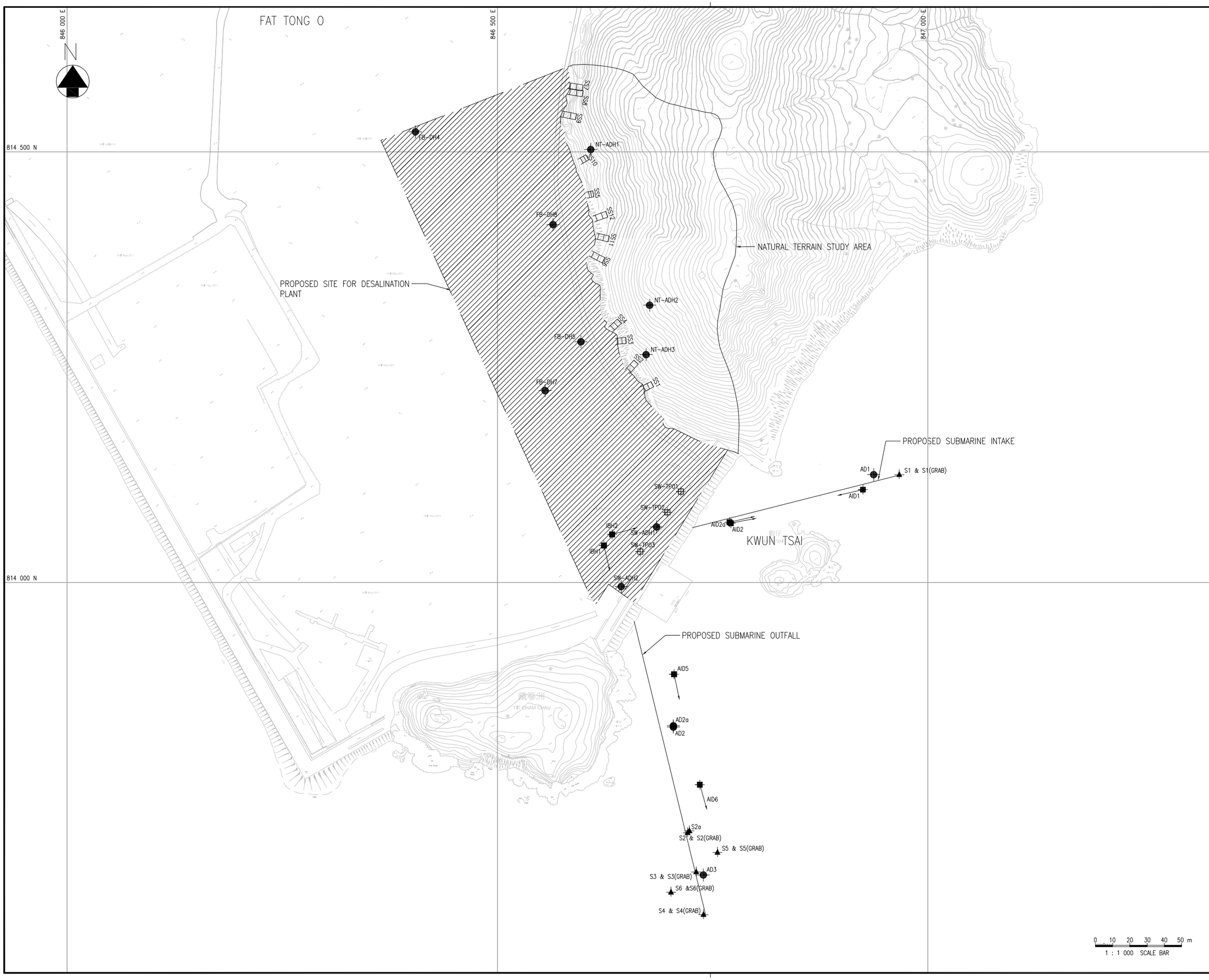

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MAP NOS. 12SW11D, 12SW12C, 12SW16B, 12SW16D, 12SW17A, 12SW17C

SITE SPECIFIC SI (COMPLETED IN NOV 2016)

- SITE SPECIFIC DRILLHOLE
- SITE SPECIFIC INCLINED DRILLHOLE
- SITE SPECIFIC VIBROCORE AND GRAB SAMPLE
- SITE SPECIFIC STRIPPING
- SITE SPECIFIC TRIAL PIT

Logs of GI can be found in http://www.ginfo.cedd.gov.hk/ginfoint/

Revision	Date	Description			Initial
		Designed	Checked	Drawn	Checked
Initial		YLC	CKH	SZ	WLS
Date		02/17	02/17	02/17	02/17

Approved

Agreement No.
CE 8/2015 (WS)

Contract Title
FIRST STAGE OF DESALINATION PLANT AT TSEUNG KWAN O – INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title
SITE SPECIFIC SI STATION LAYOUT PLAN (COMPLETED IN NOV 2016)

Drawing No.

Revision
–

Scale
A1 1 : 2000
A3 1 : 4000

水務署
Water Supplies Department

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 4** SHEET 1 of 9

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846404.74 N 814523.17	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD38		DATE 28.05.2016 to 11.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +30.02 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
28.05.2016	SW								0.00	+30.02	0.00			Grey (10YR 6/1) mottled black, angular to subangular, fine to coarse GRAVEL and some cobble of rock fragments and with some concrete and asphalt fragments. (FILL)
1			30	37					T6-146					
									1.50					
2			30	27					T6-146					
3									3.00					
			5	33					T6-146					
4									4.50					From 4.35m to 6.00m: With much angular to subangular cobble and boulder (<260mm) sized moderately decomposed rock fragments and concrete fragments.
5			5	23					T6-146					
28.05.2016		1.50 at 1800							6.00					
30.05.2016		Dry at 0800												
			5	42					T6-146					
7									7.50					From 7.50m to 10.80m: With much angular to subangular cobble and boulder (<260mm) sized moderately decomposed rock fragments and concrete fragments.
8			5	31					T6-146					
9									9.00					
			5	40					T6-146					
10										+20.02	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	22.07.2016
CHECKED	R. Chu
DATE	23.07.2016

REMARKS

1. No inspection pit was excavated.
2. Constant head permeability tests were carried out at sections from 43.00m to 44.50m, 46.65m to 47.65m and 64.75m to 66.25m.
3. Groundwater sample was taken at 89.90m.
4. Piezometers were installed with tips at 41.50m and 65.00m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. FB-DH 4 SHEET 2 of 9

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846404.74 N 814523.17	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD38		DATE 28.05.2016 to 11.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +30.02 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			5	44					10.00 T6-146 10.80					As sheet 1 of 9.
11			5	58					T6-146					
30.12.2016	SW 12.00m	8.00 at 1800							12.00					
31.05.2016	PW	Dry at 0800												
			0	45					T2-120					
13									13.50					
14			0	33					T2-120					
15									15.00	+15.02	15.00			
			0	28					T2-120					Light brown (7.5YR 6/4) spotted grey, angular to subangular, slightly clayey silty very sandy fine to coarse GRAVEL and occasional cobble of rock fragments. (FILL)
16									16.50					
17			0	78					T2-120	+12.87	17.15			
			0	100					17.47 T2-120					Grey (7.5YR 6/1) mottled very pale brown, spotted dark grey, angular to subangular, slightly silty sandy fine to coarse GRAVEL and COBBLE of rock fragments and with much concrete and refuse fragments. (FILL)
18									18.00					
			0	45					T2-120					
19														
31.05.2016		Dry at 1800												
01.06.2016		Dry at 0800							19.50 T2-120					
20										+10.02	20.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu	REMARKS
DATE	22.07.2016	
CHECKED	R. Chu	
DATE	23.07.2016	

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 4** SHEET 3 of 9

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846404.74 N 814523.17	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD38		DATE 28.05.2016 to 11.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +30.02 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	30					T2-120					As sheet 2 of 9.
21									21.00					
			0	45					T2-120					
22									22.50					
23			0	37					T2-120					
24									24.00					
			0	27					T2-120					
25														
01.06.2016		Dry at 1800							25.50					
02.06.2016		Dry at 0800												
26			0	42					T2-120					
										+3.42	26.60			Grey (7.5YR 6/1) mottled light reddish brown and dark grey, angular to subangular, COBBLE and some medium to coarse gravel of rock fragments and with some concrete fragments. (FILL)
27									27.00					
			0	24					T2-120					
28									28.50					
29			0	23					T2-120					
30										+0.02	30.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	22.07.2016
CHECKED	R. Chu
DATE	23.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. FB-DH 4 SHEET 4 of 9

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846404.74 N 814523.17	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD38		DATE 28.05.2016 to 11.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +30.02 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									30.00					As sheet 3 of 9.
			0	25					T2-120					
31									31.00					
			0	12					T2-120					
32									32.20					
33			0	24					T2-120					
02.06.2016		6.50 at 1800												
03.06.2016		Dry at 0800							33.70					
34														
			50	24					T2-101					
35									35.20	-5.18	35.20			
														Light grey (7.5YR 7/1), CONCRETE. (FILL)
36										-5.88	35.90			
			55	68					T2-101					Greyish brown (10YR 5/2), angular to subangular, slightly clayey silty sandy fine to coarse GRAVEL and COBBLE of rock fragments and with some concrete fragments. (FILL) From 36.80m to 37.05m: With a boulder (<250mm) of moderately decomposed granite fragment.
37									37.05					
			65	36					T2-101					
38									37.95					
			70	30					T2-101					
39									38.95					
			70	40					T2-101					
									39.75					
40									T2-101	-9.98	40.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	22.07.2016
CHECKED	R. Chu
DATE	23.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 4** SHEET 5 of 9

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846404.74 N 814523.17	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD38		DATE 28.05.2016 to 11.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +30.02 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
03.06.2016 04.06.2016 41 42 04.06.2016 07.06.2016 43 44 07.06.2016 08.06.2016 45 46 47 08.06.2016 10.06.2016 48 49 10.06.2016 11.06.2016 50	PW 42.00m HW	9.20 at 1800 26.95 at 0800 21.00 at 1800 26.00 at 0800 9.50 at 1800 26.85 at 0800 9.50 at 1800 26.85 at 0800 9.50 at 1800 26.85 at 0800	70 70 70 70 70	46 23 100 100 0 100 100				B=45 3,2 2,2,2,2 N=8 B=69 2,3 4,4,5,4 N=17 4,4 4,5,6,6 N=21	T2-101 40.40 T2-101 1 41.50 2 41.95 42.00 3 42.40 4 43.50 5 43.95 44.00 6 44.10 7 44.40 45.50 8 46.50 9 46.60 10 47.60 11 47.70 12 48.65 48.70 13 49.10 14 49.70	-11.48 -15.48 -16.58 -19.98	41.50 45.50 46.60 50.00			As sheet 4 of 9. Loose to medium dense, greyish brown (10YR 5/2) spotted light grey, white and dark grey, slightly clayey silty fine to coarse SAND with some angular to subangular fine to coarse gravel of rock fragments and with some shell fragments. (FILL) Grey (7.5YR 6/1) mottled brown, angular to subangular, slightly clayey silty sandy fine to coarse GRAVEL of rock fragments and with some concrete and steel fragments. (FILL) Very stiff, greenish grey (5G 6/1) spotted white, sandy SILT with occasional shell fragments. (MARINE DEPOSIT)

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	22.07.2016
CHECKED	R. Chu
DATE	23.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 4** SHEET 6 of 9

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846404.74 N 814523.17	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD38		DATE 28.05.2016 to 11.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +30.02 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
51		11.06.2016 12.00 at 1800 13.06.2016 26.80 at 0800		100				3,4 4,5,5,6 N=20	15 50.65 50.70 16 50.80 17 51.10					As sheet 5 of 9.
52				100					18 51.70 19 52.65 52.70 20 52.80 21 53.10					
53								3,3 4,4,5,6 N=19						
54				100					22 53.70 23 54.65 54.70 24 54.80 25 55.10					
55								4,6 6,7,7,8 N=26						
56				100					26 55.70	-25.68	55.70			Very stiff, light greenish grey (5GY 7/1) spotted brown, slightly sandy SILT. (ALLUVIUM)
57								4,5 5,7,7,9 N=28	27 56.65 56.70 28 57.10					
58		13.06.2016 12.40 at 1800 14.06.2016 25.93 at 0800	60	76					29 57.70 30 58.70 31 58.80					
59			0	40										
60								7,9	32 59.80 59.90	-29.98	60.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	22.07.2016
CHECKED	R. Chu
DATE	23.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 4** SHEET 7 of 9

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846404.74 N 814523.17	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD38		DATE 28.05.2016 to 11.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +30.02 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
61 62		19.50 at 1800	50	100				11,11,10,11 N=43 7,8 12,12,12,11 N=47	33 60.30 34 60.80 35 61.80 61.90 36 62.00 37 62.30					As sheet 6 of 9.
14.06.2016 15.06.2016 63		26.03 at 0800	0	53					62.70 T2-101 63.32	-32.68	62.70			Dark grey (10YR 4/1) streaked light yellowish brown and light grey, angular to subangular, COBBLE and BOULDER (<330mm) of moderately decomposed tuff fragments. (ALLUVIUM)
64			0	55					T2-101 64.05	-34.03	64.05		V	Extremely weak, light yellowish brown (10YR 6/4) streaked very pale brown, completely decomposed fine ash TUFF. (Very stiff, slightly sandy clayey SILT)
65			0	0					38 65.05 65.15					
66		25.70 at 1800	0	0					39 66.15 66.25	-36.23	66.25			
15.06.2016 17.06.2016		25.30 at 0800						4,10 18,21,23,23 N=83	40 66.35 41 66.65				V	Extremely weak, light brown (7.5YR 6/4) spotted grey and white, completely decomposed fine ash TUFF. (Slightly clayey very silty fine SAND) From 68.95m to 69.89m: No recovery, assumed to be completely decomposed TUFF.
67 68			0	100				9,12 17,23,25,28 N=93	42 67.15 43 68.15 68.25 44 68.35 45 68.65					
69 70			0	27	9	9	NR		68.95 T2-101	-39.87	68.95 69.89			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	22.07.2016
CHECKED	R. Chu
DATE	23.07.2016

REMARKS

DRILLHOLE RECORD

DRiLTECH

CONTRACT NO. GE/2015/24

HOLE NO. **FB-DH 4**

SHEET 8 of 9

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846404.74 N 814523.17	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD38		DATE 28.05.2016 to 11.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +30.02 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
17.06.2016		25.00 at 1800					NI		T2-101 70.24	-40.08	70.10		IV	Weak to moderately weak, brown (7.5YR 5/4) streaked reddish brown, highly decomposed fine ash TUFF. (Angular, coarse GRAVEL and COBBLE of highly decomposed tuff fragments)
18.06.2016		26.00 at 0800					8.3			-40.32	70.34		II	
			0	18	11	0	NR		T2-101 70.80	-40.78	70.80		V	
71			0	0					46 71.30 71.40	-41.38	71.40		V	From 70.10m to 70.34m: Strong and slightly decomposed. (CORESTONE)
			0	43	0	0	NI		T2-101	-41.88	71.70		IV	From 70.34m to 70.80m: No recovery, assumed to be completely decomposed TUFF.
72							NR		72.10	-42.08	72.10		V	Extremely weak, light yellowish brown (10YR 6/4) mottled dark grey, completely decomposed fine ash TUFF. (Very stiff, slightly clayey sandy SILT with some angular fine to coarse coarse gravel and cobble of tuff fragments)
			0	0					47 72.90 73.00				V	Weak to moderately weak, brown (7.5YR 4/3) streaked dark grey, highly decomposed fine ash TUFF. (Angular, gravelly BOULDER (<270mm) and some cobble of highly decomposed tuff fragments)
18.06.2016		25.00 at 1800												
20.06.2016		25.10 at 0800	50	0										From 71.70m to 72.10m: No recovery, assumed to be completely decomposed TUFF.
74									48 74.00 74.10					
								5,9 11,13,15,18 N=57	49 74.20					Extremely weak, pale brown (10YR 6/3) spotted white and very dark brown, completely decomposed fine ash TUFF. (Very stiff, slightly sandy clayey SILT with occasional angular fine to coarse gravel of tuff fragments)
20.06.2016		24.30 at 1800							50 74.50					
22.06.2016		24.10 at 2000							74.70	-44.68	74.70			
75	HW 75.03m	24.00 at 1800	30	52	0	0	NI		T2-101 75.03	-44.85	74.87		IV	Weak to moderately weak, pale brown (10YR 6/3) spotted dark grey, highly decomposed fine ash TUFF. (Angular, slightly silty sandy fine to coarse GRAVEL and COBBLE of highly decomposed tuff fragments)
23.06.2016							NR			-45.01	75.03		V	
25.06.2016	NW	25.18 at 0800					NI			-45.12	75.14		IV	
							2.7			-45.35	75.37		II	
										-45.49	75.51		III	
			30	96	91	91			T2-101				II	From 74.87m to 75.03m: No recovery, assumed to be completely decomposed TUFF.
76														Strong to very strong, dark grey, slightly decomposed fine ash TUFF. (CORESTONE)
		23.50 at 1800	30	100	100	100	1.4		76.39 T2-101 76.66					
22.06.2016														
23.06.2016		25.10 at 0800	0	100	100	100			T2-101 77.11					From 75.37m to 75.51m and 83.14m to 83.30m: Moderately strong and moderately decomposed.
77														From 77.69m to 78.11m, 79.28m to 79.81m, 80.31m to 81.70m and 83.30m to 83.43m and 83.51m to 83.64m: No recovery, assumed to be completely decomposed TUFF.
			0	66	54	54			T2-101	-47.67	77.69		V	
78							NR			-48.09	76.11			
		24.00 at 1800							78.36				II	From 83.43m to 83.51m: Moderately weak and moderately decomposed.
25.06.2016														
27.06.2016		25.10 at 0800	0	100	93	88	8.5		TNW 78.93					
79										-49.26	79.28			
			0	63	33	33			TNW				V	
		24.00 at 1800					NR		79.81	-49.79	79.81			
27.06.2016														
07.07.2016		25.60 at							TNW	-49.98	80.00		II	
80														

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
MAZIER SAMPLE
SPT LINER SAMPLE
WATER SAMPLE
U100 SAMPLE
STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
PACKER TEST
PERMEABILITY TEST
PRESSUREMETER TEST
BOREHOLE TELEVIEWER
PIEZOMETER TIP
STANDPIPE TIP

LOGGED S.L. Chiu
DATE 22.07.2016
CHECKED R. Chu
DATE 23.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 4** SHEET 9 of 9

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846404.74 N 814523.17	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD38		DATE 28.05.2016 to 11.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +30.02 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
		0800					6.0			-50.29	80.31		II	As sheet 8 of 9.
			0	43	40	32			TNW				V	
81							NR		80.96					
			0	0	0	0			TNW					
07.07.2016	NW 81.70m	23.20 at 1800							81.70	-51.68	81.70			
08.07.2016		24.20 at 0800											II	
82							4.6				82.35			
			0	100	85	82			TNW					
							>20				82.72			
		23.50 at 1800												
08.07.2016							4.8		83.00					
										-53.12	83.14			
							>20			-53.28	83.30		III	
							NR			-53.41	83.43		V	
										-53.49	83.51			
			0	75	48	43	>20		TNW	-53.62	83.64		III	
							NR						V	Strong to very strong, dark grey, slightly decomposed fine ash TUFF. Joints are medium to widely spaced, occasionally very closely and closely spaced, rough planar and rough undulating, iron and manganese oxide stained, dipping at 0° to 10°, 35° to 45° and 50° to 60°.
							10.9						II	
84									84.06		84.10			
			0	100	100	97			TNW					From 86.02m to 86.12m: Moderately strong and moderately decomposed.
85							0.6							
									85.53					From 86.12m to 86.28m and 87.49m to 87.55m: No recovery, assumed to be completely decomposed TUFF.
											85.90			
86										-56.00	86.02			
09.07.2016		24.80 at 0800					>20			-56.10	86.12		III	
			0	89	77	74	NR		TNW	-56.26	86.28		V	
													II	
87							5.0		86.97					
										-57.47	87.49			
							NR			-57.53	87.55		V	
			0	96	95	83			TNW				II	
88														
09.07.2016		23.80 at 1800					6.0		88.48					
11.07.2016		24.60 at 0800												
89														
			0	100	100	99			TNW					
		23.50 at 1800												
11.07.2016										-59.88	89.90			End of hole at 89.90 m.
90														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	22.07.2016
CHECKED	R. Chu
DATE	23.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 5** SHEET 1 of 3

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846597.06 N 814279.40	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD04		DATE 02.07.2016 to 14.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +8.25 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
02.07.2016	SW								0.00	+8.25	0.00			Brown (10YR 5/3) and yellowish brown (10YR 5/4), clayey silty fine to coarse SAND with some subangular fine to coarse gravel of rock fragments. (FILL)
									1 0.45					
1									2 0.95					
									3 1.65 (1.50)	+6.75	1.50			
			0	100					T6-146 2.00					Light grey (N7/) and grey (N5/), angular to subangular, COBBLE and occasional coarse gravel of rock fragments and with some concrete fragments. (FILL)
2									T2-120 2.80					
			0	75										
3									T2-120 3.60					
			0	79										
4		Dry at 1800	0	71					T2-120 4.30					
02.07.2016														
07.07.2016		Dry at 0800												
			0	89					T2-120 5.00					
5										+3.25	5.00			
			0	90					T2-120 6.00					Light grey (N7/) and grey (N5/), angular to subangular, COBBLE and some coarse gravel of rock fragments and with some concrete, steel, asphalt and brick fragments. (FILL)
6														
		Dry at 1800	0	100					T2-120 6.50					
07.07.2016														
08.07.2016		Dry at 0800												
7			0	100					T2-120 7.50					
			0	100					T2-120 8.20					
8														
			0	88					T2-120 9.00					
9														
	SW 9.50m		0	86					T2-120 9.70					
	PW													
10									T2-120	-1.75	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	L. Zhang
DATE	22.07.2016
CHECKED	R. Chu
DATE	25.07.2016

REMARKS

1. An inspection pit was excavated to 1.50m deep by hand tools.
2. Groundwater sample was taken at 26.00m.
3. Piezometers were installed with tips at 11.50m and 20.00m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 5** SHEET 2 of 3

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846597.06 N 814279.40	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD04		DATE 02.07.2016 to 14.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +8.25 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
08.07.2016 09.07.2016 11 12 13 14 09.07.2016 11.07.2016 15 16 17 18 19 20	PW 14.00m HW HW 15.33m	Dry at 1800 6.50 at 0800 5.70 at 1800 7.00 at 0800	0 0 0 50 50 50 50 50 50 50	68 92 100 64 42 76 51 94 100 100	22 4 16 31 40 57	13 0 0 0 0 16	7.0 NI NR NI NR >20 NI NR >20 NI NR >20 NI >20 NI >20 NI 12.5 NI 18.2 3.4 >20	T2-120 10.50 T2-120 11.00 T2-120 12.00 T2-120 13.00 T2-120 14.00 T2-120 14.50 T2-101 15.33 T2-101 16.83 T2-101 18.07 T2-101 19.35 T2-101	-3.75 -4.18 -4.39 -4.75 -4.87 -5.45 -5.75 -5.98 -6.10 -6.25 -6.53 -6.94 -7.08 -7.56 -7.75 -7.84 -10.79 -10.91 -11.07 -11.18 -11.75	12.00 12.43 12.64 13.00 13.12 13.70 14.00 14.23 14.35 14.50 14.78 15.19 15.33 15.81 16.00 16.09 18.62 18.80 19.04 19.16 19.32 19.43 19.54 19.80 20.00	III IV V IV V III IV V III IV V III IV III IV III IV III IV III	As sheet 1 of 3. Weak to moderately weak, grey (2.5Y 5/1) mottled yellowish brown, highly decomposed fine ash TUFF. (Angular, medium to coarse GRAVEL and COBBLE of highly decomposed tuff fragments) From 12.00m to 12.43m, 13.70m to 14.00m, 14.35m to 14.50m, 15.19m to 15.33m and 15.81m to 16.00m: Moderately strong and moderately decomposed. (CORESTONE) From 12.64m to 13.00m, 13.12m to 13.70m, 14.23m to 14.35m and 14.78m to 15.19m: No recovery, assumed to be completely decomposed TUFF. Moderately strong, grey mottled yellowish brown, moderately decomposed fine ash TUFF. (CORESTONE) From 19.04m to 19.16m and 19.32m to 19.43m: Weak and highly decomposed. (Angular, slightly clayey silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments) Moderately strong, light greenish grey mottled brown and white, moderately decomposed fine ash TUFF. Joints are closely to medium spaced, occasionally

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	L. Zhang
DATE	22.07.2016
CHECKED	R. Chu
DATE	25.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. FB-DH 5 SHEET 3 of 3

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846597.06 N 814279.40	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD04		DATE 02.07.2016 to 14.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +8.25 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			50	96	39	39	6.7		T2-101		20.05		III	very closely spaced, rough planar and rough undulating, iron and manganese oxide stained, dipping at 25° to 35° and 65° to 75°.
11.07.2016		6.00 at 1800					>20		20.54	-12.29	20.35 20.54			
13.07.2016		6.85 at 0800									20.68		II	Strong, grey, slightly decomposed fine ash TUFF. Joints are very closely to closely spaced, occasionally medium spaced, rough planar and rough undulating, chlorite and kaolin coated, dipping at 5° to 15°, 25° to 35°, 45° to 55° and subvertically from 20.54m to 21.86m, 21.46m to 23.88m, 23.97m to 24.04m, 24.82m to 24.98m and 25.54m to 25.70m. From 24.82m to 24.98m: Moderately strong and moderately decomposed.
21			50	100	44	39	11.9		T2-101					
22									21.86		22.27			
			50	100	35	32	>20		T2-101					
23									23.16					
			50	100	0	0			T2-101					
24									23.88		23.88			
			50	100	74	74	9.6		T2-101					
13.07.2016		5.80 at 1800					>20			-16.57	24.82		III	
14.07.2016		6.80 at 0800							24.98	-16.73	24.98		II	
			50	100	84	70	8.5		T2-101					
14.07.2016		5.70 at 1200					0.0	▲		-17.75	25.80 26.00			
27														End of hole at 26.00 m.
28														
29														
30														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	L. Zhang
DATE	22.07.2016
CHECKED	R. Chu
DATE	25.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 8** SHEET 1 of 4

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846564.66 N 814415.49	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD5		DATE 23.06.2016 to 12.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +7.84 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
23.06.2016	SW								0.00	+7.84	0.00			Greyish brown (10YR 5/2) and light brownish grey (10YR 6/2), clayey silty fine to coarse SAND with some subangular fine to coarse gravel of rock fragments. (FILL)
									1 0.45 INSPECTION PIT					
1									2 0.95					
									3 1.45	+6.34	1.50			
									4 1.50					Grey (10YR 6/1), angular to subangular, COBBLE sized concrete fragment. (FILL)
2			50	86										
									5 2.50	+5.24	2.60			
								1,2 2,2,2,2 N=8	2.60 6 2.70					Firm to stiff, dark greyish brown (10YR 4/2), clayey sandy SILT with some subangular fine to medium gravel of rock fragments. (FILL)
3									7 3.00					
										+4.34	3.50			
									3.50					Light grey (N7/) mottled black, angular to subangular, medium to coarse GRAVEL and some cobble of rock fragments and occasional boulder of moderately decomposed tuff fragments and with some concrete fragments. (FILL)
4			0	40					T2-101					
		1.00 at 1800												
23.06.2016 24.06.2016		1.50 at 0800	0	56					5.00 T2-101 5.50					
6			0	45					T2-101					
									6.50					
7			0	42					T2-101					
		2.50 at 1800												
24.06.2016 25.06.2016		2.00 at 0800							7.50	+0.34	7.50			Light grey (N7/), subangular to subrounded, COBBLE and some coarse gravel of rock fragments and occasional boulder of moderately decomposed tuff and granite fragments. (FILL)
8			0	44					T2-120					
9									9.00					
	SW 9.50m								T2-101					
	PW		0	37						-2.16	10.00			
10														

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
MAZIER SAMPLE
SPT LINER SAMPLE
WATER SAMPLE
U100 SAMPLE
STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
PACKER TEST
PERMEABILITY TEST
PRESSUREMETER TEST
BOREHOLE TELEVIEWER
PIEZOMETER TIP
STANDPIPE TIP

LOGGED	L. Zhang
DATE	22.07.2016
CHECKED	R. Chu
DATE	25.07.2016

REMARKS

1. An inspection pit was excavated to 1.50m deep by hand tools.
2. Constant head permeability test was carried out at section from 22.70m to 24.20m.
3. Groundwater sample was taken at 30.23m.
4. Piezometers were installed with tips at 20.00m and 24.00m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 8** SHEET 2 of 4

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846564.66 N 814415.49	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD5		DATE 23.06.2016 to 12.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +7.84 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
25.06.2016		3.00 at 1800							T2-101					As sheet 1 of 4.
27.06.2016		3.00 at 0800							10.50					
11			0	27					T2-120					
27.06.2016		5.50 at 1800							12.00					
28.06.2016	PW 12.50m	5.00 at 0800	0	52					T2-101					
28.06.2016	HW	5.50 at 1800							13.00					
30.06.2016		5.00 at 0800	0	90					T2-101					
30.06.2016		5.20 at 1800							14.00					
04.07.2016		5.60 at 0800	0	95					T2-101					
04.07.2016		5.90 at 1800							15.00					
07.07.2016		6.00 at 0800	0	60					T2-101					
16									16.00					
			0	56					T2-101					
17									16.80					
		5.70 at 1800	0	71					T2-101					
07.07.2016									17.50					
08.07.2016		5.70 at 0800												
18			0	67					T2-101					
19									19.00					
			0	50					T2-101	-12.16	20.00			
20														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	L. Zhang
DATE	22.07.2016
CHECKED	R. Chu
DATE	25.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 8** SHEET 3 of 4

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846564.66 N 814415.49	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD5		DATE 23.06.2016 to 12.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +7.84 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									T2-101					As sheet 2 of 4.
									8	-12.66	20.50		V	Extremely weak, light yellowish brown (10YR 6/4), completely decomposed fine ash TUFF. (Clayey very silty fine to coarse SAND)
21			50	90					9		21.50 21.60			
								4,0 9,2,12,14 N=37	10		21.70			
22									11		22.00			
									12		22.50			
23			50	100										
									13		23.50 23.60			
								3,7 9,10,13,16 N=48	14		23.70			
24									15		24.00			
08.07.2016	HW 24.50m	5.50 at 1800								-16.66	24.50			
11.07.2016		5.00 at 0800	30	70	0	0	>20		T2-101	-16.96	24.80		IV	Weak to moderately weak, light olive grey (5Y 6/2), highly decomposed fine ash TUFF. (Angular, coarse GRAVEL and occasional cobble of highly decomposed tuff fragments)
							NR		24.93	-17.09	24.93		V	
25			50	100	83	72	9.6		T2-101				II	Strong to very strong, grey, slightly decomposed fine ash TUFF. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, iron and manganese oxide stained, calcite and kaolin coated, dipping at 45° to 55°, 65° to 75° and subvertically from 25.22m to 25.26m, 25.78m to 26.82m, 27.48m to 27.64m, 27.85m to 28.22m, 28.57m to 28.65mm, 29.28m to 29.42m and 29.50m to 29.68m.
											25.87			
26							>20		25.95		26.20			
			50	100	51	25	18.4		T2-101					
		4.70 at 1800									26.96			
11.07.2016 12.07.2016		4.40 at 0800							26.96					
			50	99	91	82	5.2		T2-101					
28											28.31			
							13.3		28.46		28.46			
							>20				28.62			
29			50	100	74	74	6.0		T2-101					
											29.29			
							>20		29.42		29.42			
			50	100	86	69	8.7		T2-101	-22.16	30.00			
30														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	L. Zhang
DATE	22.07.2016
CHECKED	R. Chu
DATE	25.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 8** SHEET 4 of 4

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Fill Bank)

METHOD	ROTARY	CO-ORDINATES E 846564.66 N 814415.49	WORKS ORDER NO. GE/2015/24.3
MACHINE	SD5		DATE 23.06.2016 to 12.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +7.84 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
12.07.2016		4.00 ft 1800					0.0	▲	T2-101	-22.39	30.11 30.23		II	As sheet 3 of 4.
														End of hole at 30.23 m.

31
32
33
34
35
36
37
38
39
40

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	L. Zhang
DATE	22.07.2016
CHECKED	R. Chu
DATE	25.07.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 7** SHEET 1 of 6

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD **ROTARY**	CO-ORDINATES E **846555.43** N **814222.75**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE **SD27**		DATE **04.08.2016** to **12.08.2016**
FLUSHING MEDIUM **WATER**	ORIENTATION **VERTICAL**	GROUND LEVEL **+18.84** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
04.08.2016	SW								0.00	+18.84	0.00			Grey (7.5YR 7/1) spotted red, angular to subangular, fine to coarse GRAVEL and some cobble of rock fragments and with much concrete and brick fragments. (FILL)
			70	65					T6-146 1.00					
1			50	63					T6-146 1.80					
2			30	75					T6-146 2.65					
3			30	58					T6-146 3.60					
4			0	64					T6-146 4.50					
5			0	64					T6-146 5.20					
			0	69					T6-146 6.00					
6			0	77					T6-146	+12.04	6.80			Grey (7.5YR 6/1) mottled pinkish grey, angular to subangular, medium to coarse GRAVEL and some cobble of rock fragments and with some concrete fragments. (FILL)
7			0	70					T6-146 7.10					
8			0	86					T6-146 8.10					
9			0	74					T6-146 8.80					From 8.55m to 8.80m: With a boulder of slightly decomposed granite fragment.
10									T6-146 9.80	+8.84	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	16.08.2016
CHECKED	R. Chu
DATE	23.08.2016

REMARKS

1. No inspection pit was excavated.
2. Groundwater sample was taken at 53.63m.
2. Constant head permeability test was carried out at section from 36.90m to 38.40m.
3. Piezometers were installed with tips at 35.00m and 48.00m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 7** SHEET 2 of 6

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846555.43** N **814222.75**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD27**		DATE **04.08.2016** to **12.08.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **VERTICAL**	GROUND LEVEL **+18.84** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	90					T6-146 10.90					As sheet 1 of 6.
11			0	92					T6-146 11.90	+7.04	11.80			
12			0	86					T6-146 12.60					Light grey (7.5YR 7/1) and grey (7.5YR 5/1), angular to subangular, COBBLE and occasional coarse gravel of rock fragments and with some concrete fragments. (FILL)
04.08.2016		Dry at 1800												
05.08.2016		Dry at 0600												
13			0	83					T6-146 13.20					
			0	81					T6-146 13.90					From 13.20m to 13.90m: With much angular to subangular medium to coarse gravel of rock fragments.
14			0	63					T6-146 14.70					
	SW 14.70m													
	PW													
15			0	92					T6-146 15.30	+3.54	15.30			From 14.75m to 15.10m: With a boulder of slightly decomposed granite fragment.
16			0	76					T2-120 16.60					Grey (10YR 5/1) spotted light grey, angular to subangular, coarse GRAVEL and some cobble of rock fragments and with some concrete and steel fragments. (FILL)
17			0	75					T2-120 17.60	+1.04	17.80			
18			0	79					T2-120 18.60					Light grey (7.5YR 7/1) spotted red, angular to subangular, slightly sandy fine to coarse GRAVEL and occasional to some cobble of rock fragments and with some concrete, brick and refuse fragments. (FILL)
19			0	78					T2-120 19.10					
20			0	75					T2-120	-1.16	20.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**16.08.2016**
CHECKED	**R. Chu**
DATE	**23.08.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. FB-DH 7 SHEET 3 of 6

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD ROTARY	CO-ORDINATES E 846555.43 N 814222.75	WORKS ORDER NO. GE/2015/24.3B
MACHINE SD27		DATE 04.08.2016 to 12.08.2016
FLUSHING MEDIUM WATER	ORIENTATION VERTICAL	GROUND LEVEL +18.84 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
05.08.2016 06.08.2016		13.60 at 1800 15.70 at 0800							T2-120 20.40					As sheet 2 of 6. From 20.20m to 21.60m: With many angular to subangular cobble of rock fragments.
21			0	75					T2-120 21.20					
			0	81					T2-120 22.05					
22			0	72					T2-120 22.90					
23			0	74					T2-120 23.90					
24			0	79					T2-120 24.90					
25			0	82					T2-120 25.45					
26			0	86					T2-120 26.60					
27			0	81					T2-120 27.40					
28			0	87					T2-120 28.60					
29			0	87					T2-120 29.70	-10.66	29.50			Light grey (7.5YR 7/1) mottled dark brown and black, angular to subangular, fine to coarse
30			0	86					T2-120					

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	16.08.2016
CHECKED	R. Chu
DATE	23.08.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 7** SHEET 4 of 6

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846555.43** N **814222.75**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD27**		DATE **04.08.2016** to **12.08.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **VERTICAL**	GROUND LEVEL **+18.84** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	85					30.05 T2-120 30.80					GRAVEL and many cobble of rock fragments and with some concrete and asphalt fragments. (FILL)
06.08.2016 08.08.2016 31		12.30 at 1800 15.72 at 0800	0	82					T2-120 31.85					
32			0	81					T2-120 33.00					
33			0	80					T2-120 33.60	-14.56	33.40			
34			0	81					T2-120 34.70					Grey (10YR 5/1) mottled light grey and black, angular to subangular, COBBLE and fine to coarse gravel of concrete and slightly decomposed rock fragments and some shell fragments. (FILL)
08.08.2016	PW 34.70m	15.63 at 1800												
09.08.2016 35	HW	15.78 at 0800	50	52					T2-120	-16.76	35.60			
36									36.00	-17.16	36.00		V	Firm, brown (10YR 5/3) mottled grey, slightly sandy silty CLAY with many angular to subangular, fine to coarse gravel and cobble of rock fragments. (COLLUVIUM)
			80	100										Extremely weak, brown (10YR 5/3) and pale brown (10YR 6/3) spotted light grey and light brown, completely decomposed coarse ash TUFF. (Firm, slightly sandy clayey SILT)
37 09.08.2016 10.08.2016		15.70 at 1800 15.80 at 0800						7,9 11,10,10,11 N=42	37.00 37.10 37.20 37.50					
38			80	88					38.00					
10.08.2016 11.08.2016		9.70 at 1800 15.86 at 0800	70	70	8	0	NI NR >20 NI		38.80 38.90 T2-101 39.40 T2-101	-20.06 -20.32 -20.47 -20.94 -21.12	38.90 39.16 39.31 39.78 39.96		IV V III IV	Weak to moderately weak, greyish brown (10YR 5/2), highly decomposed coarse ash TUFF. (Angular, coarse GRAVEL and COBBLE of highly decomposed tuff fragments) From 39.16m to 39.31m and 39.96m to 40.50m: No
40														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**16.08.2016**
CHECKED	**R. Chu**
DATE	**23.08.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 7** SHEET 5 of 6

