Table 9 – Summary of laboratory tests – Borehole TRT-1.

#	Depth, (m)		Layer	w	G.C.	S.C.	F.C.	LL/ PI	Carbonate		γ_d	σ_{UCS}	$Is_{(50)}$
	From	to		(%)	(%)	(%)	(%)	(%)	$CaCo_3$	Co_3	(kN/m3)	(MPa)	kN/m^2
1	3	4.5	clay	14	41	32	27	48/ 24					
2	7	8		28	3	26	71	71/ 46					
3	13.5	15		39	1	13	86						
4	17.2	17.45	Marl	36	0	1	99	75/ 48	38	23	13.5	0.19	
5	18.5	20.5		36					29	18			
6	20.5	21.5	Marl + silty Gravel (GM)	57	0	1	99		29	17			
7	22.2	22.6		51				76/ 46	31	18			30
8	24.1	24.4		49									
9	25.6	25.95		47	0	2	98	60/ 32	35	21			
10	27.15	27.45		51									
11	28.6	28.9		54					30	18			
12	30.5	33.3		47					14	9			
13	39	40		37				73/ 74	18	11	13.6	0.24	
14	40	41.1		47				102/ 72	24	15	12.7	0.26	
15	42.3	43.7	Clay+ clayey Gravel	45	0	14	86	141/111					
16	45	47		36	17	29	54						
17	49.94	50.11		40	13	33	54						
18	60.9	61.17		42									
19	62.8	63		42	19	25	56	83/ 48					
20	64.4	64.6	Pyroclasti cs, Highly to completely weathered	31	23	43	34	53/ 20					
21	68.25	68.4		5							21.2	5.27	
22	77.4	77.7		40	2	10	88	134/ 100					
23	80	80.27		32									20
24	84.55	84.75		30	2	64	34	55/ 27			14.9	0.05	
25	87.2	87.6		25				79/ 41			16.2	0.19	
26	90.3	90.5		26							15.7	0.28	
27	95.44	95.67		32	4	7	88	122/ 88					
28	97.4	97.65		16							15.9	0.19	
29	99.3	99.64		32	1	4	96	101/ 72			14.5	0.52	
30	103	103.25		41									
31	105	105.25		28									
32	108.9	109.15		30									

Where: w – Water content; G.C. – Gravel content; S.C. – Sand content; F.C. – Fines content. PL – Plastic Limit; LL – Liquid Limit; PI – Plasticity Index; γ_d – Dry unit weight; σ_{UCS} – Unconfined compressive strength; Is – Point load strength index.

Table 10 – Summary of laboratory tests – Borehole TRT-2.

#	Depth (m)		Layer	w	γ_d	σ_{UCS}	Es	ν	$Is_{(50)}$	T
	From	To		(%)	(kN/m^3)	(MPa)	(GPa)	-	(MPa)	(MPa)
1	7.5	7.8	Basalt, fresh	3	24.7				4.11	6.61
2	9.0	9.2		1	28.0	118.7				
3	13.9	14.0	Pyroclastics, moderately weathered	4	22.8				1.39	2.49
4	16.5	16.8		8	18.8	2.52				0.97
5	19.7	20.0		6	20.3	16.5	4.3	0.14		1.57
6	23.7	24.0	Pyroclastics, fresh	6	19.8	14.57				1.85
7	25.1	25.4	Basalt, fresh	1	27.7	26.83				9.53
8	29.8	30.0		5	18.8	13.04				1.53
9	34.5	34.9		3	24.0	47.28				4.34
10	37.7	37.9		1	26.6	78.43				7.6
11	38.4	38.6		4	21.2	16.6	10.3	0.27		1.02
12	43.7	43.9		1	27.1	93.77				
13	46.5	47.0		2	26.3	91.23				7.47
14	50.2	50.6		1	25.8	36.13				12.48
15	52.3	52.9		1	26.8	70.24				9.19
16	56.4	56.8		1	25.9	18.9	49.5	0.18		8.24
17	58.6	58.9		4	22.7	2.61				1.35
18	60.0	60.2		1	26.7					8.37
19	64.2	64.4		1	27.2	25.27				
20	68.9	69.1							5.32	
21	71.7	72.1		1	27.4	168.27				10.89
22	75.5	75.7		0	27.8	109.47				11.92
23	78.9	79.2	Pyroclastics, moderately weathered	3	17.9				0.3	0.73
24	81.6	82.3		4	15.3	10.3	4.9	0.26		1.84
25	84.7	85.0		3	21.4	8.59				1.16
26	88.2	88.4		6	15.6	6.93				
27	91.7	92.0	Basalt, fresh	2	25.9	73.5	43.3	0.24		8.84
28	94.9	95.1		1	27.0	42.68				
29	98.1	98.6		1	27.2	115.13				9.3
30	101.8	102.3	Pyroclastics, moderately weathered	3	20.4	17.6	4.7	0.1		2.01
31	105.1	105.5	Basalt, fresh	1	27.2	30.26				15.81
32	107.8	108.3	Pyroclastics, moderately	4	21.5	14.41				2.02
33	111.6	112.1		1	27.8	129.47				15.55

