

APPENDIX A4 – Cone Calibration Certificate

Eijkelkamp GeoPoint
SoilSolutions

Rijkstraatweg 22F
2171 AL Sassenheim
The Netherlands

Cone Calibration Certificate

Certificate: **GS-1867-003**
 Instrument Type: Electric Subtraction Cone
 Model: S15-CFIIP
 Serial number: 1867
 Calibration date: 07-06-2023
 Client: In Situ
 Calibrated by: A.Verhart

Calibration instruments
 Manufacturer: Hottinger Baldwin Messtechnik GmbH
 NMI certificate: 2461165.00501

Calibration conditions
 Ambient temperature: 24.6 °C
 Atmospheric pressure: 1024 mBar

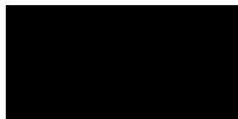
Cone specifications
 Cone base area: 1500 mm²
 Load tip resistance (nom.): 100 kN
 Friction sleeve area: 22500 mm²
 Load tip + local friction (nom.): 100 kN
 Load friction sleeve (nom.): 22.5 kN
 Load pore pressure (nom.): 2 MPa
 Inclination (nom.): +/- 20 °
 Temperature compensation (all channels): 0...+40 °C
 Maximum overload capacity (all channels): 100 %
 Cone area ratio (a): 0.79
 Max. Inaccuracy, relative to measurement value: 1.0 %

Zero points:	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
	0213		0266		0188				
0	0	0	0	0	0	0	2477	2266	
5	0304	5	0315	0.4	1714	-20	0515	0238	
10	0611	10	0629	0.8	3428	20	4497	4229	
15	0915	15	0944	1.2	5128				
20	1224	20	1261	1.6	6824				
25	1529	25	1578	2	8524				
30	1835	30	1895						
35	2140	35	2209						
40	2447	40	2526						
45	2753	45	2842						
50	3059	50	3159						
75	4590	75	4741						
100	6117	100	6319						

Max. error, abs. qc: 35 kPa
 Max. error, abs. fs: 5 kPa
 Max. error, abs. u2: 10 kPa
 Max. error, abs. I: 1 °

This calibration is compliant with Eijkelkamp GeoPoint SoilSolutions internal quality system, internal calibration procedures and meets the requirements of NEN2649, NEN-EN-ISO 22476-1, NORSOK G-001, ISSMFE and ASTM using calibration equipment traceable to (Inter-)National Standards.

Approved by:
Date:



Eijkelkamp GeoPoint SoilSolutions
V.A.T. NO. NL 8584.21.422.B01
Trade Reg. Arnhem no. 70686149

IBAN NL43 RABO 0326 7904 38
BIC: RABONL2U

APPENDIX A5 – Symbol List

English

a	is area ratio of the cone (=)
A	is area
A _c	is projected area of the cone
A _n	is cross sectional area of load cell or shaft
A _s	is area of friction sleeve
A _{sb}	is bottom end area of friction sleeve
A _{st}	is top end area of friction sleeve
B _q	is pore pressure parameter (= $\frac{\sigma'_{h0} - \sigma'_0}{\sigma'_0}$)
C _h	is horizontal coefficient of consolidation
C _v	is vertical coefficient of consolidation
D	is diameter
D _r	is relative density (= $\frac{\rho_s - \rho}{\rho_s - \rho_0}$ 100%)
e	is void ratio
e _{max}	is maximum void ratio
e _{min}	is minimum void ratio
E	is Young's modulus
f _s	is unit sleeve friction resistance
f _t	is sleeve friction corrected for pore pressure effects
F _s	is total force acting on friction sleeve
F _R	is normalized friction ratio (= $\frac{f_t}{\sigma'_0}$)
FoS	is factor of safety
FC	is fines content
g	is acceleration due to gravity
G ₀	is initial or maximum shear modulus, shear stiffness
I _c	is soil behavior type index
I _r	is rigidity index (=)
I _p	is plasticity index
k	is coefficient of permeability
k _h	is coefficient of permeability in horizontal direction
k _v	is coefficient of permeability in vertical direction
K ₀	is coefficient of earth pressure at rest (= $\frac{\sigma'_{h0}}{\sigma'_0}$)
L	is length
m _v	is coefficient of volume change
M	is constrained deformation modulus
M7.5	is earthquake magnitude of 7.5 Richter scale
N	is number of blows of SPT
N ₆₀	is SPT energy ratio
N _k	is cone factor
N _{ke}	is cone factor
N _{kt}	is cone factor
N _{Δu}	is cone factor
p _a	is reference stress (= 100)
q _c	is measured cone resistance
q _e	is effective cone resistance (= $q_c - \sigma'_0$)
q _n	is net cone resistance (= $q_c - \sigma'_0$)
q _t	is corrected cone resistance (= $q_c - (1 - \sigma'_0)$)
Q _c	is total force acting on the cone
Q _t	is normalized cone resistance (= $\frac{q_c - \sigma'_0}{\sigma'_0}$)

R_f	is friction ratio (= 100% or alternatively = 100%)
s_u	is undrained shear strength
s_{ur}	is remoulded undrained shear strength
S_t	is sensitivity
t	is time
t_{50}	is time for 50% dissipation of excess pore water pressure
T_{50}	is time factor at = 50 %
u	is pore water pressure
u_0	is in situ pore pressure
u_1	is pore pressure measured on the cone
u_2	is pore pressure measured behind the cone
u_3	is pore pressure measured behind sleeve friction
Δu	is excess pore water pressure
U	is normalized excess pore pressure
V_s	is shear wave velocity
z	is depth

Greek

α	is constant
α	is cone roughness
β	is constant
β_1	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1 , in degrees
γ	is unit weight of soil
γ_w	unit weight of water
Δ	is change
Δu	is excess pore pressure (= - u_0)
μ	is Poisson's ratio
ρ	is density
ψ	is state parameter
σ, σ'	is normal stress (total, effective)
σ_h, σ'_h	is horizontal stress (total, effective)
σ_v, σ'_v	is vertical stress (total, effective)
$\sigma_{v0}, \sigma'_{v0}$	is overburden stress (total, effective)
T_{av}	is average cyclic shear stress
T_{cy}	is cyclic shear stress
ϕ'	is effective friction angle

APPENDIX A6 – Abbreviations

ASTM	American Society for Testing and Materials
CPTU	Cone Penetration Test with Pore Pressure Measurement (Piezocone Test)
CRR	Cyclic Resistance Ratio
CSR	Cyclic Stress Ratio
GWT	Ground Water Table
NC	Normally Consolidated
OC	Over consolidated
OCR	Over consolidation Ratio
PL	Limit Pressure
SCPT	Seismic Cone Penetration
SDMT	Seismic Dilatometer Marchetti
SPT	Standard Penetration Test
TC	Technical Committee

APPENDIX A7 – Glossary

CPT

Cone Penetration Test.

Cone

The part of the cone penetrometer on which the end bearing is developed.

Cone Penetrometer

The assembly containing the *cone*, *friction sleeve*, any other sensors and measuring systems, as well as the connections to the *push-rods*.

Cone resistance, q_c

The total force acting on the cone, Q_c , divided by the projected area of the cone, A_c . =

Corrected cone resistance, q_t

The *cone resistance*, q_c corrected for pore water pressure effects.

Corrected sleeve friction, f_t

The *sleeve friction* corrected for pore water pressure effects on the ends of the *friction sleeve*.

Data acquisition system

The system used to measure and record the measurements made by the *cone penetrometer*.

Dissipation Test

A test when the decay of the pore water pressure is monitored during a pause in penetration.

Filter element

The porous element inserted into the cone penetrometer to allow transmission of the pore water pressure to the pore pressure sensor, while maintaining the correct profile of the *cone penetrometer*.

Friction ratio, R_f

The ratio, expressed as a percentage of the *sleeve friction*, f_s , to the *cone resistance*, q_c , both measured at the same depth.

Friction reducer

A local enlargement on the push-rod surface, placed at a distance above the cone penetrometer, and provided to reduce the friction on the *push-rods*.

Friction sleeve

The section of the *cone penetrometer* upon which the *sleeve friction* is measured.

Normalized cone resistance, Q_c or Q_t

The *cone resistance* expressed in a non-dimensional form and taking account of stress changes *in situ*, $= \frac{Q_c}{\sigma_{v0}}$, or when the *corrected cone resistance* is used $= \frac{Q_t}{\sigma'_{v0}}$. Where σ_{v0} and σ'_{v0} are the total and effective vertical stress respectively.

Net cone resistance, q_n

The *corrected cone resistance* minus the vertical total stress. = $q_t - \sigma_{v0}$

Normalized friction ratio, F_r

The *sleeve friction* normalized by the *net cone resistance*.

Piezocone

A *cone penetrometer* containing a pore pressure sensor.

Pore pressure, u

The pore pressure generated during penetration and measured by a pore pressure sensor, u_1 when measured on the cone, u_2 when measured just behind the cone and u_3 when measured just behind the friction sleeve.

Pore pressure ratio, B_q

The *net pore pressure* normalized with respect to the *net cone resistance*.

Push-rods

The thick-walled tubes or rods used for advancing the cone penetrometer.

Rig machine

The equipment which pushes the cone penetrometer and rods into the ground.

Sleeve friction, f_s

The total frictional force acting on the *friction sleeve*, F_s , divided by its *surface area*, A_s . =

APPENDIX A8 – Soils Description Tables

GRANULAR SOILS (Sands and Gravels)

Description	Relative Density D_r (%)	SPT N value, N_{SPT}
Very Loose	0 – 15	0 - 4
Loose	15 – 35	4 - 10
Medium Dense	35 – 65	10 - 30
Dense	65 – 85	30 - 50
Very Dense	>85	>50

COHESIVE SOILS (Clays and Silts)

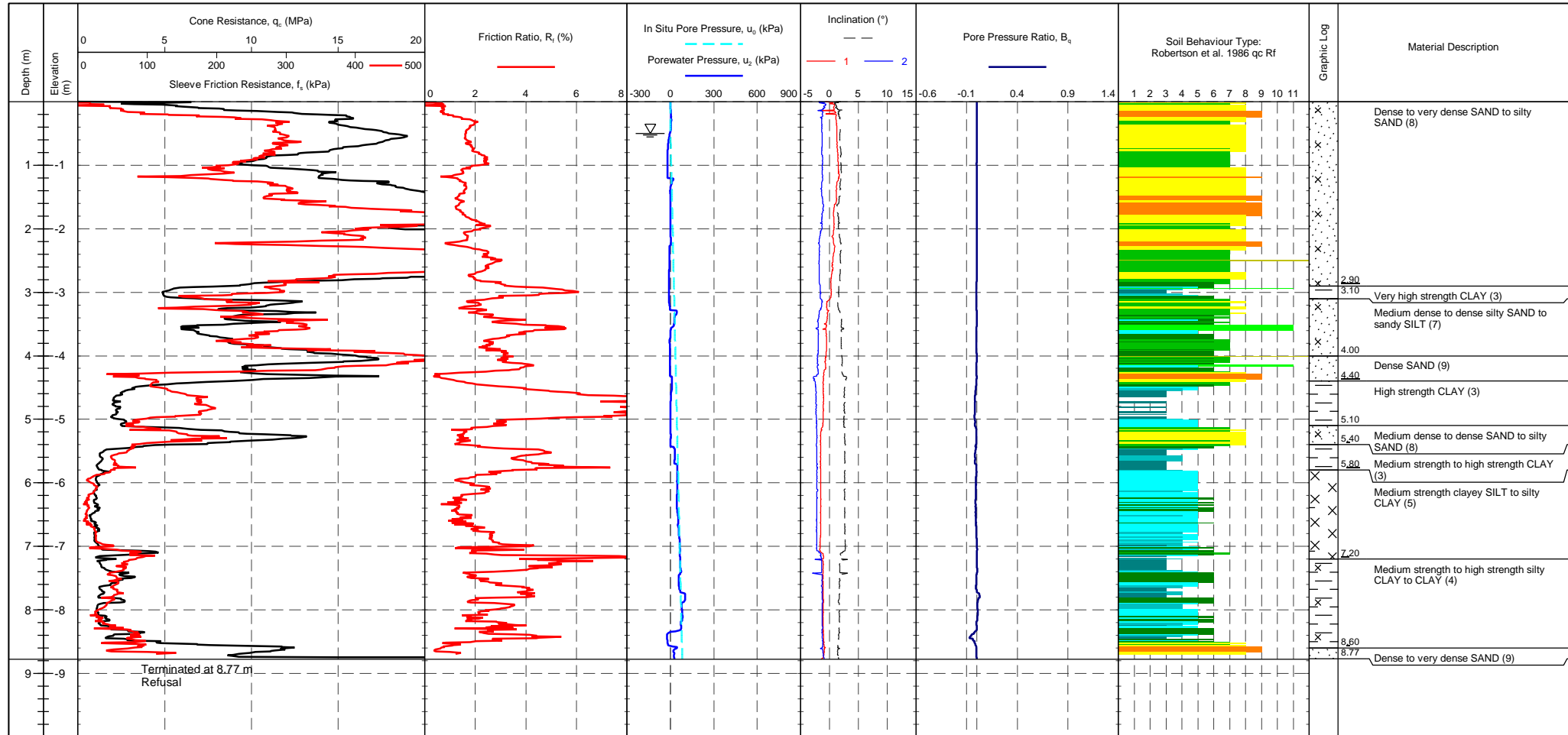
Term based on measurement	Undrained Shear Strength Classification, s_u (kPa)
Extremely low	<10
Very low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very high	150 - 300
Extremely high	>300

APPENDIX B

Cone Penetration Measured Parameters and Geotechnical Derived Parameters

PointID	CPT101
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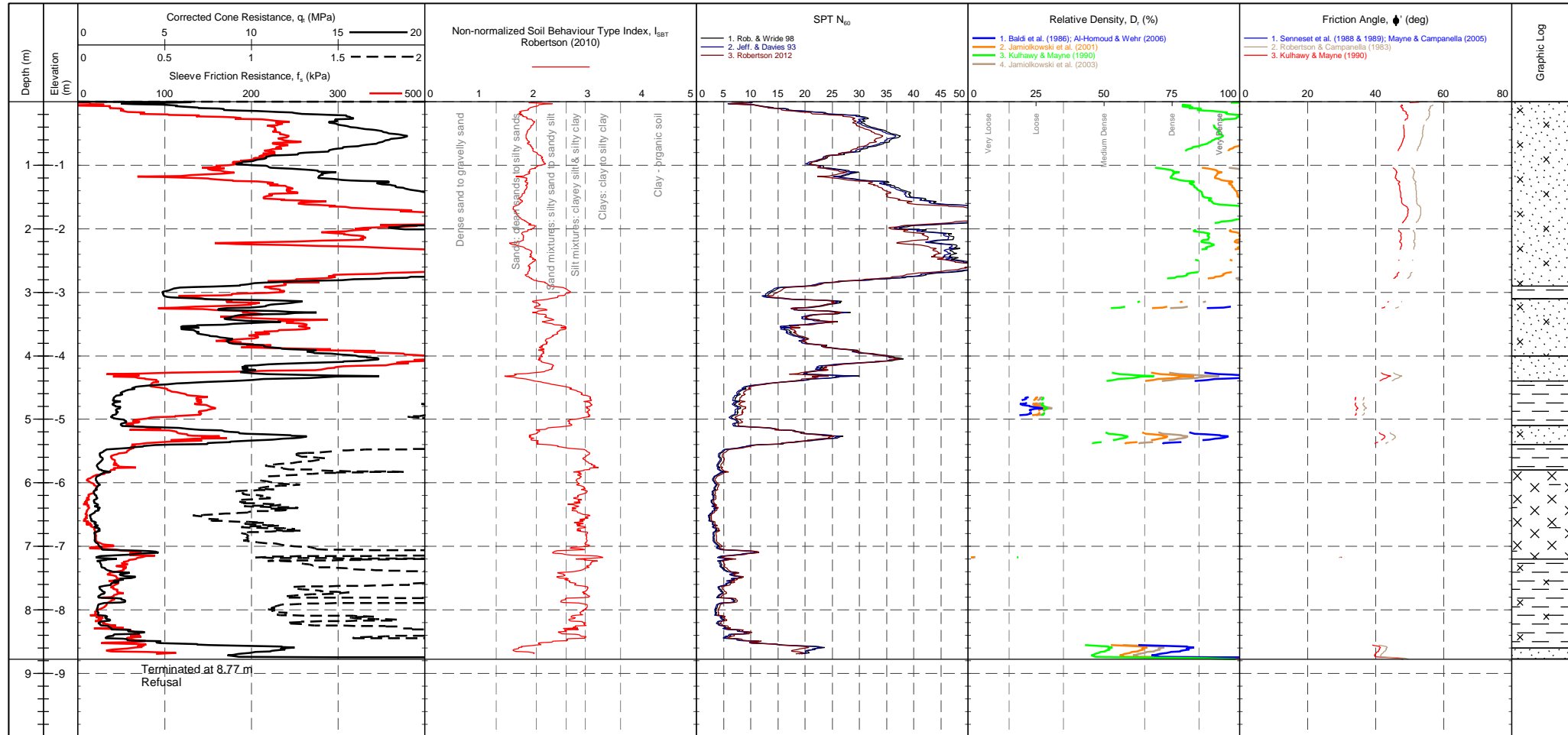
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	Transducer Tip : 241 mV Sleeve : 299 mV Pore Pressure 2 : 200 mV X-Y Inclinator : 2454 mV	CPTU ZERO VALUES Post : 242 mV 301 mV 189 mV 2438 mV	Difference : 0.011 MPa 0.001 kPa -0.003 kPa	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID	CPT101
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark : Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 06/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	CPTU ZERO VALUES Transducer Pre Post Difference Tip 241 mV 242 mV 0.011 MPa Sleeve 299 mV 301 mV 0.001 kPa Pore Pressure 2 200 mV 189 mV -0.003 kPa X-Y Inclinator 2454 mV 2438 mV	GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12 <table border="1"> <thead> <tr> <th>Description</th> <th>SBT Index, I_c</th> <th>Description</th> <th>SPT N value, NSPT</th> <th>Description</th> <th>Relative Density D_r (%)</th> </tr> </thead> <tbody> <tr> <td>Clays</td> <td>2.95-3.60</td> <td>Very Loose</td> <td>0 - 4</td> <td>Very Loose</td> <td>0 - 15</td> </tr> <tr> <td>Silt mixtures</td> <td>2.60-2.95</td> <td>Loose</td> <td>4 - 10</td> <td>Loose</td> <td>15 - 35</td> </tr> <tr> <td>Sand mixtures</td> <td>2.05-2.60</td> <td>Medium Dense</td> <td>10 - 30</td> <td>Medium Dense</td> <td>35 - 65</td> </tr> <tr> <td>Sands</td> <td>1.31-2.05</td> <td>Dense</td> <td>30 - 50</td> <td>Dense</td> <td>65 - 85</td> </tr> <tr> <td>Gravelly sand</td> <td><1.31</td> <td>Very Dense</td> <td>>50</td> <td>Very Dense</td> <td>>85</td> </tr> </tbody> </table>	Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density D _r (%)	Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15	Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35	Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65	Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85	Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85	Groundwater Level Dissipation Test
Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density D _r (%)																																			
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15																																			
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35																																			
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65																																			
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85																																			
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85																																			

PointID

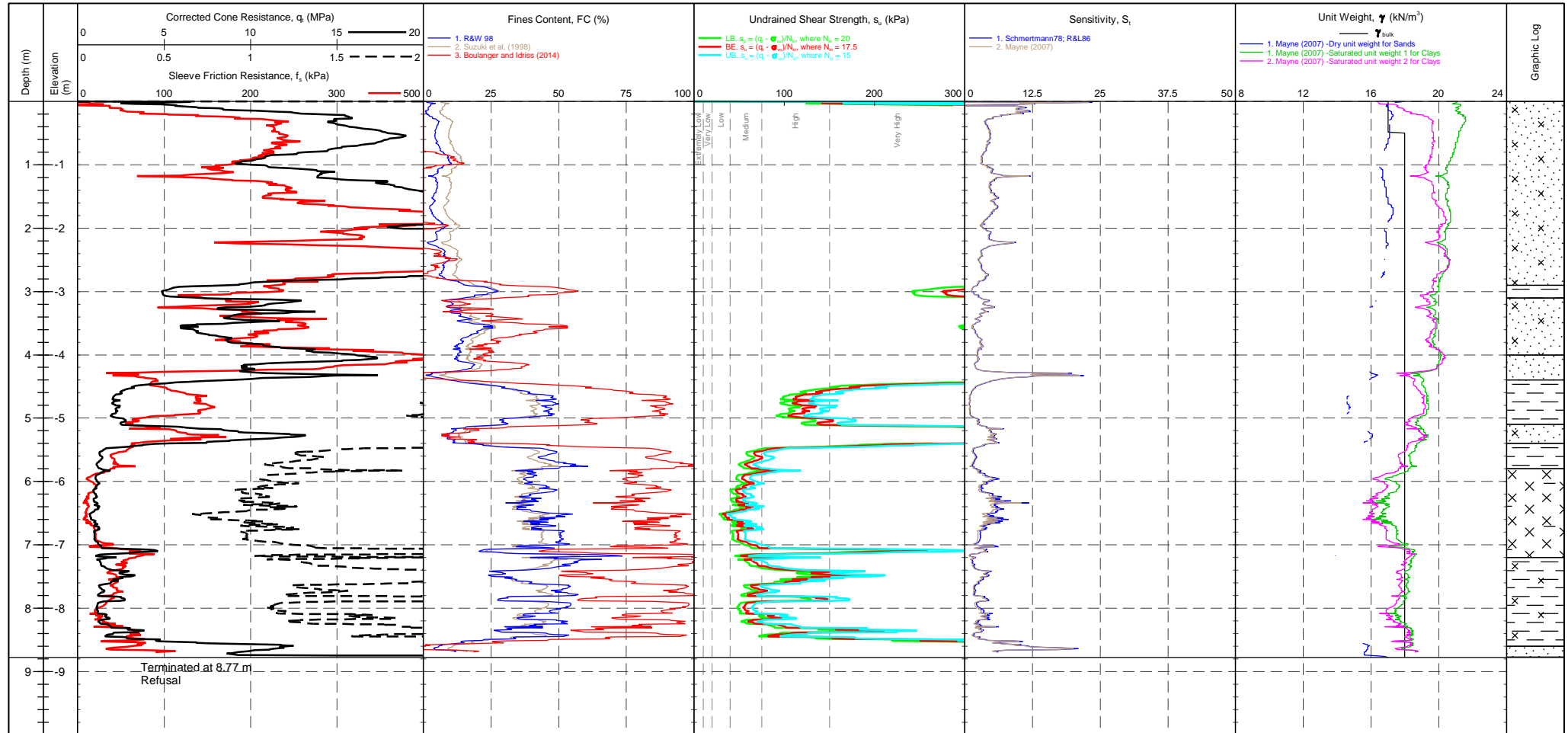
CPT101

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 06/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

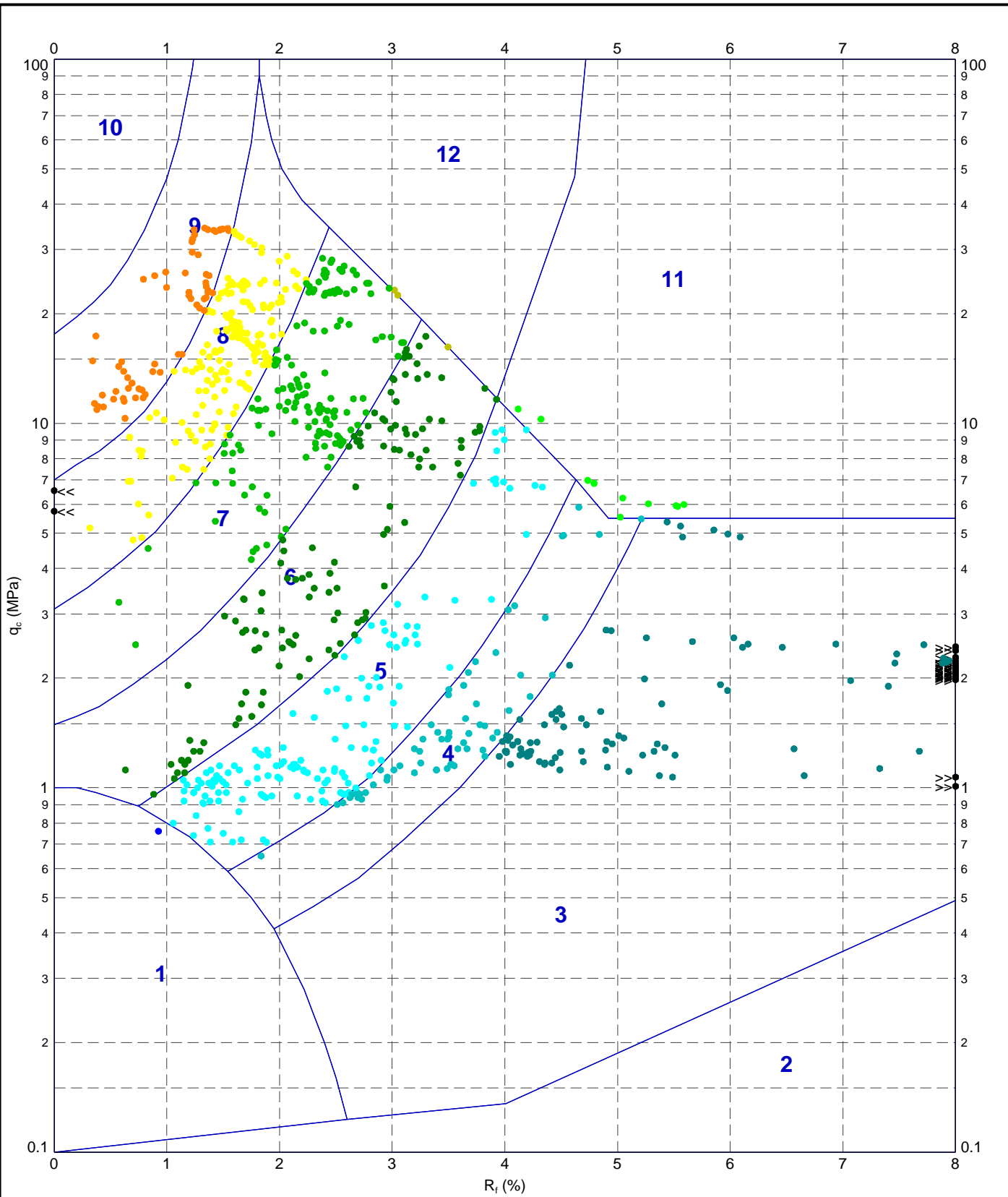
Transducer
 Tip 241 mV 242 mV 0.011 MPa
 Sleeve 299 mV 301 mV 0.001 kPa
 Pore Pressure 2 200 mV 189 mV -0.003 kPa
 X-Y Inclinator 2454 mV 2438 mV

CPTU ZERO VALUES

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11			
Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

▽ Groundwater Level
 ▭ Dissipation Test

220629-ADVANCED REPORT INSTIUSI 2.02.1 LIB - CHLOE GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF APF 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 13:43 10.03.00.09 Dargel Lab and In Situ Tool - DGD (Lib: In Situ SI 2.02.0 2017-07-10 Pdf: In Situ SI 2.02.0 2017-07-10



METHOD: Robertson et al. 1986 qc Rf

- | | | | |
|---|--|---|--|
| ■ 1 - Sensitive fine grained material | ■ 4 - Silty CLAY to CLAY | ■ 7 - Silty SAND to sandy SILT | ■ 10 - Gravelly SAND to SAND |
| ■ 2 - Organic material | ■ 5 - Clayey SILT to silty CLAY | ■ 8 - SAND to silty SAND | ■ 11 - Very stiff fine grained |
| ■ 3 - CLAY | ■ 6 - Sandy SILT to clayey SILT | ■ 9 - SAND | ■ 12 - SAND to clayey SAND |

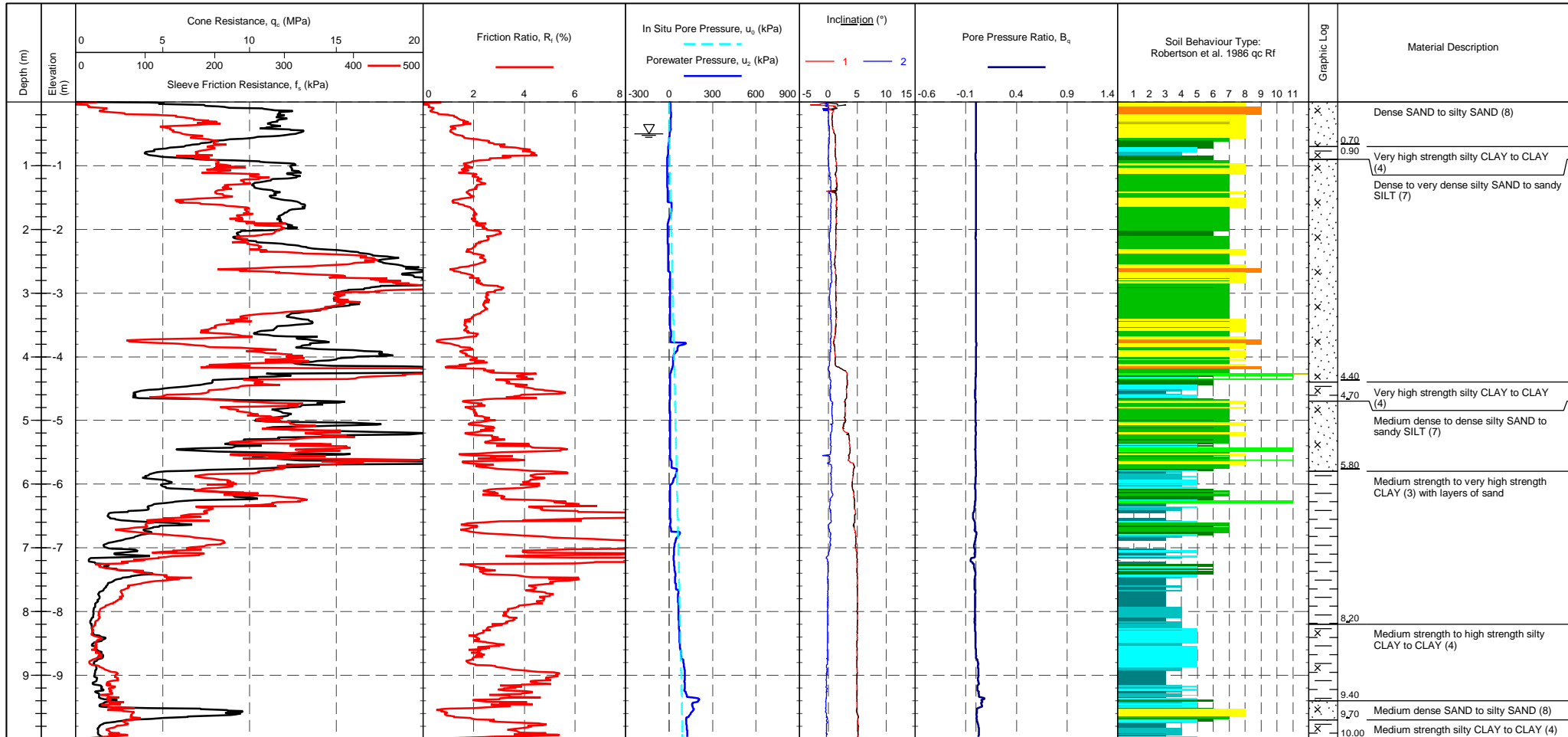


TITLE
TRC
 Tunbridge Wells
 Chapman Way
 Robertson et al. 1986 qc vs. Rf - CPT101

DRAWN	DATE	11/09/2023
CHECKED	DATE	11/09/2023
SCALE	Not To Scale	
PROJECT No	1230378	
FIGURE No	A4	

PointID	CPT102
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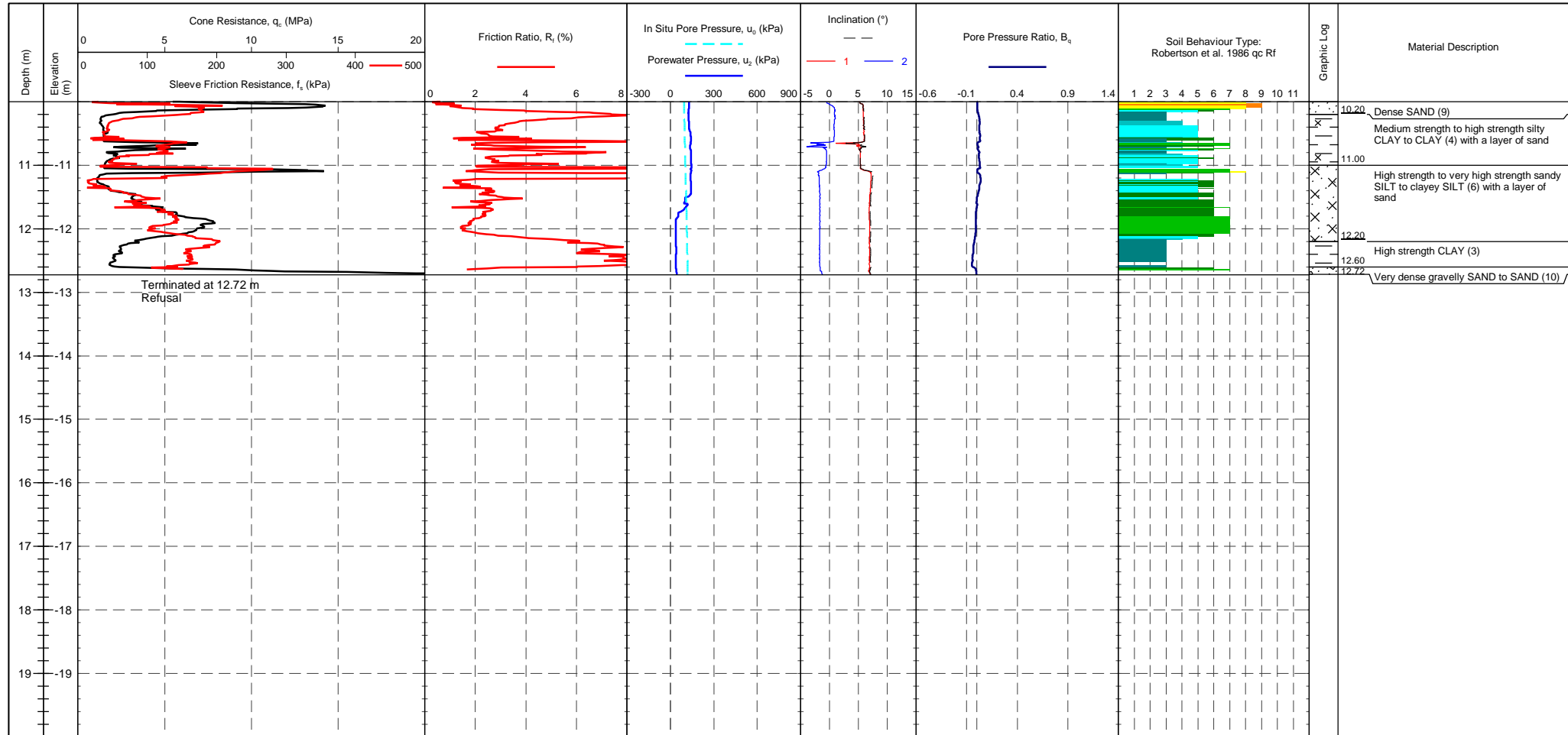
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	Transducer : Tip : 244 mV Sleeve : 303 mV Pore Pressure 2 : 152 mV X-Y Inclinator : 2708 mV	CPTU ZERO VALUES Post : 241 mV Difference : -0.033 MPa Post : 300 mV Difference : -0.002 kPa Post : 200 mV Difference : 0.011 kPa Post : 2523 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID	CPT102
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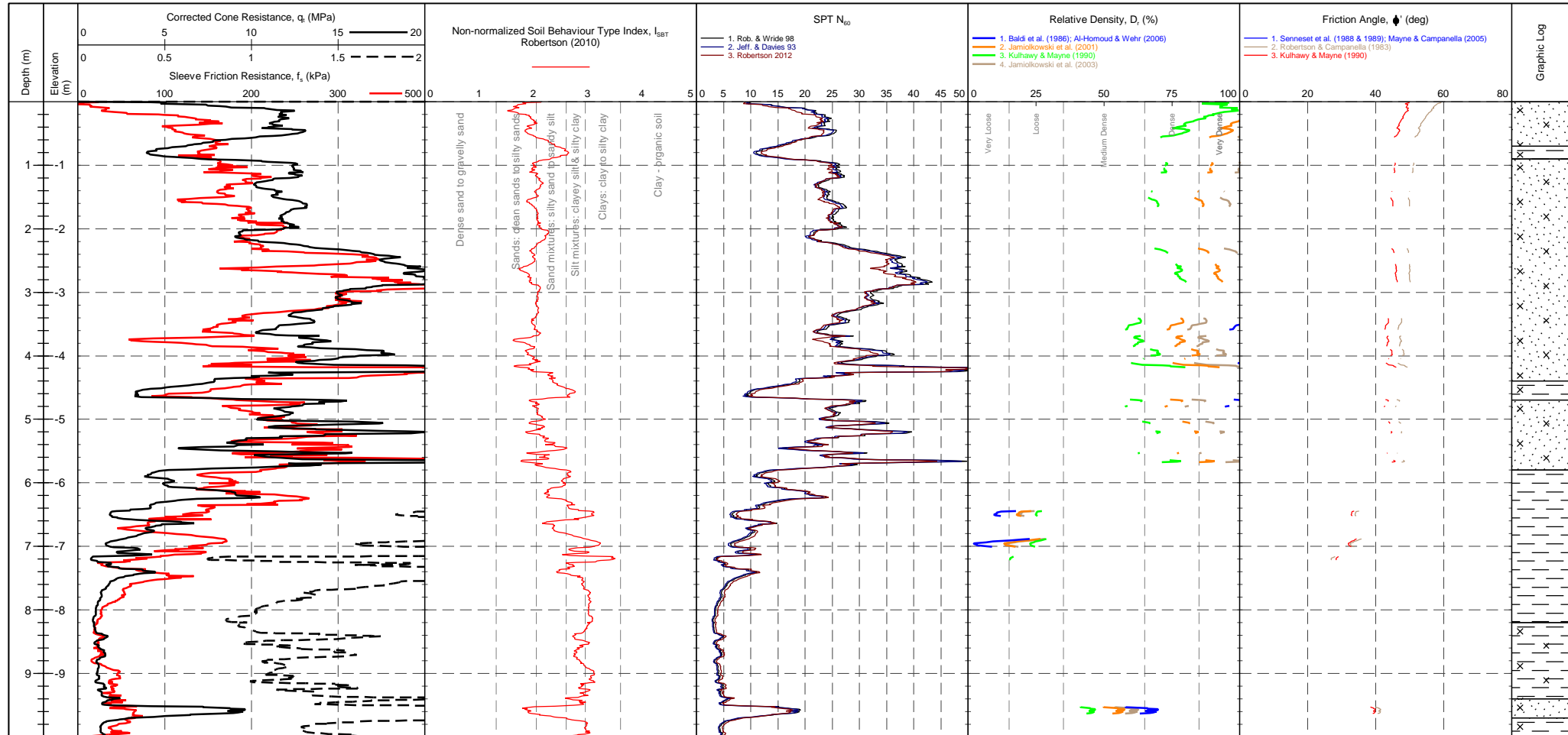
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	Transducer Tip : 244 mV / 241 mV / -0.033 MPa Sleeve : 303 mV / 300 mV / -0.002 kPa Pore Pressure 2 : 152 mV / 200 mV / 0.011 kPa X-Y Inclinometer : 2708 mV / 2523 mV	CPTU ZERO VALUES Pre Post Difference Tip 244 mV 241 mV -0.033 MPa Sleeve 303 mV 300 mV -0.002 kPa Pore Pressure 2 152 mV 200 mV 0.011 kPa X-Y Inclinometer 2708 mV 2523 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID	CPT102
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark : Test refused on total pressure.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density D _r (%)																																			
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15																																			
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35																																			
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65																																			
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85																																			
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85																																			

PointID

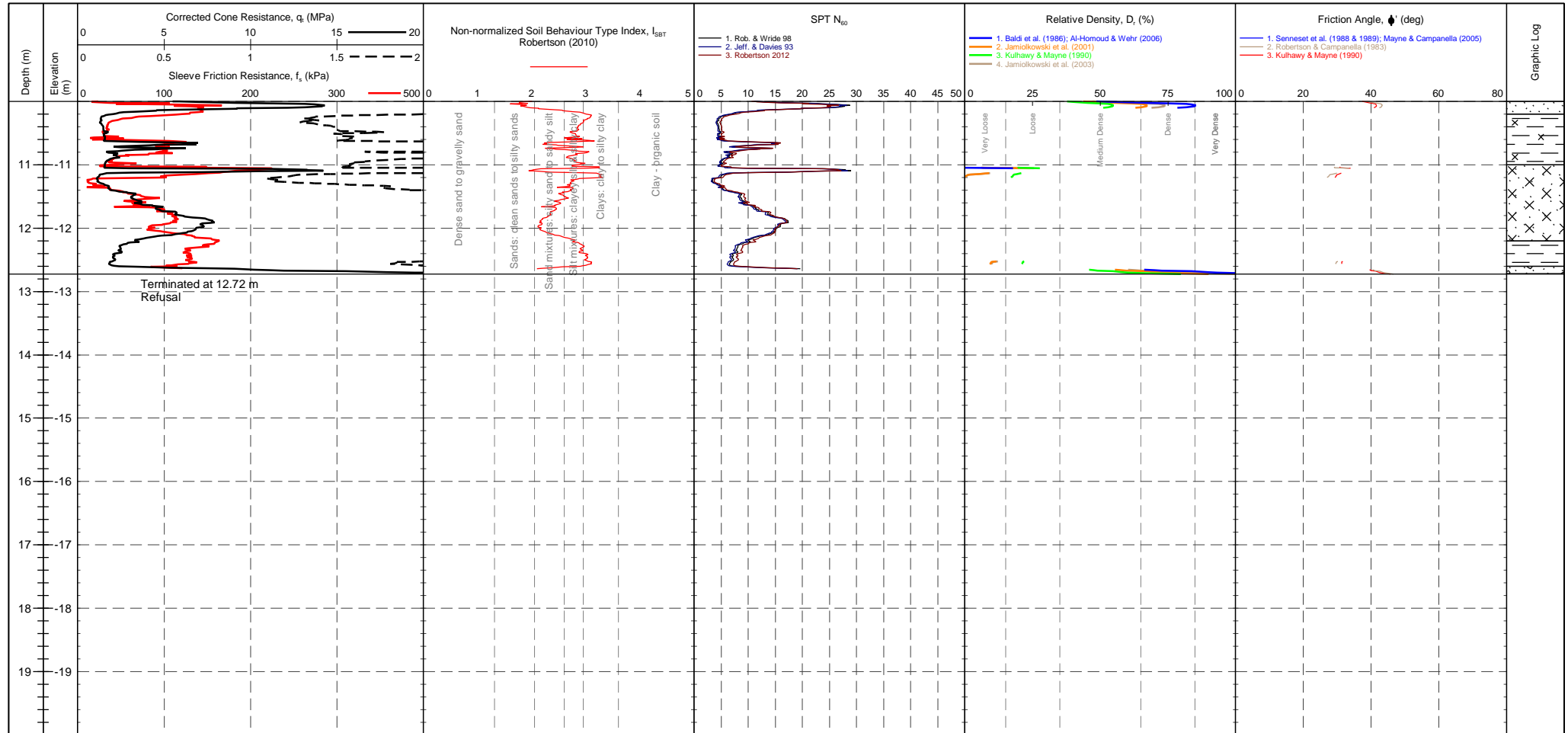
CPT102

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICION REDUCER : None
WEATHER : Sunny & Hot

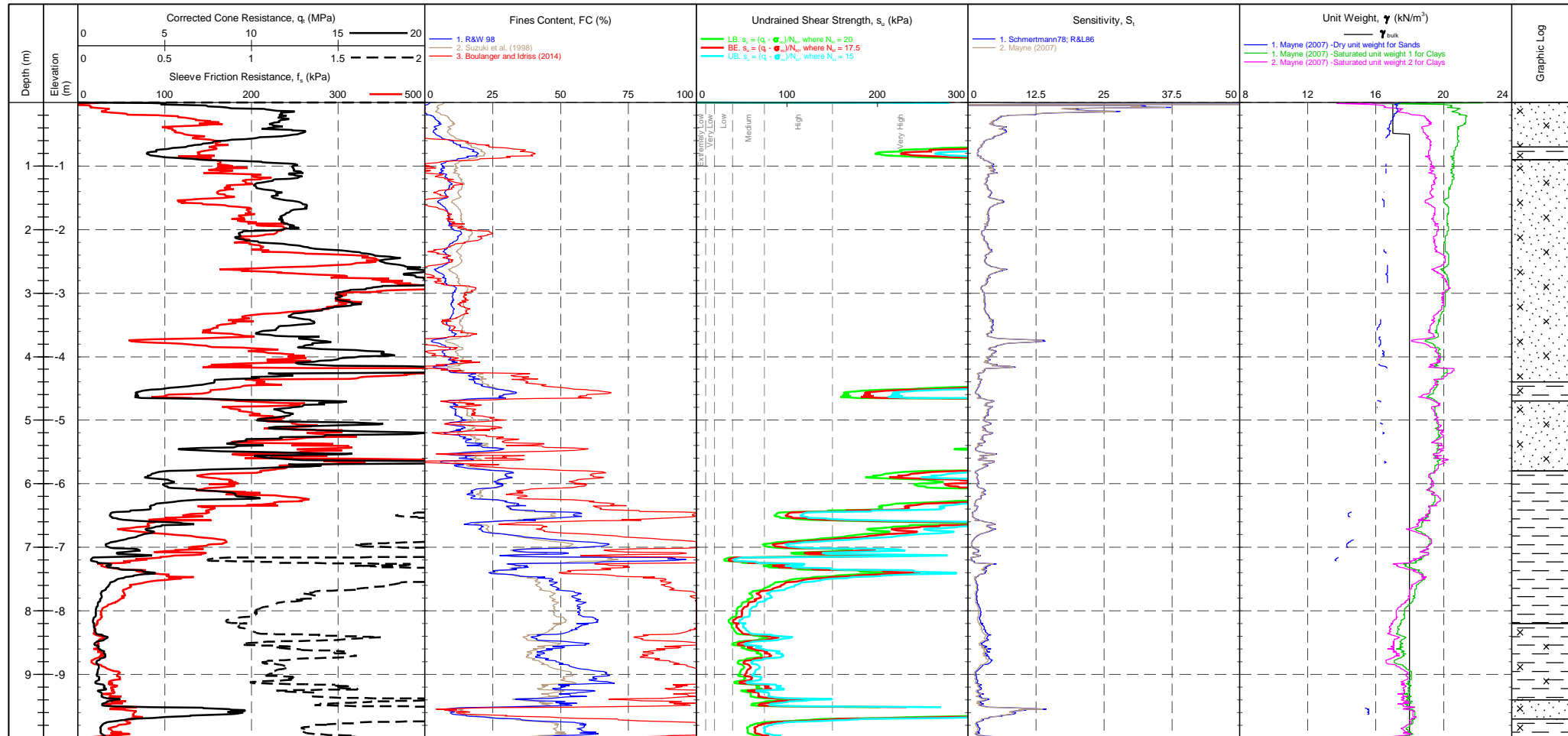
CPTU ZERO VALUES
 Transducer Pre Post Difference
 Tip 244 mV 241 mV -0.033 MPa
 Sleeve 303 mV 300 mV -0.002 kPa
 Pore Pressure 2 152 mV 200 mV 0.011 kPa
 X-Y Inclinator 2708 mV 2523 mV