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846555.43** N **814222.75**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD27**		DATE **04.08.2016** to **12.08.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **VERTICAL**	GROUND LEVEL **+18.84** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			70	51	20	16	NR		T2-101	-21.66	40.50		V	recovery, assumed to be completely decomposed TUFF.
41			80	0					40.50 7 41.50	-22.76	41.60		IV	From 39.31m to 39.78m: Moderately strong and moderately decomposed. (CORESTONE) Weak to moderately weak, greyish brown (10YR 5/2), highly decomposed coarse ash TUFF. (Angular, clayey silty sandy fine to coarse GRAVEL and COBBLE of highly decomposed tuff fragments)
42			80	100					8 41.60 9 42.60				V	Extremely weak, brown (10YR 5/3), completely decomposed coarse ash TUFF. (Stiff, clayey sandy SILT with occasional angular fine gravel of granite fragments)
43								7,9 9,11,12,14 N=46	42.70 10 42.80 11 43.10	-24.76	43.60			
44			80	90					12 43.60				V	Extremely weak, brown (10YR 5/3) spotted white, completely decomposed coarse ash TUFF. (Slightly clayey silty fine to coarse SAND with occasional to some angular fine gravel of granite fragments)
45								8,12 16,17,20,22 N=75	13 44.60 44.70 14 44.80 15 45.10	-26.66	45.50			
							>20		45.50	-26.96	45.80		II	Strong, grey, slightly decomposed coarse ash TUFF. (CORESTONE)
46			80	30	6	0	NR		T2-101	-27.66	46.50		V	From 45.80m to 46.50m: No recovery, assumed to be completely decomposed TUFF.
47		12.22 at 1800	80	0					46.50 16 47.20 47.30	-28.46	47.30		IV	Weak to moderately weak, dark brown (10YR 3/3), highly decomposed coarse ash TUFF. (Angular, slightly sandy fine to coarse GRAVEL and occasional cobble of highly decomposed granite fragments)
11.08.2016 12.08.2016		15.90 at 0800					>20			-28.86	47.70		II	From 47.30m to 47.70m: Strong and slightly decomposed. (CORESTONE)
48	HW 48.60m		80	65	3	0	NI NR		T2-101	-29.31 -29.76	48.15 48.60		IV V	From 48.15m to 48.60m: No recovery, assumed to be completely decomposed TUFF.
49			80	96	50	28	>20		48.60 T2-101 49.10	-30.06 -30.30	48.90 49.14		II III	Strong to very strong, grey spotted light grey, slightly decomposed coarse ash TUFF. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin coated, dipping at 0° to 10°, 20° to 30°, 45° to 55° and 65° to 75°.
50			80	100	74	72	3.1		T2-101	-31.16	50.00		II	

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
MAZIER SAMPLE
SPT LINER SAMPLE
WATER SAMPLE
U100 SAMPLE
STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
PACKER TEST
PERMEABILITY TEST
PRESSUREMETER TEST
BOREHOLE TELEVIEWER
PIEZOMETER TIP
STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**16.08.2016**
CHECKED	**R. Chu**
DATE	**23.08.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **FB-DH 7** SHEET 6 of 6

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846555.43** N **814222.75**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD27**		DATE **04.08.2016** to **12.08.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **VERTICAL**	GROUND LEVEL **+18.84** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									T2-101	-31.27	50.11		II	From 48.90m to 49.14m and 50.11m to 50.44m: Moderately strong to strong and moderately decomposed.
							>20		50.40	-31.60	50.44		III	
											50.65		II	
51			80	100	85	83	13.0		T2-101					
							>20				51.34			
											51.46			
52							5.1		51.90					
											52.25			
			80	100	86	86			T2-101					
							>20							
53									53.02					
			80	100	90	90			T2-101		53.35			
12.08.2016		15.86 at 1800					10.7			-34.79	53.63			
54														End of hole at 53.63 m.
55														
56														
57														
58														
59														
60														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**16.08.2016**
CHECKED	**R. Chu**
DATE	**23.08.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 1** SHEET 1 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES	E **846623.80**	WORKS ORDER NO.	**GE/2015/24.3B**
MACHINE	**SD41**		N **814042.99**	DATE	**30.07.2016** to **30.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION	**167°/25°**	GROUND LEVEL	**+8.60** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30.07.2016	SW		80	100					0.00 T6-146	+8.60	0.00			Grey, CONCRETE. (PLATFORM)
30.07.2016									0.55 T6-146	+8.39	0.50			Pale brown (10YR 6/3), angular to subangular, slightly clayey silty very sandy fine to coarse GRAVEL and some cobble of rock fragments. (FILL)
01.08.2016			80	95					1.15 T6-146					
1			80	91					1.50 T6-146					
			80	82					2.15 T6-146	+7.69	2.15			
2			80	62					2.65 T6-146					Grey (7.5YR 6/1) mottled brown and dark grey, angular to subangular, slightly sandy fine to coarse GRAVEL and some cobble of rock fragments and with occasional concrete and steel fragments. (FILL)
			80	94					3.15 T6-146					
3			80	36					3.65 T6-146					
			80	100					4.15 T6-146					
4			80	86					4.50 T6-146					
01.08.2016 03.08.2016			80	96					5.00 T6-146					
5			80	58					5.52 T6-146					
			80	61					6.08 T6-146					
6			80	58					6.60 T6-146					
			80	77					7.12 T6-146					
7			80	73					7.60 T6-146					
			80	85					8.00 T6-146					
8			80	92					8.50 T6-146					
			80	64					8.95 T6-146					
9			80	64					9.48 T6-146					
			80	62						+4.37	10.00			
03.08.2016														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chu**
DATE	**11.10.2016**
CHECKED	**R. Chu**
DATE	**17.10.2016**

REMARKS

1. No inspection pit was excavated.
2. Eastman surveys were carried out at 60.00m, 80.00m, 100.00m, 120.00m and 140.00m.
3. Packer (Water absorption) tests were carried out at sections from 76.50m to 81.00m, from 83.00m to 87.50m and from 92.50m to 97.00m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 1 SHEET 2 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES E 846623.80 N 814042.99	WORKS ORDER NO. GE/2015/24.3B
MACHINE	SD41		DATE 30.07.2016 to 30.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION 167°/25°	GROUND LEVEL +8.60 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
04.08.2016									10.00					As sheet 1 of 16.
			0	60					T6-146					
									10.58					
11			0	91					T2-120					From 10.83m to 11.13m: With a boulder of slightly decomposed tuff fragment. From 11.13m to 13.68m: With a boulder sized concrete fragment.
									11.13					
			0	63					T2-120					
									11.61					
12			0	65					T2-120					
									12.09					
			0	79					T2-120					
									12.62					
13			0	93					T2-120					
									13.16					
			0	92					T2-120					
									13.68					
14			0	96					T2-120					
04.08.2016									14.22					
05.08.2016			0	94					T2-120					
									14.54					
			0	94					T2-120					
									14.89	+2.31	14.89			
15				67					T2-120					Grey (7.5YR 5/1) spotted light brown, angular to subangular, coarse GRAVEL and some cobble of rock fragments. (FILL)
									15.37					
			0	67					T2-120					
									15.79					
16			0	70					T2-120					
05.08.2016									16.22					
06.08.2016	SW 16.50m		0	69					T2-120					
	PW								16.64					
17			0	67					T2-120					
									17.16					
			0	73					T2-120					
									17.67					
18			0	75					T2-120					
									18.18					
			0	70					T2-120					
06.08.2016									18.71					
08.08.2016														
19			0	75					T2-120					
									19.22					
			0	68					T2-120					
									19.72					
20									T2-120	+0.15	20.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	11.10.2016
CHECKED	R. Chu
DATE	17.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 1 SHEET 3 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES E 846623.80 N 814042.99	WORKS ORDER NO. GE/2015/24.3B
MACHINE	SD41		DATE 30.07.2016 to 30.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION 167°/25°	GROUND LEVEL +8.60 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	86					T2-120 20.23					As sheet 2 of 16.
			0	77					T2-120 20.75					
08.08.2016 09.08.2016 21			0	64					T2-120 21.22					
			0	66					T2-120 21.69					
22			0	70					T2-120 22.19					
			0	67					T2-120 22.64					
23			0	78					T2-120 23.13					
			0	90					T2-120 23.64					
24			0	71					T2-120 24.15					
			0	75					T2-120 24.66					
09.08.2016 10.08.2016 25			0	79					T2-120 25.14	-2.07	25.25			
			0	70					T2-120 25.67					Dark grey (7.5YR 4/1) mottled grey and light brown, angular to subrounded, medium to coarse GRAVEL and some cobble of rock fragments. (FILL) At 26.00m: With a cobble sized coral fragment.
26			0	88					T2-120 26.16					
			0	84					T2-120 26.66					
27			0	86					T2-120 27.17					
10.08.2016 11.08.2016			0	82					T2-120 27.67					
28			0	86					T2-120 28.18					
			0	88					T2-120 28.69					
29			0	90					T2-120 29.19	-3.74	29.19			
11.08.2016 12.08.2016			0	90					T2-120 29.50					Dark grey (7.5YR 4/1) spotted light brown and light grey, angular to subangular, COBBLE and BOULDER (<300mm) of slightly decomposed tuff fragments. (FILL)
12.08.2016 06.09.2016 30			0	98					T2-120 29.94	-4.08	30.00			

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
MAZIER SAMPLE
SPT LINER SAMPLE
WATER SAMPLE
U100 SAMPLE
STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
PACKER TEST
PERMEABILITY TEST
PRESSUREMETER TEST
BOREHOLE TELEVIEWER
PIEZOMETER TIP
STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	11.10.2016
CHECKED	R. Chu
DATE	17.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 1** SHEET 4 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846623.80** N **814042.99**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD41**		DATE **30.07.2016** to **30.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **167°/25°**	GROUND LEVEL **+8.60** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
06.09.2016 07.09.2016			0	96					T2-120 T2-120 30.48					As sheet 3 of 16.
31	PW 30.97m HW		0	92					T2-120 30.97					
			0	87					T2-101 31.46					
			0	100					T2-101 31.85					
32			0	95					T2-101 32.27					
			0	81					T2-101 32.69	-5.22	32.69			
33			0	96					T2-101 33.18					Grey (7.5YR 5/1) mottled very dark grey and light grey, angular to subangular, coarse GRAVEL and some cobble of rock fragments. (FILL)
			0	94					T2-101 33.69					
34			0	90					T2-101 34.11					
			0	79					T2-101 34.49					
			0	65					T2-101 34.98					
35			0	81					T2-101					
07.09.2016 08.09.2016									1 35.50	-6.40	35.50			
36			60	98					2 36.50 3 36.60				V	Extremely weak, red (2.5YR 5/8) mottled light grey and yellowish brown, completely decomposed coarse ash TUFF. (Firm, silty sandy CLAY)
37			60	98					4 37.60	-7.33	37.70			
38			60	100					5 37.70 6 38.70	-7.80	38.80		IV	Weak to moderately weak, red (2.5YR 5/8) spotted light yellowish brown, highly decomposed coarse ash TUFF. (Angular, slightly clayey silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
39			60	100					7 38.80 8 39.80 9 39.90	-8.26	39.90		V	Extremely weak, light yellowish brown (10YR 6/4) streaked yellowish red, completely decomposed coarse ash TUFF. (Firm, clayey sandy SILT with occasional angular fine gravel of quartz and tuff fragments)
40														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**11.10.2016**
CHECKED	**R. Chu**
DATE	**17.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 1 SHEET 5 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES E 846623.80 N 814042.99	WORKS ORDER NO. GE/2015/24.3B
MACHINE	SD41		DATE 30.07.2016 to 30.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION 167°/25°	GROUND LEVEL +8.60 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			60	100					10 40.90 11 41.00	-8.73	41.00		IV	Very weak to weak, light yellowish brown (10YR 6/4) streaked yellowish red, highly decomposed coarse ash TUFF. (Angular, slightly clayey silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
41			60	100					12 42.00 13 42.10	-9.19	42.10		V	Extremely weak, light yellowish brown (10YR 6/4) streaked yellowish red, completely decomposed coarse ash TUFF. (Firm, clayey sandy SILT with occasional angular fine gravel of quartz and tuff fragments)
42			60	100					14 43.10 43.20				IV	Weak to moderately weak, light yellowish brown (10YR 6/4) streaked brown and red, highly decomposed coarse ash TUFF. (Angular, slightly clayey silty sandy fine to coarse GRAVEL and occasional cobble of highly decomposed tuff fragments)
43			60	0					15 44.20 16 44.30					
44			60	98					17 45.30 18 45.40	-10.59	45.40			
45			70	100					19 46.40 46.50	-11.05	46.50		IV	Weak, light red (10R 6/8) spotted light brown, highly decomposed coarse ash TUFF. (Angular, slightly clayey silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
08.09.2016 09.09.2016														
46			70	79	50	34	14.3 NI NR		T2-101	-11.32 -11.39 -11.47	47.13 47.29 47.50		III IV V	Moderately strong, brown, moderately decomposed coarse ash TUFF. (CORESTONE) From 47.13m to 47.29m: Weak to moderately strong and highly decomposed. (Angular, slightly sandy fine to coarse GRAVEL of highly decomposed tuff fragments) From 47.29m to 47.50m: No recovery, assumed to be completely decomposed TUFF.
47			70	40					20 47.50 21 48.50 48.60	-12.01	48.60 48.76		IV	Weak to moderately weak, light yellowish brown (10YR 6/4) streaked red and dark brown, highly decomposed coarse ash TUFF. (Angular, slightly clayey silty sandy fine to coarse GRAVEL and occasional cobble of highly decomposed tuff fragments)
48			70	100	46	18	NI 13.0 >20		T2-101 49.28	-12.35	48.99 49.58		III	Moderately strong, brown, moderately decomposed coarse ash TUFF. (CORESTONE)
49 09.09.2016 10.09.2016	HW 49.28m		30	87	40	29	NI		T2-101	-12.48 -12.52	49.87 49.98		IV III	From 49.58m to 49.87m: Weak to moderately weak
50														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
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- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	11.10.2016
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REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 1** SHEET 6 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846623.80** N **814042.99**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD41**		DATE **30.07.2016** to **30.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **167°/25°**	GROUND LEVEL **+8.60** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									49.98				II	and highly decomposed. (Angular, slightly clayey silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
			30	100	98	98	6.8		T2-101		50.90			Moderately strong to strong, brown dappled dark grey and grey, spotted light grey, moderately decomposed coarse ash lithic TUFF. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin coated, dipping at 20° to 30°, 40° to 50° and 65° to 75°.
51									51.22					
			30	92	64	50	1.5			-13.19	51.55		III	
							>20		T2-101		51.87			
52							NI			-13.41	52.08			
									52.23				II	From 49.98m to 51.55m and 52.08m to 53.63m: Strong to very strong and slightly decomposed.
			30	100	100	95	5.4		T2-101					From 54.86m to 55.04m: Weak to moderately strong and highly decomposed. (Angular, slightly silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
53									53.38					
										-14.07	53.63		III	
											53.92			
54							>20				54.02			
			30	100	82	72	10.3		T2-101					
										-14.58	54.80			
							>20		54.86					
55							NI			-14.66	54.86 55.04		IV	
							>20				55.15		III	
										-14.75	55.25			
			30	100	70	70			T2-101				II	Strong to very strong, grey spotted light grey, slightly decomposed coarse ash lithic TUFF. Joints are closely to medium spaced, occasionally very closely and widely spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin coated, dipping at 0° to 10°, 45° to 55° and 60° to 70°.
10.09.2016 12.09.2016 56							0.8		55.82					
											56.41			
			30	100	100	100			T2-101					
57							4.7		57.17					
											57.68			
58			30	100	99	99			T2-101					
							0.5		58.65					
59														
			30	100	97	97			T2-101					
											59.58			
							6.7			-16.76	60.00			
60														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
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- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
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- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**11.10.2016**
CHECKED	**R. Chu**
DATE	**17.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 1** SHEET 7 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846623.80** N **814042.99**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD41**		DATE **30.07.2016** to **30.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **167°/25°**	GROUND LEVEL **+8.60** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									T2-101 60.16		60.03		II	As sheet 6 of 16.
							1.3							
			30	100	100	100			T2-101		60.82			
61														
							3.4		61.50					
											61.99			
62			30	90	73	73	>20		T2-101	-17.64	62.08			
							NR			-17.68	62.18		V	From 62.08m to 62.18m: No recovery, assumed to be completely decomposed TUFF.
							3.7				62.45		II	
							>20		62.55		62.55			
63														
			30	100	92	92			T2-101					
										-18.29	63.62		III	From 63.62m to 63.91m: Moderately strong to strong and moderately decomposed.
										-18.41	63.91		II	Strong to very strong, grey spotted light grey, slightly decomposed coarse ash lithic TUFF. Joints are very closely to closely spaced, occasionally medium spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin and chlorite coated, dipping at 0° to 10°, 30° to 40°, 50° to 60° and 65° to 75°.
64									63.97					
							3.2							
			30	100	95	95			T2-101					
65														
12.09.2016 13.09.2016									65.24					
66			30	100	79	76			T2-101		65.99			
							>20				66.30			
									66.59					
67							6.0							
			30	100	63	60			T2-101					
											67.47			
							>20							
68									67.93		68.00			
							8.3				68.12			
										-20.29	68.36		III	From 68.36m to 68.90m: Moderately strong and moderately decomposed.
			30	100	37	12			T2-101					
							>20			-20.52	68.90			
69									68.90				II	Strong, grey spotted light grey, slightly decomposed coarse ash lithic TUFF. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, kaolin and chlorite coated, dipping at 20° to 30°, 30° to 40°, 50° to 60°, 65° to 75° and
											69.44			
			30	100	47	13	6.7		T2-101		69.59			
							>20			-20.98	70.00			
70														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
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- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
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- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**11.10.2016**
CHECKED	**R. Chu**
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REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 1 SHEET 8 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES E 846623.80 N 814042.99	WORKS ORDER NO. GE/2015/24.3B
MACHINE	SD41		DATE 30.07.2016 to 30.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION 167°/25°	GROUND LEVEL +8.60 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
13.09.2016 14.09.2016														
			30	100	69	57	7.5 10.9		70.11 T2-101		70.11 70.62		II	subvertically from 74.66m to 76.07m and 76.55m to 77.41m.
71			30	100	89	73	3.1 >20		71.04 T2-101 71.86		71.17 71.81 71.92			
72			30	100	65	49	10.5 >20		T2-101 72.79		72.30			
73			30	100	52	26	7.1 >20		T2-101 73.84		73.33 73.47 73.60			
74			30	100	73	62	6.1		T2-101		74.91			
75			30	100	0	0	>20		75.21 T2-101					
14.09.2016 15.09.2016									75.93		75.96			From 75.93m to 77.34m: Lapilli-bearing coarse ash lithic TUFF.
77			30	100	50	50	3.1 >20		T2-101		76.61			
									77.34	-24.11	77.41		III	Strong, grey spotted light grey and dark grey, slightly decomposed coarse ash lithic TUFF. Joints are very closely to closely spaced, occasionally medium spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin and chlorite coated, dipping at 0° to 10°, 20° to 30°, 30° to 40° and 65° to 75°.
78			30	100	50	45	2.2 >20 NI		T2-101	-24.41 -24.49	77.87 78.11 78.30		IV	
									78.34				III	
79			30	100	60	34	>20 6.4		T2-101		78.56 79.03			From 77.41m to 78.11m and 78.30m to 79.21m: Moderately strong to strong and moderately decomposed.
									79.16	-24.88	79.21		II	
80			30	100	47	37	>20 6.7		T2-101	-25.21	79.57 80.00			From 78.11m to 78.30m: Weak to moderately weak and highly decomposed. (Angular, slightly silty

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
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- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	11.10.2016
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REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 1 SHEET 9 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES	E 846623.80 N 814042.99	WORKS ORDER NO.	GE/2015/24.3B
MACHINE	SD41			DATE	30.07.2016 to 30.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION	167°/25°	GROUND LEVEL	+8.60 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
							>20		T2-101 80.37		80.43		II	sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
							5.9				80.60			
81			30	100	46	23	>20		T2-101 81.69		81.53			
15.09.2016							6.3				81.69			
17.09.2016										-25.97	81.79		III	From 81.79m to 83.08m: Moderately strong to strong and moderately decomposed.
82							>20							
			30	100	53	45	4.2		T2-101 83.08		82.32			
							>20				82.56			
											82.66			
83										-26.51	83.08		II	
			30	100	100	94			T2-101 84.33					
84							6.3							
			30	100	100	81			T2-101 85.28					
85														
											85.69			
			30	100	54	0	>20		T2-101 86.42	-27.73	85.97		II	Very strong, dark grey spotted light grey, slightly decomposed coarse ash crystal TUFF / RHYOLITE. Joints are medium to widely spaced, occasionally very closely and closely spaced, rough planar and rough undulating, calcite and kaolin coated, dipping at 0° to 10°, 30° to 40°, 60° to 70° and subvertically from 85.97m to 86.99m.
86											86.51			
87			30	100	86	78	6.0		T2-101 87.87					
											87.67			
										-28.54	87.87		II	Very strong, dark grey spotted light grey, slightly decomposed TRACHYDACITE. Joints are medium to widely spaced, occasionally very closely and closely spaced, rough planar and rough undulating, calcite and kaolin coated, dipping at 0° to 10°, 30° to 40° and 60° to 70°.
88			30	100	100	100			T2-101 89.08					
89							3.7							
			30	100	100	94			T2-101	-29.44	90.00			
90														

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
MAZIER SAMPLE
SPT LINER SAMPLE
WATER SAMPLE
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STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
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PRESSUREMETER TEST
BOREHOLE TELEVIEWER
PIEZOMETER TIP
STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	11.10.2016
CHECKED	R. Chu
DATE	17.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 1** SHEET 10 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846623.80** N **814042.99**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD41**		DATE **30.07.2016** to **30.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **167°/25°**	GROUND LEVEL **+8.60** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									T2-101				II	As sheet 9 of 16.
									90.51		90.67			
91			30	100	98	90	1.6		T2-101		91.28			
							13.6				91.50			
17.09.2016 20.09.2016									91.83					
92			0	100	100	100	1.5		T2-101		92.81			
93									93.34					
94			0	100	100	100	3.7		T2-101					
									94.85					
95			0	100	100	94			T2-101					
96							>20				96.05 96.13			
							7.5		96.39		96.53			
97			0	100	100	100			T2-101					
98									97.83					
			0	100	100	100	1.0		T2-101					
99									99.32					
									T2-101					
100			0	100	100	100				-33.66	100.00			

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
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STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
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LOGGED	S.L. Chiu
DATE	11.10.2016
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DATE	17.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 1 SHEET 11 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES	E 846623.80 N 814042.99	WORKS ORDER NO.	GE/2015/24.3B
MACHINE	SD41			DATE	30.07.2016 to 30.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION	167°/25°	GROUND LEVEL	+8.60 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									T2-101 100.55	-33.96	100.30		II	As sheet 10 of 16. From 100.29m to 100.55m: EUTAXITE.
							7.7				100.71			
101							1.9				100.82		II	Very strong, grey and very dark grey spotted light grey, slightly decomposed, silicified, coarse ash TUFF. Joints are closely to medium spaced, occasional very closely and widely spaced, rough planar and rough undulating, kaolin, calcite and chlorite coated, dipping at 0° to 10°, 20° to 30°, 40° to 50° and 55° to 65°.
			0	100	98	79			T2-101		101.36			
							8.4							
102									102.09	-34.59	102.19			
							NR			-34.63	102.29		V	From 102.16m to 103.03m: Pale green streaked dark grey and brecciated.
			0	91	88	49			T2-101				II	Very strong, grey and very dark grey spotted light grey, slightly decomposed, silicified, coarse ash vitric TUFF. Joints are closely to medium spaced, occasional very closely and widely spaced, rough planar and rough undulating, kaolin, calcite and chlorite coated, dipping at 0° to 10°, 20° to 30°, 40° to 50° and 55° to 65°. From 102.19m to 102.29m: No recovery, assumed to be completely decomposed TUFF / FAULT.
103							9.6							
20.09.2016 21.09.2016									103.20					
			0	100	99	96			T2-101		103.75			
104									104.11					
							1.0							
											104.73			
105			0	100	69	59	7.8		T2-101					
											105.24			
									105.64					
			0	100	31	0	>20		T2-101					
106									106.03					
											106.29			
							11.4				106.64			
			0	100	48	20			T2-101					
107							>20							
21.09.2016 22.09.2016									107.34		107.34			
							5.0				107.74			
108			0	100	65	46	>20		T2-101		108.15			
							7.9				108.53			
							>20				108.63			
							6.1		108.74					
109											109.12			
			0	100	60	38	>20		T2-101					
										-37.82	109.85			
110									T2-101 109.90	-37.89	110.03		II	

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
MAZIER SAMPLE
SPT LINER SAMPLE
WATER SAMPLE
U100 SAMPLE
STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
PACKER TEST
PERMEABILITY TEST
PRESSUREMETER TEST
BOREHOLE TELEVIEWER
PIEZOMETER TIP
STANDPIPE TIP

LOGGED	S.L. Chiu	REMARKS
DATE	11.10.2016	
CHECKED	R. Chu	
DATE	17.10.2016	

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 1** SHEET 12 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846623.80** N **814042.99**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD41**		DATE **30.07.2016** to **30.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **167°/25°**	GROUND LEVEL **+8.60** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
22.09.2016 23.09.2016			0	100	76	52	9.1 >20		T2-101 110.56		110.45 110.56		II	Very strong, dark grey spotted light grey, slightly decomposed coarse ash vitric TUFF / RHYOLITE. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, kaolin coated, occasionally clean, dipping at 0° to 10°, 20° to 30°, 30° to 40° and 50° to 60°.
111			0	100	85	69	8.5 >20		T2-101 111.45		111.27 111.50			
112			0	100	84	61	11.1		T2-101 112.49		112.49			
113			0	100	94	94	3.3 >20		T2-101 113.73		113.10 113.17			
114			0	100	100	100			T2-101 114.10					
115			0	100	100	100	4.4		T2-101 115.04					
116			0	100	100	96			T2-101 116.31		116.14			
23.09.2016 24.09.2016							1.5							
117			0	100	96	96	8.0 >20		T2-101 117.33		116.79 117.04 117.20			
118			0	100	98	95	5.0 12.5 >20		T2-101 118.64	-41.54	118.40 118.64 118.72			
119			0	100	92	84	17.1		T2-101	-42.11	119.07 120.00		II	Very strong, dark grey spotted light grey, slightly decomposed coarse ash lithic TUFF. Joints are closely to medium spaced, occasionally very closely and widely spaced, rough planar and rough undulating, kaolin and calcite coated, dipping at 0° to 10°, 10° to 20°, 30° to 40° and 50° to 60°. From: 118.64m to 119.07m: Strong and
120														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**11.10.2016**
CHECKED	**R. Chu**
DATE	**17.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 1** SHEET 13 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES	E 846623.80 N 814042.99	WORKS ORDER NO.	GE/2015/24.3B
MACHINE	SD41			DATE	30.07.2016 to 30.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION	167°/25°	GROUND LEVEL	+8.60 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									120.11				II	microfractured.
121			0	100	100	94	1.1		T2-101					
									121.39					
122			0	100	97	91			T2-101					
24.09.2016									122.18					
26.09.2016			0	100	82	82	>20		T2-101		122.79			
123							8.9				122.87			
									123.32		123.32			
							1.5				123.97			
124			0	100	95	79	6.7		T2-101					
							>20		124.80		124.72 124.80			
125							5.8				125.49			
			0	100	65	46	>20		T2-101	-44.57	125.82			From 125.49m to 125.82m: Strong and microfractured.
126							9.3						II	Very strong, dark grey spotted light grey, slightly decomposed coarse ash lithic TUFF. Joint are medium spaced, occasionally very closely and closely spaced, rough planar and rough undulating, kaolin and calcite coated, occasionally clean, dipping at 0° to 10°, 20° to 30° and 50° to 60°.
									126.25		126.25			
							1.4							
127			0	100	98	98	>20		T2-101		126.96 127.03			
							3.3		127.62					
128											128.23			
			0	100	80	74	>20		T2-101		128.40			
							7.7		128.92					
129											129.31			
			0	100	97	56	14.0		T2-101					
26.09.2016									129.81		129.81			
27.09.2016									T2-101	-46.34	130.00			
130														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	11.10.2016
CHECKED	R. Chu
DATE	17.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 1** SHEET 14 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES E 846623.80 N 814042.99	WORKS ORDER NO. GE/2015/24.3B
MACHINE	SD41		DATE 30.07.2016 to 30.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION 167°/25°	GROUND LEVEL +8.60 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	100	100	100	1.7		T2-101 130.39		130.39 130.49 130.61		II	As sheet 13 of 16.
							>20 8.3							
131			0	100	95	93			T2-101 131.70					
132			0	100	100	100	3.0		T2-101 133.14					
133														
134			0	100	93	87			T2-101 134.64		134.33 134.43			
							>20							
135			0	100	100	100			T2-101 135.87					
136			0	100	100	100			T2-101 136.77					
137			0	100	100	100	3.6		T2-101 137.64					
27.09.2016 28.09.2016										-49.68	137.90			
138			0	100	100	100			T2-101 139.06				II	Very strong, dark grey spotted light grey, slightly decomposed coarse ash vitric TUFF. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, kaolin and calcite coated, dipping at 0° to 10°, 10° to 20°, 20° to 30°, 50° to 60° and 65° to 75°.
139			0	100	89	69	>20		T2-101		139.47 139.53			
140										-50.57	140.00			

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
MAZIER SAMPLE
SPT LINER SAMPLE
WATER SAMPLE
U100 SAMPLE
STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
PACKER TEST
PERMEABILITY TEST
PRESSUREMETER TEST
BOREHOLE TELEVIEWER
PIEZOMETER TIP
STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	11.10.2016
CHECKED	R. Chu
DATE	17.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 1** SHEET 15 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846623.80** N **814042.99**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD41**		DATE **30.07.2016** to **30.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **167°/25°**	GROUND LEVEL **+8.60** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	100	89	63	7.7		140.01 T2-101 141.03				II	As sheet 14 of 16.
141			0	100	85	74	>20		T2-101 142.43		141.60 141.77			
142 28.09.2016 29.09.2016			0	100	93	87	4.3 >20		T2-101 143.70		143.17 143.31			
143 144			0	100	95	70	3.2 >20 4.7		T2-101 145.18		144.34 144.47 144.90			
145			0	100	95	23	>20		T2-101 145.75		145.62			
146			0	100	96	90	3.4		T2-101 147.18		146.78			
147 29.09.2016 30.09.2016			0	100	80	61	9.4 3.1		T2-101 148.39		147.63 148.27			
148			0	100	52	34	>20 5.3 >20		T2-101 149.31		148.50 148.69 149.11			
149			0	100	100	87	6.2		T2-101	-54.79	150.00			
150														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**11.10.2016**
CHECKED	**R. Chu**
DATE	**17.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 1 SHEET 16 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD ROTARY	CO-ORDINATES E 846623.80 N 814042.99	WORKS ORDER NO. GE/2015/24.3B
MACHINE SD41		DATE 30.07.2016 to 30.09.2016
FLUSHING MEDIUM WATER	ORIENTATION 167°/25°	GROUND LEVEL +8.60 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
30.09.2016									T2-101	-55.03	150.57		II	As sheet 15 of 16.
151														End of hole at 150.57 m.
152														
153														
154														
155														
156														
157														
158														
159														
160														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED S.L. Chiu
DATE 11.10.2016
CHECKED R. Chu
DATE 17.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 2** SHEET 1 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846633.32** N **814055.81**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD38**		DATE **22.07.2016** to **24.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **075°/25°**	GROUND LEVEL **+8.73** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
22.07.2016	SW								0.00	+8.73	0.00			Grey (7.5YR 5/1) mottled light grey, angular to subangular, coarse GRAVEL and COBBLE of rock fragments and with some concrete and refuse fragments. (FILL)
			0	40					T6-146 0.58					
1			0	23					T6-146 1.50					
2			0	29					T6-146 2.30					
3			0	41					T6-146 3.20					
22.07.2016 23.07.2016			0	17					T6-146 3.90					
4			0	13					T6-146 4.65					
5			0	52					T6-146 5.30	+6.45	5.40			
			0	24					T6-146 6.00					Grey (10YR 6/1) spotted brown, angular to subangular, slightly clayey silty sandy fine to coarse GRAVEL and occasional cobble of rock fragments. (FILL)
6			0	31					T6-146 6.80					
7			0	26					T6-146 7.70					
8			0	23					T6-146 8.50					
9			0	33					T6-146 9.20					
			0	29					T6-146 9.90	+4.50	10.00			
10														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**08.10.2016**
CHECKED	**R. Chu**
DATE	**14.10.2016**

REMARKS

1. No inspection pit was excavated.
2. Eastman surveys were carried out at 70.00m, 90.00m, 110.00m, 130.00m and 150.00m.
3. Packer (Water absorption) tests were carried out at sections from 83.50m to 86.50m, from 89.50m to 92.50m and from 93.50m to 96.50m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 2 SHEET 2 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES E 846633.32 N 814055.81	WORKS ORDER NO. GE/2015/24.3B
MACHINE	SD38		DATE 22.07.2016 to 24.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION 075°/25°	GROUND LEVEL +8.73 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
11			0	30					T6-146 10.80					As sheet 1 of 16.
23.07.2016 25.07.2016			0	29					T6-146 11.50	+3.87	11.50			
12	SW 12.30m PW		0	13					T6-146 12.30					Grey (7.5YR 6/1) streaked brown and dark brown, angular to subangular, COBBLE and some fine to coarse gravel of rock fragments. (FILL)
13			0	28					T2-120 13.50					
14			0	41					T2-120 14.70					
15			0	26					T2-120 15.70					
16			0	27					T2-120 16.90					From 15.60m to 15.90m: Grey (7.5YR 6/1) mottled light grey, angular to subangular, slightly clayey silty sandy fine to coarse GRAVEL of rock fragments. (FILL)
25.07.2016 26.07.2016			0	100					T2-120 17.20					
			0	32					T2-120 17.80					
18			0	40					T2-120 18.83					
26.07.2016 27.07.2016 19			0	35					T2-120 19.83					
20									T2-120	+0.28	20.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	08.10.2016
CHECKED	R. Chu
DATE	14.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 2** SHEET 3 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846633.32** N **814055.81**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD38**		DATE **22.07.2016** to **24.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **075°/25°**	GROUND LEVEL **+8.73** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	78					T2-120					As sheet 2 of 16.
									20.73					
21			0	89					T2-120					From 20.73m to 21.30m: With a boulder of slightly decomposed tuff fragment.
									21.00					
			0	49					T2-120					
27.07.2016									21.86					
28.07.2016 22			0	63					T2-120					
									22.26					
			0	79					T2-120					
									22.60					
			0	82					T2-120					
23									23.10					
			0	87					T2-120					
28.07.2016									23.62					
29.07.2016														
24			0	91					T2-120					
									24.15					
			0	84					T2-120					From 24.30m to 24.65m: With a boulder of slightly decomposed tuff fragment.
									24.65					
			0	65					T2-120					
25									25.05	-1.92	25.20			
			0	47					T2-120					Grey (10YR 5/1) mottled light brown and red, angular to subangular, fine to coarse GRAVEL and some cobble of rock fragments and with occasional brick fragments. (FILL)
									25.65					
26			0	63					T2-120					
									26.30					
			0	64					T2-120					
27									27.08					
			0	98					T2-120					
29.07.2016									27.55					
30.07.2016														
			0	88					T2-120					
28									28.15					
			0	86					T2-120					
	PW 28.65m								28.65					
	HW									-3.48	28.90			
29			0	100					T2-101					Grey (10YR 5/1) mottled light grey, angular to subangular, coarse GRAVEL and COBBLE of rock fragments. (FILL)
									29.20					
			0	100					T2-101	-3.72	29.45			
30.07.2016									29.60					Grey (7.5YR 6/1) mottled dark grey and light grey, angular to subangular, coarse GRAVEL and COBBLE of rock fragments. (FILL)
01.08.2016														
			0	54					T2-101	-3.95	30.00			
30														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**08.10.2016**
CHECKED	**R. Chu**
DATE	**14.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 2** SHEET 4 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846633.32** N **814055.81**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD38**		DATE **22.07.2016** to **24.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **075°/25°**	GROUND LEVEL **+8.73** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									T2-101 30.28					As sheet 3 of 16.
			0	62					T2-101 30.70					
31			0	48					T2-101 31.28					
			0	60					T2-101 31.90					
01.08.2016 02.08.2016														
			0	90					T2-101 32.40					
			0	93					T2-101 32.85					
33			0	98					T2-101 33.35					From 32.85m to 33.35m: With some coarse gravel and cobble sized coral fragments.
			0	88					T2-101 33.75					
34			0	75					T2-101 34.50					From 33.75m to 39.80m: Subrounded.
03.08.2016 04.08.2016														
			0	74					T2-101 35.00					
35			0	80					T2-101 35.50					From 35.20m to 35.50m: With a boulder of slightly decomposed tuff fragment.
04.08.2016 11.08.2016			0	80					T2-101 35.65					
36			0	55					T2-101 36.25					
			0	57					T2-101 36.95					From 36.42m to 36.95m: With a boulder of slightly decomposed tuff fragment.
37			0	82					T2-101 37.50					
			0	92					T2-101 38.00					
11.08.2016 03.09.2016														
			0	79					T2-101 38.76					
39			0	77					T2-101 39.80	-8.09	39.80			
40										-8.17	40.00		V	Extremely weak to very weak, light grey (10YR 7/1)

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	08.10.2016
CHECKED	R. Chu
DATE	14.10.2016

