Appendix B
Post Earthworks CPT Logs

CONE PENETRATION TEST (CPT) REPORT

Client: Aurecon NZ Ltd

Location: Prestons Park, Christchurch

Printed: 11/02/2020

Generated with Core-GS by Geroc

McMILLAN Drilling
LandTest

CONE PENETRATION TEST

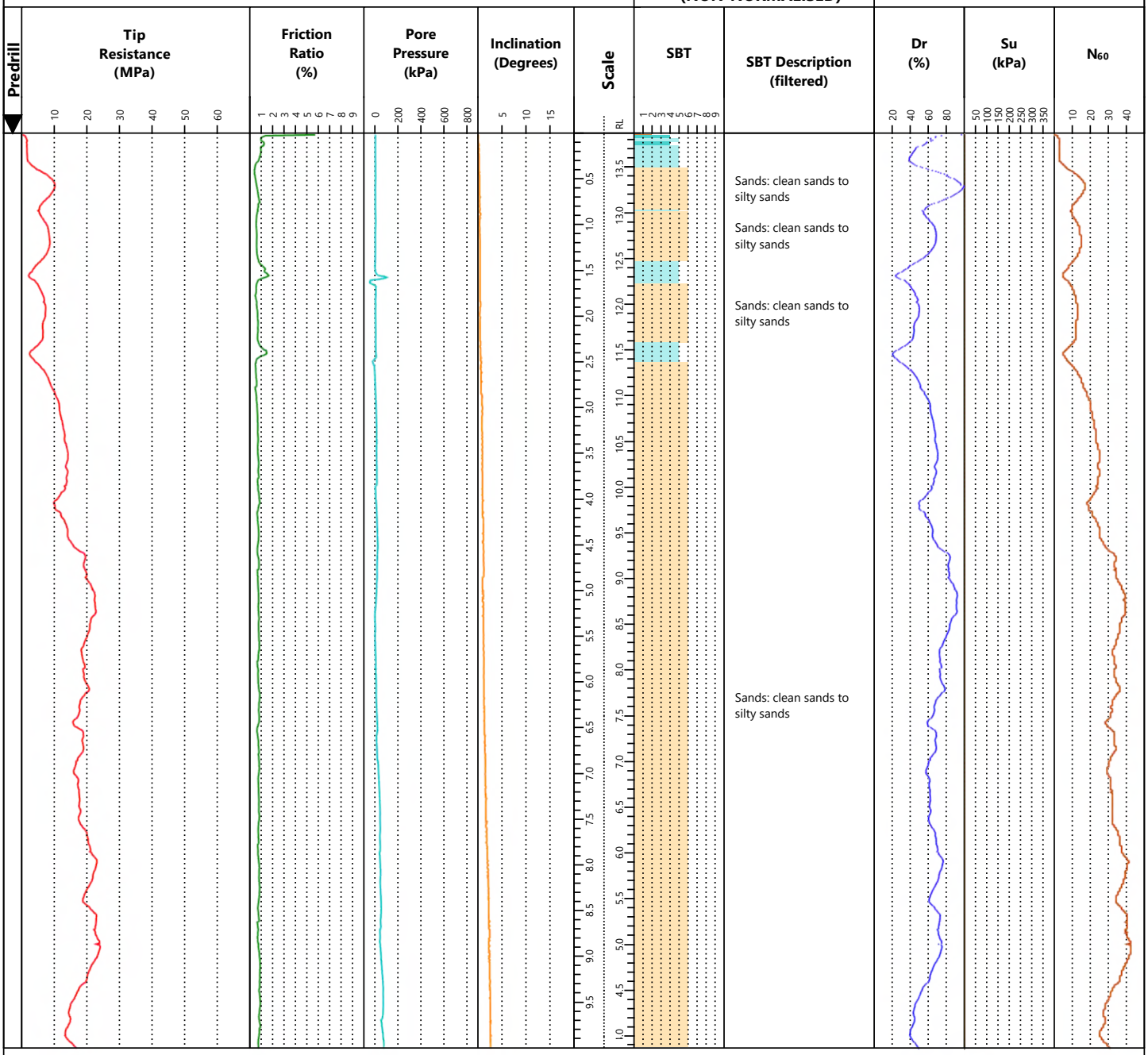
Job: 18363
CPT No.: CPTuPF74

Name: Prestons Park, Christchurch
Client: Aurecon NZ Ltd
Location: Prestons Park, Christchurch

Hole Depth (m): 10.00
Elevation (m): 13.87
Datum: -

North (m): 811680.60
East (m): 395439.95
Grid: NZTM

RAW DATA | **SOIL BEHAVIOUR TYPE (NON-NORMALISED)** | **ESTIMATED PARAMETERS**



EOH: 10m

Operator: B. Wilson
Rig: Pagani TG63-150
Cone Reference: MKJ332
Cone Area Ratio: 0.80
Cone Type: Pagani Piezocone
Tip Resistance (MPa) Initial: 11.5847
Local Friction (MPa) Initial: 0.1388
Pore Pressure (MPa) Initial: 1.4582

Date: 07/02/2020
Predrill: -
Water Level: -
Collapse: 1.80
Final: 11.5274
Final: 0.1402
Final: 1.4557

Effective Refusal
Tip:
Gauge:
Inclinometer:
Other:
Target Depth: ✓

Soil Behaviour Type (SBT) - Robertson et al. 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. No warranty is provided as to the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Generated with Core-GS by Geroc

McMILLAN Drilling
LandTest

CONE PENETRATION TEST

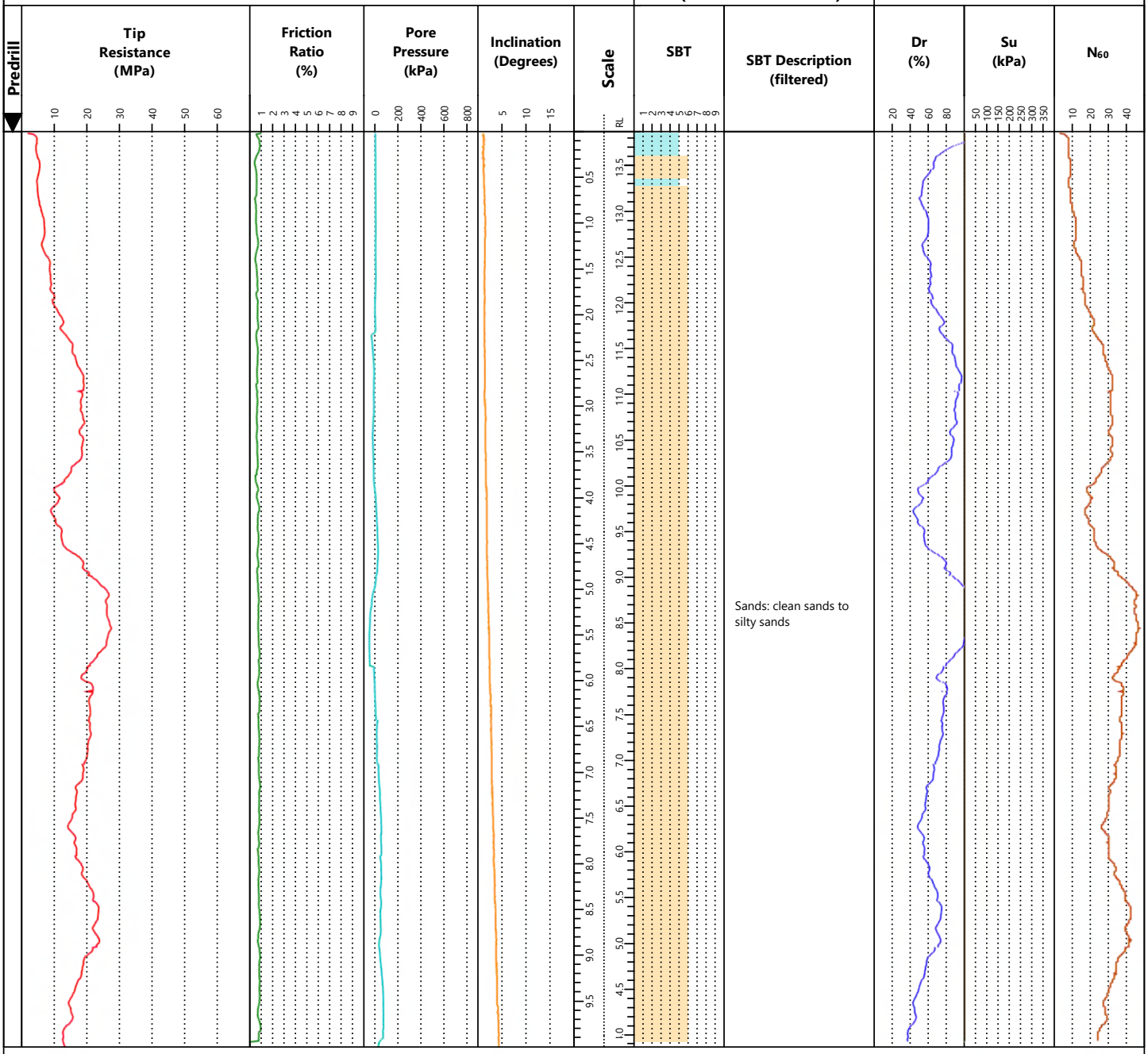
Job: 18363
CPT No.: CPTuPF75

Name: Prestons Park, Christchurch
Client: Aurecon NZ Ltd
Location: Prestons Park, Christchurch

Hole Depth (m): 10.00
Elevation (m): 13.87
Datum: -

North (m): 811710.90
East (m): 395478.51
Grid: NZTM

RAW DATA | **SOIL BEHAVIOUR TYPE (NON-NORMALISED)** | **ESTIMATED PARAMETERS**



EOH: 10m

Operator: B. Wilson
Rig: Pagani TG63-150
Cone Reference: MKJ332
Cone Area Ratio: 0.80
Cone Type: Pagani Piezocone
Tip Resistance (MPa) Initial: 11.5639
Local Friction (MPa) Initial: 0.1401
Pore Pressure (MPa) Initial: 1.4592

Date: 07/02/2020
Predrill: -
Water Level: -
Collapse: 2.00
Final: 11.5378
Final: 0.1402
Final: 1.4579

Effective Refusal
Tip:
Gauge:
Inclinometer:
Other:
Target Depth: ✓

Soil Behaviour Type (SBT) - Robertson et al. 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Notes & Limitations