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12				
Description	SBT Index, I _c	Description	SPT N value, NSPT	Description
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense
Sands	1.31-2.05	Dense	30 - 50	Dense
Gravelly sand	<1.31	Very Dense	>50	Very Dense

Groundwater Level
 Dissipation Test

PointID	CPT102
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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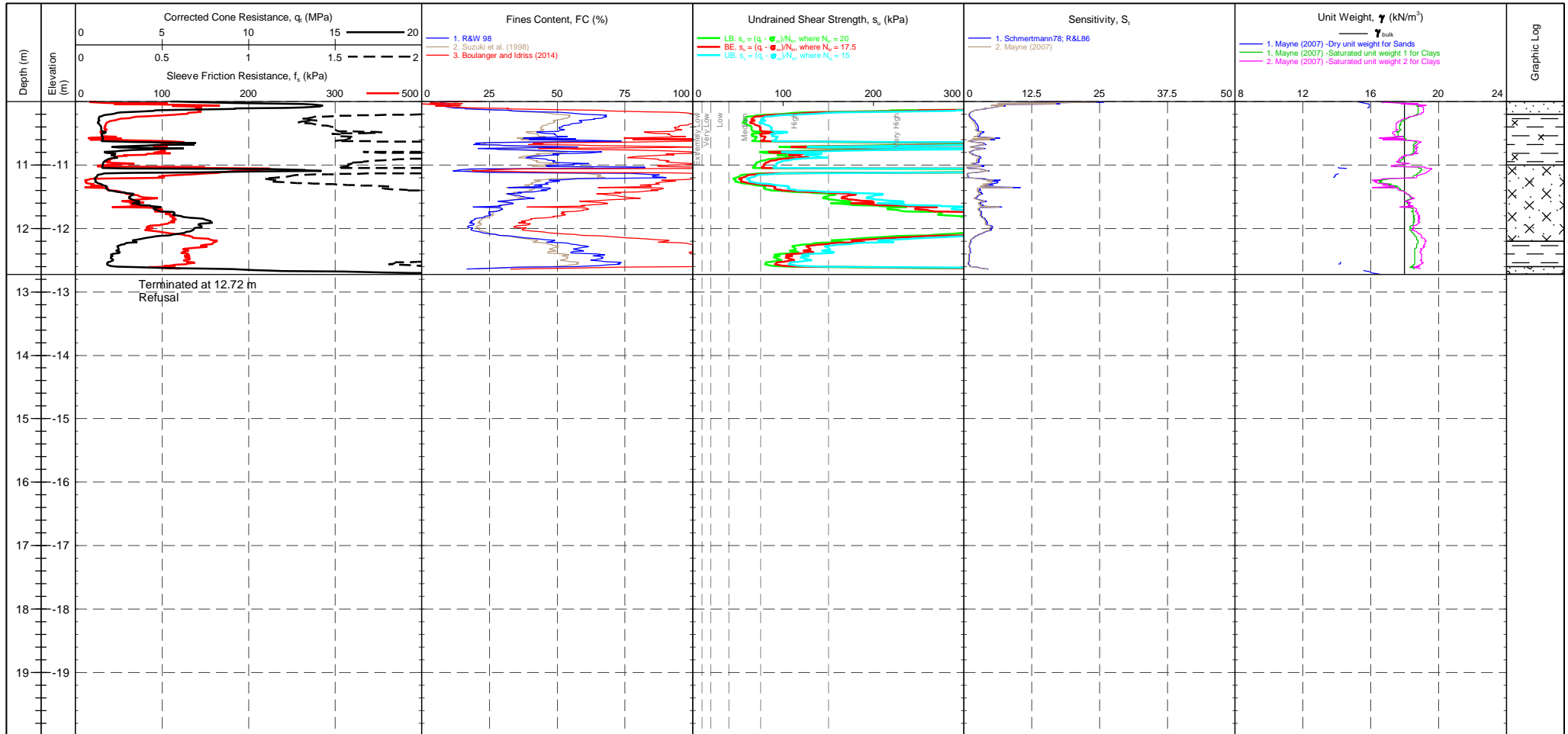


CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip: 244 mV Sleeve: 303 mV Pore Pressure 2: 152 mV X-Y Inclinometer: 2708 mV	CPTU ZERO VALUES Pre: 241 mV Post: 241 mV Difference: -0.033 MPa 300 mV -0.002 kPa 200 mV 0.011 kPa 2523 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement su (kPa) Extremely low strength <10 Very low strength 10-20 Low strength 20-40	Term based on measurement su (kPa) Medium strength 40-75 High strength 75-150 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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PointID

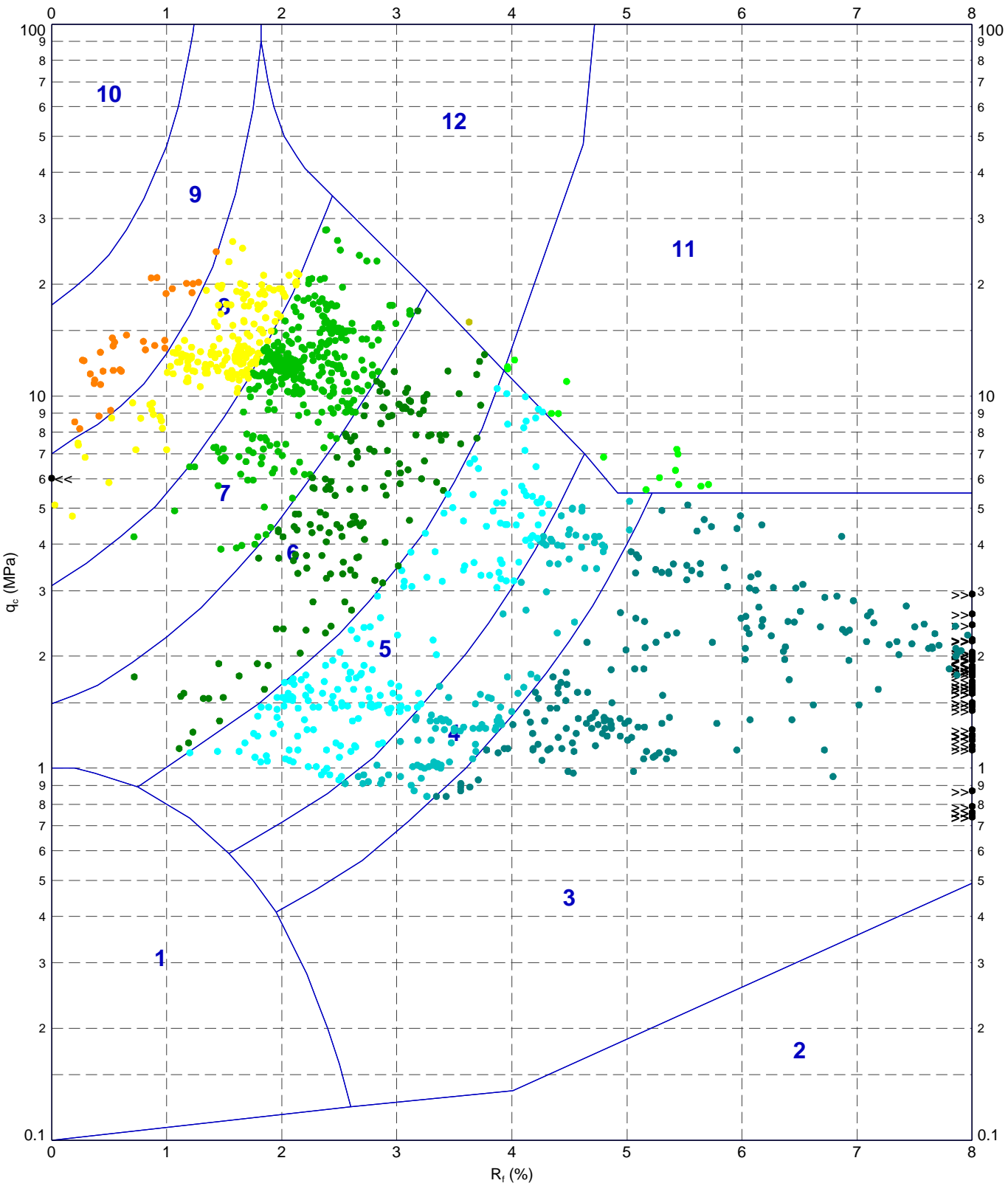
CPT102

CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip: 244 mV Sleeve: 303 mV Pore Pressure 2: 152 mV X-Y Inclinator: 2708 mV	CPTU ZERO VALUES Pre: 241 mV Post: 241 mV Difference: -0.033 MPa 300 mV 200 mV 2523 mV Difference: -0.002 kPa 0.011 kPa	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement su (kPa) Extremely low strength <10 Very low strength 10-20 Low strength 20-40	Term based on measurement su (kPa) Medium strength 40-75 High strength 75-150 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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220629-ADVANCED REPORT INST/USI 2.02.1 LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. Rf AIP 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 13:45 10.03.00.09 Dargal Lab and In Situ Tool - DGD (Lib: In Situ SI 2.02.0 2017-07-10 Pdf: In Situ SI 2.02.0 2017-07-10



- METHOD: Robertson et al. 1986 q_c R_f**
- 1 - Sensitive fine grained material
 - 4 - Silty CLAY to CLAY
 - 7 - Silty SAND to sandy SILT
 - 10 - Gravelly SAND to SAND
 - 2 - Organic material
 - 5 - Clayey SILT to silty CLAY
 - 8 - SAND to silty SAND
 - 11 - Very stiff fine grained
 - 3 - CLAY
 - 6 - Sandy SILT to clayey SILT
 - 9 - SAND
 - 12 - SAND to clayey SAND

	TITLE TRC Tunbridge Wells Chapman Way Robertson et al. 1986 q _c vs. R _f - CPT102	DRAWN	DATE	11/09/2023	
		CHECKED	DATE	11/09/2023	
		SCALE	Not To Scale		A4
		PROJECT No	1230378		
			FIGURE No		

PointID

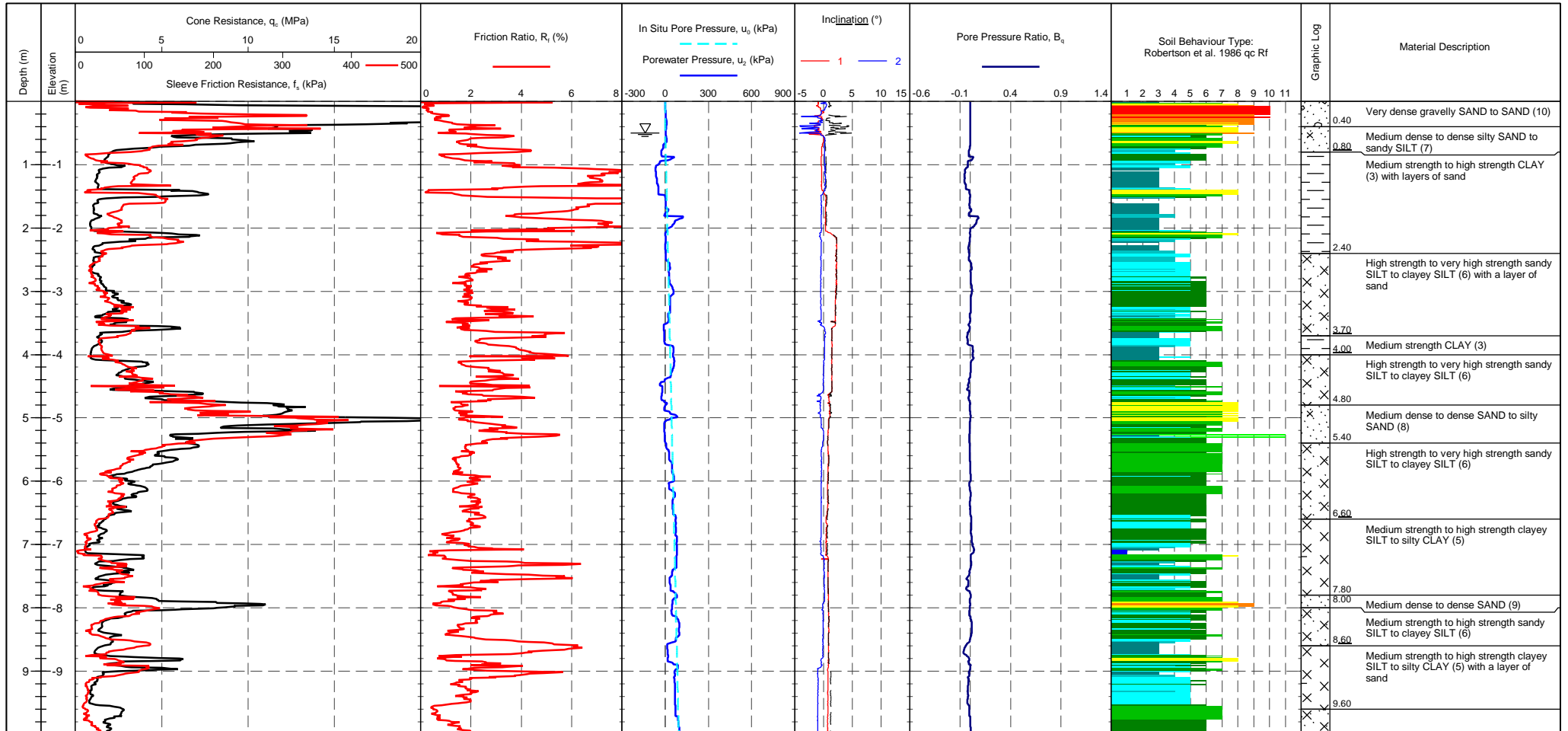
CPT103

CLIENT : TRC
PROJECT : Chapman Way
 LOCATION : Tunbridge Wells
 PROJECT No. : 1230378

EASTING : 0.000 m
 NORTHING : 0.000 m
 ELEVATION : 0.000 m OD
 CHECKED BY : DW
 TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 06/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
 CALIBRATION DATE : 07/06/2023
 CONE MODEL : Subtraction
 CONE AREA : 15cm²
 CONE AREA RATIO : 0.79
 FILTER POSITION : u2
 FILTER TYPE : HDPE

TEST TYPE : TE2
 APPLICATION CLASS : 2
 RIG : CPT 007 - Morooka
 OPERATOR : AC
 FRICTION REDUCER : None
 WEATHER : Sunny & Hot
 GROUNDWATER DEPTH : Assumed for calculation purposes

CPTU ZERO VALUES
 Transducer : Pre Post Difference
 Tip : 241 mV 243 mV 0.022 MPa
 Sleeve : 300 mV 302 mV 0.001 kPa
 Pore Pressure 2 : 165 mV 229 mV 0.015 kPa
 X-Y Inclinometer : 2442 mV 2425 mV

METHOD: Robertson et al. 1986 qc Rf
 1 - Sensitive fine grained material
 2 - Organic material
 3 - CLAY
 4 - Silty CLAY to CLAY
 5 - Clayey SILT to silty CLAY
 6 - Sandy SILT to clayey SILT
 7 - Silty SAND to sandy SILT
 8 - SAND to silty SAND
 9 - SAND
 10 - Gravelly SAND to SAND
 11 - Very stiff fine grained
 12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

PointID

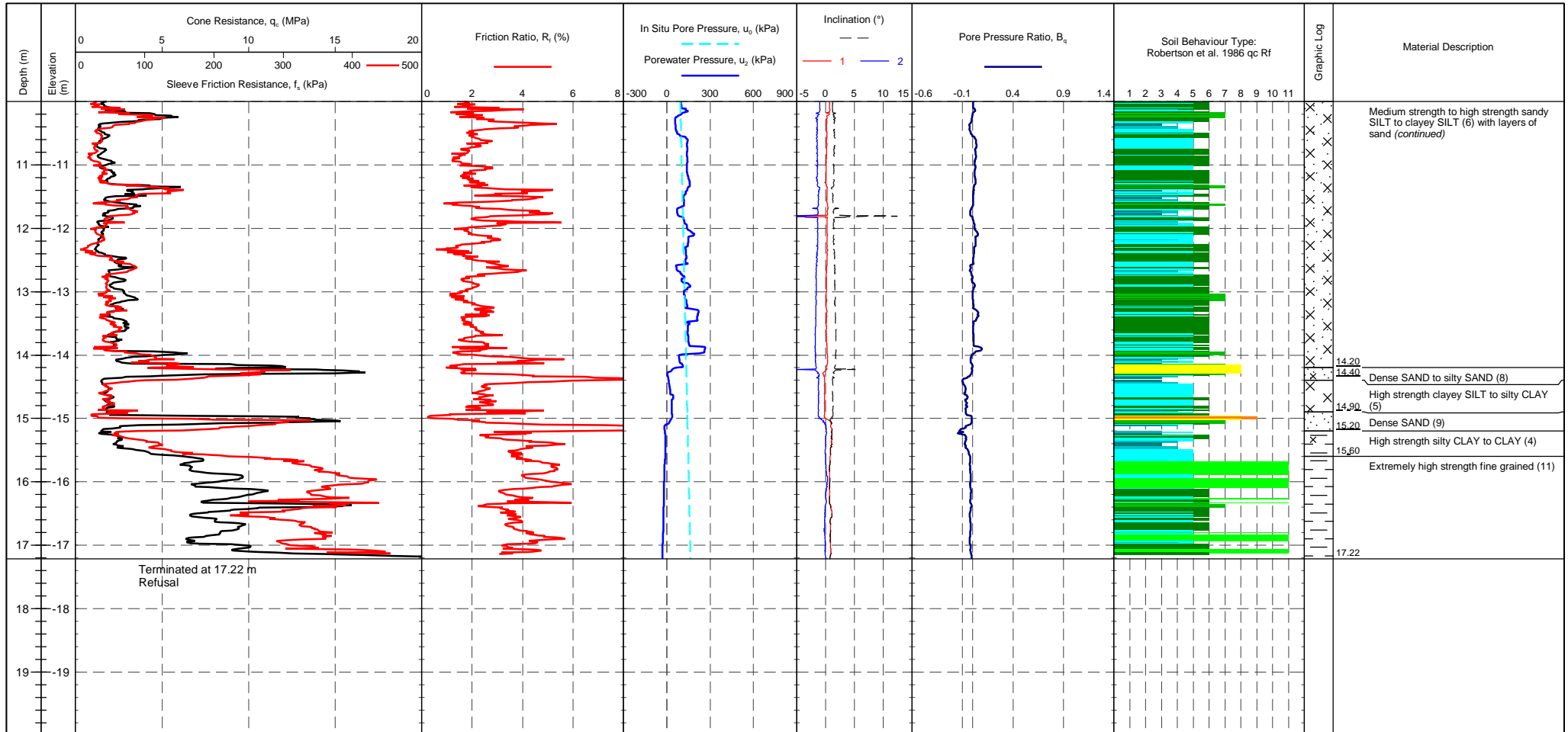
CPT103

CLIENT : TRC
PROJECT : Chapman Way
 LOCATION : Tunbridge Wells
 PROJECT No. : 1230378

EASTING : 0.000 m
 NORTHING : 0.000 m
 ELEVATION : 0.000 m OD
 CHECKED BY : DW
 TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 06/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
 CALIBRATION DATE : 07/06/2023
 CONE MODEL : Subtraction
 CONE AREA : 15cm²
 CONE AREA RATIO : 0.79
 FILTER POSITION : u2
 FILTER TYPE : HDPE

TEST TYPE : TE2
 APPLICATION CLASS : 2
 RIG : CPT 007 - Morooka
 OPERATOR : AC
 FRICTION REDUCER : None
 WEATHER : Sunny & Hot
 GROUNDWATER DEPTH : Assumed for calculation purposes

CPTU ZERO VALUES
 Transducer : Pre 241 mV, Post 243 mV, Difference 0.022 MPa
 Tip : 300 mV, 302 mV, 0.001 kPa
 Sleeve : 165 mV, 229 mV, 0.015 kPa
 Pore Pressure 2 : 165 mV, 229 mV, 0.015 kPa
 X-Y Inclinator : 2442 mV, 2425 mV

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	5 - Clayey SILT to silty CLAY	9 - SAND
2 - Organic material	6 - Sandy SILT to clayey SILT	10 - Gravelly SAND to SAND
3 - CLAY	7 - Silty SAND to sandy SILT	11 - Very stiff fine grained
4 - Silty CLAY to CLAY	8 - SAND to silty SAND	12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

PointID

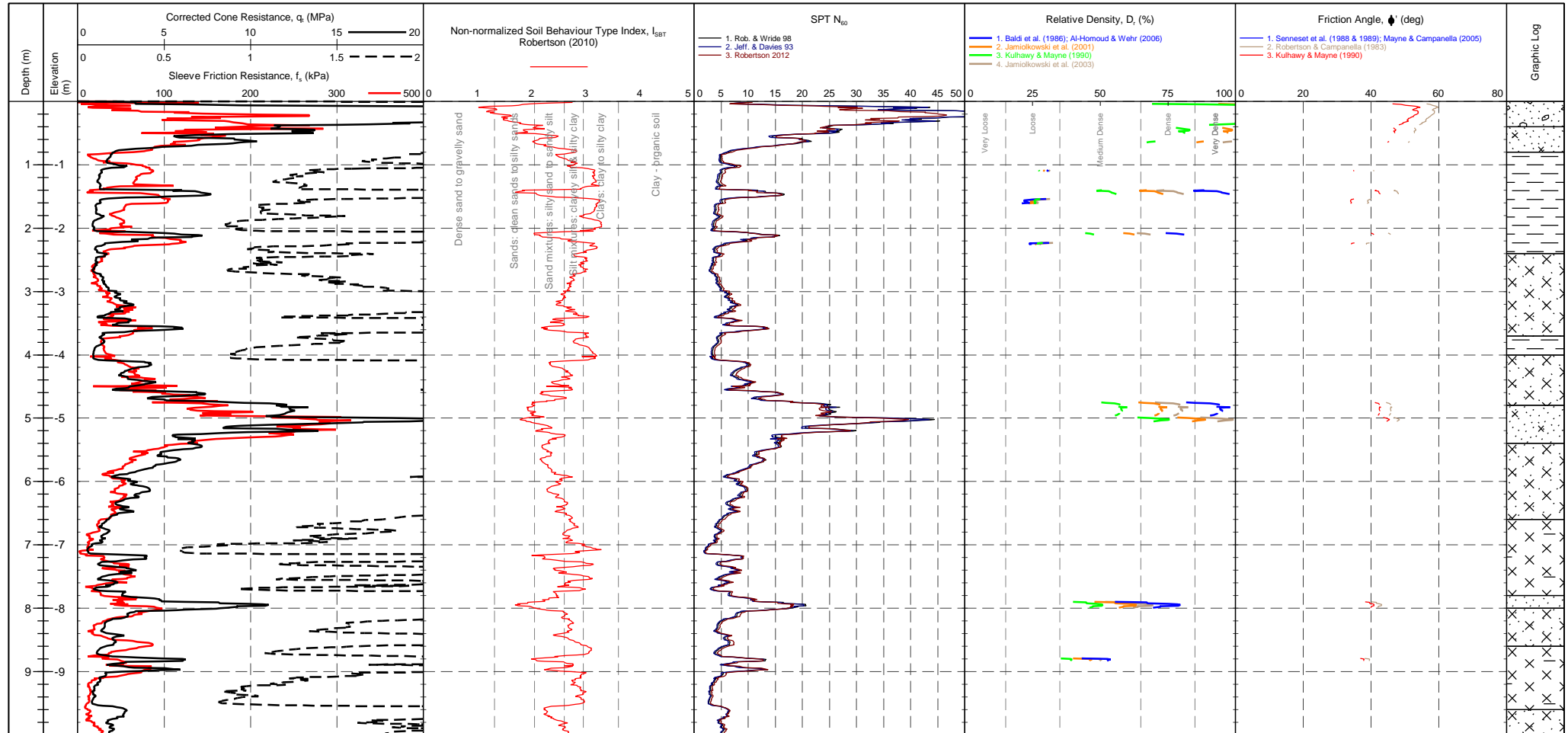
CPT103

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 06/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

CPTU ZERO VALUES
 Transducer Pre Post Difference
 Tip 241 mV 243 mV 0.022 MPa
 Sleeve 300 mV 302 mV 0.001 kPa
 Pore Pressure 2 165 mV 229 mV 0.015 kPa
 X-Y Inclinator 2442 mV 2425 mV

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12			
Description	SBT Index, I_c	Description	SPT N value, NSPT
Clays	2.95-3.60	Very Loose	0 - 4
Silt mixtures	2.60-2.95	Loose	4 - 10
Sand mixtures	2.05-2.60	Medium Dense	10 - 30
Sands	1.31-2.05	Dense	30 - 50
Gravelly sand	<1.31	Very Dense	>50
		Very Loose	0 - 15
		Loose	15 - 35
		Medium Dense	35 - 65
		Dense	65 - 85
		Very Dense	>85

Groundwater Level

Dissipation Test

PointID

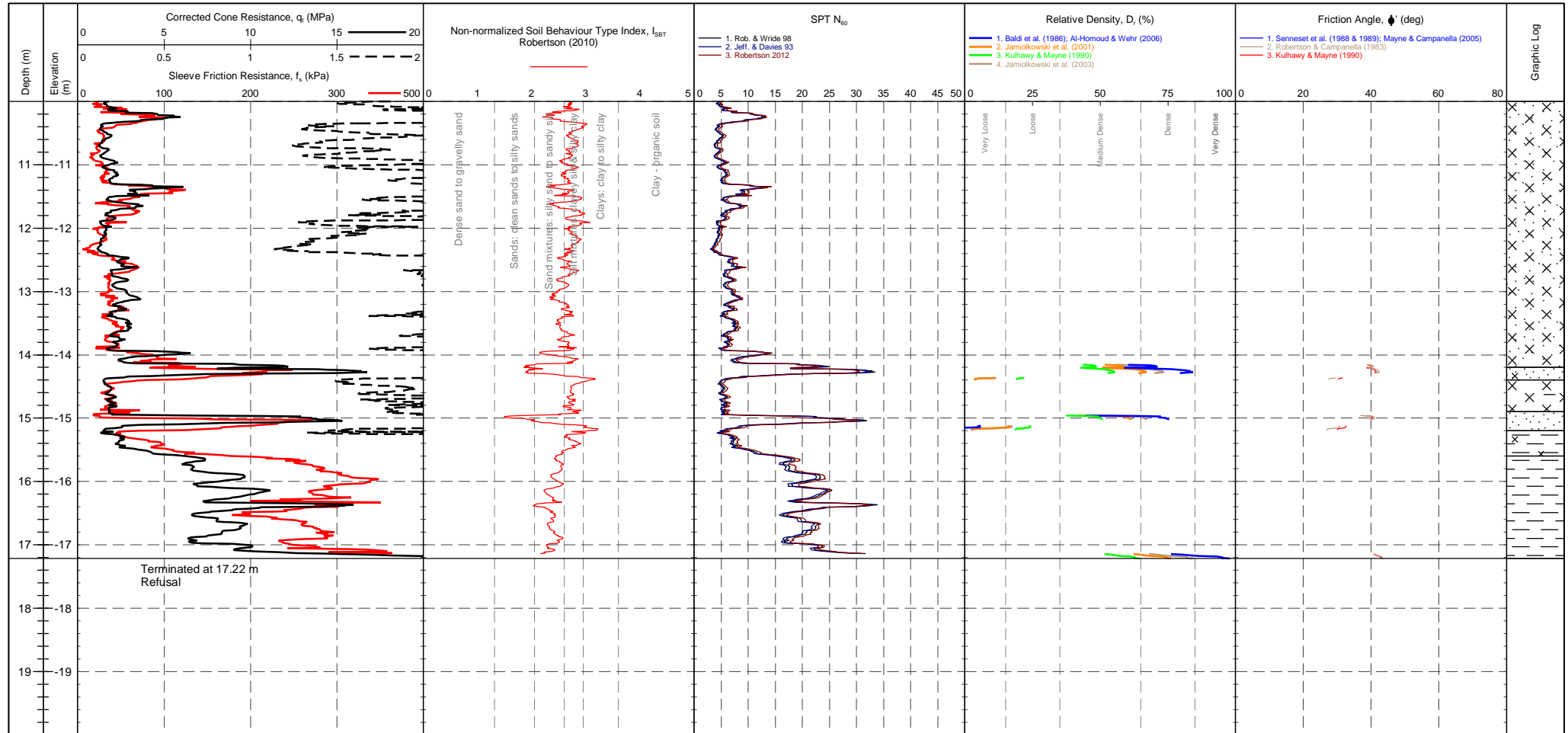
CPT103

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 06/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	241 mV	243 mV	0.022 MPa
Sleeve	300 mV	302 mV	0.001 kPa
Pore Pressure 2	165 mV	229 mV	0.015 kPa
X-Y Inclinator	2442 mV	2425 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12					
Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density D _r (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

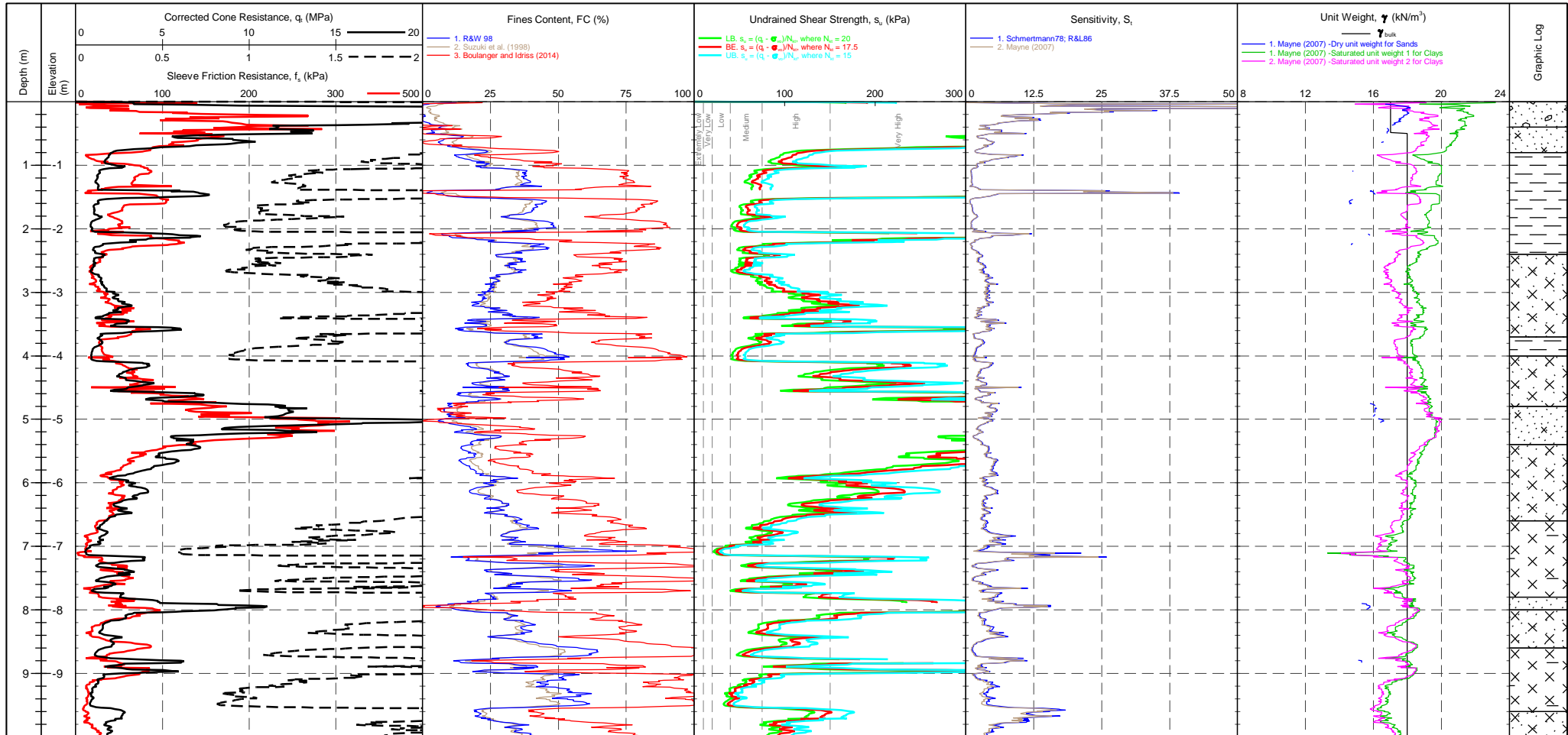


NOITAEITSEVNI SITE INVESTIGATION Working with:



PointID
CPT103

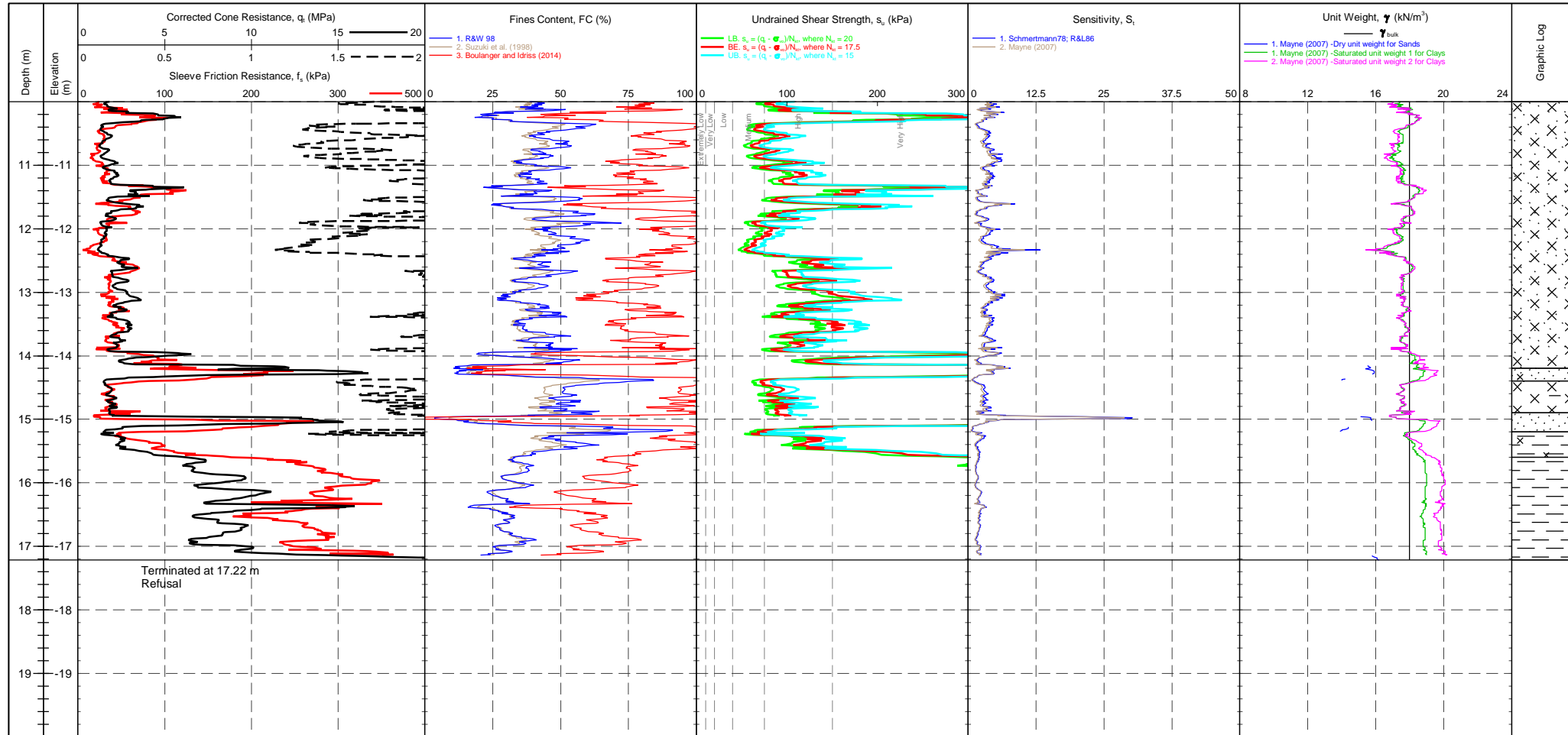
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 06/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip: 241 mV Sleeve: 300 mV Pore Pressure 2: 165 mV X-Y Inclinator: 2442 mV	CPTU ZERO VALUES Pre: 243 mV Post: 302 mV Difference: 0.022 MPa 0.001 kPa 229 mV 0.015 kPa 2425 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 <table border="1"> <tr> <th>Term based on measurement</th> <th>su (kPa)</th> <th>Term based on measurement</th> <th>su (kPa)</th> </tr> <tr> <td>Extremely low strength</td> <td><10</td> <td>Medium strength</td> <td>40-75</td> </tr> <tr> <td>Very low strength</td> <td>10-20</td> <td>High strength</td> <td>75-150</td> </tr> <tr> <td>Low strength</td> <td>20-40</td> <td>Very high strength</td> <td>150-300</td> </tr> <tr> <td></td> <td></td> <td>Extremely high strength</td> <td>>300</td> </tr> </table>	Term based on measurement	su (kPa)	Term based on measurement	su (kPa)	Extremely low strength	<10	Medium strength	40-75	Very low strength	10-20	High strength	75-150	Low strength	20-40	Very high strength	150-300			Extremely high strength	>300	Groundwater Level Dissipation Test
Term based on measurement	su (kPa)	Term based on measurement	su (kPa)																						
Extremely low strength	<10	Medium strength	40-75																						
Very low strength	10-20	High strength	75-150																						
Low strength	20-40	Very high strength	150-300																						
		Extremely high strength	>300																						

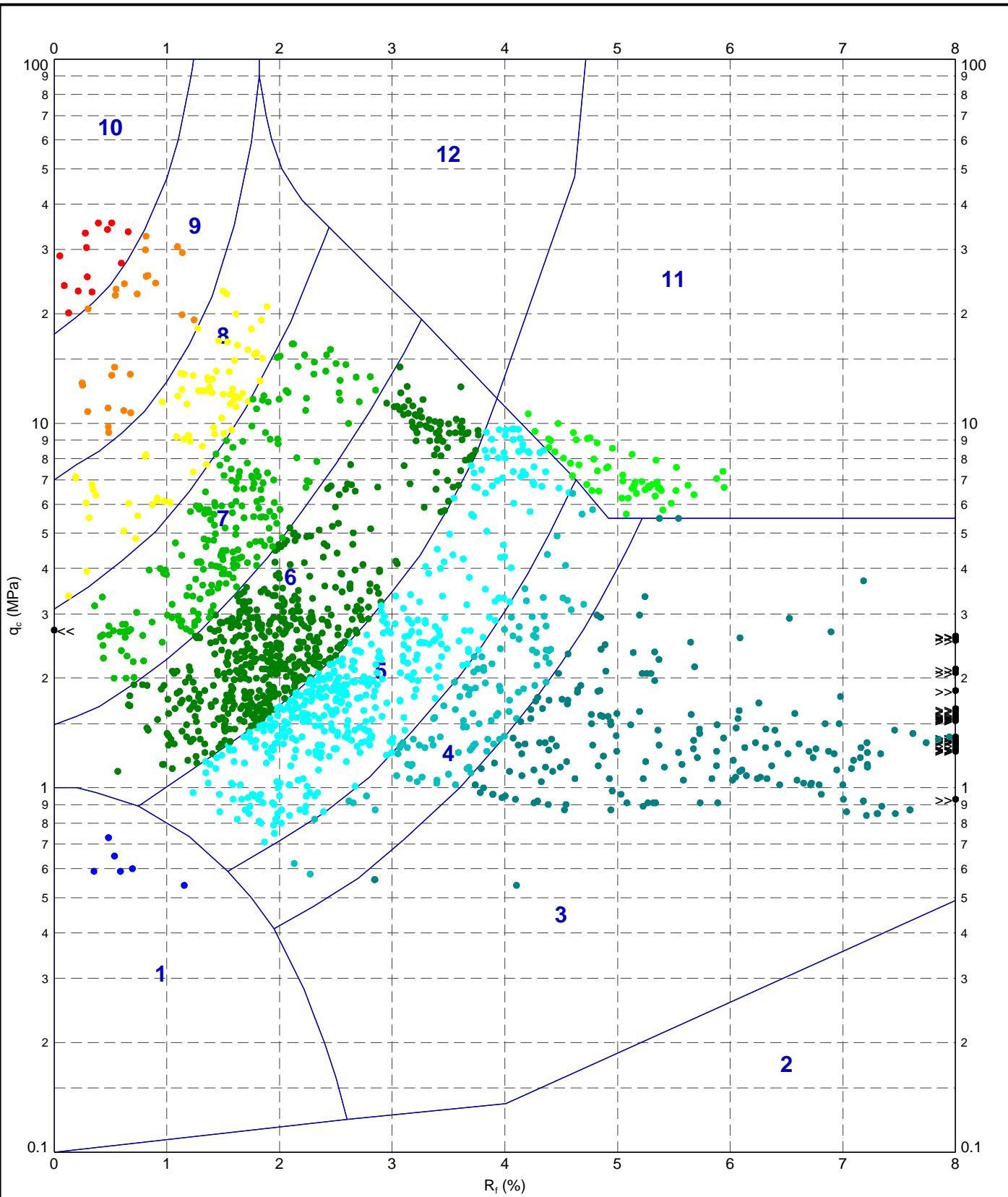
PointID	CPT103
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 06/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip : 241 mV Sleeve : 300 mV Pore Pressure 2 : 165 mV X-Y Inclinator : 2442 mV	CPTU ZERO VALUES Post : 243 mV Difference : 0.022 MPa 302 mV 0.001 kPa 229 mV 0.015 kPa 2425 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement su (kPa) Extremely low strength <10 Very low strength 10-20 Low strength 20-40	Term based on measurement su (kPa) Medium strength 40-75 High strength 75-150 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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220629-ADVANCED REPORT INSTUSI 2.02.1 LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. Rf AIP 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 13:46 10.03.00.09 Dargel Lab and In Situ Tool - DGD (Lib - In Situ SI 2.02.0 2017-07-10 Pdf - In Situ SI 2.02.0 2017-07-10



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 4 - Silty CLAY to CLAY
- 7 - Silty SAND to sandy SILT
- 10 - Gravelly SAND to SAND
- 2 - Organic material
- 5 - Clayey SILT to silty CLAY
- 8 - SAND to silty SAND
- 11 - Very stiff fine grained
- 3 - CLAY
- 6 - Sandy SILT to clayey SILT
- 9 - SAND
- 12 - SAND to clayey SAND

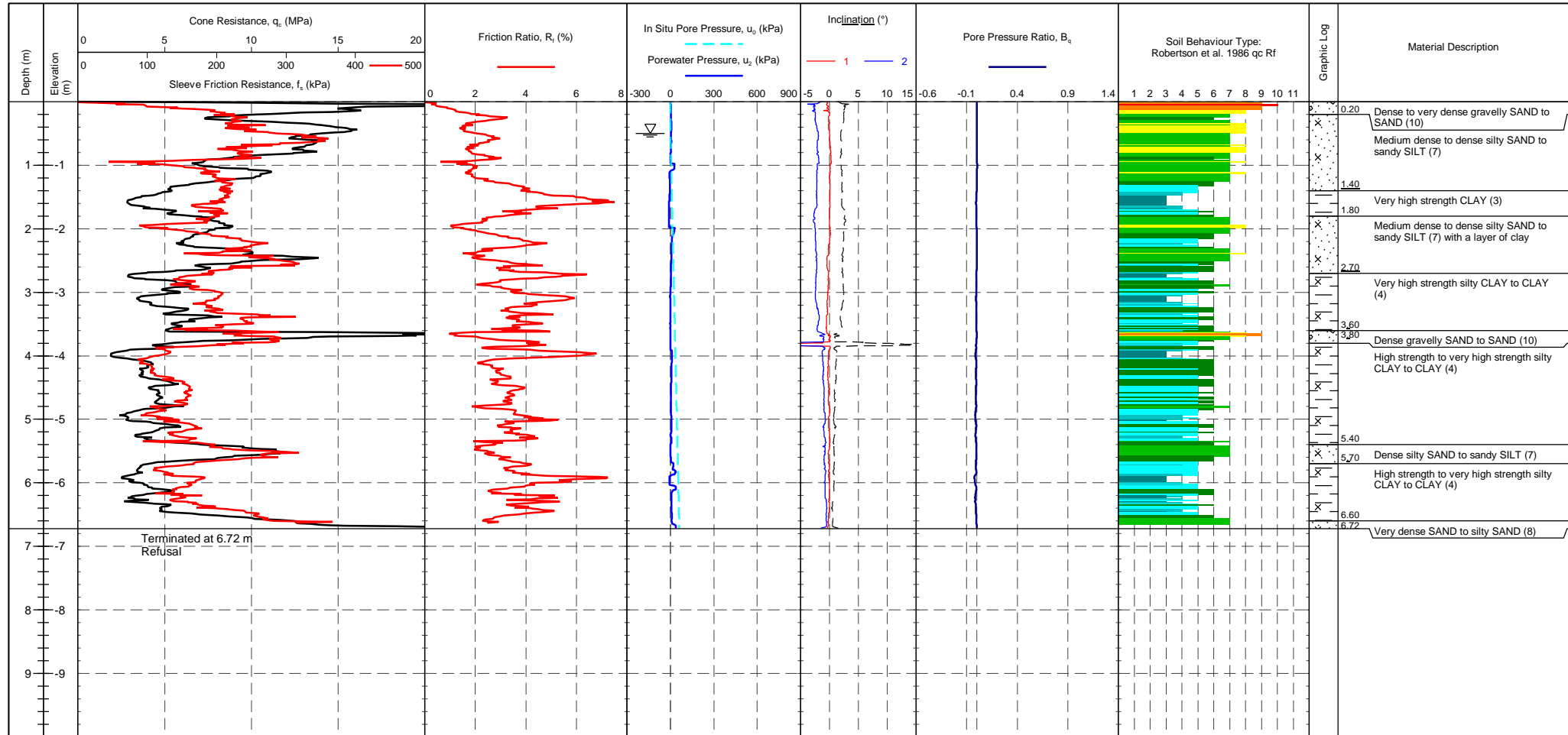


TITLE
TRC
 Tunbridge Wells
 Chapman Way
 Robertson et al. 1986 qc vs. Rf - CPT103

