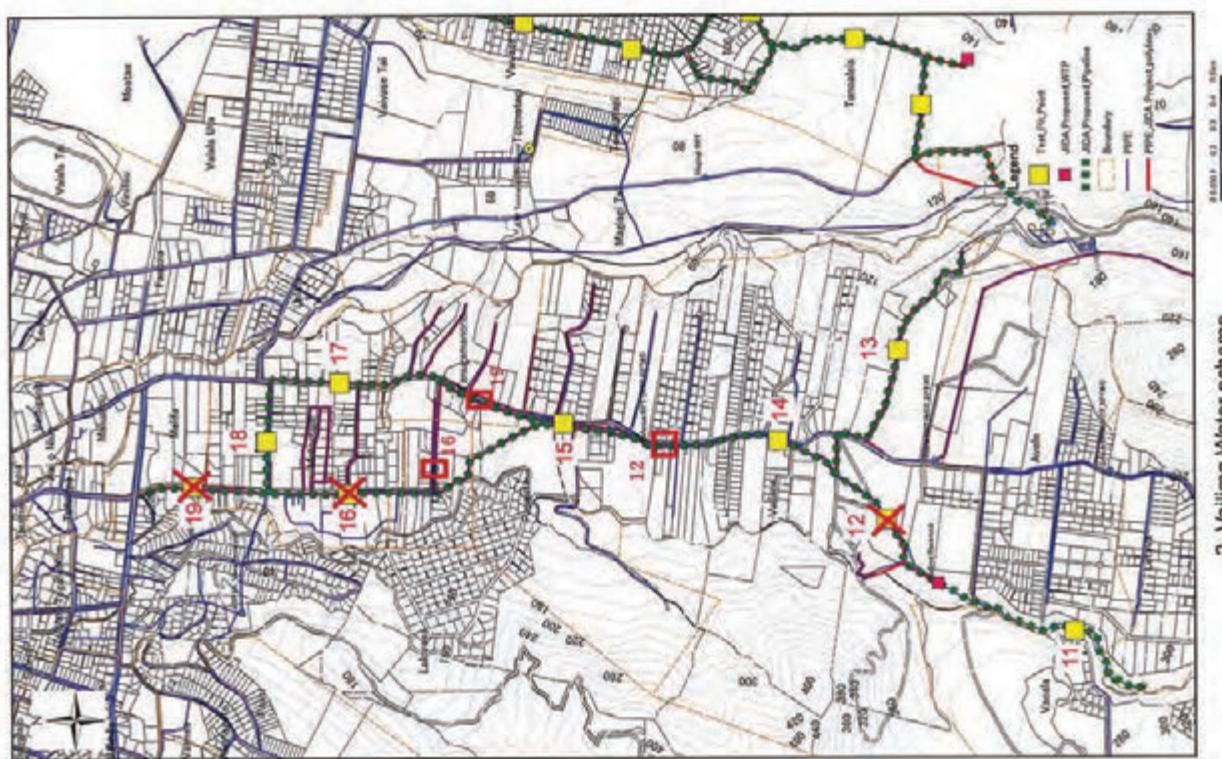
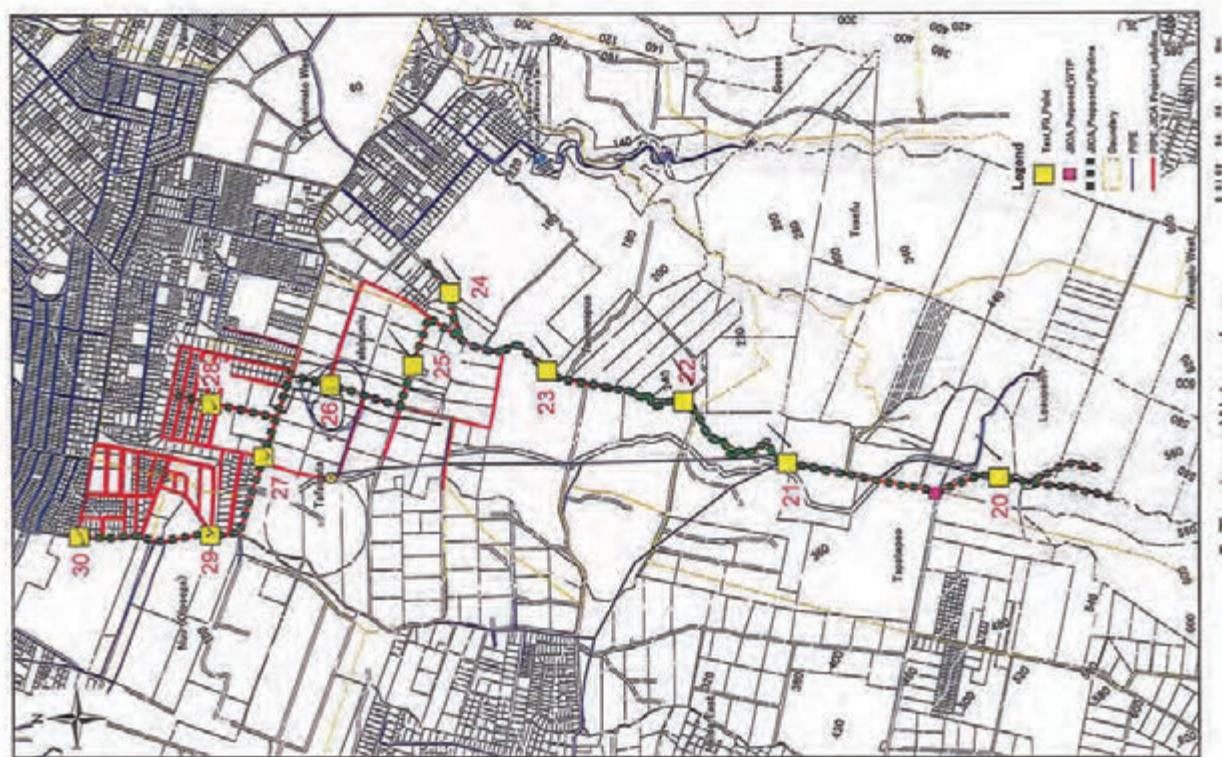


資料 9 試掘調查結果

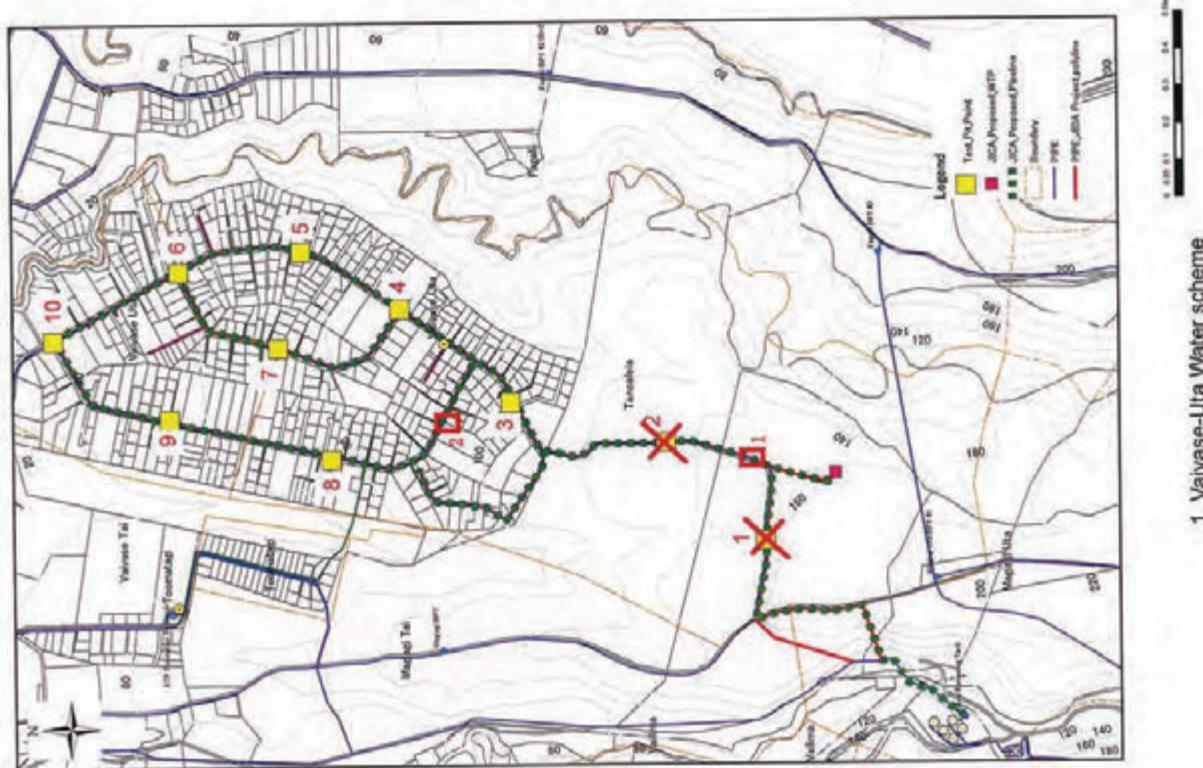
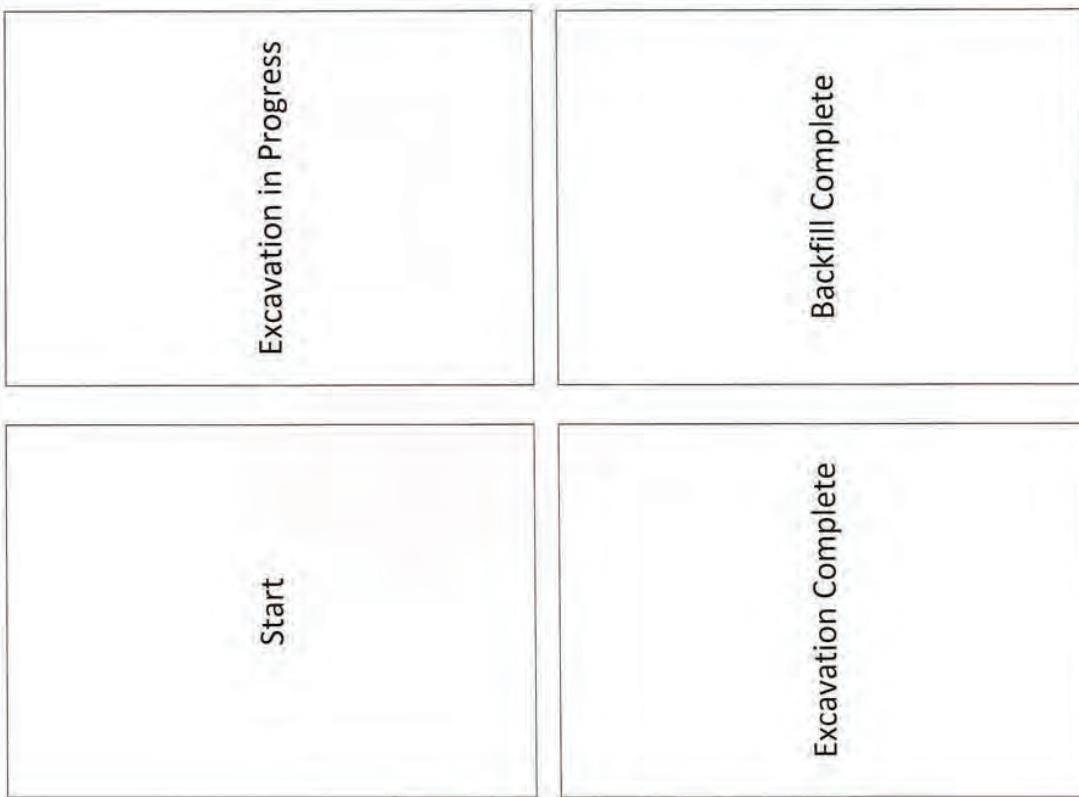