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Remarks

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McMILLAN Drilling
LandTest

CONE PENETRATION TEST

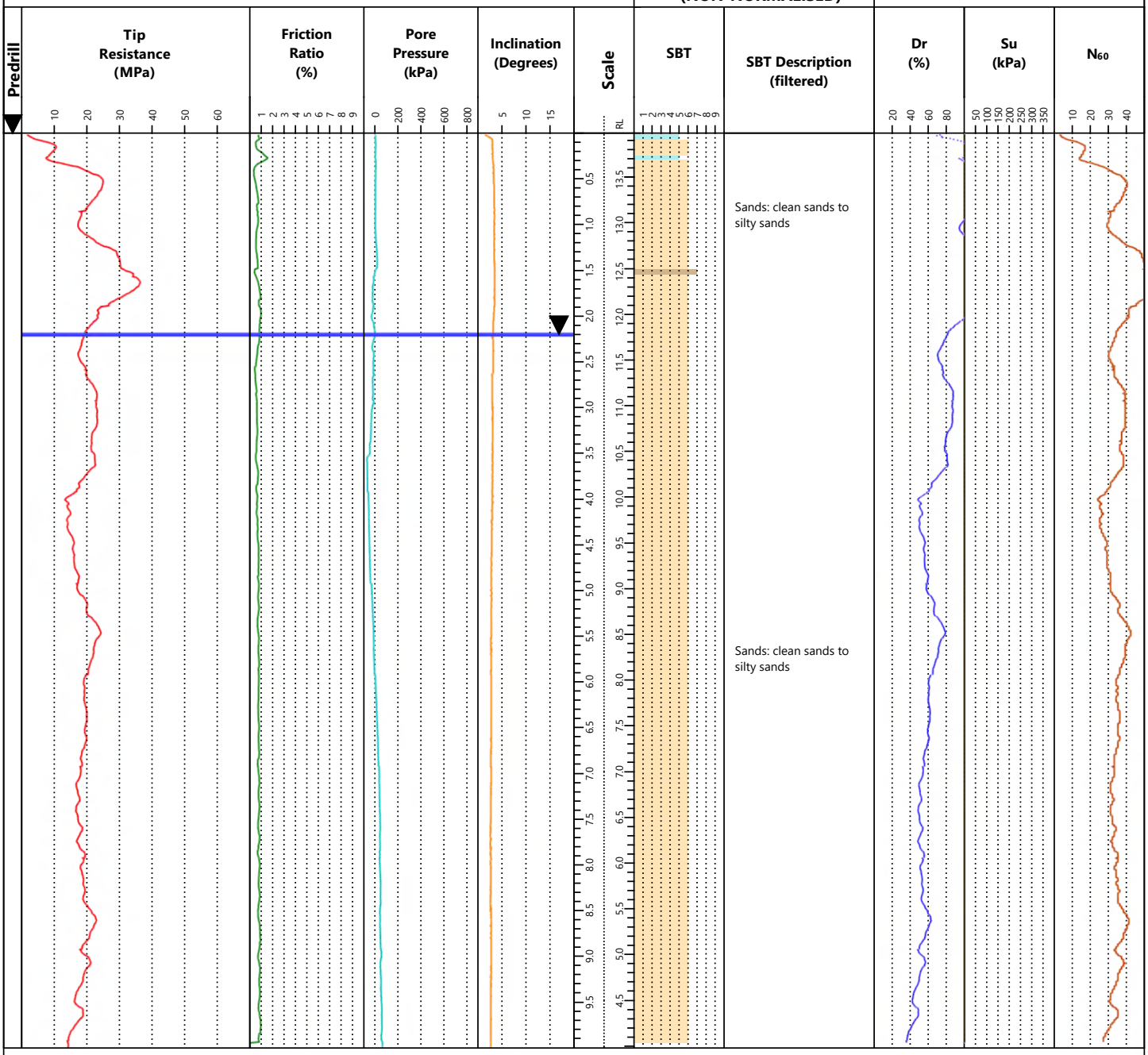
Job: 18363
CPT No.: CPTuPF76

Name: Prestons Park, Christchurch
Client: Aurecon NZ Ltd
Location: Prestons Park, Christchurch

Hole Depth (m): 10.00
Elevation (m): 13.98
Datum: -

North (m): 811760.10
East (m): 395478.19
Grid: NZTM

RAW DATA | **SOIL BEHAVIOUR TYPE (NON-NORMALISED)** | **ESTIMATED PARAMETERS**



EOH: 10m

Operator: B. Wilson
Rig: Pagani TG63-150
Cone Reference: MKJ332
Cone Area Ratio: 0.80
Cone Type: Pagani Piezocone
Tip Resistance (MPa) Initial: 11.5482
Local Friction (MPa) Initial: 0.14
Pore Pressure (MPa) Initial: 1.4593

Date: 07/02/2020
Predrill: -
Water Level: 2.20
Collapse: 2.30
Final: 11.4909
Final: 0.1404
Final: 1.4592

Effective Refusal
Tip:
Gauge:
Inclinometer:
Other:
Target Depth: ✓

Soil Behaviour Type (SBT) - Robertson et al. 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Notes & Limitations

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Remarks

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McMILLAN Drilling
LandTest

CONE PENETRATION TEST

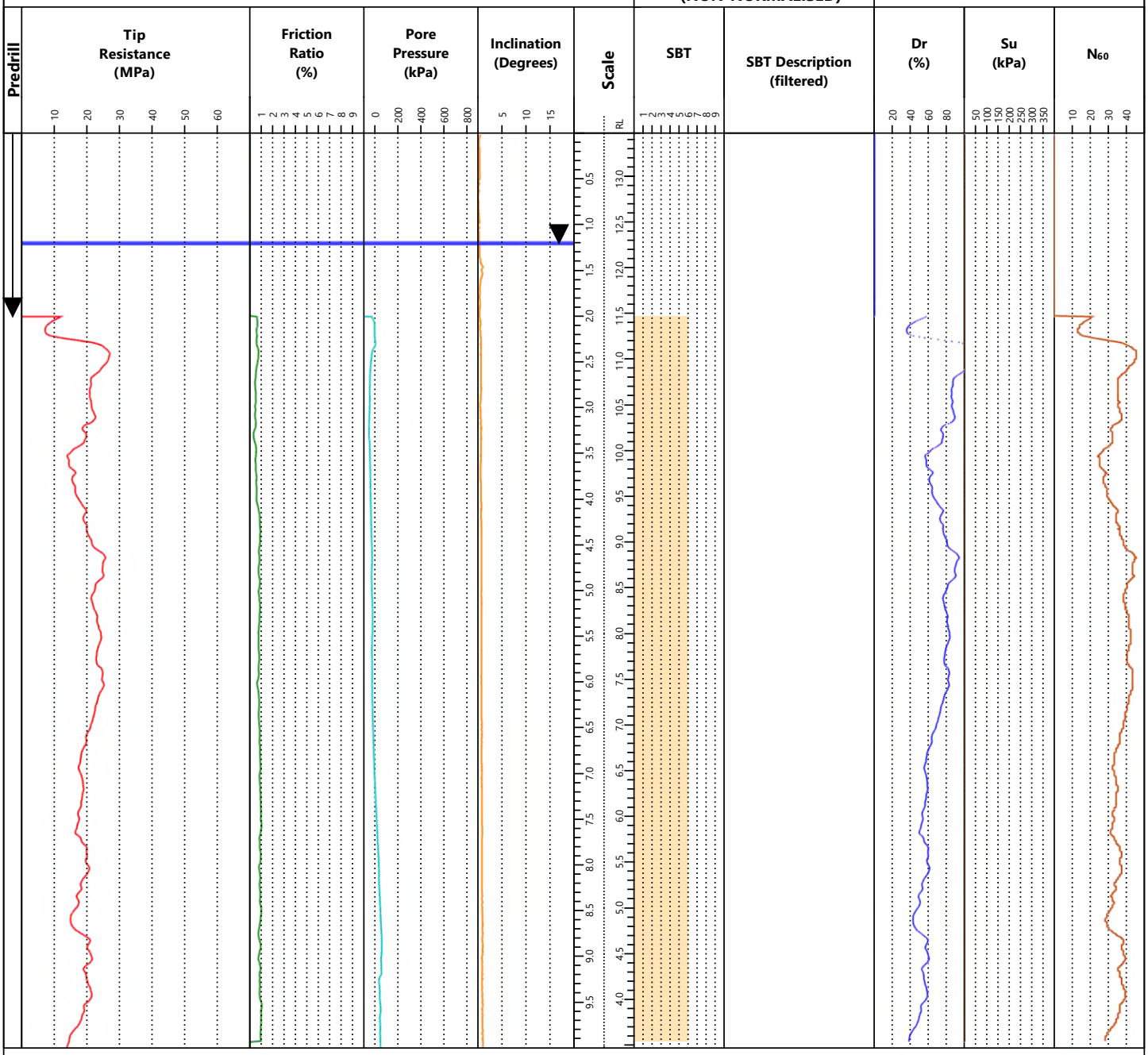
Job:	18363
CPT No.:	CPTuPF77

Name: Prestons Park, Christchurch
Client: Aurecon NZ Ltd
Location: Prestons Park, Christchurch

Hole Depth (m): 10.00
Elevation (m): 13.47
Datum: -

North (m): 811736.20
East (m): 395555.50
Grid: NZTM

RAW DATA | **SOIL BEHAVIOUR TYPE (NON-NORMALISED)** | **ESTIMATED PARAMETERS**



EOH: 10m

Operator: R. Wyllie
Rig: Geomil Panther 100
Cone Reference: 140934
Cone Area Ratio: 0.75
Cone Type: I-CFXYP100-10
Tip Resistance (MPa) Initial: 2.0364
Local Friction (MPa) Initial: 0.0152
Pore Pressure (MPa) Initial: 0.0033

Date: 10/02/2020
Predrill: 2.00
Water Level: 1.20
Collapse: 1.60
Final: 2.1328
Final: 0.0113
Final: -0.0004

Effective Refusal
Tip:
Gauge:
Inclinometer:
Other:
Target Depth: ✓

Soil Behaviour Type (SBT) - Robertson et al. 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
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Remarks

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McMILLAN Drilling
LandTest

CONE PENETRATION TEST

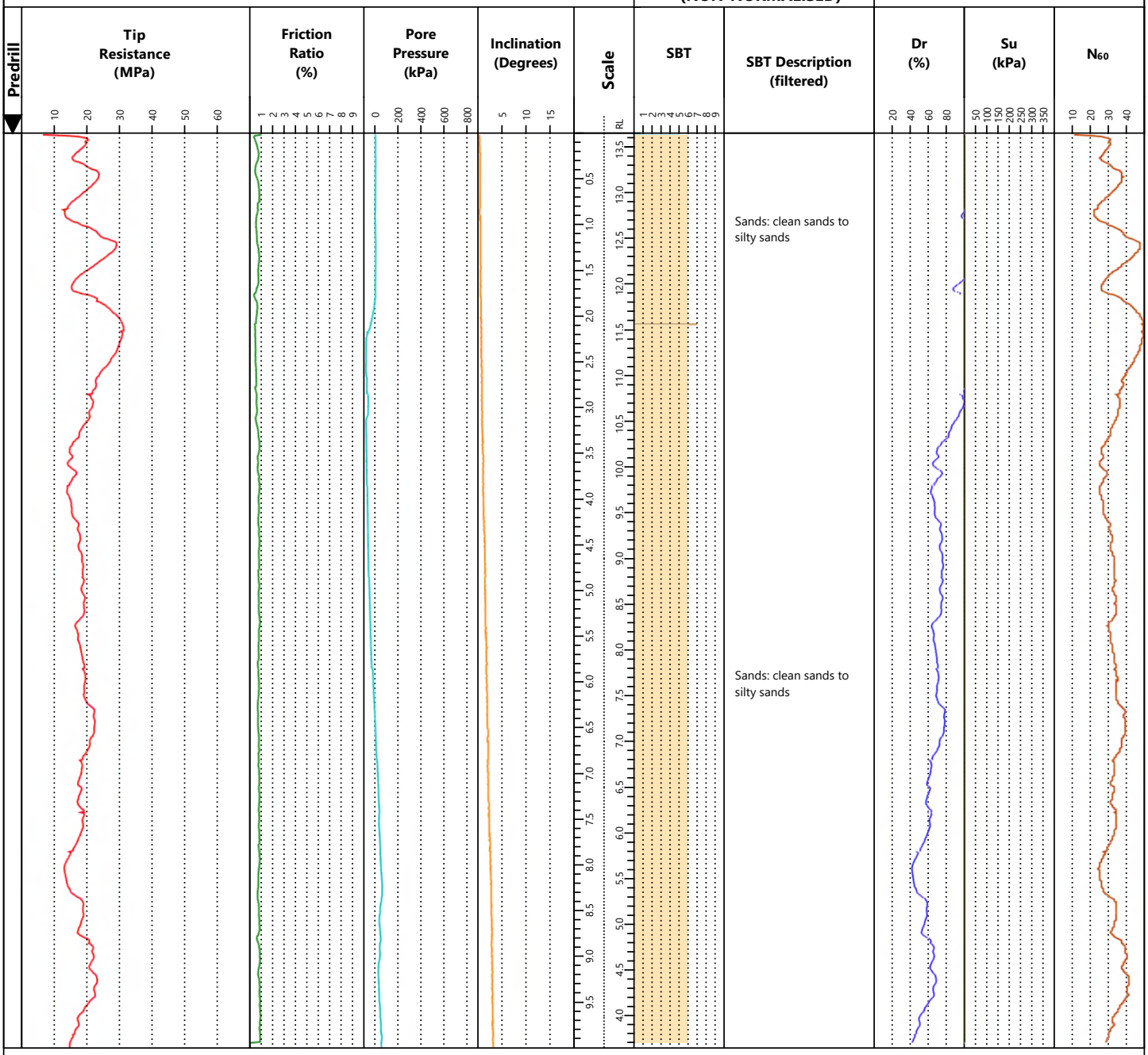
Job:	18363
CPT No.:	CPTuPF78

Name: Prestons Park, Christchurch
Client: Aurecon NZ Ltd
Location: Prestons Park, Christchurch

