50.40 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	59.50
Weight of dried sample after washing through 0.063 mm sieve	(gm)	1.31
Weight of material washed through 0.063 mm sieve	(gm)	58.19

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000			
3.350			
2.000			
1.180	0.00	0.00	100.00
0.600	0.42	0.71	99.29
0.425	0.30	1.21	98.79
0.300	0.17	1.50	98.50
0.212	0.11	1.68	98.32
0.150	0.12	1.88	98.12
0.063	0.15	2.13	97.87
- 0.063 mm dry	0.04		
- 0.063 mm wet	58.19		
- 0.063 mm total	58.23		
TOTAL	***59.50***		

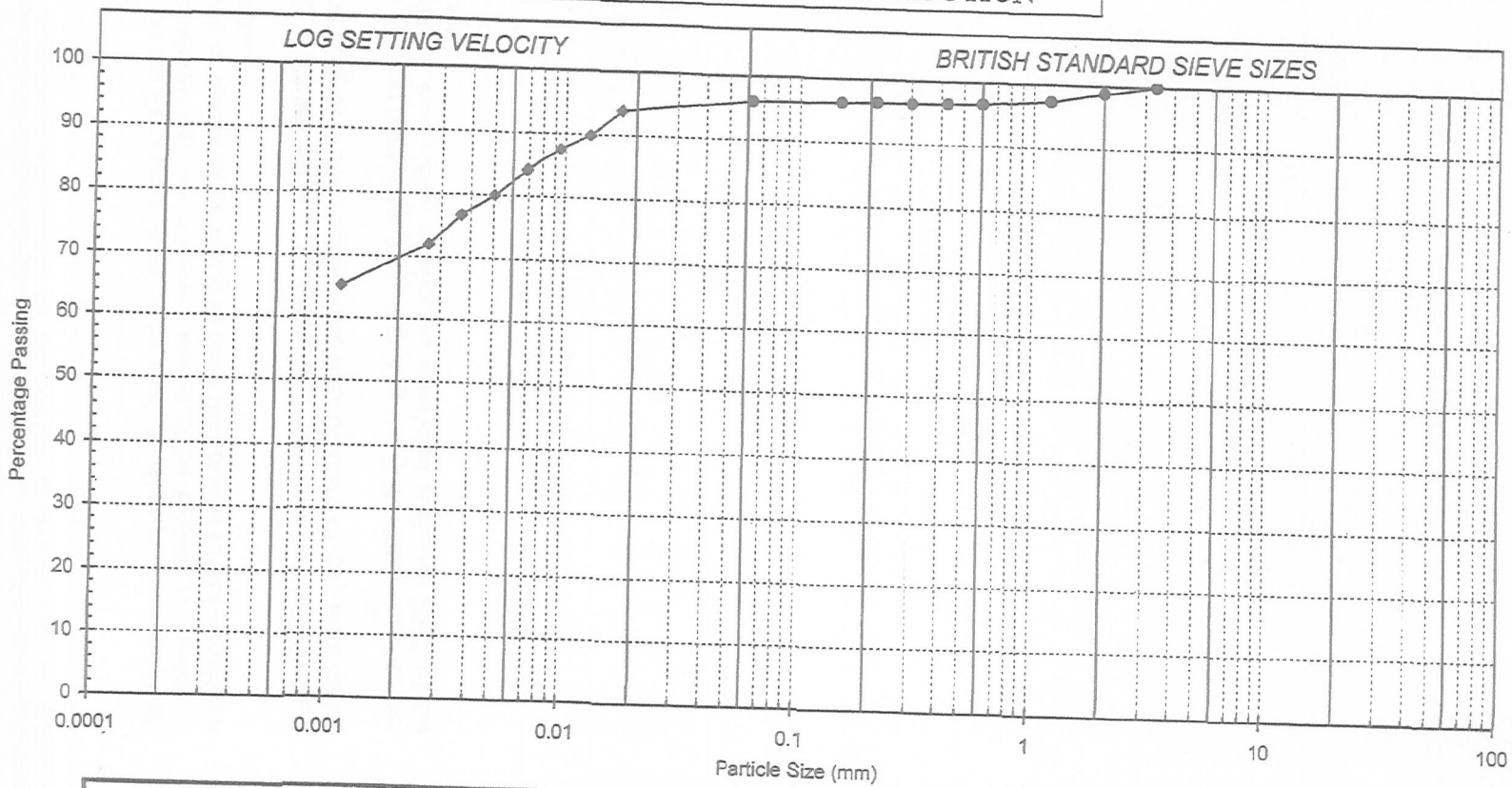
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 07/10/2013

Our Ref. : AJH06

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/153
Client :	Field Sample No. : BH2/D36
Sample Description : Refer to Borehole Log.	Depth : 54.90 m
	Tested By : Eddie
Remarks :	Checked By : Tommie
	Date : 09/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION									
←	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*
	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		

RESULTS		
Gravel	(%)	1
Sand	(%)	3
Silt	(%)	26
Clay	(%)	70

Our Ref. : AJH07

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/153
	Field Sample No. : BH2/D36
Client :	Depth : 54.90 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 09/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	1
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	55.40
Weight after pre-treatment (gm)	54.37
Specific Gravity, G_s	2.65

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
09/10/2013	1114 hrs	26	30 secs								
09/10/2013		26	1 min								
09/10/2013		26	2 mins								
09/10/2013		26	4 mins	30	30.5	7.3	9.86	0.03037	0.01730	31.78	93.88
09/10/2013		26	8 mins	28.6	29.1	7.9	9.86	0.01642	0.01272	30.38	89.74
09/10/2013		26	15 mins	27.8	28.3	8.2	9.86	0.00913	0.00949	29.58	87.38
09/10/2013		26	30 mins	26.7	27.2	8.7	9.86	0.00483	0.00690	28.48	84.13
09/10/2013	1214 hrs	26	1 hour	25.3	25.8	9.3	9.86	0.00258	0.00504	27.08	79.99
09/10/2013	1314 hrs	26	2 hours	24.2	24.7	9.7	9.86	0.00135	0.00365	25.98	76.74
09/10/2013	1514 hrs	26	4 hours	22.6	23.1	10.4	9.86	0.00072	0.00267	24.38	72.02
10/10/2013	1114 hrs	26	24 hours	20.3	20.8	11.4	9.86	0.00013	0.00114	22.08	65.22

Our Ref. : AJH07

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/153
	Field Sample No. : BH2/D36
Client :	Depth : 54.90 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	54.37
Weight of dried sample after washing through 0.063 mm sieve	(gm)	2.20
Weight of material washed through 0.063 mm sieve	(gm)	52.17

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000			
3.350	0.00	0.00	100.00
2.000	0.62	1.14	98.86
1.180	0.80	2.61	97.39
0.600	0.39	3.33	96.67
0.425	0.09	3.49	96.51
0.300	0.04	3.57	96.43
0.212	0.03	3.62	96.38
0.150	0.06	3.73	96.27
0.063	0.12	3.95	96.05
- 0.063 mm dry	0.05		
- 0.063 mm wet	52.17		
- 0.063 mm total	52.22		
TOTAL	***54.37***		

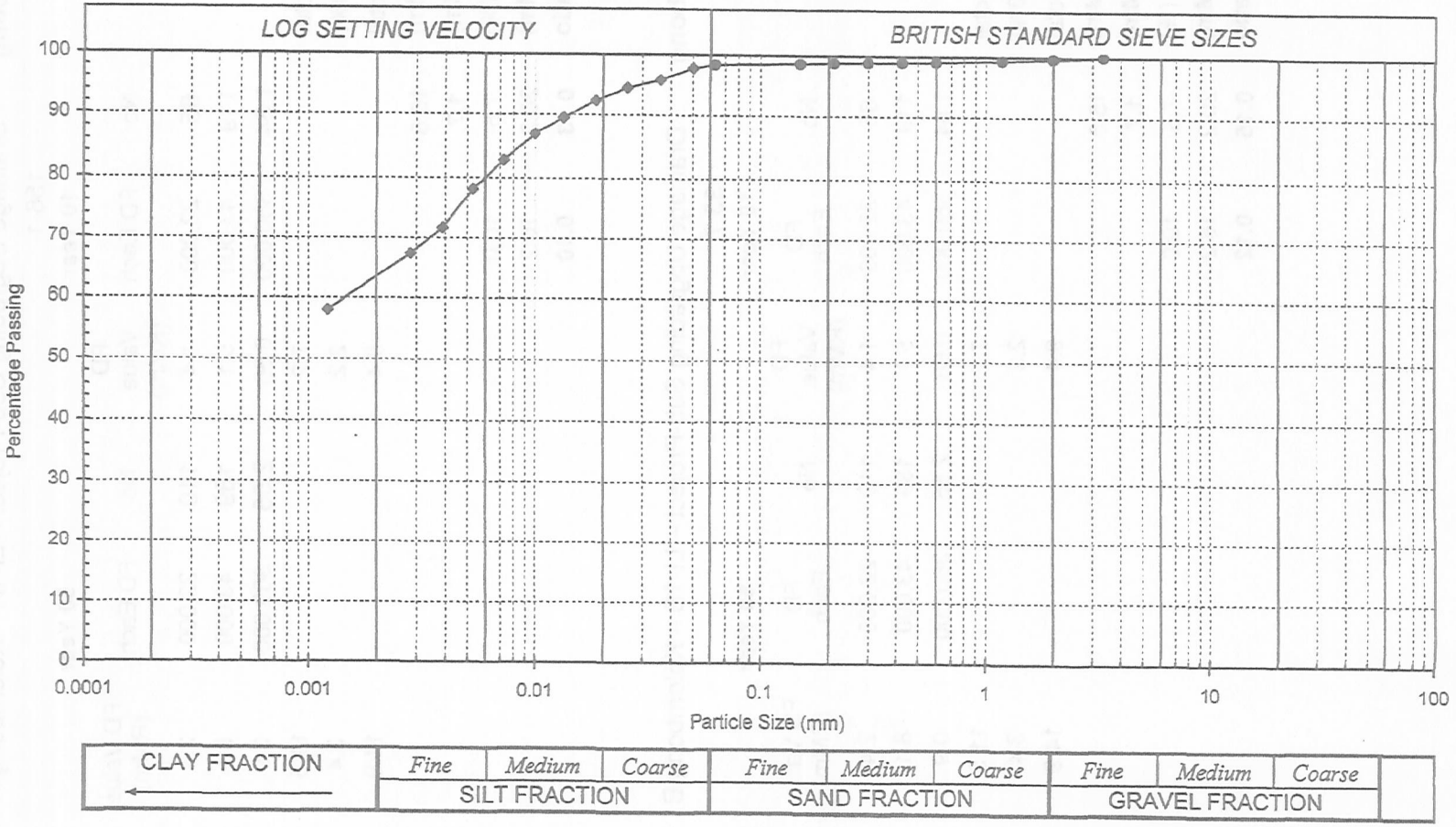
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 09/10/2013

Our Ref. : AJH07

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project : S	Lab Sample No. : HD/2013/154
	Field Sample No. : BH2/D39
Client :	Depth : 59.40 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 09/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		
←	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*

RESULTS		
Gravel	(%)	0
Sand	(%)	2
Silt	(%)	35
Clay	(%)	63

Our Ref. : AJH08

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/154
	Field Sample No. : BH2/D39
Client .	Depth : 59.40 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 09/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	2
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	51.60
Weight after pre-treatment (gm)	50.48
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
09/10/2013	1116 hrs	26	30 secs	29	29.5	7.7	9.80	0.25706	0.05018	30.78	97.71
09/10/2013		26	1 min	28.4	28.9	8.0	9.80	0.13276	0.03607	30.18	95.80
09/10/2013		26	2 mins	28	28.5	8.1	9.80	0.06779	0.02577	29.78	94.53
09/10/2013		26	4 mins	27.3	27.8	8.4	9.80	0.03513	0.01855	29.08	92.31
09/10/2013		26	8 mins	26.4	26.9	8.8	9.80	0.01836	0.01341	28.18	89.45
09/10/2013		26	15 mins	25.6	26.1	9.2	9.80	0.01017	0.00998	27.38	86.91
09/10/2013		26	30 mins	24.3	24.8	9.7	9.80	0.00539	0.00727	26.08	82.79
09/10/2013	1216 hrs	26	1 hour	22.8	23.3	10.3	9.80	0.00287	0.00530	24.58	78.03
09/10/2013	1316 hrs	26	2 hours	20.8	21.3	11.2	9.80	0.00155	0.00390	22.58	71.68
09/10/2013	1516 hrs	26	4 hours	19.4	19.9	11.8	9.80	0.00082	0.00283	21.18	67.23
10/10/2013	1116 hrs	26	24 hours	16.5	17.0	13.0	9.80	0.00015	0.00121	18.28	58.03

Our Ref. : AJH08

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/154
	Field Sample No. : BH2/D39
Client :	Depth : 59.40 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	50.48
Weight of dried sample after washing through 0.063 mm sieve	(gm)	0.90
Weight of material washed through 0.063 mm sieve	(gm)	49.58

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000			
3.350	0.00	0.00	100.00
2.000	0.21	0.42	99.58
1.180	0.15	0.71	99.29
0.600	0.15	1.01	98.99
0.425	0.05	1.11	98.89
0.300	0.05	1.21	98.79
0.212	0.04	1.29	98.71
0.150	0.06	1.41	98.59
0.063	0.13	1.66	98.34
- 0.063 mm dry	0.06		
- 0.063 mm wet	49.58		
- 0.063 mm total	49.64		
TOTAL	***50.48***		

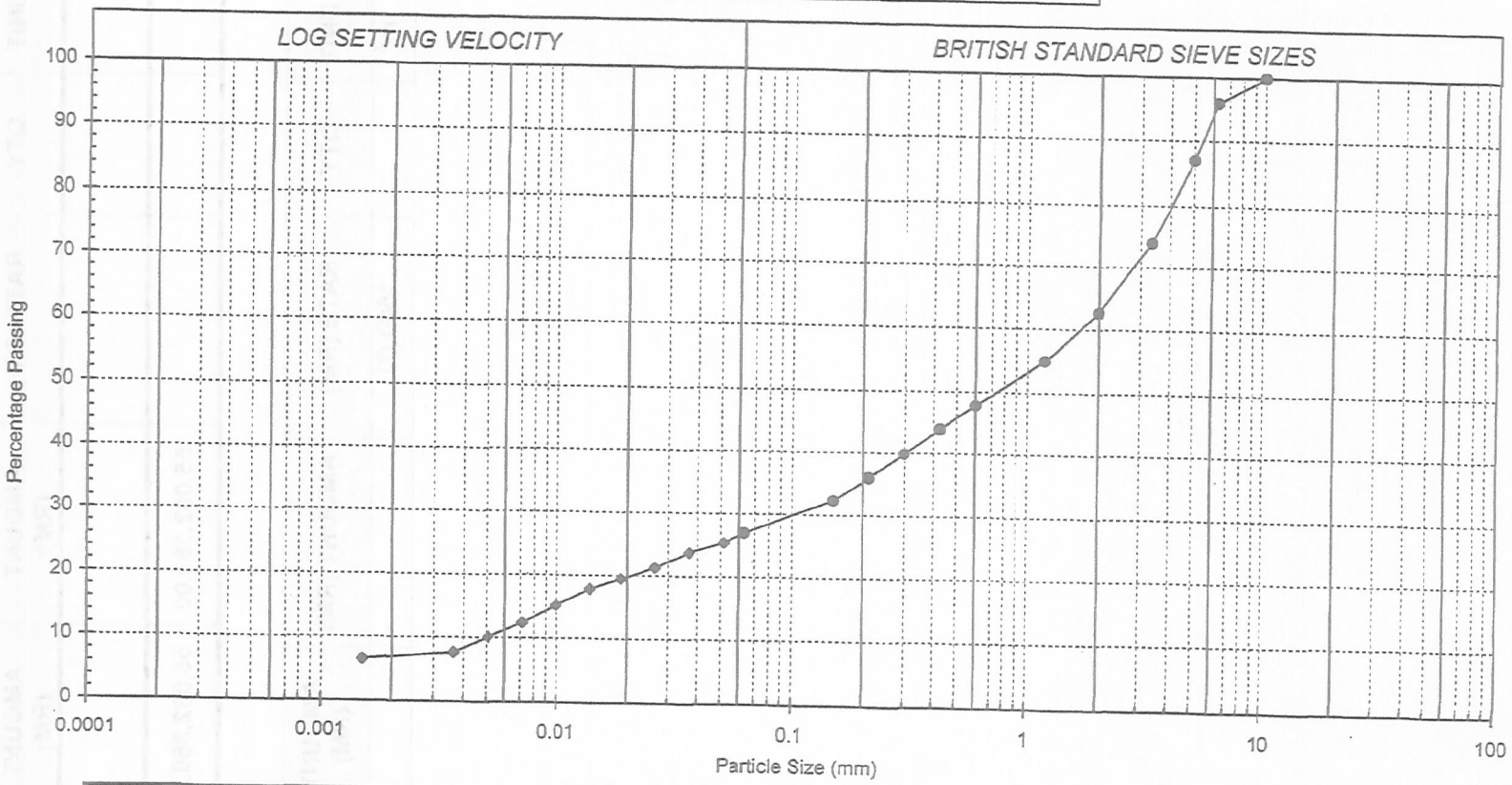
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 09/10/2013

Our Ref. : AJH08

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/161
Client :	Field Sample No. : BH4/D12
Sample Description : Refer to Borehole Log.	Depth : 18.90 m
	Tested By : Eddie
Remarks :	Checked By : Tommie
	Date : 16/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		

RESULTS		
Gravel	(%)	37
Sand	(%)	36
Silt	(%)	20
Clay	(%)	7

Our Ref. : AJH15

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/161
Client :	Field Sample No. : BH4/D12
	Depth : 18.90 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	1
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	70.00
Weight after pre-treatment (gm)	68.60
Specific Gravity, G_s	2.65

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
16/10/2013	0924 hrs	26	30 secs	9.7	10.2	15.9	9.86	0.52940	0.07224	11.48	26.88
16/10/2013		26	1 min	9	9.5	16.2	9.86	0.26964	0.05155	10.78	25.24
16/10/2013		26	2 mins	8.3	8.8	16.5	9.86	0.13729	0.03679	10.08	23.60
16/10/2013		26	4 mins	7.3	7.8	16.9	9.86	0.07041	0.02634	9.08	21.26
16/10/2013		26	8 mins	6.5	7.0	17.2	9.86	0.03591	0.01881	8.28	19.39
16/10/2013		26	15 mins	5.8	6.3	17.5	9.86	0.01948	0.01386	7.58	17.75
16/10/2013		26	30 mins	4.7	5.2	18.0	9.86	0.01000	0.00993	6.48	15.17
16/10/2013	1024 hrs	26	1 hour	3.5	4.0	18.5	9.86	0.00514	0.00712	5.28	12.36
16/10/2013	1124 hrs	26	2 hours	2.5	3.0	18.9	9.86	0.00263	0.00509	4.28	10.02
16/10/2013	1324 hrs	26	4 hours	1.5	2.0	19.4	9.86	0.00134	0.00364	3.28	7.68
17/10/2013	0924 hrs	26	24 hours	1	1.5	19.6	9.86	0.00023	0.00149	2.78	6.51

Our Ref. : AJH15

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/161
Client :	Field Sample No. : BH4/D12
	Depth : 18.90 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	68.60
Weight of dried sample after washing through 0.063 mm sieve	(gm)	50.77
Weight of material washed through 0.063 mm sieve	(gm)	17.83

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000	0.00	0.00	100.00
6.300	2.83	4.13	95.87
5.000	6.17	13.12	86.88
3.350	8.88	26.06	73.94
2.000	7.78	37.41	62.59
1.180	5.29	45.12	54.88
0.600	4.93	52.30	47.70
0.425	2.60	56.09	43.91
0.300	2.86	60.26	39.74
0.212	2.62	64.08	35.92
0.150	2.52	67.76	32.24
0.063	3.63	73.05	26.95
- 0.063 mm dry	0.66		
- 0.063 mm wet	17.83		
- 0.063 mm total	18.49		
TOTAL	***68.60***		

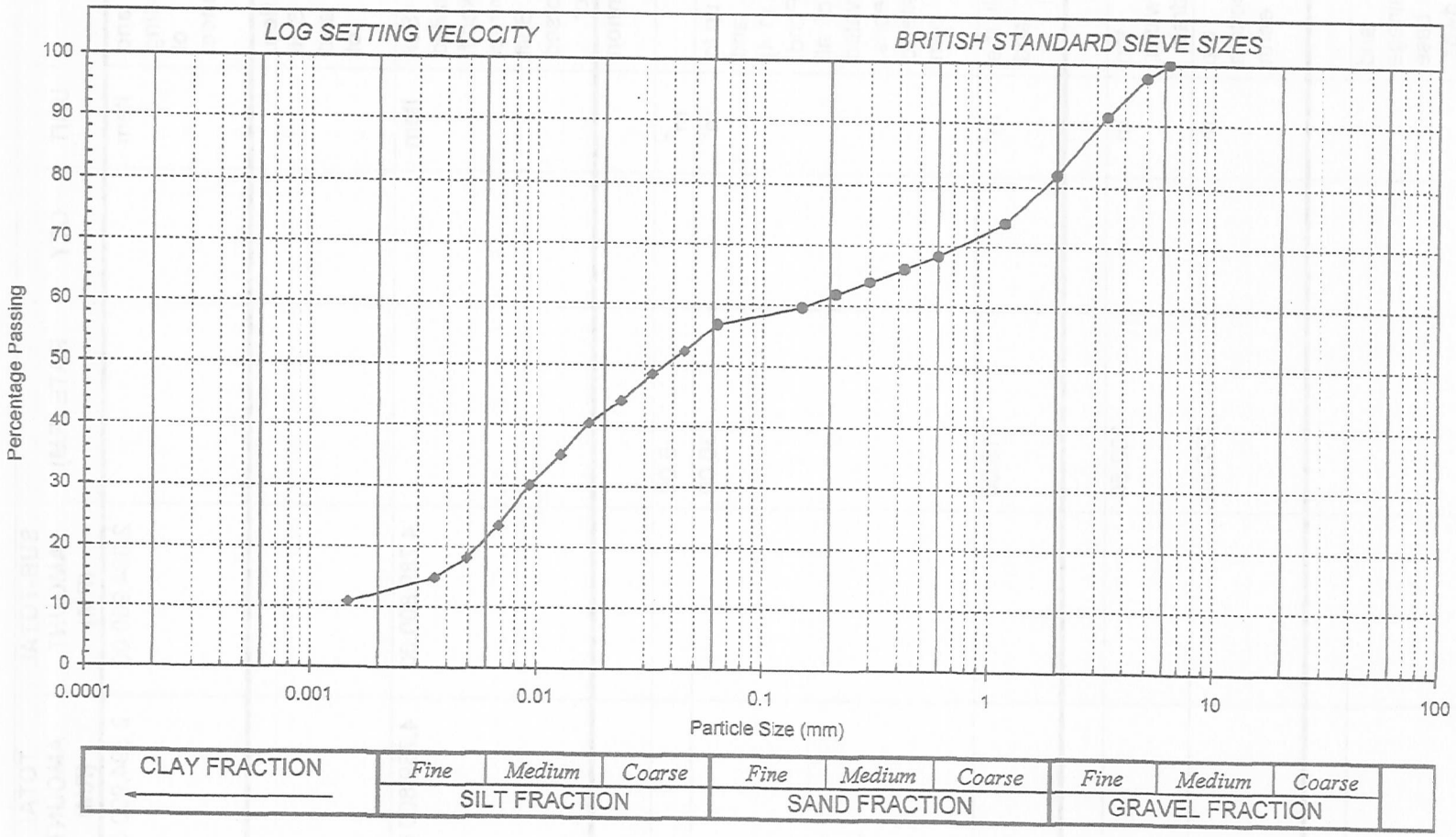
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Our Ref. : AJH15

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/162
	Field Sample No. : BH4/D16
Client :	Depth : 24.90 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

PARTICLE SIZE DISTRIBUTION



RESULTS		
Gravel	(%)	18
Sand	(%)	26
Silt	(%)	44
Clay	(%)	12

Our Ref. : AJH16

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/162
	Field Sample No. : BH4/D16
Client :	Depth : 24.90 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	2
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	62.80
Weight after pre-treatment (gm)	60.66
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
16/10/2013	0927 hrs	26	30 secs	20.5	21.0	11.3	9.80	0.37700	0.06077	22.28	58.86
16/10/2013		26	1 min	18	18.5	12.4	9.80	0.20614	0.04494	19.78	52.25
16/10/2013		26	2 mins	16.6	17.1	13.0	9.80	0.10801	0.03253	18.38	48.55
16/10/2013		26	4 mins	14.9	15.4	13.7	9.80	0.05700	0.02363	16.68	44.06
16/10/2013		26	8 mins	13.5	14.0	14.3	9.80	0.02974	0.01707	15.28	40.36
16/10/2013		26	15 mins	11.5	12.0	15.1	9.80	0.01680	0.01283	13.28	35.08
16/10/2013		26	30 mins	9.6	10.1	15.9	9.80	0.00885	0.00931	11.38	30.06
16/10/2013	1027 hrs	26	1 hour	7.1	7.6	17.0	9.80	0.00472	0.00680	8.88	23.46
16/10/2013	1127 hrs	26	2 hours	5.1	5.6	17.8	9.80	0.00248	0.00493	6.88	18.17
16/10/2013	1327 hrs	26	4 hours	3.8	4.3	18.4	9.80	0.00128	0.00354	5.58	14.74
17/10/2013	0927 hrs	26	24 hours	2.3	2.8	19.0	9.80	0.00022	0.00147	4.08	10.78

Our Ref. : AJH16

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/162
	Field Sample No. : BH4/D16
Client :	Depth : 24.90 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	60.66
Weight of dried sample after washing through 0.063 mm sieve	(gm)	26.59
Weight of material washed through 0.063 mm sieve	(gm)	34.07

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300	0.00	0.00	100.00
5.000	1.41	2.32	97.68
3.350	3.91	8.77	91.23
2.000	5.68	18.13	81.87
1.180	4.87	26.16	73.84
0.600	3.38	31.73	68.27
0.425	1.35	33.96	66.04
0.300	1.32	36.14	63.86
0.212	1.27	38.23	61.77
0.150	1.33	40.42	59.58
0.063	1.77	43.34	56.66
- 0.063 mm dry	0.30		
- 0.063 mm wet	34.07		
- 0.063 mm total	34.37		
TOTAL	***60.66***		