2. Valima Water scheme



3. Tapatapao Water scheme

Test Pit Investigation – Template



Test Pit Investigation - Water Scheme, Apia, Samoa

Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref.:	750556									
Client:	T&TI	Contractor:	Geotechnics Ltd											
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer														
TEST PIT INVESTIGATION LOG REPORT														
Project:	Samoa Water Treatment scheme		Sampled by:											
Location:	S 13° 52' 02.9" W 171° 44' 49.8"		Date sampled:											
Chainage:			Sampling method:											
House No.:			Sample condition:											
Pit No.:	1		Date recovered:											
Depth (mm)	Description	Estimated Field CBR												
0 - 400	Gravelly SAND with some silt; dark brown, mottled grey. Moist.	0.09	15	8	23									
400	Top of rock.	0.08	16	18	28									
400	End of pit.	0.07	13	16	33									
		0.06	14	18	39									
		0.05	15	18	45									
		0.04	16	18	50									
		0.03	17	18	50									
		0.02	18	18	50									
		0.01	19	18	50									
		0.00	20	18	50									
			0	1	2	3	4	5	6	7	8	9	10	Number of blows per 50mm
		Density By Nuclear Densometer												
Basecourse sample recovered at:		N/A (mm)	N/A (mm)	Subgrade										
Sub-base sample recovered at:		N/A (mm)	N/A (mm)	Basecourse	N/A									
Subgrade sample recovered at:		N/A (mm)	N/A (mm)	Subgrade	N/A									
Depth from ground surface to commencement of penetration:		0 (mm)	0 (mm)	Wet density (t/m^3):	N/A									
				Dry density (t/m^3):	N/A									
				Water content (%):	N/A									

COMMENTS:
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"
IANZ Accreditation does not apply
Tested by: LZ Date: 5/07/2013 Checked by: IW Date: 16/07/2013



TP 1, Apia site plan

Test Pit Investigation - Water Scheme, Apia, Samoa



TEST PIT INVESTIGATION LOG REPORT					
Project:	Samoa Water Treatment scheme	Sampled by:			
Site:	In and around Apia, Samoa	Job No.:	615478.178		
Client:	T&I	Contractor:	Geotechnics Ltd		
Location:	S 13° 51' 36.4" W 171° 44' 46.5"	Date sampled:			
Chainage:		Sampling method:			
House No.:		Sample condition:			
Pit No.:	2	Date Received:			
Depth (mm)	Description	Estimated Field CBR			
0 - 300	Silty GRAVEL with some sand; brown to dark brown, mottled grey. Moist.	0.09	3.5	8	13
300 - 900	Clayey SILT with trace of gravel; brown. Moist, Non-plastic.	0.08	18	23	28
900	White pipe, ~100mm diameter.	0.07	33	38	45
900	End of pit.	0.06	45	50	
		Depth (m)	0.05	0.04	0.03
		0.02	0.01	0.00	0.00
		Number of blows per 50mm	0	1	2

Density By Nuclear Densometer	
Basecourse	Subgrade
Wet density (t/m^3):	N/A
Dry density (t/m^3):	N/A
Water content (%):	N/A

COMMENTS:
 The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"
 IANZ Accreditation does not apply

Tested by: LZ Date: 4/07/2013 Checked by: IW Date: 16/07/2013

Test Pit Investigation - Water Scheme, Apia, Samoa

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Form No.: P7

Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref:	750956
Client:	T&T	Contractor:	Geotechnics Ltd		
Test Method Used: Nzs 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer					
TEST PIT INVESTIGATION LOG REPORT					
Project:	Samoa Water Treatment scheme		Sampled by:		
Location:	S 13°51'47.5"E W 171°44'49.3"S		Date sampled:		
Chainage:			Sampling method:		
House No.:			Sample condition:		
Pit No.:	3		Date Received:		
Depth (mm)	Description	Estimated Field CBR			
0 - 300	Sandy GRAVEL with trace of silt, dark brown, mottled grey. Moist.	3.6	8	13	18
300 - 700	Clayey SILT with some gravel, brown. Moist, Non-plastic.	13	23	33	45
700	Grey pipe, ~200mm diameter.	39	45	50	
700	End of pit.	0.06	0.08	0.08	0.08
		0.07	0.07	0.07	0.07
		0.08	0.08	0.08	0.08
		0.09	0.09	0.09	0.09
		0.10	0.10	0.10	0.10
		0.11	0.11	0.11	0.11
		0.12	0.12	0.12	0.12
		0.13	0.13	0.13	0.13
		0.14	0.14	0.14	0.14
		0.15	0.15	0.15	0.15
		0.16	0.16	0.16	0.16
		0.17	0.17	0.17	0.17
		0.18	0.18	0.18	0.18
		0.19	0.19	0.19	0.19
		0.20	0.20	0.20	0.20
		0.21	0.21	0.21	0.21
		0.22	0.22	0.22	0.22
		0.23	0.23	0.23	0.23
		0.24	0.24	0.24	0.24
		0.25	0.25	0.25	0.25
		0.26	0.26	0.26	0.26
		0.27	0.27	0.27	0.27
		0.28	0.28	0.28	0.28
		0.29	0.29	0.29	0.29
		0.30	0.30	0.30	0.30
		0.31	0.31	0.31	0.31
		0.32	0.32	0.32	0.32
		0.33	0.33	0.33	0.33
		0.34	0.34	0.34	0.34
		0.35	0.35	0.35	0.35
		0.36	0.36	0.36	0.36
		0.37	0.37	0.37	0.37
		0.38	0.38	0.38	0.38
		0.39	0.39	0.39	0.39
		0.40	0.40	0.40	0.40
		0.41	0.41	0.41	0.41
		0.42	0.42	0.42	0.42
		0.43	0.43	0.43	0.43
		0.44	0.44	0.44	0.44
		0.45	0.45	0.45	0.45
		0.46	0.46	0.46	0.46
		0.47	0.47	0.47	0.47
		0.48	0.48	0.48	0.48
		0.49	0.49	0.49	0.49
		0.50	0.50	0.50	0.50
		0.51	0.51	0.51	0.51
		0.52	0.52	0.52	0.52
		0.53	0.53	0.53	0.53
		0.54	0.54	0.54	0.54
		0.55	0.55	0.55	0.55
		0.56	0.56	0.56	0.56
		0.57	0.57	0.57	0.57
		0.58	0.58	0.58	0.58
		0.59	0.59	0.59	0.59
		0.60	0.60	0.60	0.60
		0.61	0.61	0.61	0.61
		0.62	0.62	0.62	0.62
		0.63	0.63	0.63	0.63
		0.64	0.64	0.64	0.64
		0.65	0.65	0.65	0.65
		0.66	0.66	0.66	0.66
		0.67	0.67	0.67	0.67
		0.68	0.68	0.68	0.68
		0.69	0.69	0.69	0.69
		0.70	0.70	0.70	0.70
		0.71	0.71	0.71	0.71
		0.72	0.72	0.72	0.72
		0.73	0.73	0.73	0.73
		0.74	0.74	0.74	0.74
		0.75	0.75	0.75	0.75
		0.76	0.76	0.76	0.76
		0.77	0.77	0.77	0.77
		0.78	0.78	0.78	0.78
		0.79	0.79	0.79	0.79
		0.80	0.80	0.80	0.80
		0.81	0.81	0.81	0.81
		0.82	0.82	0.82	0.82
		0.83	0.83	0.83	0.83
		0.84	0.84	0.84	0.84
		0.85	0.85	0.85	0.85
		0.86	0.86	0.86	0.86
		0.87	0.87	0.87	0.87
		0.88	0.88	0.88	0.88
		0.89	0.89	0.89	0.89
		0.90	0.90	0.90	0.90
		0.91	0.91	0.91	0.91
		0.92	0.92	0.92	0.92
		0.93	0.93	0.93	0.93
		0.94	0.94	0.94	0.94
		0.95	0.95	0.95	0.95
		0.96	0.96	0.96	0.96
		0.97	0.97	0.97	0.97
		0.98	0.98	0.98	0.98
		0.99	0.99	0.99	0.99
		1.00	1.00	1.00	1.00
Basecourse sample recovered at:		N/A (mm)	Density By Nuclear Densometer		
Sub-base sample recovered at:		N/A (mm)	Basecourse		
Subgrade sample recovered at:		N/A (mm)	Subgrade		
Depth from ground surface to commencement of penetration:		0 (mm)	Wet density (t/m³): Dry density (t/m³): Water content (%):		
Ianz Accreditation does not apply		0 (mm)	N/A N/A N/A		
Comments:	The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"				
Tested by:	LZ	Date: 5/07/2013	Checked by: IW	Date: 16/07/2013	



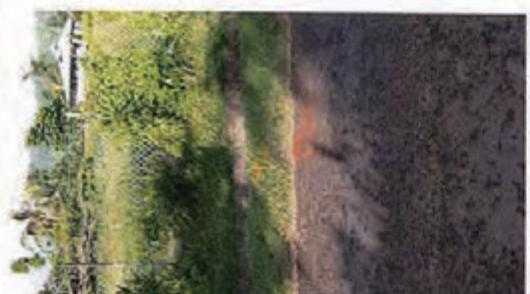
TP 3, as per site plan

TEST PIT INVESTIGATION LOG REPORT						Page 1 of 1	
Site:	In and around Apia, Samoa	Job No.:	615478-178	Client Ref.:	750956		
Client:	T&I	Contractor:	Geotechnics Ltd				
Test Method Used:	NZS 4402:1988 Test 6.5.2	Dynamic Cone Penetrometer					
Project:	Samma Water Treatment scheme	Sampled by:					
Location:	S 13° 51' 33.0" W 171° 44' 36.2"	Date sampled:					
Chainage:		Sampling method:					
House No.:		Sample condition:					
Pit No.:	4	Date Received:					
Depth (mm)	Description	Estimated Field CBR					
0 - 150	Sandy SILT with some gravel; dark brown. Moist, Non-plastic.	0.06	3.5	8	13	18	23
150 - 1200	Clayey SILT with minor gravel; brown. Moist, low plasticity.	0.06	28	33	38	45	50
1200	End of pit.	0.07					
		0.06					
		0.06					
		0.04					
		0.03					
		0.02					
		0.01					
		0.00	0	1	2	3	4
							5
							6
							7
							8
							9
							10
Basecourse sample recovered at:		Density By Nuclear Densometer					
Sub-base sample recovered at:		Subgrade					
Subgrade sample recovered at:		Basecourse					
Depth from ground surface to commencement of penetration:		Wet density (t/m ³):	N/A	N/A	N/A	N/A	N/A
		Dry density (t/m ³):	N/A	N/A	N/A	N/A	N/A
		Water content (%):	0	0	0	0	0
COMMENTS:							
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"							
JANZ Accreditation does not apply	LZ	Checked by:	IW	Date:	16/07/2013		
Tested by:		Date:	3/07/2013	Checked by:	IW	Date:	16/07/2013



HP 4, as per site plan

Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref.:	750956	Page 1 of 1	
Client:	T&TI	Contractor:	Geotechnics Ltd				
Test Method Used:	NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer						
TEST PIT INVESTIGATION LOG REPORT							
Project:	Samoa Water Treatment scheme		Sampled by:				
Location:	S 13° 51' 22.5" W 171° 44' 30.0"		Date sampled:				
Chainage:			Sampling method:				
House No.:			Sample condition:				
Pit No.:	5		Date Received:				
Depth (mm)	Description	Estimated Field CBR					
0 - 300	Silty GRAVEL with some sand; dark brown. Moist.	3.5	8	13	18	23	28
300 - 1200	Clayey SILT with trace of gravel; brown to dark brown. Moist; low plasticity.	33	38	43	48	53	58
1200	End of pit	0.07					
		0.08					
		0.06					
		0.04					
		0.03					
		0.02					
		0.01					
		0.00	0	1	2	3	4
			5	6	7	8	9
			10				
Density By Nuclear Densometer							
Basecourse sample recovered at:	N/A (mm)		Subgrade:				
Sub-base sample recovered at:	N/A (mm)		Basecourse:				
Subgrade sample recovered at:	N/A (mm)		Wet density (t/m ³):				
Depth from ground surface to commencement of penetration:	0 (mm)		Dry density (t/m ³):				
			Water content (%):				
COMMENTS:							
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"							
IANZ Accreditation does not apply							
Tested by:	17	Date:	3/07/2013	Checked by:	IW	Date:	16/07/2013