Hole Depth (m): 10.00
Elevation (m): 13.65
Datum: -

North (m): 811792.50
East (m): 395568.03
Grid: NZTM

RAW DATA | **SOIL BEHAVIOUR TYPE (NON-NORMALISED)** | **ESTIMATED PARAMETERS**



Operator: B. Wilson
Rig: Pagani TG63-150
Cone Reference: MKJ332
Cone Area Ratio: 0.80
Cone Type: Pagani Piezocone
Tip Resistance (MPa) Initial: 11.5951
Local Friction (MPa) Initial: 0.139
Pore Pressure (MPa) Initial: 1.4582

Date: 07/02/2020
Predrill: -
Water Level: -
Collapse: 1.80
Final: 11.5534
Final: 0.1405
Final: 1.4556

Effective Refusal
Tip:
Gauge:
Inclinometer:
Other:
Target Depth: ✓

Soil Behaviour Type (SBT) - Robertson et al. 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

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Remarks

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McMILLAN Drilling
LandTest

CONE PENETRATION TEST

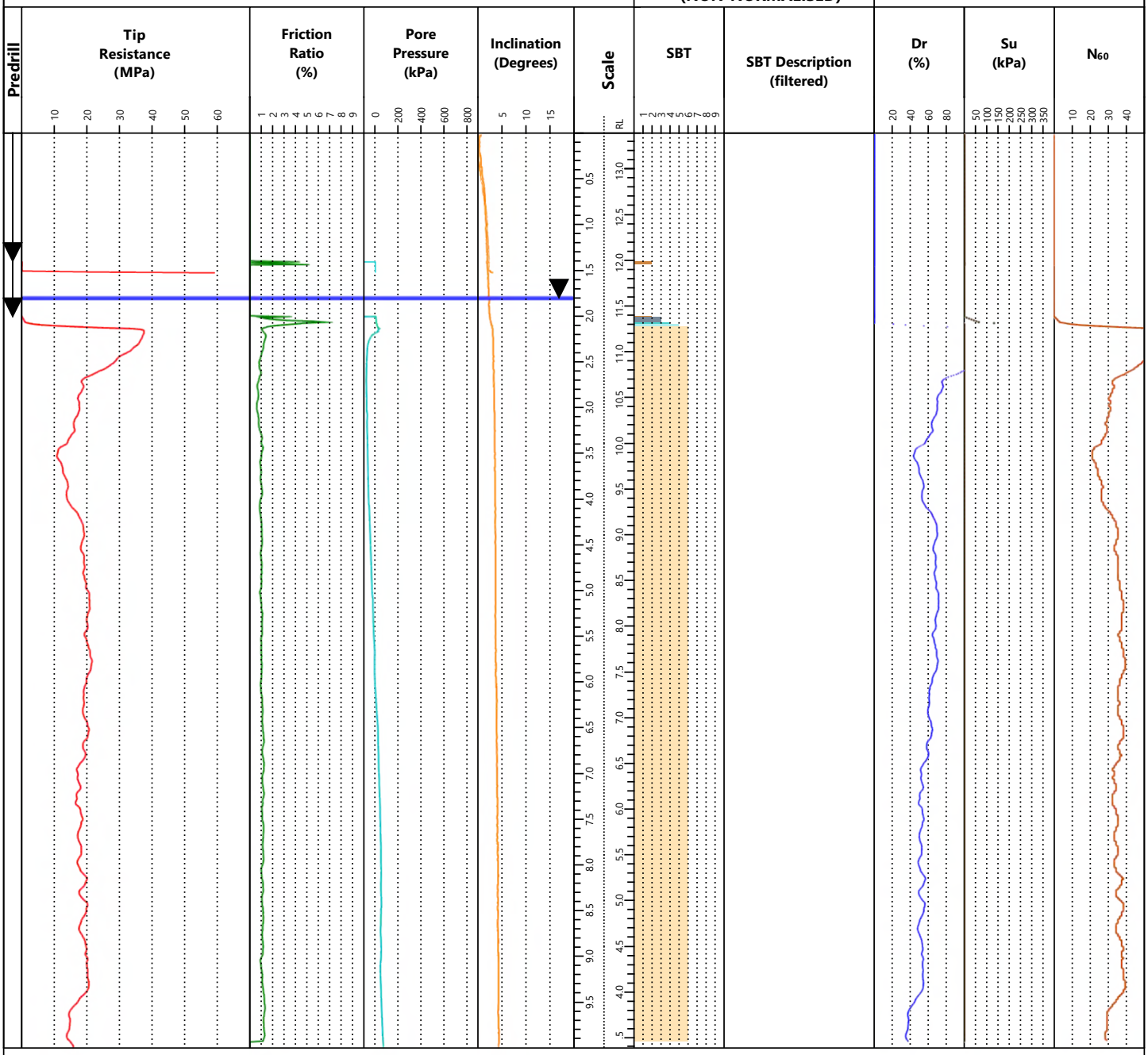
Job:	18363
CPT No.:	CPTuPF79

Name: Prestons Park, Christchurch
Client: Aurecon NZ Ltd
Location: Prestons Park, Christchurch

Hole Depth (m): 10.00
Elevation (m): 13.39
Datum: -

North (m): 811778.50
East (m): 395637.86
Grid: NZTM

RAW DATA | **SOIL BEHAVIOUR TYPE (NON-NORMALISED)** | **ESTIMATED PARAMETERS**



EOH: 10m

Operator: R. Wyllie
Rig: Geomil Panther 100
Cone Reference: 140912
Cone Area Ratio: 0.75
Cone Type: I-CFXYP100-10
Tip Resistance (MPa) Initial: 0.1294
Local Friction (MPa) Initial: 0.0017
Pore Pressure (MPa) Initial: -0.0131

Date: 10/02/2020
Predrill: 2.00
Water Level: 1.80
Collapse: 2.10
Final: 0.0667
Final: 0.0006
Final: -0.0227

Effective Refusal
Tip:
Gauge:
Inclinometer:
Other:
Target Depth: ✓

Soil Behaviour Type (SBT) - Robertson et al. 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
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Remarks

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TEST DETAIL

PointID: CPTuPF74

Sounding: 1

Operator:	B. Wilson	**Date:**	07/02/2020	**Effective Refusal**	
Cone Reference:	MKJ332	**Predrill:**	-	**Tip:**	
Cone Area Ratio:	0.80	**Water Level:**	-	**Gauge:**	
Cone Type:	Pagani Piezocone	**Collapse:**	1.80	**Inclinometer:**	
				Other:	
Tip Resistance (MPa) Initial:	11.5847	**Final:**	11.5274		
Local Friction (MPa) Initial:	0.1388	**Final:**	0.1402		
Pore Pressure (MPa) Initial:	1.4582	**Final:**	1.4557	**Target Depth:**	✓

PointID: CPTuPF75

Sounding: 1

Operator:	B. Wilson	**Date:**	07/02/2020	**Effective Refusal**	
Cone Reference:	MKJ332	**Predrill:**	-	**Tip:**	
Cone Area Ratio:	0.80	**Water Level:**	-	**Gauge:**	
Cone Type:	Pagani Piezocone	**Collapse:**	2.00	**Inclinometer:**	
				Other:	
Tip Resistance (MPa) Initial:	11.5639	**Final:**	11.5378		
Local Friction (MPa) Initial:	0.1401	**Final:**	0.1402		
Pore Pressure (MPa) Initial:	1.4592	**Final:**	1.4579	**Target Depth:**	✓

PointID: CPTuPF76

Sounding: 1

Operator:	B. Wilson	**Date:**	07/02/2020	**Effective Refusal**	
Cone Reference:	MKJ332	**Predrill:**	-	**Tip:**	
Cone Area Ratio:	0.80	**Water Level:**	2.20	**Gauge:**	
Cone Type:	Pagani Piezocone	**Collapse:**	2.30	**Inclinometer:**	
				Other:	
Tip Resistance (MPa) Initial:	11.5482	**Final:**	11.4909		
Local Friction (MPa) Initial:	0.14	**Final:**	0.1404		
Pore Pressure (MPa) Initial:	1.4593	**Final:**	1.4592	**Target Depth:**	✓

PointID: CPTuPF77

Sounding: 2

Operator:	R. Wyllie	**Date:**	10/02/2020	**Effective Refusal**	
Cone Reference:	140934	**Predrill:**	2.00	**Tip:**	
Cone Area Ratio:	0.75	**Water Level:**	1.20	**Gauge:**	
Cone Type:	I-CFXYP100-10	**Collapse:**	1.60	**Inclinometer:**	
				Other:	
Tip Resistance (MPa) Initial:	2.0364	**Final:**	2.1328		
Local Friction (MPa) Initial:	0.0152	**Final:**	0.0113		
Pore Pressure (MPa) Initial:	0.0033	**Final:**	-0.0004	**Target Depth:**	✓

PointID: CPTuPF78

Sounding: 1

Operator:	B. Wilson	**Date:**	07/02/2020	**Effective Refusal**	
Cone Reference:	MKJ332	**Predrill:**	-	**Tip:**	
Cone Area Ratio:	0.80	**Water Level:**	-	**Gauge:**	
Cone Type:	Pagani Piezocone	**Collapse:**	1.80	**Inclinometer:**	
				Other:	
Tip Resistance (MPa) Initial:	11.5951	**Final:**	11.5534		
Local Friction (MPa) Initial:	0.139	**Final:**	0.1405		
Pore Pressure (MPa) Initial:	1.4582	**Final:**	1.4556	**Target Depth:**	✓

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TEST DETAIL

PointID: CPTuPF79

Sounding: 1

Operator:	R. Wyllie	**Date:**	10/02/2020	**Effective Refusal**	
Cone Reference:	140912	**Predrill:**	1.40	**Tip:**	✓
Cone Area Ratio:	0.75	**Water Level:**	-	**Gauge:**	
Cone Type:	I-CFXYP100-10	**Collapse:**		**Inclinometer:**	
				Other:	
Tip Resistance (MPa) Initial:	0.0885	**Final:**	0.1289		
Local Friction (MPa) Initial:	0.002	**Final:**	0.0016		
Pore Pressure (MPa) Initial:	-0.0086	**Final:**	-0.0127	**Target Depth:**	

Sounding: 11

Operator:	R. Wyllie	**Date:**	10/02/2020	**Effective Refusal**	
Cone Reference:	140912	**Predrill:**	2.00	**Tip:**	
Cone Area Ratio:	0.75	**Water Level:**	1.80	**Gauge:**	
Cone Type:	I-CFXYP100-10	**Collapse:**	2.10	**Inclinometer:**	
				Other:	
Tip Resistance (MPa) Initial:	0.1294	**Final:**	0.0667		
Local Friction (MPa) Initial:	0.0017	**Final:**	0.0006		
Pore Pressure (MPa) Initial:	-0.0131	**Final:**	-0.0227	**Target Depth:**	✓

