Appendix C Laboratory test results

C1 **Atterberg Limits tests**

C2 **Particle Size Distribution tests**

C3 **Allophane tests**

C4 **Unconfined Compressive Strength tests**

C5 **Consolidated-Undrained triaxial compression tests**

C1 Atterberg Limits tests

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Report Number	1102034.0000.0.0/Rep 9	04-03-2026
Test Schedule Reference	NZ01_307	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

Laboratory Test Report

Liquid (4 point) and plastic limits, plasticity index - NZS 4402:1986 Test 2.2, 2.3, 2.4

Customer Sample Details

Location	**ID**	StJean1				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2836		**Date Sampled**	19-01-2026	
	Reference	BH11_0.0 m		**Depth From**	0.0 m	**to** 0.4 m
	Description	SILT				
Customer Instructions	N/A					

Test Results

Liquid Limit	82
Plastic Limit	39
Plasticity Index	43
Date Tested	24-02-2026

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- Liquid limit device: Manual
- Plastic limit device: Manual
- Liquid limit grooving tool: Original (Metal)
- Laboratory description: Gravely SAND, with minor silt; dark brown. Firm, moist, high plasticity.
- Sample description follows the NZGS Guidelines for field description of soil and rock.

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
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- Sample descriptions are enclosed for your information but are not covered under the IANZ endorsement of this report.

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Approved by KTP	Authorised by Project Director
	
Fergus Goldie	Steven Anderson

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

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Report Number	**1102034.0000.0.0/Rep 20**	**12-03-2026**
Test Schedule Reference	**NZ01_312**	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

Laboratory Test Report

Liquid (4 point) and plastic limits, plasticity index - NZS 4402:1986 Test 2.2, 2.3, 2.4

Customer Sample Details

Location	**ID**	VSC1				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2866		**Date Sampled**	16-02-2026	
	Reference	BH12_7.5m		**Depth From**	7.5 m	**to** 7.95 m
	Description	SILT some clay				
Customer Instructions	N/A					

Test Results

Liquid Limit	115
Plastic Limit	86
Plasticity Index	29
Date Tested	05-03-2026

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Fraction Passing a 425 µm sieve. Mechanically pushed through the sieve. Estimated retained: N/A %.
- Liquid limit device: Mechanical
- Plastic limit device: Manual
- Liquid limit grooving tool: Original (Metal)
- Lab Description: Clayey SILT, with minor sand; brown. Firm, moist, high plasticity.
- Sample description follows the NZGS Guidelines for field description of soil and rock.

General Remarks

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C2 Particle Size Distribution tests

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Report Number	1102034.0000.0.0/Rep 4	23-02-2026
Test Schedule Reference	NZ01_309	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

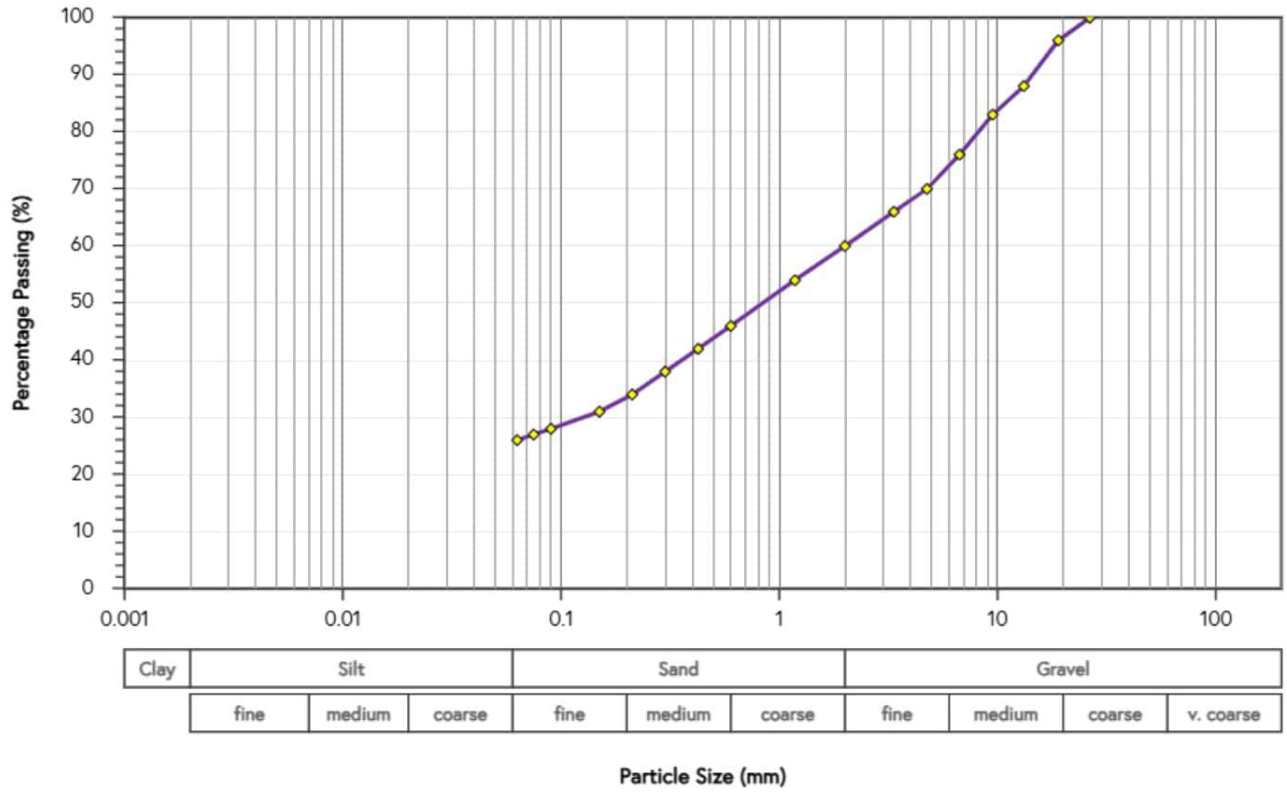
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	Market1				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2831		**Date Sampled**	21-01-2026	
	Reference	BH02_SPT_1.5m		**Depth From**	1.5 m	**to** 1.95 m
	Description	Sandy GRAVEL				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	100	4.75	70	0.300	38
100	-	19.0	96	3.35	66	0.212	34
75	-	16.0	-	2.00	60	0.150	31
63	-	13.2	88	1.18	54	0.090	28
53	-	9.50	83	0.600	46	0.075	27
37.5	-	6.70	76	0.425	42	0.063	26

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Sandy GRAVEL, with some silt; dark brown. Moist.

Date Tested 18-02-2026

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
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Report Number	1102034.0000.0.0/Rep 5	23-02-2026
Test Schedule Reference	NZ01_309	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

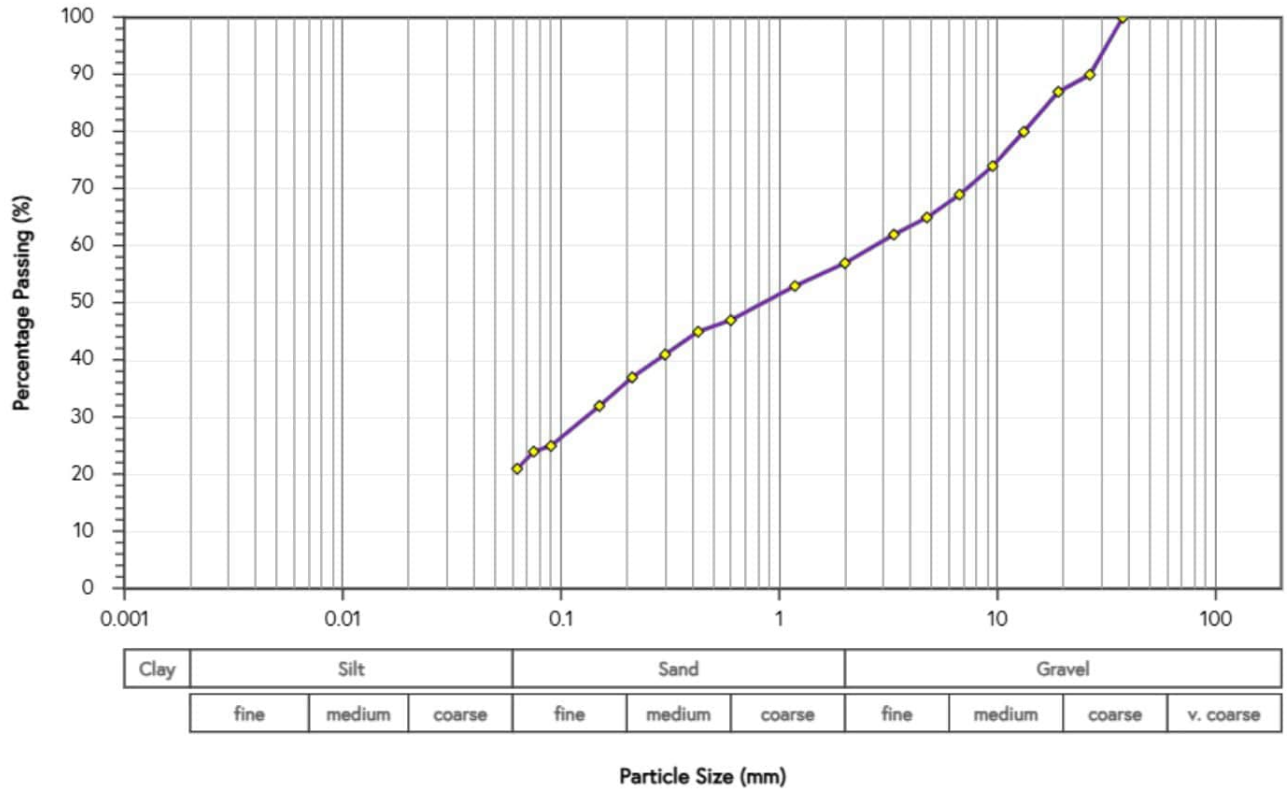
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	Market2				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2832		**Date Sampled**	21-01-2026	
	Reference	BH02_SPT_3.0m		**Depth From**	3.0 m	**to** 3.45 m
	Description	Sandy GRAVEL				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	90	4.75	65	0.300	41
100	-	19.0	87	3.35	62	0.212	37
75	-	16.0	-	2.00	57	0.150	32
63	-	13.2	80	1.18	53	0.090	25
53	-	9.50	74	0.600	47	0.075	24
37.5	100	6.70	69	0.425	45	0.063	21

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Sandy GRAVEL, with some silt; brown with grey. Moist.

Date Tested 18-02-2026

General Remarks

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Report Number	1102034.0000.0.0/Rep 11	11-03-2026
Test Schedule Reference	NZ01_313	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

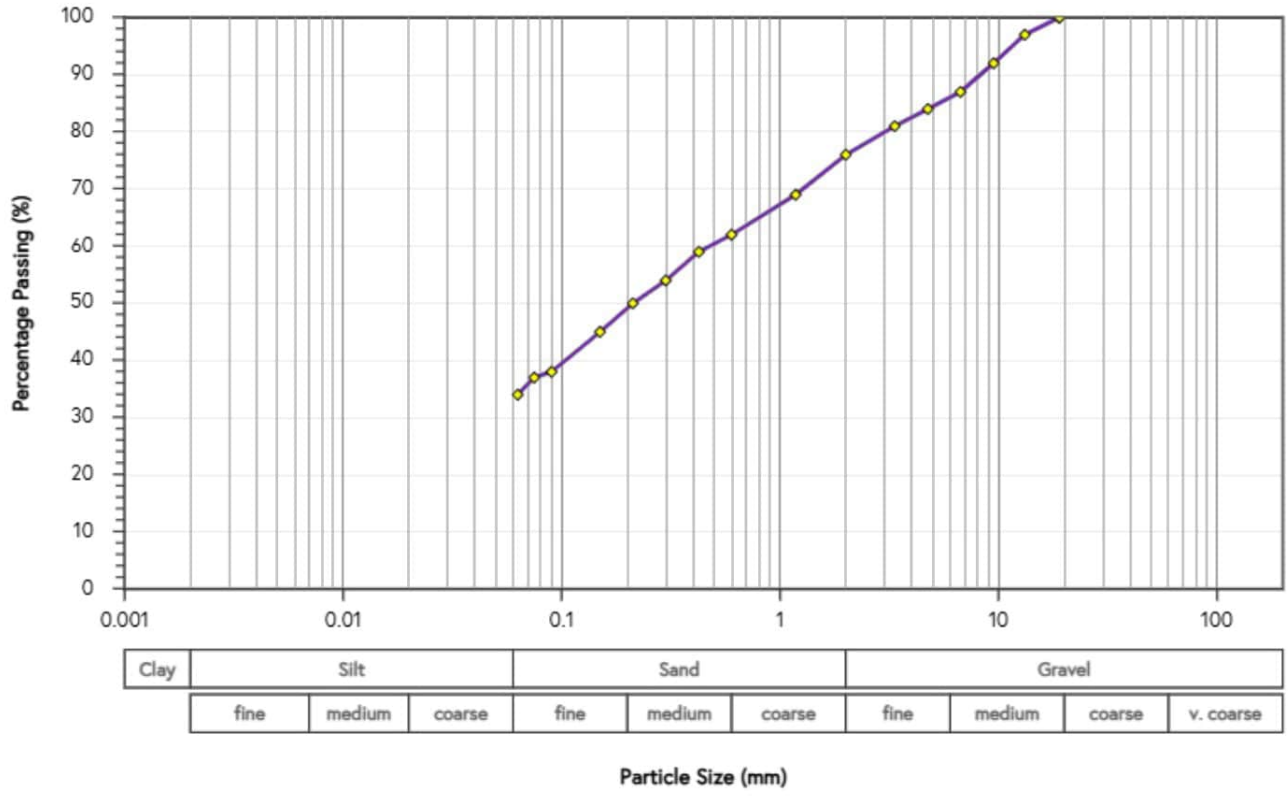
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	Market5				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2856		**Date Sampled**	21-01-2026	
	Reference	BH02_7.5m		**Depth From**	7.5 m	**to** 7.95 m
	Description	Sandy GRAVEL				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	-	4.75	84	0.300	54
100	-	19.0	100	3.35	81	0.212	50
75	-	16.0	-	2.00	76	0.150	45
63	-	13.2	97	1.18	69	0.090	38
53	-	9.50	92	0.600	62	0.075	37
37.5	-	6.70	87	0.425	59	0.063	34

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Silty SAND, with some gravel; grey. Moist.

Date Tested 04-03-2026

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
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Report Number	1102034.0000.0.0/Rep 6	23-02-2026
Test Schedule Reference	NZ01_309	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

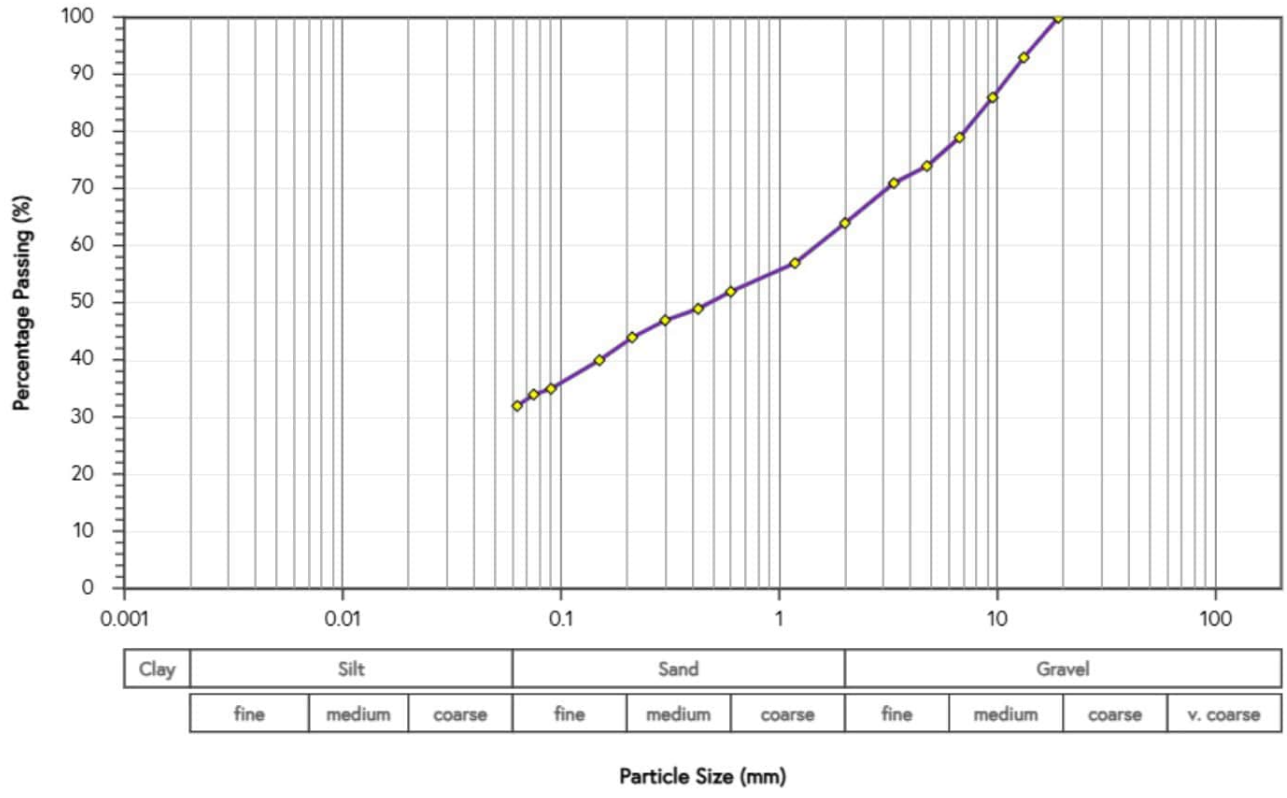
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	Market3				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2833		**Date Sampled**	21-01-2026	
	Reference	BH02_SPT_9.0 m		**Depth From**	9.0 m	**to** 9.45 m
	Description	Sandy GRAVEL				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	-	4.75	74	0.300	47
100	-	19.0	100	3.35	71	0.212	44
75	-	16.0	-	2.00	64	0.150	40
63	-	13.2	93	1.18	57	0.090	35
53	-	9.50	86	0.600	52	0.075	34
37.5	-	6.70	79	0.425	49	0.063	32

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Sandy GRAVEL, with some silt; white and grey. Moist.

Date Tested 18-02-2026

General Remarks

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Report Number	1102034.0000.0.0/Rep 12	11-03-2026
Test Schedule Reference	NZ01_313	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

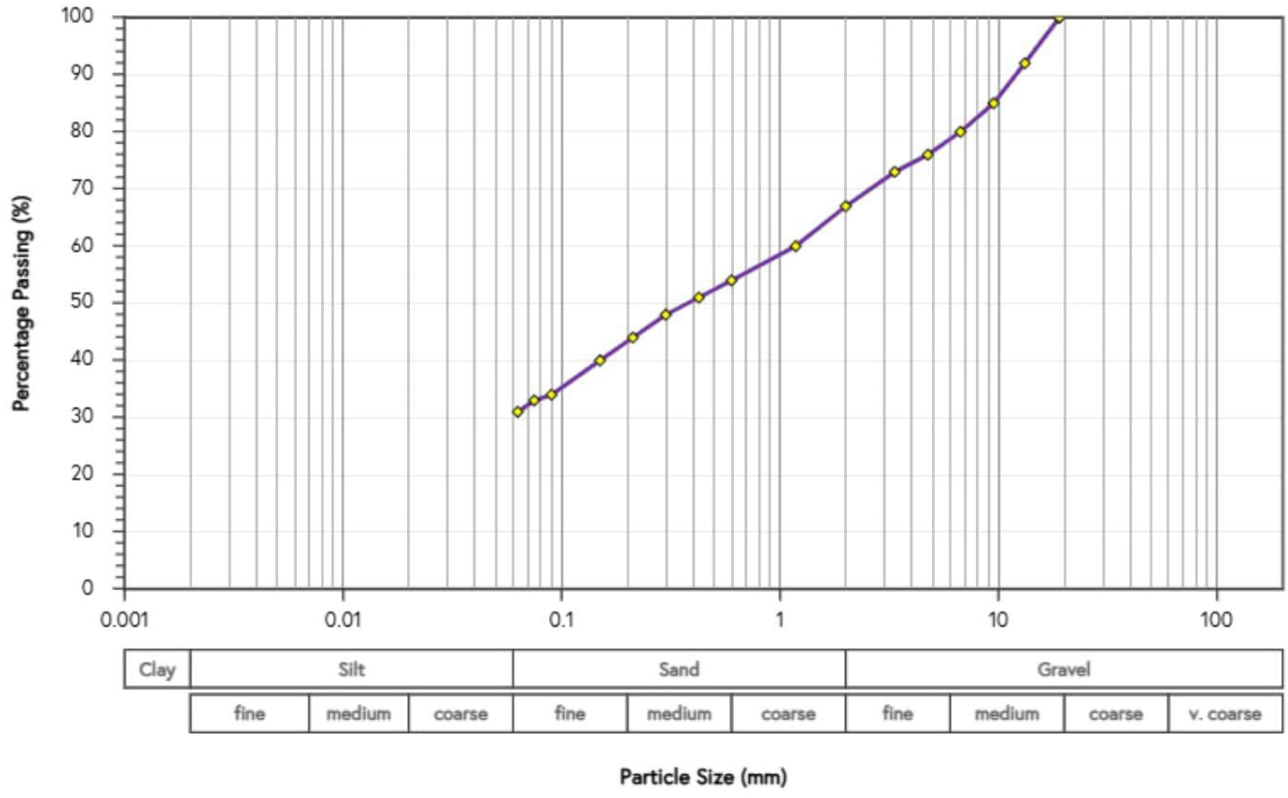
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	Market6				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2857		**Date Sampled**	21-01-2026	
	Reference	BH02_13.5m		**Depth From**	13.5 m	**to** 13.95 m
	Description	Silty SAND				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	-	4.75	76	0.300	48
100	-	19.0	100	3.35	73	0.212	44
75	-	16.0	-	2.00	67	0.150	40
63	-	13.2	92	1.18	60	0.090	34
53	-	9.50	85	0.600	54	0.075	33
37.5	-	6.70	80	0.425	51	0.063	31

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Gravely SAND, with some silt; light brown. Moist.