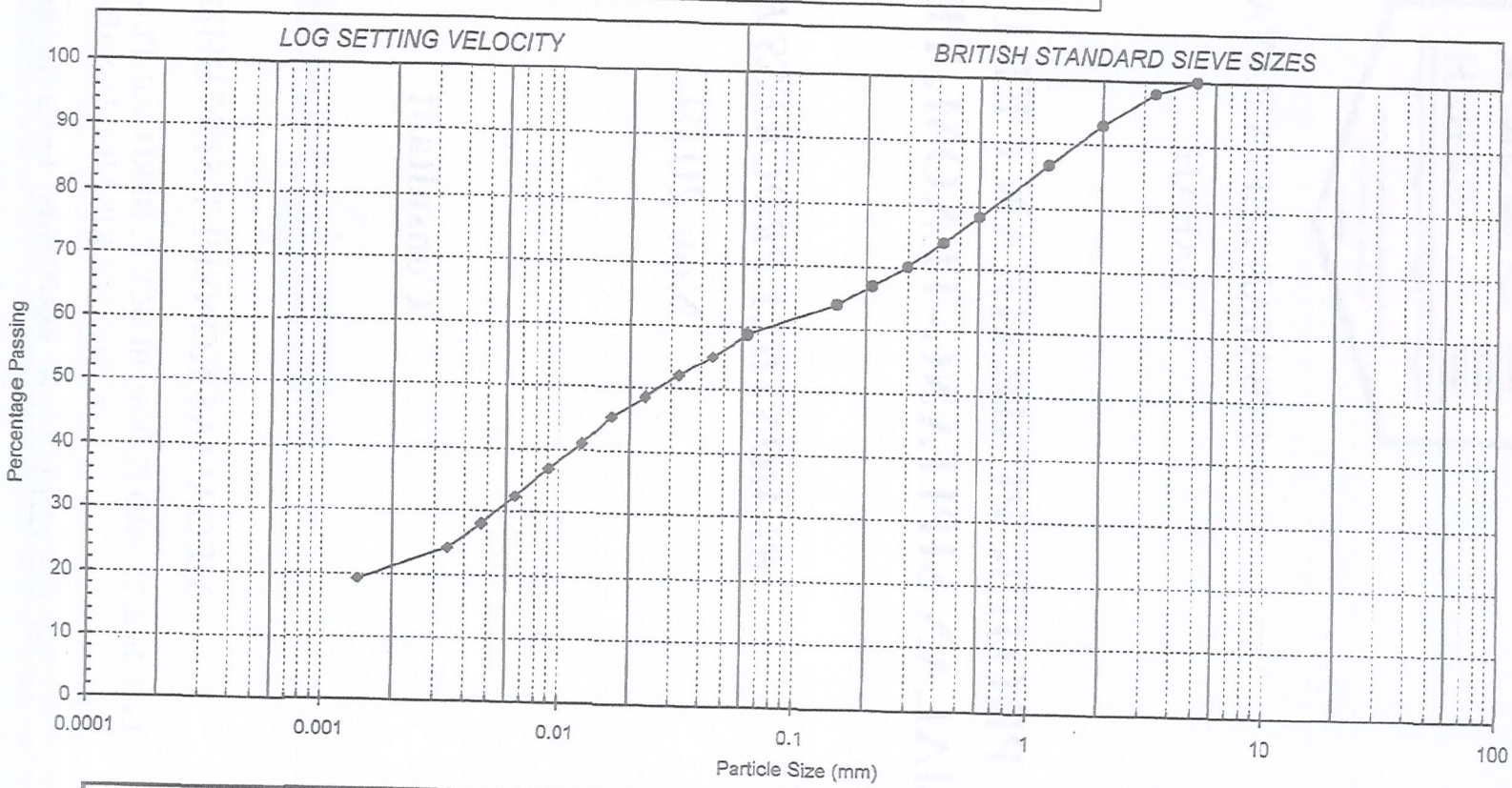
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Our Ref. : AJH16

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/163
	Field Sample No. : BH4/D19
Client :	Depth : 29.40 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
←	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		

RESULTS		
Gravel	(%)	7
Sand	(%)	35
Silt	(%)	37
Clay	(%)	21

Our Ref. : AJH17

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/163
	Field Sample No. : BH4/D19
Client :	Depth : 29.40 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	3
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	60.40
Weight after pre-treatment (gm)	58.21
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
16/10/2013	0930 hrs	26	30 secs	20	20.5	11.5	9.80	0.38406	0.06134	21.78	59.96
16/10/2013		26	1 min	18.3	18.8	12.2	9.80	0.20402	0.04471	20.08	55.28
16/10/2013		26	2 mins	17.1	17.6	12.7	9.80	0.10624	0.03226	18.88	51.97
16/10/2013		26	4 mins	15.9	16.4	13.3	9.80	0.05524	0.02326	17.68	48.67
16/10/2013		26	8 mins	14.7	15.2	13.8	9.80	0.02868	0.01676	16.48	45.37
16/10/2013		26	15 mins	13.1	13.6	14.4	9.80	0.01605	0.01254	14.88	40.96
16/10/2013		26	30 mins	11.6	12.1	15.1	9.80	0.00838	0.00906	13.38	36.83
16/10/2013	1030 hrs	26	1 hour	10	10.5	15.8	9.80	0.00438	0.00655	11.78	32.43
16/10/2013	1130 hrs	26	2 hours	8.4	8.9	16.4	9.80	0.00228	0.00473	10.18	28.02
16/10/2013	1330 hrs	26	4 hours	7	7.5	17.0	9.80	0.00118	0.00340	8.78	24.17
17/10/2013	0930 hrs	26	24 hours	5.2	5.7	17.8	9.80	0.00021	0.00142	6.98	19.21

Our Ref. : AJH17

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/163
	Field Sample No. : BH4/D19
Client :	Depth : 29.40 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	58.21
Weight of dried sample after washing through 0.063 mm sieve	(gm)	24.59
Weight of material washed through 0.063 mm sieve	(gm)	33.62

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000	0.00	0.00	100.00
3.350	1.12	1.92	98.08
2.000	3.03	7.13	92.87
1.180	3.61	13.33	86.67
0.600	4.85	21.66	78.34
0.425	2.44	25.85	74.15
0.300	2.33	29.86	70.14
0.212	1.85	33.04	66.96
0.150	1.77	36.08	63.92
0.063	2.99	41.21	58.79
- 0.063 mm dry	0.60		
- 0.063 mm wet	33.62		
- 0.063 mm total	34.22		
TOTAL	***58.21***		

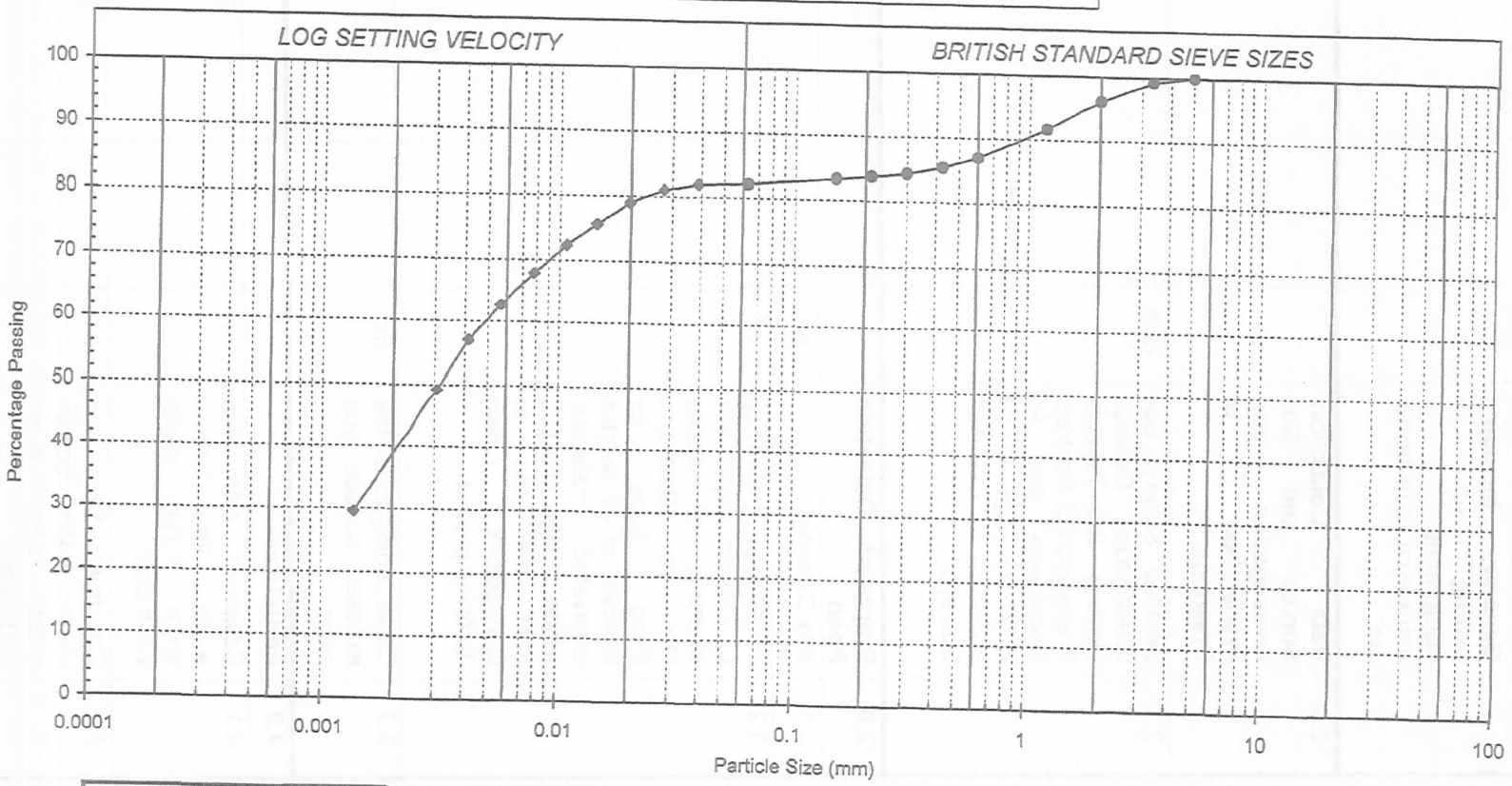
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Our Ref. : AJH17

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/164
Client :	Field Sample No. : BH4/D24
Sample Description : Refer to Borehole Log.	Depth : 36.90 m
	Tested By : Eddie
Remarks :	Checked By : Tommie
	Date : 16/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION										
←	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			

RESULTS		
Gravel	(%)	4
Sand	(%)	14
Silt	(%)	43
Clay	(%)	39

Our Ref. : AJH18

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/164
Client :	Field Sample No. : BH4/D24
	Depth : 36.90 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	4
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	55.20
Weight after pre-treatment (gm)	53.02
Specific Gravity, G_s	2.67

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
16/10/2013	0933 hrs	26	30 secs	26.1	26.6	8.9	9.74	0.29798	0.05387	27.88	84.07
16/10/2013		26	1 min	25.4	25.9	9.2	9.74	0.15393	0.03872	27.18	81.96
16/10/2013		26	2 mins	25.1	25.6	9.4	9.74	0.07802	0.02756	26.88	81.06
16/10/2013		26	4 mins	24.4	24.9	9.7	9.74	0.04025	0.01980	26.18	78.95
16/10/2013		26	8 mins	23.3	23.8	10.1	9.74	0.02109	0.01433	25.08	75.63
16/10/2013		26	15 mins	22.2	22.7	10.6	9.74	0.01177	0.01070	23.98	72.31
16/10/2013		26	30 mins	20.7	21.2	11.2	9.74	0.00624	0.00779	22.48	67.79
16/10/2013	1033 hrs	26	1 hour	19	19.5	11.9	9.74	0.00332	0.00568	20.78	62.66
16/10/2013	1133 hrs	26	2 hours	17.1	17.6	12.7	9.74	0.00177	0.00415	18.88	56.93
16/10/2013	1333 hrs	26	4 hours	14.5	15.0	13.9	9.74	0.00096	0.00306	16.28	49.09
17/10/2013	0933 hrs	26	24 hours	8	8.5	16.6	9.74	0.00019	0.00137	9.78	29.49

Our Ref. : AJH18

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/164
	Field Sample No. : BH4/D24
Client :	Depth : 36.90 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	53.02
Weight of dried sample after washing through 0.063 mm sieve	(gm)	9.59
Weight of material washed through 0.063 mm sieve	(gm)	43.43

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000	0.00	0.00	100.00
3.350	0.41	0.77	99.23
2.000	1.63	3.85	96.15
1.180	2.41	8.39	91.61
0.600	2.52	13.15	86.85
0.425	0.86	14.77	85.23
0.300	0.53	15.77	84.23
0.212	0.27	16.28	83.72
0.150	0.24	16.73	83.27
0.063	0.56	17.79	82.21
- 0.063 mm dry	0.16		
- 0.063 mm wet	43.43		
- 0.063 mm total	43.59		
TOTAL	***53.02***		

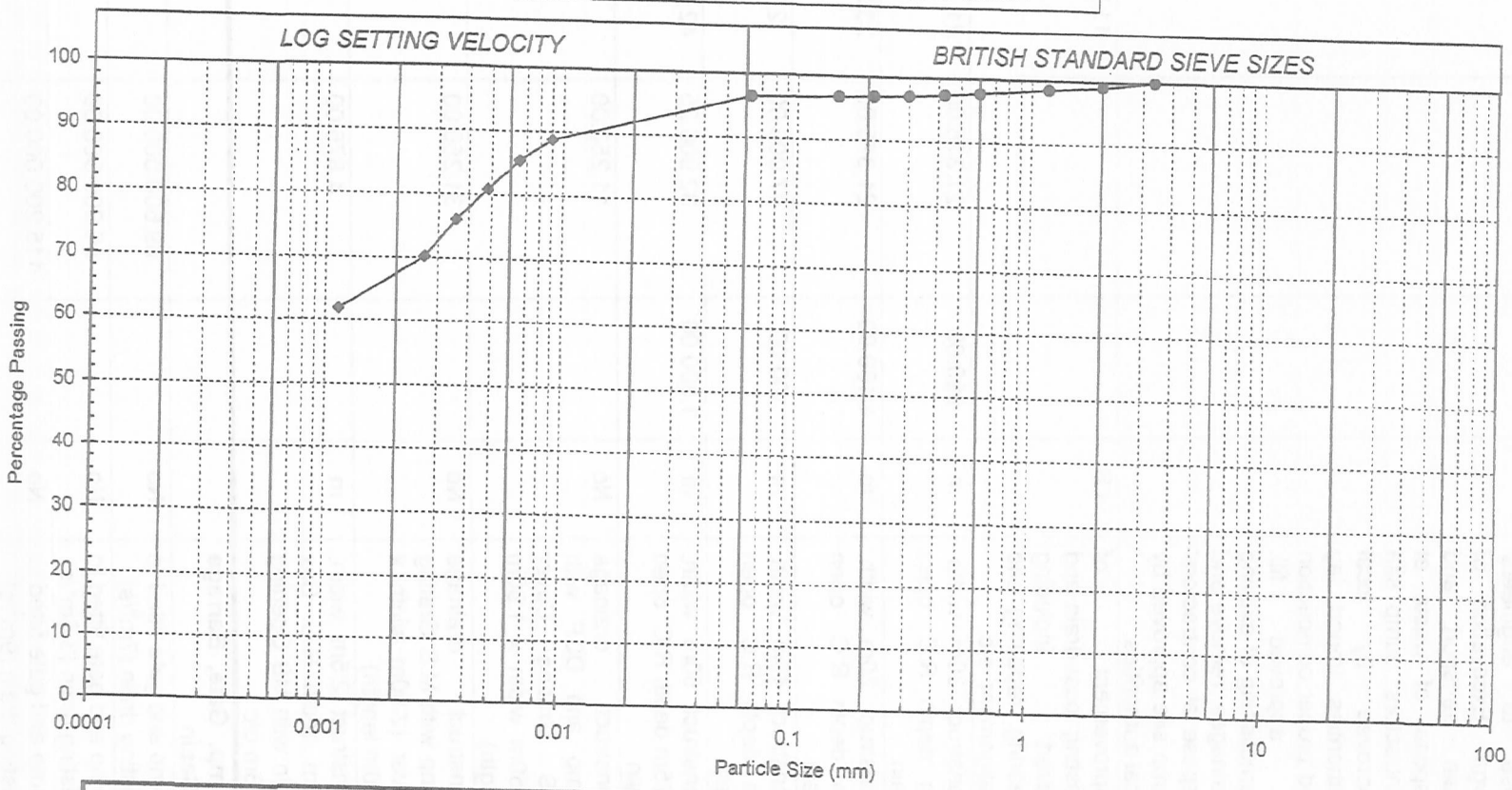
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Our Ref. : AJH18

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No.	: HD/2013/165
Client :	Field Sample No.	: BH4/D27
Sample Description : Refer to Borehole Log.	Depth	: 41.40 m
	Tested By	: Eddie
Remarks :	Checked By	: Tommie
	Date	: 16/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION									
←	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*
	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		

RESULTS		
Gravel	(%)	1
Sand	(%)	3
Silt	(%)	29
Clay	(%)	67

Our Ref. : AJH19

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/165
Client :	Field Sample No. : BH4/D27
	Depth : 41.40 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	5
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	58.10
Weight after pre-treatment (gm)	57.07
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
16/10/2013	0936 hrs	26	30 secs								
16/10/2013		26	1 min								
16/10/2013		26	2 mins								
16/10/2013		26	4 mins								
16/10/2013		26	8 mins								
16/10/2013		26	15 mins	29.8	30.3	7.4	9.80	0.00819	0.00896	31.58	88.67
16/10/2013		26	30 mins	28.6	29.1	7.9	9.80	0.00438	0.00655	30.38	85.30
16/10/2013	1036 hrs	26	1 hour	27	27.5	8.6	9.80	0.00238	0.00483	28.78	80.81
16/10/2013	1133 hrs	26	2 hours	25.3	25.8	9.3	9.80	0.00129	0.00355	27.08	76.04
16/10/2013	1336 hrs	26	4 hours	23.2	23.7	10.2	9.80	0.00071	0.00263	24.98	70.14
17/10/2013	0936 hrs	26	24 hours	20.2	20.7	11.4	9.80	0.00013	0.00114	21.98	61.72

Our Ref. : AJH19

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/165
	Field Sample No. : BH4/D27
Client :	Depth : 41.40 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	57.07
Weight of dried sample after washing through 0.063 mm sieve	(gm)	2.03
Weight of material washed through 0.063 mm sieve	(gm)	55.04

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000			
3.350	0.00	0.00	100.00
2.000	0.51	0.89	99.11
1.180	0.34	1.49	98.51
0.600	0.47	2.31	97.69
0.425	0.21	2.68	97.32
0.300	0.15	2.94	97.06
0.212	0.09	3.10	96.90
0.150	0.09	3.26	96.74
0.063	0.14	3.50	96.50
- 0.063 mm dry	0.03		
- 0.063 mm wet	55.04		
- 0.063 mm total	55.07		
TOTAL	***57.07***		

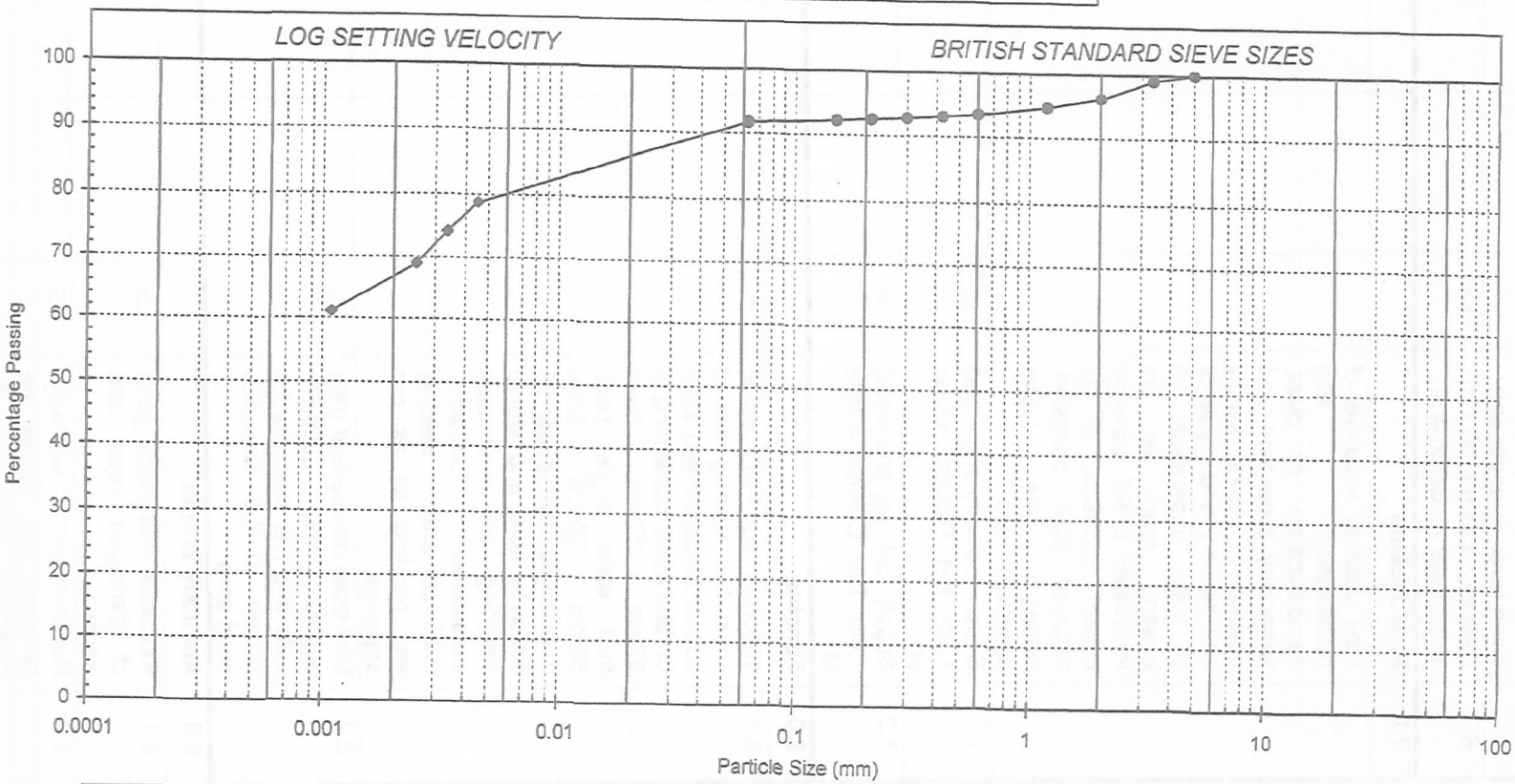
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Our Ref. : AJH19

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No.	: HD/2013/166
Client :	Field Sample No.	: BH4/D31
Sample Description : Refer to Borehole Log.	Depth	: 47.40 m
	Tested By	: Eddie
Remarks :	Checked By	: Tommie
	Date	: 16/10/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION									
←	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*
	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		

RESULTS		
Gravel	(%)	4
Sand	(%)	5
Silt	(%)	24
Clay	(%)	67

Our Ref. : AJH20

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/166
	Field Sample No. : BH4/D31
Client :	Depth : 47.40 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Hydrometer No.	1377
Measuring Cylinder No.	6
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	64.80
Weight after pre-treatment (gm)	63.82
Specific Gravity, G_s	2.65

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
16/10/2013	0939 hrs	26	30 secs								
16/10/2013		26	1 min								
16/10/2013		26	2 mins								
16/10/2013		26	4 mins								
16/10/2013		26	8 mins								
16/10/2013		26	15 mins								
16/10/2013		26	30 mins								
16/10/2013	1039hrs	26	1 hour	29.5	30.0	7.5	9.86	0.00208	0.00453	31.28	78.72
16/10/2013	1139 hrs	26	2 hours	27.7	28.2	8.3	9.86	0.00115	0.00336	29.48	74.19
16/10/2013	1339 hrs	26	4 hours	25.6	26.1	9.2	9.86	0.00064	0.00250	27.38	68.90
17/10/2013	0939 hrs	26	24 hours	22.5	23.0	10.5	9.86	0.00012	0.00109	24.28	61.10

Our Ref. : AJH20

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/166
	Field Sample No. : BH4/D31
Client :	Depth : 47.40 m

WET SIEVE

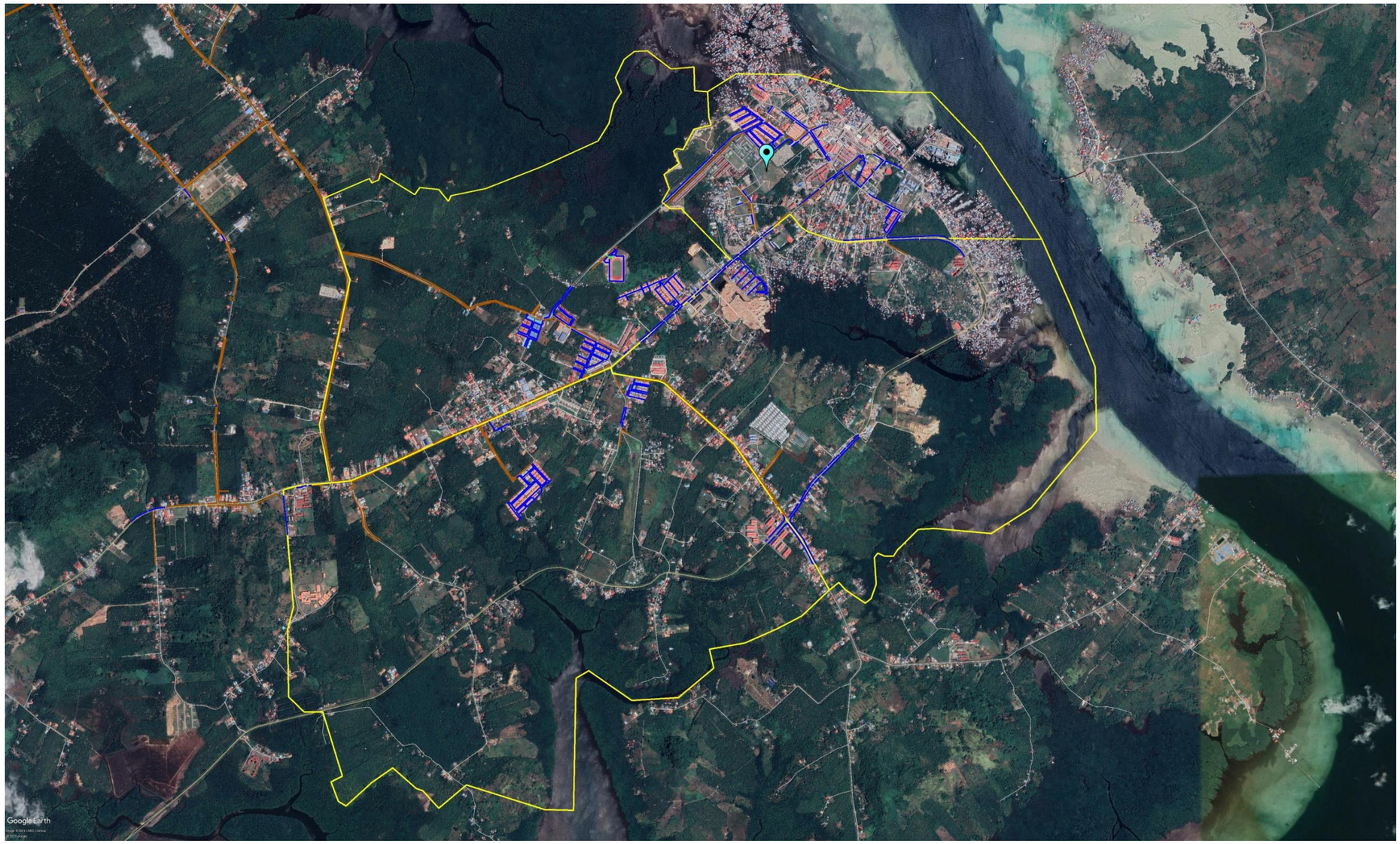
Weight of dried sample before washing through 0.063 mm sieve	(gm)	63.82
Weight of dried sample after washing through 0.063 mm sieve	(gm)	5.35
Weight of material washed through 0.063 mm sieve	(gm)	58.47

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300			
5.000	0.00	0.00	100.00
3.350	0.56	0.88	99.12
2.000	1.85	3.78	96.22
1.180	0.99	5.33	94.67
0.600	0.80	6.58	93.42
0.425	0.24	6.96	93.04
0.300	0.20	7.27	92.73
0.212	0.17	7.54	92.46
0.150	0.18	7.82	92.18
0.063	0.30	8.29	91.71
- 0.063 mm dry	0.06		
- 0.063 mm wet	58.47		
- 0.063 mm total	58.53		
TOTAL	***63.82***		

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 16/10/2013

Our Ref. : AJH20



LEGEND:

- Study Area
- R.C Drain
- Earth Drain
- Road
- Location of Soil Investigation

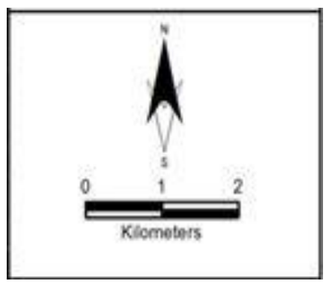


FIGURE 2: LOCATION OF 2nd SOIL INVESTIGATION

JARABUMI BERGABUNG SDN. BHD. (647710-P)

DEEP BORING LOG

PROJECT :

Borehole No. : BH-1 (Tamu Ground)	Reduced Level : Existing Ground Level / Flat	Driller : Alih
Sheet No. : 1 of 1	Type of Drill : Rotary (YBM-05)	Date : 12/05/2013 - 14/05/2013

(m)	DESCRIPTION OF SOIL Consistency, Colour, Relative Density, Grain Size, Texture Etc.	DEPTH (m)	SAMPLE NO.	Standard Penetration Test (N) 75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	N	Rec. cm	Time min	RQD %
0.00	Dark brown, silty sandy CLAY with coral fragment.	0.60 - 1.05	UD 1	Thick Wall (10 blows)							21		
1.50	Medium dense, whitish grey clayey SAND with coral.	1.50 - 1.95	D 1	1	2	2	3	3	4	12	30		
3.45	Stiff whitish grey silty sandy CLAY with coral.	3.45 - 3.90	D 2	2	3	3	4	4	4	15	25		
4.95	Dense, whitish grey to white SAND with coral.	4.95 - 5.40	D 3	4	5	7	7	14	17	45	9		
6.00	Whitish grey to white, highly fractured very weak coral. (porous coral)	6.00 - 7.50	C 1								15	20	0
		7.50 - 9.00	C 2								15	25	0
		9.00 - 10.50	C 3								45	25	0
		10.50 - 12.00	C 4								35	20	0
		12.00 - 13.50	C 5								35	25	0
		13.50 - 15.00	C 6								35	20	0
		15.00 - 16.50	C 7								20	20	0
		16.50 - 18.00	C 8								35	25	0
		18.00 - 18.26	D 4	5	8	11	16	18	5/ 30mm	50/255 mm	4		
		18.26 - 19.76	C 9								35	25	0
		19.76 - 20.08	D 5	10	12	17	25	8/ 20mm		50/170 mm	5		
		20.08 - 21.58	C 10								35	25	0
		21.58 - 21.90	D 6	9	10	18	28	4/ 15mm		50/165 mm	6		
		21.90 - 23.40	C 11								25	25	0
		23.40 - 23.69	D 7	10	14	19	31/ 65mm			50/140 mm	5		
		23.69 - 25.19	C 12								40	25	0
25.19	End of Borehole Log												

Casing Sunk (NW) : 9.00 m

Water Level Below Existing Ground Level :
13/05/2013 : 3.10 m
14/05/2013 : 3.30 m
15/05/2013 : 3.50 m

* Remark : Water loss at 3.00 m during drilling work.