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Test Pit Investigation - Water Scheme, Apia, Samoa



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Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref:	750956		
Client:	T&T	Contractor:	Geotechnics Ltd				
Page 1 of 1							
TEST PIT INVESTIGATION LOG REPORT							
Project:	Samoa Water Treatment scheme						
Location:	S 13° 51' 13.8" W 171° 44' 32.9"						
Chainage:							
House No.:							
Pit No.:	6						
Depth (mm)	Description	Estimated Field CBR					
0 - 150	Gravelly SILT with minor sand; dark brown. Moist. Non-plastic.	0.06	3.5	8	13	18	
150 - 300	Gravelly SAND; brown, mottled grey. Moist.	0.08	23	28	33	39	
300 - 1200	Clayey SILT with trace of sand; brown. Wet, low plasticity.	0.07	45	50			
1200	End of pit.	0.09					
		0.05					
		0.04					
		0.03					
		0.02					
		0.01					
		0.00	0	1	2	3	
			4	5	6	7	
			8	9	10		
			Number of blows per 50mm				
Density By Nuclear Densometer							
Basecourse sample recovered at:	N/A (mm)	Subgrade					
Sub-base sample recovered at:	N/A (mm)		N/A				
Subgrade sample recovered at:	N/A (mm)		N/A				
Depth from ground surface to commencement of penetration:	0 (mm)		N/A				
Comments:	The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements" IANZ Accreditation does not apply						
Tested by:	LZ	Date:	3/07/2013	Checked by:	W	Date:	16/07/2013

TP 6, as per site plan

Test Pit Investigation - Water Scheme, Apia, Samoa



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P7, as per site plan

		Page 1 of 1													
Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref.:	700956										
Client:	T&T	Contractor:	Geotechnics Ltd												
TEST PIT INVESTIGATION LOG REPORT															
Project:	Samoa Water Treatment scheme			Sampled by:											
Location:	S 13° 51' 25.0" W 171° 44' 40.4"			Date sampled:											
Chainage:				Sampling method:											
House No.:				Sample condition:											
Pit No.:	7			Date Received:											
Depth (mm)	Description	Estimated Field CBR													
0 - 250	Silty GRAVEL with some sand; brown, mottled grey, moist.	0.00	3.5	8	13	18	23	28	33	38	43				
250 - 1200	Clayey SILT with trace of gravel; brown, moist, Non-plastic.	0.08													
1200	End of pit.	0.07													
		0.06													
		0.05													
		0.04													
		0.03													
		0.02													
		0.01													
		0.00	0	1	2	3	4	5	6	7	8				
											10				
											Number of blows per 50mm				
				Density By Nuclear Densimeter											
				Basecourse	Subgrade										
				N/A	N/A										
				N/A	N/A										
				N/A	N/A										
				Wet density (t/m³):	0										
				Dry density (t/m³):	0										
				Water content (%):	0										
COMMENTS:															
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"															
IANZ Accreditation does not apply															
Tested by:	I.Z.	Date:	5/07/2013	Checked by:	I.W.	Date:	16/07/2013								

Test Pit Investigation - Water Scheme, Apia, Samoa

Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref:	75056									
Client:	T&T	Contractor:	Geotechnics Ltd											
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer														
TEST PIT INVESTIGATION LOG REPORT														
Project:	Samoa Water Treatment scheme		Sampled by:											
Location:	S 13° 51' 22.8" W 171° 44' 48.1"		Date sampled:											
Chainage:			Sampling method:											
House No.:			Sample condition:											
Pit No.:	8		Date Received:											
Depth (mm)	Description	Estimated Field CBR												
		3.5	8	13	18	23	28	33	39	45	50			
0 - 200	Sandy GRAVEL with trace of silt; dark brown, mottled grey. Moist.	0.09												
200 - 350	Gravelly SILT with minor clay; brown, mottled grey. Moist, Non-plastic.	0.08												
350 - 800	Clayey SILT with trace of gravel; brown. Moist, Non-plastic.	0.07												
800	White pipe, ~100mm diameter.	0.06												
800	End of pit.	0.05												
		0.04												
		0.03												
		0.02												
		0.01												
		0.00	0	1	2	3	4	5	6	7	8	9	10	
			Number of blows per 50mm											
Basecourse sample recovered at:			Sub-base sample recovered at:			Subgrade sample recovered at:			Depth from ground surface to commencement of penetration:			Density By Nuclear Densimeter		
												Basecourse	Subcourse	Subgrade
												N/A	N/A	N/A
												N/A	N/A	N/A
												N/A	N/A	N/A

COMMENTS:
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR
AUSTRALIA (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"
IANZ Accreditation does not apply

Tested by: LZ Date: 4/07/2013 Checked by: IW Date: 16/07/2013



TP & TS per site plan

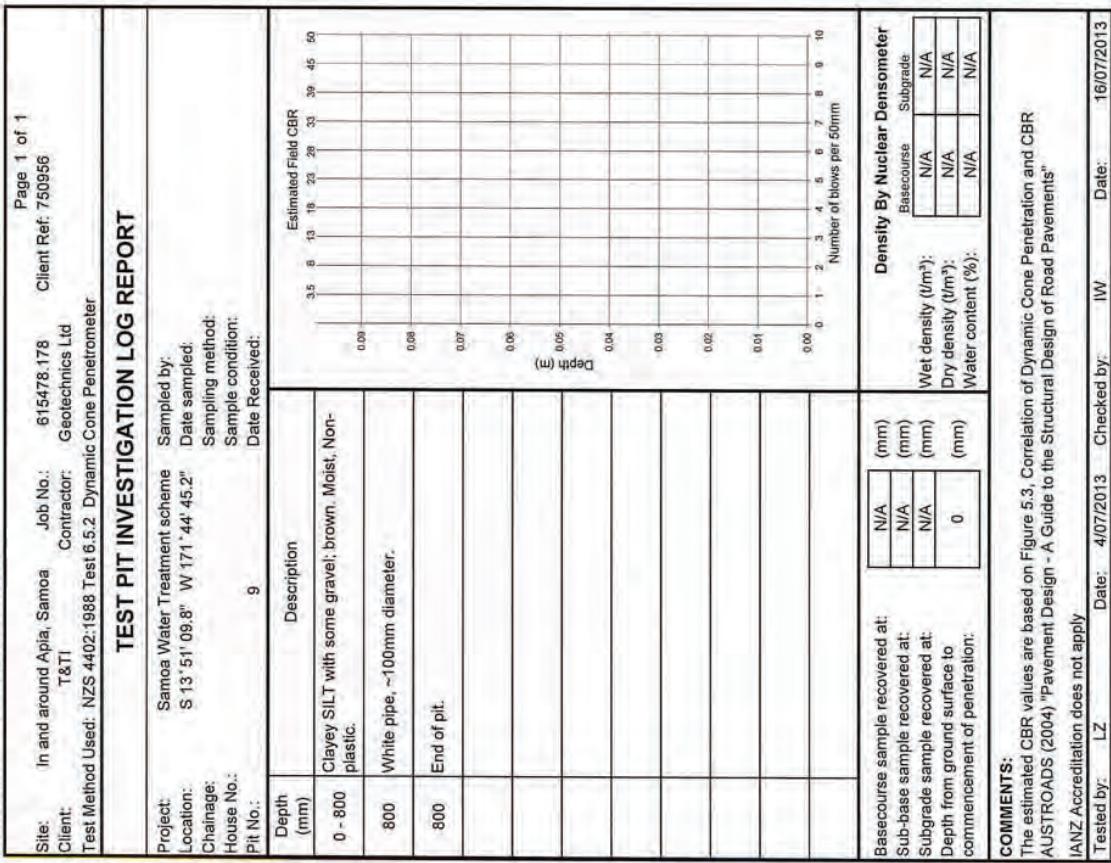
Test Pit Investigation - Water Scheme, Apia, Samoa

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Form No.: P7

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The image consists of two photographs. The top photograph shows a steep, eroded hillside with a metal strip installed across a gully to prevent further soil loss. The bottom photograph shows a grassed waterway with orange spray paint markings, likely indicating a path or specific area for maintenance.



Top 9: Best Car Side Mirrors

Top 9: Best Car Side Mirrors

資料 9-11

Test Pit Investigation - Water Scheme, Apia, Samoa



COMMENTS: The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetrometer and CBR (ASCE/SEI 2004) "Pavement Design - A Guide to the Structural Design of Road Pavements."

TP30_WK2014.indd

Test Pit Investigation - Water Scheme, Apia, Samoa



Site:	In and around Apia, Samoa	Job No.:	615478.178	Page 1 of 1
Client:	T&TI	Contractor:	Geotechnics Ltd	Client Ref: 750956
TEST PIT INVESTIGATION LOG REPORT				
Project:	Samoa Water Treatment scheme			Sampled by:
Location:	S 13° 52' 21.5" W 171° 46' 08.4"			Date sampled:
Chainage:				Sampling method:
House No.:				Sample condition:
Pit No.:	11			Date Recovered:
Depth (mm)	Description	Estimated Field CBR		
0 - 500	SILTY GRAVEL with some sand; dark brown. Moist;	3.5	8	13 18 23 28 33 39 45 50
500	Top of rock.	0.09		
500	End of pit.	0.08		
		0.07		
		0.06		
		0.05		
		0.04		
		0.03		
		0.02		
		0.01		
		0.00		
			0 1 2 3 4 5 6 7 8 9 10	Number of blows per 50mm
COMMENTS: The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTRADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements" IANZ Accreditation does not apply				
Tested by: LZ	Date: 30/07/2013	Checked by: IW	Date: 16/07/2013	Date: 16/07/2013

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Form No.: P7



TP 12 : 05' core with plan

		TEST PIT INVESTIGATION LOG REPORT											
Project:	Samoa Water Treatment scheme		Sampled by:	Estimated Field CBR									
Location:	S 13° 51' 28.8" W 171° 45' 42.5"		Date sampled:	3.6	8	13	18	23	28	33	39	45	
Client:	T&T	Contractor:	Geotechnics Ltd	Sampling method:	0.09	0.08	0.07	0.06	0.05	0.04	0.03	0.02	
Test Method Used:	NZS 4402:1988 Test 6.5.2	Dynamic Cone Penetrometer	Sample condition:	12	Date Received:	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
Depth (mm)	Description	Depth (m)	Estimated Field CBR	3.6	8	13	18	23	28	33	39	45	
0 - 100	Gravelly SILT with some sand; dark brown. Moist, Non-plastic.	0.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	
100 - 200	Demolition rubbish: reddish brown.	0.02	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
200 - 500	Sandy SILT with some gravel; brown. Moist, Non-plastic.	0.04	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	
500	2 steel pipes, ~40mm diameter.	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	
500	End of pit.	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	
		0.10	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	
		0.12	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	
		0.14	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
		0.16	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
		0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Density By Nuclear Densometer	
Basecourse	Subgrade
N/A	N/A
N/A	N/A
N/A	N/A
0	N/A

COMMENTS:

The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"