Date Tested 04-03-2026

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
- This report has been prepared for the benefit of Tonkin + Taylor, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement.
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Report Number	1102034.0000.0.0/Rep 13	11-03-2026
Test Schedule Reference	NZ01_313	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

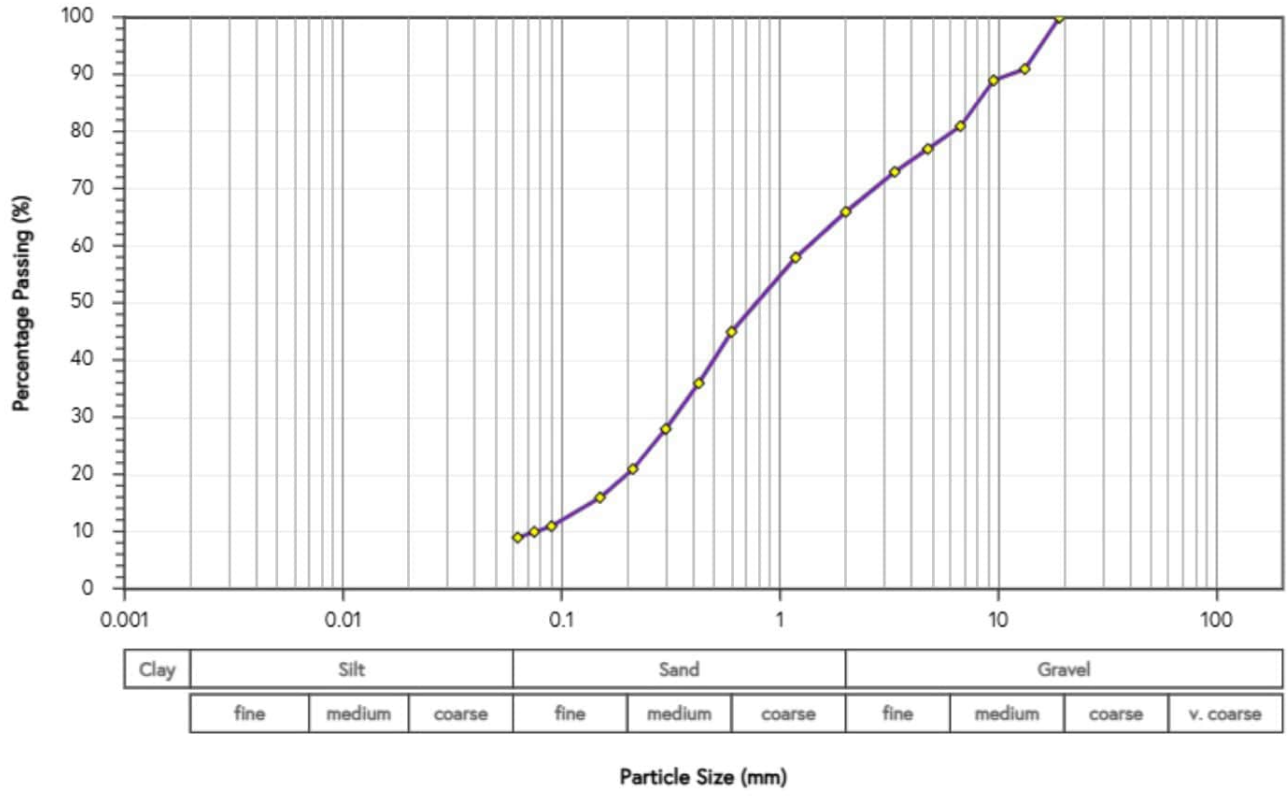
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	LolamHouse3				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2858		**Date Sampled**	21-01-2026	
	Reference	BH03_1.5m		**Depth From**	1.5 m	**to** 1.95 m
	Description	Gravelly SAND				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	-	4.75	77	0.300	28
100	-	19.0	100	3.35	73	0.212	21
75	-	16.0	-	2.00	66	0.150	16
63	-	13.2	91	1.18	58	0.090	11
53	-	9.50	89	0.600	45	0.075	10
37.5	-	6.70	81	0.425	36	0.063	9

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Gravely SAND, with minor silt; light brown. Moist.

Date Tested 04-03-2026

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
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Report Number	1102034.0000.0.0/Rep 14	11-03-2026
Test Schedule Reference	NZ01_313	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

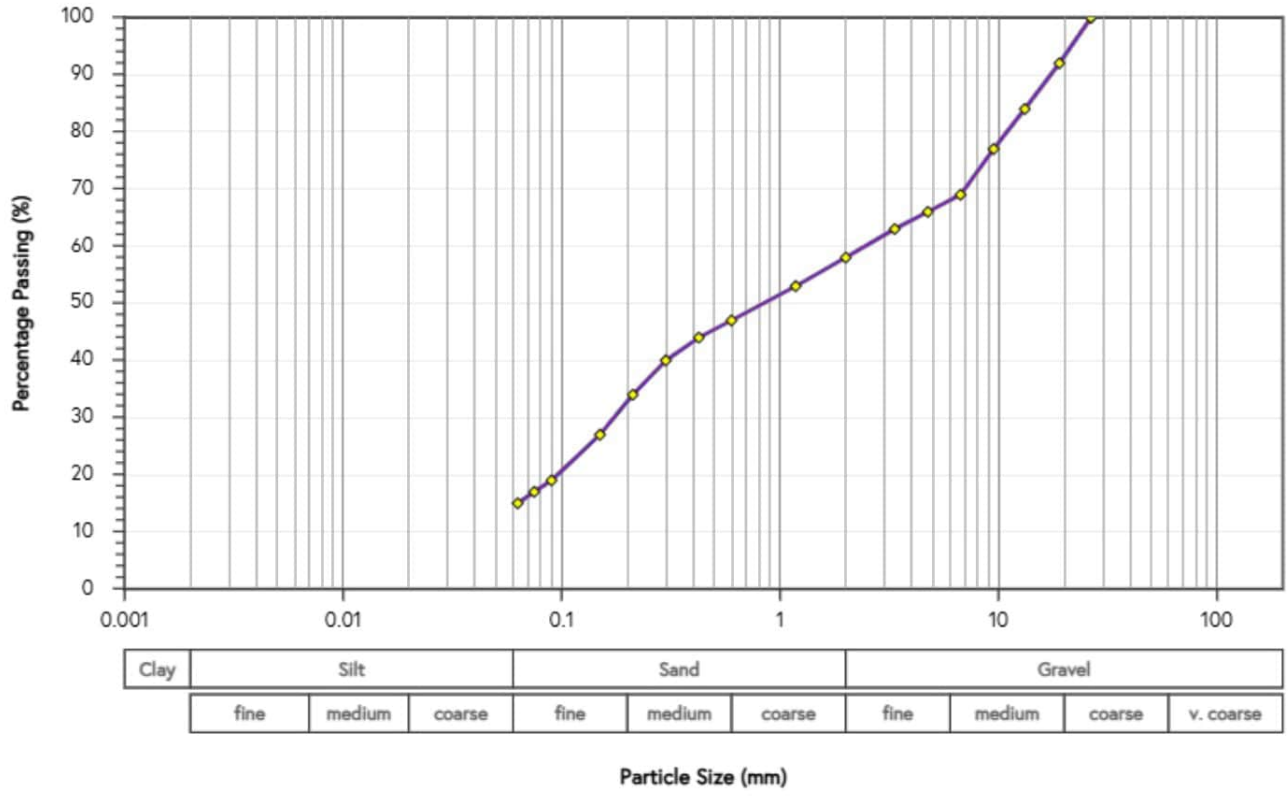
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	LolamHouse4				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2859		**Date Sampled**	21-01-2026	
	Reference	BH03_4.5m		**Depth From**	4.5 m	**to** 4.95 m
	Description	SAND				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	100	4.75	66	0.300	40
100	-	19.0	92	3.35	63	0.212	34
75	-	16.0	-	2.00	58	0.150	27
63	-	13.2	84	1.18	53	0.090	19
53	-	9.50	77	0.600	47	0.075	17
37.5	-	6.70	69	0.425	44	0.063	15

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Gravelly SAND, with minor silt; light brown. Moist.

Date Tested 04-03-2026

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
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Report Number	1102034.0000.0.0/Rep 15	11-03-2026
Test Schedule Reference	NZ01_313	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

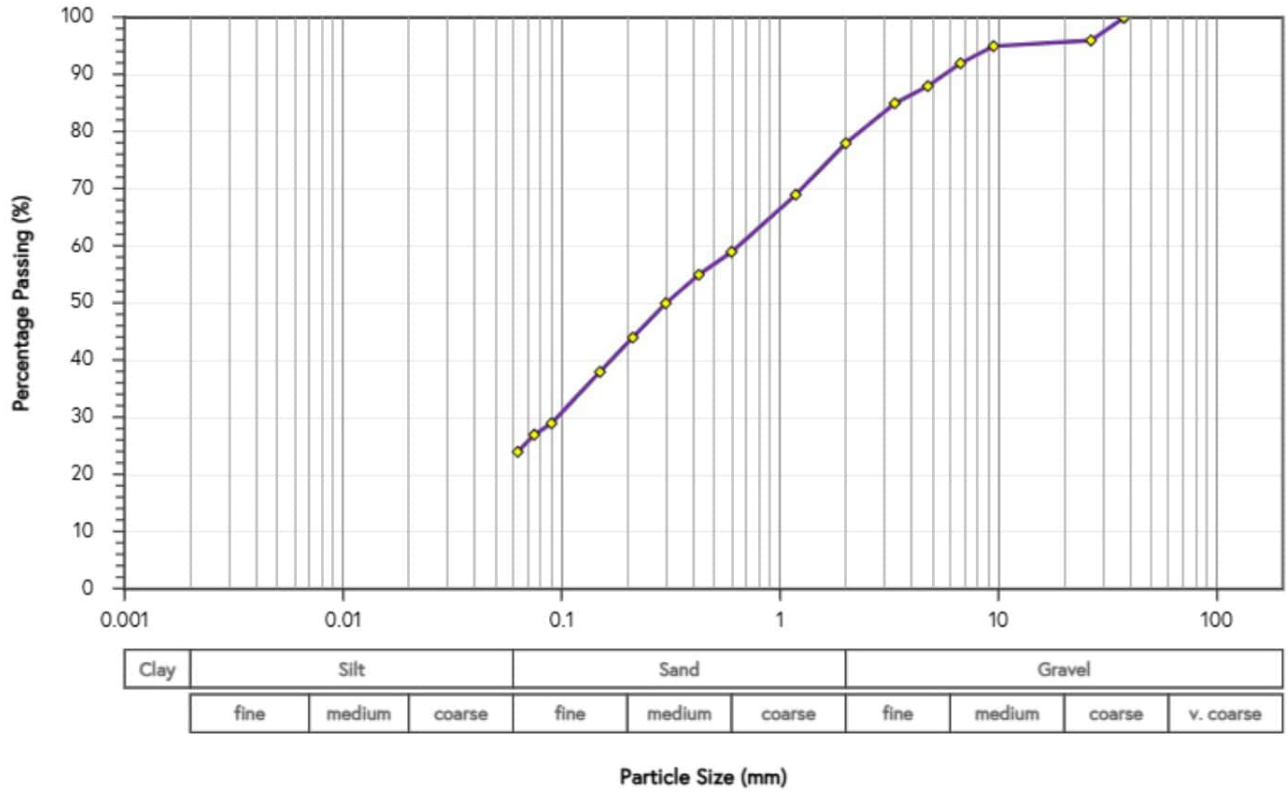
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	LolamHouse5				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2860		**Date Sampled**	21-01-2026	
	Reference	BH03_7.5m		**Depth From**	7.5 m	**to** 7.95 m
	Description	Silty SAND				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	96	4.75	88	0.300	50
100	-	19.0	-	3.35	85	0.212	44
75	-	16.0	-	2.00	78	0.150	38
63	-	13.2	-	1.18	69	0.090	29
53	-	9.50	95	0.600	59	0.075	27
37.5	100	6.70	92	0.425	55	0.063	24

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: SAND, with some gravel and silt; light brownish grey. Moist.

Date Tested 04-03-2026

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
- This report has been prepared for the benefit of Tonkin + Taylor, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement.
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- Sample descriptions are enclosed for your information but are not covered under the IANZ endorsement of this report.

Approved by KTP	Authorised by Project Director	
Fergus Goldie	Steven Anderson	ACCREDITED IANZ TESTING LABORATORY — All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

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Report Number	1102034.0000.0.0/Rep 3	03-02-2026
Test Schedule Reference	NZ01_304	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

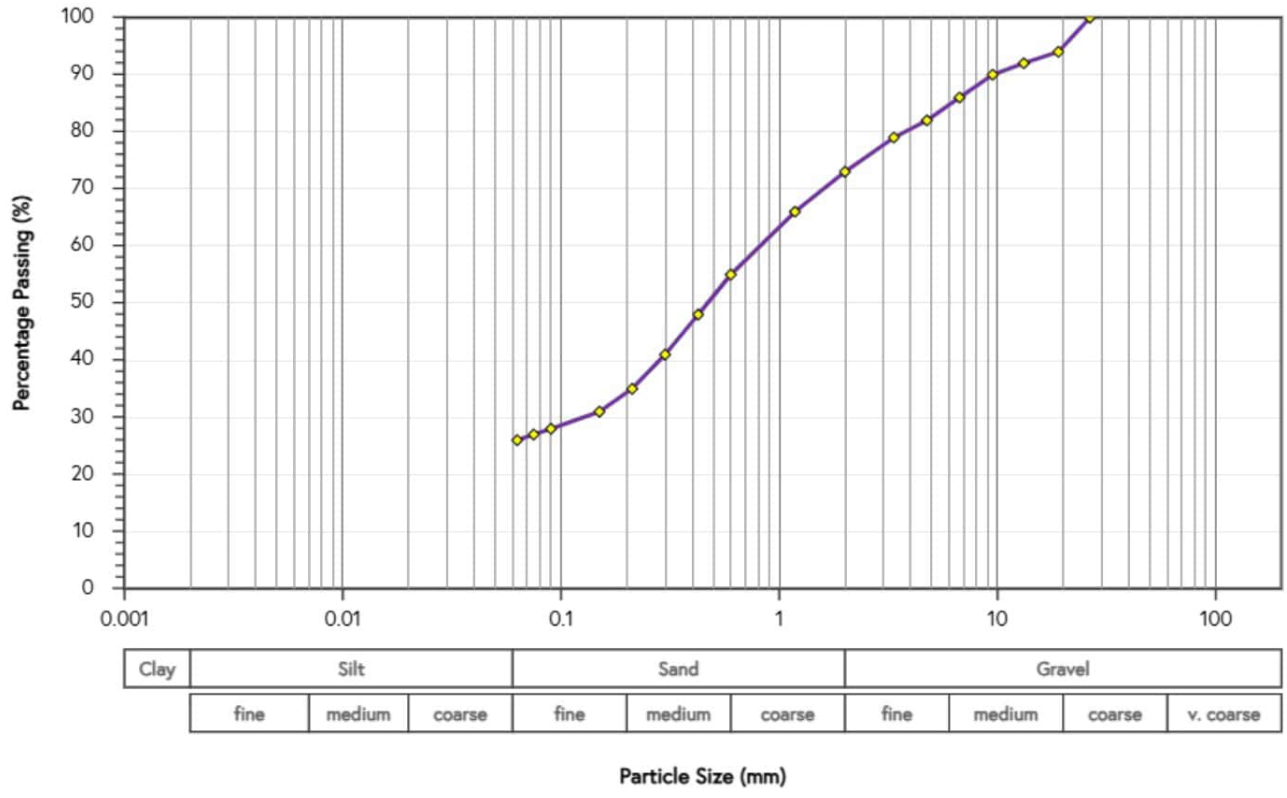
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	VNB1				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2573	**Date Sampled**	14-12-2025		
	Reference	BH04_SPT_1.5 m	**Depth From**	1.5 m	**to**	1.95 m
	Description	Gravelly SAND, with some silt; White speckled brown. Wet.				
Customer Instructions	N/A					

Test Results



Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	100	4.75	82	0.300	41
100	-	19.0	94	3.35	79	0.212	35
75	-	16.0	-	2.00	73	0.150	31
63	-	13.2	92	1.18	66	0.090	28
53	-	9.50	90	0.600	55	0.075	27
37.5	-	6.70	86	0.425	48	0.063	26

Test Remarks

- Condition of the sample as received: Oven Dried.
- The sample used for testing: Whole Sample.

Date Tested 04-02-2026

General Remarks

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Approved by KTP	Authorised by Project Director
Fergus Goldie	Steven Anderson

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Report Number	1102034.0000.0.0/Rep 2	03-02-2026
Test Schedule Reference	NZ01_304	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

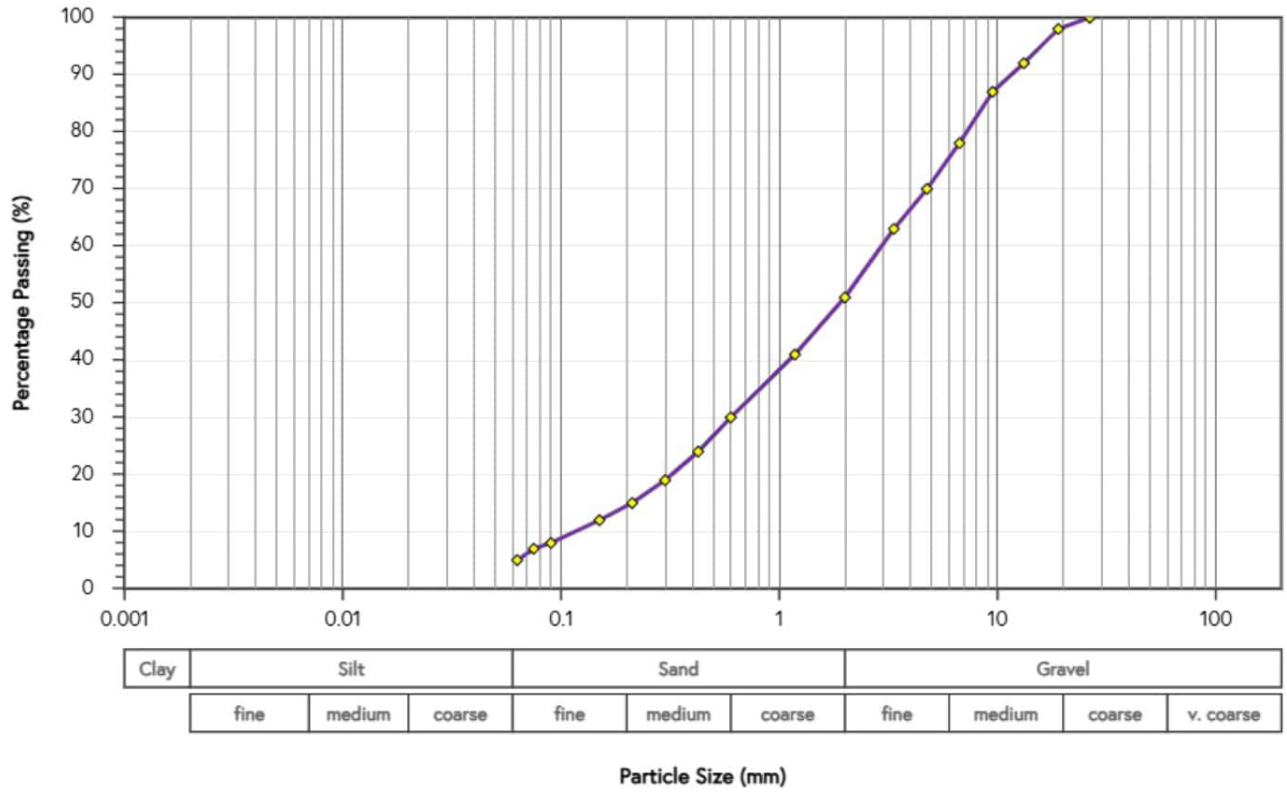
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	VNB2				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2574	**Date Sampled**	15-12-2025		
	Reference	BH04A_SPT_3.0 m	**Depth From**	3.0 m	**to**	3.45 m
	Description	Sandy GRAVEL; White with some orange. Wet.				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	100	4.75	70	0.300	19
100	-	19.0	98	3.35	63	0.212	15
75	-	16.0	-	2.00	51	0.150	12
63	-	13.2	92	1.18	41	0.090	8
53	-	9.50	87	0.600	30	0.075	7
37.5	-	6.70	78	0.425	24	0.063	5

Test Remarks

- Condition of the sample as received: Oven Dried.
- The sample used for testing: Whole Sample.