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McMILLAN Drilling
LandTest

CPT CALIBRATION AND TECHNICAL NOTES

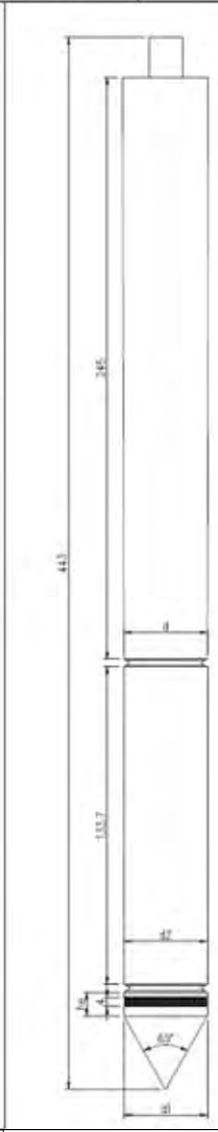
These notes describe the technical specifications and associated calibration references pertaining to the following cone types:

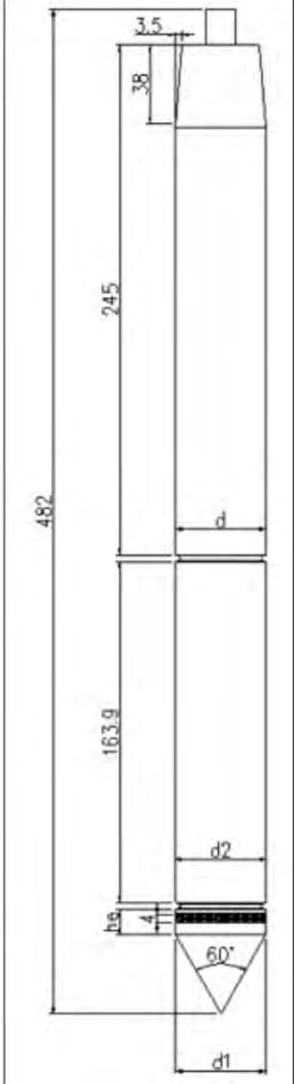
- I-CFXY-10 measuring cone resistance, sleeve friction and inclination (standard cone, 10cm^2);
- I-CFXY-15 measuring cone resistance, sleeve friction and inclination (standard cone, 15cm^2);
- I-CFXYP20-10 / I-CFXYP100-10 measuring cone resistance, sleeve friction, inclination and pore pressure (piezocone, 10cm^2);
- I-CFXYP20-15 measuring cone resistance, sleeve friction, inclination and pore pressure (piezocone, 15cm^2);
- I-C5F0p15XYP20-10 measuring sensitive cone resistance, sleeve friction, inclination and pore pressure (piezocone, 10cm^2).

Dimensions

Dimensional specifications for all cone types are detailed below. All tolerances are routinely checked prior to testing and measurements

A.P. van den Berg Machinefabriek tel.: +31 (0)513-631355 info@apvandenberg.com	**DEVIATION of Straightness + MINIMUM Dimensions tip, friction jacket, cone adapter**	Standards: EN ISO 22476-1 APB-standard	
Type of cone:	Icone 10 cm^2		Icone 15 cm^2
ALLOWABLE SIZE VARIATION			
Diameter of tip:	$35,3 \leq d1 \leq 36,0$		$43,2 \leq d_1 \leq 44,1$
Diameter of centering ring CFP	$35,3 \leq d1 \leq 36,0$		$43,2 \leq d_1 \leq 44,1$
Diameter of friction jacket:	$d_1 \leq d_2 < d_1 + 0,35$		$d_1 \leq d_2 < d_1 + 0,43$
Height dimension of tip edge:	$7 \leq h_e \leq 10$		$9 \leq h_e \leq 12$
PRODUCTION DIMENSIONS			
Tip:	$d_1 = 35,7\ ^{+0,2}_{0}$		$d_1 = 43,8\ ^{+0,2}_{0}$
Jacket (C-cone):	$d_2 = 35,7\ ^{+0,2}_{0}$		$d_2 = 43,7\ ^{+0,2}_{0}$
Friction jacket (CF-cone):	$d_2 = 35,9\ ^{+0,1}_{0}$		$d_2 = 44,0\ ^{+0,1}_{0}$
Tip for used cone:	$d_1 = 35,5\ ^{+0,1}_{0}$		$d_1 = 43,5\ ^{+0,1}_{0}$
MINIMUM DIMENSIONS			
Minimum diameter jacket (C-cone):	$d_2 = 35,2$ (APB standard)		$d_2 = 43,0$ (APB standard)
Minimum diameter friction jacket (CF-cone):	$d_2 = 35,3$		$d_2 = 43,2$
Use "used cone"-tip when friction jacket diameter:	$d_2 \leq 35,65$		$d_2 \leq 43,7$
Minimum diameter of cone adaptor:	$d = 35,3$		$d = 43,8$
Maximum deviation of straightness:	1 mm on a length of 1000 mm (max. oscillation 1,0 mm.)		1 mm on a length of 1000 mm (max. oscillation: 2.0 mm)

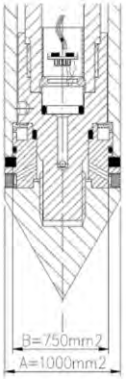




Tip and Local Friction sensor displacement

The different distances of the sensors are compensated depending on the cone types:

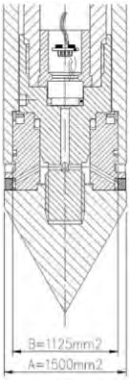
- 10cm^2 cones: 80mm
- 15cm^2 cones: 100mm



Cone area ratio

$\alpha = B / A = 0.75$

$\beta = 1 - B / A = 0.25$



McMILLAN Drilling

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CPT CALIBRATION AND TECHNICAL NOTES (cont.)

Calibration

Each cone has a unique identification number that is electronically recorded and reported for each CPT test. The identification number enables the operator to compare 'zero-load offsets' to manufacturer calibrated zero-load offsets.

The recommended maximum zero-load offset for each sensor is determined as ± 5% of the nominal measuring range.

In addition to maximum zero-load offsets, the difference in zero load offset before and after the test is limited as ± 2% of the maximum measuring range. See table below:

	Tip (MPa)	Friction (MPa)	Pore Pressure (MPa)
Maximum Measuring Range:	150	1.50	3.00
Nominal Measuring Range:	75	1.00	2.00
Max. 'zero-load offset':	7.5	0.10	0.20
Max 'before and after test':	3	0.03	0.06

Note: The zero offsets are electronically recorded and reported for each test in the same units as that of each sensor.

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CPT CALIBRATION AND TECHNICAL NOTES

These notes describe the technical specifications and associated calibration references pertaining to the Pagani piezocone types measuring cone resistance, sleeve friction, inclination and pore pressure (piezocone, 10cm^2)

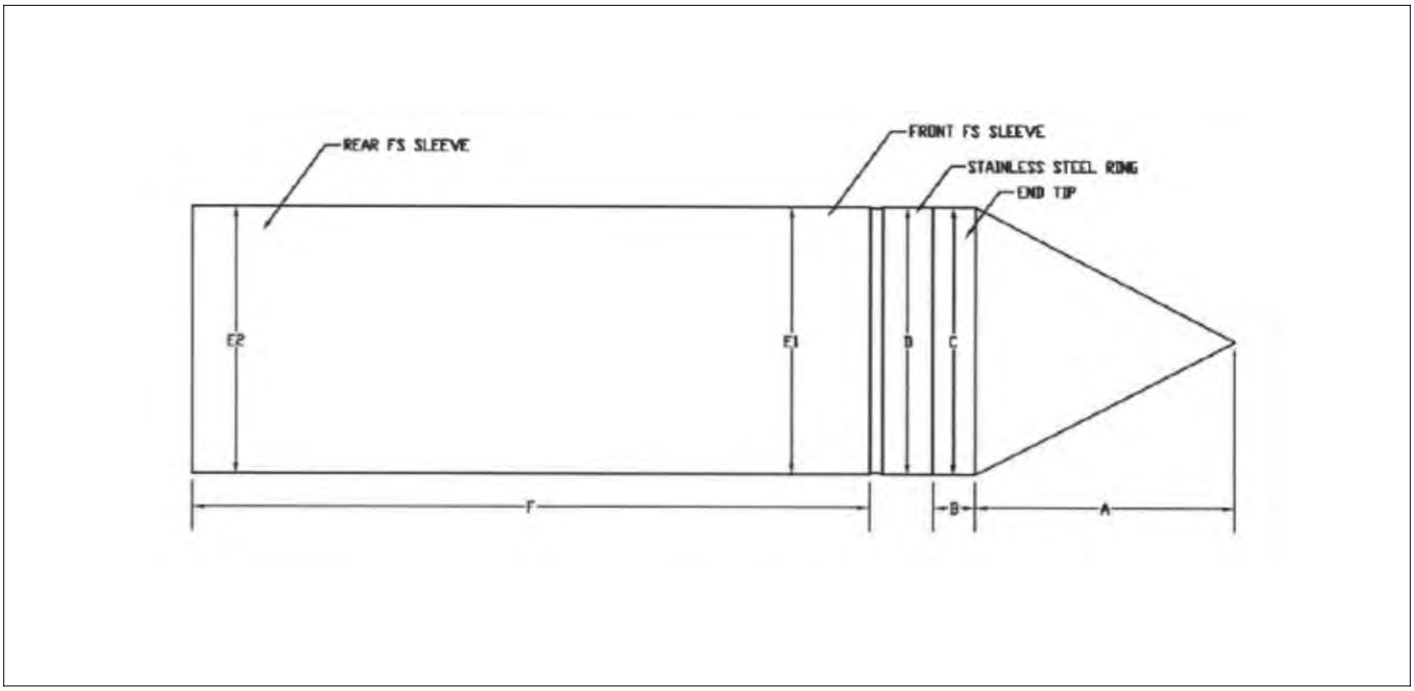
Dimensions

Dimensional specifications are detailed below. All tolerances are routinely checked prior to testing and measurements taken are electronically recorded. All records are kept on file and available on request.

Technical specifications

	Tip	Friction	Pore Pressure	Inclination
Maximum Measuring Range:	50 - 100 MPa	1.60 MPa	2.50 MPa	0° - 20°
Resolution:	24 bit	24 bit	24 bit	12 bit
Accuracy:	0.005 MPa	0.04 MPa	0.04 MPa	0.5°

Length:	320 mm	**Weight:**	1.8 kg
Diameter:	35.8 mm	**Opening angle of bit:**	60°
Cone base area:	10 cm^2	**Side sleeve surfaces:**	150 cm^2
Cone area ratio:	0.80	**Tip and Local Friction sensor displacement:**	80 mm



Generated with Core-GS by Geroc

McMILLAN Drilling

Land Test
McMILLAN Drilling

Calibration Certificate

a.p. van den berg

1.1 General

Cone number:	140912
Cone type:	I-CFXYP100-10
Description:	Tip 75 MPa Sleeve 1.00 MPa Inclinometer 20° Pore 10MPa
Part number:	01002788
Certificate number:	140912-6
Client:	Mc Millan Drilling

1.2 Calibration equipment

	calibrated
Autolog 3000	
Autolog 3000	August 2017 (Peekel: SN# 2628009)
Autolog 3000	August 2017 (Peekel: SN# 2628009)
Autolog 3000	August 2017 (Peekel: SN# 2628009)
Reference Loadcell 100kN 93280	Sept 2017 (HBM: 64804 2017-09)
Reference Loadcell 20kN H22789	Sept 2017 (HBM: 64867 2017-09)
Reference Sensor 200 Bar 1149206	April 2018 (Trescal: 1803-17622)
Reference ACS-080-SC00-HP2-PM 08/11 470481	March 2015 (Trescal: 1503-02689)
Reference ACS-080-SC00-HP2-PM 08/11 470481	March 2015 (Trescal: 1503-02689)

1.3 Standard
EN ISO 22476-1 2012 Class 2

1.4 Result
The sensor complies to the above standard

Calibrated by:	C.J. Ouwejan
Date:	19/09/2018
Signature:	
QA Manager:	N.R.E. de Jong
Date:	19/09/2018
Signature:	