DRAWN	DATE	11/09/2023	
CHECKED	DATE	11/09/2023	
SCALE	Not To Scale		A4
PROJECT No	1230378		FIGURE No

PointID	CPT104
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 06/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	Transducer Tip : 241 mV Sleeve : 299 mV Pore Pressure 2 : 169 mV X-Y Inclinator : 2471 mV	CPTU ZERO VALUES Post : 241 mV Difference : 0 MPa 0 kPa 219 mV 0.012 kPa 2469 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID

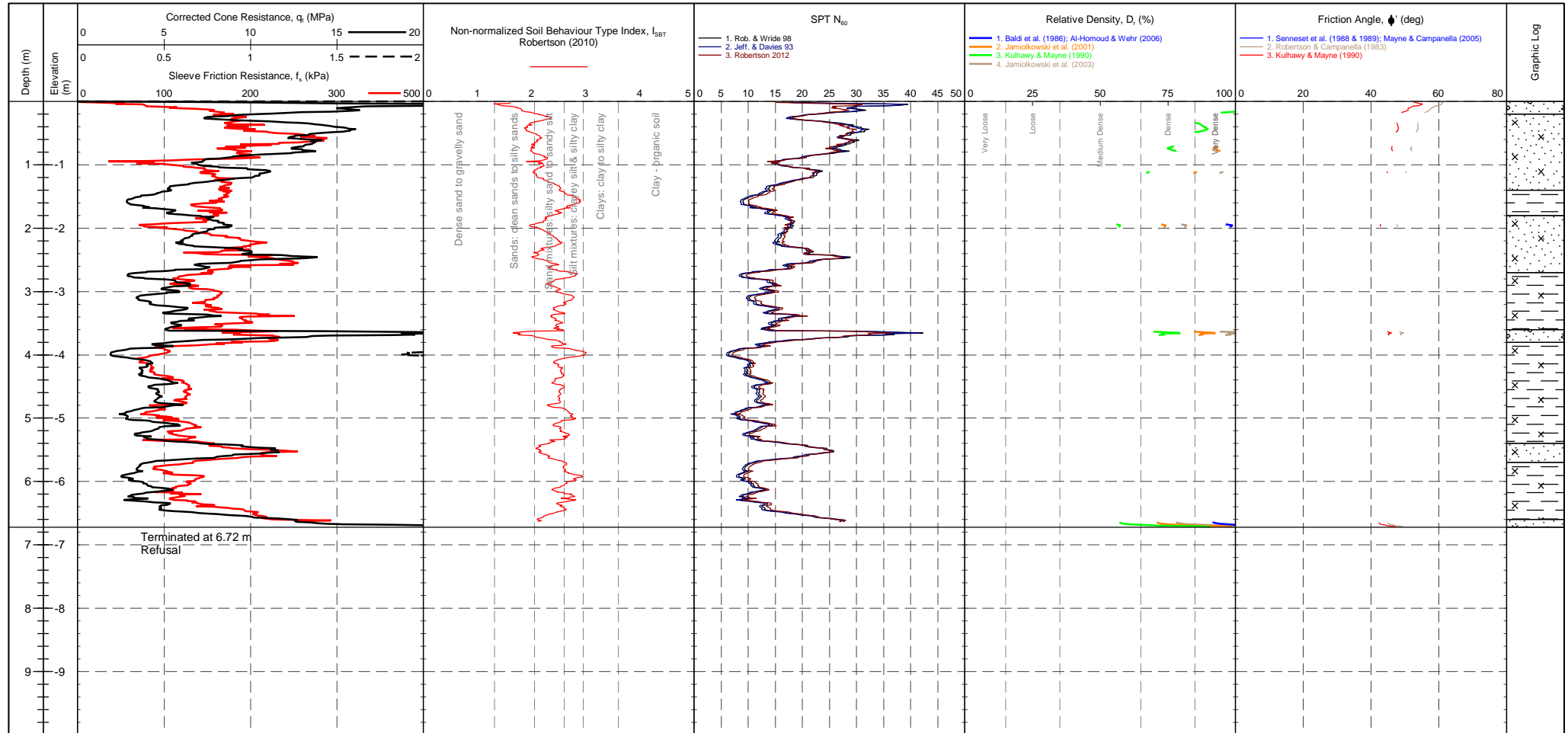
CPT104

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 06/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICION REDUCER : None
WEATHER : Sunny & Hot

Transducer
Tip : 241 mV
Sleeve : 299 mV
Pore Pressure 2 : 169 mV
X-Y Inclinator : 2471 mV

CPTU ZERO VALUES
Pre : 241 mV
Post : 241 mV
Difference : 0 MPa
0 kPa
0.012 kPa
2469 mV

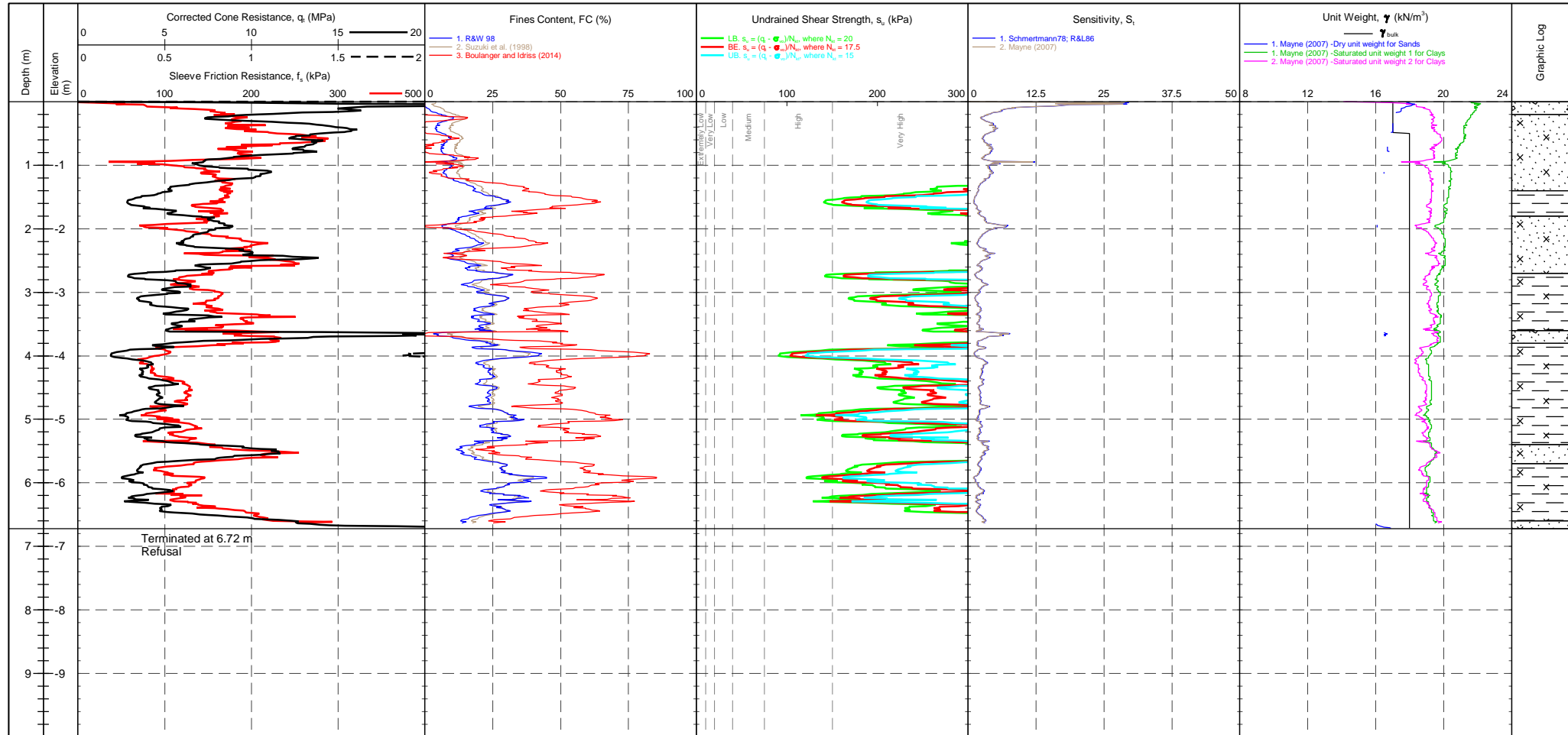
GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12				
Description	SBT Index, I _c	Description	SPT N value, NSPT	Description
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense
Sands	1.31-2.05	Dense	30 - 50	Dense
Gravelly sand	<1.31	Very Dense	>50	Very Dense

Groundwater Level

Dissipation Test

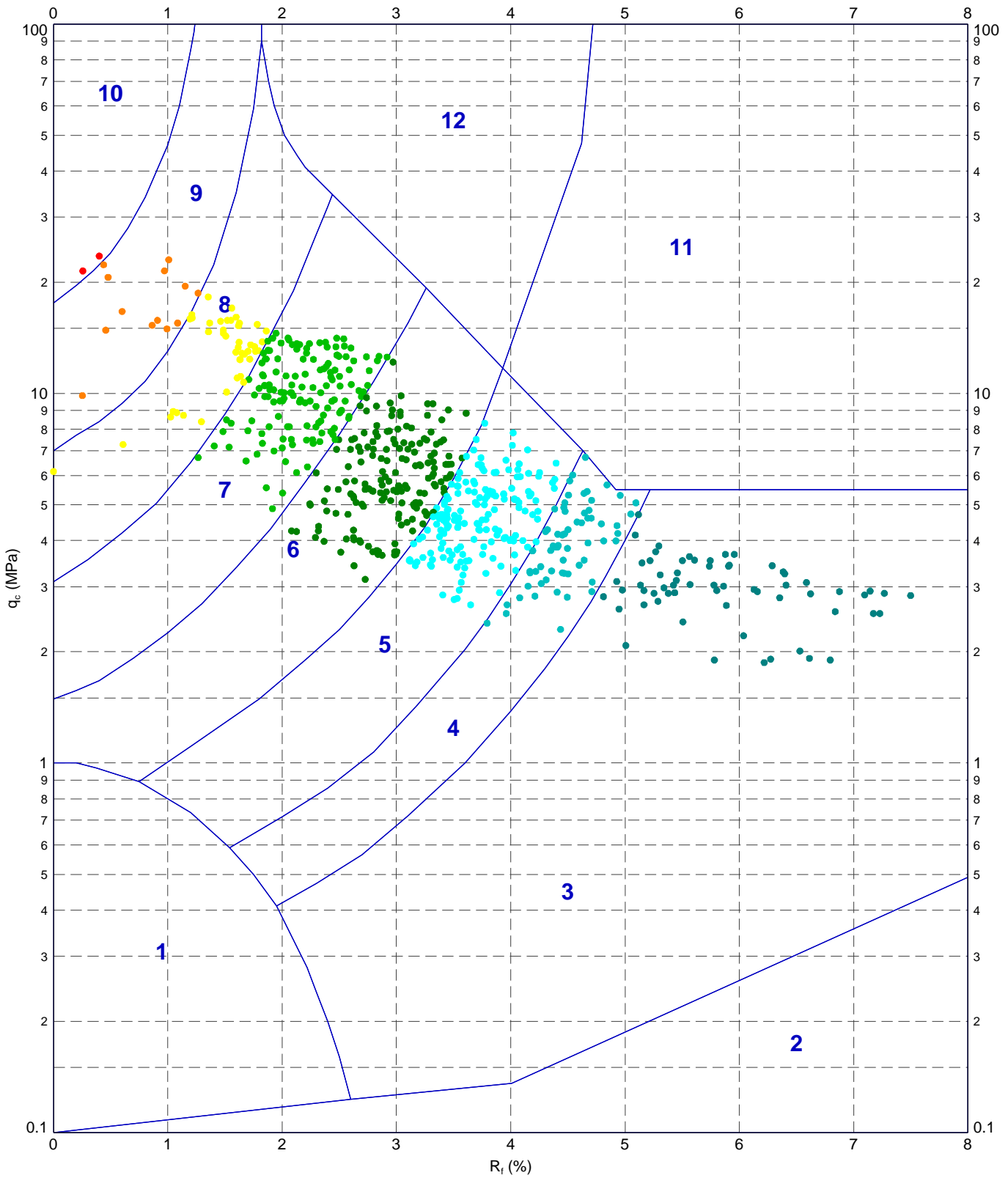
PointID	CPT104
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 06/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip : 241 mV Sleeve : 299 mV Pore Pressure 2 : 169 mV X-Y Inclinator : 2471 mV	CPTU ZERO VALUES Post : 241 mV Difference : 0 MPa 299 mV 0 kPa 219 mV 0.012 kPa 2469 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement su (kPa) <10 10-20 20-40	Term based on measurement su (kPa) 40-75 75-150 150-300 >300	Groundwater Level Dissipation Test
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220629-ADVANCED REPORT INSTIUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF APF 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 13:47 10.03.00.09 Dargel Lab and In Situ Tool - DGD (Lib: In Situ SI 2.02.0 2017-07-10 Pdf: In Situ SI2.02.0 2017-07-10



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 4 - Silty CLAY to CLAY
- 7 - Silty SAND to sandy SILT
- 10 - Gravelly SAND to SAND
- 2 - Organic material
- 5 - Clayey SILT to silty CLAY
- 8 - SAND to silty SAND
- 11 - Very stiff fine grained
- 3 - CLAY
- 6 - Sandy SILT to clayey SILT
- 9 - SAND
- 12 - SAND to clayey SAND



TITLE

TRC
Tunbridge Wells
Chapman Way
Robertson et al. 1986 qc vs. Rf - CPT104

DRAWN

DATE

11/09/2023

CHECKED

DATE

11/09/2023

SCALE

Not To Scale

A4

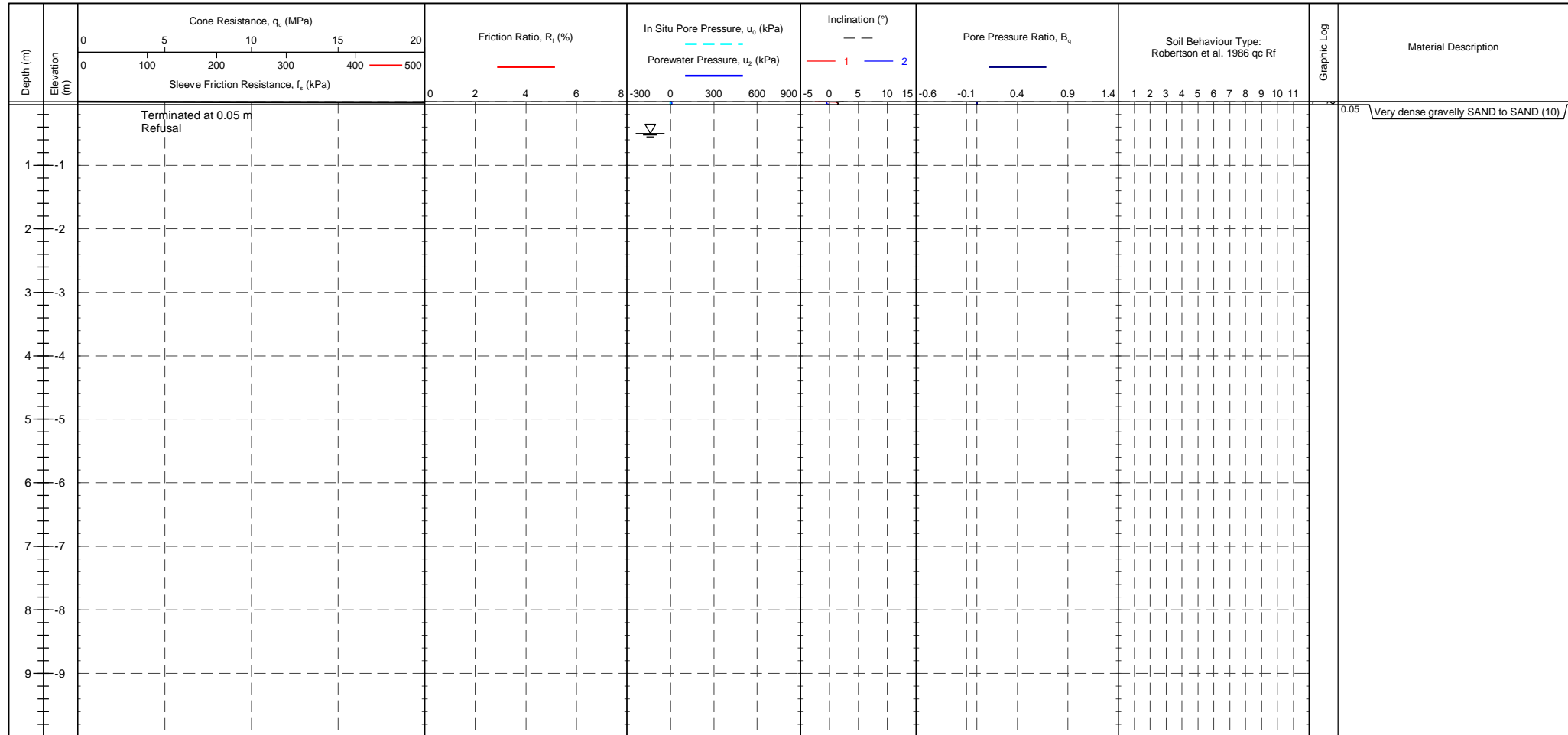
PROJECT No

1230378

FIGURE No

PointID
CPT105

CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES Transducer Tip: Pre 243 mV, Post 244 mV, Difference 0.011 MPa Sleeve: Pre 301 mV, Post 303 mV, Difference 0.001 kPa Pore Pressure 2: Pre 193 mV, Post 153 mV, Difference -0.009 kPa X-Y Inclinometer: Pre 2264 mV, Post 2610 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID

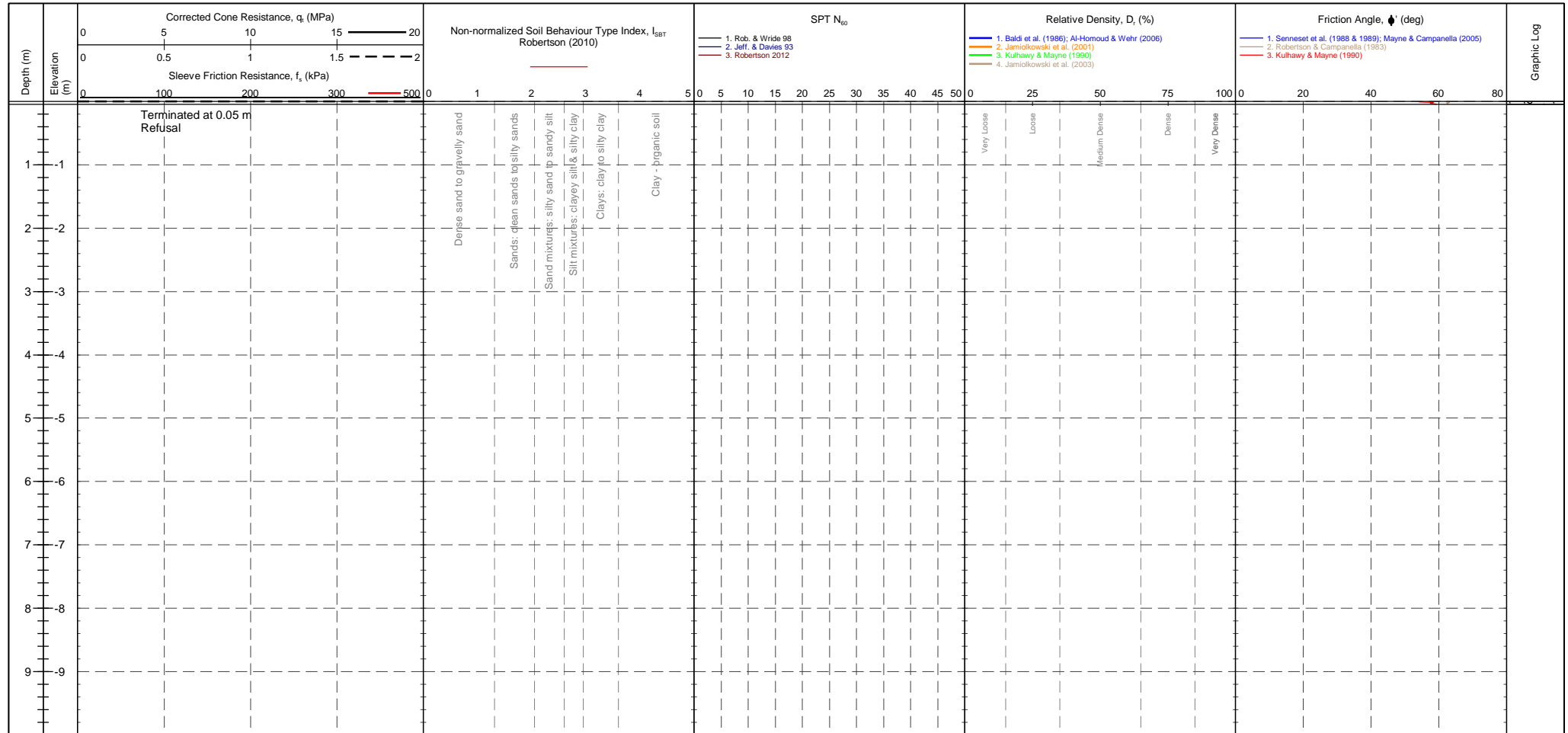
CPT105

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

Transducer
Tip : 243 mV / 244 mV / 0.011 MPa
Sleeve : 301 mV / 303 mV / 0.001 kPa
Pore Pressure 2 : 193 mV / 153 mV / -0.009 kPa
X-Y Inclinator : 2264 mV / 2610 mV

CPTU ZERO VALUES
GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, I_c	Description	SPT N value, NSPT	Description	Relative Density D_r (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

Graphic Log



NOITAEITSEVNI SITE INVESTIGATION Working with:



PointID
CPT105

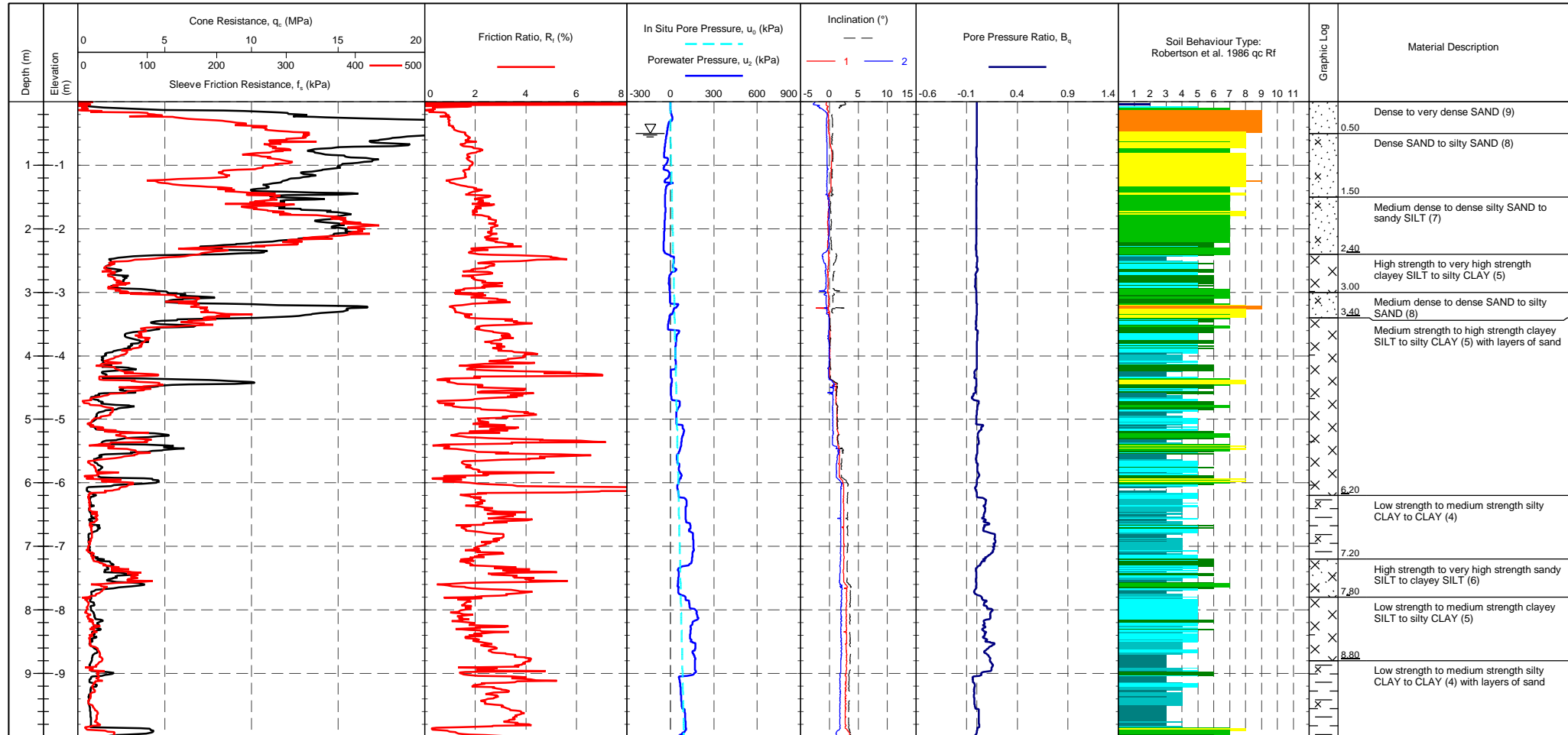
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip 243 mV 244 mV 0.011 MPa Sleeve 301 mV 303 mV 0.001 kPa Pore Pressure 2 193 mV 153 mV -0.009 kPa X-Y Inclinator 2264 mV 2610 mV	CPTU ZERO VALUES Pre Post Difference Tip 243 mV 244 mV 0.011 MPa Sleeve 301 mV 303 mV 0.001 kPa Pore Pressure 2 193 mV 153 mV -0.009 kPa X-Y Inclinator 2264 mV 2610 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement su (kPa) Term based on measurement su (kPa) Extremely low strength <10 Medium strength 40-75 Very low strength 10-20 High strength 75-150 Low strength 20-40 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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PointID	CPT105A
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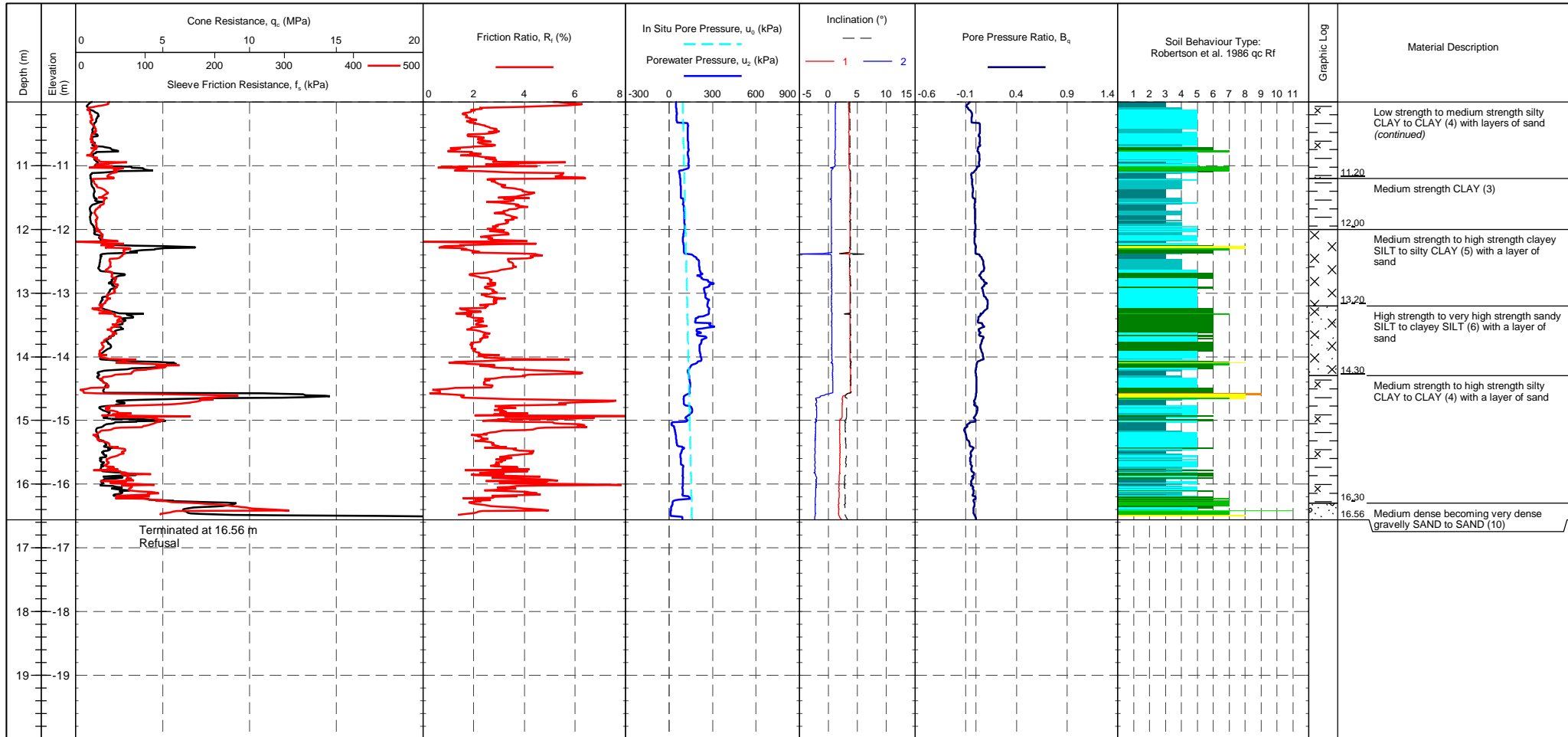
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 06/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	Transducer : Tip : 239 mV Sleeve : 297 mV Pore Pressure 2 : 179 mV X-Y Inclinometer : 2472 mV	CPTU ZERO VALUES Post : 240 mV Difference : 0.011 MPa 299 mV 0.001 kPa 370 mV 0.045 kPa 2473 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clay SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID	CPT105A
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 06/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	Transducer Tip : 239 mV / 240 mV / 0.011 MPa Sleeve : 297 mV / 299 mV / 0.001 kPa Pore Pressure 2 : 179 mV / 370 mV / 0.045 kPa X-Y Inclinator : 2472 mV / 2473 mV	CPTU ZERO VALUES Pre : 239 mV / 297 mV / 179 mV / 2472 mV Post : 240 mV / 299 mV / 370 mV / 2473 mV Difference : 0.011 MPa / 0.001 kPa / 0.045 kPa	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID

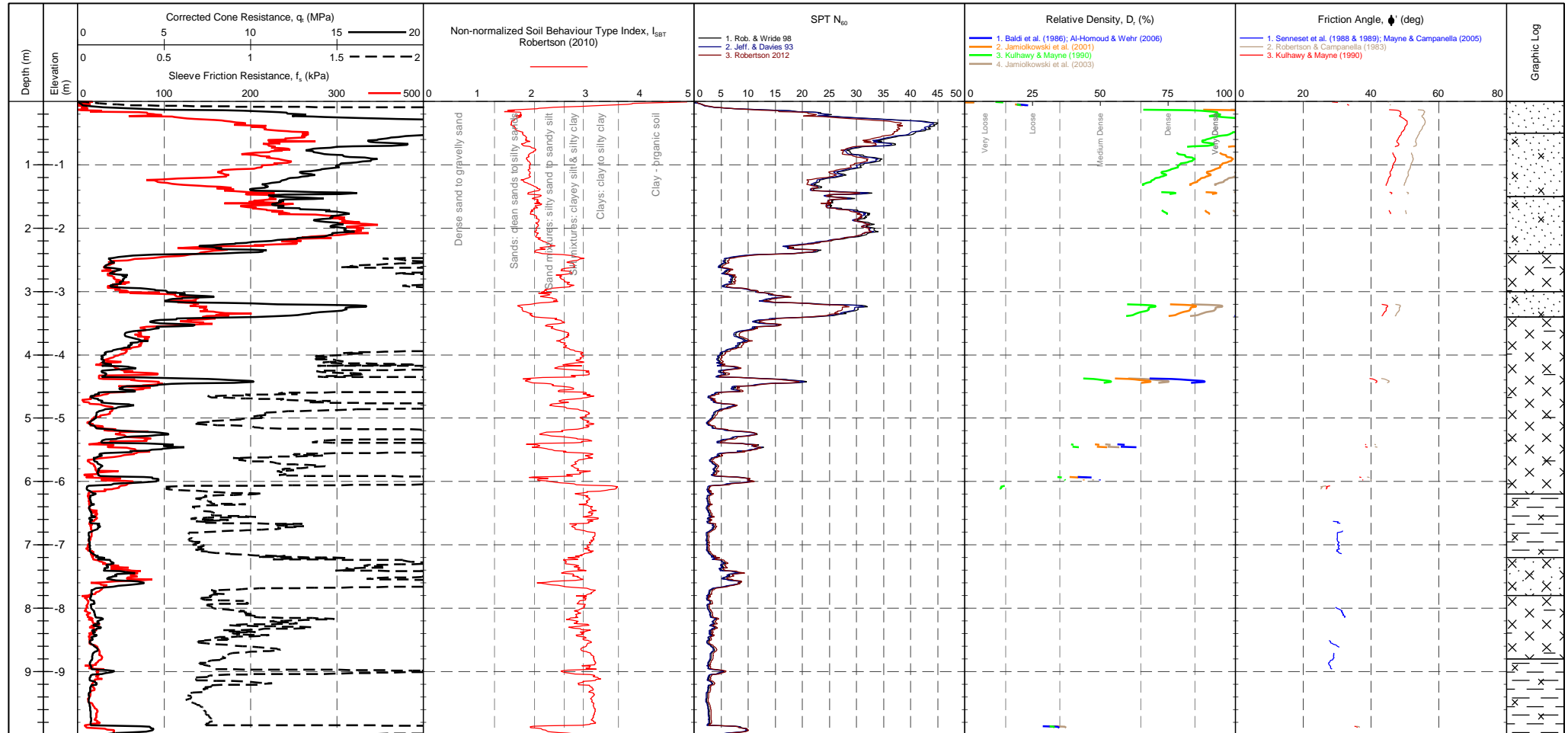
CPT105A

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 06/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

CPTU ZERO VALUES
 Transducer Pre Post Difference
 Tip 239 mV 240 mV 0.011 MPa
 Sleeve 297 mV 299 mV 0.001 kPa
 Pore Pressure 2 179 mV 370 mV 0.045 kPa
 X-Y Inclinator 2472 mV 2473 mV

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12				
Description	SBT Index, I_c	Description	SPT N value, NSPT	Description
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense
Sands	1.31-2.05	Dense	30 - 50	Dense
Gravelly sand	<1.31	Very Dense	>50	Very Dense

Groundwater Level

Dissipation Test

PointID

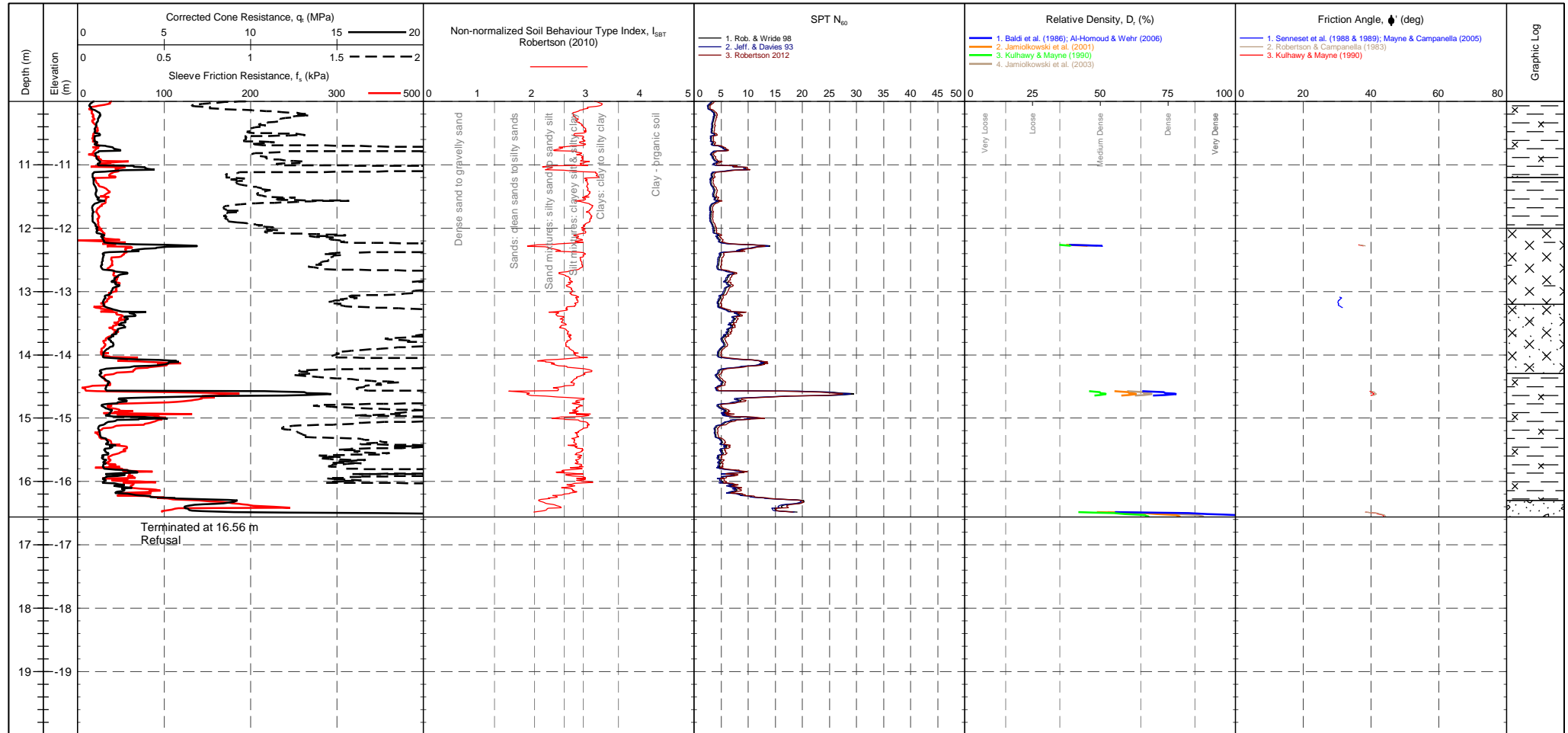
CPT105A

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 06/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

Transducer
Tip : 239 mV
Sleeve : 297 mV / 299 mV
Pore Pressure 2 : 179 mV / 370 mV
X-Y Inclinator : 2472 mV / 2473 mV
CPTU ZERO VALUES
Pre : 239 mV
Post : 240 mV
Difference : 0.011 MPa
Sleeve : 0.001 kPa
Difference : 0.045 kPa

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12				
Description	SBT Index, I _c	Description	SPT N value, NSPT	Description
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense
Sands	1.31-2.05	Dense	30 - 50	Dense
Gravelly sand	<1.31	Very Dense	>50	Very Dense
				Relative Density Dr (%)
				0 - 15
				15 - 35
				35 - 65
				65 - 85
				>85

Groundwater Level
 Dissipation Test

PointID

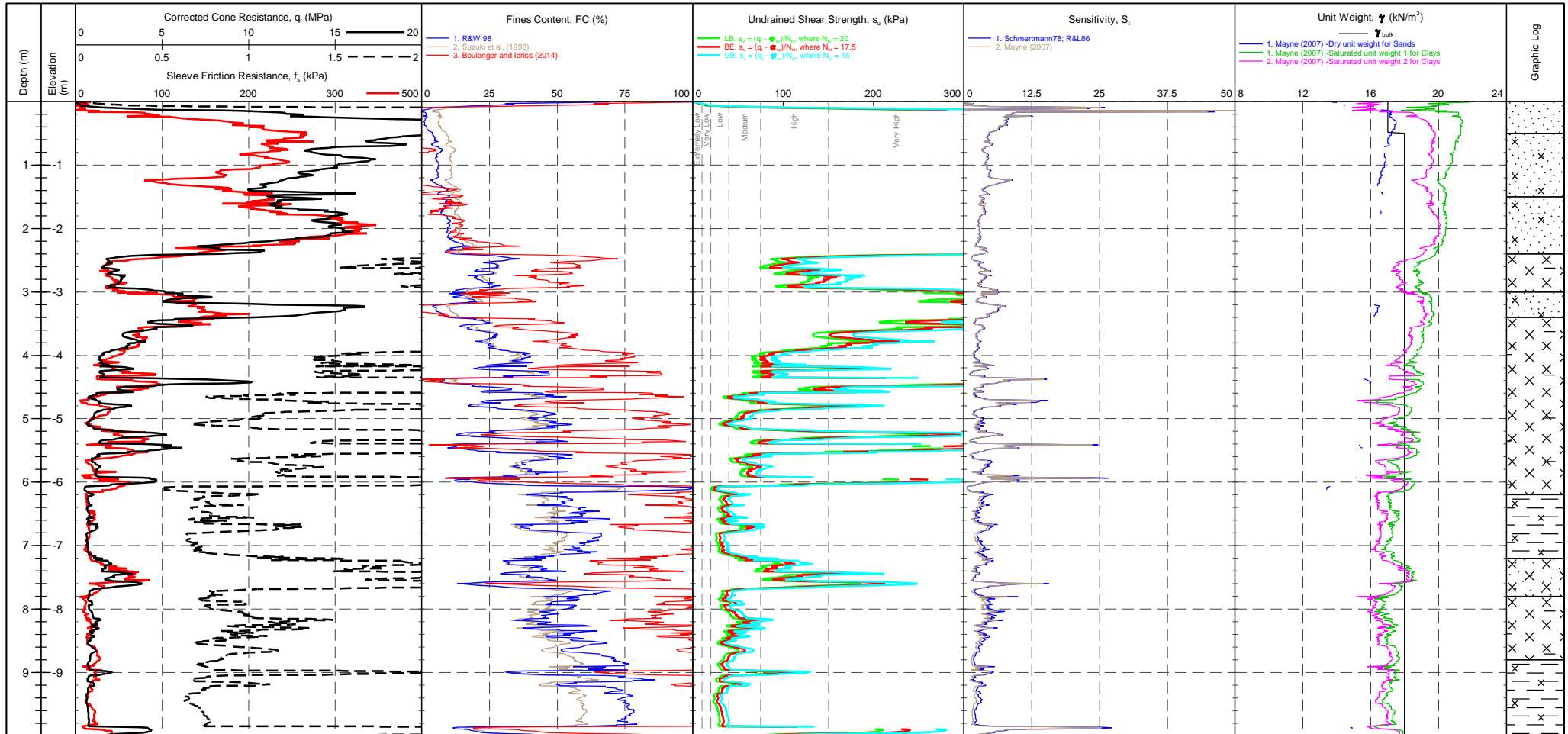
CPT105A

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 06/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	239 mV	240 mV	0.011 MPa
Sleeve	297 mV	299 mV	0.001 kPa
Pore Pressure 2	179 mV	370 mV	0.045 kPa
X-Y Inclinator	2472 mV	2473 mV	

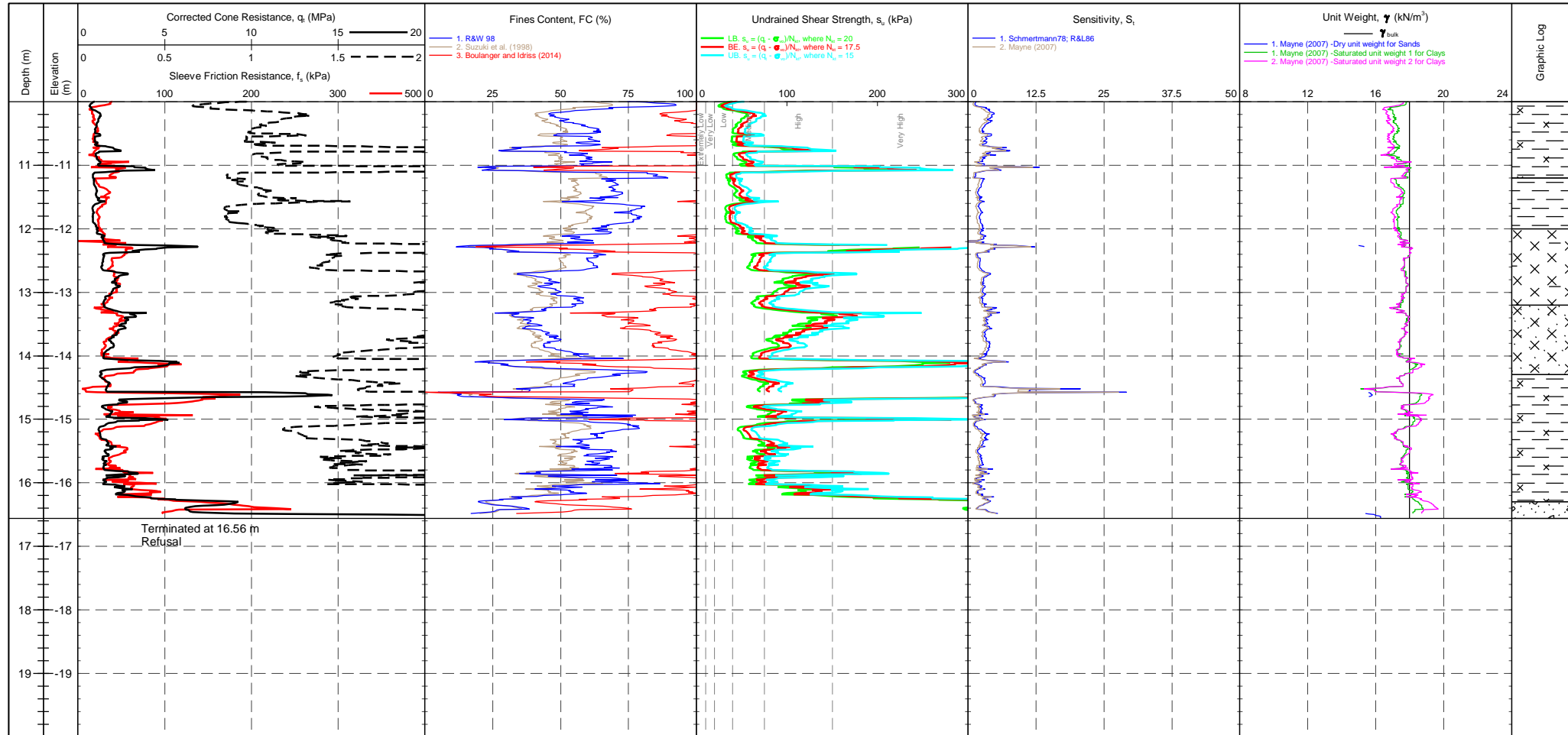
COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	s_u (kPa)	Term based on measurement	s_u (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level
 Dissipation Test