REMARKS

DRiLTECH	**DRILLHOLE RECORD** CONTRACT NO. **GE/2015/24**	HOLE NO. **IBH 2** SHEET **5** of **16**

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES	E **846633.32** N **814055.81**	WORKS ORDER NO.	**GE/2015/24.3B**
MACHINE	**SD38**			DATE	**22.07.2016** to **24.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION	**075°/25°**	GROUND LEVEL	**+8.73** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	100					2 40.80 3 40.90				V	streaked yellowish red, mottled yellowish brown, completely decomposed coarse ash TUFF. (Stiff, slightly sandy clayey SILT with occasional angular fine to coarse gravel of quartz and tuff fragments)
41			0	100					4 41.90 5 42.00					
42			0	100					6 43.00 7 43.10	-9.48	43.10			
43			0	100					8 44.10 9 44.20	-9.95	44.20		V	Extremely weak to very weak, pale red (10R 6/3) spotted light grey, completely decomposed coarse ash TUFF. (Stiff, slightly sandy clayey SILT with occasional angular fine to coarse gravel of quartz and tuff fragments)
44			0	100					10 45.20 11 45.30				IV	Weak to moderately weak, light grey (10YR 7/1) mottled yellowish red and yellowish brown, highly decomposed, chloritised, coarse ash TUFF. (Angular, slightly silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
45			0	100					12 46.30 13 46.40					
46			0	100					14 47.40 15 47.50					
47			0	88					16 48.50 17 48.60	-11.81	48.60			
48 03.09.2016 05.09.2016			0	90					18 49.60 19 49.70	-12.27	49.70		IV	Weak to moderately weak, light grey (2.5Y 7/1) streaked yellowish brown, highly decomposed, chloritised, coarse ash TUFF. (Angular, slightly silty very sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
49										-12.40	50.00		IV	Weak to moderately weak, yellowish red (5YR 5/8)
50														

- SMALL DISTURBED SAMPLE
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- MAZIER SAMPLE
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- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**08.10.2016**
CHECKED	**R. Chu**
DATE	**14.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 2 SHEET 6 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES E 846633.32 N 814055.81	WORKS ORDER NO. GE/2015/24.3B
MACHINE	SD38		DATE 22.07.2016 to 24.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION 075°/25°	GROUND LEVEL +8.73 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	100					20 50.70 21 50.80	-12.74	50.80		IV	streaked light grey, highly decomposed coarse ash TUFF. (Angular, slightly silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
51			0	100					22 51.80 23 51.90				IV	Weak to moderately weak, greyish brown (10YR 5/2) streaked yellowish red and very dark brown, highly decomposed coarse ash TUFF. (Angular, slightly sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
52			0	95					24 52.90 25 53.00					
53			0	18					26 54.00 54.10	-14.13	54.10			
54			0	0					27 55.10 28 55.20				IV	Weak to moderately weak, brown (7.5YR 4/3) mottled grey, highly decomposed coarse ash TUFF. (Angular, slightly sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
55 05.09.2016 06.09.2016			0	48					29 56.20 30 56.30	-15.06	56.30			
56			0	65					31 57.30 32 57.40				IV	Weak to moderately weak, light brown (7.5YR 6/4) streaked light grey, highly decomposed coarse ash TUFF. (Angular, slightly silty clayey sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
57			0	60					33 58.40 58.50	-15.99	58.50			
58			0	96	6	0	>20 NI		T2-101	-16.14 -16.20	58.84 59.00		III IV	Moderately strong, greyish brown, moderately decomposed coarse ash TUFF. (CORESTONE)
06.09.2016 07.09.2016			0	55					34 59.00	-16.63	60.00		IV	From 58.84m to 59.00m: Weak to moderately weak and highly decomposed. (Angular, slightly sandy fine to coarse GRAVEL of highly decomposed tuff fragments) Weak to moderately weak, brown (7.5YR 4/3)
60														

- SMALL DISTURBED SAMPLE
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- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	08.10.2016
CHECKED	R. Chu
DATE	14.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 2** SHEET 7 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846633.32** N **814055.81**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD38**		DATE **22.07.2016** to **24.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **075°/25°**	GROUND LEVEL **+8.73** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	95	62	0	>20		35 60.00 60.10 T2-101	-16.67 -16.75	60.10 60.30		IV II III	spotted grey, highly decomposed coarse ash TUFF. (Angular, slightly sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
							NI		60.87	-16.95 -16.99	60.76 60.87		IV	Moderately strong, brown, moderately decomposed coarse ash TUFF. (CORESTONE)
61			0	96	0	0	>20		T2-101 61.39				III	From 60.10m to 60.30m: Strong and slightly decomposed.
			0	91	7	0			T2-101	-17.39	61.80			From 60.76m to 60.87m and 61.80m to 61.94m: Weak to moderately weak and highly decomposed.
62							NI		61.94	-17.45	61.94		IV IV	(Angular, slightly clayey silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
			0	0					36 62.70 62.80	-17.81	62.80			Weak to moderately weak, greyish brown (10YR 5/2), highly decomposed coarse ash TUFF. (Angular, Slightly clayey silty sandy angular fine to coarse GRAVEL of highly decomposed tuff fragments)
07.09.2016 08.09.2016 63			0	100	84	48	>20 6.7		T2-101		62.95 63.55		III	Moderately strong, brown, moderately decomposed coarse ash TUFF. Joints are very closely to closely spaced, occasionally medium spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin coated, dipping at 0° to 10°, 20° to 30°, 65° to 75° and subvertically from 64.85m to 65.35m.
64	HW 64.34m		0	100	46	19	>20		63.82 T2-101		64.17			
			30	100	59	57	5.6		64.34 T2-101	-18.46 -18.69	64.34 64.89		II	From 64.34m to 64.89m: Strong and slightly decomposed.
65							>20				65.12		III	
			30	100	90	72	8.3		65.31 T2-101	-18.95	65.50		II	Strong to very strong, grey spotted light grey, slightly decomposed coarse ash lithic TUFF / feldsparphyric RHYOLITE. Joints are closely and medium spaced, occasionally very closely spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin and chlorite coated, dipping at 0° to 10°, 20° to 30°, 35° to 45°, 50° to 60° and 65° to 75°.
66										-19.45	66.68			
08.09.2016 09.09.2016							>20		66.76		66.79		III	
67			30	100	97	87			T2-101 67.43	-19.57	66.96		II	From 66.68m to 66.96m: Moderately strong to strong and moderately decomposed.
68			30	100	100	75	9.9		T2-101					
									68.81		68.81			
69			30	100	43	0	>20		T2-101 69.68					
70									T2-101	-20.85	69.98			

- SMALL DISTURBED SAMPLE
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- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**08.10.2016**
CHECKED	**R. Chu**
DATE	**14.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 2** SHEET 8 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES	E **846633.32** N **814055.81**	WORKS ORDER NO.	**GE/2015/24.3B**
MACHINE	**SD38**			DATE	**22.07.2016** to **24.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION	**075°/25°**	GROUND LEVEL	**+8.73** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			30	100	88	61			T2-101 70.53				II	As sheet 7 of 16.
71			30	100	79	29			T2-101 71.30					
09.09.2016 10.09.2016														
72			30	100	96	61	1.7		T2-101 72.45					
73			30	100	91	63			T2-101 73.78		73.49 73.78			
							>20							
74			30	100	94	86	8.5		T2-101 74.28		74.25			
							>20				74.61			
75			30	100	61	19	12.0		T2-101 75.21		74.86			
							>20							
			30	100	88	37			T2-101 75.86		75.76			
10.09.2016 12.09.2016 76							3.3				76.06 76.17			
			0	100	93	49	>20		T2-101 76.54	-23.62	76.54			
							9.4						II	Very strong, dark grey spotted light grey, slightly decomposed RHYOLITE. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, iron oxide stained and kaolin coated, dipping at 0° to 10°, 20° to 30°, 40° to 50° and subvertically from 79.75m to 81.35m.
77							>20				76.81 76.85			
			0	100	94	72	9.8		T2-101 78.07		78.17			
78														
							>20				78.51			
79			0	100	97	70	7.9		T2-101 79.53		79.27 79.59			
							18.8							
80									T2-101	-25.08	80.00			

- SMALL DISTURBED SAMPLE
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- PRESSUREMETER TEST
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LOGGED	**S.L. Chiu**
DATE	**08.10.2016**
CHECKED	**R. Chu**
DATE	**14.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 2** SHEET 9 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES E 846633.32 N 814055.81	WORKS ORDER NO. GE/2015/24.3B
MACHINE	SD38		DATE 22.07.2016 to 24.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION 075°/25°	GROUND LEVEL +8.73 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	100	87	80	6.5		T2-101				II	As sheet 8 of 16.
81							>20		80.96		80.83 80.96			
			0	100	84	77	6.7		T2-101		81.56			
							>20				81.88			
82									82.11	-25.92	82.00		II	Strong, grey, slightly decomposed feldsparphyric RHYOLITE. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, kaolin and chlorite coated, dipping at 0° to 10°, 20° to 30°, 40° to 50°, 55° to 65° and subvertically from 83.95m to 84.80m and 88.57m to 89.32m.
83			0	100	100	97	4.8		T2-101					
									83.58		83.53			
84			0	100	87	54			T2-101					
85							9.5		85.11					
86			0	100	100	76			T2-101					
									86.57		86.78			
87			0	100	100	88	4.4		T2-101					
88 12.08.2016 13.09.2016									88.03		88.38			
89			0	100	69	56	11.7		T2-101		89.15			
							8.0		89.58		89.65			
90									T2-101	-29.31	90.00			

- SMALL DISTURBED SAMPLE
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- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	08.10.2016
CHECKED	R. Chu
DATE	14.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 2 SHEET 10 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES E 846633.32 N 814055.81	WORKS ORDER NO. GE/2015/24.3B
MACHINE	SD38		DATE 22.07.2016 to 24.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION 075°/25°	GROUND LEVEL +8.73 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	100	92	70	3.1		T2-101		90.61		II	As sheet 9 of 16.
							>20				90.81			
91									91.10					
			0	100	88	54	10.1		T2-101					
92											92.20			
							>20		92.47		92.47			
93			0	100	100	86	6.7		T2-101	-30.73	93.36			
													II	Strong to very strong, grey streaked light grey, slightly decomposed RHYOLITE. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, occasionally kaolin and quartz coated and clean, dipping at 0° to 10°, 20° to 30°, 40° to 50°, 55° to 65° and subvertically from 83.95m to 84.80m and 88.57m to 89.32m.
94							11.1		93.93					
			0	100	83	43			T2-101		94.80			
95							>20				95.31			
							10.3		95.44		95.70			
							>20				95.82			
96										-31.81	95.92		II	Strong to very strong, grey and brownish grey, slightly decomposed feldsparphyric RHYOLITE. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, kaolin and chlorite coated, dipping at 0° to 10°, 30° to 40° and 55° to 65°.
			0	100	85	67	6.3		T2-101					
97									96.94		97.08			
							>20				97.20			
			0	100	95	76	5.8		T2-101					
98														
13.09.2016 04.09.2016									98.44					
											98.76			
99							>20				98.94			
			0	100	78	67			T2-101					
							8.8							
100									T2-101 99.90	-33.53	100.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
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- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	08.10.2016
CHECKED	R. Chu
DATE	14.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 2 SHEET 11 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES	E 846633.32 N 814055.81	WORKS ORDER NO.	GE/2015/24.3B
MACHINE	SD38			DATE	22.07.2016 to 24.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION	075°/25°	GROUND LEVEL	+8.73 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	100	86	61	>20		T2-101		100.53 100.65		II	As sheet 10 of 16.
101							6.4		101.30					
			0	100	100	91			T2-101		102.05			
102							14.3		102.41		102.26			
			0	100	99	85	8.9		T2-101					
103									103.37	-34.93	103.31		II	Very strong, grey spotted light grey, slightly decomposed feldsparphyric RHYOLITE. Joints are very closely to closely spaced, occasionally medium spaced, rough planar and rough undulating, quartz infilled (<2mm), dipping at 0° to 10°, 30° to 40°, 50° to 60° and 65° to 75°.
			0	100	39	36	>20		T2-101		103.86			
104							8.3				103.98			
							>20				104.11			
							5.3				104.30			
							>20				104.41			
			0	100	66	49	9.7		104.59					
105									T2-101		105.13			
							>20		105.54					
			0	100	75	55	6.6		T2-101		105.88			
106											106.49			
04.09.2016 15.09.2016							>20		106.56		106.66			
107							5.8				107.18			
			0	100	77	60	>20		T2-101		107.45			
108							17.8		108.15					
							>20				108.45 108.57			
			0	100	97	91	4.4		T2-101		109.02			
109							1.4		109.67		109.76			
110									T2-101	-37.76	110.00			

- SMALL DISTURBED SAMPLE
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LOGGED	S.L. Chiu	REMARKS
DATE	08.10.2016	
CHECKED	R. Chu	
DATE	14.10.2016	

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 2** SHEET 12 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD	ROTARY	CO-ORDINATES E 846633.32 N 814055.81	WORKS ORDER NO. GE/2015/24.3B
MACHINE	SD38		DATE 22.07.2016 to 24.09.2016
FLUSHING MEDIUM	WATER	ORIENTATION 075°/25°	GROUND LEVEL +8.73 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	100	96	96	7.3 1.6		T2-101 110.94		110.31 110.94		II	As sheet 11 of 16.
15.09.2016 17.09.2016 112			0	100	94	69	5.9		T2-101 112.44		112.13			
113			0	100	35	13	>20		T2-101 113.61		113.45			
114			0	100	75	63	7.9 >20 8.1 >20		T2-101 115.11		113.83 114.02 114.76 115.01			
115 116			0	100	59	55	7.5 >20 8.8 >20		T2-101 116.29	-40.43	115.41 115.46 115.80 116.33			
17.09.2016 19.09.2016 117			0	100	98	90	5.9		T2-101 117.54				II	Very strong, grey spotted light grey, slightly decomposed coarse ash lithic TUFF with occasional quartz veins (<10mm thick). Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, clean, occasionally quartz and chlorite coated, dipping at 0° to 10°, 30° to 40° and 50° to 60°.
118			0	100	82	56	>20 7.7		T2-101 118.82		118.02 118.12 118.51			
119 120			0	100	91	88	5.2		T2-101	-41.98	119.67 120.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	08.10.2016
CHECKED	R. Chu
DATE	14.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 2** SHEET 13 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846633.32** N **814055.81**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD38**		DATE **22.07.2016** to **24.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **075°/25°**	GROUND LEVEL **+8.73** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
							1.7		T2-101		120.26		II	As sheet 12 of 16.
121			0	100	97	97			T2-101					
									121.64					
122			0	100	97	97	4.0		T2-101					
123 19.09.2016 20.09.2016									123.10					
			0	100	85	81			T2-101					
124											124.24			
							0.3		124.52		124.52			
125			0	100	97	97			T2-101					
										-44.22	125.30			
							7.3		125.42				II	Very strong, dark grey, slightly decomposed fine ash vitric TUFF. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, kaolin coated, dipping at 0° to 10°, 30° to 40° and 50° to 60°.
126			0	100	89	70			T2-101		126.17			
							>20				126.24			
							7.9		126.74					
127											127.00			
							>20				127.23			
			0	100	74	55			T2-101					
							7.1							
20.09.2016 128 21.09.2016									127.95					
											128.35			
			0	100	77	61			T2-101					
129							14.3							From 128.91m to 130.14m: With a dyke of medium grained GRANITE.
									129.27					
											129.40			
							>20		T2-101		129.67			
							5.6				129.85			
130										-46.21	130.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**08.10.2016**
CHECKED	**R. Chu**
DATE	**14.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 2** SHEET 14 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES E **846633.32** N **814055.81**	WORKS ORDER NO. **GE/2015/24.3B**
MACHINE	**SD38**		DATE **22.07.2016** to **24.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **075°/25°**	GROUND LEVEL **+8.73** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			0	100	60	47	>20				130.14		II	As sheet 13 of 16.
							8.5		T2-101	-46.47	130.61			From 130.40m to 130.61m: With a dyke of RHYOLITE.
21.09.2016 22.09.2016 131									130.78				II	Very strong, grey spotted light grey, slightly decomposed lapilli-bearing coarse ash TUFF. Joints are widely spaced, occasionally closely and medium spaced, rough planar and rough undulating, clean and occasionally kaolin coated, dipping at 0° to 10°, 25° to 35° and 55° to 65°.
			0	100	100	100	2.5		T2-101					
132									132.00		132.19			
			0	100	100	100			T2-101					
133									132.99					
			0	100	100	100			T2-101					
134							1.2		134.43					
135			0	100	100	100			T2-101					
							7.7				135.64 135.77			
22.09.2016 23.09.2016									135.94					
			0	100	100	100			T2-101					
137							0.9		137.42					
138											137.96			
			0	100	100	100			T2-101					
							2.2		138.86		138.86			
139														
			0	100	100	100			T2-101					
140										-50.44	140.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**08.10.2016**
CHECKED	**R. Chu**
DATE	**14.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **IBH 2** SHEET 15 of 16

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)**

METHOD	**ROTARY**	CO-ORDINATES	E **846633.32**	WORKS ORDER NO.	**GE/2015/24.3B**
MACHINE	**SD38**		N **814055.81**	DATE	**22.07.2016** to **24.09.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION	**075°/25°**	GROUND LEVEL	**+8.73** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
							1.7		T2-101 140.36				II	As sheet 14 of 16.
141			0	100	97	95			T2-101 141.90	-51.21	141.82			
142			0	100	99	93	>20 5.8 2.6		T2-101 143.24		141.96 142.48 143.24		II	Very strong, grey spotted light grey, slightly decomposed RHYOLITE. Joints are medium to widely spaced, occasionally very closely and closely spaced, rough planar and rough undulating, clean and occasionally kaolin coated, dipping at 0° to 10°, 20° to 30° and 50° to 60°.
143			0	100	97	90	11.1 1.6		T2-101 144.13		143.51 144.13			
144			0	100	94	89	8.0		T2-101 145.27		144.88			
145 23.09.2016 24.09.2016			0	100	100	100	1.1		T2-101 146.77					
146			0	100	100	100	5.4		T2-101 148.27		147.52 148.08			
147			0	100	100	100	1.1		T2-101 149.68		148.97			
148							4.8		T2-101	-54.66	150.00			
149														
150														

SMALL DISTURBED SAMPLE	STANDARD PENETRATION TEST
LARGE DISTURBED SAMPLE	IN-SITU VANE SHEAR TEST
U76 SAMPLE	PACKER TEST
PISTON SAMPLE (76mm)	PERMEABILITY TEST
MAZIER SAMPLE	PRESSUREMETER TEST
SPT LINER SAMPLE	BOREHOLE TELEVIEWER
WATER SAMPLE	PIEZOMETER TIP
U100 SAMPLE	STANDPIPE TIP

LOGGED	**S.L. Chiu**
DATE	**08.10.2016**
CHECKED	**R. Chu**
DATE	**14.10.2016**

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. IBH 2 SHEET 16 of 16

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Magazine Site)

METHOD ROTARY	CO-ORDINATES E 846633.32 N 814055.81	WORKS ORDER NO. GE/2015/24.3B
MACHINE SD38		DATE 22.07.2016 to 24.09.2016
FLUSHING MEDIUM WATER	ORIENTATION 075°/25°	GROUND LEVEL +8.73 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
151 24.09.2016			0	100	86	71	>20		T2-101	-55.11	150.86 151.07		II	As sheet 15 of 16.
152														End of hole at 151.07 m.
153														
154														
155														
156														
157														
158														
159														
160														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	08.10.2016
CHECKED	R. Chu
DATE	14.10.2016

REMARKS

DRILLHOLE RECORD

DRiLTECH

CONTRACT NO. GE/2015/24

HOLE NO. **SW-ADH 1**

SHEET 1 of 4

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Seawall)

METHOD	ROTARY	CO-ORDINATES E 846684.91 N 814064.50	WORKS ORDER NO. GE/2015/24.3C
MACHINE	SD26		DATE 06.10.2016 to 12.10.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +5.50 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
06.10.2016	SW								0.00 / 1 Inspection Pit / 0.45 / 2 / 0.95 / 3 / 1.05 / 1.10	+5.50	0.00			Grey (7.5YR 5/1) streaked brown, angular to subangular, slightly sandy fine to coarse GRAVEL of rock fragments. (FILL)
1										+4.40	1.10			
			0	79					T6-146					Grey (10YR 5/1) spotted pink, angular to subangular, medium to coarse GRAVEL of rock fragments. (FILL)
										+3.70	1.80			
2			0	100					1.90 T6-146					Grey (10YR 5/1), angular to subangular, COBBLE and occasional fine to coarse gravel of rock fragments. (FILL)
			0	83					2.48 T6-146					
3									3.00					
		Dry at 1800	0	100					T6-146					
06.10.2016									3.55					
07.10.2016		4.03 at 1200	0	100					T6-146					
4									4.00	+1.50	4.00			
			0	100					T6-146					Grey (10YR 5/1) spotted pink, angular to subangular, fine to coarse GRAVEL and occasional cobble of rock fragments. (FILL)
									4.50					
			0	100					T6-146					
5	SW 5.00m								5.00					
	PW		0	88					T2-120					
									5.75					
6			0	93					T2-120					
									6.50					
			0	70					T2-120					
7										-1.60	7.10			
									7.20					Grey (10YR 5/1) spotted pink, angular to subangular, medium to coarse GRAVEL and occasional cobble of rock fragments and with occasional concrete fragments. (FILL)
			0	76					T2-120					
		4.17 at 1800												
07.10.2016									8.00					
08.10.2016		4.26 at 0800	0	74					T2-120					From 7.76m to 8.00m: With a boulder of slightly decomposed tuff fragment.
									8.50					
9														
			0	76					T2-120					
									9.80					
10									T2-120	-4.50	10.00			

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
MAZIER SAMPLE
SPT LINER SAMPLE
WATER SAMPLE
U100 SAMPLE
STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
PACKER TEST
PERMEABILITY TEST
PRESSUREMETER TEST
BOREHOLE TELEVIEWER
PIEZOMETER TIP
STANDPIPE TIP

LOGGED S.L. Chiu
DATE 17.10.2016
CHECKED R. Chu
DATE 20.10.2016

REMARKS
1. An inspection pit was excavated to 1.10m deep by hand tools.
2. Groundwater sample was taken at 30.43m.
3. Piezometers were installed with tips at 10.50m and 22.40m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **SW-ADH 1** SHEET 2 of 4

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Seawall)**

METHOD	**ROTARY**	CO-ORDINATES	E 846684.91 N 814064.50	WORKS ORDER NO.	**GE/2015/24.3C**
MACHINE	**SD26**			DATE	**06.10.2016** to **12.10.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION	**VERTICAL**	GROUND LEVEL	**+5.50** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
	PW 10.30m HW		0	94					T2-120 10.30					As sheet 1 of 4.
			0	64					T2-120 11.00	-5.50	11.00			
11			80	95									V	Extremely weak, grey (7.5YR 6/1), streaked yellowish brown and dark brown, completely decomposed coarse ash crystal TUFF. (Slightly clayey silty fine to coarse SAND with occasional angular fine gravel of tuff fragments)
12								4,8 7,8,9,12 N=36	5 12.00 12.10 6 12.20 7 12.50					
13									8 13.00	-7.50	13.00		V	
			80	82										Extremely weak, pale brown (10YR 6/3), completely decomposed coarse ash crystal TUFF. (Stiff, clayey sandy SILT with some angular fine to coarse gravel of tuff fragments)
14	HW 13.95m								9 13.85 13.95	-8.45	13.95		III	Moderately strong, greyish brown, moderately decomposed coarse ash crystal TUFF. Joints are very closely to closely spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally clayey silty sand coated, dipping at 0° to 10°, 10° to 20°, 45° to 55°, 65° to 75° and subvertically from 13.95m to 15.34m and 16.80m to 17.45m.
			80	100	18	18			T2-101 14.51					
15			80	100	31	0			T2-101 15.34					
16			80	98	26	0			T2-101 16.24					From 19.11m to 19.26m and 19.73m to 19.80m: Weak to moderately weak and highly decomposed. (Angular, slightly sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
		2.92 at 1800	80	96	16	0	>20		T2-101 16.80					From 19.50m to 19.73m: No recovery, assumed to be completely decomposed TUFF.
08.10.2016 11.10.2016 17		4.30 at 0800	80	96	33	0			T2-101 17.38					
			80	100	26	0			T2-101 18.03					
18			80	100	19	9			T2-101					
19									19.11	-13.61	19.11			
							NI			-13.76	19.26		IV	
							>20			-14.00	19.50		III	
			80	78	11	11	NR		T2-101	-14.23	19.73		V	
							NI			-14.38	19.88		IV	
20							>20				19.97			Moderately strong, brown mottled grey, moderately

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	17.10.2016
CHECKED	R. Chu
DATE	20.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **SW-ADH 1** SHEET 3 of 4

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Seawall)

METHOD	ROTARY	CO-ORDINATES E 846684.91 N 814064.50	WORKS ORDER NO. GE/2015/24.3C
MACHINE	SD26		DATE 06.10.2016 to 12.10.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +5.50 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
							14.0		T2-101 20.17				III	decomposed coarse ash crystal TUFF. Joints are very closely to closely spaced, rough planar and rough undulating, iron and manganese oxide stained, dipping at 20° to 30°, 30° to 40° and 50° to 60°.
							>20				20.40			
			80	100	50	13	12.5		T2-101	-15.28	20.78		II	
21										-15.60	21.10		III	From 20.78m to 21.10m and 21.27m to 21.67m: Strong and slightly decomposed.
							>20		21.40	-15.77	21.27		II	
										-16.17	21.67			From 22.67m to 22.80m: No recovery, assumed to be completely decomposed TUFF.
			80	100	87	14	14.3		T2-101				III	
22											21.95			
							>20	▲	22.10					
			80	84	29	0			T2-101	-17.17	22.67			
							NR			-17.30	22.80		V	
							~~>20~~		22.89	-17.39	22.89		III	Strong to very strong, grey spotted light grey, slightly decomposed coarse ash crystal TUFF. Joints are closely to medium spaced, occasionally very closely spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin coated, dipping at 0° to 10°, 20° to 30°, 30° to 40° and 55° to 65°.
23							~~17.6~~				23.06		II	
			80	100	100	95			T2-101					
24							4.8							
									24.32					
										-19.43	24.93			From 22.80m to 22.89m and 24.93m to 25.03m: Moderately strong to strong and moderately decomposed.
25			80	100	99	87			T2-101	-19.53	25.03		III	
							8.0						II	
											25.43			
							3.4		25.68					
26											26.01			
			80	100	97	82			T2-101					
							8.7							
		3.92 at 1800												
11.10.2016									26.80					
12.10.2016		3.91 at 0800									26.93			
27														
			80	100	90	26	>20		T2-101					
											27.58			
							3.0		27.69					
											27.91			
28							18.2				28.13			
			80	100	93	83	2.2		T2-101					
							>20				28.59			
											28.69			
29														
									29.23					
							2.3		T2-101					
			80	100	100	100				-24.50	30.00			
30														

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
MAZIER SAMPLE
SPT LINER SAMPLE
WATER SAMPLE
U100 SAMPLE
STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
PACKER TEST
PERMEABILITY TEST
PRESSUREMETER TEST
BOREHOLE TELEVIEWER
PIEZOMETER TIP
STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	17.10.2016
CHECKED	R. Chu
DATE	20.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **SW-ADH 1** SHEET 4 of 4

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Seawall)

METHOD	ROTARY	CO-ORDINATES E 846684.91 N 814064.50	WORKS ORDER NO. GE/2015/24.3C
MACHINE	SD26		DATE 06.10.2016 to 12.10.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +5.50 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
12.10.2016		3.91 at 1800						▲	T2-101	-24.93	30.43		II	As sheet 3 of 4.
														End of hole at 30.43 m.

31
32
33
34
35
36
37
38
39
40

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	17.10.2016
CHECKED	R. Chu
DATE	20.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **SW-ADH 2** SHEET 1 of 3

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Seawall)

METHOD	ROTARY	CO-ORDINATES E 846643.84 N 813995.24	WORKS ORDER NO. GE/2015/24.3C
MACHINE	SD26		DATE 14.10.2016 to 19.10.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +5.59 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
14.10.2016	SW								0.00	+5.59	0.00			Light bluish grey (5B 7/1), subangular, slightly clayey silty sandy fine to coarse GRAVEL of rock fragments and with much concrete fragments. (FILL)
									1 INSPECTION PIT 0.45	+5.09	0.50			
									2 0.65 0.70					Dark grey (N4/) mottled very pale brown and light grey, angular to subangular, COBBLE and some medium to coarse gravel of rock fragments. (FILL)
1			0	100					T6-146 1.30					
			0	100					T6-146 2.15					
2			0	100					T6-146 2.79					
3			0	100					T6-146 3.42					
14.10.2016	SW 3.42m	Dry at 1800												
15.10.2016	PW	Dry at 0800	0	70					T2-120 3.92					
4			0	100					T2-120 4.70					
5			0	100					T2-120 5.08					
			0	100					T2-120 5.66					
6			0	100					T2-120 6.20					
		3.78 at 1800	0	100					T2-120 6.80					
15.10.2016														
17.10.2016		3.71 at 0800												
7			0	99					T2-120 7.50					
			0	100					T2-120 8.02					
8			0	100					T2-120 8.57					
9			0	88					T2-120 9.40	-3.40	8.99			Grey (10YR 6/1) mottled brown, subangular to subrounded, slightly clayey silty sandy COBBLE and some fine to coarse gravel of rock fragments. (ALLUVIUM)
	PW 9.40m									-3.81	9.40			Firm, pale yellow (2.5Y 8/3) mottled pink, slightly
	HW													
10			80	100										

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	24.10.2016
CHECKED	R. Chu
DATE	31.10.2016

REMARKS

1. An inspection pit was excavated to 0.70m deep by hand tools.
2. Constant head permeability test was carried out at section from 11.00m to 12.50m.
3. Groundwater sample was taken at 24.33m.
4. Piezometers were installed with tips at 8.00m and 17.00m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **SW-ADH 2** SHEET 2 of 3

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Seawall)

METHOD	ROTARY	CO-ORDINATES E 846643.84 N 813995.24	WORKS ORDER NO. GE/2015/24.3C
MACHINE	SD26		DATE 14.10.2016 to 19.10.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +5.59 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									4 10.40 10.50	-4.91	10.50			sandy silty CLAY. (ALLUVIUM)
11								2,3 3,4,4,5 N=16	5 10.60 6 10.90				V	Extremely weak, light red (10R 6/6) mottled pink and white, completely decomposed coarse ash crystal TUFF. (Clayey silty fine SAND with occasional angular fine gravel of tuff fragments)
12			80	100					7 11.40 8 12.40 12.50	-8.91	12.50			
17.10.2016		2.98 at 1800												
18.10.2016		4.03 at 0800						8,8 9,9,14,20 N=52	9 12.60 10 12.90				V	Extremely weak to weak, light red (10R 7/6) mottled white, completely decomposed coarse ash crystal TUFF. (Clayey silty fine SAND with some angular fine to coarse gravel of tuff fragments)
13														
14			80	100					11 13.40 12 14.40 14.50	-8.91	14.50			
15								3,3 3,3,4,6 N=16	13 14.60 14 14.90				V	Extremely weak, very pale brown (10YR 7/3) and light yellowish brown (10YR 6/4) mottled white, completely decomposed coarse ash crystal TUFF. (Clayey very silty fine SAND with some angular fine to medium gravel of tuff fragments)
16			80	100					15 15.40 16 16.40 16.50 17 16.60 18 16.90					
17								6,6 12,17,22,40 N=91						
18			80	100					19 17.40 20 18.30 18.40	-11.81	17.40		IV	Weak, light greenish grey (5GY 7/1) mottled brown, highly decomposed coarse ash crystal TUFF. (Angular, clayey silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
18.10.2016	HW 18.40m	2.99 at 1800								-12.81	18.40			
19.10.2016		3.93 at 0800											II	Strong to very strong, grey spotted white, slightly decomposed coarse ash crystal TUFF. Joints are closely to medium spaced, occasionally very closely and widely spaced, rough planar and rough undulating, iron and manganese oxide stained, dipping at 5° to 15°, 25° to 35°, 45° to 55° and subvertically from 21.52m to 21.73m.
19			80	100	81	63	14.3		T2-101		18.75 18.92			
							>20							
							4.1				19.65			
							14.3		T2-101 19.62	-14.41	19.93 20.00			
20														

SMALL DISTURBED SAMPLE
LARGE DISTURBED SAMPLE
U76 SAMPLE
PISTON SAMPLE (76mm)
MAZIER SAMPLE
SPT LINER SAMPLE
WATER SAMPLE
U100 SAMPLE
STANDARD PENETRATION TEST
IN-SITU VANE SHEAR TEST
PACKER TEST
PERMEABILITY TEST
PRESSUREMETER TEST
BOREHOLE TELEVIEWER
PIEZOMETER TIP
STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	24.10.2016
CHECKED	R. Chu
DATE	31.10.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **SW-ADH 2** SHEET 3 of 3

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Seawall)

METHOD **ROTARY**	CO-ORDINATES E **846643.84** N **813995.24**	WORKS ORDER NO. **GE/2015/24.3C**
MACHINE **SD26**		DATE **14.10.2016** to **19.10.2016**
FLUSHING MEDIUM **WATER**	ORIENTATION **VERTICAL**	GROUND LEVEL **+5.59** mPD

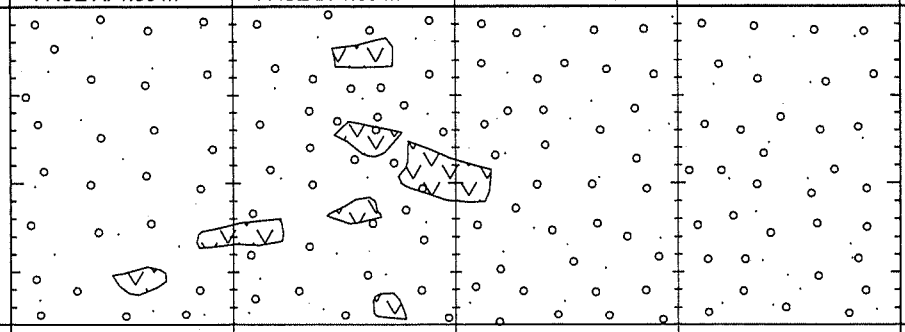
Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			80	100	90	90	3.0		T2-101				II	As sheet 2 of 3.
21									20.93	-15.34	20.93		III	From 20.93m to 21.22m: Moderately strong and moderately decomposed.
							8.6			-15.63	21.22		II	
			80	100	98	90	~~>20~~ 7.9		T2-101		21.51 21.53			
22									22.21		21.91			
			80	100	100	100	1.2		T2-101					
23									23.39		23.52			
			80	100	96	86	7.4		T2-101					
24 19.10.2016		3.91 at 1800						▲		-18.74	24.33			End of hole at 24.33 m.
25														
26														
27														
28														
29														
30														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	24.10.2016
CHECKED	R. Chu
DATE	31.10.2016

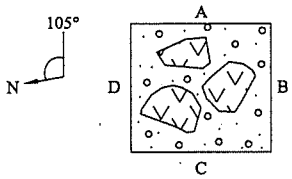
REMARKS

PROJECT	Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Seawall)			WORKS ORDER NO. GE/2015/24.3C
CO-ORDINATES E 846713.13	N 814105.62	GROUND LEVEL: +5.28 mPD	LOGGED S.L. Chiu DATE 14.10.2016 / CHECKED R. Chu DATE 17.10.2016	EXCAVATION DATES: 11.10.2016 to 12.10.2016 BACKFILL DATES: 25.10.2016 to 25.10.2016

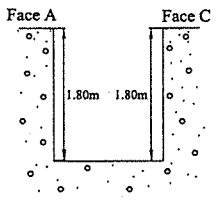
SAMPLES and TESTS	DEPTH (m)	SKETCH FACE A: 1.50 m	FACE B: 1.50 m	FACE C: 1.50 m	FACE D: 1.50 m	DEPTH (m)	LEGEND	GRADE	DESCRIPTION
1 ⊥ 2 ⊥	0.00 – 1.80					0.00 – 1.80			Greyish brown (10YR 5/2), angular to subangular, very sandy fine to coarse GRAVEL and some cobble of rock fragments and occasional boulder (<400mm) of slightly decomposed tuff fragments. (FILL) At bottom: With much boulder (<700mm) of slightly decomposed tuff fragments. (FILL)
									End of trial pit at maximum depth of 1.80 m.

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE (VERTICAL / HORIZONTAL)
- U100 SAMPLE (VERTICAL / HORIZONTAL)
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



REMARKS

Maximum Depth: 1.80 m
Average Depth: 1.80 m
Shoring: YES
Stability: STABLE
Water Seepage: NO

1. Small disturbed samples were taken at 0.50m and 1.00m.

DRILTECH

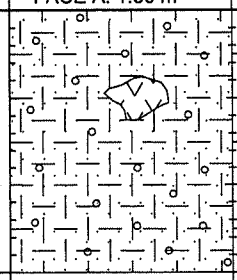
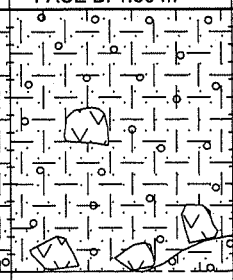
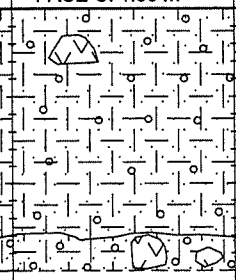
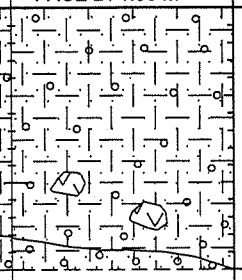
TRIAL PIT RECORD
CONTRACT NO. GE/2015/24

TRIAL PIT NO. SW-TP01

SHEET 1 of 1

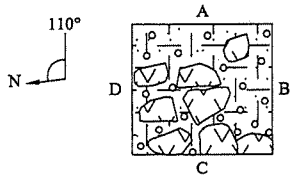
PROJECT	Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Seawall)			WORKS ORDER NO. GE/2015/24.3C
CO-ORDINATES E 846697.47	N 814081.50	GROUND LEVEL: +5.25 mPD	LOGGED S.L. Chiu DATE 14.10.2016 / CHECKED R. Chu DATE 17.10.2016	EXCAVATION DATES: 11.10.2016 to 12.10.2016 BACKFILL DATES: 25.10.2016 to 25.10.2016

DRILTECH

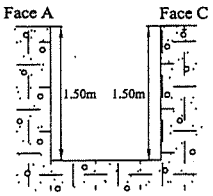
SAMPLES and TESTS	DEPTH (m)	SKETCH				DEPTH (m)	LEGEND	GRADE	DESCRIPTION
		FACE A: 1.50 m	FACE B: 1.50 m	FACE C: 1.50 m	FACE D: 1.50 m				
1 H 2 H	0.00 0.45 0.95 1.50					0.00 1.50			Grey (7.5YR 6/1) mottled brown, angular to subangular, slightly clayey silty sandy fine to coarse GRAVEL and some cobble of rock fragments and occasional boulder (<500mm) of slightly decomposed tuff fragments. (FILL) At bottom: With much boulder (<600mm) of slightly decomposed tuff fragments. (FILL)
									End of trial pit at maximum depth of 1.50 m.