IANZ Accreditation does not apply

Tested by: LZ Date: 3/07/2013 Checked by: IW Date: 16/07/2013

Test Pit Investigation - Water Scheme, Apia, Samoa



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Form No.: P7



Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref:	750856						
Client:	T&T	Contractor:	Geotechnics Ltd								
Test Method Used:	NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer										
TEST PIT INVESTIGATION LOG REPORT											
Project:	Samoa Water Treatment scheme	Sampled by:									
Location:	S 13°52'02.8" W 171°45'26.8"	Date sampled:									
Chainage:		Sampling method:									
House No.:		Sample condition:									
Pit No.:	13	Date Received:									
Depth (mm)	Description	Estimated Field CBR									
0 - 100	Sandy SILT with minor clay; dark brown. Moist, Non-plastic.	3.5	8	13	18	23	28	33	39	45	50
100 - 200	Gravelly SAND; light grey. Dry.	0.09									
200 - 400	Gravelly SAND with minor silt; dark brown. Moist.	0.08									
400 - 1200	Clayey SILT with minor gravel; brown. Moist, Non-plastic.	0.07									
1200	End of pit.	0.06									
		0.05									
		0.04									
		0.03									
		0.02									
		0.01									
		0.00	0	1	2	3	4	5	6	7	8
			Number of blows per 50mm								
						Density By Nuclear Densimeter					
Basecourse sample recovered at:	(mm)	Basecourse	Subgrade								
Sub-base sample recovered at:	(mm)			N/A	N/A						
Subgrade sample recovered at:	(mm)			N/A	N/A						
Depth from ground surface to commencement of penetration:	(mm)			0	0						
						Density					
Basecourse sample recovered at:	(mm)	Wet density (t/m³);									
Sub-base sample recovered at:	(mm)	Dry density (t/m³);									
Subgrade sample recovered at:	(mm)	Water content (%);									
COMMENTS:						The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR					
AUSTRADDS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"						I/ANZ Accreditation does not apply					
Tested by:	LZ	Date:	3/07/2013	Checked by:	IW	Date:	16/07/2013				

Site:	In and around Apia, Samoa	Job No.:	615478-178	Client Ref.:	750956	Page 1 of 1					
Client:	T&T	Contractor:	Geotechnics Ltd								
Test Method Used:	NZS 4402:1988 Test 6.5.2	Dynamic Cone Penetrometer									
TEST PIT INVESTIGATION LOG REPORT											
Project:	Samoa Water Treatment scheme		Sampled by:								
Location:	S 13° 51' 44.6" W 171° 45' 41.6"		Date sampled:								
Chainage:			Sampling method:								
House No.:			Sample condition:								
Pit No.:	14		Date Received:								
Depth (mm)	Description	Estimated Field CBR									
		3.5	8	13	18	23	28	33	38	45	50
0 - 150	Gravelly SILT; dark brown, Moist, Non-plastic.	0.09									
150 - 350	Sandy GRAVEL with some silt; brownish grey, Moist.	0.08									
350 - 900	Sandy SILT with some gravel; brown. Moist, Non-plastic.	0.07									
900 - 950	Top of rock.	0.06									
950	End of pit.	0.05									
		0.04									
		0.03									
		0.02									
		0.01									
		0.00	0	1	2	3	4	5	6	7	
									8	9	
									10		
Basecourse sample recovered at:		Density By Nuclear Densometer									
Sub-base sample recovered at:		Basecourse	Subgrade								
Subgrade sample recovered at:		N/A	N/A								
Depth from ground surface to commencement of penetration:		N/A	N/A								
		N/A (mm)	N/A (mm)								
		N/A (mm)	N/A (mm)								
		0 (mm)	0 (mm)								
		Wet density (t/m ³); Dry density (t/m ³); Water content (%);									
COMMENTS:		The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR. AUSTRROADS (2004) 'Pavement Design - A Guide to the Structural Design of Road Pavements'									
Tested by:	LZ	Date:	3/07/2013	Checked by:	IW	Date:	16/07/2013				



資料 9-16

Test Pit Investigation - Water Scheme, Apia, Samoa



TP 15 : as per site plan

Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref:	750956
Client:	T&T	Contractor:	Geotechnics Ltd		
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer					
TEST PIT INVESTIGATION LOG REPORT					
Project:	Samoa Water Treatment scheme		Sampled by:		
Location:	S 13° 51' 23.6" W 171° 45' 39.7"		Date sampled:		
Chainage:			Sampling method:		
House No.:			Sample condition:		
Pit No.:	15		Date Received:		
Depth (mm)	Description	Estimated Field CBR	Depth (m)	Number of blows per 50mm	
0 + 300	Sandy SILT with some gravel; dark brown. Moist, Non-plastic.	0.08	0.00	0	
300 - 350	2 black pipes, ~20mm diameter.	0.06	0.01	1	
350	End of pit.	0.07	0.02	2	
		0.08	0.03	3	
		0.09	0.04	4	
		0.05	0.01	5	
		0.04	0.02	6	
		0.03	0.01	7	
		0.02	0.00	8	
		0.01	0.00	9	
		0.00	0.00	10	

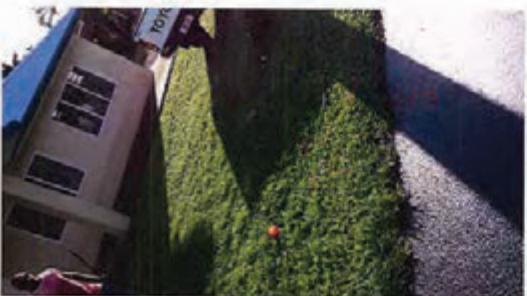
Density By Nuclear Densimeter	
Basecourse	Subgrade
N/A	N/A
N/A	N/A
N/A	N/A
0	N/A

COMMENTS:
 The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR
 AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"
 IANZ Accreditation does not apply

Tested by: LZ Date: 3/07/2013 Checked by: IW Date: 16/07/2013

Test Pit Investigation - Water Scheme, Apia, Samoa

Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref:	750956	
Client:	T&T	Contractor:	Geotechnics Ltd			
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer						
TEST PIT INVESTIGATION LOG REPORT						
Project:	Samoa Water Treatment scheme					
Location:	S 13° 51' 00.5" W 171° 45' 47.8"					
Chainage:						
House No.:						
Pit No.:	16					
Depth (mm)	Description	Estimated Field CBR				
0 - 300	Sandy SILT with some clay; dark brown, mottled black. Moist, Non-plastic.	3.5	8	13	18	23
300 - 400	Gravelly medium to coarse SAND; light brown. Dry, Non-plastic.	0.08	0.08	0.08	0.08	0.08
400 - 1000	Sandy SILT with some gravel; brown. Moist, low plasticity.	0.07	0.07	0.07	0.07	0.07
1000-1200	Sandy SILT with some gravel; dark brown. Wet, Non-plastic.	0.06	0.06	0.06	0.06	0.06
1200	End of pit.	0.04	0.04	0.04	0.04	0.04
		0.03	0.03	0.03	0.03	0.03
		0.02	0.02	0.02	0.02	0.02
		0.01	0.01	0.01	0.01	0.01
		0.00	0	1	2	3
						Number of blows per 50mm
						4 5 6 7 8 9 10
						Density By Nuclear Densometer
Basecourse sample recovered at:	N/A (mm)	Subgrade sample recovered at:	N/A (mm)	Basecourse	Subgrade	
Sub-base sample recovered at:	N/A (mm)	Subgrade sample recovered at:	N/A (mm)	N/A	N/A	
Subgrade sample recovered at:	N/A (mm)	Subgrade sample recovered at:	N/A (mm)	N/A	N/A	
Depth from ground surface to commencement of penetration:	0 (mm)	Wet density (t/m³)	0 (mm)	Water content (%)	N/A	
	Dry density (t/m³)					
	Water content (%)					
COMMENTS:						
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements" IANZ Accreditation does not apply						
Tested by:	LZ	Date:	3/07/2013	Checked by:	W	
		Date:		Date:	16/07/2013	



TP 16 - At test site plan



資料 9-19



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Test Pit Investigation - Water Scheme, Apia, Samoa


Site:	In and around Apia, Samoa	Job No.:	615478.178	Page 1 of 1
Client:	T&T	Contractor:	Geotechnics Ltd	Client Ref: 750956
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer				
TEST PIT INVESTIGATION LOG REPORT				
Project:	Samoa Water Treatment scheme		Sampled by:	
Location:	S 13° 53' 08.2" E 171° 49' 51.2"		Date sampled:	
Chainage:			Sampling method:	
House No.:			Sample condition:	
Pit No.:	20		Date Received:	
Depth (mm)	Description		Estimated Field CBR	
0 - 100	Sandy SILT with some gravel; dark brown, mottled white. Wet. Non-plastic.	0.08	1.5	8
100 - 300	Sandy SILT with some gravel; brown, mottled grey. Moist, Non-plastic.	0.08	1.3	18
300	Top of rock.	0.07	1.2	23
300	End of pit.	0.08	1.1	33
		0.05	1.0	39
		0.04	0.9	45
		0.03	0.8	50
		0.02		
		0.01		
		0.00	0	
			1	Number of blows per 50mm
			2	
			3	
			4	
			5	
			6	
			7	
			8	
			9	
			10	
			Density By Nuclear Densometer	
			Basecourse	Subgrade
			N/A	N/A
			N/A	N/A
			Wet density (t/m ³):	
			Dry density (t/m ³):	
			Water content (%):	
COMMENTS:				
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR				
AUSTRROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"				
IANZ Accreditation does not apply				
Tested by:	LZ	Date:	4/07/2013	Checked by:
			W	Date:
				16/07/2013

TP 20 - 36 per site plan

Test Pit Investigation - Water Scheme, Apia, Samoa


Site: In and around Apia, Samoa Job No.: 615478.178 Client Ref: 750956
 Client: T&T Contractor: Geotechnics Ltd
 House No.:
 Pit No.: 21
 Test Method Used: NZS 4402:1998 Test 6.5.2 Dynamic Cone Penetrometer

Page 1 of 1
Client Ref: 750956

TEST PIT INVESTIGATION LOG REPORT

Project:	Samoa Water Treatment scheme	Sampled by:	
Location:	S 13° 52' 28.5" E 171° 49' 47.7"	Date sampled:	
Chainage:		Sampling method:	
House No.:		Sample condition:	
Pit No.:	21	Date Received:	
Depth (mm)	Description	Estimated Field CBR	
0 - 200	Gravelly SILT with some sand; brown. Moist, Non-plastic.	0.08	
200 - 1200	Clayey SILT with some gravel; brown. Moist to wet, low plasticity.	0.08	
1200	End of pit.	0.07	
		0.06	
		0.05	
		0.04	
		0.03	
		0.02	
		0.01	
		0.00	
			Number of blows per 50mm
			0 1 2 3 4 5 6 7 8 9 10

COMMENTS:

The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements".

(ANZ Accreditation does not apply)

Tested by: LZ Date: 4/07/2013 Checked by: IW Date: 16/07/2013

Test Pit Investigation - Water Scheme, Apia, Samoa

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Form No.: P7.