NOTES

N	Standard Penetration Test (SPT)
P	50 mm dia. undisturbed piston sample
UD	50 mm dia. undisturbed sample
D	Disturbed sample
VS	Vane shear test
W	Water sample
C	Core sample
RQD	Rock Quality Description (%)
Rr	Recovery rates
WL	Water level
MZ	= Mazier Samples

COHESIVE SOIL (N)

0 - 2	:	VERY SOFT
2 - 4	:	SOFT
4 - 8	:	MEDIUM STIFF (FIRM)
8 - 15	:	STIFF
15 - 30	:	VERY STIFF
> 30	:	HARD

NON-COHESIVE SOIL (N)

0 - 4	:	VERY LOOSE
4 - 10	:	LOOSE
10 - 30	:	MEDIUM DENSE
30 - 50	:	DENSE
> 50	:	VERY DENSE

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JARABUMI BERGABUNG SDN. BHD. (647710-P)

DEEP BORING LOG

PROJECT :

Borehole No. : BH-2 (Lot 108)	Reduced Level : Existing Ground Level / Flat	Driller : Alih	
Sheet No. : 1 of 1	Type of Drill : Rotary (YBM-05)	Date : 15/05/2013 - 17/05/2013	

(m)	DESCRIPTION OF SOIL Consistency, Colour, Relative Density, Grain Size, Texture Etc.	DEPTH (m)	SAMPLE NO.	Standard Penetration Test (N) 75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	N	Rec. cm	Time min	RQD %
0.00	Light brown, silty clayey SAND with coral fragment.	0.50 - 0.95	UD 1	Thick Wall (12 blows)							24		
1.50	Medium dense, yellowish grey silty clayey SAND with coral.	1.50 - 1.95	D 1	2	2	2	3	3	4	12	27		
		3.45 - 3.90	D 2	2	2	3	4	4	5	16	24		
4.95	Very dense, whitish grey to white very weak coral, highly fractured porous coral.	4.95 - 5.24	D 3	8	14	23	27/60mm			50/135 mm	9		
		6.00 - 7.50	C 1								40	25	0
		7.50 - 9.00	C 2								45	25	0
		9.00 - 9.28	D 4	9	17	24	26/55mm			50/130 mm	30		
		9.28 - 10.78	C 3								55	25	0
		10.78 - 12.28	C 4								60	30	0
		12.28 - 12.55	D 5	8	15	22	28/40mm			50/115 mm	14		
		12.55 - 14.05	C 5								23	20	0
		14.05 - 15.55	C 6								36	25	0
		15.55 - 15.80	D 6	11	21	28	22/25mm			50/100 mm	6		
		15.80 - 17.30	C 7								40	25	0
		17.30 - 18.80	C 8								33	25	0
		18.80 - 19.05	D 7	13	24	31	29/20mm			50/95 mm	Nil		
		19.05 - 20.55	C 9								28	20	0
		20.55 - 22.05	C 10								50	25	0
		22.05 - 22.30	D 8	12	21	30	20/23mm			50/98 mm	14		
		22.30 - 23.80	C 11								27	20	0
		23.80 - 25.30	C 12								48	25	0
25.30	End of Borehole Log Casing Sunk (NW) : 3.00 m Water Level Below Existing Ground Level : 16/05/2013 : 3.50 m 17/05/2013 : 3.90 m 18/05/2013 : 3.80 m												

NOTES

N	Standard Penetration Test (SPT)
P	50 mm dia. undisturbed piston sample
UD	50 mm dia. undisturbed sample
D	Disturbed sample
VS	Vane shear test
W	Water sample
C	Core sample
RQD	Rock Quality Description (%)
Rr	Recovery rates
WL	Water level
MZ	= Mazier Samples

COHESIVE SOIL (N)

0 - 2	:	VERY SOFT
2 - 4	:	SOFT
4 - 8	:	MEDIUM STIFF (FIRM)
8 - 15	:	STIFF
15 - 30	:	VERY STIFF
> 30	:	HARD

NON-COHESIVE SOIL (N)

0 - 4	:	VERY LOOSE
4 - 10	:	LOOSE
10 - 30	:	MEDIUM DENSE
30 - 50	:	DENSE
> 50	:	VERY DENSE

SUPERVISOR

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APPENDIX E -- Laboratory Test Summaries & Results

PROJECT :

TABLE 1 : SUMMARY OF BOREHOLE DRILLING, HAND AUGERING, INSITU SAMPLING AND TESTING

BOREHOLE NO./ HAND AUGER NO.	GROUND ELEVATION	TIME PROGRESS		FIELD PROGRESS			INSITU SAMPLING/TESTS					
		DATE STARTED	DATE COMPLETED	DEPTH OF BOREHOLE (m)	LENGTH OF SOIL BORING (m)	LENGTH OF ROCK CORING (m)	NO. OF UD	NO. OF SPT	NO. OF D	NO. OF PIEZOMETER	NO. OF INCLINOMETER	NO. OF MS
BH-1	Existing Ground Level	12/05/2013	14/05/2013	25.19	7.19	18.00	1	7	7	-	-	-
BH-2	Existing Ground Level	15/05/2013	17/05/2013	25.30	7.30	18.00	1	8	7	-	-	-
			TOTAL =	**50.49**	**14.49**	**36.00**	**2**	**15**	**14**	-	-	-

NOTE :

UD = Undisturbed Samples
SPT = Standard Penetration Tests
VS = Insitu Vane Shear Tests
CPT = Cone Protection Test
MS = Mazier Samples

JARABUMI BERGABUNG SDN. BHD.

(Company No. 647710-P)

SUMMARY SHEET

For Actual Work Done

Project No : JBSB/PF/2013/21

Project Name :

Field works		Actual Work Done
Total No. of	Borehole	2
Total No. of	JKR Probes	
Total No. of	Hand Bore	
Total No. of	Trial Pit	
Total No. of	Dutch Cone	
Total No. of	Piezo Cone	
Total Depth of Soil Boring		14.49
Total Length of Rock Drilling		36.00

Field Tests & Sampling		Actual Work Done
Total No. of	SPT	15
Total No. of	Disturbed Samples Collected	14
Total No. of	Undisturbed Samples Collected	2
Total No. of	Mazier Samples	
Total No. of	Vane Shear Tests	
Total No. of	In Situ CBR Tests	
Total No. of	Permeability Tests	
Total No. of	Field Density Tests	
Total No. of	Mackintosh Probe Tests	
Total No. of	Inclinometer	
Total No. of	Settlement Plate	
Total No. of	Bulk Samples Collected	

Laboratory Testing		Actual Work Done
Total No. of	Natural Moisture Content	5
Total No. of	Liquid Limits Tests	2
Total No. of	Plastic Limits Tests	2
Total No. of	Plastic Index Tests	2
Total No. of	Linear Shrinkage Tests	-
Total No. of	Specific Gravity Tests	-
Total No. of	Test 7A/7B (Wet Sieving)	8
Total No. of	Test 7C/7D (Hydrometer)	5
Total No. of	Hydrometer	-
Total No. of	Bulk Density	-
Total No. of	Detailed Compaction Tests	-
Total No. of	UC Tests in Soil	-
Total No. of	UU Tests (SUU)	1
Total No. of	CIU Tests	1
Total No. of	Consolidation Tests	1
Total No. of	CBR On Remoulded Samples	-
Total No. of	Organic Matter Tests	-
Total No. of	Sulphate Content Tests	-
Total No. of	Sulphate Content in GW Tests	-
Total No. of	PH Value Tests	-
Total No. of	Chloride Content Tests	-
Total No. of	UC Rock Samples	-
Total No. of	Point Load Test	9

Remarks :

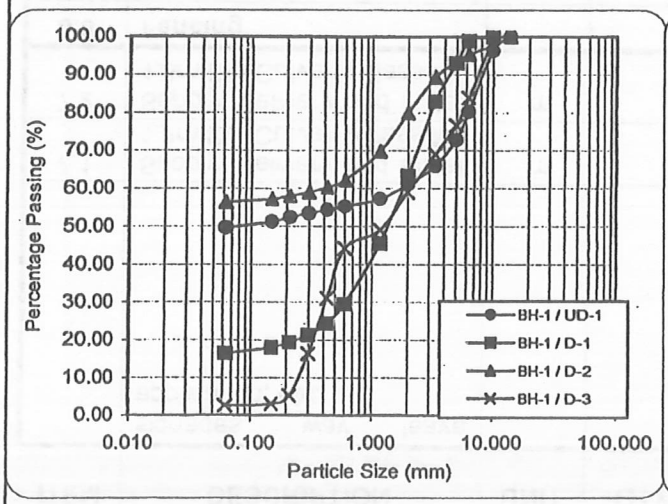
JARABUMI BERGABUNG SDN. BHD.

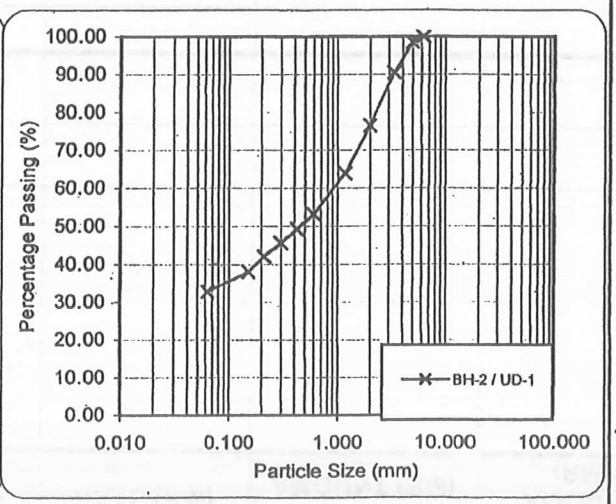
(Company No. 647710-P)

Project No. : JBSB/PF/2013/21	LABORATORY TEST RESULTS SUMMARY	Page : 1 of 3

Project :

Borehole No.		BH-1	BH-1	BH-1	BH-1	BH-1	BH-1	BH-1	BH-2
Depth (m)		1.05	1.95	3.90	5.40	9.00	12.00	15.00	0.95
Sample No.		UD-1	D-1	D-2	D-3	C-2	C-4	C-6	UD-1
Classification	BS 5930	CL							
Clay	< 0.002 mm (%)	30							16
Silt	0.002 - 0.063 mm (%)	19	16	56	3				16
Sand	0.063 - 2.000 mm (%)	12	47	24	56				45
Gravel	2.000 - 63.000 mm (%)	39	37	20	41				23
Particle Size Distribution (% Passing)	37.500 mm (%)								
	28.000 mm (%)								
	20.000 mm (%)								
	14.000 mm (%)	100.00		100.00					
	10.000 mm (%)	96.27	100.00	97.64	100.00				
	6.300 mm (%)	80.19	98.86	95.28	83.83				100.00
	5.000 mm (%)	72.67	92.98	93.30	76.55				98.43
	3.350 mm (%)	65.86	83.00	89.36	68.91				90.48
	2.000 mm (%)	61.03	63.24	79.85	58.90				76.52
	1.180 mm (%)	57.15	45.47	69.75	48.96				63.88
	0.600 mm (%)	55.11	29.46	62.20	44.15				53.13
	0.425 mm (%)	54.32	24.33	60.23	30.98				49.18
	0.300 mm (%)	53.40	21.17	58.91	16.31				45.54
	0.212 mm (%)	52.36	19.42	57.96	5.22				42.02
	0.150 mm (%)	51.20	18.06	57.18	3.00				38.01
	0.063 mm (%)	49.59	16.44	56.34	2.56				32.72
Liquid Limit	LL (%)	45							
Plastic Limit	PL (%)	24							N/P
Plastic Index	PI (%)	21							
Natural Moisture Content	MC (%)	30							16
Specific Gravity	SG	2.65							
Unit Weight	Kg/m³	1585							
One Dimensional Consolidation Test	m_v (m²/MN)	0.1863							
	Void Ratio	1.4375							
	Eff. Overburden, P_o	42.19							
Trixial Compression Test									
Unsaturated Unconsolidated Undrained	C_u kN/m²	46.90							
	$\phi°$	4.89							
Consolidated Isotropic Undrained	c' kN/m²								
	$\phi°$								3.53
Unconfined Compression	C_u kN/m²								27.82
Rock Strength Test									
Unconfined Compression	kN/m²								
Point Load Strength Index	Is(50)(mpa)					0.52	0.68	1.28	
Chemical Test									
pH									
Water Soluble Sulphate	(%)								
Water Soluble Sulphate	g/L								
Organic Content	(%)								





LAPORAN DISEDIAKAN OLEH :	LAPORAN DISAHKAN OLEH :
LU P. T.	S. F. HO

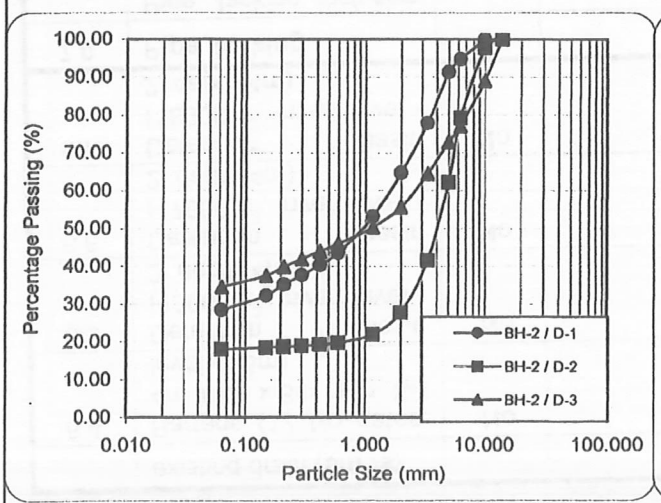
JARABUMI BERGABUNG SDN. BHD.

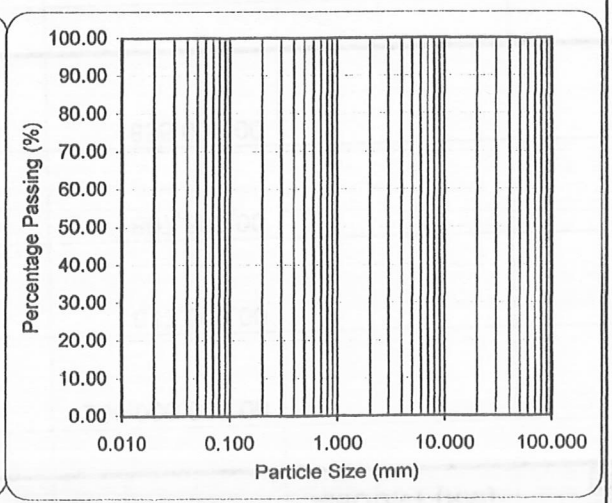
(Company No. 647710-P)

Project No. : JBSB/PF/2013/21	LABORATORY TEST RESULTS SUMMARY	Page : 2 of 3

Project :

Borehole No.		BH-2	BH-2	BH-2	BH-2	BH-2	BH-2	BH-2	BH-2
Depth (m)		1.95	3.90	5.24	7.50	9.00	10.78	12.28	14.05
Sample No.		D-1	D-2	D-3	C-1	C-2	C-3	C-4	C-5
Classification	BS 5930			CL					
Clay	< 0.002 mm (%)	17	9	21					
Silt	0.002 - 0.063 mm (%)	11	9	13					
Sand	0.063 - 2.000 mm (%)	37	10	22					
Gravel	2.000 - 63.000 mm (%)	35	72	44					
Particle Size Distribution (% Passing)	37.500 mm (%)								
	28.000 mm (%)								
	20.000 mm (%)								
	14.000 mm (%)		100.00	100.00					
	10.000 mm (%)	100.00	97.64	88.99					
	6.300 mm (%)	94.66	79.15	77.06					
	5.000 mm (%)	91.25	62.12	72.81					
	3.350 mm (%)	77.79	41.49	64.45					
	2.000 mm (%)	64.62	27.76	55.63					
	1.180 mm (%)	53.16	21.98	50.24					
	0.600 mm (%)	43.52	19.79	45.93					
	0.425 mm (%)	40.31	19.33	43.93					
	0.300 mm (%)	37.62	18.97	41.84					
	0.212 mm (%)	35.13	18.71	39.80					
	0.150 mm (%)	32.24	18.47	37.53					
	0.063 mm (%)	28.38	18.05	34.48					
Liquid Limit	LL (%)			30					
Plastic Limit	PL (%)	N/P	N/P	12					
Plastic Index	PI (%)			18					
Natural Moisture Content	MC (%)	15	15	21					
Specific Gravity	SG	2.65							
Unit Weight	Kg/m³	1585							
One Dimensional Consolidation Test	m_v (m²/MN)	0.1863							
	Void Ratio	1.4375							
	Eff. Overburden, P_o	42.19							
Trixial Compression Test									
Unsaturated Unconsolidated Undrained	C_u kN/m²								
	$\phi°$								
Consolidated Isotropic Undrained	c' kN/m²								
	$\phi°$								
Unconfined Compression	C_u kN/m²								
Rock Strength Test									
Unconfined Compression	kN/m²								
Point Load Strength Index	Is(50)(mpa)				0.52	0.72	0.60	0.76	1.04
Chemical Test									
pH									
Water Soluble Sulphate	(%)								
Water Soluble Sulphate	g/L								
Organic Content	(%)								





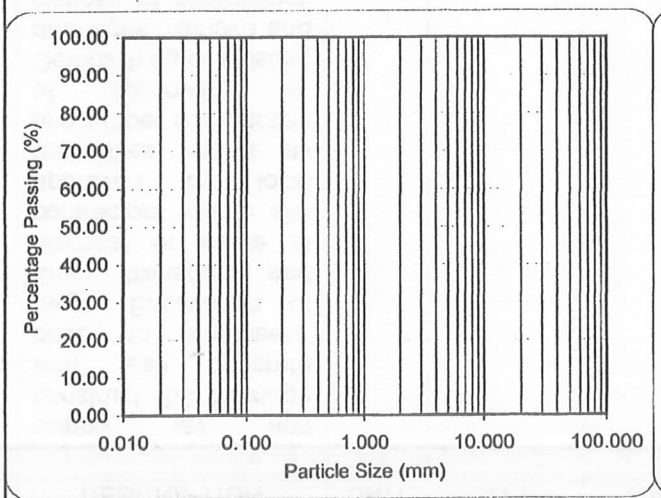
LAPORAN DISEDIAKAN OLEH :	LAPORAN DISAHKAN OLEH :
LU P. T.	S. F. HO

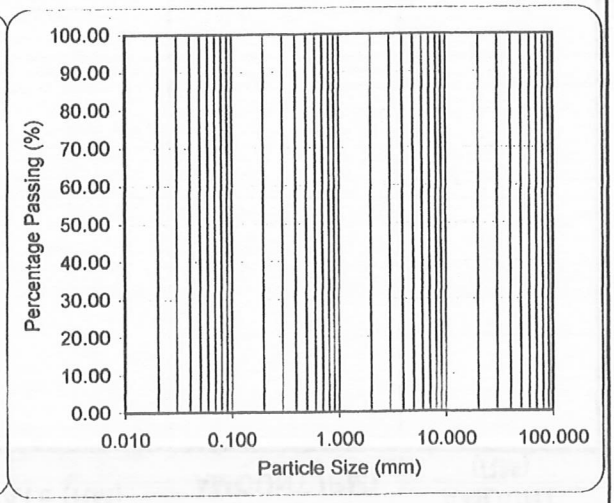
JARABUMI BERGABUNG SDN. BHD.

(Company No. 647710-P)

Project No. : JBSB/PF/2013/21	LABORATORY TEST RESULTS SUMMARY	Page : 3 of 3
Project :		

Borehole No.		BH-2
Depth (m)		15.55
Sample No.		C-6
Classification	BS 5930	
Clay	< 0.002 mm (%)	
Silt	0.002 - 0.063 mm (%)	
Sand	0.063 - 2.000 mm (%)	
Gravel	2.000 - 63.000 mm (%)	
Particle Size Distribution (% Passing)	37.500 mm (%)	
	28.000 mm (%)	
	20.000 mm (%)	
	14.000 mm (%)	
	10.000 mm (%)	
	6.300 mm (%)	
	5.000 mm (%)	
	3.350 mm (%)	
	2.000 mm (%)	
	1.180 mm (%)	
	0.600 mm (%)	
	0.425 mm (%)	
	0.300 mm (%)	
	0.212 mm (%)	
	0.150 mm (%)	
	0.063 mm (%)	
Liquid Limit	LL (%)	
Plastic Limit	PL (%)	
Plastic Index	PI (%)	
Natural Moisture Content	MC (%)	
Specific Gravity	SG	2.65
Unit Weight	Kg/m³	1585
One Dimensional Consolidation Test	m_v (m^2/MN)	0.1863
	Void Ratio	1.4375
	Eff. Overburden, P_o	42.19
Trixial Compression Test		
Unsaturated Unconsolidated Undrained	C_u kN/m²	46.90
	ϕ°	4.89
Consolidated Isotropic Undrained	c' kN/m²	
	ϕ°	
Unconfined Compression	C_u kN/m²	
Rock Strength Test		
Unconfined Compression	kN/m²	
Point Load Strength Index	Is(50)(mpa)	1.08
Chemical Test		
pH		
Water Soluble Sulphate	(%)	
Water Soluble Sulphate	g/L	
Organic Content	(%)	





LAPORAN DISEDIAKAN OLEH :	LAPORAN DISAHKAN OLEH :
LU P. T.	S. F. HO

Determination of Moisture Content

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project:

Client: Prinsip Hasil Sdn. Bhd.

Tested By: Eddie Date: 22/05/2013

Remarks:

DETERMINATION OF MOISTURE CONTENT

Lab. Sample No.	Field Sample No.	Container No.	Wt. of Container & Wet Soil gm (W_2)	Wt. of Container & Dry Soil gm (W_3)	Wt. of Container gm (W_1)	Wt. of Moisture gm (W_2-W_3)	Wt. of Dry Soil gm (W_3-W_1)	Moisture Content $\frac{(W_2-W_3)}{(W_3-W_1)}$ X 100%
MC/2013/87	BH1/UD1	S8	686.57	542.70	58.78	143.87	483.92	29.73

Our Ref.: WM01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project:

Client:

Tested By: Eddie Date:

Remarks:

DETERMINATION OF MOISTURE CONTENT

Lab. Sample No.	Field Sample No.	Container No.	Wt. of Container & Wet Soil gm (W_2)	Wt. of Container & Dry Soil gm (W_3)	Wt. of Container gm (W_1)	Wt. of Moisture gm (W_2-W_3)	Wt. of Dry Soil gm (W_3-W_1)	Moisture Content $\frac{(W_2-W_3)}{(W_3-W_1)}$ X 100%
MC/2013/99	BH2/UD1	S6	253.22	227.74	63.35	25.48	164.39	15.50
MC/2013/100	BH2/D1	S8	216.72	195.62	58.78	21.10	136.84	15.42
MC/2013/101	BH2/D2	S14	347.21	308.76	57.10	38.45	251.66	15.28
MC/2013/102	BH2/D3	S13	190.87	167.69	58.97	23.18	108.72	21.32

Our Ref.: WM02

Atterberg Limits

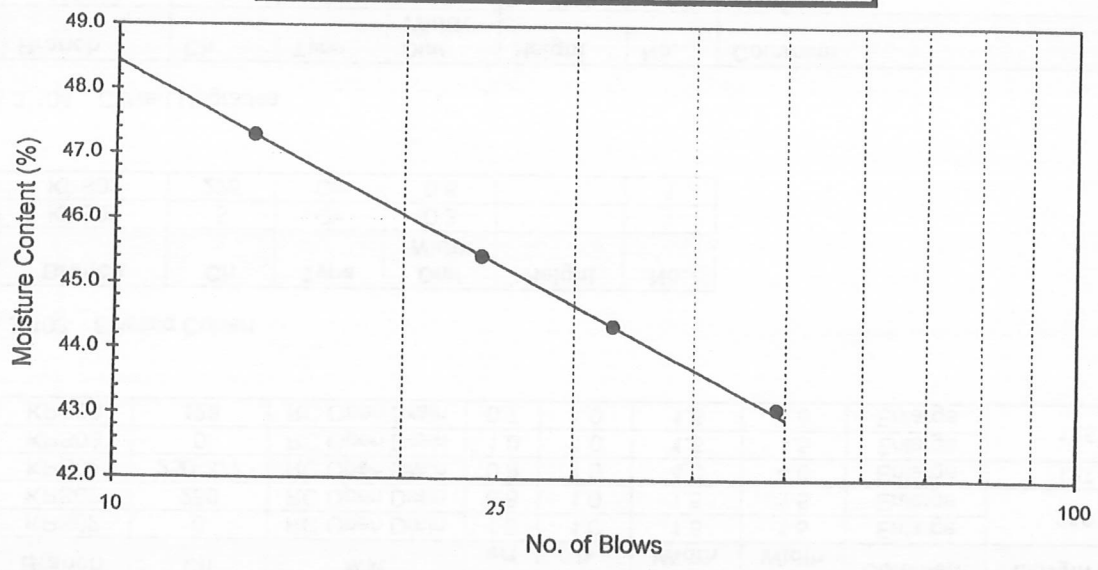
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT/2013/79
Client:	Field Sample No. : BH1/UD1
	Depth : 1.05 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		14	24	33	49		
Container No.		A10	A5	A13	A19	J2	J7
Wt. of Soil + Container	(gm)	19.06	18.56	17.68	16.45	34.90	36.07
Wt. of Dry Soil + Container	(gm)	14.60	14.53	14.06	12.93	34.18	35.36
Wt. of Container	(gm)	5.17	5.66	5.90	4.76	31.24	32.44
Wt. of Dry Soil	(gm)	9.43	8.87	8.16	8.17	2.94	2.92
Wt. of Moisture	(gm)	4.46	4.03	3.62	3.52	0.72	0.71
Moisture Content	(%)	47.30	45.43	44.36	43.08	24.49	24.32