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE (VERTICAL / HORIZONTAL)
- U100 SAMPLE (VERTICAL / HORIZONTAL)
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



REMARKS

Maximum Depth: 1.50 m
Average Depth: 1.45 m
Shoring: YES
Stability: STABLE
Water Seepage: NO

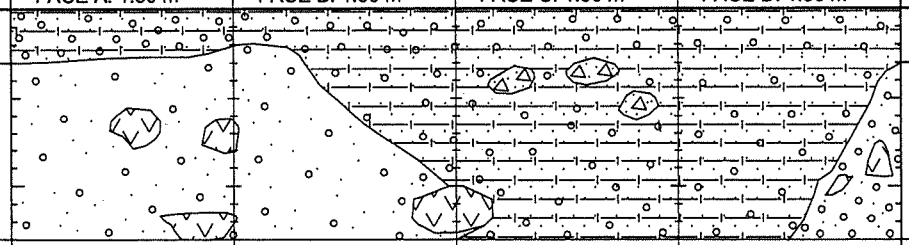
1. Small disturbed samples were taken at 0.50m and 1.00m.

TRIAL PIT RECORD
CONTRACT NO. GE/2015/24

TRIAL PIT NO. SW-TP02

SHEET 1 of 1

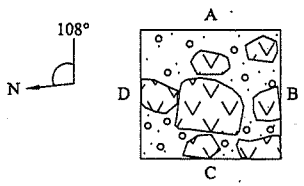
PROJECT	Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Seawall)			WORKS ORDER NO. GE/2015/24.3C
CO-ORDINATES E 846665.98	N 814035.85	GROUND LEVEL: +5.29 mPD	LOGGED S.L. Chiu DATE 14.10.2016 / CHECKED R. Chu DATE 17.10.2016	EXCAVATION DATES: 07.10.2016 to 07.10.2016 BACKFILL DATES: 25.10.2016 to 25.10.2016

SAMPLES and TESTS	DEPTH (m)	SKETCH	DEPTH (m)	LEGEND	GRADE	DESCRIPTION
	0.00		0.00			Brown (7.5YR 4/2), angular to subangular, slightly clayey silty very sandy fine to coarse GRAVEL and some cobble of rock fragments and occasional concrete, asphalt and steel fragments. (FILL)
	0.30		0.30			
1 H	0.45					Light grey (7.5YR 6/1) mottled brown, angular to subangular, very sandy fine to coarse GRAVEL and COBBLE of rock fragments and occasional boulder (<250mm) of moderately decomposed tuff fragments. (FILL)
2 H	0.95					At bottom: With much boulder (<600mm) of slightly decomposed tuff fragments.
	1.30		1.30			End of trial pit at maximum depth of 1.30 m.

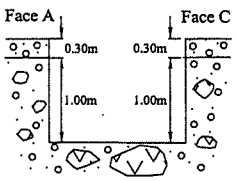
FACE A: 1.50 m | FACE B: 1.50 m | FACE C: 1.50 m | FACE D: 1.50 m

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE (VERTICAL / HORIZONTAL)
- U100 SAMPLE (VERTICAL / HORIZONTAL)
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



REMARKS

Maximum Depth: 1.30 m
Average Depth: 1.30 m
Shoring: YES
Stability: STABLE
Water Seepage: NO

1. Small disturbed samples were taken at 0.50m and 1.00m.

DRILTECH

TRIAL PIT RECORD
CONTRACT NO. GE/2015/24

TRIAL PIT NO. SW-TP03

SHEET 1 of 1

DRILLHOLE RECORD

DRiLTECH

CONTRACT NO. GE/2015/24

HOLE NO. **NT-ADH 1**

SHEET 1 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

METHOD	ROTARY	CO-ORDINATES E 846608.45 N 814502.64	WORKS ORDER NO. GE/2015/24.3A
MACHINE	SD5		DATE 21.07.2016 to 27.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +16.27 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
21.07.2016	PW								INSPECTION PIT 0.00–0.45	+16.27	0.00			Firm, dark brown (7.5YR 3/4), slightly sandy clayey SILT. (COLLUVIUM)
									1	+15.77	0.50			
			80	75					T2-120 0.80–0.90	+15.37	0.90			Grey (10YR 5/1) mottled yellowish red, angular to subangular, clayey silty sandy fine to coarse GRAVEL and COBBLE of rock fragments. (COLLUVIUM)
1														
21.07.2016	PW 1.50m	0.60 at 1800								+14.77	1.50			Wash boring, assumed to be COLLUVIUM.
23.07.2016	HW	0.60 at 0800	80	0					1.50				V	Extremely weak, red (10R 4/8) spotted light yellowish brown, completely decomposed fine ash TUFF. (Slightly clayey silty fine to coarse SAND with occasional angular fine to medium gravel of tuff fragments)
2									1 1.90 2 2.00					
			80	55					3 3.00 4 3.10	+13.17	3.10			
3														
			80	87									V	Extremely weak, light yellowish brown (10YR 6/4) spotted brown and red, completely decomposed fine ash TUFF. (Stiff, slightly sandy clayey SILT with occasional angular fine gravel of tuff fragments)
4									5 4.10 4.20	+12.07	4.20			
		1.30 at 1800	80	100	100	100			T2-101 4.42	+11.85	4.42		III	Strong to very strong, dark grey spotted light grey, slightly decomposed fine ash TUFF. (CORESTONE)
23.07.2016 25.07.2016		1.80 at 0800	80	100	100	100	0.3		4.62 T2-101 5.03				II	From 4.20m to 4.42m: Moderately strong and moderately decomposed.
5										+11.07	5.20		V	From 5.20m to 6.23m: No recovery, assumed to be completely decomposed TUFF.
			80	31	31	31	NR		T2-101					
6										+10.04	6.23			
							6.7			+9.74	6.53		II	
			80	52					6 6.53 7 7.30 7.40	+8.87	7.40		V	Extremely weak, grey (10YR 5/1) streaked very dark brown, mottled brown, completely decomposed fine ash TUFF. (Slightly clayey silty fine to coarse SAND with occasional angular fine gravel of tuff fragments)
7														
25.07.2016	HW 7.72m	2.00 at 1800	80	91	50	38	>20		T2-101 7.62	+8.65	7.62		III	Very strong, dark grey spotted grey, slightly decomposed fine ash TUFF. Joints are medium to widely spaced, occasionally closely spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin coated, dipping at 0° to 10°, 30° to 40°, 60° to 70° and subvertically from 7.40m to 11.16m and 12.10m to 13.04m.
26.07.2016		2.00 at 0800							7.72				II	
8			80	100	88	78	7.9		T2-101					
											8.89			
9							2.5		9.05					From 7.40m to 7.62m: Moderately strong and moderately decomposed.
			80	100	50	50	>20		T2-101 9.61		9.29			
											9.61			
10									T2-101	+6.27	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED S.L. Chiu

DATE 13.08.2016

CHECKED R. Chu

DATE 19.08.2016

REMARKS

1. An inspection pit was excavated to 0.50m deep by hand tools.
2. Constant head permeability test was carried out at section from 2.70m to 4.20m.
3. Groundwater sample was taken at 13.04m.
4. Acoustic borehole televiewer survey was carried out from 7.43m to 12.74m.
5. Piezometers were installed with tips at 3.70m and 7.00m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **NT-ADH 1** SHEET 2 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

METHOD	ROTARY	CO-ORDINATES E 846608.45 N 814502.64	WORKS ORDER NO. GE/2015/24.3A
MACHINE	SD5		DATE 21.07.2016 to 27.07.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +16.27 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
			80	100	100	100	2.8		T2-101 10.37				II	As sheet 1 of 2.
		2.15 at 1800	80	100	100	100			T2-101 10.97		10.70			
26.07.2016 27.07.2016		2.10 at 0800	80	100	100	89	8.7		T2-101 11.42		11.16			
12			80	100	100	100	2.2		T2-101 12.29		12.54			
13 27.07.2016		2.00 at 1200	80	100	92	75	12.0	▲	T2-101	+3.23	13.04			
14														End of hole at 13.04 m.
15														
16														
17														
18														
19														
20														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	13.08.2016
CHECKED	R. Chu
DATE	19.08.2016

REMARKS

DRILLHOLE RECORD

DRiLTECH

CONTRACT NO. GE/2015/24

HOLE NO. **NT-ADH 2**

SHEET 1 of 3

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

METHOD	ROTARY	CO-ORDINATES E 846676.90 N 814321.91	WORKS ORDER NO. GE/2015/24.3A
MACHINE	SD4		DATE 01.08.2016 to 09.08.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +47.12 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
01.05.2016	PW								0.00	+47.12	0.00		VI	Red (2.5YR 5/6), slightly sandy clayey SILT. (RESIDUAL SOIL)
									1 0.45					
1									2 INSPECTION PIT 0.95					
	PW 1.50m								3 1.45	+45.62	1.50			
	HW		70	100					4 1.50				V	Extremely weak, reddish brown (5YR 4/4) streaked very dark brown, mottled red, completely decomposed coarse ash TUFF. (Firm, clayey sandy SILT with occasional angular fine gravel of tuff fragments)
2									5 2.50	+44.52	2.60			
			70	0					2.60				IV	Weak, reddish brown (5YR 4/4) streaked red, highly decomposed coarse ash TUFF. (Angular, slightly clayey silty sandy fine to coarse GRAVEL of highly decomposed tuff fragments)
3									6 3.40	+43.62	3.50			
			70	60	0	0	NI		3.50 T2-101	+43.32	3.80		II	Strong, grey, slightly decomposed coarse ash TUFF. (CORESTONE)
							NR			+43.12	4.00		V	
4			70	90					7 4.00				V	From 3.80m to 4.00m: No recovery, assumed to be completely decomposed TUFF. Extremely weak, reddish brown (5YR 5/4) spotted white and very dark brown, completely decomposed coarse ash TUFF. (Firm, slightly sandy clayey SILT)
5									8 5.00	+42.02	5.10			
			70	100	55	55	7.7		5.10 T2-101 5.21				II	Strong to very strong, dark grey spotted light grey, slightly decomposed coarse ash TUFF. (CORESTONE)
			70	85	57	46	>20		T2-101		5.49 5.60			
		2.30 at 1800					5.3			+41.33	5.79			
01.05.2016							NR		5.89	+41.23	5.89		V	From 5.79m to 5.89m, 5.97m to 6.75m, 8.05m to 8.55m and 9.35m to 9.80m: No recovery, assumed to be completely decomposed TUFF.
03.08.2016		3.00 at 0800					>20			+41.15	5.97		III V	
			70	34	25	25	NR		T2-101					From 5.89m to 5.97m, 9.25m to 9.35m and 9.80m to 10.00m: Moderately strong and moderately decomposed.
										+40.37	6.75		II	
7									7.07					
			70	94	94	94	3.1		T2-101					
									7.75					
8										+39.07	8.05		V	
			70	67	36	30	NR		T2-101	+38.57	8.55		II	
							14.3				8.97			
9							>20		9.25	+37.87	9.25			
										+37.77	9.35		III V	
			70	40	0	0	NR		T2-101	+37.32	9.80			
03.08.2016		3.30 at 1800					>20			+37.12	10.00		III	

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED S.L. Chiu

DATE 13.08.2016

CHECKED R. Chu

DATE 19.08.2016

REMARKS

1. An inspection pit was excavated to 1.50m deep by hand tools.
2. Constant head permeability test was carried out at section from 13.50m to 15.00m.
3. Groundwater sample was taken at 24.54m.
4. Acoustic borehole televiewer survey was carried out from 18.39m to 24.38m.
5. A piezometer was installed with tip at 17.00m.
6. A standpipe was installed to 24.00m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **NT-ADH 2** SHEET 2 of 3

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

METHOD	ROTARY	CO-ORDINATES E 846676.90 N 814321.91	WORKS ORDER NO. GE/2015/24.3A
MACHINE	SD4		DATE 01.08.2016 to 09.08.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +47.12 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
05.08.2016		4.20 at 0800	70	22					9 10.00				V	Extremely weak, greyish brown (10YR 5/2) mottled brown, spotted grey, completely decomposed coarse ash TUFF. (Slightly clayey silty fine to coarse SAND with occasional to some angular fine gravel of tuff fragments)
11			70	0					10 10.90 11.00					
12			70	75					11 11.90 12 12.00					
13			70	25					13 13.00 14 13.10					
14			70	100					15 14.10 16 14.20	+32.92	14.20		V	Extremely weak, greyish brown (2.5Y 5/2) streaked yellowish red, spotted white, completely decomposed coarse ash TUFF. (Slightly clayey silty fine to coarse SAND with occasional angular fine gravel of tuff fragments)
15		5.00 at 1800							17 15.20 18 15.30					
05.08.2016 06.08.2016		7.00 at 0800	70	100										
16									19 16.30 20 16.40					
17			70	100					21 17.40 17.50	+29.62	17.50			
18			70	76	36	0	>20 13.6		T2-101		18.13		II	Strong, dark grey spotted light grey, slightly decomposed coarse ash TUFF. (CORESTONE) From 18.35m to 18.62m and 19.21m to 19.41m: No recovery, assumed to be completely decomposed TUFF.
	HW 18.62m						NR			+28.77	18.35			
									18.62	+28.50	18.62		V	
06.08.2016 08.08.2016		6.90 at 1800 16.00 at 0800	70	100	0	0	>20		T2-101 19.01				III	From 18.62m to 19.21m: Moderately strong and moderately decomposed.
			70	50	0	0	NR		T2-101 19.41	+27.91	19.21			
										+27.71	19.41		V	
										+27.57	19.55		III	Strong to very strong, dark grey spotted light grey, slightly decomposed coarse ash TUFF. Joints are closely and medium spaced, occasionally
20			70	92	17	12	>20		T2-101	+27.12	20.00		II	

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	13.08.2016
CHECKED	R. Chu
DATE	19.08.2016

REMARKS

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **NT-ADH 2** SHEET 3 of 3

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)**

METHOD	**ROTARY**	CO-ORDINATES E **846676.90** N **814321.91**	WORKS ORDER NO. **GE/2015/24.3A**
MACHINE	**SD4**		DATE **01.08.2016** to **09.08.2016**
FLUSHING MEDIUM	**WATER**	ORIENTATION **VERTICAL**	GROUND LEVEL **+47.12** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
									T2-101				II	very closely spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin coated, dipping at 0° to 10°, 20° to 30°, 40° to 50° and 60° to 70°. From 19.41m to 19.55m: Moderately strong to strong and moderately decomposed. From 20.31m to 20.43m: No recovery, assumed to be completely decomposed TUFF.
									20.31	+26.81	20.31			
										+26.69	20.43		V	
							NR						II	
							10.3				20.82			
21			70	98	52	48	>20		T2-101		20.95			
							6.9				21.24			
							>20							
									21.53		21.53			
22			70	100	73	48	11.1		T2-101					
											22.16			
08.08.2016		14.70 at 1800					>20		22.37					
09.08.2016		17.20 at 0800									22.53			
			70	100	72	54	6.5		T2-101					
23											22.99			
									23.06					
							1.4							
											23.71			
			70	98	66	44	12.5		T2-101		23.87			
24														
							>20							
09.08.2016		16.80 at 1200								+22.58	24.54			
25														End of hole at 24.54 m.
26														
27														
28														
29														
30														

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	13.08.2016
CHECKED	R. Chu
DATE	19.08.2016

REMARKS

DRILLHOLE RECORD

DRiLTECH

CONTRACT NO. GE/2015/24

HOLE NO. **NT-ADH 3**

SHEET 1 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

METHOD	ROTARY	CO-ORDINATES E 846672.75 N 814264.52	WORKS ORDER NO. GE/2015/24.3A
MACHINE	SD4		DATE 28.07.2016 to 03.08.2016
FLUSHING MEDIUM	WATER	ORIENTATION VERTICAL	GROUND LEVEL +28.52 mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
28.07.2016	PW								0.00	+28.52	0.00			Reddish brown (5YR 4/4) spotted brown, slightly clayey silty fine to coarse SAND with some to much angular to subangular fine to coarse gravel of rock fragments. (TOP SOIL)
1									1 0.45 INSPECTION PIT					
									2 0.95	+27.52	1.00		V	Extremely weak, brown (10YR 5/3) spotted greyish brown and red, completely decomposed coarse ash TUFF. (Slightly clayey silty fine to coarse SAND with some angular fine to coarse gravel of tuff fragments)
	PW 1.50m								3 1.45	+27.02	1.50			
	HW		70	100					4 1.50				IV	Weak to moderately weak, greyish brown (10YR 5/2), highly decomposed coarse ash TUFF. (Angular, fine to coarse GRAVEL of highly decomposed tuff fragments)
2									5 2.00	+26.42	2.10			
			70	100	10	0	>20		2.10				III	Strong to very strong, dark grey spotted light grey, slightly decomposed coarse ash TUFF. (CORESTONE)
		0.50 at 1800							T2-101 2.71					
28.07.2016 30.07.2016		0.50 at 0830									2.95			
3			70	100	50	25	6.5		T2-101	+25.11	3.41			From 2.10m to 3.41m and 3.53m to 3.94m: Moderately strong to strong and moderately decomposed.
							NI			+24.99	3.53		IV	
							>20						III	
									3.90	+24.58	3.94		II	From 3.41m to 3.53m: Weak to moderately weak and highly decomposed. (Angular, fine to coarse GRAVEL of highly decomposed tuff fragments)
4			70	100	53	50	9.2		T2-101					
											4.70			From 6.08m to 6.38m: No recovery, assumed to be completely decomposed TUFF.
		0.60 at 1800					>20		5.07		5.07			
5 30.07.2016 01.08.2016		3.30 at 0800												
			70	79	76	69	5.9		T2-101					
6										+22.44	6.08			
							NR						V	
	HW 6.51m									+22.14	6.38			
									6.51				II	Very strong, dark grey spotted light grey, slightly decomposed coarse ash TUFF. Joints are closely to medium spaced, occasionally very closely and widely spaced, rough planar and rough undulating, iron and manganese oxide stained, occasionally kaolin coated, dipping at 0° to 10°, 40° to 50° and 60° to 70°.
			70	100	88	88			T2-101					
7									7.01					
							5.5							
			70	100	80	67			T2-101					
8											8.03			
							>20				8.19			
							4.5				8.41			
							>20		8.54					
											8.84			
9			70	97	81	68			T2-101					
		3.60 at 1800												
01.08.2016 03.08.2016		6.30 at 0800							9.57					
							3.2		T2-101					
10										+18.52	10.00			

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED S.L. Chiu

DATE 13.08.2016

CHECKED R. Chu

DATE 19.08.2016

REMARKS

1. An inspection pit was excavated to 1.50m deep by hand tools.
2. Groundwater sample was taken at 11.81m.
3. Acoustic borehole televiewer survey was carried out from 8.71m to 11.65m.
4. Piezometers were installed with tips at 2.30m and 11.30m.

DRiLTECH	DRILLHOLE RECORD CONTRACT NO. GE/2015/24	HOLE NO. **NT-ADH 3** SHEET 2 of 2

PROJECT **Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)**

METHOD **ROTARY**	CO-ORDINATES E **846672.75** N **814264.52**	WORKS ORDER NO. **GE/2015/24.3A**
MACHINE **SD4**		DATE **28.07.2016** to **03.08.2016**
FLUSHING MEDIUM **WATER**	ORIENTATION **VERTICAL**	GROUND LEVEL **+28.52** mPD

Drilling Progress	Casing Size	Water Level (m) Shift Start/ End	Water Return%	TCR%	SCR%	RQD%	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
11 03.08.2016		7.50 at 1800	70 70	100 100	100 100	100 100	1.2 4.3		T2-101 10.83 T2-101	+16.71	10.73 11.58 11.81		II	As sheet 1 of 2.
12 13 14 15 16 17 18 19 20														End of hole at 11.81 m.

- SMALL DISTURBED SAMPLE
- LARGE DISTURBED SAMPLE
- U76 SAMPLE
- PISTON SAMPLE (76mm)
- MAZIER SAMPLE
- SPT LINER SAMPLE
- WATER SAMPLE
- U100 SAMPLE
- STANDARD PENETRATION TEST
- IN-SITU VANE SHEAR TEST
- PACKER TEST
- PERMEABILITY TEST
- PRESSUREMETER TEST
- BOREHOLE TELEVIEWER
- PIEZOMETER TIP
- STANDPIPE TIP

LOGGED	S.L. Chiu
DATE	13.08.2016
CHECKED	R. Chu
DATE	19.08.2016

REMARKS

DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. SS 1 FEATURE NO. - SHEET 1 of 1

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

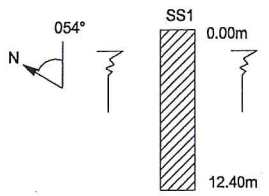
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846679.99 N 814230.18	DATUM (TOE) CO-ORDINATES E 846670.69 N 814225.27	WORKS ORDER NO. GE/2015/24.3A	
DATE 22.07.2016	LEVEL +21.79 mPD	LEVEL +12.89 mPD	DATE 14.07.2016 to 16.07.2016	
CHECKED R. Chu			DATE REINSTATED 29.08.2016	
DATE 28.07.2016				

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00	20°	+21.79		Dense, brown (7.5YR 5/4) mottled grey, slightly clayey silty fine SAND with some angular to subangular fine to coarse gravel of rock fragments. (COLLUVIUM) From 0.00m to 0.50m: Greyish brown (10YR 5/2). From 1.75m to 2.95m: With some boulder (<400mm) of moderately decomposed tuff fragments.				
0.45			1					
1 0.95	56°		2					
1.45	45°		3					
2 1.95			4					
2.45			5					
3 2.95	36°		6					
3.45			7					
4 3.95			8					
4.30		+18.94						
4.45			9	Firm, brown (7.5YR 5/4), silty sandy CLAY with some angular to subangular fine to coarse gravel and cobble of rock fragments and some boulder (<600mm) of moderately decomposed tuff fragments. (COLLUVIUM)				
5 4.95			10					
5.45			11					
6 5.95			12					
6.45	60°		13					
7 6.95	35°		14					
7.45			15					
8 7.95			16					
8.45	65°		17					
9 8.95			18					
9.45			19					
10 9.95	40°		20					
10.45			21					
10.90								
11 10.95		+14.27	22					
11.45	67°		23	Firm, brown (7.5YR 4/3), slightly sandy silty CLAY with some angular fine to coarse gravel and cobble of tuff fragments. (RESIDUAL SOIL)		VI		
11.90								
12 11.95		+13.35	24					
12.35				Extremely weak, brown (10YR 5/3) streaked very dark brown, spotted red, completely decomposed fine ash TUFF. (Stiff, slightly sandy clayey SILT with some angular fine to coarse gravel and cobble of tuff fragments)		V		
12.40		+12.89	25					
13				End of stripping at 12.40 m.				
14								
15								

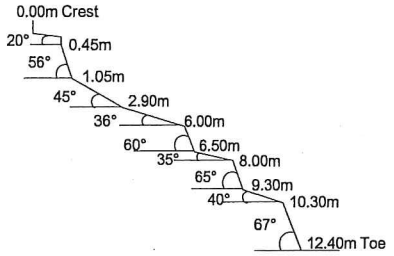
REMARKS
1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 12.00m at 0.50 interval and at 12.40m.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS 2** FEATURE NO. - SHEET 1 of 1

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

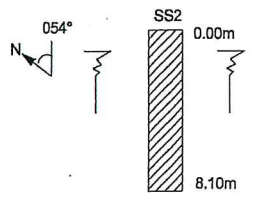
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846661.09 N 814255.69	DATUM (TOE) CO-ORDINATES E 846652.76 N 814246.61	WORKS ORDER NO. GE/2015/24.3A	
DATE 22.07.2016	LEVEL +20.73 mPD	LEVEL +16.26 mPD	DATE 14.07.2016 to 16.07.2016	
CHECKED R. Chu			DATE REINSTATED 29.08.2016	
DATE 28.07.2016				

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00		+20.73						
0.45			1	Firm, very dark brown (10YR 2/2) mottled grey, slightly sandy silty CLAY with much angular to subangular fine to coarse gravel and some cobble of rock fragments and with much rootlets. (COLLUVIUM)				
1 0.95			2					
1.45	20°		3	From 1.40m to 1.80m: With some cobble and boulder (<460mm) of moderately decomposed tuff fragments.				
2 1.95			4					
2.30		+19.94						
2.45			5	Extremely weak, very dark brown (7.5YR 3/2), completely decomposed fine ash TUFF. (Firm, slightly sandy silty CLAY with some angular fine to coarse gravel and cobble of tuff fragments)		V		
3 2.95			6					
3.45			7	From 2.70m to 3.30m and 3.90m to 4.50m: With some boulder (<750mm) sized corestones of moderately decomposed tuff fragments.				
4 3.95			8					
4.45	36°		9					
4.90								
5 4.95		+18.66	10	Strong, grey, slightly decomposed fine ash TUFF with closely to medium spaced, rough planar and rough undulating, narrow to moderately narrow, iron and manganese oxide stained, silty clay infilled (<30mm) joints.	J1	III		
5.45	68°		11					
6 5.95			12		J2	II	J1: 193°/87°	FeO and MnO stained
6.45			13	From 4.90m to 5.90m: Moderately strong and moderately decomposed.			J2: 016°/08°	Silty clay infilled (<30mm)
7 6.95	47°		14					
7.45			15		J2			
7.95								
8 8.10		+16.26	16		J2			
8.05			17					
9				End of stripping at 8.10 m.				
10								
11								
12								
13								
14								
15								

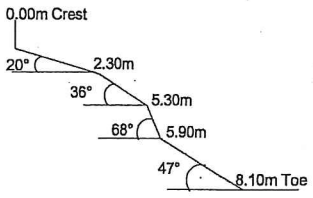
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 8.00m at 0.50 interval and at 8.10m.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS 3** FEATURE NO. - SHEET 1 of 1

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

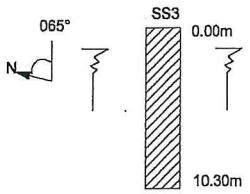
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846649.31 N 814281.06	DATUM (TOE) CO-ORDINATES E 846640.13 N 814280.20	WORKS ORDER NO. GE/2015/24.3A
DATE 28.07.2016	LEVEL +18.80 mPD	LEVEL +8.75 mPD	DATE 19.07.2016 to 20.07.2016
CHECKED R. Chu			DATE REINSTATED 29.08.2016
DATE 01.08.2016			

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00, 0.45, 0.50	57°	+18.80, +18.38	1	Firm, red (2.5YR 5/6) mottled greyish brown, slightly sandy silty CLAY with occasional angular to subangular fine to coarse gravel and cobble of rock fragments. (COLLUVIUM)				
1, 0.95, 1.45, 1.90			2, 3	Greyish brown (10YR 5/2), BOULDER of moderately decomposed tuff fragment. (COLLUVIUM)				
2, 1.95, 2.45	41°	+17.26	4, 5	Stiff, reddish brown (5YR 4/3) mottled greyish brown, slightly sandy silty CLAY with occasional angular to subangular fine to coarse gravel and cobble of rock fragments. (COLLUVIUM)				
3, 2.95, 3.45			6, 7	From 3.70m to 4.80m: With some boulder of moderately decomposed tuff fragments.				
4, 3.95, 4.45			8, 9					
5, 4.95, 5.45, 5.50		+14.90	10, 11					
6, 5.95, 6.45			12, 13	Moderately strong, grey (10YR 6/1), moderately decomposed fine ash TUFF. (PW 50/90)		III		
7, 6.95, 7.45, 7.80	76°	+12.82	14, 15					
8, 7.95, 8.45			16, 17	Extremely weak, brown (7.5YR 4/2), completely decomposed fine ash TUFF. (Slightly clayey silty fine SAND with occasional angular fine to coarse gravel and cobble of tuff fragments) (PW 30/50)		V		
9, 8.95, 9.45			18, 19	From 8.60m to 9.10m: With some boulder of moderately decomposed tuff fragments.				
10, 9.95, 10.45			20, 21					
11, 10.95, 11.45, 11.95			22, 23					
12, 12.00		+8.75	24					
13, 14, 15				End of stripping at 12.00 m.				

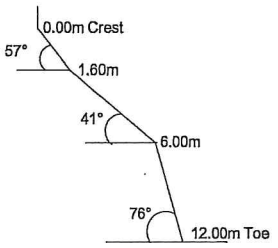
REMARKS
1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 12.00m at 0.50 interval.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS 4** FEATURE NO. - SHEET 1 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

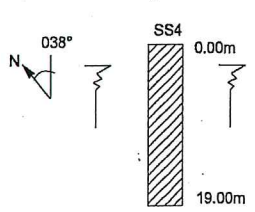
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846641.80 N 814303.29	DATUM (TOE) CO-ORDINATES E 846633.69 N 814295.71	WORKS ORDER NO. GE/2015/24.3A
DATE 28.07.2016	LEVEL +21.02 mPD	LEVEL +6.76 mPD	DATE 19.07.2016 to 20.07.2016
CHECKED R. Chu			DATE REINSTATED 29.08.2016
DATE 01.08.2016			

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00		+21.02		Stiff, red (10R 5/8) spotted brown and light red, slightly sandy clayey SILT with some angular fine gravel of rock fragments. (COLLUVIUM)				
0.45	37°		1					
1 0.95			2					
1.45			3					
2 1.95			4					
2.45	25°		5					
3 2.95			6					
3.45								
3.50		+19.38	7					
4 3.95			8	Extremely weak to very weak, light brownish grey (10YR 6/2) streaked very dark brown, mottled red, completely decomposed fine ash TUFF. (Slightly silty fine to coarse SAND with some angular fine gravel of tuff fragments)		V		
4.20		+18.76						
4.45			9			III		
4.95								
5 5.00		+18.04	10	Moderately strong to strong, light grey, moderately decomposed fine ash TUFF. (CORESTONE)				
5.30	63°	+17.78				V		
5.45			11	From 5.00m to 5.30m: Extremely weak and completely decomposed. (Firm, clayey SILT)		III		
5.95								
6 6.00		+17.15	12					
6.45			13	Extremely weak, yellowish red (5YR 5/8) spotted red, completely decomposed fine ash TUFF. (Slightly clayey silty fine to coarse SAND with some angular fine to coarse gravel and cobble of tuff fragments)		V		
7 6.95			14					
7.20	18°	+16.26						
7.45			15	Moderately strong to strong, light grey, moderately decomposed coarse ash TUFF. (CORESTONE) From 9.20m to 9.50m: Extremely weak and completely decomposed. (Firm, clayey SILT)		III		
8 7.95			16					
8.45			17					
9 8.95			18					
9.20		+14.44						
9.45								
9.50		+14.17	19			V		
10 9.95	65°		20			III		
10.45			21					
11 10.95			22					
11.45			23					
12 11.95			24					
12.20		+11.73						
12.45			25	Extremely weak, dark brown (7.5YR 3/2), completely decomposed fine ash TUFF. (Slightly clayey silty fine to coarse SAND) From 13.70m to 14.30m: Moderately strong and moderately decomposed. (CORESTONE)		V		
13 12.95			26					
13.45			27					
13.70	47°	+10.63						
14 13.95			28			III		
14.30		+10.19						
14.45			29	Extremely weak, dark brown (7.5YR 3/2), completely decomposed fine ash TUFF. (Slightly clayey silty fine to coarse SAND with some		V		
15 14.95			30					

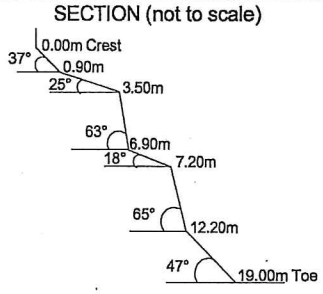
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 19.00m at 0.50 interval.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. SS 4 FEATURE NO. - SHEET 2 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846641.80 N 814303.29	DATUM (TOE) CO-ORDINATES E 846633.69 N 814295.71	WORKS ORDER NO. GE/2015/24.3A
DATE 28.07.2016			DATE 19.07.2016 to 20.07.2016
CHECKED R. Chu			
DATE 01.08.2016	LEVEL +21.02 mPD	LEVEL +6.76 mPD	DATE REINSTATED 29.08.2016

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
15.45	47°		31	angular fine to coarse gravel and cobble of rock fragments and occasional boulder (<250mm) sized corestone of tuff fragments)		V		
16 15.95			32	From 17.20m to 18.00m: Moderately strong and moderately decomposed. (CORESTONE)				
16.45			33					
17 16.95			34					
17.20		+8.07						
17.45			35			III		
17.95								
18 18.00		+7.48	36					
18.45			37			V		
18.95								
19 19.00		+6.76	38					
20				End of stripping at 19.00 m.				
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

REMARKS

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)

As sheet 1 of 2

SECTION (not to scale)

As sheet 1 of 2

DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS 5** FEATURE NO. - SHEET 1 of 1

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

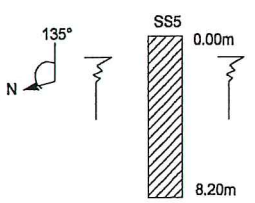
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846611.39 N 814451.26 LEVEL +11.10 mPD	DATUM (TOE) CO-ORDINATES E 846606.44 N 814450.26 LEVEL +6.24 mPD	WORKS ORDER NO. GE/2015/24.3A	
DATE 06.08.2016			DATE 01.08.2016 to 03.08.2016	
CHECKED R. Chu			DATE REINSTATED 29.08.2016	
DATE 12.08.2016				

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00		+11.10		Stiff, dark brown (7.5YR 3/3) spotted light yellowish brown and grey, slightly sandy silty CLAY with occasional angular to subangular fine to coarse gravel and cobble of rock fragments. (COLLUVIUM) From 0.80m to 1.10m and 4.30m to 5.50m: With some boulder (<900mm) of moderately decomposed tuff fragments.				
0.45	21°		1					
1 0.95			2					
1.45	87°		3					
2 1.95			4					
2.45			5					
3 2.95	17°		6					
3.45			7					
4 3.95			8					
4.45			9					
5 4.95	62°		10					
5.45			11					
5.50		+8.39						
6 5.95	29°		12	Extremely weak, red (10R 5/6) mottled light yellowish brown and grey, completely decomposed fine ash TUFF. (Stiff, clayey sandy SILT with some angular fine to coarse gravel of tuff fragments) From 7.10m to 7.90m: Moderately weak to moderately strong and moderately decomposed. (CORESTONE)		V		
6.45			13					
7 6.95	54°		14					
7.10		+7.33						
7.45			15			III		
7.90	81°	+6.54						
8 8.15			16					
8.20		+6.24	17			V		
9				End of stripping at 8.20 m.				
10								
11								
12								
13								
14								
15								

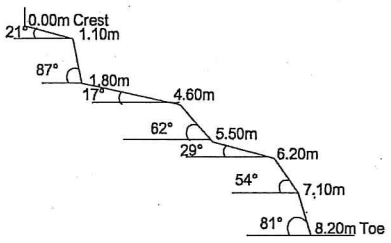
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 8.00m at 0.50 interval and at 8.20m.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS 6** FEATURE NO. - SHEET 1 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

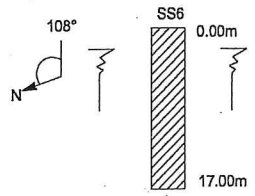
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846623.41 N 814373.99	DATUM (TOE) CO-ORDINATES E 846610.68 N 814380.67	WORKS ORDER NO. GE/2015/24.3A
DATE 06.08.2016	LEVEL +23.79 mPD	LEVEL +12.02 mPD	DATE 21.07.2016 to 23.07.2016
CHECKED R. Chu			DATE REINSTATED 29.08.2016
DATE 01.08.2016			

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00	30°	+23.79		Stiff, brown (7.5YR 4/3) spotted grey and dark brown, slightly sandy silty CLAY with occasional angular to subangular fine to coarse gravel and cobble of rock fragments. (COLLUVIUM)				
0.45			1					
1 0.95			2					
1.45			3					
2 1.95			4					
2.45			5					
3 2.95			6					
3.40		+22.09	7					
3.45	72°			Firm, reddish yellow (7.5YR 6/6) mottled brown, red and grey, slightly sandy silty CLAY with some angular to subangular fine to coarse gravel and cobble of rock fragments. (COLLUVIUM) From 3.40m to 6.65m: With many boulder (<1000mm) of moderately decomposed tuff fragments. From 3.85m to 6.20m: With much roots (<40mm in dia.).				
4 3.95			8					
4.45			9					
5 4.95			10					
5.45			11					
6 5.95			12					
6.20		+19.43						
6.45	31°		13	Firm, red (2.5YR 5/6) and yellowish red (5YR 5/8) spotted light yellowish brown spotted red, slightly sandy silty CLAY with occasional angular fine gravel of quartz and with some fine to coarse gravel and cobble sized patches of completely decomposed tuff fragments. (RESIDUAL SOIL)		VI		
7 6.95			14					
7.45			15					
8 7.95			16					
8.45	40°		17					
9 8.95			18					
9.45			19					
10 9.95	65°		20					
10.45			21					
11 10.95			22					
11.45			23					
12 11.95			24					
12.45			25					
13 12.95			26					
13.45								
13.50		+13.98	27					
14 13.95	30°		28	Extremely weak, red (10R 5/8) mottled light yellowish brown, completely decomposed fine ash TUFF. (Stiff, slightly sandy clayey SILT) From 15.20m to 16.50m: Moderately weak to moderately strong and		V		
14.45			29					
14.95								
15 15.00		+13.23	30					

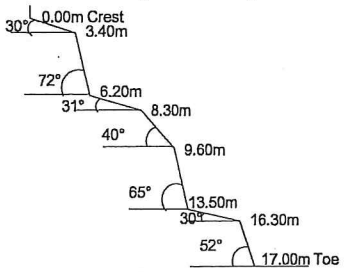
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 17.00m at 0.50 interval.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. SS 6 FEATURE NO. - SHEET 2 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846623.41 N 814373.99 LEVEL +23.79 mPD	DATUM (TOE) CO-ORDINATES E 846610.68 N 814380.67 LEVEL +12.02 mPD	WORKS ORDER NO. GE/2015/24.3A
DATE 06.08.2016			DATE 21.07.2016 to 23.07.2016
CHECKED R. Chu			DATE REINSTATED 29.08.2016
DATE 01.08.2016			

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
15.20		+13.13		moderately decomposed. (CORESTONE) As sheet 1 of 2.		V		
15.45	30°		31			III		
16 15.95			32					
16.45 16.50		+12.42	33					
16.95 17 17.00	52°	+12.02	34			V		
				End of stripping at 17.00 m.				
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

REMARKS

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)

As sheet 1 of 2

SECTION (not to scale)

As sheet 1 of 2

DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS 7** FEATURE NO. - SHEET 1 of 1