Page 1 of 1

750956

Client Ref:

TEST PIT INVESTIGATION LOG REPORT

Project:	Samoa Water Treatment scheme	Sampled by:		Estimated Field CBR
Location:	S 13° 51' 56.1" W 171° 49' 32.7"	Date sampled:		.35 .4 .5 .6 .7 .8 .9 .10
Chainage:		Sampling method:		.36 .4 .5 .6 .7 .8 .9 .10
House No.:		Sample condition:		.37 .4 .5 .6 .7 .8 .9 .10
Pit No.:	22	Date Received:		.38 .4 .5 .6 .7 .8 .9 .10
Depth (mm)	Description			
0 - 150	Sandy SILT with some gravel; brown. Moist, Non-plastic.	Sampled at:	0.08	
150 -1000	Clayey SILT with trace of gravel; brown. Moist, low plasticity.	Sampled at:	0.08	
1000	Top of rock.	Sampled at:	0.07	
1000	End of pit.	Sampled at:	0.06	
		Depth (E)	0.05	
		Depth (E)	0.04	
		Depth (E)	0.03	
		Depth (E)	0.02	
		Depth (E)	0.01	
		Depth (E)	0.00	
			0 1 2 3 4 5 6 7 8 9 10	Number of blows per 50mm

Basecourse sample recovered at:
Sub-base sample recovered at:
Subgrade sample recovered at:
Depth from ground surface to commencement of penetration:

Density By Nuclear Densometer	
Basecourse	Subgrade
Wet density (t/m³):	N/A
Dry density (t/m³):	N/A
Water content (%):	N/A

COMMENTS:

The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"

IANZ Accreditation does not apply

Tested by: LZ Date: 4/07/2013 Checked by: IW Date: 16/07/2013

TP 72, as per site plan

Test Pit Investigation - Water Scheme, Apia, Samoa



TEST PIT INVESTIGATION LOG REPORT				
Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref.:
Client:	T&T	Contractor:	Geotechnics Ltd	
Chainage:	S 13° 51' 26.1" W 171° 43' 22.2"	Sampling method:		
House No.:		Sample condition:		
Pit No.:	23	Date Received:		
Project:	Samoa Water Treatment scheme	Sampled by:		Estimated Field CBR
Location:	S 13° 51' 26.1" W 171° 43' 22.2"	Date sampled:		.5 .6 .7 .8 .9 .10 .11 .12 .13 .14 .15 .16 .17 .18 .19 .20 .21 .22 .23 .24 .25 .26 .27 .28 .29 .30 .31 .32 .33 .34 .35 .36 .37 .38 .39 .40 .41 .42 .43 .44 .45 .46 .47 .48 .49 .50
Depth (mm)	Description			
0 - 150	Clayey Silt with minor sand; dark brown. Moist, Non-plastic.	0.09		
150 - 300	Clayey Silt with some gravel; brown. Moist, Non-plastic.	0.08		
300 - 1200	Clayey Silt with trace of gravel; brown. Moist, Non-plastic.	0.07		
1200	End of pit.	0.06		
		Depth (m)		
		0.05		
		0.04		
		0.03		
		0.02		
		0.01		
		0.00		
				Number of blows per 50mm
				0 1 2 3 4 5 6 7 8 9 10
COMMENTS:				
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"				
IANZ Accreditation does not apply				
Tested by:	LZ	Date:	4/07/2013	Checked by:
			IW	Date:

TP 23 : as per site plan

P:615478.15478.1780 - TT Samoa - Richard Working Material Test Pits Draft Report\TP23.xls

Test Pit Investigation - Water Scheme, Apia, Samoa



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Form No.: P7

Site:	In and around Apia, Samoa	Job No.:	615478-178	Page 1 of 1
Client:	T&T	Contractor:	Geotechnics Ltd	Client Ref: 750956
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer				
TEST PIT INVESTIGATION LOG REPORT				
Project:	Samoa Water Treatment scheme			
Location:	S 13° 51' 15.7" W 171° 49' 15.3"			
Chainage:				
House No.:				
Pit No.:	24			
Depth (mm)	Description	Sampled by:	Date sampled:	Estimated Field CBR
0 - 500	Sandy GRAVEL with some silt; dark brown, mottled grey. Moist.			0.08
500	Top of rock.			0.08
500	End of pit.			0.07
				0.06
				0.05
				0.04
				0.03
				0.02
				0.01
				0.00
COMMENTS:				
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements" IANZ Accreditation does not apply				
Tested by: LZ	Date: 4/07/2013	Checked by: IW	Date: 16/07/2013	



TP 24 - 06 pit site plan

Test Pit Investigation - Water Scheme, Apia, Samoa



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Form No.: P7



Site:	In and around Apia, Samoa	Job No.:	615478.178	Page 1 of 1
Client:	T&T	Contractor:	Geotechnics Ltd	Client Ref: 750956
Test Method Used:	NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer			
TEST PIT INVESTIGATION LOG REPORT				
Project:	Samoa Water Treatment scheme	Sampled by:		
Location:	S 13° 51' 07.5" W 171° 49' 22.4"	Date sampled:		
Chainage:		Sampling method:		
House No.:		Sample condition:		
Pit No.:	25	Date Received:		
Depth (mm)	Description		Estimated Field CBR	
0 - 200	Sandy GRAVEL with some silt; dark brown, mottled grey. Moist, Non-plastic.	0.00	14	18
200 - 900	Clayey SILT with minor gravel; brown. Moist, Non-plastic.	0.08	16	20
900	Top of rock.	0.07	22	28
900	End of pit.	0.06	33	39
		0.05	45	50
		0.04		
		0.03		
		0.02		
		0.01		
		0.00	1	2
			3	4
			5	6
			7	8
			9	10
			Number of blows per 50mm	
Comments:				
<p>The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"</p> <p>IANZ Accreditation does not apply</p>				
Tested by:	LZ	Date:	4/07/2013	Checked by:
			W	Date:
				16/07/2013

TP 25, as per site plan

Test Pit Investigation - Water Scheme, Apia, Samoa



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Form No.: P7



TEST PIT INVESTIGATION LOG REPORT		Page 1 of 1												
Site:	In and around Apia, Samoa	Job No.:	615478.178	Client Ref.:	750956									
Client:	T&I	Contractor:	Geotechnics Ltd.											
Test Method Used:	NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer													
Project:	Samoa Water Treatment scheme	Sampled by:												
Location:	S 13° 50' 45.2"E W 171° 49' 28.6"S	Date sampled:												
Chainage:		Sampling method:												
House No.:		Sample condition:												
Pit No.:	26	Date Received:												
Depth (mm)	Description													
0 - 600	Clayey SILT with trace of gravel; brown. Moist, Non-plastic.	Estimated Field CBR	35	38	43	48	53	58	63	68	73	78		
600	Top of rock.		0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08		
600	End of pit.		0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07		
			0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06		
			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
			0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04		
			0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03		
			0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02		
			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
			0	1	2	3	4	5	6	7	8	9		
Basecourse sample recovered at:			N/A	(mm)	Density By Nuclear Densometer									
Sub-base sample recovered at:			N/A	(mm)	Basecourse		Subgrade							
Subgrade sample recovered at:			N/A	(mm)	Wet density (t/m³);		N/A	N/A						
Depth from ground surface to commencement of penetration:			0	(mm)	Dry density (t/m³);		N/A	N/A						
(IANZ Accreditation does not apply)					Water content (%):		N/A	N/A						
COMMENTS:														
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR														
AUSTRROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"														
Tested by:	LZ	Date:	4/07/2013	Checked by:	W	Date:	16/07/2013							
TP 26 as per site plan														



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Test Pit Investigation - Water Scheme, Apia, Samoa



Site:	In and around Apia, Samoa	Job No.:	615478.178	Page 1 of 1
Client:	T&T	Contractor:	Geotechnics Ltd	Client Ref: 750956
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer				
TEST PIT INVESTIGATION LOG REPORT				
Project:	Samoa Water Treatment scheme		Sampled by:	
Location:	S 13° 50' 31.8"E W 171° 49' 53.9"S		Date sampled:	
Chainage:			Sampling method:	
House No.:			Sample condition:	
Pit No.:	27		Date Received:	
Depth (mm)	Description	Estimated Field CBR		
0 - 300	Silty GRAVEL with minor sand; brown, mottled grey, moist, Non-plastic.	14	8	13 18 23 28 33 36 46 50
300 - 900	Clayey SILT with some gravel; brown. Moist to wet, Non-plastic.	0.06	0.08	
900	Top of rock.	0.07	0.07	
900	End of pit.	0.06	0.06	
		0.06	0.06	
		0.04	0.04	
		0.03	0.03	
		0.02	0.02	
		0.01	0.01	
		0.00	0.00	0 1 2 3 4 5 6 7 8 9 10 Number of blows per 50mm
		Density By Nuclear Densometer		
Basecourse sample recovered at:		N/A	Subgrade	
Sub-base sample recovered at:		N/A	Basecourse	N/A
Subgrade sample recovered at:		N/A	Subgrade	N/A
Depth from ground surface to commencement of penetration:		0	Wet density (t/m^3)	N/A
		0	Dry density (t/m^3)	N/A
		0	Water content (%)	N/A

COMMENTS:

The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"

IANZ Accreditation does not apply

Tested by: LZ Date: 4/07/2013 Checked by: IW Date: 16/07/2013

TP 27 as per site plan

Test Pit Investigation - Water Scheme, Apia, Samoa



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Form No.: P7



TP 28, As per site photo

		Page 1 of 1														
		Client Ref: 750956														
Site:	In and around Apia, Samoa	Job No.:	615478.178		Client Ref: 750956											
Client:	T&T	Contractor:	Geotechnics Ltd													
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer																
TEST PIT INVESTIGATION LOG REPORT																
Project:	Samoa Water Treatment scheme		Sampled by:			Estimated Field CBR	1.5	8	13	18	23	28	33	39	45	50
Location:	S 13° 50' 26.9" W 171° 49' 44.2"		Date sampled:			0.08										
Chainage:			Sampling method:			0.08										
House No.:			Sample condition:			0.08										
Pit No.:	28		Date Received:			0.08										
Depth (mm)	Description	Estimated Field CBR	1.5	8	13	18	23	28	33	39	45	50				
0 - 100	Clayey SILT with minor gravel; dark brown. Moist. Non-plastic.	0.08														
100 - 600	Clayey SILT with some gravel; brown. Moist. Non-plastic.	0.08														
600 - 700	Top of rock.	0.07														
700	End of pit.	0.06														
		0.05														
		0.04														
		0.03														
		0.02														
		0.01														
		0.00	0	1	2	3	4	5	6	7	8	9	10			
		Density By Nuclear Densometer														
		Basecourse Subgrade														
		Basecourse		Subgrade		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Wet density (t/m³):		Dry density (t/m³):												
		Water content (%):														
COMMENTS:																
The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR																
AUSTRALIA (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"																
IANZ Accreditation does not apply																
Tested by:	LZ	Date:	4/07/2013		Checked by:	IW	Date:	16/07/2013								

Test Pit Investigation - Water Scheme, Apia, Samoa



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Form No.: P7



Site:	In and around Apia, Samoa	Job No.:	615478.178	Page 1 of 1
Client:	T&T	Contractor:	Geotechnics Ltd	Client Ref: 750956
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer				
TEST PIT INVESTIGATION LOG REPORT				
Project:	Samoa Water Treatment scheme	Sampled by:		
Location:	S 13° 50' 23.7" W 171° 50' 04.0"	Date sampled:		
Chainage:		Sampling method:		
House No.:		Sample condition:		
Pit No.:	29	Date Received:		
Depth (mm)	Description	Estimated Field CBR		
0 - 800	Clayey Silt with trace of gravel; brown. Moist to wet. Non-plastic.	0.09	13	33
800	White pipe, ~100mm diameter.	0.08	18	39
800	End of pit.	0.07	23	45
		0.06	33	50
		0.05		
		0.04		
		0.03		
		0.02		
		0.01		
		0.00		
			0	Number of blows per 50mm
			1	2
			3	4
			5	6
			7	8
			9	10
		Density By Nuclear Densometer		
Basecourse sample recovered at:		N/A (mm)	Wet density (t/m³):	
Sub-base sample recovered at:		N/A (mm)	Dry density (t/m³):	
Subgrade sample recovered at:		N/A (mm)	Water content (%):	
Depth from ground surface to commencement of penetration:		0 (mm)		
COMMENTS: The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements" IANZ Accreditation does not apply				
Tested by:	LZ	Date:	4/07/2013	Checked by:
			IW	Date:
				16/07/2013

TP 25, as per One Plan

Test Pit Investigation - Water Scheme, Apia, Samoa

 Site: In and around Apia, Samoa
 Client: T&T
 Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

 Job No.: 615478.178
 Contractor: Geotechnics Ltd

Client Ref: 750956

House No.:

Pit No.:

30

TEST PIT INVESTIGATION LOG REPORT

Project:	Samoa Water Treatment scheme	Sampled by:	
Location:	S 13° 49' 53.3"E W 171° 50' 03.3"S	Date sampled:	
Chainage:		Sampling method:	
House No.:		Sample condition:	
Pit No.:		Date Received:	
Depth (mm)	Description	Estimated Field CBR	Number of blows per 50mm
0 - 500	Gravelly SIL-T with trace of clay, brown. Moist, Non-plastic.	0.06	1 2 3 4 5 6 7 8 9 10
500	Top of rock.	0.08	
500	End of pit.	0.07	
		0.06	
		0.05	
		0.04	
		0.03	
		0.02	
		0.01	
		0.00	