Date Tested 04-02-2026

General Remarks

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Approved by KTP	Authorised by Project Director
Fergus Goldie	Steven Anderson

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Report Number	1102034.0000.0.0/Rep 1	03-02-2026
Test Schedule Reference	NZ01_304	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

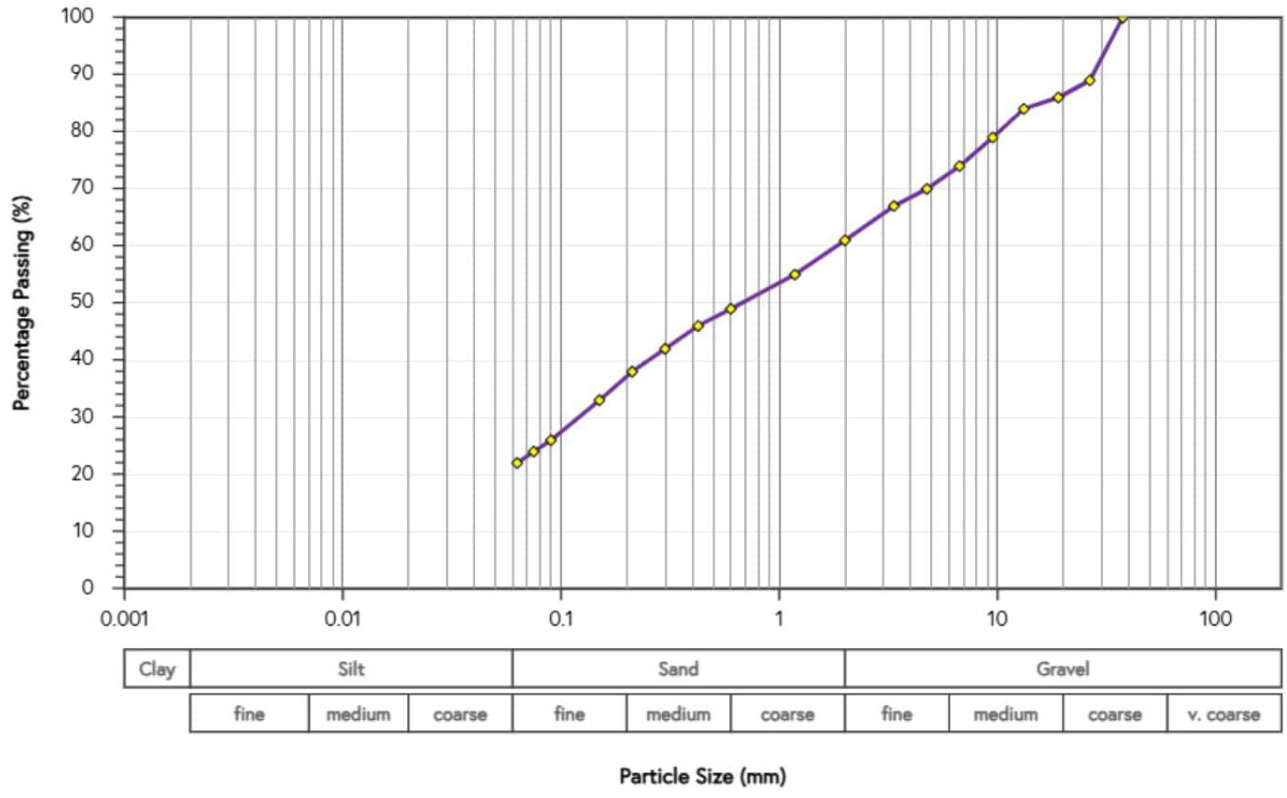
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	VNB3				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2575	**Date Sampled**	15-12-2025		
	Reference	BH04A_SPT_9.0 m	**Depth From**	9.0 m	**to**	9.45 m
	Description	Gravelly SAND, with some silt; brown with some White. Wet.				
Customer Instructions	N/A					

Test Results



GEOTECHNICS

Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	89	4.75	70	0.300	42
100	-	19.0	86	3.35	67	0.212	38
75	-	16.0	-	2.00	61	0.150	33
63	-	13.2	84	1.18	55	0.090	26
53	-	9.50	79	0.600	49	0.075	24
37.5	100	6.70	74	0.425	46	0.063	22

Test Remarks

- Condition of the sample as received: Oven Dried.
- The sample used for testing: Whole Sample.

Date Tested 04-02-2026

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
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Approved by KTP	Authorised by Project Director
	
Fergus Goldie	Steven Anderson

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Report Number	**1102034.0000.0.0/Rep 16**	**11-03-2026**
Test Schedule Reference	**NZ01_313**	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

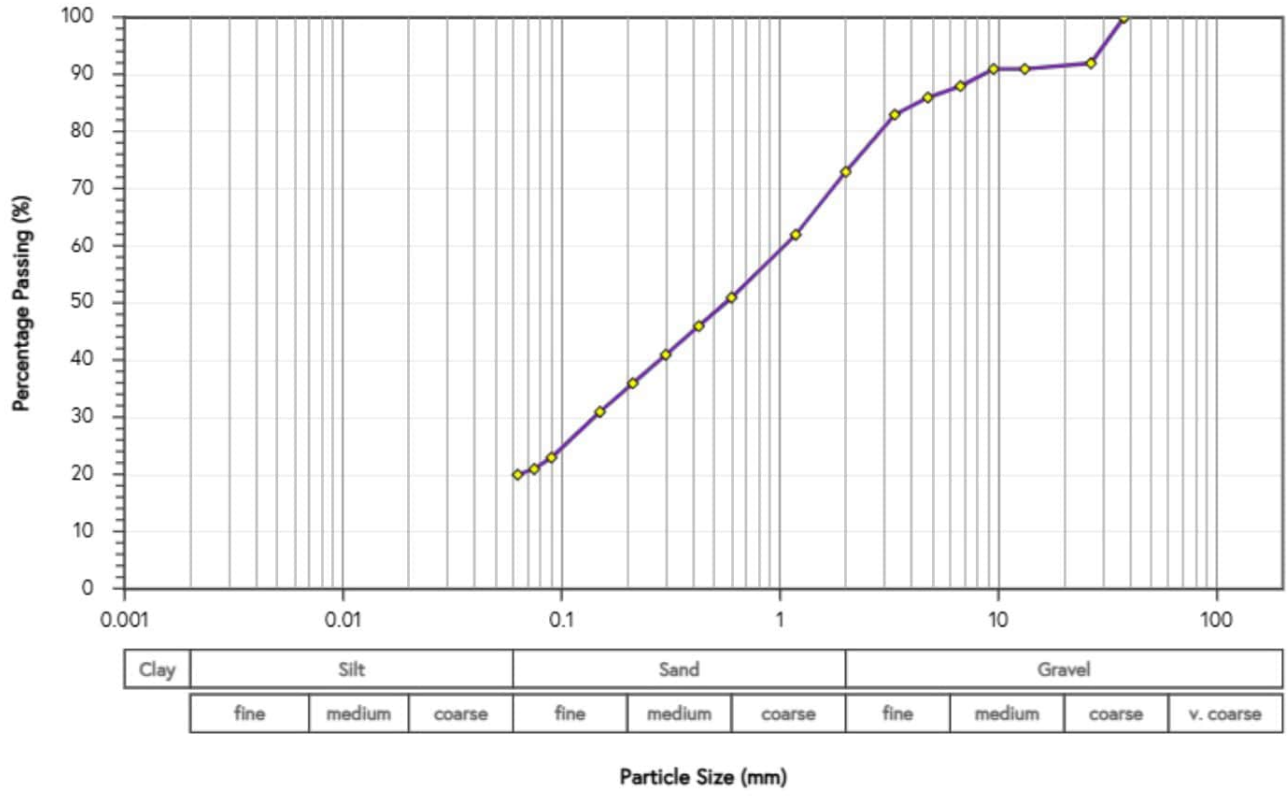
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	Tanna1				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2861		**Date Sampled**	12-02-2026	
	Reference	BH09_4.5m		**Depth From**	4.5 m	**to** 4.95 m
	Description	SAND				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	92	4.75	86	0.300	41
100	-	19.0	-	3.35	83	0.212	36
75	-	16.0	-	2.00	73	0.150	31
63	-	13.2	91	1.18	62	0.090	23
53	-	9.50	91	0.600	51	0.075	21
37.5	100	6.70	88	0.425	46	0.063	20

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Gravely SAND, with some silt; greyish white. Moist.

Date Tested 04-03-2026

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
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Approved by KTP	Authorised by Project Director
Fergus Goldie	Steven Anderson

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Report Number	1102034.0000.0.0/Rep 17	11-03-2026
Test Schedule Reference	NZ01_313	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

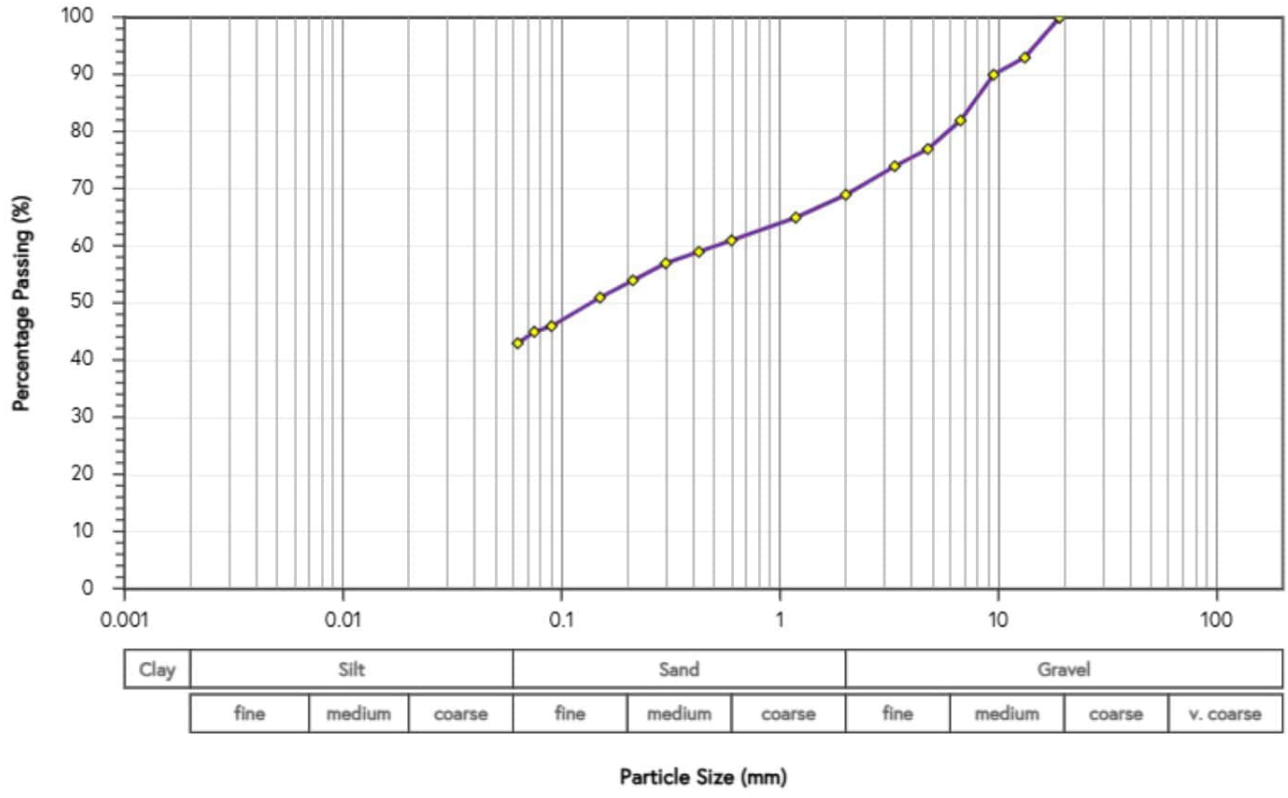
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	Tanna2				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2862		**Date Sampled**	12-02-2026	
	Reference	BH09_9.0m		**Depth From**	9.0 m	**to** 9.45 m
	Description	Sandy SILT				
Customer Instructions	N/A					

Test Results



GEOTECHNICS

Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	-	4.75	77	0.300	57
100	-	19.0	100	3.35	74	0.212	54
75	-	16.0	-	2.00	69	0.150	51
63	-	13.2	93	1.18	65	0.090	46
53	-	9.50	90	0.600	61	0.075	45
37.5	-	6.70	82	0.425	59	0.063	43

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Silty GRAVEL, with some sand; light brownish white. Moist.

Date Tested 04-03-2026

General Remarks

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Fergus Goldie	Steven Anderson

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Report Number	**1102034.0000.0.0/Rep 18**	**11-03-2026**
Test Schedule Reference	**NZ01_313**	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

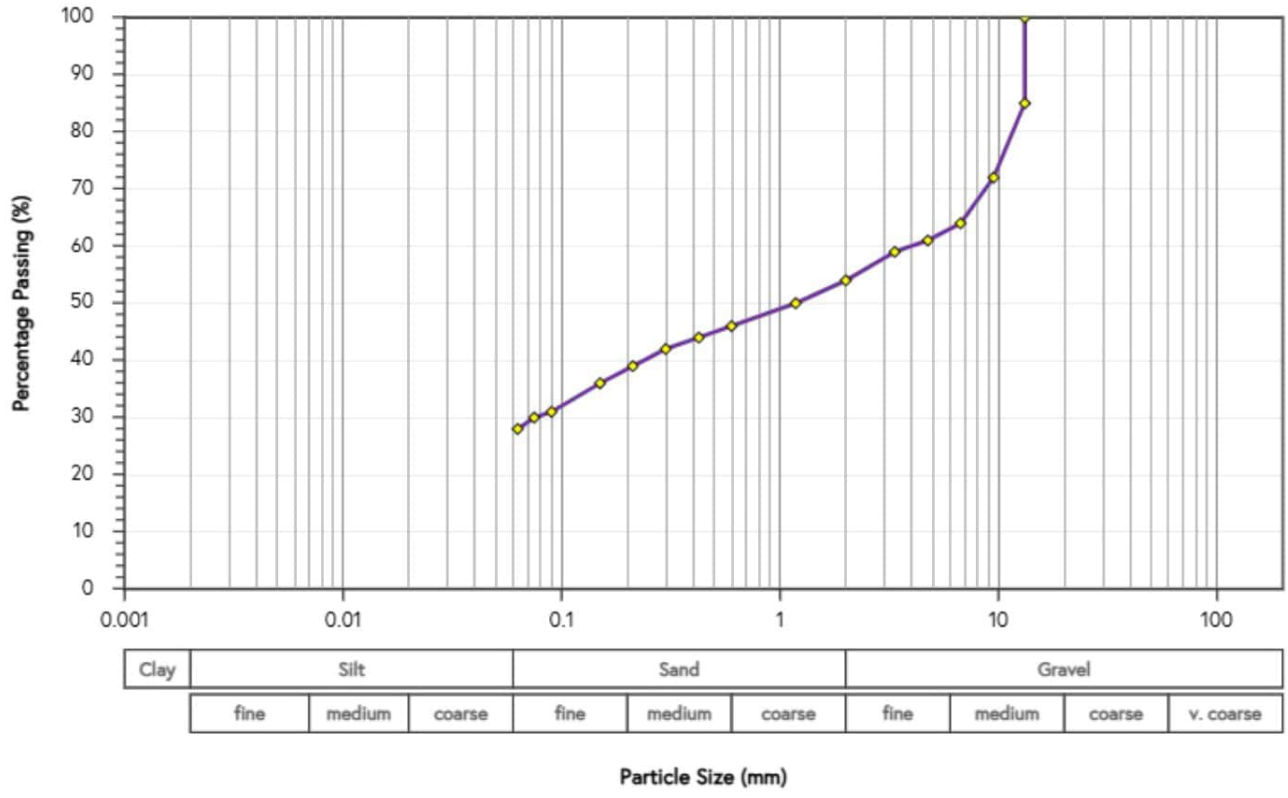
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	Tanna3				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2863		**Date Sampled**	12-02-2026	
	Reference	BH09_12.0m		**Depth From**	12.0 m	**to** 12.45 m
	Description	GRAVEL				
Customer Instructions	N/A					

Test Results



GEOTECHNICS

Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	-	4.75	61	0.300	42
100	-	19.0	-	3.35	59	0.212	39
75	-	16.0	-	2.00	54	0.150	36
63	-	13.2	85	1.18	50	0.090	31
53	-	9.50	72	0.600	46	0.075	30
37.5	-	6.70	64	0.425	44	0.063	28

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Sandy GRAVEL, with some silt; brownish white. Moist.

Date Tested 04-03-2026

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
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Report Number	1102034.0000.0.0/Rep 19	11-03-2026
Test Schedule Reference	NZ01_313	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

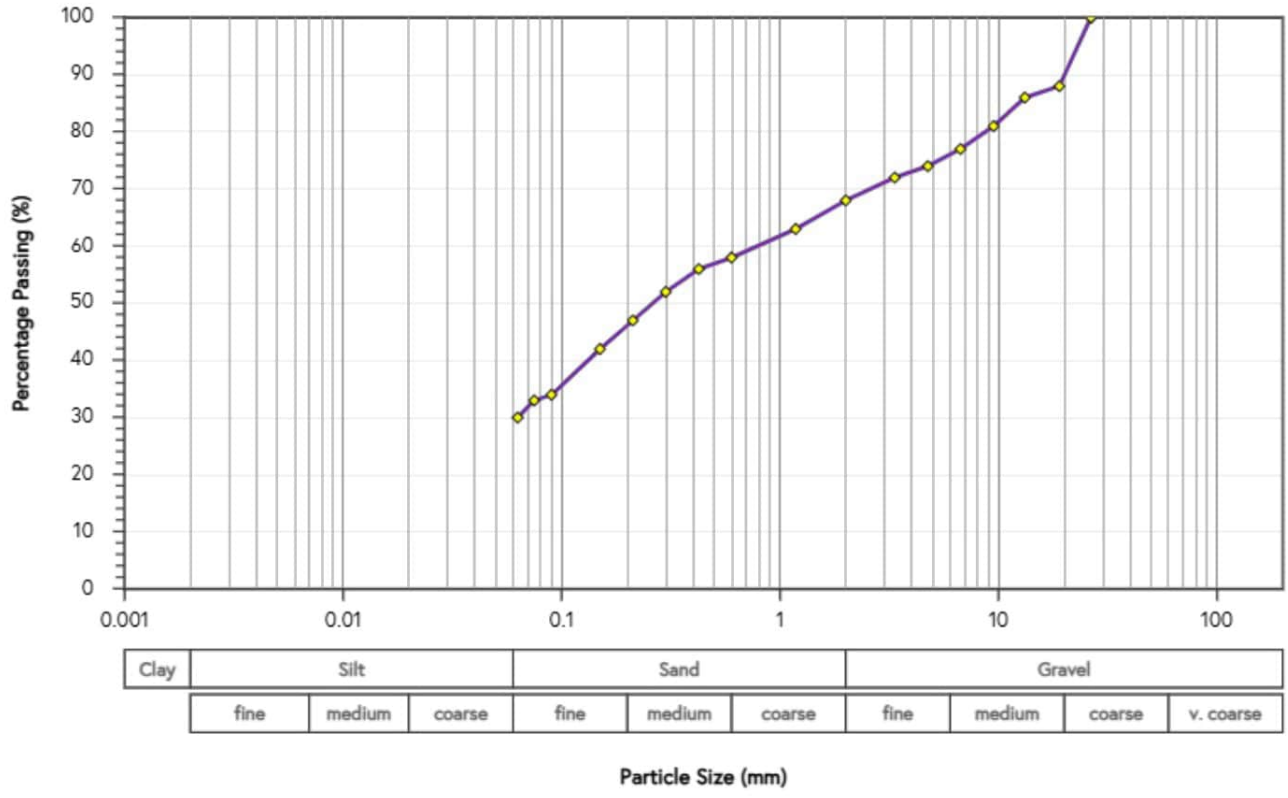
Laboratory Test Report

Determination of the Particle Size Distribution (Wet Sieve Method) - NZS 4402:1986 Test 2.8.1

Customer Sample Details

Location	**ID**	Tanna4				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2864		**Date Sampled**	13-02-2026	
	Reference	BH09_15.0m		**Depth From**	15.0 m	**to** 15.45 m
	Description	Gravelly SAND				
Customer Instructions	N/A					

Test Results



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Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)	Sieve Size (mm)	Percentage Passing (%)
150	-	26.5	100	4.75	74	0.300	52
100	-	19.0	88	3.35	72	0.212	47
75	-	16.0	-	2.00	68	0.150	42
63	-	13.2	86	1.18	63	0.090	34
53	-	9.50	81	0.600	58	0.075	33
37.5	-	6.70	77	0.425	56	0.063	30

Test Remarks

- Condition of the sample as received: Natural.
- The sample used for testing: Whole Sample.
- The percentage passing the <0.063 mm sieve was obtained by difference.
- Laboratory description: Gravely SAND, with some silt; brownish grey. Moist. Not accredited due to not a representative mass.