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

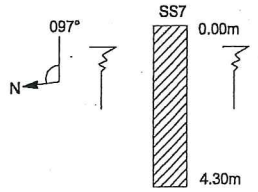
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846598.99 N 814574.20	DATUM (TOE) CO-ORDINATES E 846584.79 N 814576.37	WORKS ORDER NO. GE/2015/24.3A	
DATE 06.08.2016	LEVEL +17.83 mPD	LEVEL +15.37 mPD	DATE 29.07.2016 to 29.07.2016	
CHECKED R. Chu			DATE REINSTATED 29.08.2016	
DATE 12.08.2016				

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00		+17.83		Firm, dark greyish brown (10YR 4/2) mottled grey, clayey sandy SILT with occasional angular to subangular fine to coarse gravel and cobble of rock fragments. (COLLUVIUM)				
0.45			1					
1 0.95			2	From 0.00m to 0.55m: With some roots (<40mm in dia.).				
1.45			3					
1.90				From 0.90m to 1.80m: With a boulder (<900mm) of moderately decomposed tuff fragment.				
1.95		+16.74	4					
2	35°							
2.45			5	Firm, dark greyish brown (10YR 4/2), clayey sandy SILT with some angular to subangular fine to coarse gravel and cobble of rock fragments and with some roots (<20mm in dia.) and rootlets. (COLLUVIUM)				
3 2.95			6					
3.45			7					
4 3.95			8	From 2.75m to 3.25m: With a boulder (<500mm) of moderately decomposed tuff fragment.				
4.25								
4.30		+15.37	9					
5				End of stripping at 4.30 m.				
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

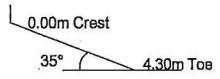
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 4.00m at 0.50 interval and at 4.30m.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS 8A** FEATURE NO. - SHEET 1 of 1

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

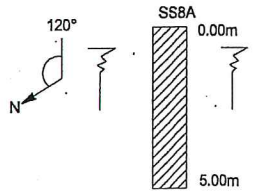
LOGGED	S.L. Chiu	DATUM (CREST) CO-ORDINATES	DATUM (TOE) CO-ORDINATES	WORKS ORDER NO. GE/2015/24.3A
DATE	06.08.2016	E 846599.05	E 846596.14	DATE 29.07.2016 to 29.07.2016
CHECKED	R. Chu	N 814567.38	N 814567.86	
DATE	12.08.2016	LEVEL +18.83 mPD	LEVEL +16.18 mPD	DATE REINSTATED 29.08.2016

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00		+18.83		Grey (10YR 6/1) dappled dark brown, angular to subangular, COBBLE and BOULDER (<450mm) of moderately decomposed tuff fragments in matrix of stiff, clayey sandy silt with some angular to subangular fine to coarse gravel of tuff fragments. (COLLUVIUM)				
0.45			1					
1 0.95			2					
1.45			3					
2 1.95			4					
2.45	32°		5					
3 2.95			6					
3.45			7					
4 3.95			8					
4.45			9					
4.95								
5 5.00		+16.18	10	End of stripping at 5.00 m.				
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

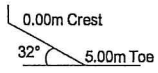
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 5.00m at 0.50 interval.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS 8B** FEATURE NO. - SHEET 1 of 1

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

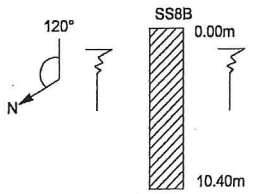
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846589.50 N 814568.96	DATUM (TOE) CO-ORDINATES E 846584.43 N 814569.80	WORKS ORDER NO. GE/2015/24.3A
DATE 06.08.2016	LEVEL +10.14 mPD	LEVEL +5.53 mPD	DATE 29.07.2016 to 29.07.2016
CHECKED R. Chu			DATE REINSTATED 29.08.2016
DATE 12.08.2016			

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00 0.40 0.45	75°	+10.14 +9.75		Stiff, yellowish red (5YR 5/6) spotted red, slightly sandy clayey SILT with some angular fine to coarse gravel and cobble sized patches of completely decomposed tuff fragments. (RESIDUAL SOIL)		VI		
1 0.95			1					
1.45			2	Firm, yellowish red (5YR 5/6) spotted red, slightly sandy clayey SILT with some angular to subangular fine to coarse gravel and occasional cobble of rock fragments. (COLLUVIUM)				
2 1.95			3					
2.45			4					
3 2.95			5					
3.45			6					
4 3.95			7					
4.45			8					
5 4.95			9					
5.45	25°		10					
6 5.95			11					
6.45			12					
7 6.95			13					
7.45			14					
8 7.95			15					
8.45 8.50		+6.33	16					
9 8.95			17	Loose, dark greyish brown (10YR 4/2), clayey silty fine to coarse SAND with some angular to subangular fine to coarse gravel and cobble of rock fragments and with some refuse fragments. (FILL)				
9.45			18					
10 9.95			19					
10.35 10.40		+5.53	20					
11			21	End of stripping at 10.40 m.				
12								
13								
14								
15								

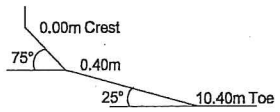
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 10.00m at 0.50 interval and at 10.40m.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS 9** FEATURE NO. - SHEET 1 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

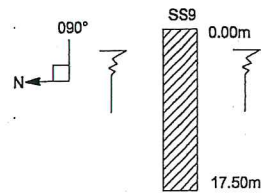
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846591.30 N 814540.76	DATUM (TOE) CO-ORDINATES E 846577.11 N 814543.47	WORKS ORDER NO. GE/2015/24.3A	
DATE 08.08.2016	LEVEL +14.38 mPD	LEVEL +5.71 mPD	DATE 29.07.2016 to 30.07.2016	
CHECKED R. Chu			DATE REINSTATED 29.08.2016	
DATE 12.08.2016				

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00		+14.38		Stiff, brown (7.5YR 5/4) mottled grey and reddish yellow, slightly sandy clayey SILT with much angular to subangular fine to coarse gravel and cobble of rock fragments. (COLLUVIUM) From 0.35m to 0.55m, 1.20m to 2.00m, 2.70m to 6.00m: With some boulder (<600mm) of moderately decomposed tuff fragments.				
0.45			1					
1 0.95			2					
1.45			3					
2 1.95			4					
2.45			5					
3 2.95	42°		6					
3.45			7					
4 3.95			8					
4.45			9					
5 4.95			10					
5.45			11					
5.95								
6 6.00	15°	+10.49	12					
6.45			13	Firm to stiff, brownish yellow (10YR 6/6) dappled light grey and reddish yellow, slightly sandy clayey SILT with much angular to subangular fine to coarse gravel and cobble of rock fragments. (COLLUVIUM)				
7 6.95			14					
7.45			15					
8 7.95			16					
8.45	33°		17					
9 8.95			18					
9.45			19					
9.95								
10 10.00		+8.42	20					
10.45			21	Grey (10YR 4/1), BOULDER of moderately decomposed tuff fragments. (COLLUVIUM)				
10.80		+7.99						
11 10.95			22	Soft to firm, reddish brown (5YR 5/4), clayey sandy SILT with much angular to subangular fine to coarse gravel and cobble of rock fragments. (COLLUVIUM) From 11.00m to 11.30m: With a boulder of moderately decomposed tuff fragment.				
11.45			23					
12 11.95			24					
12.45			25					
13 12.95	20°		26					
13.45			27					
14 13.95			28					
14.45			29					
14.95								
15 15.00		+6.55	30					

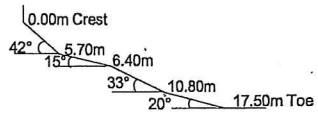
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 17.50m at 0.50 interval.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. SS 9 FEATURE NO. - SHEET 2 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846591.30 N 814540.76 LEVEL +14.38 mPD	DATUM (TOE) CO-ORDINATES E 846577.11 N 814543.47 LEVEL +5.71 mPD	WORKS ORDER NO. GE/2015/24.3A
DATE 08.08.2016			DATE 29.07.2016 to 30.07.2016
CHECKED R. Chu			
DATE 12.08.2016			DATE REINSTATED 29.08.2016

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
15.45			31	As sheet 1 of 2.				
16 15.95			32					
16.45	20°		33					
17 16.95			34					
17.45 17.50		+5.71	35					
18				End of stripping at 17.50 m.				
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

REMARKS

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)

As sheet 1 of 2

SECTION (not to scale)

As sheet 1 of 2

DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS10** FEATURE NO. - SHEET 1 of 1

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

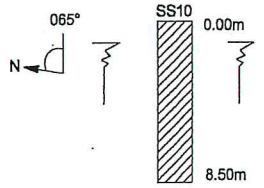
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846604.36 N 814493.59 LEVEL +11.76 mPD	DATUM (TOE) CO-ORDINATES E 846597.95 N 814489.89 LEVEL +7.29 mPD	WORKS ORDER NO. GE/2015/24.3A	
DATE 22.07.2016			DATE 18.07.2016 to 19.07.2016	
CHECKED R. Chu			DATE REINSTATED 29.08.2016	
DATE 28.07.2016				

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00		+11.76						
0.45	10°		1	Firm, brown (7.5YR 5/4) dappled grey, slightly sandy silty CLAY with some angular to subangular fine to coarse gravel and cobble of rock fragments and some boulder (<300mm) of moderately decomposed tuff fragments. (COLLUVIUM)				
1 0.95			2					
1.45	28°		3					
2 1.95			4					
2.45			5					
3 2.95			6					
3.45			7					
3.80		+9.98						
4 3.95			8	Firm, dark brown (7.5YR 3/3), slightly sandy silty CLAY with occasional angular to subangular fine to coarse gravel and cobble of rock fragments. (COLLUVIUM) From 4.70m to 6.70m: With some boulder (<450mm) of moderately decomposed tuff fragments.				
4.45			9					
5 4.95	35°		10					
5.45			11					
6 5.95			12					
6.45			13					
6.70		+8.32						
7 6.95			14	Extremely weak, dark reddish brown (5YR 3/3), completely decomposed fine ash TUFF. (Firm, slightly sandy silty CLAY with some angular fine to coarse gravel and cobble of tuff fragments and some boulder (<800mm) sized corestones of moderately decomposed tuff fragments)		V		
7.45			15					
8 7.95			16					
8.45								
8.50		+7.29	17					
9				End of stripping at 8.50 m.				
10								
11								
12								
13								
14								
15								

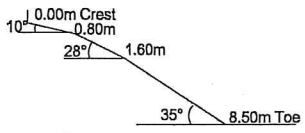
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 8.50m at 0.50 interval.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS11** FEATURE NO. - SHEET 1 of 1

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

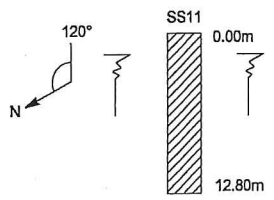
LOGGED	S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846629.29 N 814398.86 LEVEL +22.28 mPD	DATUM (TOE) CO-ORDINATES E 846617.21 N 814401.75 LEVEL +13.62 mPD	WORKS ORDER NO. GE/2015/24.3A
DATE	06.08.2016			DATE 21.07.2016 to 23.07.2016
CHECKED	R. Chu			DATE REINSTATED 29.08.2016
DATE	12.08.2016			

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00		+22.28		Firm, light yellowish brown (10YR 6/4), slightly sandy clayey SILT with much subangular fine to coarse gravel and cobble of rock fragments and occasional boulder of moderately decomposed tuff fragments and with some rootlets. (COLLUVIUM)				
0.45			1					
1 0.95			2					
1.45			3					
2 1.95	25°		4					
2.45			5					
3 2.95			6					
3.45			7					
3.95 4 4.00		+20.59	8					
4.45			9	Greyish brown (10YR 5/2), subangular, COBBLE and BOULDER of moderately decomposed tuff fragments in matrix of brown (7.5YR 4/3), slightly sandy clayey silt with some angular to subangular fine to coarse gravel of rock fragments and with some rootlets. (COLLUVIUM)				
4.70	85°	+19.89						
5 4.95			10					
5.45			11	Firm, reddish yellow (7.5YR 6/8), clayey sandy SILT with some subangular fine to coarse gravel and cobble of rock fragments and occasional boulder of moderately decomposed tuff fragments. (COLLUVIUM)				
6 5.95			12					
6.45			13					
7 6.95			14					
7.45	45°		15					
8 7.95			16					
8.45			17					
8.95 9 9.00		+16.71	18					
9.45			19	Extremely weak, yellow (2.5Y 8/6) dappled reddish yellow and light red, completely decomposed fine ahs TUFF. (Firm, slightly clayey sandy SILT)		V		
10 9.95			20					
10.45	85°		21					
11 10.95			22					
11.30		+14.68						
11.45			23	Extremely weak, brown (7.5YR 5/4) mottled red, spotted yellow, completely decomposed fine ash TUFF. (Soft to firm, clayey sandy SILT with some angular fine to coarse gravel and cobble of tuff fragments and with some rootlets)		V		
12 11.95	45°		24					
12.45			25					
12.75 12.80		+13.62	26					
13				End of stripping at 12.80 m.				
14								
15								

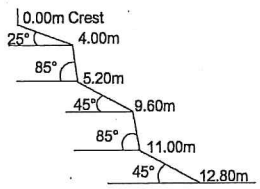
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 12.50m at 0.50 interval and at 12.80m.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. **SS12** FEATURE NO. - SHEET 1 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

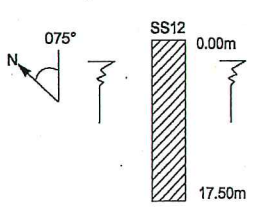
LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846627.14 N 814427.47	DATUM (TOE) CO-ORDINATES E 846615.84 N 814423.31	WORKS ORDER NO. GE/2015/24.3A	
DATE 06.08.2016	LEVEL +17.40 mPD	LEVEL +6.78 mPD	DATE 01.08.2016 to 01.08.2016	
CHECKED R. Chu			DATE REINSTATED 29.08.2016	
DATE 12.08.2016				

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
0.00	14°	+17.40		Firm, yellowish brown (10YR 5/6), slightly sandy clayey SILT with much angular to subangular fine to coarse gravel and cobble of rock fragments and with some rootlets. (COLLUVIUM) From 2.00m to 3.70m: With some boulder of moderately decomposed tuff fragments.				
4.20		+16.38						
4.45	56°			Soft to firm, brownish yellow (10YR 6/6) mottled light grey and red, clayey sandy SILT with much angular to subangular fine to coarse gravel and cobble of rock fragments and occasional boulder of moderately decomposed tuff fragments and with some rootlets. (COLLUVIUM)				
6.20		+14.73						
6.45				Extremely weak, yellow (10YR 7/8) dappled reddish yellow, spotted white, completely decomposed fine ash TUFF. (Stiff, clayey sandy SILT)		V		
10.20		+11.41						
10.45				Extremely weak, brownish yellow (10YR 6/8) dappled yellow, completely decomposed fine ash TUFF. (Stiff, clayey sandy SILT) At 13.70m: with an inclined tree root (dia. <80mm).		V		
11.45	36°							
15.00		+8.25						

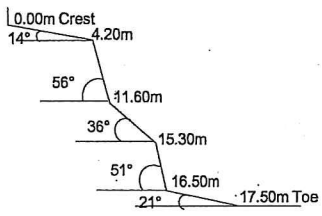
REMARKS 1. The slope surface was natural.
2. Small disturbed samples were taken from 0.50m to 17.50m at 0.50 interval.

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)



SECTION (not to scale)



DRiLTECH	SLOPE STRIPPING RECORD CONTRACT NO. GE/2015/24 FEATURE NO. -	STRIP NO. SS12 FEATURE NO. - SHEET 2 of 2

PROJECT Ground Investigation - New Territories East (Term Contract), Agreement No. CE 8/2015 (WS), First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction (Natural Terrain)

LOGGED S.L. Chiu	DATUM (CREST) CO-ORDINATES E 846627.14 N 814427.47 LEVEL +17.40 mPD	DATUM (TOE) CO-ORDINATES E 846615.84 N 814423.31 LEVEL +6.78 mPD	WORKS ORDER NO. GE/2015/24.3A
DATE 06.08.2016			DATE 01.08.2016 to 01.08.2016
CHECKED R. Chu			DATE REINSTATED 29.08.2016
DATE 12.08.2016			

Distance from Datum (m)	Slope Angle	Reduced Level (mPD)	Samples and Tests	Description	Legend	Grade	Discontinuities: Dip Direction / Dip	Discontinuities: Nature & Infilling
15.45	36°		31	As sheet 1 of 2.				
15.90								
16 15.95	51°	+7.61	32	Moderately strong, grey spotted white and yellow, moderately decomposed coarse ash TUFF. (CORESTONE)		III		
16.45			33					
16.80		+7.03						
17 16.95	21°		34	Extremely weak, brownish yellow (10YR 6/8) mottled reddish yellow, completely decomposed fine ash TUFF. (Stiff, clayey sandy SILT with some angular fine to coarse gravel of tuff fragments)		V		
17.45								
17.50		+6.78	35	End of stripping at 17.50 m.				
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

REMARKS

- SMALL DISTURBED SAMPLE
- U76 SAMPLE (VER / HOR)
- U100 SAMPLE (VER / HOR)
- LARGE DISTURBED SAMPLE
- BLOCK SAMPLE
- IN-SITU DENSITY TEST
- WATER SAMPLE
- WATER SEEPAGE
- N-SCHMIDT HAMMER TEST

PLAN (not to scale)

As sheet 1 of 2

SECTION (not to scale)

As sheet 1 of 2

DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AD1**

SHEET 1 of 6

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No.	G29	E 846937.18 N 814125.17	DATE from 24/06/2016 to 04/07/2016
FLUSHING MEDIUM	WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.80 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. / Type / Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
24/06/2016	ZX	08:00		100					1 0.00	-6.80	0.00			Light brownish grey (10YR 6/2), fine to coarse SAND with much shell fragments. (MARINE DEPOSIT)
				100				15 bls 1,1 1,1,1,2 N=5	2 0.95 3 1.00 4 1.45 5 1.50 6 1.90 1.95	-7.80	1.00			Loose, greenish grey (5GY 5/1), slightly clayey silty fine to coarse SAND with some shell fragments. (MARINE DEPOSIT)
				100				24 bls 1,1 2,2,3,3 N=10	7 3.00 8 3.45 9 3.50 10 3.90 3.95	-11.80	5.00			
				100				14 bls 1,1 1,2,2,2 N=7	11 5.00 12 5.45 13 5.50 14 5.90 5.95	-13.80	7.00			Loose, greenish grey (5GY 5/1), clayey silty fine to coarse SAND with occasional shell fragments. (MARINE DEPOSIT)
	ZX 5.95 SX													
				100				16 bls 1,1 1,1,2,3 N=7	15 7.00 16 7.45 17 7.50 18 7.90 7.95					Loose, greenish grey (5GY 5/1), slightly clayey silty fine to coarse SAND with much shell fragments. (MARINE DEPOSIT)
24/06/2016 25/06/2016	SX 8.10 PX	18:00 08:00		87 70 70 77					8.10 T2116 8.50 T2116 9.00 T2116 9.50 T2116	-14.90 -16.80	8.10 10.00			Dark grey (N3), grey (N6) and light orangish brown (5YR 6/8), COBBLE with some subangular to subrounded coarse gravel sized rock fragments. (ALLUVIUM)

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DATE 05/07/2016

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DATE 06/07/2016

REMARKS

1. Vane shear test was carried out at 1.50m depth.
2. Pressuremeter test was attempted to carry out at 14.10m-14.70m depth but failed due to hard soil.
3. Constant head permeability test was carried out at 18.70m-20.20m depth.
4. Acoustic televiewer survey was carried out at 29.86m-50.88m depth.
5. Packer (Water Absorption) tests were carried out at 30.80m-31.80m and 32.50m-33.50m depths.

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AD1**

SHEET 2 of 6

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846937.18 N 814125.17	DATE from 24/06/2016 to 04/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.80 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
	PX 10.15 HX			53					T2106 10.15	-16.80 -17.05 -17.29	10.00 10.25 10.49			As sheet 1 of 6. 10.25 - 10.49m: Boulder.
				100					T2101 19 11.00	-17.80	11.00		V	Extremely weak, orangish brown (5YR 5/8), dappled light grey and streaked black, completely decomposed TUFF. (Very silty fine to coarse SAND)
25/06/2016 27/06/2016		18:00 08:00						10,13 16,16,15,18 N=65	20 12.00 21 12.10 22 12.50 12.55	-18.90	12.10		V	Extremely weak, light grey (N7), streaked orangish brown, completely decomposed TUFF. (Slightly silty fine to coarse SAND)
				85					23 13.00	-19.80	13.00		V	Very weak, orangish brown (5YR 5/8), dappled light grey, completely decomposed TUFF. (Silty fine to coarse SAND with much subangular fine to medium gravel sized rock fragments)
								6,9 10,15,16,19 N=60	24 14.00 25 14.10 26 14.50 14.55 27 14.65 14.70	-20.90	14.10		V	Extremely weak, light grey (N7), dappled orangish brown, completely decomposed TUFF. (Silty fine to coarse SAND with some subangular fine to medium gravel sized rock fragments)
				48					28 15.00	-21.80	15.00		IV	Weak, light grey (N7), dappled orangish brown, highly decomposed TUFF. (Subangular fine to coarse GRAVEL sized rock fragments in sandy matrix)
				90					29 16.00 30 16.10	-22.90	16.10		V	Extremely weak, light grey (N7), dappled and striped orangish brown, completely decomposed TUFF. (Very silty fine to coarse SAND with occasional subangular fine to medium gravel sized rock fragments)
								15,35/60mm 100/60mm 100bls/60mm	31 17.10 32 17.20 33 17.35 17.40	-24.00 -24.90	17.20 18.10		V	Extremely weak, orangish brown (5YR 5/8), dappled light grey and striped dark brown, completely decomposed TUFF. (Slightly silty fine to coarse SAND with occasional subangular fine to medium gravel sized rock fragments)
				0					18.10 34 19.10 19.20	-26.00	19.20		IV	Weak, light grey (N7), dappled orangish brown, highly decomposed TUFF. (Angular to subangular fine to coarse GRAVEL sized rock fragments in sandy matrix)
				96					35	-26.80	20.00		IV	Weak, orangish brown (5YR 5/8), dappled light grey, highly decomposed TUFF. (Angular to subangular fine to coarse GRAVEL sized rock fragments in sandy matrix)

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AD1**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES E 846937.18 N 814125.17	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29		DATE from 24/06/2016 to 04/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.80 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-26.80	20.00			
27/06/2016		18:00							36 20.10	-27.00	20.20		IV	As sheet 2 of 6.
28/06/2016		08:00		96	0	0	N.I.		20.20 T2IO1	-27.52	20.72		IV	Weak, light greenish grey (5BG 7/1), dappled grey and orangish brown, highly decomposed, slightly chloritized TUFF. Highly fractured. (Angular to subangular coarse GRAVEL and COBBLE sized rock fragments)
				100	34	21	16.0		20.87	-27.67	20.87		III	20.72 - 20.87m: In sandy silty matrix.
							>20		T2IO1					Moderately strong, light greenish grey, dappled orangish brown, spotted black and white, moderately decomposed, slightly chloritized fine ash crystal TUFF. Joints are very closely, locally medium to closely spaced, rough planar and undulating, extremely to very narrow, clean, iron and manganese stained, dipping 10°-20°, 40°-50°, 60°-70° and 80°-90°.
				100	10	0			21.55	-28.48	21.68			
							11.1		T2IO1					
		18:00					>20			-28.88	22.08			21.68 - 22.08m: Grey, streaked light greenish grey.
28/06/2016 29/06/2016		08:00		100	13	0			22.22 T2IO1					
				100	44	25	15.8		22.53					
							>20							
							3.8		T2IO1					
							N.I.			-30.14	23.34			
				100	0	0			23.55 T2IO1				IV	Weak, greenish grey (5GY 5/1), dappled orangish brown, highly decomposed, slightly chloritized TUFF. Highly fractured. (Angular to subangular fine to coarse GRAVEL and COBBLE sized rock fragments in sandy matrix)
				100	14	0			24.08	-31.15	24.35			
							N.A.			-31.33	24.53		V	24.35 - 24.53m: Very weak, light grey, completely decomposed. (Silty fine to coarse SAND with some subangular fine to coarse gravel)
							N.I.		T2IO1	-31.62	24.82		IV	
							>20						III	Moderately strong, grey, streaked orangish brown, spotted black and white, moderately decomposed coarse ash crystal TUFF. Joints are very closely, locally closely spaced, rough planar and undulating, extremely to very narrow, iron and manganese stained, dipping 10°-20°, 40°-50°, 60°-70° and 70°-80°.
				100	53	33	9.1		25.00					
							>20							
							13.3		T2IO1	-32.50	25.70			
							>20			-32.87	26.07			
				100	31	0			26.20	-33.20	26.40			25.70 - 26.50m: Dappled light grey, TUFF BRECCIA.
									T2IO1	-33.30	26.50			
										-33.45	26.65			26.07m: Weak, highly decomposed (60mm thick). (Subangular medium to coarse GRAVEL)
				100	45	35			26.75 T2IO1				III	26.40m: Weak, highly decomposed (40mm thick). (Subangular fine to coarse GRAVEL and COBBLE)
							11.8							
				100	76	59	>20		27.15					
							5.0							
							>20			-34.46	27.66			Moderately strong, dark greenish grey, streaked orangish brown and spotted white, moderately decomposed, slightly chloritized fine ash crystal TUFF. Joints are medium to very closely spaced, rough and smooth planar, extremely to very narrow, chlorite coated and iron stained, dipping 10°-20°, 30°-40°, 60°-70° and 80°-90°.
							4.3		T2IO1	-34.75	27.95		II	
										-34.91	28.11			
							18.8							
							6.7			-35.22	28.42			
				100	100	94	4.0		28.42				II	27.66 - 28.42m: Strong, slightly decomposed. 27.95 - 28.11m: Dappled greenish grey, TUFF BRECCIA.
							1.3		T2IO1					Strong, greenish grey, spotted black and white, slightly decomposed lithic bearing coarse ash crystal TUFF. Joints are widely to medium, locally closely to very closely spaced, rough planar and undulating, extremely narrow, clean and iron stained, dipping 10°-20°, 50°-60° and
							10.0			-36.34	29.54			
	HX 29.86	18:00					4.2			-36.58	29.78			
29/06/2016 30/06/2016		08:00		100	66	58	>20		29.86	-36.75 -36.80	29.95 30.00		III	

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AD1**

SHEET 4 of 6

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)	
METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846937.18 N 814125.17	DATE from 24/06/2016 to 04/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.80 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				100	66	58	2.2			-36.80	30.00		II	70°-80°.
										-37.10	30.30			29.54 - 30.30m: Streaked light green.
										-37.25	30.45			29.78 - 29.95m: Moderately strong, moderately decomposed.
							>20			-37.35	30.55		III	
							5.9		T2IO1				II	30.45 - 30.55m: Moderately strong, orangish brown, moderately decomposed.
							>20							Strong, light greenish grey, dappled dark grey, slightly decomposed TUFF BRECCIA. Joints are medium to very closely spaced, smooth planar and undulating, extremely to very narrow, clean and chlorite coated, dipping 10°-20°, 30°-40°, 60°-70° and 80°-90°.
							11.1			-38.00	31.20			
				100	89	81	>20		31.20	-38.18	31.38		III	31.20 - 31.38m: Moderately strong, moderately decomposed.
							2.7						II	
							6.7		T2IO1					
							2.4							
							5.9							
				83	50	25	>20		32.77	-39.55	32.75		!!!	32.75 - 33.10m: Moderately strong, moderately decomposed.
							10.0		T2IO1	-39.90	33.10			
				100	100	100	2.1		33.17				II	
										-40.27	33.47			
													II	Strong, light greenish grey, spotted black and white, slightly decomposed, slightly chloritized coarse ash crystal TUFF. Joints are widely to medium, locally closely to very closely spaced, smooth planar and undulating, extremely to very narrow, clean, calcite and chlorite coated, dipping 10°-20°, 30°-40°, 50°-60° and 80°-90°.
									T2IO1					
				100	100	96			34.54					
							1.2							
									T2IO1					
		18:00								-42.65	35.85			
30/06/2016							9.1							
02/07/2016		08:00		100	100	92	>20		35.97					35.85 - 36.59m: Dappled dark grey and white, TUFF BRECCIA.
							2.8							
										-43.39	36.59			
									T2IO1					
							1.2							
				100	97	84			37.41					
										-44.82	38.02			
							5.9		T2IO1					38.02 - 39.02m: Dappled dark grey, TUFF BRECCIA.
							12.5							
							4.4							
				97	97	89			38.96	-45.82	39.02			
										-45.95	39.15		III	39.15 - 39.39m: Moderately strong, dappled dark grey, moderately decomposed TUFF BRECCIA.
							1.6			-46.19	39.39		II	
									T2IO1					
										-46.50	39.70			
										-46.63	39.83		III	39.70 - 39.83m: Moderately strong, moderately
							5.5			-46.80	40.00		II	

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AD1**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES E 846937.18 N 814125.17	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29		DATE from 24/06/2016 to 04/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.80 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-46.80	40.00		II	decomposed.
				97	97	89			T2IO1					Strong, light greenish grey, spotted black, slightly decomposed, slightly chloritized fine ash crystal TUFF. Joints are widely to closely spaced, rough planar and undulating, tight to extremely narrow, clean, dipping 10°-20°, 30°-40°, 40°-50° and 60°-70°.
							16.7		40.51					
				100	100	100	5.3							
							1.3							
									T2IO1	-48.10	41.30			
										-48.20	41.40			41.30 - 41.40m: Dappled dark grey, TUFF BRECCIA.
									41.95					
				100	100	100								
							3.0							
										-49.22	42.42		II	Strong, greenish grey, slightly decomposed, slightly chloritized fine ash vitric TUFF. Joints are medium, locally widely, closely and very closely spaced, rough planar, tight to extremely narrow, clean, dipping 10°-20°, 30°-40°, 40°-50° and 70°-80°.
									T2IO1	-49.64	42.84			
										-49.75	42.95			42.84 - 42.95m: Dappled dark grey and mottled light grey, TUFF BRECCIA.
										-49.80	43.00			
										-50.00	43.20			43.00 - 43.20m: Dark grey, spotted white, fine ash crystal TUFF.
									43.49					
				100	100	100								
									T2IO1					
							1.0							
									45.02					
				100	100	100								
										-52.15	45.35			
										-52.33	45.53			45.35 - 45.53m: Dappled dark grey, TUFF BRECCIA.
									T2IO1					
							7.7							
							3.3							
										-53.26	46.46			
									46.53					46.46m: Light grey, QUARTZ vein (20mm thick), dipping 40°-50°.
				100	87	78	>20		T2IO1					
							10.0			-53.60	46.80			
							1.6		46.85					46.80 - 47.20m: Dappled dark grey, TUFF BRECCIA.
				100	100	100								
										-54.00	47.20			
							3.9							
										-54.37	47.57		II	Strong, greenish grey, dappled and streaked dark grey, slightly decomposed, slightly chloritized fine ash crystal TUFF. Joints are medium, locally widely, closely and very closely spaced, rough and smooth undulating, extremely narrow, clean and calcite coated, dipping 10°-20°, 20°-30°, 40°-50° and 80°-90°.
									T2IO1					
		18:00												
02/07/2016									48.36					
04/07/2016		08:00		100	89	65	17.1							
							1.3							
									T2IO1					
							2.3		49.63					
				100	99	99			T2IO1					
										-56.80	50.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DATE 05/07/2016

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DATE 06/07/2016

REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AD1**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846937.18 N 814125.17	DATE from 24/06/2016 to 04/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.80 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	99	99				-56.80	50.00		II	As sheet 5 of 6.
							6.2		T2101					
		18:00								-57.44	50.64			50.64 - 50.88m: Dark grey.
04/07/2016									50.88	-57.68	50.88			End of hole at 50.88m depth.
										-66.80	60.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DATE 05/07/2016

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DATE 06/07/2016

REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AD2**

SHEET 1 of 3

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846704.46 N 813832.07	DATE from 27/07/2016 to 30/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
27/07/2016	ZX	08:00		0					0.00	-6.00	0.00			Light pinkish brown (5YR 6/3), CORAL and SHELL fragments in sandy matrix. (MARINE DEPOSIT)
				100				172 bls	1 0.45 2 0.50					
	ZX 1.00								3 0.95	-7.00	1.00			
	SX							2,3 5,8,36,12 N=61	4 1.00					Grey (N6), angular to subangular fine to medium GRAVEL sized rock fragments in clayey matrix. (ALLUVIUM)
	SX 1.50								5 1.40 1.45 1.50	-7.50	1.50			
	PX			100					T2IOI 1.76					Dark grey (N3), subangular medium to coarse GRAVEL and COBBLE sized rock fragments. (ALLUVIUM)
				100	0	0	N.I.		T2IOI	-7.87	1.87		III	
				95	20	20			2.00					Moderately strong, brownish grey, dappled orangish brown and spotted white, moderately decomposed fine ash crystal TUFF. Highly fractured and joints are closely to very closely spaced, rough planar, extremely narrow to narrow, iron and manganese stained, dipping 10°-20°, 20°-30° and 80°-90°.
							9.1		T2IOI					
							N.I.		2.55					
	PX 2.75	18:00		85	30	0			T2IOI 2.75					
27/07/2016 28/07/2016	HX	08:00		80	37	37			T2IOI					
							7.7		3.10					
	HX 3.40			100	47	40	>20		T2IOI	-9.29	3.29		II	
							3.7		3.40					Strong, dark grey, mottled grey, streaked and spotted white, slightly decomposed lithic bearing coarse ash crystal TUFF. Joints are widely to medium, locally closely spaced, rough and smooth planar, extremely to very narrow, iron stained, calcite and kaolin coated, dipping 10°-20°, 40°-50°, 60°-70° and 80°-90°. 3.29 - 3.83m: Fine ash crystal TUFF. 4.37m: Vug bearing (Dia. 40mm).
				100	100	70			T2IOI					
				100	100	100			3.70	-9.83	3.83			
									T2IOI					
				100	86	78			4.27	-10.37	4.37			
							12.0							
							2.1		T2IOI					
							11.1							
							3.8		5.65					
				97	97	97								
									T2IOI	-12.52	6.52		III	
							1.1			-12.92	6.92			6.52 - 6.92m: Moderately strong, dark greenish grey, moderately decomposed, slightly chloritized TUFF.
									7.05				II	
				100	78	78								
							14.7		T2IOI					
							1.8		7.87					
				100	100	100			T2IOI					
									8.40					
				100	84	84				-14.70	8.70			
							20.0		T2IOI				III	Moderately strong, dark greyish brown, dappled dark grey, mottled grey, streaked and spotted white, moderately decomposed lithic bearing coarse ash crystal TUFF. Joints are medium to closely, locally very closely spaced, rough and smooth planar, extremely to very narrow, calcite coated, iron and manganese stained, dipping 10°-20°, 30°-40° and 80°-90°.
							2.6							
		18:00												
28/07/2016 29/07/2016		08:00		100	94	94	>20		9.40					
							5.6							
							2.4		T2IOI	-15.71	9.71			
										-16.00	10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AD2**

CONTRACT No. GE/2013/37

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No.	G29	E 846704.46 N 813832.07	DATE from 27/07/2016 to 30/07/2016
FLUSHING MEDIUM	WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	94	94				-16.00	10.00		III	9.71 - 10.42m: White, CALCITE vein (1mm thick), dipping 80°-90°.
									T2IOI	-16.42	10.42			
							9.5		10.60					
				100	96	91	4.4							
										-17.06	11.06			11.06 - 11.95m: Dark grey.
									T2IOI					
							14.3 1.7							
									11.95	-17.95	11.95			
				100	100	100	0.4			-18.11	12.11		II	Strong, grey, mottled light grey, spotted white and streaked dark grey, slightly decomposed lithic bearing coarse ash crystal TUFF. Joints are very widely spaced, rough undulating, extremely narrow, iron and manganese stained, dipping 0°-10° and 30°-40°.
									T2IOI					
				100	100	100			13.16					
									T2IOI					
				100	100	100			13.53					
									T2IOI					
				100	100	100			13.89					
									T2IOI					
				100	100	100			14.72					
										-21.16	15.16			
										-21.33	15.33			15.16 - 15.33m: Dappled dark grey.
									T2IOI					
										-21.82	15.82			
				100	99	99			16.22				II	Strong, dark grey, mottled grey, streaked and spotted white, slightly decomposed lithic bearing fine ash crystal TUFF. Joints are very widely to closely, locally very closely spaced, rough and smooth planar, extremely narrow, clean, calcite and kaolin coated, dipping 20°-30°, 50°-60° and 80°-90°.
							1.8		T2IOI					
							6.3							
				100	98	98			17.75					
							3.1		T2IOI					
							1.5							
				100	100	100			18.60					
							0.4		T2IOI					
		18:00												
29/07/2016 30/07/2016		08:00		100	100	100			19.40					
									T2IOI					
				100	100	100			19.65					
									T2IOI	-26.00	20.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AD2**

SHEET 3 of 3

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846704.46 N 813832.07	DATE from 27/07/2016 to 30/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-26.00	20.00		II	As sheet 2 of 3.
				100	100	100			20.08 T2IO1					
				100	100	100			20.69 T2IO1					
							1.7							
				100	100	100			21.39 T2IO1					
							3.2							
				98	92	75			22.14 T2IO1					
							9.1							
				100	95	95	2.0		22.79 T2IO1					
							7.1							
				100	100	100	1.7		23.60 T2IO1					
							8.7							
				100	88	88			24.37 T2IO1					
							>20		25.20 T2IO1					
				100	28	28	9.1							
							>20		25.59 T2IO1					
				100	100	100	7.3		26.00 T2IO1					
				100	100	76	14.3							
							5.0							
							12.5							
30/07/2016		18:00					5.0		26.63	-32.63	26.63			
										-36.00	30.00			End of hole at 26.63m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

Gammon

HOLE No. **AD2A**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846704.43 N 813833.59	DATE from 03/08/2016 to 13/08/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
03/08/2016	ZX	08:00								-6.00	0.00			Wash boring, no sample recovered.
	ZX 1.50									-7.50	1.50			
	SX 1.80			89					1.50 T2IOI					Dark grey (N3), subangular medium to coarse GRAVEL and COBBLE sized rock fragments. (ALLUVIUM)
	PX			83					1.88 T2IOI	-8.04	2.04			
		18:00			0	0	N.I.						III	Moderately weak, orangish brown, spotted grey, moderately decomposed coarse ash crystal TUFF. Highly fractured and joints are closely spaced, rough planar and undulating, very narrow to narrow, iron stained, dipping 0°-10°, 70°-80° and 80°-90°.
03/08/2016 04/08/2016	PX 2.53	08:00		70	0	0			2.30 T2IOI					
	HX			91	0	0			2.53	-8.53	2.53		IV	2.53 - 2.74m: Weak, highly decomposed. (Subangular fine to coarse GRAVEL in sandy matrix)
							15.0		T2IOI	-8.74	2.74		III	
	HX 3.30									-9.14	3.14			3.14 - 3.30m: Weak, highly decomposed. (Subangular fine to coarse GRAVEL with occasional cobble in sandy matrix)
							N.I.			-9.30	3.30		IV	
				91	60	21	>20		3.30	-9.51	3.51		III	
							11.8		T2IOI				II	
				91	34	0	>20		3.77 T2IOI					Strong, grey, mottled light grey, spotted black and white, slightly decomposed lithic bearing coarse ash crystal TUFF. Joints are widely to medium, locally closely to very closely spaced, rough planar, extremely to very narrow, clean and iron stained, dipping 0°-10°, 10°-20° and 80°-90°.
				93	63	63	10.5		4.12 T2IOI					3.30 - 3.51m: Moderately strong, dappled orangish brown, moderately decomposed.
							>20		4.42 T2IOI					4.90 - 5.44m: Dark grey, dappled light grey.
				100	100	0			4.62					
				100	92	74	3.7		T2IOI	-10.90	4.90			
				100	100	100			5.00 T2IOI	-11.44	5.44			
				100	100	96			5.53					
							1.0		T2IOI					
				100	100	100			7.03					
									T2IOI					
		18:00					2.0							
04/08/2016 05/08/2016		08:00		99	99	88			8.55	-14.82	8.82			
							9.4						III	Moderately strong, grey, dappled yellowish brown, mottled light grey, spotted black and white, moderately decomposed lithic bearing coarse ash crystal TUFF. Joints are widely to medium, locally closely spaced, rough planar and undulating, tight to extremely narrow, clean and iron stained, dipping 0°-10°, 20°-30°,
							2.6		T2IOI					
										-16.00	10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

1. Acoustic televiewer survey was carried out at 3.30m-50.52m depth.
2. Packer (Water Absorption) tests were carried out at 24.50m-28.50m and 30.50m-34.50m depths.