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	30
Liquid Limit	(%)	45
Plastic Limit	(%)	24
Plasticity Index	(%)	21
Classification		CL

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 24/05/2013

Our Ref. : WA01

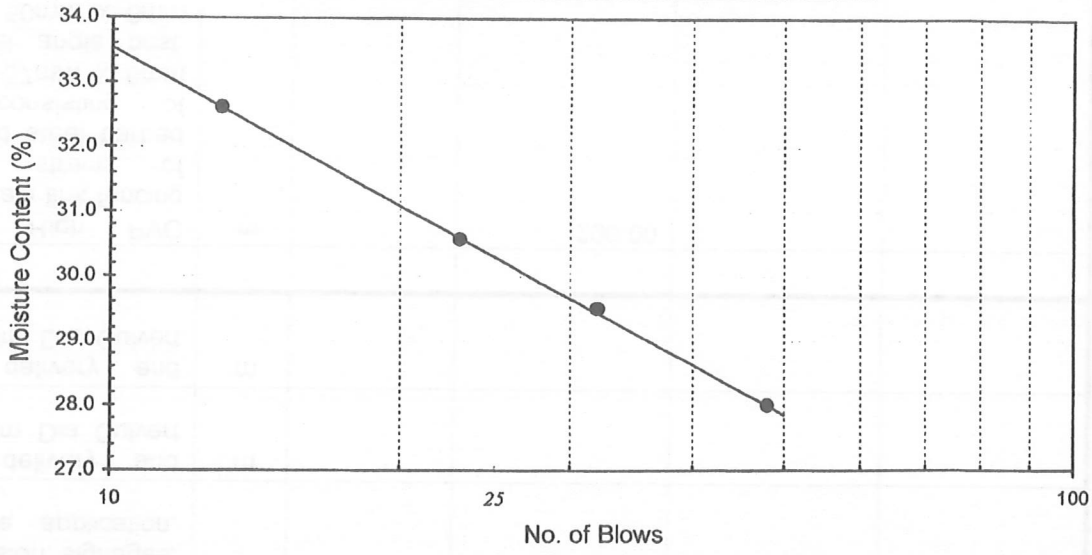
JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : AT/2013/91
	Field Sample No. : BH2/D3
Client:	Depth : 5.24 m

DETERMINATION OF ATTERBERG LIMITS

Type of Test		*Liquid Limit*				*Plastic Limit*	
No. of Blows		13	23	32	48		
Container No.		A16	A5	A13	A19	J2	J7
Wt. of Soil + Container	(gm)	19.08	18.47	17.62	16.17	32.99	34.36
Wt. of Dry Soil + Container	(gm)	15.58	15.47	14.95	13.67	32.80	34.15
Wt. of Container	(gm)	4.85	5.66	5.90	4.76	31.24	32.44
Wt. of Dry Soil	(gm)	10.73	9.81	9.05	8.91	1.56	1.71
Wt. of Moisture	(gm)	3.50	3.00	2.67	2.50	0.19	0.21
Moisture Content	(%)	32.62	30.58	29.50	28.00	12.18	12.28

Moisture Content Vs No. of Blows Plot



LINEAR SHRINKAGE		
Length Wet Soil	(mm)	
Length Dry Soil	(mm)	
Shrinkage	(mm)	
% Shrinkage		

RESULTS		
Natural Moisture Content	(%)	21
Liquid Limit	(%)	30
Plastic Limit	(%)	12
Plasticity Index	(%)	18
Classification		CL

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

Our Ref. : WA02

Particle Size Distribution

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/20
	Field Sample No. : BH1/D1
Client: Prinsip Hasil Sdn. Bhd.	Depth : 1.95 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000	0.00	0.00	100.00
6.300	1.16	1.14	98.86
5.000	6.01	7.02	92.98
3.350	10.19	17.00	83.00
2.000	20.18	36.76	63.24
1.180	18.15	54.53	45.47
0.600	16.35	70.54	29.46
0.425	5.23	75.67	24.33
0.300	3.23	78.83	21.17
0.212	1.79	80.58	19.42
0.150	1.39	81.94	18.06
0.063	1.65	83.56	16.44
-0.063 mm dry	0.14		
-0.063 mm wet	16.65		
-0.063 mm total	16.79		
TOTAL	***102.12***		

WET SIEVE

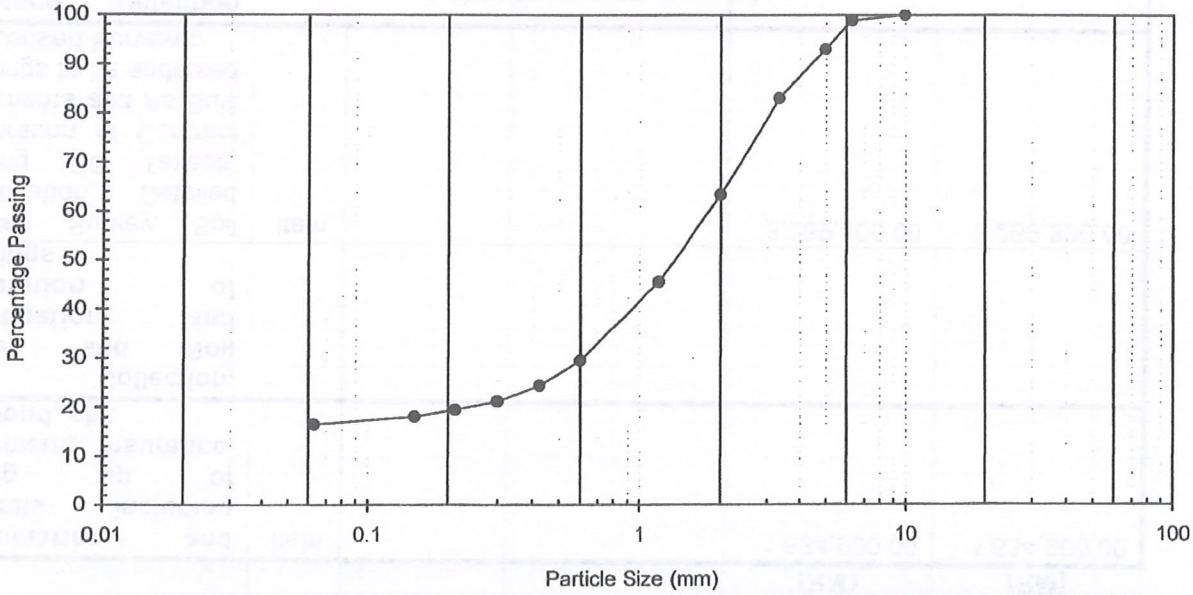
Weight of dried sample before washing through 0.063 mm sieve	(gm)	102.12
Weight of dried sample after washing through 0.063 mm sieve	(gm)	85.47
Weight of material washed through 0.063 mm sieve	(gm)	16.65
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	24/05/2013

Particle Size Distribution



CLAY & SILT	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*
16%		SAND	47%		GRAVEL	37%

Our Ref. : WS01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/21
	Field Sample No. : BH1/D2
Client: Pinsip Hasil Sdn. Bhd.	Depth : 3.90 m

DRY SIEVING

B.S. Seive (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000	0.00	0.00	100.00
10.000	2.56	2.36	97.64
6.300	2.57	4.72	95.28
5.000	2.15	6.70	93.30
3.350	4.28	10.64	89.36
2.000	10.32	20.15	79.85
1.180	10.97	30.25	69.75
0.600	8.20	37.80	62.20
0.425	2.14	39.77	60.23
0.300	1.44	41.09	58.91
0.212	1.03	42.04	57.96
0.150	0.85	42.82	57.18
0.063	0.91	43.66	56.34
-0.063 mm dry	0.06		
-0.063 mm wet	61.13		
-0.063 mm total	61.19		
TOTAL	*108.61*		

WET SIEVE

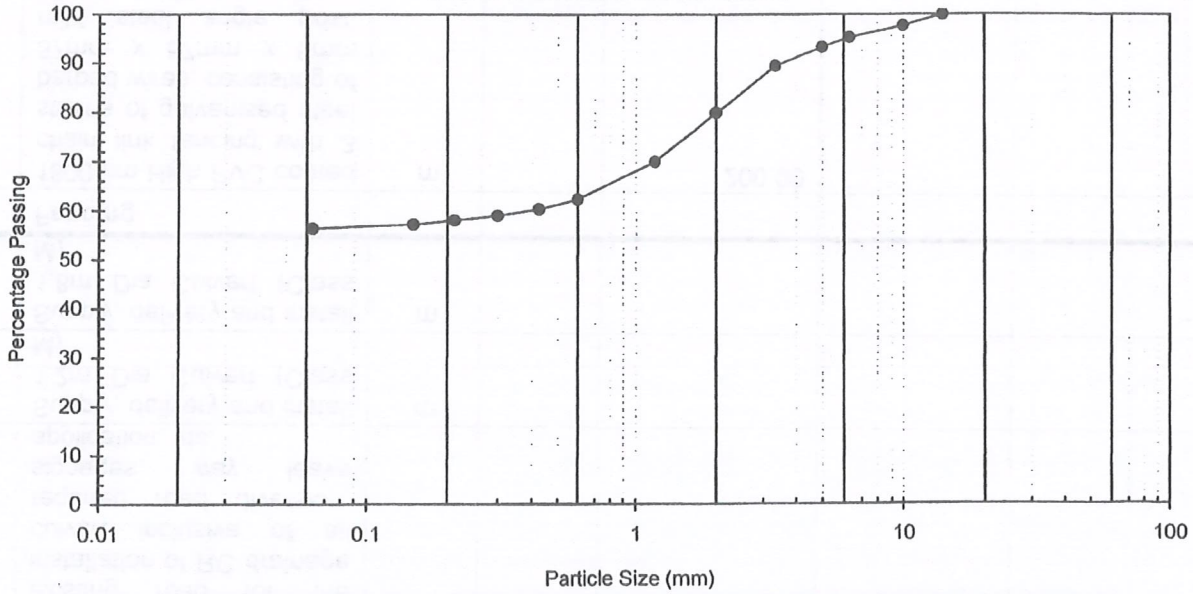
Weight of dried sample before washing through 0.063 mm sieve	(gm)	108.61
Weight of dried sample after washing through 0.063 mm sieve	(gm)	47.48
Weight of material washed through 0.063 mm sieve	(gm)	61.13
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	24/05/2013

Particle Size Distribution



CLAY & SILT	Fine	Medium	Coarse	Fine	Medium	Coarse
56%		SAND	24%		GRAVEL	20%

Our Ref. : WS02

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : SV/2013/22
	Field Sample No. : BH1/D3
Client:	Depth : 5.40 m

DRY SIEVING

B.S. Selve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing (%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000	0.00	0.00	100.00
6.300	19.00	16.17	83.83
5.000	8.56	23.45	76.55
3.350	8.98	31.09	68.91
2.000	11.77	41.10	58.90
1.180	11.68	51.04	48.96
0.600	5.65	55.85	44.15
0.425	15.48	69.02	30.98
0.300	17.24	83.69	16.31
0.212	13.04	94.78	5.22
0.150	2.60	97.00	3.00
0.063	0.52	97.44	2.56
-0.063 mm dry	0.20		
-0.063 mm wet	2.81		
-0.063 mm total	3.01		
TOTAL	*117.53*		

WET SIEVE

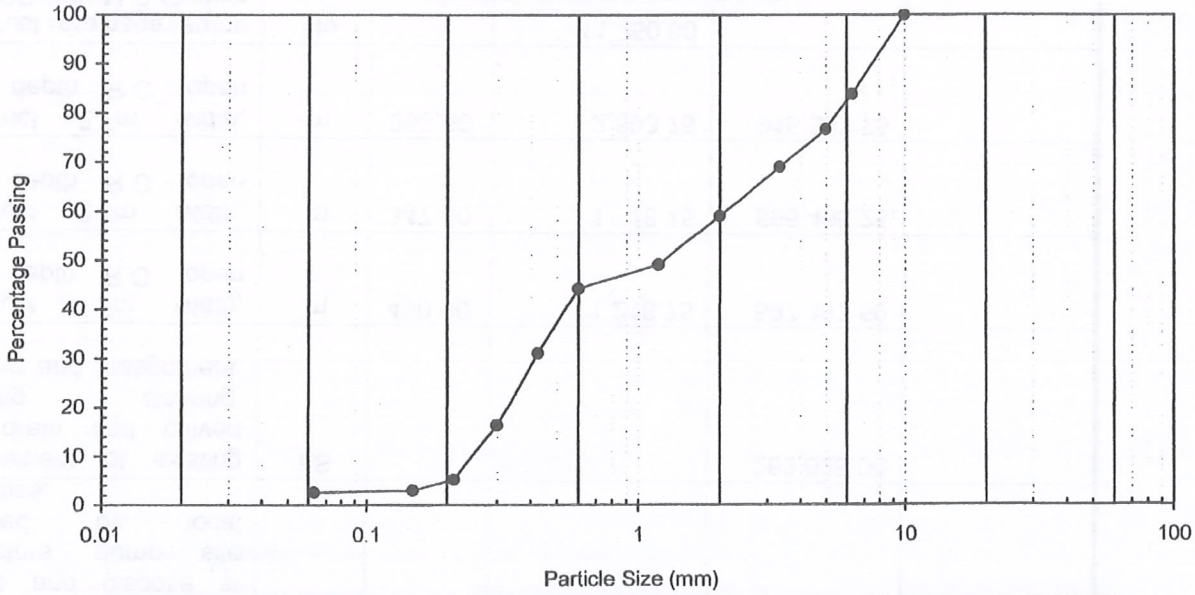
Weight of dried sample before washing through 0.063 mm sieve	(gm)	117.53
Weight of dried sample after washing through 0.063 mm sieve	(gm)	114.72
Weight of material washed through 0.063 mm sieve	(gm)	2.81
Natural Moisture Content	(%)	

Sample Description : Refer to Borehole Log.

Remarks :

Tested By	:	Eddie
Checked By	:	Tommie
Date	:	24/05/2013

Particle Size Distribution



CLAY & SILT	*Fine*	*Medium*	*Coarse*	*Fine*	*Medium*	*Coarse*
3%		SAND	56%		GRAVEL	41%

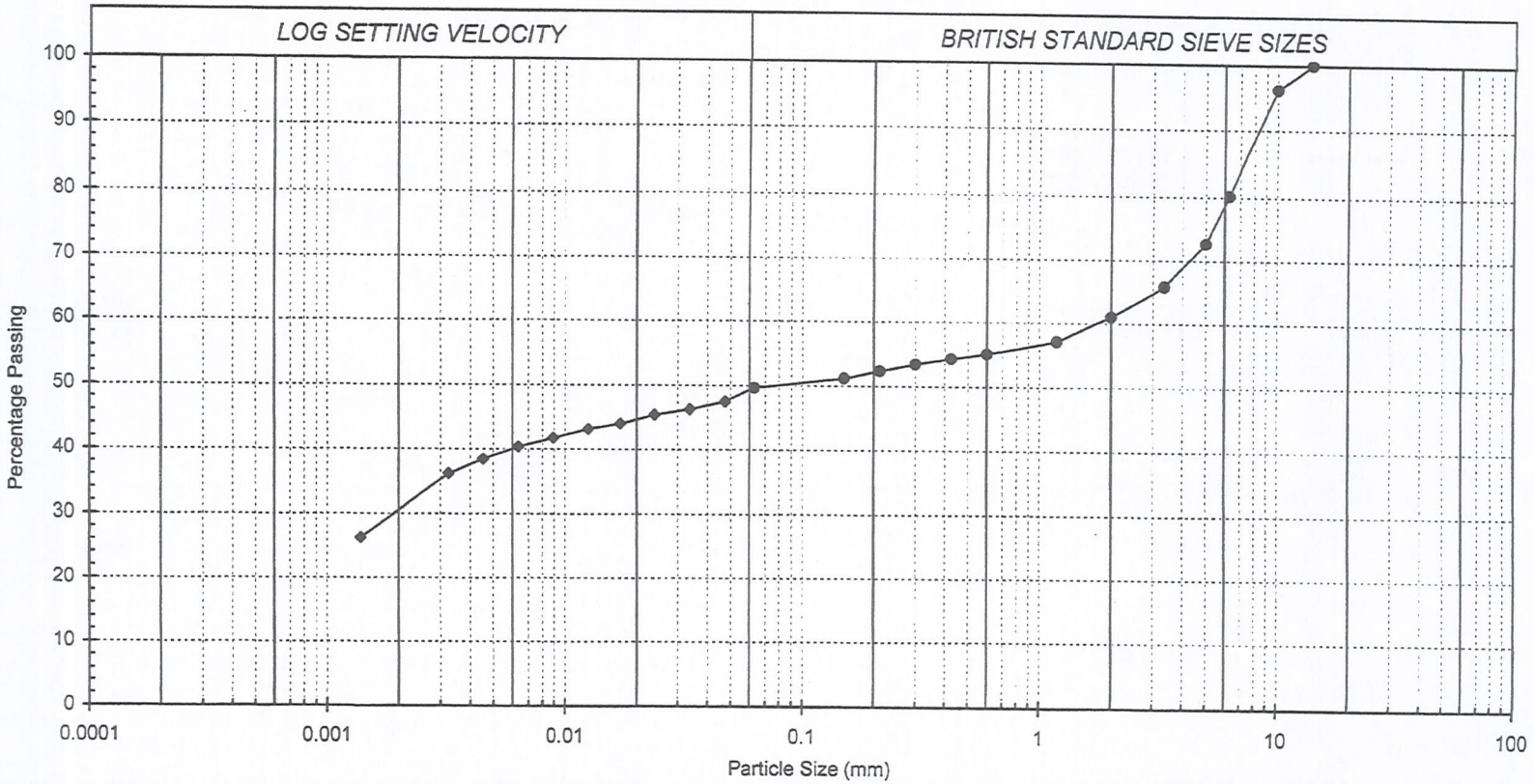
Our Ref. : WS03

Particle Size Analysis Hydrometer

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/77
	Field Sample No. : BH1/UD1
Client :	Depth : 1.05 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 24/05/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
←	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION			

RESULTS	
Gravel (%)	39
Sand (%)	12
Silt (%)	19
Clay (%)	30

Our Ref. : WH01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/77
Client :	Field Sample No. : BH1/UD1
	Depth : 1.05 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 24/05/2013

Hydrometer No.	1377
Measuring Cylinder No.	S5
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	57.30
Weight after pre-treatment (gm)	56.89
Specific Gravity, G_s	2.65

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
24/05/2013	1040 hrs	26	30 secs	17	17.5	12.8	9.86	0.42639	0.06483	18.78	53.02
24/05/2013		26	1 min	15	15.5	13.6	9.86	0.22731	0.04733	16.78	47.37
24/05/2013		26	2 mins	14.6	15.1	13.8	9.86	0.11506	0.03368	16.38	46.24
24/05/2013		26	4 mins	14.3	14.8	13.9	9.86	0.05806	0.02392	16.08	45.40
24/05/2013		26	8 mins	13.8	14.3	14.1	9.86	0.02947	0.01704	15.58	43.98
24/05/2013		26	15 mins	13.5	14.0	14.3	9.86	0.01586	0.01250	15.28	43.14
24/05/2013		26	30 mins	13	13.5	14.5	9.86	0.00805	0.00891	14.78	41.73
24/05/2013	1140 hrs	26	1 hour	12.5	13.0	14.7	9.86	0.00408	0.00634	14.28	40.31
24/05/2013	1240 hrs	26	2 hours	11.8	12.3	15.0	9.86	0.00208	0.00453	13.58	38.34
24/05/2013	1440 hrs	26	4 hours	11	11.5	15.3	9.86	0.00106	0.00324	12.78	36.08
25/05/2013	1040 hrs	26	24 hours	7.5	8.0	16.8	9.86	0.00019	0.00138	9.28	26.20

Our Ref. : WH01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/77
	Field Sample No. : BH1/UD1
Client :	Depth : 1.05 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	56.89
Weight of dried sample after washing through 0.063 mm sieve	(gm)	28.87
Weight of material washed through 0.063 mm sieve	(gm)	28.02

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000	0.00	0.00	100.00
10.000	2.12	3.73	96.27
6.300	9.15	19.81	80.19
5.000	4.28	27.33	72.67
3.350	3.87	34.14	65.86
2.000	2.75	38.97	61.03
1.180	2.21	42.85	57.15
0.600	1.16	44.89	55.11
0.425	0.45	45.68	54.32
0.300	0.52	46.60	53.40
0.212	0.59	47.64	52.36
0.150	0.66	48.80	51.20
0.063	0.92	50.41	49.59
- 0.063 mm dry	0.19		
- 0.063 mm wet	28.02		
- 0.063 mm total	28.21		
TOTAL	***56.89***		

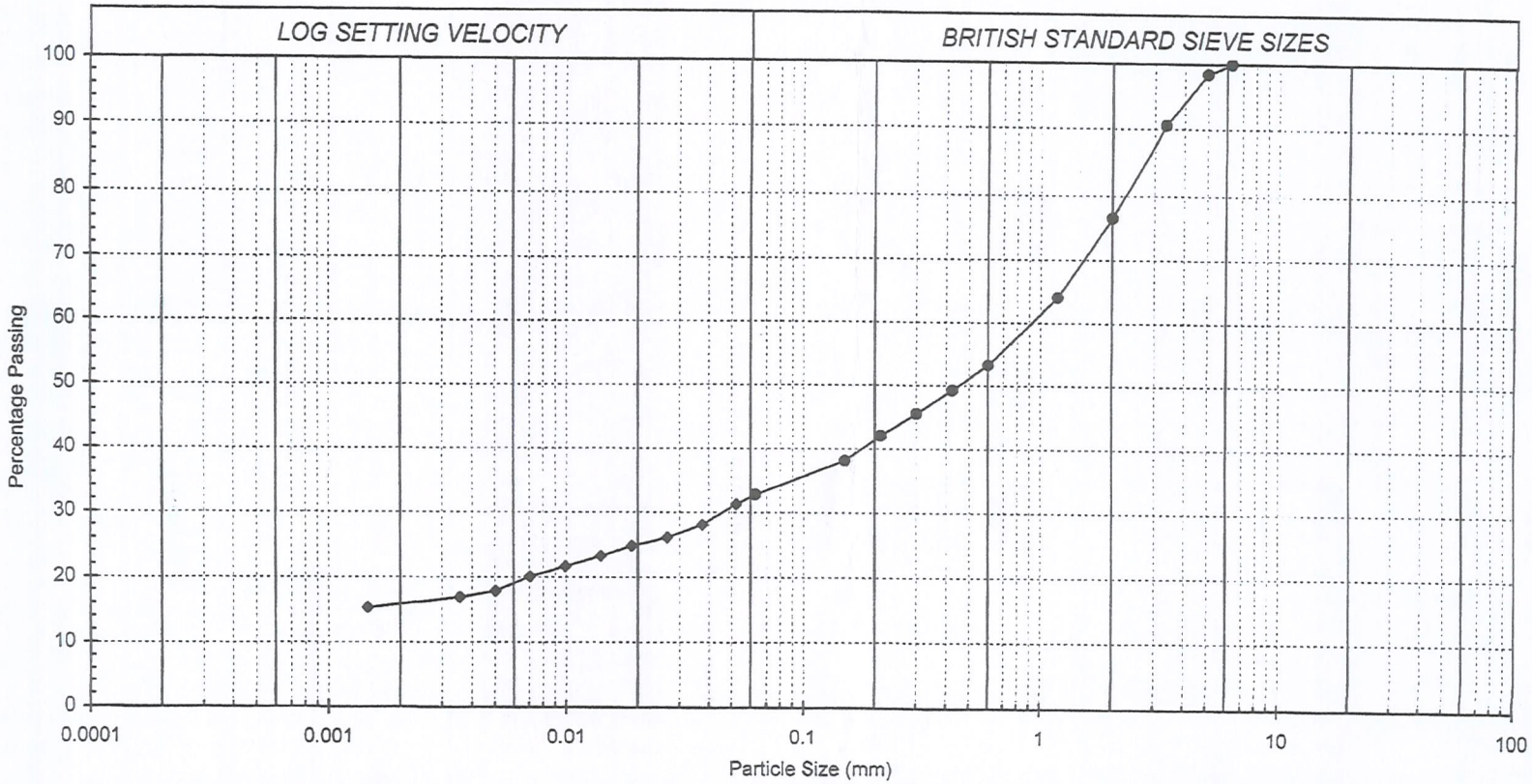
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 24/05/2013

Our Ref. : WH01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :		Lab Sample No. :	HD/2013/89
		Field Sample No. :	BH2/UD1
Client :		Depth :	0.95 m
Sample Description : Refer to Borehole Log.		Tested By :	Eddie
		Checked By :	Tommie
Remarks :		Date :	10/06/2013

PARTICLE SIZE DISTRIBUTION



RESULTS	
Gravel (%)	23
Sand (%)	45
Silt (%)	16
Clay (%)	16

Our Ref. : WH02

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/89
	Field Sample No. : BH2/UD1
Client :	Depth : 0.95 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

Hydrometer No.	1377
Measuring Cylinder No.	S1
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	51.50
Weight after pre-treatment (gm)	50.33
Specific Gravity, G_s	2.65

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
10/06/2013	0933 hrs	26	30 secs	9	9.5	16.2	9.86	0.53928	0.07291	10.78	34.40
10/06/2013		26	1 min	8	8.5	16.6	9.86	0.27669	0.05222	9.78	31.21
10/06/2013		26	2 mins	7	7.5	17.0	9.86	0.14188	0.03740	8.78	28.02
10/06/2013		26	4 mins	6.4	6.9	17.3	9.86	0.07200	0.02664	8.18	26.10
10/06/2013		26	8 mins	6	6.5	17.4	9.86	0.03635	0.01893	7.78	24.83
10/06/2013		26	15 mins	5.5	6.0	17.7	9.86	0.01962	0.01391	7.28	23.23
10/06/2013		26	30 mins	5	5.5	17.9	9.86	0.00993	0.00989	6.78	21.64
10/06/2013	1033 hrs	26	1 hour	4.5	5.0	18.1	9.86	0.00502	0.00704	6.28	20.04
10/06/2013	1133 hrs	26	2 hours	3.8	4.3	18.4	9.86	0.00255	0.00502	5.58	17.81
10/06/2013	1333 hrs	26	4 hours	3.5	4.0	18.5	9.86	0.00129	0.00356	5.28	16.85
11/06/2013	0933 hrs	26	24 hours	3	3.5	18.7	9.86	0.00022	0.00146	4.78	15.25

Our Ref. : WH02

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/89
	Field Sample No. : BH2/UD1
Client : [illegible]	Depth : 0.95 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	50.33
Weight of dried sample after washing through 0.063 mm sieve	(gm)	34.22
Weight of material washed through 0.063 mm sieve	(gm)	16.11

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000			
6.300	0.00	0.00	100.00
5.000	0.79	1.57	98.43
3.350	4.00	9.52	90.48
2.000	7.03	23.48	76.52
1.180	6.36	36.12	63.88
0.600	5.41	46.87	53.13
0.425	1.99	50.82	49.18
0.300	1.83	54.46	45.54
0.212	1.77	57.98	42.02
0.150	2.02	61.99	38.01
0.063	2.66	67.28	32.72
- 0.063 mm dry	0.36		
- 0.063 mm wet	16.11		
- 0.063 mm total	16.47		
TOTAL	***50.33***		