Date Tested 04-03-2026

General Remarks

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Fergus Goldie	Steven Anderson

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C3 Allophane tests

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Report Number	1102034.0000.0.0/Rep 7	04-03-2026
Test Schedule Reference	NZ01_307	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

Laboratory Test Report

Detection of presence of allophane in soils - NZS 4402:1986 Test 3.4

Customer Sample Details

Location	**ID**	Saralana1				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2838		**Date Sampled**	28-01-2026	
	Reference	BH08_0.25m		**Depth From**	0.25 m	**to** 0.4 m
	Description	CLAY minor silt				
Customer Instructions	N/A					

Test Results

Allophane Colour Intensity	Pink to Red
Approximate Allophane Content	5 % to 7 %
Date Tested	25-02-2026

Test Remarks

- Condition of the sample as received: Natural.
- Laboratory description: Silty SAND, with some gravel; dark brown. Moist, high plasticity.

General Remarks

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- Sample descriptions are enclosed for your information but are not covered under the IANZ endorsement of this report.

Approved by KTP	Authorised by Project Director
Fergus Goldie	Steven Anderson

ACCREDITED IANZ TESTING LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

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Report Number	1102034.0000.0.0/Rep 8	04-03-2026
Test Schedule Reference	NZ01_307	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

Laboratory Test Report

Detection of presence of allophane in soils - NZS 4402:1986 Test 3.4

Customer Sample Details

Location	**ID**	StJean1				
	Description	N/A				
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A
Sample	**Geotechnics ID**	A2836		**Date Sampled**	19-01-2026	
	Reference	BH11_0.0 m		**Depth From**	0.0 m	**to** 0.4 m
	Description	SILT				
Customer Instructions	N/A					

Test Results

Allophane Colour Intensity	Pink to Red
Approximate Allophane Content	5 % to 7 %
Date Tested	25-02-2026

Test Remarks

- Condition of the sample as received: Natural.
- Laboratory description: Gravely SAND, with minor silt; dark brown. Moist, high plasticity.

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
- This report has been prepared for the benefit of Tonkin + Taylor, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement.
- Please reproduce this report in full when transmitting to others or including in internal reports.
- Samples not destroyed during testing will be retained for one month from the date of this report before being discarded. If we can be of any further assistance, feel free to get in touch.
- Sample descriptions are enclosed for your information but are not covered under the IANZ endorsement of this report.

Approved by KTP	Authorised by Project Director
Fergus Goldie	Steven Anderson

ACCREDITED IANZ TESTING LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

www.geotechnics.co.nz

GEOTECHNICS

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auckland@geotechnics.co.nz

Report Number	1102034.0000.0.0/Rep 10	06-03-2026
Test Schedule Reference	NZ01_311	

Customer Details

Customer	Tonkin + Taylor
Address	PO BOX 5271 AUCKLAND 1141
Project Name	Port Vila CBD Geotechnical Hazard Study
Project ID	1097984.1000

Laboratory Test Report

Detection of presence of allophane in soils - NZS 4402:1986 Test 3.4

Customer Sample Details

Location	**ID**	VCS2					
	Description	N/A					
	Data	E°: N/A	N°: N/A	Level: N/A	Chainage: N/A	Offset: N/A	
Sample	**Geotechnics ID**	A2867		**Date Sampled**	16-02-2026		
	Reference	BH12_9.0m		**Depth From**	9.0 m	**to**	9.45 m
	Description	Sandy SILT					
Customer Instructions	N/A						

Test Results

Allophane Colour Intensity	Pink to Red
Approximate Allophane Content	5 % to 7 %
Date Tested	04-03-2026

Test Remarks

- Condition of the sample as received: Natural.
- Laboratory description: Sandy SILT; dark brown. Firm, moist, low plasticity.

General Remarks

- Samples have been tested as received and according to your instructions. Results apply only to the sample(s) tested.
- This report has been prepared for the benefit of Tonkin + Taylor, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement.
- Please reproduce this report in full when transmitting to others or including in internal reports.
- Samples not destroyed during testing will be retained for one month from the date of this report before being discarded. If we can be of any further assistance, feel free to get in touch.
- Sample descriptions are enclosed for your information but are not covered under the IANZ endorsement of this report.

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C4 Unconfined Compressive Strength tests

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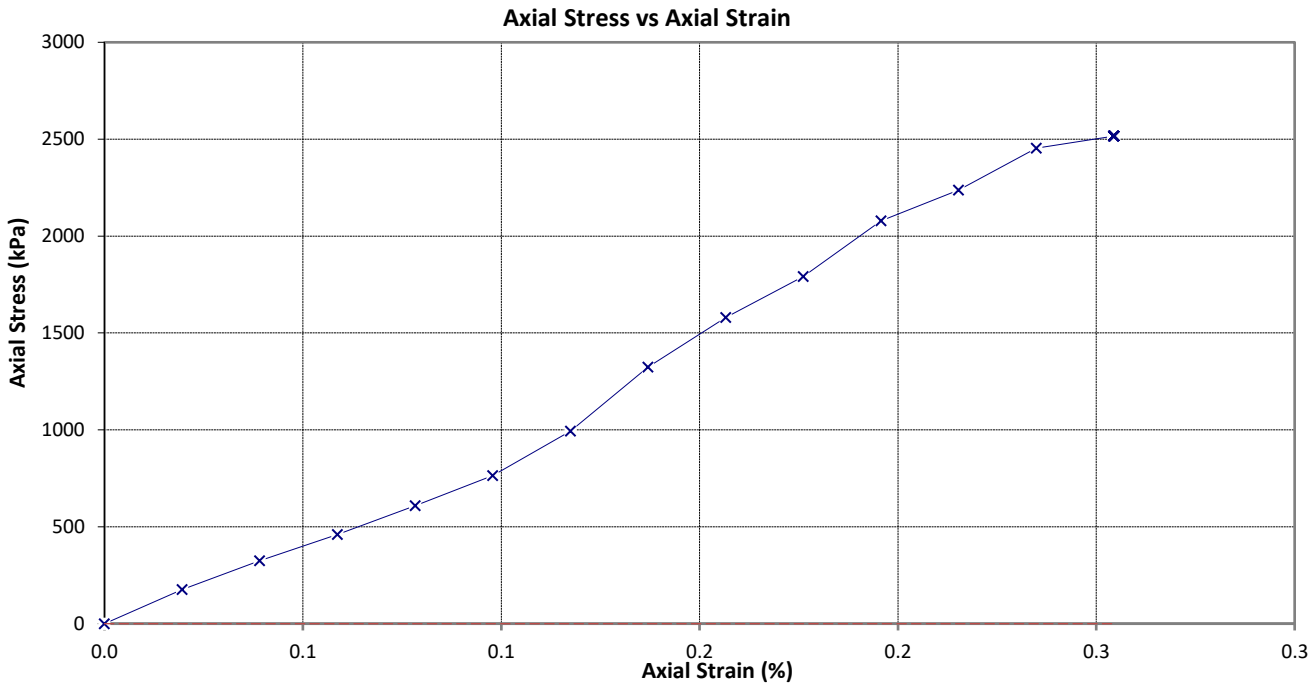
Geotechnics Project ID: **1102034.0000.0.0**
Customer Project ID: **1097984.1**

Site: Port Vila CBD Geotech Hazard
Location ID: BH06
Sample Ref.: BH06_8.57 m
Depth: 8.57-8.79 (m)
Test method used: NZS 4402:1986 Test 6.3.1 Determination of the Unconfined Compressive Strength of Cohesive Soil
NZS 4402:1986 Test 2.1 Determination of Water Content

UNCONFINED COMPRESSION STRENGTH TEST



Initial Sample Parameters:

Sample Length (mm)	127.74	Bulk Density (t/m³)	1.99
Sample Diameter (mm)	60.16	Dry Density (t/m³)	1.89
Test Length (mm)	127.74	Water Content (%)	5.5
Test Height / Diameter Ratio	2.12		

Failure Value:

Axial Strain ε (%)	Unconfined Compressive Strength q_u (kPa)	Rate of Compression (mm/min)
0.25	2516	0.20

Mode of Failure: Axial

Sample History: Undisturbed core trimmed at natural water content.

Sample Description: Slightly weathered, lightbrownish white, LIMESTONE. Very weak.

Test Remarks: Unconfined Compressive Strength reported to the nearest 1 kPa.

Failure Photo:



Tested by: ANHU Date: 30/01/2026 Approved by KTP: GEGO Date: 4/02/2026

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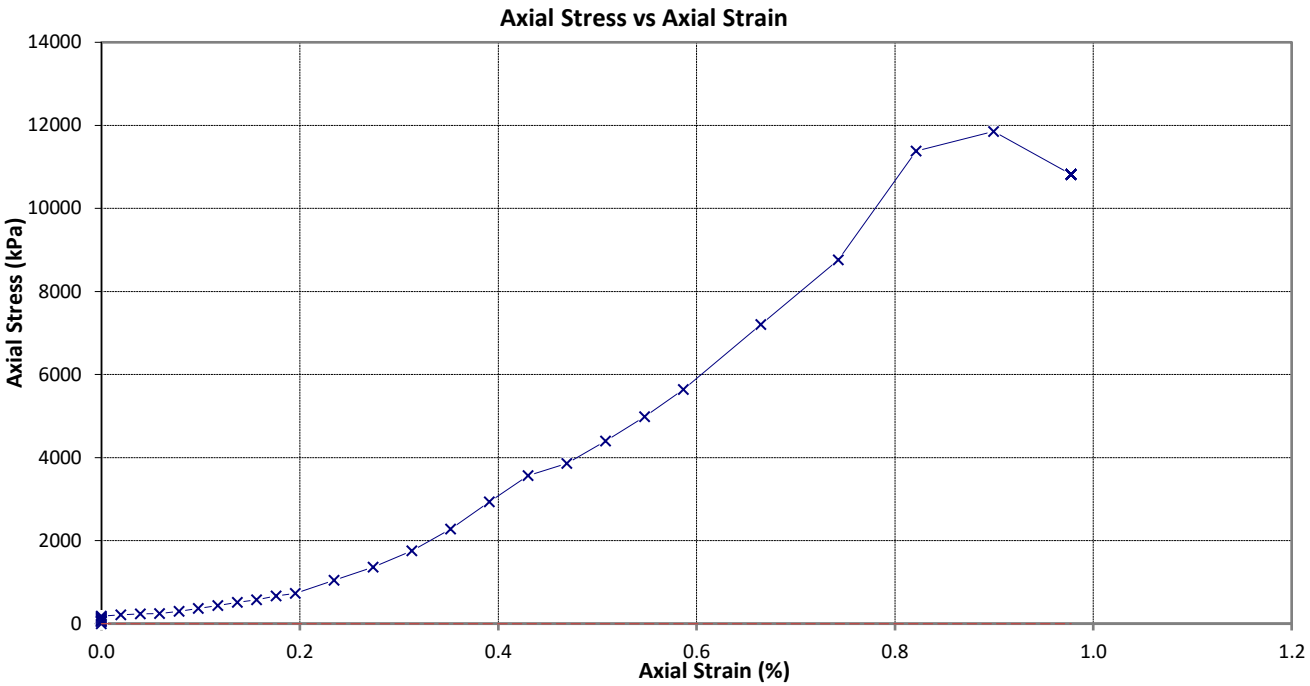
Geotechnics Project ID: **1102034.0000.0.0**
Customer Project ID: **1097984.1**

Site:	Port Vila CBD Geotech Hazard	Location ID:	BH10	
Sample Ref.:	BH10_10.8 m	Depth:	10.8-11.1	(m)
Test method used:	NZS 4402:1986 Test 6.3.1 Determination of the Unconfined Compressive Strength of Cohesive Soil NZS 4402:1986 Test 2.1 Determination of Water Content			

UNCONFINED COMPRESSION STRENGTH TEST



Initial Sample Parameters:

Sample Length (mm)	127.85	Bulk Density (t/m³)	2.35
Sample Diameter (mm)	61.14	Dry Density (t/m³)	2.21
Test Length (mm)	127.85	Water Content (%)	6.2
Test Height / Diameter Ratio	2.09		

Failure Value:

Axial Strain ε (%)	Unconfined Compressive Strength q_u (kPa)	Rate of Compression (mm/min)
0.90	11854	0.20

Mode of Failure: Axial

Sample History: Undisturbed core trimmed at natural water content.

Sample Description: Unweathered, light brownish white, LIMESTONE. Weak.

Test Remarks: Unconfined Compressive Strength reported to the nearest 1 kPa.

Failure Photo:



Tested by:	ANHU	Date:	2/02/2026	Approved by KTP:	GEGO	Date:	4/02/2026

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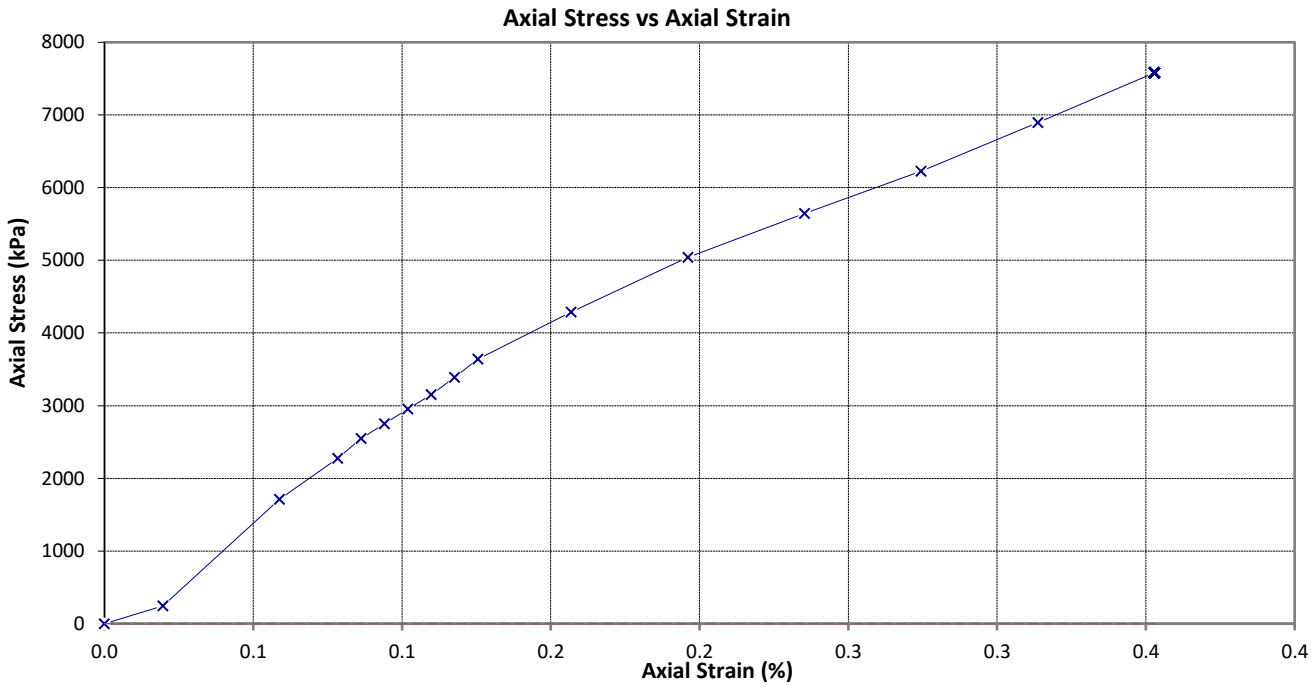
Geotechnics Project ID: **1102034.0000.0.0**
Customer Project ID: **1097984.1**

Site:	Port Vila CBD Geotech Hazard	Location ID:	BH10	
Sample Ref.:	BH10_8.69 m	Depth:	8.69-8.9	(m)
Test method used:	NZS 4402:1986 Test 6.3.1 Determination of the Unconfined Compressive Strength of Cohesive Soil NZS 4402:1986 Test 2.1 Determination of Water Content			

UNCONFINED COMPRESSION STRENGTH TEST



Initial Sample Parameters:

Sample Length (mm)	127.51	Bulk Density (t/m³)	1.98
Sample Diameter (mm)	60.97	Dry Density (t/m³)	1.87
Test Length (mm)	127.51	Water Content (%)	6.1
Test Height / Diameter Ratio	2.09		

Failure Value:

Axial Strain ε (%)	Unconfined Compressive Strength q_u (kPa)	Rate of Compression (mm/min)
0.35	7582	0.20

Mode of Failure: Shear

Sample History: Undisturbed core trimmed at natural water content.

Sample Description: Slightly weathered, light brownish white, LIMESTONE. Very weak,

Test Remarks: Unconfined Compressive Strength reported to the nearest 1 kPa.

Failure Photo:



Tested by:	ANHU	Date:	2/02/2026	Approved by KTP:	GEGO	Date:	4/02/2026

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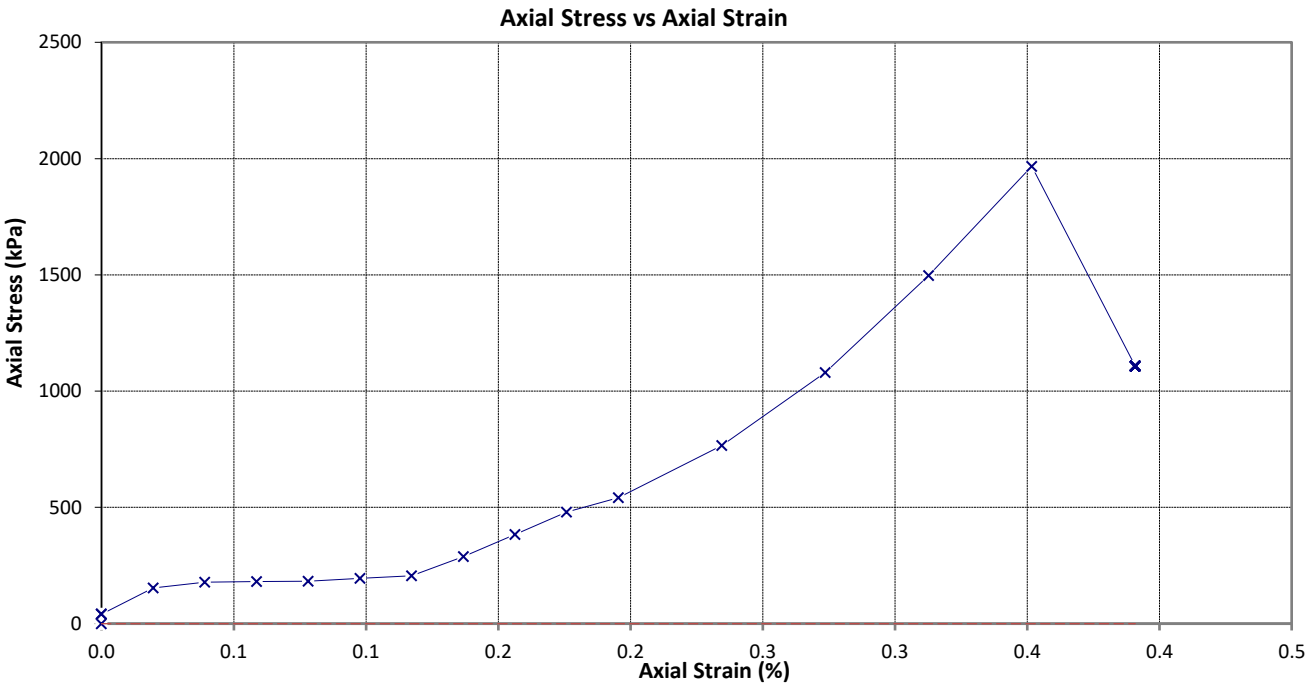
Geotechnics Project ID: **1102034.0000.0.0**
Customer Project ID: **1097984.1**

Site:	Port Vila CBD Geotech Hazard	Location ID:	BH05	
Sample Ref.:	BH05_9.35 m	Depth:	9.35-9.55	(m)
Test method used:	NZS 4402:1986 Test 6.3.1 Determination of the Unconfined Compressive Strength of Cohesive Soil NZS 4402:1986 Test 2.1 Determination of Water Content			

UNCONFINED COMPRESSION STRENGTH TEST



Initial Sample Parameters:

Sample Length (mm)	127.92	Bulk Density (t/m³)	1.94
Sample Diameter (mm)	60.70	Dry Density (t/m³)	1.80
Test Length (mm)	127.92	Water Content (%)	8.1
Test Height / Diameter Ratio	2.11		

Failure Value:

Axial Strain ε (%)	Unconfined Compressive Strength q_u (kPa)	Rate of Compression (mm/min)
0.35	1967	0.22

Mode of Failure: Axial

Sample History: Undisturbed core trimmed at natural water content.