Basecourse sample recovered at:
 Sub-base sample recovered at:
 Subgrade sample recovered at:
 Depth from ground surface to commencement of penetration:

Basecourse	Subgrade
N/A	N/A
N/A	N/A
N/A	N/A
0	Water content (%)

Density By Nuclear Densometer

Basecourse

Subgrade

Wet density (t/m³):

Dry density (t/m³):

Water content (%):

COMMENTS:

The estimated CBR values are based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSROADS (2004) "Pavement Design - A Guide to the Structural Design of Road Pavements"

IANZ Accreditation does not apply

Tested by: LZ Date: 4/07/2013 Checked by: IW Date: 16/07/2013

TP 30, as per site plan

資料 10 地盤調查結果

資料 10

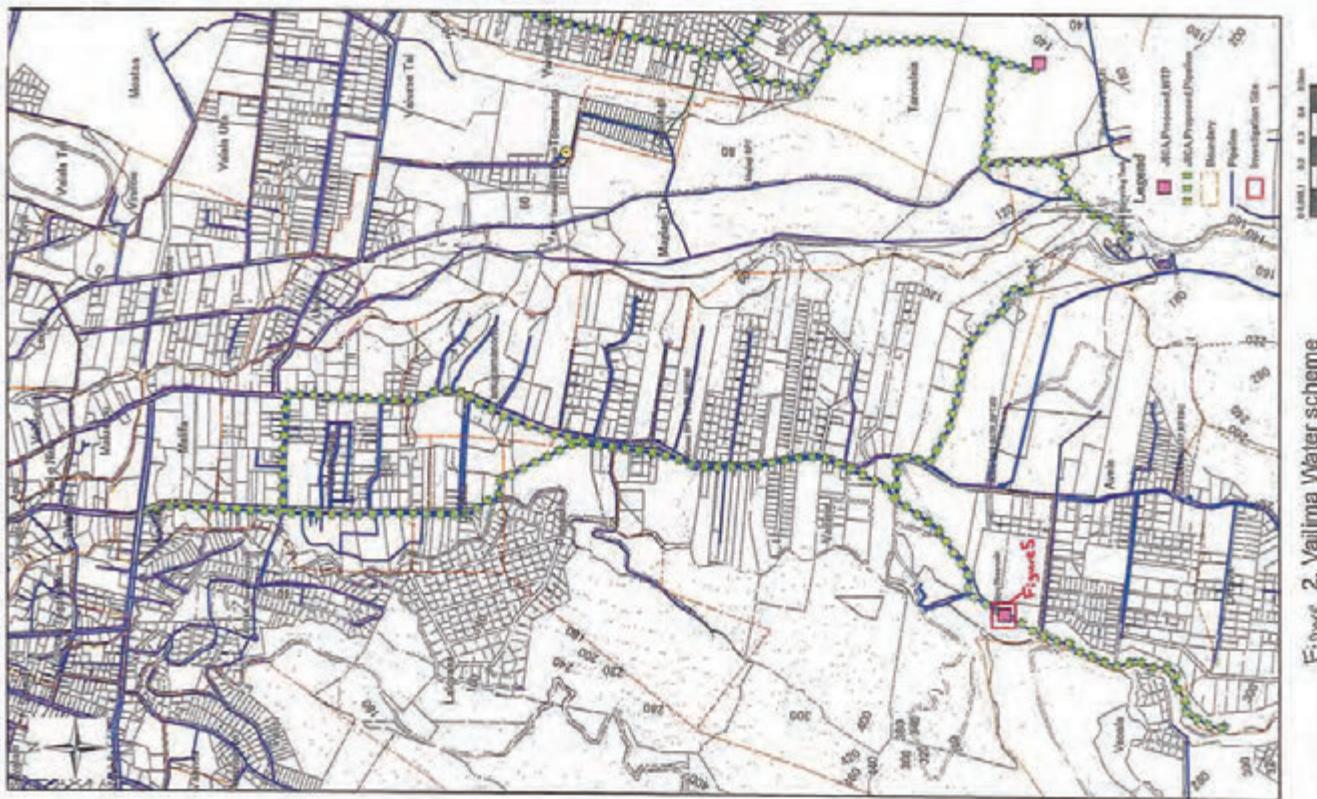


Figure 2. Vailima Water scheme

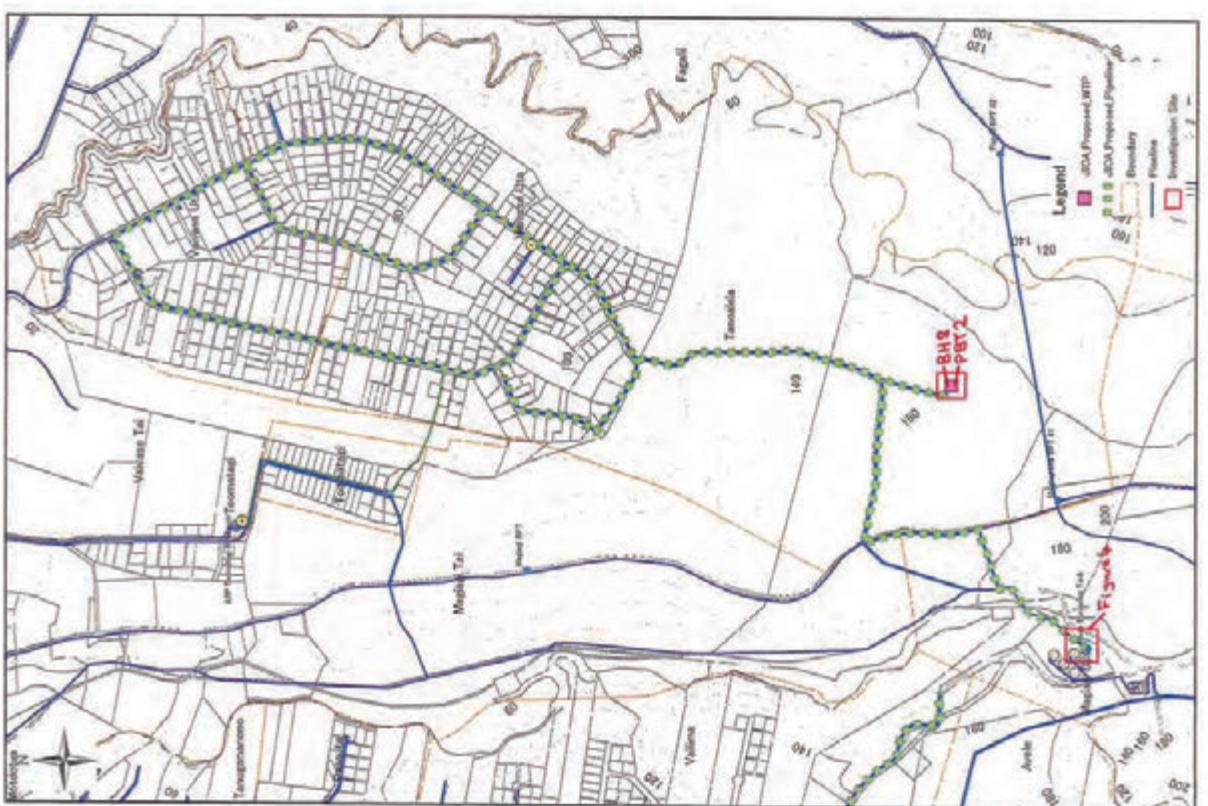


Figure 1. Vaiava-Uta Water scheme

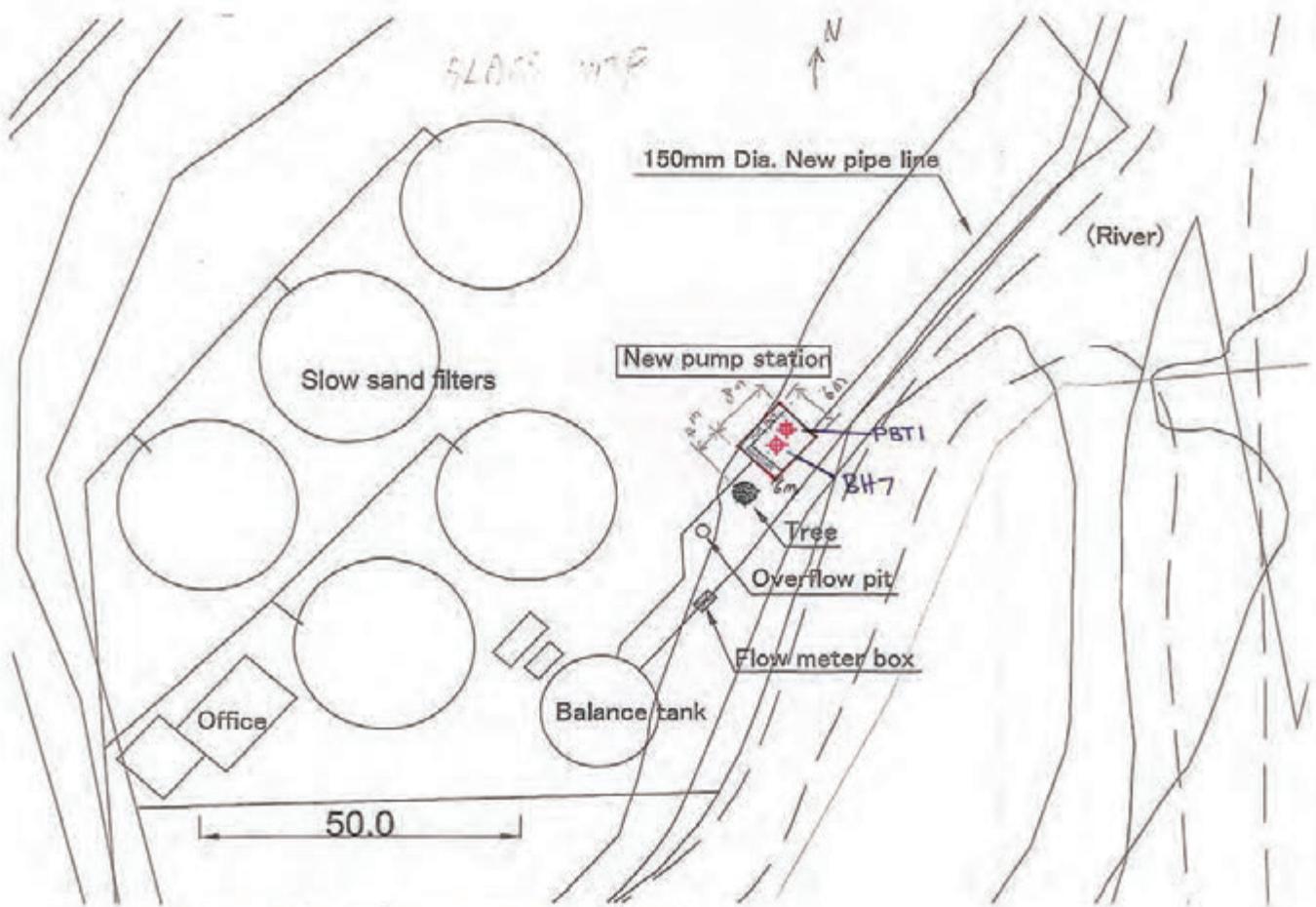


Figure 4: Existing Alaoa water treatment plant

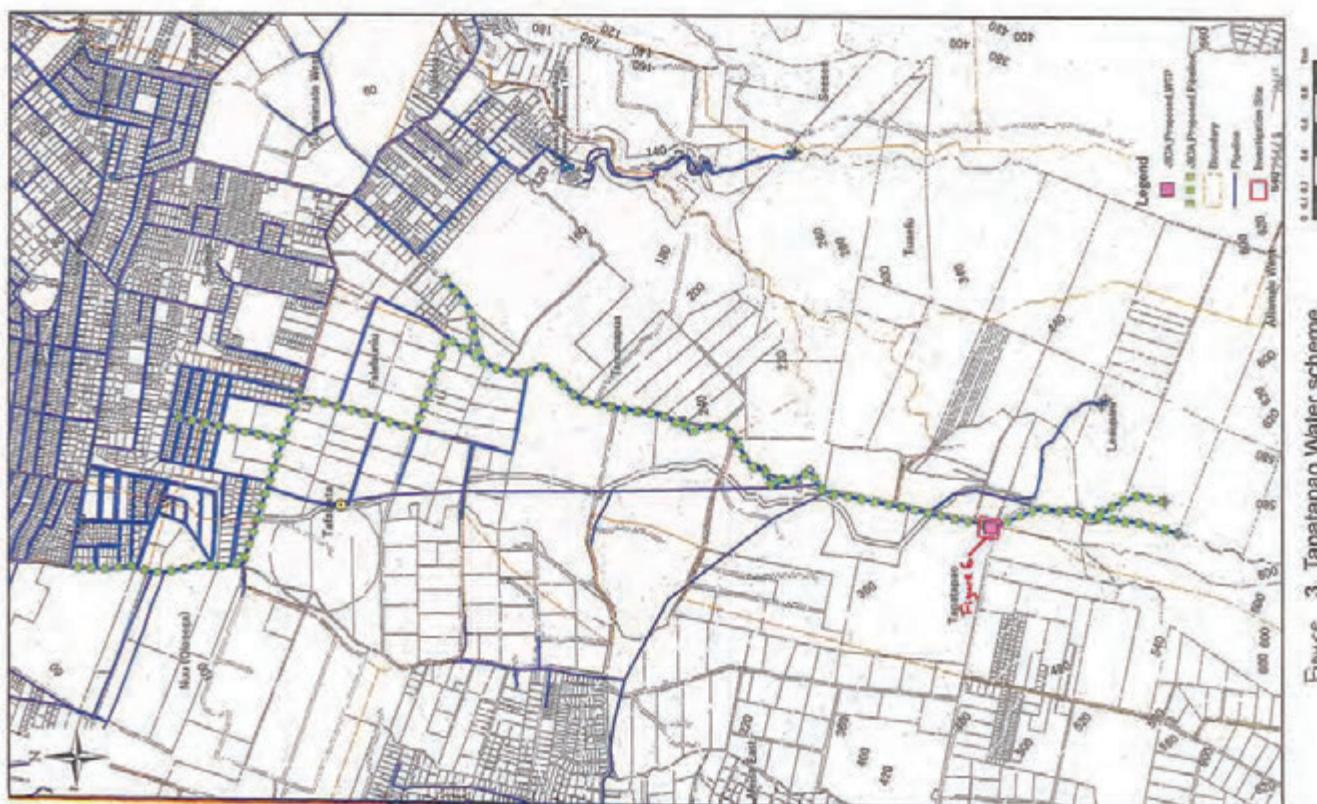


Figure 3. Tapatapao Water scheme

LALOANEA RD

Figure 6: Proposed Tapatapo Water Treatment Plant

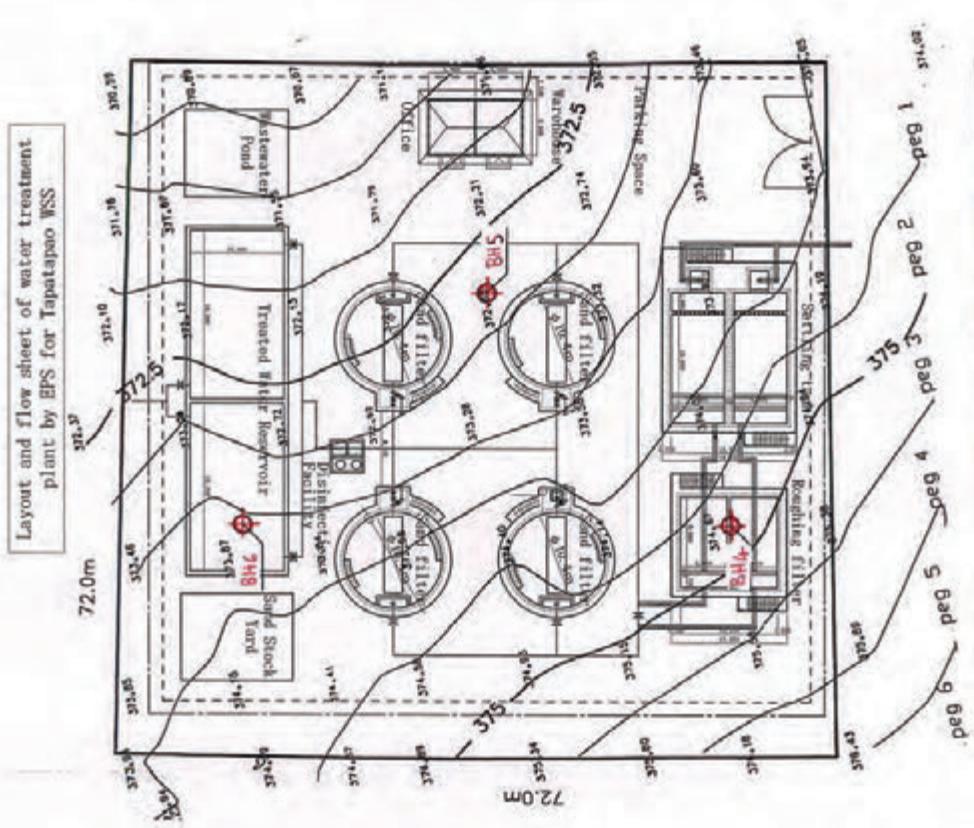
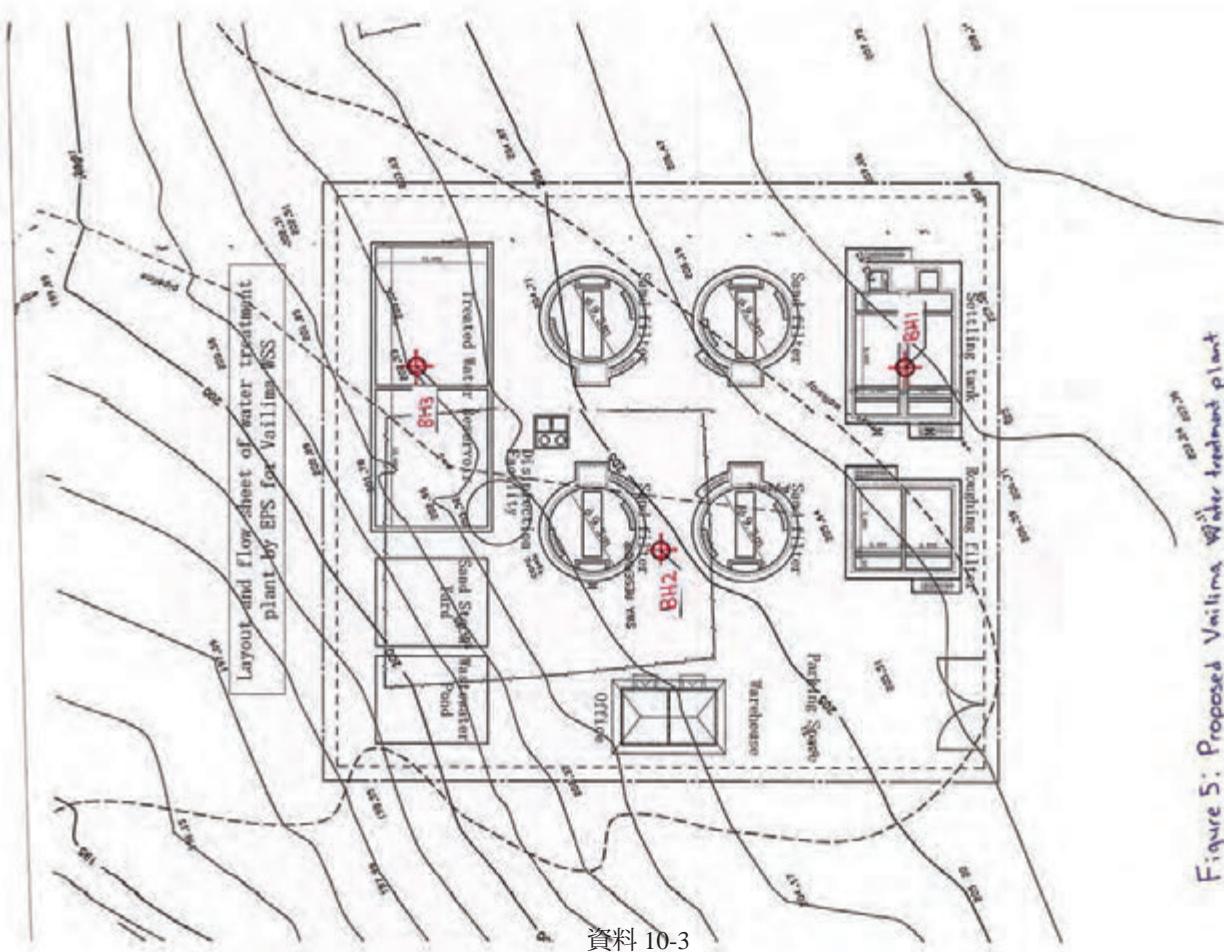


Figure 5: Proposed Vailima Water treatment plant



資料 10-3



TONKIN & TAYLOR LTD

BOREHOLE LOG

BOREHOLE No.BH2
Hole Location: Vailima

SHEET 1 OF 1

PROJECT: Samoa Water		LOCATION: Samoa		JOB No: 750566	
CO-ORDINATES: -13°52'26.90"N -171°49'56.10"E		HOLE STARTED: 8/8/13 HOLE FINISHED: 9/8/13		HOLE STARTED: 9/8/13 HOLE FINISHED: 9/8/13	