#	Depth (m)		Layer	w	γ_d	σ_{UCS}	Es	ν	$Is_{(50)}$	T
	From	To		(%)	(kN/m^3)	(MPa)	(GPa)	-	(MPa)	(MPa)
			weathered							
34	114.3	114.5	Clay-completely weathered rock						0.73	
35	114.8	115.0	Basalt, weathered	4	21.3				0.8	3.09
36	118.5	118.8	Basalt, fresh	2	24.4	43.8	19.1	0.18		3.57
37	119.8	120.2		3	22.8	26.52				4.68
38	121.9	122.2	Pyroclastics, moderately weathered	3	21.5	23.1	7.1	0.14		1.72
39	126.2	126.6	Basalt, fresh	2	26.0	76.69				15.71
40	129.3	129.5	Basalt, weathered	4	20.3	13.92				
41	134.0	134.2		8	19.3				0.31	0.97
42	137.6	137.8		8	19.1				0.99	2.37
43	138.5	138.9	Basalt, fresh	1	27.7	176.6	76.4	0.24		11.68

Where:

w – Water content; γ_d – Dry density;

σ_{UCS} – Unconfined compressive strength; Es – Elasticity modulus; ν – Poisson's Ratio;

Is – Point load strength index. T – Splitting **T**ensile Strength.

Table 11 – Summary of laboratory tests – Borehole HRT-1.

#	Depth (m)		Layer	w	γ_t	σ_{UCS}	Es	ν	$Is_{(50)}$	T	LL/Pl
	From	To		(%)	kN/m^3	(MPa)	(GPa)	-	(MPa)	(MPa)	(%)
1	9.2	7.8	Marl	36	17.8	0.49					98/ 57
2	17.5	17.9	Marl	4	20	3.2	1.1	*		0.24	73/ 44
3	21.1	21.3	Marl	34	18.8	1.88				0.38	82/ 46
4	24.1	24.3	Pyroclastics	8					0.48		
5	31.05	31.2	Basalt, fresh	2	26	76.53				6.41	
6	39.0	39.2	Basalt, fresh	1	28	160.9	58.7	0.25			
7	44.8	45.0	Basalt, fresh	0	28	192.2					
8	51.6	51.7	Basalt, fresh	1	27.9				1.24	11.76	
9	58.7	59.0	Marl	16	20.2	1.55					82/ 48
10	61.0	61.4	Clay	26	19.6	0.43				0.58	77/ 46
11	70.0	70.3	Pyroclastics, coarse	6	18.7	4.2	0.39	0.19		0.32	
12	80.5	80.6	Basalt, weathered	4	23	24.1	16.8	0.1			
13	89.4	89.6	Basalt, fresh	1	28.5	193.4	75.7	0.23		20.17	
14	93.7	93.9	Basalt, fresh	1	28.5	60.38					
15	101.3	101.5	Pyroclastics	4	21	4.8	0.56	0.14		1.32	
16	105.5	105.6	Pyroclastics	6	19.9				0.7	1.1	

Where:

w – Water content; γ_d – Bulk density; LL – Liquid Limit; PI – Plasticity Index.

σ_{UCS} – Unconfined compressive strength; Es – Elasticity modulus; ν – Poisson's Ratio;

Is – Point load strength index. T – Splitting Tensile Strength.

* The poisson's ration can not be determined.

Table 12 – Summary of laboratory tests – Borehole HRT-2.