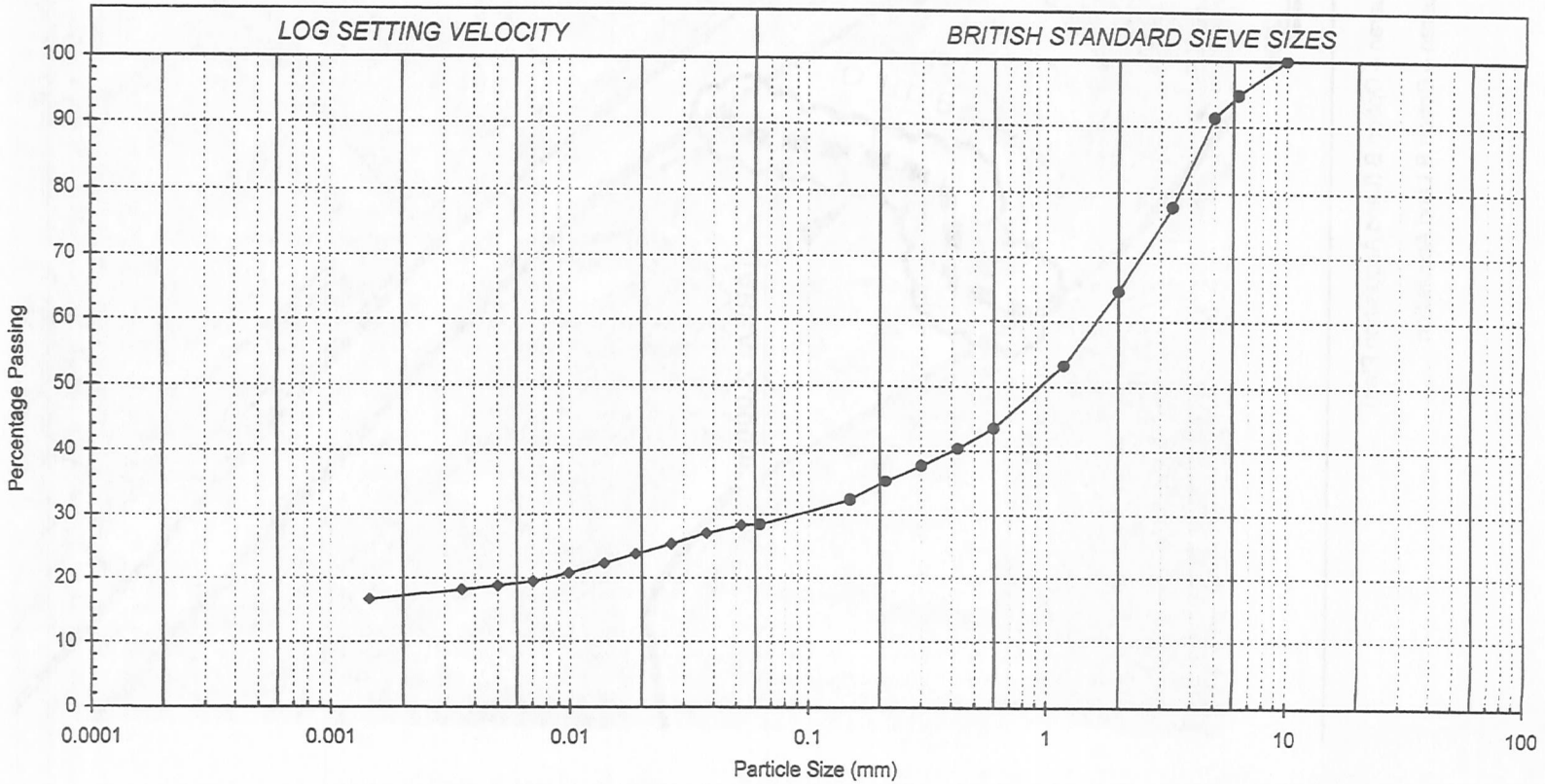
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

Our Ref. : WH02

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/90
	Field Sample No. : BH2/D1
Client :	Depth : 1.95 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
←	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		

RESULTS		
Gravel	(%)	35
Sand	(%)	37
Silt	(%)	11
Clay	(%)	17

Our Ref. : WH03

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/90
	Field Sample No. : BH2/D1
Client : [illegible]	Depth : 1.95 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

Hydrometer No.	1377
Measuring Cylinder No.	S2
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	52.10
Weight after pre-treatment (gm)	50.96
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
10/06/2013	0936 hrs	26	30 secs	9.8	10.3	15.8	9.80	0.52799	0.07192	11.58	36.41
10/06/2013		26	1 min	7.2	7.7	16.9	9.80	0.28234	0.05259	8.98	28.24
10/06/2013		26	2 mins	6.8	7.3	17.1	9.80	0.14258	0.03738	8.58	26.98
10/06/2013		26	4 mins	6.3	6.8	17.3	9.80	0.07217	0.02659	8.08	25.41
10/06/2013		26	8 mins	5.8	6.3	17.5	9.80	0.03653	0.01892	7.58	23.83
10/06/2013		26	15 mins	5.3	5.8	17.7	9.80	0.01972	0.01390	7.08	22.26
10/06/2013		26	30 mins	4.8	5.3	18.0	9.80	0.00998	0.00989	6.58	20.69
10/06/2013	1036 hrs	26	1 hour	4.4	4.9	18.1	9.80	0.00503	0.00702	6.18	19.43
10/06/2013	1136 hrs	26	2 hours	4.2	4.7	18.2	9.80	0.00253	0.00498	5.98	18.80
10/06/2013	1336 hrs	26	4 hours	4	4.5	18.3	9.80	0.00127	0.00353	5.78	18.17
11/06/2013	0936 hrs	26	24 hours	3.5	4.0	18.5	9.80	0.00021	0.00145	5.28	16.60

Our Ref. : WH03

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/90
	Field Sample No. : BH2/D1
Client :	Depth : 1.95 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	50.96
Weight of dried sample after washing through 0.063 mm sieve	(gm)	36.72
Weight of material washed through 0.063 mm sieve	(gm)	14.24

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000			
10.000	0.00	0.00	100.00
6.300	2.72	5.34	94.66
5.000	1.74	8.75	91.25
3.350	6.86	22.21	77.79
2.000	6.71	35.38	64.62
1.180	5.84	46.84	53.16
0.600	4.91	56.48	43.52
0.425	1.64	59.69	40.31
0.300	1.37	62.38	37.62
0.212	1.27	64.87	35.13
0.150	1.47	67.76	32.24
0.063	1.97	71.62	28.38
- 0.063 mm dry	0.22		
- 0.063 mm wet	14.24		
- 0.063 mm total	14.46		
TOTAL	***50.96***		

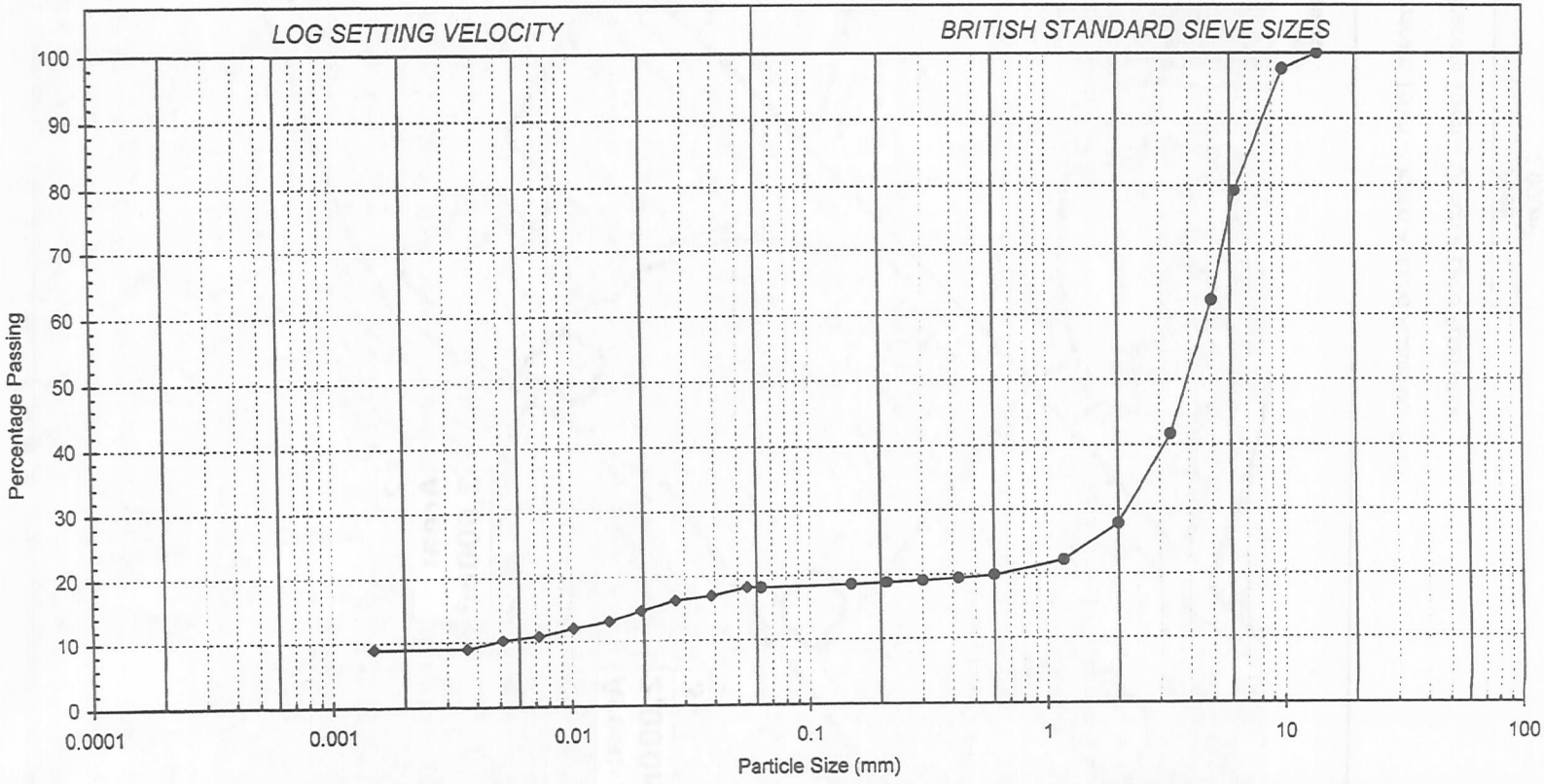
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

Our Ref. : WH03

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :		Lab Sample No.	: HD/2013/91
		Field Sample No.	: BH2/D2
Client :		Depth	: 3.90 m
Sample Description : Refer to Borehole Log.		Tested By	: Eddie
		Checked By	: Tommie
Remarks :		Date	: 10/06/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
←	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		

RESULTS		
Gravel	(%)	72
Sand	(%)	10
Silt	(%)	9
Clay	(%)	9

Our Ref. : WH04

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/91
	Field Sample No. : BH2/D2
Client :	Depth : 3.90 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

Hydrometer No.	1377
Measuring Cylinder No.	S3
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	51.30
Weight after pre-treatment (gm)	50.08
Specific Gravity, G_s	2.67

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
10/06/2013	0939 hrs	26	30 secs	6.8	7.3	17.1	9.74	0.57032	0.07453	8.58	27.39
10/06/2013		26	1 min	3.9	4.4	18.3	9.74	0.30562	0.05456	5.68	18.13
10/06/2013		26	2 mins	3.5	4.0	18.5	9.74	0.15422	0.03875	5.28	16.86
10/06/2013		26	4 mins	3.3	3.8	18.6	9.74	0.07746	0.02747	5.08	16.22
10/06/2013		26	8 mins	2.8	3.3	18.8	9.74	0.03917	0.01953	4.58	14.62
10/06/2013		26	15 mins	2.3	2.8	19.0	9.74	0.02113	0.01434	4.08	13.03
10/06/2013		26	30 mins	2	2.5	19.1	9.74	0.01063	0.01018	3.78	12.07
10/06/2013	1039 hrs	26	1 hour	1.6	2.1	19.3	9.74	0.00536	0.00723	3.38	10.79
10/06/2013	1139 hrs	26	2 hours	1.4	1.9	19.4	9.74	0.00269	0.00512	3.18	10.15
10/06/2013	1339 hrs	26	4 hours	1	1.5	19.6	9.74	0.00136	0.00364	2.78	8.88
11/06/2013	0939 hrs	26	24 hours	1	1.5	19.6	9.74	0.00023	0.00149	2.78	8.88

Our Ref. : WH04

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/91
	Field Sample No. : BH2/D2
Client :	Depth : 3.90 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	50.08
Weight of dried sample after washing through 0.063 mm sieve	(gm)	41.10
Weight of material washed through 0.063 mm sieve	(gm)	8.98

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000	0.00	0.00	100.00
10.000	1.18	2.36	97.64
6.300	9.26	20.85	79.15
5.000	8.53	37.88	62.12
3.350	10.33	58.51	41.49
2.000	6.88	72.24	27.76
1.180	2.89	78.02	21.98
0.600	1.10	80.21	19.79
0.425	0.23	80.67	19.33
0.300	0.18	81.03	18.97
0.212	0.13	81.29	18.71
0.150	0.12	81.53	18.47
0.063	0.21	81.95	18.05
- 0.063 mm dry	0.06		
- 0.063 mm wet	8.98		
- 0.063 mm total	9.04		
TOTAL	***50.08***		

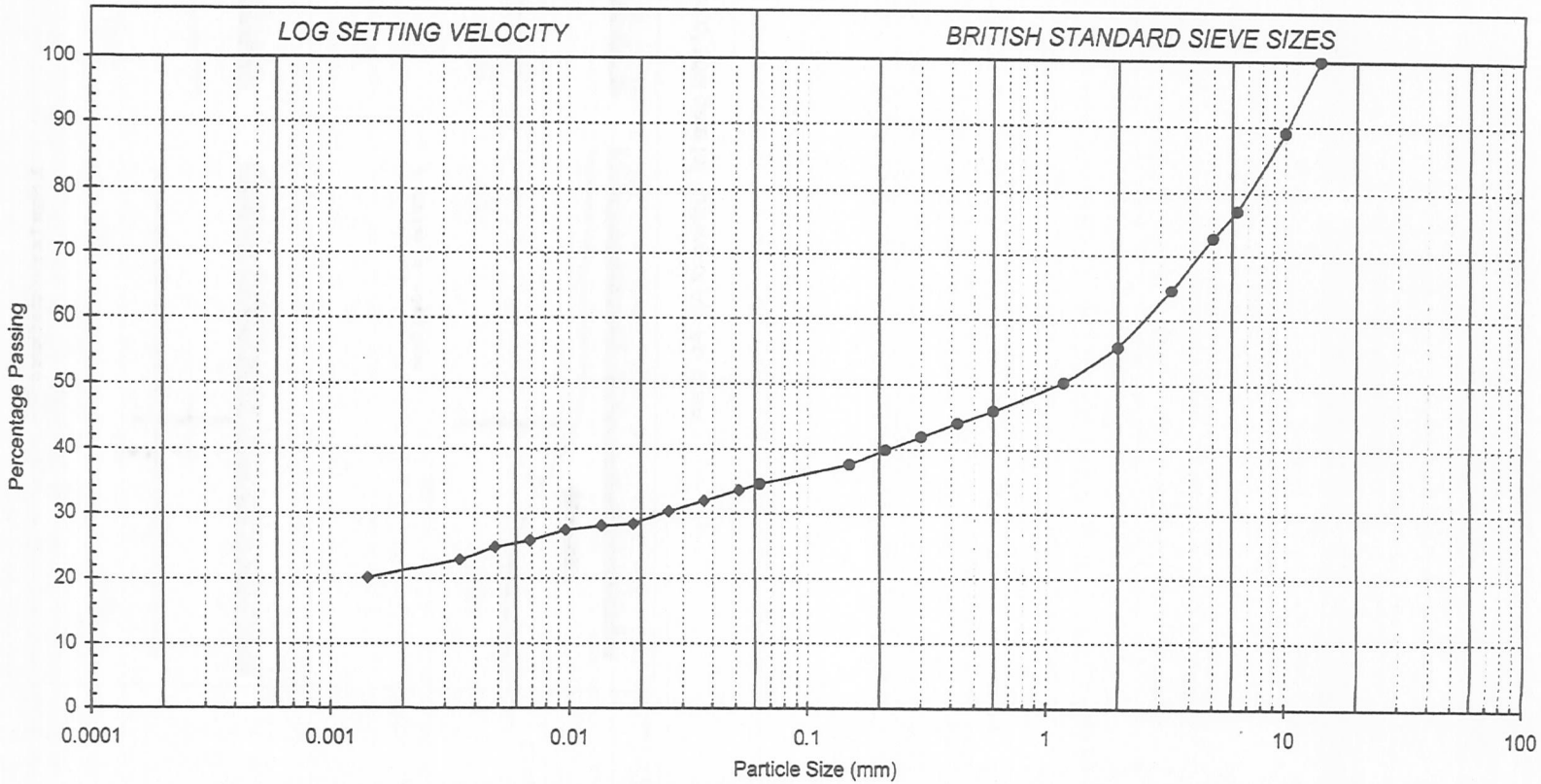
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

Our Ref. : WH04

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/92
	Field Sample No. : BH2/D3
Client :	Depth : 5.24 m
Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

PARTICLE SIZE DISTRIBUTION



CLAY FRACTION	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
←	SILT FRACTION			SAND FRACTION			GRAVEL FRACTION		

RESULTS		
Gravel	(%)	44
Sand	(%)	22
Silt	(%)	13
Clay	(%)	21

Our Ref. : WH05

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/92
	Field Sample No. : BH2/D3
Client :	Depth : 5.24 m

PARTICLE SIZE ANALYSIS HYDROMETER

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

Hydrometer No.	1377
Measuring Cylinder No.	S4
Meniscus Correction, C_m	0.5
PH Value	-
Air Dry Moisture Content (%)	-
Weight before pre-treatment (gm)	51.30
Weight after pre-treatment (gm)	50.12
Specific Gravity, G_s	2.66

Date	Time	Temp (°C)	Elapsed Time, t	Hydrometer Reading, R_h^1	Corrected Hydrometer Reading $R_h = R_h^1 + C_m$	Effective Depth H_R	Constant B	Velocity, V (cm/sec)	Equivalent Particle Diameter	$R_h + m_t - x$	% of particles finer than the corresponding particle diameter
10/06/2013	0942 hrs	26	30 secs	9.5	10.0	16.0	9.80	0.53222	0.07221	11.28	36.06
10/06/2013		26	1 min	8.7	9.2	16.3	9.80	0.27176	0.05160	10.48	33.51
10/06/2013		26	2 mins	8.2	8.7	16.5	9.80	0.13764	0.03672	9.98	31.91
10/06/2013		26	4 mins	7.7	8.2	16.7	9.80	0.06970	0.02613	9.48	30.31
10/06/2013		26	8 mins	7.1	7.6	17.0	9.80	0.03538	0.01862	8.88	28.39
10/06/2013		26	15 mins	7	7.5	17.0	9.80	0.01892	0.01361	8.78	28.07
10/06/2013		26	30 mins	6.8	7.3	17.1	9.80	0.00951	0.00965	8.58	27.43
10/06/2013	1042 hrs	26	1 hour	6.3	6.8	17.3	9.80	0.00481	0.00687	8.08	25.83
10/06/2013	1142 hrs	26	2 hours	6	6.5	17.4	9.80	0.00242	0.00487	7.78	24.87
10/06/2013	1342 hrs	26	4 hours	5.4	5.9	17.7	9.80	0.00123	0.00347	7.18	22.96
11/06/2013	0942 hrs	26	24 hours	4.5	5.0	18.1	9.80	0.00021	0.00143	6.28	20.08

Our Ref. : WH05

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : HD/2013/92
	Field Sample No. : BH2/D3
Client :	Depth : 5.24 m

WET SIEVE

Weight of dried sample before washing through 0.063 mm sieve	(gm)	50.12
Weight of dried sample after washing through 0.063 mm sieve	(gm)	33.01
Weight of material washed through 0.063 mm sieve	(gm)	17.11

DRY SIEVING

B. S. Sieve (mm)	Weight Retained (gm)	Percentage Retained (%)	Total Percentage Passing(%)
75.000			
63.000			
50.000			
37.500			
28.000			
20.000			
14.000	0.00	0.00	100.00
10.000	5.52	11.01	88.99
6.300	5.98	22.94	77.06
5.000	2.13	27.19	72.81
3.350	4.19	35.55	64.45
2.000	4.42	44.37	55.63
1.180	2.70	49.76	50.24
0.600	2.16	54.07	45.93
0.425	1.00	56.07	43.93
0.300	1.05	58.16	41.84
0.212	1.02	60.20	39.80
0.150	1.14	62.47	37.53
0.063	1.53	65.52	34.48
- 0.063 mm dry	0.17		
- 0.063 mm wet	17.11		
- 0.063 mm total	17.28		
TOTAL	***50.12***		

Sample Description : Refer to Borehole Log.	Tested By : Eddie
	Checked By : Tommie
Remarks :	Date : 10/06/2013

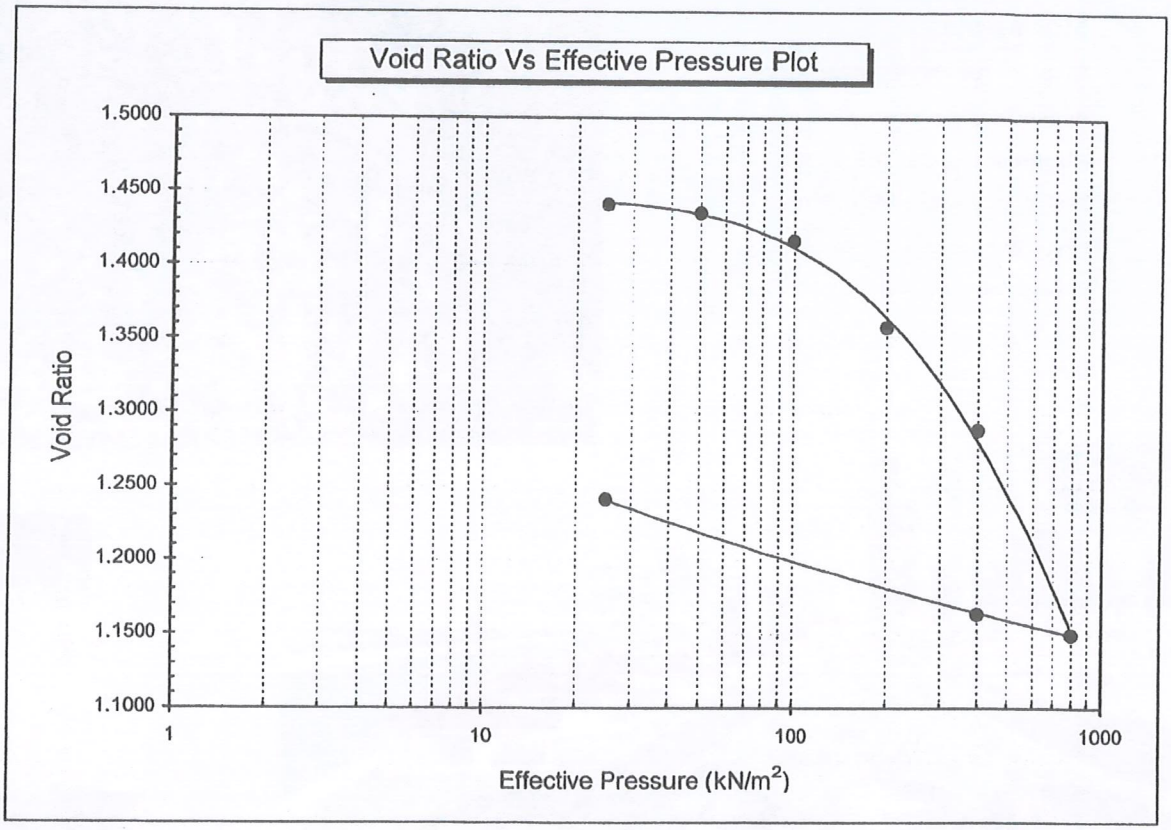
One Dimensional Consolidation Test Results

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : S2013/442
	Field Sample No. : BH1/UD1
Client	Depth : 1.05 m

ONE DIMENSIONAL CONSOLIDATION TEST

Void Ratio Vs Effective Pressure Plot



Pressure Range (kN/m^2)	Compression Ratio		
	Initial, r_o	*Primary, r_p*	*Secondary, r_s*

Initial Moisture Content (%)
46.22
Initial Bulk Density (kg/m^3)
1585
Specific Gravity
2.65
Effective Overburden Pressure, P_o (kN/m^2)
42.19
Void Ratio
1.4375
m_v (m^2/MN)
0.1863

Sample Description : Refer to Borehole Log.	Tested By : John
	Checked By : Ho
Remarks :	Date : 27/05/2013

Our Ref. : WD01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : S2013/442
	Field Sample No. : BH1/UD1
Client :	Depth : 1.05 m

ONE DIMENSIONAL CONSOLIDATION TEST

		Before Test	*After Test*
Specimen Diameter	(mm)	50.0000	50.0000
Measured Thickness	(mm)	20.0000	17.5920
Mass of Ring and Wet Specimen	(gm)	130.38	128.80
Mass of Ring and Dry Specimen	(gm)	110.70	110.70
Mass of Ring	(gm)	68.12	68.12
Mass of Dry Specimen	(gm)	42.58	42.58
Mass of Wet Specimen	(gm)	62.26	60.68
Moisture Content	(%)	46.22	42.51
Bulk Density	(kg/m^3)	1585	1757
Dry Density	(kg/m^3)	1084	1233
Degree of Saturation	(%)	84.82	97.98
Specific Gravity		2.65	2.65
Height of Soil Particles	(mm)	8.1833	8.1833

Applied Pressure (kN/m^2)	Final Dial Reading	Change in Height (mm)	Height of Sample (mm)	Void Height (mm)	Void Ratio
0	0	0.0000	20.0000	11.8167	1.4440
25	12	0.0240	19.9760	11.7927	1.4411
50	34	0.0440	19.9320	11.7487	1.4357
100	111	0.1540	19.7780	11.5947	1.4169
200	350	0.4780	19.3000	11.1167	1.3585
400	636	0.5720	18.7280	10.5447	1.2886
800	1204	1.1360	17.5920	9.4087	1.1497
400	1147	-0.1140	17.7060	9.5227	1.1637
25	830	-0.6340	18.3400	10.1567	1.2411
0	785	-0.0900	18.4300	10.2467	1.2521

Pressure Range (kN/m^2)	Average Height of Sample, $\bar{H}$ (mm)	$\bar{H}^2$	$\sqrt{t_{90}}$ (min)	t_{90} (min)	Compression Index, C_c	Coefficient of Consolidation, C_v (m^2/year)	Coefficient of Compressibility, m_v (m^2/MN)
0 - 25	19.9880	399.52	1.36	1.85		23.98	0.0480
25 - 50	19.9540	398.16	1.10	1.21	0.0179	36.53	0.0881
50 - 100	19.8550	394.22	1.17	1.37	0.0625	31.97	0.1545
100 - 200	19.5390	381.77	1.08	1.17	0.1940	36.33	0.2417
200 - 400	19.0140	361.53	1.23	1.51	0.2322	26.53	0.1482
400 - 800	18.1600	329.79	5.10	26.01	0.4611	1.41	0.1516

Sample Description : Refer to Borehole Log.	Tested By : John
	Checked By : Ho
Remarks :	Date : 27/05/2013

Our Ref. : WD01

Unconsolidated Undrained Triaxial Compression Test Results (U U U)

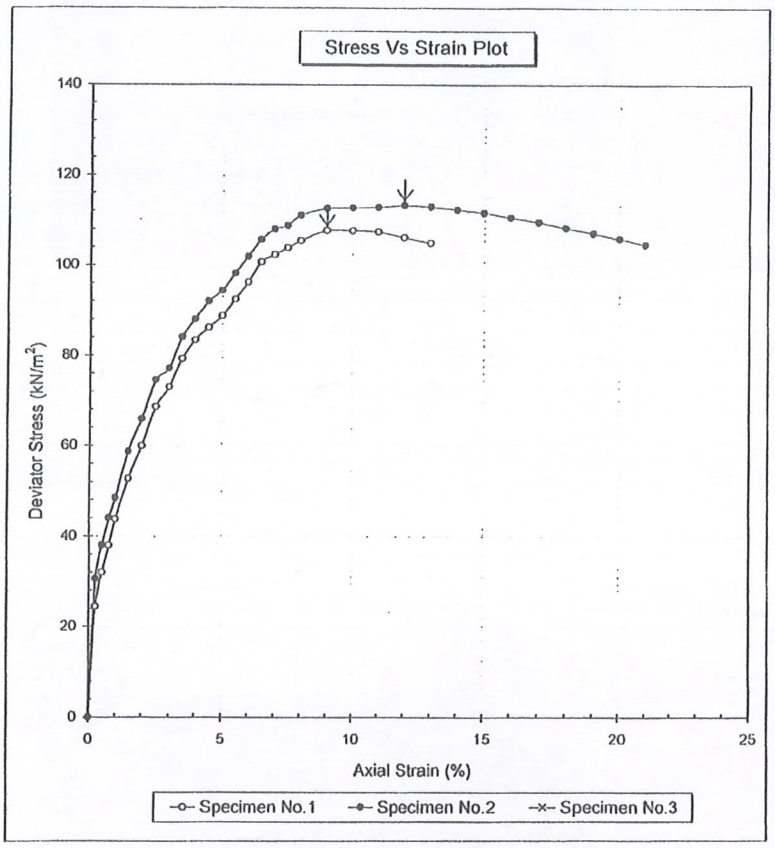
JARABUMI BERGABUNG SDN. BHD. (647710-P)

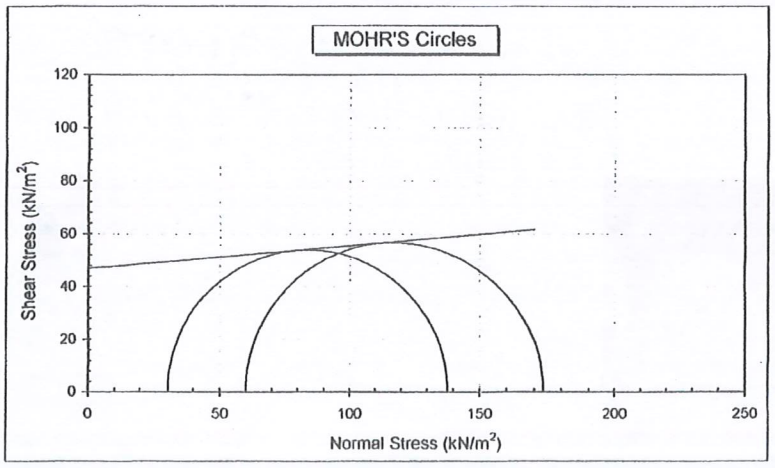
Project :	Lab Sample No. : S2013/442
	Field Sample No. : BH1/UD1
Client :	Depth : 1.05 m

TRIAXIAL COMPRESSION TEST

Date : 23/05/2013
Test No. :
Type of Test : U-U-U

Tested By : Ivan
Checked By : Ho





SPECIMEN DETAILS			
No.	1	2	3
Diameter (cm)	5.000	5.000	
Height (cm)	10.000	10.000	
PHYSICAL PROPERTIES			
Total Unit Weight (kg/m³)	1484	1480	
Initial Moisture Content (%)	39.09	40.47	
Moisture Content after Saturation (%)			
Liquid Limit (%)			
Plasticity Index (%)			
TESTING CONDITIONS AND RESULTS			
Cell Pressure (kN/m²)	30	60	
Strain at Failure (%)	9.00	12.00	
Deviator Stress at Failure (kN/m²)	107.754	113.347	
Undrained Shear Strength (kN/m²)	53.877	56.674	
Cohesion (kN/m²)	46.90		
Friction (degrees)	4.89		
REMARKS			
Shearing Rate (% per minute)	1		
Back Pressure (kN/m²)			

Sample Description :
Refer to Borehole Log.