R.L.: DATUM:		DRILLED BY: MNRE LOGGED BY: LZ		DRILLED BY: MNRE LOGGED BY: LZ	
GEOLOGICAL					
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION.		TESTS			
VOLCANIC GRAVEL AND ASH		CASING			
SOL DESCRIPTION Sub-type minor components, plasticity or particle size, colour. ROCK DESCRIPTION Sub-type particle size, colour. Sub-class: Minor components. Defects: Type, infiltration, thickness, fragility, filling.		100 100 0 100 100 0	HQ3 HQ3 SPT HQ3 SPT HQ3	METHOD CORER RECOVERY (%)	FLUID LOSS WATER MATERIAL CASSING TESTS SAMPLES
ENGINEERING DESCRIPTION					
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION.		TESTS			
VOLCANIC GRAVEL AND ASH		CASING			
SOL DESCRIPTION Sub-type minor gravel, brown, soil ROCK DESCRIPTION Sub-type particle size, colour. Sub-class: Minor components. Defects: Type, infiltration, thickness, fragility, filling.		100 100 0 100 100 0	HQ3 HQ3 SPT HQ3 SPT HQ3	METHOD CORER RECOVERY (%)	FLUID LOSS WATER MATERIAL CASSING TESTS SAMPLES
SOIL DESCRIPTION					
SOL TYPE, MINOR COMPONENTS, PLASTICITY OR PARTICLE SIZE, COLOUR.					
SUB-SURFACE					
DEPTH (m)	0.00	0.25	0.50	0.75	1.00
COMPRESSION STRENGTH (kgf)	2000	2000	2000	2000	2000
SHERF STRENGTH (kgf)	2000	2000	2000	2000	2000
CLASSIFICATION SYMBOL					
TESTS					
DEPTH (m)	0.00	0.25	0.50	0.75	1.00
GRAPHIC LOG					
RL (m)	0.00	0.25	0.50	0.75	1.00
DATA					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