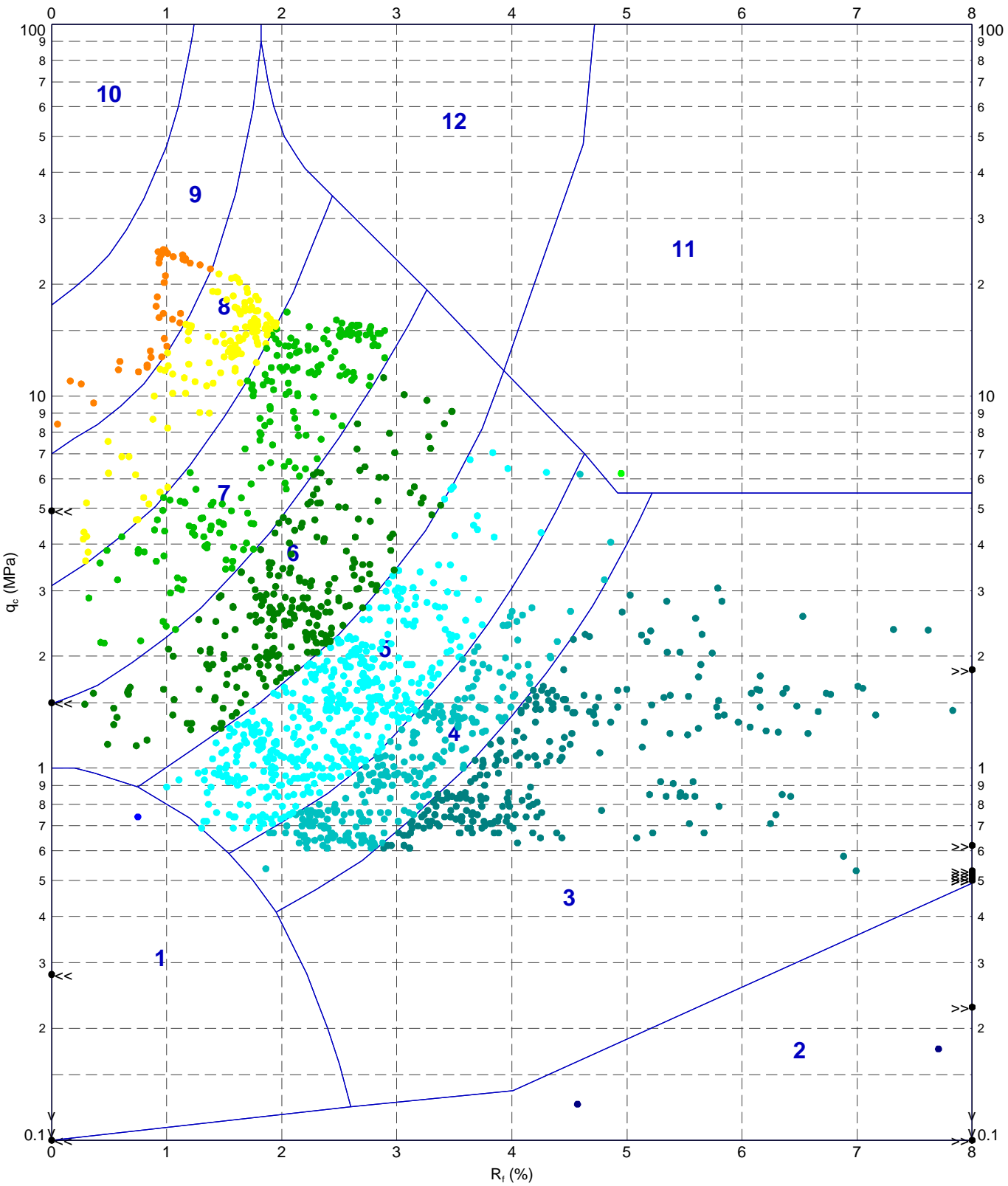
PointID	CPT105A
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 06/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip : 239 mV Sleeve : 297 mV Pore Pressure 2 : 179 mV X-Y Inclinator : 2472 mV	CPTU ZERO VALUES Post : 240 mV Difference : 0.011 MPa 299 mV 0.001 kPa 370 mV 0.045 kPa 2473 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement su (kPa) Extremely low strength <10 Very low strength 10-20 Low strength 20-40	Term based on measurement su (kPa) Medium strength 40-75 High strength 75-150 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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220689-ADVANCED REPORT INSTIUSI 2.02.1 LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF APF 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 13:48 10.03.00.09 Dargel Lab and In Situ Tool - DGD (Lib - In Situ SI 2.02.0 2017-07-10 Pdf In Situ SI2.02.0 2017-07-10



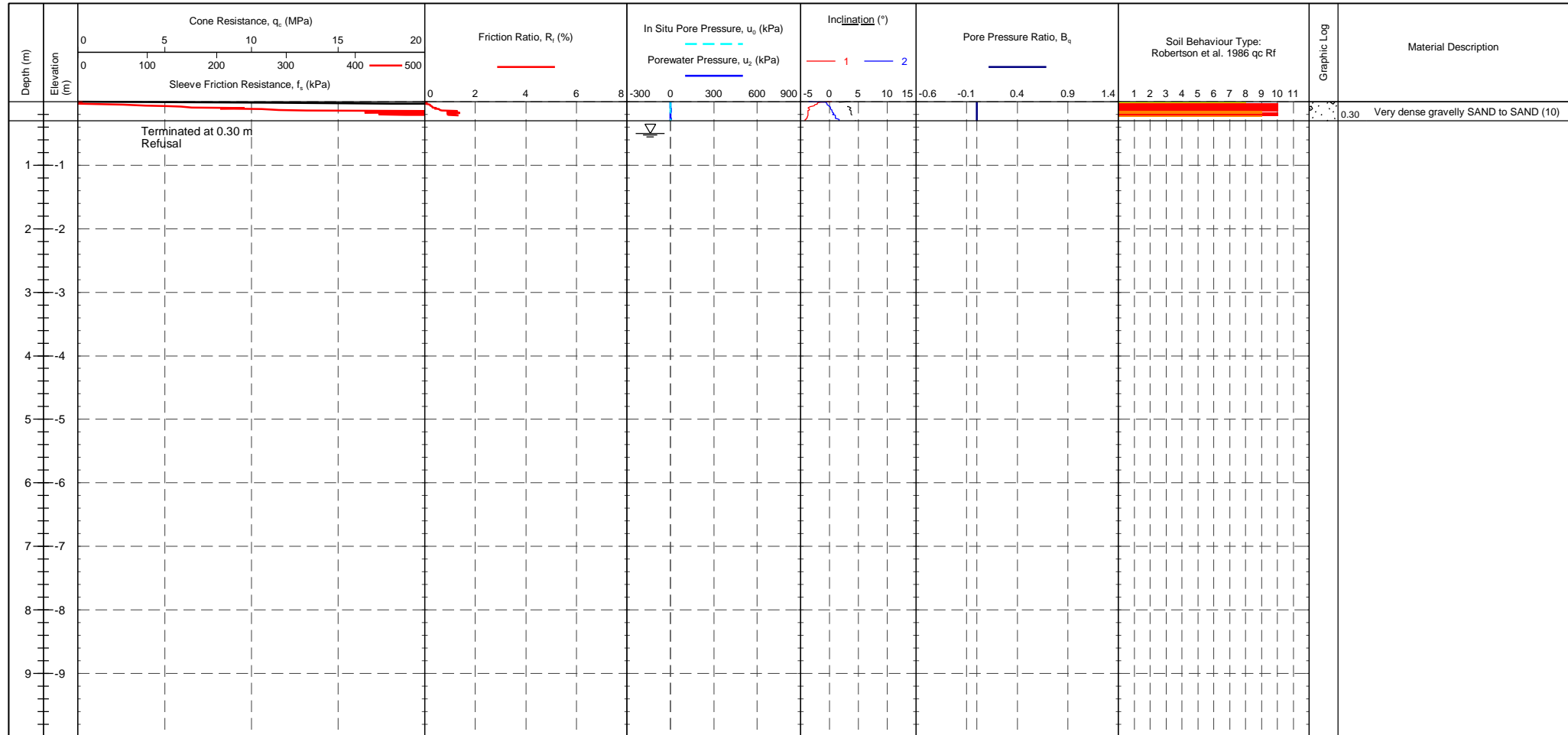
METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 4 - Silty CLAY to CLAY
- 7 - Silty SAND to sandy SILT
- 10 - Gravelly SAND to SAND
- 2 - Organic material
- 5 - Clayey SILT to silty CLAY
- 8 - SAND to silty SAND
- 11 - Very stiff fine grained
- 3 - CLAY
- 6 - Sandy SILT to clayey SILT
- 9 - SAND
- 12 - SAND to clayey SAND

	<p>TITLE</p> <p>TRC Tunbridge Wells Chapman Way Robertson et al. 1986 qc vs. Rf - CPT105A</p>	DRAWN	DATE	11/09/2023	
		CHECKED	DATE	11/09/2023	
		SCALE	Not To Scale		A4
		PROJECT No	FIGURE No		
		1230378			

PointID	CPT106
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 06/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES Transducer Pre Post Difference Tip 239 mV 240 mV 0.011 MPa Sleeve 298 mV 301 mV 0.002 kPa Pore Pressure 2 226 mV 196 mV -0.007 kPa X-Y Inclinometer 2571 mV 2486 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID

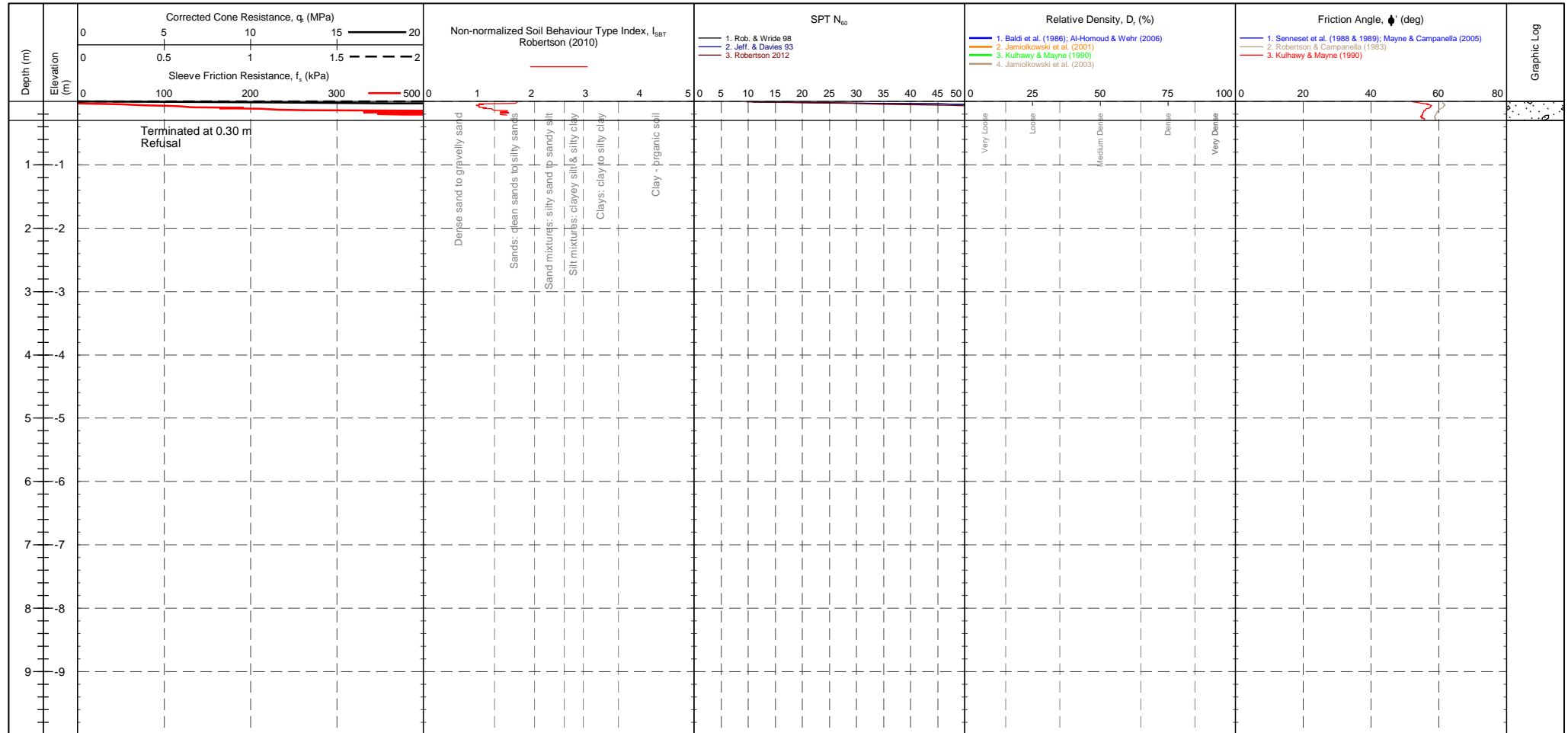
CPT106

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 06/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

CPTU ZERO VALUES
 Pre Post Difference
 239 mV 240 mV 0.011 MPa
 298 mV 301 mV 0.002 kPa
 226 mV 196 mV -0.007 kPa
 2571 mV 2486 mV

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12			
Description	SBT Index, I_c	Description	SPT N value, NSPT
Clays	2.95-3.60	Very Loose	0 - 4
Silt mixtures	2.60-2.95	Loose	4 - 10
Sand mixtures	2.05-2.60	Medium Dense	10 - 30
Sands	1.31-2.05	Dense	30 - 50
Gravelly sand	<1.31	Very Dense	>50

Description	Relative Density D_r (%)
Very Loose	0 - 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	>85

Groundwater Level
 Dissipation Test

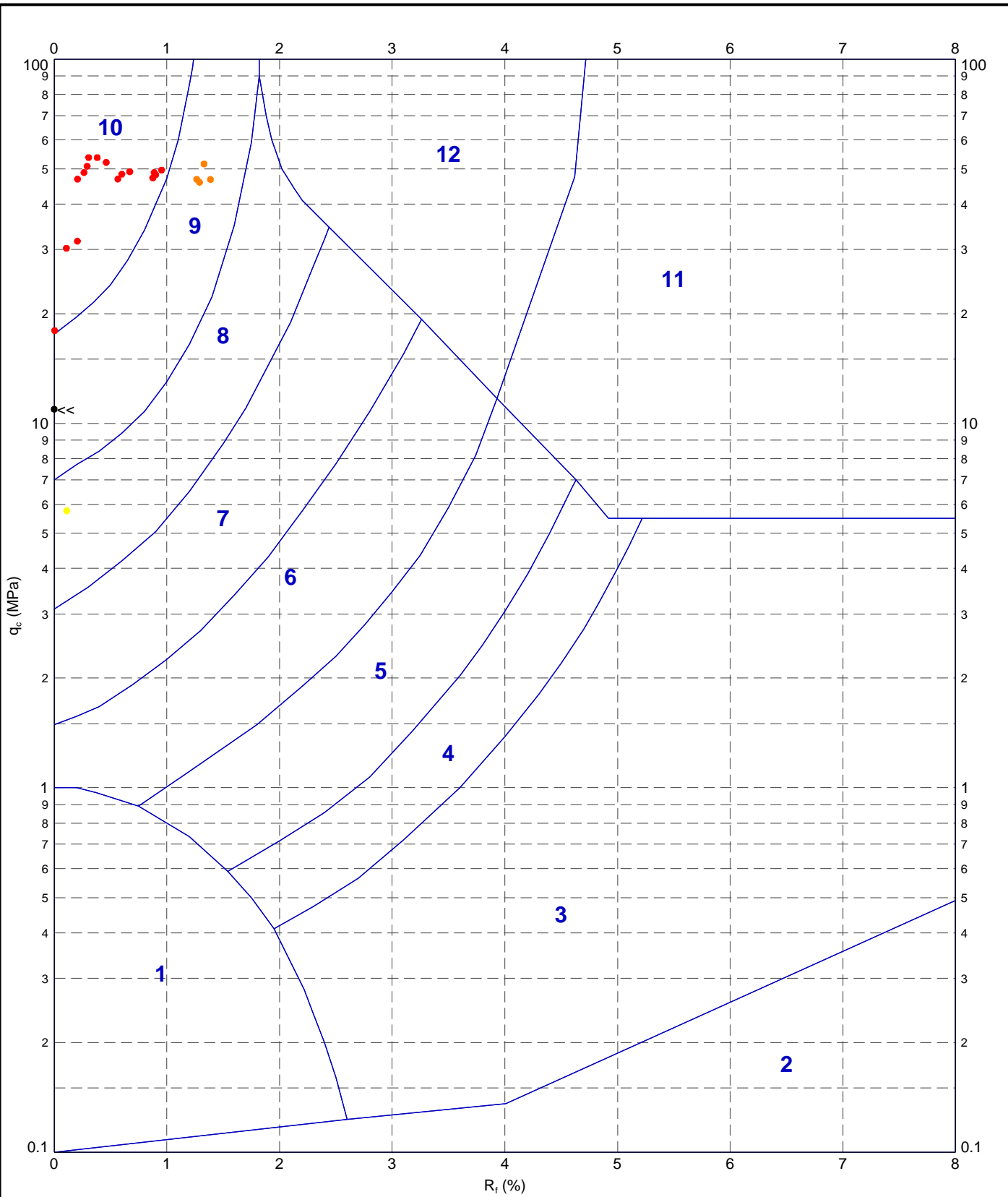
PointID
CPT106

CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 06/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference 239 mV 240 mV 0.011 MPa 298 mV 301 mV 0.002 kPa 226 mV 196 mV -0.007 kPa 2571 mV 2486 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement su (kPa) Extremely low strength <10 Very low strength 10-20 Low strength 20-40	Term based on measurement su (kPa) Medium strength 40-75 High strength 75-150 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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220629-ADVANCED REPORT INSTUSI 2.02.1 LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF APF 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 13:49 10.03.00.09 Dargal Lab and In Situ Tool - DGD (Lib - In Situ SI 2.02.0 2017-07-10 Pdf - In Situ SI 2.02.0 2017-07-10



METHOD: Robertson et al. 1986 q_c R_f

- 1 - Sensitive fine grained material
- 4 - Silty CLAY to CLAY
- 7 - Silty SAND to sandy SILT
- 10 - Gravelly SAND to SAND
- 2 - Organic material
- 5 - Clayey SILT to silty CLAY
- 8 - SAND to silty SAND
- 11 - Very stiff fine grained
- 3 - CLAY
- 6 - Sandy SILT to clayey SILT
- 9 - SAND
- 12 - SAND to clayey SAND

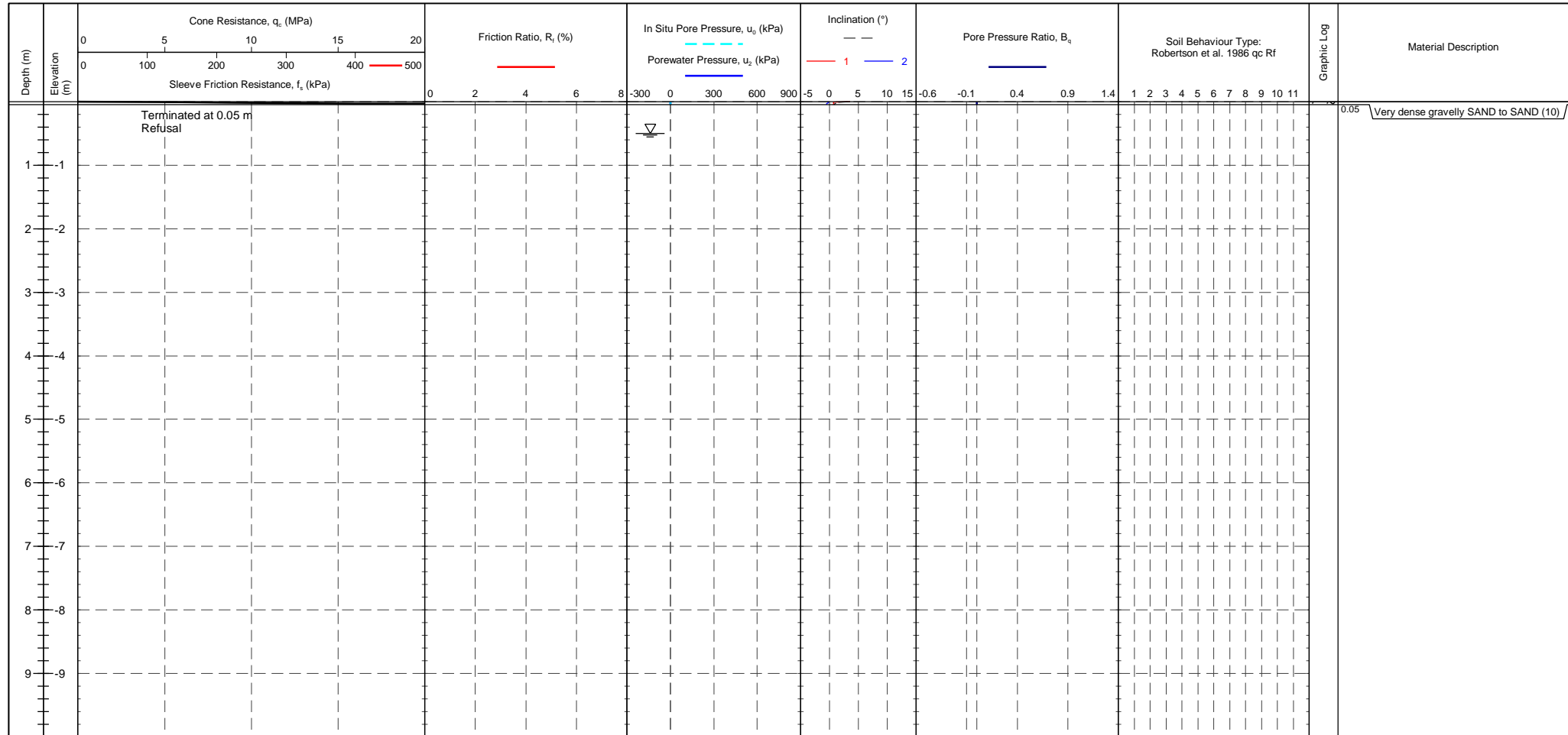


TITLE
TRC
 Tunbridge Wells
 Chapman Way
 Robertson et al. 1986 q_c vs. R_f - CPT106

DRAWN	DATE	11/09/2023	
CHECKED	DATE	11/09/2023	
SCALE	Not To Scale		A4
PROJECT No	1230378		FIGURE No

PointID
CPT107

CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES <table border="1"> <tr> <td>Transducer</td> <td>Pre</td> <td>Post</td> <td>Difference</td> </tr> <tr> <td>Tip</td> <td>242 mV</td> <td>243 mV</td> <td>0.011 MPa</td> </tr> <tr> <td>Sleeve</td> <td>303 mV</td> <td>303 mV</td> <td>0 kPa</td> </tr> <tr> <td>Pore Pressure 2</td> <td>150 mV</td> <td>150 mV</td> <td>0 kPa</td> </tr> <tr> <td>X-Y Inclinometer</td> <td>2876 mV</td> <td>2627 mV</td> <td></td> </tr> </table>	Transducer	Pre	Post	Difference	Tip	242 mV	243 mV	0.011 MPa	Sleeve	303 mV	303 mV	0 kPa	Pore Pressure 2	150 mV	150 mV	0 kPa	X-Y Inclinometer	2876 mV	2627 mV		METHOD : Robertson et al. 1986 qc Rf <table border="1"> <tr> <td>1 - Sensitive fine grained material</td> <td>5 - Clayey SILT to silty CLAY</td> <td>9 - SAND</td> </tr> <tr> <td>2 - Organic material</td> <td>6 - Sandy SILT to clayey SILT</td> <td>10 - Gravelly SAND to SAND</td> </tr> <tr> <td>3 - CLAY</td> <td>7 - Silty SAND to sandy SILT</td> <td>11 - Very stiff fine grained</td> </tr> <tr> <td>4 - Silty CLAY to CLAY</td> <td>8 - SAND to silty SAND</td> <td>12 - SAND to clayey SAND</td> </tr> </table>	1 - Sensitive fine grained material	5 - Clayey SILT to silty CLAY	9 - SAND	2 - Organic material	6 - Sandy SILT to clayey SILT	10 - Gravelly SAND to SAND	3 - CLAY	7 - Silty SAND to sandy SILT	11 - Very stiff fine grained	4 - Silty CLAY to CLAY	8 - SAND to silty SAND	12 - SAND to clayey SAND	Groundwater Level Dissipation Test
Transducer	Pre	Post	Difference																																	
Tip	242 mV	243 mV	0.011 MPa																																	
Sleeve	303 mV	303 mV	0 kPa																																	
Pore Pressure 2	150 mV	150 mV	0 kPa																																	
X-Y Inclinometer	2876 mV	2627 mV																																		
1 - Sensitive fine grained material	5 - Clayey SILT to silty CLAY	9 - SAND																																		
2 - Organic material	6 - Sandy SILT to clayey SILT	10 - Gravelly SAND to SAND																																		
3 - CLAY	7 - Silty SAND to sandy SILT	11 - Very stiff fine grained																																		
4 - Silty CLAY to CLAY	8 - SAND to silty SAND	12 - SAND to clayey SAND																																		

PointID

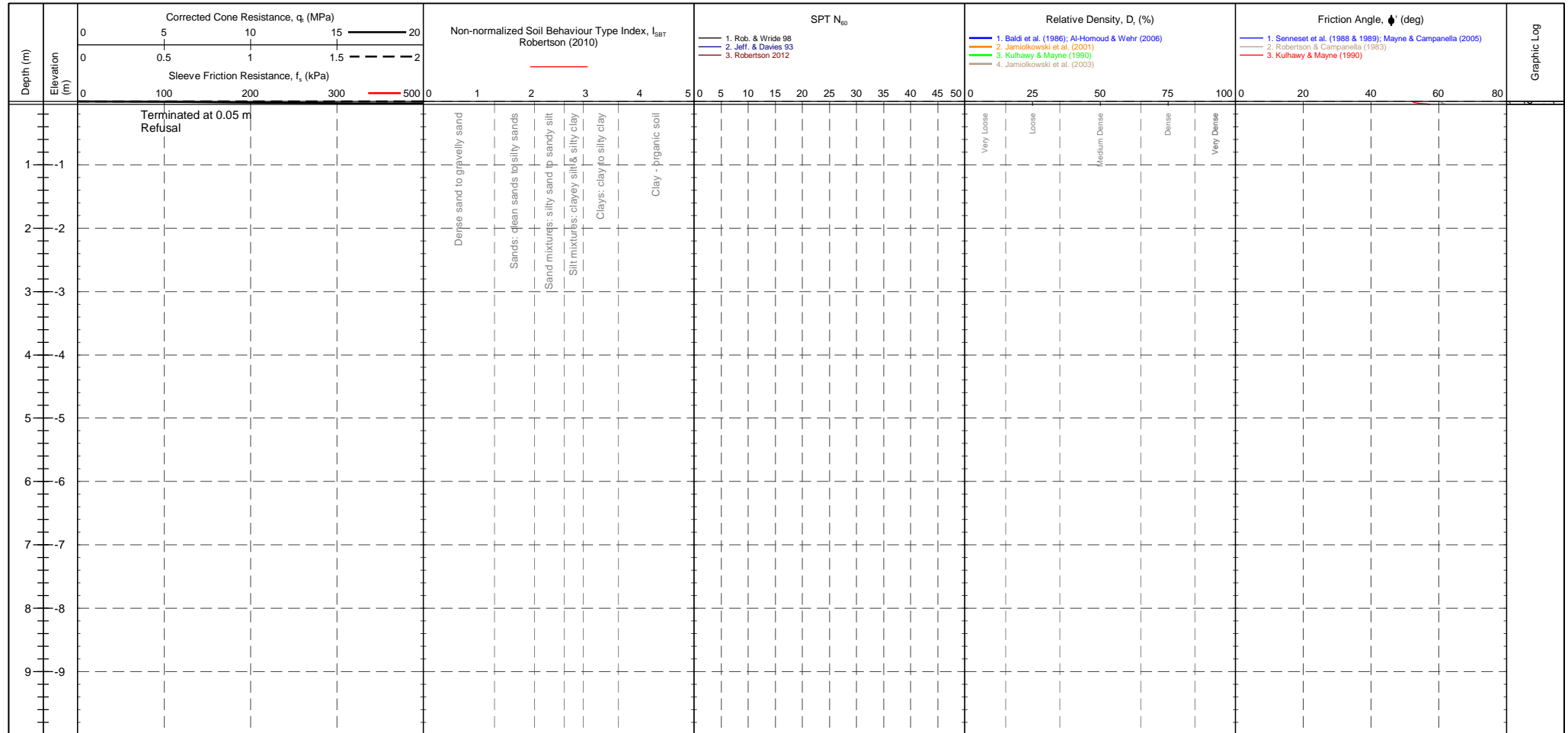
CPT107

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICION REDUCER : None
WEATHER : Sunny & Hot

Transducer
Tip : 242 mV
Sleeve : 303 mV
Pore Pressure 2 : 150 mV
X-Y Inclinator : 2876 mV

CPTU ZERO VALUES
Pre : 243 mV
Post : 303 mV
Difference : 0.011 MPa
0 kPa
0 kPa
2627 mV

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12			
Description	SBT Index, I_c	Description	SPT N value, NSPT
Clays	2.95-3.60	Very Loose	0 - 4
Silt mixtures	2.60-2.95	Loose	4 - 10
Sand mixtures	2.05-2.60	Medium Dense	10 - 30
Sands	1.31-2.05	Dense	30 - 50
Gravelly sand	<1.31	Very Dense	>50

Description	Relative Density D_r (%)
Very Loose	0 - 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	>85

Groundwater Level
 Dissipation Test



NOITAEITSEVNI SITE INVESTIGATION Working with:



PointID
CPT107

CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip: 242 mV Sleeve: 303 mV Pore Pressure 2: 150 mV X-Y Inclinometer: 2876 mV	CPTU ZERO VALUES Pre: 243 mV Post: 243 mV Difference: 0.011 MPa 303 mV 0 kPa 150 mV 0 kPa 2627 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement s_u (kPa) Extremely low strength: <10 Very low strength: 10-20 Low strength: 20-40	Term based on measurement s_u (kPa) Medium strength: 40-75 High strength: 75-150 Very high strength: 150-300 Extremely high strength: >300	Groundwater Level Dissipation Test
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PointID

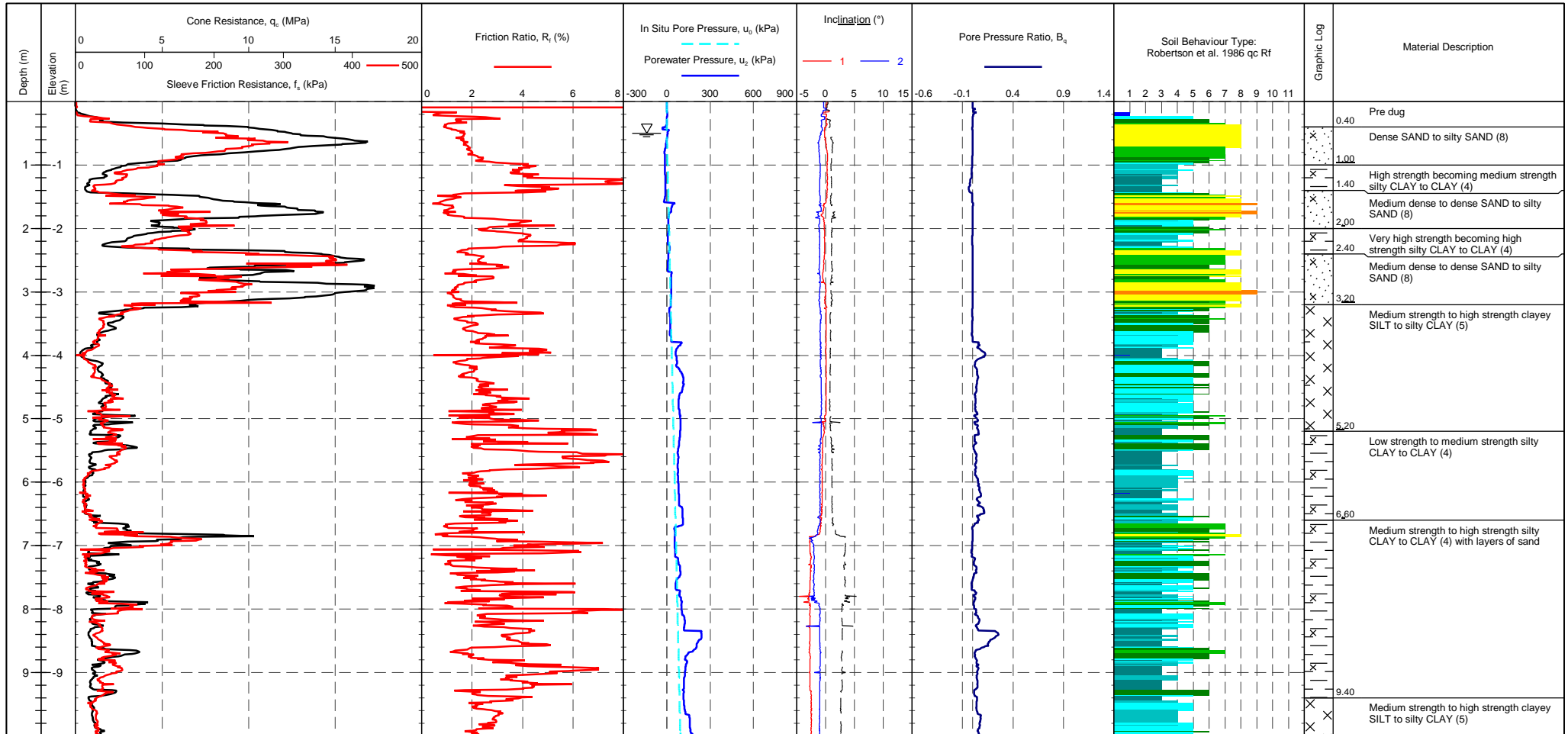
CPT107A

CLIENT : TRC
PROJECT : Chapman Way
 LOCATION : Tunbridge Wells
 PROJECT No. : 1230378

EASTING : 0.000 m
 NORTHING : 0.000 m
 ELEVATION : 0.000 m OD
 CHECKED BY : DW
 TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
 CALIBRATION DATE : 07/06/2023
 CONE MODEL : Subtraction
 CONE AREA : 15cm²
 CONE AREA RATIO : 0.79
 FILTER POSITION : u2
 FILTER TYPE : HDPE

TEST TYPE : TE2
 APPLICATION CLASS : 2
 RIG : CPT 007 - Morooka
 OPERATOR : AC
 FRICTION REDUCER : None
 WEATHER : Sunny & Hot
 GROUNDWATER DEPTH : Assumed for calculation purposes

CPTU ZERO VALUES
 Transducer :
 Tip : 243 mV / 249 mV / 0.066 MPa
 Sleeve : 303 mV / 306 mV / 0.002 kPa
 Pore Pressure 2 : 150 mV / 472 mV / 0.076 kPa
 X-Y Inclinator : 2567 mV / 2521 mV

METHOD: Robertson et al. 1986 qc Rf

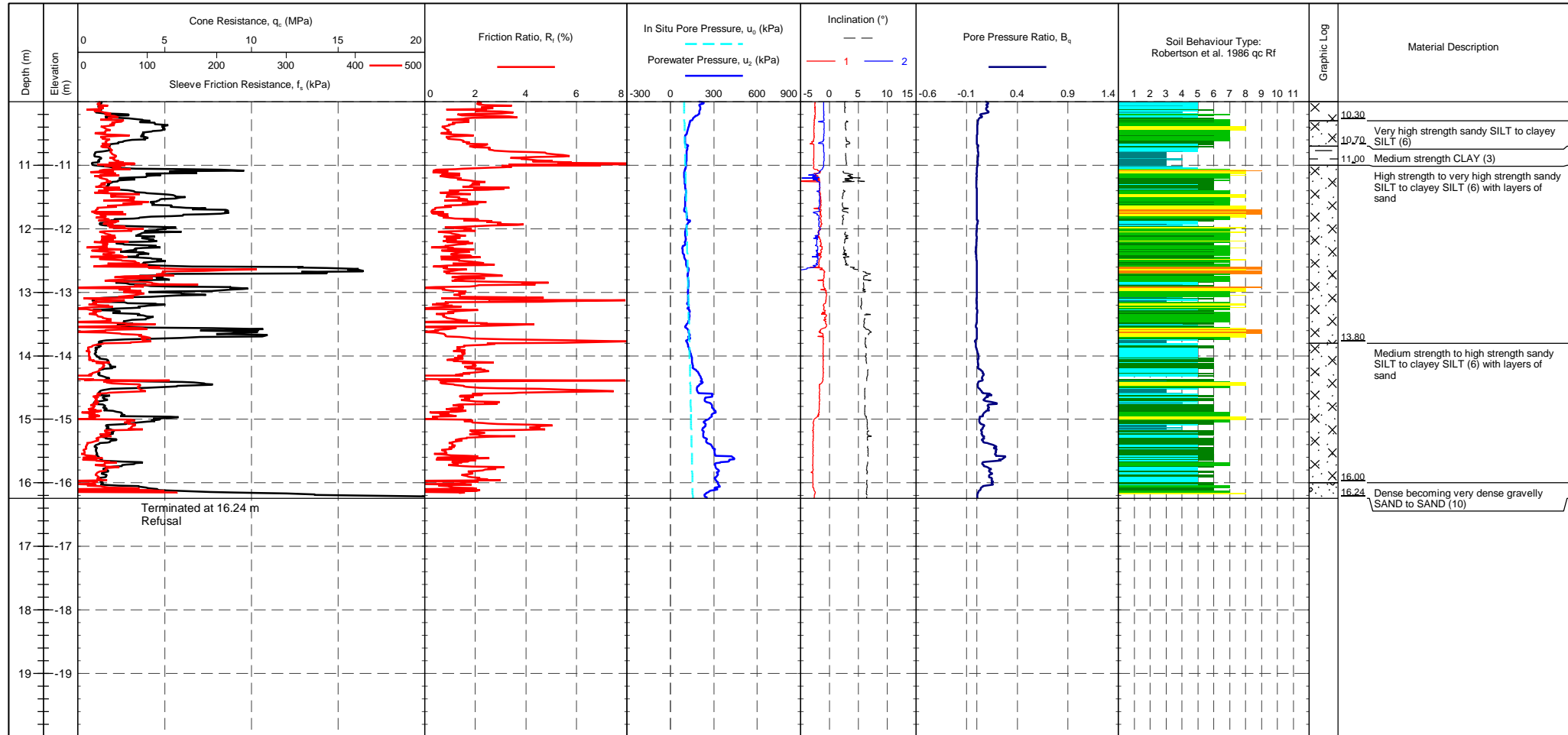
1 - Sensitive fine grained material	5 - Clayey SILT to silty CLAY	9 - SAND
2 - Organic material	6 - Sandy SILT to clayey SILT	10 - Gravelly SAND to SAND
3 - CLAY	7 - Silty SAND to sandy SILT	11 - Very stiff fine grained
4 - Silty CLAY to CLAY	8 - SAND to silty SAND	12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

PointID	CPT107A
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	Transducer Tip : 243 mV / 249 mV / 0.066 MPa Sleeve : 303 mV / 306 mV / 0.002 kPa Pore Pressure 2 : 150 mV / 472 mV / 0.076 kPa X-Y Inclinator : 2567 mV / 2521 mV	CPTU ZERO VALUES Pre : 243 mV / 303 mV / 150 mV / 2567 mV Post : 249 mV / 306 mV / 472 mV / 2521 mV Difference : 0.066 MPa / 0.002 kPa / 0.076 kPa	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID

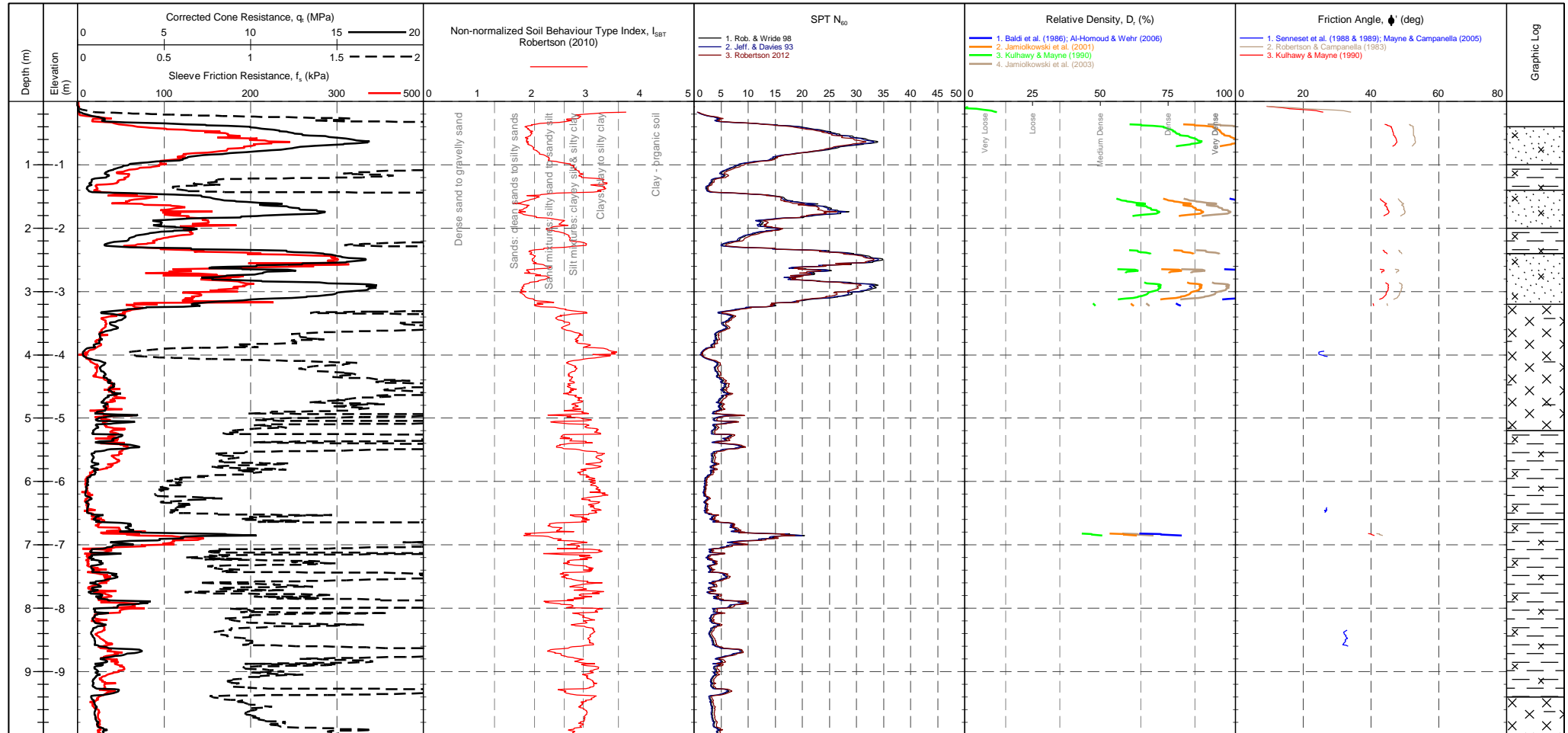
CPT107A

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

CPTU ZERO VALUES
 Transducer Pre Post Difference
 Tip 243 mV 249 mV 0.066 MPa
 Sleeve 303 mV 306 mV 0.002 kPa
 Pore Pressure 2 150 mV 472 mV 0.076 kPa
 X-Y Inclinometer 2567 mV 2521 mV