Sample Description: Slightly weathered, white, LIMESTONE. Very weak.

Test Remarks: Unconfined Compressive Strength reported to the nearest 1 kPa.

Failure Photo:



Tested by:	ANHU	Date:	2/02/2026	Approved by KTP:	GEGO	Date:	4/02/2026

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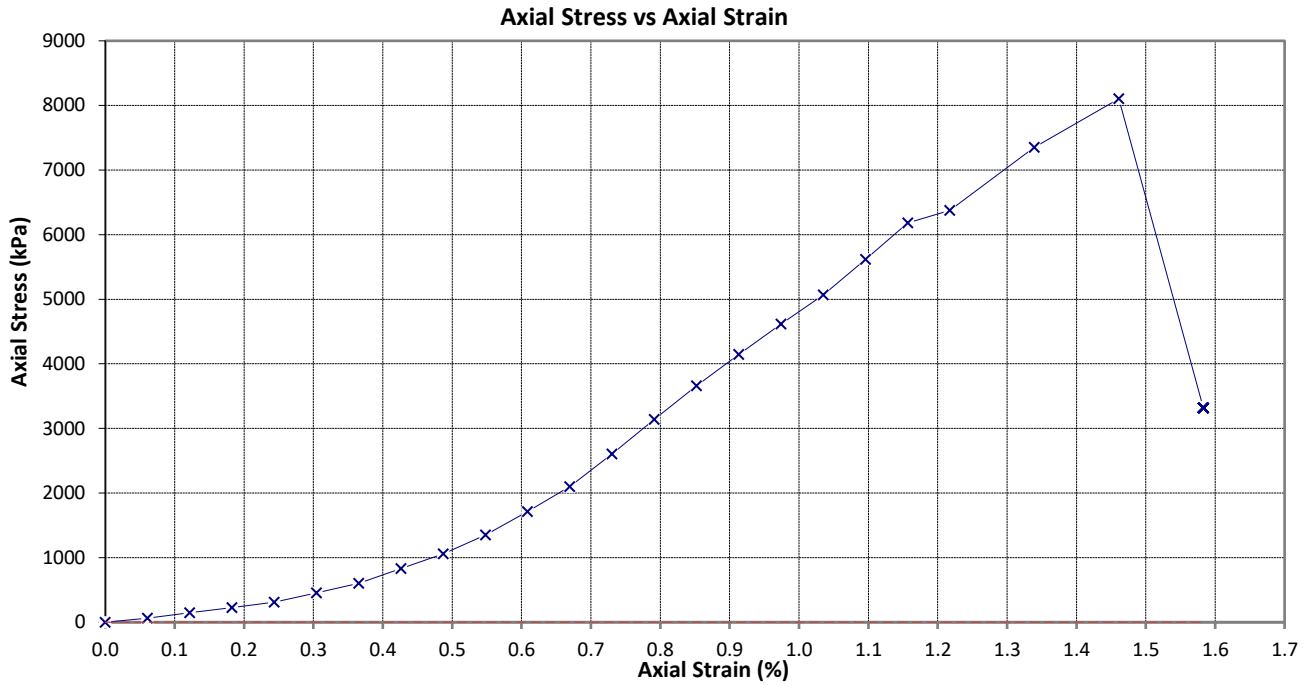
Geotechnics Project ID: **1102034**
Customer Project ID: **1097984**

Site:
Location ID: BH03
Sample Ref.: Port Vila CBD Geotechnical Hazard
Depth: 13.7 - 13.8 (m)
Test method used: NZS 4402:1986 Test 6.3.1 Determination of the Unconfined Compressive Strength of Cohesive Soil
NZS 4402:1986 Test 2.1 Determination of Water Content

UNCONFINED COMPRESSION STRENGTH TEST



Initial Sample Parameters:

Sample Length (mm)	82.13	Bulk Density (t/m³)	2.26
Sample Diameter (mm)	60.20	Dry Density (t/m³)	2.17
Test Length (mm)	82.13	Water Content (%)	4.3
Test Height / Diameter Ratio	1.36		

Failure Value:

Axial Strain ε (%)	Unconfined Compressive Strength q_u (kPa)	Rate of Compression (mm/min)
1.46	8102	0.16

Mode of Failure: Axial

Sample History: Undisturbed core trimmed at natural water content.

Sample Description: Moderately weathered, white and light brown, LIMESTONE; weak.

Test Remarks: Unconfined Compressive Strength reported to the nearest 1 kPa.

Failure Photo:



Tested by: KTAY Date: 9/03/2026 Approved by KTP: GEGO Date: 13/03/2026

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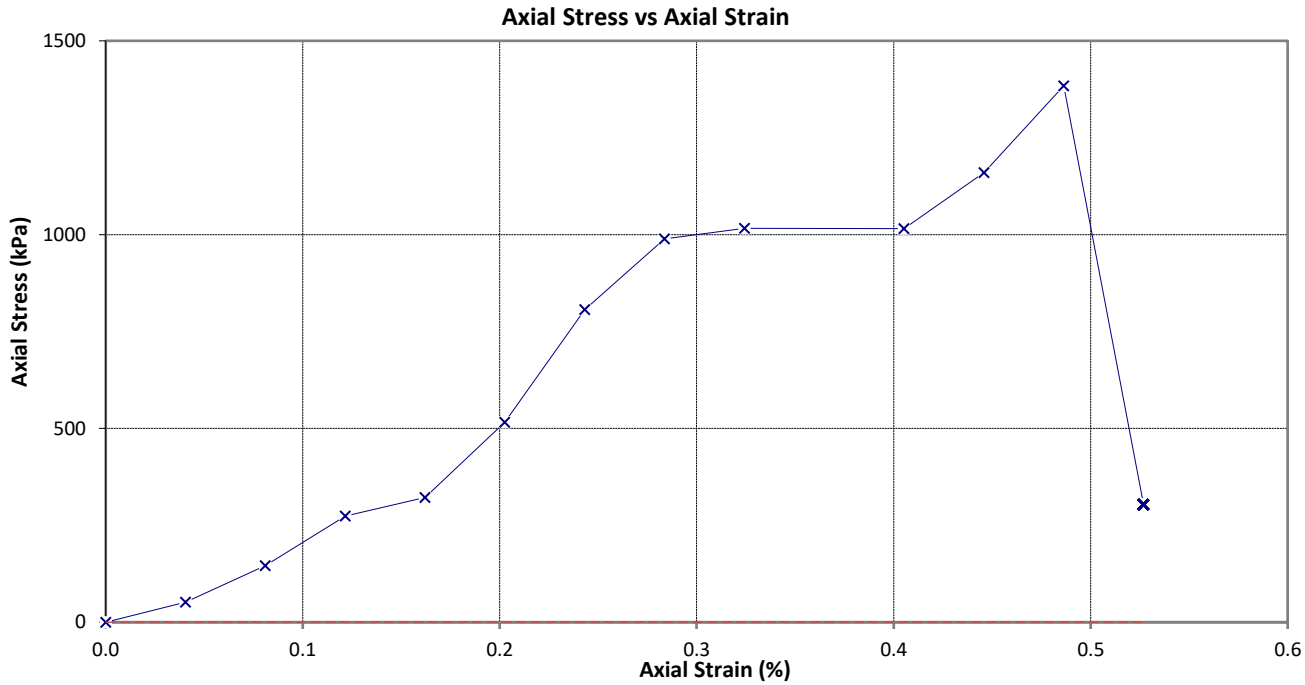
Geotechnics Project ID: **1102034**
Customer Project ID: **1097984**

Site: Port Vila CBD Geotechnical Hazard
Location ID: BH03
Sample Ref.:
Depth: 12.66 - 12.86 (m)

Test method used: NZS 4402:1986 Test 6.3.1 Determination of the Unconfined Compressive Strength of Cohesive Soil
NZS 4402:1986 Test 2.1 Determination of Water Content

UNCONFINED COMPRESSION STRENGTH TEST



Initial Sample Parameters:

Sample Length (mm)	123.37	Bulk Density (t/m³)	2.01
Sample Diameter (mm)	60.59	Dry Density (t/m³)	1.87
Test Length (mm)	123.37	Water Content (%)	7.8
Test Height / Diameter Ratio	2.04		

Failure Value:

Axial Strain ε (%)	Unconfined Compressive Strength q_u (kPa)	Rate of Compression (mm/min)
0.49	1384	0.20

Mode of Failure: Axial

Sample History: Undisturbed core trimmed at natural water content.

Sample Description: Slightly weathered, white and light brown, LIMESTONE; Very weak.

Test Remarks: Unconfined Compressive Strength reported to the nearest 1 kPa.

Failure Photo:



Tested by: KTAY Date: 9/03/2026 Approved by KTP: GEGO Date: 13/03/2026

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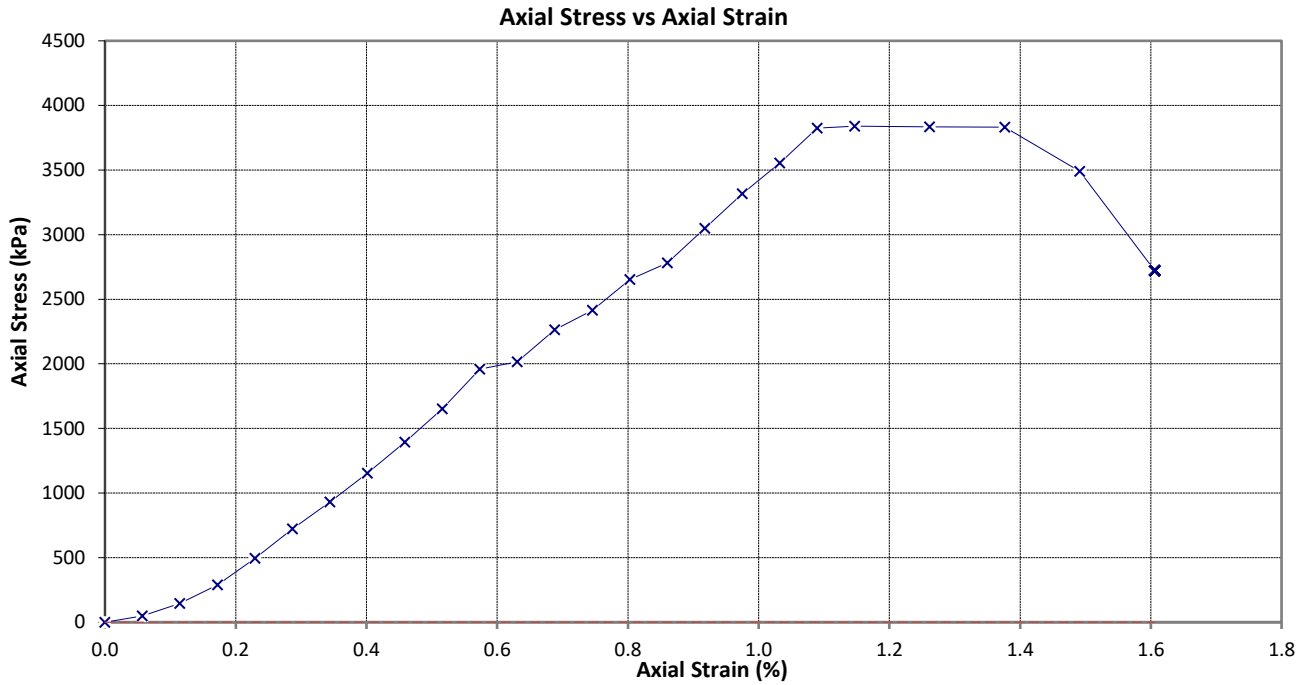
Geotechnics Project ID: **1102034**
Customer Project ID: **1097984**

Site: Port Vila CBD Geotechnical Hazard
Location ID: BH11
Sample Ref.:
Depth: 11.65 - 11.76 (m)
Test method used: NZS 4402:1986 Test 6.3.1 Determination of the Unconfined Compressive Strength of Cohesive Soil
NZS 4402:1986 Test 2.1 Determination of Water Content

UNCONFINED COMPRESSION STRENGTH TEST



Initial Sample Parameters:

Sample Length (mm)	87.18	Bulk Density (t/m³)	2.01
Sample Diameter (mm)	60.76	Dry Density (t/m³)	1.85
Test Length (mm)	87.18	Water Content (%)	8.7
Test Height / Diameter Ratio	1.43		

Failure Value:

Axial Strain ε (%)	Unconfined Compressive Strength q_u (kPa)	Rate of Compression (mm/min)
1.15	3839	0.21

Mode of Failure: Axial

Sample History: Undisturbed core trimmed at natural water content.

Failure Photo:



Sample Description: Moderately weathered, light brown, LIMESTONE; very weak.

Test Remarks: Unconfined Compressive Strength reported to the nearest 1 kPa.

Tested by: KTAY Date: 6/03/2026 Approved by KTP: GEGO Date: 13/03/2026

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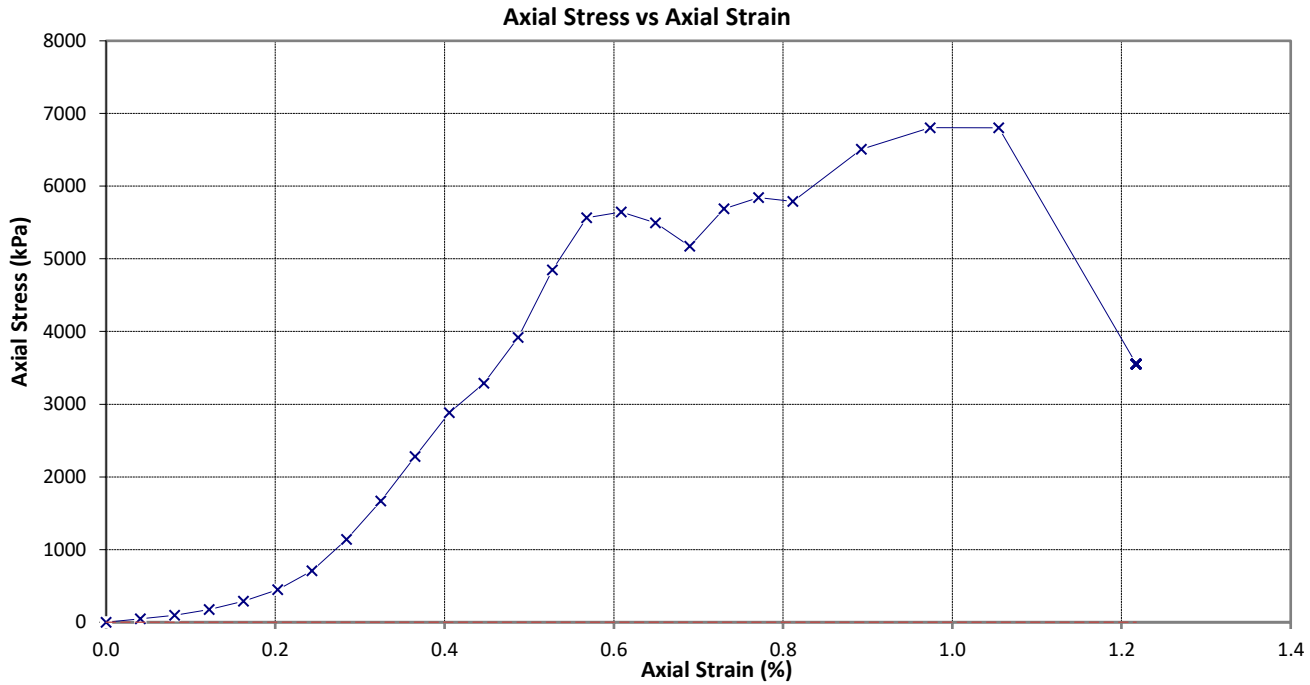
Geotechnics Project ID: **1102034**
Customer Project ID: **1097984**

Site: Port Vila CBD Geotechnical Hazard
Location ID: BH02
Sample Ref.:
Depth: 17.56 - 17.88 (m)
Test method used: NZS 4402:1986 Test 6.3.1 Determination of the Unconfined Compressive Strength of Cohesive Soil
NZS 4402:1986 Test 2.1 Determination of Water Content

UNCONFINED COMPRESSION STRENGTH TEST



Initial Sample Parameters:

Sample Length (mm)	123.21	Bulk Density (t/m³)	2.16
Sample Diameter (mm)	60.72	Dry Density (t/m³)	2.06
Test Length (mm)	123.21	Water Content (%)	4.9
Test Height / Diameter Ratio	2.03		

Failure Value:

Axial Strain ε (%)	Unconfined Compressive Strength q_u (kPa)	Rate of Compression (mm/min)
0.97	6805	0.21

Mode of Failure:

Sample History: Undisturbed core trimmed at natural water content.

Sample Description: Moderately weathered, brownish white, LIMESTONE; weak.

Test Remarks: Unconfined Compressive Strength reported to the nearest 1 kPa.

Failure Photo:



Tested by: KTAY Date: 9/03/2026 Approved by KTP: GEGO Date: 13/03/2026

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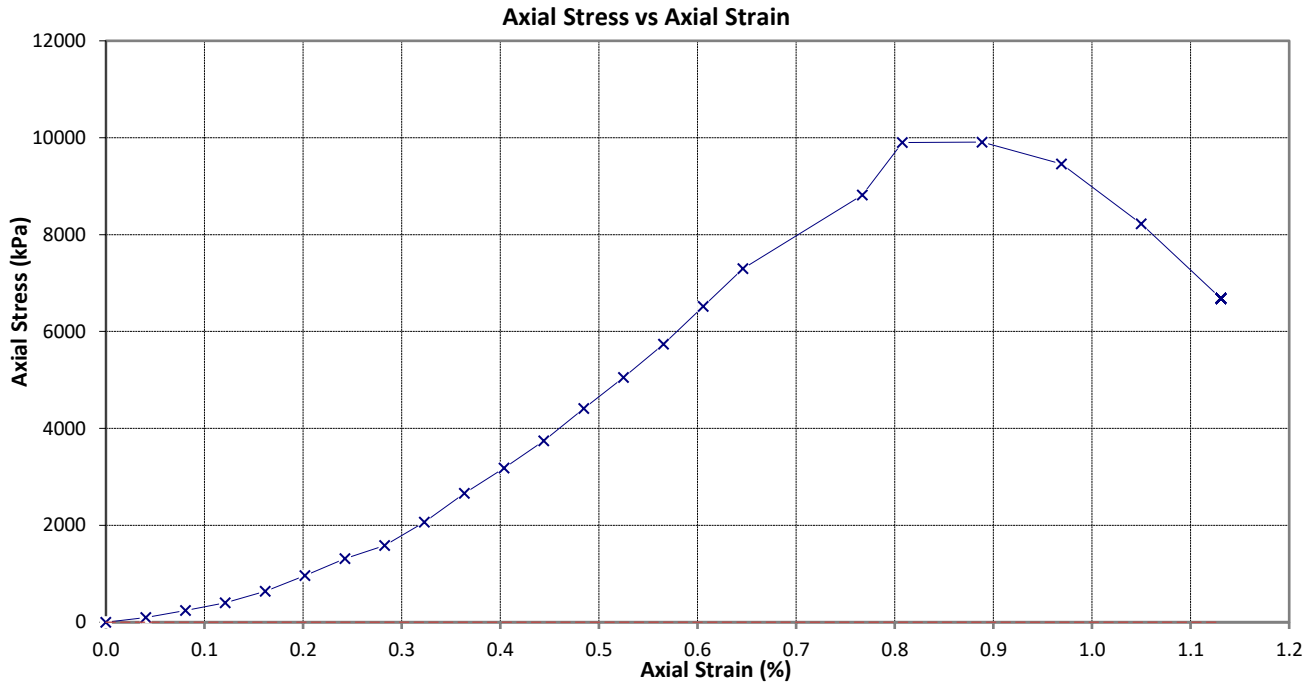
Geotechnics Project ID: **1102034**
Customer Project ID: **1097984.1000**

Site: Port Vila CBD Geotechnical Hazard
Location ID: BH09
Sample Ref.:
Depth: 20.7-20.9 (m)
Test method used: NZS 4402:1986 Test 6.3.1 Determination of the Unconfined Compressive Strength of Cohesive Soil
NZS 4402:1986 Test 2.1 Determination of Water Content

UNCONFINED COMPRESSION STRENGTH TEST



Initial Sample Parameters:

Sample Length (mm)	123.81	Bulk Density (t/m³)	1.90
Sample Diameter (mm)	60.83	Dry Density (t/m³)	1.46
Test Length (mm)	123.81	Water Content (%)	29.8
Test Height / Diameter Ratio	2.04		

Failure Value:

Axial Strain ε (%)	Unconfined Compressive Strength q_u (kPa)	Rate of Compression (mm/min)
0.89	9910	0.17

Mode of Failure: Axial

Sample History: Undisturbed core trimmed at natural water content.