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AD2A**

SHEET 2 of 6

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846704.43 N 813833.59	DATE from 03/08/2016 to 13/08/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	100	1.1		10.00 T2IOI	-16.00	10.00		III	40°-50° and 60°-70°.
				95	95	90	4.6		10.63 T2IOI					
							1.7							
				100	95	78	12.5 2.7		12.16 T2IOI	-18.66	12.66		II	Strong, grey, mottled light grey, spotted dark grey and white, slightly decomposed lithic bearing coarse ash crystal TUFF. Joints are widely to medium, locally closely spaced, rough planar, tight to extremely narrow, clean, dipping 0°-10°, 40°-50° and 80°-90°.
							13.6 1.3							
				100	100	100			13.48 T2IOI					
							4.4							
							0.9		14.74 T2IOI	-20.86	14.86		II	Strong, dark grey, mottled light grey, spotted light brown and white, slightly decomposed lithic bearing fine ash crystal TUFF. Joints are widely to medium, locally very widely, closely and very closely spaced, rough and smooth, planar and undulating, tight to extremely narrow, clean and kaolin coated, dipping 0°-10°, 10°-20°, 60°-70° and 80°-90°.
				100	100	100								
							4.0 0.4							
				100	100	100			16.11 T2IOI					
				99	96	93			16.77 T2IOI					
							>20 1.4							
				100	100	92			18.27 T2IOI					
							4.3							
				100	100	100	1.7		19.05 T2IOI					
		18:00												
05/08/2016 06/08/2016		08:00		100	97	97			19.74 T2IOI	-26.00	20.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AD2A**

CONTRACT No. GE/2013/37

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No.	G29	E 846704.43 N 813833.59	DATE from 03/08/2016 to 13/08/2016
FLUSHING MEDIUM	WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	97	97				-26.00	20.00		II	As sheet 2 of 6.
				100	88	88			T2IOI 20.47					
							>20			-26.84	20.84			
							3.6		T2IOI					20.84 - 21.28m: Eutaxitic TUFF.
										-27.28	21.28			
				98	98	98	1.3		21.40					
							5.6		T2IOI					
				100	95	90			22.74					
							>20		T2IOI					
				100	92	79	4.1		23.47					
							13.5		T2IOI					
				100	99	91	2.4		24.24					
									T2IOI	-31.08	25.08		III	25.08 - 25.44m: Moderately strong, moderately decomposed.
										-31.44	25.44			
				100	99	94			25.46	-31.54	25.54		II	25.54 - 27.19m: Striped greenish grey, fused with chloritized fine ash crystal TUFF (10-40mm thick), dipping 80°-90°.
									T2IOI					
				100	97	97	9.1		26.85					
										-33.19	27.19			27.19 - 28.15m: Greenish grey, slightly chloritized TUFF.
							1.7		T2IOI					
							4.5							
							0.7			-34.15	28.15			
				97	97	97			28.33					
		18:00							T2IOI					
06/08/2016 08/08/2016		08:00		100	100	100			29.04					
									T2IOI					
				100	100	100			29.60	-35.69	29.69			
									T2IOI	-36.00	30.00			29.69 - 30.08m: Greenish grey, slightly chloritized TUFF.

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AD2A**

SHEET 4 of 6

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846704.43 N 813833.59	DATE from 03/08/2016 to 13/08/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	100				-36.00	30.00			
										-36.08	30.08		II	As sheet 2 of 6.
				100	94	85			T2IOI 30.58					
										-36.94	30.94			
							13.6		T2IOI				II	Strong, greenish grey, streaked white, spotted dark grey and light grey, slightly decomposed chloritized fine ash crystal TUFF with occasional calcite veins. Joints are widely, locally medium to closely spaced, rough and smooth planar, tight to very narrow, clean and calcite coated, dipping 0°-10° and 80°-90°.
							6.3							
							0.7		31.52	-37.55	31.55			
				100	100	100				-37.80	31.80			
									T2IOI					31.55 - 31.80m: Dappled grey, fused with coarse ash crystal TUFF.
									32.79					
				98	71	71	1.1							
									T2IOI					
										-39.78	33.78		III	Moderately strong, grey, mottled brown and light grey, spotted black and white, moderately decomposed lithic bearing coarse ash crystal TUFF. Joints are widely, locally medium to closely spaced, rough planar and undulating, tight to very narrow, clean, dipping 10°-20° and 80°-90°.
							8.0							
							4.9							
				100	96	96			34.27					
							0.7			-40.65	34.65			
									T2IOI					33.78 - 34.65m: Dappled and striped greenish grey, fused with slightly chloritized fine ash crystal TUFF.
				100	100	100			35.69					
										-42.17	36.17			
									T2IOI	-42.40	36.40		II	36.17m: Dappled greenish grey, fused with slightly chloritized fine ash crystal TUFF (50mm thick).
				100	100	100			37.09					Strong, dark grey, spotted white, mottled pink and light grey, slightly decomposed lithic bearing fine ash crystal TUFF. Joints are widely to medium, locally closely to very closely spaced, rough planar and undulating, tight to extremely narrow, clean, dipping 10°-20°, 30°-40°, 60°-70° and 80°-90°.
									T2IOI					
				100	100	100			38.00					
										-44.35	38.35			
									T2IOI	-44.50	38.50			38.35 - 38.50m: Dappled greenish grey, fused with slightly chloritized fine ash crystal TUFF.
		18:00					2.8							
08/08/2016 10/08/2016		08:00		100	100	100			39.00					
									T2IOI					
				100	75	75	8.5		39.74 T2IOI	-46.00	40.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

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HOLE No. **AD2A**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)		
METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846704.43 N 813833.59	DATE from 03/08/2016 to 13/08/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	75	75				-46.00	40.00		II	As sheet 4 of 6.
		18:00					2.3		T2IO1					
10/08/2016 12/08/2016		08:00		96	96	88			40.54					
							16.7							
							2.6		T2IO1					
				100	100	93			41.57					
									T2IO1					
							9.8		42.55					
				100	100	66			T2IO1					
							2.4		43.05					
				100	100	100			T2IO1					
				100	97	97			43.53					
									T2IO1					
									44.86					
				100	100	100								
							1.5		T2IO1	-51.59	45.59			45.59 - 46.06m: Dappled greenish grey, fused with slightly chloritized fine ash crystal TUFF.
							7.1			-52.06 -52.18	46.06 46.18			
				100	81	78	17.9		46.18				II	Strong, greenish grey, dappled dark grey, spotted black and white, slightly decomposed, slightly chloritized fine ash crystal TUFF fused with fine ash crystal TUFF. Joints are closely, locally medium and very closely spaced, rough planar and undulating, tight to extremely narrow, clean, dipping 0°-10°, 10°-20°, 60°-70° and 80°-90°.
							1.7							
									T2IO1					
							6.7							
		18:00												
12/08/2016 13/08/2016		08:00		97	97	92			47.72					
							2.6							
									T2IO1	-54.50	48.50		II	Strong, dark grey, spotted light grey, pink and white, slightly decomposed fine ash crystal TUFF. Joints are medium spaced, rough and smooth, planar and undulating, tight to extremely narrow, clean and calcite coated, dipping 10°-20°, 20°-30°, 40°-50° and 60°-70°.
				100	97	97			49.16					
									T2IO1					
				96	96	96			49.84	-56.00	50.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 15/08/2016

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DATE 16/08/2016

REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AD2A**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846704.43 N 813833.59	DATE from 03/08/2016 to 13/08/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -6.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
13/08/2016		18:00		96	96	96			T2IO1 50.52	-56.00 -56.36 -56.52	50.00 50.36 50.52		II	As sheet 5 of 6. 50.36 - 50.52m: Greenish grey, slightly chloritized crystal bearing fine ash crystal TUFF. End of hole at 50.52m depth.
										-66.00	60.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- VIBO Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 15/08/2016

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DATE 16/08/2016

REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AD3**

CONTRACT No. GE/2013/37

SHEET 1 of 6

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)	
METHOD Rotary	CO-ORDINATES E 846739.27 N 813660.35	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29		DATE from 12/07/2016 to 22/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.70 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
12/07/2016	ZX	08:00		100					1		0.00	-14.70	0.00			Very soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
									2		0.95 1.00					
				100					V 3		1.50					
									4		2.45 2.50					
				95					V 5		3.00	-17.70	3.00			Very soft, greenish grey (5GY 5/1), CLAY with some shell fragments. (MARINE DEPOSIT)
									6		3.95 4.00					
				100					V 7		4.50	-19.20	4.50			Very soft to soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
									8		5.45 5.50					
				100					V 9		6.00					
									10		6.95 7.00					
				100					V 11		7.50					
									12		8.45 8.50					
				100					V 13		9.00					
12/07/2016		18:00							14		9.95	-24.70	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DATE 23/07/2016

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DATE 25/07/2016

REMARKS

1. Vane shear tests were carried out at 1.50m, 3.00m, 4.50m, 6.00m, 7.50m, 9.00m and 10.50m depths.
2. Pressuremeter test was carried out at 12.60m-13.60m depth.
3. Constant head permeability test was carried out at 12.10m-13.60m depth.
4. Acoustic televiewer survey was carried out at 14.55m-50.46m depth.
5. Packer (Water Absorption) tests were carried out at 16.00m-18.50m and 18.50m-21.00m depths.

DRILLHOLE RECORD

Gammon

HOLE No. **AD3**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES E 846739.27 N 813660.35	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29		DATE from 12/07/2016 to 22/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.70 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
14/07/2016		08:00									10.00	-24.70	10.00			As sheet 1 of 6.
				80				V	15		10.50	-25.20	10.50			Firm, light grey (N7), dappled light yellowish brown, sandy silty CLAY with occasional cobble sized rock fragments. (ALLUVIUM)
	ZX 11.50								16		11.45	-26.20	11.50			
	SX			100					17		11.50					Very dense, light grey (N7), dappled orangish brown, silty fine to coarse SAND. (ALLUVIUM)
									18		12.50	-27.30	12.60			
								3,7 11,14,15,17 N=57	19		12.60				V	Extremely weak, grey (N6), spotted white and striped orangish brown, completely decomposed TUFF. (Silty fine to coarse SAND)
	SX 13.05	18:00							20		13.00 13.05					
14/07/2016 15/07/2016	PX	08:00														
	PX 13.60	18:00							21		13.55	-28.30	13.60			
15/07/2016 16/07/2016	HX	08:00		100					22		13.60				IV	Weak, grey (N6), dappled orangish brown and spotted white, highly decomposed TUFF. (Subangular fine to coarse GRAVEL and COBBLE sized rock fragments in sandy silty matrix)
	HX 14.00								23		13.90	-28.70	14.00			
				73	24	0	N.I.			T2IO1	14.00	-28.87	14.17		III	
							N.R.					-29.02	14.32		V	
							15.4								III	Strong, dark grey, spotted white, slightly decomposed lithic bearing fine ash crystal TUFF with moderately decomposed zone along joint margin. Joints are widely to closely, locally very closely spaced, rough and smooth planar, extremely narrow to narrow, calcite and chlorite coated, iron and manganese stained, dipping 10°-20°, 40°-50°, 60°-70° and 70°-80°.
							N.I.					-29.25	14.55			
				100	100	100	2.8			T2IO1	14.55				II	14.00 - 14.17m: Moderately strong, grey, dappled orangish brown, moderately decomposed.
										T2IO1	15.15	-29.94	15.24			14.17 - 14.32m: No recovery. Inferred as completely decomposed TUFF.
				80	76	60	>20					-30.07	15.37		III	14.32 - 14.55m: Moderately strong, grey, dappled orangish brown, moderately decomposed.
							N.R.			T2IO1		-30.17	15.47		V	15.24 - 15.37m: Moderately strong, grey, dappled orangish brown, moderately decomposed.
							7.3				15.65				II	15.37 - 15.47m: No recovery. Inferred as completely decomposed TUFF.
				98	93	85	4.5			T2IO1						
							>20									
							7.7									
							1.8									
		18:00									16.65					
16/07/2016 18/07/2016		08:00		99	94	75	>20			T2IO1						
							6.5									
				96	87	70				T2IO1	17.65					
				100	89	75	2.6				18.12					
							14.3			T2IO1						
				100	66	56	6.2				19.23					
							>20			T2IO1						
							3.4				19.73					
				97	97	78				T2IO1		-34.70	20.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AD3**

SHEET 3 of 6

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No.	G29	E 846739.27 N 813660.35	DATE from 12/07/2016 to 22/07/2016
FLUSHING MEDIUM	WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.70 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				97	97	78	10.0			-34.70	20.00		II	As sheet 2 of 6.
							4.1		T2IOI 20.59					
				100	98	87	>20							
							5.9		T2IOI					
							1.1							
				100	100	100			21.51					
									T2IOI					
				100	100	100			21.92					
							5.0		T2IOI					
				100	100	80			22.28					
							18.2							
							1.9		T2IOI					
				100	96	96			23.03					
							6.5		T2IOI					
							1.3							
		18:00		100	100	100			23.76					
18/07/2016									T2IOI					
19/07/2016		08:00		98	98	96			24.09					
									T2IOI	-39.57	24.87			24.87m: Light grey, spotted dark grey, coarse ash crystal TUFF (90mm thick).
				100	100	100			25.37					
							4.0		T2IOI					
				100	94	90			26.84					
									T2IOI					
							8.6		28.00					
				100	81	57			T2IOI	-42.87	28.17			
				100	100	95			28.21				III	Moderately strong, greenish grey, dappled orangish brown, spotted green and white, moderately decomposed lithic bearing coarse ash crystal TUFF. Joints are medium, locally closely spaced, rough planar, extremely to very narrow, iron and manganese stained, dipping 0°-10°, 10°-20° and 40°-50°.
							2.3		T2IOI					
										-43.87	29.17			
										-43.97	29.27			29.17 - 29.27m: Vug bearing.
										-44.10	29.40			
													II	Strong, dark grey, mottled greenish grey, spotted pink and white, slightly decomposed lithic bearing fine ash crystal TUFF with
				100	100	78	6.2		29.69 T2IOI	-44.70	30.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AD3**

SHEET 4 of 6

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846739.27 N 813660.35	DATE from 12/07/2016 to 22/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.70 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	78	3.7			-44.70	30.00		II	moderately decomposed zone along joint margin. Joints are medium, locally widely, closely and very closely spaced, rough and smooth planar, extremely narrow, calcite and chlorite coated, iron and manganese stained, dipping 0°-10°, 10°-20°, 40°-50° and 60°-70°.
				100	100	100	1.6		T2IOI 30.23					
							7.7		T2IOI					
							3.4							
				100	91	69	13.5		31.19	-46.00	31.30			31.30m: Vug bearing (Dia. 30mm).
							2.0		T2IOI					
		18:00												
19/07/2016 20/07/2016		08:00		100	100	94			32.23					
							12.5 2.7		T2IOI					
				99	99	99			33.55					
									T2IOI					
							5.3							
							9.3		34.96					
				100	98	94				-49.83	35.13		III	35.13 - 35.30m: Moderately strong, grey, dappled orangish brown, moderately decomposed.
							1.5			-50.00	35.30		II	
									T2IOI					
				100	100	100			36.23					
							3.3		T2IOI					
				100	100	100			37.27					
									T2IOI					
				100	100	94			37.82					
									T2IOI					
				100	86	86			39.07					
							>20 3.1		T2IOI					
									39.91	-54.70	40.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AD3**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846739.27 N 813660.35	DATE from 12/07/2016 to 22/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.70 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	95	1.1			-54.70	40.00			
										-54.84	40.14		II	As sheet 4 of 6.
									T2IOI				III	Moderately strong, dark grey, mottled greenish grey, spotted pink and white, streaked light green and white, moderately decomposed, slightly chloritized fine ash crystal TUFF with much microfractures. Joints are medium, locally widely and closely spaced, rough and smooth planar, extremely to very narrow, iron stained, calcite and chlorite coated, dipping 10°-20°, 20°-30°, 40°-50° and 60°-70°.
							2.6							
		18:00												
20/07/2016									41.38					
21/07/2016		08:00		100	100	93								
									T2IOI					
							8.2							
									42.48					
				100	100	94	3.6							
									T2IOI					
										-58.34	43.64			
							8.3							43.64m: Brecciated TUFF (70mm thick).
							2.4		43.80					
				100	100	90								
										-58.76	44.06			
							12.5		T2IOI				II	Strong, dark grey, spotted light green and white, slightly decomposed, slightly chloritized crystal bearing fine ash vitric TUFF. Joints are widely to medium, locally closely to very closely spaced, rough and smooth planar, tight to extremely narrow, clean, iron stained, calcite and chlorite coated, dipping 10°-20°, 30°-40°, 40°-50° and 70°-80°.
							2.9							
									44.57					
				100	97	97								
									T2IOI					
									45.33					
				100	100	100								
									T2IOI					
									45.78					
				100	100	100								
							1.4		T2IOI					
									46.44					
				100	98	98								
							>20							
							3.4							
							1.4		T2IOI					
									47.66					
				100	99	91								
									T2IOI					
							16.7							
							2.6							
		18:00												
21/07/2016									49.06					
22/07/2016		08:00		100	100	100								
									T2IOI					
							5.4							
									49.63					
				100	99	99								
							1.9		T2IOI					
										-64.70	50.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AD3**

CONTRACT No. GE/2013/37

SHEET 6 of 6

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846739.27 N 813660.35	DATE from 12/07/2016 to 22/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.70 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				100	99	99				-64.70	50.00		II	As sheet 5 of 6.
22/07/2016		18:00					8.7		T2101 50.46	-65.16	50.46			End of hole at 50.46m depth.
										-74.70	60.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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VIBROCORE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **S1**

SHEET 1 of 1

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Vibrocore	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846966.92 N 814125.07	DATE from 23/06/2016 to 23/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -10.80 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
23/06/2016		08:00		100					1	V100	0.00	-10.80	0.00			Very soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
									2	•	0.85 0.90	-11.70	0.90			Very soft, greenish grey (5GY 5/1), sandy CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					3	V100						
									4	•	1.85 1.90					
				100					5	V100						
									6	•	2.85 2.90	-13.70	2.90			Soft, greenish grey (5GY 5/1), sandy CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					7	V100						
									8	•	3.85 3.90					
				100					9	V100						
									10	•	4.85 4.90	-15.70	4.90			Firm, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					11	V100						
									12	•	5.85 5.90					
				100					13	V100						
									14	•	6.85 6.90					
				100					15	V100						
									16	•	7.85 7.90	-18.70	7.90			Firm, greenish grey (5GY 5/1), sandy CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					17	V100						
									18	•	8.85 8.90	-19.70	8.90			Firm, greenish grey (5GY 5/1), dappled light orangish brown, sandy CLAY with occasional subrounded fine to medium gravel sized rock and shell fragments. (MARINE DEPOSIT/ALLUVIUM)
				100					19	V100						
23/06/2016		18:00							20	●	9.50 9.60	-20.40	9.60			
												-20.80	10.00			End of hole at 9.60m depth.

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 24/06/2016

CHECKED T T FUNG

DATE 25/06/2016

REMARKS

1. The vibrocore samples 0.00m-0.90m, 0.90m-1.90m, 1.90m-2.90m, 4.90m-5.90m, 7.90m-8.90m and 8.90m-9.50m were sent to the laboratory.

t:\gintw\library\10 september 2016 (new).glb\3110 geo drillhole (march 2014)

Gammon

VIBROCORE RECORD

HOLE No. **S2**

CONTRACT No. GE/2013/37

SHEET 1 of 1

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Vibrocore	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846721.03 N 813709.43	DATE from 17/06/2016 to 17/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -15.05 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
17/06/2016		08:00		89					1	V100	0.00	-15.05	0.00			Very soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					2		0.85 0.90	-15.95	0.90			Soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					3	V100						
									4		1.85 1.90	-16.95	1.90			Greenish grey (5GY 5/1), clayey fine to coarse SAND with much shell fragments. (MARINE DEPOSIT)
				100					5	V100						
				100					6		2.85 2.90					
									7	V100						
17/06/2016		18:00							8		3.40 3.50	-18.55	3.50			End of hole at 3.50m depth.
												-25.05	10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 18/06/2016

CHECKED T T FUNG

DATE 20/06/2016

REMARKS

1. All vibrocore samples were sent to the laboratory.

t:\gintw\library\10 september 2016 (new).glb\3110 geo drillhole (march 2014)

VIBROCORE RECORD

Gammon

HOLE No. **S2A**

CONTRACT No. GE/2013/37

SHEET 1 of 1

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Vibrocore	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846723.04 N 813711.55	DATE from 17/06/2016 to 17/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -15.05 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
17/06/2016		08:00		44					1	V100	0.00	-15.05	0.00			Very soft, greenish grey (5GY 5/1), sandy CLAY with some shell fragments. (MARINE DEPOSIT)
				100					2 3	V100	0.85 0.90					
				100					4 5	V100	1.85 1.90	-16.95	1.90			Greenish grey (5GY 5/1), clayey fine to coarse SAND with much shell fragments. (MARINE DEPOSIT)
				100					6 7 8	V100	2.85 2.90 3.20 3.30	-18.35	3.30			
17/06/2016		18:00														End of hole at 3.30m depth.
												-25.05	10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 18/06/2016

CHECKED T T FUNG

DATE 20/06/2016

REMARKS

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VIBROCORE RECORD

Gammon

HOLE No. **S3**

CONTRACT No. GE/2013/37

SHEET 1 of 2

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)	
METHOD Vibrocore	CO-ORDINATES E 846730.99 N 813663.89	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29		DATE from 18/06/2016 to 18/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.75 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
18/06/2016		08:00		89					1	V100	0.00	-14.75	0.00			Very soft, light brownish grey (10YR 6/2), CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					2	V100	0.85 0.90	-15.65	0.90			Soft, greenish grey (5GY 5/1), slightly sandy CLAY with some shell fragments. (MARINE DEPOSIT)
				100					3	V100						
				100					4	V100	1.85 1.90					
				100					5	V100						
				100					6	V100	2.85 2.90					
				80					7	V100						
				100					8	V100	3.85 3.90	-18.65	3.90			Soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					9	V100						
				100					10	V100	4.85 4.90					
				100					11	V100						
				100					12	V100	5.85 5.90					
				100					13	V100						
				100					14	V100	6.85 6.90	-21.65	6.90			Soft, greenish grey (5GY 5/1), CLAY with some shell fragments. (MARINE DEPOSIT)
				100					15	V100						
				100					16	V100	7.85 7.90	-22.65	7.90			Firm, greenish grey (5GY 5/1), dappled orangish brown, sandy CLAY with occasional shell fragments. (MARINE DEPOSIT/ALLUVIUM)
				100					17	V100						
				100					18	V100	8.85 8.90	-23.65	8.90			Light greyish brown (10YR 6/3), dappled orangish brown and reddish brown, very silty fine to coarse SAND. (ALLUVIUM)
				100					19	V100						
		18:00							20	V100	9.85 9.90	-24.75	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 20/06/2016

CHECKED T T FUNG

DATE 21/06/2016

REMARKS

1. The vibrocore samples 0.00m-0.90m, 0.90m-1.90m, 1.90m-2.90m, 4.90m-5.90m, 7.90m-8.90m, 8.90m-9.90m and 9.90m-10.00m were sent to the laboratory.

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VIBROCORE RECORD

Gammon

HOLE No. **S3**

CONTRACT No. GE/2013/37

SHEET 2 of 2

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Vibrocore	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846730.99 N 813663.89	DATE from 18/06/2016 to 18/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.75 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. / Type / Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-24.75	10.00			
18/06/2016				100					21 ● 10.00	-24.85	10.10			As sheet 1 of 2.
									22 10.10					End of hole at 10.10m depth.
										-34.75	20.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 20/06/2016

CHECKED T T FUNG

DATE 21/06/2016

REMARKS

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VIBROCORE RECORD

Gammon

HOLE No. **S4**

CONTRACT No. GE/2013/37

SHEET 1 of 2

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Vibrocore	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846739.44 N 813614.29	DATE from 21/06/2016 to 21/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.05 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
21/06/2016		08:00		100					1	VIBO	0.00	-14.05	0.00			Very soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
									2	•	0.85 0.90	-14.95	0.90			
				100					3	VIBO						Soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
									4	•	1.85 1.90					
				100					5	VIBO						
									6	•	2.85 2.90					
				100					7	VIBO						
									8	•	3.85 3.90	-17.95	3.90			
				100					9	VIBO						Soft, greenish grey (5GY 5/1), CLAY with some shell fragments. (MARINE DEPOSIT)
									10	•	4.85 4.90	-18.95	4.90			
				100					11	VIBO						Firm, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
									12	•	5.85 5.90					
				100					13	VIBO						
									14	•	6.85 6.90					
				100					15	VIBO						
									16	•	7.85 7.90	-21.95	7.90			
				100					17	VIBO						Firm, greenish grey (5GY 5/1), CLAY. (MARINE DEPOSIT)
									18	•	8.85 8.90					
				100					19	VIBO						
									20	•	9.85 9.90	-24.05	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 22/06/2016

CHECKED T T FUNG

DATE 23/06/2016

REMARKS

1. The vibrocore samples 0.00m-0.90m, 0.90m-1.90m, 1.90m-2.90m, 4.90m-5.90m, 7.90m-8.90m, 10.90m-11.90m, 11.90m-12.90m and 12.90m-13.90m were sent to the laboratory.

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VIBROCORE RECORD

Gammon

HOLE No. **S4**

CONTRACT No. GE/2013/37

SHEET 2 of 2

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)		
METHOD Vibrocore	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846739.44 N 813614.29	DATE from 21/06/2016 to 21/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.05 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				100					21	V100		-24.05	10.00			As sheet 1 of 2.
									22		10.85 10.90	-24.95	10.90			
				100					23	V100						Soft, grey (N6), sandy CLAY. (MARINE DEPOSIT)
									24		11.85 11.90	-25.95	11.90			
				100					25	V100						Firm, grey (N6), CLAY with some seaweed. (MARINE DEPOSIT)
									26		12.85 12.90	-26.95	12.90			
				100					27	V100						Dark grey (N3), mottled light orangish brown, silty fine to coarse SAND with some subangular fine to medium gravel sized rock fragments. (ALLUVIUM)
21/06/2016		18:00							28		13.90 14.00	-28.05	14.00			
																End of hole at 14.00m depth.
												-34.05	20.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- ↓ Standard penetration test
- V100 Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- V In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 22/06/2016

CHECKED T T FUNG

DATE 23/06/2016

REMARKS

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VIBROCORE RECORD

Gammon

HOLE No. **S5**

CONTRACT No. GE/2013/37

SHEET 1 of 2

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Vibrocore	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846755.66 N 813686.49	DATE from 17/06/2016 to 17/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.55 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
17/06/2016		08:00		100					1	V100	0.00	-14.55	0.00			Very soft, greenish grey (5GY 5/1), CLAY. (MARINE DEPOSIT)
				100					2	•	0.85 0.90	-15.45	0.90			Soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					3	V100						
				100					4	•	1.85 1.90					
				100					5	V100						
				100					6	•	2.85 2.90	-17.45	2.90			Soft, greenish grey (5GY 5/1), CLAY with much shell fragments. (MARINE DEPOSIT)
				100					7	V100						
				100					8	•	3.85 3.90					
				100					9	V100						
				100					10	•	4.85 4.90	-19.45	4.90			Soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					11	V100						
				100					12	•	5.85 5.90					
				100					13	V100						
				100					14	•	6.85 6.90					
				100					15	V100						
				100					16	•	7.85 7.90	-22.45	7.90			Firm, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
				100					17	V100						
				100					18	•	8.85 8.90	-23.45	8.90			Firm, grey (N6), slightly sandy CLAY with occasional decayed wood fragments. (ALLUVIUM)
				100					19	V100						
									20	•	9.85 9.90	-24.45 -24.55	9.90 10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 18/06/2016

CHECKED T T FUNG

DATE 20/06/2016

REMARKS

1. The vibrocore samples 0.00m-0.90m, 0.90m-1.90m, 1.90m-2.90m, 4.90m-5.90m, 7.90m-8.90m and 10.90m-11.90m were sent to the laboratory.

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VIBROCORE RECORD

Gammon

HOLE No. **S5**

CONTRACT No. GE/2013/37

SHEET 2 of 2

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Vibrocore	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846755.66 N 813686.49	DATE from 17/06/2016 to 17/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.55 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				100					21	V100		-24.55	10.00			Stiff, light greyish brown (10YR 6/3), mottled light grey, sandy silty CLAY. (ALLUVIUM)
									22		10.85 10.90	-25.45	10.90			
				100					23	V100						Firm, light grey (N7), dappled dark grey and light brown, sandy CLAY. (ALLUVIUM)
17/06/2016		18:00							24		11.90 12.00	-26.55	12.00			
																End of hole at 12.00m depth.
												-34.55	20.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 18/06/2016

CHECKED T T FUNG

DATE 20/06/2016

REMARKS

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VIBROCORE RECORD

Gammon

HOLE No. **S6**

CONTRACT No. GE/2013/37

SHEET 1 of 2

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)	
METHOD Vibrocore	CO-ORDINATES E 846701.72 N 813640.25	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29		DATE from 22/06/2016 to 22/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.75 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
22/06/2016		08:00		100					1	V100	0.00	-14.75	0.00			Very soft, light brownish grey (10YR 6/2), CLAY with occasional shell fragments. (MARINE DEPOSIT)
									2	V100	0.85 0.90	-15.65	0.90			
				100					3	V100						Soft, greenish grey (5GY 5/1), CLAY with some shell fragments. (MARINE DEPOSIT)
									4	V100	1.85 1.90	-16.65	1.90			
				100					5	V100						Soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
									6	V100	2.85 2.90	-17.65	2.90			
				100					7	V100						Soft, greenish grey (5GY 5/1), CLAY with some shell fragments. (MARINE DEPOSIT)
									8	V100	3.85 3.90	-18.65	3.90			
				100					9	V100						Soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
									10	V100	4.85 4.90					
				100					11	V100						
									12	V100	5.85 5.90					
				100					13	V100						
									14	V100	6.85 6.90					
				100					15	V100						
									16	V100	7.85 7.90					
				100					17	V100						
									18	V100	8.85 8.90	-23.65	8.90			
				100					19	V100						Firm, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
									20	V100	9.85 9.90	-24.65 -24.75	9.90 10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 23/06/2016

CHECKED T T FUNG

DATE 24/06/2016

REMARKS

1. The vibrocore samples 0.00m-0.90m, 0.90m-1.90m, 1.90m-2.90m, 4.90m-5.90m, 7.90m-8.90m, 9.90m-10.90m and 10.90m-11.70m were sent to the laboratory.

t:\gintw\library\10 september 2016 (new).glb\3110 geo drillhole (march 2014)

Gammon

VIBROCORE RECORD

HOLE No. **S6**

CONTRACT No. GE/2013/37

SHEET 2 of 2

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD Vibrocore	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. G29	E 846701.72 N 813640.25	DATE from 22/06/2016 to 22/06/2016
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	SEABED LEVEL -14.75 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				100					21	V100		-24.75	10.00			Stiff, light grey (N7), dappled orangish brown and reddish brown, sandy SILT. (ALLUVIUM)
									22	•	10.85 10.90	-25.65	10.90			
				100					23	V100						Stiff, light brown (7.5YR 6/4), mottled grey, sandy SILT with occasional subangular fine to medium gravel sized rock fragments. (ALLUVIUM)
22/06/2016		18:00							24	●	11.70 11.80	-26.55	11.80			
																End of hole at 11.80m depth.
												-34.75	20.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 23/06/2016

CHECKED T T FUNG

DATE 24/06/2016

REMARKS

t:\gintw\library\10 september 2016 (new) glb\3110 geo drillhole (march 2014)

GRAB SAMPLE

Gammon

HOLE No. **S1 (Grab)**

CONTRACT No. GE/2013/37

SHEET 1 of 1

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD GRAB	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. Vessel	E 846971.00 N 814130.00	DATE from 20/06/2016 to 20/06/2016
FLUSHING MEDIUM NA	ORIENTATION **Vertical**	SEABED LEVEL -10.80 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
												-10.80	0.00			
20/06/2016										●	0.00 0.10	-10.90	0.10			Very soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT)
																End of grab sample at 0.10m depth.
												-20.80	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 21/06/2016

CHECKED T T FUNG

DATE 22/06/2016

REMARKS

1. Water sample (>20L) was taken and sent to the laboratory.

t:\gintw\library\10 september 2016 (new).glb\3110 geo drillhole (march 2014)

GRAB SAMPLE

Gammon

HOLE No. **S2 (Grab)**

CONTRACT No. GE/2013/37

SHEET 1 of 1

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD GRAB	CO-ORDINATES E 846713.00 N 813716.00	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. Vessel		DATE from 20/06/2016 to 20/06/2016
FLUSHING MEDIUM NA	ORIENTATION **Vertical**	SEABED LEVEL -15.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
												-15.00	0.00			
20/06/2016										●	0.00 0.10	-15.10	0.10			Very soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT) End of grab sample at 0.10m depth.
												-25.00	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 21/06/2016

CHECKED T T FUNG

DATE 22/06/2016

REMARKS

1. Water sample (>20L) was taken and sent to the laboratory.

t:\gintw\library\10 september 2016 (new).glb\3110 geo drillhole (march 2014)

GRAB SAMPLE

Gammon

CONTRACT No. GE/2013/37

HOLE No. **S3 (Grab)**

SHEET 1 of 1

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD GRAB	CO-ORDINATES E 846734.00 N 813667.00	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. Vessel		DATE from 20/06/2016 to 20/06/2016
FLUSHING MEDIUM NA	ORIENTATION **Vertical**	SEABED LEVEL -14.80 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
20/06/2016									● 0.00 0.10	-14.80 -14.90	0.00 0.10			Very soft, light brownish grey (10YR 6/2), CLAY with occasional shell fragments. (MARINE DEPOSIT) End of grab sample at 0.10m depth.
										-24.80	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 21/06/2016

CHECKED T T FUNG

DATE 22/06/2016

REMARKS

1. Water sample (>20L) was taken and sent to the laboratory.

t:\gintw\library\10 september 2016 (new).glb\3110 geo drillhole (march 2014)

GRAB SAMPLE

Gammon

HOLE No. **S4 (Grab)**

CONTRACT No. GE/2013/37

SHEET 1 of 1

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD GRAB	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. Vessel	E 846743.00 N 813610.00	DATE from 20/06/2016 to 20/06/2016
FLUSHING MEDIUM NA	ORIENTATION **Vertical**	SEABED LEVEL -14.00 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
												-14.00	0.00			
20/06/2016										●	0.00 0.10	-14.10	0.10			Very soft, greenish grey (5GY 5/1), CLAY with occasional shell fragments. (MARINE DEPOSIT) End of grab sample at 0.10m depth.
												-24.00	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 21/06/2016

CHECKED T T FUNG

DATE 22/06/2016

REMARKS

1. Water sample (>20L) was taken and sent to the laboratory.

t:\gintw\library\10 september 2016 (new).glb\3110 geo drillhole (march 2014)

GRAB SAMPLE

Gammon

CONTRACT No. GE/2013/37

HOLE No. **S5 (Grab)**

SHEET 1 of 1

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)

METHOD GRAB	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. Vessel	E 846765.00 N 813689.00	DATE from 20/06/2016 to 20/06/2016
FLUSHING MEDIUM NA	ORIENTATION **Vertical**	SEABED LEVEL -14.50 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
20/06/2016										●	0.00 0.10	-14.50 -14.60	0.00 0.10			Very soft, greenish grey (5GY 5/1), CLAY. (MARINE DEPOSIT) End of grab sample at 0.10m depth.
												-24.50	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 21/06/2016

CHECKED T T FUNG

DATE 22/06/2016

REMARKS

1. Water sample (>20L) was taken and sent to the laboratory.

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GRAB SAMPLE

Gammon

CONTRACT No. GE/2013/37

HOLE No. **S6 (Grab)**

SHEET 1 of 1

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Vertical Drillholes and Vibrocores)	
METHOD GRAB	CO-ORDINATES E 846699.00 N 813642.00	WORK ORDER NO. GE/2013/37.30A
MACHINE & No. Vessel		DATE from 20/06/2016 to 20/06/2016
FLUSHING MEDIUM NA	ORIENTATION **Vertical**	SEABED LEVEL -14.80 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
20/06/2016										●	0.00 0.10	-14.80 -14.90	0.00 0.10			Very soft, light brownish grey (10YR 6/2), CLAY with occasional shell fragments. (MARINE DEPOSIT) End of grab sample at 0.10m depth.
												-24.80	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 21/06/2016

CHECKED T T FUNG

DATE 22/06/2016

REMARKS

1. Water sample (>20L) was taken and sent to the laboratory.

t:\gintw\library\10 september 2016 (new).glb\3110 geo drillhole (march 2014)

DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID1**

SHEET 1 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM WATER	ORIENTATION **257°/45°**	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
28/09/2016	SX	08:00		0							0.00	-6.46	0.00			Brownish grey (5YR 5/2), slightly silty fine to coarse SAND with some shell fragments. (MARINE DEPOSIT)
				0					1	●	1.00 1.10					
				0					2	●	2.10 2.20	-8.02	2.20			Light greenish grey (5BG 7/1), silty fine to coarse SAND with some shell fragments. (MARINE DEPOSIT)
				0					3	●	3.20 3.30	-8.79	3.30			Light greenish grey (5BG 7/1), CORAL and SHELL fragments in sandy matrix. (MARINE DEPOSIT)
	SX 4.50 PX			0					4	●	4.30 4.40					
				0					5	●	5.40 5.50					
				0					6	●	6.50 6.60	-11.13	6.60			
	PX 7.00 HX			0					7	●	6.90 7.00	-11.41	7.00			Light greyish brown (10YR 6/3), CORAL and SHELL fragments. (MARINE DEPOSIT)
		18:00		35						T2IOI		-11.93	7.74			Light greyish brown (10YR 6/3), dappled light yellowish brown, CORAL and SHELL fragments. (MARINE DEPOSIT)
28/09/2016 29/09/2016		08:00		60						T2IOI	8.00					Dark grey (N3), BOULDER with some cobble sized rock fragments. (ALLUVIUM)
				90					8		8.50	-12.47	8.50		V	Extremely weak, reddish brown (10R 4/4), mottled light grey and white, completely decomposed TUFF. (Stiff, sandy SILT)
				100					9 10	●	9.50 9.60	-13.25 -13.53	9.60 10.00		V	Very weak, brown (10YR 5/4), mottled grey, completely decomposed TUFF. (Silty fine to

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 13/10/2016

CHECKED T T FUNG

DATE 14/10/2016

REMARKS

1. Acoustic televiewer survey was carried out at 21.30m-100.00m depth.
2. Packer (Water Absorption) tests were carried out at 26.00m-30.00m and 36.00m-40.00m depths.

t:\gintw\library\10 august 2015 (new).glb\3110 geo drillhole (march 2014)

DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID1**

SHEET 2 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM WATER	ORIENTATION **257°/45°**	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
												-13.53	10.00		V	coarse SAND with some subangular fine to medium gravel sized rock fragments)
				100					11	●	10.60 10.70	-14.03	10.70			
				0					12	●	11.70 11.80	-14.80	11.80		IV	Weak, brown (10YR 5/4), mottled grey, highly decomposed TUFF. (Subangular fine to coarse GRAVEL sized rock fragments)
				95					13						V	Very weak, brown (10YR 5/4), mottled white, completely decomposed TUFF. (Silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments)
									14	●	12.80 12.90	-15.58	12.90			
				95					15						V	Very weak, light grey (N7), mottled brown, completely decomposed TUFF. (Silty fine to coarse SAND with some subangular fine to medium gravel sized rock fragments)
									16	●	13.90 14.00	-16.36	14.00			
				0					17	●	15.00 15.10	-17.14	15.10		IV	Weak, brown (10YR 5/4), mottled black and light grey, highly decomposed TUFF. (Subangular fine to coarse GRAVEL and COBBLE sized rock fragments)
				90					18						V	Very weak, brown (10YR 5/4), mottled light grey, completely decomposed TUFF. (Silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments)
29/09/2016		18:00							19	●	16.10 16.20	-17.92	16.20			
30/09/2016		08:00		0					20	●	17.20 17.30				V	Very weak, brown (10YR 5/4), mottled grey, completely decomposed TUFF. (Silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments)
				100					21							
									22	●	18.30 18.40	-19.47	18.40			
				0					23	●	19.30 19.40	-20.18	19.40		IV	Weak, grey (N6), dappled dark grey, highly decomposed TUFF. (Subangular to subrounded fine to coarse GRAVEL sized rock fragments)
				80	18	0	N.I.		T2101						III	Moderately weak, brown, dappled dark grey, moderately decomposed TUFF. Highly fractured. (Core recovered as subangular fine to coarse
				84	0	0					19.85	-20.60	20.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DATE 13/10/2016

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DATE 14/10/2016

REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID1**

SHEET 3 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM WATER	ORIENTATION **257°/45°**	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				84	0	0			T2IOI 20.43	-20.60	20.00		III	GRAVEL and COBBLE sized rock fragments)
				39	25	17	N.R.		T2IOI	-21.01	20.58		V	20.58 - 21.33m: No recovery. Inferred as completely decomposed TUFF.
	HX 21.50						6.9		21.66	-21.54	21.33		II	Strong, dark greenish grey, spotted white, slightly decomposed fine ash crystal TUFF. Joints are widely to closely spaced, rough planar, tight to very narrow, clean and iron stained, dipping (apparent) 10°-20°, 30°-40°, 60°-70° and 70°-80°.
				98	95	94	2.4		T2IOI					
30/09/2016 03/10/2016		18:00 08:00		100	100	100	1.5		22.53	-22.54	22.74		II	Strong, dark grey, dappled greenish grey and grey, streaked black, spotted black and light grey, slightly decomposed TUFF BRECCIA. Joints are medium, locally closely to very closely spaced, rough planar, extremely to very narrow, clean and iron stained, dipping (apparent) 20°-30°, 40°-50° and 60°-70°.
							6.7							
							2.7		T2IOI					
				94	92	92			24.03					
									T2IOI					
				100	96	85			25.30					
							18.8		T2IOI					
							4.1							
				100	100	100			26.61					
									T2IOI					
				100	95	81			27.93					
									T2IOI					
							15.6		28.87					
				100	100	93	6.2							
							2.4		T2IOI					
							8.3			-27.67	30.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DATE 13/10/2016

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DATE 14/10/2016

REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID1**

SHEET 4 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM	WATER	ORIENTATION 257°/45°	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	93	2.7		T2IO1 30.23	-27.67	30.00		II	As sheet 3 of 11.
				100	94	76								
							13.3		T2IO1					
							3.2							
		18:00												
03/10/2016 04/10/2016		08:00		100	92	82			31.66	-28.88	31.71		II	Strong, dark grey, spotted black and white, locally dappled grey, slightly decomposed lithic bearing fine ash crystal TUFF. Joints are medium, locally widely, closely and very closely spaced, rough planar, extremely to very narrow, clean and iron stained, dipping (apparent) 30°-40°, 40°-50°, 60°-70° and 80°-90°.
							1.5							
									T2IO1					
							12.0							
				100	56	42	19.1		32.68					
									T2IO1					
							8.3							
				100	76	76	15.4		33.27					
							3.0							
									T2IO1					
							15.0							
							4.5							
				98	98	93			34.54					
									T2IO1					
							2.0							
				100	83	83	6.7		35.88					
							3.1							
							6.7		T2IO1					
							13.1							
				98	97	89			37.33					
							2.9							
									T2IO1					
							7.1							
		18:00												
04/10/2016 05/10/2016		08:00		100	100	100	4.5		38.81					
							2.7		T2IO1					
										-34.74	40.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 13/10/2016

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DATE 14/10/2016

REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID1**

SHEET 5 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM	WATER	ORIENTATION 257°/45°	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	100	1.5		T2IOI 40.21	-34.74	40.00		II	As sheet 4 of 11.
				100	100	97	>20 3.2		T2IOI					
				100	98	93			41.73 T2IOI					
				97	90	77	11.8 3.4		43.25 T2IOI	-37.81	44.34			
				100	81	77	>20 4.1		44.47 T2IOI				II	Strong, grey, dappled dark grey, spotted black and light grey, slightly decomposed TUFF BRECCIA. Joints are medium, locally closely to very closely spaced, rough and smooth, planar and undulating, extremely to very narrow, clean, calcite coated and iron stained, dipping (apparent) 30°-40°, 50°-60° and 70°-80°.
				100	100	100	2.3		45.09 T2IOI					
				100	84	77	>20 7.7 2.0		46.33 T2IOI	-39.22	46.33		III	46.33 - 46.80m: Moderately strong, moderately decomposed.
										-39.55	46.80		II	
				100	95	88	16.7 2.4 10.0 0.9		47.67 T2IOI	-40.37	47.95		II	Strong, dark grey, spotted light grey, slightly decomposed fine ash vitric TUFF. Joints are very widely to widely, locally medium to very closely spaced, rough and smooth, planar and undulating, extremely narrow to narrow, clean, iron stained, calcite and chlorite coated, dipping (apparent) 20°-30°, 40°-50°, 70°-80° and 80°-90°. 47.95 - 49.00m: Eutaxitic.
05/10/2016		18:00												
06/10/2016		08:00		100	90	90	2.0		48.90 T2IOI	-41.11	49.00			
				100	95	81	>20 3.2		49.74 T2IOI	-41.56 -41.63 -41.82	49.64 49.74 50.00		III II	49.64 - 49.74m: Moderately strong, moderately decomposed.

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DATE 13/10/2016

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DATE 14/10/2016

REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID1**

SHEET 6 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM	WATER	ORIENTATION **257°/45°**	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	95	81	11.1			-41.82	50.00		II	As sheet 5 of 11.
							1.6		T2IOI					
				100	100	100			51.07					
							3.7		T2IOI					
							2.0							
										-43.50	52.38			
				98	87	87	>20		52.50	-43.63	52.57			52.38 - 52.89m: Grey.
							1.6			-43.76	52.75		III	52.57 - 52.75m: Moderately strong, dappled orangish brown, moderately decomposed.
									T2IOI	-43.86	52.89		II	
				100	96	96	8.7		53.32					
							1.4		T2IOI					
							4.5			-44.88	54.34			
				100	99	97	>20		54.45	-45.03	54.54		III	54.34 - 54.54m: Moderately strong, dappled brownish grey, moderately decomposed.
							3.7						II	
							0.6		T2IOI					
				100	94	83			55.92					
							16.7		T2IOI					
							6.7							
							1.1		57.14					
				100	93	93								
							9.1		T2IOI					
							2.3							
							1.2		58.65					
				100	100	100								
							0.6		T2IOI					
		18:00												
06/10/2016 07/10/2016		08:00							59.89	-48.89	60.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 13/10/2016

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REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID1**

SHEET 7 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM WATER	ORIENTATION **257°/45°**	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				99	99	99				-48.89	60.00		II	As sheet 5 of 11.
									T2IO1					
							2.6							
							7.7		61.40	-49.86	61.37			
				100	100	100	0.3							61.37 - 61.86m: Brown, streaked dark grey.
										-50.20	61.86			
									T2IO1					
				100	100	100			62.72					
									T2IO1					
										-51.59	63.82			63.82m: Lithic fragment (50mm thick).
				100	100	100			64.16					
									T2IO1					
							1.0		65.56					
				100	90	90								
									T2IO1					
							4.1							
				100	91	83			66.85					
									T2IO1					
							0.5		67.74					
				100	100	100								
										-54.71	68.23			
										-54.78	68.33			68.23 - 68.33m: Pink, GRANITE fragment.
									T2IO1					
				100	90	72			69.15					
									T2IO1					
							17.5			-55.77	69.74			
										-55.96	70.00			69.74 - 70.26m: Dappled brown.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID1**

SHEET 8 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM	WATER	ORIENTATION 257°/45°	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
07/10/2016 08/10/2016		18:00 08:00								-55.96	70.00			
				100	100	100	0.3		70.14	-56.14	70.26		II	As sheet 5 of 11.
				100	100	100			71.60					
				100	100	100			72.90					
										-58.44	73.51			
							1.1						II	Strong, dark grey, dappled light orangish brown, spotted black, light grey and green, slightly decomposed crystal bearing fine ash vitric TUFF. Joints are widely, locally medium to very closely spaced, smooth planar, tight to very narrow, clean and calcite coated, dipping (apparent) 10°-20°, 20°-30° and 50°-60°.
				100	91	80			74.32					
							20.0							
							3.8							
							12.5							
							9.1							
							1.3							
				100	100	100			75.70					
							4.8							
							0.7							
				100	100	100			77.22					
				100	100	100			78.54					
							4.3							
							0.5							
				100	100	100			79.86	-63.03	80.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID1**

SHEET 9 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM WATER	ORIENTATION **257°/45°**	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-63.03	80.00			
				100	100	100				-63.14	80.16		II	As sheet 8 of 11.
									T2IO1				II	Strong, dark grey, spotted light grey, slightly decomposed crystal bearing fine ash vitric TUFF. Joints are widely, locally medium to very closely spaced, smooth planar, tight to extremely narrow, clean, calcite and chlorite coated, dipping (apparent) 10°-20°, 30°-40°, 40°-50° and 70°-80°.
		18:00												
08/10/2016									81.16					
11/10/2016		08:00		100	91	91								
							4.9							
									T2IO1					
							0.5							
									82.69					
				100	100	100								
									T2IO1					
							2.0							
									84.17					
				100	100	92								
									T2IO1					
							10.5							
									85.58					
				100	100	94	3.6							
									T2IO1					
							8.7							
							2.9							
									86.98					
				100	90	81	18.8							
							1.4							
									T2IO1					
							>20							
							0.8							
									88.32					
				100	100	100								
									T2IO1					
							2.1							
							0.5		89.80					
				100	100	100			T2IO1	-70.10	90.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AID1**

CONTRACT No. GE/2013/37

SHEET 10 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM WATER	ORIENTATION 257°/45°	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-70.10	90.00		II	As sheet 9 of 11.
				100	100	100								
				94	94	94			T2IOI 90.70					
				100	100	100	3.2		T2IOI 91.71					
		18:00					0.7		T2IOI					
11/10/2016 12/10/2016		08:00		100	98	94			92.65					
							12.5 1.0		T2IOI 94.05					
				98	98	92								
							1.7		T2IOI 95.50					
				100	100	100	0.9							
				100	100	100			T2IOI 96.88					
				100	100	100			T2IOI 98.30					
				100	100	100			T2IOI 99.82	-77.17	100.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 13/10/2016

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REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AID1**

CONTRACT No. GE/2013/37

SHEET 11 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846924.62 N 814107.72	DATE from 28/09/2016 to 12/10/2016
FLUSHING MEDIUM WATER	ORIENTATION **257°/45°**	SEABED LEVEL -6.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	100				-77.17	100.00		II	As sheet 9 of 11.
12/10/2016		18:00							T2101 101.18	-78.01	101.18			End of hole at 101.18m depth.
										-84.24	110.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED W K SIU

DATE 13/10/2016

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DATE 14/10/2016

REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID2**

SHEET 1 of 4

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846771.23 N 814068.78	DATE from 26/07/2016 to 30/07/2016
FLUSHING MEDIUM	WATER	ORIENTATION 079°/45°	SEABED LEVEL -2.10 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
26/07/2016	PX	08:00		46					No. Type Depth 0.00	-2.10	0.00			Light grey (N7), CORAL fragments. (MARINE DEPOSIT)
									T2IOI	-2.24	0.20			Dark grey (N3), dappled light yellowish brown, COBBLE sized rock fragments. (ALLUVIUM)
				28					1.00 T2IOI 1.50	-3.16	1.50			
				90					1 1.70				V	Extremely weak, orangish brown (5YR 5/8), dappled light grey, completely decomposed TUFF. (Silty fine to coarse SAND with occasional subangular fine gravel sized rock fragments)
									2 2.70	-4.08	2.80			
				85					3 2.80				IV	Weak, greyish brown (10YR 5/2), mottled black, highly decomposed TUFF. (Angular fine to coarse GRAVEL sized rock fragments in sandy silty matrix)
									4 3.80	-4.86	3.90			
				0					3.90				V	No sample recovered. Inferred as completely decomposed TUFF.
									5 4.26	-5.18	4.36			
				100	39	0	>20		4.36				III	Moderately strong, dark grey, dappled light brown, moderately decomposed crystal bearing fine ash vitric TUFF. Joints are closely, locally very closely spaced, rough planar, extremely to very narrow, iron and manganese stained, dipping (apparent) 10°-20°. 40°-50° and 70°-80°.
	PX 4.80						15.2		T2IOI	-5.35	4.59		II	
	HX			100	20	0			4.80 T2IOI	-5.55	4.88		III	
				88	8	0	>20		5.05	-5.67	5.05		III	4.59 - 4.88m: Strong, dark grey, slightly decomposed.
		18:00							T2IOI					
26/07/2016 27/07/2016		08:00		69	0	0	N.I.		5.70					Moderately weak, light brown, dappled dark grey and orangish brown, moderately decomposed fine ash crystal TUFF. Highly fractured and joints are very closely spaced, rough and smooth planar, extremely narrow to narrow, kaolin coated and iron stained, dipping (apparent) 30°-40° and 60°-70°.
									T2IOI	-6.55	6.30			
							N.R.			-6.78	6.62		V	
							>20		6.73				III	
				93	30	30			T2IOI	-7.06	7.02			
							7.1		7.16				II	6.30 - 6.62m: No recovery. Inferred as completely decomposed TUFF. 6.62 - 7.02m: Moderately strong, dark grey.
				100	87	79	4.3							
									T2IOI					Strong, dark grey, spotted white, slightly decomposed fine ash crystal TUFF. Joints are medium, locally closely to very closely spaced, rough planar, extremely narrow, iron and manganese stained, dipping (apparent) 30°-40° and 60°-70°.
	HX 8.31	18:00					>20			-7.81	8.08		III	
27/07/2016 28/07/2016		08:00		100	51	36			8.31					
							4.3							
							>20		T2IOI					Moderately strong, greenish grey, dappled light greyish brown and orangish brown, spotted white, moderately decomposed fine ash crystal TUFF. Joints are medium to very closely spaced, rough planar, extremely to very narrow, iron and manganese stained, dipping (apparent) 40°-50° and 60°-70°.
							7.1							
							>20							
				100	40	0			9.36 T2IOI					
				100	74	70	4.2		9.79 T2IOI	-9.17	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DATE 01/08/2016

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DATE 02/08/2016

REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID2**

SHEET 2 of 4

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846771.23 N 814068.78	DATE from 26/07/2016 to 30/07/2016
FLUSHING MEDIUM WATER	ORIENTATION 079°/45°	SEABED LEVEL -2.10 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	74	70				-9.17	10.00		III	As sheet 1 of 4.
				97	97	74			T2IOI 10.33					
							18.2		T2IOI					
							7.0							
				100	86	78			T2IOI 11.41					
							1.7		T2IOI	-10.68	12.13		II	Strong, dark grey, streaked light grey, spotted white, slightly decomposed crystal bearing fine ash vitric TUFF. Joints are medium to closely, locally widely and closely spaced, rough and smooth, planar and undulating, extremely to very narrow, chlorite and kaolin coated, iron and manganese stained, dipping (apparent) 10°-20°, 30°-40°, 60°-70° and 80°-90°.
				100	100	94			T2IOI 12.29					
							10.0							
							2.7		T2IOI					
				100	96	92	6.9		T2IOI 13.51					
							3.2		T2IOI					
				100	100	91			T2IOI 14.95					
							>20		T2IOI					
				98	98	96	1.4		T2IOI 16.02					
							5.3		T2IOI					
							15.4							
							4.0							
							>20		T2IOI 17.44					
				100	94	71	5.9							
							13.3		T2IOI					
		18:00					4.1							
28/07/2016									T2IOI 17.95					
29/07/2016		08:00		100	100	100								
									T2IOI					
									T2IOI 18.96					
				100	86	74	5.0							
										-15.79	19.36			
							>20		T2IOI	-15.87	19.48		III	19.36 - 19.48m: Moderately strong, dappled orangish brown, moderately decomposed.
							6.1						II	
							2.7			-16.24	20.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID2**

SHEET 3 of 4

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846771.23 N 814068.78	DATE from 26/07/2016 to 30/07/2016
FLUSHING MEDIUM	WATER	ORIENTATION 079°/45°	SEABED LEVEL -2.10 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-16.24	20.00			
				100	86	74	>20		T2IOI 20.44				II	As sheet 2 of 4.
				100	93	82	9.9		T2IOI 21.69					
				100	92	72	2.9		T2IOI 23.07					
							8.3							
				100	100	100	3.9		T2IOI	-18.63	23.38		III	23.38 - 24.10m: Moderately strong, greyish brown, moderately decomposed.
							1.7		T2IOI 24.40	-19.14	24.10		II	
				100	90	84	6.4		T2IOI 25.93					
				100	100	96	0.7		T2IOI 27.43					
				99	96	91	5.9		T2IOI					
							>20 2.8		T2IOI 28.93					
				97	92	81	20.0 3.8		T2IOI					
29/07/2016		18:00								-23.19	29.83			
30/07/2016		08:00		100	84	48	>20		T2IOI 29.83	-23.31	30.00		III	Moderately strong, light greyish pink, dappled

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID2**

SHEET 4 of 4

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846771.23 N 814068.78	DATE from 26/07/2016 to 30/07/2016
FLUSHING MEDIUM WATER	ORIENTATION 079°/45°	SEABED LEVEL -2.10 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	84	48	8.3, >20, 6.2		T2IO1	-23.31	30.00		III	and spotted greenish grey, moderately decomposed fine ash crystal TUFF. Joints are medium to closely, locally very closely spaced, smooth planar, tight to very narrow, clean and chlorite coated, dipping (apparent) 0°-10°, 20°-30° and 50°-60°. 30.30 - 30.64m: Brown.
				94	90	86	2.7, 7.7, 13.2		30.93, T2IO1, 32.36	-23.53	30.30			
				100	100	91	3.1		T2IO1	-23.77	30.64			
										-25.29	32.80		II	Strong, dark grey, spotted white, slightly decomposed fine ash crystal TUFF. Joints are widely to closely, locally very closely spaced, smooth planar and undulating, tight to very narrow, clean and chlorite coated, dipping (apparent) 20°-30°, 50°-60° and 70°-80°.
				100	100	83	8.3, 12.5, 9.1		33.91, T2IO1, 34.80					
				98	98	91	1.2, 3.5, 15.4		T2IO1, 36.30					
				100	69	69	5.3, >20		T2IO1, 36.81	-28.04	36.68		III	36.68 - 36.93m: Moderately strong, greenish grey, moderately decomposed.
				100	87	77	3.6, 15.4, 1.2		T2IO1	-28.21	36.93		II	
30/07/2016		18:00					20.0		38.26	-29.15	38.26			End of hole at 38.26m depth.
										-30.38	40.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID2A**

SHEET 1 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846769.68 N 814069.92	DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM	WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
04/08/2016	SX	08:00		32					0.00 T2IOI 1.00	-2.16	0.00			Brown (10YR 5/4) and grey (N6), subangular medium to coarse GRAVEL and COBBLE sized rock and shell fragments. (ALLUVIUM)
	SX 1.00									-2.87	1.00			Wash boring, no sample recovered.
	PX													
	PX 4.90			72	0	0	N.I.		4.50 T2IOI 4.90	-5.34	4.50		III	Moderately strong, grey, dappled orangish brown, spotted dark grey and white, moderately decomposed crystal bearing coarse ash TUFF. Highly fractured.
							N.R.			-5.55	4.79		V	4.79 - 4.90m: No recovery. Inferred as completely decomposed TUFF.
				89	17	0	>20			-5.62	4.90		III	Strong, dark grey, dappled orangish brown, spotted light grey and black, slightly decomposed crystal bearing fine ash vitric TUFF with moderately decomposed zone along joint margin. Joints are closely to very closely, locally medium spaced, rough planar and undulating, extremely narrow to narrow, clean and iron stained, dipping (apparent) 10°-20°, 20°-30°, 50°-60° and 80°-90°.
							12.5		T2IOI 5.26	-5.71	5.02		II	4.90 - 5.02m: Moderately strong, orangish brown, moderately decomposed.
				100	90	73	3.7							
							8.1		T2IOI 6.18					
				100	23	0	>20							
							N.I. 15.8		T2IOI	-6.80	6.56		III	Moderately strong, light brown, dappled dark grey and spotted light grey, moderately decomposed fine ash crystal TUFF. Joints are very closely, locally closely spaced, rough planar and undulating, extremely narrow to narrow, clean, iron and manganese stained, dipping (apparent) 20°-30°, 40°-50° and 50°-60°.
				97	33	0	>20		6.78					
							15.0		T2IOI					
		18:00												
04/08/2016 05/08/2016		08:00		92	7	0			7.36 T2IOI					
							N.I.							
				100	56	56	6.7		8.08 T2IOI	-8.04	8.32		II	Strong, dark grey, spotted light grey, black and white, slightly decomposed crystal bearing fine vitric crystal TUFF. Joints are medium, locally closely to very closely spaced, rough and smooth, planar and undulating, tight to very narrow, clean, iron and manganese stained, calcite and chlorite coated, dipping (apparent) 0°-10°, 30°-40°, 50°-60° and 60°-70°.
							16.7							
				96	96	92	3.8		8.62					
							1.7		T2IOI					
							6.7		9.97	-9.23	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

1. Acoustic televiewer survey was carried out at 8.40m-94.90m depth.
2. Packer (Water Absorption) tests were carried out at 26.50m-31.00m and 32.00m-36.50m depths.

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DRILLHOLE RECORD

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HOLE No. **AID2A**

SHEET 2 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846769.68 N 814069.92	DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	87				-9.23	10.00		II	As sheet 1 of 11.
							15.8		T2IOI					
							2.2		10.52					
				94	90	76								
							9.1		T2IOI					
							>20		11.35					
				100	99	94	7.4							
							3.8		T2IOI					
		18:00					10.0							
05/08/2016									12.46	-11.02	12.53			
06/08/2016		08:00		100	81	65	>20			-11.15	12.71			12.53 - 12.71m: Dappled pinkish brown.
							10.0							
							4.9		T2IOI	-11.54	13.26			13.26 - 14.06m: Dappled pinkish brown.
		18:00												
06/08/2016							>20		13.88					
08/08/2016		08:00		98	93	51	7.8			-12.10	14.06			
									T2IOI	-12.41	14.50		III	14.50 - 14.86m: Moderately strong, brownish grey, moderately decomposed.
				98	98	89			14.75	-12.67	14.86		II	
							1.6		T2IOI					
				100	100	100	3.2		15.63					
									T2IOI					
				100	99	99			16.37					
									T2IOI					
							9.1							
							7.7		17.54	-14.55	17.52			
				100	97	81	17.6							17.52 - 18.13m: Striped greenish grey.
							2.4			-14.98	18.13			
							9.1		T2IOI					
							3.8							
							13.3		19.00					
				100	90	90	4.0							
							9.1		T2IOI					
				100	82	74	3.8		19.60					
									T2IOI	-16.30	20.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

Gammon

HOLE No. **AID2A**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846769.68 N 814069.92	DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Water Depth (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Samples (No. Type Depth)	Reduced Level	Depth (m)	Grade	Description
		100	82	74			-16.30	20.00	II	As sheet 1 of 11.
					18.2					
					6.1	T2IOI				
	18:00				>20		-16.89	20.83	III	20.83 - 21.16m: Moderately strong, moderately decomposed.
08/08/2016 10/08/2016	08:00	100	92	75	9.8	21.08 T2IOI	-17.12	21.16	II	
		100	100	90	2.6	21.83				
					>20	T2IOI				
					3.0					
		97	93	84	19.0	23.38				
					6.7					
					0.8	T2IOI				
		98	97	97	7.3	24.88				
						T2IOI				
		100	93	85		26.35				
					3.2					
						T2IOI				
	18:00									
10/08/2016 12/08/2016	08:00	100	99	89		27.83				
					7.1					
					2.4	T2IOI				
					14.3					
					3.4					
		100	94	88		29.34				
						T2IOI				
					>20		-23.37	30.00		

Tests

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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CONTRACT No. GE/2013/37

HOLE No. **AID2A**

SHEET 4 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846769.68 N 814069.92	DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	94	88	5.9			-23.37	30.00			
										-23.44	30.09		III	As sheet 1 of 11. 30.09 - 30.56m: Moderately strong, grey, spotted brown and light grey, moderately decomposed.
									T2IOI					
				100	93	88			30.56	-23.77	30.56		II	
									T2IOI					
							>20							
							4.1			-24.57	31.69		III	Moderately strong, light greenish grey, spotted grey and orangish pink, streaked green, moderately decomposed fine ash crystal TUFF. Joints are medium, locally closely to very closely spaced, rough and smooth, planar and undulating, tight to very narrow, clean, dipping (apparent) 0°-10° and 20°-30°.
				100	98	95	>20		31.96					
							4.3							
							2.6		T2IOI					
							11.1							
							2.6							
				100	100	100			33.51					
									T2IOI					
									34.98					
				100	99	87	6.2							
							2.7			-27.11	35.28		II	Strong, dark grey, spotted light grey and white, slightly decomposed crystal bearing fine ash vitric TUFF. Joints are medium, locally widely, locally closely and very closely spaced, rough and smooth planar, tight to very narrow, clean and chlorite coated, dipping (apparent) 10°-20°, 40°-50° and 50°-60°. 36.02 - 36.31m: Dappled light green, coarse ash crystal TUFF.
							11.5		T2IOI					
							5.7			-27.63	36.02			
										-27.84	36.31			
							0.9		36.54					
				100	99	97								
									T2IOI					
							4.0							
		18:00												
12/08/2016									37.98					
13/08/2016		08:00		100	100	100	2.1							
									T2IOI					
										-29.60	38.80			
							10.3			-29.75	39.02			38.80 - 39.02m: Greenish grey, dappled brown, coarse ash crystal TUFF.
				100	100	96	1.6		39.17					
									T2IOI					
							14.3 3.6			-30.44	40.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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HOLE No. **AID2A**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846769.68 N 814069.92	DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-30.44	40.00		II	As sheet 4 of 11.
				100	100	96			T2IOI					
				100	98	98			40.54					
							8.2		T2IOI					
				100	100	97	2.3		41.62					
									T2IOI					
				100	100	89			43.08					
							15.4		T2IOI					
							6.7							
							16.7							
							>20							
				100	79	52	3.8		44.59					
							>20		T2IOI					
				100	89	77	2.6		46.06					
							8.3		T2IOI					
							18.7							
		18:00					10.5			-35.43	47.05			
13/08/2016 15/08/2016		08:00		100	100	100	0.8		47.18	-35.62	47.32			47.05 - 47.32m: Streaked and dappled light brown.
									T2IOI					
										-36.22	48.17			
										-36.33	48.33			48.17 - 48.33m: Dappled green.
				100	100	100			48.60					
									T2IOI					
							1.5			-37.36	49.78			
										-37.52	50.00		II	Strong, dark grey, dappled brown, spotted light

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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HOLE No. **AID2A**

SHEET 6 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846769.68 N 814069.92	DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-37.52	50.00		II	grey and white, slightly decomposed fine ash crystal TUFF. Joints are widely, locally medium, closely and very closely spaced, smooth planar, tight to very narrow, clean and chlorite coated, dipping (apparent) 10°-20°, 50°-60° and 70°-80°.
				100	100	100			50.10 T2IOI					
				100	100	100			51.58 T2IOI					
							6.2							
							1.4		53.06 T2IOI					
				100	100	91				-40.09	53.64		III	53.64 - 53.98m: Moderately strong, greyish brown, spotted black, moderately decomposed.
							10.0			-40.33	53.98		II	
							16.7							
							0.6							
		18:00												
15/08/2016 16/08/2016		08:00		97	97	97			54.55 T2IOI					
							1.4		56.05 T2IOI					
				100	100	100								
							4.4							
							1.8		57.58 T2IOI					
				100	100	93								
							12.5			-43.67	58.71			58.71 - 59.00m: Greyish green, coarse ash crystal TUFF.
							0.7			-43.88	59.00		II	Strong, dark grey, spotted light grey and white, slightly decomposed fine ash vitric TUFF. Joints are widely, locally medium and very closely spaced, smooth planar, tight to very narrow, clean and chlorite coated, dipping (apparent)
				99	96	96			59.08 T2IOI					
										-44.59	60.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

Gammon

HOLE No. **AID2A**

CONTRACT No. GE/2013/37

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846769.68 N 814069.92	DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM	WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				99	96	96	>20 4.8 1.7		T2IOI 60.58	-44.59	60.00		II	0°-10°, 20°-30°, 40°-50° and 60°-70°.
				100	100	100	4.8 1.3		T2IOI					
16/08/2016 17/08/2016		18:00 08:00		98	98	98			61.91 T2IOI					
				100	100	94			63.22	-47.15	63.62		II	Strong, greenish grey, spotted light grey, slightly decomposed fine ash crystal TUFF. Joints are widely, locally very widely, medium to very closely spaced, smooth planar and undulating, tight to very narrow, clean and chlorite coated, dipping (apparent) 0°-10°, 20°-30°, 60°-70° and 80°-90°.
				100	100	100	4.4 2.0		T2IOI 64.60					
				94	92	73	12.0 1.9		T2IOI 65.52	-48.63 -48.70	65.72 65.82		III II	65.72 - 65.82m: Moderately strong, mottled brown and light grey, moderately decomposed coarse ash lithic TUFF.
				100	100	100	4.2 >20 2.3 5.9 1.8		T2IOI 66.58					
17/08/2016 18/08/2016		18:00 08:00		96	96	93			T2IOI 68.07					
				100	94	94	7.1 11.3 3.2		T2IOI 69.56	-51.66	70.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- ↓ Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID2A**

SHEET 8 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846769.68 N 814069.92	DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-51.66	70.00		II	As sheet 7 of 11.
				100	94	94			T2IOI 70.43					
				99	91	91								
							9.3							
							0.9		T2IOI					
									71.84	-52.97	71.85			
				99	97	97								71.85 - 72.34m: Brownish grey.
										-53.31	72.34			
										-53.35	72.40			72.40 - 72.72m: Streaked brown.
									T2IOI	-53.58	72.72			
				100	100	100			73.32					
									T2IOI					
							2.9							
		18:00												
18/08/2016									74.81					
19/08/2016		08:00		100	100	100	8.0							
							4.5			-55.25	75.08			75.08 - 75.57m: Dappled greyish brown, lithic bearing coarse ash crystal TUFF.
							1.3		T2IOI	-55.60	75.57			
				97	97	97			76.31					
									T2IOI					
				100	95	95	6.8		77.85					
							4.5		T2IOI					
				100	100	100	7.1		79.40					
							2.1		T2IOI	-58.73	80.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID2A**

SHEET 9 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD Rotary	CO-ORDINATES E 846769.68 N 814069.92	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35		DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				97	97	92	11.1 1.4		80.06 T2IOI	-58.73	80.00		II	As sheet 7 of 11.
				100	99	34	3.1 0.4		81.07 T2IOI					
19/08/2016		18:00												
20/08/2016		08:00		100	100	100			82.58 T2IOI					
							5.0							
				100	100	100	1.2		84.09 T2IOI					
				100	100	97			85.56 T2IOI					
				99	99	99			87.06 T2IOI	-63.94	87.37			87.37 - 88.10m: Dappled pinkish brown, lithic bearing coarse ash crystal TUFF.
							4.5							
							0.4			-64.46	88.10			
				100	100	100			88.56 T2IOI					
		18:00								-65.80	90.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID2A**

SHEET 10 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846769.68 N 814069.92	DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-65.80	90.00		II	As sheet 7 of 11.
20/08/2016 22/08/2016		08:00		100	100	100			90.06					
									T2IO1					
				98	98	98			91.56					
									T2IO1					
				100	99	92			93.05					
							3.6			-68.27	93.49			93.49 - 94.10m: Streaked light brown.
									T2IO1					
				98	98	98			94.15	-68.70	94.10			
									T2IO1					
		18:00												
22/08/2016 23/08/2016		08:00		98	98	98	0.7		95.65					
									T2IO1					
				100	100	100	2.0		97.12					
							9.1 0.8		T2IO1					
				100	100	100			98.26					
									T2IO1					
				100	100	100			98.83					
									T2IO1					
		18:00								-72.87	100.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID2A**

SHEET 11 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846769.68 N 814069.92	DATE from 04/08/2016 to 23/08/2016
FLUSHING MEDIUM	WATER	ORIENTATION 077°/45°	SEABED LEVEL -2.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
										-72.87	100.00			
23/08/2016									100.12	-72.96	100.12		II	As sheet 7 of 11. End of hole at 100.12m depth.
										-79.94	110.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID5**

SHEET 1 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846705.24 N 813893.45	DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM	WATER	ORIENTATION 168°/45°	SEABED LEVEL -4.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
21/06/2016	PX	08:00		0					0.00	-4.46	0.00			Grey (N6) and white (N8), CORAL with occasional subangular fine to medium gravel sized rock and shell fragments. (MARINE DEPOSIT)
									1 1.00 1.10	-5.24	1.10			
				0										White (N8), CORAL fragments. (MARINE DEPOSIT)
	PX 1.60								2 1.50 1.60	-5.63	1.65			
	HX	18:00		91					1.65 T2IOI	-5.70	1.76			Dark grey (N3) and light grey (N7), dappled light orangish brown, subangular to subrounded coarse GRAVEL and COBBLE sized rock fragments. (ALLUVIUM) 1.76 - 2.00m: Boulder.
21/06/2016									2.00	-5.87	2.00			
22/06/2016		08:00		67					2.15					
				62					T2IOI					
									2.80					
				80					T2IOI					
									3.15					
				90					T2IOI 3.35					
				90					T2IOI 3.55					
				84					T2IOI					
									4.00					
				67					T2IOI					
	HX 4.40	18:00							4.40					
22/06/2016														
23/06/2016		08:00		92						-7.78	4.69		III	Moderately strong, grey, dappled orangish brown and spotted white, moderately decomposed coarse ash crystal TUFF. Joints are medium to closely, locally very closely spaced, rough and smooth planar, extremely to very narrow, clean, iron and manganese stained, dipping (apparent) 0°-10°, 30°-40°, 50°-60° and 70°-80°.
					78	80	6.5		T2IOI					
							>20		5.43					
				98	91	86	11.1							
							2.3		T2IOI					
							>20		6.66					
				99	94	89	9.5							
							4.5							
							7.1		T2IOI					
							3.6							
							11.1							
							2.3		8.09					
				98	93	86								
									T2IOI	-10.61	8.70			
										-10.70	8.83		III	Moderately strong, light greenish grey, streaked dark green, spotted black and white, moderately decomposed, slightly chloritized coarse ash crystal TUFF. Joints are medium to closely, locally very closely spaced, rough and smooth, planar and undulating, extremely to very narrow, iron stained, calcite and chlorite coated, dipping (apparent) 20°-30°, 40°-50°,
							15.4			-10.84	9.02			
							6.1							
							>20		9.32					
				100	74	72	4.1		T2IOI					
										-11.50	9.95			
										-11.53	10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

1. Acoustic televiewer survey was carried out at 5.10m-100.03m depth.
2. Packer (Water Absorption) tests were carried out at 23.00m-27.00m, 34.00m-38.00m and 40.00m-44.00m depths.