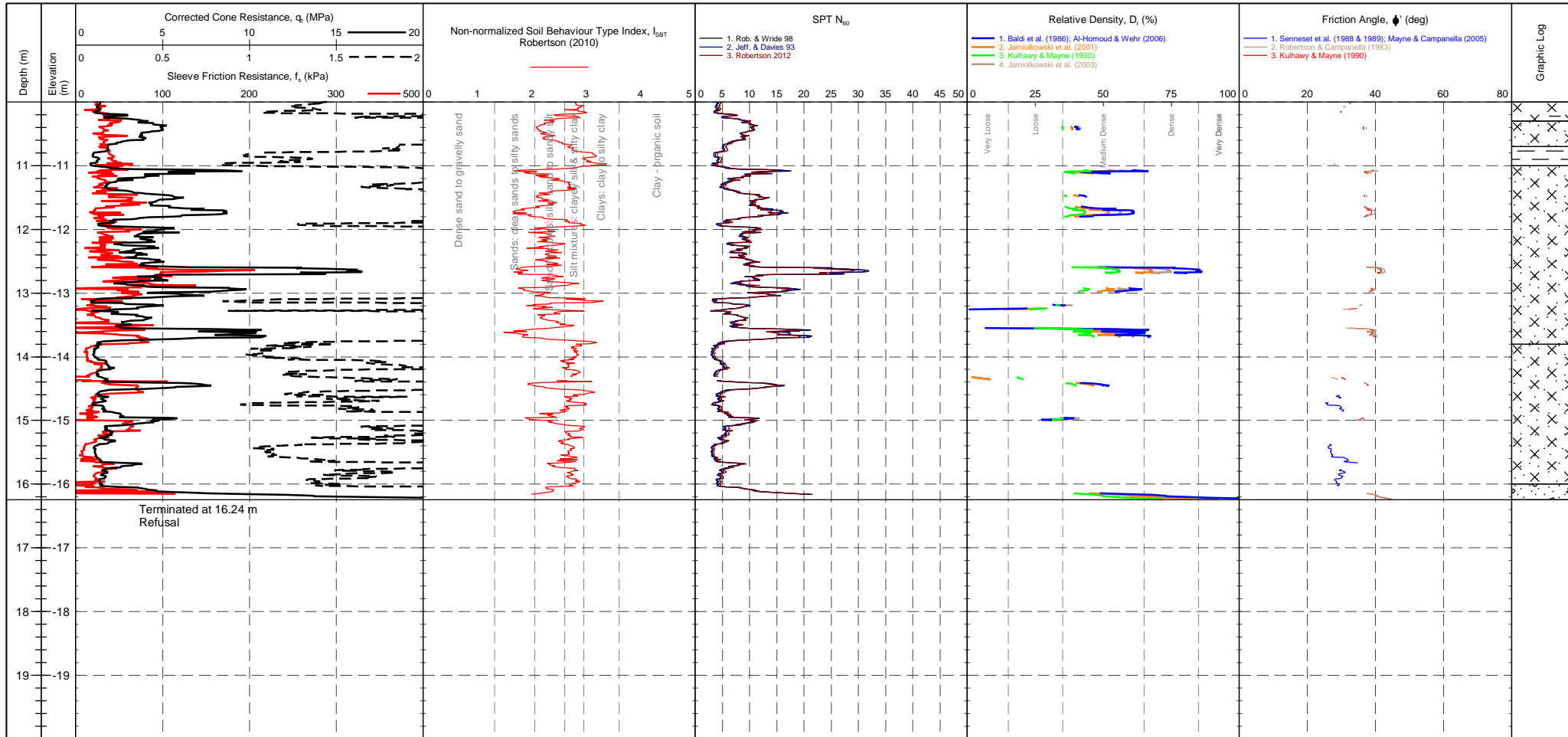
GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12			
Description	SBT Index, I_c	Description	SPT N value, NSPT
Clays	2.95-3.60	Very Loose	0 - 4
Silt mixtures	2.60-2.95	Loose	4 - 10
Sand mixtures	2.05-2.60	Medium Dense	10 - 30
Sands	1.31-2.05	Dense	30 - 50
Gravelly sand	<1.31	Very Dense	>50
		Very Loose	0 - 15
		Loose	15 - 35
		Medium Dense	35 - 65
		Dense	65 - 85
		Very Dense	>85

Groundwater Level

Dissipation Test

PointID	CPT107A
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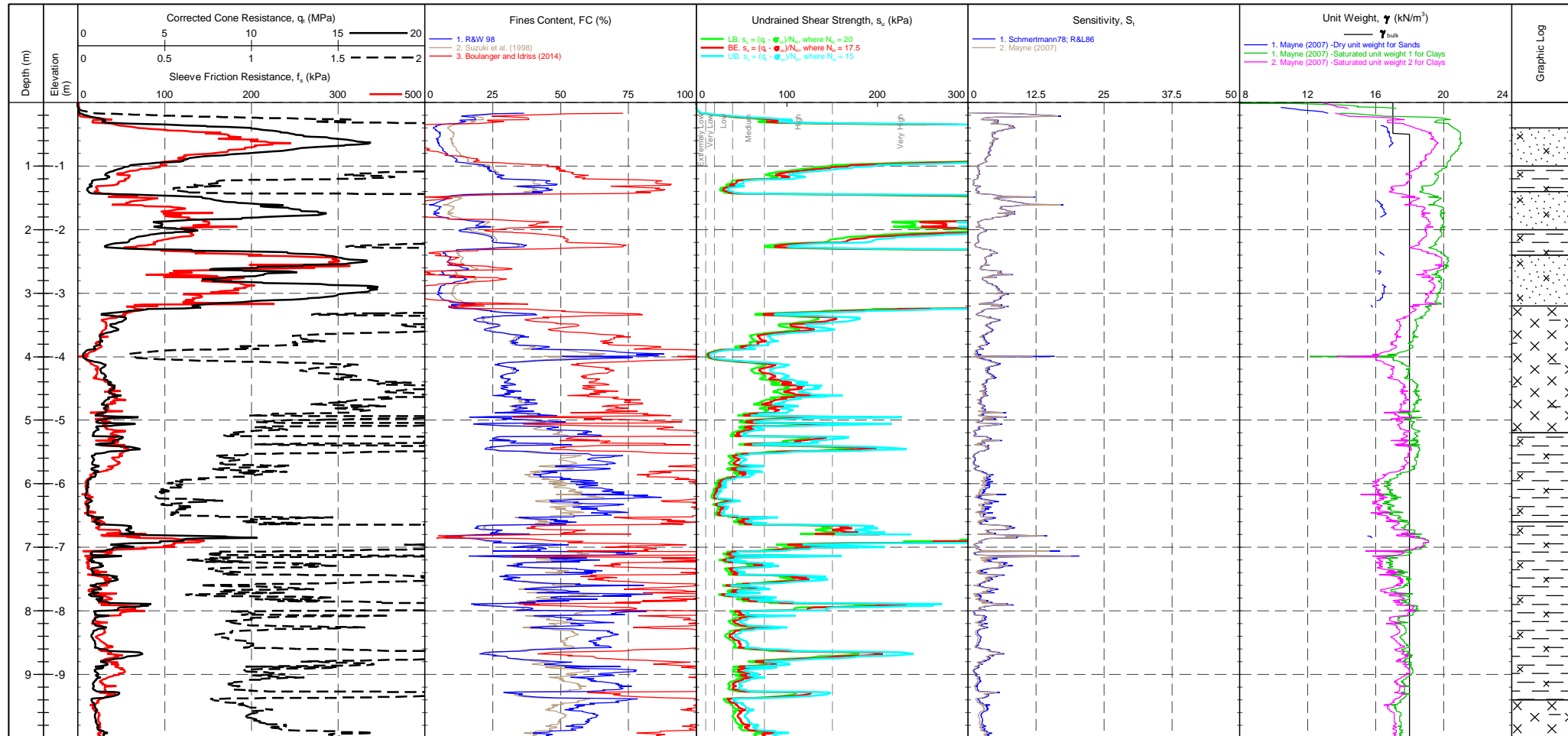
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference 243 mV 249 mV 0.066 MPa 303 mV 306 mV 0.002 kPa 150 mV 472 mV 0.076 kPa 2567 mV 2521 mV	GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12 Description SBT Index, I_c Description SPT N value, NSPT Description Relative Density D_r (%) Clays 2.95-3.60 Very Loose 0 - 4 Very Loose 0 - 15 Silt mixtures 2.60-2.95 Loose 4 - 10 Loose 15 - 35 Sand mixtures 2.05-2.60 Medium Dense 10 - 30 Medium Dense 35 - 65 Sands 1.31-2.05 Dense 30 - 50 Dense 65 - 85 Gravelly sand <1.31 Very Dense >50 Very Dense >85	Groundwater Level Dissipation Test
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PointID	CPT107A
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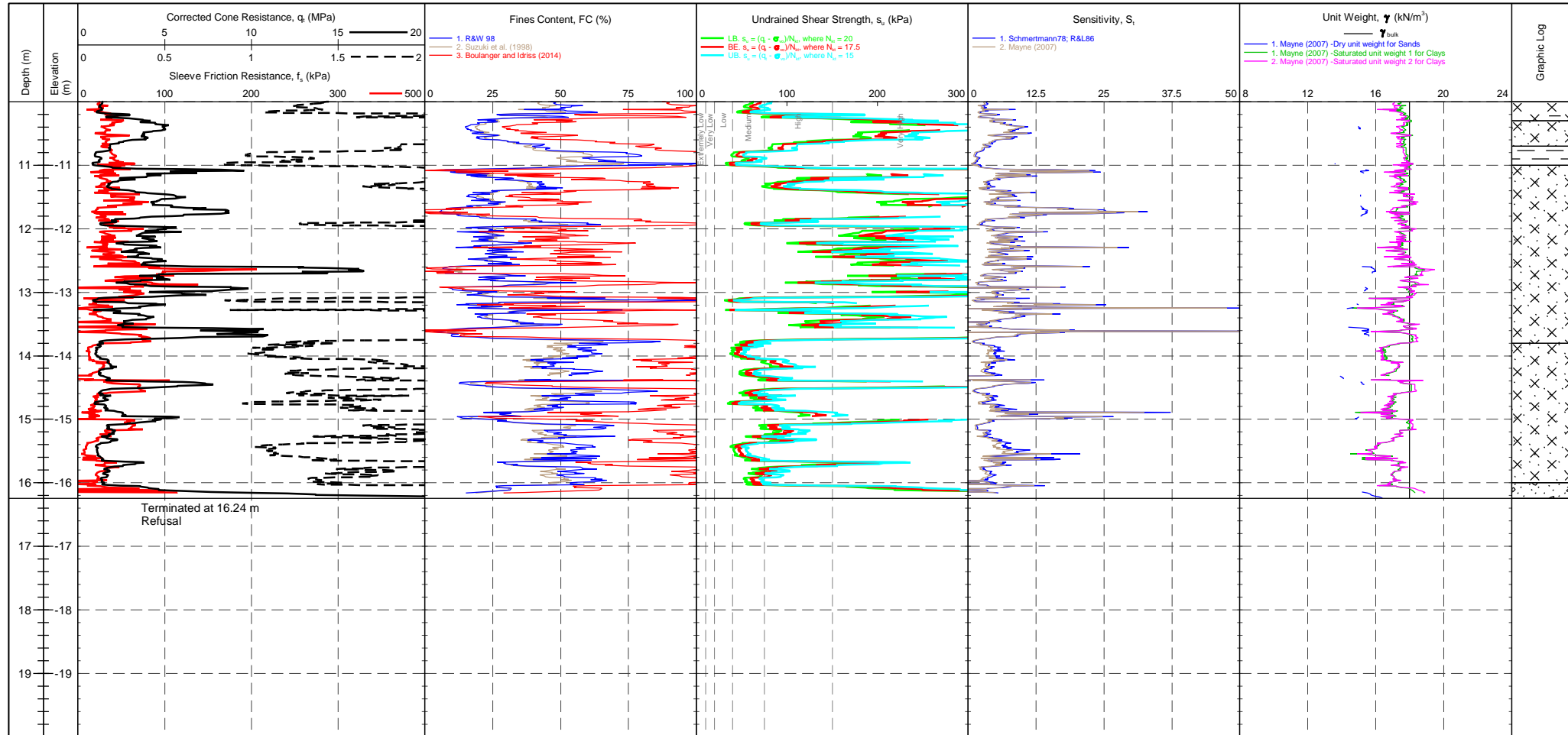
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip: 243 mV Sleeve: 303 mV Pore Pressure 2: 150 mV X-Y Inclinator: 2567 mV	CPTU ZERO VALUES Pre Post Difference Tip: 249 mV 0.066 MPa Sleeve: 306 mV 0.002 kPa Pore Pressure 2: 472 mV 0.076 kPa X-Y Inclinator: 2521 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement s_u (kPa) Term based on measurement s_u (kPa) Extremely low strength <10 Medium strength 40-75 Very low strength 10-20 High strength 75-150 Low strength 20-40 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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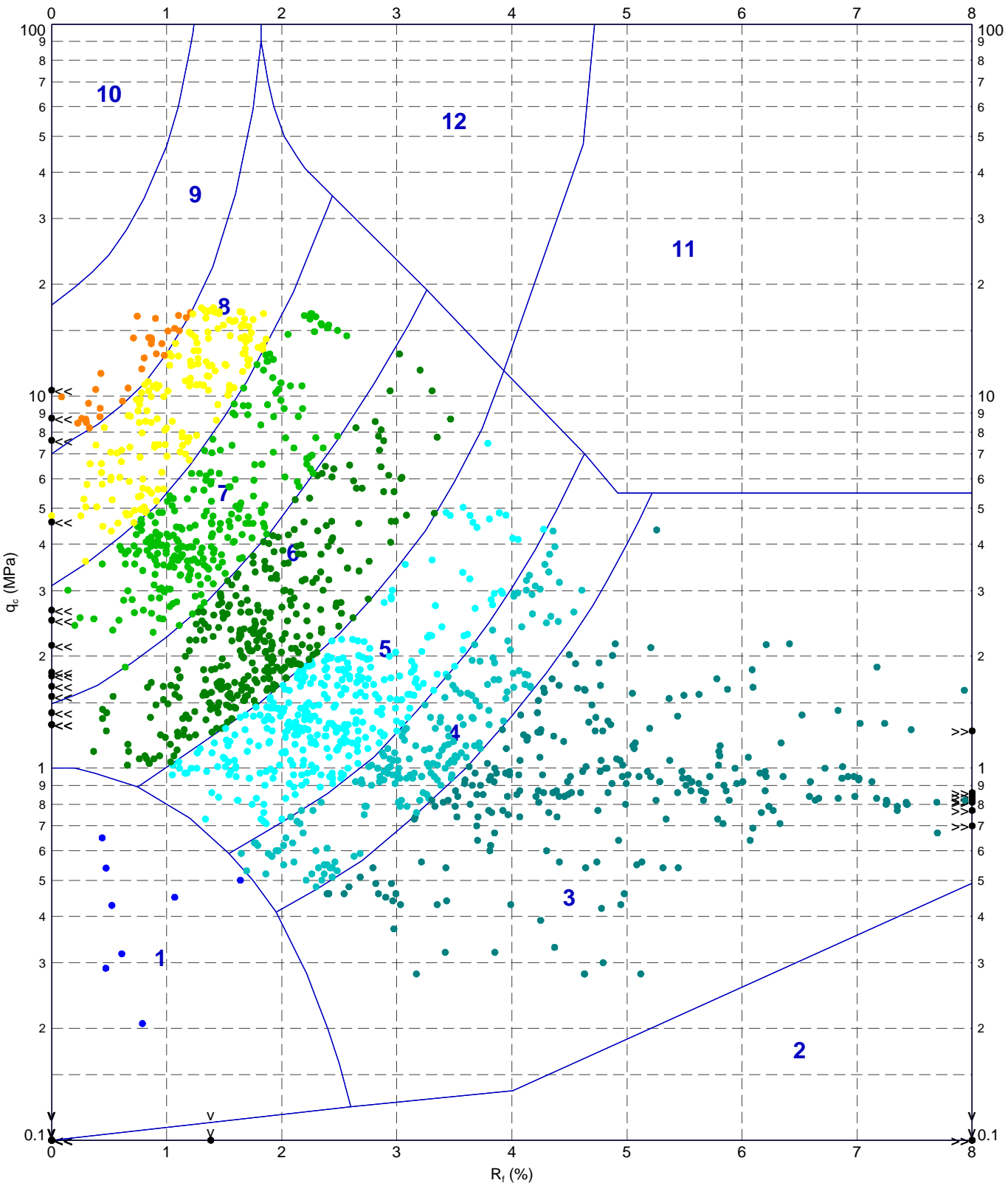
PointID	CPT107A
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference 243 mV 249 mV 0.066 MPa 303 mV 306 mV 0.002 kPa 150 mV 472 mV 0.076 kPa 2567 mV 2521 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement s_u (kPa) Extremely low strength <10 Very low strength 10-20 Low strength 20-40	Term based on measurement s_u (kPa) Medium strength 40-75 High strength 75-150 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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220689-ADVANCED REPORT INSTIUSI 2.02.1 LIB - CHLOE GLEB Graph CPT ROBERTSON ET AL. 86 QC VS. RF APF 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 13:51 10.03.00.09 Dargel Lab and In Situ Tool - DGD (Lib - In Situ SI 2.02.0 2017-07-10 Pdf - In Situ SI 2.02.0 2017-07-10



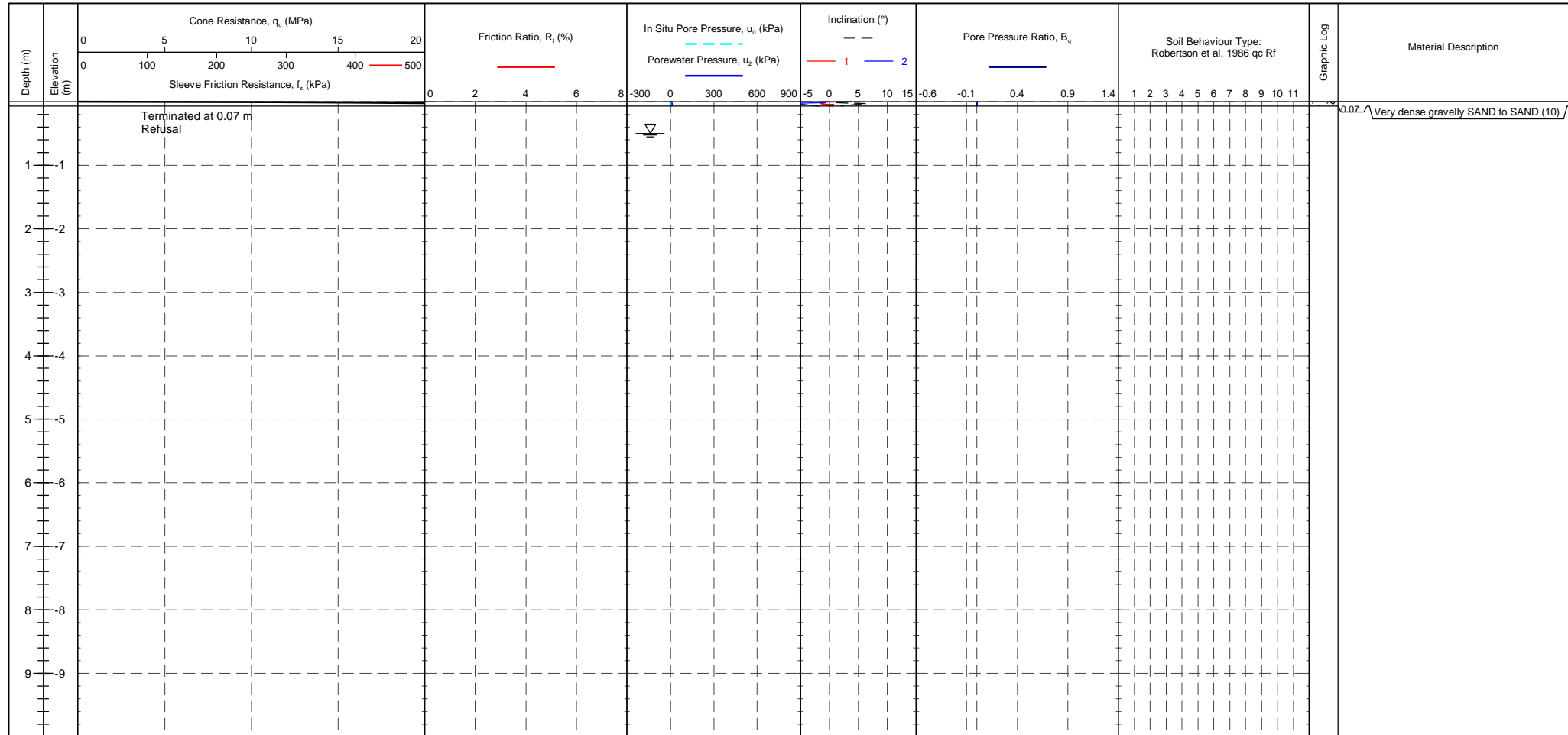
METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 4 - Silty CLAY to CLAY
- 7 - Silty SAND to sandy SILT
- 10 - Gravelly SAND to SAND
- 2 - Organic material
- 5 - Clayey SILT to silty CLAY
- 8 - SAND to silty SAND
- 11 - Very stiff fine grained
- 3 - CLAY
- 6 - Sandy SILT to clayey SILT
- 9 - SAND
- 12 - SAND to clayey SAND

	<p>TITLE</p> <p>TRC Tunbridge Wells Chapman Way Robertson et al. 1986 qc vs. Rf - CPT107A</p>	DRAWN	DATE 11/09/2023	
		CHECKED	DATE 11/09/2023	
		SCALE	Not To Scale	A4
		PROJECT No 1230378	FIGURE No	

PointID
CPT108

CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES Transducer Tip: Pre 242 mV, Post 243 mV, Difference 0.011 MPa Sleeve: Pre 302 mV, Post 302 mV, Difference 0 kPa Pore Pressure 2: Pre 152 mV, Post 151 mV, Difference 0 kPa X-Y Inclinometer: Pre 2511 mV, Post 2528 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID

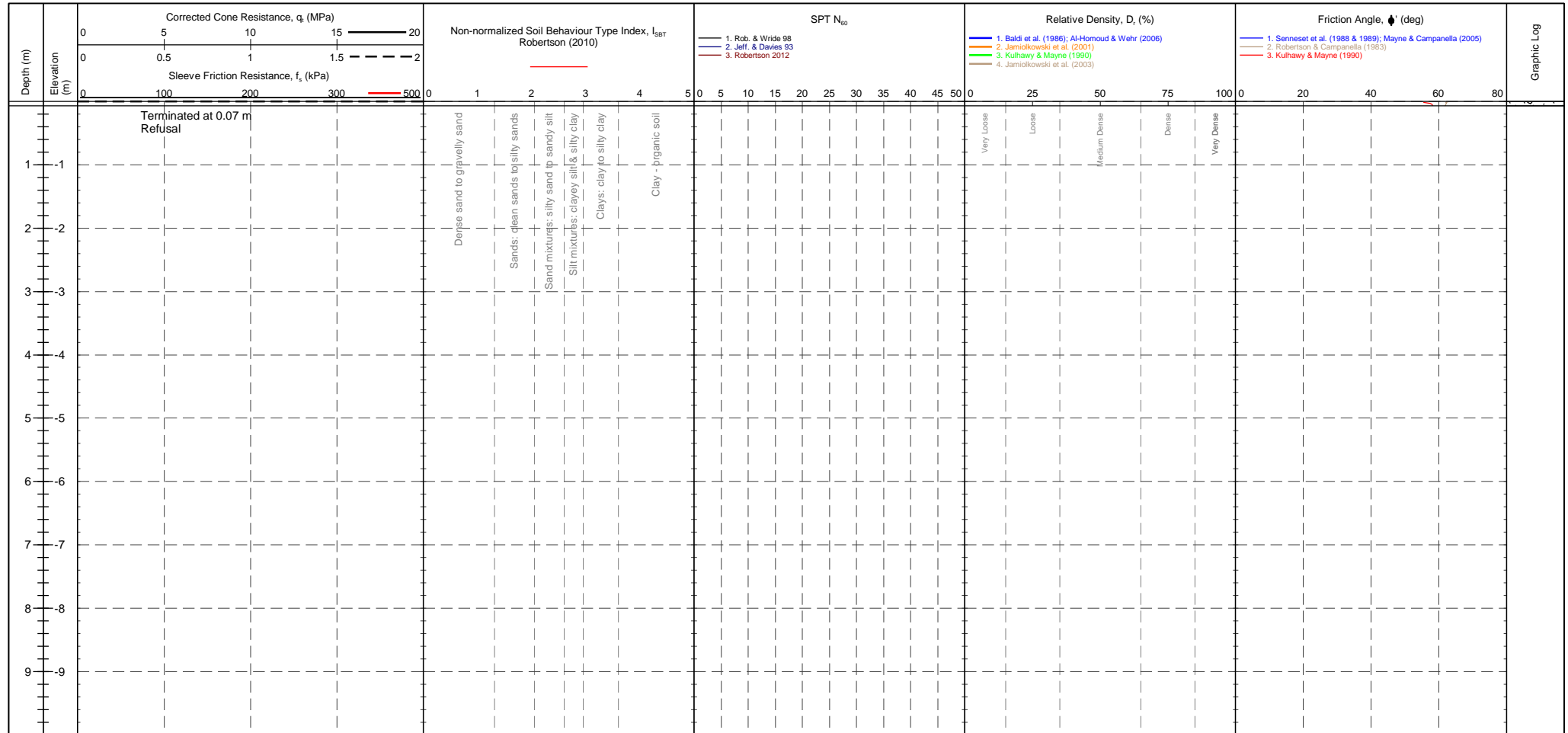
CPT108

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



Graphic Log

CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICION REDUCER : None
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	242 mV	243 mV	0.011 MPa
Sleeve	302 mV	302 mV	0 kPa
Pore Pressure 2	152 mV	151 mV	0 kPa
X-Y inclinometer	2511 mV	2528 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12			
Description	SBT Index, I_c	Description	SPT N value, NSPT
Clays	2.95-3.60	Very Loose	0 - 4
Silt mixtures	2.60-2.95	Loose	4 - 10
Sand mixtures	2.05-2.60	Medium Dense	10 - 30
Sands	1.31-2.05	Dense	30 - 50
Gravelly sand	<1.31	Very Dense	>50

Groundwater Level
Dissipation Test

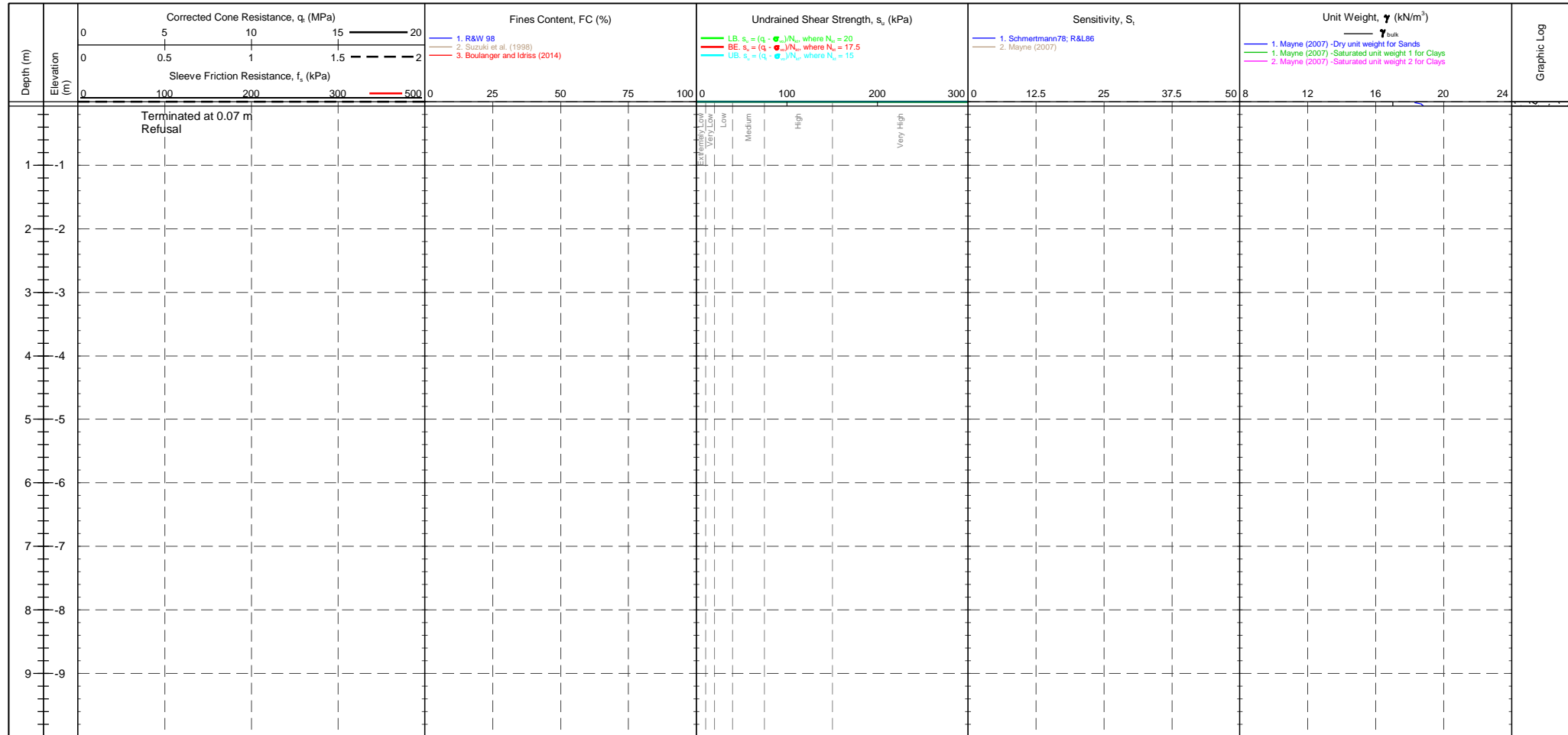


NOITAEITSEVNI SITE INVESTIGATION Working with:



PointID
CPT108

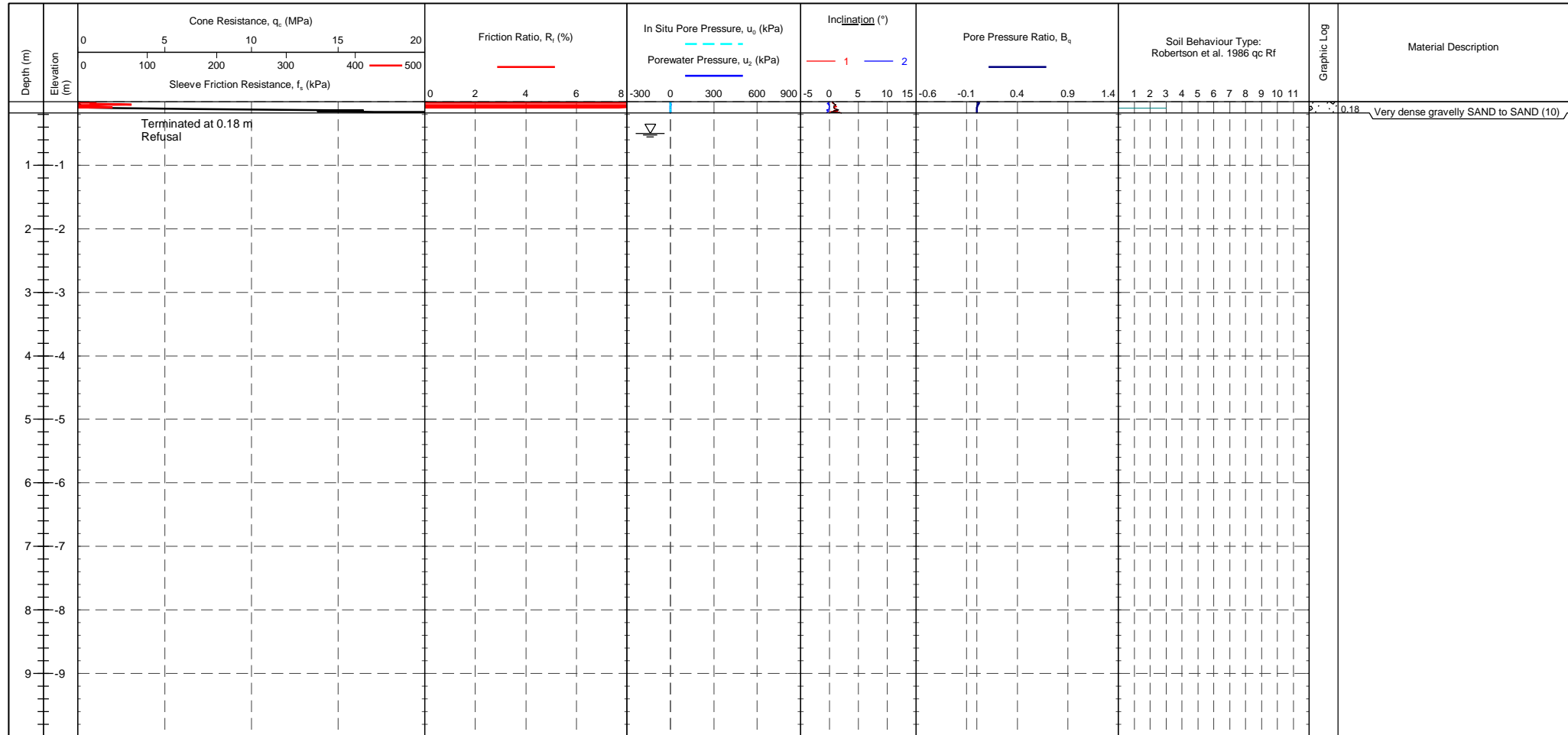
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
--	---	---	--



CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip 242 mV 243 mV 0.011 MPa Sleeve 302 mV 302 mV 0 kPa Pore Pressure 2 152 mV 151 mV 0 kPa X-Y Inclinator 2511 mV 2528 mV	CPTU ZERO VALUES Pre Post Difference Tip 242 mV 243 mV 0.011 MPa Sleeve 302 mV 302 mV 0 kPa Pore Pressure 2 152 mV 151 mV 0 kPa X-Y Inclinator 2511 mV 2528 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement su (kPa) Extremely low strength <10 Very low strength 10-20 Low strength 20-40	Term based on measurement su (kPa) Medium strength 40-75 High strength 75-150 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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PointID	CPT108A
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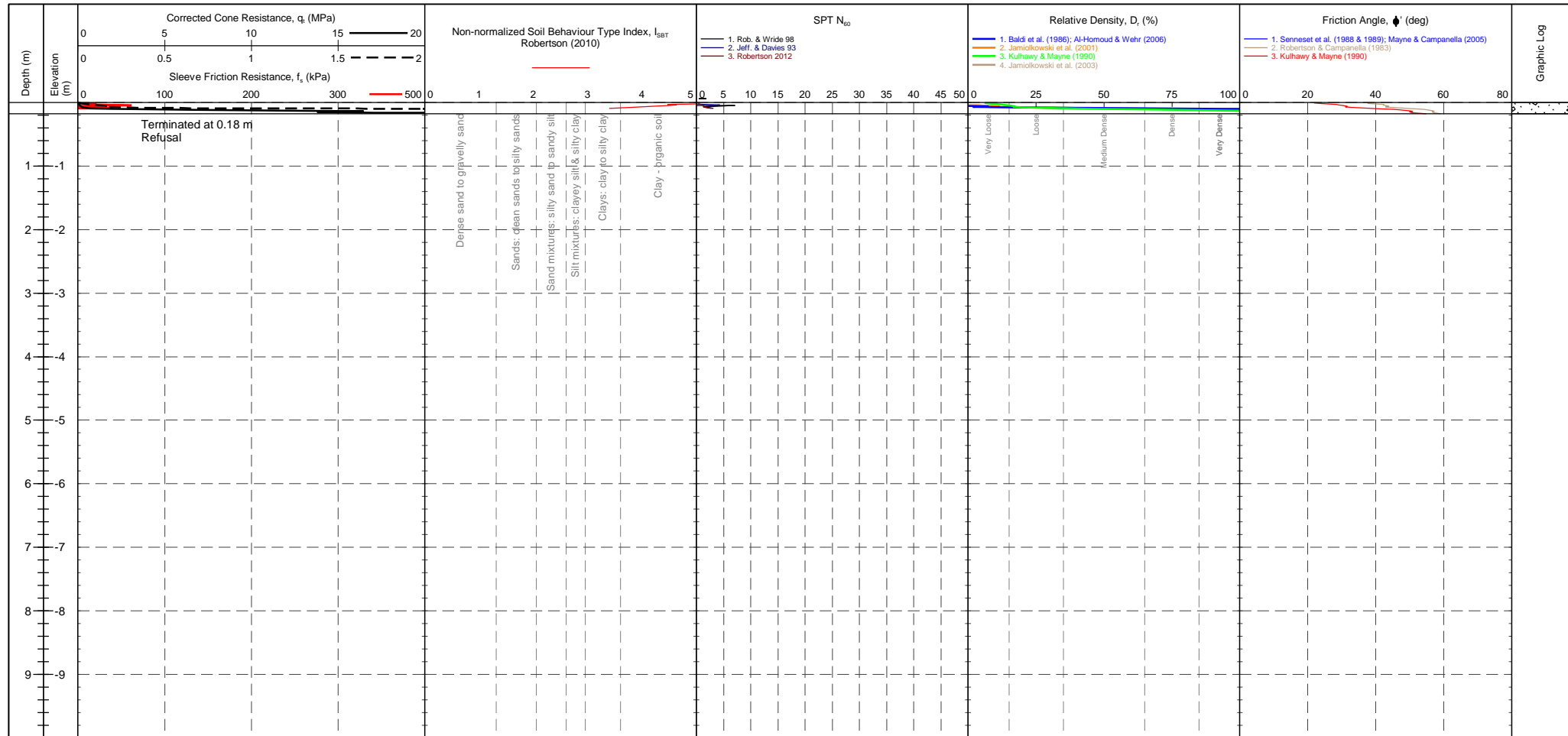
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES Transducer Pre Post Difference Tip 242 mV 244 mV 0.022 MPa Sleeve 302 mV 302 mV 0 kPa Pore Pressure 2 150 mV 149 mV 0 kPa X-Y Inclinator 2568 mV 2579 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID	CPT108A
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark : Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	CPTU ZERO VALUES Transducer Pre Post Difference Tip 242 mV 244 mV 0.022 MPa Sleeve 302 mV 302 mV 0 kPa Pore Pressure 2 150 mV 149 mV 0 kPa X-Y Inclinator 2568 mV 2579 mV	GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12 <table border="1"> <thead> <tr> <th>Description</th> <th>SBT Index, I_c</th> <th>Description</th> <th>SPT N value, NSPT</th> <th>Description</th> <th>Relative Density Dr (%)</th> </tr> </thead> <tbody> <tr> <td>Clays</td> <td>2.95-3.60</td> <td>Very Loose</td> <td>0 - 4</td> <td>Very Loose</td> <td>0 - 15</td> </tr> <tr> <td>Silt mixtures</td> <td>2.60-2.95</td> <td>Loose</td> <td>4 - 10</td> <td>Loose</td> <td>15 - 35</td> </tr> <tr> <td>Sand mixtures</td> <td>2.05-2.60</td> <td>Medium Dense</td> <td>10 - 30</td> <td>Medium Dense</td> <td>35 - 65</td> </tr> <tr> <td>Sands</td> <td>1.31-2.05</td> <td>Dense</td> <td>30 - 50</td> <td>Dense</td> <td>65 - 85</td> </tr> <tr> <td>Gravelly sand</td> <td><1.31</td> <td>Very Dense</td> <td>>50</td> <td>Very Dense</td> <td>>85</td> </tr> </tbody> </table>	Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density Dr (%)	Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15	Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35	Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65	Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85	Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85	Groundwater Level Dissipation Test
Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density Dr (%)																																			
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15																																			
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Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85																																			
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85																																			

PointID

CPT108A

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

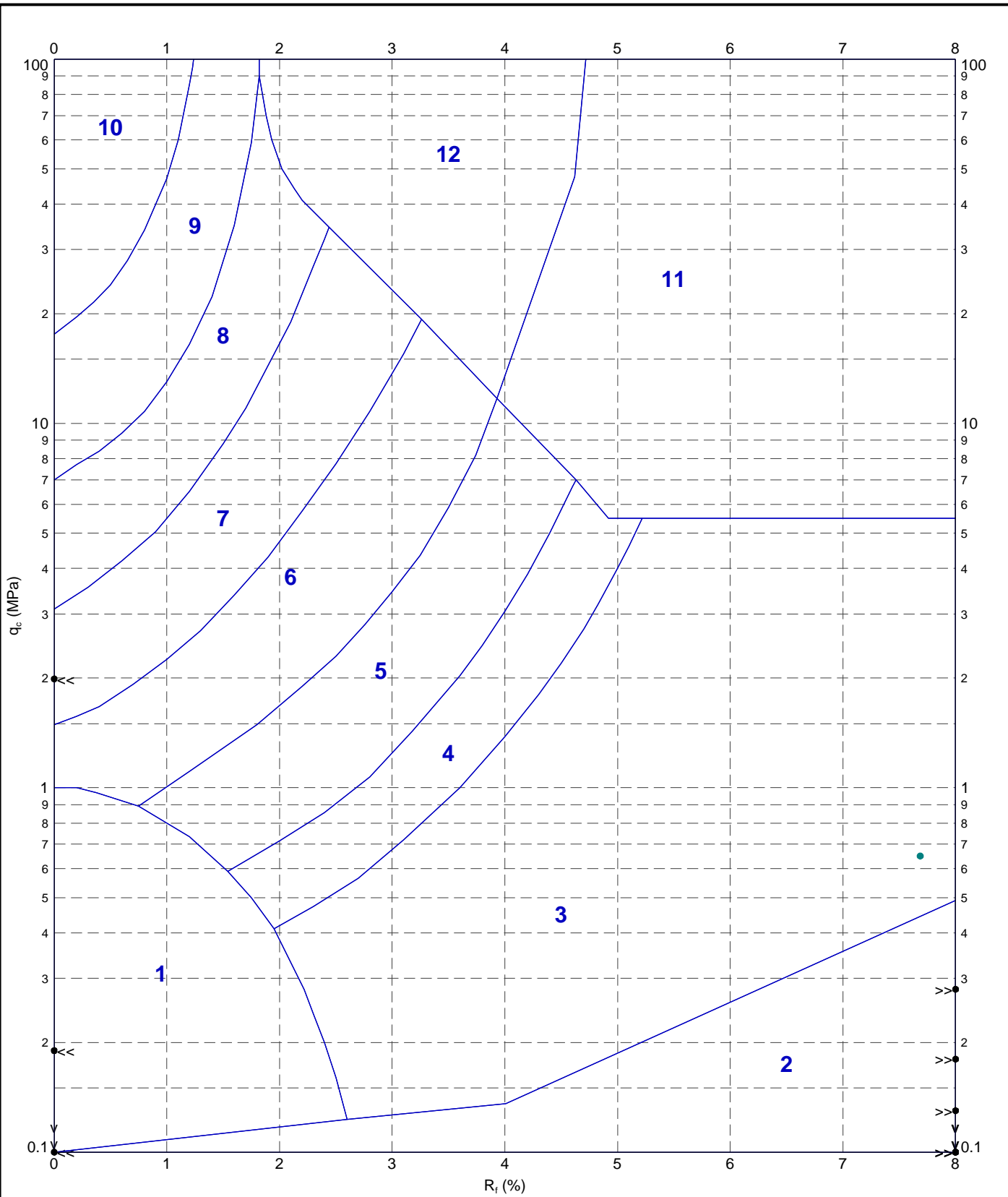
Transducer
 Tip 242 mV 244 mV 0.022 MPa
 Sleeve 302 mV 302 mV 0 kPa
 Pore Pressure 2 150 mV 149 mV 0 kPa
 X-Y Inclinator 2568 mV 2579 mV

CPTU ZERO VALUES

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11			
Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level
 Dissipation Test

220689-ADVANCED REPORT INSTIUSI 2.02.1 LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 13:53 10.03.00.09 Dargel Lab and In Situ Tool - DGD (Lib - In Situ SI 2.02.0 2017-07-10 Pdf - In Situ SI 2.02.0 2017-07-10



METHOD: Robertson et al. 1986 qc Rf

- | | | | |
|---|--|---|--|
| ■ 1 - Sensitive fine grained material | ■ 4 - Silty CLAY to CLAY | ■ 7 - Silty SAND to sandy SILT | ■ 10 - Gravelly SAND to SAND |
| ■ 2 - Organic material | ■ 5 - Clayey SILT to silty CLAY | ■ 8 - SAND to silty SAND | ■ 11 - Very stiff fine grained |
| ■ 3 - CLAY | ■ 6 - Sandy SILT to clayey SILT | ■ 9 - SAND | ■ 12 - SAND to clayey SAND |

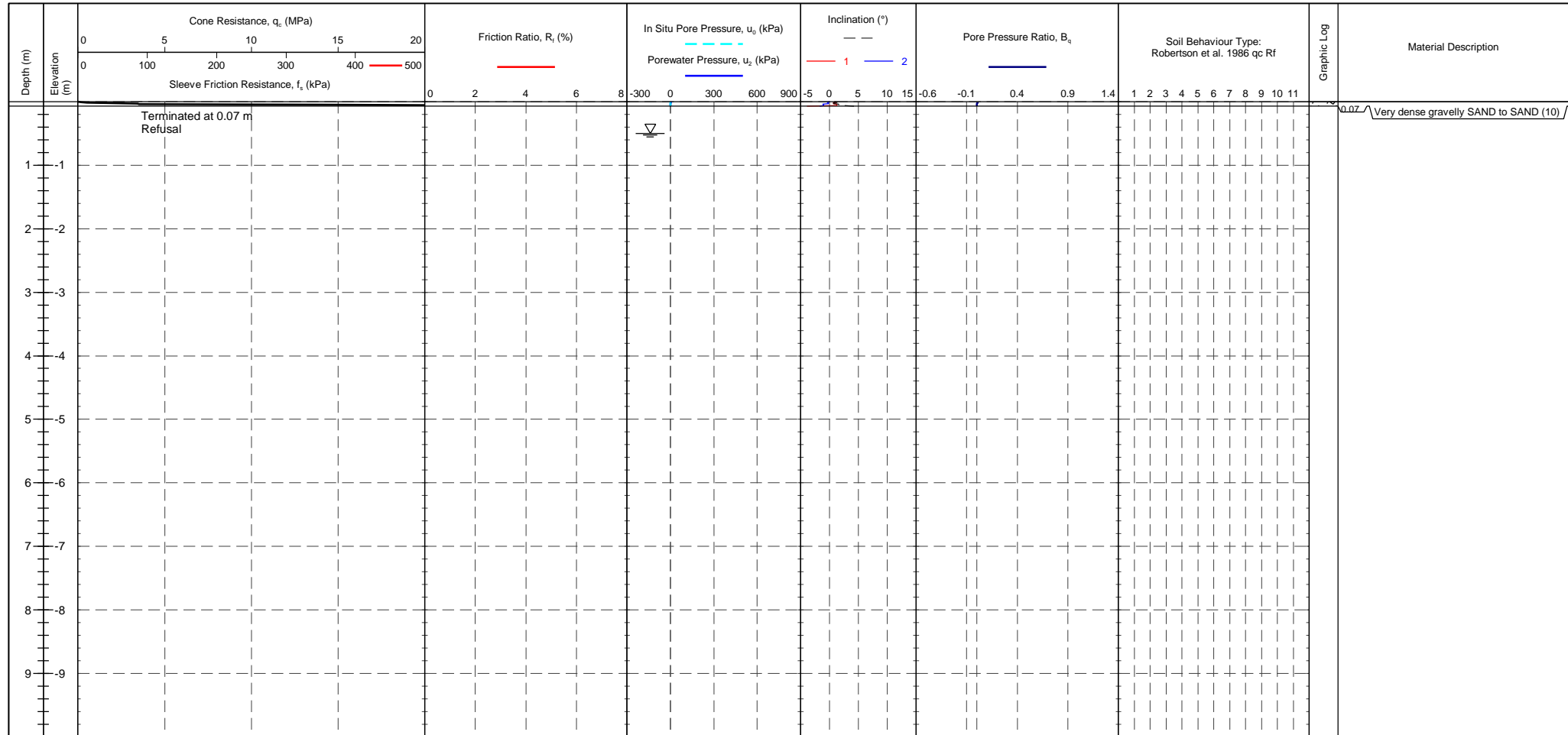


TITLE
TRC
 Tunbridge Wells
 Chapman Way
 Robertson et al. 1986 qc vs. Rf - CPT108A