TONKIN & TAYLOR LTD

BOREHOLE LOG

BOREHOLE No.BH2
Hole Location: Vailima

SHEET 1 OF 1

PROJECT: Samoa Water		LOCATION: Samoa		JOB No: 750566	
CO-ORDINATES: -13°52'26.90"N -171°49'56.10"E		HOLE STARTED: 8/8/13 HOLE FINISHED: 9/8/13		HOLE STARTED: 9/8/13 HOLE FINISHED: 9/8/13	
R.L.: DATUM:		DRILLED BY: MNRE LOGGED BY: LZ		DRILLED BY: MNRE LOGGED BY: LZ	
GEOLOGICAL					
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION.		TESTS			
VOLCANIC GRAVEL AND ASH		CASING			
SOL DESCRIPTION Sub-type minor gravel, brown, soil ROCK DESCRIPTION Sub-type particle size, colour. Sub-class: Minor components. Defects: Type, infiltration, thickness, fragility, filling.		100 100 0 100 100 0	HQ3 HQ3 SPT HQ3 SPT HQ3	METHOD CORER RECOVERY (%)	FLUID LOSS WATER MATERIAL CASSING TESTS SAMPLES
ENGINEERING DESCRIPTION					
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION.		TESTS			
VOLCANIC GRAVEL AND ASH		CASING			
SOL DESCRIPTION Sub-type minor gravel, brown, soil ROCK DESCRIPTION Sub-type particle size, colour. Sub-class: Minor components. Defects: Type, infiltration, thickness, fragility, filling.		100 100 0 100 100 0	HQ3 HQ3 SPT HQ3 SPT HQ3	METHOD CORER RECOVERY (%)	FLUID LOSS WATER MATERIAL CASSING TESTS SAMPLES
SOIL DESCRIPTION					
SOL TYPE, MINOR COMPONENTS, PLASTICITY OR PARTICLE SIZE, COLOUR.					
SUB-SURFACE					
DEPTH (m)	0.00	0.25	0.50	0.75	1.00
COMPRESSION STRENGTH (kgf)	2000	2000	2000	2000	2000
SHERF STRENGTH (kgf)	2000	2000	2000	2000	2000
CLASSIFICATION SYMBOL					
TESTS					
DEPTH (m)	0.00	0.25	0.50	0.75	1.00
GRAPHIC LOG					
RL (m)	0.00	0.25	0.50	0.75	1.00
DATA					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

TONKIN & TAYLOR LTD

BOREHOLE LOG



BOREHOLE No.BH3
Hole Location: Vailima

SHEET 1 OF 1

PROJECT: Samoa Water		LOCATION: Samoa		DRILL TYPE: DB520		HOLE STARTED: 6/8/13		HOLE FINISHED: 6/8/13		DRILLED BY: MNRE		LOGGED BY: LZ		CHECKED: CWM	
CO-ORDINATES:	-13°52'59.00"N -171°46'16.00"E	HOLE STARTED:	10/8/13	HOLE FINISHED:	10/8/13	DRILLED BY:	MNRE	DRILLED BY:	MNRE	LOGGED BY:	LZ	LOGGED BY:	LZ	LOGGED BY:	LZ
R.L.:															
DATUM:															
GEOLOGICAL	GEOLoGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION.	TESTS	SAMPLES	TESTS	SAMPLES	TESTS	SAMPLES	TESTS	SAMPLES	TESTS	SAMPLES	TESTS	SAMPLES	TESTS	SAMPLES
VOLCANIC GRAVEL AND ASH	Gravely COBBLES, brownish grey, loose, highly vesicular basalt gravel and cobbles Sandy GRAVEL, very loose No Recovery (soft ash?)	100 0 0 100 0 0 100 0 0 100 0 0 100 0 0	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100 0 0 100 0 0 100 0 0 100 0 0 100 0 0	56 56 56 56 56 56 56 56 56 56 56 56 56 56 56	SPt	HQ3	SPt	HQ3	SPt	HQ3	SPt	HQ3	SPt	HQ3
FLUID LOSS															
WATER															
CASING															
4.10															
4.4															
6.6 N=20															
2															
3															
4															
4.44															
N>20 for 1.0mm															
5															
11 8															
5.5															
7.1 N=32															
6															
50															
N>20 for 30mm															
7															
7															
8															
9															
10															

Log Scale 1:50
BORELOG 75056 GPJ 17 Sep 2013

TONKIN & TAYLOR LTD

BOREHOLE LOG



BOREHOLE No.BH3
Hole Location: Tapalapao

SHEET 1 OF 1

PROJECT: Samoa Water		LOCATION: Samoa		DRILL TYPE: DB520		HOLE STARTED: 6/8/13		HOLE FINISHED: 6/8/13		DRILLED BY: MNRE		LOGGED BY: LZ		CHECKED: CWM	
CO-ORDINATES:	-13°52'59.00"N -171°46'16.00"E	HOLE STARTED:	10/8/13	HOLE FINISHED:	10/8/13	DRILLED BY:	MNRE	DRILLED BY:	MNRE	LOGGED BY:	LZ	LOGGED BY:	LZ	LOGGED BY:	LZ
R.L.:															
DATUM:															
GEOLOGICAL	GEOLoGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION.	TESTS	SAMPLES	TESTS	SAMPLES	TESTS	SAMPLES	TESTS	SAMPLES	TESTS	SAMPLES	TESTS	SAMPLES	TESTS	SAMPLES
VOLCANIC GRAVEL AND ASH	Gravely COBBLES, brownish grey, loose, highly vesicular basalt gravel and cobbles Sandy GRAVEL, very loose No Recovery (soft ash?)	100 0 0 100 0 0 100 0 0 100 0 0 100 0 0	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100 0 0 100 0 0 100 0 0 100 0 0 100 0 0	56 56 56 56 56 56 56 56 56 56 56 56 56 56	SPt	HQ3	SPt	HQ3	SPt	HQ3	SPt	HQ3	SPt	HQ3
FLUID LOSS															
WATER															
CASING															
4.10															
4.4															
6.6 N=20															
2															
3															
4															
4.44															
N>20 for 1.0mm															
5															
11 8															
5.5															
7.1 N=32															
6															
50															
N>20 for 30mm															
7															
7															
8															
9															
10															

Log Scale 1:50
BORELOG 75056 GPJ 17 Sep 2013

TONKIN & TAYLOR LTD

BOREHOLE LOG



BOREHOLE No.BH5
Hole Location: Tapalapao

SHEET 1 OF 1

PROJECT: Samoa Water		LOCATION: Samoa		DRILL TYPE: DB520		HOLE STARTED: 5/8/13		HOLE FINISHED: 5/8/13		DRILLED BY: MNRE		LOGGED BY: LZ		CHECKED: CWM	
CO-ORDINATES:	-13°52'58.80"N -171°49'55.90"E	R.L.:													
DATUM:															
GEOLOGICAL	Engineering Description	SOL DESCRIPTION	SOIL TYPE	TESTS	DEPTH (m)	RL (m)	SAMPLES	TESTS	DEPTH (m)	RL (m)	SAMPLES	TESTS	DEPTH (m)	RL (m)	
GENERIC UNIT, MINERAL COMPOSITION.	GENERIC NAME, MINERAL COMPOSITION.	Sa. fine sand, components, plasticity or particle size, colour.													
		ROCK DESCRIPTION													
		Sub-surface:	Rock type, particle size, colour,												
			Defects:	Type, indication, thickness,											
VOLCANIC ASH AND COBBLES		Gravely, COBBLES, grey, very dense, boulders cobbles													
BASALT BOULDERS AND GRAVEL		1 BASALT BOULDERS, uw-weathered, grey strong, highly vesicular 2 3.47 N>50 for 140mm													
			No recovery (soft ash?)												
			3 1.1 0.3 5.5 N=13												
			4 2.11 50 N>50 for 60mm												
			5 50 N>50 for 40mm												
			6 10.40 N>50 for 15mm												
			7 7												
			8 8												
			9 9												
			10 10												

資料 10-6

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BOREHOLE LOG

BOREHOLE No.BH6
Hole Location: Tapalapao

SHEET 1 OF 1

PROJECT: Samoa Water		LOCATION: Samoa		DRILL TYPE: DB520		HOLE STARTED: 5/8/13		HOLE FINISHED: 5/8/13		DRILLED BY: MNRE		LOGGED BY: LZ		CHECKED: CWM	
CO-ORDINATES:	-13°52'58.80"N -171°49'55.90"E	R.L.:													
DATUM:															
GEOLOGICAL	Engineering Description	SOL DESCRIPTION	SOIL TYPE	TESTS	DEPTH (m)	RL (m)	SAMPLES	TESTS	DEPTH (m)	RL (m)	SAMPLES	TESTS	DEPTH (m)	RL (m)	
GENERIC UNIT, MINERAL COMPOSITION.	GENERIC NAME, MINERAL COMPOSITION.	Sa. fine sand, components, plasticity or particle size, colour.													
		ROCK DESCRIPTION													
		Sub-surface:	Rock type, particle size, colour,												
			Defects:	Type, indication, thickness,											
VOLCANIC ASH AND COBBLES		1 BASALT													
BASALT		2 10.30 N>50 for 140mm													
		3 27.23 N>50 for 140mm													
		4 7.43 N>50 for 140mm													
		5 END OF BOREHOLE AT 2.5m. -No groundwater encountered													
		6 6													
		7 7													
		8 8													
		9 9													
		10 10													

1-1 DATATEMPLATE.GDT.cwm

BORELOG 75056 GPJ 17 Sep 2013

Log Scale 1:50

BORELOG 75056 GPJ 17 Sep 2013



TONKIN & TAYLOR LTD

BOREHOLE LOG

BOREHOLE No.BH8
Hole Location: Vaivase - Uta
SHEET 2 OF 2

PROJECT: Samoa Water
CO-ORDINATES: -13°52'11.20"E
-171°46'2.60"S
R.L.:
DATUM:
GEOLOGICAL

	LOCATION: Samoa	DRILL TYPE: DB520	HOLE STARTED: 25/7/13	HOLE FINISHED: 25/7/13	DRILLED BY: MNRE	CHECKED: CWM	LOGGED BY: LZ
	VOLCANIC ASH	TESTS	CASING	METHOD	FLUID LOSS	WATER	TESTS
							SPt
1.1							
1.1 N=6							
1.0							
1.1							
1.1 N=4							
3.3							
1.2							
1.1 N=5							
12							
13							
14							
1.1							
1.1 N=4							
1.1							
0.1							
1.2 N=4							
15							
2.1							
2.1 N=5							
100							
100							
100							
100							
END OF BOREHOLE AT 15.45m							
16							
17							
18							
19							
20							

Log Scale:1:50

BORELOG 79086 GPJ 17 Sep 2013

Samoa Water Supply Scheme Project - Soil Investigation



BH1 0.0-1.0m [pg]



BH1 1.0-2.0m [pg]



BH1 2.0-3.5m [pg]



BH1 3.0-4.5m [pg]



BH1 4.0-5.5m [pg]



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Samoa Water Supply Scheme Project - Soil Investigation

Samoa Water Supply Scheme Project - Soil Investigation



BH1 7.5-8.0m.jpg
BH2 1.5-2.0m.jpg
BH2 3.0-3.5m.jpg
BH3 2.0-2.5m.jpg
BH3 0.0-0.5m.jpg

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BH3 2.5-3.0m.jpg
BH4 4.0-4.5m.jpg
BH4 5.0-5.5m.jpg
BH4 6.0-7.0m.jpg

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Samoa Water Supply Scheme Project - Soil Investigation

Samoa Water Supply Scheme Project - Soil Investigation



BH5 0.0-1.0m.jpg

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BH8 6.0-6.5m.jpg

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Samoa Water Supply Scheme Project - Soil Investigation



EHS 8.0-8.5m.jpg



EHS 9.0-9.5m.jpg



EHS 10.0-10.5m.jpg



EHS 11.0-11.5m.jpg



EHS 12.0-12.5m.jpg



EHS 13.0-13.5m.jpg

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