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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID5**

SHEET 2 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846705.24 N 813893.45	DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM WATER	ORIENTATION 168°/45°	SEABED LEVEL -4.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	74	72	13.0		T2IOI 10.36	-11.53	10.00		III	60°-70° and 70°-80°.
				100	100	91	3.1			-11.81	10.40		III	8.83 - 9.02m: With highly decomposed zone along joint margin (10mm thick), dipping (apparent) 70°-80°.
							8.3							9.95 - 10.40m: Light greyish brown.
							1.5		T2IOI					Moderately strong, dark grey, dappled orangish brown and spotted white, moderately decomposed fine ash crystal TUFF. Joints are closely, locally widely, medium and very closely spaced, rough and smooth planar, extremely to very narrow, calcite and chlorite coated, iron and manganese stained, dipping (apparent) 0°-10°, 10°-20°, 40°-50° and 60°-70°.
		18:00					5.3							
23/06/2016							18.8		11.73					
24/06/2016		08:00		100	97	91	5.5		T2IOI					
							16.7							
							6.1		13.15					
				100	96	96	>20			-13.86	13.29			13.29m: Moderately weak (50mm thick).
							5.2		T2IOI					
				100	95	89			14.57	-14.88	14.74			14.74 - 15.07m: Light brown.
										-15.12	15.07		II	Strong, dark grey, spotted light green and white, slightly decomposed fine ash crystal TUFF. Joints are widely to closely, locally very closely spaced, rough and smooth, planar and undulating, extremely to very narrow, clean, calcite and chlorite coated, iron and manganese stained, dipping (apparent) 10°-20°, 30°-40°, 60°-70° and 80°-90°.
				99	93	80	16.7		T2IOI 16.07					
							5.3			-16.06	16.40			
							18.8			-16.16	16.55		III	16.40 - 16.55m: Moderately strong, dappled light brownish grey, moderately decomposed coarse ash crystal TUFF.
							2.3		T2IOI				II	
				100	84	76			17.15					
							13.3							
							3.6		T2IOI	-17.10	17.88			
							16.0						III	17.88 - 18.20m: Moderately strong, dappled light brownish grey, moderately decomposed coarse ash crystal TUFF.
							8.3			-17.33	18.20			18.20 - 19.03m: Moderately strong, light grey, dappled dark grey, moderately decomposed coarse ash crystal TUFF.
							>20		18.59					
				100	18	0			T2IOI					
		18:00					14.3							
24/06/2016							>20		18.99	-17.92	19.03			
25/06/2016		08:00		100	100	100	5.9						II	
									T2IOI					
							2.8		19.69					
				99	99	93			T2IOI					
							6.5			-18.60	20.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

Gammon

CONTRACT No. GE/2013/37

HOLE No. **AID5**

SHEET 3 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846705.24 N 813893.45	DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM	WATER	ORIENTATION **168°/45°**	SEABED LEVEL -4.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				99	99	93	4.5 14.3 3.3			-18.60	20.00		II	As sheet 2 of 11.
				100	92	67	20.0 4.5 10.0		T2IOI 20.76	-19.51 -19.58	21.28 21.38			21.28 - 21.38m: Light greenish grey, striped white, CALCITE vein (20mm thick), dipping (apparent) 40°-50°.
				100	94	86	2.9 15.4 2.6		T2IOI 21.74	-19.92 -20.05	21.87 22.05			21.87 - 22.05m: Mottled light greenish grey, lithic bearing.
				100	61	61	>20 3.1		T2IOI 23.14	-20.78 -20.96	23.08 23.34		III II	23.08 - 23.34m: Moderately strong, dappled light brownish grey, moderately decomposed.
25/06/2016 27/06/2016		18:00 08:00		100	93	86	>20 4.8 12.5 5.4 3.0		T2IOI 23.86	-21.29 -21.37	23.80 23.91		III II	23.80 - 23.91m: Moderately strong, dappled light brownish grey, moderately decomposed.
				100	87	60	>20 2.9 12.5		T2IOI 25.09	-22.20	25.09			25.09m: Moderately strong, dappled light brownish grey, moderately decomposed (60mm thick).
				100	90	79	5.4 >20		T2IOI 25.64	-22.74	25.85			25.85m: Moderately strong, light greenish grey, moderately decomposed (60mm thick).
				100	59	26	5.6 >20		T2IOI 26.26	-23.32	26.67		III	26.67 - 27.07m: Moderately strong, light greenish grey, moderately decomposed coarse ash crystal TUFF.
				100	91	88	2.3 6.7 3.0		T2IOI 26.94	-23.60 -23.82 -23.95	27.07 27.38 27.57		II III II	27.38 - 27.57m: Moderately strong, light greenish grey, moderately decomposed coarse ash crystal TUFF.
				97	97	97	1.0		T2IOI 27.75					
				99	99	99			T2IOI 28.40					
27/06/2016 28/06/2016		18:00 08:00		97	95	93			T2IOI 29.61	-25.67	30.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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CONTRACT No. GE/2013/37

HOLE No. **AID5**

SHEET 4 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846705.24 N 813893.45	DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM	WATER	ORIENTATION 168°/45°	SEABED LEVEL -4.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				97	95	93				-25.67	30.00		II	As sheet 2 of 11.
									T2IO1					
									31.13					
				100	100	100								
									T2IO1					
							4.3			-27.24	32.22			
										-27.43	32.49			32.22 - 32.49m: Light brownish grey, coarse ash crystal TUFF.
							13.6		32.68					
				100	99	85	2.3							
									T2IO1					
									33.71					
				100	100	91	10.0 1.4							
									T2IO1					
		18:00												
28/06/2016 29/06/2016		08:00		97	77	69	12.5 1.4		34.50					
									T2IO1					
							19.2			-29.53	35.45			
							6.3			-29.63	35.60		III	35.45 - 35.60m: Moderately strong, dappled light greenish grey, moderately decomposed.
				100	85	68			35.65				II	
									T2IO1	-30.07	36.22			
							>20						III	36.22 - 37.10m: Moderately strong, dappled light greenish grey and streaked white, moderately decomposed with occasional calcite veins (5-10mm), dipping (apparent) 60°-70°.
							8.0		36.58					
				99	80	61	>20							
							6.9			-30.69	37.10			
							>20 10.7		T2IO1				II	
							>20		37.67					
				100	97	97	5.0							
							1.3							
									T2IO1					
							2.2			-31.85	38.74			
				100	100	100			38.82					38.74 - 39.08m: Mottled and striped light greenish grey, with some microfractures.
										-32.09	39.08			
									T2IO1	-32.39	39.50			
										-32.57	39.75			39.50 - 39.75m: Striped light green, with some microfractures.
										-32.74	40.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- ↓ Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID5**

SHEET 5 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846705.24 N 813893.45	DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM WATER	ORIENTATION 168°/45°	SEABED LEVEL -4.46 mPD

Drilling Progress	Water Depth (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Samples (No. Type Depth)	Reduced Level	Depth (m)	Grade	Description
		100	100	100	5.6	T2IOI	-32.74	40.00	II	As sheet 2 of 11.
							-32.75	40.01		40.01 - 40.27m: Brecciated TUFF.
							-32.94	40.27		
		100	88	86	4.1	40.30				
						T2IOI				
	18:00						-33.66	41.30		
29/06/2016					>20	41.40			III	41.30 - 41.55m: Moderately strong, moderately decomposed.
30/06/2016	08:00	100	95	76	11.1		-33.84	41.55	II	
					3.2	T2IOI				
					5.9					
					12.1	42.25				
		100	87	33		T2IOI				
					>20					
					10.0		-34.72	42.79		
					>20	42.88			III	42.79 - 43.34m: Moderately strong, light greenish grey, moderately decomposed.
		100	83	83	5.6					
					>20					
					4.5		-35.11	43.34		
							-35.15	43.40	II	43.40 - 43.55m: Mottled light green, lithic bearing.
						T2IOI	-35.25	43.55		
					>20					
					5.4	44.25				
		100	88	69						
					13.0					
					2.9	T2IOI				
					13.3					
					2.7	45.27				
		99	94	94						
					>20	T2IOI				
					10.3					
					2.0					
						46.69				
		100	96	93						
					16.7					
					4.0					
					10.0					
					1.7	T2IOI				
	18:00									
					6.2		-38.42	48.02		
30/06/2016						48.07			III	48.02 - 48.34m: Moderately strong, moderately decomposed.
02/07/2016	08:00	99	63	63	18.9		-38.64	48.34	II	
					3.3					
						T2IOI				
					>20					
					3.0	49.60				
		98	89	89		T2IOI				
					15.4		-39.82	50.00		

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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HOLE No. **AID5**

CONTRACT No. GE/2013/37

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846705.24 N 813893.45	DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM	WATER	ORIENTATION 168°/45°	SEABED LEVEL -4.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				98	89	89	8.0			-39.82	50.00			
							2.0			-39.91	50.13		II	As sheet 2 of 11. 50.13 - 50.84m: Mottled light green, lithic bearing.
									T2IOI					
							10.0							
				100	92	87	3.1		50.84	-40.41	50.84			
									T2IOI					
										-41.06	51.76			
							6.5						III	51.76 - 52.14m: Moderately strong, greenish grey, dappled dark grey, moderately decomposed coarse ash crystal TUFF.
							>20			-41.33	52.14			
				100	100	100	1.6		52.25				II	
							2.3		T2IOI					
										-42.09	53.22			
							6.6			-42.22	53.40			53.22 - 53.40m: Mottled light greenish grey.
				100	98	90			53.70					
							4.3							
							10.0		T2IOI					
							4.3							
				100	98	98	6.2		54.53					
							2.9							
									T2IOI					
		18:00												
02/07/2016 04/07/2016		08:00		96	90	75			56.08					
							18.2							
							4.1		T2IOI					
							18.2							
							2.6		57.21					
				100	96	90				-45.03	57.37			
							18.2			-45.19	57.60			57.37 - 57.60m: Mottled light green, lithic bearing.
							1.0							
									T2IOI					
										-45.80	58.47			
							5.0							58.47m: Light green (30mm thick), dipping (apparent) 10°-20°.
				97	84	80	2.0		58.72					
									T2IOI					
										-46.65	59.66			
							>20			-46.74	59.80			59.66 - 59.80m: Mottled dark green and light green, lithic bearing.
							5.9			-46.89	60.00			

● Small disturbed sample	▲ Water sample
SPT liner sample	Piezometer / Standpipe tip
U76 undisturbed sample	Permeability test
U100 undisturbed sample	Packer (Water Absorption) test
Mazier sample	Impression packer test
Piston sample	Acoustic Televiewer Survey Test
Standard penetration test	In-situ vane shear test
Vibrocore sample	Pressuremeter Test

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HOLE No. **AID5**

SHEET 7 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)	
METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846705.24 N 813893.45	DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM WATER	ORIENTATION **168°/45°**	SEABED LEVEL -4.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				97	84	80	>20, 9.1		T2IOI 60.20	-46.89	60.00		II	As sheet 2 of 11.
				99	97	86	>20, 6.1			-47.03	60.20			60.20m: Moderately strong, moderately decomposed (60mm thick).
							3.0		T2IOI					
							11.1, 3.4							
				100	98	91	12.5, 1.4		61.63					
							>20, 3.4		T2IOI					
				100	97	87	1.3		62.86					
		18:00					16.7, 1.1		T2IOI					
04/07/2016 05/07/2016		08:00		100	100	100			63.81					
				100	100	100			T2IOI 64.61					
									T2IOI	-50.63	65.30		II	Strong, greenish grey, spotted black and white, streaked dark green and light green, locally mottled dark grey and green, slightly decomposed, slightly chloritized fine ash crystal TUFF with some microfractures. Joints are medium to closely, locally widely and very closely spaced, smooth planar, tight to extremely narrow, clean, calcite and chlorite coated, dipping (apparent) 10°-20°, 30°-40°, 50°-60° and 80°-90°.
							7.1, 1.2		65.96					
				99	90	87								
							8.3, 1.6		T2IOI					
							>20		67.45					
				100	100	85	12.5, 1.3		T2IOI					
				100	95	89	16.7, 7.4, 2.2		68.34					
									T2IOI					
				96	70	70	>20, 2.7		69.13					
							13.3, 6.5		T2IOI	-53.93	69.96			
										-53.96	70.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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HOLE No. **AID5**

CONTRACT No. GE/2013/37

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)	
METHOD Rotary	CO-ORDINATES E 846705.24 N 813893.45	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35		DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM WATER	ORIENTATION 168°/45°	SEABED LEVEL -4.46 mPD

Drilling Progress	Water Depth (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Samples (No. Type Depth)	Reduced Level	Depth (m)	Grade	Description
		96	70	70	>20		-53.96	70.00		
					6.7		-54.10	70.20	III	69.96 - 70.20m: Moderately strong, dappled light orangish brown, moderately decomposed.
	18:00				N.I.	T2IO1			IV	70.20 - 70.48m: Weak, light greenish grey, highly decomposed. (Subangular medium to coarse GRAVEL)
05/07/2016						70.48	-54.30	70.48		70.48 - 70.58m: Moderately strong, dappled light green, moderately decomposed.
06/07/2016	08:00	100	81	58	13.2		-54.37	70.58	III	
									II	
					3.6	T2IO1				
					>20					
					4.3					
		99	85	79	>20	71.66				
					1.9	T2IO1				
					5.6	73.16				
		100	99	93	18.8					
					5.9					
					>20					
					2.3	T2IO1				
					8.9	74.66				
		98	91	78						
					>20					
					3.1	T2IO1				
							-57.85	75.50	III	75.50 - 76.35m: Moderately strong, dappled light greenish grey, moderately decomposed coarse ash crystal TUFF.
	18:00				6.3					
06/07/2016					16.7	75.95				
07/07/2016	08:00	100	83	78						
					3.0		-58.45	76.35	II	
					5.3	T2IO1				
					1.1	77.53				
		98	84	78						
					10.0	T2IO1	-59.91	78.42		
					>20	78.53	-60.02	78.58	III	78.42 - 78.58m: Moderately strong, dappled light greenish grey, moderately decomposed.
		100	90	73	4.5				II	
					12.5					
					2.5	T2IO1				
					>20					
					8.3					
		100	81	79	>20	79.81	-61.03	80.00		

Tests

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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HOLE No. **AID5**

SHEET 9 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846705.24 N 813893.45	DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM WATER	ORIENTATION 168°/45°	SEABED LEVEL -4.46 mPD

Drilling Progress	Water Depth (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Samples (No. Type Depth)	Reduced Level	Depth (m)	Grade	Description
		100	81	79	3.8		-61.03	80.00	II	As sheet 7 of 11.
					6.3	T2IO1				
	18:00						-61.48	80.64		
					>20		-61.58	80.78		80.64 - 80.78m: Dappled light greenish grey coarse ash crystal TUFF.
07/07/2016					10.7	80.86				
09/07/2016	08:00	100	98	81						
					3.5					
						T2IO1				
					9.5					
					3.2					
		99	79	58		82.16				
					12.0		-62.87	82.60	III	
					>20					82.60 - 82.96m: Moderately strong, dappled light greenish grey, moderately decomposed coarse ash crystal TUFF.
					15.4	T2IO1	-63.12	82.96	II	
					6.5					
					11.8	83.72				
		100	80	77						
					7.8	T2IO1				
						84.43				
		100	89	85	4.5					
					>20					
					2.2	T2IO1				
	18:00									
09/07/2016						85.22	-64.72	85.22		
12/07/2016	08:00	100	100	100	6.7		-64.83	85.37		85.22 - 85.37m: Brecciated TUFF.
					1.9				II	Strong, light greenish grey, spotted black and white, slightly decomposed, slightly chloritized crystal bearing fine ash vitric TUFF. Joints are medium, locally closely spaced, rough and smooth planar, tight to extremely narrow, clean and calcite coated, dipping (apparent) 10°-20°, 40°-50°, 60°-70° and 70°-80°.
						T2IO1				
							-65.66	86.55		86.55 - 86.96m: Coarse ash crystal TUFF.
						86.72				
		100	88	79			-65.95	86.96		
							-66.13	87.22		
							-66.27	87.41		87.22 - 87.41m: Coarse ash crystal TUFF
					14.3	T2IO1				
					3.8					
					8.3					
					2.7	88.19				
		100	100	96						
						T2IO1				
							-67.45	89.08		
					12.9	89.26			II	Strong, dark greenish grey, mottled light green and spotted white, slightly decomposed lithic bearing fine ash crystal TUFF. Joints are widely to medium, locally closely to very closely spaced, smooth planar, tight to extremely
		100	100	95						
					4.8	T2IO1				
							-68.10	90.00		

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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HOLE No. **AID5**

SHEET 10 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846705.24 N 813893.45	DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM	WATER	ORIENTATION 168°/45°	SEABED LEVEL -4.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	95	14.3 2.0		T2IOI 90.76	-68.10	90.00		II	narrow, clean, calcite and chlorite coated, dipping (apparent) 0°-10°, 20°-30°, 40°-50° and 60°-70°.
				100	100	100	5.6		T2IOI	-69.18	91.53			
										-69.29	91.69			91.53 - 91.69m: Striped light green, with some microfractures.
							0.9		92.26					
				100	100	100			T2IOI					
		18:00												
12/07/2016 14/07/2016		08:00		100	100	100			93.72					
							4.2		T2IOI					
							0.9		94.77					
				100	100	100			T2IOI					
							6.7 0.9		96.25					
				100	100	94			T2IOI					
							1.8							
							11.1 0.9		97.71					
				100	100	94			T2IOI					
							3.9							
		18:00												
14/07/2016 15/07/2016		08:00		100	84	82	>20 2.9		99.21					
							7.7		T2IOI	-74.89	99.60			99.60 - 100.07m: Moderately strong, dappled light greenish grey, streaked dark green and
							>20 4.9			-75.17	100.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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SHEET 11 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846705.24 N 813893.45	DATE from 21/06/2016 to 15/07/2016
FLUSHING MEDIUM WATER	ORIENTATION 168°/45°	SEABED LEVEL -4.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
15/07/2016		18:00		100	84	82			T2101 100.26	-75.17 -75.22 -75.31 -75.35	100.00 100.07 100.19 100.26		II	white, moderately decomposed lithic bearing coarse ash crystal TUFF. 100.07 - 100.19m: Dappled light greenish grey. End of hole at 100.26m depth.
										-82.24	110.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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HOLE No. **AID6**

SHEET 1 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846735.15 N 813765.28	DATE from 31/08/2016 to 21/09/2016
FLUSHING MEDIUM	WATER	ORIENTATION 164°/44°	SEABED LEVEL -12.01 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
31/08/2016	PX	08:00		0					0.00	-12.01	0.00			Greenish grey (5GY 5/1), fine to coarse SAND with much subangular fine to coarse gravel sized shell fragments. (DISTURBED MARINE DEPOSIT)
				38					1 1.00 2 1.10	-12.77	1.10			Grey (N6), dappled white, angular to subangular fine to coarse GRAVEL and COBBLE sized rock and coral fragments in sandy matrix. (DISTURBED MARINE DEPOSIT)
		18:00		0					3 2.10 2.20					
31/08/2016 01/09/2016		08:00		31					4 2.40 2.50	-13.75 -13.85	2.50 2.65			Grey (N6) and white (N8), subangular fine to coarse GRAVEL sized rock and shell fragments in sandy matrix. (DISTURBED MARINE DEPOSIT)
				21					T2IO1 3.30					Dark grey (N3), dappled light brown, subangular to subrounded fine to coarse GRAVEL and COBBLE sized rock fragments. (ALLUVIUM)
01/09/2016	PX 4.03	18:00							T2IO1 4.03					
02/09/2016	HX	08:00		13					T2IO1					
				26					5.53					
				9					T2IO1 6.30					
									T2IO1					
				60					5 7.40	-17.15	7.40			Light brown (7.5YR 6.4), dappled purple and white, mottled greenish brown, angular to subangular fine to medium GRAVEL sized rock fragments in silty sandy matrix. (ALLUVIUM)
				0					6 8.40 8.50					
		18:00							7 9.50 9.60					
02/09/2016 03/09/2016		08:00		0						-18.96	10.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

1. Acoustic televiewer survey was carried out at 10.60m-98.00m depth.
2. Packer (Water Absorption) tests were carried out at 20.50m-25.50m, 28.00m-33.00m and 35.00m-40.00m depths.

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DRILLHOLE RECORD

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HOLE No. **AID6**

SHEET 2 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES E 846735.15 N 813765.28	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35		DATE from 31/08/2016 to 21/09/2016
FLUSHING MEDIUM WATER	ORIENTATION **164°/44°**	SEABED LEVEL -12.01 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				0						-18.96	10.00			As sheet 1 of 11.
				100	15	0	N.I.		8 10.20–10.30	-19.16	10.30		III	Moderately strong, light grey, dappled orangish brown, mottled black and white, moderately decomposed coarse ash crystal TUFF. Highly fractured.
				83	0	0			T2IOI 10.50					
				94	15	0			T2IOI 10.74					
	HX 11.27						16.1		T2IOI					
				94	80	73			11.27	-19.87	11.32		II	Strong, grey, mottled greenish grey, spotted black and white, slightly decomposed, slightly chloritized coarse ash crystal TUFF. Joints are medium to closely spaced, rough and smooth, planar and undulating, extremely narrow to narrow, chlorite coated, iron and manganese stained, dipping (apparent) 10°-20°, 30°-40°, 50°-60° and 80°-90°.
							6.2							
							1.7		T2IOI					
		18:00					12.5							
03/09/2016									12.59	-20.76	12.59			
05/09/2016		08:00		100	17	0	>20		T2IOI 12.77				III	Moderately strong, light greyish brown, mottled black and white, moderately decomposed coarse ash crystal TUFF. Joints are closely, locally very closely spaced, rough planar and undulating, extremely narrow to narrow, iron and manganese stained, dipping (apparent) 10°-20°, 40°-50°, 60°-70° and 80°-90°. 13.33 - 13.46m: No recovery. Inferred as completely decomposed TUFF.
				100	43	30	6.7							
							15.0		T2IOI					
				90	90	90	6.2		13.17	-21.27	13.33			
							N.R.			-21.36	13.46		V	
							2.2			-21.46	13.61		III	
									T2IOI				II	
		18:00												Strong, greenish grey, spotted black and white, slightly decomposed chloritized coarse ash crystal TUFF. Joints are medium, locally closely to very closely spaced, rough and smooth, planar and undulating, extremely to very narrow, chlorite coated and iron stained, dipping (apparent) 0°-10°, 20°-30°, 40°-50° and 60°-70°.
							7.7							
05/09/2016									14.50					
06/09/2016		08:00		100	30	0	20.0		T2IOI 14.70					
				100	100	57			T2IOI 14.93					
							7.3							
				100	96	89				-22.48	15.07		II	
									T2IOI					
							3.0		15.83					Strong, dark grey, spotted grey and white, slightly decomposed fine ash crystal TUFF. Joints are medium to closely spaced, rough and smooth, planar and undulating, tight to extremely narrow, clean, calcite and chlorite coated, iron and manganese stained, dipping (apparent) 0°-10°, 20°-30°, 40°-50° and 80°-90°. 16.71 - 17.70m: Greenish grey, altered and chloritized TUFF.
				100	100	100			T2IOI					
									16.49					
				100	100	94				-23.62	16.71			
									T2IOI					
										-24.31	17.70			
									17.79					17.70 - 18.02m: Mottled grey and black, lithic bearing coarse ash crystal TUFF.
				100	98	85				-24.53	18.02			
									T2IOI					
							13.0							
									18.68					
				100	100	100	5.9							
									T2IOI					
		18:00												
06/09/2016									19.46					
07/09/2016		08:00		100	100	92								
									T2IOI					
							10.0			-25.90	20.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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DRILLHOLE RECORD

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HOLE No. **AID6**

SHEET 3 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)		
METHOD	Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No.	G35	E 846735.15 N 813765.28	DATE from 31/08/2016 to 21/09/2016
FLUSHING MEDIUM	WATER	ORIENTATION 164°/44°	SEABED LEVEL -12.01 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
										-25.90	20.00			
				100	100	92	4.3		T2IOI 20.36				II	As sheet 2 of 11.
				100	100	80								
									T2IOI	-26.60	21.00			
							13.1		21.28				III	21.00 - 21.61m: Moderately strong, greyish brown, moderately decomposed.
				100	100	96				-27.02	21.61			
							2.9			-27.19	21.85		II	
							14.3		T2IOI	-27.31	22.03			21.85 - 22.03m: Dappled light greenish grey, slightly chloritized TUFF.
							4.1			-27.58	22.41			
				98	80	72			22.53	-27.65	22.51			22.41 - 22.51m: Vug bearing (5-30mm diameter).
							12.5							
							8.2		T2IOI					
										-28.32	23.48		III	Moderately strong, greenish brown, dappled dark grey, spotted dark red, black and white, moderately decomposed fine ash crystal TUFF. Joints are widely and closely, locally very closely spaced, rough and smooth, planar and undulating, extremely narrow to narrow, kaolin coated, iron and manganese stained, dipping (apparent) 10°-20°, 40°-50°, 60°-70° and 80°-90°.
				100	88	79	1.6		23.98					
							7.5		T2IOI					
							>20							
				96	85	85	10.0		25.18	-29.61	25.33			
							2.9						II	Strong, dark grey, mottled greenish grey and spotted white, slightly decomposed, slightly chloritized fine ash crystal TUFF. Joints are medium to closely, locally widely and very closely spaced, rough and smooth, planar and undulating, extremely to very narrow, chlorite coated, iron and manganese stained, dipping (apparent) 10°-20°, 40°-50° and 60°-70°.
							8.3		T2IOI					
							4.4							
				100	100	100			26.40					
									T2IOI 26.71					
				98	95	89								
							1.1		T2IOI					
		18:00												
07/09/2016							9.0		28.00					
08/09/2016		08:00		100	100	96								
									T2IOI					
							2.9							
				95	87	55	>20		29.10					
							4.5							
							8.3		T2IOI					
							17.2							
							10.1		29.94	-32.85	30.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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HOLE No. **AID6**

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PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846735.15 N 813765.28	DATE from 31/08/2016 to 21/09/2016
FLUSHING MEDIUM WATER	ORIENTATION **164°/44°**	SEABED LEVEL -12.01 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	63				-32.85	30.00		II	As sheet 3 of 11.
									T2IOI					
							3.2		31.49	-33.86	31.46		III	31.46 - 32.21m: Moderately strong, dappled greyish brown, moderately decomposed.
				98	98	98								
							8.7							
							4.8		T2IOI	-34.38	32.21		II	
							1.6							
				100	100	100			32.74					
									T2IOI	-35.30	33.53			
							4.0			-35.43	33.71		III II	33.53 - 33.71m: Moderately strong, dappled greyish brown and light brown, moderately decomposed.
				98	89	89			34.02					
									T2IOI	-35.99	34.52			
							>20			-36.07	34.63		III	34.52 - 34.63m: Moderately strong, greyish brown, moderately decomposed.
							1.8						II	
				97	89	60			34.94					
							5.1							
							15.6		T2IOI					
		18:00					8.3							
08/09/2016							>20		36.09					
09/09/2016		08:00		100	100	95	3.3							
									T2IOI					
										-37.78	37.10			37.10 - 37.53m: Greenish grey, chloritized TUFF.
							7.6			-38.08	37.53			
				100	86	76			37.59				II	Strong, grey, mottled light grey, spotted black and white, slightly decomposed coarse ash crystal TUFF. Joint are closely, locally medium and very closely spaced, rough and smooth, planar and undulating, extremely to very narrow, iron stained, calcite and chlorite coated, dipping (apparent) 10°-20°, 40°-50°, 60°-70° and 70°-80°.
							2.4		T2IOI					
							>20			-38.76	38.51		III	
							12.0			-39.06	38.94			38.51 - 38.94m: Moderately strong, brownish grey, moderately decomposed.
							4.7		39.07				II	
				100	100	87								Strong, dark grey, spotted grey and white, slightly decomposed fine ash crystal TUFF. Joints are medium, locally widely and closely spaced, rough and smooth planar, tight to extremely narrow, chlorite coated, iron and
							1.4		T2IOI					
										-39.80	40.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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HOLE No. **AID6**

SHEET 5 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)	
METHOD Rotary	CO-ORDINATES E 846735.15 N 813765.28	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35		DATE from 31/08/2016 to 21/09/2016
FLUSHING MEDIUM WATER	ORIENTATION 164°/44°	SEABED LEVEL -12.01 mPD

Drilling Progress	Water Depth (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Samples (No. Type Depth)	Reduced Level	Depth (m)	Grade	Description
		100	100	87	2.0		-39.80	40.00	II	manganese stained, dipping (apparent) 0°-10°, 20°-30°, 40°-50° and 60°-70°.
		100	100	94	1.9	T2IOI 40.64	-40.28	40.69	III	40.69 - 41.44m: Moderately strong, brownish grey, moderately decomposed.
					2.7	T2IOI	-40.80	41.44	II	
		100	97	97	10.0 2.4	42.06				
					7.7	T2IOI				
	18:00				3.3					
09/09/2016 10/09/2016	08:00	100	62	48	8.2	43.60	-42.30	43.60	III	Moderately strong, dark grey, dappled brown, spotted grey and white, moderately decomposed fine ash crystal TUFF. Joints are closely spaced, rough and smooth, planar and undulating, extremely narrow to narrow, calcite coated, iron and manganese stained, dipping (apparent) 10°-20°, 30°-40°, 60°-70° and 80°-90°.
					14.3	T2IOI				
					5.1		-43.17	44.85	II	
		100	95	72		45.05	-43.30	45.05	III	44.85 - 45.05m: Strong, slightly decomposed.
					13.0	T2IOI	-43.94	45.96	II	Strong, dark grey, spotted greenish grey and white, slightly decomposed, slightly chloritized fine ash crystal TUFF. Joints are medium, locally widely, closely and very closely spaced, rough and smooth, planar and undulating, extremely to very narrow, clean, calcite coated and iron stained, dipping (apparent) 0°-10°, 30°-40° and 60°-70°.
					3.1					
		100	100	100		46.60				
						T2IOI				
		100	100	100		47.87				
					1.1	T2IOI				
	18:00									
10/09/2016 12/09/2016	08:00	100	84	84		49.34				
					4.2	T2IOI				
		97	97	89	>20 1.4	49.84	-46.74	50.00		

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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SHEET 6 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846735.15 N 813765.28	DATE from 31/08/2016 to 21/09/2016
FLUSHING MEDIUM WATER	ORIENTATION **164°/44°**	SEABED LEVEL -12.01 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				97	97	89				-46.74	50.00		II	As sheet 5 of 11.
							2.9		T2IOI					
				100	100	88			50.94					
							7.9							
							1.4		T2IOI					
							9.1		52.44					
				99	99	95	2.1							
									T2IOI					
							12.5		53.94					
				100	100	100	2.5							
									T2IOI					
				96	96	96			55.39					
							1.1		T2IOI					
				100	100	100	3.3		56.78					
									T2IOI					
				100	100	92			57.45					
									T2IOI	-52.41	58.16			58.16 - 58.31m: Greenish grey, altered and chloritized TUFF
										-52.52	58.31			58.31 - 58.80m: Mottled white, lithic bearing fine ash crystal TUFF
				100	100	100			58.63	-52.86	58.80			58.80 - 58.97m: Greyish green, chloritized TUFF.
							1.2			-52.97	58.97			
									T2IOI					
		18:00					3.8			-53.69	60.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
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- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846735.15 N 813765.28	DATE from 31/08/2016 to 21/09/2016
FLUSHING MEDIUM WATER	ORIENTATION 164°/44°	SEABED LEVEL -12.01 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
12/09/2016 13/09/2016		08:00		100	100	100	1.5		60.11	-53.69	60.00		II	As sheet 5 of 11.
									T2IOI	-53.94	60.36		II	Strong, dark grey, mottled light green and striped white, slightly decomposed, slightly chloritized coarse ash crystal TUFF. Joints are widely spaced, smooth planar, extremely narrow, calcite coated, dipping (apparent) 60°-70° and 80°-90°.
										-54.56	61.26		III	
										-54.71	61.47		II	61.26 - 61.47m: Moderately strong, moderately decomposed
				98	98	74			61.61					
							13.3			-55.09	62.01		III	Strong, dark grey, spotted light green and striped white, slightly decomposed, slightly chloritized fine ash crystal TUFF. Joints are medium to closely, locally widely spaced, rough and smooth, planar and undulating, extremely to very narrow, clean, iron stained, calcite and chlorite coated, dipping (apparent) 0°-10°, 40°-50°, 60°-70° and 70°-80°.
							7.1		T2IOI	-55.36	62.41		II	62.01 - 62.41m: Moderately strong, dappled brown, moderately decomposed.
				98	98	98	2.6		63.01					
									T2IOI					
				100	100	90			63.87					
									T2IOI					
							9.3							
				100	100	85	10.7		65.08					
							3.3		T2IOI					
							6.1							
				100	100	100			66.58					
									T2IOI					
							1.5			-58.97	67.60			67.60m: Striped dark red (70mm thick).
				100	100	72	12.5		68.08					
							1.9		T2IOI					
		18:00					10.0							
13/09/2016 14/09/2016		08:00		100	100	100	2.1		69.08					
									T2IOI	-60.64	70.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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REMARKS

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HOLE No. **AID6**

SHEET 8 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846735.15 N 813765.28	DATE from 31/08/2016 to 21/09/2016
FLUSHING MEDIUM WATER	ORIENTATION **164°/44°**	SEABED LEVEL -12.01 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				90	66	17	7.1 13.0		70.03 T2IOI	-60.64	70.00		II	As sheet 7 of 11.
				100	100	95	3.5		70.86 T2IOI					
										-61.86	71.76		II	Strong, dark grey, dappled light green and light grey, spotted white, slightly decomposed, slightly chloritized lithic bearing coarse ash crystal TUFF. Joints are widely to medium, locally closely and very closely spaced, rough and smooth, planar and undulating, tightly to extremely narrow, clean, iron stained, calcite and chlorite coated, dipping (apparent) 10°-20°, 30°-40°, 50°-60° and 80°-90°.
				100	98	86	6.6		72.30 T2IOI					
				100	100	98	2.2		73.80 T2IOI					
		18:00					4.7							
14/09/2016 15/09/2016		08:00		99	97	93	10.7 1.1		75.27 T2IOI					
				99	95	95	18.2 4.0		76.77 T2IOI					
		18:00												
15/09/2016 17/09/2016		08:00		99	87	85	1.5 13.3		78.29 T2IOI					
				100	100	100	1.3		79.79 T2IOI	-67.58	80.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

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DATE 22/09/2016

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REMARKS

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DRILLHOLE RECORD

HOLE No. **AID6**

CONTRACT No. GE/2013/37

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES E 846735.15 N 813765.28	WORK ORDER NO. GE/2013/37.30B
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FLUSHING MEDIUM WATER	ORIENTATION 164°/44°	SEABED LEVEL -12.01 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	100				-67.58	80.00		II	As sheet 8 of 11.
										-67.75	80.24			80.24 - 81.13m: Streaked white, with some calcite veinlets.
									T2IOI					
										-68.37	81.13			
				100	100	100	7.1		81.34					
							2.6							
							6.5		T2IOI					
										-69.10	82.18		II	Strong, dark grey, mottled green and spotted white, slightly decomposed, slightly chloritized lithic bearing fine ash crystal TUFF. Joints are medium to closely, locally widely and very closely spaced, rough and smooth, planar and undulating, tight to very narrow, clean, iron stained, calcite and chlorite coated, dipping (apparent) 10°-20°, 40°-50°, 60°-70° and 80°-90°.
							1.9							
				99	99	91	5.1		82.87					
							2.9		T2IOI					
							11.1							
							4.6		84.34					
				99	99	66								
									T2IOI					
							18.0							
		18:00												
17/09/2016									85.83					
19/09/2016		08:00		100	83	29			T2IOI					
							10.0							
							>20		86.18					
				100	100	64	6.9							
									T2IOI					
							>20							
									87.26					
				97	97	97	1.9							
									T2IOI					
							3.8							
									88.32					
				100	67	62	6.5							
									T2IOI					
									89.25					
				100	89	80	N.I. 2.0							
									T2IOI					
							12.8			-74.53	90.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
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- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
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DRILLHOLE RECORD

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CONTRACT No. GE/2013/37

HOLE No. **AID6**

SHEET 10 of 11

PROJECT Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)

METHOD Rotary	CO-ORDINATES	WORK ORDER NO. GE/2013/37.30B
MACHINE & No. G35	E 846735.15 N 813765.28	DATE from 31/08/2016 to 21/09/2016
FLUSHING MEDIUM WATER	ORIENTATION 164°/44°	SEABED LEVEL -12.01 mPD

Drilling Progress	Water Depth (m)	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Samples (No. Type Depth)	Reduced Level	Depth (m)	Grade	Description
		100	89	80			-74.53	90.00	II	As sheet 9 of 11.
		100	100	100	2.3	T2IO1 90.17				
					1.3					
	18:00									
19/09/2016 20/09/2016	08:00	100	96	88		T2IO1 91.50				
					4.4		-76.52	92.86	III	Moderately strong, dark grey, mottled green, striped white and spotted black, moderately decomposed, slightly chloritized lithic bearing coarse ash crystal TUFF with some calcite veins. Joints are medium, locally closely to very closely spaced, smooth planar and undulating, extremely narrow to narrow, calcite and chlorite coated, dipping (apparent) 0°-10°, 40°-50°, 60°-70° and 80°-90°.
		100	69	55	14.3	T2IO1 93.00				
					N.I.					
					18.5					
					2.9					
		100	97	93		T2IO1 94.50				
					9.3					
		100	100	86		T2IO1 96.03				
					5.0					
					1.8		-79.33	96.91	II	Strong, dark grey, spotted light green and white, slightly decomposed, slightly chloritized fine ash crystal TUFF. Joints are medium to closely, locally very closely spaced, smooth planar and undulating, extremely narrow to narrow, clean, chlorite and kaolin coated, dipping (apparent) 0°-10°, 20°-30° and 70°-80°.
					2.9					
					>20 7.7					
		100	100	36	12.2	T2IO1 97.47				
	18:00									
20/09/2016 21/09/2016	08:00	100	92	92	3.2	T2IO1 98.45				
					>20 3.6					
		100	100	70		T2IO1 99.35				
					10.8					
	18:00						-81.48	100.00		

Tests

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
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DRILLHOLE RECORD

Gammon

HOLE No. **AID6**

CONTRACT No. GE/2013/37

SHEET 11 of 11

PROJECT	Agreement No. CE 8/2015(WS) - First Stage of Desalination Plant at Tseung Kwan O - Investigation, Design and Construction Marine Ground Investigation (Inclined Drillholes)	
METHOD Rotary	CO-ORDINATES E 846735.15 N 813765.28	WORK ORDER NO. GE/2013/37.30B
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Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
21/09/2016									100.04	-81.48	100.00			
										-81.50	100.04			As sheet 10 of 11. End of hole at 100.04m depth.
										-88.42	110.00			

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Vibrocore sample
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