Our Ref. : WTT01

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Project :	Lab Sample No. : S2013/442
	Field Sample No. : BH1/UD1
Client :	Depth : 1.05 m

TRIAXIAL COMPRESSION TEST

Date of Test	: 23/05/2013	*Specimen No.*	:	*1*	*2*	*3*
Test No.	:	Final Mass (g)	:			
Type of Test	: U-U-U	Height (cm)	:	10.000	10.000	
Back Pressure (kN/m^2)	:	Diameter (cm)	:	5.000	5.000	
Liquid Limit (%)	:	Wet Mass (g)	:	291.42	290.50	
Plasticity Index (%)	:	Dry Mass (g)	:	209.52	206.80	
Tested By	: Ivan	Bulk Density (kg/m^3)	:	1484	1480	
Checked By	: Ho	Dry Density (kg/m^3)	:	1067	1053	
Sample Description :		Initial Moisture Content (%)	:	39.09	40.47	
Refer to Borehole Log.		Moisture Content after saturation(%)	:			
		Cell Pressure (kN/m^2)	:	30	60	
		Proving Ring Constant (kN/div.)	:	0.003	0.003	

Dial Gauge Reading X 0.001 cm	Strain (%)	Corrected Area (cm^2)	Proving Ring Reading			Axial Load (kN)			Deviator Stress (kN/m^2)		
			1	2	3	1	2	3	1	2	3
0	0.00	19.635	0.0	0.0		0.000	0.000		0.000	0.000	
25	0.25	19.684	16.0	20.0		0.048	0.060		24.385	30.482	
50	0.50	19.734	21.0	25.0		0.063	0.075		31.925	38.005	
75	0.75	19.783	25.0	29.0		0.075	0.087		37.911	43.977	
100	1.00	19.833	28.9	32.0		0.087	0.096		43.715	48.404	
150	1.50	19.934	35.0	39.0		0.105	0.117		52.674	58.694	
200	2.00	20.036	40.0	44.0		0.120	0.132		59.892	65.881	
250	2.50	20.138	46.0	50.0		0.138	0.150		68.527	74.486	
300	3.00	20.242	49.2	52.0		0.148	0.156		72.918	77.067	
350	3.50	20.347	53.7	57.0		0.161	0.171		79.176	84.042	
400	4.00	20.453	56.8	60.0		0.170	0.180		83.313	88.007	
450	4.50	20.560	59.0	63.0		0.177	0.189		86.089	91.926	
500	5.00	20.668	61.1	65.0		0.183	0.195		88.688	94.349	
550	5.50	20.778	64.0	68.0		0.192	0.204		92.405	98.181	
600	6.00	20.888	67.0	71.0		0.201	0.213		96.227	101.972	
650	6.50	21.000	70.5	74.0		0.212	0.222		100.714	105.714	
700	7.00	21.113	72.0	76.0		0.216	0.228		102.307	107.990	
750	7.50	21.227	73.5	77.0		0.221	0.231		103.877	108.824	
800	8.00	21.342	75.0	79.0		0.225	0.237		105.426	111.049	
900	9.00	21.577	77.5	81.0		0.233	0.243		107.754	112.620	
1000	10.00	21.817	78.3	82.0		0.235	0.246		107.668	112.756	
1100	11.00	22.062	79.0	83.0		0.237	0.249		107.425	112.864	
1200	12.00	22.312	79.0	84.3		0.237	0.253		106.221	113.347	
1300	13.00	22.569	79.0	85.0		0.237	0.255		105.011	112.987	
1400	14.00	22.831		85.5			0.257			112.347	
1500	15.00	23.100		86.0			0.258			111.688	
1600	16.00	23.375		86.2			0.259			110.631	
1700	17.00	23.657		86.4			0.259			109.566	
1800	18.00	23.945		86.5			0.260			108.373	
1900	19.00	24.241		86.6			0.260			107.174	
2000	20.00	24.544		86.7			0.260			105.973	
2100	21.00	24.854		86.7			0.260			104.651	

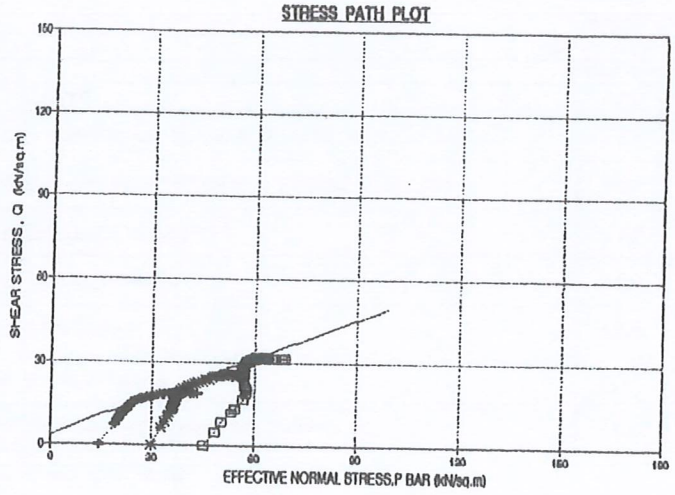
Our Ref. : WTT01

Consolidated Undrained Triaxial Compression Test Results

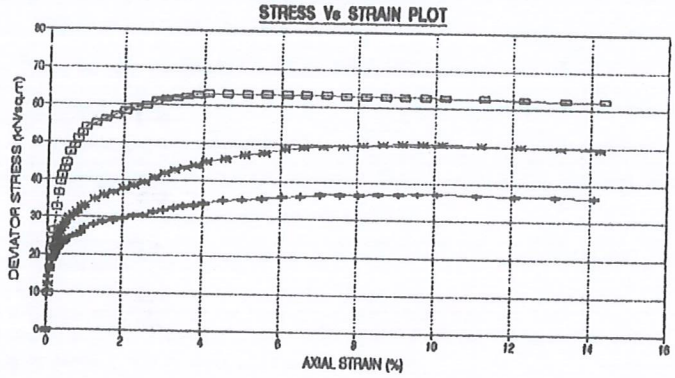
(C I U)

Borehole No.	: BH-2	Date	: 26-05-2013
Sample No.	: UD-1	Test No.	: -
Depth (m)	: 0.50-0.95	Type of Test	: CIU (Single Stage)

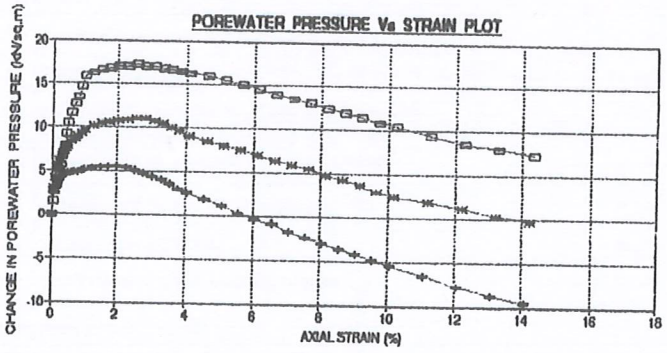
STRESS PATH PLOT



STRESS Vs STRAIN PLOT



POREWATER PRESSURE Vs STRAIN PLOT



Specimen No.1 Specimen No.2 Specimen No.3

SPECIMEN DETAILS			
No.	1	2	3
DIAMETER (cm)	5.000	5.000	5.000
HEIGHT (cm)	10.000	10.000	10.000
PHYSICAL PROPERTIES (INITIAL)			
* TOTAL UNIT WEIGHT (kN/cu.m)	18.00	18.04	17.61
* MOISTURE CONTENT (%)	30	31	31
VOID RATIO	0.910	0.915	0.964
DEGREE OF SATURATION (%)	90	91	87
PHYSICAL PROPERTIES (FINAL)			
TOTAL UNIT WEIGHT (kN/cu.m)	18.68	18.95	18.89
MOISTURE CONTENT (%)	32	30	31
VOID RATIO	0.870	0.814	0.825
DEGREE OF SATURATION (%)	100	100	100
FAILURE CONDITION			
CONSOLIDATION PRESSURE (kN/sq.m)	15	30	45
STRAIN (%)	2.27	3.31	4.10
EFFECTIVE NORMAL STRESS (kN/sq.m)	24.75	40.78	60.40
SHEAR STRESS (kN/sq.m)	15.15	21.28	31.70
POREWATER PRESSURE (kN/sq.m)	205	211	216

TEST RESULT	
COHESION INTERCEPT c (kN/sq.m)	3.53
SHEARING RESISTANCE ANGLE Ø (deg)	27.82
a (kN/sq.m)	3.12

REMARKS	
SHEARING RATE (% per hour)	2
BACK PRESSURE (kN/sq.m)	200

DESCRIPTION :

* Note : Moisture content and unit weight are being controlled.

PROJECT :

TRIAXIAL COMPRESSION TEST

JARABUMI BERGABUNG SDN. BHD.

Tested by : John

Checked by : Wong

Hole No. : BH-2

Sample No. : UD-1

Depth (m) : 0.50-0.95

Date : 26-05-2013

Test No. : -

Type Of Test : CIU (Single Stage)

Specimen / Stage No.		1			2			3		
Effective Cell Pressure	(kPa)	15			30			45		
Specimen Details		Initial	After Saturation	After Consolidation	Initial	After Saturation	After Consolidation	Initial	After Saturation	After Consolidation
Diameter of specimen	(mm)	50.00		49.65	50.00		49.11	50.00		48.79
Length of specimen	(mm)	100.00		99.29	100.00		98.22	100.00		97.58
Volume of specimen	(cu.cm)	196.35	196.35	192.21	196.35	196.35	186.07	196.35	196.35	182.46
Wet mass of specimen	(g)	360.33	369.13	365.93	361.07	365.07	359.37	352.50	355.00	351.40
Dry mass of specimen	(g)	276.51	276.51	276.51	275.85	275.85	275.85	268.90	268.90	268.90
Mass of moisture	(g)	83.82	92.62	89.42	85.22	89.22	83.52	83.60	86.10	82.50
Moisture content	(%)	30.31	33.50	32.34	30.89	32.34	30.28	31.09	32.02	30.68
Wet unit weight	(kN/cu.m)	18.00	18.44	18.68	18.04	18.24	18.95	17.61	17.74	18.89
Dry unit weight	(kN/cu.m)	13.81	13.81	14.11	13.78	13.78	14.54	13.43	13.43	14.46
Void ratio		0.910	0.910	0.870	0.915	0.915	0.814	0.964	0.964	0.825
Degree of saturation	(%)	89.59	99.00	100.00	90.85	95.11	100.00	88.73	89.33	100.00
Volume of water taken in	(cu.cm)		8.80			4.00			2.50	
Volume of water drained out	(cu.cm)			3.20			5.70			3.60
Sketch of failed specimen										
Soil description										
Specific gravity		2.69			2.69			2.69		
Liquid limit	(%)	-			-			-		
Plasticity index	(%)	-			-			-		
Gravel 4.75 - 76.2 (mm)	(%)									
Sand 0.074 - 4.75 (mm)	(%)									
Silt 0.005 - 0.074 (mm)	(%)									
Clay < 0.005 (mm)	(%)									

PROJECT :

TRIAXIAL COMPRESSION TEST

JARABUMI BERGABUNG SDN. BHD.

Tested By : John

Checked By : Wong

HOLE No.	:	BH-2	SPECIMEN No.	:	1
SAMPLE No.	:	UD-1	INITIAL HEIGHT OF SPECIMEN (cm)	:	10.000
DEPTH (m)	:	0.50-0.95	INITIAL DIAMETER OF SPECIMEN (cm)	:	5.000
DATE OF TEST	:	25-05-2013	SPECIMEN HEIGHT AFTER CONS. (cm)	:	9.929
TEST No.	:	-	SPECIMEN AREA AFTER CONS. (sq.cm)	:	19.356
TYPE OF TEST	:	CIU (Single Stage)	WET MASS (g)	:	360.33
CELL PRES.(kN/sq.m)	:	15	DRY MASS (g)	:	276.51
BACK PRES.(kN/sq.m)	:	200	PROVING RING CONSTANT (kN/div.)	:	0.006

DIAL GAUGE READING (x0.001cm)	STRAIN (%)	AREA (sq.cm)	PROVING RING READING	AXIAL LOAD (kN)	DEVIATOR STRESS (kN/sq.m)	PORE PRESSURE READING (kN/sq.m)	PORE PRESSURE CHANGE (kN/sq.m)	SIGMA 3 BAR (kN/sq.m)	SIGMA 1 BAR (kN/sq.m)	P (kN/sq.m)	P BAR (kN/sq.m)	Q BAR (kN/sq.m)	PRINCIPAL STRESS RATIO
0	0.00	19.358	0.0	0.000	0.000	200	0	15.000	15.000	15.000	15.000	0.000	1.000
5	0.05	19.368	4.6	0.028	14.250	202.4	2.4	12.600	26.850	22.125	19.725	7.125	2.131
10	0.10	19.378	5.3	0.032	16.411	202.9	2.9	12.100	28.511	23.205	20.305	8.205	2.356
15	0.15	19.387	5.9	0.035	18.259	203.3	3.3	11.700	29.959	24.130	20.830	9.130	2.561
20	0.20	19.397	6.3	0.038	19.487	203.7	3.7	11.300	30.787	24.744	21.044	9.744	2.725
25	0.25	19.407	6.7	0.040	20.714	204	4	11.000	31.714	25.357	21.357	10.357	2.883
30	0.30	19.417	7.0	0.042	21.631	204.3	4.3	10.700	32.331	25.815	21.515	10.815	3.022
35	0.35	19.427	7.2	0.043	22.238	204.5	4.5	10.500	32.738	26.119	21.619	11.119	3.118
40	0.40	19.436	7.4	0.044	22.844	204.6	4.6	10.400	33.244	26.422	21.822	11.422	3.197
45	0.45	19.446	7.5	0.045	23.141	204.6	4.6	10.400	33.541	26.570	21.970	11.570	3.225
50	0.50	19.456	7.7	0.046	23.746	204.7	4.7	10.300	34.046	26.873	22.173	11.873	3.305
60	0.60	19.476	8.0	0.048	24.646	204.8	4.8	10.200	34.846	27.323	22.523	12.323	3.416
70	0.70	19.496	8.2	0.049	25.237	204.9	4.9	10.100	35.337	27.618	22.718	12.618	3.499
80	0.81	19.515	8.3	0.050	25.518	204.9	4.9	10.100	35.618	27.759	22.859	12.759	3.527
90	0.91	19.535	8.5	0.051	26.107	205	5	10.000	36.107	28.053	23.053	13.053	3.611
100	1.01	19.555	8.9	0.053	27.307	205.1	5.1	9.900	37.207	28.654	23.654	13.654	3.758
125	1.26	19.605	9.2	0.055	28.156	205.3	5.3	9.700	37.856	29.078	23.778	14.078	3.903
150	1.51	19.655	9.4	0.056	28.695	205.4	5.4	9.600	38.295	29.347	23.947	14.347	3.989
175	1.76	19.705	9.6	0.058	29.231	205.5	5.5	9.500	38.731	29.615	24.115	14.615	4.077
200	2.01	19.756	9.8	0.059	29.763	205.5	5.5	9.500	39.263	29.882	24.382	14.882	4.133
225	2.27	19.807	10.0	0.060	30.292	205.4	5.4	9.600	39.892	30.146	24.746	15.146	4.155
250	2.52	19.858	10.2	0.061	30.819	205.1	5.1	9.900	40.719	30.409	25.309	15.409	4.113
275	2.77	19.910	10.5	0.063	31.643	204.7	4.7	10.300	41.943	30.822	26.122	15.822	4.072
300	3.02	19.961	10.7	0.064	32.162	204.4	4.4	10.600	42.762	31.081	26.681	16.081	4.034
325	3.27	20.013	10.9	0.065	32.678	204.1	4.1	10.900	43.578	31.339	27.239	16.339	3.996
350	3.52	20.065	11.1	0.067	33.191	203.6	3.6	11.400	44.591	31.596	27.996	16.596	3.912
375	3.78	20.118	11.2	0.067	33.403	203.1	3.1	11.900	45.303	31.702	28.602	16.702	3.807
400	4.03	20.171	11.4	0.068	33.911	202.5	2.5	12.500	46.411	31.955	29.455	16.955	3.713
450	4.53	20.277	11.7	0.070	34.620	201.8	1.8	13.200	47.820	32.310	30.610	17.310	3.623
500	5.04	20.385	11.9	0.071	35.026	201.2	1.2	13.800	48.826	32.513	31.313	17.513	3.538
550	5.54	20.493	12.1	0.073	35.426	200.4	0.4	14.600	50.026	32.713	32.313	17.713	3.426
600	6.04	20.603	12.3	0.074	35.820	199.6	-0.4	15.400	51.220	32.910	33.310	17.910	3.326
650	6.55	20.714	12.5	0.075	36.207	199.2	-0.8	15.800	52.007	33.104	33.904	18.104	3.292
700	7.05	20.826	12.7	0.076	36.588	198.3	-1.7	16.700	53.288	33.294	34.994	18.294	3.191
750	7.55	20.940	12.8	0.077	36.677	197.7	-2.3	17.300	53.977	33.338	35.638	18.338	3.120
800	8.06	21.054	12.9	0.077	36.762	197	-3	18.000	54.762	33.381	36.381	18.381	3.042
850	8.56	21.170	13.0	0.078	36.844	196.4	-3.6	18.600	55.444	33.422	37.022	18.422	2.981
900	9.06	21.288	13.1	0.079	36.923	195.8	-4.2	19.200	56.123	33.461	37.661	18.461	2.923
950	9.57	21.406	13.2	0.079	36.999	195.2	-4.8	19.800	56.799	33.499	38.299	18.499	2.869
1000	10.07	21.526	13.3	0.080	37.071	194.4	-5.6	20.600	57.671	33.536	39.136	18.536	2.800
1100	11.08	21.770	13.4	0.080	36.932	193.5	-6.5	21.500	58.432	33.466	39.966	18.466	2.718
1200	12.09	22.019	13.5	0.081	36.786	192.2	-7.8	22.800	59.586	33.393	41.193	18.393	2.613
1300	13.09	22.274	13.6	0.082	36.634	191.2	-8.8	23.800	60.434	33.317	42.117	18.317	2.539
1400	14.10	22.536	13.7	0.082	36.476	190.4	-9.6	24.600	61.076	33.238	42.838	18.238	2.483

PROJECT:

TRIAXIAL COMPRESSION TEST

JARABUMI BERGABUNG SDN. BHD.

Tested by : John

Checked by : Wong

HOLE No.	:	BH-2	SPECIMEN No.	:	2
SAMPLE No.	:	UD-1	INITIAL HEIGHT OF SPECIMEN (cm)	:	10.000
DEPTH (m)	:	0.50-0.95	INITIAL DIAMETER OF SPECIMEN (cm)	:	5.000
DATE OF TEST	:	25-05-13	SPECIMEN HEIGHT AFTER CONS. (cm)	:	9.922
TEST No.	:	-	SPECIMEN AREA AFTER CONS. (sq.cm)	:	18.943
TYPE OF TEST	:	CIU (Single Stage)	WET MASS (g)	:	361.07
CELL PRES.(kN/sq.m)	:	30	DRY MASS (g)	:	276.65
BACK PRES.(kN/sq.m)	:	200	PROVING RING CONSTANT (kN/div.)	:	0.006

DIAL GAUGE READING (x0.001cm)	STRAIN (%)	AREA (sq.cm)	PROVING RING READING	AXIAL LOAD (kN)	DEVIATOR STRESS (kN/sq.m)	PORE PRESSURE READING (kN/sq.m)	PORE PRESSURE CHANGE (kN/sq.m)	SIGMA 3 BAR (kN/sq.m)	SIGMA 1 BAR (kN/sq.m)	P (kN/sq.m)	P BAR (kN/sq.m)	Q BAR (kN/sq.m)	PRINCIPAL STRESS RATIO
0	0.00	18.943	0.0	0.000	0.000	200	0	30.000	30.000	30.000	30.000	0.000	1.000
5	0.05	18.953	3.8	0.023	12.030	203.1	3.1	26.900	38.930	38.015	32.915	6.015	1.447
10	0.10	18.963	5.1	0.031	16.137	204.2	4.2	25.800	41.937	38.069	33.669	8.069	1.625
15	0.15	18.972	6.2	0.037	19.606	205.1	5.1	24.900	44.506	39.604	34.704	9.604	1.787
20	0.20	18.982	6.9	0.041	21.810	205.7	5.7	24.300	46.110	40.905	35.205	10.905	1.898
25	0.25	18.992	7.5	0.045	23.695	206.2	6.2	23.800	47.495	41.647	35.647	11.647	1.996
30	0.31	19.001	8.0	0.048	25.261	206.6	6.6	23.400	48.661	42.631	36.031	12.631	2.080
35	0.36	19.011	8.3	0.050	26.195	206.9	6.9	23.100	49.295	43.098	36.198	13.098	2.134
40	0.41	19.021	8.6	0.052	27.128	207.2	7.2	22.800	49.928	43.564	36.364	13.564	2.190
45	0.46	19.030	8.8	0.053	27.745	207.5	7.5	22.500	50.245	43.872	36.372	13.872	2.233
50	0.51	19.040	9.1	0.055	28.676	207.8	7.8	22.200	50.876	44.338	36.538	14.338	2.292
60	0.61	19.060	9.5	0.057	29.906	208.3	8.3	21.700	51.606	44.953	36.653	14.953	2.378
70	0.71	19.079	9.8	0.059	30.819	208.7	8.7	21.300	52.119	45.409	36.709	15.409	2.447
80	0.81	19.099	10.1	0.061	31.730	209	9	21.000	52.730	45.865	36.865	15.865	2.511
90	0.92	19.118	10.4	0.062	32.639	209.3	9.3	20.700	53.339	46.319	37.019	16.319	2.577
100	1.02	19.138	10.6	0.064	33.232	209.6	9.6	20.400	53.632	46.616	37.016	16.616	2.629
125	1.27	19.187	11.1	0.067	34.710	210.1	10.1	19.900	54.610	47.355	37.255	17.355	2.744
150	1.53	19.237	11.5	0.069	35.868	210.4	10.4	19.600	55.468	47.934	37.534	17.934	2.830
175	1.78	19.287	11.8	0.071	36.709	210.6	10.6	19.400	56.109	48.354	37.754	18.354	2.892
200	2.04	19.337	12.2	0.073	37.855	210.8	10.8	19.200	57.055	48.927	38.127	18.927	2.972
225	2.29	19.387	12.5	0.075	38.685	210.9	10.9	19.100	57.785	49.342	38.442	19.342	3.025
250	2.55	19.438	12.8	0.077	39.610	211.1	11.1	18.900	58.410	49.755	38.655	19.755	3.090
275	2.80	19.489	13.2	0.079	40.638	211.1	11.1	18.900	59.538	50.319	39.219	20.319	3.150
300	3.05	19.540	13.6	0.082	41.760	210.8	10.8	19.200	60.960	50.880	40.080	20.880	3.175
325	3.31	19.592	13.9	0.083	42.569	210.5	10.5	19.500	62.069	51.285	40.785	21.285	3.183
350	3.56	19.643	14.2	0.085	43.374	210	10	20.000	63.374	51.687	41.687	21.687	3.169
375	3.82	19.695	14.5	0.087	44.173	209.6	9.6	20.400	64.573	52.087	42.487	22.087	3.165
400	4.07	19.747	14.8	0.089	44.966	209.1	9.1	20.900	65.866	52.484	43.384	22.484	3.152
450	4.58	19.853	15.2	0.091	45.936	208.6	8.6	21.400	67.336	52.969	44.369	22.969	3.147
500	5.09	19.959	15.6	0.094	46.895	208	8	22.000	68.895	53.448	45.448	23.448	3.132
550	5.60	20.067	15.9	0.095	47.541	207.5	7.5	22.500	70.041	53.770	46.270	23.770	3.113
600	6.11	20.176	16.3	0.098	48.474	207	7	23.000	71.474	54.237	47.237	24.237	3.108
650	6.62	20.286	16.6	0.100	49.099	206.5	6.5	23.500	72.599	54.549	48.049	24.549	3.089
700	7.13	20.397	16.8	0.101	49.419	206	6	24.000	73.419	54.710	48.710	24.710	3.059
750	7.64	20.509	17.0	0.102	49.733	205.5	5.5	24.500	74.233	54.867	49.367	24.867	3.030
800	8.14	20.623	17.2	0.103	50.041	204.8	4.8	25.200	75.241	55.021	50.221	25.021	2.986
850	8.65	20.738	17.4	0.104	50.343	204.3	4.3	25.700	76.043	55.171	50.871	25.171	2.959
900	9.16	20.854	17.6	0.106	50.937	203.7	3.7	26.300	76.937	55.319	51.619	25.319	2.925
950	9.67	20.972	17.7	0.106	50.640	203	3	27.000	77.640	55.320	52.320	25.320	2.876
1000	10.18	21.090	17.8	0.107	50.639	202.4	2.4	27.600	78.239	55.319	52.919	25.319	2.835
1100	11.20	21.332	17.9	0.107	50.346	201.8	1.8	28.200	78.546	55.173	53.373	25.173	2.785
1200	12.22	21.580	18.0	0.108	50.047	201.2	1.2	28.800	78.847	55.024	53.824	25.024	2.738
1300	13.24	21.833	18.1	0.109	49.741	200.4	0.4	29.600	79.341	54.871	54.471	24.871	2.680
1400	14.25	22.092	18.2	0.109	49.429	199.7	-0.3	30.300	79.729	54.715	55.015	24.715	2.631

PROJECT:

TRIAXIAL COMPRESSION TEST

JARABUMI BERGABUNG SDN. BHD.