#	Depth (m)		Layer	w	γ_d	σ_{UCS}	Es	ν	$Is_{(50)}$	T	LL/Pl
	From	To		(%)	kN/m^3	(MPa)	(GPa)	-	(MPa)	(MPa)	(%)
1	20.4	20.6	clay	21					0.02		42/ 21
2	23.6	23.8	Basalt	7	18.9	6.93				0.8	
3	28.8	29.0	Pyroclastics	7	19.3	4.09				0.97	
4	36.7	39.8	Basalt	1	27.8	135.86				15.27	
5	47.0	47.3	Basalt	0	28.6	40.8	51.8	0.24		12.19	
6	49.6	49.8	Marl	19					0.09		50/ 27
7	52.7	53.0	Marl	20	20.8	0.8			0.11	0.72	44/ 22
8	57.2	57.4	Clay	33	17.8				0.05	0.32	70/ 37
9	62.6	63.0	Marl	5	20.6	5.1	1.4	0.17		0.69	53/ 31
10	65.7	66.0	Breccia	7	20.8	9.4	1.2	0.25		1.53	
11	76.3	76.5	Basalt	1	28	61.1	59.8	0.26		11.83	
12	84.7	84.9	Basalt	1	28.4	185				10.52	
13	92.5	92.7	Pyroclastics	4	20.5	11.6	4.0	0.22			
14	93.9	94.1	Pyroclastics	7	19.6	7.87				1.31	

Where:

w – Water content; γ_d – Dry density; LL – Liquid Limit; Pl – Plasticity Index.

σ_{UCS} – Unconfined compressive strength; Es – Elasticity modulus; ν – Poisson's Ratio;

Is – Point load strength index. T – Splitting Tensile Strength.

Table 13 – Summary of laboratory tests – Borehole A.

#	Depth (m)		Layer	w	γ_d	σ_{UCS}	Es	ν	$Is_{(50)}$	T	LL/Pl
	From	To		(%)	kN/m^3	(MPa)	(GPa)	-	(MPa)	(MPa)	(%)
1	8	10	Clay								71/ 47
2	22	24	Marl								60/ 33
3	30.0	30.3	Basalt	1	27.9	44	78.7	0.21		10.94	
4	34.6	34.9	Basalt	1	27.4	48.31				8.59	
5	36.0	36.3	Basalt	1	27.8	111.77				7.69	
6	42.0	42.6	Basalt	1	27.7	104	71.6	0.21			
7	48.3	48.5	Conglomerate	5	21.0	7.81				2.36	
8	56.8	57.2	Conglomerate	8	18.7	9.01				1.17	
9	65.2	65.5	Conglomerate	6	19.5	7.6	1.1	0.21		1.26	
10	65.6	65.9	Conglomerate	6	19.9	6.19				0.86	
11	74.5	74.9	Conglomerate	6	20.0	9.8	3.1	0.21		2.89	
12	75.3	75.5	Conglomerate	5	22.9	20.41				3.05	
13	83.2	83.5	Conglomerate	6	21.9	13.56				1.96	
14	85.8	86.1	Conglomerate	6	19.8	9.86				1.79	
15	90.3	90.5	Conglomerate	5	20.6	16.7	5			3.31	
16	95.0	95.2	Conglomerate	8	16.9				0.16	0.44	
17	103.4	103.8	Conglomerate	7	19.5	5.52				0.78	
18	107.0	107.2	Conglomerate	5	21.7	6.69				1.11	
19	110.6	110.9	Conglomerate	4	23.0	12.6	5.6	0.22		1.52	
20	119.3	119.5	Conglomerate	6	20.3	9.99				1	
21	126.5	126.8	Pyroclastics	4	21.9	11.05				4.14	
22	127.1	127.8	Basalt	2	26.7	86.6	57.6	0.23			
23	134.8	135.0	Basalt	4	21.8	27.15				8.64	
24	139.5	139.8	Pyroclastics (Conglomerate)	13	16.4				0.42	0.46	52/ 16
25	147.4	147.6	Basalt	3	24.0	15.46					
26	149.3	149.5	Pyroclastics	5	19.2	7.4				5.51	
27	157.3	157.5	Pyroclastics	1	28.1	74.81				1.58	
28	161.6	162.0	Pyroclastics	6	19.9	10	8.5	0.35		3.17	
29	168.6	168.9	Basalt	2	26.3	76.85					
30	169.5	169.7	Pyroclastics	3	21.1	15.8	9.6	0.23		2.73	
31	176.2	176.5	Basalt	1	28.2	87.8	61.1	0.24		11.12	
32	178.6	178.8	Pyroclastics	6	20.7	10					
33	185.6	185.9	Pyroclastics	5	17.4	12.73				1.54	
34	187.9	188.2	Pyroclastics	4	20.0	22.00	6.40	0.11		2.04	
35	191.1	191.5	Basalt	2	26.7	37.50				3.53	
36	197.8	198.0	Basalt	0	28.7	195.90				11.75	
37	205.9	206.3	Basalt	0	28.5	101.33				16.21	