Sample Description: Moderately Weathered, white, LIMESTONE; Weak.

Test Remarks: Unconfined Compressive Strength reported to the nearest 1 kPa.

Failure Photo:



Tested by: KTAY/KAPO Date: 9/03/2026 Approved by KTP: GEGO Date: 13/03/2026

C5 Consolidated-Undrained triaxial compression tests

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Geotechnics Project ID: 1102034.0000.02.0
Customer Project ID: 1097984.1000
Testing Schedule Reference: --

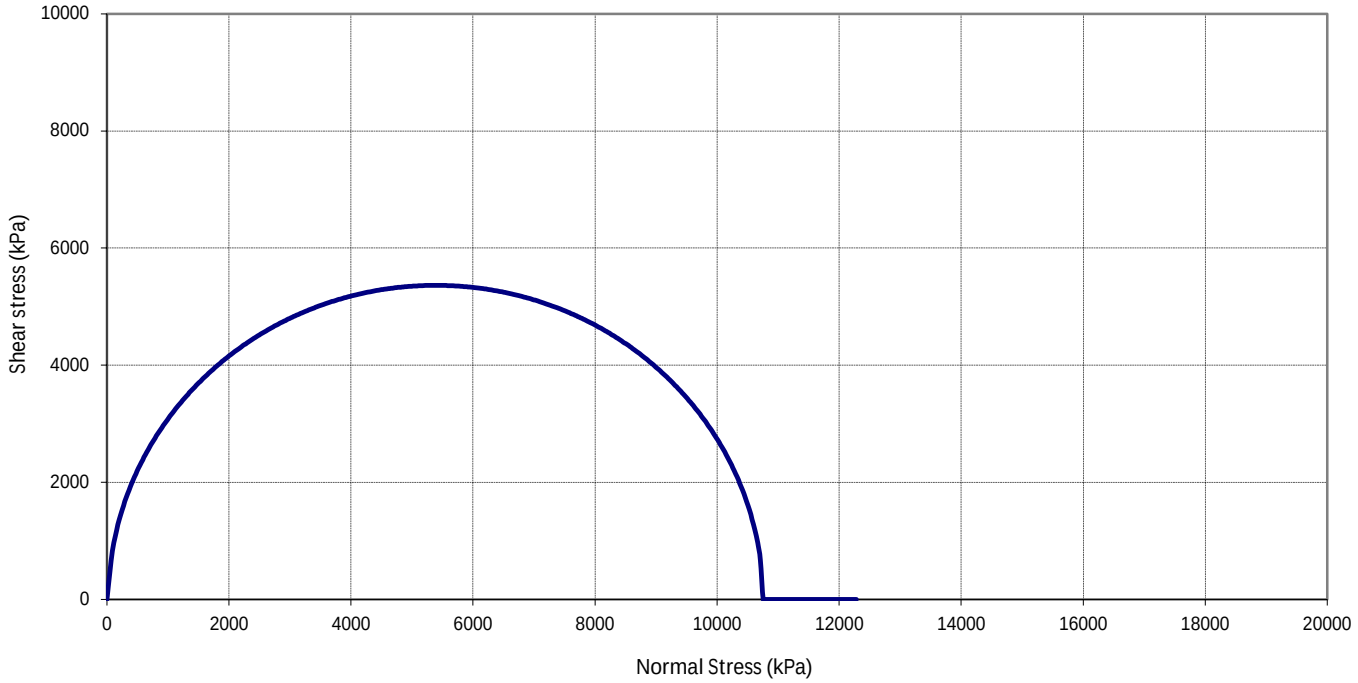
Site: Port Vila CBD Location ID: BH12

Sample Ref.: -- Geotechnics ID: -- Depth: 14.11 - 14.22 (m)

Test method used: ISO 17892-9:2018 Part 9 Isotropic consolidated-undrained triaxial compression test on water saturated soils (CIU)
NZS 4402:1986 Test 2.1 Determination of Water Content

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST (SINGLE-STAGE)

MOHR CIRCLES OF EFFECTIVE STRESSES



General Sample Parameters

Initial Sample Height:	110.58	mm	Initial Water Content:	16.0	%
Initial Sample Diameter:	60.08	mm	Initial Bulk Density:	2.05	t/m³
Initial B Value:	0	%	Initial Dry Density:	1.77	t/m³
B Value before Consolidation:	94	%	Final Water Content:	17.4	%

Test Results

At the End of Consolidation Stage					Failure Values					
Effective Stress		Back Pressure (kPa)	Volumetric Strain		Deviator Stress ($\sigma_v' - \sigma_h'$) (kPa)	Vertical Strain ε (%)	Effective Stress		Corrections (kPa)	
Horizontal σ_h'(kPa)	Vertical σ_v'(kPa)		Strain (%)	Rate (%/hr)			Vertical σ_v' (kPa)	Horizontal σ_h'(kPa)	Membrane $(\Delta\sigma_v)_m$	Filter P $(\Delta\sigma_v)_{fp}$
100	101	300	0.38	0.00	10727.32	0.65	10752.72	25.40	0.51	1.24

Failure Mode & Photo

Planar



Sample History: Undisturbed core trimmed at natural water content.

Soil description: SILTSTONE, weak, dark brownish grey.

Test Speed: 0.009 (mm/min)

Test Remarks: The sample was saturated by increments of cell pressure and back pressure.
It was drained from radial boundary and both ends in the consolidation stage.
Failure for compression stage was determined by the maximum effective stress ratio.

Tested by: PIHE Date: 30/03/2026 Approved by KTP: Date: 15/04/2026

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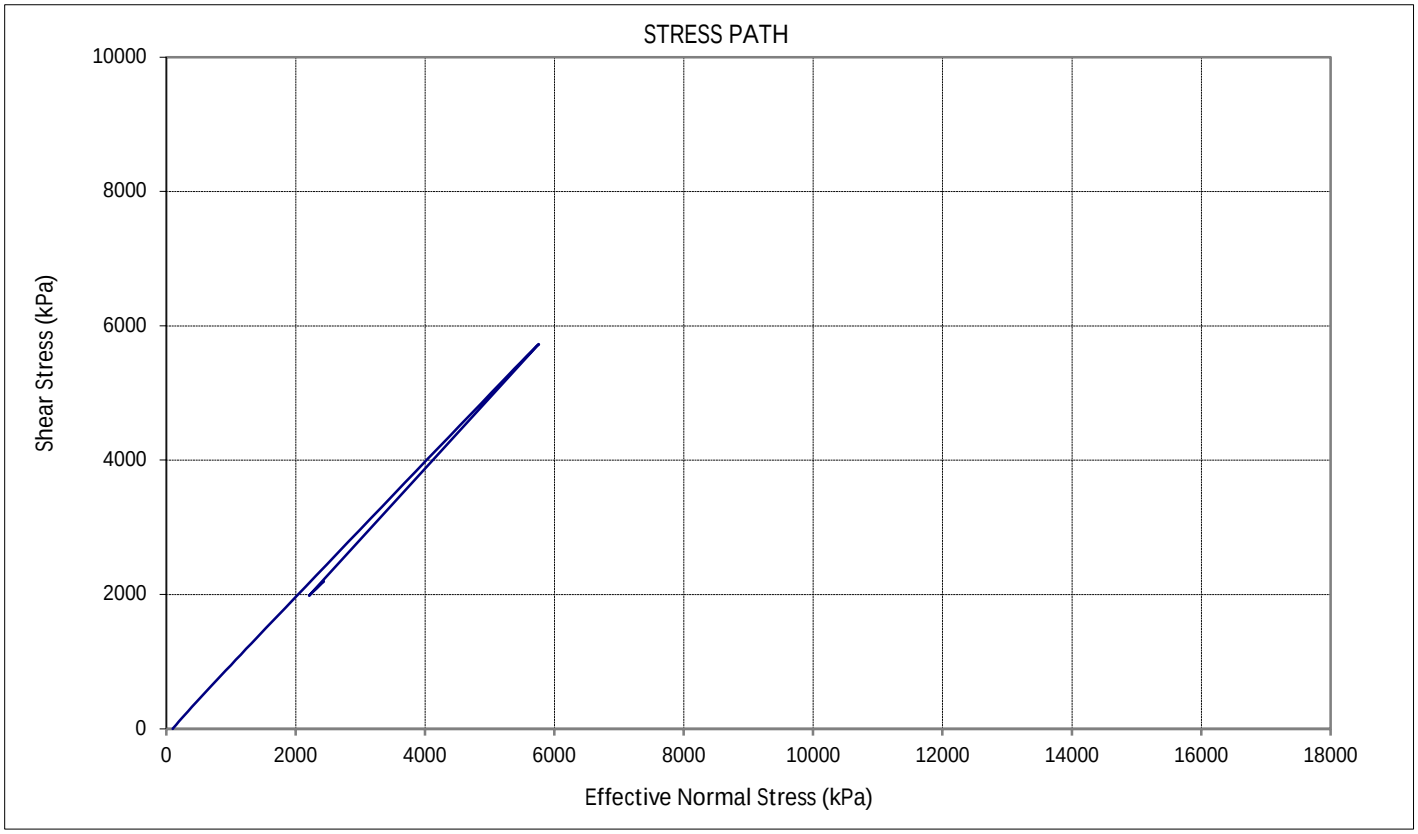
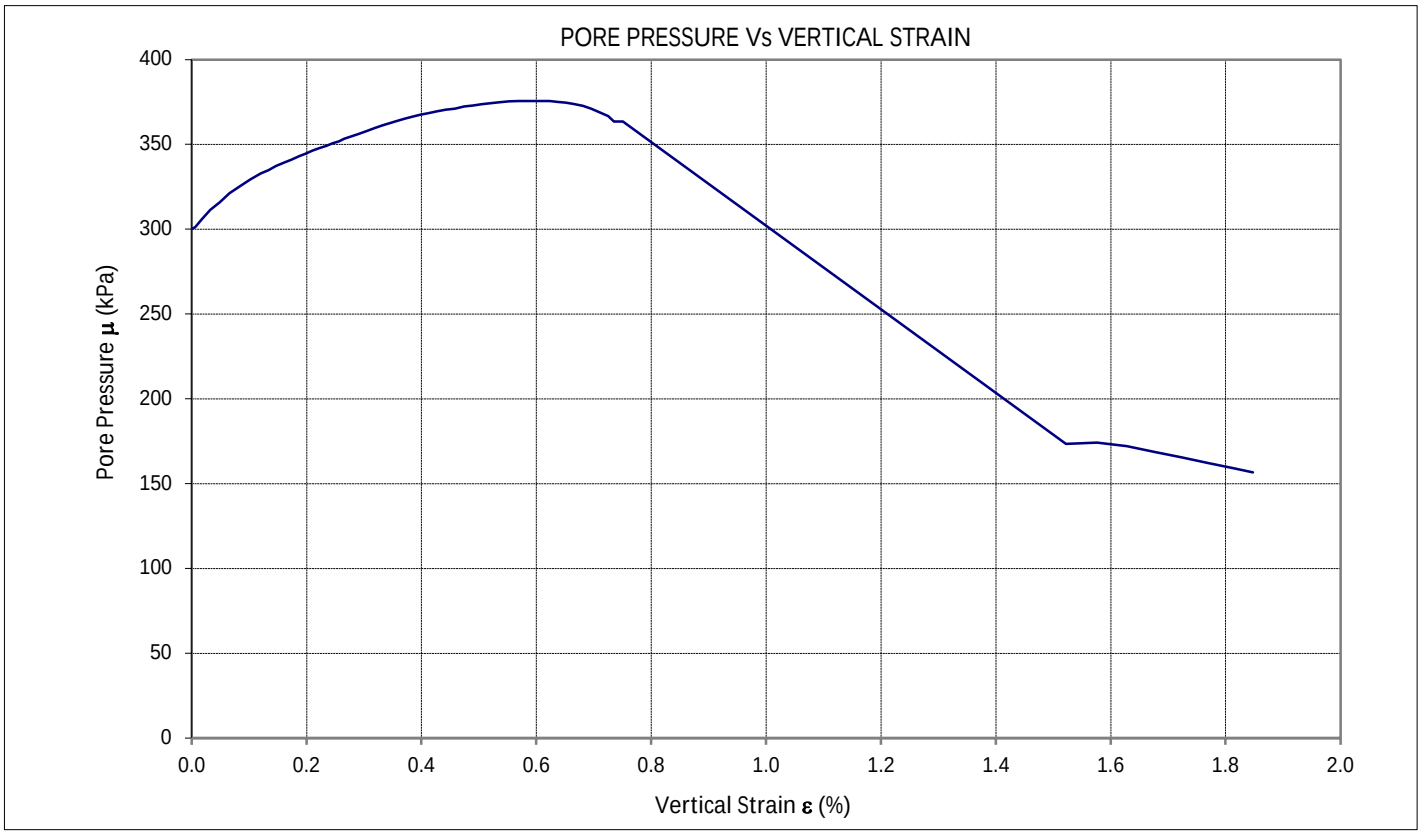
Geotechnics Project ID: 1102034.0000.02.0
Customer Project ID: 1097984.1000
Testing Schedule Reference: --

Site: Port Vila CBD Location ID: BH12
Sample Ref.: -- Geotechnics ID: -- Depth: 14.11 - 14.22 (m)
Test method used: ISO 17892-9:2018 Part 9 Isotropic consolidated-undrained triaxial compression test on water saturated soils (CIU)
NZS 4402:1986 Test 2.1 Determination of Water Content

GRAPHS





Tested by: PIHE Date: 30/03/2026 Approved by KTP: YHW Date: 15/04/2026

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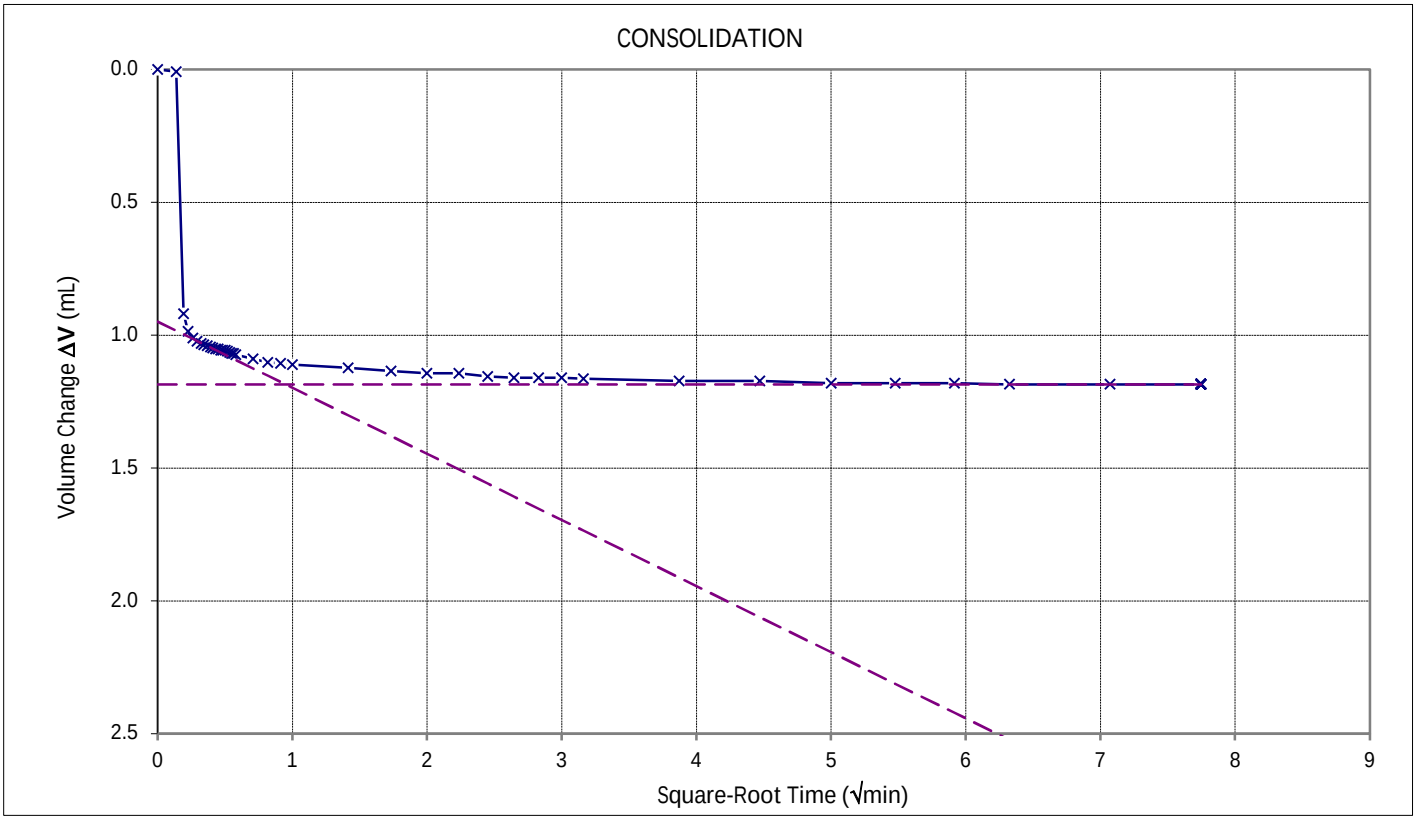
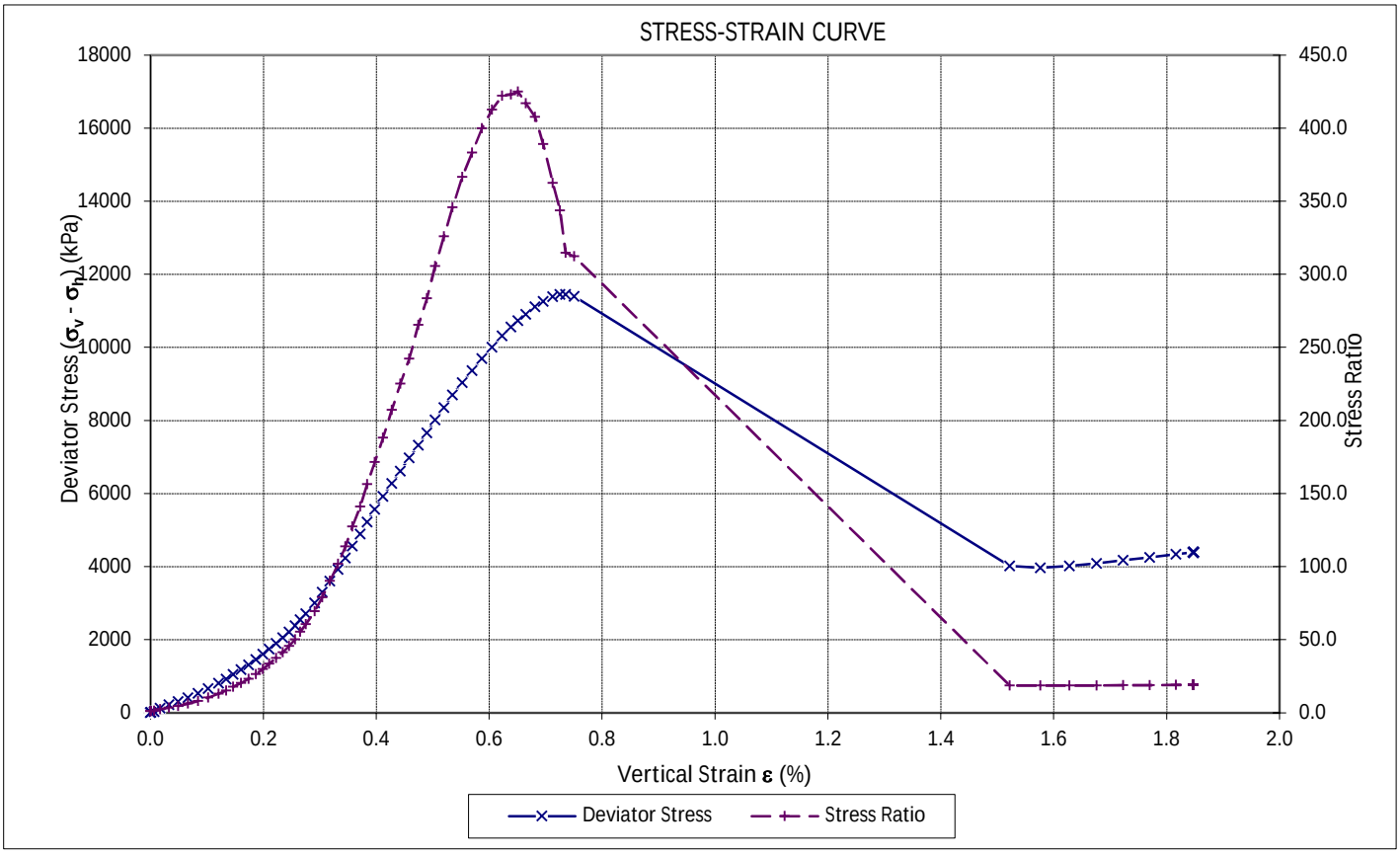
Geotechnics Project ID: 1102034.0000.02.0
Customer Project ID: 1097984.1000
Testing Schedule Reference: --

Site: Port Vila CBD Location ID: BH12
Sample Ref.: -- Geotechnics ID: -- Depth: 14.11 - 14.22 (m)
Test method used: ISO 17892-9:2018 Part 9 Isotropic consolidated-undrained triaxial compression test on water saturated soils (CIU)
NZS 4402:1986 Test 2.1 Determination of Water Content

GRAPHS





Tested by: PIHE Date: 30/03/2026 Approved by KTP: YHW Date: 15/04/2026

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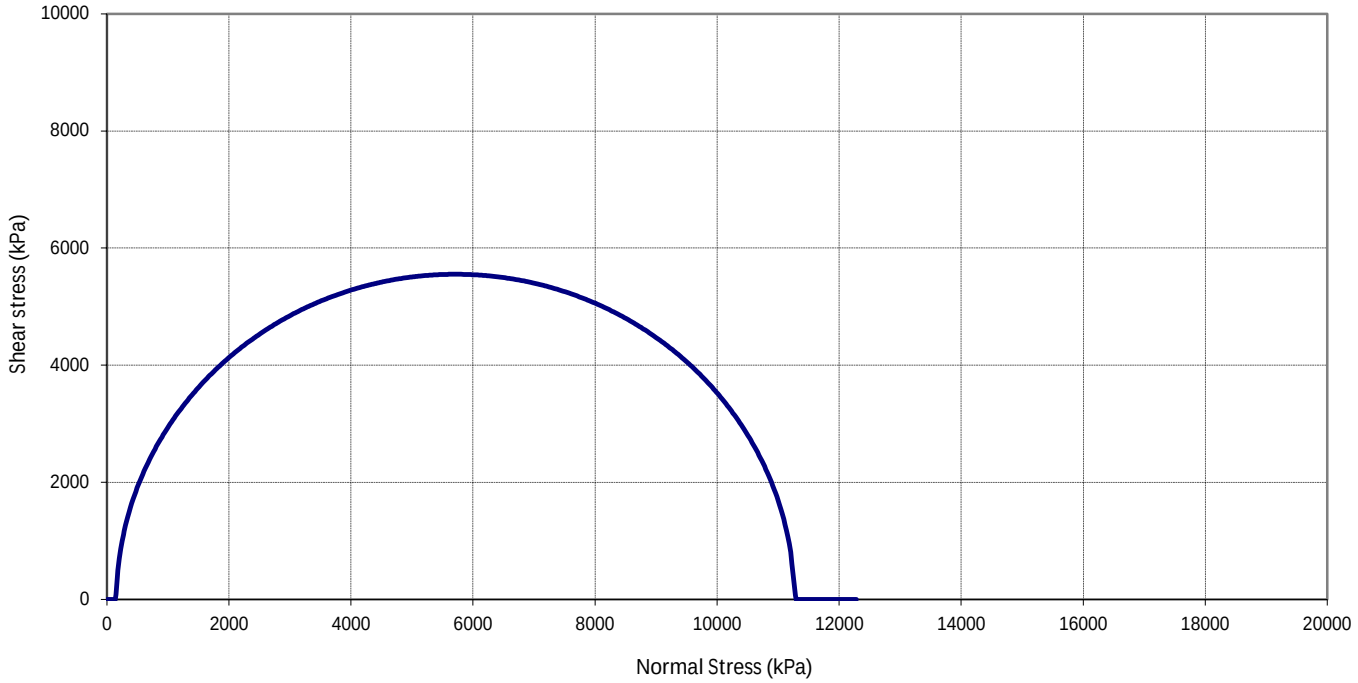
Geotechnics Project ID: 1102034.0000.02.0
Customer Project ID: 1097984.1000
Testing Schedule Reference: --

Site: Port Vila CBD Location ID: BH12
Sample Ref.: -- Geotechnics ID: -- Depth: 25.08 - 25.22 (m)
Test method used: ISO 17892-9:2018 Part 9 Isotropic consolidated-undrained triaxial compression test on water saturated soils (CIU)
NZS 4402:1986 Test 2.1 Determination of Water Content

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST (SINGLE-STAGE)

MOHR CIRCLES OF EFFECTIVE STRESSES



General Sample Parameters

Initial Sample Height:	138.65	mm	Initial Water Content:	18.0	%
Initial Sample Diameter:	60.55	mm	Initial Bulk Density:	2.07	t/m³
Initial B Value:	8	%	Initial Dry Density:	1.76	t/m³
B Value before Consolidation:	98	%	Final Water Content:	18.8	%

Test Results

At the End of Consolidation Stage					Failure Values					
Effective Stress		Back Pressure (kPa)	Volumetric Strain		Deviator Stress ($\sigma_v' - \sigma_h'$) (kPa)	Vertical Strain ε (%)	Effective Stress		Corrections (kPa)	
Horizontal σ_h'(kPa)	Vertical σ_v'(kPa)		Strain (%)	Rate (%/hr)			Vertical σ_v' (kPa)	Horizontal σ_h'(kPa)	Membrane $(\Delta\sigma_v)_m$	Filter P $(\Delta\sigma_v)_{fp}$
600	601	300	0.75	0.02	11106.21	0.67	11263.91	157.70	0.53	1.26

Failure Mode & Photo

Planar



Sample History: Undisturbed core trimmed at natural water content.

Soil description: SILTSTONE, weak, light brownish grey.

Test Speed: 0.026 (mm/min)

Test Remarks: The sample was saturated by increments of cell pressure and back pressure.
It was drained from radial boundary and both ends in the consolidation stage.
Failure for compression stage was determined by the maximum effective stress ratio.

The specimen membrane punctured at 1.87% axial (vertical) strain during shearing. This compromised the specimen boundary (potential loss of confinement and/or partial drainage); therefore, pore-pressure measurements recorded after 1.87% strain are unreliable/not representative.

Tested by: PIHE Date: 26/03/2026 Approved by KTP: Date: 15/04/2026

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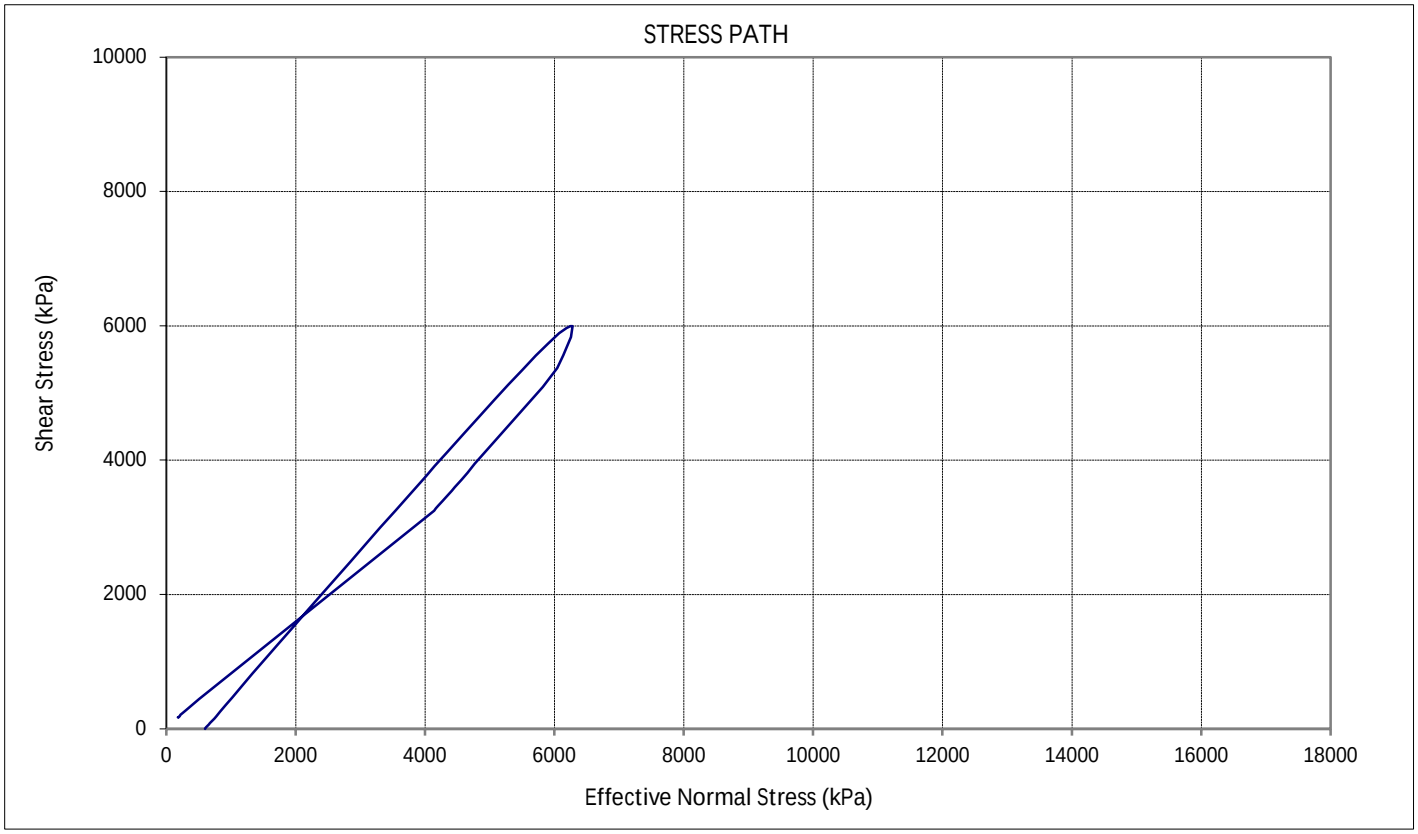
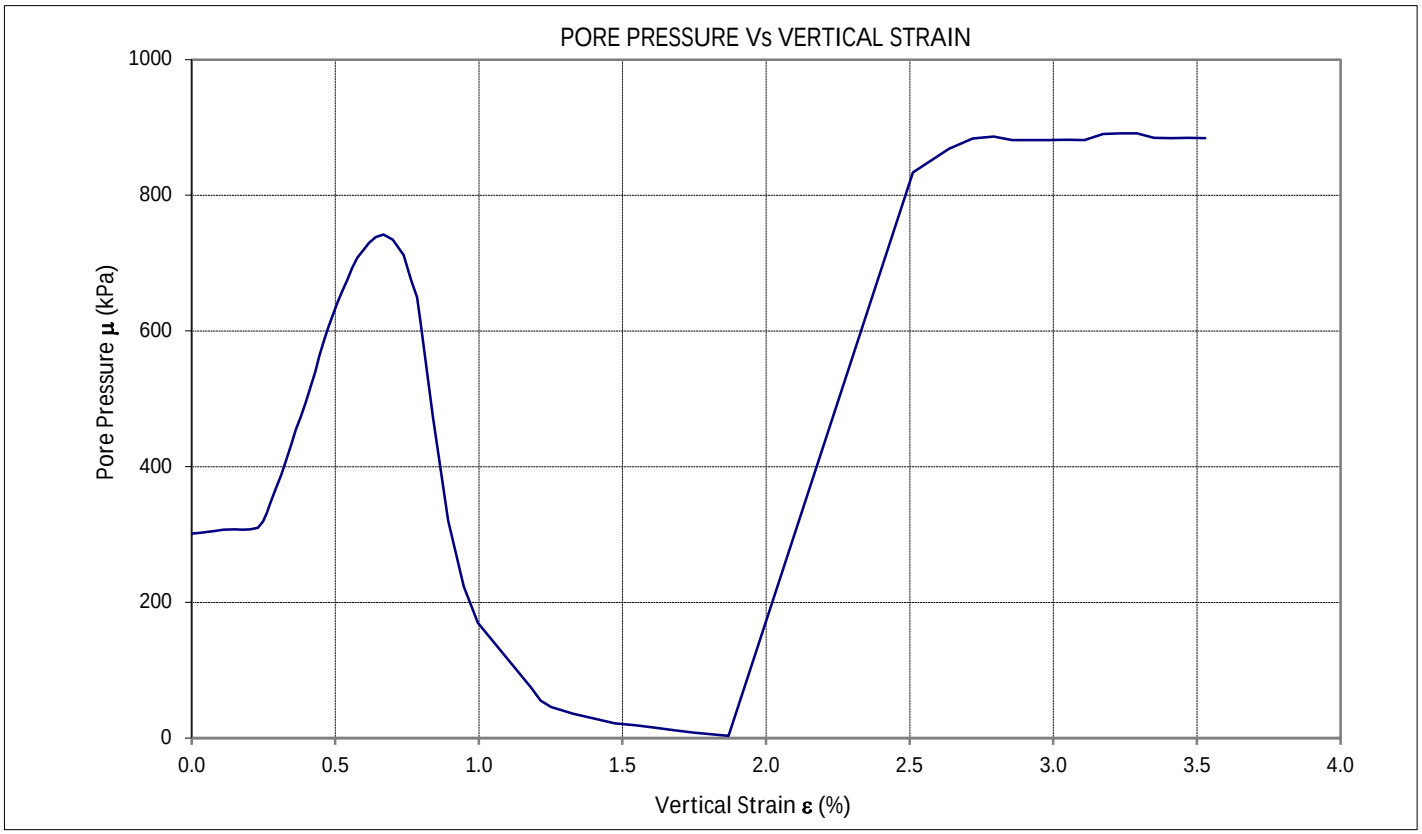
Geotechnics Project ID: 1102034.0000.02.0
Customer Project ID: 1097984.1000
Testing Schedule Reference: --

Site: Port Vila CBD Location ID: BH12
Sample Ref.: -- Geotechnics ID: -- Depth: 25.08 - 25.22 (m)
Test method used: ISO 17892-9:2018 Part 9 Isotropic consolidated-undrained triaxial compression test on water saturated soils (CIU)
NZS 4402:1986 Test 2.1 Determination of Water Content

GRAPHS





Tested by: PIHE Date: 26/03/2026 Approved by KTP: YHW Date: 15/04/2026

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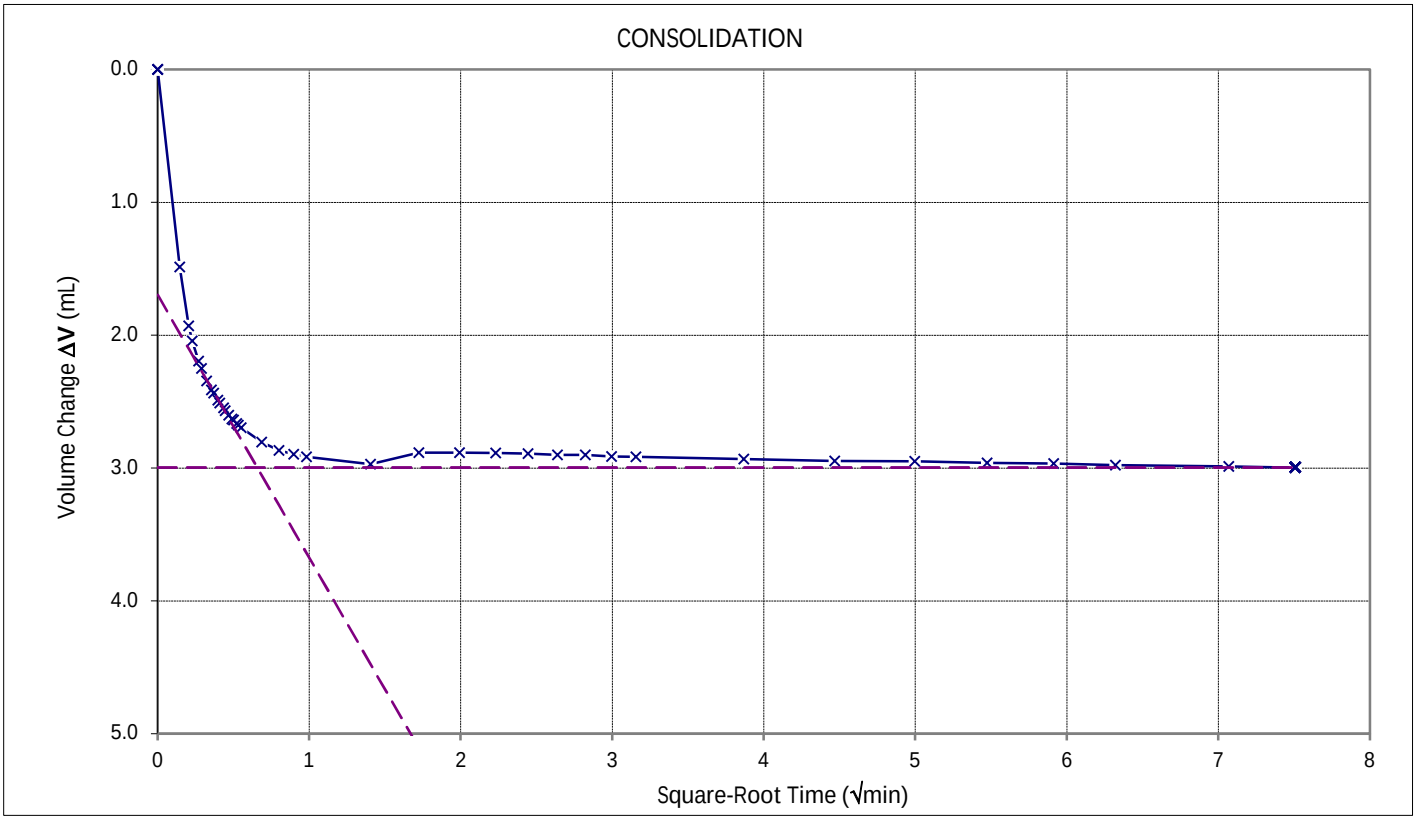
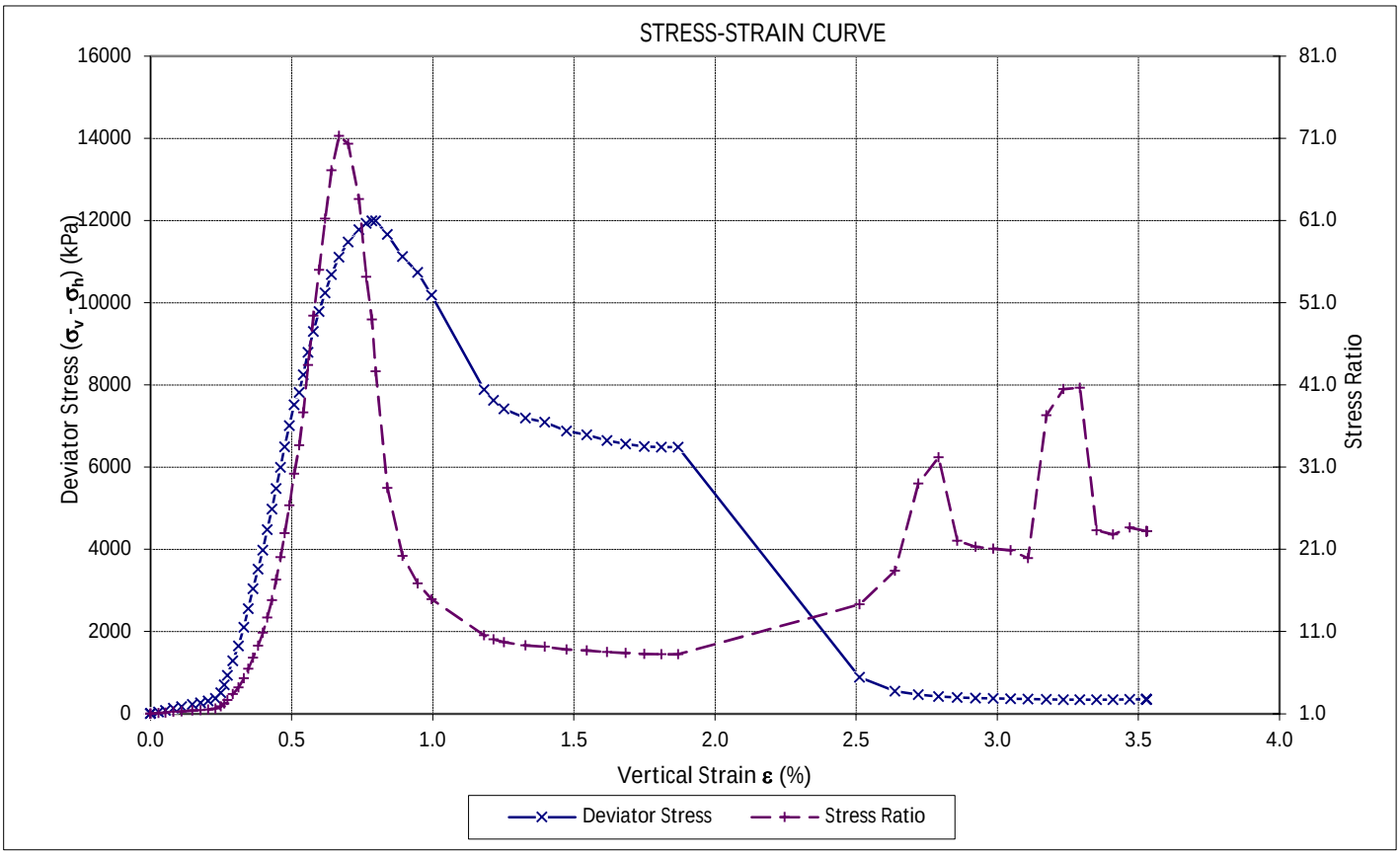
GRAPHS





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Geotechnics Project ID: 1102034.0000.02.0
Customer Project ID: 1097984.1000
Testing Schedule Reference: --

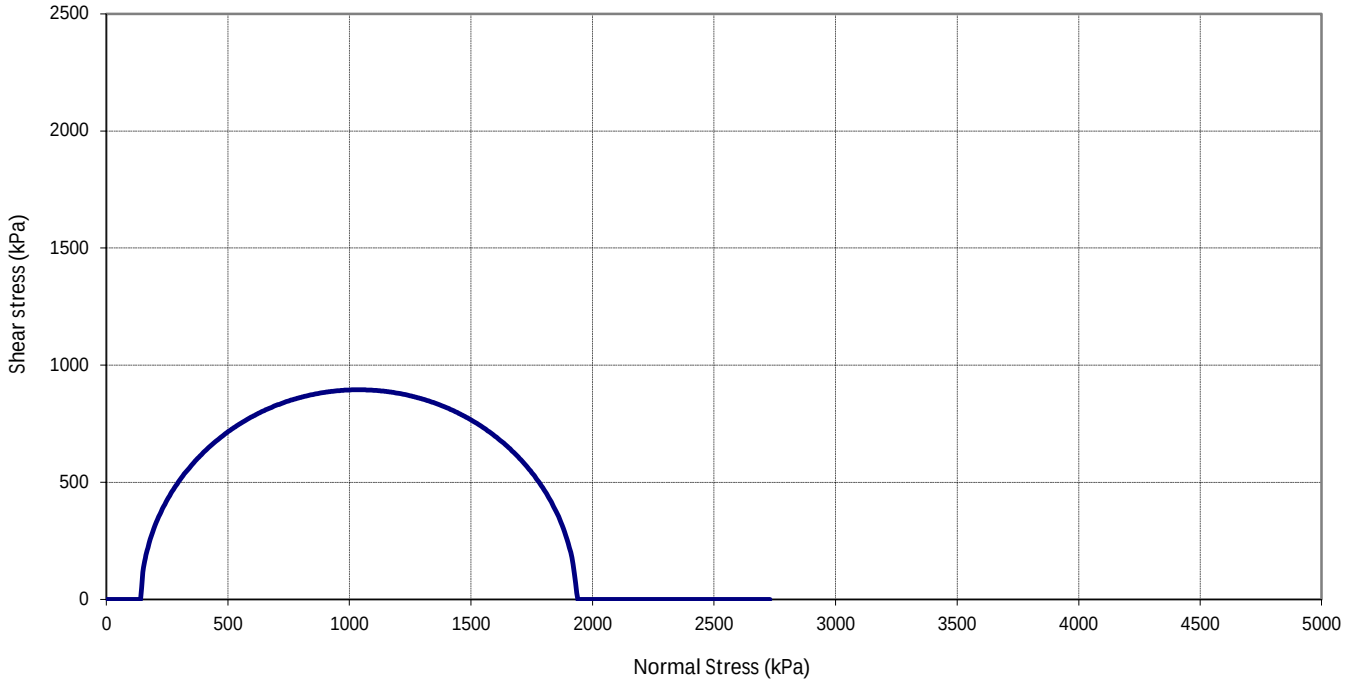
Site: Port Vila CBD Location ID: BH12

Sample Ref.: -- Geotechnics ID: -- Depth: 29.70 - 29.82 (m)

Test method used: ISO 17892-9:2018 Part 9 Isotropic consolidated-undrained triaxial compression test on water saturated soils (CIU)
NZS 4402:1986 Test 2.1 Determination of Water Content

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST (SINGLE-STAGE)

MOHR CIRCLES OF EFFECTIVE STRESSES



General Sample Parameters

Initial Sample Height:	125.28	mm	Initial Water Content:	34.0	%
Initial Sample Diameter:	60.09	mm	Initial Bulk Density:	1.76	t/m³
Initial B Value:	--	%	Initial Dry Density:	1.32	t/m³
B Value before Consolidation:	98	%	Final Water Content:	34.7	%

Test Results

At the End of Consolidation Stage					Failure Values						Failure Mode & Photo
Effective Stress		Back Pressure (kPa)	Volumetric Strain		Deviator Stress ($\sigma_v' - \sigma_h'$) (kPa)	Vertical Strain ε (%)	Effective Stress		Corrections (kPa)		
Horizontal σ_h'(kPa)	Vertical σ_v'(kPa)		Strain (%)	Rate (%/hr)			Vertical σ_v' (kPa)	Horizontal σ_h'(kPa)	Membrane $(\Delta\sigma_v)_m$	Filter P $(\Delta\sigma_v)_{fp}$	
300	301	300	1.49	0.00	1790.29	1.23	1932.70	142.41	0.99	2.35	Planar / Plastic



Sample History: Undisturbed core trimmed at natural water content.

Soil description: SILTSTONE, very weak, light grey.

Test Speed: 0.016 (mm/min)

Test Remarks: The sample was saturated by increments of cell pressure and back pressure.
It was drained from radial boundary and both ends in the consolidation stage.
Failure for compression stage was determined by the maximum effective stress ratio.

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Geotechnics Project ID: 1102034.0000.02.0
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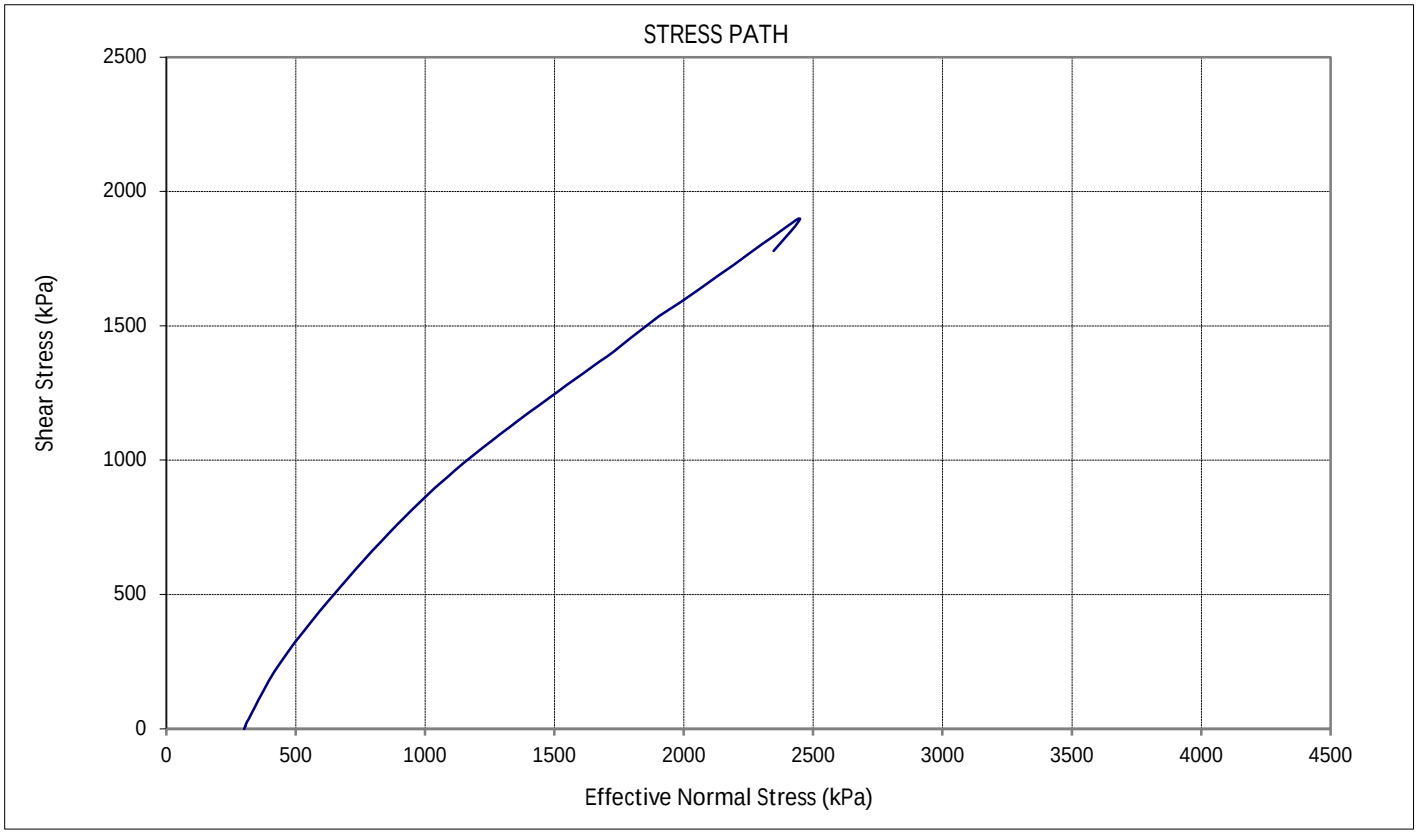
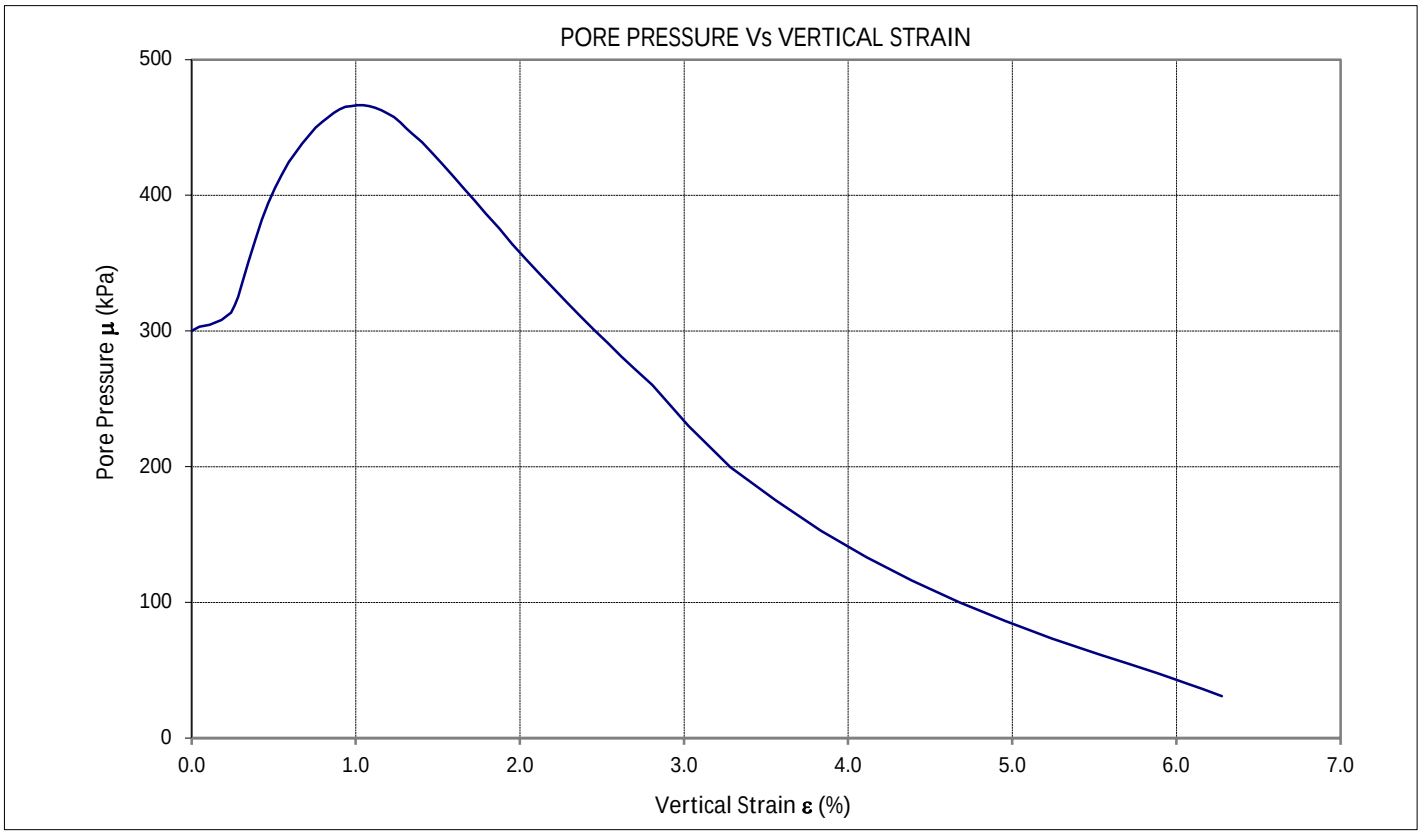
Testing Schedule Reference: --

Site: Port Vila CBD Location ID: BH12
Sample Ref.: -- Geotechnics ID: -- Depth: 29.70 - 29.82 (m)
Test method used: ISO 17892-9:2018 Part 9 Isotropic consolidated-undrained triaxial compression test on water saturated soils (CIU)
NZS 4402:1986 Test 2.1 Determination of Water Content

GRAPHS





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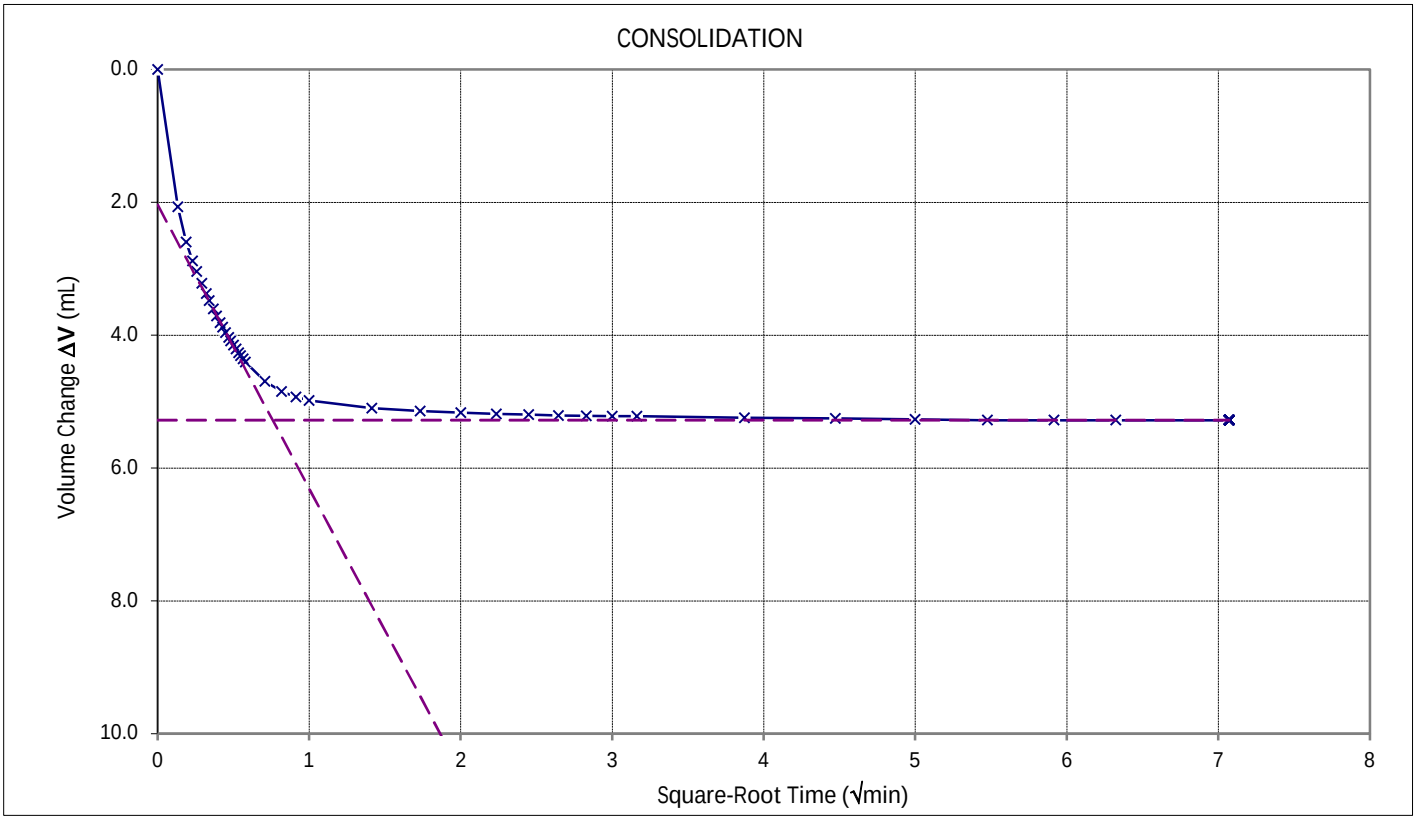

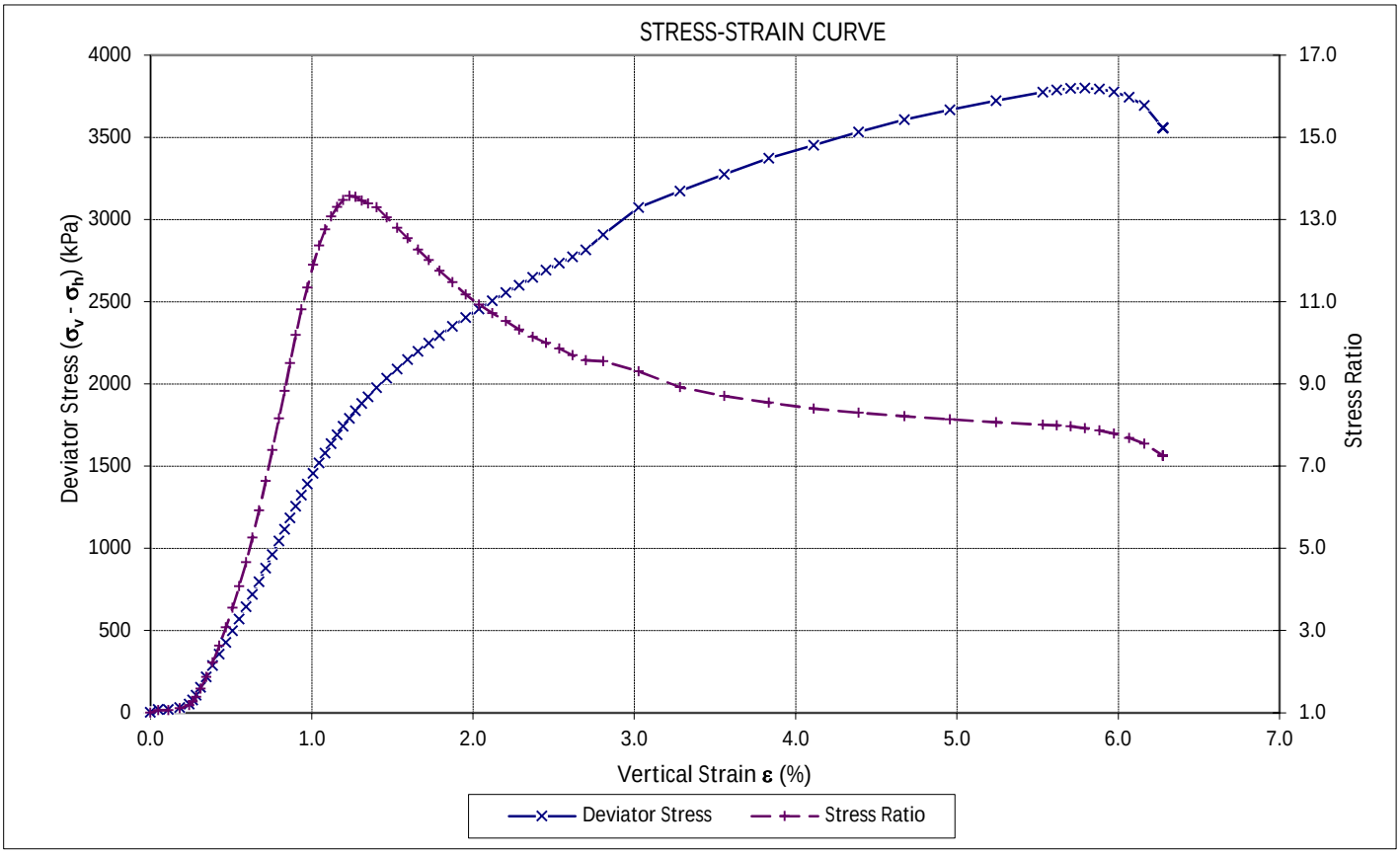

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