Tested by : John

Checked by : Wong

HOLE No.	:	BH-2	SPECIMEN No.	:	3
SAMPLE No.	:	UD-1	INITIAL HEIGHT OF SPECIMEN (cm)	:	10.000
DEPTH (m)	:	0.50-0.95	INITIAL DIAMETER OF SPECIMEN (cm)	:	5.000
DATE OF TEST	:	26-05-2013	SPECIMEN HEIGHT AFTER CONS. (cm)	:	9.758
TEST No.	:	-	SPECIMEN AREA AFTER CONS. (sq.cm)	:	18.698
TYPE OF TEST	:	CIU (Single Stage)	WET MASS (g)	:	352.50
CELL PRES.(kN/sq.m)	:	45	DRY MASS (g)	:	268.90
BACK PRES.(kN/sq.m)	:	200	PROVING RING CONSTANT (kN/div.)	:	0.006

DIAL GAUGE READING (x0.001cm)	STRAIN (%)	AREA (sq.cm)	PROVING RING READING	AXIAL LOAD (kN)	DEVIATOR STRESS (kN/sq.m)	PORE PRESSURE READING (kN/sq.m)	PORE PRESSURE CHANGE (kN/sq.m)	SIGMA 3 BAR (kN/sq.m)	SIGMA 1 BAR (kN/sq.m)	P (kN/sq.m)	P BAR (kN/sq.m)	Q BAR (kN/sq.m)	PRINCIPAL STRESS RATIO
0	0.00	18.698	0.0	0.000	0.000	200	0	45.000	45.000	45.000	45.000	0.000	1.000
5	0.05	18.707	3.0	0.018	9.622	201.5	1.5	43.500	53.122	49.811	48.311	4.811	1.221
10	0.10	18.717	5.0	0.030	16.028	202.6	2.6	42.400	58.428	53.014	50.414	8.014	1.378
15	0.15	18.727	7.3	0.044	23.389	203.4	3.4	41.600	64.989	56.595	53.295	11.695	1.562
20	0.20	18.736	8.3	0.050	26.579	204	4	41.000	67.579	58.290	54.290	13.290	1.649
25	0.26	18.746	10.2	0.061	32.647	204.7	4.7	40.300	72.947	61.324	56.624	16.324	1.810
30	0.31	18.756	11.4	0.068	36.469	205.6	5.6	39.400	75.869	63.235	57.635	18.235	1.926
35	0.36	18.765	12.3	0.074	39.328	206.6	6.6	38.200	77.528	64.664	57.864	19.664	2.030
40	0.41	18.775	12.8	0.077	40.906	207.6	7.6	37.200	78.106	65.453	57.653	20.453	2.100
45	0.46	18.785	13.4	0.080	42.801	209.2	9.2	35.600	78.601	66.401	57.201	21.401	2.196
50	0.51	18.794	14.0	0.084	44.695	210.4	10.4	34.600	79.295	67.347	56.947	22.347	2.292
60	0.61	18.814	14.8	0.089	47.200	211.7	11.7	33.300	80.500	68.600	56.900	23.600	2.417
70	0.72	18.833	15.4	0.092	49.063	212.6	12.6	32.400	81.463	69.531	56.931	24.531	2.514
80	0.82	18.852	16.0	0.096	50.922	213.4	13.4	31.600	82.522	70.461	57.061	25.461	2.611
90	0.92	18.872	16.5	0.099	52.459	214.7	14.7	30.300	82.759	71.229	56.529	26.229	2.731
100	1.02	18.891	17.0	0.102	53.993	215.8	15.8	29.200	83.193	71.996	56.196	26.996	2.849
125	1.28	18.941	17.4	0.104	55.120	216.3	16.3	28.700	83.820	72.560	56.260	27.560	2.921
150	1.54	18.990	17.8	0.107	56.241	216.6	16.6	28.400	84.641	73.120	56.520	28.120	2.980
175	1.79	19.039	18.2	0.109	57.355	216.8	16.8	28.200	85.555	73.677	56.877	28.677	3.034
200	2.05	19.089	18.6	0.112	58.463	217	17	28.000	86.463	74.231	57.231	29.231	3.086
225	2.31	19.139	18.9	0.113	59.250	217.1	17.1	27.900	87.150	74.625	57.525	29.625	3.124
250	2.56	19.190	19.2	0.115	60.033	217.2	17.2	27.800	87.833	75.016	57.816	30.016	3.159
275	2.82	19.240	19.5	0.117	60.810	217.1	17.1	27.900	88.710	75.405	58.305	30.405	3.180
300	3.07	19.291	19.8	0.119	61.583	217	17	28.000	89.583	75.792	58.792	30.792	3.199
325	3.33	19.342	20.0	0.120	62.041	216.8	16.8	28.200	90.241	76.020	59.220	31.020	3.200
350	3.59	19.393	20.2	0.121	62.495	216.7	16.7	28.300	90.795	76.248	59.548	31.248	3.208
375	3.84	19.445	20.4	0.122	62.946	216.5	16.5	28.500	91.446	76.473	59.973	31.473	3.209
400	4.10	19.497	20.6	0.124	63.394	216.3	16.3	28.700	92.094	76.697	60.397	31.697	3.209
450	4.61	19.602	20.7	0.124	63.361	216	16	29.000	92.361	76.681	60.681	31.681	3.185
500	5.12	19.708	20.8	0.125	63.328	215.5	15.5	29.500	92.828	76.663	61.163	31.663	3.147
550	5.64	19.815	20.9	0.125	63.266	215	15	30.000	93.266	76.643	61.643	31.643	3.110
600	6.15	19.923	21.0	0.126	63.244	214.5	14.5	30.500	93.744	76.622	62.122	31.622	3.074
650	6.66	20.032	21.1	0.127	63.186	214	14	31.000	94.186	76.599	62.599	31.599	3.039
700	7.17	20.143	21.2	0.127	63.149	213.4	13.4	31.600	94.749	76.575	63.175	31.575	2.996
750	7.69	20.255	21.3	0.128	63.097	213	13	32.000	95.097	76.548	63.548	31.548	2.972
800	8.20	20.368	21.4	0.128	63.041	212.5	12.5	32.500	95.541	76.521	64.021	31.521	2.940
850	8.71	20.482	21.5	0.129	62.982	212	12	33.000	95.982	76.491	64.491	31.491	2.909
900	9.22	20.598	21.6	0.130	62.920	211.5	11.5	33.500	96.420	76.460	64.960	31.460	2.878
950	9.74	20.714	21.7	0.130	62.855	210.9	10.9	34.100	96.955	76.427	65.527	31.427	2.843
1000	10.25	20.833	21.8	0.131	62.786	210.4	10.4	34.600	97.386	76.393	65.993	31.393	2.815
1100	11.27	21.073	22.0	0.132	62.638	209.4	9.4	35.600	98.238	76.319	66.919	31.319	2.760
1200	12.30	21.320	22.2	0.133	62.478	208.5	8.5	36.500	98.978	76.239	67.739	31.239	2.712
1300	13.32	21.572	22.4	0.134	62.304	208	8	37.000	99.304	76.152	68.152	31.152	2.684
1400	14.35	21.830	22.6	0.136	62.117	207.3	7.3	37.700	99.817	76.059	68.759	31.059	2.648

PROJECT:

TRIAXIAL COMPRESSION TEST

JARABUMI BERGABUNG SDN. BHD.

Tested by : John

Checked by : Wong

Point Load Strength Index Tests

On Rock Cores

JARABUMI BERGABUNG SDN. BHD. (647710-P)

Point Load Strength Index Tests on Rock Cores

PROJECT: _____

_____

CLIENT: Prinsip Hasil Sdn. Bhd.

LOCATION: Semporna

TESTED BY: Eddie DATE TESTED: 03/06/2013

BH No.	Depth		D-mm	P-kN	Is(50) (Mpa)	24 X Is (50) Mpa
	From (m)	To (m)				
BH1/C2	7.50	9.00	50	1.3	0.52	12.48
BH1/C4	10.50	12.00	50	1.7	0.68	16.32
BH1/C6	13.50	15.00	50	3.2	1.28	30.72
BH2/C1	6.00	7.50	50	1.3	0.52	12.48
BH2/C2	7.50	9.00	50	1.8	0.72	17.28
BH2/C3	9.28	10.78	50	1.5	0.60	14.4
BH2/C4	10.78	12.28	50	1.9	0.76	18.24
BH2/C5	12.55	14.05	50	2.6	1.04	24.96
BH2/C6	14.05	15.55	50	2.7	1.08	25.92

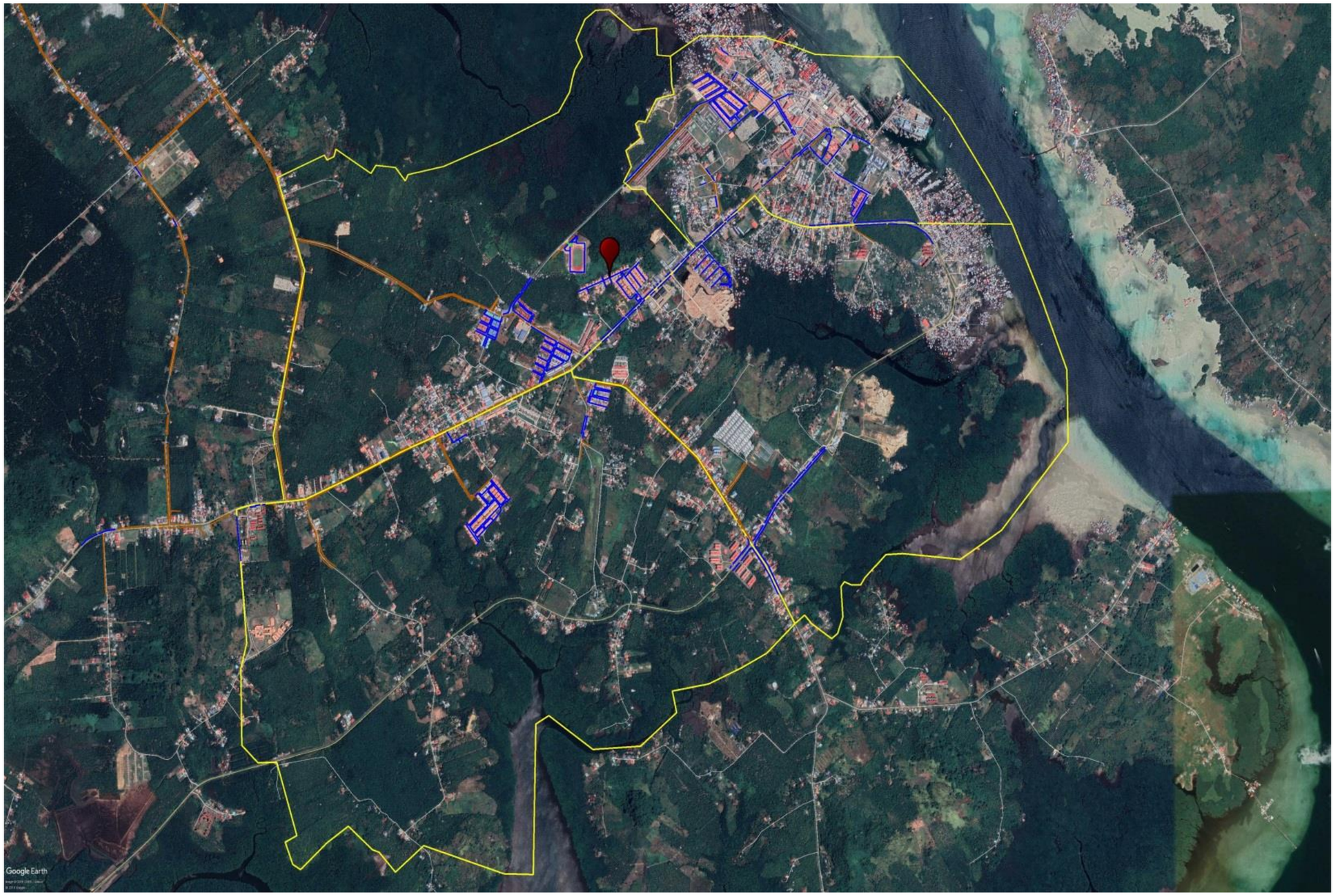
Remarks: _____

_____

Our Ref.: WP01

APPENDIX G:

WATER LOGGER



LEGEND:

- Study Area
- R.C Drain
- Earth Drain
- Road
- Location of Logger Installed

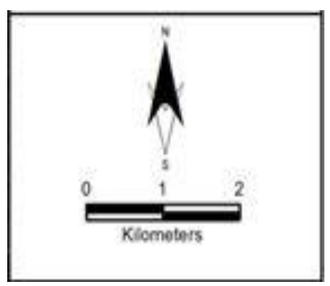
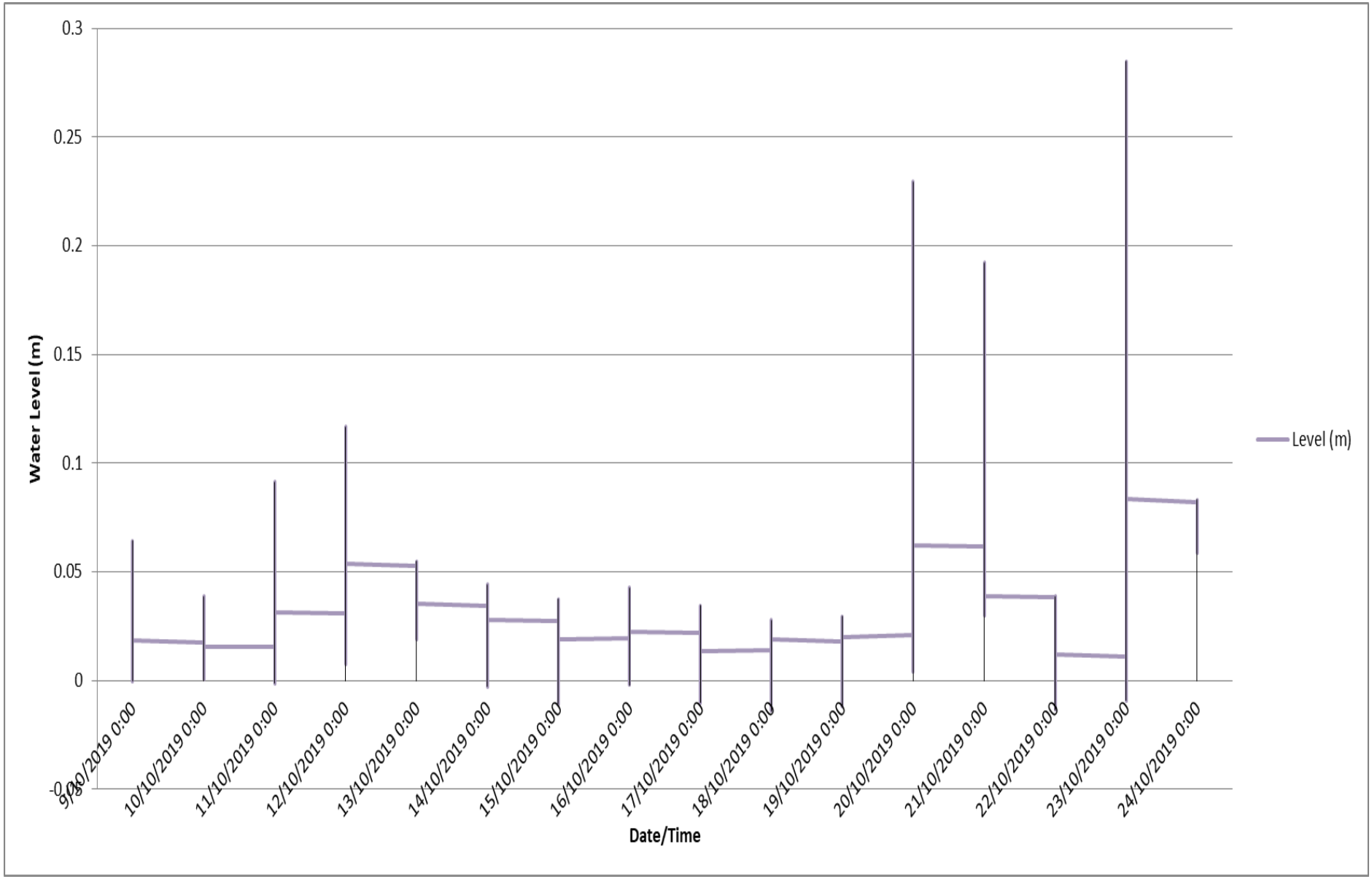
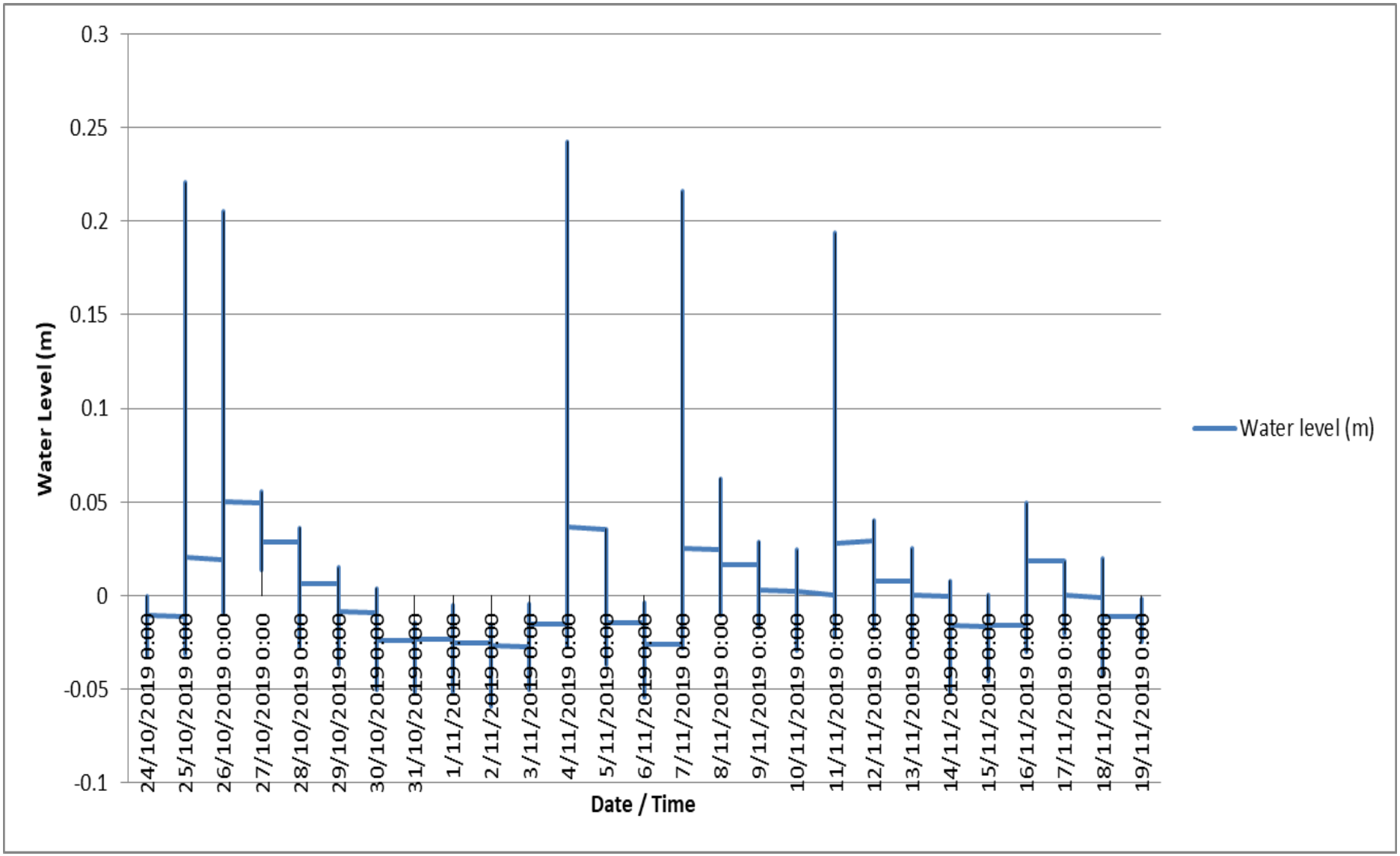


FIGURE 1: LOCATION OF LOGGER INSTALLED WITHIN STUDY AREA

Readding logger at Taman Miramas, Semporna

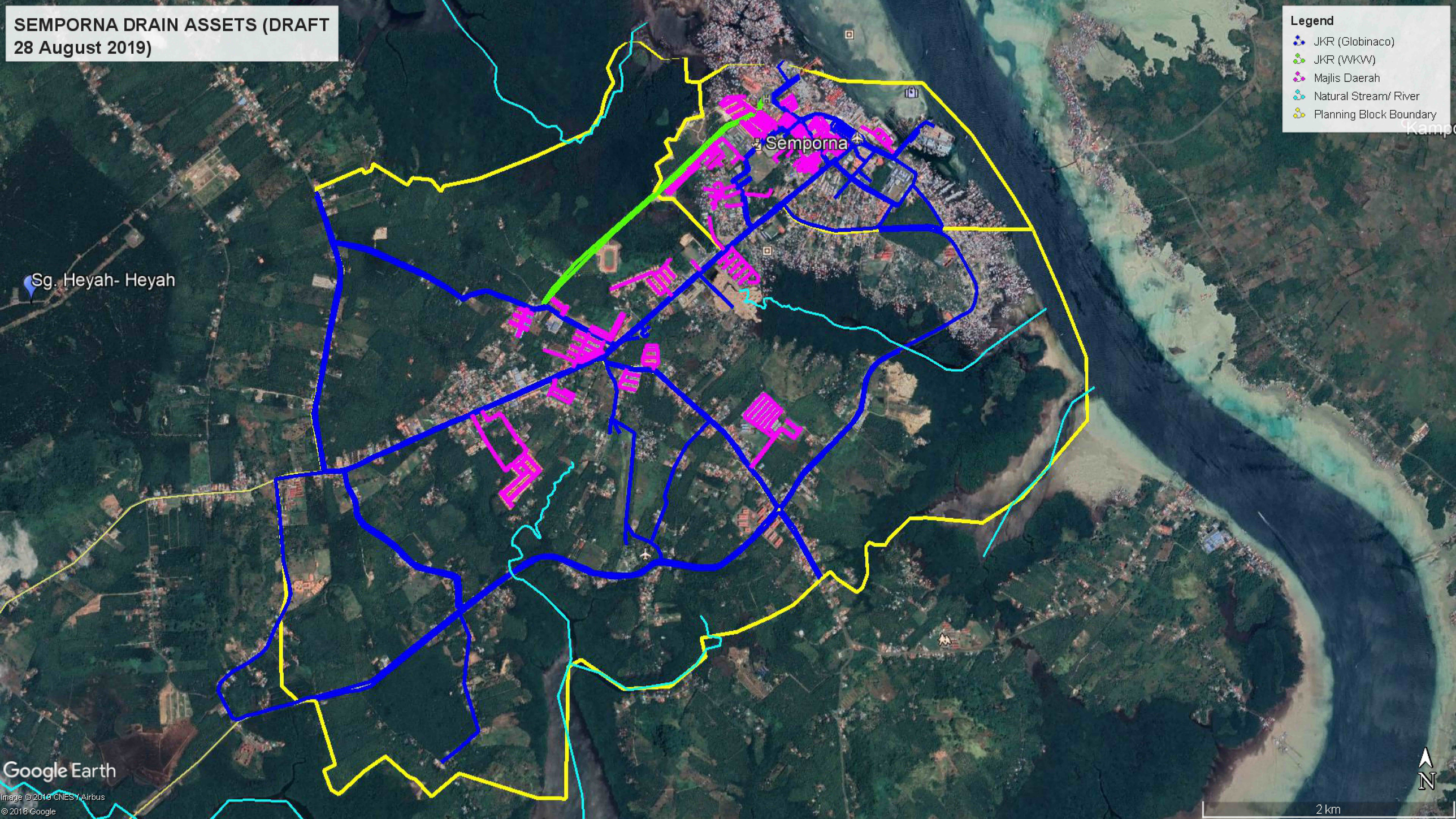


Readding logger at Taman Miramas, Semporna



APPENDIX H:

DRAINAGE ASSETS


SEMPORNA DRAIN ASSETS (DRAFT 28 August 2019)
Legend
JKR (Globinaco)
JKR (WKW)
Majlis Daerah
Natural Stream/ River
Planning Block Boundary
Semporna
Sg. Heyah- Heyah
Google Earth
Image © 2018 CNES / Airbus
© 2018 Google
N
2 km

APPENDIX I:

PROPOSED PILOT PROJECT- GROSS POLLUTANT TRAP (GPT)

1.0 GPT Design Criteria

Catchment (m^2)	GPT	Cost (RM)
3,000 to 10,000	F908	350,000
10,000 to 20,000	P1009	450,000
20,000 to 35,000	P1015	500,000
35,000 to 70,000	2×P1015	1,000,000

2.0 Quantity and Costing

Attached herewith estimated cost for the proposal GPT's in accordance with the catchments and drain sizes:

Semporna Town Area

Bandar Dolton:

- Outlet A

Catchment (m^2)	Drain Size (mm)	GPT	Estimated Cost (RM)	Remarks
46,000	750w × 750d	2×P1015	1,000,000	

Pekan Lama:

- Outlet B,C

Catchment (m^2)	Drain Size (mm)	GPT	Estimated Cost (RM)	Remarks
74,000	Ø1200	1×F908 2×P1015	1,350,000	

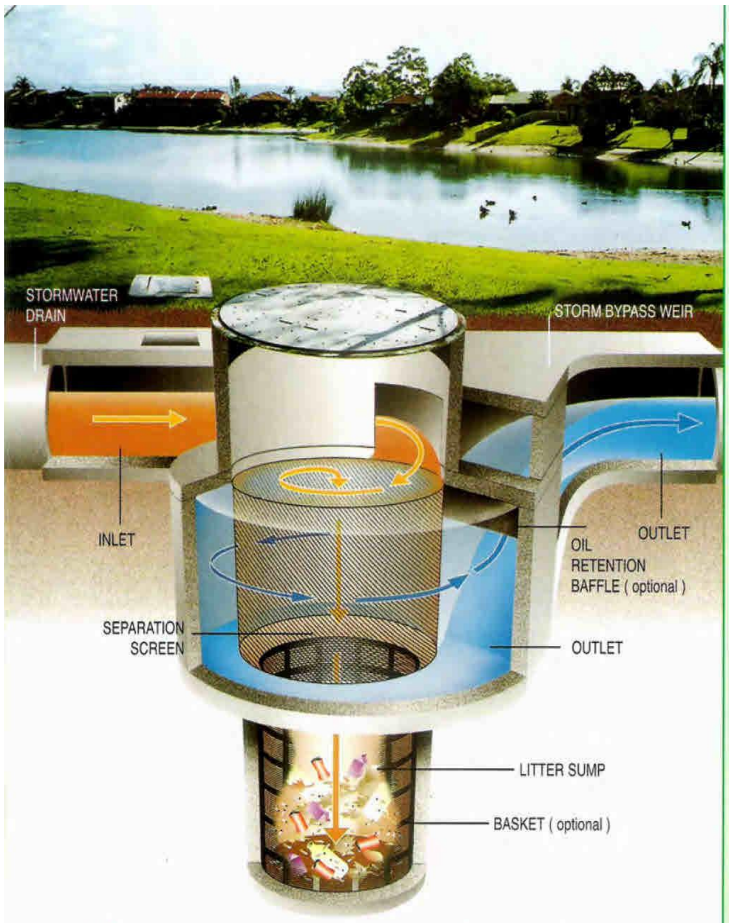
- Outlet E

Catchment (m^2)	Drain Size (mm)	GPT	Estimated Cost (RM)	Remarks
71,000	Ø1200	2×P1015	1,000,000	

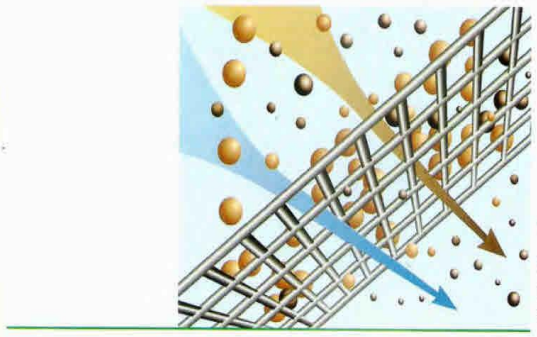
Taman Miramas

Catchment (m^2)	Drain Size (mm)	GPT	Estimated Cost (RM)	Remarks
73,000	600w x 600d	1×F908 2×P1015	1,350,000	

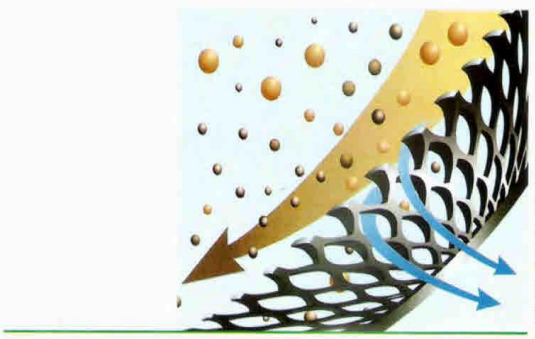
3.0 GPT (Sample Catalogue)



What is CDS technology?



Conventional direct screening
Flow directed of screen causes blinding



Indirect screening technology
Flow tangential to screen retains solids without blinding

THE CDS TECHNOLOGY OFFERS AN EFFECTIVE METHOD OF SEPARATING SOLIDS FROM LIQUIDS

Based on a surprisingly simple combination of non-blinding screens and flow management, Continuous Deflective Separation (CDS) is a non-powered, low maintenance alternative to traditional screening systems.

The CDS unit is designed to be retrofitted into existing and newly constructed drainage systems. The unit covers a minimum of surface space, with lids specially designed for the location and pre-engineered for traffic loading. Generally located beneath the ground, the unit requires no support infrastucture or power.

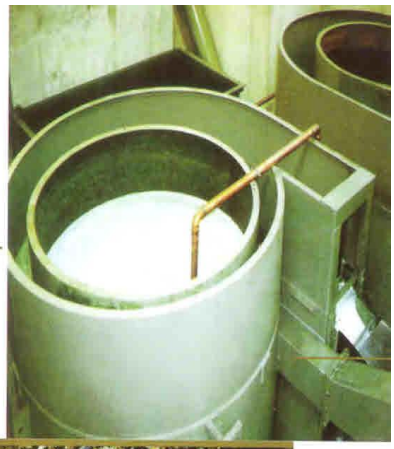
CDS technology uses *indirect screening to* trap even small pollutants. A unique, non-blocking screen design deflects particles into a catchment area while clean water flows to the waterway.

Advantages of the CDS technology are:

- captures and retains close to 100% of all solid materials, irrespective of flow conditions
- utilises indirect screening, preventing the screen from blinding
- visually unobtrusive
- various unit sizes to suit application and site requirements
- ease of cleaning by means of basket, eduction or utilising a customised cleaning truck.

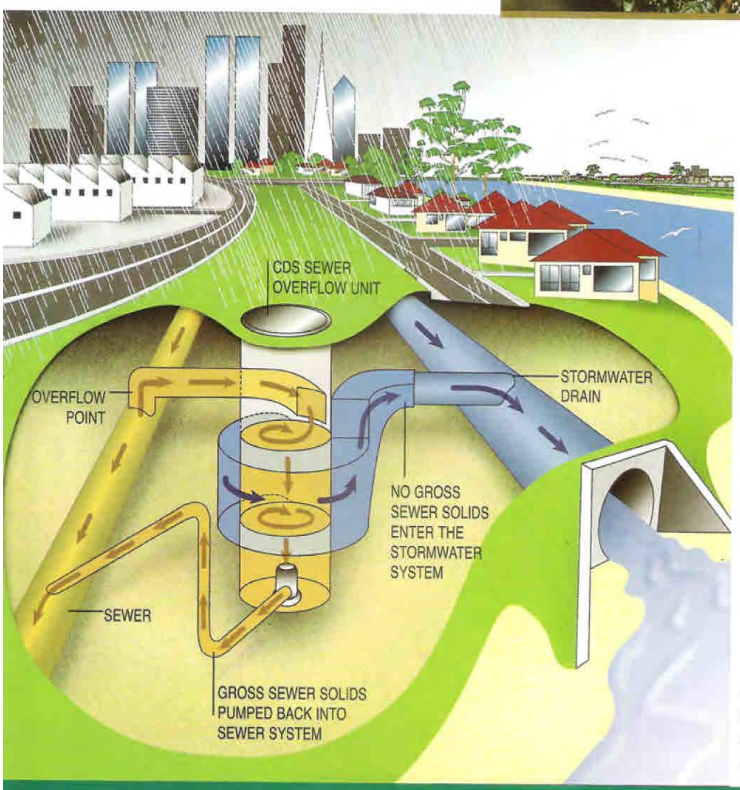
Applications

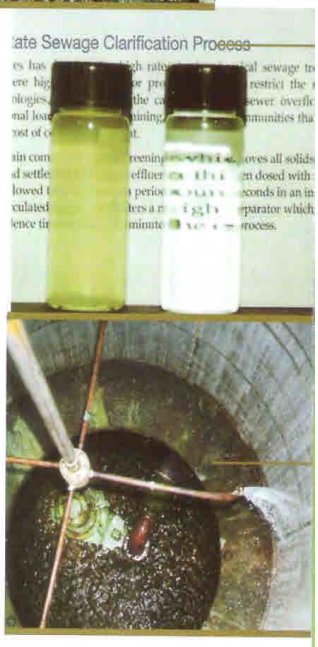
A NUMBER OF APPLICATIONS HAVE BEEN DEVELOPED USING THE CDS TECHNOLOGY



Stormwater

CDS has been highly successful in removing pollutants from the stormwater system. Some high profile sites within Australia and overseas have used the technology to keep the waterways clear of litter, vegetation and other matter flowing through the stormwater systems.





SEWER OVERFLOWS
CDS gross solids separator used to screen sewer overflow at relief point. All visible solids removed before discharge.

EcoClean is happy to discuss and design your application.

Rocla®

CDS TECHNOLOGIES

Industrial

The CDS technology has been of great use to the industrial sector. The indirect screening provides a non-blinding separation system for a number of processes. CDS has been involved in separating pollutants from cooling liquids, sediments from site runoff and washdown facilities.

Fine Solids Separation

CDS Technologies has developed a high rate process for the removal of suspended solids from sewage. It achieves a stream that is highly amendable to disinfection for the treatment of sewer overflows. It is suitable for reuse in many applications, especially ideal for feeding to biological processes with low particle BOD_5 levels.

Sewer Overflows

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CDS Unit Selection

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CDS Units: KEY CHARACTERISTICS

CDS Model No	Catchment Area (ha)	* Pollution Storage m^3	Underground Footprint m	Ground Level Footprint Diameter m
F0506	≤ 1	0.50	1.0 x 1.0	0.9
P0708	≤ 2	1.80	1.5 x 1.5	1.3
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P1012	≤ 12	3.60	2.0 x 2.0	1.3
P1015	≤ 18	3.80	2.0 x 2.0	1.3
P1512	≤ 20	7.10	2.6 x 2.6	1.8
P2018	≤ 45	19.00	3.5 x 3.5	2.3
P2028	≤ 75	21.50	3.5 x 3.5	2.3
P3018	≤ 100	28.50	6.5 x 6.5	3.5
P3024	≤ 150	32.75	6.5 x 6.5	3.5
P3030	≤ 200	37.00	6.5 x 6.5	3.5
C4527	200-250	58.50	8.0 x 8.0	5.0
TWIN	≤ 500	Variable	Variable	Variable

NOTE: 1) CDS Model Selection Table shall only be used for initial sizing. Actual CDS model shall be determined by detailed engineering. Please check with EcoClean Technology Sdn Bhd for your specific needs.

2) Twin precast unit combination can be used to treat larger flows - detail on request

KEY
- P - Precast Concrete
- F - Fibreglass
- C - Cast-in-place
- * Based on vacuum suction

P2018 is a **P**recast unit with screen diameter **20**00mm and height **18**00mm

F0912 is a **F**ibreglass unit with screen diameter **9**00mm and height **12**00mm

Other Specific Applications (details on request)

- CDS Surface / Rainwater filtration unit
- CDS Sewer overflow unit (CSO)
- CDS Stainless steel or FRP industrial separator
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- CDS Smart water (Class A re-use water)
- CDS filternator media filtration system
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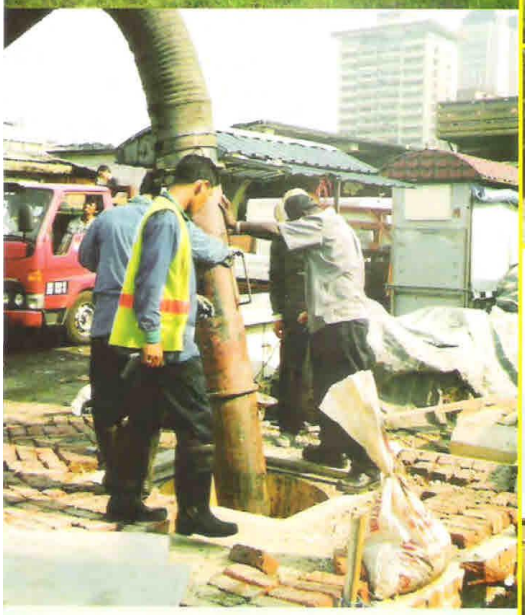
- EcoClean oil and grease trap.
- EcoSac wastewater primary screening
- Vacuum fluid evacuation system
- CDS Hybrid Advanced Immobilised Cell Reactor Technology (India) for water / Wastewater Treatment.



Vacuum Truck

CDS units are safe and effective to maintain. The CDS cleanout crew are fully trained and accredited in confined space entry, machine operation and traffic control. All work is insured and all operations are covered by EcoClean OH&S and Environmental Management Plans.

Removable Basket Unit

Removable Basket Unit

Materials Grab Truck

Three methods of litter removal from the CDS unit. All methods involve a minimum of manual handling.

Waste Management

It is recommended that monitoring of the CDS unit be performed on a monthly basis. Data from this monitoring will provide information on cleaning requirements, establishing a pattern required for your unit.

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Australian Technology Awards

CASE EARTH AWARDS
A Civil Contractors Federation (CCF) initiative

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Engineering Excellence Awards 1999

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CDS Technologies

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EcoClean Technology Sdn. Bhd. (516716-H)

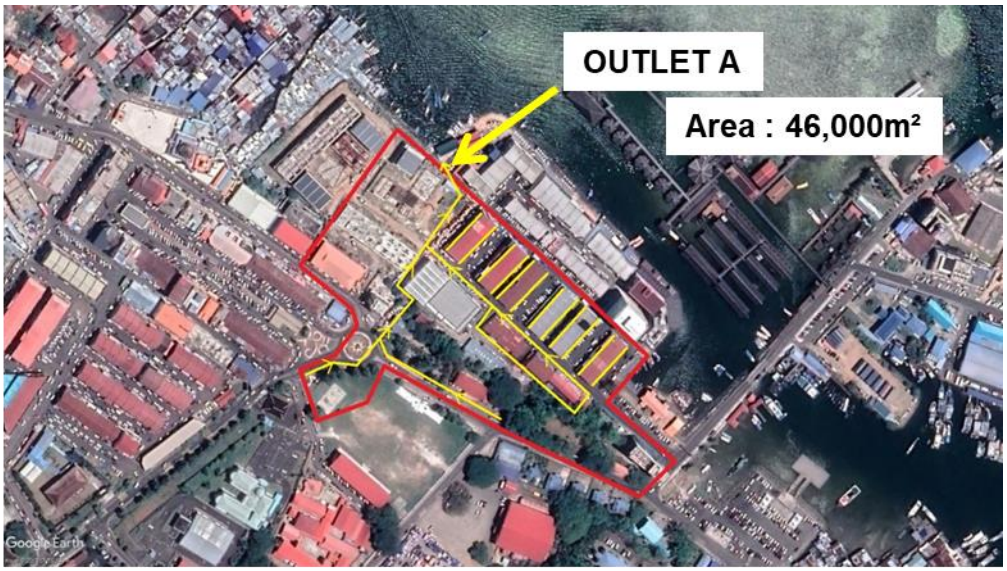
12A-02, 03 & 03A, Wisma Zelan, Jalan Tasik Permaisuri 2,
Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia.
Tel: 603-9171 8160 (Hunting Line) Fax: 603-9171 9160
E-mail: ecoclean@unifi.my
Website: www.ecoclean.com.my

For more details, please contact: Yale Wong

GPT Design Criteria

Catchment	GPT	Cost
3,000 to 10,000	F908	280,000
10,000 to 20,000	P1009	350,000
20,000 to 35,000	P1015	400,000
35,000 to 70,000	2×P1015	2×400,000

GPT For Outlet “A”



Outlet	Catchment (m^2)	Drain Size (mm)	GPT	Estimated Cost
A	46,000	750w × 750d	2×P1015	2×400,000

GPT For Outlet “B,C”

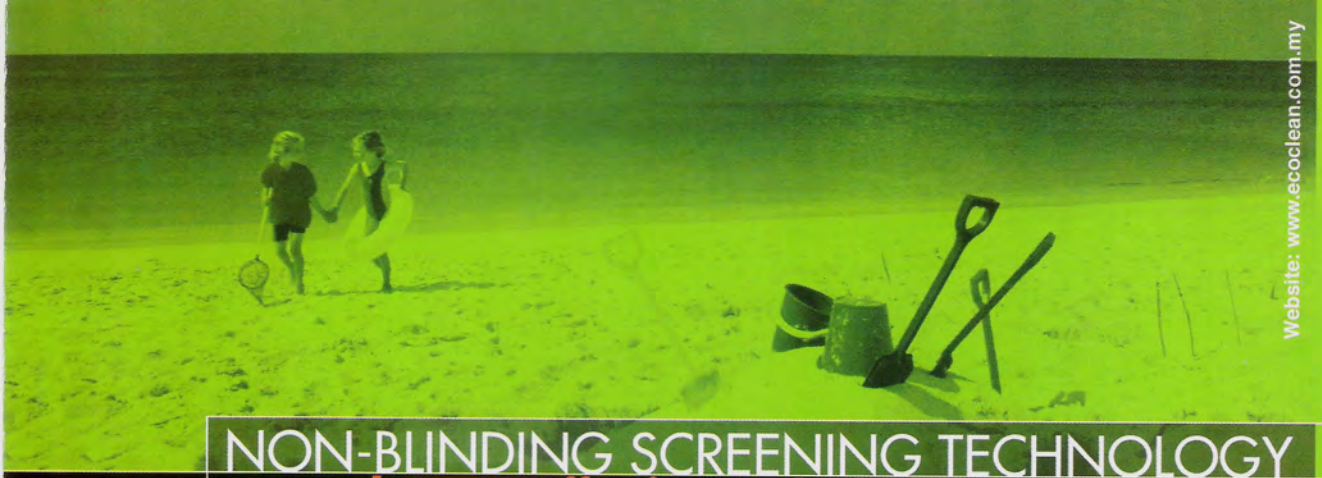
Outlet	Catchment (m^2)	Drain Size (mm)	GPT	Estimated Cost
B,C	74,000	Ø1200	1×F908 2×P1015	1,080,000

GPT For Outlet “E”

Outlet	Catchment (m^2)	Drain Size (mm)	GPT	Estimated Cost
E	71,000	Ø1200	2×P1015	2×400,000

GPT For Outlet at Taman Miramas

Outlet	Catchment (m^2)	Drain Size (mm)	GPT	Estimated Cost
Taman Miramas	73,000	600w x 600d	1×F908 2×P1015	2×400,000

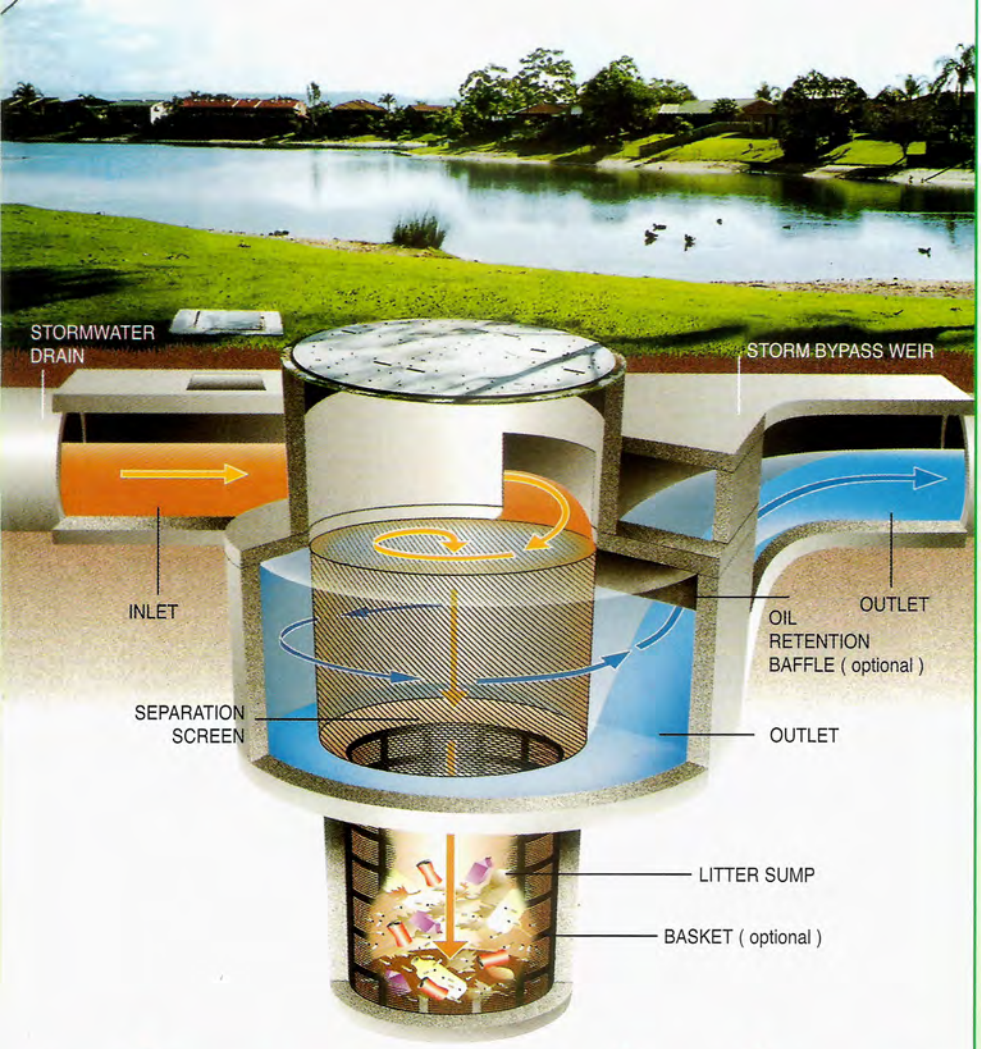


Website: www.ecoclean.com.my

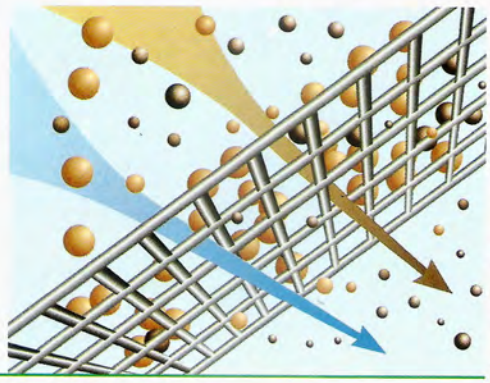
NON-BLINDING SCREENING TECHNOLOGY

the most effective method of separating solids from liquids

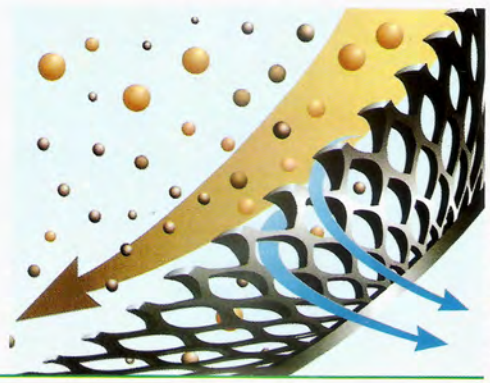
EcoClean Technology Sdn. Bhd. (516716-H)



What is CDS technology?



Conventional direct screening
Flow directed of screen causes blinding



Indirect screening technology
Flow tangential to screen retains solids without blinding

THE CDS TECHNOLOGY OFFERS AN EFFECTIVE METHOD OF SEPARATING SOLIDS FROM LIQUIDS

Based on a surprisingly simple combination of non-blinding screens and flow management, Continuous Deflective Separation (CDS) is a non-powered, low maintenance alternative to traditional screening systems.

The CDS unit is designed to be retrofitted into existing and newly constructed drainage systems. The unit covers a minimum of surface space, with lids specially designed for the location and pre-engineered for traffic loading. Generally located beneath the ground, the unit requires no support infrastucture or power.

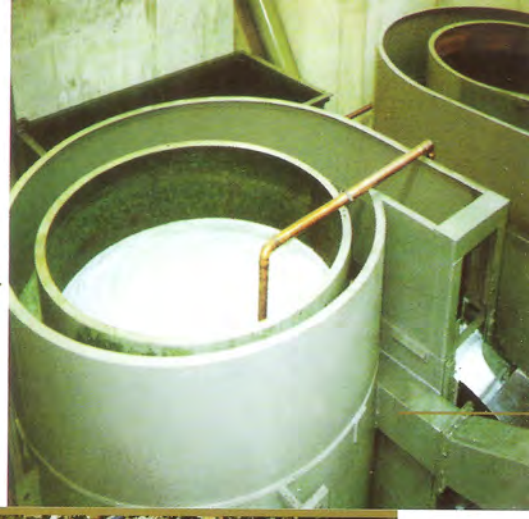
CDS technology uses *indirect screening to* trap even small pollutants. A unique, non-blocking screen design deflects particles into a catchment area while clean water flows to the waterway.

Advantages of the CDS technology are:

- captures and retains close to 100% of all solid materials, irrespective of flow conditions
- utilises indirect screening, preventing the screen from blinding
- visually unobtrusive
- various unit sizes to suit application and site requirements
- ease of cleaning by means of basket, eduction or utilising a customised cleaning truck.

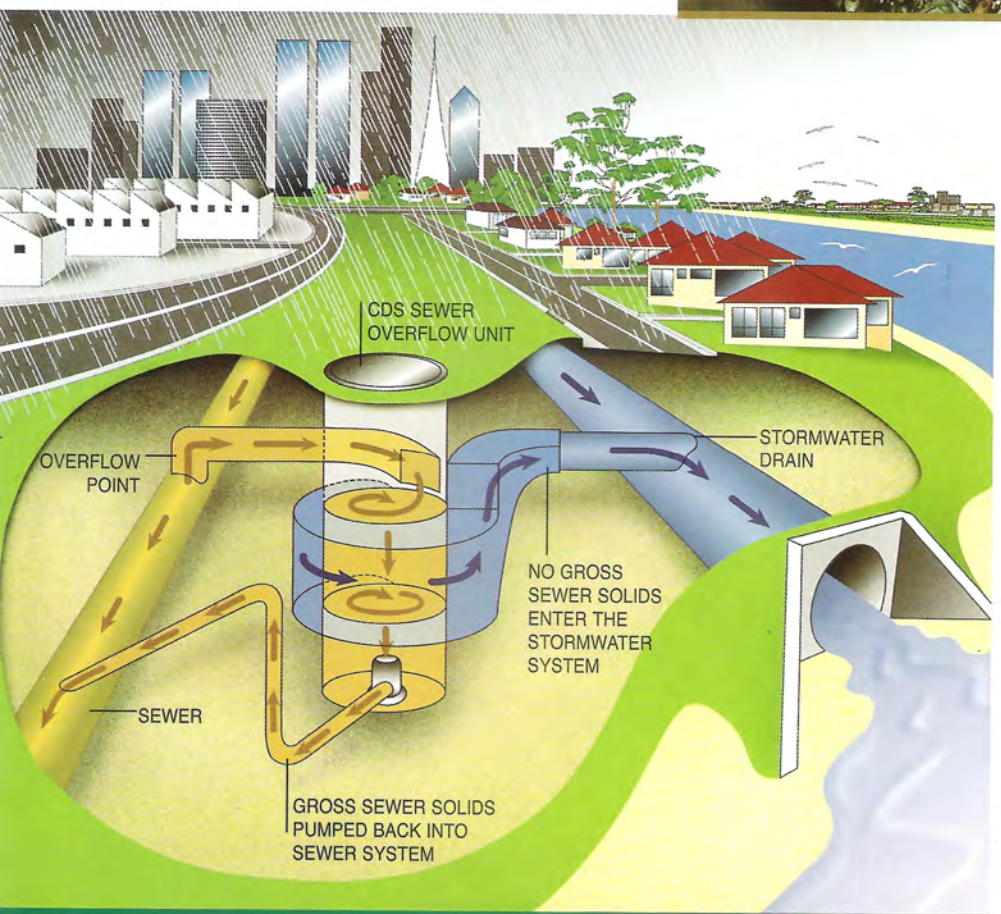
Applications

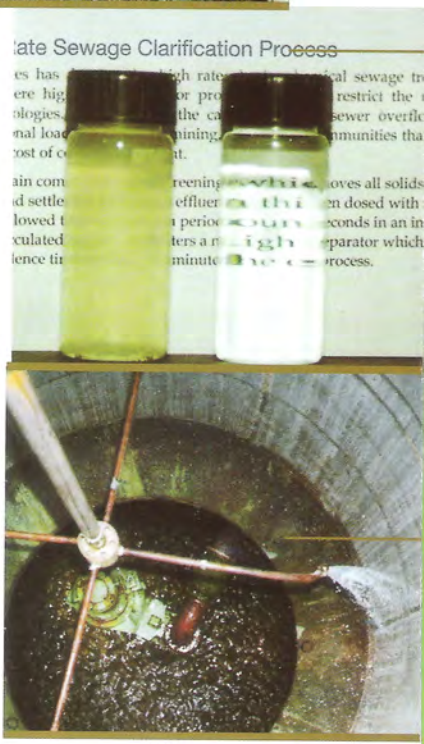
A NUMBER OF APPLICATIONS HAVE BEEN DEVELOPED USING THE CDS TECHNOLOGY



Stormwater

CDS has been highly successful in removing pollutants from the stormwater system. Some high profile sites within Australia and overseas have used the technology to keep the waterways clear of litter, vegetation and other matter flowing through the stormwater systems.





SEWER OVERFLOWS
CDS gross solids separator used to screen sewer overflow at relief point. All visible solids removed before discharge.

EcoClean is happy to discuss and design your application.

Rocla®

CDS™ TECHNOLOGIES

Industrial

The CDS technology has been of great use to the industrial sector. The indirect screening provides a non-blinding separation system for a number of processes. CDS has been involved in separating pollutants from cooling liquids, sediments from site runoff and washdown facilities.

Fine Solids Separation

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For more details, please contact: Yale Wong