DRAWN	DATE	11/09/2023
CHECKED	DATE	11/09/2023
SCALE	Not To Scale	
PROJECT No	1230378	
FIGURE No	A4	

PointID	CPT108B
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES Transducer Tip: Pre 243 mV, Post 242 mV, Difference -0.011 MPa Sleeve: Pre 301 mV, Post 304 mV, Difference 0.002 kPa Pore Pressure 2: Pre 149 mV, Post 149 mV, Difference 0 kPa X-Y Inclinometer: Pre 2618 mV, Post 2573 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID

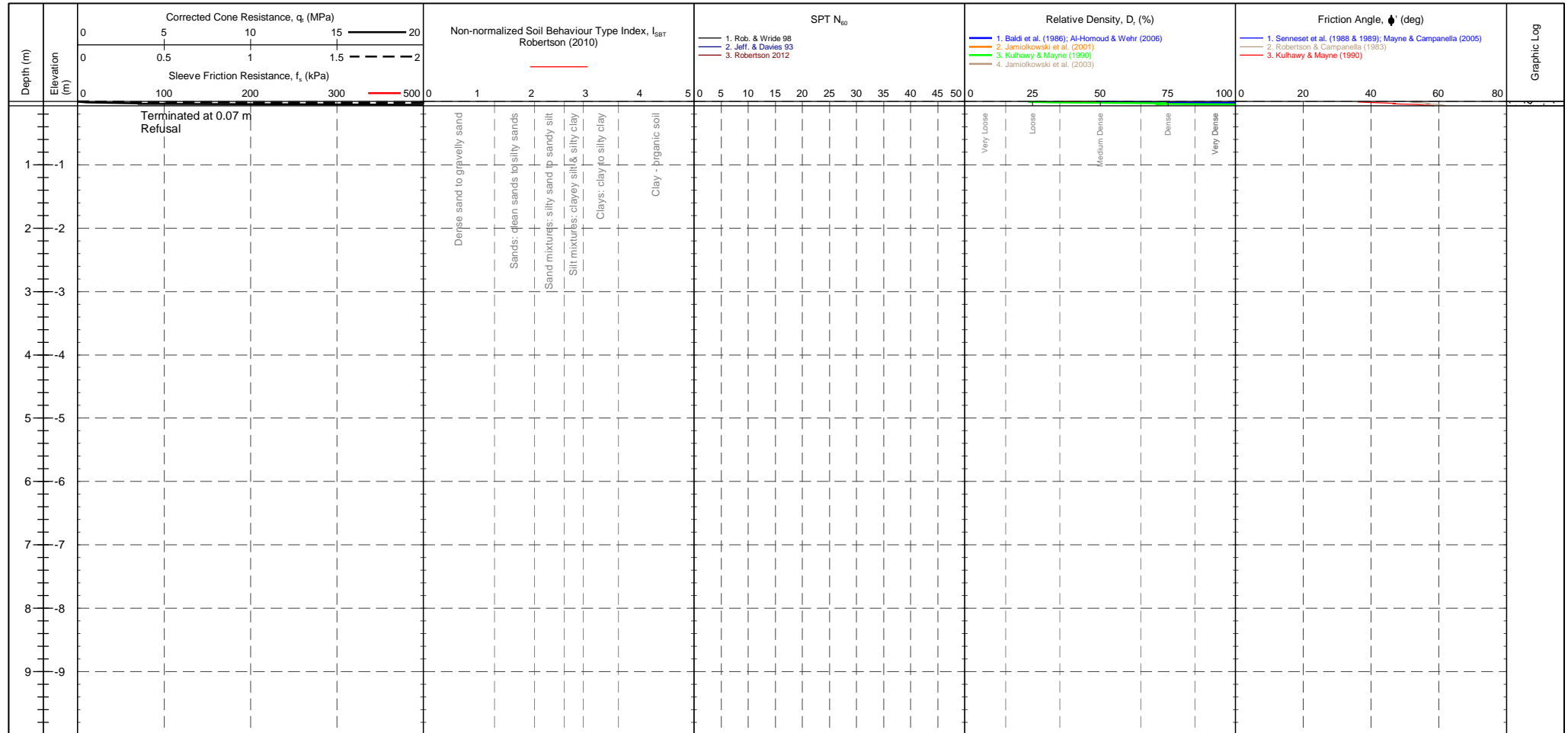
CPT108B

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICION REDUCER : None
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	243 mV	242 mV	-0.011 MPa
Sleeve	301 mV	304 mV	0.002 kPa
Pore Pressure 2	149 mV	149 mV	0 kPa
X-Y Inclinator	2618 mV	2573 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12			
Description	SBT Index, I_c	Description	SPT N value, NSPT
Clays	2.95-3.60	Very Loose	0 - 4
Silt mixtures	2.60-2.95	Loose	4 - 10
Sand mixtures	2.05-2.60	Medium Dense	10 - 30
Sands	1.31-2.05	Dense	30 - 50
Gravelly sand	<1.31	Very Dense	>50

Description	Relative Density D_r (%)
Very Loose	0 - 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	>85

Groundwater Level
 Dissipation Test

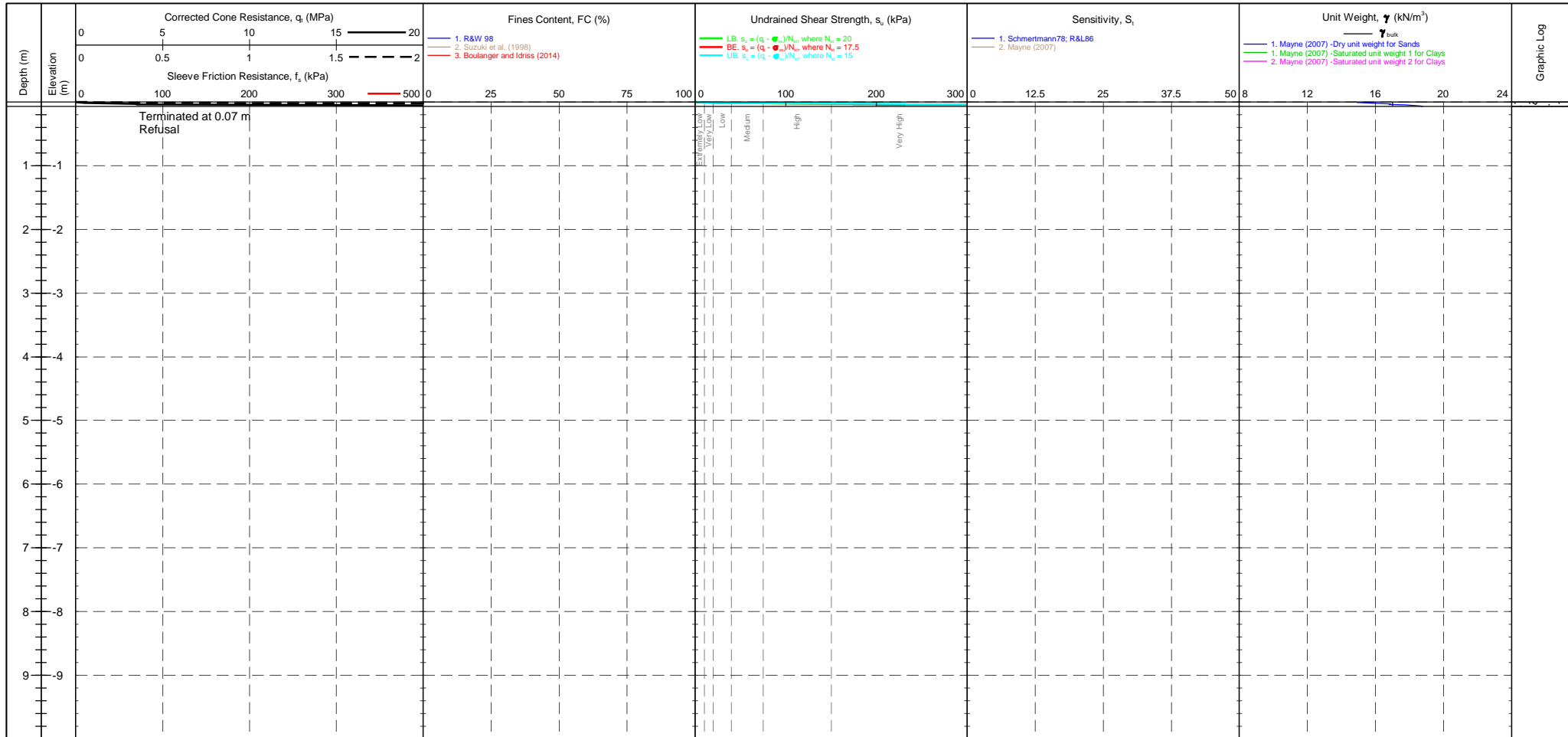


NOITAEITSEVNI SITE INVESTIGATION Working with:



PointID
CPT108B

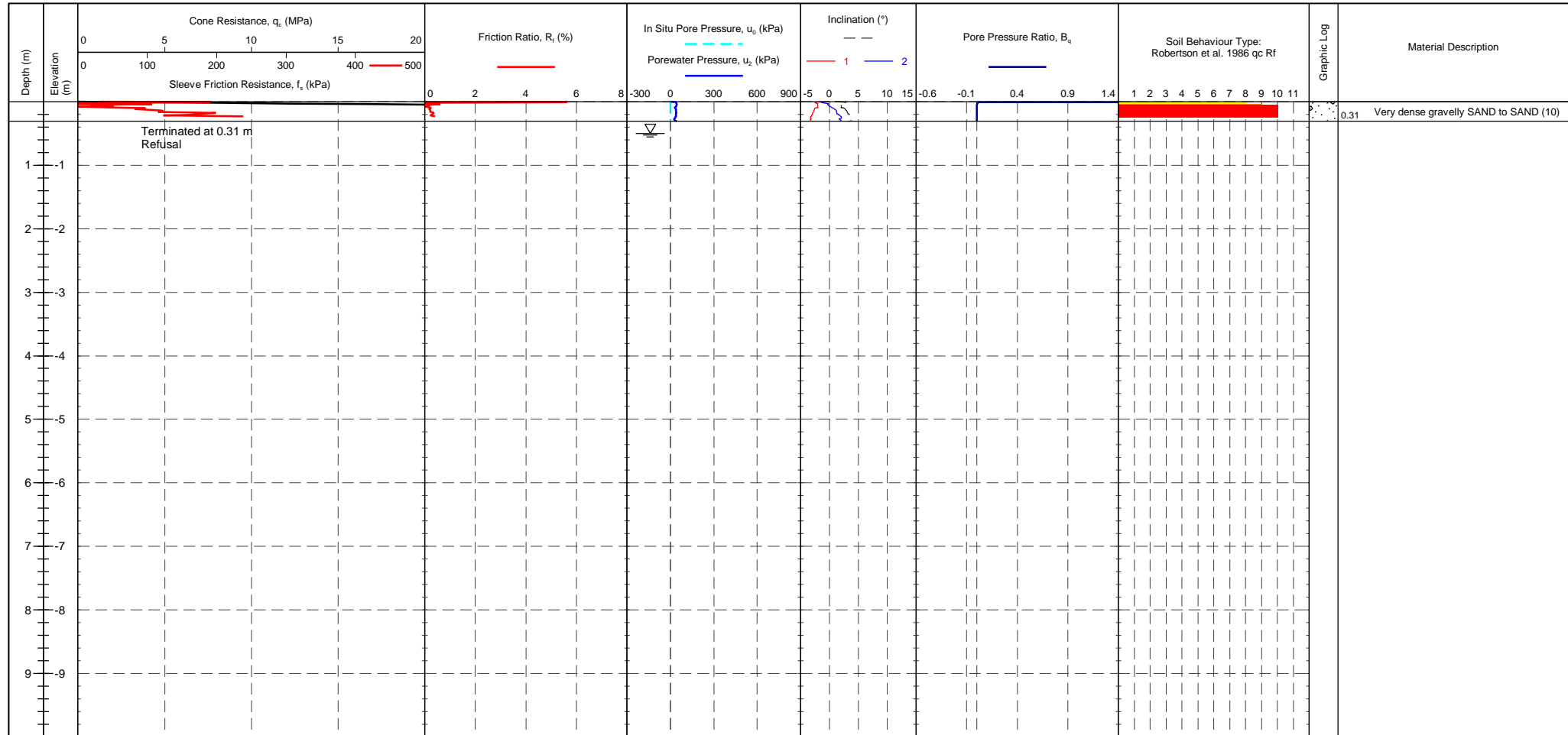
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip: 243 mV Sleeve: 301 mV Pore Pressure 2: 149 mV X-Y Inclinator: 2618 mV	CPTU ZERO VALUES Pre: 242 mV Post: 304 mV Difference: -0.011 MPa 0.002 kPa 149 mV 2573 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement s_u (kPa) Extremely low strength <10 Very low strength 10-20 Low strength 20-40	Term based on measurement s_u (kPa) Medium strength 40-75 High strength 75-150 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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PointID	CPT109
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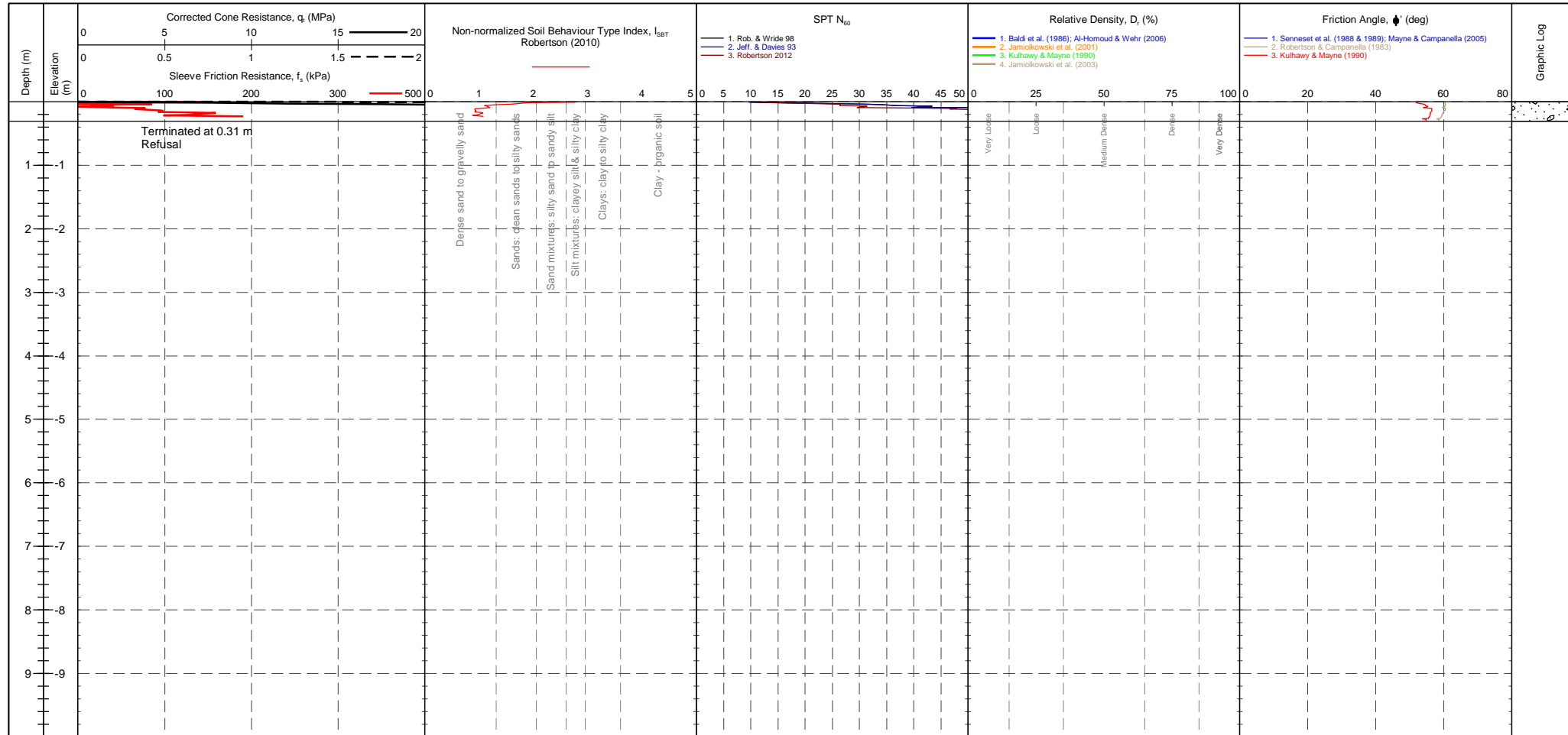
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark : Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES Transducer Pre Post Difference Tip 241 mV 244 mV 0.033 MPa Sleeve 300 mV 301 mV 0.001 kPa Pore Pressure 2 168 mV 144 mV -0.006 kPa X-Y Inclinometer 2523 mV 2440 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID	CPT109
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark : Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	CPTU ZERO VALUES Transducer Pre Post Difference Tip 241 mV 244 mV 0.033 MPa Sleeve 300 mV 301 mV 0.001 kPa Pore Pressure 2 168 mV 144 mV -0.006 kPa X-Y Inclinator 2523 mV 2440 mV	GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12 <table border="1"> <thead> <tr> <th>Description</th> <th>SBT Index, I_c</th> <th>Description</th> <th>SPT N value, NSPT</th> <th>Description</th> <th>Relative Density D_r (%)</th> </tr> </thead> <tbody> <tr> <td>Clays</td> <td>2.95-3.60</td> <td>Very Loose</td> <td>0 - 4</td> <td>Very Loose</td> <td>0 - 15</td> </tr> <tr> <td>Silt mixtures</td> <td>2.60-2.95</td> <td>Loose</td> <td>4 - 10</td> <td>Loose</td> <td>15 - 35</td> </tr> <tr> <td>Sand mixtures</td> <td>2.05-2.60</td> <td>Medium Dense</td> <td>10 - 30</td> <td>Medium Dense</td> <td>35 - 65</td> </tr> <tr> <td>Sands</td> <td>1.31-2.05</td> <td>Dense</td> <td>30 - 50</td> <td>Dense</td> <td>65 - 85</td> </tr> <tr> <td>Gravelly sand</td> <td><1.31</td> <td>Very Dense</td> <td>>50</td> <td>Very Dense</td> <td>>85</td> </tr> </tbody> </table>	Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density D _r (%)	Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15	Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35	Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65	Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85	Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85	Groundwater Level Dissipation Test
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NOITAEITSEVNI SITE INVESTIGATION Working with:



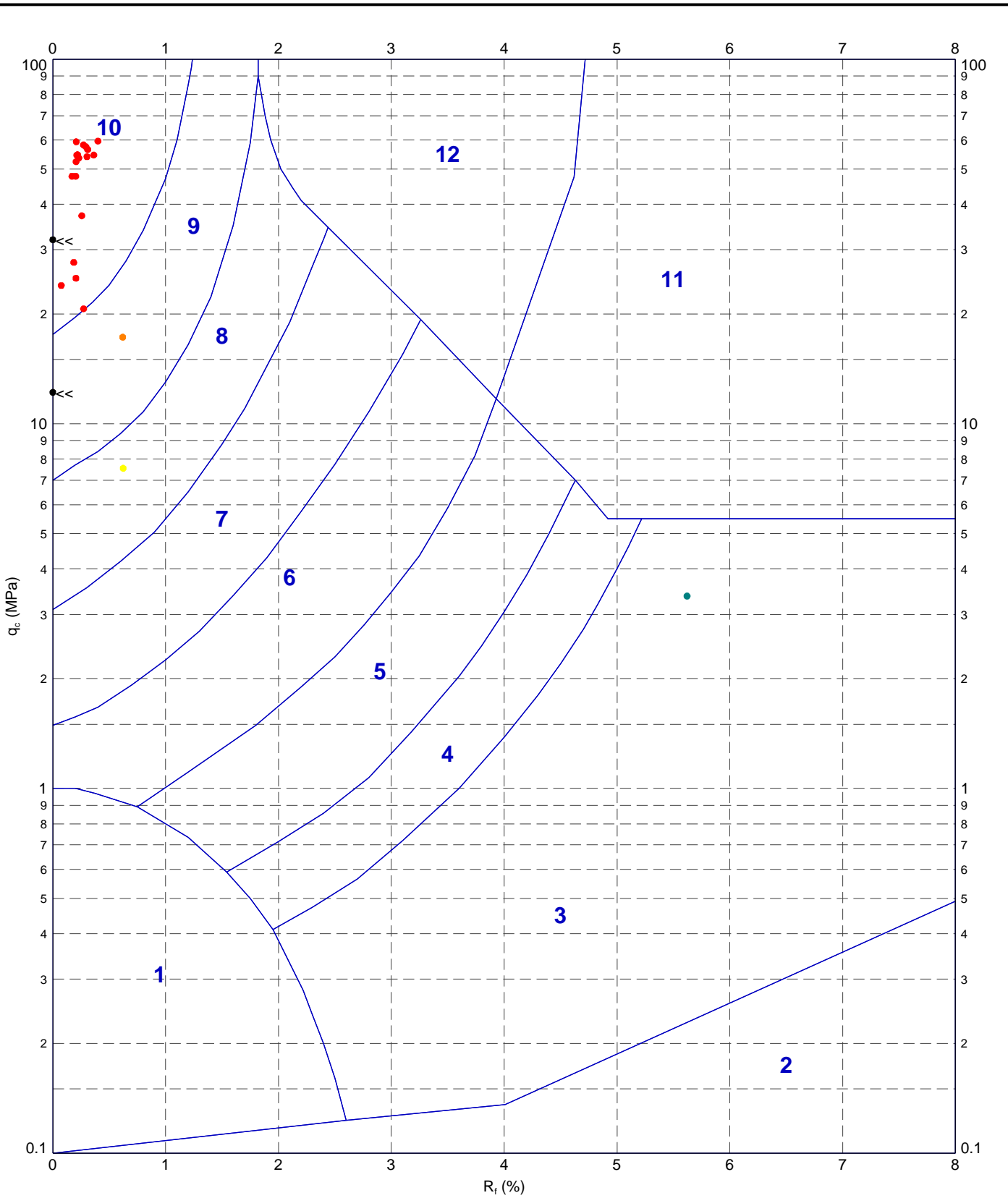
PointID
CPT109

CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot	Transducer Pre Post Difference Tip 241 mV 244 mV 0.033 MPa Sleeve 300 mV 301 mV 0.001 kPa Pore Pressure 2 168 mV 144 mV -0.006 kPa X-Y Inclinator 2523 mV 2440 mV	CPTU ZERO VALUES COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 <table border="1"> <tr> <td>Term based on measurement</td> <td>su (kPa)</td> <td>Term based on measurement</td> <td>su (kPa)</td> </tr> <tr> <td>Extremely low strength</td> <td><10</td> <td>Medium strength</td> <td>40-75</td> </tr> <tr> <td>Very low strength</td> <td>10-20</td> <td>High strength</td> <td>75-150</td> </tr> <tr> <td>Low strength</td> <td>20-40</td> <td>Very high strength</td> <td>150-300</td> </tr> <tr> <td></td> <td></td> <td>Extremely high strength</td> <td>>300</td> </tr> </table>	Term based on measurement	su (kPa)	Term based on measurement	su (kPa)	Extremely low strength	<10	Medium strength	40-75	Very low strength	10-20	High strength	75-150	Low strength	20-40	Very high strength	150-300			Extremely high strength	>300	Groundwater Level Dissipation Test
Term based on measurement	su (kPa)	Term based on measurement	su (kPa)																					
Extremely low strength	<10	Medium strength	40-75																					
Very low strength	10-20	High strength	75-150																					
Low strength	20-40	Very high strength	150-300																					
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220689-ADVANCED REPORT INSTUSI 2.02.1 LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF APF 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 13:54 10.03.00.09 Dargel Lab and In Situ Tool - DGD (Lib - In Situ SI 2.02.0 2017-07-10 Pdf - In Situ SI 2.02.0 2017-07-10



METHOD: Robertson et al. 1986 q_c R_f

- | | | | |
|---|--|---|--|
| ■ 1 - Sensitive fine grained material | ■ 4 - Silty CLAY to CLAY | ■ 7 - Silty SAND to sandy SILT | ■ 10 - Gravelly SAND to SAND |
| ■ 2 - Organic material | ■ 5 - Clayey SILT to silty CLAY | ■ 8 - SAND to silty SAND | ■ 11 - Very stiff fine grained |
| ■ 3 - CLAY | ■ 6 - Sandy SILT to clayey SILT | ■ 9 - SAND | ■ 12 - SAND to clayey SAND |



TITLE

TRC
Tunbridge Wells
Chapman Way
Robertson et al. 1986 q_c vs. R_f - CPT109

DRAWN

DATE

11/09/2023

CHECKED

DATE

11/09/2023

SCALE

Not To Scale

A4

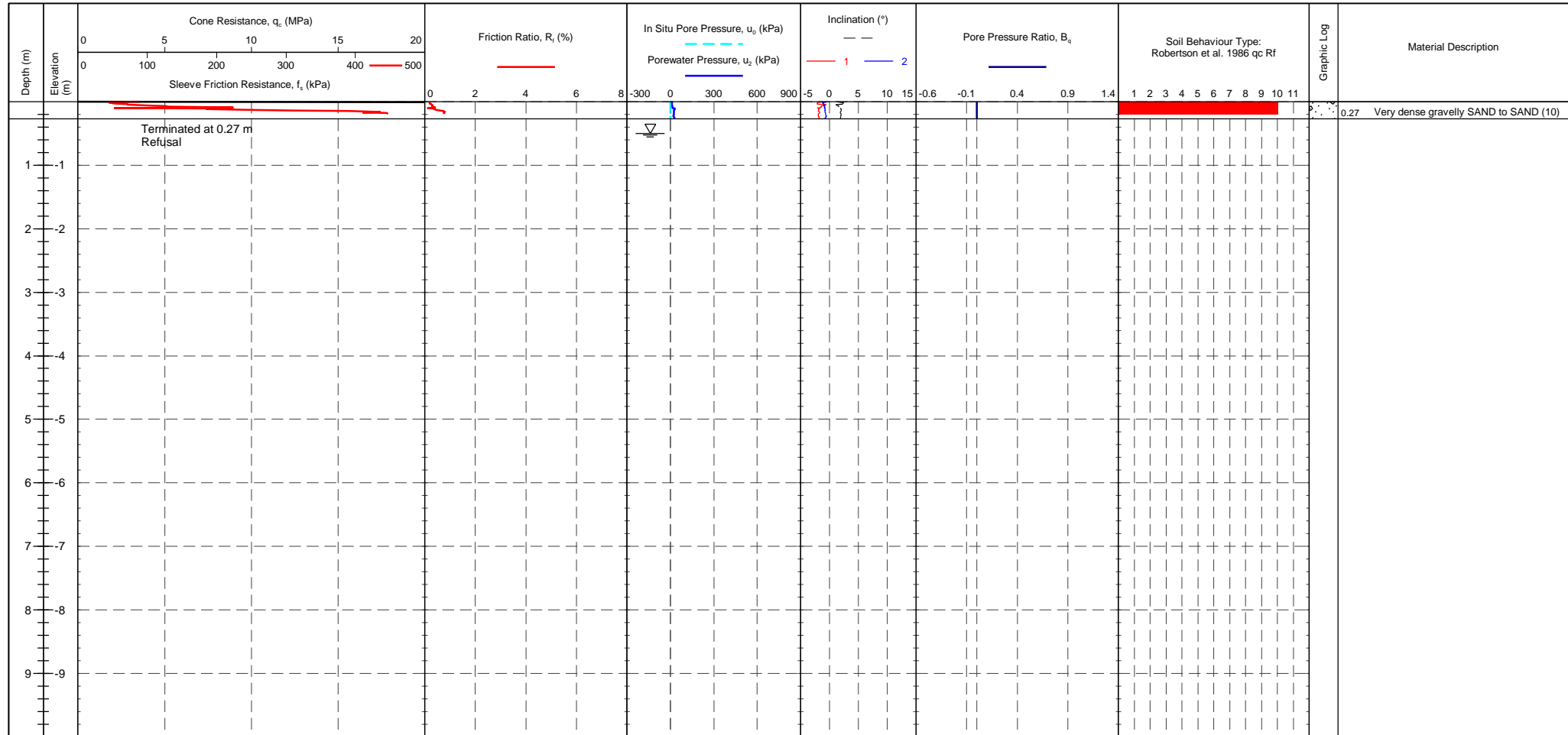
PROJECT No

1230378

FIGURE No

PointID	CPT109A
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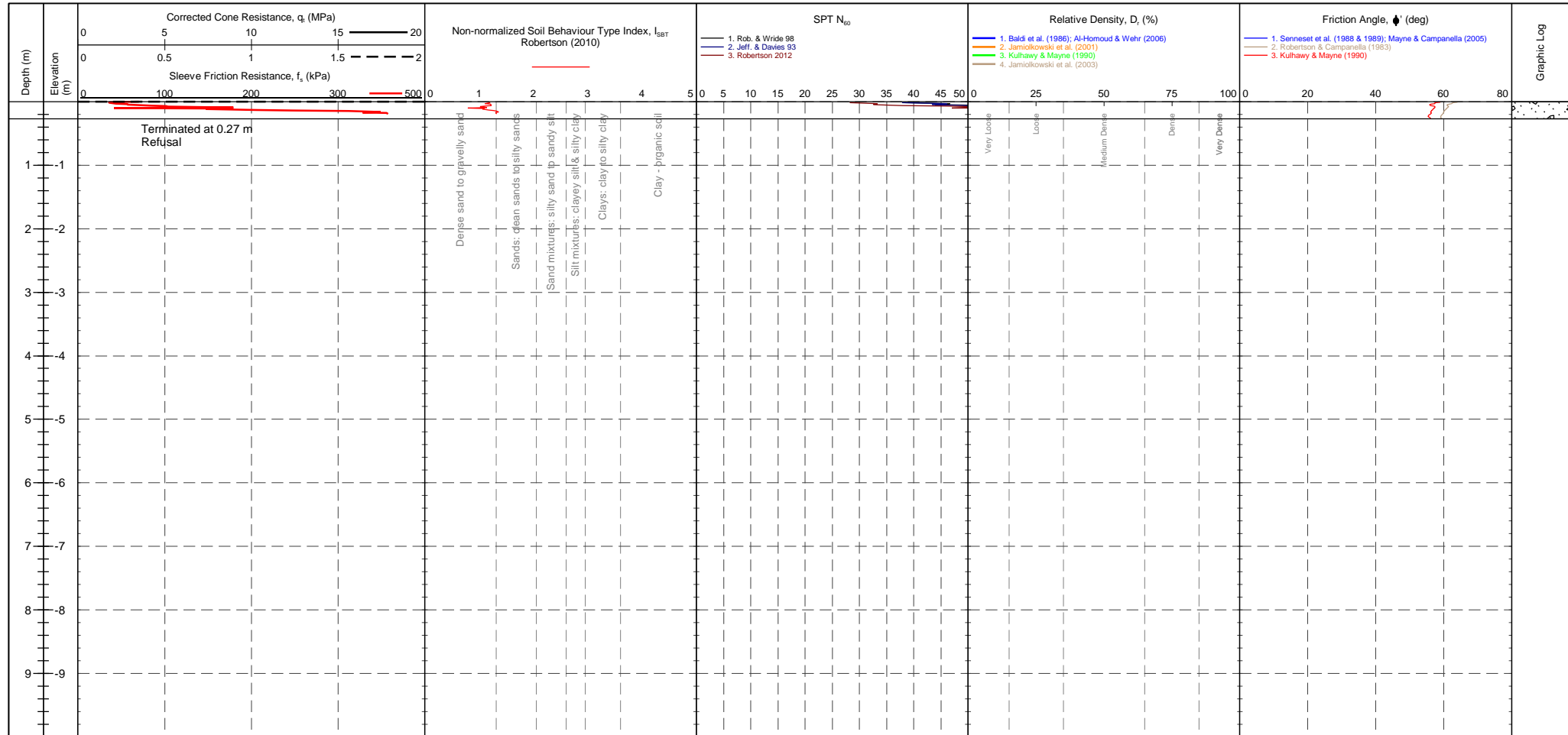
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark : Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes.	CPTU ZERO VALUES Transducer Tip : Pre 242 mV, Post 248 mV, Difference 0.066 MPa Sleeve : Pre 301 mV, Post 304 mV, Difference 0.002 kPa Pore Pressure 2 : Pre 143 mV, Post 126 mV, Difference -0.004 kPa X-Y Inclinometer : Pre 2398 mV, Post 2390 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID	CPT109A
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark : Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	CPTU ZERO VALUES Transducer Pre Post Difference Tip 242 mV 248 mV 0.066 MPa Sleeve 301 mV 304 mV 0.002 kPa Pore Pressure 2 143 mV 126 mV -0.004 kPa X-Y Inclinator 2398 mV 2390 mV	GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12 <table border="1"> <thead> <tr> <th>Description</th> <th>SBT Index, I_c</th> <th>Description</th> <th>SPT N value, NSPT</th> <th>Description</th> <th>Relative Density Dr (%)</th> </tr> </thead> <tbody> <tr> <td>Clays</td> <td>2.95-3.60</td> <td>Very Loose</td> <td>0 - 4</td> <td>Very Loose</td> <td>0 - 15</td> </tr> <tr> <td>Silt mixtures</td> <td>2.60-2.95</td> <td>Loose</td> <td>4 - 10</td> <td>Loose</td> <td>15 - 35</td> </tr> <tr> <td>Sand mixtures</td> <td>2.05-2.60</td> <td>Medium Dense</td> <td>10 - 30</td> <td>Medium Dense</td> <td>35 - 65</td> </tr> <tr> <td>Sands</td> <td>1.31-2.05</td> <td>Dense</td> <td>30 - 50</td> <td>Dense</td> <td>65 - 85</td> </tr> <tr> <td>Gravelly sand</td> <td><1.31</td> <td>Very Dense</td> <td>>50</td> <td>Very Dense</td> <td>>85</td> </tr> </tbody> </table>	Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density Dr (%)	Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15	Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35	Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65	Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85	Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85	Groundwater Level Dissipation Test
Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density Dr (%)																																			
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15																																			
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Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85																																			
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85																																			

PointID

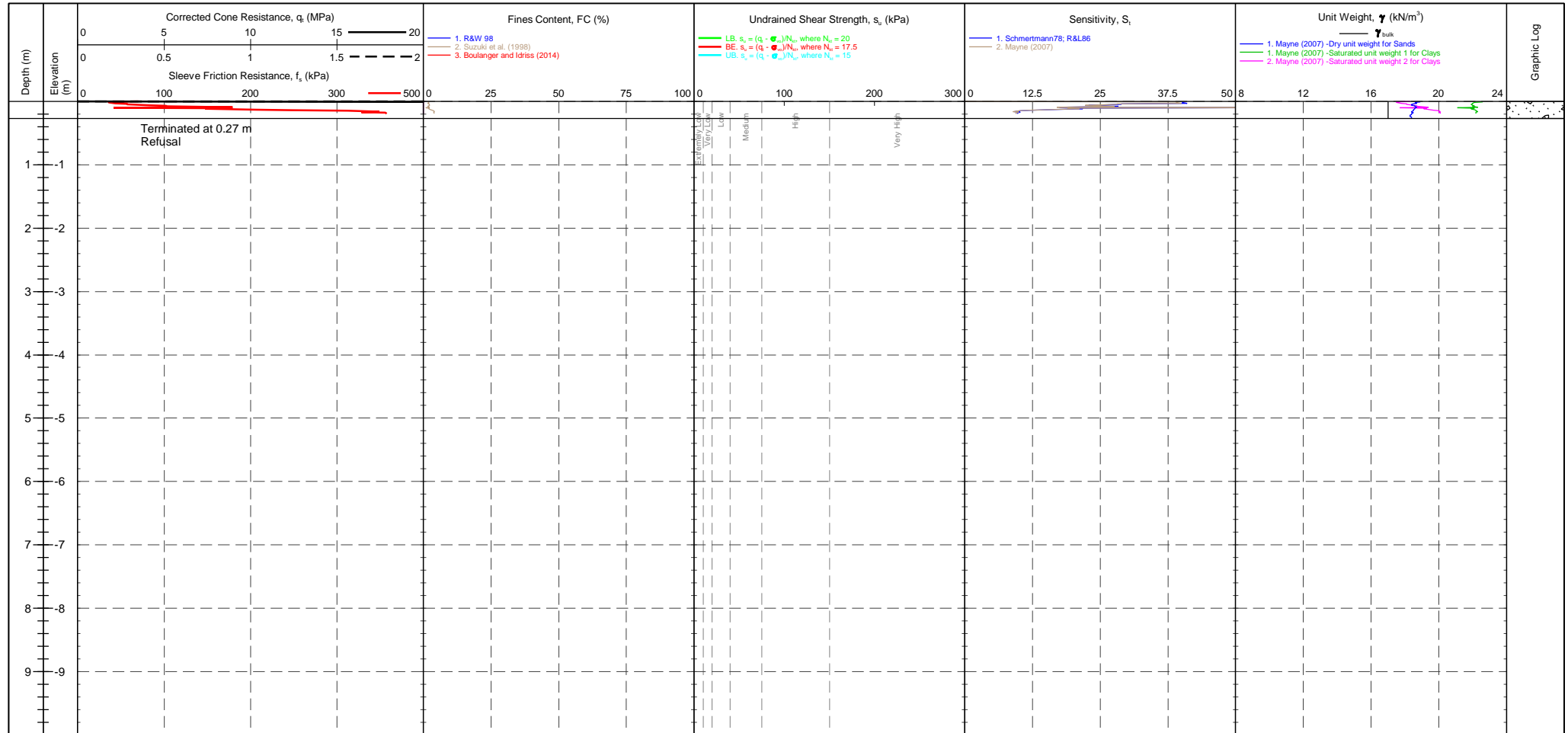
CPT109A

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Refusal

Remark:
 Test refused on total pressure.

SHEET : 1 OF 1
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

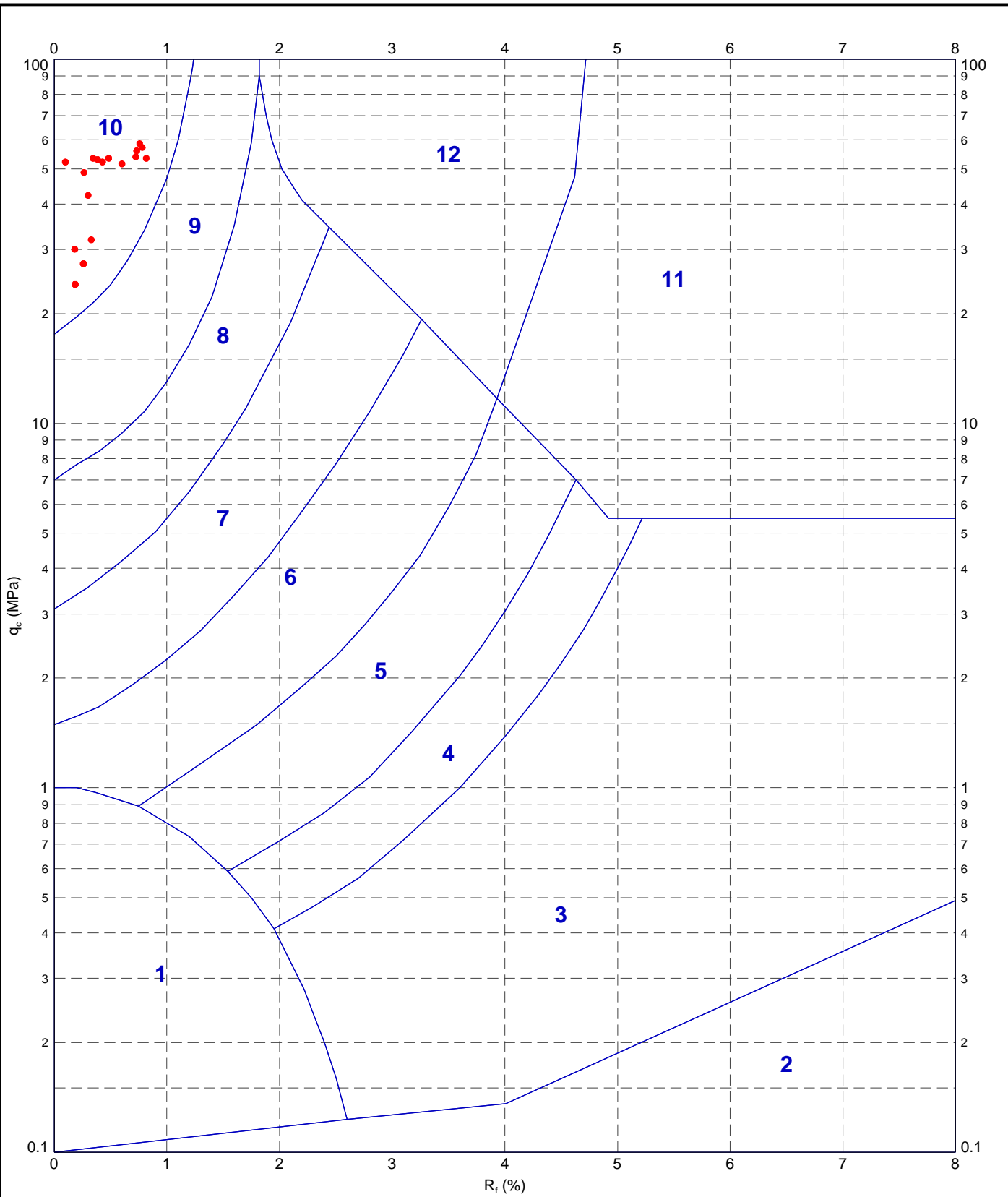
CPTU ZERO VALUES
 Transducer Pre Post Difference
 Tip 242 mV 248 mV 0.066 MPa
 Sleeve 301 mV 304 mV 0.002 kPa
 Pore Pressure 2 143 mV 126 mV -0.004 kPa
 X-Y Inclinator 2398 mV 2390 mV

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level
 Dissipation Test

220689-ADVANCED REPORT INSTIUSI 2.02.1 LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF APF 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 3:54 10.03.00.09 Dargel Lab and In Situ Tool - DGD (Lib - In Situ SI 2.02.0 2017-07-10 Pdf - In Situ SI 2.02.0 2017-07-10



METHOD: Robertson et al. 1986 q_c R_f

- 1 - Sensitive fine grained material
- 4 - Silty CLAY to CLAY
- 7 - Silty SAND to sandy SILT
- 10 - Gravelly SAND to SAND
- 2 - Organic material
- 5 - Clayey SILT to silty CLAY
- 8 - SAND to silty SAND
- 11 - Very stiff fine grained
- 3 - CLAY
- 6 - Sandy SILT to clayey SILT
- 9 - SAND
- 12 - SAND to clayey SAND

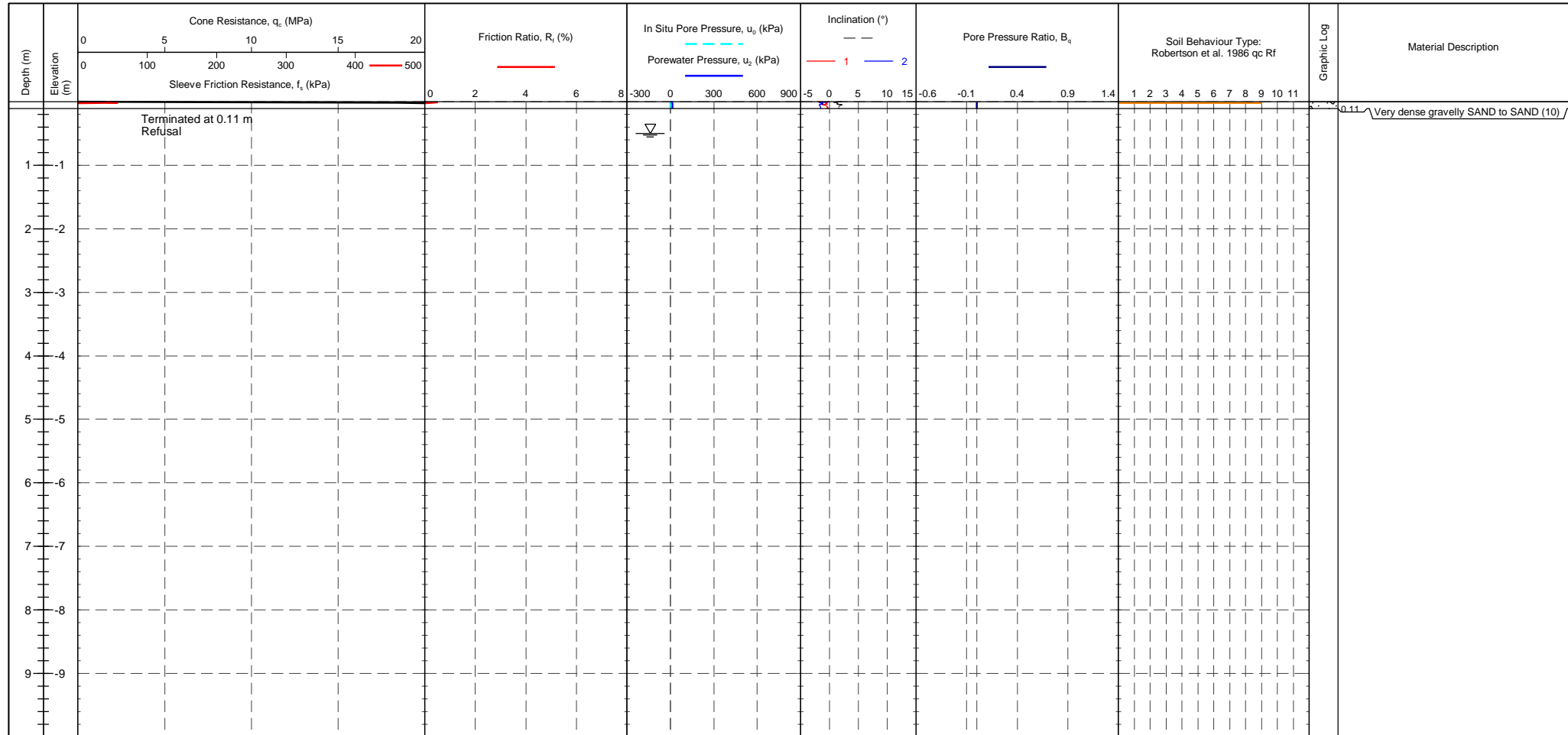


TITLE
TRC
 Tunbridge Wells
 Chapman Way
 Robertson et al. 1986 q_c vs. R_f - CPT109A

