Appendix E
Post Earthworks CPT Testing

McMILLAN Drilling

CONE PENETRATION TEST

Job: 19024

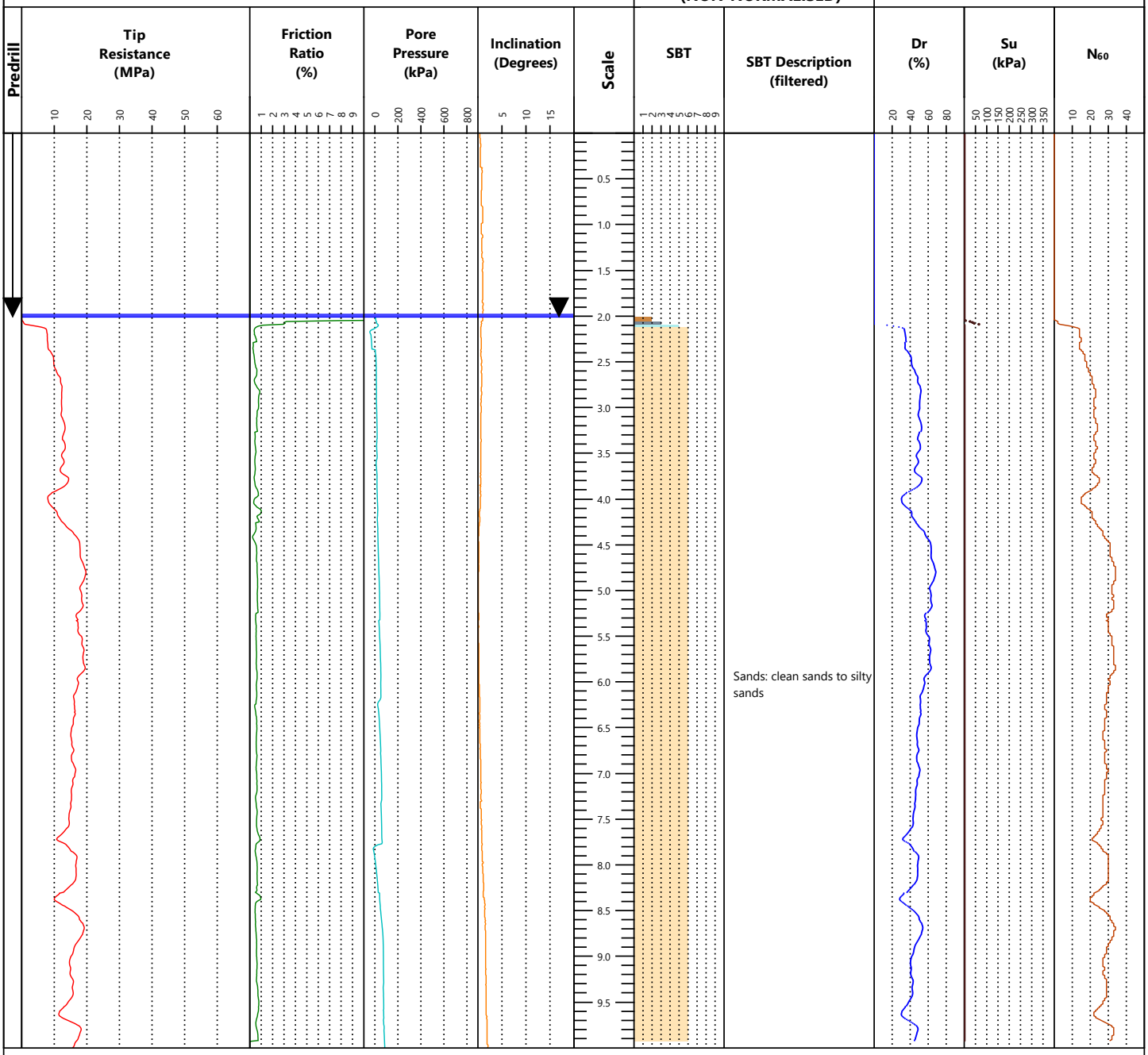
CPT No.: CPTuPF84

Name: Stage 4 Completion Testing
Client: Aurecon NZ Ltd
Location: Prestons Park, Christchurch

Hole Depth (m): 10.00
Elevation (m): 0.00
Datum: Ground

North (m): 5185978.54
East (m): 1573592.32
Grid: NZTM

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



EOH: 10m

Operator: S. Cardona
Rig: 14t truck mounted rig
Cone Reference: 100992
Cone Area Ratio: 0.75
Cone Type: I-CFXYP20-10
Tip Resistance (MPa) Initial: 0.9986
Local Friction (MPa) Initial: 0.0336
Pore Pressure (MPa) Initial: 0.0051

Date: 04/08/2020
Predrill: 2.00
Water Level: 2.00
Collapse: 2.10
Final: 1.0277
Final: 0.0327
Final: 0.0016

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

McMILLAN Drilling

CONE PENETRATION TEST

Job: 19024

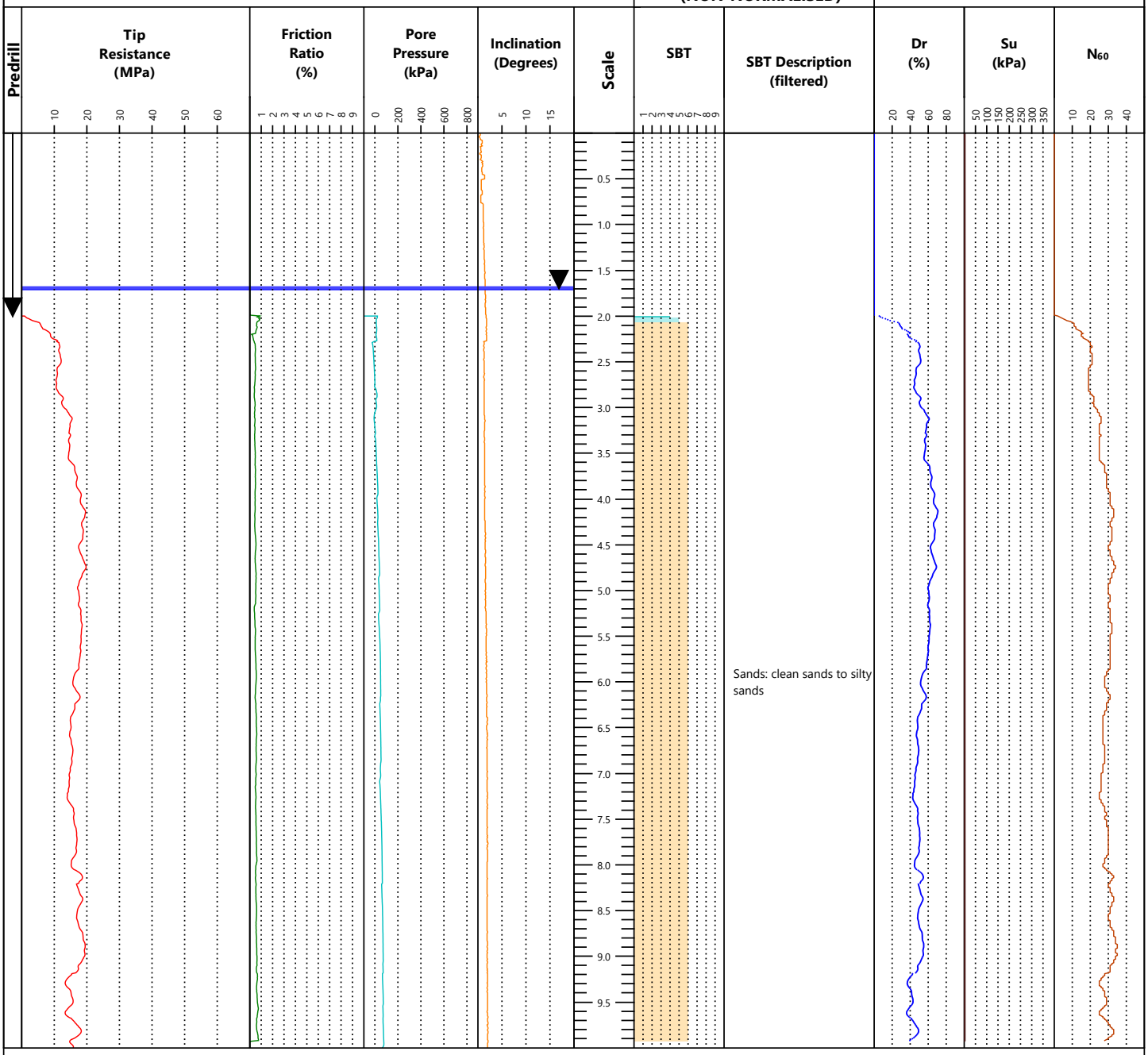
CPT No.: CPTuPF85

Name: Stage 4 Completion Testing
Client: Aurecon NZ Ltd
Location: Prestons Park, Christchurch

Hole Depth (m): 10.00
Elevation (m): 0.00
Datum: Ground

North (m): 5185979.49
East (m): 1573675.66
Grid: NZTM

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



EOH: 10m

Operator: S. Cardona
Rig: 14t truck mounted rig
Cone Reference: 151125
Cone Area Ratio: 0.75
Cone Type: I-CFXYP20-10
Tip Resistance (MPa) Initial: 0.3723
Local Friction (MPa) Initial: 0.0144
Pore Pressure (MPa) Initial: -0.0197

Date: 04/08/2020
Predrill: 2.00
Water Level: 1.70
Collapse: 1.80
Final: 0.3629
Final: 0.0152
Final: -0.0207

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

McMILLAN Drilling

CONE PENETRATION TEST

Job: 19024

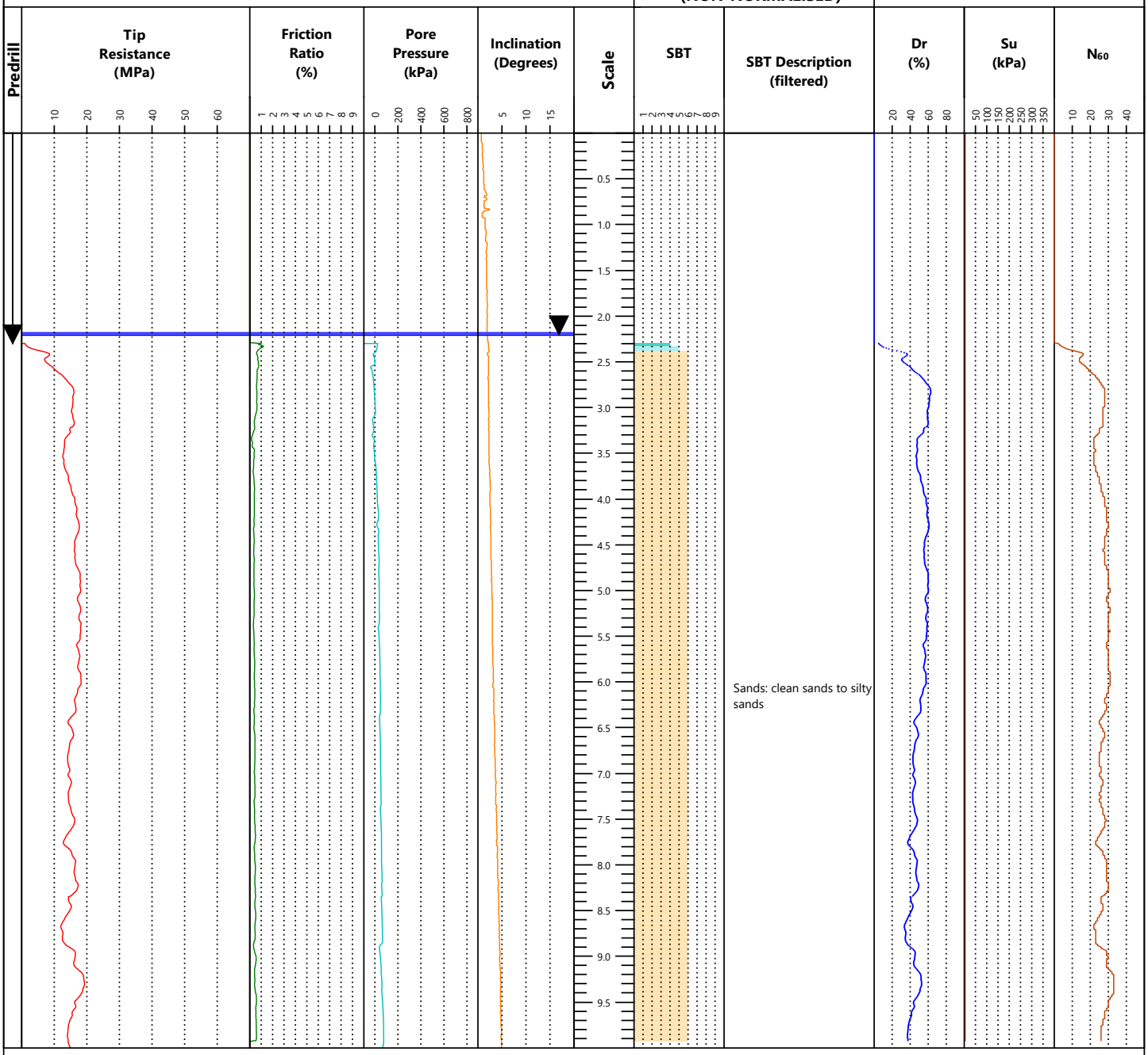
CPT No.: CPTuPF86

Name: Stage 4 Completion Testing
Client: Aurecon NZ Ltd
Location: Prestons Park, Christchurch

Hole Depth (m): 10.00
Elevation (m): 0.00
Datum: Ground

North (m): 5185992.39
East (m): 1573742.11
Grid: NZTM

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



EOH: 10m

Operator: S. Cardona
Rig: 14t truck mounted rig
Cone Reference: 100992
Cone Area Ratio: 0.75
Cone Type: I-CFXYP20-10
Tip Resistance (MPa) Initial: 0.9747
Local Friction (MPa) Initial: 0.0369
Pore Pressure (MPa) Initial: 0.0041

Date: 05/08/2020
Predrill: 2.30
Water Level: 2.20
Collapse: 2.30
Final: 1.008
Final: 0.0328
Final: 0.0011

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

McMILLAN Drilling

CONE PENETRATION TEST

Job: 19024

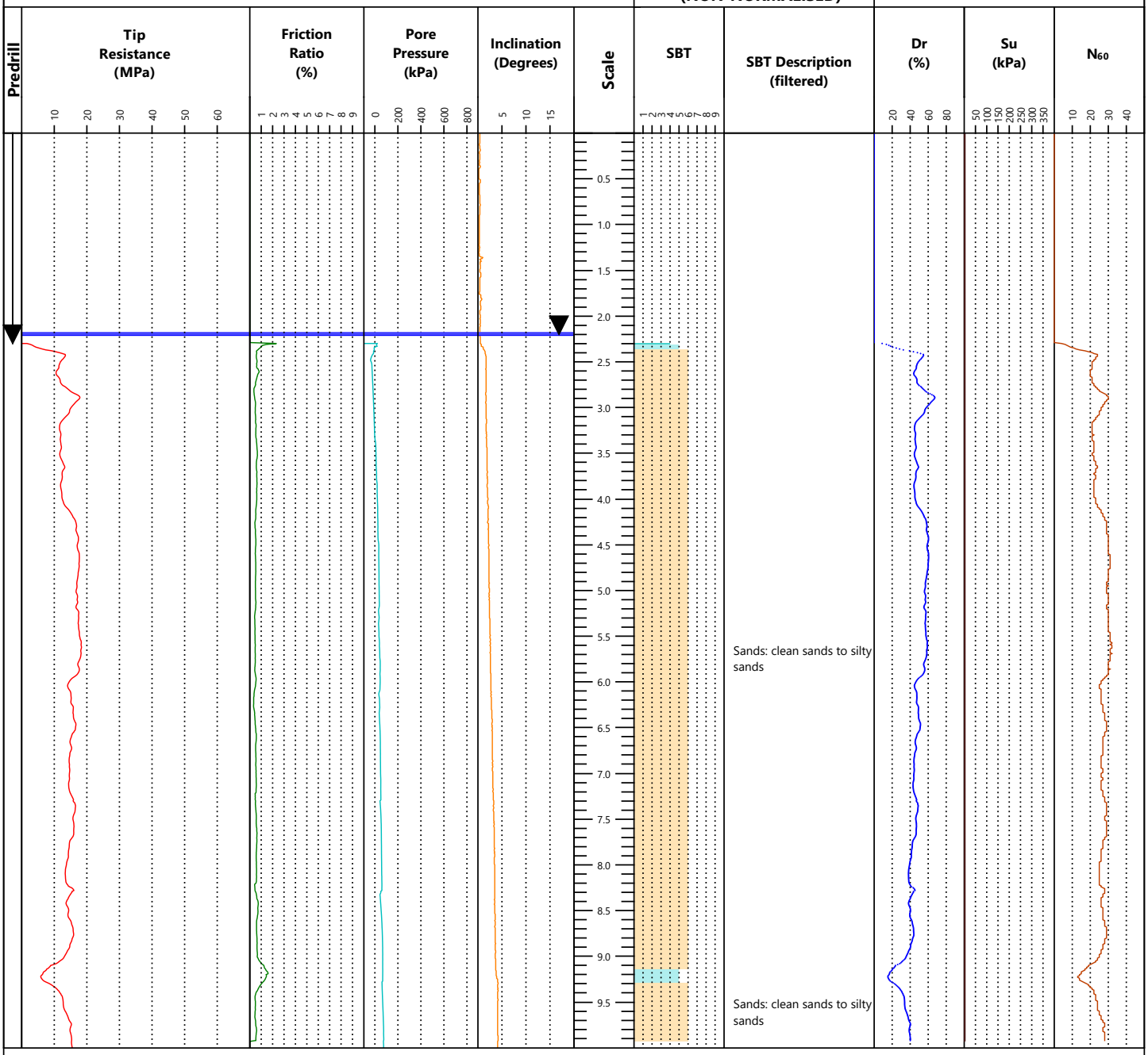
CPT No.: CPTuPF87

Name: Stage 4 Completion Testing
Client: Aurecon NZ Ltd
Location: Prestons Park, Christchurch

Hole Depth (m): 10.00
Elevation (m): 0.00
Datum: Ground

North (m): 5186019.80
East (m): 1573809.62
Grid: NZTM

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



EOH: 10m

Operator: S. Cardona
Rig: 14t truck mounted rig
Cone Reference: 151125
Cone Area Ratio: 0.75
Cone Type: I-CFXYP20-10
Tip Resistance (MPa) Initial: 0.4097
Local Friction (MPa) Initial: 0.0185
Pore Pressure (MPa) Initial: -0.0161

Date: 05/08/2020
Predrill: 2.30
Water Level: 2.20
Collapse: 2.20
Final: 0.3856
Final: 0.0171
Final: -0.0194

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

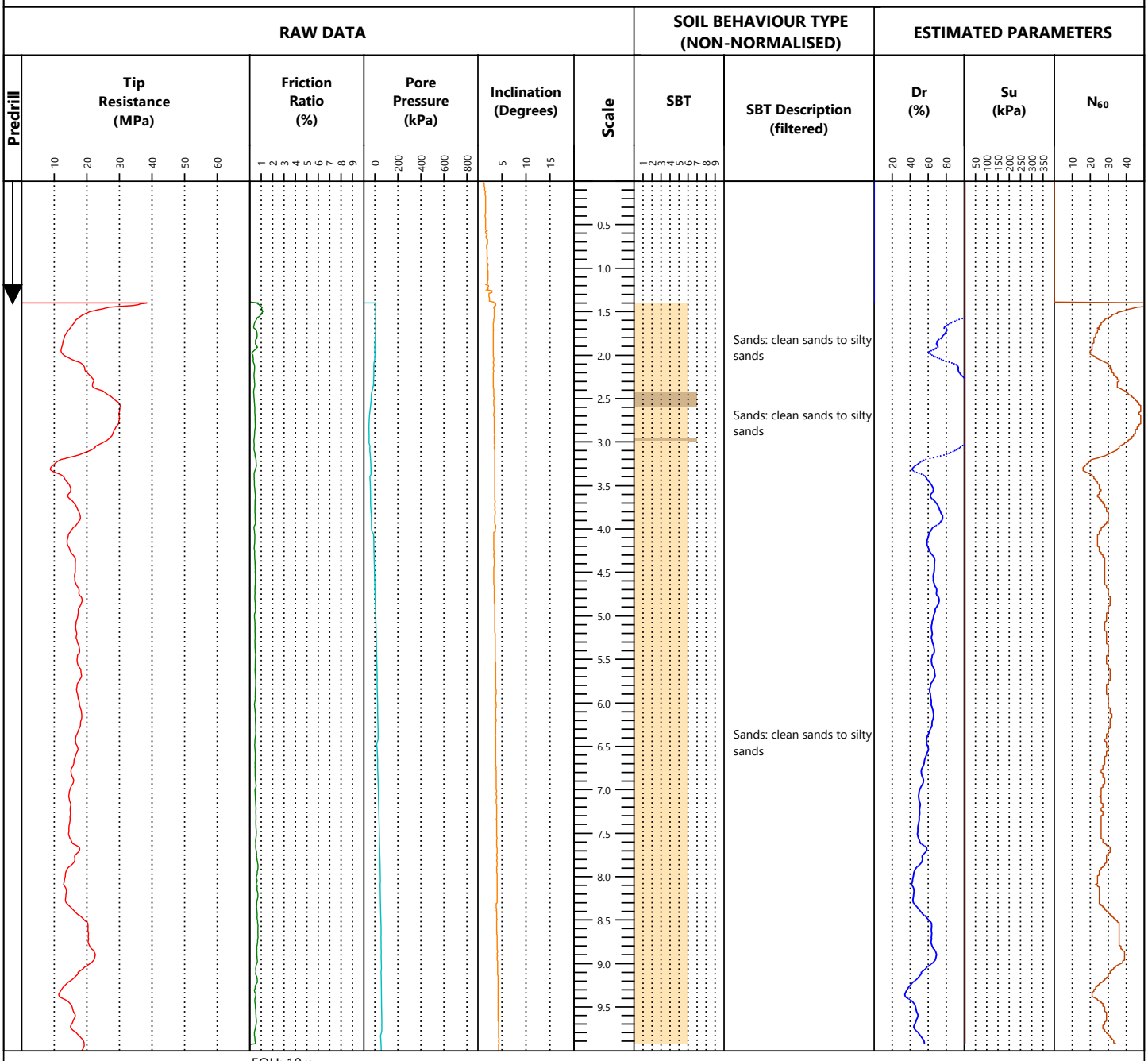
McMILLAN Drilling

Client: Aurecon NZ Ltd	**Bore No.:** CPTuPF88
Project: Stage 4 Completion Testing	**Job No.:** 19024

Site Location: Prestons Park, Christchurch **Date:** 14/9/2020

Grid Reference: 1573621.86m E, 5186024.49m N (NZTM) - Map or aerial photograph **Rig Operator:** S. Cardona

Elevation: 0.00m **Datum:** Ground **Equipment:** Geomil Panther 100



Cone Type: I-CFXYP20-10 - Compression
Cone Reference: 100992
Cone Area Ratio: 0.75
Standards: ISO 22476-1:2012

Predrill: 1.4m
Water Level: -
Collapse: 1.9m

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

Zero load outputs (MPa)	Before test	After test
Tip Resistance	1.526	1.438
Local Friction	0.0393	0.0399
Pore Pressure	-0.0054	-0.0063

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

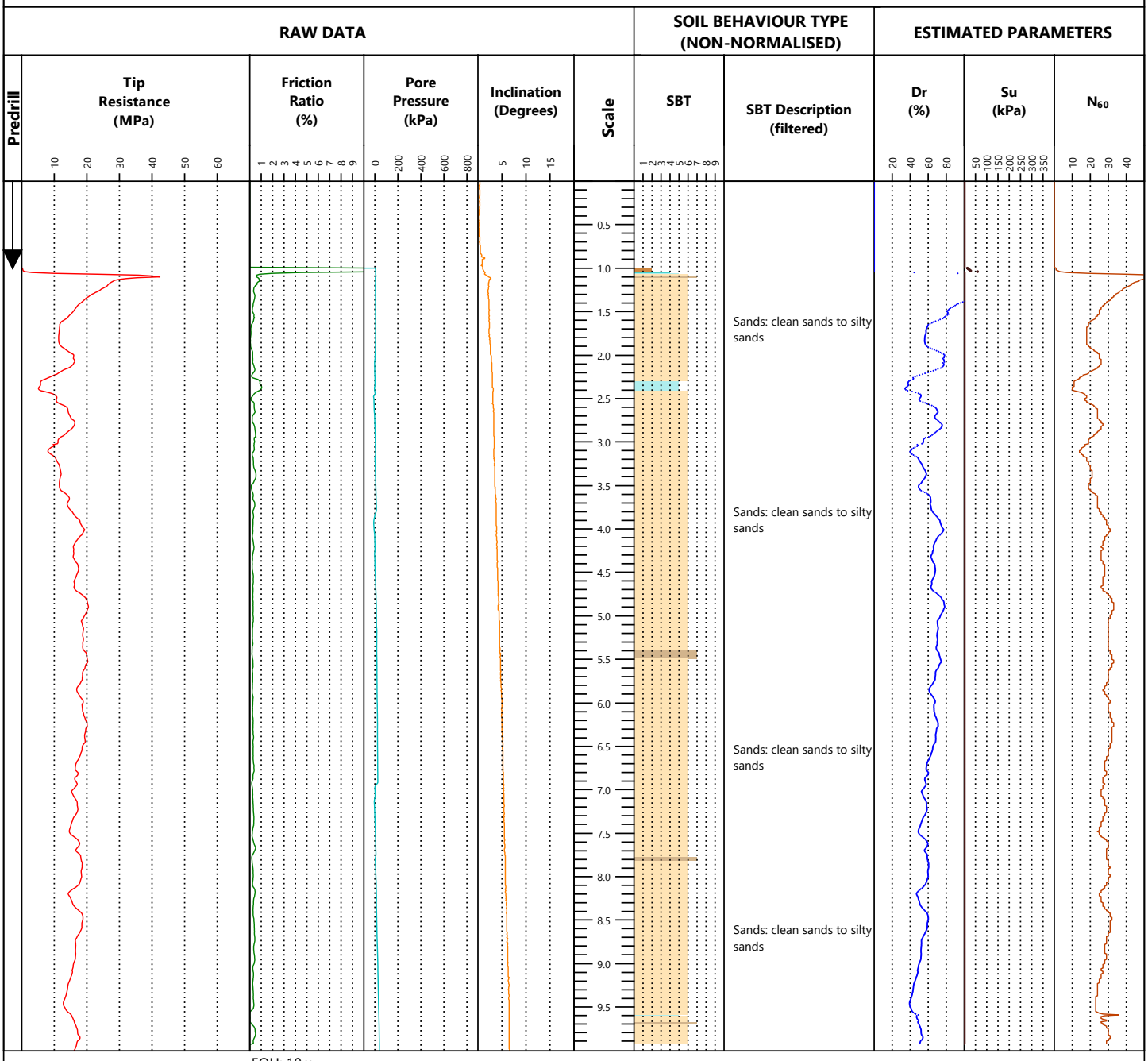
McMILLAN Drilling

Client: Aurecon NZ Ltd	**Bore No.:** CPTuPF89
Project: Stage 4 Completion Testing	**Job No.:** 19024

Site Location: Prestons Park, Christchurch **Date:** 14/9/2020

Grid Reference: 1573677.84m E, 5186028.34m N (NZTM) - Map or aerial photograph **Rig Operator:** S. Cardona

Elevation: 0.00m **Datum:** Ground **Equipment:** Geomil Panther 100



EOH: 10m

Cone Type: I-CFXYP100-10 - Compression
Cone Reference: 140912
Cone Area Ratio: 0.75
Standards: ISO 22476-1:2012

Predrill: 1m
Water Level: -
Collapse: 2.0m

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

Zero load outputs (MPa)	Before test	After test
Tip Resistance	-0.2536	0.1302
Local Friction	0.0051	0.0038
Pore Pressure	-0.0237	-0.029

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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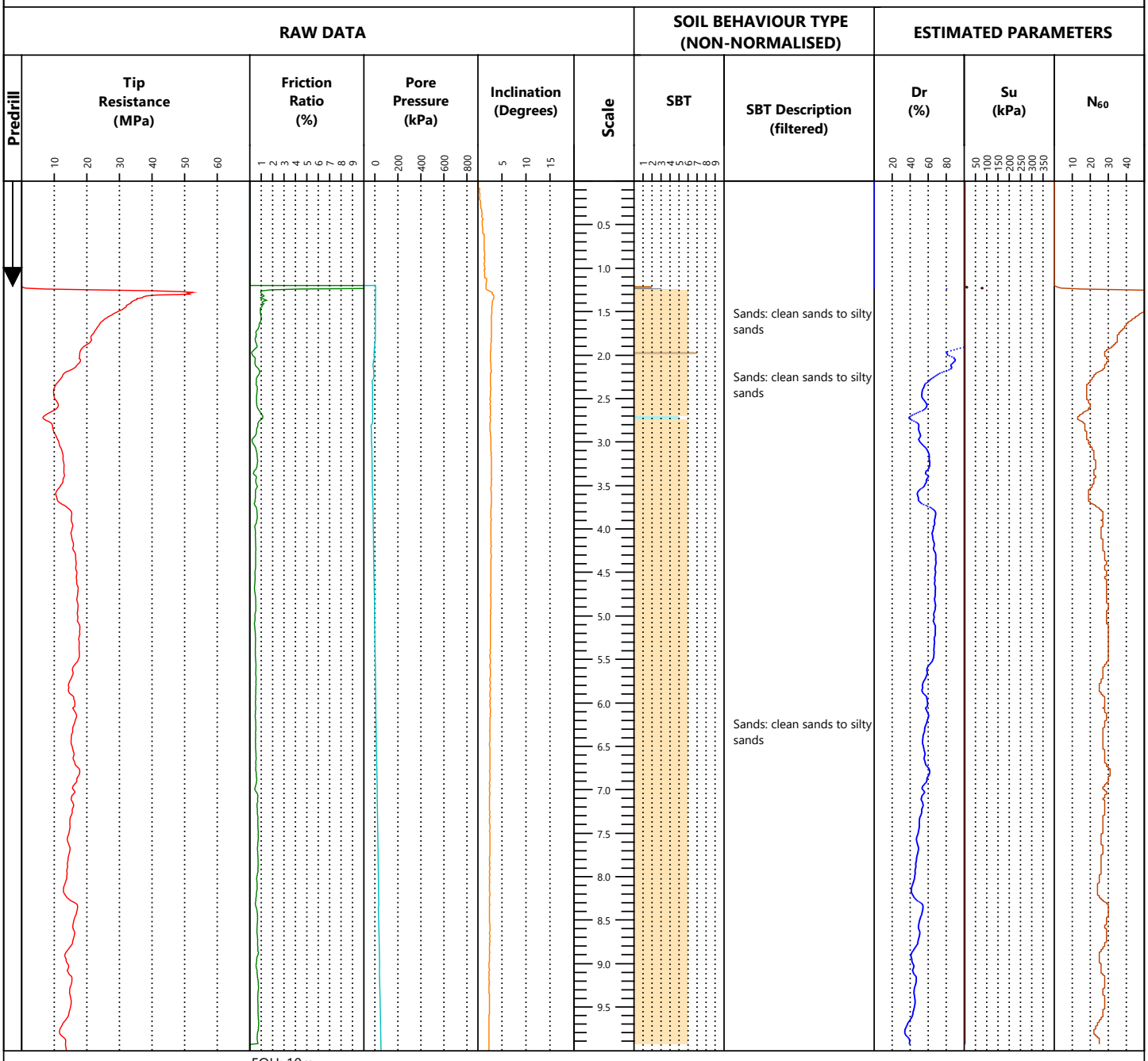
Remarks

McMILLAN Drilling	Client: Aurecon NZ Ltd	Bore No.: CPTuPF90
	Project: Stage 4 Completion Testing	Job No.: 19024

Site Location: Prestons Park, Christchurch **Date:** 14/9/2020

Grid Reference: 1573744.03m E, 5186027.15m N (NZTM) - Map or aerial photograph **Rig Operator:** S. Cardona

Elevation: 0.00m **Datum:** Ground **Equipment:** Geomil Panther 100



Cone Type: I-CFXYP20-10 - Compression
Cone Reference: 100992
Cone Area Ratio: 0.75
Standards: ISO 22476-1:2012

Predrill: 1.2m
Water Level: -
Collapse: 1.6m

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

Zero load outputs (MPa)	Before test	After test
Tip Resistance	1.3887	1.3691
Local Friction	0.0436	0.0395
Pore Pressure	-0.0036	-0.0044

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

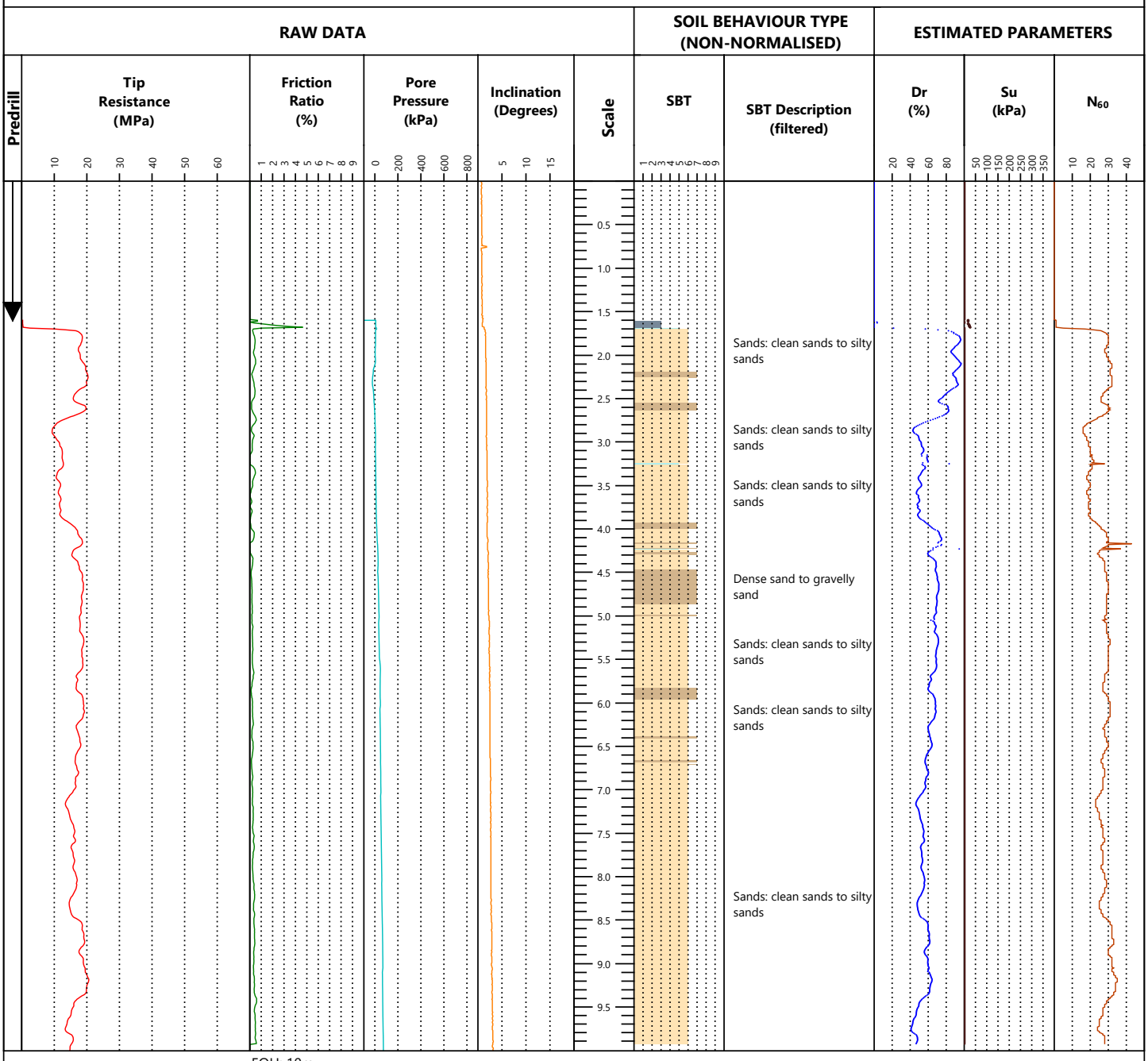
McMILLAN Drilling

Client: Aurecon NZ Ltd	**Bore No.:** CPTuPF91
Project: Stage 4 Completion Testing	**Job No.:** 19024

Site Location: Prestons Park, Christchurch **Date:** 14/9/2020

Grid Reference: 1573815.3m E, 5186026.71m N (NZTM) - Map or aerial photograph **Rig Operator:** S. Cardona

Elevation: 0.00m **Datum:** Ground **Equipment:** Geomil Panther 100



Cone Type: I-CFXYP100-10 - Compression
Cone Reference: 140912
Cone Area Ratio: 0.75
Standards: ISO 22476-1:2012

Predrill: 1.6m
Water Level: -
Collapse: 2.2m

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

Zero load outputs (MPa)	Before test	After test
Tip Resistance	-0.1398	0.1912
Local Friction	0.0047	0.0034
Pore Pressure	-0.0285	-0.0301

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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