Calibration Certificate

a.p. van den berg

Zero Value	Cone	-0.015 [MPa]	**Max. Deviation from Zero Value**	Cone	3.75 [MPa]
	Sleeve	0.024 [MPa]		Sleeve	0.05 [MPa]
	Pore(u2)	-3.1 [kPa]		Pore(u2)	500.0 [kPa]

Ref [MPa]	Cone [MPa]	Cone-Ref [kPa]
-0.018	-0.013	5
1.000	1.015	15
2.104	2.095	-9
4.022	4.023	1
8.491	8.494	3
12.349	12.331	-18
20.978	20.975	-3
30.487	30.531	44
41.759	41.798	39
49.899	49.955	56
61.619	61.687	68
75.456	75.470	14

Ref [MPa]	Sleeve [MPa]	Sleeve-Ref [kPa]
0.000	0.000	0
0.036	0.036	0
0.067	0.067	0
0.104	0.105	1
0.130	0.131	1
0.198	0.200	2
0.296	0.299	3
0.421	0.424	3
0.568	0.571	3
0.675	0.678	3
0.752	0.755	3
1.023	1.023	0

Ref [MPa]	Pore(u2) [MPa]	Pore(u2)-Ref [kPa]
0.001	-0.002	-3
0.211	0.209	-2
0.402	0.400	-2
0.740	0.739	-1
1.202	1.203	1
2.013	2.020	7
2.652	2.659	7
3.972	3.979	7
4.813	4.827	14
5.762	5.787	25
7.858	7.867	9
9.819	9.810	-9

Generated with Core-GS by Geroc

Land Test

McMILLAN Drilling

Calibration Certificate

a.p. van den berg

1.1 General

Cone number:	140934
Cone type:	I-CFXYP100-10
Description:	Tip 75 MPa Sleeve 1.00 MPa Inclinometer 20° Pore 10MPa
Part number:	0100278B
Certificate number:	140934-7
Client:	Mc Millan Drilling

1.2 Calibration equipment

	calibrated
Autolog 3000	
Autolog 3000	August 2017 (Peekel: SN# 2628009)
Autolog 3000	August 2017 (Peekel: SN# 2628009)
Autolog 3000	August 2017 (Peekel: SN# 2628009)
Reference Loadcell 100kN 93280	Sept 2017 (HBM: 64604 2017-09)
Reference Loadcell 20kN H22789	Sept 2017 (HBM: 64667 2017-09)
Reference Sensor 200 Bar 1149206	April 2018 (Trescal: 1803-17622)
Reference ACS-080-SC00-HP2-PM 08/11 470481	March 2015 (Trescal: 1503-02689)
Reference ACS-080-SC00-HP2-PM 08/11 470481	March 2015 (Trescal: 1503-02689)

1.3 Standard
EN ISO 22476-1 2012 Class 2

1.4 Result
The sensor complies to the above standard

Calibrated by:	C.J. Ouwejan
Date:	12/10/2018
Signature:	
QA Manager:	N.R.E. de Jong
Date:	12/10/2018
Signature:	

Calibration Certificate

a.p. van den berg

Zero Value Cone -0.006 [MPa] **Max. Deviation from Zero Value** Cone 3.75 [MPa]
Sleeve 0.001 [MPa] Sleeve 0.05 [MPa]
Pore(u2) 0.6 [kPa] Pore(u2) 500.0 [kPa]

Ref [MPa]	Cone [MPa]	Cone-Ref [kPa]
0.000	-0.006	-6
1.032	1.026	-6
2.089	2.073	-16
3.254	3.252	-2
8.280	8.293	13
10.470	10.492	22
16.980	17.009	29
29.975	30.023	48
40.481	40.543	62
46.047	46.110	63
60.893	60.955	62
75.798	75.810	12

Ref [MPa]	Sleeve [MPa]	Sleeve-Ref [kPa]
0.000	0.000	0
0.039	0.040	1
0.069	0.071	2
0.098	0.099	1
0.140	0.143	3
0.185	0.188	3
0.276	0.279	3
0.338	0.341	3
0.410	0.414	4
0.565	0.568	3
0.650	0.653	3
0.774	0.777	3
1.014	1.015	1

Ref [MPa]	Pore(u2) [MPa]	Pore(u2)-Ref [kPa]
0.000	0.000	0
0.204	0.205	1
0.325	0.326	1
0.810	0.816	6
1.201	1.208	7
2.943	2.965	22
3.438	3.466	28
4.994	5.019	25
6.101	6.127	26
8.089	8.105	16
10.190	10.191	1

Generated with Core-GS by Geroc

LandTest McMILLAN Drilling

PAGANI® GEOTECHNICAL EQUIPMENT

CONE CALIBRATION CERTIFICATE
N° Z121/19

Calibrated system *(Sistema tarato)* :

Serial number	Mkj332
Sensor	TIP RESISTANCE
Max. Capacity [MPa]:	100
Scaling Factor:	191890
Tip net area ratio (a_n):	0,80
Sleeve net ratio (b_n):	0,00

Addressee *(destinatario)* :
LANDTEST
307 Cashel street, Christchurch
New Zeland

Applied load measurement system:
(Sistema di rilevamento del carico applicato)

Load cell:

Manufacturer	AEP transducers
Model	KAL 200 kN
Serial Number	138913

Power press:

Manufacturer	Easydur Italiana
Model	Aura 20T
Serial Number	29084

The measurement system is periodically checked in a SIT calibration center. *(Il sistema di rilevamento è sottoposto a verifica periodica presso un centro SIT)*

Last verification date:	15/01/2019
Certificate N.	LAT 091 2019-014
Temperature of calibration	22°C
Humidity	46%

Factory calibration in accordance with ASTM D5778-12

PAGANI® GEOTECHNICAL EQUIPMENT

CONE CALIBRATION CERTIFICATE
N° Z121/19

Calibrated system *(Sistema tarato)* :

Serial number	Mkj332
Sensor	SLEEVE FRICTION
Max. Capacity [kPa]:	1600
Scaling Factor:	31188

Addressee *(destinatario)* :
LANDTEST
307 Cashel street, Christchurch
New Zeland

Applied load measurement system:
(Sistema di rilevamento del carico applicato)

Load cell:

Manufacturer	AEP transducers
Model	KAL 50 kN
Serial Number	65495

Power press:

Manufacturer	Easydur Italiana
Model	Aura 10T
Serial Number	29002

The measurement system is periodically checked in a SIT calibration center. *(Il sistema di rilevamento è sottoposto a verifica periodica presso un centro SIT)*

PAGANI® GEOTECHNICAL EQUIPMENT

CONE CALIBRATION CERTIFICATE
N° Z121/19

Calibrated system *(Sistema tarato)* :

Serial number	Mkj332
Sensor	PORE PRESSURE
Max. Capacity [kPa]:	2500
Scaling Factor:	10972
Sensor	TILT ANGLE
Max. Inclination [°]:	20
Scaling Factor:	140139

Addressee *(destinatario)* :
LANDTEST
307 Cashel street, Christchurch
New Zeland

Applied load measurement system:
(Sistema di rilevamento del carico applicato)

Pressure Generator:

Manufacturer	AEP transducers
Model	GPM500

Digital Indicator:

Manufacturer	AEP transducers
Model	LAB DMM
Serial Number	301796

The measurement system is periodically checked in a SIT calibration center. *(Il sistema di rilevamento è sottoposto a verifica periodica presso un centro SIT)*

The adopted calibration procedure has been developed according to the suggestions given by Prof. Paul W. Mayne (Georgia Institute of technology) and Prof. Diego La Presti (University of Pisa)

Cone calibrated by Claudio C.

Date of issue 28/08/2019

Appendix C
Compaction Curves

Road Science
Leading Transport Technology

CHRISTCHURCH LABORATORY

397 Mcleans Island Road, Harewood
P O Box 11-326, Sockburn, Christchurch 8443
Phone: (03) 359-0757

Test Report

Client:	K.B. Contracting & Quarries Limited	**Sample Date:**	08/12/2017	08:00
Address:	PO Box 19746, Woolston, Christchurch 8241	**Sampled By:**	Pete Haward	
Client Ref:	Not advised	**Laboratory No:**	C17/3810	
Job Location:	McLeans Island	**Report No:**	257833	**Final**
Material:	Pit Run	**Report Date:**	15/12/2017	Page 1 of 2
Material Source:	McLeans Island			

Test Methods:

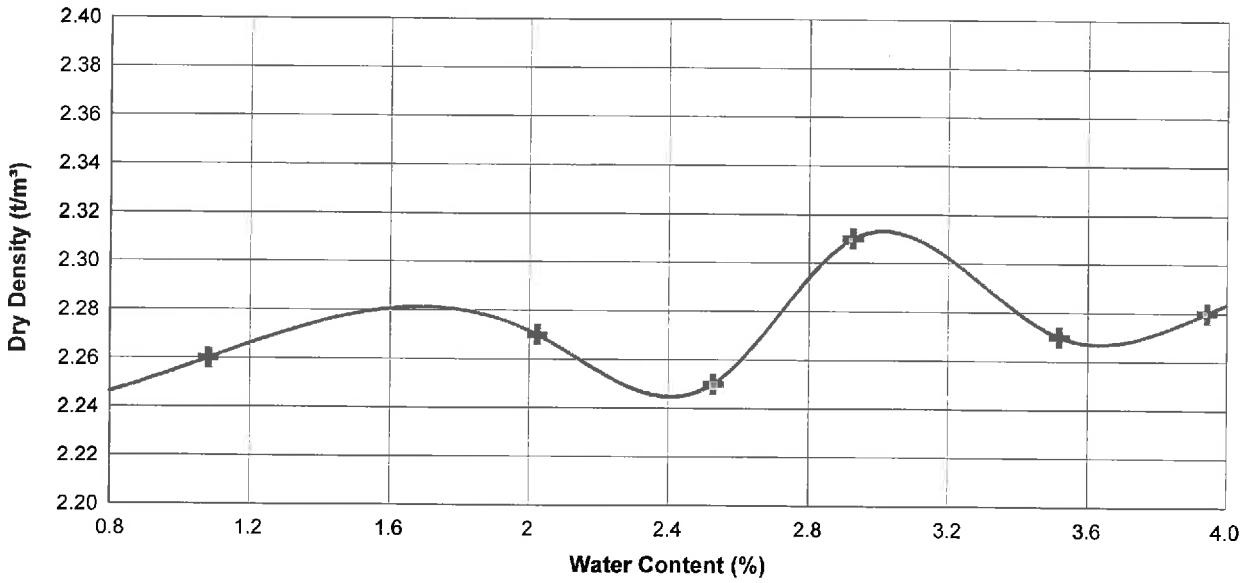
1#	Sampling from stockpiles of well graded aggregate - machine method	NZS4407:2015 2.4.6.3.2
2	Determination of the Dry Density/Water Content Relationship - New Zealand Vibrating Hammer Compaction Test	NZS4402:1986 Test 4.1.3

Test methods marked with a hash are not accredited.

Results

Water Content (%)	1.08	2.02	2.53	2.93	3.52	3.94
Dry Density (t/m³)	2.26	2.27	2.25	2.31	2.27	2.28

Dry Density/Water Content Relationship



Maximum Dry Density (t/m³)	2.32
Optimum Water Content (%)	3.0
History of Sample	Result obtained from oven-dried sample.
Test Fraction	Passing 37.5mm sieve
Test Date:	13/12/2017

Notes

Date of sample receipt: 08/12/2017

Vicky Henderson
Approved Signatory
Laboratory Manager
IANZ Accreditation No: 439
Date of Issue: 10/04/92

IANZ ACCREDITED LABORATORY

Tests indicated as not accredited are outside the scope of the laboratory's accreditation.
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Canterbury Laboratory

24 Miners Road, Templeton, Christchurch
PO Box 16-064, Christchurch 8441
Telephone: +64 3 349 9142
Facsimile: +64 3 349 9143
www.fultonhogan.com
0800 LABORATORY

Maximum Dry Density Report

Report No: MDD:CAN18S-14541
Issue No: 1

Client: Toni O'Regan
City Care Limited
PO Box 7669
Sydenham

Christchurch 8240
NZ

Project: QA Testing - City Care Ltd

The tests reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. Samples are tested as received, in natural condition, unless stated otherwise in the comments. This report may only be reproduced in full.

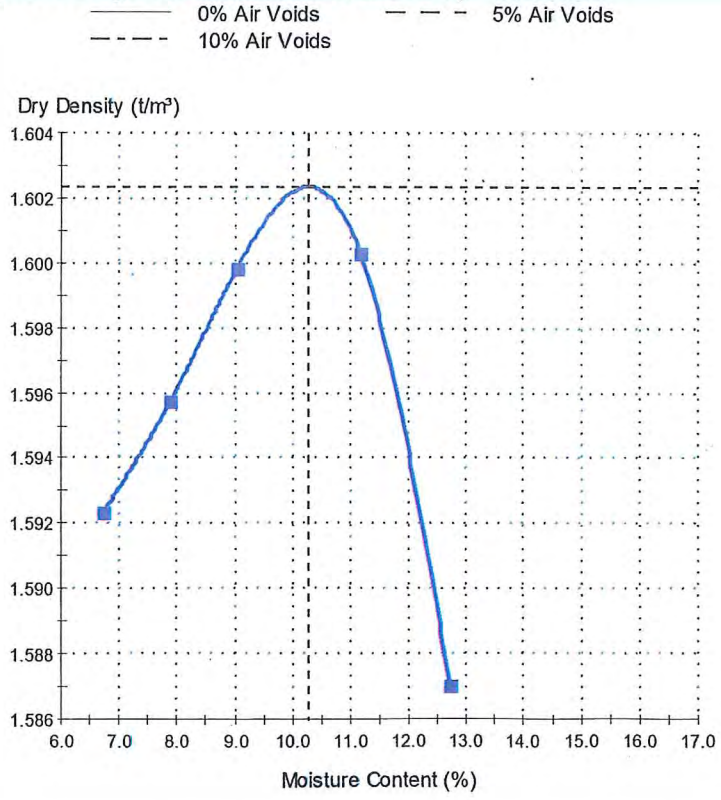
IANZ ACCREDITED LABORATORY

Approved Signatory: Max Burford (Supervisor)
IANZ Accreditation No:200
Date of Issue: 21/06/2018

Sample Details

Sample ID:	CAN18S-14541	**Client Sample ID:**	1208/18
Material:	Sand	**Sample Source:**	Miscellaneous Material Source
Site/Sampled From:	Lot 264 (mix) (sample 1)	**Date Sampled:**	13/06/2018
Specification:	Vibrating Hammer Compaction Test	**Sampled By:**	Advised - See Comments
Sampling Method:	Not Advised - Not Accredited	**Date Tested:**	19/06/2018
Technician:	Johny Slade	**Sampling Endorsed?:**	No

Dry Density - Moisture Relationship



Test Results

NZS 4402:1986 Test 4.1.3 - 1986

Maximum Dry Density (t/m³):	**1.60**
Optimum Moisture Content (%):	**10**
Solid Density (t/m³):	2.68 assumed
Fraction Tested Passes (mm):	37.5
Material Removed (%):	0
Sample History:	Natural

275 2.79? 1660 AW

Comments

Sampled by Clive

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Canterbury Laboratory

24 Miners Road, Templeton, Christchurch
PO Box 16-064, Christchurch 8441
Telephone: +64 3 349 9142
Facsimile: +64 3 349 9143
www.fultonhogan.com
0800 LABORATORY

Maximum Dry Density Report

Report No: MDD:CAN18S-14543
Issue No: 1

Client: Toni O'Regan
City Care Limited
PO Box 7669
Sydenham

Christchurch 8240
NZ

Project: QA Testing - City Care Ltd

The tests reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. Samples are tested as received, in natural condition, unless stated otherwise in the comments. This report may only be reproduced in full.

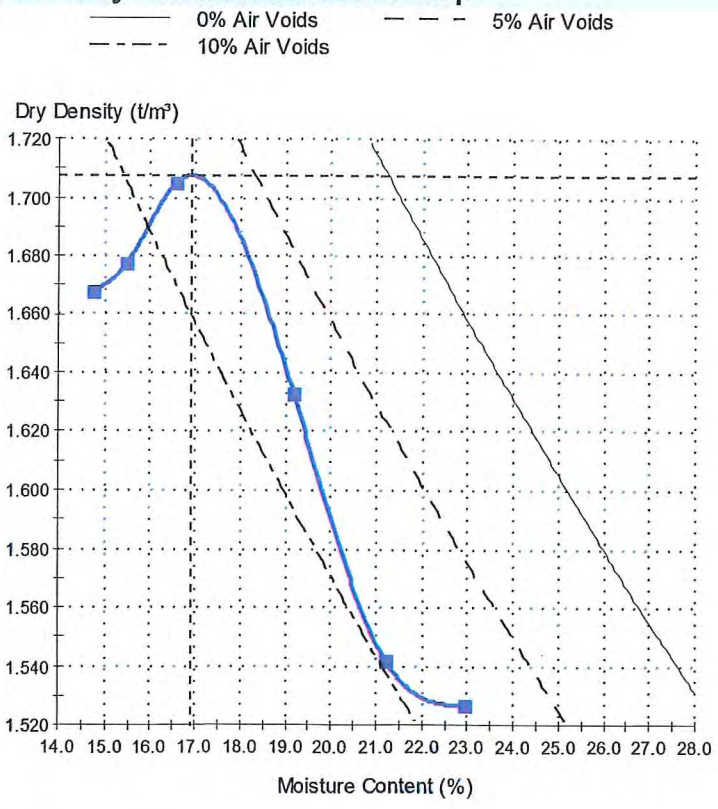
IANZ ACCREDITED LABORATORY

Approved Signatory: Max Burford (Supervisor)
IANZ Accreditation No:200
Date of Issue: 21/06/2018

Sample Details

Sample ID:	CAN18S-14543	**Client Sample ID:**	1210/18
Material:	Sand	**Sample Source:**	Miscellaneous Material Source
Site/Sampled From:	Caldwell Bdy (sample 3)	**Date Sampled:**	13/06/2018
Specification:	Vibrating Hammer Compaction Test	**Sampled By:**	Advised - See Comments
Sampling Method:	Not Advised - Not Accredited	**Date Tested:**	19/06/2018
Technician:	Johny Slade	**Sampling Endorsed?:**	No

Dry Density - Moisture Relationship



Test Results

NZS 4402:1986 Test 4.1.3 - 1986

Maximum Dry Density (t/m³):	**1.70**
Optimum Moisture Content (%):	**17**
Solid Density (t/m³):	2.68 assumed
Fraction Tested Passes (mm):	37.5
Material Removed (%):	0
Sample History:	Natural

Comments

Sampled by Clive
Compaction for test points @ 21.2% & 23.2% ceased prior to 3 minutes due to oversaturation causing ejection of fines from sample.

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Canterbury Laboratory

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PO Box 16-064, Christchurch 8441
Telephone: +64 3 349 9142
Facsimile: +64 3 349 9143
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0800 LABORATORY

Report No: MDD:CAN18S-14542
Issue No: 1

Maximum Dry Density Report

Client: Toni O'Regan
City Care Limited
PO Box 7669
Sydenham

Christchurch 8240
NZ

Project: QA Testing - City Care Ltd

The tests reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. Samples are tested as received, in natural condition, unless stated otherwise in the comments. This report may only be reproduced in full.

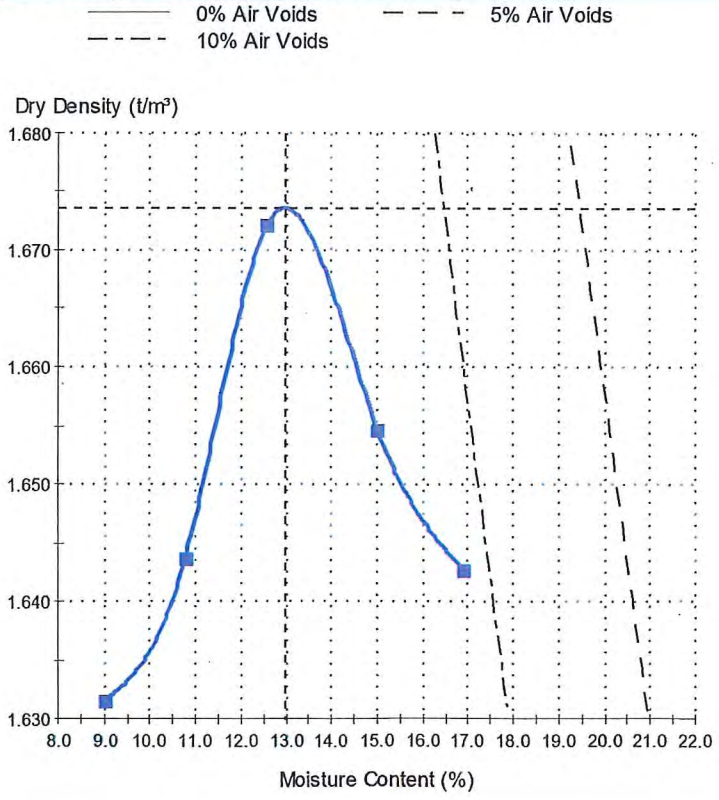
IANZ ACCREDITED LABORATORY

Approved Signatory: Max Burford (Supervisor)
IANZ Accreditation No:200
Date of Issue: 21/06/2018

Sample Details

Sample ID:	CAN18S-14542	**Client Sample ID:**	1209/18
Material:	Sand	**Sample Source:**	Miscellaneous Material Source
Site/Sampled From:	Large stripped stockpile (sample 2)	**Date Sampled:**	13/06/2018
Specification:	Vibrating Hammer Compaction Test	**Sampled By:**	Advised - See Comments
Sampling Method:	Not Advised - Not Accredited	**Date Tested:**	19/06/2018
Technician:	Johny Slade	**Sampling Endorsed?:**	No

Dry Density - Moisture Relationship



Test Results

NZS 4402:1986 Test 4.1.3 - 1986

Maximum Dry Density (t/m³):	**1.68**
Optimum Moisture Content (%):	**13**
Solid Density (t/m³):	2.68 assumed
Fraction Tested Passes (mm):	37.5
Material Removed (%):	0
Sample History:	Natural

Comments

Sampled by Clive
Compaction for test point @ 16.9% ceased prior to 3 minutes due to oversaturation causing ejection of fines from sample.

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Canterbury Laboratory

325 Pound Rd, Yaldhurst
PO Box 16-064, Christchurch 8441
Telephone: +64 3 349 9142
Facsimile: +64 3 349 9143
www.fultonhogan.com
0800 LABORATORY

Maximum Dry Density Report

Report No: MDD:CAN14S-05061
Issue No: 1

Client: Toni O'Regan
City Care Limited
PO Box 7669
Sydenham

Christchurch 8240

Project: QA Testing - City Care Ltd

The test (s) reported herein (unless indicated) have been performed in accordance with the laboratory's scope of accreditation. Results only apply to samples as received. This report must be reproduced in full.

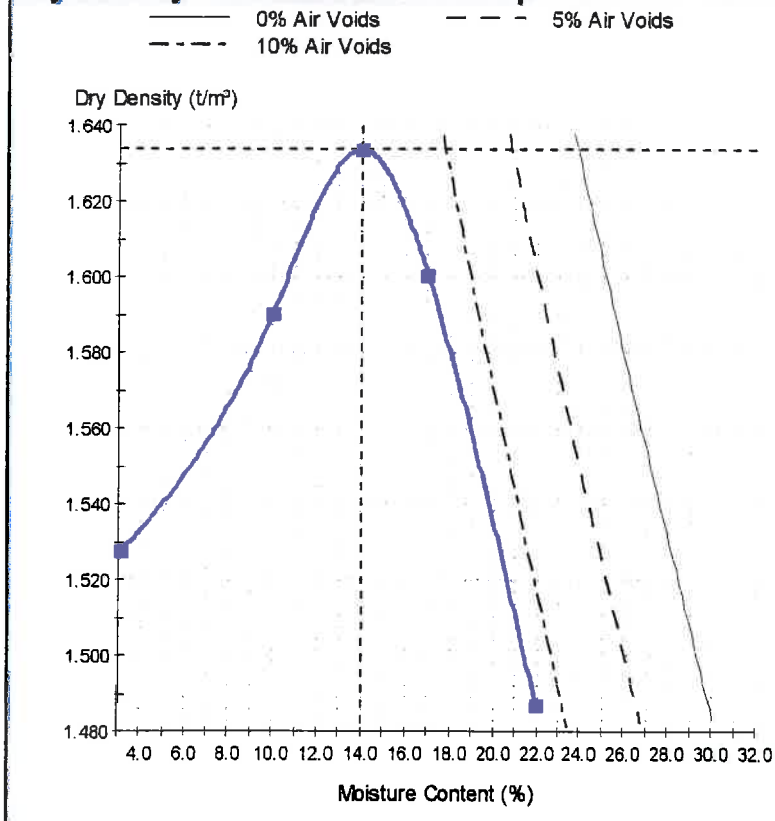
IANZ ACCREDITED LABORATORY

Approved Signatory: Max Burford (Supervisor)
IANZ Accreditation No:200
Date of Issue: 06/03/14

Sample Details

Sample ID:	CAN14S-05061	**Client Sample ID:**	0429/14 Site B
Material:	BEACH SAND	**Sample Source:**	Field Sample [Taken From Site]
Site/Sampled From:	Prestons Road Alpine V Site B	**Date Sampled:**	25/02/2014
Specification:	No Specification	**Sampled By:**	Advised - See Comments
Sampling Method:	As Received - Not Accredited	**Date Tested:**	06/03/2014
Technician:	Daniel Daly	**Sampling Endorsed?:**	No

Dry Density - Moisture Relationship



Test Results

NZS 4402:1986 Test 4.1.3 - 1986

Maximum Dry Density (t/m³):	1.64
Optimum Moisture Content (%):	14
Solid Density (t/m³):	2.68 assumed
Fraction Tested Passes (mm):	37.5
Material Removed (%):	0
Sample History:	Natural

Comments

50% MEDIUM SAND 46% fine sand & 4% silt

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Appendix D
NDM Test Results

Project Prestons South Subdivision
Project No. 235361
Date 27-Feb-20
Title Summary of Compaction

Date	Test ID#	Test #	Unique ID#	mE	mN	Stage	MDD	Type	Lift #	Lot ID	Compaction	Retest
20/02/2020	KB20/0040	9	207	395694.7	811815.8	T1	2320	PIT RUN	LIFT 4	Lot 399	96	
		10	208	395701.2	811803.2	T1	2320	PIT RUN	LIFT 4		98	
		11	209	395719.5	811813	T1	2320	PIT RUN	LIFT 4	Lot 400	97	
		12	210	395712.6	811825.9	T1	2320	PIT RUN	LIFT 4		96	
		13	211	395730.8	811835.1	T1	2320	PIT RUN	LIFT 4	Lot 401	98	
		14	212	395736.9	811822.5	T1	2320	PIT RUN	LIFT 4		97	
		15	213	395753	811829.9	T1	2320	PIT RUN	LIFT 4	Lot 402	98	
		16	214	395746.6	811843.9	T1	2320	PIT RUN	LIFT 4		99	
		1	215	395624.2	811779.1	T1	2320	PIT RUN		LOT 395	95	
		2	216	395630.6	811766.5	T1	2320	PIT RUN			97	
24/06/2019	1523/19	3	217	395648	811775.9	T1	2320	PIT RUN		LOT 396	96	
		4	218	395641.5	811788.2	T1	2320	PIT RUN			97	
		5	219	395659.6	811797.7	T1	2320	PIT RUN		LOT 397	96	
		6	220	395665.8	811785.2	T1	2320	PIT RUN			96	
		7	221	395683.4	811793.5	T1	2320	PIT RUN		LOT 398	96	
		8	222	395676.2	811806.4	T1	2320	PIT RUN			96	
		9	223	395694.7	811815.8	T1	2320	PIT RUN		LOT 399	96	
		10	224	395701.2	811803.2	T1	2320	PIT RUN			96	
		11	225	395754.8	811848.5	T1	2320	PIT RUN		LOT 402	97	
		12	226	395760.6	811833.8	T1	2320	PIT RUN			97	
		1	227	395581.5	811740.8	T1	2320	PIT RUN		LOT 393	101	
		2	228	395585.2	811754.2	T1	2320	PIT RUN			98	
1/06/2019	1589/19	3	229	395598.7	811749.3	T1	2320	PIT RUN		LOT 394	99	
		4	230	395603.2	811764.4	T1	2320	PIT RUN			98	
		5	231	395619	811775.2	T1	2320	PIT RUN		LOT 395	96	
		6	232	395635.7	811768.6	T1	2320	PIT RUN			97	
		7	233	395635.7	811785.3	T1	2320	PIT RUN		LOT 396	97	
		8	234	395653.2	811778.4	T1	2320	PIT RUN			100	
		9	235	395656.3	811787.9	T1	2320	PIT RUN		LOT 397	96	
		10	236	395666.8	811793.8	T1	2320	PIT RUN			98	
		11	237	395677.2	811790.4	T1	2320	PIT RUN		LOT 398	101	

Project Prestons South Subdivision
Project No. 235361
Date 27-Feb-20
Title Summary of Compaction

Date	Test ID#	Test #	Unique ID#	mE	mN	Stage	MDD	Type	Lift #	Lot ID	Compaction	Retest
		12	238	395683	811806.7	T1	2320	PIT RUN			97	
		1	239	395753	811829.9	T1	2320	PIT RUN	LIFT 2	LOT 402 RETEST	96	
		2	240	395746.6	811843.9	T1	2320	PIT RUN			97	
26/06/2019	1539/19	3	241	395659.6	811797.7	T1	2320	PIT RUN	LIFT 2	LOT 397	98	
		4	242	395665.8	811785.2	T1	2320	PIT RUN			97	
		5	243	395648	811775.9	T1	2320	PIT RUN	LIFT 2	LOT 396	99	
		6	244	395641.5	811788.2	T1	2320	PIT RUN			98	
		7	245	395624.2	811779.1	T1	2320	PIT RUN	LIFT 2	LOT 395	98	
		8	246	395630.6	811766.5	T1	2320	PIT RUN			98	
		9	247	395603.6	811752.3	T1	2320	PIT RUN	LIFT 2	LOT 394	97	
		10	248	395597.1	811765.4	T1	2320	PIT RUN			99	
		11	249	395676.2	811806.4	T1	2320	PIT RUN	LIFT 2	LOT 398	97	
		12	250	395683.4	811793.5	T1	2320	PIT RUN			97	
		13	251	395701.2	811803.2	T1	2320	PIT RUN	LIFT 2	LOT 399	96	
		14	252	395694.7	811815.8	T1	2320	PIT RUN			97	
		1	253	395577.5	811787.7	T1	1660	SAND	FINAL	LOT 371	101	
		2	254	395570.6	811800	T1	1660	SAND			94	
3/07/2019	1617/19	3	255	395555.3	811792.4	T1	1660	SAND	FINAL	LOT 372	101	
		4	256	395561.2	811779.1	T1	1660	SAND			99	
		5	257	395546.6	811771.9	T1	1660	SAND	FINAL	LOT 373	97	
		6	258	395539.2	811784.1	T1	1660	SAND			99	
		1	267	395746.6	811843.9	T1	2320	PIT RUN	LIFT 2	LOT 402	96	
		2	268	395753	811829.9	T1	2320	PIT RUN			96	
27/06/2019	1565/19	3	269	395736.9	811822.5	T1	2320	PIT RUN	LIFT 2	LOT 401	95	
		4	270	395730.8	811835.1	T1	2320	PIT RUN			95	
		5	271	395712.6	811825.9	T1	2320	PIT RUN	LIFT 2	LOT 400	97	
		6	272	395719.5	811813	T1	2320	PIT RUN			97	
		7	273	395531.7	811717.3	T1	2320	PIT RUN	LIFT 3	LOT 390	95	
		8	274	395526.1	811728.8	T1	2320	PIT RUN			95	
		9	275	395543.8	811738	T1	2320	PIT RUN	LIFT 3	LOT 391	98	
		10	276	395549.6	811726.5	T1	2320	PIT RUN			96	

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Date	Test ID#	Test #	Unique ID#	mE	mN	Stage	MDD	Type	Lift #	Lot ID	Compaction	Retest
		1	279	395676.2	811806.4	T1	2320	PIT RUN	LIFT 2	LOT 398	101	
		2	280	395683.4	811793.5	T1	2320	PIT RUN			99	
2/07/2019	1607/19	3	281	395701.2	811803.2	T1	2320	PIT RUN	LIFT 2	LOT 399	104	
		4	282	395694.7	811815.8	T1	2320	PIT RUN			101	
		5	283	395712.6	811825.9	T1	2320	PIT RUN	LIFT 2	LOT 400	99	
		6	284	395719.5	811813	T1	2320	PIT RUN			100	
		7	285	395736.9	811822.5	T1	2320	PIT RUN	LIFT 2	LOT 401	99	
		8	286	395730.8	811835.1	T1	2320	PIT RUN			100	
		9	287	395746.6	811843.9	T1	2320	PIT RUN	LIFT 2	LOT 402	100	
		10	288	395753	811829.9	T1	2320	PIT RUN			98	
		1	289	395526.1	811728.8	T1	2320	PIT RUN		LOT 390	97	
		2	290	395531.7	811717.3	T1	2320	PIT RUN			98	
18/06/2019	1460/19	3	291	395543.8	811738	T1	2320	PIT RUN		LOT 391	102	
		4	292	395549.6	811726.5	T1	2320	PIT RUN			100	
		5	293	395561.4	811747.2	T1	2320	PIT RUN		LOT 392	96	
		6	294	395566.3	811735.4	T1	2320	PIT RUN			99	
		1	297	395705.8	811822.6	T1	2320	PIT RUN	LIFT 2	LOT 400	97	
		2	298	395724.2	811815.6	T1	2320	PIT RUN			96	
25/06/2019	1534/19	3	299	395730.8	811819.1	T1	2320	PIT RUN	LIFT 2	LOT 401	97	
		4	300	395734.9	811837.5	T1	2320	PIT RUN			98	
		5	301	395743	811841.6	T1	2320	PIT RUN	LIFT 2	LOT 402	93	
		6	302	395749.8	811828.2	T1	2320	PIT RUN			95	
		7	303	395585.2	811754.2	T1	2320	PIT RUN	LIFT 2	LOT 393	96	
		8	304	395581.5	811740.8	T1	2320	PIT RUN			96	
		9	305	395572.4	811738	T1	2320	PIT RUN	LIFT 2	LOT 392	96	
		10	306	395556.1	811744.6	T1	2320	PIT RUN			99	
		11	307	395548.7	811740.9	T1	2320	PIT RUN	LIFT 2	LOT 391	97	
		12	308	395545.2	811723.4	T1	2320	PIT RUN			98	
		13	309	395536.7	811719.3	T1	2320	PIT RUN	LIFT 2	LOT 390	96	
		14	310	395530.4	811731.5	T1	2320	PIT RUN			98	
		1	319	395574.4	811794	T1	1660	SAND	FINAL	LOT 371	97	

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Date	Test ID#	Test #	Unique ID#	mE	mN	Stage	MDD	Type	Lift #	Lot ID	Compaction	Retest
		1	320	395694.7	811815.8	T1	2320	PIT RUN	LIFT 5	LOT 399	100	
9/07/2019	1666/19	2	321	395701.2	811803.2	T1	2320	PIT RUN			100	
19/07/2019	1793/19	3	322	395719.5	811813	T1	2320	PIT RUN	LIFT 5	LOT 400	101	
		4	323	395712.6	811825.9	T1	2320	PIT RUN			101	
		5	324	395730.8	811835.1	T1	2320	PIT RUN	LIFT 5	LOT 401	97	
		6	325	395736.9	811822.5	T1	2320	PIT RUN			99	
		7	326	395753	811829.9	T1	2320	PIT RUN	LIFT 5	LOT 402	101	
		8	327	395746.6	811843.9	T1	2320	PIT RUN			100	
		1	328	395543.8	811738	T1	2320	PIT RUN	LIFT 4	LOT 391	102	
		2	329	395549.6	811726.5	T1	2320	PIT RUN			101	
15/07/2019	1737/19	3	330	395536.7	811719.3	T1	2320	PIT RUN	LIFT 4	LOT 390	100	
		4	331	395530.4	811731.5	T1	2320	PIT RUN			101	
		1	352	395676.2	811806.4	T1	2320	PIT RUN	LIFT 5	LOT 398	102	
		2	353	395683.4	811793.5	T1	2320	PIT RUN			103	
23/07/2019	1810/19	3	354	395665.8	811785.2	T1	2320	PIT RUN	LIFT 5	LOT 397	101	
		4	355	395659.6	811797.7	T1	2320	PIT RUN			102	
		5	356	395641.5	811788.2	T1	2320	PIT RUN	LIFT 5	LOT 396	100	
		6	357	395648	811775.9	T1	2320	PIT RUN			100	
		7	358	395630.6	811766.5	T1	2320	PIT RUN	LIFT 5	LOT 395	100	
		8	359	395624.2	811779.1	T1	2320	PIT RUN			99	
		9	360	395597.1	811765.4	T1	2320	PIT RUN	LIFT 5	LOT 394	99	
		10	361	395603.6	811752.3	T1	2320	PIT RUN			98	
		11	362	395586.2	811743.3	T1	2320	PIT RUN	LIFT 5	LOT 393	98	
		12	363	395579.7	811756.9	T1	2320	PIT RUN			98	
		19	453	395633.1	811835.6	T1	1660	SAND		LOT 407	97	
		20	454	395640.6	811821.7	T1	1660	SAND			97	
		21	455	395625.2	811813.6	T1	1660	SAND		LOT 408	100	
		22	456	395618.4	811828.7	T1	1660	SAND			100	
		23	457	395603.2	811820.3	T1	1660	SAND		LOT 409	100	
		24	458	395611.2	811805.3	T1	1660	SAND			97	
		1	459	395696.7	811800.7	T1	1660	SAND		LOT 399	96	

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Date	Test ID#	Test #	Unique ID#	mE	mN	Stage	MDD	Type	Lift #	Lot ID	Compaction	Retest
		2	460	395699.3	811817.9	T1	1660	SAND			96	
12/07/2019	1715/19	3	461	395676.2	811806.4	T1	1660	SAND		LOT 398	98	
		4	462	395683.4	811793.5	T1	1660	SAND			98	
		5	463	395659.6	811797.7	T1	1660	SAND		LOT 397	97	
		6	464	395665.8	811785.2	T1	1660	SAND			97	
		7	465	395641.5	811788.2	T1	1660	SAND		LOT 396	98	
		8	466	395648	811775.9	T1	1660	SAND			97	
		9	467	395630.6	811766.5	T1	1660	SAND		LOT 395	98	
		10	468	395624.2	811779.1	T1	1660	SAND			97	
		11	469	395597.1	811765.4	T1	1660	SAND		LOT 394	97	
		12	470	395603.6	811752.3	T1	1660	SAND			95	
		13	471	395586.2	811743.3	T1	1660	SAND		LOT 393	100	
		14	472	395579.7	811756.9	T1	1660	SAND			102	
		15	473	395561.4	811747.2	T1	1660	SAND		LOT 392	97	
		16	474	395566.3	811735.4	T1	1660	SAND			95	
		17	475	395543.8	811738	T1	1660	SAND		LOT 391	96	
		18	476	395549.6	811726.5	T1	1660	SAND			97	
		19	477	395526.1	811728.8	T1	1660	SAND		LOT 390	95	
		1	500	395556.1	811744.6	T1	2320	PIT RUN	LIFT 1	LOT 392	101	
		2	501	395572.4	811738	T1	2320	PIT RUN			98	
20/06/2019	1488/19	3	502	395581.5	811740.8	T1	2320	PIT RUN	LIFT 1	LOT 393	96	
		4	503	395579.7	811756.9	T1	2320	PIT RUN			98	
		5	504	395592.1	811763.7	T1	2320	PIT RUN	LIFT 1	LOT 394	97	
		6	505	395603.6	811752.3	T1	2320	PIT RUN			96	
		9	508	395760.6	811833.8	T1	2320	PIT RUN	LIFT 1	LOT 402	102	
		10	509	395754.8	811848.5	T1	2320	PIT RUN			99	
		1	510	395703.2	811852.8	T1	1660	SAND	FINAL	LOT 404	102	
		2	511	395695.2	811867.4	T1	1660	SAND	FINAL		99	
29/07/2019	1850/19	1	512	395732	811866.2	T1	2320	PIT RUN	LIFT 1	LOT 403	101	
		2	513	395741.6	811881.5	T1	2320	PIT RUN			98	
25/07/2019	1830/19	13	524	395561.4	811747.2	T1	2320	PIT RUN	LIFT 5	LOT 392	98	

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Date	Test ID#	Test #	Unique ID#	mE	mN	Stage	MDD	Type	Lift #	Lot ID	Compaction	Retest
		14	525	395566.3	811735.4	T1	2320	PIT RUN			99	
		15	526	395549.6	811726.5	T1	2320	PIT RUN	LIFT 5	LOT 391	97	
		16	527	395543.8	811738	T1	2320	PIT RUN			98	
		17	528	395526.2	811728.8	T1	2320	PIT RUN	LIFT 5	LOT 390	101	
		18	529	395531.7	811717.3	T1	2320	PIT RUN			100	
15/05/2019	1174/19	13	153	395503.4	811750.2	Z1	1660	SAND	LIFT 1	LOT 772	99	
		14	154	395491.5	811760.7	Z1	1660	SAND	LIFT 1		102	
		15	155	395479.8	811744.6	Z1	1660	SAND	LIFT 1	LOT 770	101	
		16	156	395473.7	811759.7	Z1	1660	SAND	LIFT 1		104	
		17	157	395458.2	811750.6	Z1	1660	SAND	LIFT 1	LOT 769	102	
		18	158	395460.8	811770.2	Z1	1660	SAND	LIFT 1		105	
		19	159	395470.9	811776.1	Z1	1660	SAND	LIFT 1	LOT 771	97	
		20	160	395485.3	811776.6	Z1	1660	SAND	LIFT 1		101	
		11	277	395513.4	811706.9	Z1	2320	PIT RUN	LIFT 3	LOT 773	95	
		12	278	395507.6	811720.5	Z1	2320	PIT RUN			95	
		19	530	395519.2	811709.6	Z1	2320	PIT RUN	LIFT 5	LOT 733	98	
		20	531	395512.8	811723.1	Z1	2320	PIT RUN			96	
		1	674	395492.9	811745.4	Z1	1660	SAND	Lift 1	Lot 772	98	
		2	675	395479.8	811744.6	Z1	1660	SAND	Lift 1	Lot 770	98	
		1	676	395492.9	811745.4	Z1	1660	SAND	Lift 2	Lot 772	99	
		2	677	395479.8	811744.6	Z1	1660	SAND	Lift 2	lot 770	97	
		1	678	395492.9	811745.4	Z1	1660	SAND	Lift 3	Lot 772	98	
		2	679	395479.8	811744.6	Z1	1660	SAND	Lift 3	Lot 770	97	
12/10/2019	2510/19	1	680	395418.9	811712.5	Z1	1660	SAND	Lift 5	Lot 767	98	
		2	681	395437.3	811725	Z1	1660	SAND	Lift 5	Lot 768	100	
24/10/2019	2599/19	1	682	395418.9	811712.5	Z1	1660	SAND	Lift 4	Lot 767	99	
		2	683	395437.3	811725	Z1	1660	SAND	Lift 4	Lot 768	99	
25/10/2019	2607/19	1	684	395437.3	811725	Z1	1660	SAND	Lift 3	Lot 768	103	
		2	685	395418.9	811712.5	Z1	1660	SAND	Lift 3	Lot 767	99	
18/11/2019	2769/19	1	686	395492.9	811745.4	Z1	1660	SAND	Final lift	Lot 772	106	
		2	687	395479.8	811744.6	Z1	1660	SAND	Final Lift	Lot 770	106	

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14/11/2019	2763/19	3	688	395418.9	811712.5	Z1	1660	SAND	Lift 2	Lot 767	101	
		4	689	395437.3	811725	Z1	1660	SAND	Lift 2	Lot 768	100	
13/11/2019	2746/19	5	706	395509.7	811704.6	Z1	1660	SAND	Lift 5	Lot 773	101	
		6	707	395502.7	811718.9	Z1	1660	SAND			97	
12/11/2019	2731/19	7	708	395465.4	811714.4	Z1	1660	SAND	Lift 2	Lot 775	99	
		8	709	395424.6	811685.4	Z1	1660	SAND	Lift 2	Lot 778	95	
		9	710	395427.1	811669.6	Z1	1660	SAND			97	
		1	711	395502.7	811718.9	Z1	1660	SAND	Final Lift	Lot 773	96	
		2	712	395519.2	811709.6	Z1	1660	SAND			98	
		1	735	395512.8	811723.1	Z1	1660	SAND	Lift 1	Lot 773	97	
		2	736	395519.2	811709.6	Z1	1660	SAND	lift 1		99	
		1	737	395512.8	811723.1	Z1	1660	SAND	Lift 2	Lot 773	100	
		2	738	395519.2	811709.6	Z1	1660	SAND	Lift 2		98	
16/12/2019	3030/19	1	739	395512.8	811723.1	Z1	1660	SAND	Lift 3	Lot 773	96	
		2	740	395519.2	811709.6	Z1	1660	SAND	Lift 3		97	
12/12/2019	2997/19	1	741	395512.8	811723.1	Z1	1660	SAND	Lift 4	Lot 773	100	
		2	742	395519.2	811709.6	Z1	1660	SAND	Lift 4		98	
13/12/2019	3015/19	1	743	395460.4	811713.4	Z1	1660	SAND	Lift 1	Lot 775	97	
		2	744	395468.6	811720.5	Z1	1660	SAND	Lift 1		97	
13/12/2019	3016/19	3	745	395430.6	811688.1	Z1	1660	SAND	Lift 1	Lot 777	99	
		4	746	395424.6	811685.4	Z1	1660	SAND	Lift 1	Lot 778	98	
16/12/2019	3018/19	1	747	395450.8	811698.0	Z1	1660	SAND	Lift 1 + Final	Lot 776	99	
		2	748	395459.2	811680.4	Z1	1660	SAND			101	
12/12/2019	2990/19	3	749	395495.3	811698.8	Z1	1660	SAND	Lift 1 + Final	Lot 774	106	
		4	750	395487.0	811717.0	Z1	1660	SAND			101	
		3	753	395419.3	811665.9	Z1	1660	SAND	Lift 1	Lot 778 partial	96	
		4	754	395427.2	811667.1	Z1	1660	SAND			97	

Document prepared by

Aurecon New Zealand Limited
Level 2, Iwikau Building
93 Cambridge Terrace
Christchurch 8013
New Zealand

T +64 3 366 0821
F +64 3 379 6955
E christchurch@aurecongroup.com
W aurecongroup.com

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