DRAWN	DATE	11/09/2023
CHECKED	DATE	11/09/2023
SCALE	Not To Scale	
PROJECT No	1230378	
FIGURE No	A4	

PointID	CPT109B
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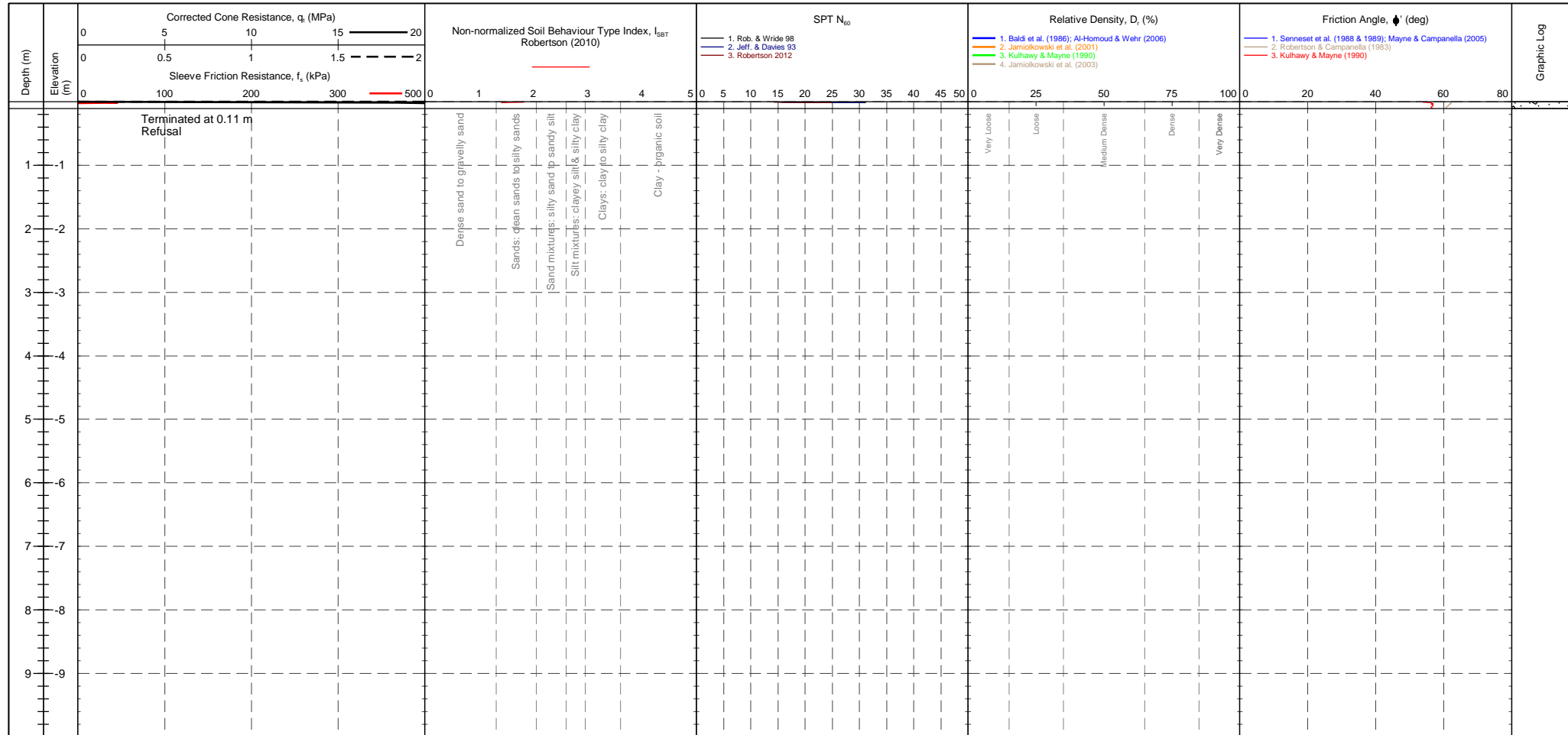
CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES Transducer Pre Post Difference Tip 241 mV 237 mV -0.044 MPa Sleeve 300 mV 300 mV 0 kPa Pore Pressure 2 129 mV 129 mV 0 kPa X-Y Inclinator 2325 mV 2519 mV	METHOD: Robertson et al. 1986 $q_c R_f$ 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID	CPT109B
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	CPTU ZERO VALUES Transducer Pre Post Difference Tip 241 mV 237 mV -0.044 MPa Sleeve 300 mV 300 mV 0 kPa Pore Pressure 2 129 mV 129 mV 0 kPa X-Y Inclinator 2325 mV 2519 mV	GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12 <table border="1"> <thead> <tr> <th>Description</th> <th>SBT Index, I_c</th> <th>Description</th> <th>SPT N value, NSPT</th> <th>Description</th> <th>Relative Density D_r (%)</th> </tr> </thead> <tbody> <tr> <td>Clays</td> <td>2.95-3.60</td> <td>Very Loose</td> <td>0 - 4</td> <td>Very Loose</td> <td>0 - 15</td> </tr> <tr> <td>Silt mixtures</td> <td>2.60-2.95</td> <td>Loose</td> <td>4 - 10</td> <td>Loose</td> <td>15 - 35</td> </tr> <tr> <td>Sand mixtures</td> <td>2.05-2.60</td> <td>Medium Dense</td> <td>10 - 30</td> <td>Medium Dense</td> <td>35 - 65</td> </tr> <tr> <td>Sands</td> <td>1.31-2.05</td> <td>Dense</td> <td>30 - 50</td> <td>Dense</td> <td>65 - 85</td> </tr> <tr> <td>Gravelly sand</td> <td><1.31</td> <td>Very Dense</td> <td>>50</td> <td>Very Dense</td> <td>>85</td> </tr> </tbody> </table>	Description	SBT Index, I_c	Description	SPT N value, NSPT	Description	Relative Density D_r (%)	Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15	Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35	Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65	Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85	Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85	Groundwater Level Dissipation Test
Description	SBT Index, I_c	Description	SPT N value, NSPT	Description	Relative Density D_r (%)																																			
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Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85																																			



NOITAEITSEVNI SITE INVESTIGATION Working with:



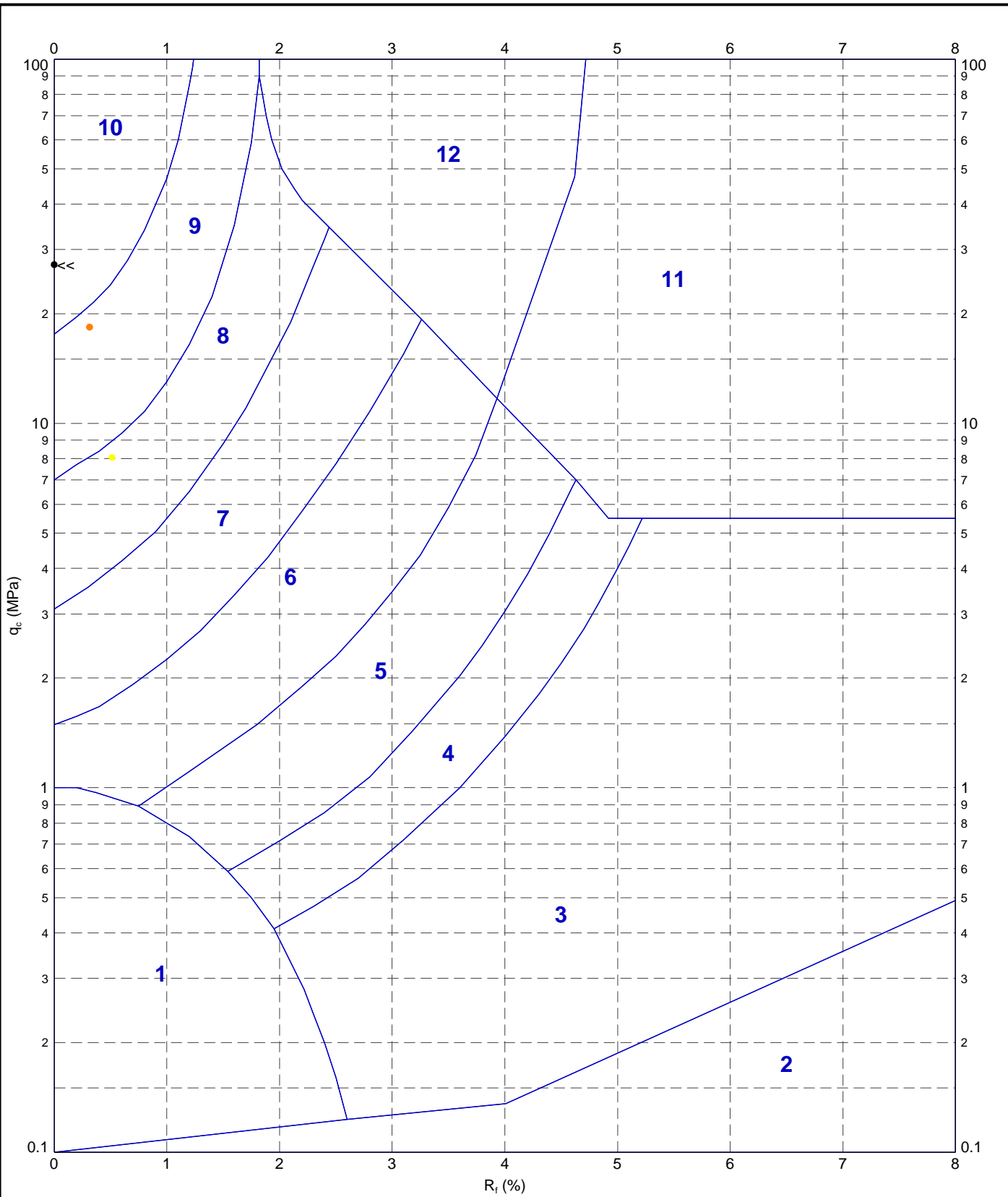
PointID
CPT109B

CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on total pressure.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICITION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip 241 mV 237 mV -0.044 MPa Sleeve 300 mV 300 mV 0 kPa Pore Pressure 2 129 mV 129 mV 0 kPa X-Y Inclinator 2325 mV 2519 mV	CPTU ZERO VALUES Pre Post Difference Tip 241 mV 237 mV -0.044 MPa Sleeve 300 mV 300 mV 0 kPa Pore Pressure 2 129 mV 129 mV 0 kPa X-Y Inclinator 2325 mV 2519 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement su (kPa) Term based on measurement su (kPa) Extremely low strength <10 Medium strength 40-75 Very low strength 10-20 High strength 75-150 Low strength 20-40 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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220689-ADVANCED REPORT INSTUSI 2.02.1 LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 3:55 10.03.00.09 Dargel Lab and In Situ Tool - DGD (Lib - In Situ SI 2.02.0 2017-07-10 Pdf - In Situ SI 2.02.0 2017-07-10



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 4 - Silty CLAY to CLAY
- 7 - Silty SAND to sandy SILT
- 10 - Gravelly SAND to SAND
- 2 - Organic material
- 5 - Clayey SILT to silty CLAY
- 8 - SAND to silty SAND
- 11 - Very stiff fine grained
- 3 - CLAY
- 6 - Sandy SILT to clayey SILT
- 9 - SAND
- 12 - SAND to clayey SAND



TITLE
TRC
 Tunbridge Wells
 Chapman Way
 Robertson et al. 1986 qc vs. Rf - CPT109B

DRAWN	DATE	11/09/2023	
CHECKED	DATE	11/09/2023	
SCALE	Not To Scale		A4
PROJECT No	1230378		FIGURE No

PointID

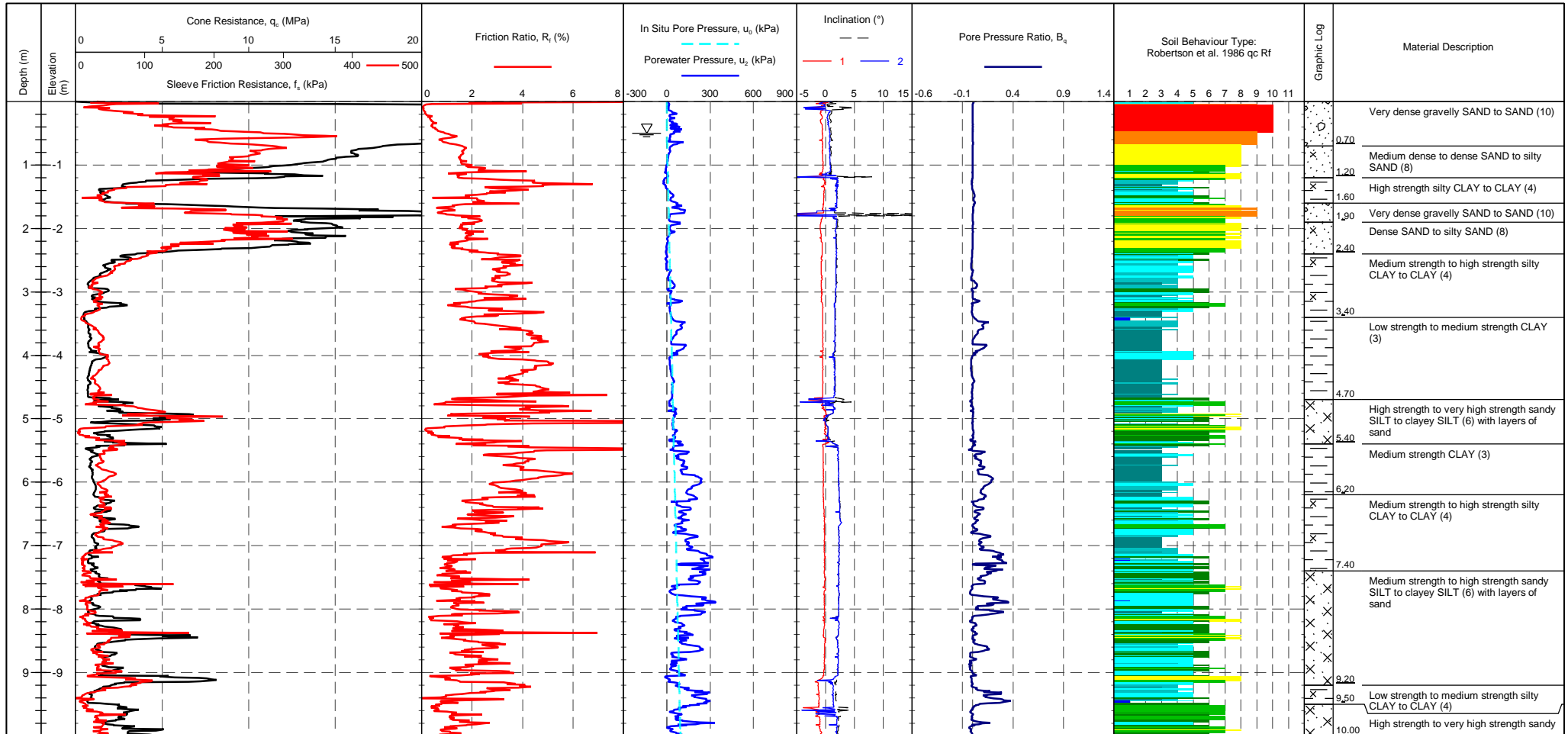
CPT110

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
 Test completed at target depth.

SHEET : 1 OF 3
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CALIBRATION DATE : 07/06/2023
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot
GROUNDWATER DEPTH : Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	241 mV	241 mV	0 MPa
Sleeve	300 mV	299 mV	-0.001 kPa
Pore Pressure 2	168 mV	187 mV	0.004 kPa
X-Y Inclinometer	2330 mV	2492 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material	5 - Clayey SILT to silty CLAY	9 - SAND
2 - Organic material	6 - Sandy SILT to clayey SILT	10 - Gravelly SAND to SAND
3 - CLAY	7 - Silty SAND to sandy SILT	11 - Very stiff fine grained
4 - Silty CLAY to CLAY	8 - SAND to silty SAND	12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

PointID

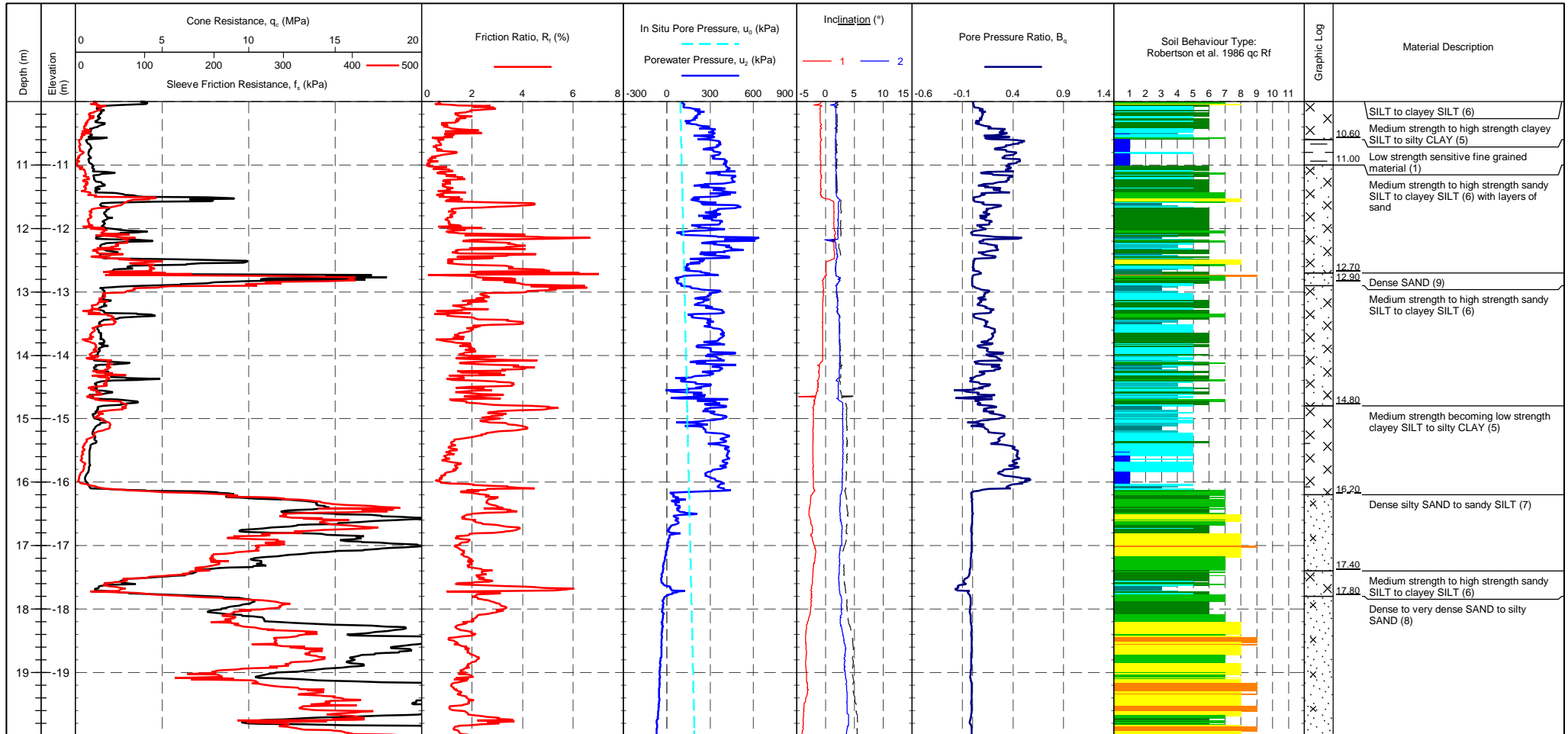
CPT110

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
 Test completed at target depth.

SHEET : 2 OF 3
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CALIBRATION DATE : 07/06/2023
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot
GROUNDWATER DEPTH : Assumed for calculation purposes

CPTU ZERO VALUES
Transducer
 Tip 241 mV 241 mV 0 MPa
 Sleeve 300 mV 299 mV -0.001 kPa
 Pore Pressure 2 168 mV 187 mV 0.004 kPa
 X-Y Inclinator 2330 mV 2492 mV

METHOD: Robertson et al. 1986 qc Rf

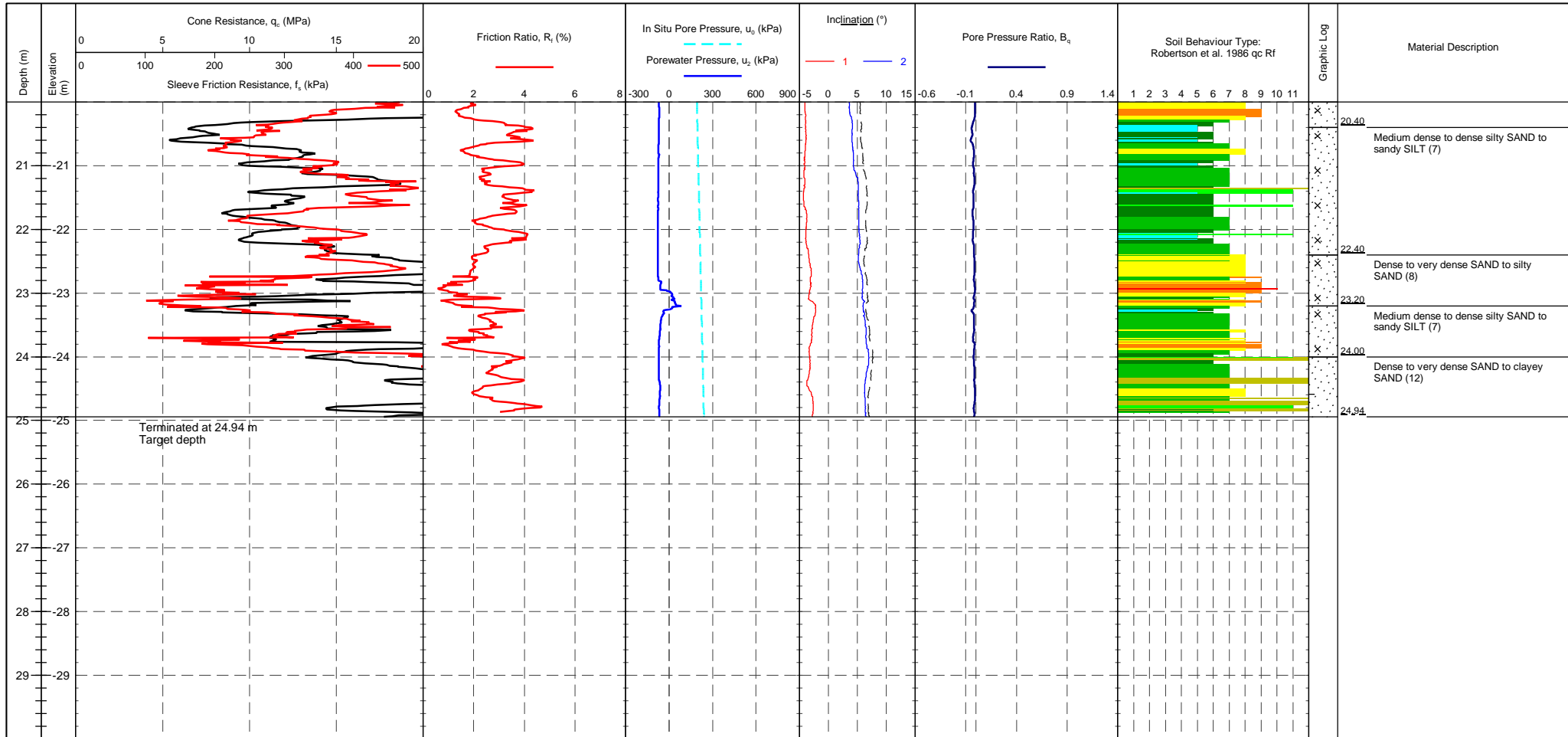
1 - Sensitive fine grained material	5 - Clayey SILT to silty CLAY	9 - SAND
2 - Organic material	6 - Sandy SILT to clayey SILT	10 - Gravelly SAND to SAND
3 - CLAY	7 - Silty SAND to sandy SILT	11 - Very stiff fine grained
4 - Silty CLAY to CLAY	8 - SAND to silty SAND	12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

PointID	CPT110
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 3 OF 3 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CALIBRATION DATE : 07/06/2023 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES Transducer Tip : 241 mV / 241 mV / 0 MPa Sleeve : 300 mV / 299 mV / -0.001 kPa Pore Pressure 2 : 168 mV / 187 mV / 0.004 kPa X-Y Inclinometer : 2330 mV / 2492 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID

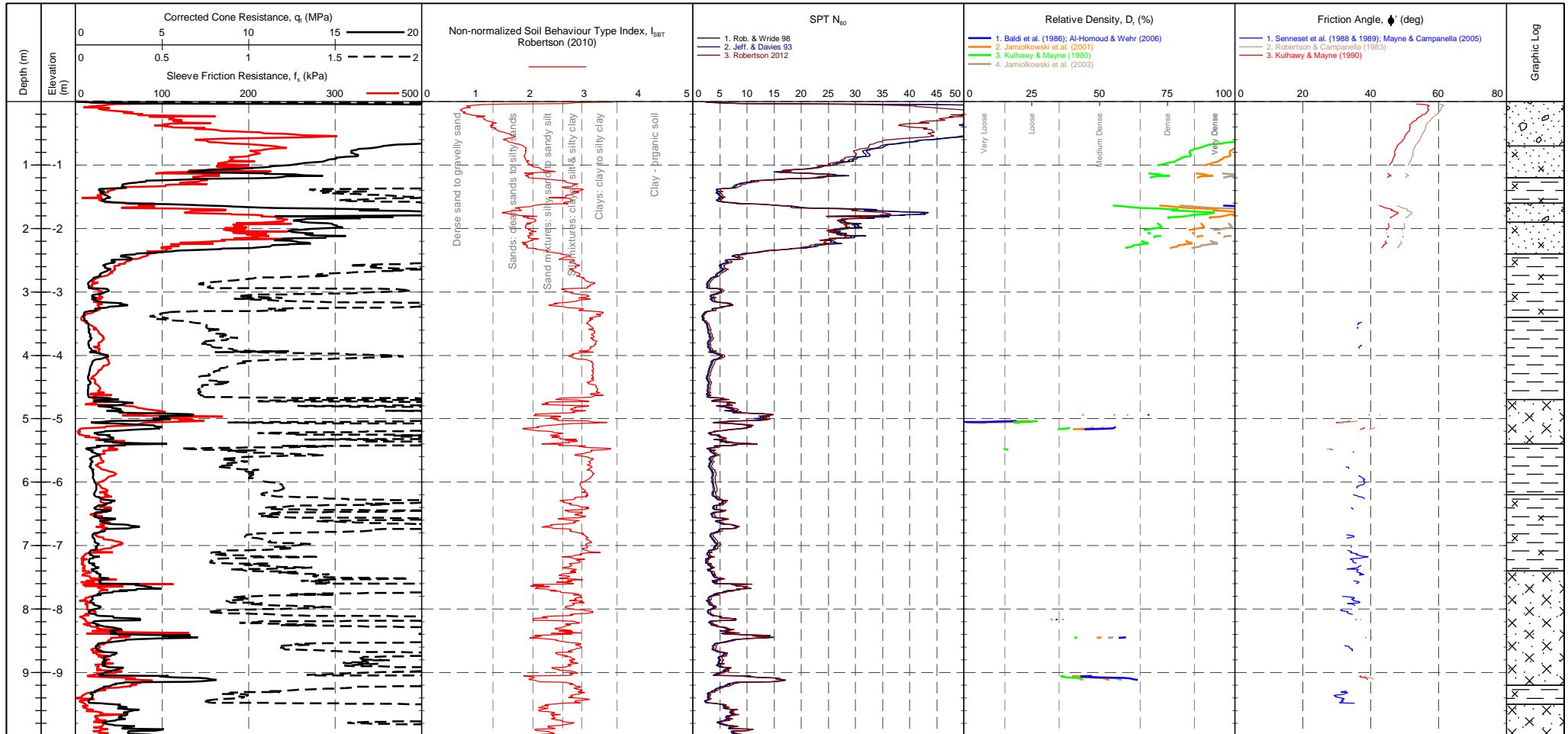
CPT110

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
 Test completed at target depth.

SHEET : 1 OF 3
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

Transducer
 Tip: 241 mV Pre, 241 mV Post, 0 MPa Difference
 Sleeve: 300 mV Pre, 299 mV Post, -0.001 kPa Difference
 Pore Pressure 2: 168 mV Pre, 187 mV Post, 0.004 kPa Difference
 X-Y Inclinator: 2330 mV Pre, 2492 mV Post

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12				
Description	SBT Index, I_c	Description	SPT N value, NSPT	Description
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense
Sands	1.31-2.05	Dense	30 - 50	Dense
Gravelly sand	<1.31	Very Dense	>50	Very Dense
				Relative Density D_r (%)
				0 - 15
				15 - 35
				35 - 65
				65 - 85
				>85

Groundwater Level

Dissipation Test

PointID

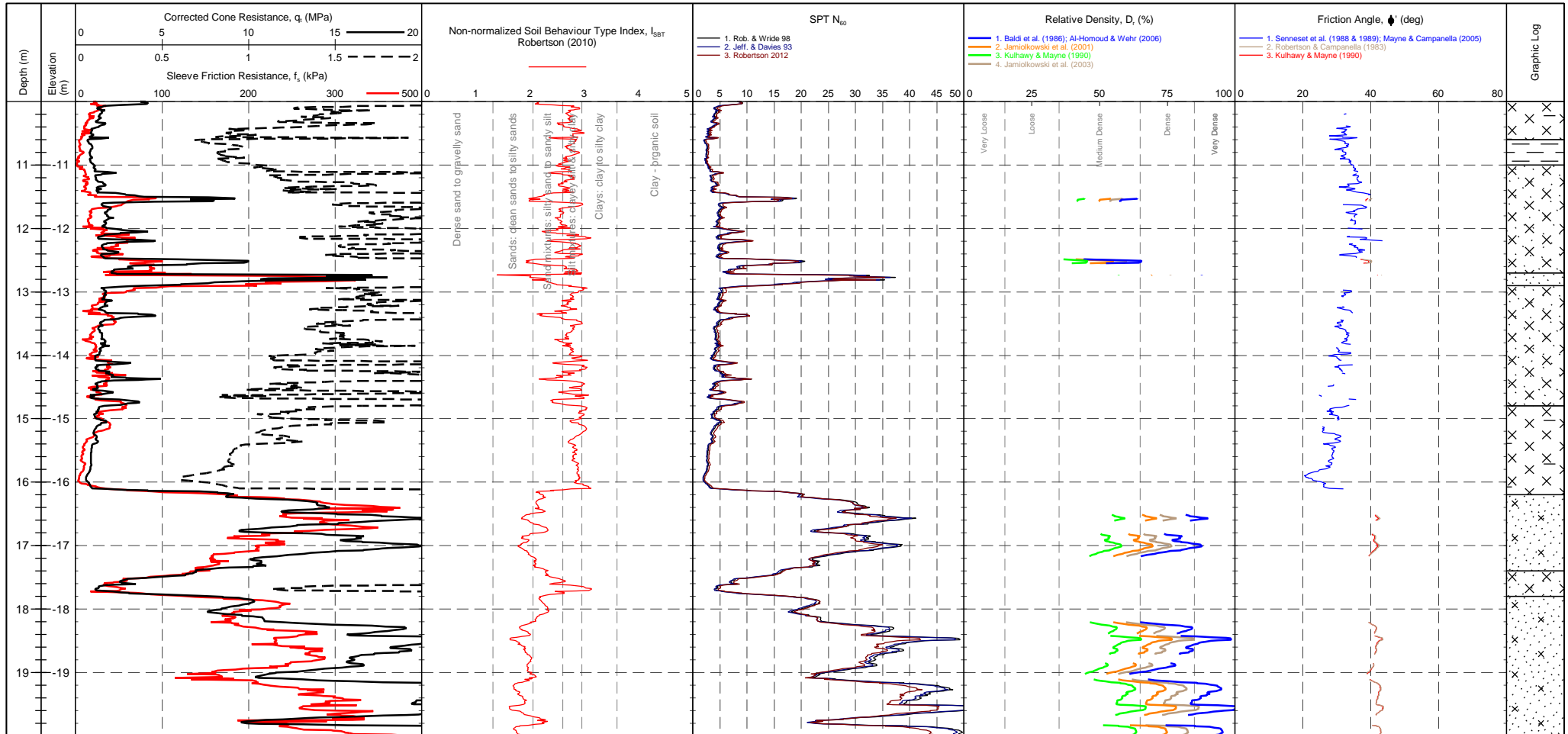
CPT110

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
 Test completed at target depth.

SHEET : 2 OF 3
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

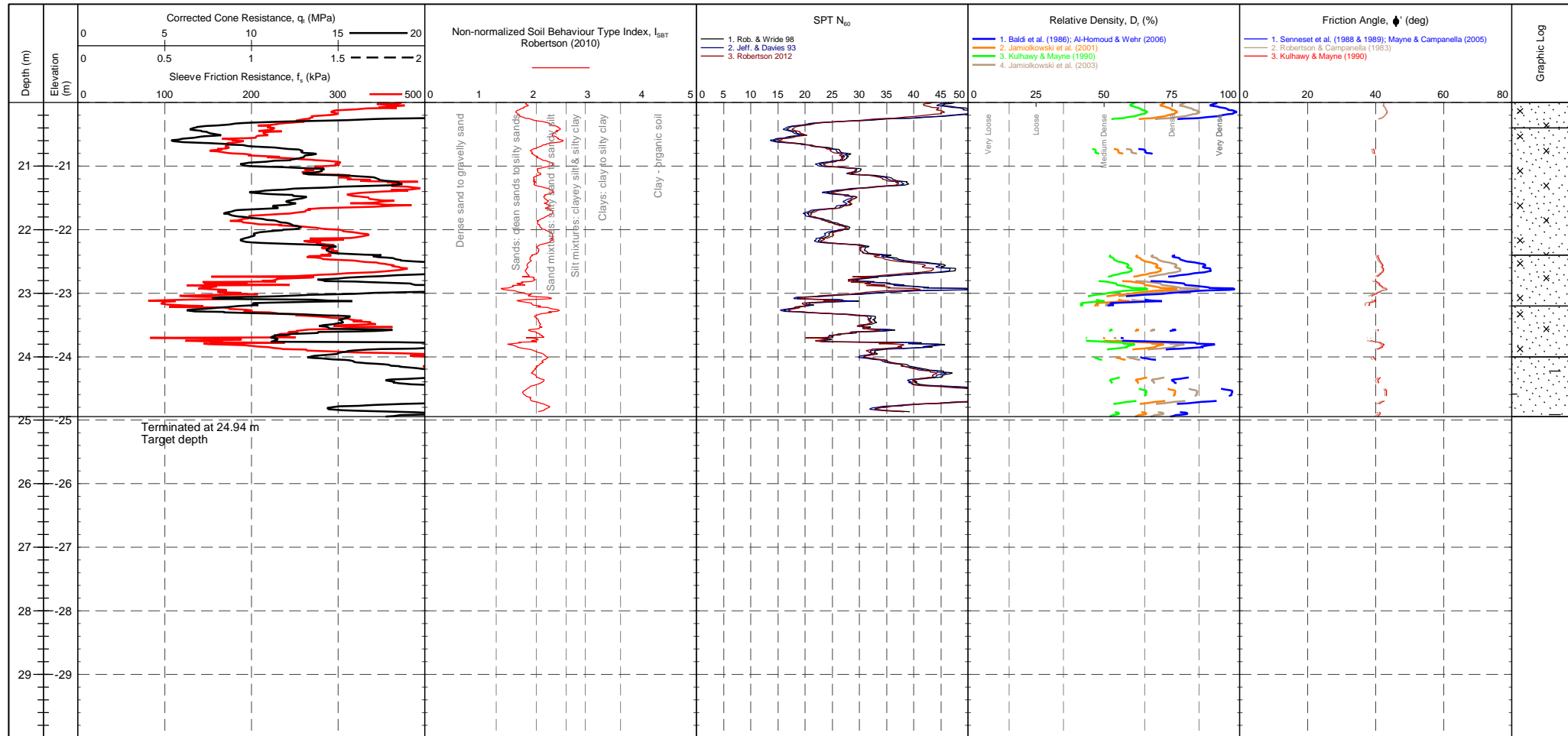
CPTU ZERO VALUES
 Transducer Pre Post Difference
 Tip 241 mV 241 mV 0 MPa
 Sleeve 300 mV 299 mV -0.001 kPa
 Pore Pressure 2 168 mV 187 mV 0.004 kPa
 X-Y Inclinator 2330 mV 2492 mV

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12					
Description	SBT Index, I_c	Description	SPT N value, NSPT	Description	Relative Density D_r (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level
 Dissipation Test

PointID
CPT110

CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 3 OF 3 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
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CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip 241 mV 241 mV 0 MPa Sleeve 300 mV 299 mV -0.001 kPa Pore Pressure 2 168 mV 187 mV 0.004 kPa X-Y Inclinator 2330 mV 2492 mV	CPTU ZERO VALUES Pre Post Difference Tip 241 mV 241 mV 0 MPa Sleeve 300 mV 299 mV -0.001 kPa Pore Pressure 2 168 mV 187 mV 0.004 kPa X-Y Inclinator 2330 mV 2492 mV	GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12 <table border="1"> <thead> <tr> <th>Description</th> <th>SBT Index, I_c</th> <th>Description</th> <th>SPT N value, NSPT</th> <th>Description</th> <th>Relative Density Dr (%)</th> </tr> </thead> <tbody> <tr> <td>Clays</td> <td>2.95-3.60</td> <td>Very Loose</td> <td>0 - 4</td> <td>Very Loose</td> <td>0 - 15</td> </tr> <tr> <td>Silt mixtures</td> <td>2.60-2.95</td> <td>Loose</td> <td>4 - 10</td> <td>Loose</td> <td>15 - 35</td> </tr> <tr> <td>Sand mixtures</td> <td>2.05-2.60</td> <td>Medium Dense</td> <td>10 - 30</td> <td>Medium Dense</td> <td>35 - 65</td> </tr> <tr> <td>Sands</td> <td>1.31-2.05</td> <td>Dense</td> <td>30 - 50</td> <td>Dense</td> <td>65 - 85</td> </tr> <tr> <td>Gravelly sand</td> <td><1.31</td> <td>Very Dense</td> <td>>50</td> <td>Very Dense</td> <td>>85</td> </tr> </tbody> </table>	Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density Dr (%)	Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15	Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35	Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65	Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85	Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85	Groundwater Level Dissipation Test
Description	SBT Index, I _c	Description	SPT N value, NSPT	Description	Relative Density Dr (%)																																				
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15																																				
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35																																				
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65																																				
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85																																				
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85																																				

PointID

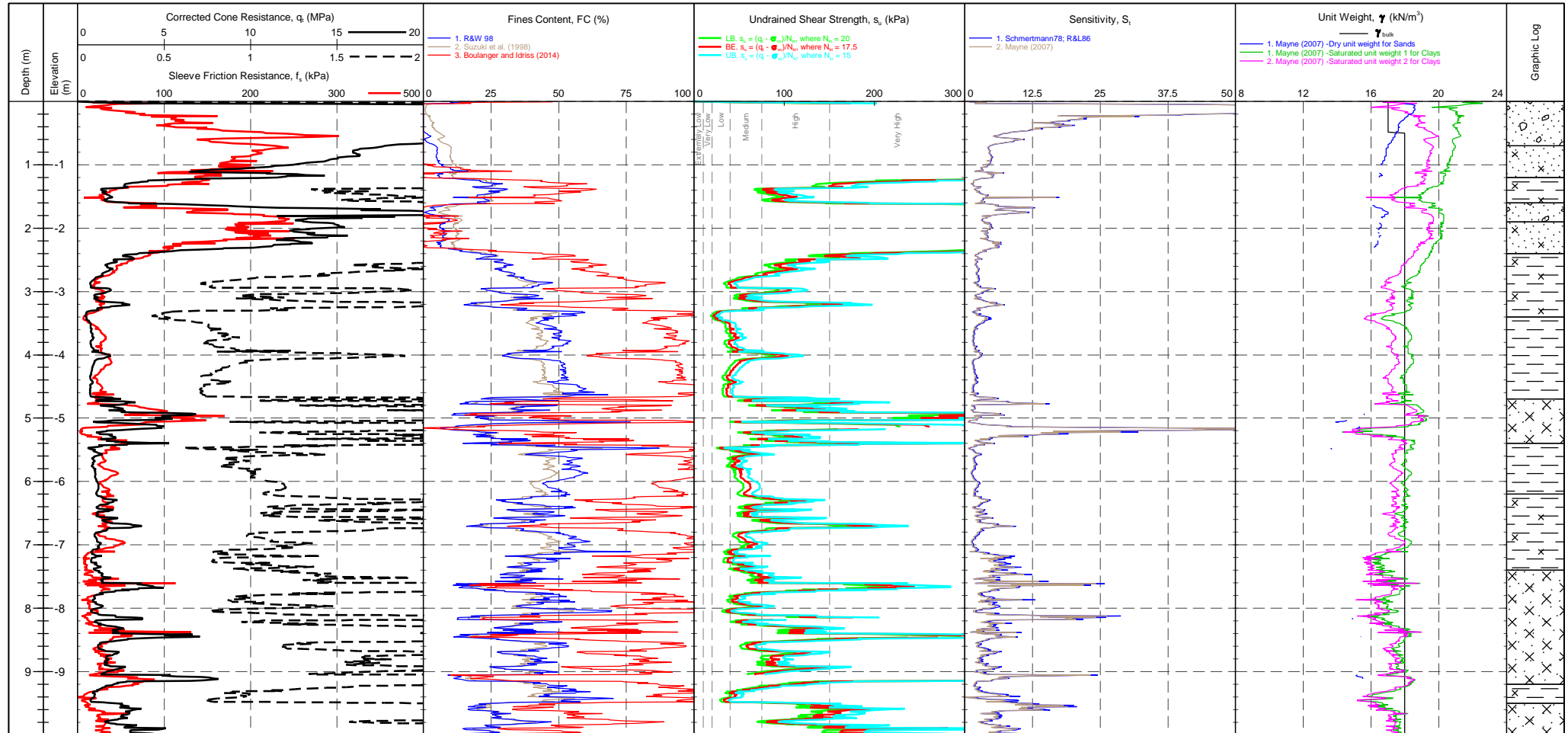
CPT110

CLIENT : TRC
 PROJECT : Chapman Way
 LOCATION : Tunbridge Wells
 PROJECT No. : 1230378

EASTING : 0.000 m
 NORTHING : 0.000 m
 ELEVATION : 0.000 m OD
 CHECKED BY : DW
 TERMINATION REASON : Target depth

Remark:
 Test completed at target depth.

SHEET : 1 OF 3
 STATUS : Final
 TEST DATE : 05/09/2023
 PLOT DATE : 11/09/2023
 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
 CONE MODEL : Subtraction
 CONE AREA : 15cm²
 CONE AREA RATIO : 0.79
 FILTER POSITION : u2
 FILTER TYPE : HDPE

TEST TYPE : TE2
 APPLICATION CLASS : 2
 RIG : CPT 007 - Morooka
 OPERATOR : AC
 FRICTION REDUCER : None
 WEATHER : Sunny & Hot

CPTU ZERO VALUES
 Transducer Pre Post Difference
 Tip 241 mV 241 mV 0 MPa
 Sleeve 300 mV 299 mV -0.001 kPa
 Pore Pressure 2 168 mV 187 mV 0.004 kPa
 X-Y Inclinator 2330 mV 2492 mV

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	s_u (kPa)	Term based on measurement	s_u (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level
 Dissipation Test

PointID

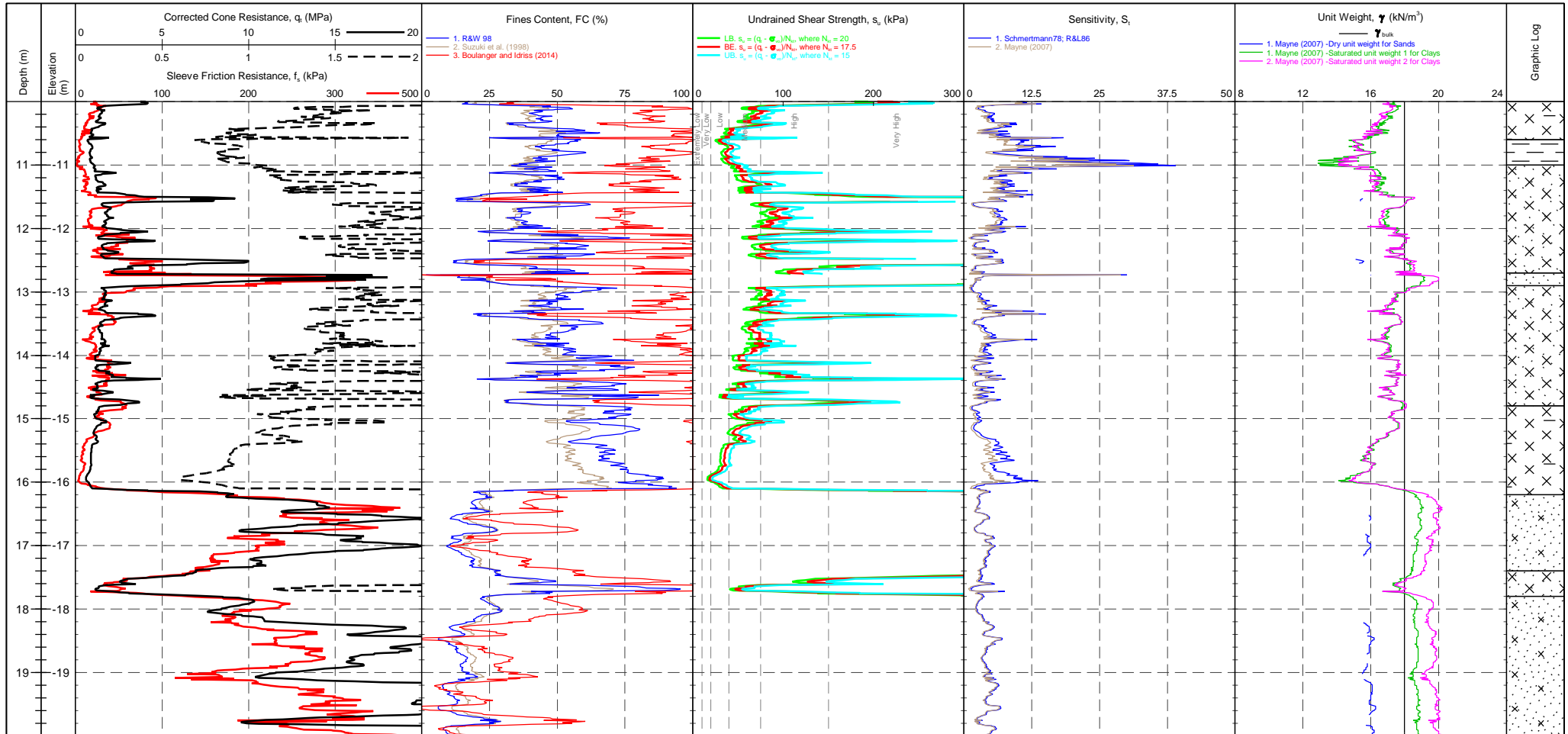
CPT110

CLIENT : TRC
PROJECT : Chapman Way
LOCATION : Tunbridge Wells
PROJECT No. : 1230378

EASTING : 0.000 m
NORTHING : 0.000 m
ELEVATION : 0.000 m OD
CHECKED BY : DW
TERMINATION REASON : Target depth

Remark:
 Test completed at target depth.

SHEET : 2 OF 3
STATUS : Final
TEST DATE : 05/09/2023
PLOT DATE : 11/09/2023
METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.1867
CONE MODEL : Subtraction
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 007 - Morooka
OPERATOR : AC
FRICITION REDUCER : None
WEATHER : Sunny & Hot

Transducer
 Pre Post Difference
Tip : 241 mV 241 mV 0 MPa
Sleeve : 300 mV 299 mV -0.001 kPa
Pore Pressure 2 : 168 mV 187 mV 0.004 kPa
X-Y Inclinometer : 2330 mV 2492 mV

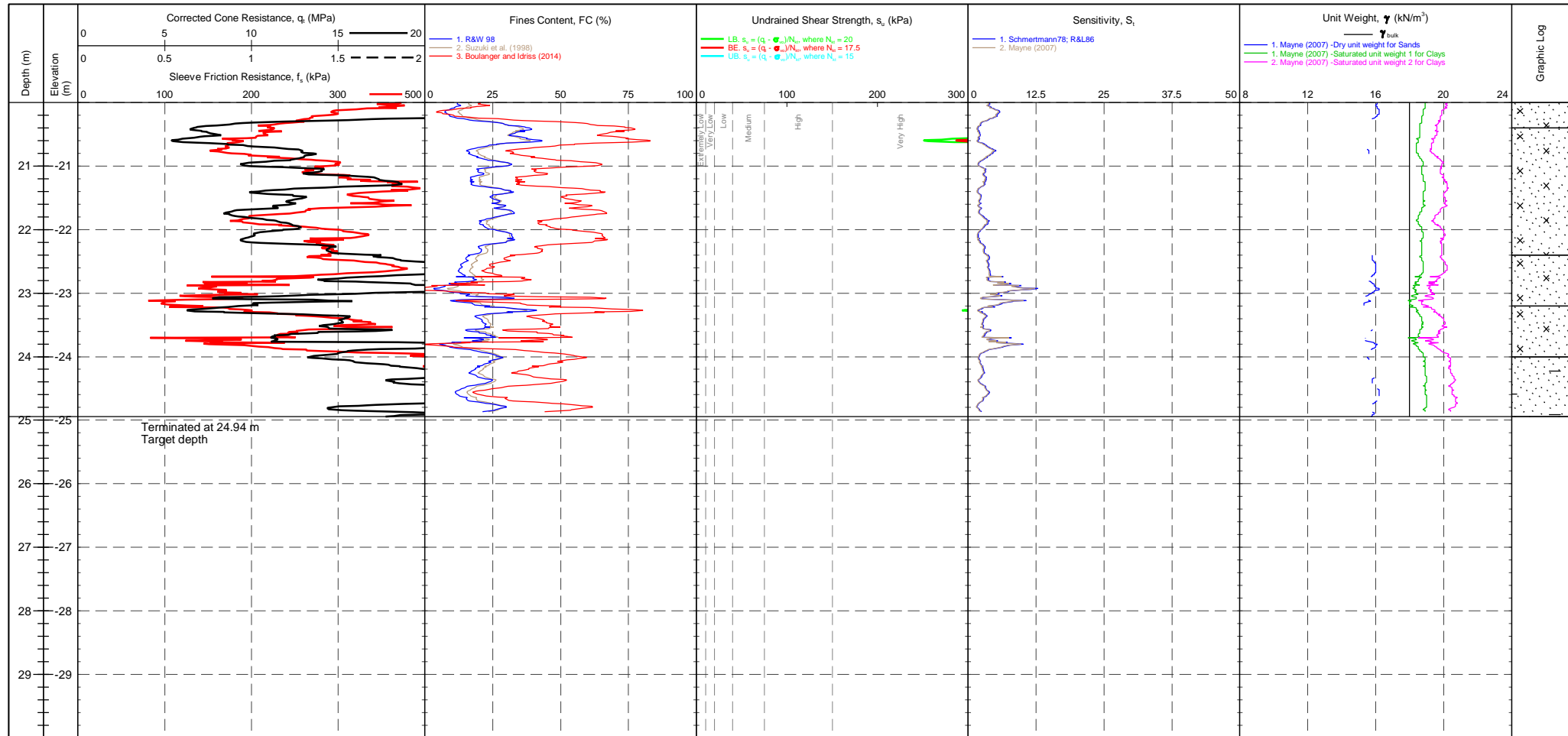
CPTU ZERO VALUES
COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	s_u (kPa)	Term based on measurement	s_u (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level
 Dissipation Test

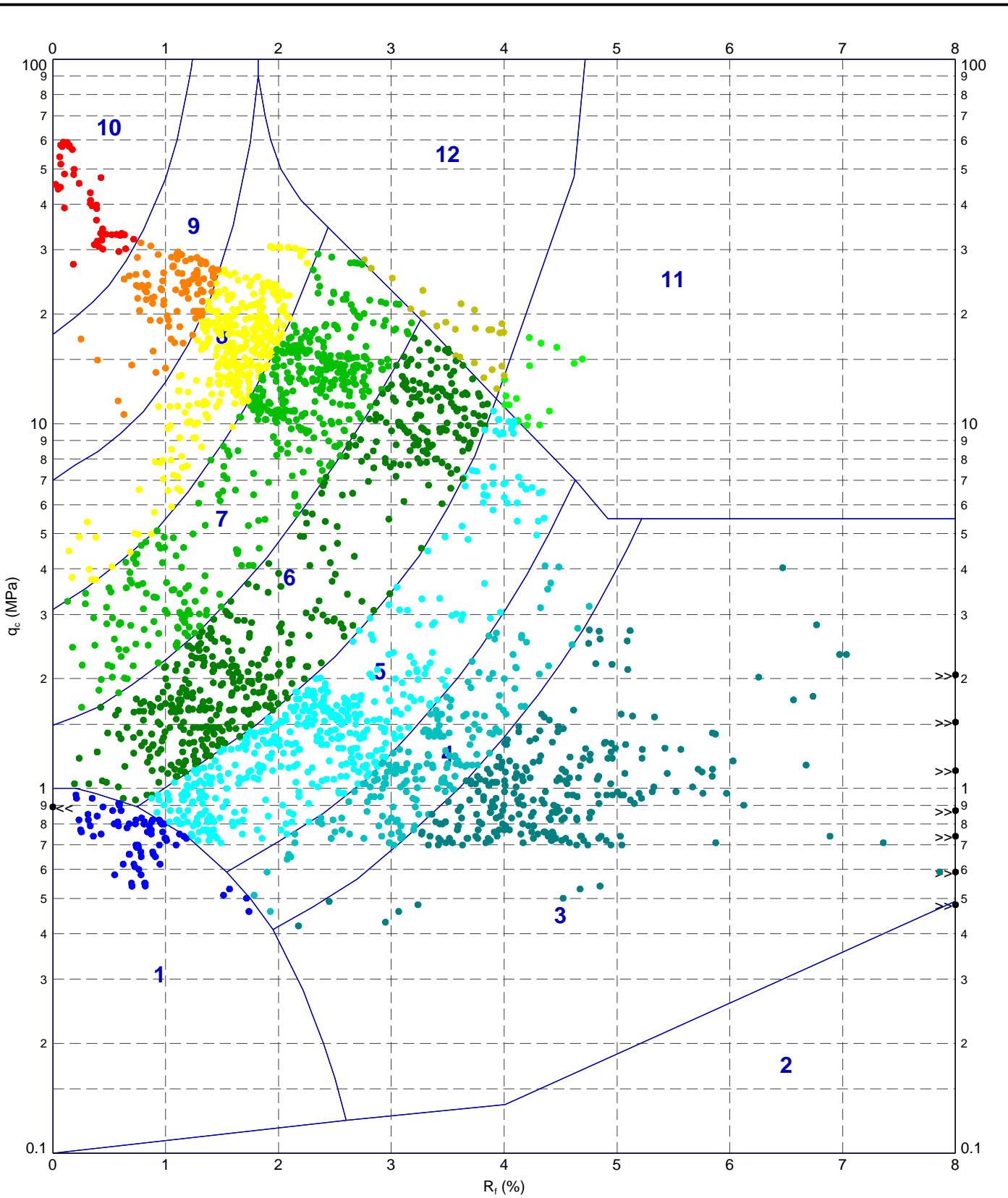
PointID	CPT110
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CLIENT : TRC PROJECT : Chapman Way LOCATION : Tunbridge Wells PROJECT No. : 1230378	EASTING : 0.000 m NORTHING : 0.000 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Target depth	Remark: Test completed at target depth.	SHEET : 3 OF 3 STATUS : Final TEST DATE : 05/09/2023 PLOT DATE : 11/09/2023 METHOD : ISO 22476-1:2022
--	---	--	---



CONE ID : S15-CFIP.1867 CONE MODEL : Subtraction CONE AREA : 15cm ² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 007 - Morooka OPERATOR : AC FRICTION REDUCER : None WEATHER : Sunny & Hot	Transducer Tip : 241 mV Sleeve : 300 mV Pore Pressure 2 : 168 mV X-Y Inclinator : 2330 mV	CPTU ZERO VALUES Post : 241 mV Difference : 0 MPa 299 mV -0.001 kPa 187 mV 0.004 kPa 2492 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement su (kPa) Extremely low strength <10 Very low strength 10-20 Low strength 20-40	Term based on measurement su (kPa) Medium strength 40-75 High strength 75-150 Very high strength 150-300 Extremely high strength >300	Groundwater Level Dissipation Test
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220689-ADVANCED REPORT INSTIUSI 2.02.1 LIB - CHLOE GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF APF 1230378 CHAPMAN WAY TUNBRIDGE WELLS TRC COMPANIES.GPJ <<DrawingFile>> 11/09/2023 13:57 10.03.00.09 Dargel Lab and In Situ Tool - DGD (Lib - In Situ SI 2.02.0 2017-07-10 Pdf - In Situ SI 2.02.0 2017-07-10



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 4 - Silty CLAY to CLAY
- 7 - Silty SAND to sandy SILT
- 10 - Gravelly SAND to SAND
- 2 - Organic material
- 5 - Clayey SILT to silty CLAY
- 8 - SAND to silty SAND
- 11 - Very stiff fine grained
- 3 - CLAY
- 6 - Sandy SILT to clayey SILT
- 9 - SAND
- 12 - SAND to clayey SAND



TITLE
TRC
 Tunbridge Wells
 Chapman Way
 Robertson et al. 1986 qc vs. Rf - CPT110

DRAWN	DATE	11/09/2023
CHECKED	DATE	11/09/2023
SCALE	Not To Scale	
PROJECT No	1230378	
FIGURE No	A4	



IN SITU SITE INVESTIGATION

Unit 23 Hastings Innovation
Centre,
Highfield Drive
St. Leonards on Sea, East Sussex,
TN38 9UH, U.K.

Company No.: 6339499
VAT No.: 922 3561 41

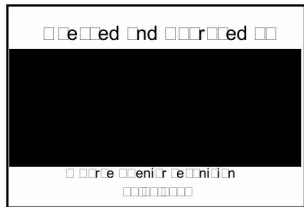
Annex E: Laboratory Geotechnical Data

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification tests					Density tests		Undrained triaxial compression			Chemical tests			Other tests and comments		
Location	Depth (m)	Sample Ref	Date	Description	w _p	LL	PL	CI	UCS (kN/m ²)	w _c	Dry Density (Mg/m ³)	Dr Density (Mg/m ³)	Undrained	Cell Pressure	Deviator Stress	Cohesion	w _L		w _P	Mg
R0001	0.000000			D									Undrained							One Dimensional consolidation
R0002	0.000	000		D																

Sample size: 100mm diameter x 100mm height / 50mm diameter x 100mm height / 100mm diameter x 150mm height

Classification



GEO / 38882
CHAPMAN WAY, TUNBRIDGE WELLS
561063



PARTICLE SIZE DISTRIBUTION

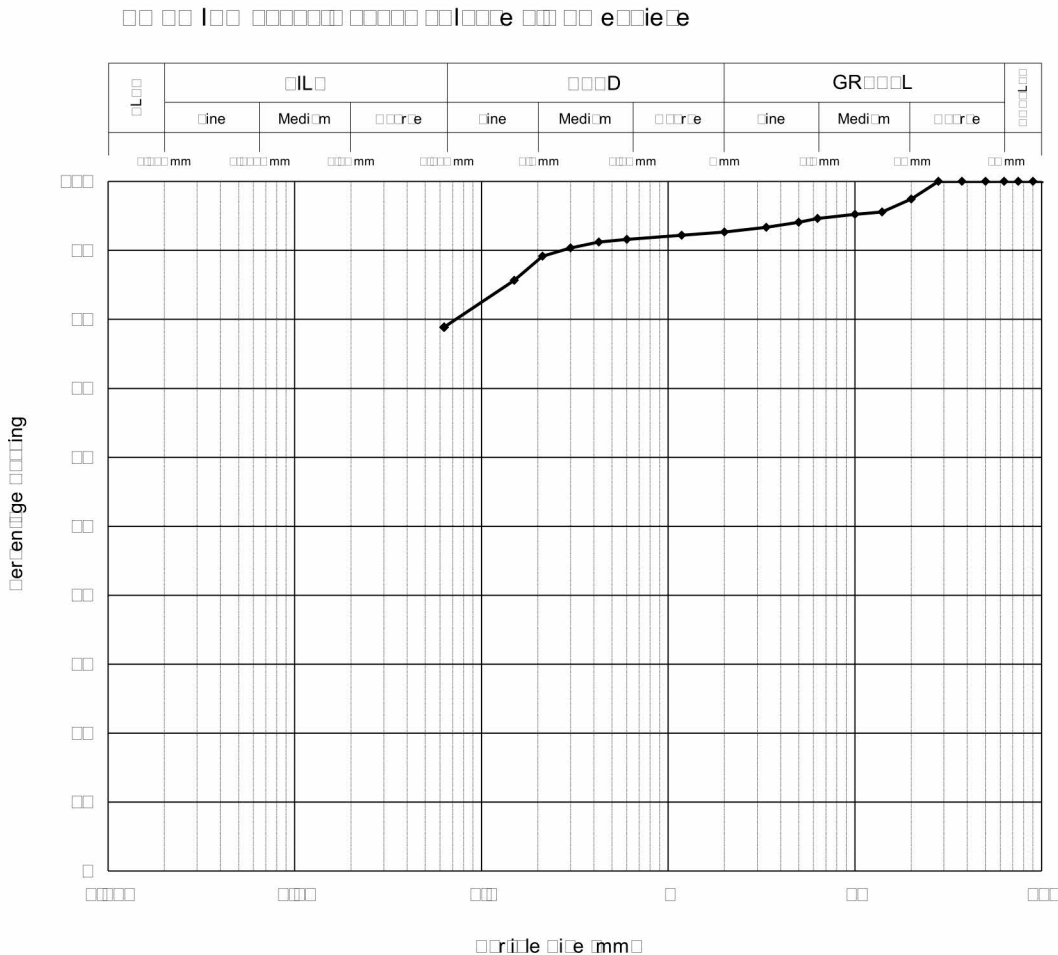
Location
 Description
 Sample No.

Reference
 Date
 Page

Description

Cellar
 Gravel
 Sand
 Silica
 Lime
 Cement
 Gravel

Size	Percentage
75 mm	
63 mm	
50 mm	
42.5 mm	
37.5 mm	
31.5 mm	
25 mm	
20 mm	
16 mm	
12.5 mm	
10 mm	
7.5 mm	
6.3 mm	
5 mm	
4.75 mm	
4.25 mm	
3.75 mm	
3.15 mm	
2.5 mm	
2 mm	
1.5 mm	
1.18 mm	
0.85 mm	
0.6 mm	
0.425 mm	
0.3 mm	
0.25 mm	
0.15 mm	
0.075 mm	



Sieve Description	
Sieve	75
Gravel	75
Sand	75
Silica	75

GL Ref No
 Date
 Description

Reference No
 Reference No
GEO / 38882
CHAPMAN WAY, TUNBRIDGE WELLS
561063



PARTICLE SIZE DISTRIBUTION

Location
 Description
 Sample No.

Reference
 Date
 Page

Description

Light Micrograph of Soil

Sieve	
Size	Weight
75 mm	
150 mm	
300 mm	
600 mm	
1200 mm	
2400 mm	
4800 mm	
9600 mm	
19200 mm	
38400 mm	
76800 mm	
153600 mm	
307200 mm	
614400 mm	
1228800 mm	
2457600 mm	
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9830400 mm	
19660800 mm	
39321600 mm	
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404399199569657643854836536790690058718594875846893646643200 mm	
808798399139315287709673073581380117437189751693787293286400 mm	
1617596798278630575419346147162760234874379503387574586572800 mm	
3235193596557261150838692294325520469748759006775149173145600 mm	
6470387193114522301677384588651040939497518013550298346291200 mm	
12940774386229044603354769177302081878995036027100596692582400 mm	
25881548772458089206709538354604163757990072054401193385164800 mm	
51763097544916178413419076709208327515980144108822386770329600 mm	
103526195089832356826838153418416655031960288217644773540659200 mm	
207052390179664713653676306836833310063920576435289547081318400 mm	
414104780359329427307352613673666620127841152870579094162636800 mm	
828209560718658854614705227347333240255682305741158188325273600 mm	
1656419121437317709229410454694666480511364611482316376550547200 mm	
331283824287463541845882090938933296102272	

PARTICLE SIZE DISTRIBUTION

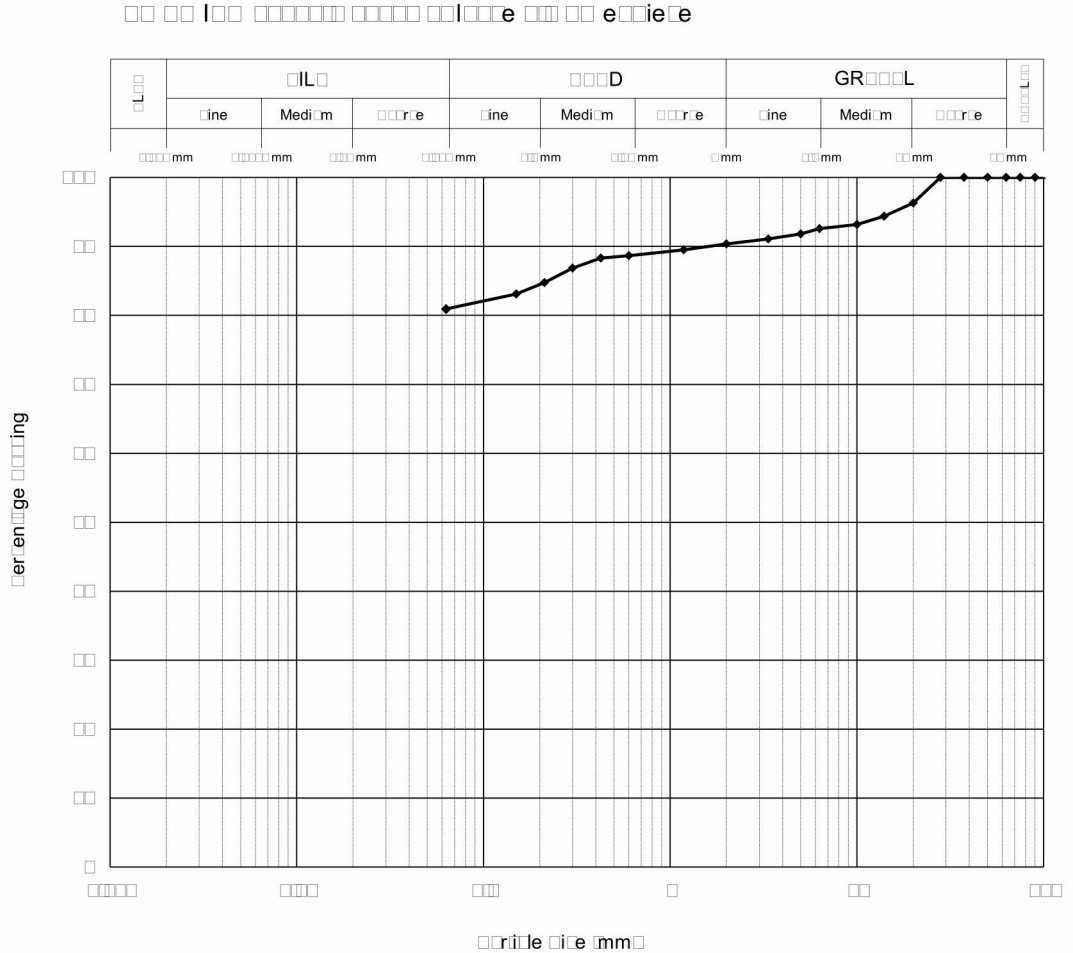
Location
 Description
 Sample No.

Reference
 Date
 Page

Description

Gravel
 Sand
 Silt
 Clay

Size	Percentage
75 mm	
60 mm	
42.5 mm	
30 mm	
25 mm	
20 mm	
15 mm	
12.5 mm	
10 mm	
7.5 mm	
6 mm	
4.75 mm	
3.75 mm	
3 mm	
2.5 mm	
2 mm	
1.5 mm	
1.18 mm	
0.85 mm	
0.6 mm	
0.425 mm	
0.3 mm	
0.25 mm	
0.15 mm	
0.075 mm	



Sieve Description	
Sieve	
Gravel	
Sand	
Silt & Clay	

Tested
 Date
 Location
 Description
 Sample No.

Reference
 Date

GEO / 38882

CHAPMAN WAY, TUNBRIDGE WELLS
 561063



PARTICLE SIZE DISTRIBUTION

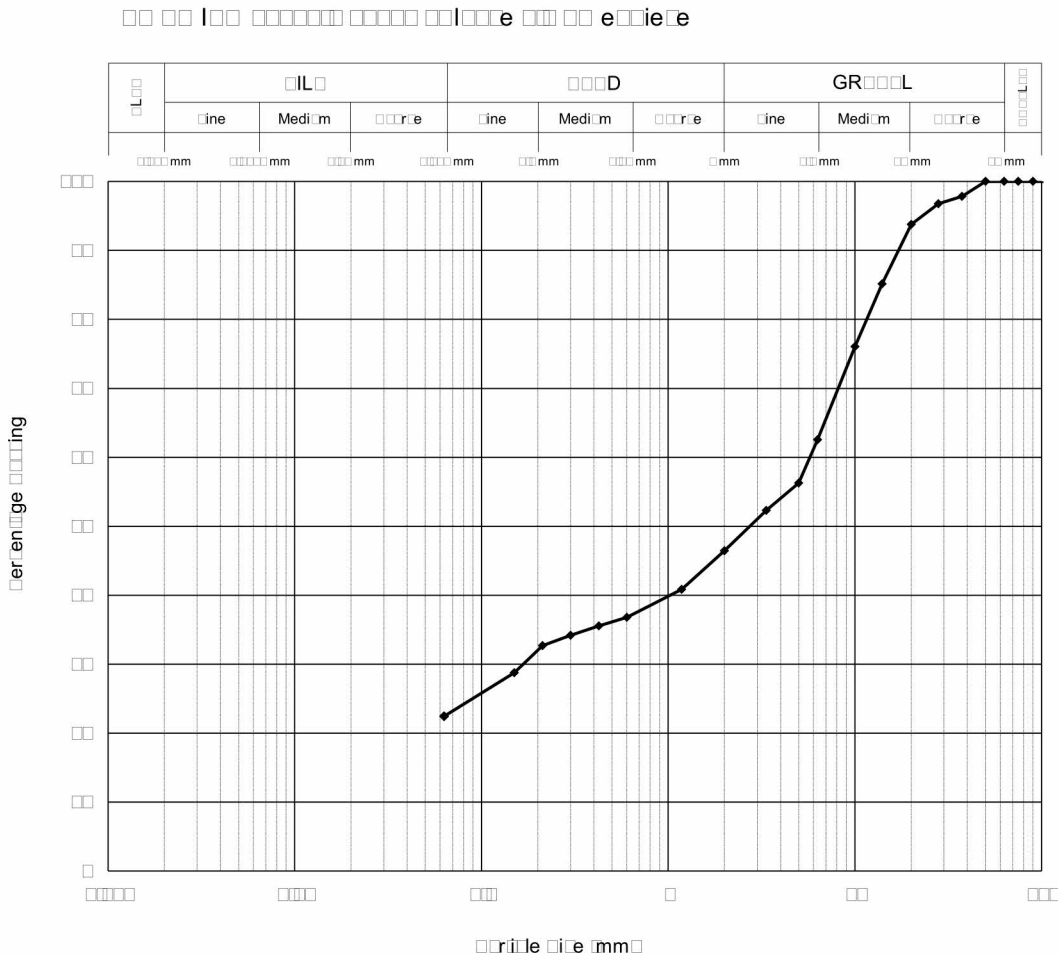
Location
 Description
 Sample No.

Reference
 Date
 Page

Description

Lignite from the ... GR ... L ...

Size	Percentage
75 mm	
63 mm	
50 mm	
40 mm	
31.5 mm	
25 mm	
20 mm	
16 mm	
12.5 mm	
10 mm	
7.5 mm	
6 mm	
4.75 mm	
3.75 mm	
3 mm	
2.5 mm	
2 mm	
1.5 mm	
1.18 mm	
0.85 mm	
0.6 mm	
0.425 mm	
0.3 mm	



Particle Description	
Sample	
Gravel	
Sand	
Silt	

GL Refin
 Referred and referred
 Referred and referred

Reference
 Reference

GEO / 38882

CHAPMAN WAY, TUNBRIDGE WELLS
 561063



UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION

Location
 Description
 Sample size

Reference
 Classification
 State

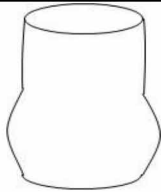
Description

Soil type or origin group cell type L

Specimen Details

Specimen condition	Indicated
Length	mm
Diameter	mm
Vertical strain	%
Vertical displacement	Mg/m
Drainage	Mg/m
Test Details	
Load membrane thickness	mm
Specimen height prior to shearing	mm
Membrane correction	
Maximum strain rate	min
Cell pressure	
Vertical strain rate	%
Maximum deviator stress	
Cell pressure	

Mode of failure



Orientation of failure plane	Vertical
Diameter of specimen mm	

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 under the Companies Act 2006

Registration number

GEO / 38882

Registration number

**CHAPMAN WAY, TUNBRIDGE WELLS
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UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION

Location
 Description
 Sample size

Reference
 Date
 No.

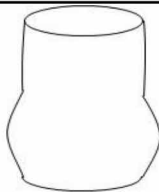
Description

Soil type / color / grain size / cell type

Specimen Details

Specimen description	Indicated
Length (mm)	
Diameter (mm)	
Vertical strain (%)	
Drainage	
Drainage	
Test Details	
Load membrane thickness (mm)	
Specimen height prior to shearing (mm)	
Membrane correction	
Meniscus correction (min)	
Cell pressure	
Strain rate	
Maximum deviator stress	
Cell pressure	

Mode of failure



Orientation of failure plane	Vertical
Diameter of failure zone (mm)	

Geotechnical Engineering
 Accredited and Approved
 Calibration and Testing

Reference number

GEO / 38882

Reference name

**CHAPMAN WAY, TUNBRIDGE WELLS
 561063**



UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION

Location
 Description
 Sample size

Reference
 Classification
 State

Description

Sample description and identification
 Sample origin

Specimen Details

Specimen identification	Indication
Length	mm
Diameter	mm
Vertical strain	%
Vertical displacement	Mg/m
Drainage	Mg/m
Test Details	
Load membrane thickness	mm
Specimen height prior to shearing	mm
Membrane correction	%
Maximum strain rate	min
Cell pressure	%
Vertical strain rate	%
Maximum deviator stress	%
Cell pressure	%

Mode of failure



Orientation of failure plane	Vertical
Diameter of failure plane	mm

Geotechnical
 Reference
 Description
 Location

Reference

GEO / 38882

Reference

**CHAPMAN WAY, TUNBRIDGE WELLS
 561063**



UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION

Location
Description
Sample size

Reference
Number
Date

Description

Unconsolidated undrained triaxial compression

Specimen Details

Specimen designation	Indication	Indication
Length	mm	
Diameter	mm	
Vertical strain	%	
Drainage	Mg/m	
Drainage	Mg/m	
Test Details		
Load membrane thickness	mm	
Specimen height prior to shearing	mm	
Membrane correction		
Maximum strain rate	min	
Cell pressure		
Vertical strain rate	%/min	
Maximum deviator stress		
Vertical strain at failure		

Mode of failure



Orientation of failure plane	Vertical
Diameter of failure zone	mm

Reported by
Checked and approved by
Date of issue

Reference number
Reference name

GEO / 38882

**CHAPMAN WAY, TUNBRIDGE WELLS
561063**



DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test														
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction	Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/D _e ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)				
							Start D	End D'										
RO102		18.00-19.50	Weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered	29/09/23	A	P	78.2	43.8	40.4		63.4	0.51	0.13	1.11	0.14			
							Determination 2	A	P	79.3	45.5	42.7		65.7	2.72	0.63	1.13	0.71
							Determination 3	A	P	78.2	38.9	36.1		60.0	0.28	0.08	1.09	0.09
RO102		21.00-22.50	Very weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered	29/09/23	D	L	74.4	74.3	72.1		73.2	0.29	0.05	1.19	0.06			
							Determination 2	A	P	75.0	44.8	43.6		64.5	0.42	0.10	1.12	0.11
RO103		19.50-21.00	Very weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered	29/09/23	D	L	78.4	78.0	76.2		77.1	0.33	0.06	1.22	0.07			
							Determination 2	A	P	79.0	45.3	42.6		65.5	0.24	0.06	1.13	0.07
							Determination 3	A	P	78.3	46.8	43.5		65.9	0.16	0.04	1.13	0.05
RO103		23.00-25.00	Very weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered	29/09/23	A	P	78.4	44.3	41.8		64.6	0.44	0.10	1.12	0.11			
							Determination 2	A	P	80.0	43.2	41.4		64.9	0.21	0.05	1.12	0.06

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **I** - Irregular lump **P** - Perpendicular to planes of weakness **U** - Random or unknown orientation **L** - Parallel to planes of weakness



Checked and Approved by I Tabios (Head of Department) Date: 04/10/2023	Project Number: GEO / 38882 Project Name: CHAPMAN WAY, TUNBRIDGE WELLS 561063	
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DETERMINATION OF POINT LOAD STRENGTH ON ROCK

Sample details				Point Load test										
Borehole Ref.	Sample Ref.	Depth (m)	Description	D. Tested	Test type & Direction	Sample width W (mm)	Platen separation (mm)		Water Content (%)	Equiv. Diameter D _e (mm)	Failure Load P (kN)	I _s P/D _e ² (MPa)	Correction Factor F	Point Load Index I _{s(50)} (MPa)
							Start D	End D'						
RO104		21.00-22.50	Very weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered	29/09/23	A P	77.0	38.3	36.7		60.0	0.18	0.05	1.09	0.05
RO104		24.00-25.50	Very weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered	29/09/23	D L	74.0	71.8	68.3		70.0	0.23	0.05	1.16	0.06
RO104		25.50-27.00	Extremely weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered	29/09/23	D L	79.8	78.9	75.7		77.3	0.10	0.02	1.22	0.02
RO104		27.00-28.50	Extremely weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered	29/09/23	A P	78.0	47.3	44.6		66.6	0.18	0.04	1.14	0.05
RO104		28.50-30.00	Extremely weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered	29/09/23	D L	78.9	76.8	74.5		75.6	0.21	0.04	1.20	0.05

(*) Sample failed on weakness

Test type and direction: **D** - Diametral **A** - Axial **B** - Block **I** - Irregular lump **P** - Perpendicular to planes of weakness **U** - Random or unknown orientation **L** - Parallel to planes of weakness

Checked and Approved by  I Tabios (Head of Department) Date: 04/10/2023	Project Number: GEO / 38882 Project Name: CHAPMAN WAY, TUNBRIDGE WELLS 561063	
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: RO104	Description: Very weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered
Sample Ref.: -	
Depth (m): 24.00-25.50	

Diameter
Height
Bulk Density
Dry Density
Water Content

79.60 mm
178.50 mm
2.26 Mg/m ³
2.06 Mg/m ³
9.8 %

Degree of Saturation: 69.2 %

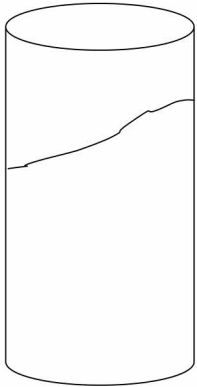
Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength Maximum load (kN): 1.50
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)




0.301 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used

Failure Sketch	
Mode of failure: Diagonal shearing	
	
Solid lines for material failures. Dashed lines for apparent weakness failure.	
Angle of foliation/Axis of loading: n/a Angle of shear plane/Axis of loading: n/a	
Sample type	C

Date tested: 03/10/2023

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by  I Tabios (Head of Department) Date: 04/10/2023	Project Number: GEO / 38882 Project Name: CHAPMAN WAY, TUNBRIDGE WELLS 561063	 
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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Borehole Ref.: RO104	Description: Extremely weak thinly laminated dark grey SILTSTONE / MUDSTONE. Highly to completely weathered
Sample Ref.: -	
Depth (m): 27.00-28.50	

Diameter
Height
Bulk Density
Dry Density
Water Content

81.40 mm
190.00 mm
2.29 Mg/m ³
2.03 Mg/m ³
13 %

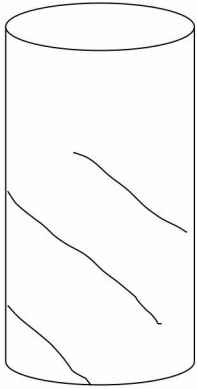
Degree of Saturation: 85.4 % Specific Gravity: 2.9 Mg/m³ (Assumed)

Test results

Unconfined Compressive Strength Maximum load (kN): 1.10
Young's Modulus (tangential at 50% failure load)
Poisson's Ratio (tangential at 50% failure load)
Young's Modulus (secant at 10% failure load)
Poisson's Ratio (secant at 10% failure load)




0.211 MPa
n/a
n/a
n/a
n/a

LF0879C (1000kN) compression frame used

Failure Sketch	
Mode of failure: Diagonal shearing	
	
Solid lines for material failures. Dashed lines for apparent weakness failure.	
Angle of foliation/Axis of loading: n/a Angle of shear plane/Axis of loading: n/a	
Sample type	C

Date tested: 03/10/2023

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are all met.

Checked and Approved by  I Tabios (Head of Department) Date: 04/10/2023	Project Number: GEO / 38882 Project Name: CHAPMAN WAY, TUNBRIDGE WELLS 561063	 
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Annex F: Laboratory Chemical Data



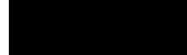
Tim Singer
TRC Companies Limited
20 Red Lion Street
Holborn
London
WC1R 4PQ

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
[REDACTED]

DETS Report No: 23-11933

Site Reference: Tunbridge Wells
Project / Job Ref: 561063
Order No: None Supplied
Sample Receipt Date: 22/09/2023
Sample Scheduled Date: 22/09/2023
Report Issue Number: 1
Reporting Date: 28/09/2023

Authorised by:



Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.



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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN



Water Analysis Certificate					
DETS Report No: 23-11933	Date Sampled	20/09/23	20/09/23	20/09/23	20/09/23
TRC Companies Limited	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Tunbridge Wells	TP / BH No	R0101	R0102	R0103	R0104
Project / Job Ref: 561063	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 28/09/2023	DETS Sample No	676353	676354	676355	676356

Determinand	Unit	RL	Accreditation				
pH	pH Units	N/a	ISO17025	8.3	8.0	8.1	7.9
Sulphate as SO ₄	mg/l	< 1	ISO17025	164	76	181	695
Arsenic (dissolved)	ug/l	< 5	ISO17025	< 5	5	< 5	< 5
Boron (dissolved)	ug/l	< 5	ISO17025	165	174	259	1600
Cadmium (dissolved)	ug/l	< 0.4	ISO17025	< 0.4	< 0.4	< 0.4	< 0.4
Chromium (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Chromium (hexavalent)	ug/l	< 20	NONE	< 20	< 20	< 20	< 20
Copper (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Lead (dissolved)	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5
Mercury (dissolved)	ug/l	< 0.05	ISO17025	< 0.05	< 0.05	< 0.05	0.20
Nickel (dissolved)	ug/l	< 5	ISO17025	30	11	8	< 5
Selenium (dissolved)	ug/l	< 5	ISO17025	6	< 5	< 5	< 5
Zinc (dissolved)	ug/l	< 2	ISO17025	12	4	2	8

Subcontracted analysis ^(S)
 Insufficient sample ^{I/S}
 Unsuitable Sample ^{U/S}



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Water Analysis Certificate - Speciated PAH					
DETS Report No: 23-11933	Date Sampled	20/09/23	20/09/23	20/09/23	20/09/23
TRC Companies Limited	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Tunbridge Wells	TP / BH No	R0101	R0102	R0103	R0104
Project / Job Ref: 561063	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 28/09/2023	DETS Sample No	676353	676354	676355	676356

Determinand	Unit	RL	Accreditation				
Naphthalene	ug/l	< 0.01	NONE	0.07	0.03	0.27	0.06
Acenaphthylene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	ug/l	< 0.01	NONE	0.13	0.13	0.24	6.70
Fluorene	ug/l	< 0.01	NONE	0.07	0.03	0.11	3.34
Phenanthrene	ug/l	< 0.01	NONE	0.02	< 0.01	0.06	1.97
Anthracene	ug/l	< 0.01	NONE	0.02	< 0.01	0.04	0.84
Fluoranthene	ug/l	< 0.01	NONE	0.08	0.02	0.05	0.83
Pyrene	ug/l	< 0.01	NONE	0.06	0.02	0.03	0.43
Benzo(a)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	ug/l	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	ug/l	0.008	NONE	< 0.008	< 0.008	< 0.008	< 0.008
Total EPA-16 PAHs	ug/l	< 0.16	NONE	0.45	0.23	0.80	14.17



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Maidstone
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Water Analysis Certificate - TPH CWG Banded

DETS Report No: 23-11933	Date Sampled	20/09/23	20/09/23	20/09/23	20/09/23
TRC Companies Limited	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Tunbridge Wells	TP / BH No	R0101	R0102	R0103	R0104
Project / Job Ref: 561063	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 28/09/2023	DETS Sample No	676353	676354	676355	676356

Determinand	Unit	RL	Accreditation				
Aliphatic >C5 - C6 : HS 1D MS AL	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aliphatic >C6 - C8 : HS 1D MS AL	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aliphatic >C8 - C10 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aliphatic >C10 - C12 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aliphatic >C12 - C16 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aliphatic >C16 - C21 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aliphatic >C21 - C34 : EH CU 1D AL	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34) : HS 1D MS+EH CU 1D AL	ug/l	< 70	NONE	< 70	< 70	< 70	< 70
Aromatic >C5 - C7 : HS 1D MS AR	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aromatic >C7 - C8 : HS 1D MS AR	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aromatic >C8 - C10 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aromatic >C10 - C12 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aromatic >C12 - C16 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10	27
Aromatic >C16 - C21 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10	19
Aromatic >C21 - C35 : EH CU 1D AR	ug/l	< 10	NONE	< 10	< 10	< 10	< 10
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	ug/l	< 70	NONE	< 70	< 70	< 70	< 70
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot al	ug/l	< 140	NONE	< 140	< 140	< 140	< 140



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4480

Water Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-11933	Date Sampled	20/09/23	20/09/23	20/09/23	20/09/23	
TRC Companies Limited	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Tunbridge Wells	TP / BH No	R0101	R0102	R0103	R0104	
Project / Job Ref: 561063	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: None Supplied	Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 28/09/2023	DETS Sample No	676353	676354	676355	676356	

Determinand	Unit	RL	Accreditation					
Benzene : HS 1D MS	ug/l	< 1	ISO17025	< 1	< 1	< 1	< 1	< 1
Toluene : HS 1D MS	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
Ethylbenzene : HS 1D MS	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
p & m-xylene : HS 1D MS	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10
o-xylene : HS 1D MS	ug/l	< 5	ISO17025	< 5	< 5	< 5	< 5	< 5
MTBE : HS 1D MS	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	< 10

Water Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-11933

TRC Companies Limited

Site Reference: Tunbridge Wells

Project / Job Ref: 561063

Order No: None Supplied

Reporting Date: 28/09/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichlorometha	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCS	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym
Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C34 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Aromatic C5 - C35 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS



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Analytical Report Number : 23-55077

Project / Site name:	Chapman Way, Tunbridge Wells	Samples received on:	06/09/2023
Your job number:	561063	Samples instructed on/ Analysis started on:	06/09/2023
Your order number:	561063	Analysis completed by:	13/09/2023
Report Issue Number:	1	Report issued on:	13/09/2023
Samples Analysed:	5 soil samples		

Signed:

Joanna Szwagrzak
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-55077

Project / Site name: Chapman Way, Tunbridge Wells

Your Order No: 561063

Lab Sample Number				2803249	2803250	2803251	2803252	2803253
Sample Reference				RO102	RO102	RO102	RO102	RO102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	5.00	10.40	WAC	17.20
Date Sampled				04/09/2023	05/09/2023	05/09/2023	05/09/2023	05/09/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	15	21	17	8.7
Total mass of sample received	kg	0.001	NONE	0.8	0.9	1.1	1.2	1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	IZJ	IZJ	IZJ	IZJ	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7	7.9	7.6	8	7.9
Total Cyanide	mg/kg	1	MCERTS	-	-	-	< 1.0	-
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	-	340	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	0.17	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-	170	-
Organic Matter (automated)	%	0.1	MCERTS	-	-	-	3.4	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	-	-	1.9	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.2	0.12	15	0.67	0.09
Acenaphthylene	mg/kg	0.05	MCERTS	0.06	< 0.05	8.4	0.61	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.08	0.08	23	0.55	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.12	0.11	37	0.72	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.1	0.82	230	7.9	0.08
Anthracene	mg/kg	0.05	MCERTS	0.22	0.16	59	1.6	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	2.4	0.72	220	20	0.09
Pyrene	mg/kg	0.05	MCERTS	2.1	0.57	180	17	0.07
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1	0.26	73	10	< 0.05
Chrysene	mg/kg	0.05	MCERTS	1.1	0.27	75	8.9	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.5	0.31	77	13	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.54	0.12	29	4.9	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1	0.22	67	11	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.56	0.13	39	6.5	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.16	< 0.05	10	1.5	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.64	0.16	45	6.6	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	12.9	4.05	1190	111	< 0.80
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Analytical Report Number: 23-55077

Project / Site name: Chapman Way, Tunbridge Wells

Your Order No: 561063

Lab Sample Number	2803249	2803250	2803251	2803252	2803253
Sample Reference	RO102	RO102	RO102	RO102	RO102
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.90	5.00	10.40	WAC	17.20
Date Sampled	04/09/2023	05/09/2023	05/09/2023	05/09/2023	05/09/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Parameter	Units	Limit of detection	Accreditation Status	2803249	2803250	2803251	2803252	2803253
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.3	11	16	14	16
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	1.6	0.6	1.9	2.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	< 0.2	1.6	0.7	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	17	27	29	24	39
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	27	29	24	40
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	23	70	140	44
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120	23	260	520	32
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.6	0.5	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	30	27	26	56
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	310	64	350	220	90

Monoaromatics & Oxygenates

Parameter	Units	Limit of detection	Accreditation Status	2803249	2803250	2803251	2803252	2803253
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	2803249	2803250	2803251	2803252	2803253
Petroleum Range Organics (C6 - C10) HS_1D_TOTAL	mg/kg	0.1	NONE	-	-	-	< 0.1	-
TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	11	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	30	2.5	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	74	22	31
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	120	25	33
TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	11	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	3.8	90	4.7	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	500	43	< 10
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	14	< 10	450	100	< 10
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	NONE	18	21	1100	150	< 10



Analytical Report Number: 23-55077

Project / Site name: Chapman Way, Tunbridge Wells

Your Order No: 561063

Lab Sample Number				2803249	2803250	2803251	2803252	2803253
Sample Reference				RO102	RO102	RO102	RO102	RO102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	5.00	10.40	WAC	17.20
Date Sampled				04/09/2023	05/09/2023	05/09/2023	05/09/2023	05/09/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

PCBs by GC-MS

PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-

Total PCBs by GC-MS

Total PCBs	mg/kg	0.007	MCERTS	< 0.007	-	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 23-55077

Project / Site name: Chapman Way, Tunbridge Wells

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2803249	RO102	None Supplied	0.9	Brown clay and loam with gravel and vegetation.
2803250	RO102	None Supplied	5	Brown clay.
2803251	RO102	None Supplied	10.4	Brown clay.
2803252	RO102	None Supplied	WAC	Brown clay with gravel.
2803253	RO102	None Supplied	17.2	Brown clay.



Analytical Report Number : 23-55077

Project / Site name: Chapman Way, Tunbridge Wells

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS