

GEOTECHNICAL INVESTIGATION REPORT

Grevatts Lane, Climping

Prepared for: The Southern Co-Operative Ltd

SLR Ref: 402.05324.00005
Version No: 01
October 2018



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1.0 Introduction

In July 2018, SLR Consulting Limited (SLR) was commissioned by The Southern Co-Operative Limited (The Client) to undertake a geoenvironmental investigation at the proposed Crematorium Site, Grevatts Lane, Climping. It is understood that the Client is developing the site as a crematorium and associated parking. A ground investigation was conducted in support of planning with subsequent reporting.

The ground investigation intersected superficial deposits to a depth of approximately 2.5m to 3.5m below ground level (bgl) overlying weathered Lewes Nodular Chalk Formation, recovered as gravelly silt. However, at one location (BH2) superficial deposits are present to a depth greater than 5.0m bgl. This location is immediately east of the proposed crematorium building and as a result an additional phase of ground investigation was considered necessary to define the limits of this area.

The additional ground investigation was carried out on 3rd October 2018 and comprised Cone Penetration Testing (CPT) at 9 No. locations on a 5-10m grid.

This report presents a summary of the additional ground investigation, CPT test results and interpretation of field data to determine the most appropriate foundation solution.

1.1 Proposed development

SLR has been provided with a site layout feasibility plan produced by Southern Co-Operative Property Department which indicates that the site is to comprise a chapel, crematory, 102 space car park, overflow parking and landscaped areas.

The proposed site layout plan is included as Drawing 01.

1.2 Objectives

It is anticipated that the feature encountered during the previous investigation is either a former stream bed (subsequently infilled with poorly compacted superficial deposits) or a solution feature within the in-situ Chalk, again infilled with superficial deposits.

The feature may pose a problem for foundation design and construction for the proposed structure. This ground investigation was designed to allow the size and orientation of the feature to be confirmed and to collect additional geotechnical data to inform foundation design.

The July 2018 ground investigation report indicates that shallow strip foundations will provide adequate bearing capacity, in excess of 150kPa, when constructed within the superficial River Terrace Deposits; however, uncertainty around differential settlement as a result of the varying depth of the superficial deposits may result in deep, piled foundations being required.

1.3 Scope of Work

The programme of site investigation works undertaken included the following key elements:

- ✦ Health and safety planning;
- ✦ Clearance of all exploratory locations utilising a Cable Avoidance Tool (CAT) and Genny;
- ✦ Cone Penetration Testing (CPT) utilising a tracked rig at 9 No. locations to a maximum depth of 15.72m; and,

- Supervision of all works in accordance with BS5930:2015¹ by a suitably qualified engineer.

2.0 Ground Investigation

2.1.1 Cone Penetration Test Interpretation

The Cone Penetration Test (CPT) is an in-situ testing method used to determine the geotechnical engineering properties of soils and assessing subsurface stratigraphy. The testing apparatus consists of an instrumented cone having a tip facing down, with a usual apex angle of 60° and cross-section area of 1000mm².

The CPT can be carried out from the ground surface without a need for a borehole. The test is carried out by first pushing the cone into the ground at a standard velocity of 1 to 2 cm/s. The cone is typically pushed into the ground via hydraulic rams, often mounted within a tracked carrier to provide manoeuvrability and an adequate reaction force.

For any depth, the resistance of the cone, called cone resistance q_c , and sleeve friction f_s is recorded using electrical strain gauges.

The cone penetration resistance values can be then correlated to shear strength parameters using proposed empirical relationships. Similar relationships exist for other material parameters including coefficient of volume compressibility.

Soil Classification

Soil types have been identified using the relationship between cone resistance (q_c) and friction ratio (r_f) and comparison to a standard soil identification chart such as that given by Schmertmann².

Sand typically gives a friction ratio of less than 2%, while the friction ratio of clays is normally in the range of 2% to 5% but can be as high as 8%, depending on the clay type. Very silty clays show a lower friction ratio.

The superficial deposits comprise low to high strength cohesive material overlying loose to medium dense slightly gravelly sand to a maximum of 5.8m bgl in CPT07.

CIRIA Guide C574³ highlights significant variability in the determination of the weathering grade of chalk by CPT. However, CIRIA highlights the value of CPT testing to determine the depth of cover over chalk or the presence of cavities. The combination of cone resistance ($>4\text{MN/m}^2$) and friction ratio (approximately 1%) are considered reliable indicators of chalk, where this can be used in conjunction with data from adjacent boreholes.

The CPT plots, presented in Appendix 01, have been interpreted into sand, silt, clay and chalk horizons. The weathering grade of the Chalk has been interpreted using the classification proposed by Power (1982) with details of the criteria presented in Appendix 01. A summary of the depth of the interpreted contact with the Chalk is presented in Table 2-1.

Interpretation of the CPT data indicates the contact with the underlying chalk is deepest in the east of the proposed building. CPT07 intersects the Chalk at 5.8m bgl, based on the criteria outlined in Appendix 01. The contact with the chalk is shallowest in the northwest of the building at 2.87m bgl in BH1, conducted during the July 2018 investigation.

¹ BS5930:2015. Code of Practice for Ground Investigations. British Standards Institute.

² Schmertmann, J.H., (1978), "Guidelines for Cone Penetration Test Performance and Design." US Federal Highway Administration, Washington DC, Report FHWA-TS-78-209, 145

³ CIRIA C74, Engineering in Chalk, 2002.

Table 2-1 Interpreted Weathered Chalk Depth

Location ID	Easting	Northing	Interpreted Chalk Contact (m bgl)
CPT01	498745	101410	4.0
CPT02	498755	101410	4.0
CPT03	498740	101405	3.8
CPT04	498750	101405	4.2
CPT05	498760	101405	4.0
CPT06	498735	101400	4.0
CPT07	498745	101400	5.8
CPT09	498740	101395	4.0
CPT10	498750	101395	4.1

Undrained Shear Strength

From the measured cone tip resistance and interpretation of soil type the undrained shear strength (S_u) of cohesive material has been estimated from the CPT data using the equation:

$$S_u = \frac{q_c - \sigma_{vo}}{N_k}$$

Where:

q_c is the cone resistance in kPa

σ_{vo} *in-situ* total vertical stress

N_k is an empirical cone factor.

The recommended N_k values for normally consolidated clays are between 11 and 19 (Lunne⁴ et al., 1997) and these values would normally be adopted for most non-cemented soils in the UK. An N_k of 15 has been applied.

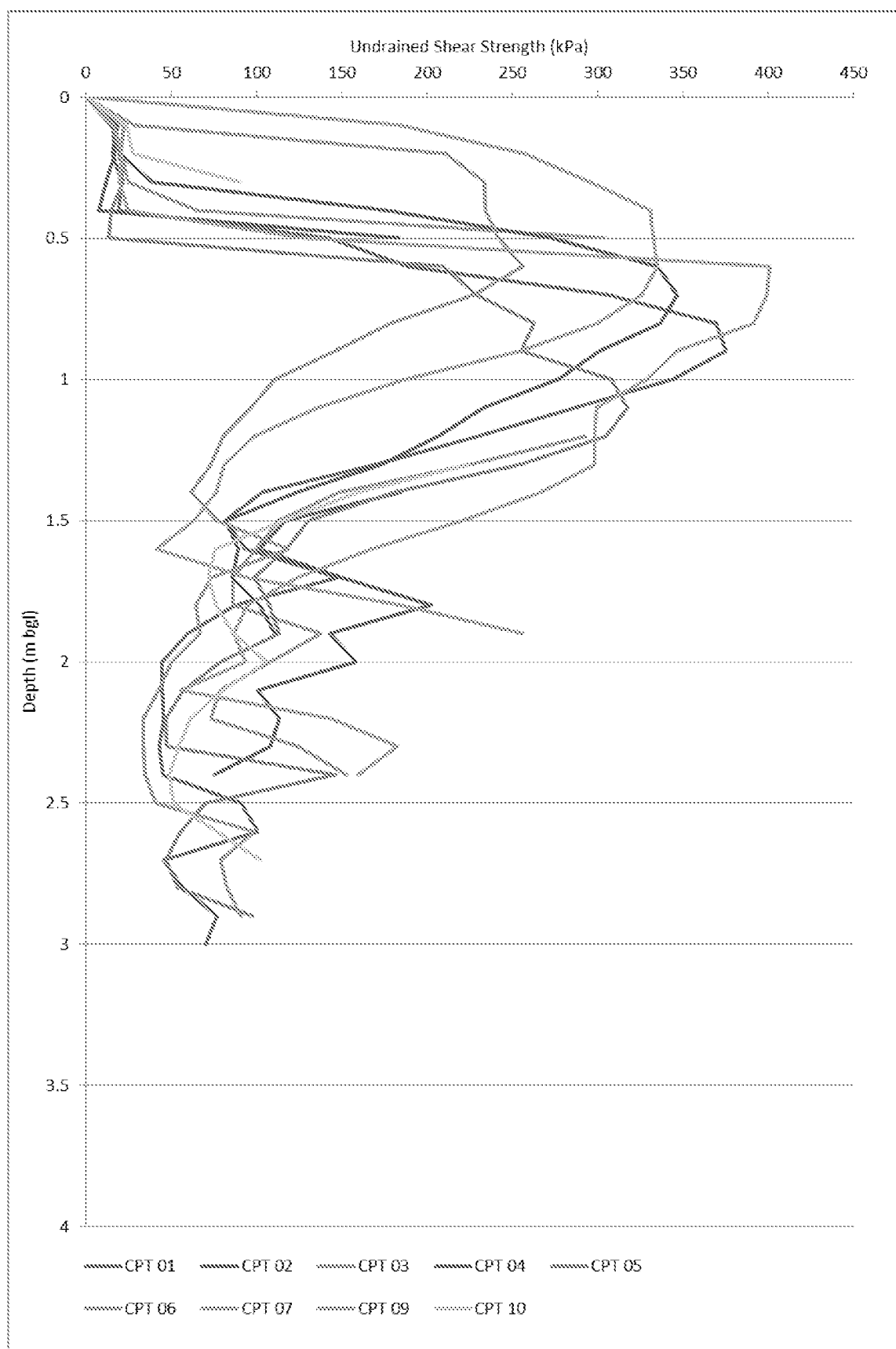
Interpreted undrained shear strength is only considered appropriate in cohesive material. Granular material has been excluded from the calculations based on the interpretation of cone resistance and friction ratio.

Shear strength of the cohesive superficial deposits are plotted for each of the CPT locations with depth in Figure 2-1, overleaf. The graph shows low strength cohesive deposits with a calculated shear strength of approximately 20kPa extending to approximately 0.4m bgl. There is an increase in shear strength between approximately 0.5m and 1.2m bgl. This can be attributed to an increase in sand content within a potential sandy silt horizon in the majority of locations causing an increase in the calculated shear strength based on cone resistance.

Calculated shear strength is broadly comparable to field observations and field testing conducted during the previous ground investigation recording firm silt overlying firm silty sandy slightly gravelly clay.

⁴ Lunne, T., Robertson, P.K. and Powell, J.J.M., (1997), "Cone Penetration Testing." Blackie Academic & Professional, pp. 64 - 67.

Figure 2-1 Interpreted Shear Strength



Coefficient of Volume Compressibility (m_v)

In addition to shear strength the coefficient of volume change (m_v) has been calculated from the CPT data using the equation:

$$m_v = \frac{1}{\alpha q_c}$$

Where:

q_c is the cone resistance in kPa

α is an empirical factor

The empirical factor (α) is selected based on the nature of site specific material. A value of 3 is considered appropriate, consistent with normally consolidated clays and silts.

Figure 2-2, overleaf, presents calculated m_v against depth below ground level for each CPT location. The graph shows higher, more variable in m_v within the shallow superficial deposits. m_v values in the underlying chalk are more consistent, typically around $0.1 \text{ m}^2/\text{MN}$, indicative of medium to low compressibility material.

The magnitude of settlement has been calculated using a worst-case scenario based on a load of 110 kN/m^2 and the calculated m_v applied for each 0.1 m interval. The cumulative settlement has been plotted against depth and is presented in Figure 2-3.

The magnitude of settlement will decrease with depth below the foundation as deeper strata are below the foundation influence zone and associated stress 'bulb'. The zone of influence is dependent on the foundation geometry and loading. However, in order to consider a worst-case cumulative settlement has been presented for the total CPT depth at each CPT location.

Settlement calculations indicate potential total settlement of approximately 8.4 mm when considered with a foundation influence zone extending up to 4 m bgl in CPT02, outside of the building footprint. Maximum settlement within the footprint is recorded in CPT01 reaching approximately 7.3 mm .

Figure 2-3 shows there is variation across the locations as a result of the interbedded River Terrace Deposits. Settlement will typically occur more quickly in granular horizons as pore water dissipates during loading. At 2 m bgl the total settlement ranges from approximately 1.6 mm to 3.3 mm . At 4 m bgl the range increases from 3.6 mm to 8.4 mm . The magnitude of settlement decreases within the underlying chalk.

Based on the calculated range of anticipated settlement traditional strip footing foundations are considered appropriate as long as they are designed to accommodate a range of settlement associated with variation in composition and depth of superficial deposits.

Figure 2-2 Coefficient of Volume Compressibility with Depth

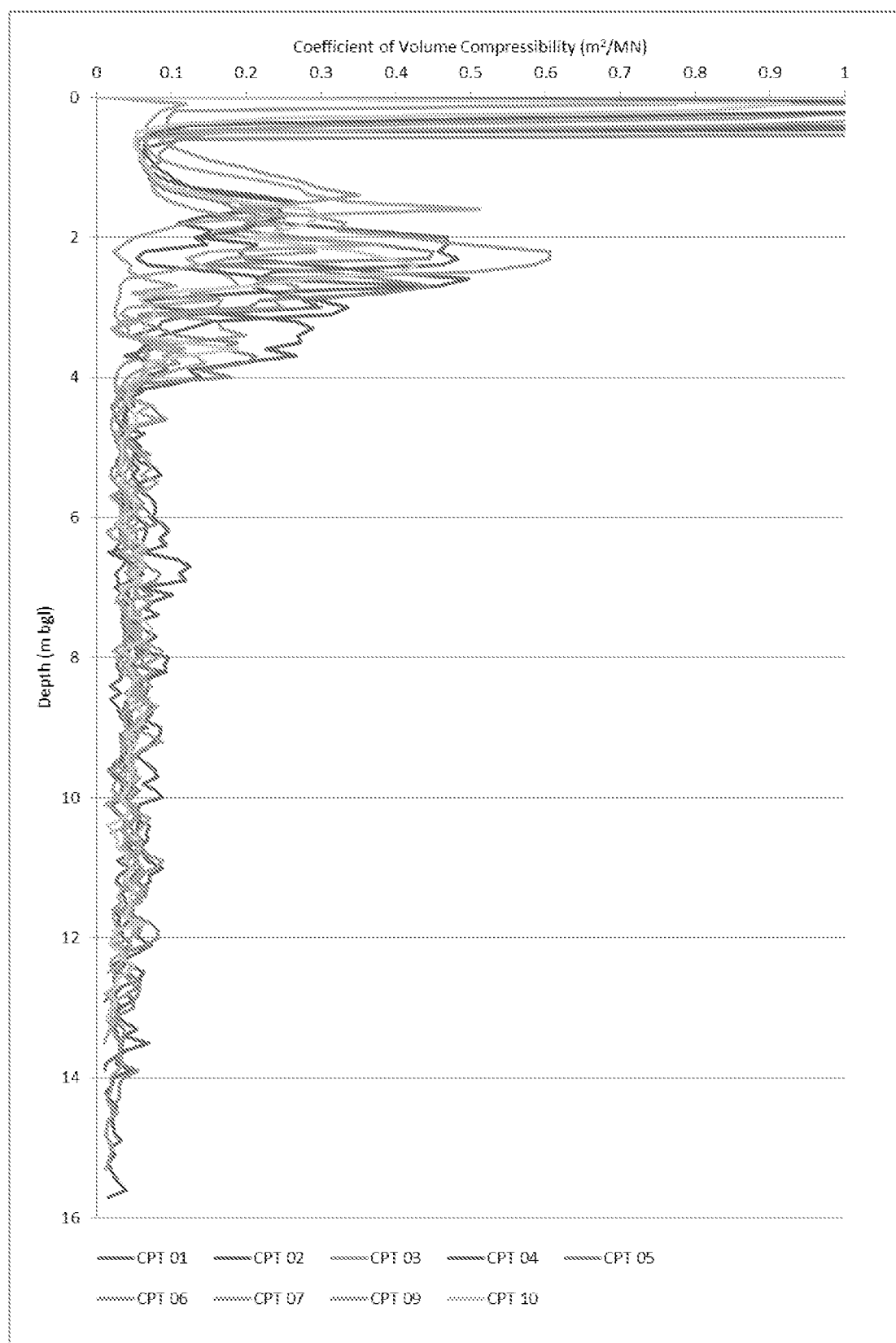
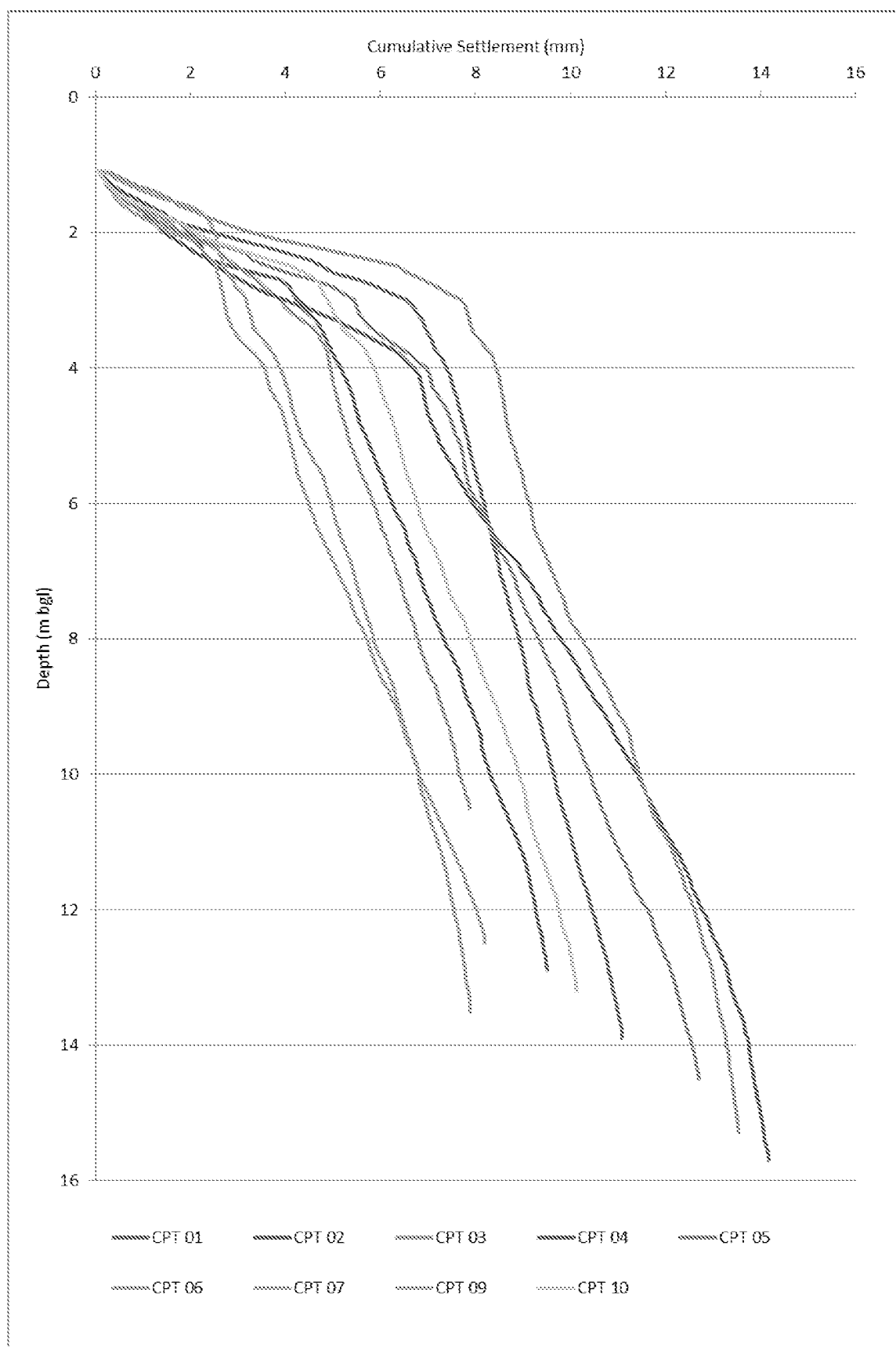


Figure 2-3 Cumulative Settlement with Depth



3.0 Summary and Conclusions

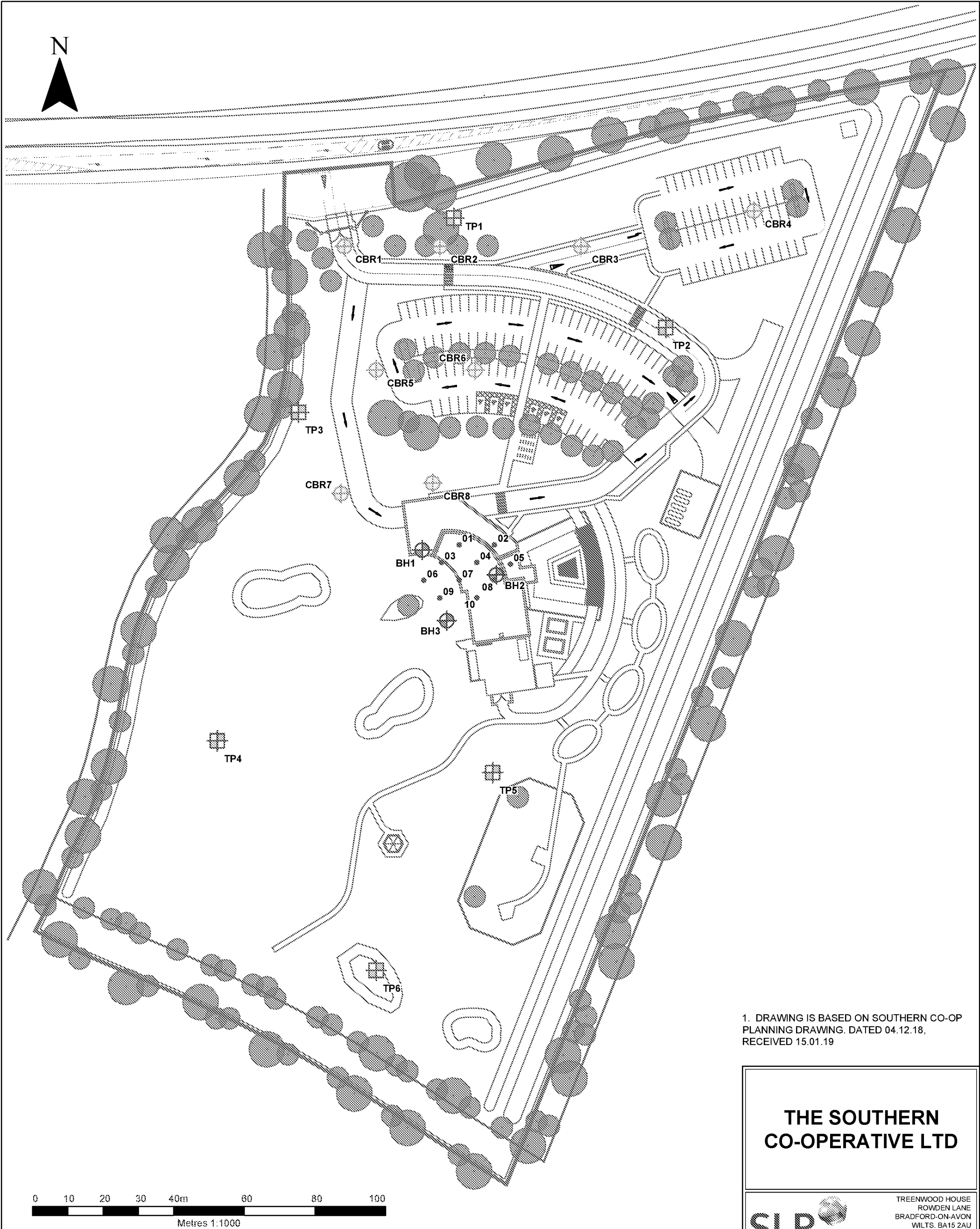
The most recent phase of ground investigation identified superficial deposits comprising interbedded clay and silt overlying sand present to a maximum of 5.8m bgl in the east of the proposed building. The depth of the chalk contact has been interpreted from previous boreholes and CPT data and is between 2.87m (BH1) and 5.8m bgl (CPT07). The feature observed during the ground investigation is considered to be localised and not extensive in depth.

Interpreted shear strength of the cohesive River Terrace Deposits is comparable with field observations and in-situ testing conducted during the July 2018 investigation. Traditional strip foundations installed to 1.0m bgl are considered appropriate and will provide a calculated bearing capacity of 180kPa. The limited depth of superficial deposits indicates that settlement, and in particular differential settlement, will not be a significant issue. Settlement magnitudes of around 10-18mm are anticipated in the worst case condition with an anticipated load of 110kN/m².

Foundations should be designed to accommodate variation in potential settlement as a result of thicker superficial deposits.

Notwithstanding this there is potential for areas of softer clay with a reduced allowable bearing capacity. Prior to construction foundation excavations should be proof rolled to highlight any soft areas. These should then be removed and backfilled with suitable granular material to ensure the structure remains stable.

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GREVATTS LANE
CLIMPING

GROUND INVESTIGATION

EXPLORATORY LOCATION PLAN
PROPOSED LAYOUT

DRAWING 01

Scale
1:1000 @ A3

Date
OCTOBER 2018

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APPENDIX 01

In Situ Investigation Static CPT Factual Report

IN SITU

SITE INVESTIGATION

STATIC CONE PENETRATION TEST FACTUAL REPORT

CLIENT
PROJECT

SLR CONSULTING
GREVATTS LANE, CLIMPING



Project	Grevatts Lane, Climping
Project No.	1180407
Client	SLR Consulting
Address	3rd Floor, Brew House, Jacob Street, Bristol, BS2 0EQ

Attention: Ms Polly Ainsley

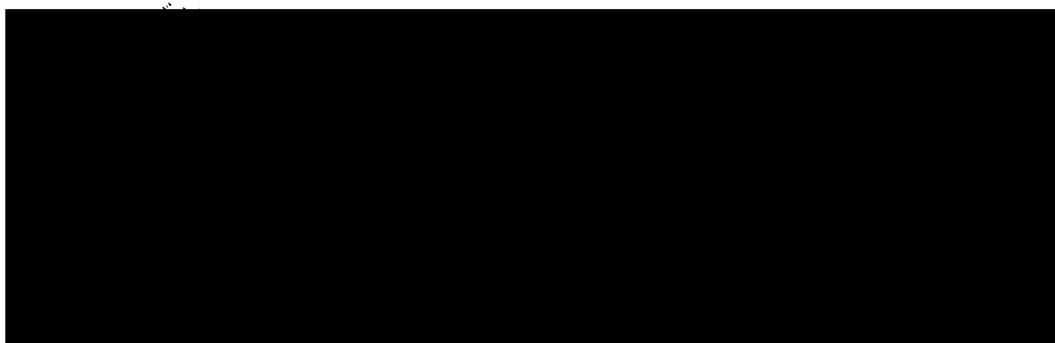
Dear Ms Ainsley,

We have pleasure in providing a digital copy of our report and data in AGS format for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,

In Situ Site Investigation Limited



Report Issue

Issue	Date	Description	Prepared
01	15/10/2018	Final	Rachel Cleaver

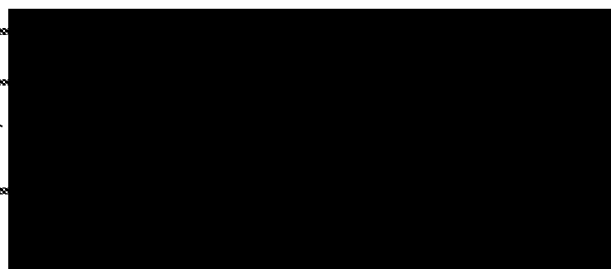


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1.0 INTRODUCTION

In Situ Site Investigation Limited (In Situ) was engaged in a geotechnical site investigation at Grevatts Lane, Climping at the request of SLR Consulting (the client). The site investigation consisted of completing 9 *Static Piezocone Penetration Tests (CPTU)* to provide information on the soil conditions and derived geotechnical parameters at:

Grevatts Lane

Climping

Sussex

BN17 5RX

All test locations were provided by the client, as shown on the site map, in *Appendix A.1*. The tests were stopped when they reached the target depth as per the client's technical specifications or for other technical reasons, as detailed in *Appendix A.2* and on each CPTU log.

The fieldwork was carried out on 03/10/2018 as per the client's request.

The work on site and the final factual reporting have been undertaken in accordance with the international technical standard *BS EN ISO 22475-1:2012*.

2.0 FIELDWORK

2.1 CONE PENETRATION TESTS

The fieldwork activity is summarised in Table 2.1.

Table 2.1 Fieldwork Summary	
CPT Operator/s	Michael O'Flaherty
Date Started	03/10/2018
Date Finished	03/10/2018
In Situ S.I. Project Manager	Darren Ward
Main Contractor's Site Manager	Anna Hill

2.1.1 Rig Information

Details of CPTU rig used in this project are shown in Table 2.2. Full data sheet for the rig is presented in *Appendix A.3*.

Table 2.2 Rig Summary	
Rig Name	Rig Description
CPT 006	14 Tonne Tracked CPT Rig

2.1.2 CPTU Cone

Details of electric CPTU cones (Type TE2) used in this project conforming to the requirements of Application Class 2 of *ISO 22476-1:2012*, are shown in Table 2.3.

Table 2.3 Cone Summary		
Number	Cross-section area	Filter position
S15CFIIP.1475	15cm ²	u ₂
S15CFIIP.1486	15cm ²	u ₂

A full datasheet of the cone used is shown in *Appendix A.4*.

The cone's measured parameters are shown in Table 2.4.

Table 2.4 Completed Fieldwork Summary

9 CPTU to a maximum depth of 15.72m. Each test measured Cone Resistance, q_c , Sleeve Friction, f_s , Porewater Pressure in the shoulder position, u_2 , Inclination in X and Y axes.

Provision of factual report with estimated soil type, derived geotechnical parameters and AGS data.

2.1.3 CPTU Cone Calibration

The cone resistance and sleeve friction are recorded by calibrated load cells in the cone. The CPTU load cells and pressure transducers are regularly calibrated in line with ISO 22476-1:2012 standard by the cone manufacturer. The cone calibration certificate for the cone used at this site are presented in *Appendix A.5*.

2.1.4 CPTU Cone Saturation

The pore water pressure is recorded using a calibrated pressure transducer located in the piezocone. To ensure pore water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. The cone and filter are saturated using a glycerine fluid with a viscosity of 10,000CST.

2.1.5 Test Procedure

The tests are carried out in accordance with the *International Standard for Electrical Cone and Piezocone Penetration Test (ISO 22476-1:2012)*.

The final depths of the tests were determined by either completion to the specified test depth or when the maximal safe capacity of the equipment was reached. A schedule of the tests performed is shown in *Appendix A.2*, which has been compiled from the operators' daily progress reports.

The data is transmitted from the digital CPTU through an umbilical cable that runs through the push rods to the data acquisition system. Results are displayed instantaneously on the computer logging screen. The results are recorded on the computer hard disc.

The rate of penetration is kept constant at 2cm/s $\pm 10\%$ except when penetrating very dense or hard strata. Before each test is carried out zero values are taken of the cone to check if it is within calibration. At the end of each test, zero values are taken again to see if there has been any drift during the test. These values are inspected during the post processing stage. This is a quality check on the data and the testing procedure. Individual test zero values are shown on their corresponding test results in *Appendix B*.

2.1.6 In Situ Pore Pressure (u_p)

The in situ or hydrostatic pore pressure is required for the calculation of several derived parameters included in this report. These values are presented on the pore pressure plot, *Form 01*, which is included in *Appendix B*.

2.2 CHALK

In order to provide an estimate of the Chalk Grade Classification as defined by Ward et al. (1968) and Wakeling (1969) a modified correlation originally derived by Power (1982) has been used. This is presented in figure 2.2.1 and has been used to give the degree of weathering quoted on the soil type estimates on the cone penetration graphs.

It should be noted that the correlation is approximate and that Chalk at different locations can differ from that described by Ward et al. at one particular site (Mundford in Norfolk). The descriptions in figure 2.2.1 are typical, and do not necessarily relate to this site. Simplified descriptions are therefore presented on the logs. It should also be noted that the Chalk grade classification was derived to describe the chalk mass. Localised variations in the cone resistance do not necessarily represent changes in Classification. Peaks may represent flints or local indurated zones.

GRADE	TYPICAL BRIEF DESCRIPTION (After Wakeling, 1969)	FRICTION RATIO (%)	CONE END RESISTANCE (MPa)
		(modified from Power, 1982)	
6	Extremely soft structureless CHALK containing small lumps of intact chalk.	-	Below 5
5	Structureless remoulded CHALK containing lumps of intact chalk.	0.75 – 1.00	5-10
4	Rubbly partly-weathered CHALK with bedding and jointing. Joints 10-60mm apart and open to 20mm and often infilled with soft remoulded chalk and fragments.	1.00 – 1.25	10-15
3	Rubbly to blocky unweathered CHALK. Joints 60-200mm apart and open to 20mm and often infilled with fragments.	1.25 – 1.50	15-20
2	Blocky medium-hard CHALK. Joints more than 200mm apart and closed.	1.50 – 2.00	More than 20
1	As for grade 2 but hard and brittle.	No penetration-	No penetration

Figure 2.2.1: Chalk classification table modified from Power (1992).

2.3 POSITIONING

Positioning and surveying of all investigated locations was the responsibility of the client. The site map and position of the tests are presented in *Appendix A.1*.

3.0 CONE PENETRATION MEASURED PARAMETERS

All measured parameters of tests carried with the CPTU cone are shown in *Appendix B* and all the information about data processing and results are given in sections 3.1, 3.2 and 3.3.

3.1 DATA PROCESSING

The measured parameters, cone end resistance, q_c , sleeve friction, f_s , porewater pressure measurements with filter in shoulder position, u_2 and inclination for x and y axis, I_x , I_y , were recorded for every 10 mm of penetration keeping a constant speed of 20 mm/s $\pm$ 5 mm/s, which may slightly change when the cone is penetrating hard strata.

The measured data from the site works is processed and presented using specialised CPT software. The interpretations on the CPTU results were carried out following the recommendations of *Lunne et al. (1997)*, *Robertson (2015)* and *BS EN ISO 22475-1:2012*. Measured parameters, mentioned in *Sections 3.2* and *3.3*, were used to derive all the geotechnical parameters, which are presented in *Chapter 4.0*. The soil behaviour type method used on this report is *Robertson et al (1986)*, shown in *Figure 3.2*.

3.1.1 Zero Measurements

Before and after each CPTU test, zero measurements are recorded for each channel of the cone. The zero measurements are presented on the logs in *Appendix B*. This is a routine quality check carried out on site.

3.2 MEASURED PARAMETERS

3.2.1 Cone Resistance (q_c)

Cone resistance, q_c , is measured as the total force acting on the cone, divided by the projected area of the cone. The results are presented in MPa, on *Log 01*, in *Appendix B*, scale 0-20 MPa with a minor scale printing on the same graph at 0-4 MPa.

3.2.2 Sleeve Friction (f_s)

Sleeve friction, f_s , is measured as the total frictional force acting on the friction sleeve divided by its surface area. The results are presented in kPa, on *Log 01*, in *Appendix B*, using a scale of 0-500 kPa.

3.2.3 Porewater pressure (u_2)

The pore pressure, u_2 , is measured during the test. If the material is free draining and saturation is maintained it will normally measure hydrostatic pore pressure. In materials that are not free draining, it will record the total pore pressure (hydrostatic plus any excess pore pressures generated) created by the cone penetration through this material.

The filter element can be mounted in one of three positions. For all tests carried out in this project the filter was mounted in the u_2 position (see *Figure 3.1*).

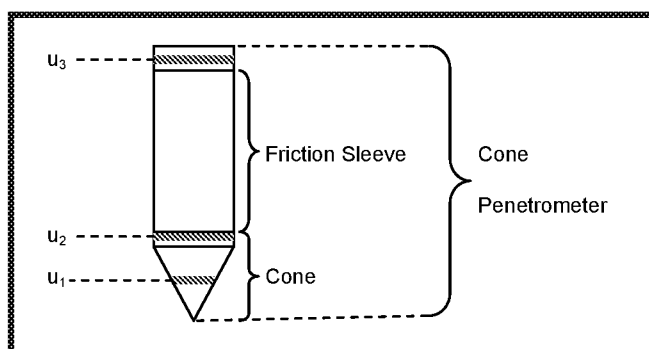


Figure 3.1: Diagram showing pore pressure filter locations (after Lunne *et al.*, 1997)

3.2.4 Inclination (I_x , I_y)

The CPT rig was set up to obtain a thrust direction as near as possible to vertical. The CPTU cones have inclinometers incorporated to measure the non-verticality of the test. For test depths less than 15 m, significant non-verticality is unusual, provided the initial thrust direction is vertical.

3.3 ESTIMATED SOIL BEHAVIOUR TYPE

3.3.1 Friction Ratio (R_f)

The friction ratio, R_f is the ratio between the sleeve friction and the cone resistance (Lunne *et al.*, 1997).

$$\text{Friction Ratio } (R_f) = \left(\frac{\text{Sleeve Friction } (f_s)}{\text{Cone Resistance } (q_c)} \right) \times 100$$

3.3.2 Estimated Soil Behaviour Type (SBT)

The estimation of soil behaviour type, *SBT*, using measurements of cone resistance and sleeve friction is based upon the variations of the friction ratio and cone resistance. The

friction ratio varies depending upon whether the soil is cohesive or granular. The cone resistance varies depending on the strength and densities of the soil.

The interpretation used in this report is *Robertson et. al. (1986)*, which is shown in Figure 3.2. The results are presented on *Log 01*, in *Appendix B*.

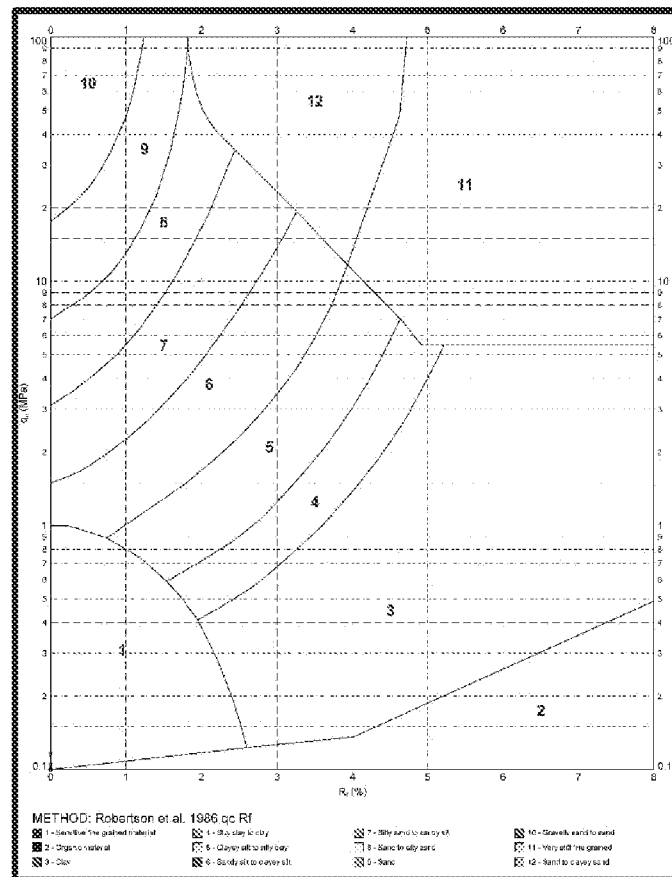


Figure 3.2: Robertson et al., 1986 soil behaviour type chart.

3.3.3 Pore Pressure Ratio (B_q)

Pore pressure ratio, B_q is the ratio between the measured pore pressure generated during penetration and the corrected cone resistance minus the total overburden stress.

Pore pressure ratio as defined by *Senneset and Janbu (1985)* is defined as:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{vo}}$$

where

- u_2 is pore pressure measured between the cone and the friction sleeve
- u_0 is equilibrium pore pressure
- σ_{vo} is total overburden stress
- q_t is cone resistance corrected for unequal end area effects

3.4 APPLIED CORRECTIONS

3.4.1 Corrected Cone Resistance (q_c)

For each penetration test, the measured cone resistance, q_c , can be corrected for the “unequal area effect” due to the influence of the ambient pore water pressure acting on the cone.

The correction has been applied using the following equation by Lunne et al., 1997:

$$q_t = q_c + [u_2 \cdot (1 - \alpha)]$$

where

α is the cone area ratio

The cone used on this project has a cone area ratio of 0.79. This value is geometrically measured.

3.4.2 Depth Correction

All tests in the report have been corrected for depth difference caused by inclination. This has been calculated using the method described in ISO 22476-1:2012.

To calculate the corrected depth the following formula is used:

$$z = \int_0^l C_{inc} \cdot dl$$

where

z is penetration depth, in m

l is penetration length, in m

C_{inc} is correction factor for the effect of the inclination of the CPTU relative to the vertical axis.

The equation for calculating the correction factor for the influence of the inclination for a bi-axial inclinometer is:

$$C_{inc} = \frac{1}{\sqrt{(1 + \tan^2 \beta_1 + \tan^2 \beta_2)}}$$

where

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

4.0 GEOTECHNICAL DERIVED PARAMETERS

A number of empirical correlations can be used to derive geotechnical parameters from CPTU data. This report includes only the parameters which are described in this chapter. The results of all correlations used to obtain the geotechnical derived parameters are presented on *Log 02* and *Log 03* in *Appendix B*.

Please note that each empirical correlation is derived for a certain type of soil, and may not be appropriate for all the soil types encountered on this project.

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c)

The soil behaviour type index, I_c , was derived by *Jefferies and Davies (1991)*, and was created to simplify the application of CPTU SBT chart shown in *Chapter 3, Figure 3.2*. This approach has been modified for use with the *Robertson (1990)* normalised CPT soil classification chart, *Figure 4.1*. The normalised cone parameters Q_t and F_r (for definitions see *Appendix A6 Symbol List*) can be combined into one Soil Behaviour Type Index, I_c , (Lunne et al., 1997).

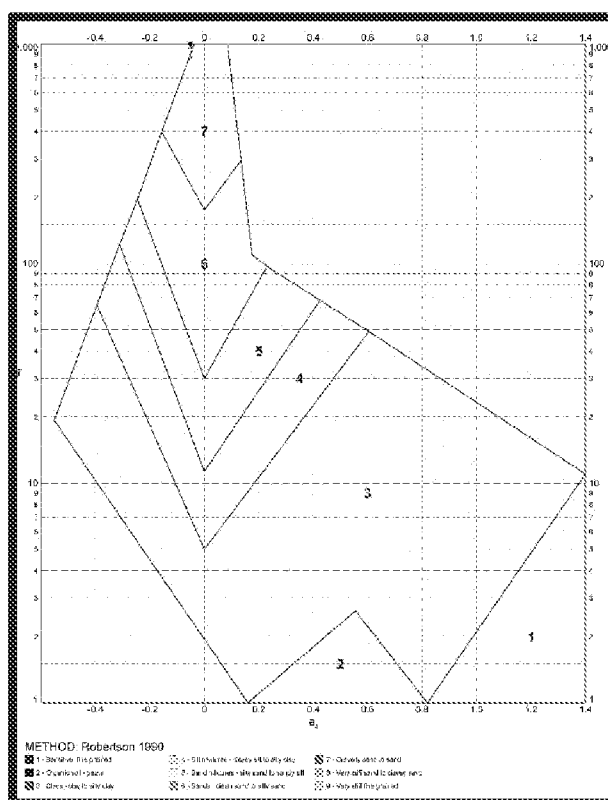


Figure 4.1: Robertson 1990 soil behaviour type chart.

The soil behaviour type index, I_c , can then be defined using *Robertson (2010)* formula, given below:

$$I_c = ((3.47 - \log Q_t)^2 + (\log F_r + 1.22)^2)^{0.5}$$

where

Q_t is the normalized cone resistance which represents the simple normalization with a stress exponent (n) of 1.0, which applies well to clay-like soils

F_R is the normalized friction ratio, in %

The boundaries of soil behaviour type are then given in terms of the index, I_c , presented in *Table 4.1* below.

The soils behaviour type index does not apply to zones 1, 8 and 9. The profiles of I_c provide a simple guide to the continuous variation of soil behaviour type in a given soil profile based on CPTU results, with a reliability greater than 80% compared with soil samples (*Robertson, 2015*).

Zone	Soil Behaviour Type	I_c
1	Sensitive fine grained	N/A
2	Organic Soils – clay	>3.6
3	Clays – silty clay to clay	2.95 – 3.6
4	Silt mixtures – clayey silt to silty clay	2.60 – 2.95
5	Sand mixtures – silty sand to sandy silt	2.05 – 2.6
6	Sands – clean sand to silty sand	1.31 – 2.05
7	Gravelly sand to dense sand	<1.31
8	Very stiff sand to clayey sand*	N/A
9	Very stiff fine grained *	N/A

* Heavily overconsolidated or cemented

Table 4.1: Normalized CPTU Soil Behaviour Type (SBT_n) Index values, I_c . (*Robertson, 2010*)

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60})

The derived N value of SPT, N_{60} , is strongly and directly related to the cone resistance, q_c .

In this report the N_{60} value is derived using the following correlations, developed by *Robertson and Wride (1998)* and *Jefferson and Davies (1998)*

1) *Robertson & Wride (1998)*

$$N_{60} = \frac{q_c}{8.5 \cdot p_a \left(1 - \frac{I_c}{4.6}\right)}$$

2) *Jefferson and Davies (1993)*

$$N_{60} = \frac{q_c}{0.85 \cdot \left(1 - \frac{I_c}{4.75}\right)}$$

where

- q_c is the cone resistance
- p_a is the atmospheric pressure equal to 100 kPa
- I_c is the soil behaviour type index calculated as given in *section 4.1*

It is suggested that this method provides a better estimation of the N value than the actual SPT test, due to its poor repeatability. But in fine grained soil with high sensitivity these methods of estimating N_{60} may overestimate it (*Jefferies and Davies, 1991*).

4.3 RELATIVE DENSITY (D_r)

Relative density, D_r , is an intermediate parameter for coarse grained soils, widely used to describe sand deposits. All the research on deriving the relative density from CPTU tests results are carried out for **clean predominantly quartz sands**. The studies have shown that CPTU resistance in granular soils is controlled by sand relative density, in situ effective stresses and compressibility. The more compressible sands tend to give lower penetration resistance for a given relative density than less compressible sands.

In this report relative density is calculated using the methods suggested by *Baldi et al., (1986)*, *Jamiolkowski et al., (2001)* and *Kulhawy and Mayne (1990)* as shown in the equations below:

1) *Baldi et al., (1986)*

$$D_r = \frac{1}{C_2} \cdot \ln \left(\frac{q_c \cdot Wehr}{C_1 \cdot (\sigma'_{v0})^{0.55}} \right) \cdot 100$$

where

C_1 is a consolidation coefficient which is 157 for normally consolidated soils and 181 for over consolidated soils

C_2 is a consolidation coefficient which is 2.41 for normally consolidated soils and 2.46 for over consolidated soils

Wehr is a correction coefficient for calcareous soils

2) Jamilkowski et al., (2001)

$$D_r = 100 \cdot \left[0.268 \cdot \ln \left(\frac{q_t / \sigma_{atm}}{\sqrt{\sigma'_{v0} / \sigma_{atm}}} \right) + C_1 \right]$$

where

C_1 is a compressibility coefficient which is -0.675 for average compressible soils, ≤ 1.0 for high compressible soils and carbonate or calcareous sands and ≥ -2.0 for low compressible soils

q_t is corrected cone resistance

σ_{atm} is the atmospheric pressure

3) Kulhawy and Mayne, (1990)

$$D_r = \left[\frac{q_{c1}}{305 \cdot C_1 \cdot OCR^{0.18} \cdot (1.2 + 0.05 \cdot \log(t/100))} \right]^{0.5} \cdot 100$$

where

q_{c1} is the cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{c1} = \frac{q_c}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

where

q_c is the cone resistance in kPa

σ'_{v0} is the initial vertical effective stress in kPa

C_1 is a compressibility coefficient which is -0.91 for low compressible sands, 1.0 for medium compressible sands and 1.09 for high compressible sands

t is time in years

4.4 FRICTION ANGLE (ϕ')

Friction angle, ϕ' , is used to express the shear strength of uncemented, coarse grained soils. In this report friction angle is derived by the correlations of *Mayne and Campanella (2005)*, *Robertson and Campanella (1983)* and *Kulhawy and Mayne (1990)*.

- 1) Mayne and Campanella, (2005)

$$\phi' = 29.5^\circ \cdot B_q^{0.121} \cdot [0.256 + 0.336 \cdot B_q + \log Q_t]$$

where

B_q is the pore pressure ratio, calculated as in Session 3.3

Q_t is the normalized cone resistance

- 2) Robertson and Campanella, (1983)

$$\phi' = \tan^{-1} \left(0.1 + 0.38 \cdot \log \left(\frac{q_t}{\sigma'_{v0}} \right) \right)$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

- 3) Kulhawy and Mayne, (1990)

$$\phi' = 17.6^\circ + 11.0^\circ \cdot \log(q_{t1})$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

The method suggested by *Mayne and Campanella (2005)* will not provide reliable results for heavily overconsolidated soils, fissured geomaterials and highly cemented or structures clays. This approach gives reliable results when pore pressure is positive and varies $0.1 < B_q < 1.0$. The correlation suggested by *Robertson and Campanella (1983)* estimates the peak friction angle for uncemented, unaged, moderately compressible, predominately quartz sands. For sands of higher compressibility the method will tend to predict low friction angles. The method suggested by *Kulhawy and Mayne (1990)* is an alternate relationship for clean, rounded, uncemented, quartz sands.

4.5 FINES CONTENT (FC)

The fines content, FC , in this report is estimated using two different methods, one from *Robertson and Wride (1998)* and the other, *Suzuki et al (1998)* as presented below:

- 1) Robertson and Wride (1998)

$$I_C < 1.26: FC = 0$$

$$1.26 \leq I_C \leq 3.5: FC(\%) = 1.75I_C^{3.25} - 3.7$$

$$3.5 < I_C: FC = 100\%$$

- 2) Suzuki et al (1998)

$$FC(\%) = 2.8I_C^{2.6}$$

where

I_c is the soil behaviour type index, calculated as in section 4.1

4.6 UNDRAINED SHEAR STRENGTH (s_u)

Estimation of undrained shear strength, s_u , from CPTU tests using corrected cone resistance is carried out using the following correlation from *Lunne et al. (1981)*:

$$S_u = \frac{(q_t - \sigma_{v0})}{N_{kt}}$$

where

N_{kt} is the empirical cone factor, which varies from 10 (6 for very soft sensitive fine grained soils) to 20. In this report 3 values are considered: 15, 17.5 and 20. N_{kt} tends to increase with increasing plasticity and decrease with increasing soil sensitivity. It decreases as B_q increases. (*Lunne et al., 1997*)

σ_{v0} = total overburden stress.

This report only presents the undrained shear strength data on soils with soil behaviour type index, I_c values greater than 2.60.

The value of undrained shear strength, s_u to be used in analysis depends on the design problem. In general, the simple shear direction of loading often represents the average undrained strength. For larger, moderate to high risk projects, where high quality field and laboratory data may be available, site specific correlations should be developed based on appropriate and reliable values of s_u .

4.7 SENSITIVITY (S_t)

The sensitivity, S_t of clays is defined as the ratio of undisturbed peak undrained shear strength to totally remoulded undrained shear strength.

In this report S_t is calculated using two correlations developed by *Schmertmann (1978)* and *Mayne (2007)*.

1) Schmertmann (1978)

$$S_t = \frac{s_u}{s_{u(rem)}} = \frac{q_t - \sigma_v}{N_{kt}} \left(\frac{1}{f_s} \right)$$

where

$s_{u(rem)}$ is the remoulded undrained shear strength. It can be assumed equal to the sleeve resistance, f_s .

2) Mayne (2007)

$$S_t = \frac{0.073 \cdot (q_t - \sigma_{v0})}{f_s}$$

For relatively sensitive clays, $S_t > 10$, the value of f_s can be very low and not very accurate, hence the estimate of sensitivity should be used as a guide only.

4.8 SOIL UNIT WEIGHT (γ)

Soil unit weight, γ in this report is calculated by using one method for sands, considered under dry conditions and two methods for clays, considered under saturated conditions. These relationships are developed by *Mayne (2007)* and the equations are presented below:

1) Mayne (2007)

Dry unit weight for sands:

$$\gamma_{dry} = 1.89 \cdot \log(q_{t1}) + 11.82$$

Saturated unit weight for clays method 1

$$\gamma_{sat} = 8.32 \cdot \log(V_s) - 1.61 \cdot \log(z)$$

Saturated unit for clays method 2

$$\gamma_{sat} = 2.60 \cdot \log(f_s) + 15 \cdot G_s - 26.5$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula:

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

z is the depth

V_s is the shear wave velocity, calculated as $V_s = 118.8 \cdot \log(f_s) + 18.5$

G_s is the specific gravity of solids, typically between 2.40 and 2.90

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APPENDIX A

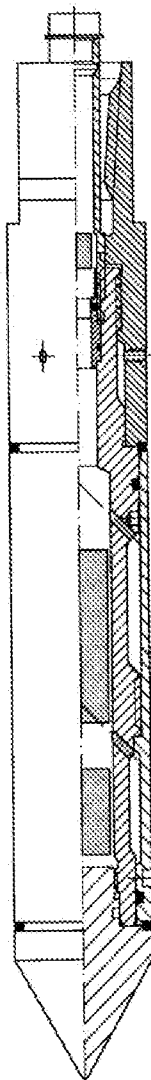
APPENDIX A1 – Site Map

Not provided

APPENDIX A2 – Cone Datasheet



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 Postbank: 5220708
 BTW nr.: NL806331077801



SPECIFICATIONS S15 SERIES ELECTRICAL CONES

The electronic subtraction cones have been developed to address the durability problems inherent in other cone designs. The unit consists of a single element temperature compensated strain gauge transducer for measuring both cone resistance and local sleeve friction. This design is therefore more robust than a compression type cone. The cone support electronics package is located directly behind the transducer. The precision strain gauge amplifiers and power supply eliminate the effects of cable resistance on the measurements. A standard subtraction cone is capable of measuring simultaneously the following channels: Tip, Local friction, Pore pressure, Temperature and Inclination.

GENERAL SPECIFICATIONS

Cone Tip Section Area	1,500 mm ²
Friction Sleeve Surface	22,500 mm ²
Total Length	325 mm
Weight	4200 g
Power Supply	± 15 VDC, 100 mA.
Output	0 – 10 VDC*
Working Temperature	0 - 60°C
Storage Temperature	- 40 to + 85°C
Connector	Lemo 10 pins (others on request)

TIP RESISTANCE

Range	100/150* kN
Accuracy	0.25 % FS
Maximum Load	150 % of range
Cone Area Ratio	0.75

LOCAL SLEEVE FRICTION

Range	100/150* kN
Accuracy	0.50 % FS
Maximum Load	150 %
Sleeve Area Ratio	1.0 (EA)

PORE PRESSURE

Range	1/2/5/10* MPa
Accuracy	0.5 % FS
Maximum Load	150 % of range

INCLINATION

Range	25 ° (biaxial)
Accuracy	< 2 °

All our equipment complies with the ISO 9001, ASTM DIN and NEN standards.

*Other output and voltage ranges available on request. Load cells may be calibrated for lower ranges.

APPENDIX A3 – Cone Calibration Certificates

Eijkelkamp GeoPoint
SoilSolutionsRijksweg 228
2121 AJ Saefterveer
The NetherlandsT +31 71 521 5251
E info@eijkelkamp-geopoint.com
I eijkelkamp-geopoint.com**Cone Calibration Certificate**

Certificate: **GS-1475-002**
Instrument Type: Electric Subtraction Cone
Model: S15-CPBP
Serial number: 1475
Calibration date: 23-09-2018
Client: Insitu
Calibrated by: M van Es
Calibration Instruments
Manufacturer: Hottinger Baldwin Messtechnik GmbH
HBM certificate no.: 49046
Calibration conditions
Ambient temperature: 19.8 °C
Atmospheric pressure: 1026 mBar
Cone specifications
Cone base area: 1500 mm²
Load tip resistance (nom.): 100 kN
Friction sleeve area: 22800 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 (α): 0.79
Max. inaccuracy, relative to measurement value: 1.0 %

	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
Zero points:		0245		0292		0242			
	0	0	0	0	0	0	0	2441	2478
	5	0301	5	0338	0.4	1480	-20	0432	0423
	10	0601	10	0617	0.8	2957	30	4533	4520
	15	0803	15	0827	1.2	4429			
	20	1205	20	1238	1.6	5898			
	25	1508	25	1547	2.0	7323			
	30	1809	30	1857					
	35	2111	35	2187					
	40	2414	40	2475					
	45	2714	45	2783					
	50	3015	50	3094					
	75	4512	75	4633					
	100	6013	100	6137					

Max. error, abs. qc: 35 kPa
Max. error, abs. fs: 2 kPa
Max. error, abs. u2: 10 kPa
Max. error, abs. i: 1 °

This calibration is compliant with the requirements of ISO 9001:2015 and ISO 17025:2017.

Approved by: B. van Es
Date: 23-09-2018

Eijkelkamp GeoPoint SoilSolutions
V.A.T. NO. NL 8784 23.423
Trade Reg. Arnhem no. 70



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Cone Calibration Certificate

Certificate: **GS-1486-003**
 Instrument Type: Electric Subtraction Cone
 Model: S15-CFHP
 Serial number: 1486
 Calibration date: 12-01-2018
 Client: Insitu
 Calibrated by: W. Volgering
 Calibration instruments:
 Manufacturer: Hottinger Baldwin Messtechnik GmbH
 HBM certificate no.: 49046
 Calibration conditions:
 Ambient temperature: 19.2 °C
 Atmospheric pressure: 1026 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)
0	0	0	0	0	0	0	0	2482	2585
5	0303	5	0311	0.4	1383	-20	0331	0443	
10	0607	10	0623	0.8	2760	20	4601	4729	
15	0914	15	0937	1.2	4134				
20	1219	20	1250	1.6	5502				
25	1524	25	1564	2.0	6882				
30	1830	30	1877						
35	2135	35	2190						
40	2441	40	2505						
45	2745	45	2618						
50	3046	50	2726						
55	3348	55	2838						
60	3649	60	2945						
65	3950	65	3052						
70	4251	70	3159						
75	4552	75	3266						
80	4853	80	3373						
85	5154	85	3480						
90	5455	90	3587						
95	5756	95	3694						
100	6057	100	3801						

Max. error, abs. qc: 35 kPa
 Max. error, abs. fs: 2 kPa
 Max. error, abs. u2: 10 kPa
 Max. error, abs. i: 1 °

This calibration is complete
 NEN-EN-ISO 10261-1

and meets the requirements of EN12640,
 (incl.) National Standards.

Approved by: [Signature]
 Date: [Date]

Hottinger Baldwin Messtechnik GmbH
 Rijksweg 22P

www.geopoint.nl
 www.geopoint.eu

Geopoint Systems B.V. van Volgering

APPENDIX A4 – Project Summary Sheet

CPT Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	Cone Used	Test Remarks
CPT 01	13.91	03/10/2018	S15CFIIP.1475	Test refused on tip resistance.
CPT 02	15.72	03/10/2018	S15CFIIP.1486	Test refused on tip resistance.
CPT 03	10.54	03/10/2018	S15CFIIP.1486	Test refused on tip resistance.
CPT 04	12.91	03/10/2018	S15CFIIP.1486	Test refused on tip resistance.
CPT 05	14.56	03/10/2018	S15CFIIP.1486	Test refused on tip resistance.
CPT 06	15.38	03/10/2018	S15CFIIP.1486	Test refused on tip resistance.
CPT 07	12.58	03/10/2018	S15CFIIP.1486	Test refused on tip resistance.
CPT 09	13.50	03/10/2018	S15CFIIP.1486	Test refused on tip resistance.
CPT 10	13.29	03/10/2018	S15CFIIP.1486	Test refused on tip resistance.

APPENDIX A5 – CPT Rig Datasheet

RIGS

14 TONNE CPT TRACK MOUNTED RIG (CPT005)

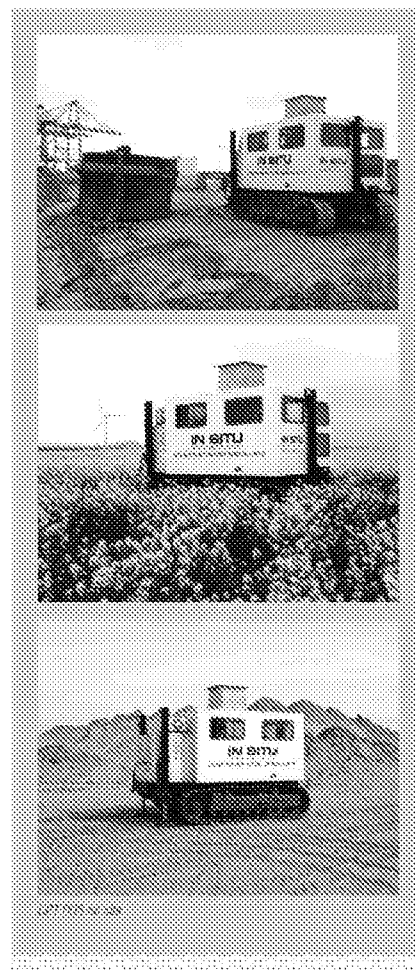
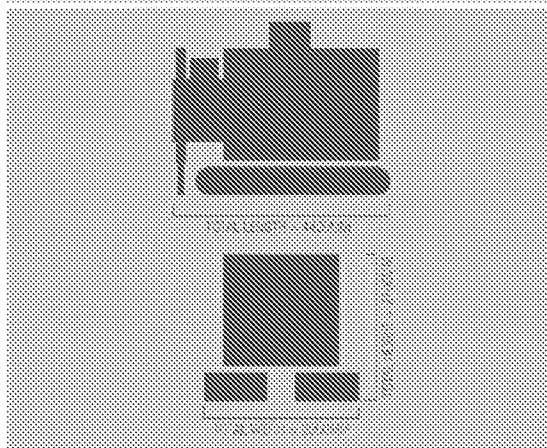
In Situ has a wide range of rigs which meet the clients varied CPT requirements often in difficult terrains. Projects may require CPT testing in areas which range from motorways to rugged mountainous terrain, to offshore work; the access to the projects may often be restricted for manoeuvring.

In Situ has rigs to meet all clients needs and situations .

CPT RIG DETAILS

TOTAL WEIGHT	14 TONNES
CPT HAM THRUST CAPACITY	25 TONNES
MAXIMUM PENETRATION	20-30M DEPENDENT ON THE GROUND GRADIENT
PERFORMANCE RATES	100M OF TESTING A DAY DEPENDENT ON ACCESS TO PROJECT
TYPICAL SITES FOR THIS RIG	WATERLOO, ST. LOUIS AND LIAISON PROJECTS

CPT RIG DIMENSIONS



APPENDIX A6 – Symbol List

English

a	is area ratio of the cone ($= A_n/A_c$)
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 ($= (u_2 - u_0)/(q_t - \sigma_{v0})$)
c_h	is horizontal coefficient of consolidation
c_v	is vertical coefficient of consolidation
D	is diameter
D_r	is relative density ($= \frac{e_{max}-e}{e_{max}-e_{min}} \times 100\%$)
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 ($= f_s/(q_t - \sigma_{v0})$)
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 ($= G/s_u$)
I_p	is plasticity index
k	is coefficient of permeability
k_h	is coefficient of permeability in horizontal direction
k_v	is is coefficient of permeability in vertical direction
K_0	is coefficient of earth pressure at rest ($= \sigma'_{h0}/\sigma'_{v0}$)
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
$N_{\Delta u}$	is cone factor
p_a	is reference stress ($= 100 \text{ kPa}$)
q_c	measured cone resistance
q_e	effective cone resistance ($= q_t - u_2$)
q_n	is net cone resistance ($= q_t - \sigma_{v0}$)

q_t	is corrected cone resistance ($= q_c - (1 - \alpha)u_2$)
Q_c	is total force acting on the cone
Q_t	is normalized cone resistance ($= q_t - \sigma_{v0} / \sigma'_{v0}$)
R_f	is friction ratio ($= (f_t / q_t) \times 100\%$ or alternatively $= (f_t / q_t) \times 100\%$)
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 $U = 50\%$
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 ($= u - u_0$)
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}	average cyclic shear stress
T_{cy}	cyclic shear stress
ϕ'	effective friction angle

APPENDIX A7 – Abbreviations

ASTM	is 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	Overconsolidated
OCR	Overconsolidation Ratio
PL	Limit Pressure
SDMT	Seismic Dilatometer Marchetti
SPT	Standard Penetration Test
TC	Technical Committee

APPENDIX A8 – 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 .
 $q_c = Q_c / A_c$

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*, $Q_c = (q_c - \sigma_{v0}) / \sigma'_{v0}$, or when the *corrected cone resistance* is used $Q_t =$

$(q_t - \sigma_{v0}) / \sigma'_{v0}$. 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. $q_n = q_t - \sigma_{v0}$

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 .

$$f_s = F_s / A_s$$

APPENDIX A9 – 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 and Geotechnical Derived Parameters

PointID

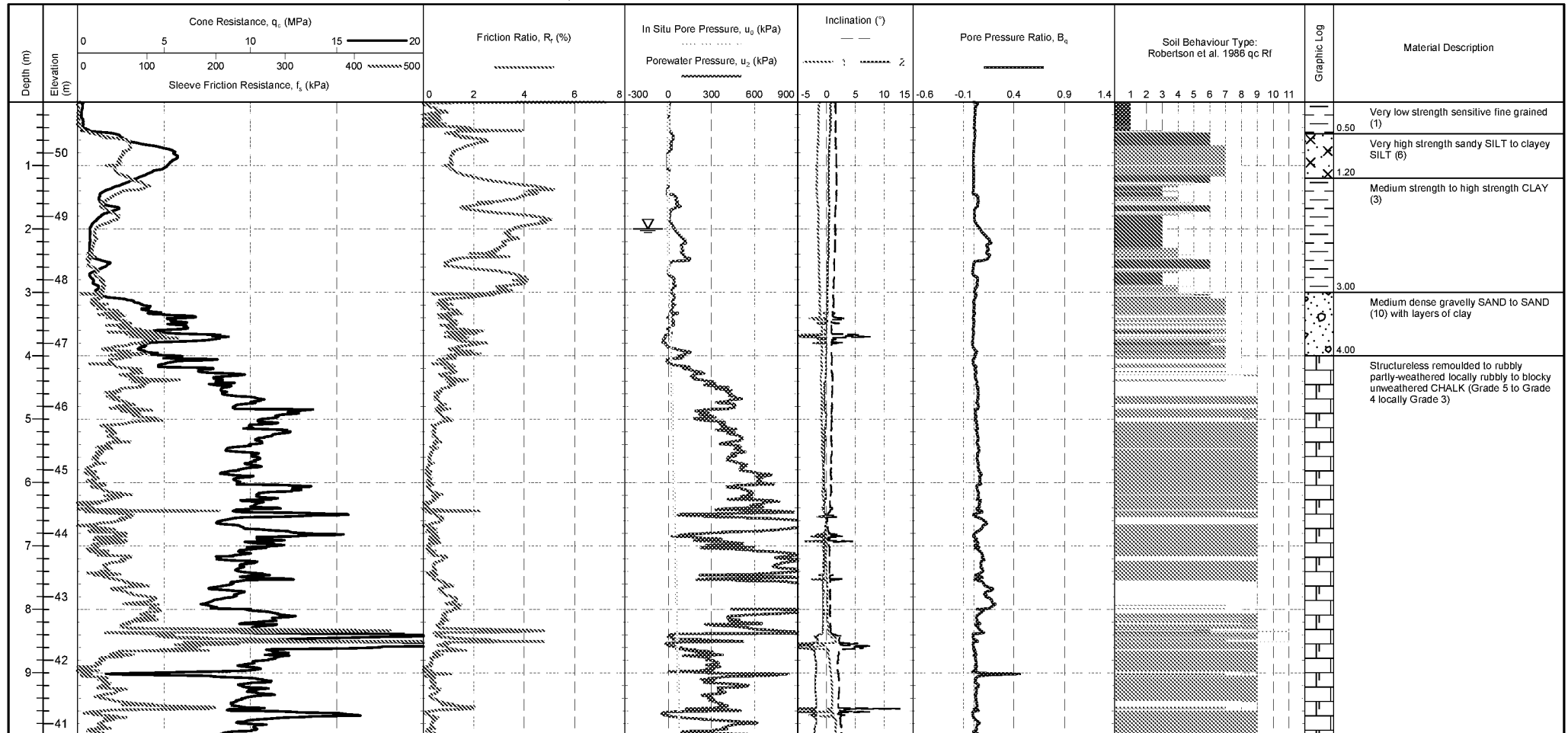
CPT 01

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101410.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1475
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 01
WEATHER : Sunny & Hot

Transducer
Tip: Pre 243 mV, Post 242 mV, Difference -0.011 MPa
Sleeve: Pre 251 mV, Post 248 mV, Difference -0.002 kPa
Pore Pressure 2: Pre 265 mV, Post 257 mV, Difference -0.002 kPa
X-Y Inclinator: Pre 2373 mV, Post 2385 mV

CPTU ZERO VALUES

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

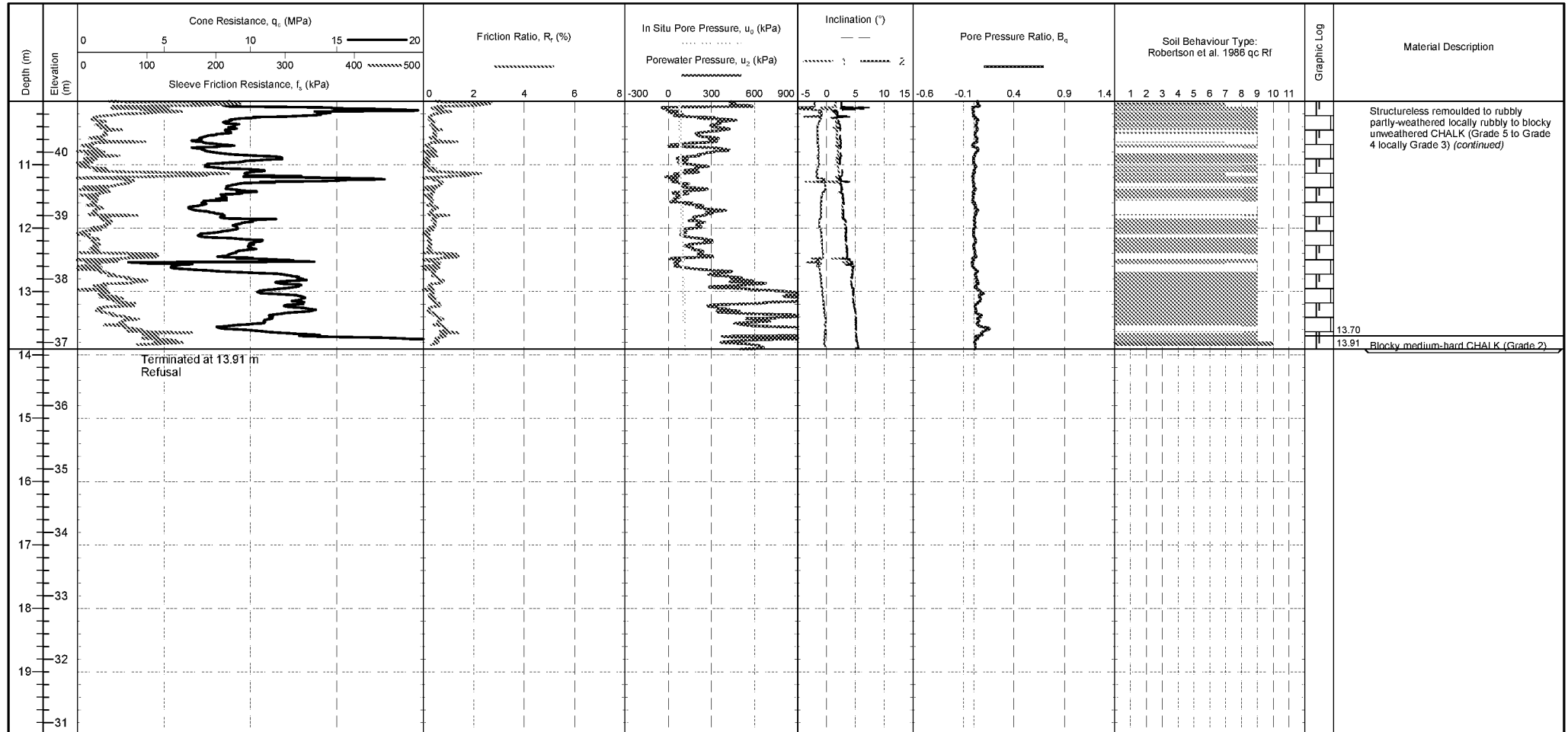
CPT 01

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101410.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1475
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 01
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

CPTU ZERO VALUES

Pre	Post	Difference
243 mV	242 mV	-0.011 MPa
251 mV	248 mV	-0.002 kPa
265 mV	257 mV	-0.002 kPa
2373 mV	2385 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

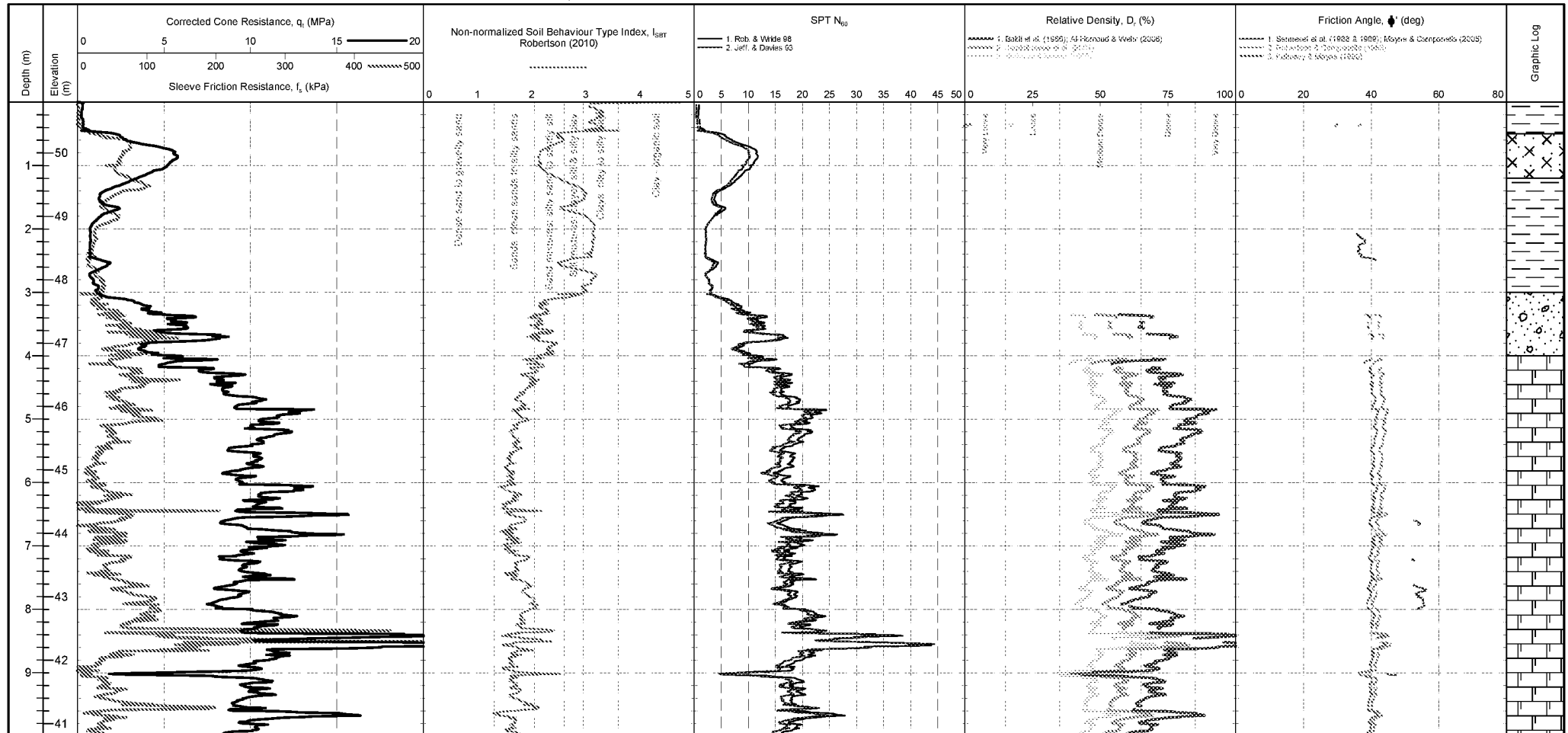
CPT 01

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101410.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1475
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 01
WEATHER : Sunny & Hot

CPTU ZERO VALUES
Transducer Pre Post Difference
Tip 243 mV 242 mV -0.011 MPa
Sleeve 251 mV 248 mV -0.002 kPa
Pore Pressure 2 265 mV 257 mV -0.002 kPa
X-Y Inclinator 2373 mV 2385 mV

Groundwater Level
Dissipation Test

PointID

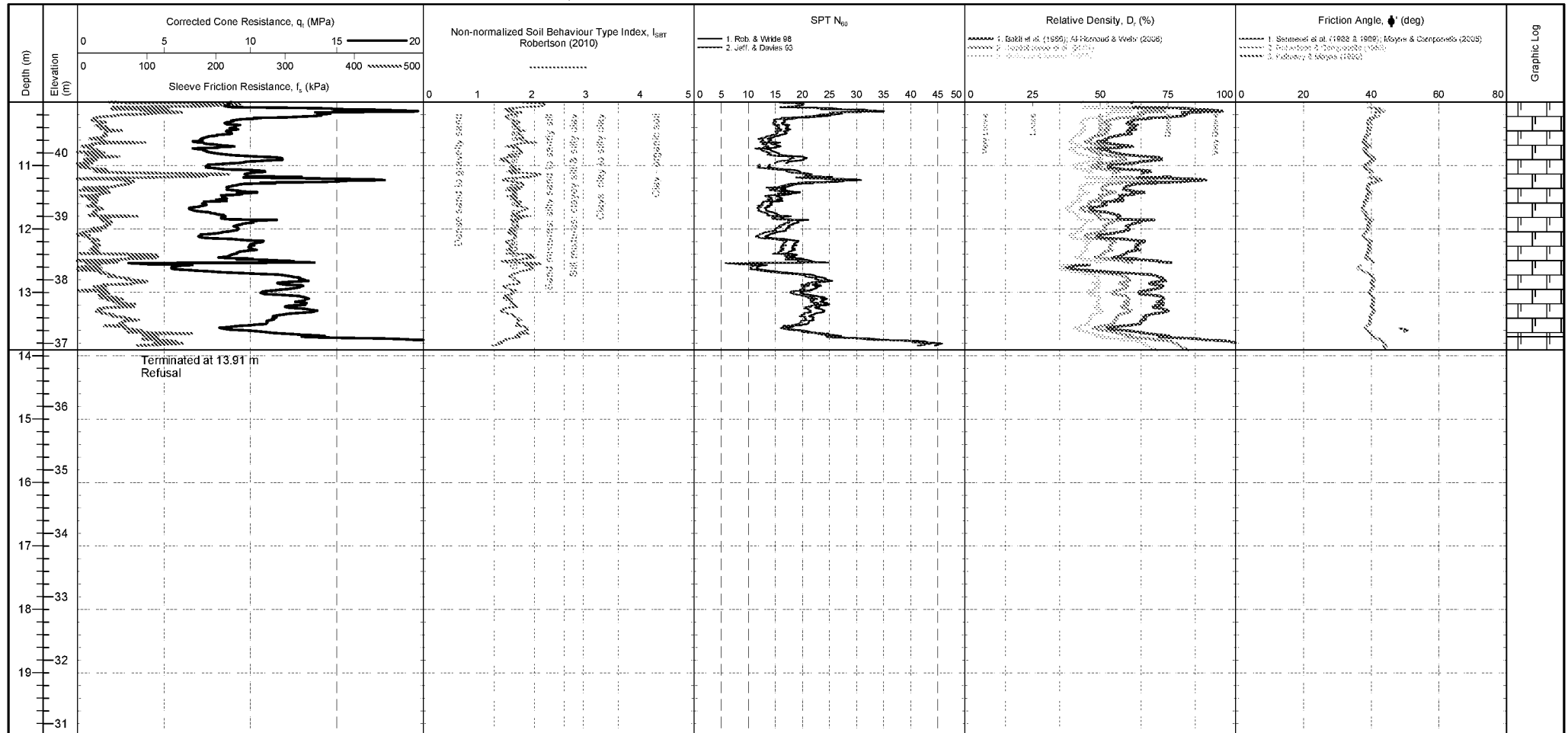
CPT 01

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101410.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1475
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 01
WEATHER : Sunny & Hot

Transducer	CPTU ZERO VALUES		
	Pre	Post	Difference
Tip	243 mV	242 mV	-0.011 MPa
Sleeve	251 mV	248 mV	-0.002 kPa
Pore Pressure 2	265 mV	257 mV	-0.002 kPa
X-Y Inclinator	2373 mV	2385 mV	

Groundwater Level
Dissipation Test

PointID

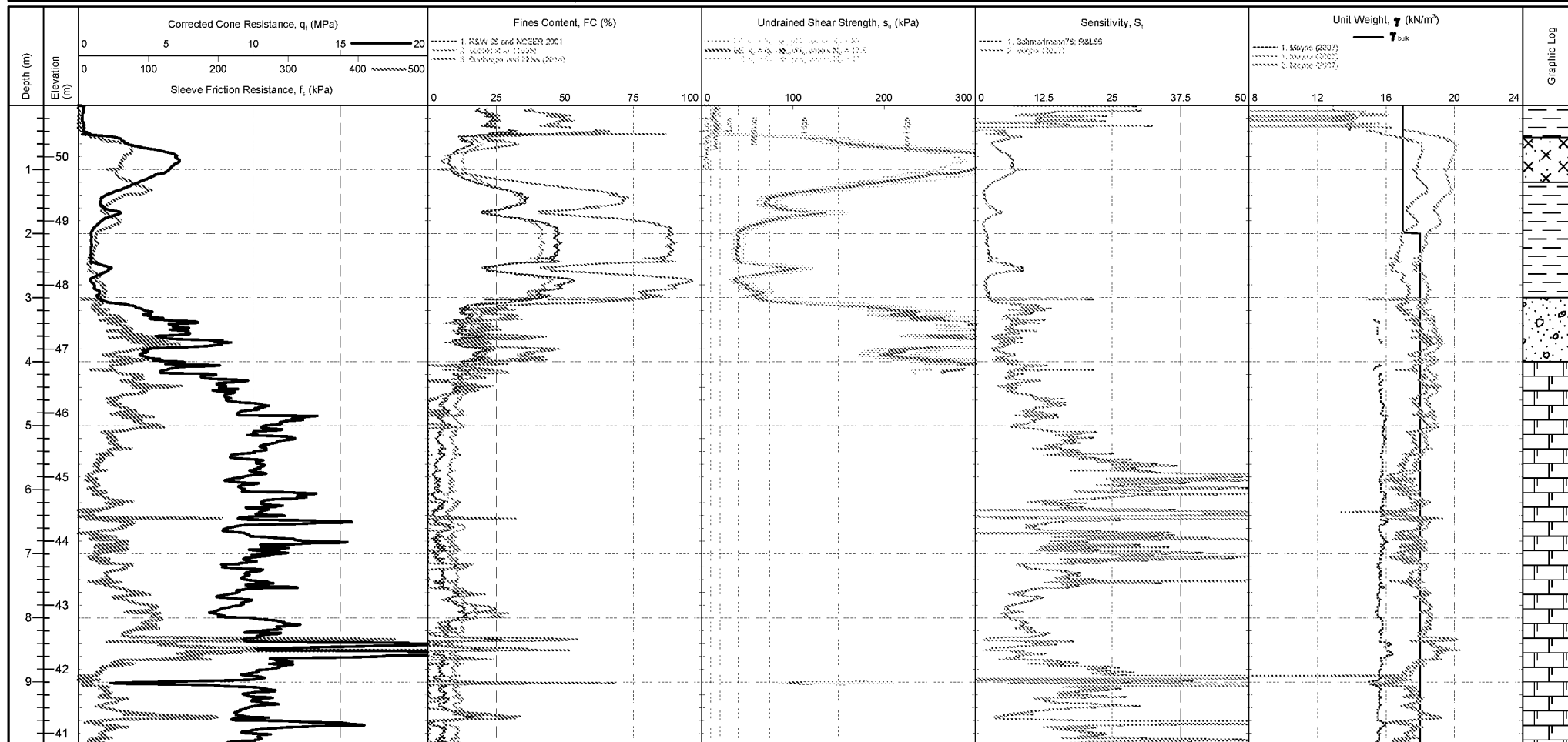
CPT 01

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101410.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1475
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 01
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	243 mV	242 mV	-0.011 MPa
Sleeve	251 mV	248 mV	-0.002 kPa
Pore Pressure 2	265 mV	257 mV	-0.002 kPa
X-Y Inclinator	2373 mV	2385 mV	

Groundwater Level
Dissipation Test

PointID

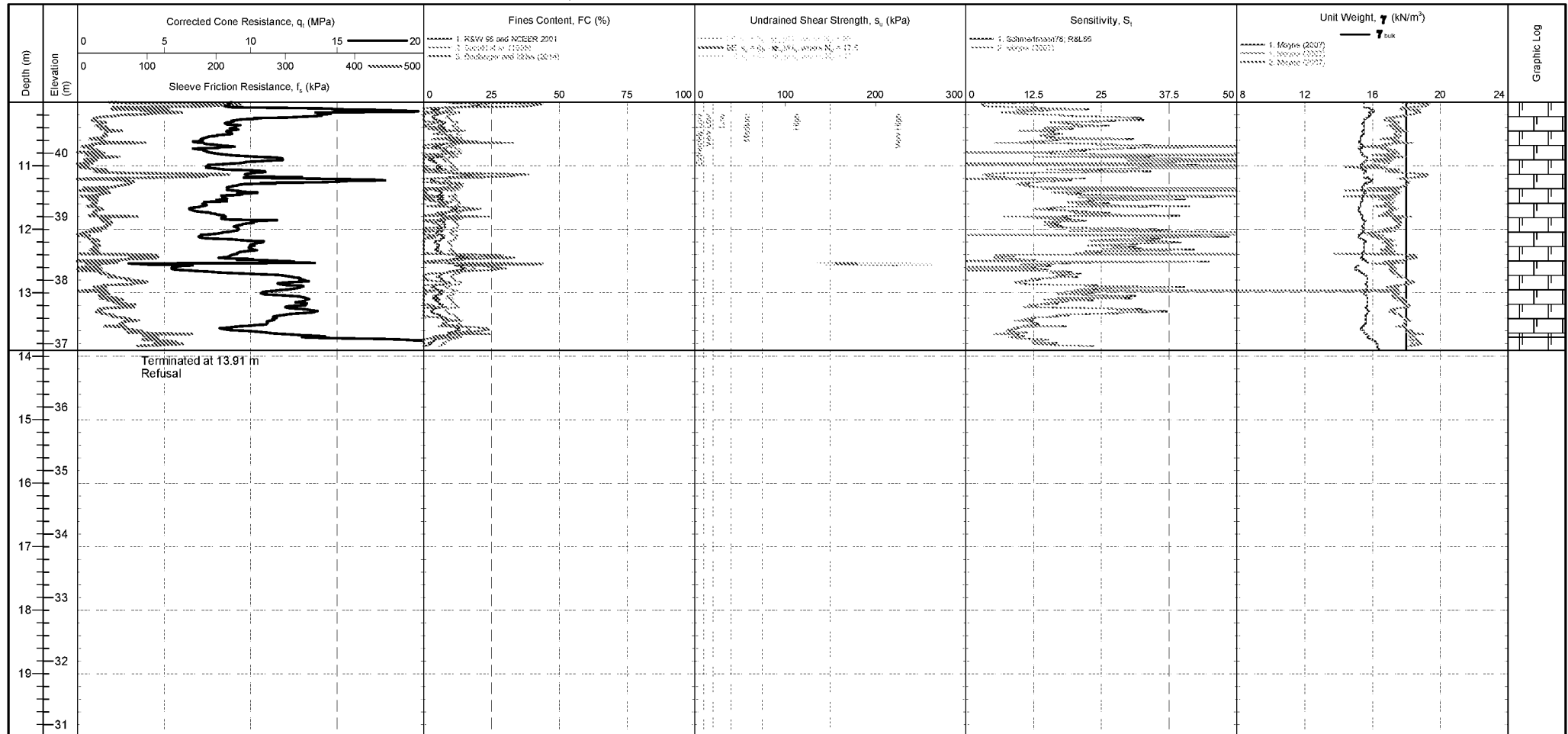
CPT 01

CLIENT : SLR Consulting
 PROJECT: Grevatts Lane
 LOCATION : Climping
 PROJECT No. : 1180407

EASTING : 498745.0 m
 NORTHING : 101410.0 m
 ELEVATION : 50.80 m
 CHECKED BY : LD
 TERMINATION REASON : Refusal

Remark:
 Test refused on tip resistance.

SHEET : 2 OF 2
 STATUS : Final
 TEST DATE : 03/10/2018
 PLOT DATE : 12/10/2018
 METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1475
 CONE AREA : 15cm²
 CONE AREA RATIO : 0.79
 FILTER POSITION : u2
 FILTER TYPE : HDPE
 FRICTION REDUCER : None

TEST TYPE : TE2
 APPLICATION CLASS : 2
 RIG : CPT 006
 OPERATOR : MO
 FILE NAME : 1180407-CPT 01
 WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	243 mV	242 mV	-0.011 MPa
Sleeve	251 mV	248 mV	-0.002 kPa
Pore Pressure 2	265 mV	257 mV	-0.002 kPa
X-Y Inclinator	2373 mV	2385 mV	

Groundwater Level
 Dissipation Test

PointID

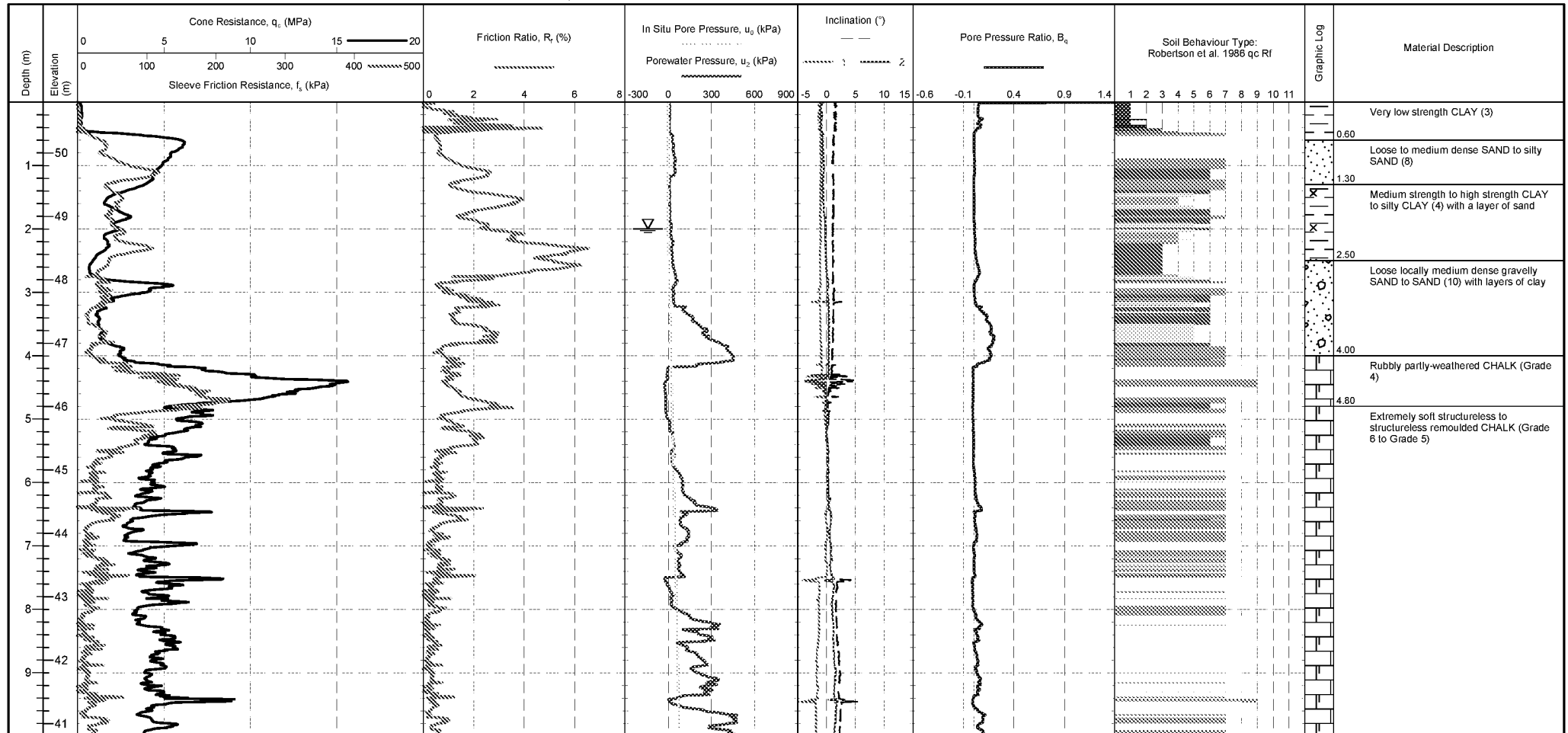
CPT 02

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498755.0 m
NORTHING : 101410.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 02
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

CPTU ZERO VALUES

Pre	Post	Difference
272 mV	273 mV	0.011 MPa
273 mV	273 mV	0 kPa
287 mV	286 mV	0 kPa
2348 mV	2351 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

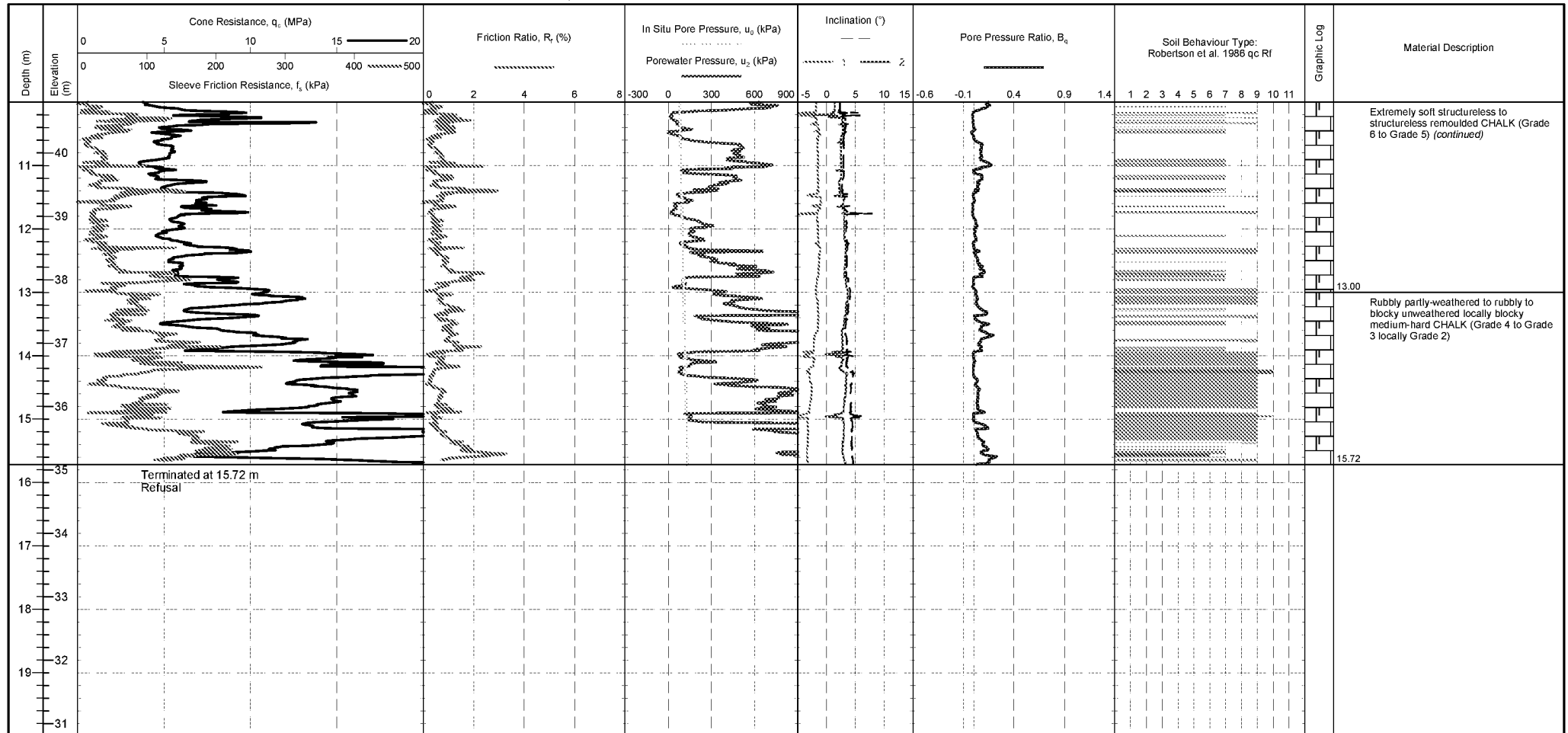
CPT 02

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498755.0 m
NORTHING : 101410.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 02
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

CPTU ZERO VALUES		
Pre	Post	Difference
272 mV	273 mV	0.011 MPa
273 mV	273 mV	0 kPa
287 mV	286 mV	0 kPa
2348 mV	2351 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 - Gravely 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

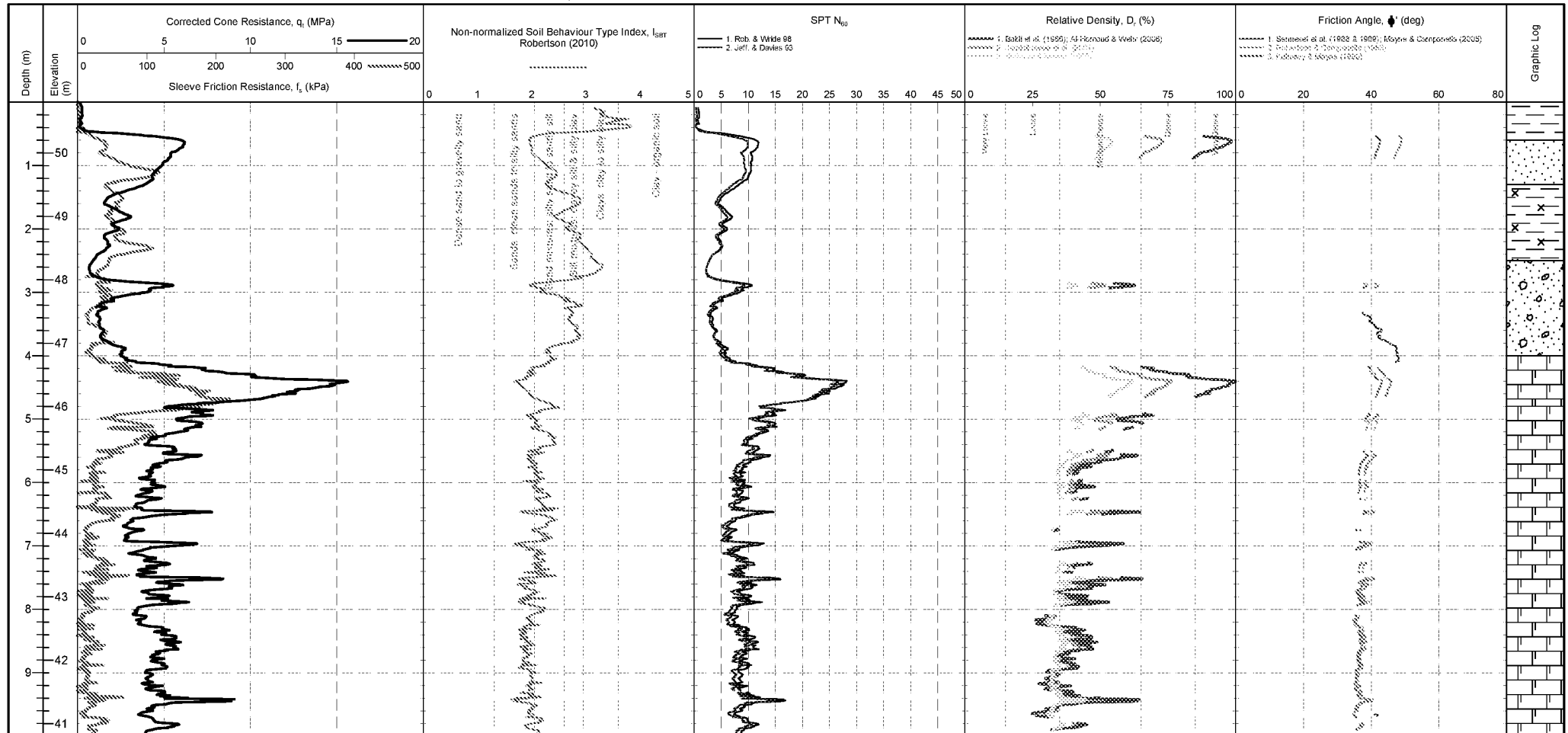
CPT 02

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498755.0 m
NORTHING : 101410.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 02
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	273 mV	0.011 MPa
Sleeve	273 mV	273 mV	0 kPa
Pore Pressure 2	287 mV	286 mV	0 kPa
X-Y Inclinator	2348 mV	2351 mV	

Groundwater Level
Dissipation Test

PointID

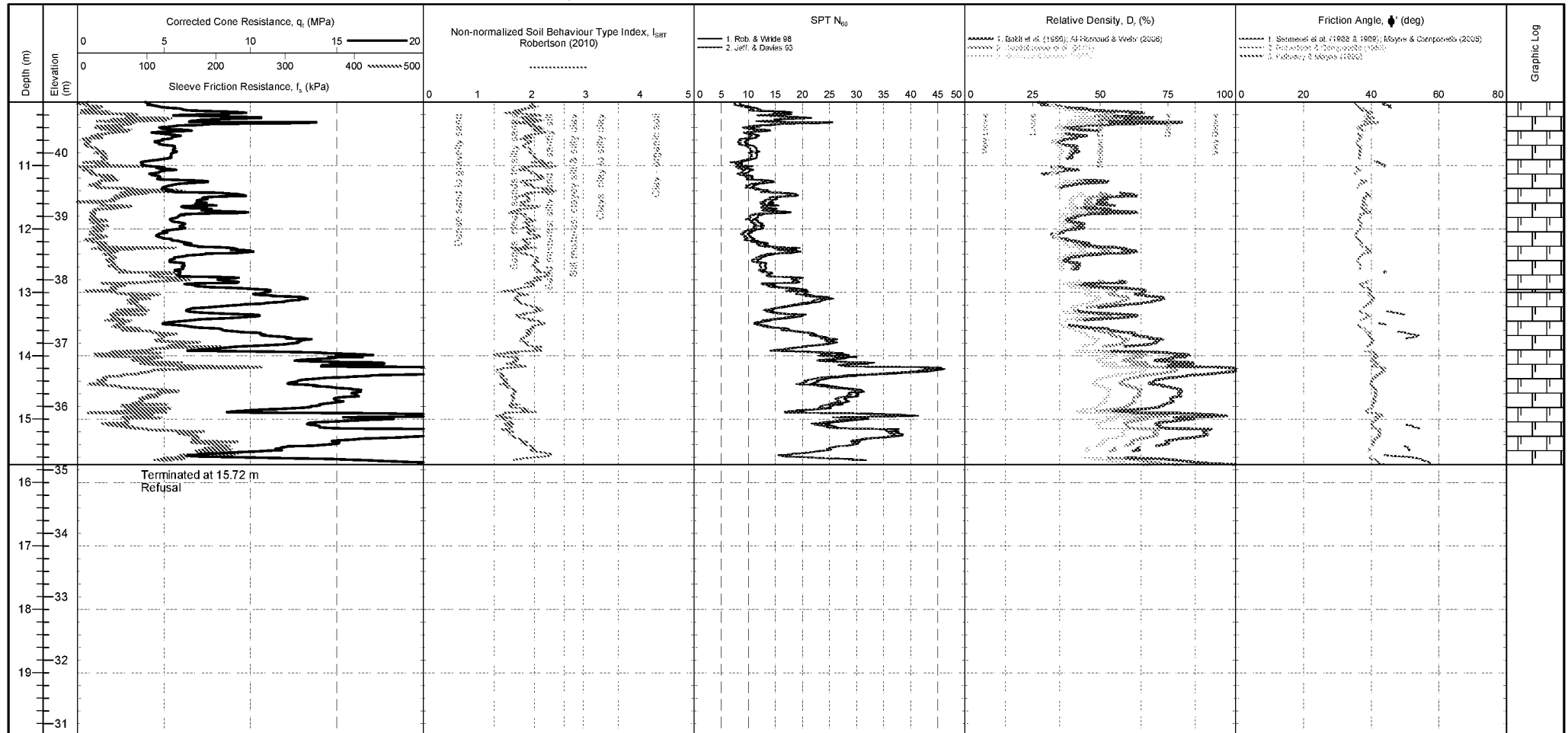
CPT 02

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498755.0 m
NORTHING : 101410.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 02
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	273 mV	0.011 MPa
Sleeve	273 mV	273 mV	0 kPa
Pore Pressure 2	287 mV	286 mV	0 kPa
X-Y Inclinator	2348 mV	2351 mV	

Groundwater Level
Dissipation Test

PointID

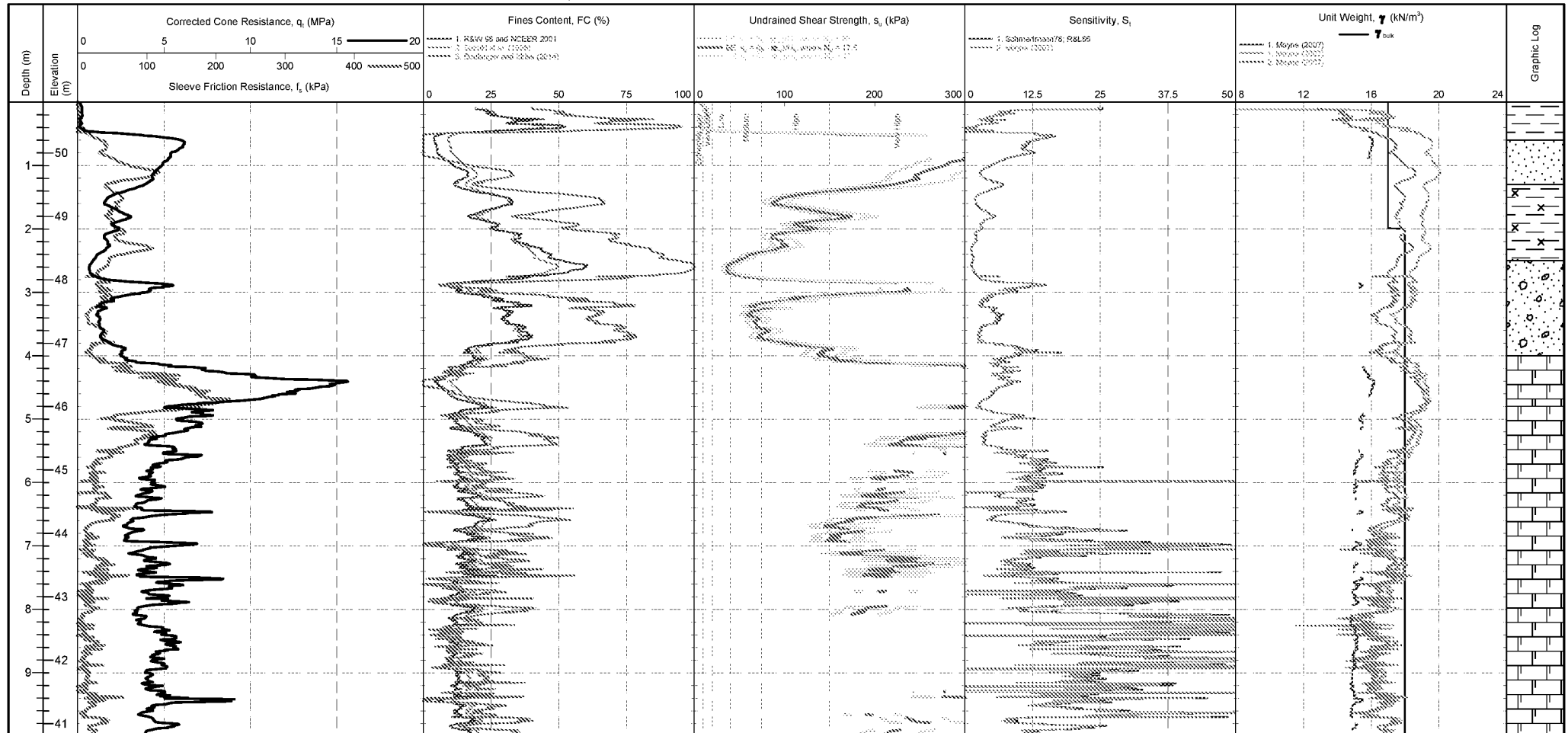
CPT 02

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498755.0 m
NORTHING : 101410.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 02
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	273 mV	0.011 MPa
Sleeve	273 mV	273 mV	0 kPa
Pore Pressure 2	287 mV	286 mV	0 kPa
X-Y Inclinator	2348 mV	2351 mV	

Groundwater Level
Dissipation Test

PointID

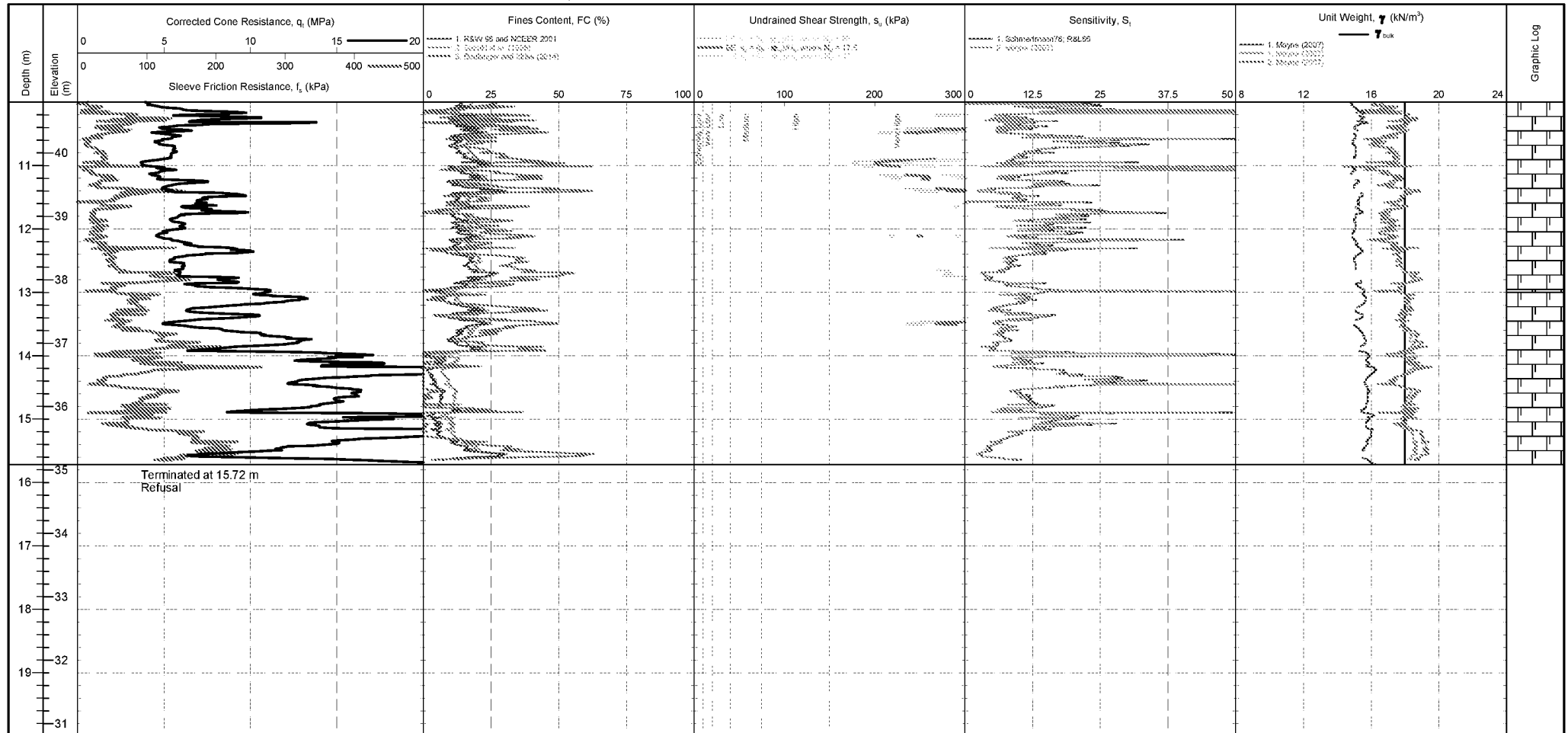
CPT 02

CLIENT : SLR Consulting
 PROJECT: Grevatts Lane
 LOCATION : Climping
 PROJECT No. : 1180407

EASTING : 498755.0 m
 NORTHING : 101410.0 m
 ELEVATION : 50.80 m
 CHECKED BY : LD
 TERMINATION REASON : Refusal

Remark:
 Test refused on tip resistance.

SHEET : 2 OF 2
 STATUS : Final
 TEST DATE : 03/10/2018
 PLOT DATE : 12/10/2018
 METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
 CONE AREA : 15cm²
 CONE AREA RATIO : 0.79
 FILTER POSITION : u2
 FILTER TYPE : HDPE
 FRICTION REDUCER : None

TEST TYPE : TE2
 APPLICATION CLASS : 2
 RIG : CPT 006
 OPERATOR : MO
 FILE NAME : 1180407-CPT 02
 WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	273 mV	0.011 MPa
Sleeve	273 mV	273 mV	0 kPa
Pore Pressure 2	287 mV	286 mV	0 kPa
X-Y Inclinator	2348 mV	2351 mV	

Groundwater Level
 Dissipation Test

PointID

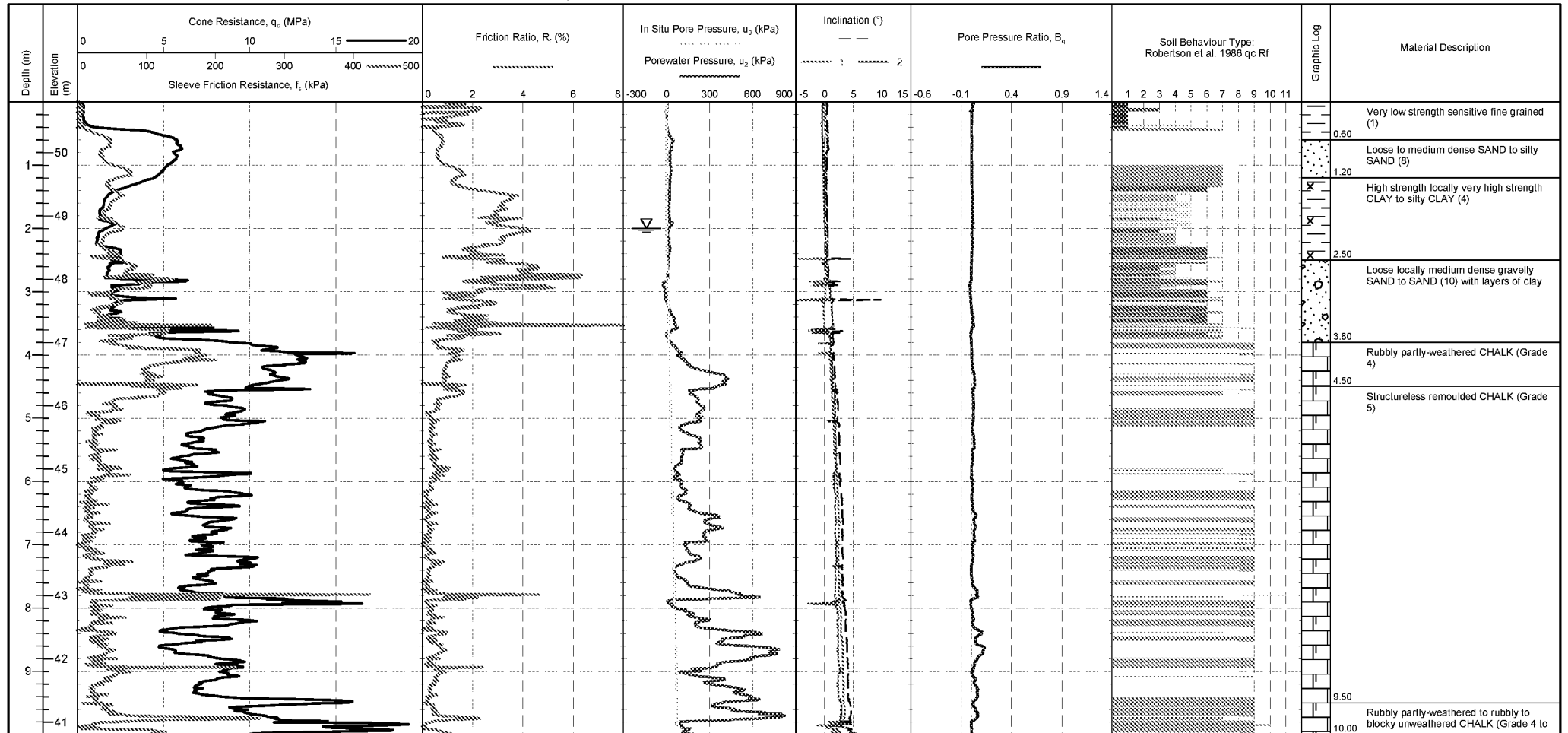
CPT 03

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 03
WEATHER : Sunny & Hot

Transducer : Pre Post Difference
Tip : 271 mV 271 mV 0 MPa
Sleeve : 268 mV 269 mV 0.001 kPa
Pore Pressure 2 : 290 mV 283 mV -0.002 kPa
X-Y Inclinator : 2427 mV 2445 mV

CPTU ZERO VALUES

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

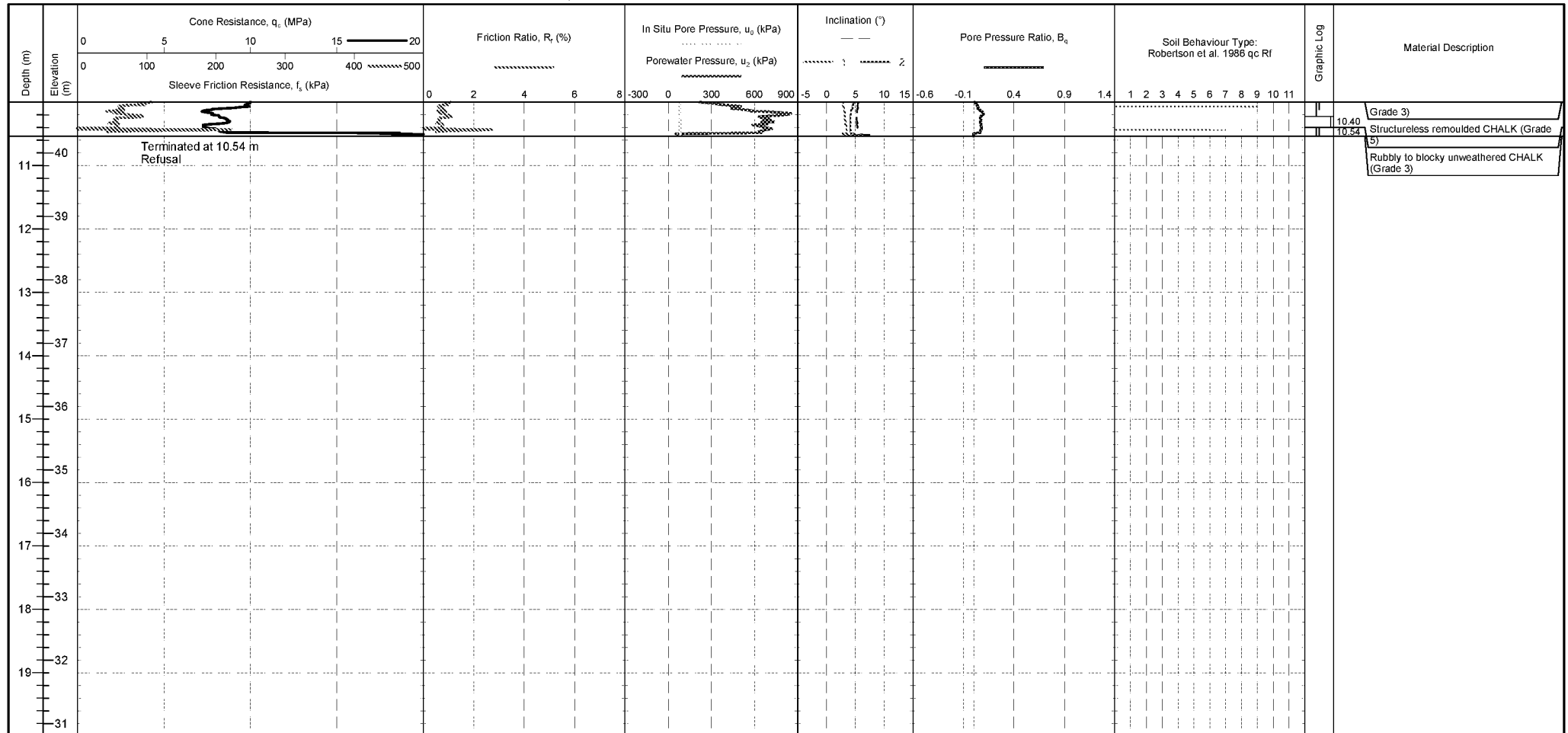
CPT 03

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 03
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

Pre	Post	Difference
271 mV	271 mV	0 MPa
268 mV	269 mV	0.001 kPa
290 mV	283 mV	-0.002 kPa
2427 mV	2445 mV	

CPTU ZERO VALUES

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 - Gravely 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

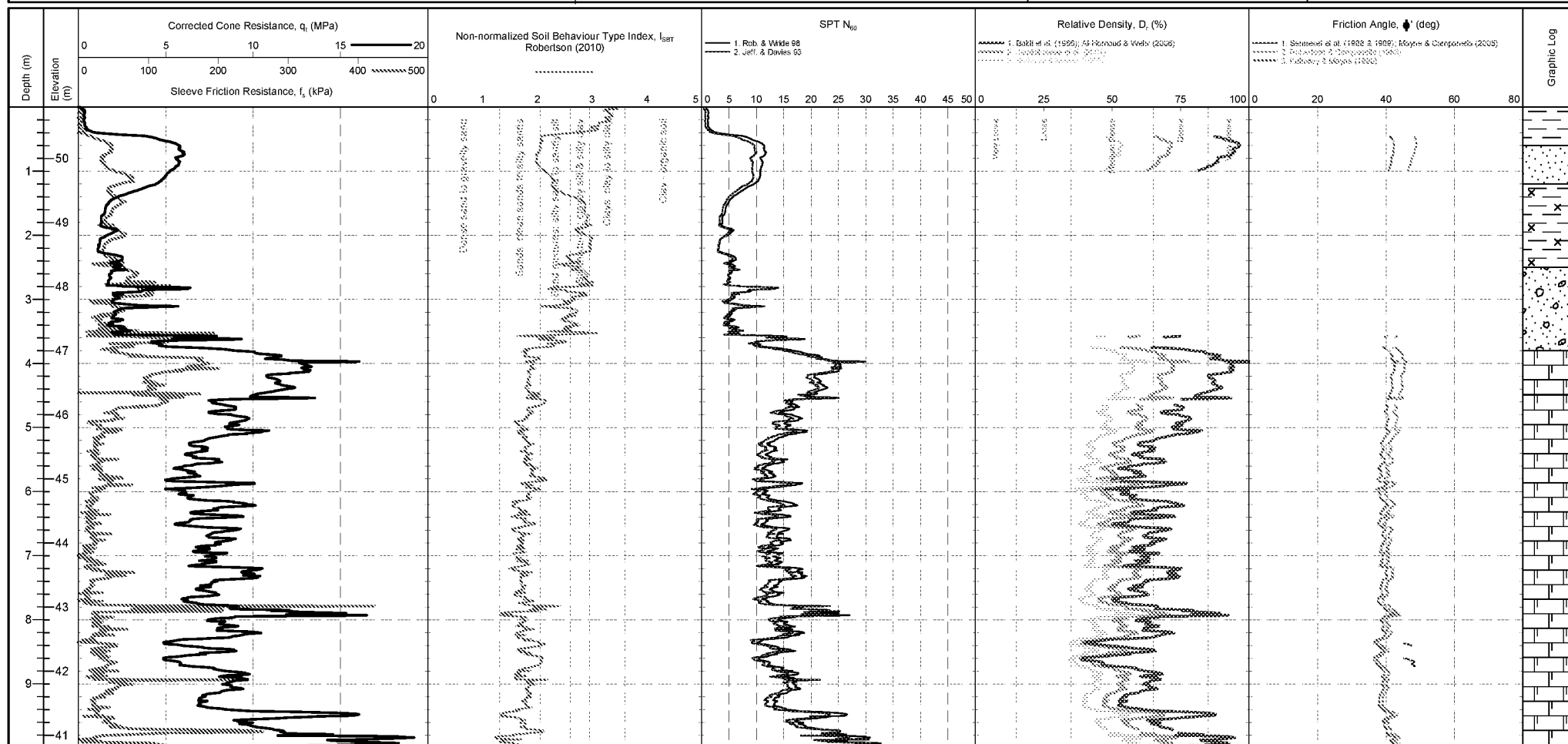
CPT 03

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID	: S15-CFIP.1486
CONE AREA	: 15cm ²
CONE AREA RATIO	: 0.79
FILTER POSITION	: u2
FILTER TYPE	: HDPE
FRICTION REDUCER	: None

```
TEST TYPE      : TE2
APPLICATION CLASS : 2
RIG            : CPT 006
OPERATOR       : MO
FILE NAME      : 1180407-CPT 03
WEATHER        : Sunny & Hot
```

CPTU ZERO VALUES			
Transducer	Pre	Post	Difference
Tip	271 mV	271 mV	0 MPa
Sleeve	268 mV	269 mV	0.001 kPa
Pore Pressure 2	290 mV	283 mV	-0.002 kPa
X-Y Inclinator	2427 mV	2445 mV	

 Groundwater Level
 Dissipation Test

PointID

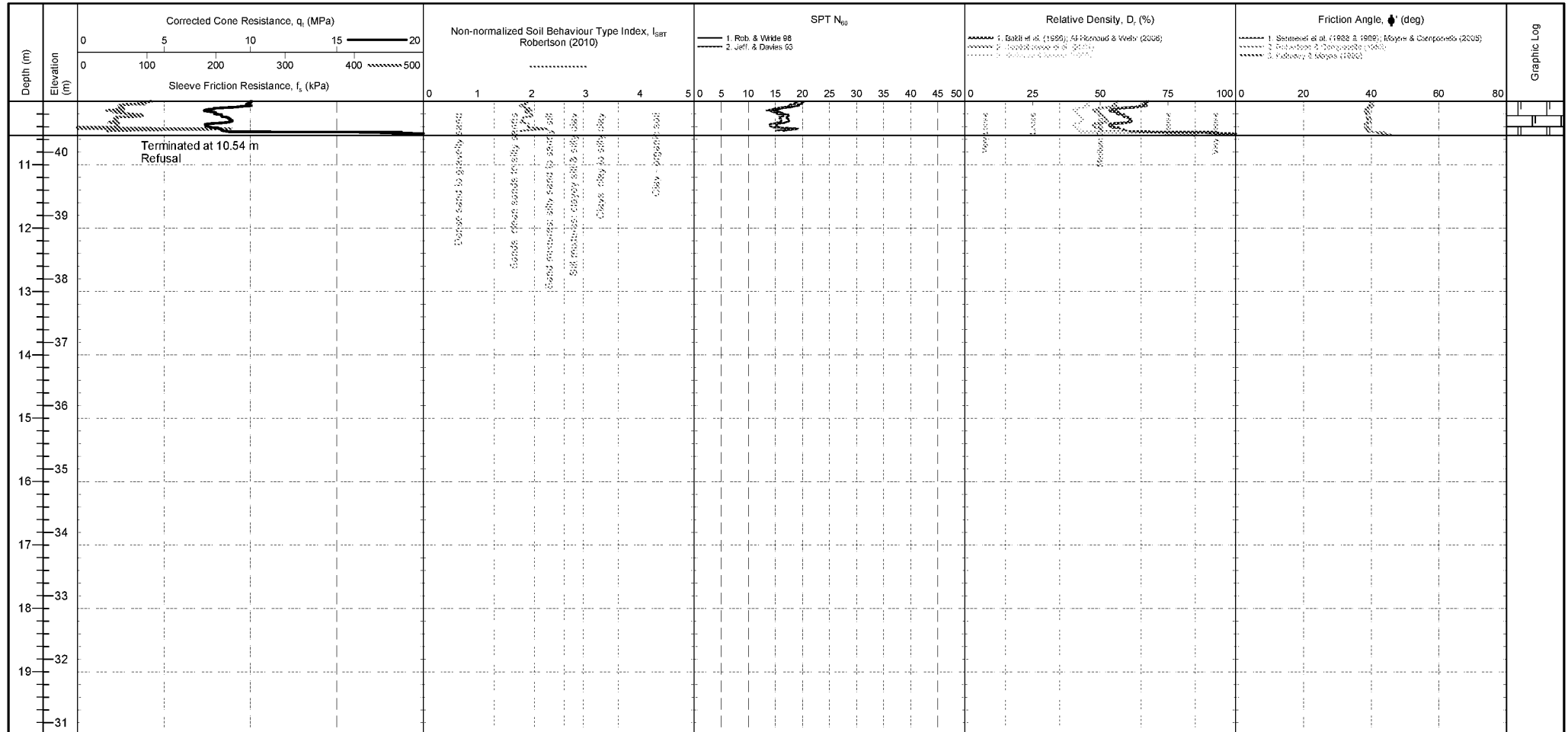
CPT 03

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 03
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	271 mV	271 mV	0 MPa
Sleeve	268 mV	269 mV	0.001 kPa
Pore Pressure 2	290 mV	283 mV	-0.002 kPa
X-Y Inclinator	2427 mV	2445 mV	

Groundwater Level
Dissipation Test

PointID

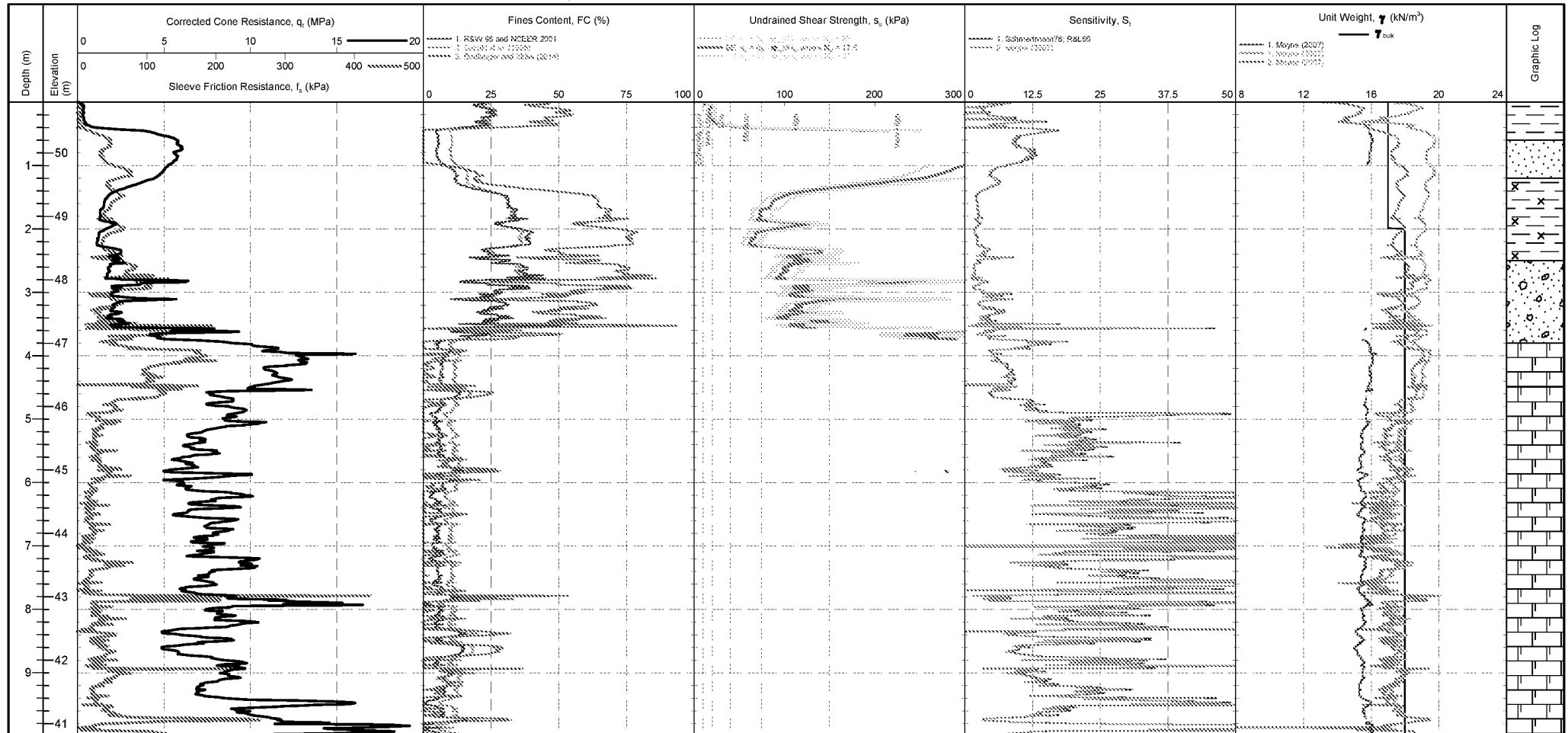
CPT 03

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 03
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	271 mV	271 mV	0 MPa
Sleeve	268 mV	269 mV	0.001 kPa
Pore Pressure 2	290 mV	283 mV	-0.002 kPa
X-Y Inclinator	2427 mV	2445 mV	

Groundwater Level
Dissipation Test

PointID

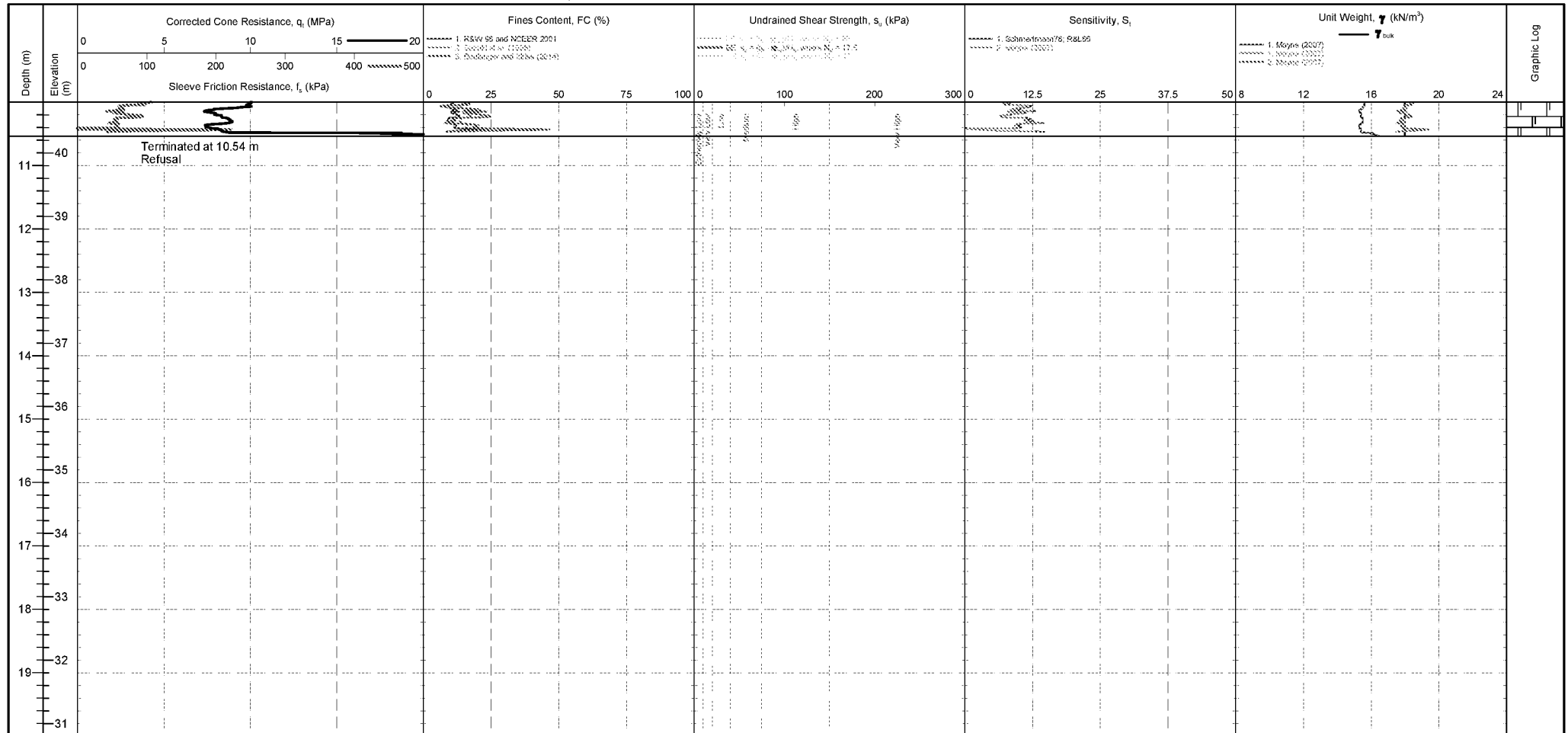
CPT 03

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 03
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	271 mV	271 mV	0 MPa
Sleeve	268 mV	269 mV	0.001 kPa
Pore Pressure 2	290 mV	283 mV	-0.002 kPa
X-Y Inclinator	2427 mV	2445 mV	

Groundwater Level
Dissipation Test

PointID

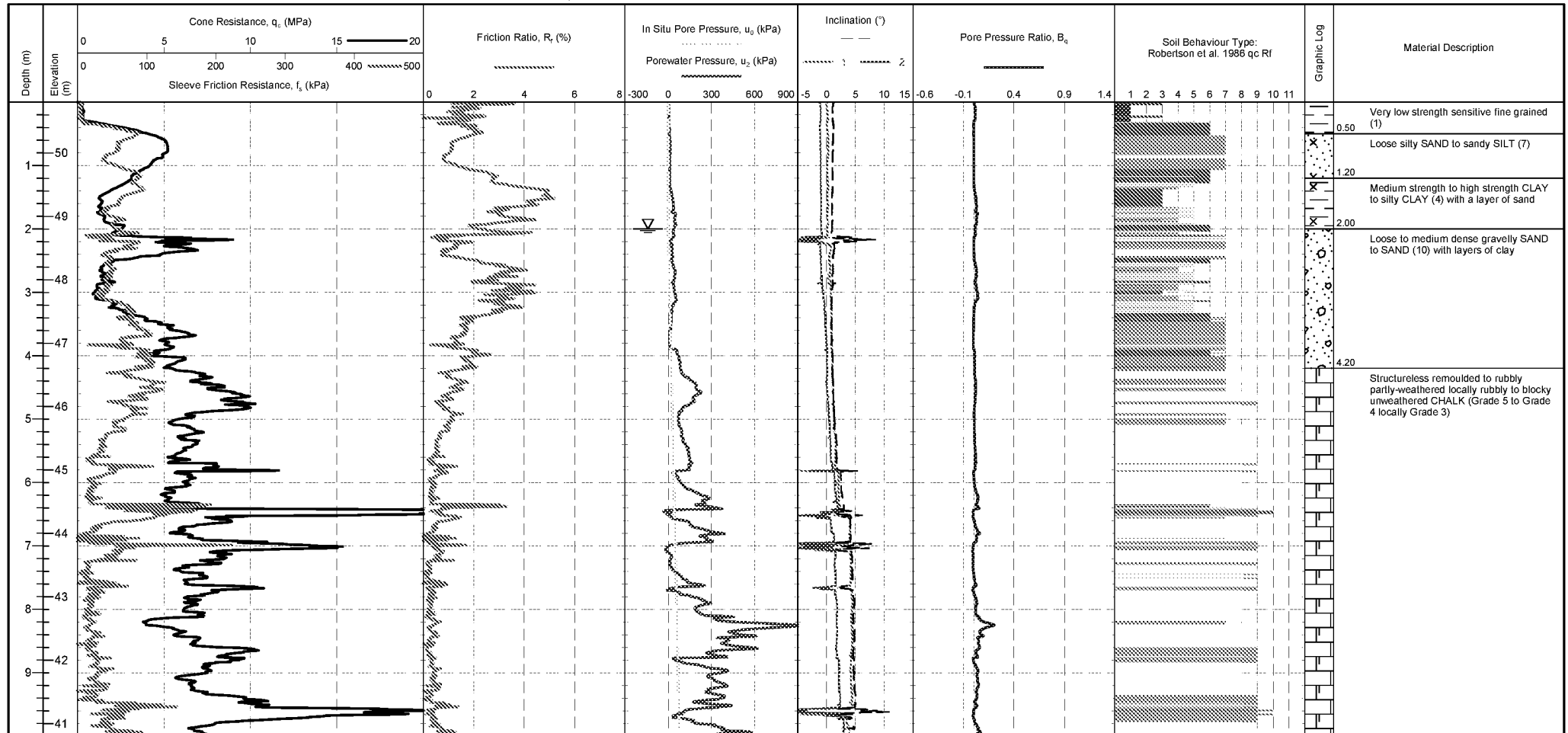
CPT 04

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 04
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

CPTU ZERO VALUES

Pre	Post	Difference
272 mV	271 mV	-0.011 MPa
270 mV	268 mV	-0.001 kPa
286 mV	277 mV	-0.003 kPa
2461 mV	2416 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

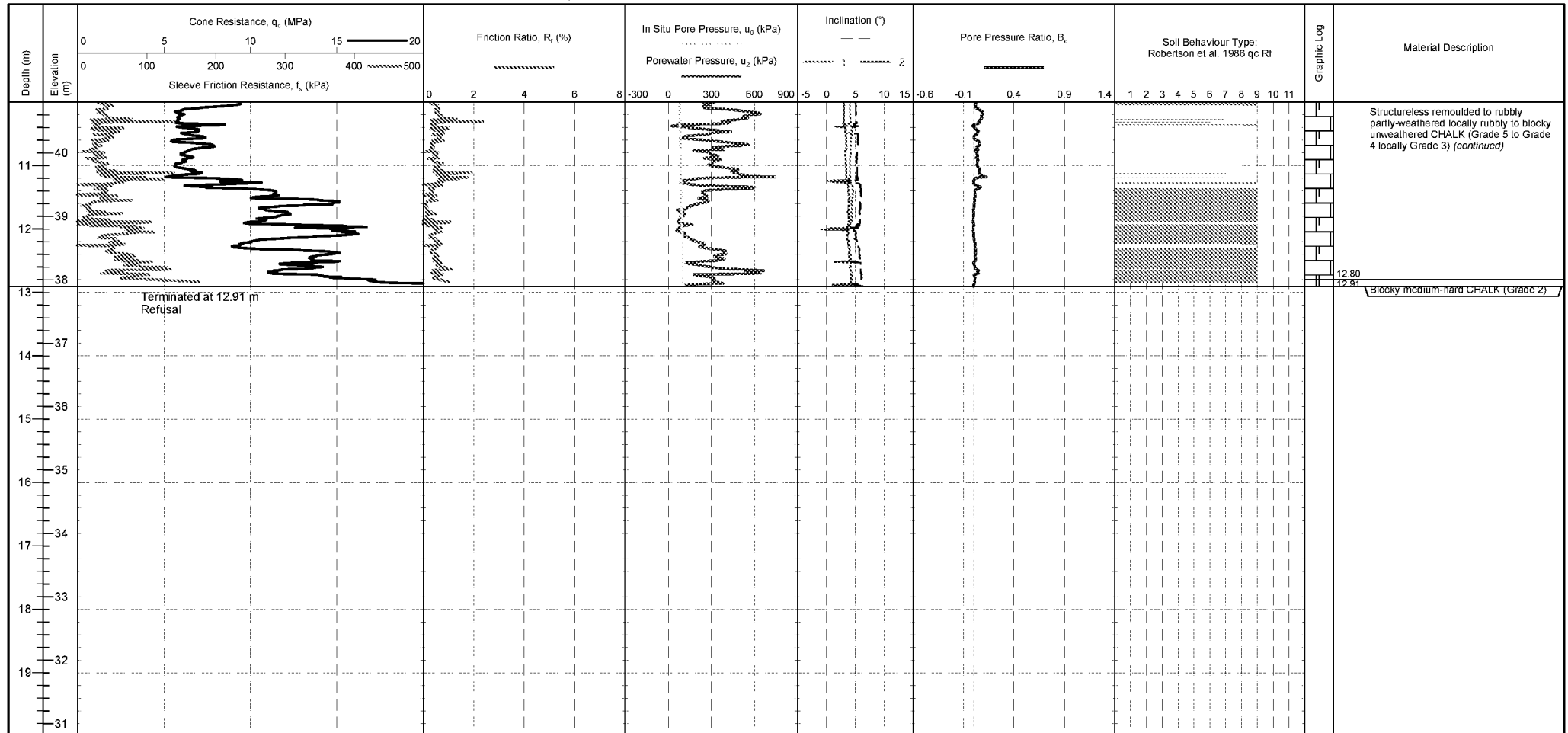
CPT 04

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 04
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinometer

CPTU ZERO VALUES			
Pre	Post	Difference	
272 mV	271 mV	-0.011 MPa	
270 mV	268 mV	-0.001 kPa	
286 mV	277 mV	-0.003 kPa	
2461 mV	2416 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 - Gravely 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

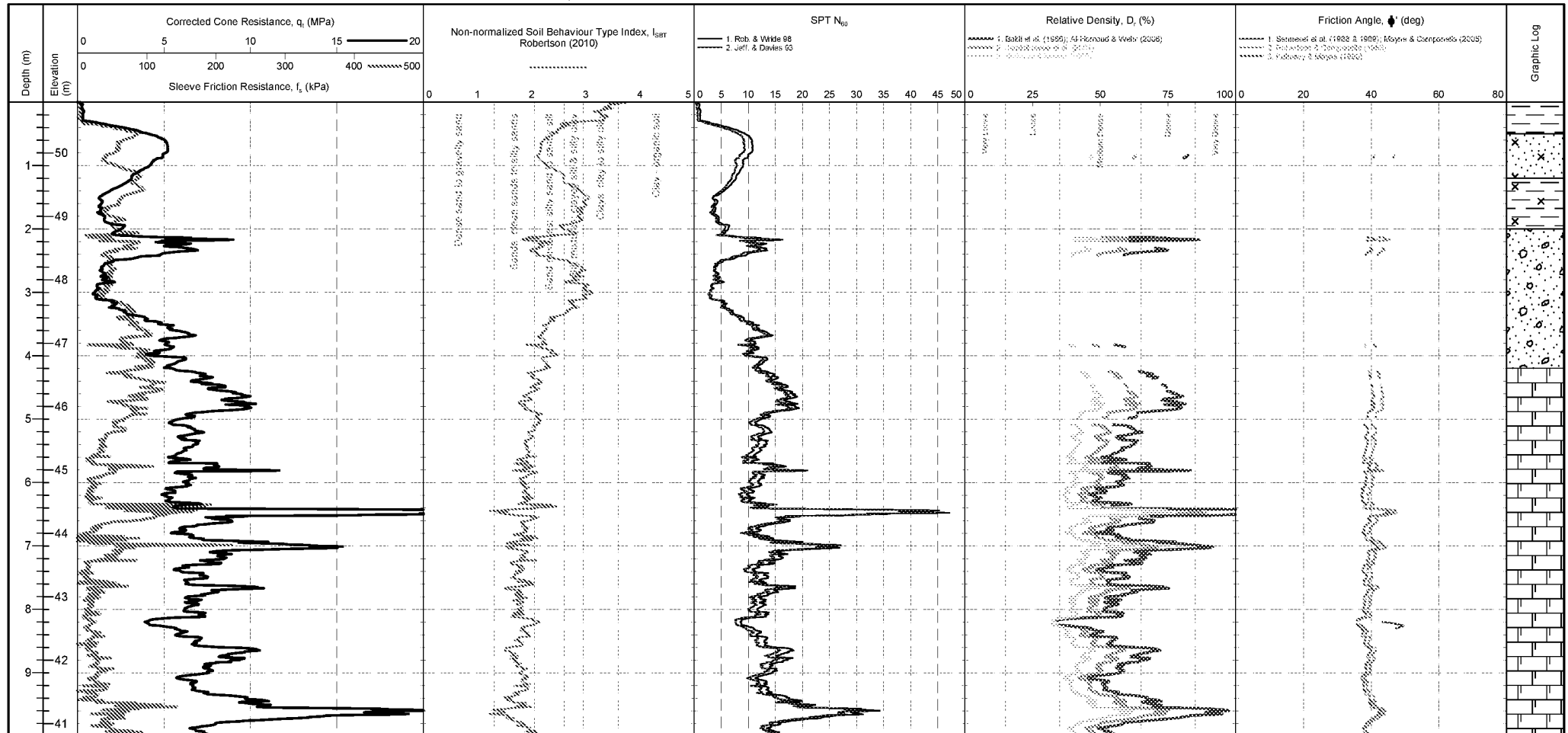
CPT 04

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 04
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	271 mV	-0.011 MPa
Sleeve	270 mV	268 mV	-0.001 kPa
Pore Pressure 2	286 mV	277 mV	-0.003 kPa
X-Y Inclinator	2461 mV	2416 mV	

Groundwater Level
Dissipation Test

PointID

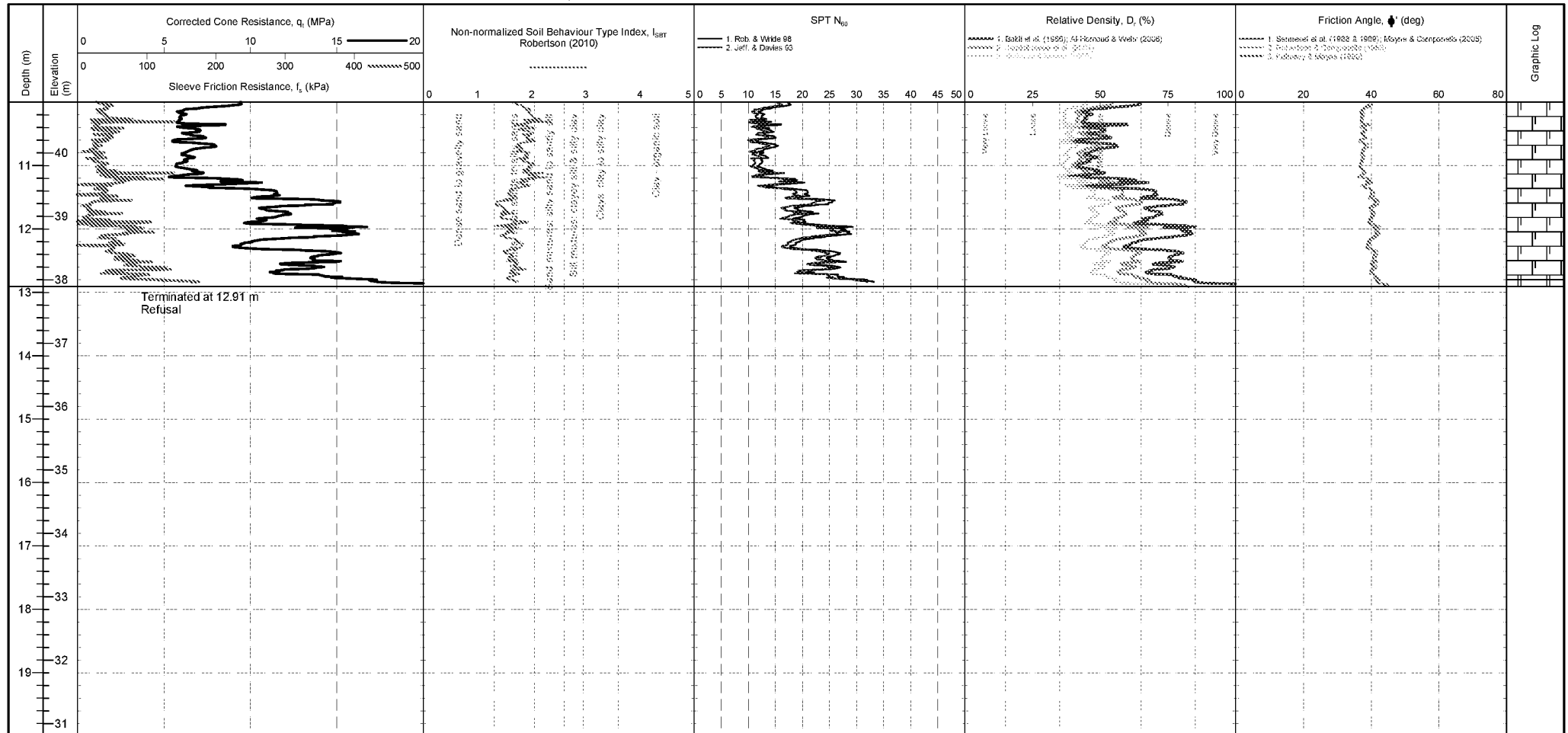
CPT 04

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 04
WEATHER : Sunny & Hot

Transducer	CPTU ZERO VALUES		
	Pre	Post	Difference
Tip	272 mV	271 mV	-0.011 MPa
Sleeve	270 mV	268 mV	-0.001 kPa
Pore Pressure 2	286 mV	277 mV	-0.003 kPa
X-Y Inclinator	2461 mV	2416 mV	

Groundwater Level
Dissipation Test

PointID

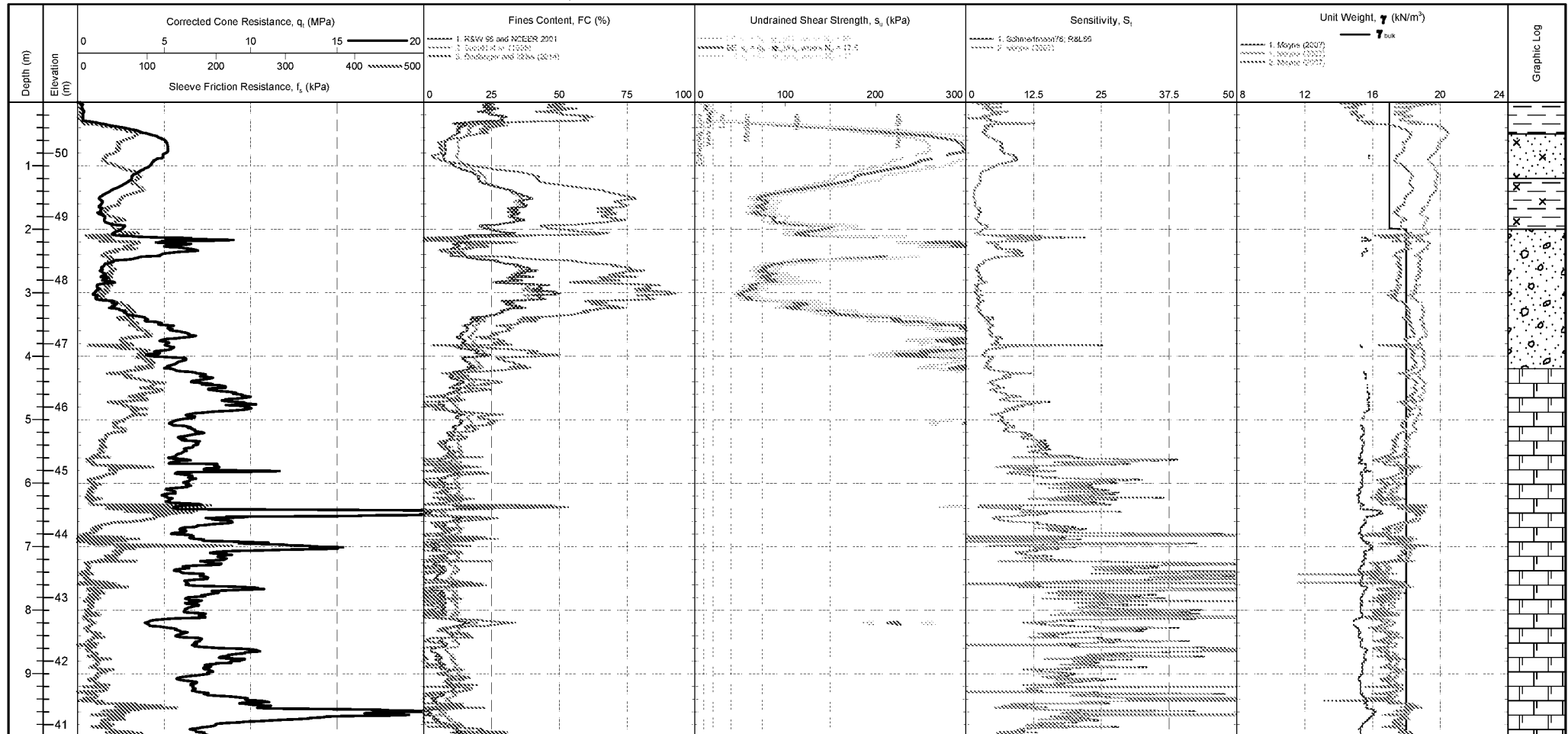
CPT 04

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 04
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	271 mV	-0.011 MPa
Sleeve	270 mV	268 mV	-0.001 kPa
Pore Pressure 2	286 mV	277 mV	-0.003 kPa
X-Y Inclinator	2461 mV	2416 mV	

Groundwater Level

Dissipation Test

PointID

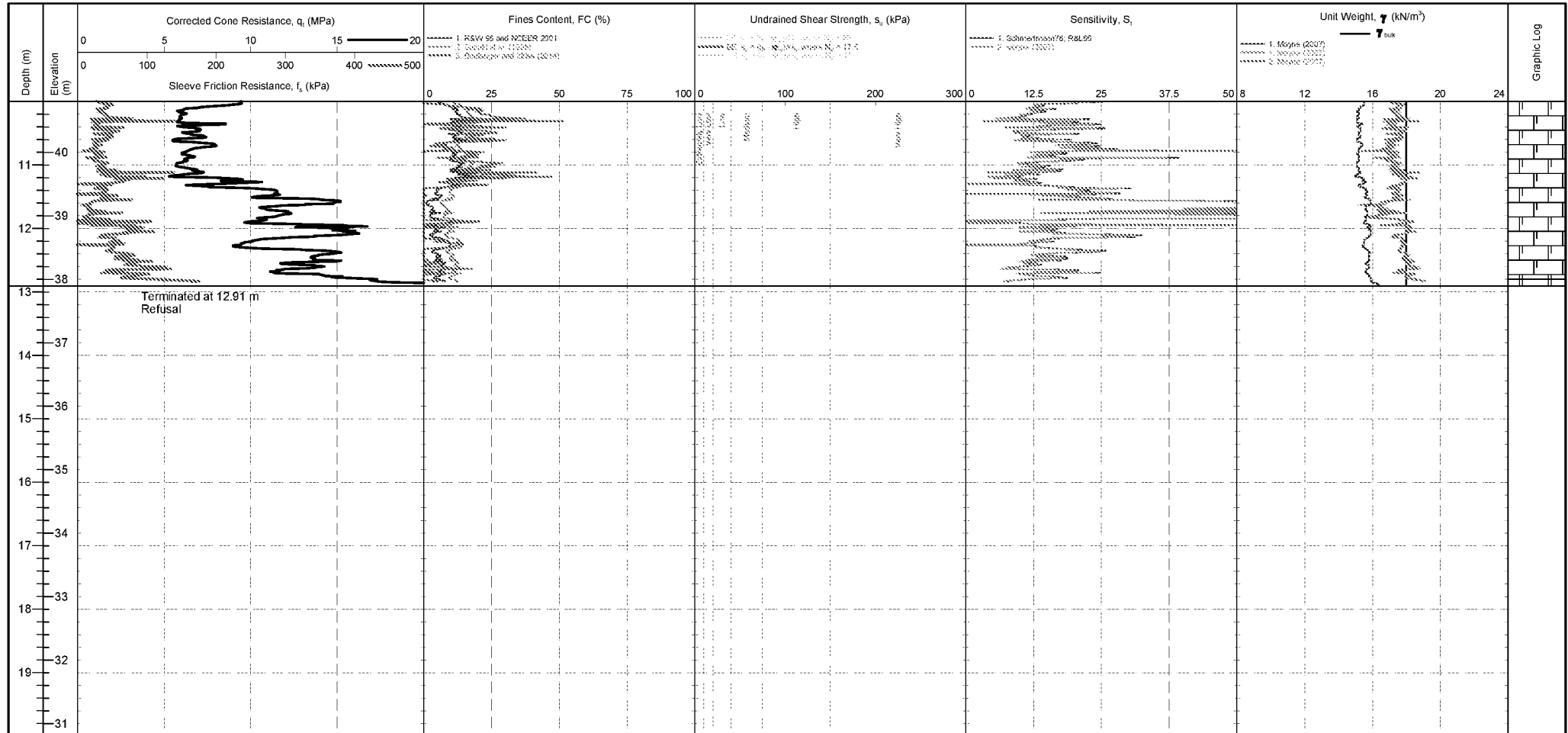
CPT 04

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 04
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	271 mV	-0.011 MPa
Sleeve	270 mV	268 mV	-0.001 kPa
Pore Pressure 2	286 mV	277 mV	-0.003 kPa
X-Y Inclinator	2461 mV	2416 mV	

Groundwater Level

Dissipation Test

PointID

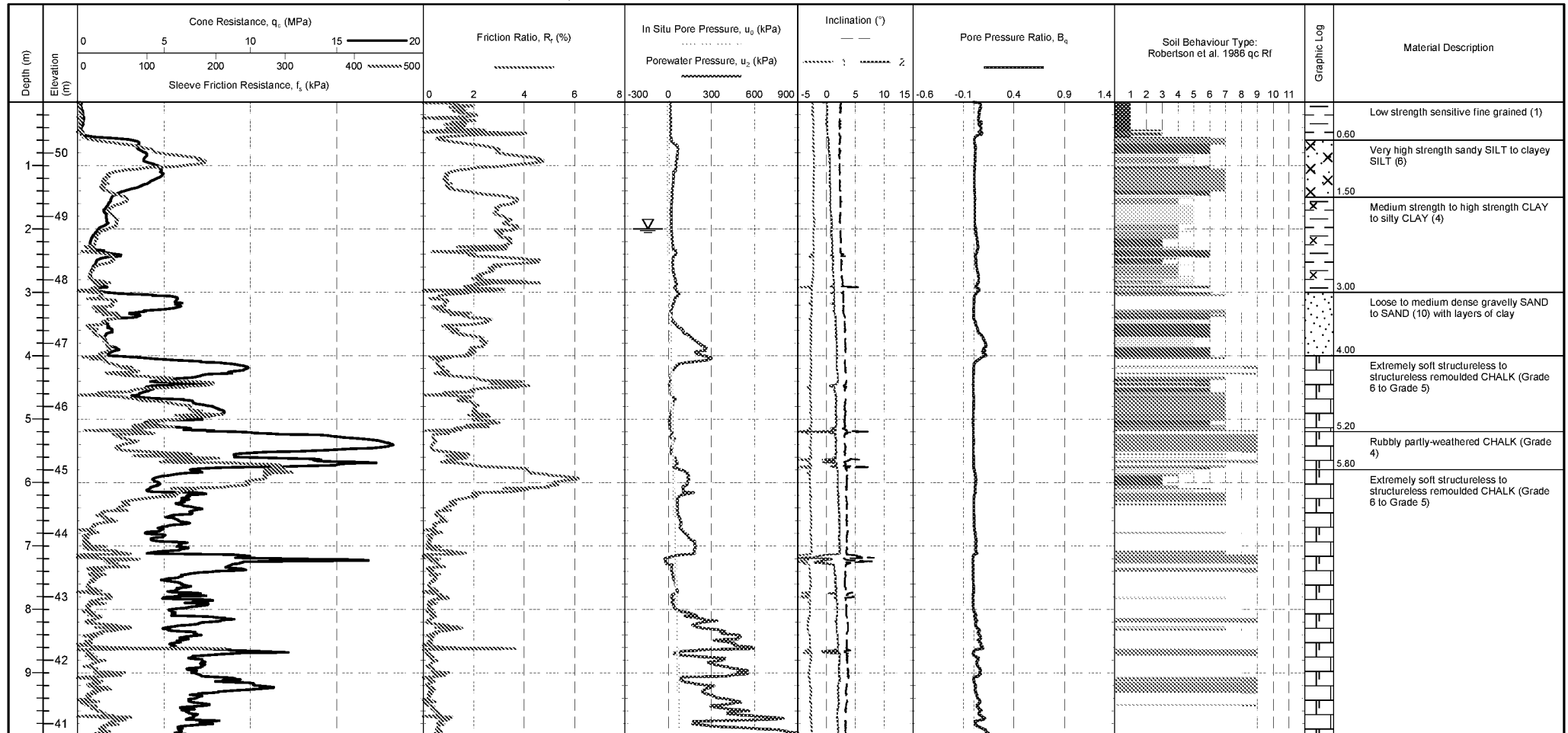
CPT 05

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498760.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 05
WEATHER : Sunny & Hot

Transducer
Tip: Pre 274 mV, Post 273 mV, Difference -0.011 MPa
Sleeve: Pre 273 mV, Post 270 mV, Difference -0.002 kPa
Pore Pressure 2: Pre 289 mV, Post 291 mV, Difference 0.001 kPa
X-Y Inclinator: Pre 2222 mV, Post 2236 mV

CPTU ZERO VALUES

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

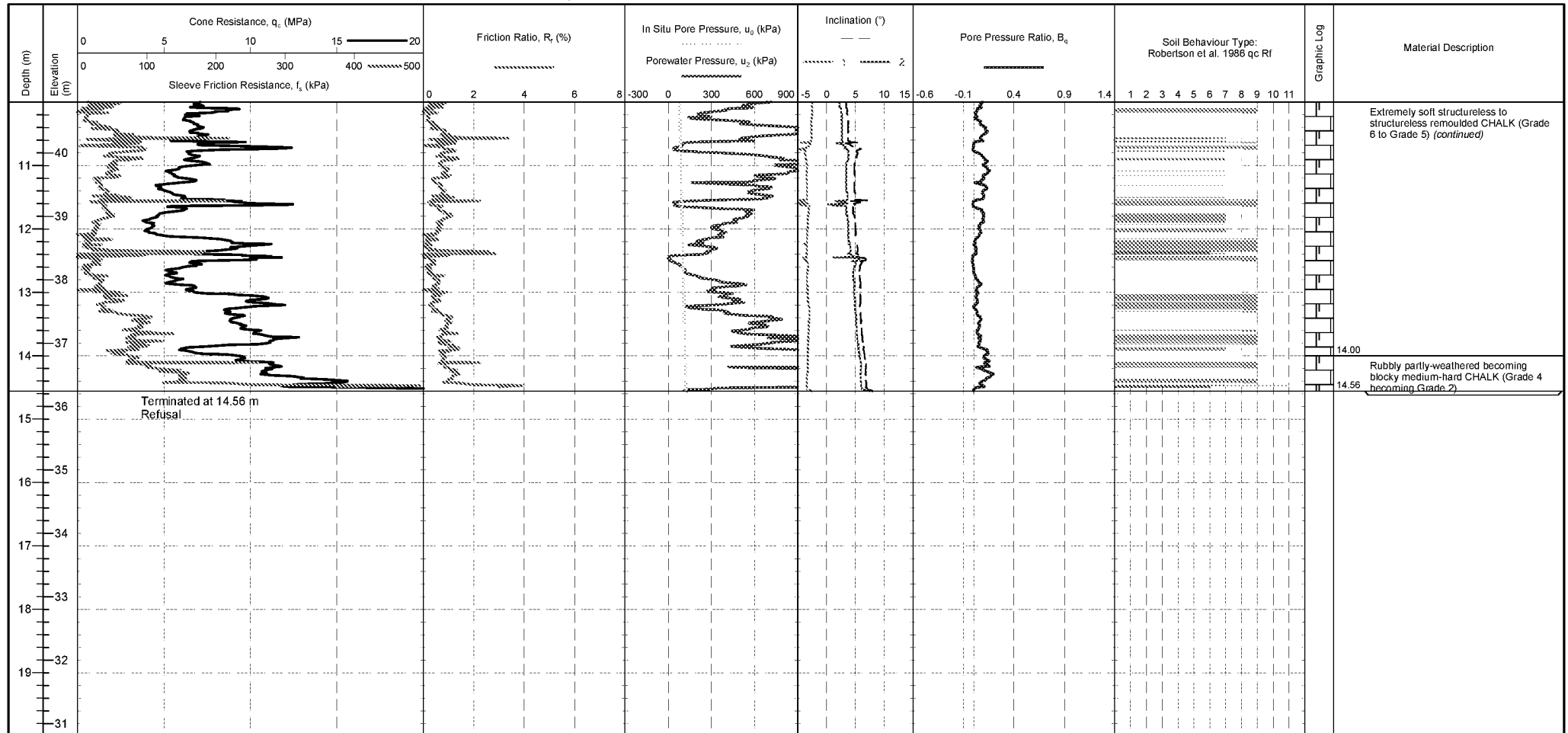
CPT 05

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498760.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 05
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

CPTU ZERO VALUES

Pre	Post	Difference
274 mV	273 mV	-0.011 MPa
273 mV	270 mV	-0.002 kPa
289 mV	291 mV	0.001 kPa
2222 mV	2236 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 - Gravely 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

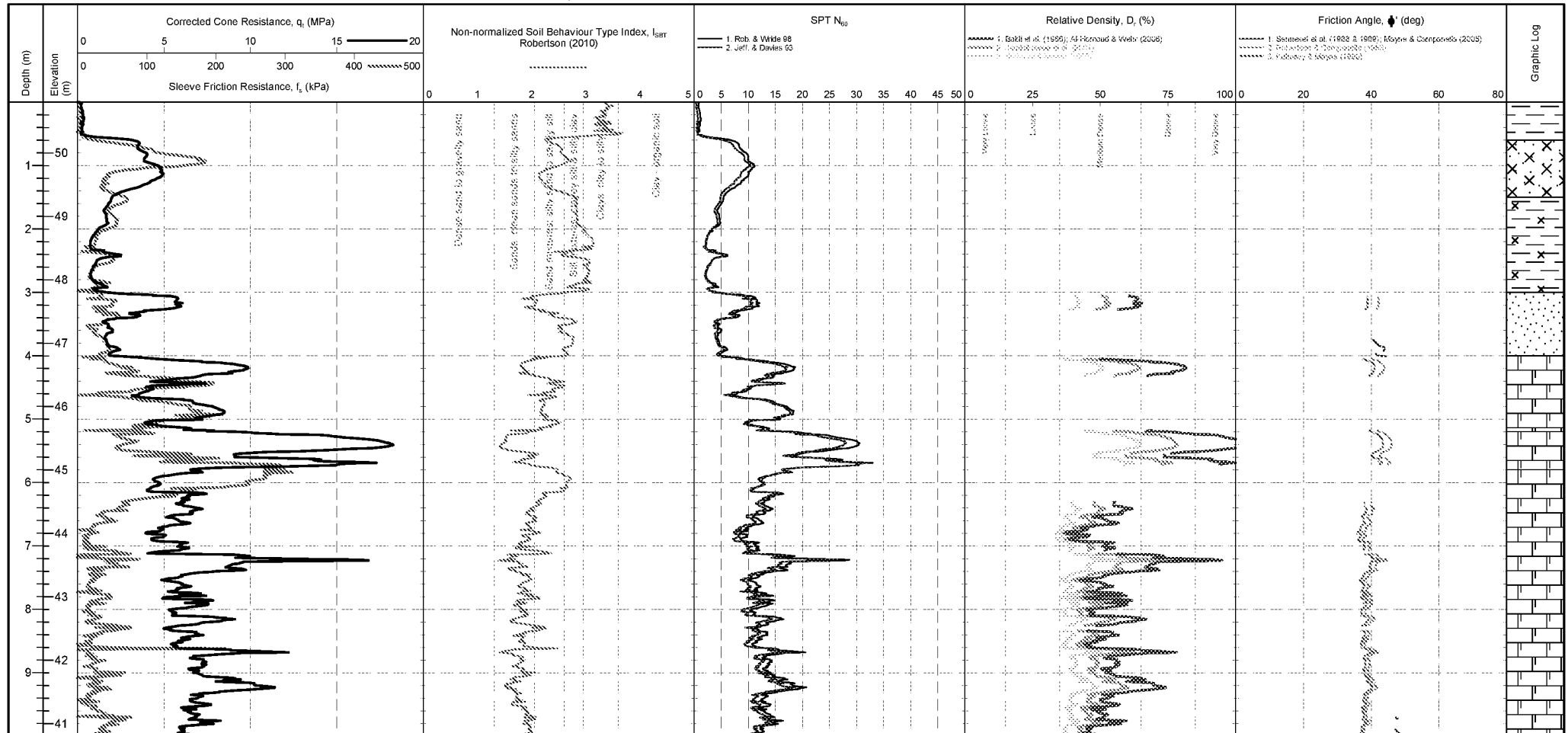
CPT 05

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498760.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 05
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	274 mV	273 mV	-0.011 MPa
Sleeve	273 mV	270 mV	-0.002 kPa
Pore Pressure 2	289 mV	291 mV	0.001 kPa
X-Y Inclinator	2222 mV	2236 mV	

Groundwater Level
Dissipation Test

PointID

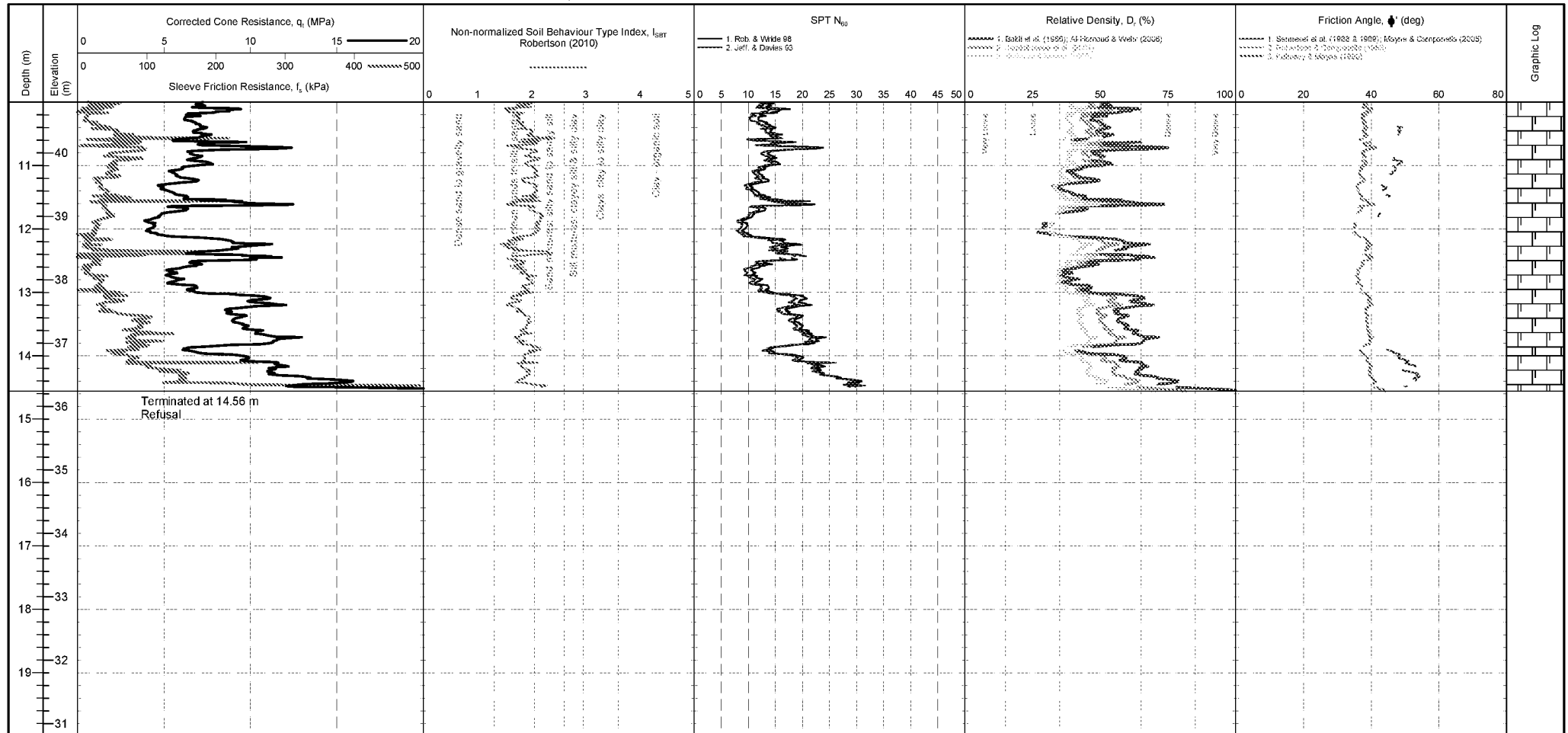
CPT 05

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498760.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 05
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	274 mV	273 mV	-0.011 MPa
Sleeve	273 mV	270 mV	-0.002 kPa
Pore Pressure 2	289 mV	291 mV	0.001 kPa
X-Y Inclinator	2222 mV	2236 mV	

Groundwater Level
Dissipation Test

PointID

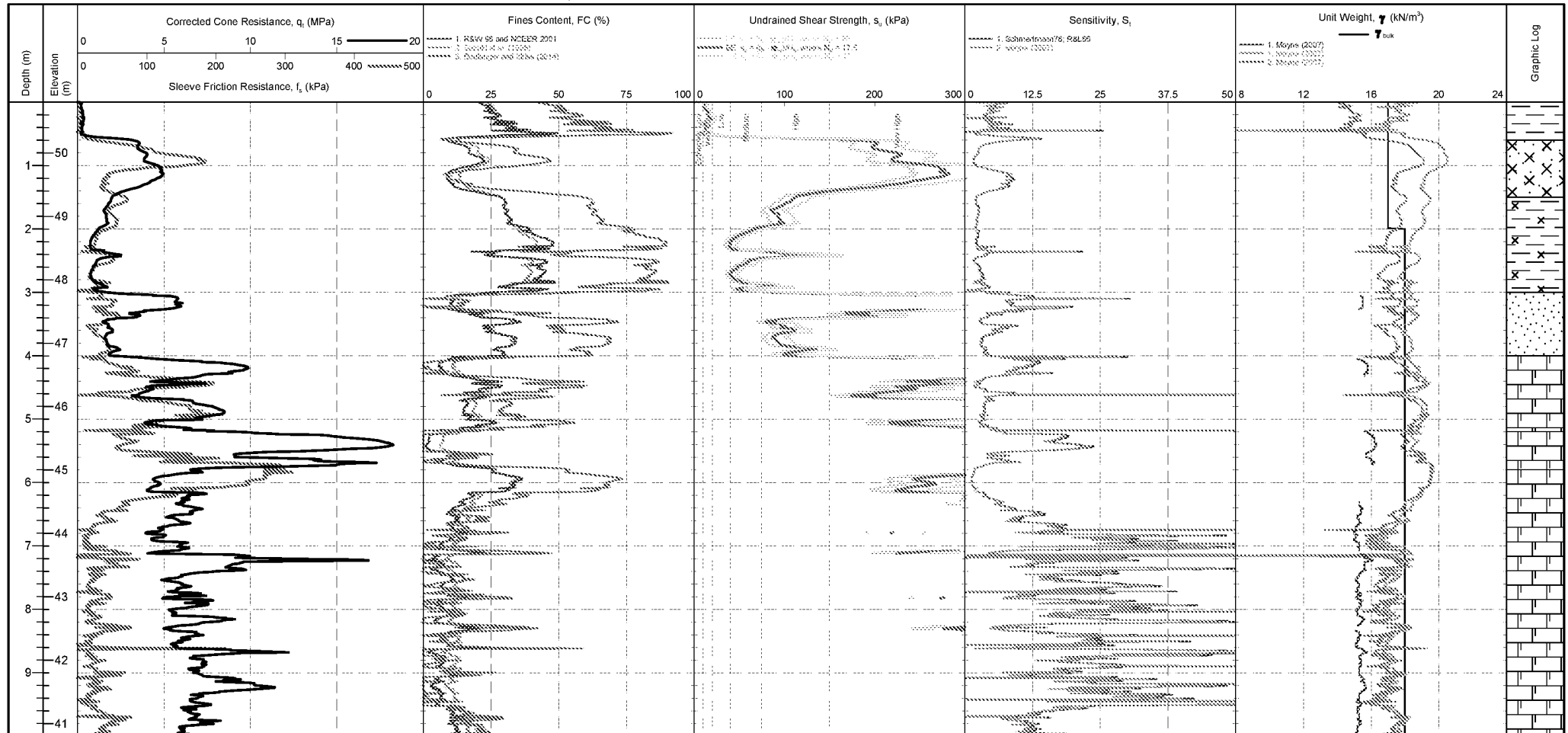
CPT 05

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498760.0 m
NORTHING : 101405.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 05
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	274 mV	273 mV	-0.011 MPa
Sleeve	273 mV	270 mV	-0.002 kPa
Pore Pressure 2	289 mV	291 mV	0.001 kPa
X-Y Inclinator	2222 mV	2236 mV	

Groundwater Level
Dissipation Test

PointID

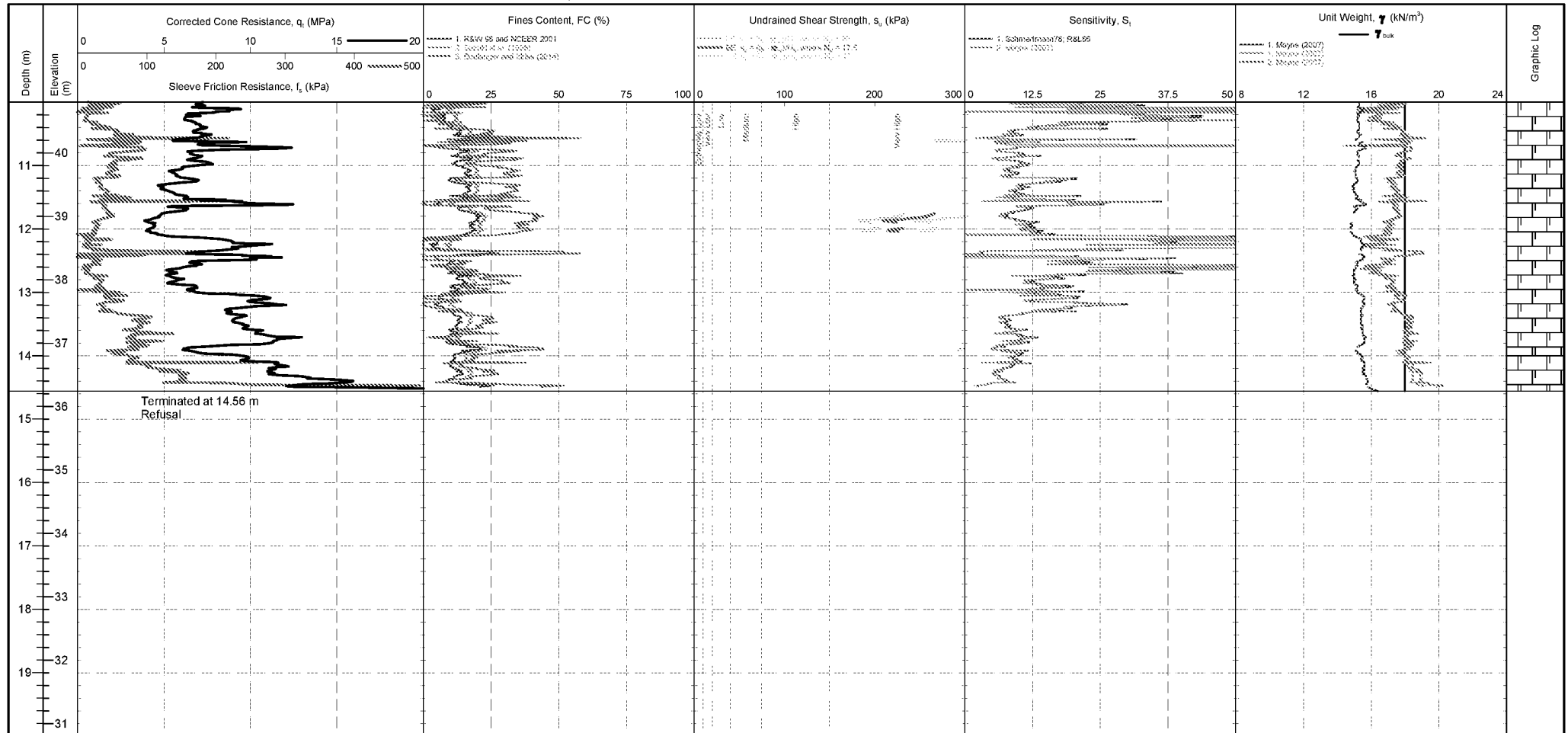
CPT 05

CLIENT : SLR Consulting
 PROJECT: Grevatts Lane
 LOCATION : Climping
 PROJECT No. : 1180407

EASTING : 498760.0 m
 NORTHING : 101405.0 m
 ELEVATION : 50.80 m
 CHECKED BY : LD
 TERMINATION REASON : Refusal

Remark:
 Test refused on tip resistance.

SHEET : 2 OF 2
 STATUS : Final
 TEST DATE : 03/10/2018
 PLOT DATE : 12/10/2018
 METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
 CONE AREA : 15cm²
 CONE AREA RATIO : 0.79
 FILTER POSITION : u2
 FILTER TYPE : HDPE
 FRICTION REDUCER : None

TEST TYPE : TE2
 APPLICATION CLASS : 2
 RIG : CPT 006
 OPERATOR : MO
 FILE NAME : 1180407-CPT 05
 WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	274 mV	273 mV	-0.011 MPa
Sleeve	273 mV	270 mV	-0.002 kPa
Pore Pressure 2	289 mV	291 mV	0.001 kPa
X-Y Inclinator	2222 mV	2236 mV	

Groundwater Level
 Dissipation Test

PointID

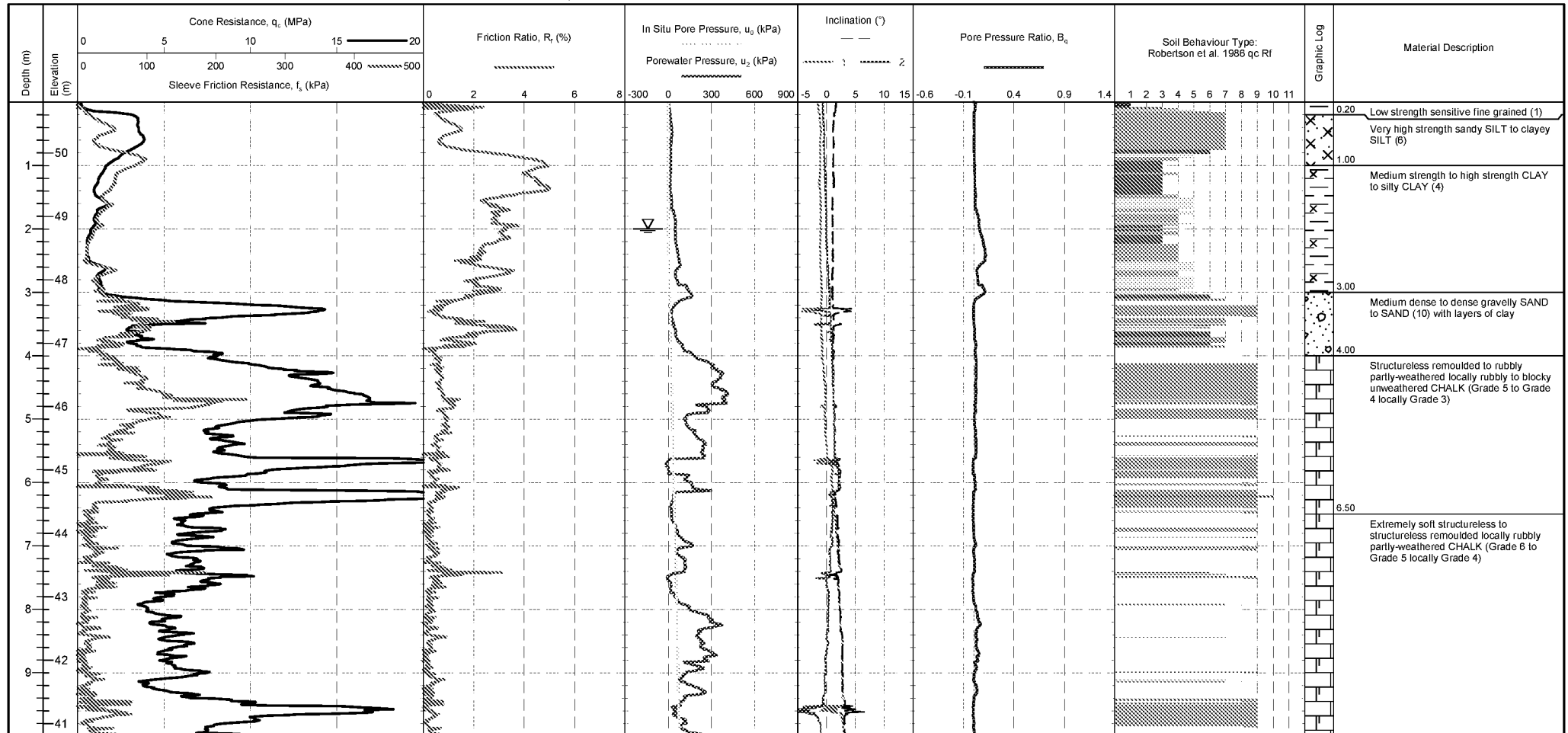
CPT 06

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498735.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 06
WEATHER : Sunny & Hot

Transducer

CPTU ZERO VALUES

	Pre	Post	Difference
Tip	271 mV	272 mV	0.011 MPa
Sleeve	270 mV	270 mV	0 kPa
Pore Pressure 2	279 mV	284 mV	0.001 kPa
X-Y Inclinator	2310 mV	2342 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

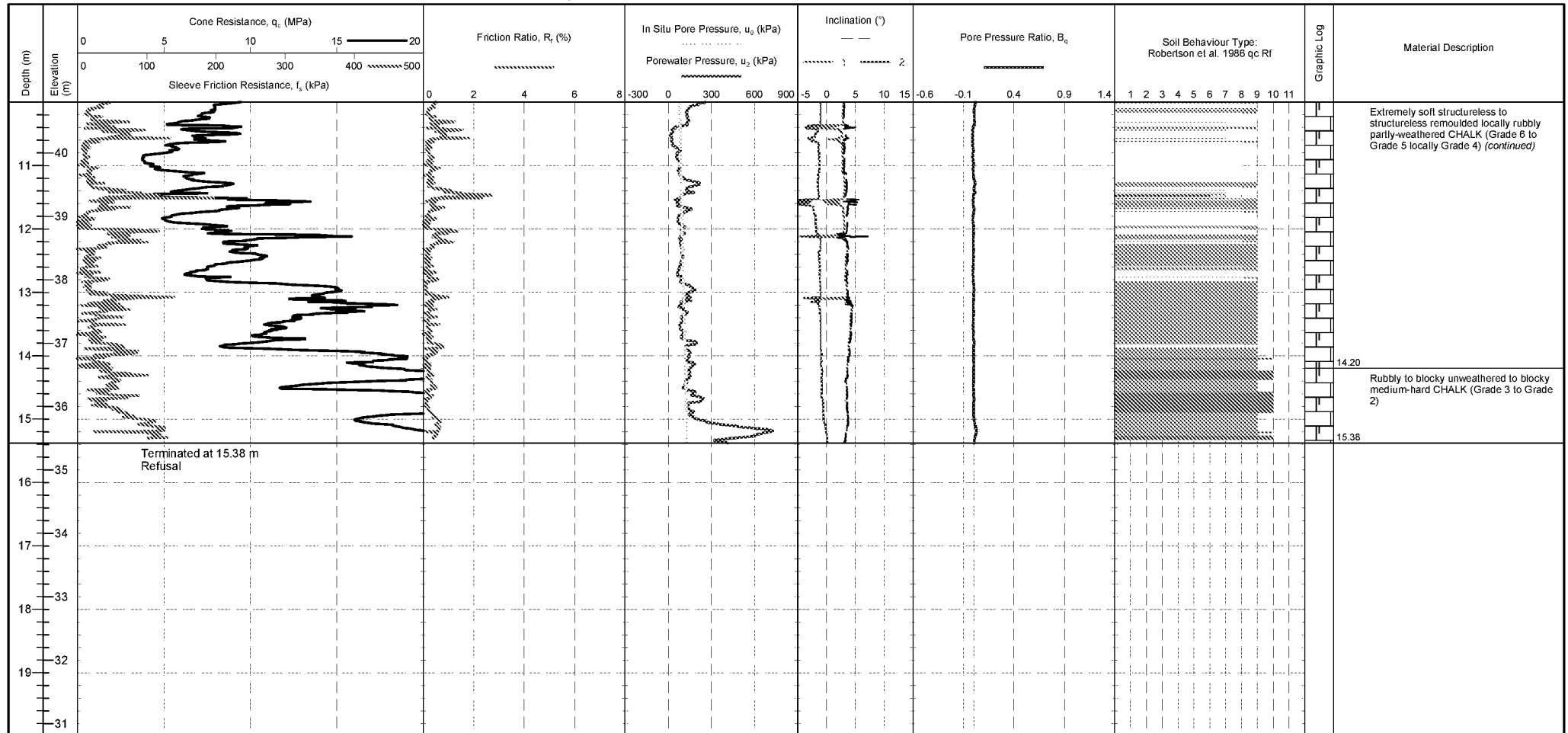
CPT 06

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498735.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 06
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

CPTU ZERO VALUES

Pre	Post	Difference
271 mV	272 mV	0.011 MPa
270 mV	270 mV	0 kPa
279 mV	284 mV	0.001 kPa
2310 mV	2342 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 - Gravely 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

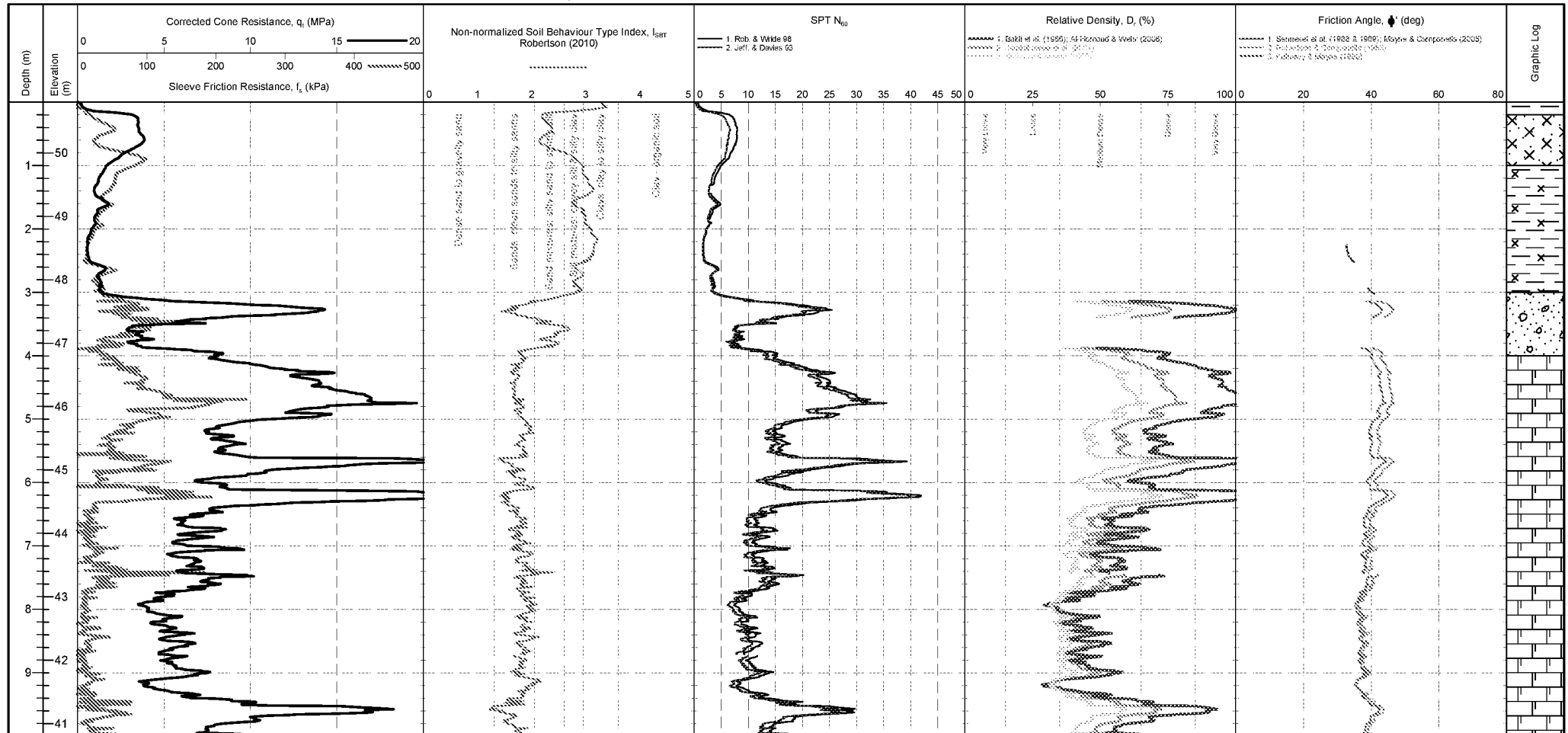
CPT 06

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498735.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 06
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	271 mV	272 mV	0.011 MPa
Sleeve	270 mV	270 mV	0 kPa
Pore Pressure 2	279 mV	284 mV	0.001 kPa
X-Y Inclinator	2310 mV	2342 mV	

Groundwater Level
Dissipation Test

PointID

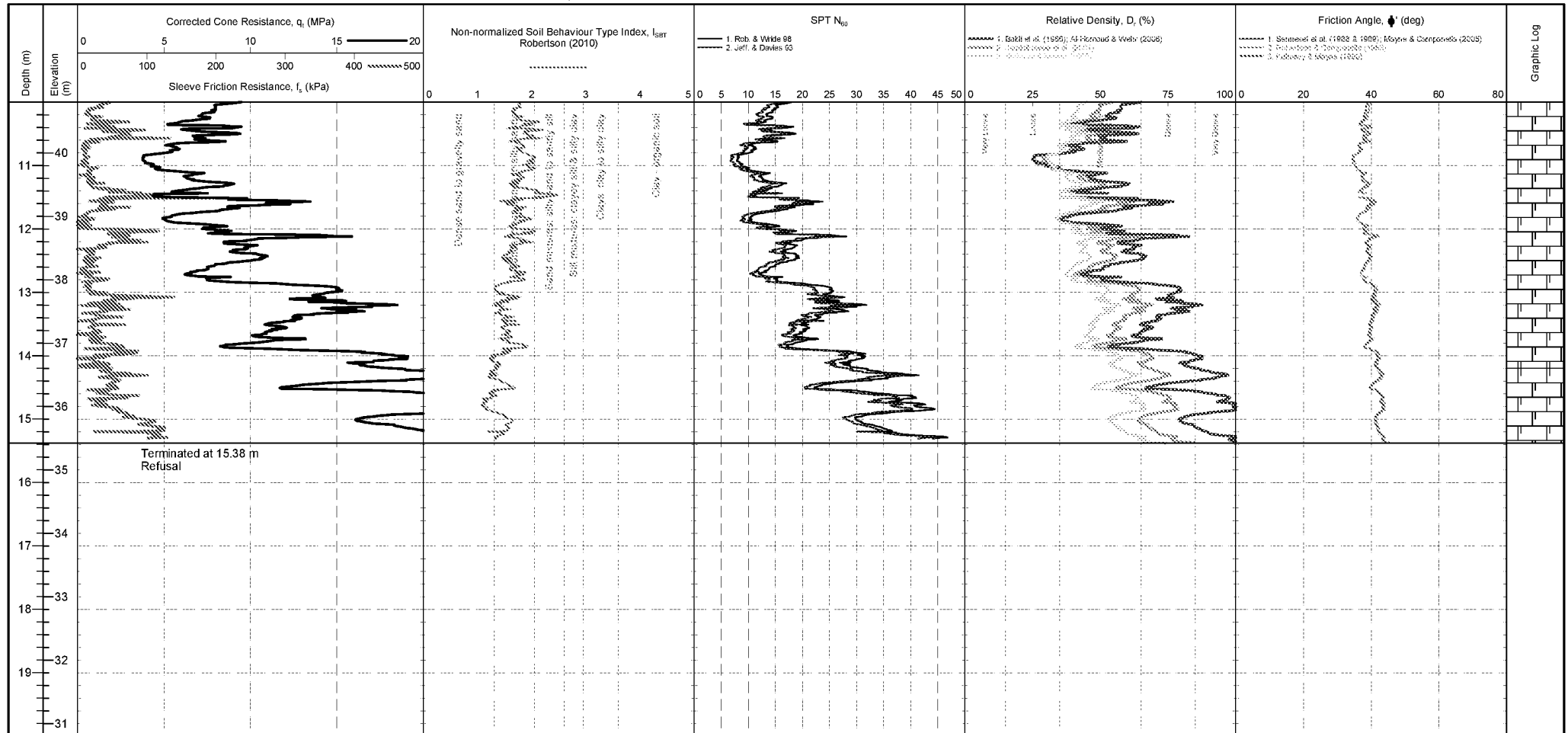
CPT 06

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498735.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 06
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	271 mV	272 mV	0.011 MPa
Sleeve	270 mV	270 mV	0 kPa
Pore Pressure 2	279 mV	284 mV	0.001 kPa
X-Y Inclinator	2310 mV	2342 mV	

Groundwater Level
Dissipation Test

PointID

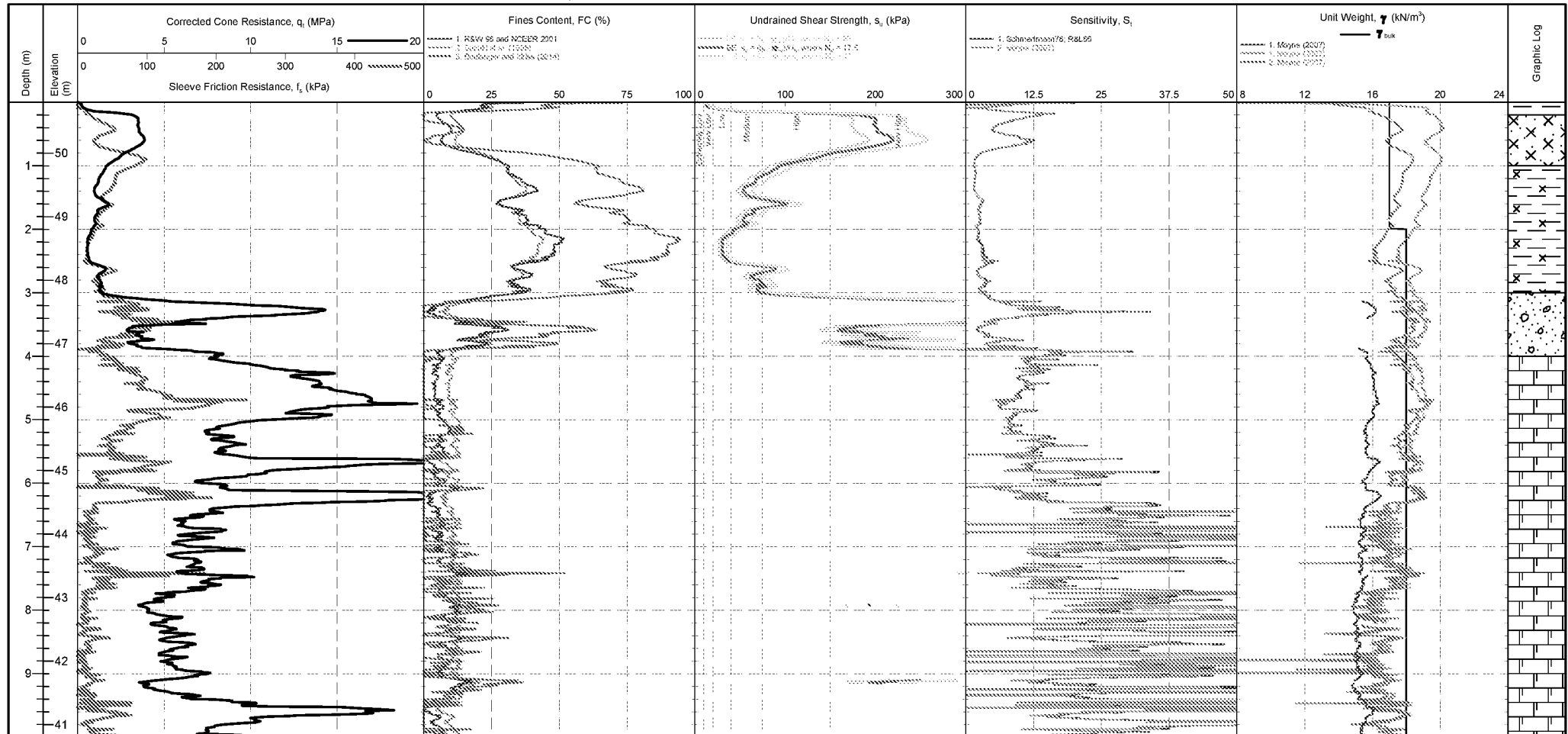
CPT 06

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498735.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 06
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	271 mV	272 mV	0.011 MPa
Sleeve	270 mV	270 mV	0 kPa
Pore Pressure 2	279 mV	284 mV	0.001 kPa
X-Y Inclinator	2310 mV	2342 mV	

Groundwater Level
Dissipation Test

PointID

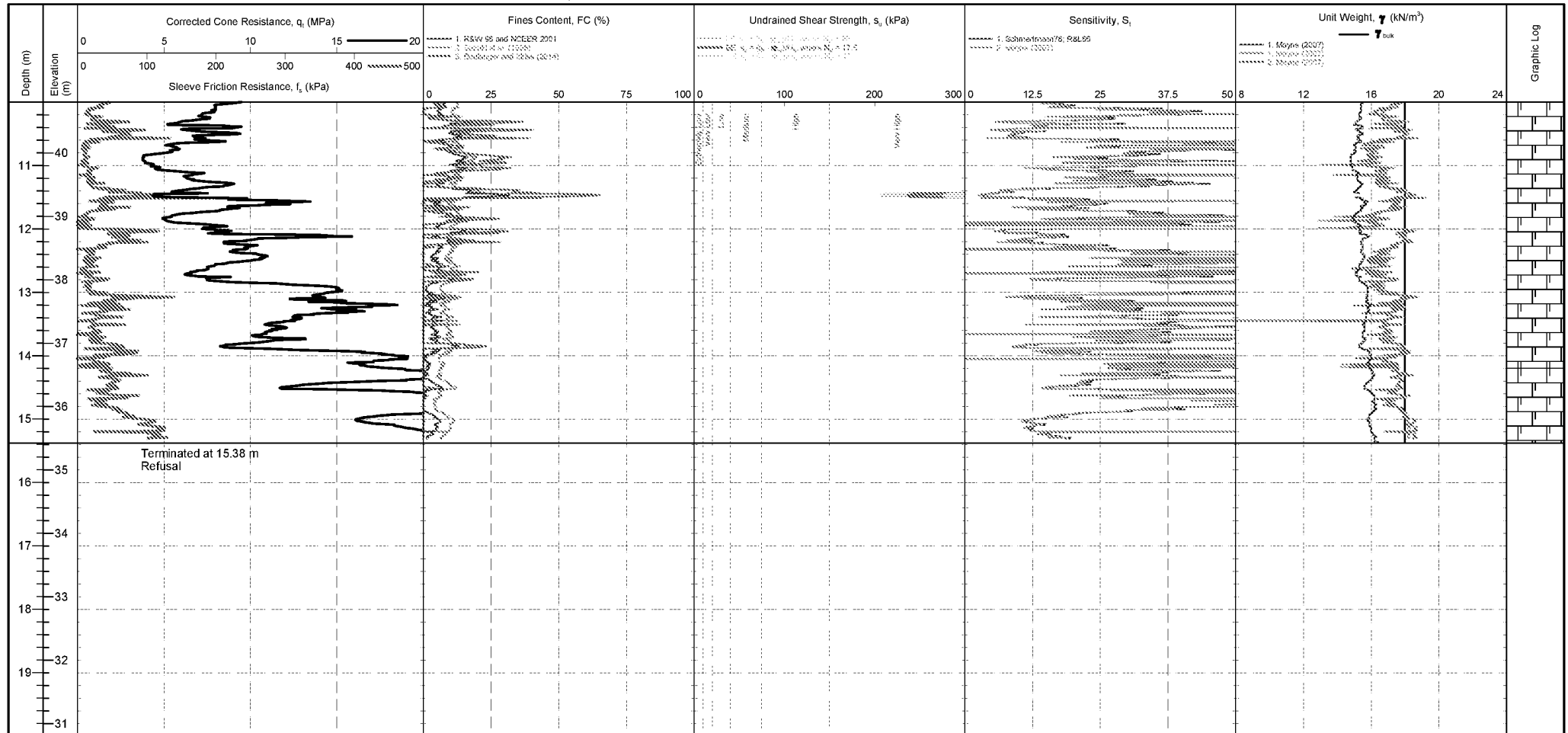
CPT 06

CLIENT : SLR Consulting
 PROJECT: Grevatts Lane
 LOCATION : Climping
 PROJECT No. : 1180407

EASTING : 498735.0 m
 NORTHING : 101400.0 m
 ELEVATION : 50.80 m
 CHECKED BY : LD
 TERMINATION REASON : Refusal

Remark:
 Test refused on tip resistance.

SHEET : 2 OF 2
 STATUS : Final
 TEST DATE : 03/10/2018
 PLOT DATE : 12/10/2018
 METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
 CONE AREA : 15cm²
 CONE AREA RATIO : 0.79
 FILTER POSITION : u2
 FILTER TYPE : HDPE
 FRICTION REDUCER : None

TEST TYPE : TE2
 APPLICATION CLASS : 2
 RIG : CPT 006
 OPERATOR : MO
 FILE NAME : 1180407-CPT 06
 WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	271 mV	272 mV	0.011 MPa
Sleeve	270 mV	270 mV	0 kPa
Pore Pressure 2	279 mV	284 mV	0.001 kPa
X-Y Inclinator	2310 mV	2342 mV	

Groundwater Level
 Dissipation Test

PointID

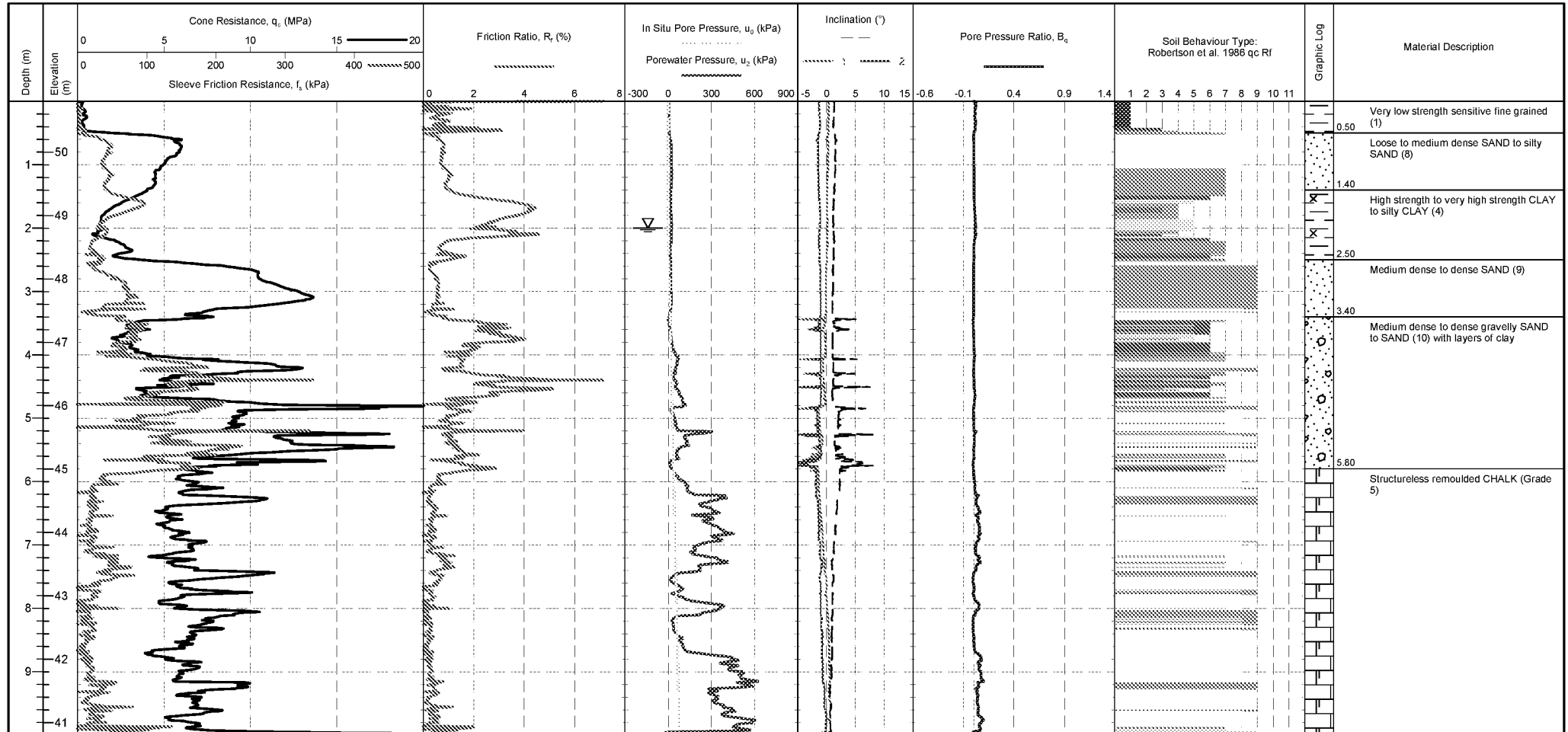
CPT 07

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 07
WEATHER : Sunny & Hot

Transducer : Pre Post Difference
Tip : 273 mV 272 mV -0.011 MPa
Sleeve : 272 mV 271 mV -0.001 kPa
Pore Pressure 2 : 282 mV 279 mV -0.001 kPa
X-Y Inclinator : 2497 mV 2470 mV

CPTU ZERO VALUES

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

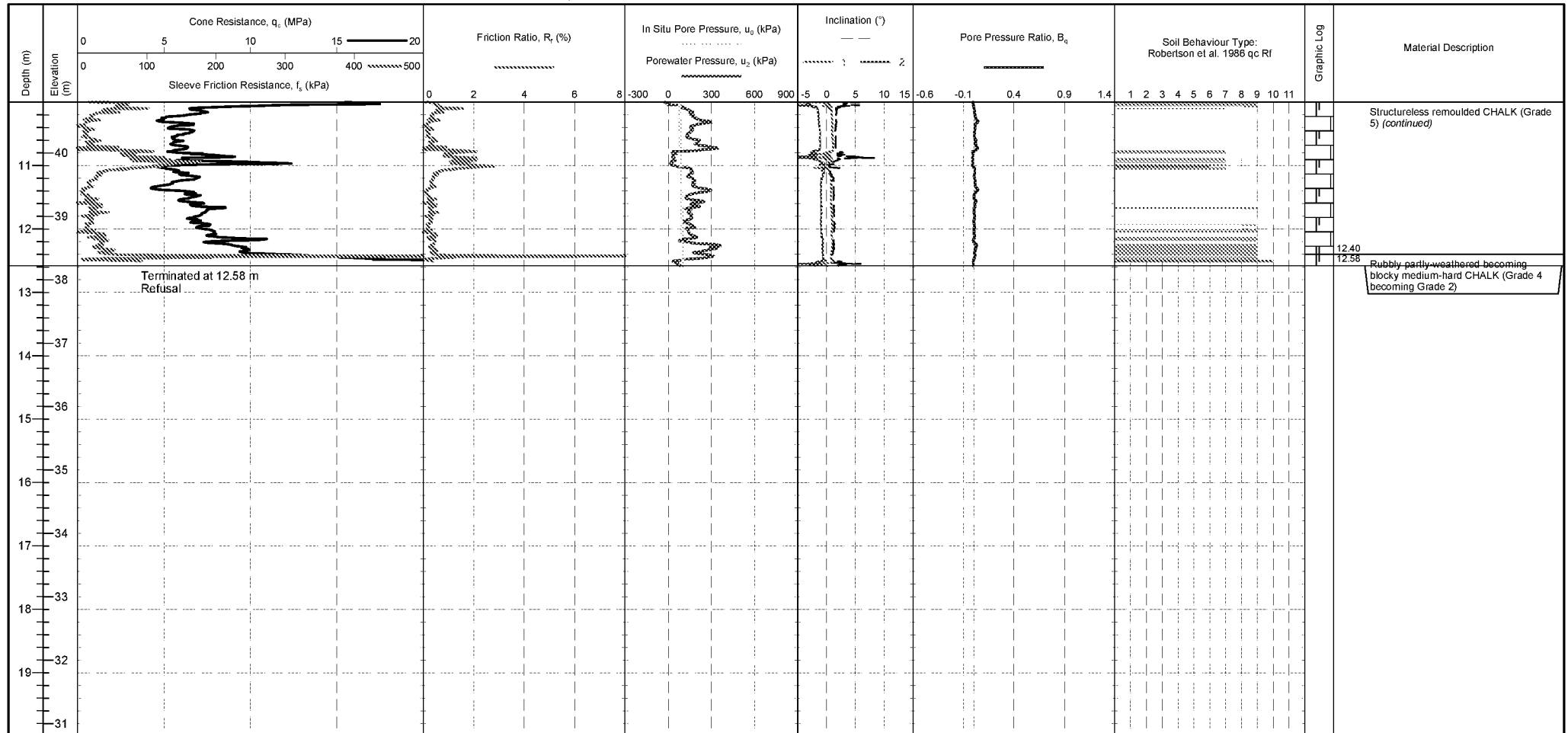
CPT 07

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 07
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

CPTU ZERO VALUES

Pre	Post	Difference
273 mV	272 mV	-0.011 MPa
272 mV	271 mV	-0.001 kPa
282 mV	279 mV	-0.001 kPa
2497 mV	2470 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

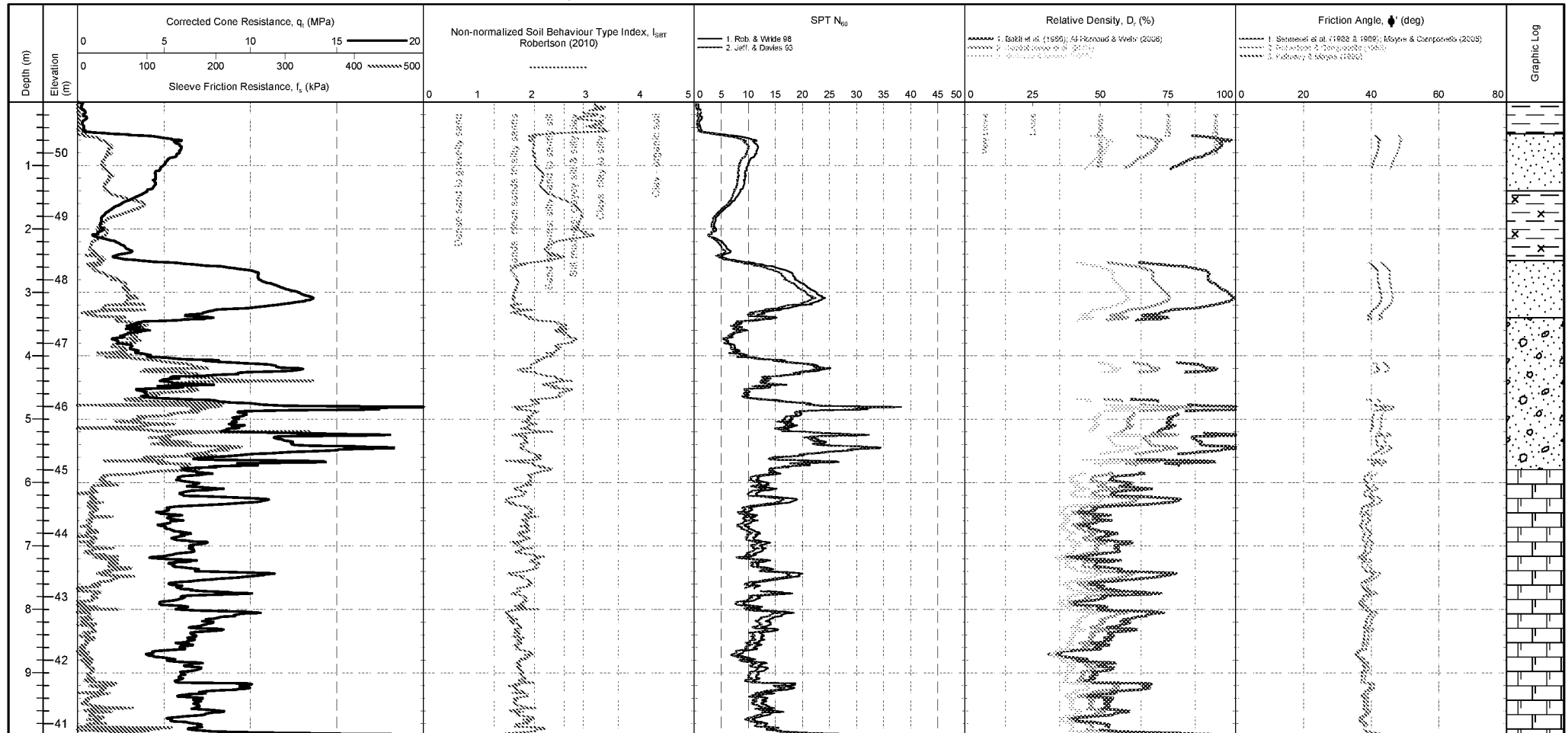
CPT 07

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 07
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	273 mV	272 mV	-0.011 MPa
Sleeve	272 mV	271 mV	-0.001 kPa
Pore Pressure 2	282 mV	279 mV	-0.001 kPa
X-Y Inclinator	2497 mV	2470 mV	

Groundwater Level

Dissipation Test

PointID

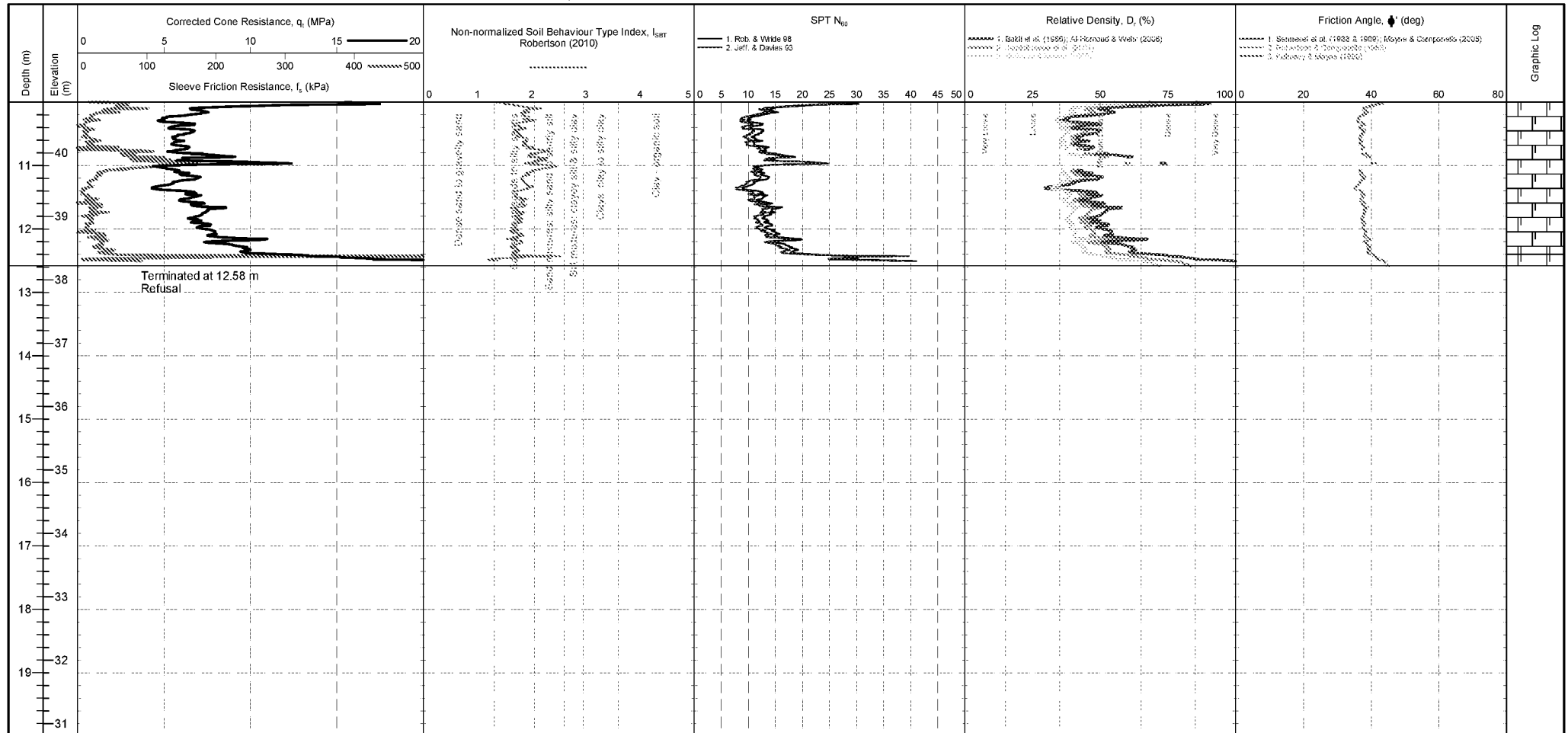
CPT 07

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 07
WEATHER : Sunny & Hot

Transducer	CPTU ZERO VALUES		
	Pre	Post	Difference
Tip	273 mV	272 mV	-0.011 MPa
Sleeve	272 mV	271 mV	-0.001 kPa
Pore Pressure 2	282 mV	279 mV	-0.001 kPa
X-Y Inclinator	2497 mV	2470 mV	

Groundwater Level
 Dissipation Test

PointID

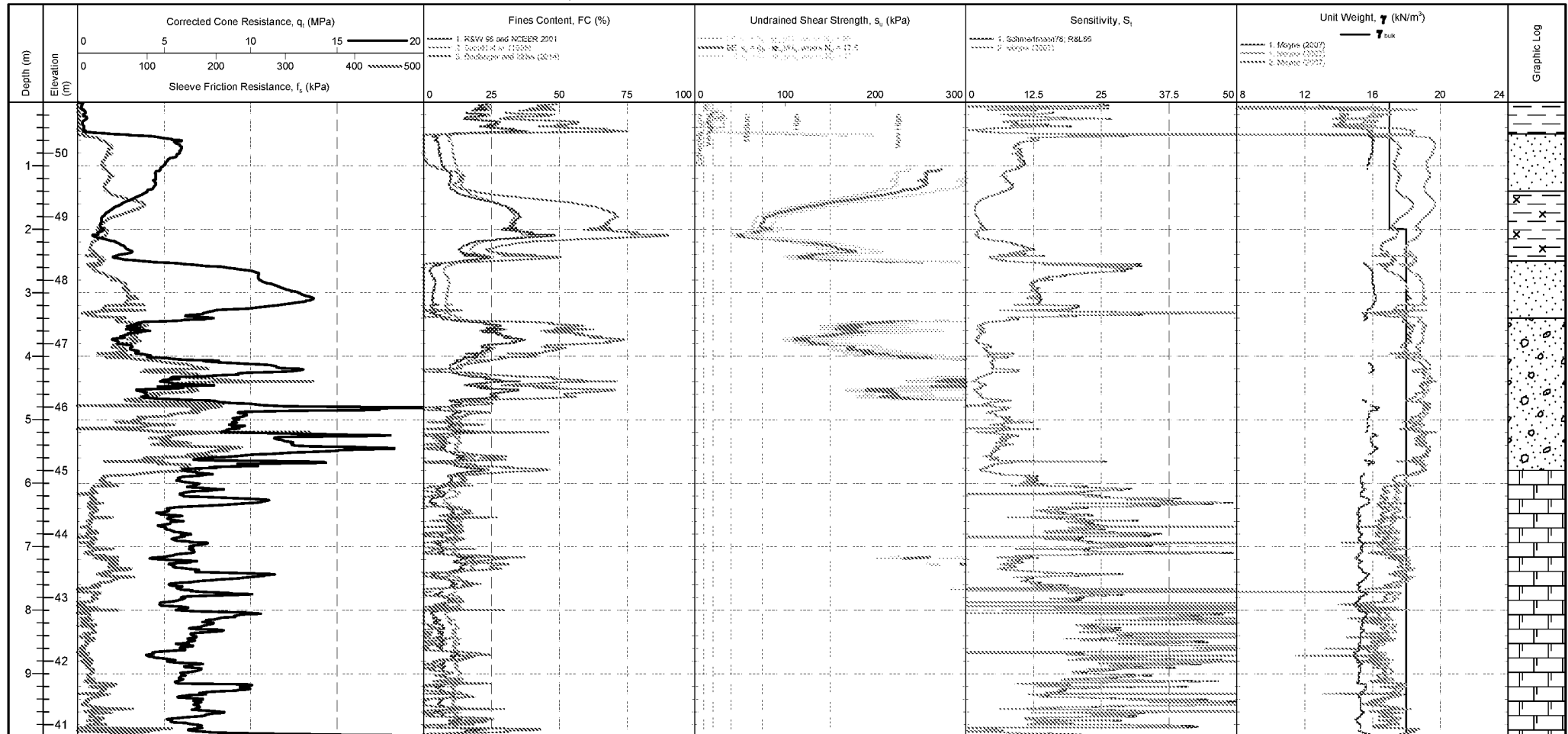
CPT 07

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 07
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	273 mV	272 mV	-0.011 MPa
Sleeve	272 mV	271 mV	-0.001 kPa
Pore Pressure 2	282 mV	279 mV	-0.001 kPa
X-Y Inclinator	2497 mV	2470 mV	

Groundwater Level
Dissipation Test

PointID

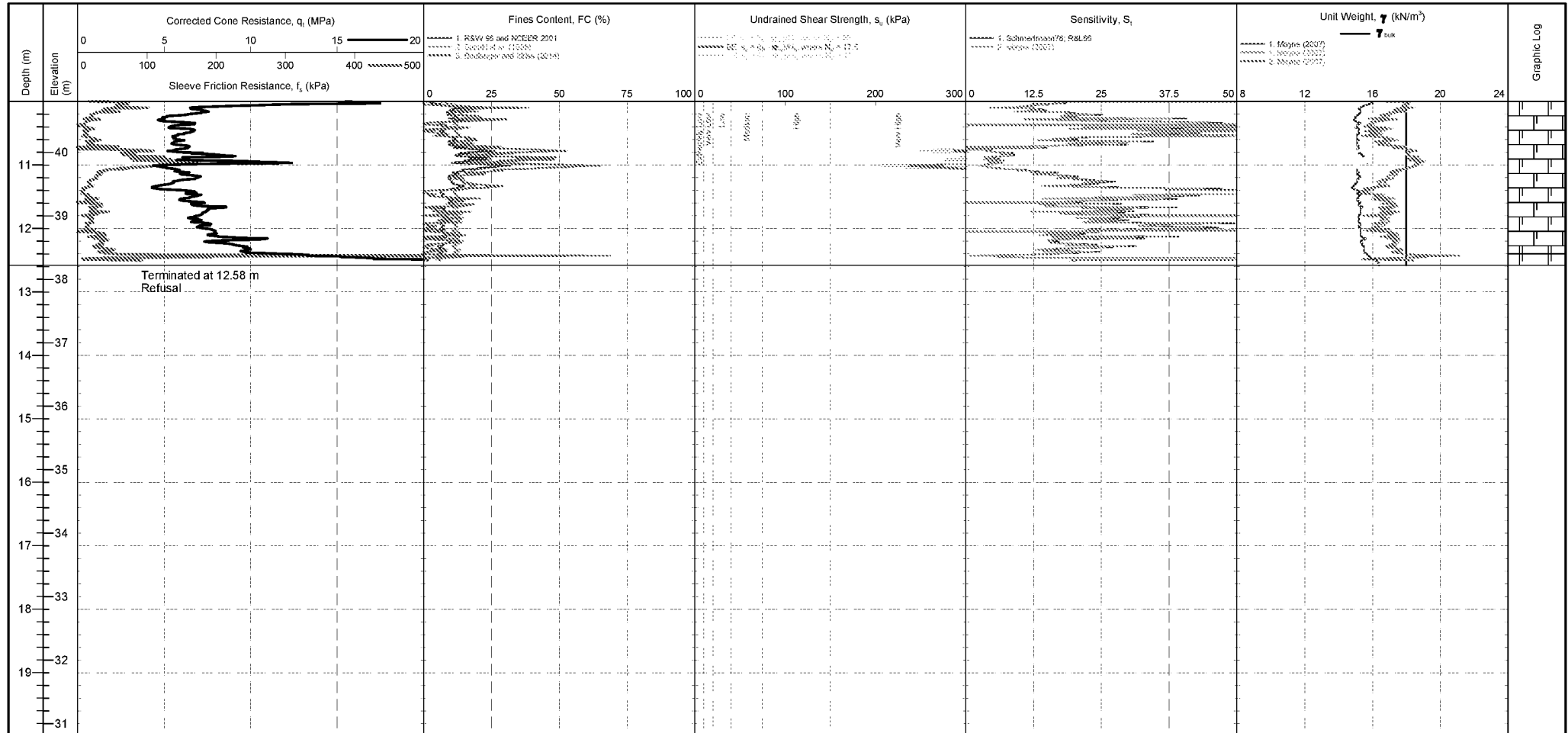
CPT 07

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498745.0 m
NORTHING : 101400.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 07
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	273 mV	272 mV	-0.011 MPa
Sleeve	272 mV	271 mV	-0.001 kPa
Pore Pressure 2	282 mV	279 mV	-0.001 kPa
X-Y Inclinator	2497 mV	2470 mV	

Groundwater Level
Dissipation Test

PointID

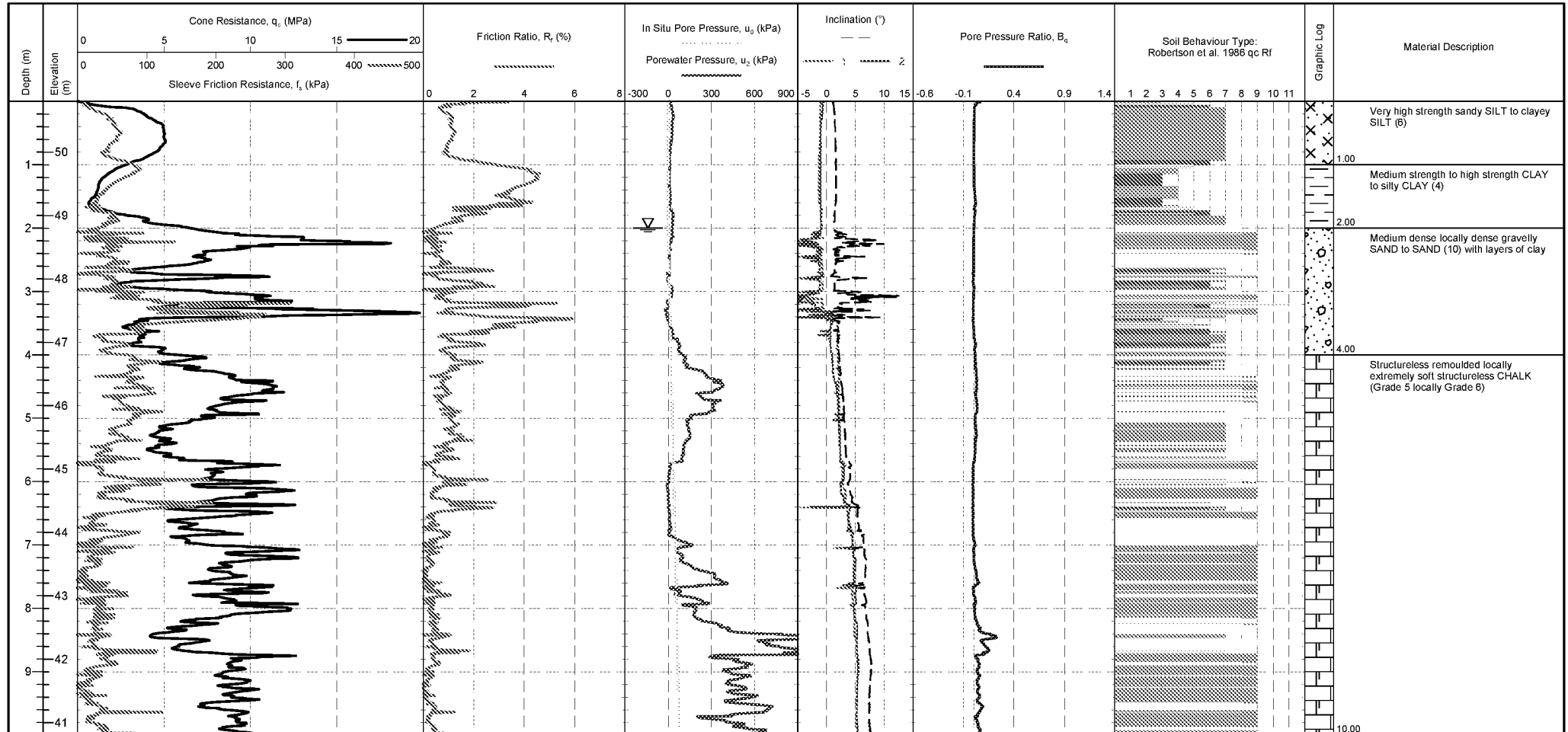
CPT 09

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 09
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

CPTU ZERO VALUES

Pre	Post	Difference
272 mV	271 mV	-0.011 MPa
271 mV	270 mV	-0.001 kPa
282 mV	281 mV	0 kPa
2362 mV	2369 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

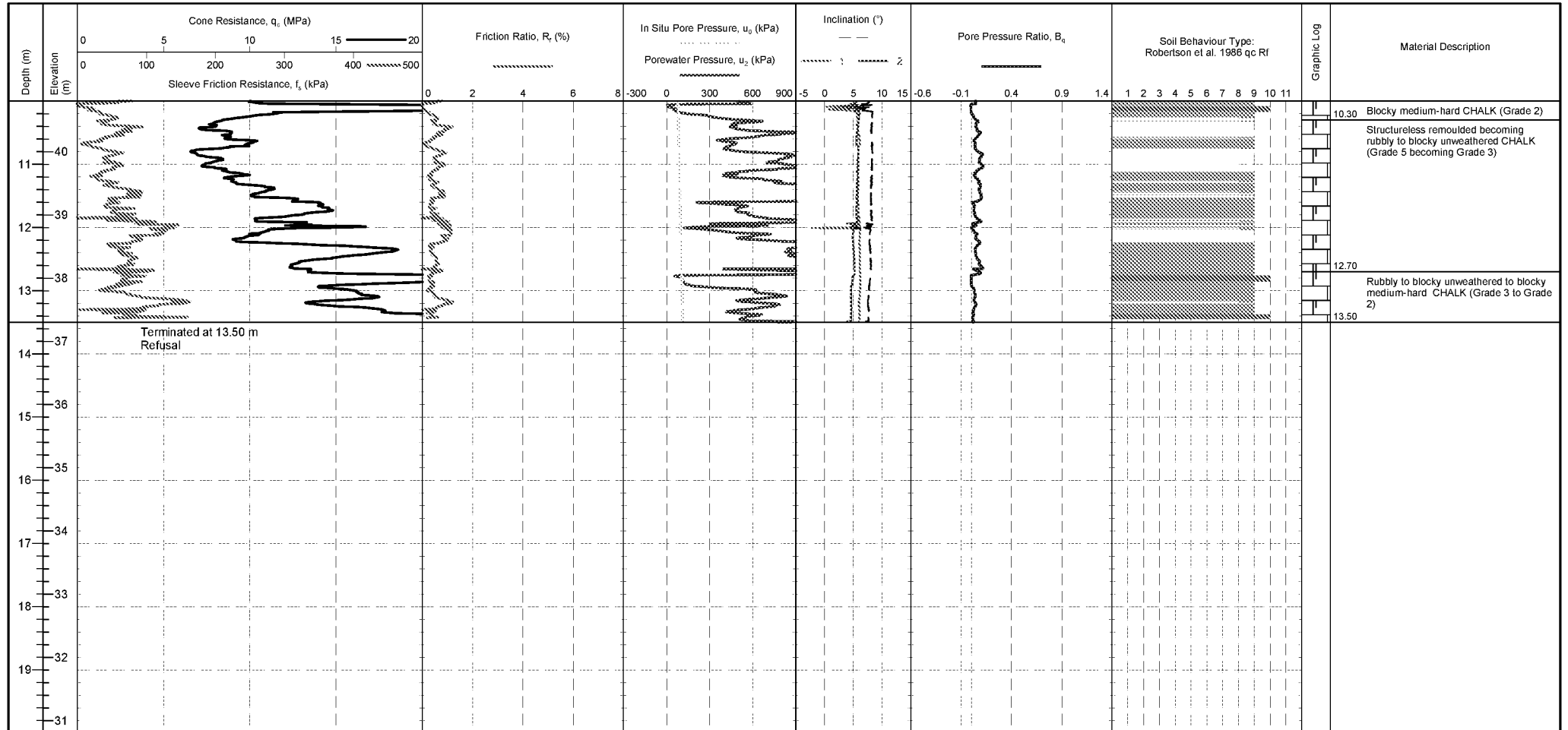
CPT 09

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



PointID

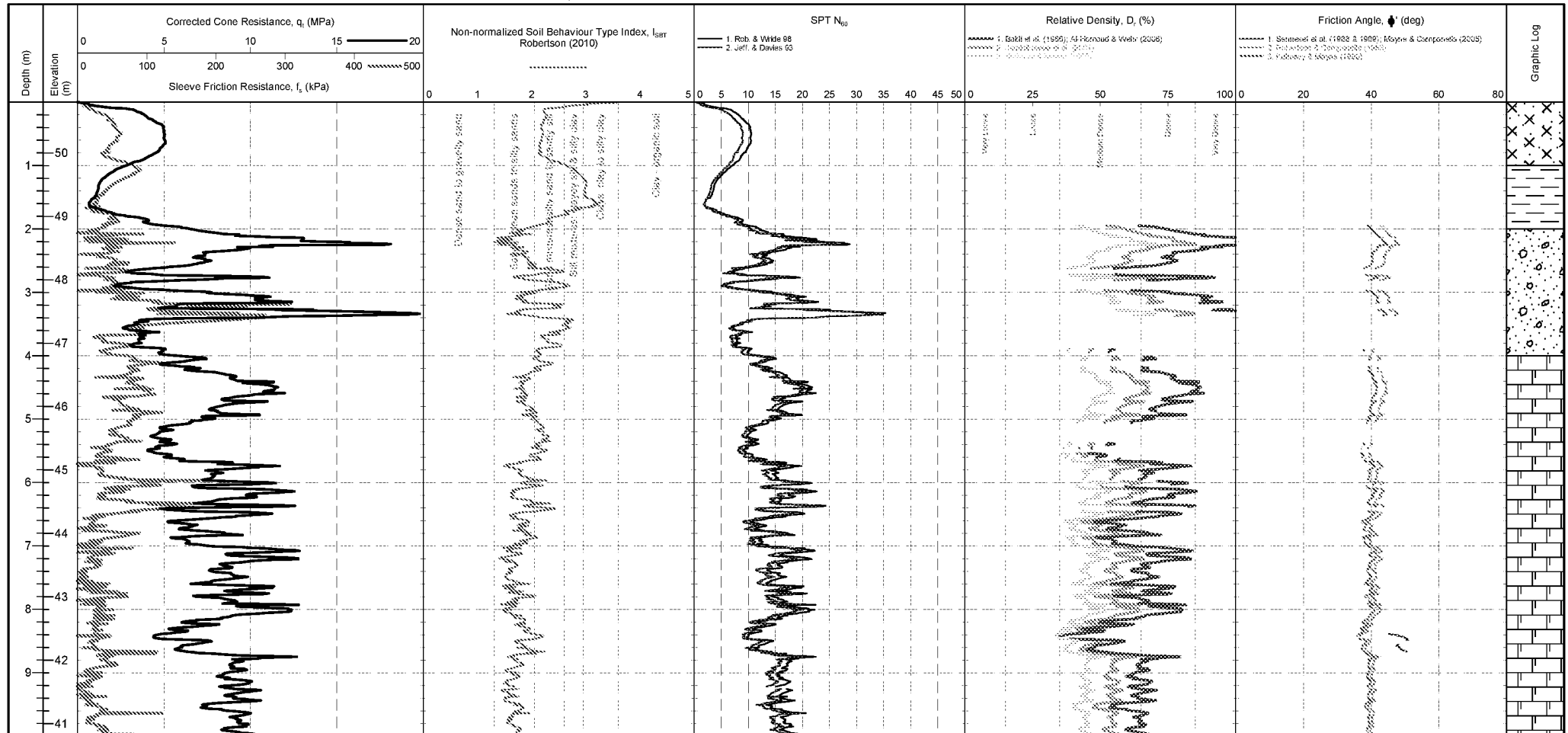
CPT 09

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 09
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	271 mV	-0.011 MPa
Sleeve	271 mV	270 mV	-0.001 kPa
Pore Pressure 2	282 mV	281 mV	0 kPa
X-Y Inclinator	2362 mV	2369 mV	

Groundwater Level

Dissipation Test

PointID

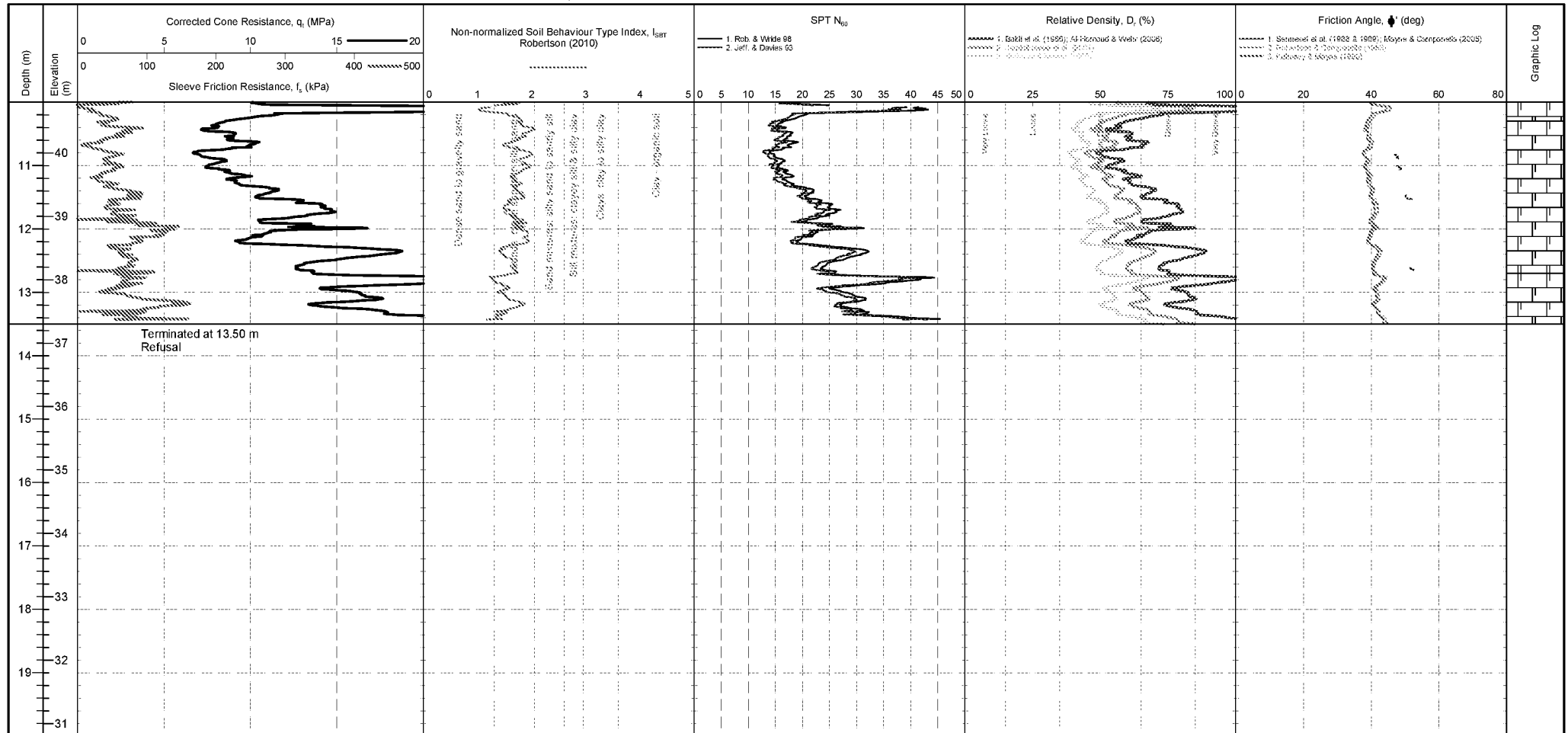
CPT 09

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 09
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	271 mV	-0.011 MPa
Sleeve	271 mV	270 mV	-0.001 kPa
Pore Pressure 2	282 mV	281 mV	0 kPa
X-Y Inclinator	2362 mV	2369 mV	

Groundwater Level
Dissipation Test

PointID

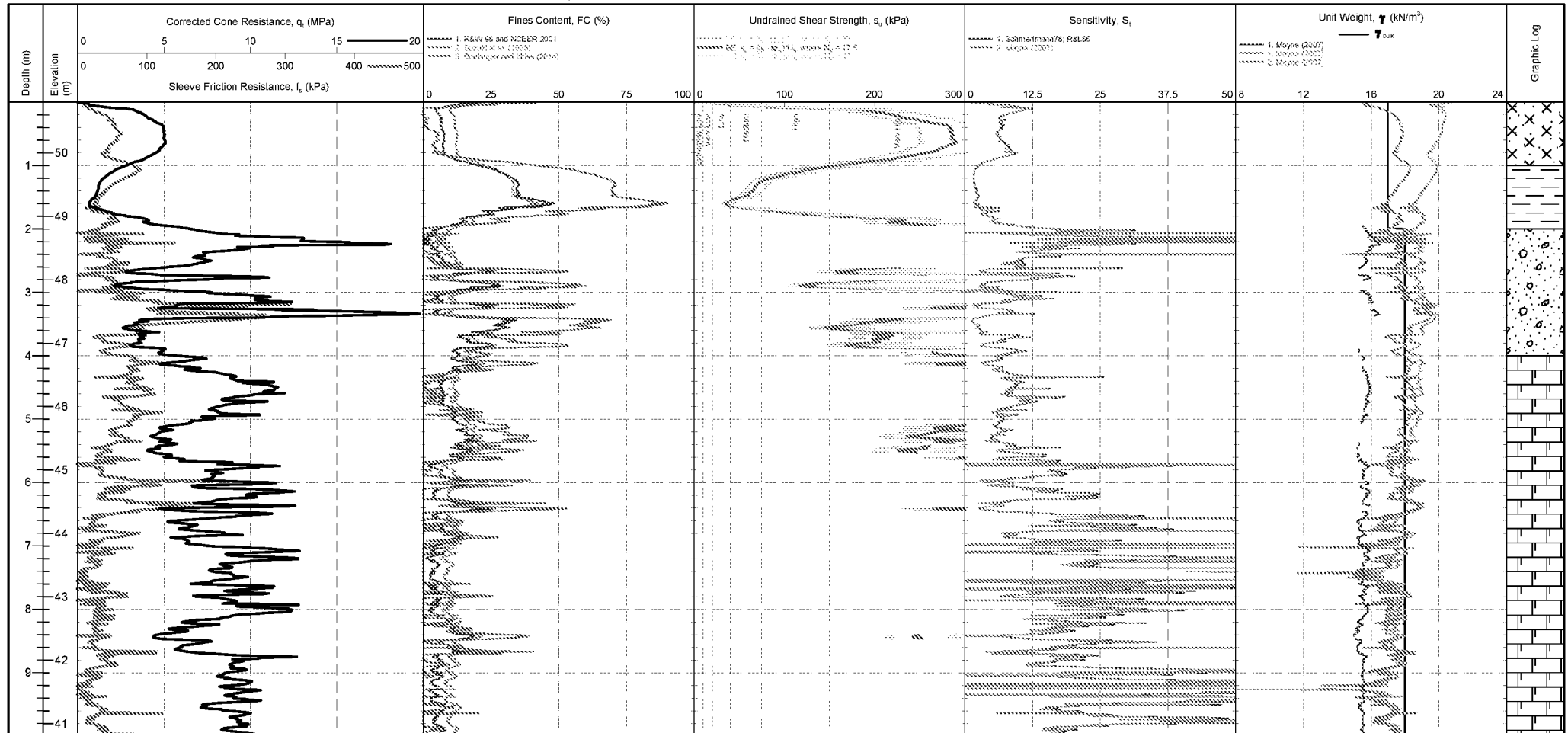
CPT 09

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 09
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	271 mV	-0.011 MPa
Sleeve	271 mV	270 mV	-0.001 kPa
Pore Pressure 2	282 mV	281 mV	0 kPa
X-Y Inclinator	2362 mV	2369 mV	

Groundwater Level
Dissipation Test

PointID

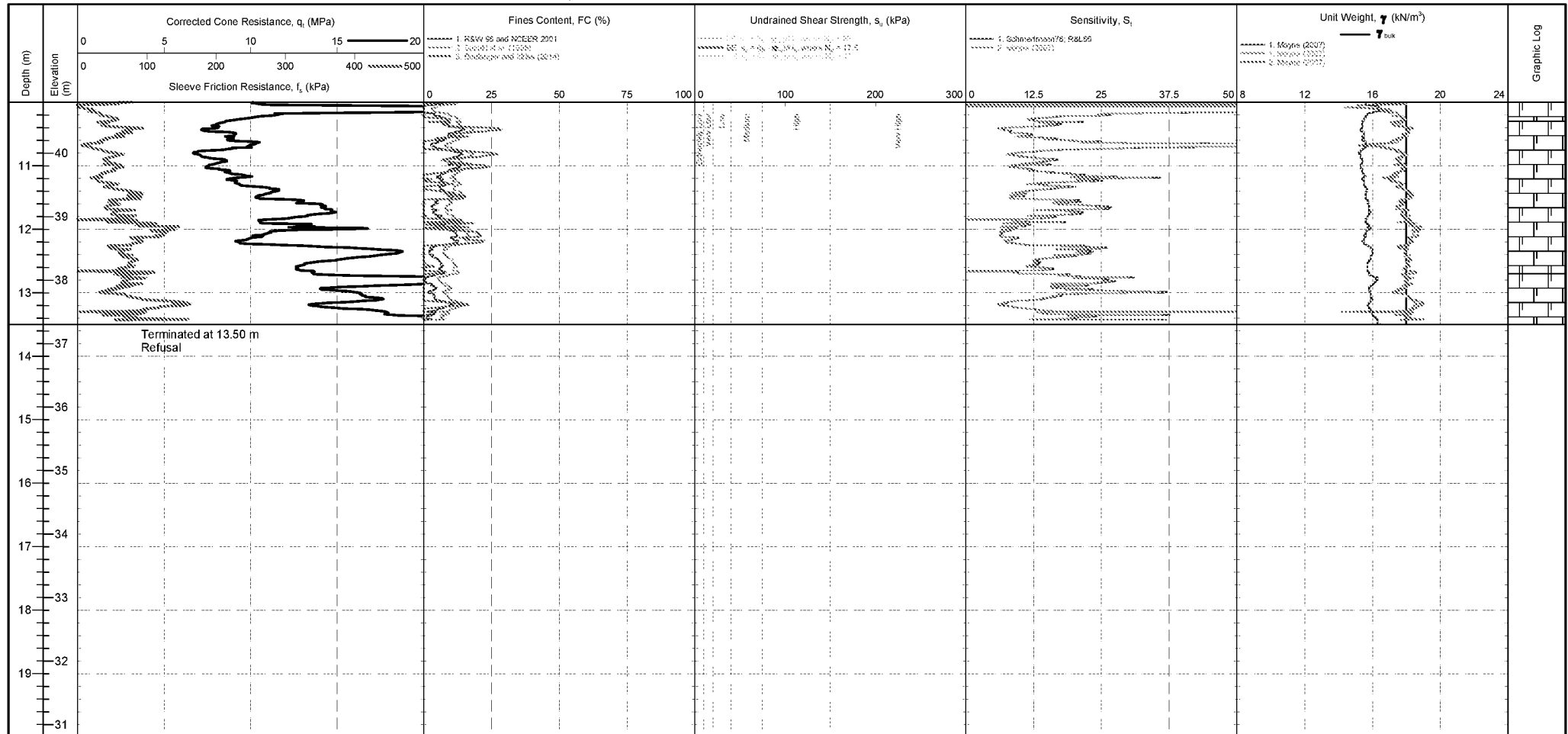
CPT 09

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498740.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 09
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	272 mV	271 mV	-0.011 MPa
Sleeve	271 mV	270 mV	-0.001 kPa
Pore Pressure 2	282 mV	281 mV	0 kPa
X-Y Inclinator	2362 mV	2369 mV	

Groundwater Level
Dissipation Test

PointID

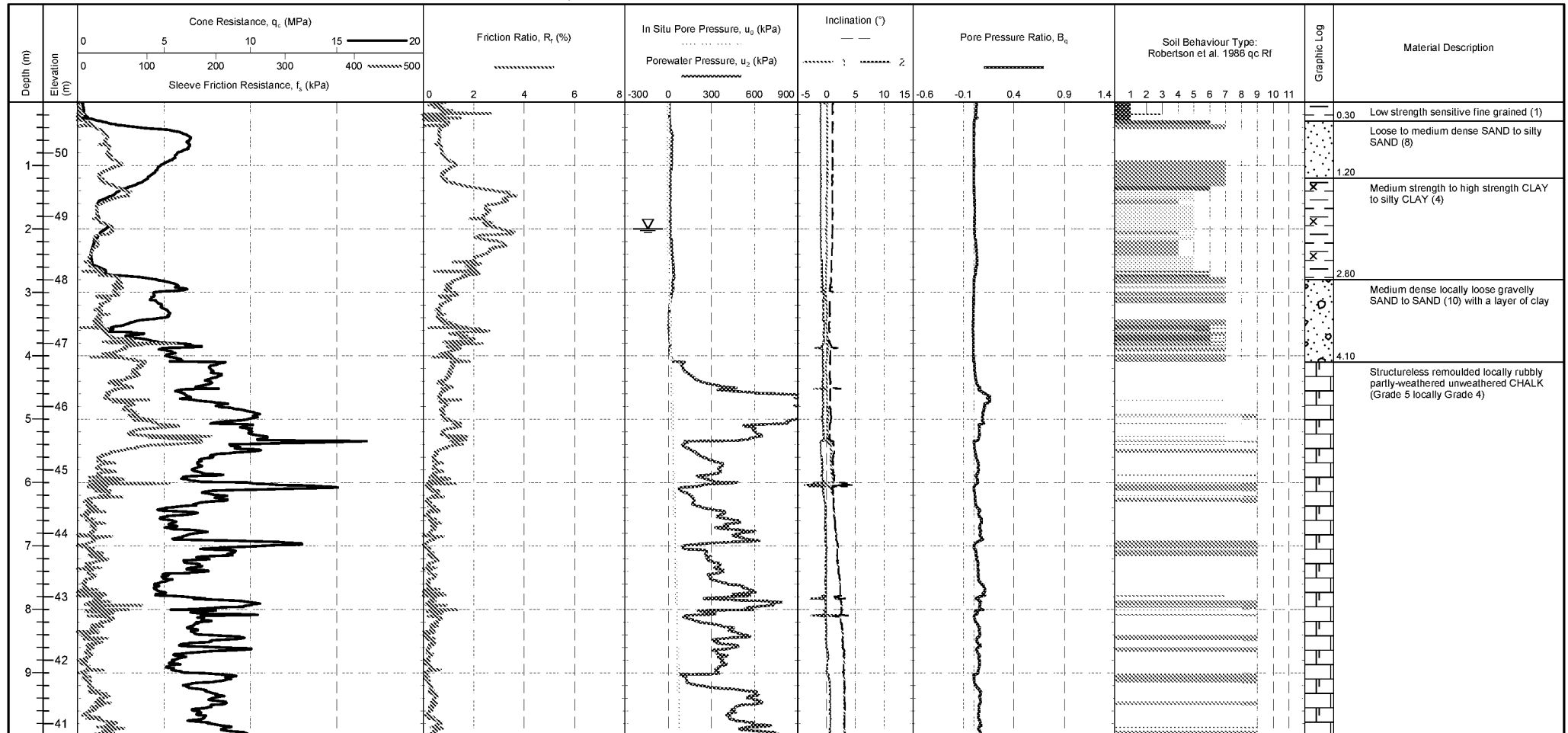
CPT 10

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 10
WEATHER : Sunny & Hot

Transducer
Tip: Pre 273 mV, Post 271 mV, Difference -0.022 MPa
Sleeve: Pre 272 mV, Post 267 mV, Difference -0.004 kPa
Pore Pressure 2: Pre 285 mV, Post 284 mV, Difference 0 kPa
X-Y Inclinator: Pre 2441 mV, Post 2369 mV

CPTU ZERO VALUES

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

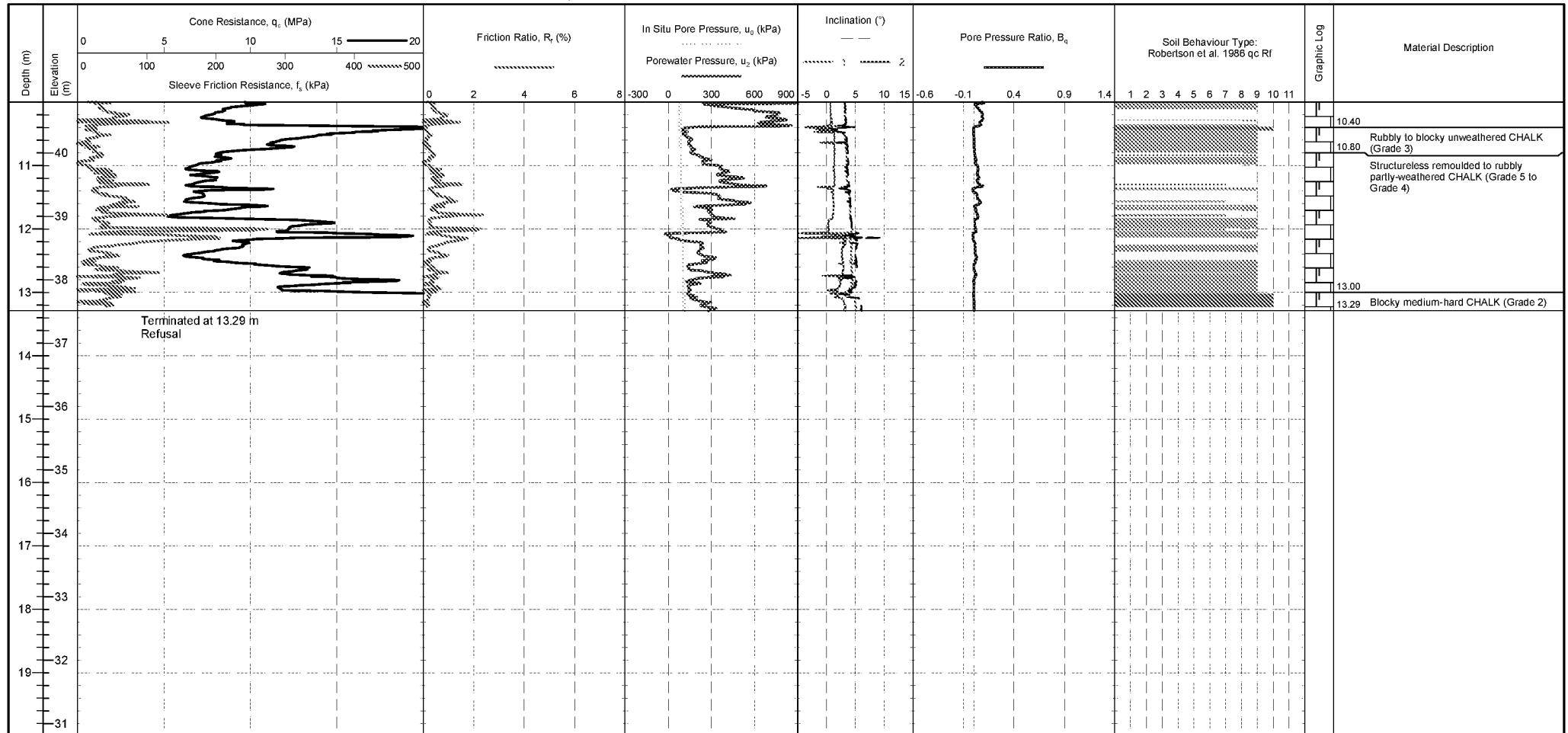
CPT 10

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 10
WEATHER : Sunny & Hot

Transducer
Tip
Sleeve
Pore Pressure 2
X-Y Inclinator

CPTU ZERO VALUES

Pre	Post	Difference
273 mV	271 mV	-0.022 MPa
272 mV	267 mV	-0.004 kPa
285 mV	284 mV	0 kPa
2441 mV	2369 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 - Gravely 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

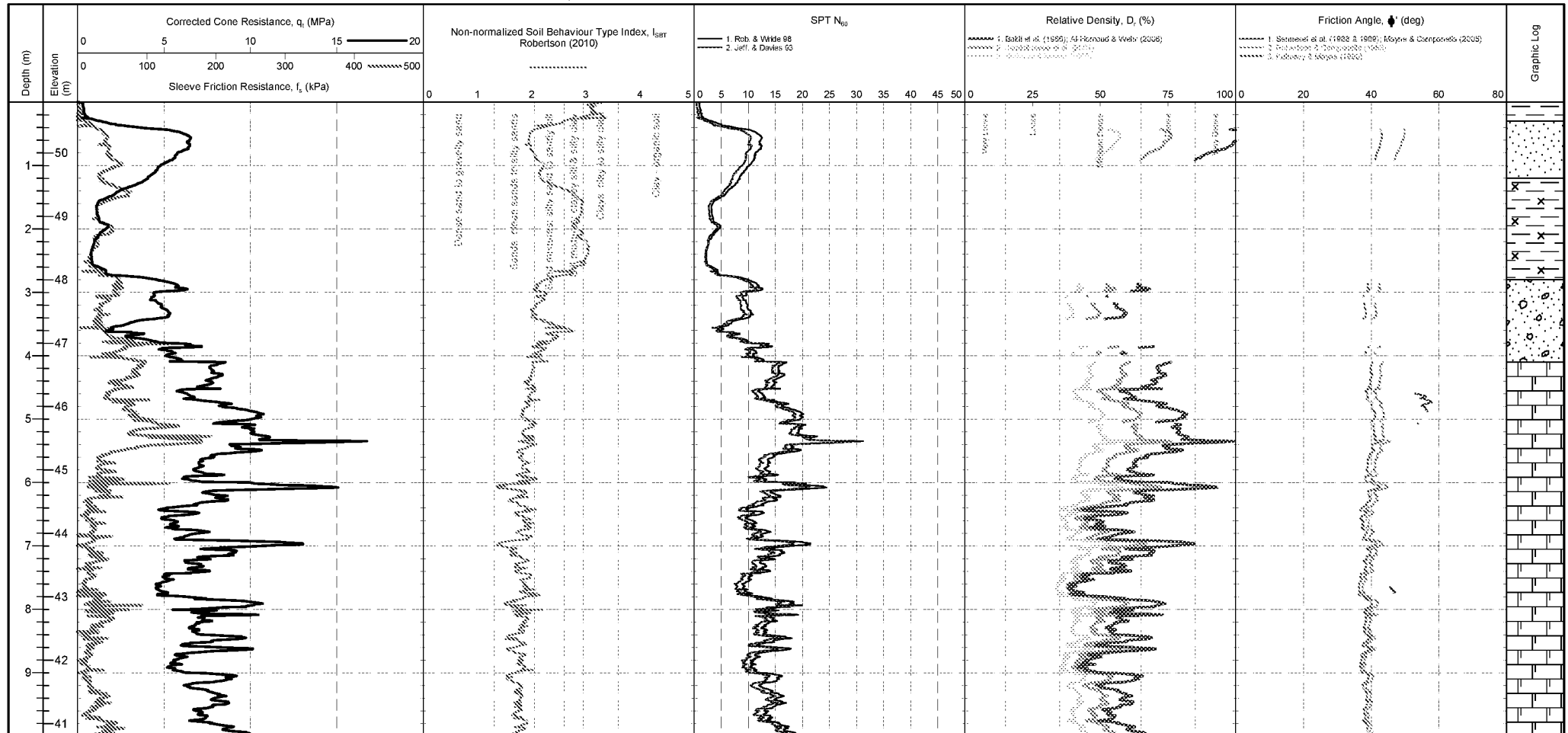
CPT 10

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 10
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	273 mV	271 mV	-0.022 MPa
Sleeve	272 mV	267 mV	-0.004 kPa
Pore Pressure 2	285 mV	284 mV	0 kPa
X-Y Inclinator	2441 mV	2369 mV	

Groundwater Level
Dissipation Test

PointID

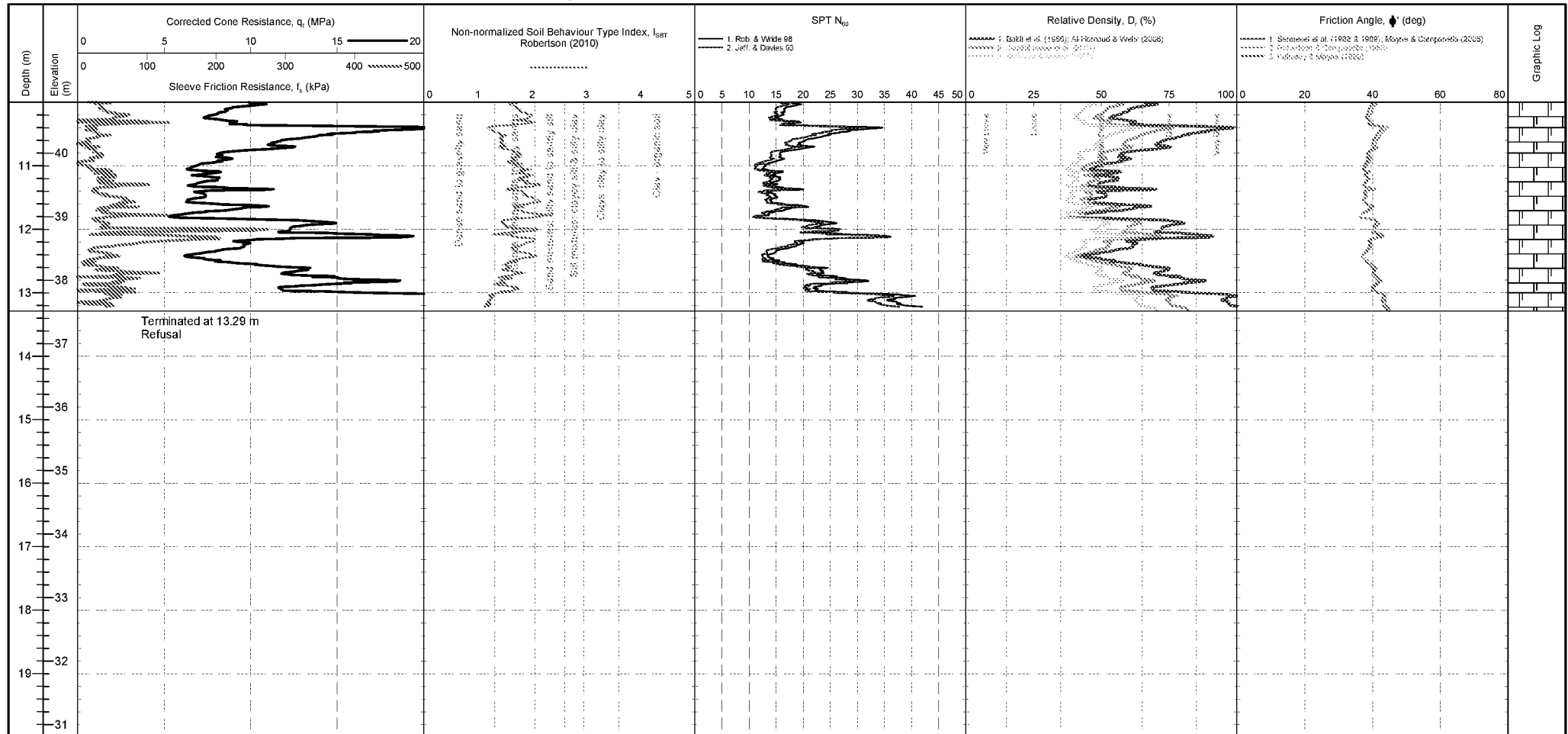
CPT 10

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 2 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 10
WEATHER : Sunny & Hot

Transducer	CPTU ZERO VALUES		
	Pre	Post	Difference
Tip	273 mV	271 mV	-0.022 MPa
Sleeve	272 mV	267 mV	-0.004 kPa
Pore Pressure 2	285 mV	284 mV	0 kPa
X-Y Inclinator	2441 mV	2369 mV	

Groundwater Level
Dissipation Test

PointID

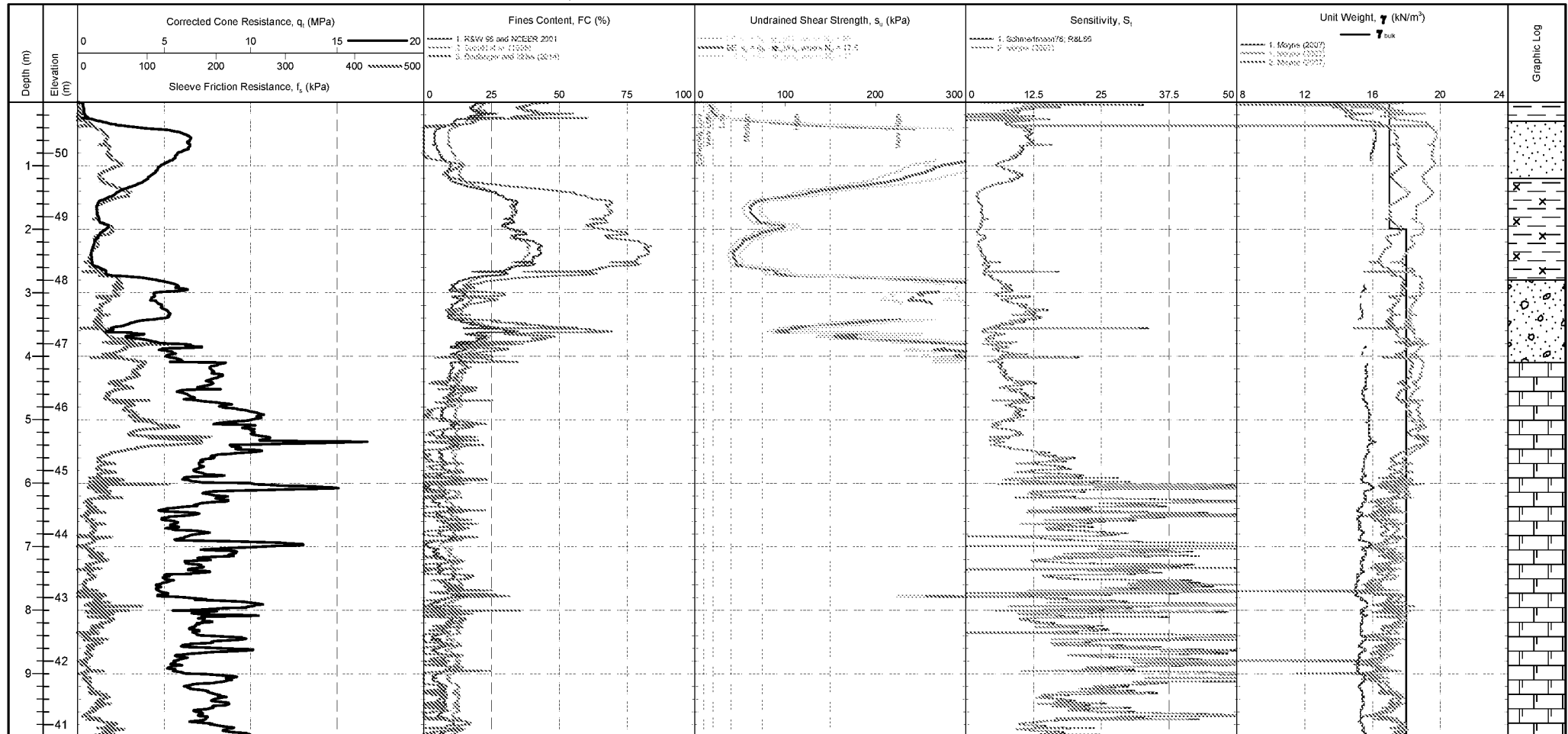
CPT 10

CLIENT : SLR Consulting
PROJECT: Grevatts Lane
LOCATION : Climping
PROJECT No. : 1180407

EASTING : 498750.0 m
NORTHING : 101395.0 m
ELEVATION : 50.80 m
CHECKED BY : LD
TERMINATION REASON : Refusal

Remark:
Test refused on tip resistance.

SHEET : 1 OF 2
STATUS : Final
TEST DATE : 03/10/2018
PLOT DATE : 12/10/2018
METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
CONE AREA : 15cm²
CONE AREA RATIO : 0.79
FILTER POSITION : u2
FILTER TYPE : HDPE
FRICTION REDUCER : None

TEST TYPE : TE2
APPLICATION CLASS : 2
RIG : CPT 006
OPERATOR : MO
FILE NAME : 1180407-CPT 10
WEATHER : Sunny & Hot

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	273 mV	271 mV	-0.022 MPa
Sleeve	272 mV	267 mV	-0.004 kPa
Pore Pressure 2	285 mV	284 mV	0 kPa
X-Y Inclinator	2441 mV	2369 mV	

Groundwater Level
Dissipation Test

PointID

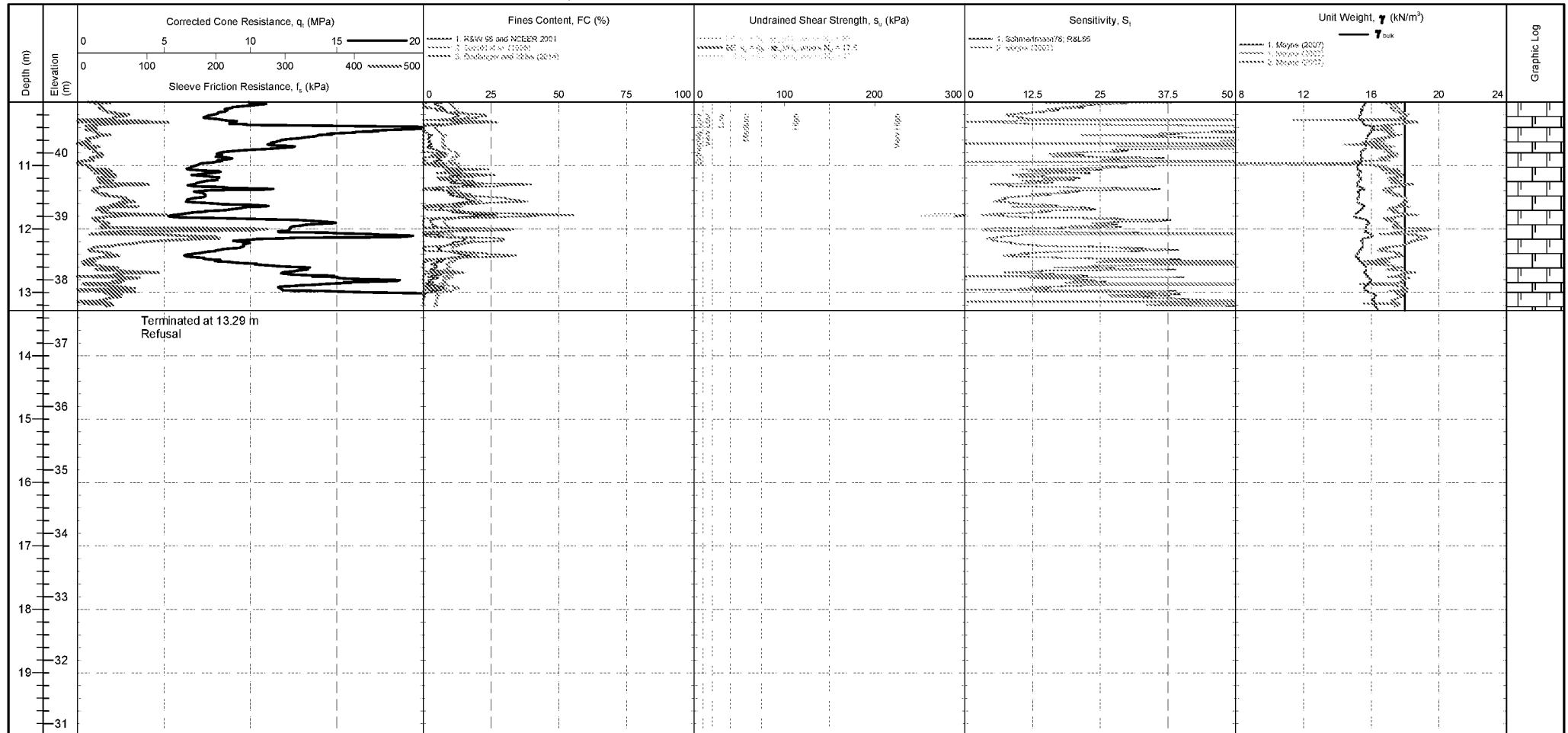
CPT 10

CLIENT : SLR Consulting
 PROJECT: Grevatts Lane
 LOCATION : Climping
 PROJECT No. : 1180407

EASTING : 498750.0 m
 NORTHING : 101395.0 m
 ELEVATION : 50.80 m
 CHECKED BY : LD
 TERMINATION REASON : Refusal

Remark:
 Test refused on tip resistance.

SHEET : 2 OF 2
 STATUS : Final
 TEST DATE : 03/10/2018
 PLOT DATE : 12/10/2018
 METHOD : ISO 22476-1:2012



CONE ID : S15-CFIP.1486
 CONE AREA : 15cm²
 CONE AREA RATIO : 0.79
 FILTER POSITION : u2
 FILTER TYPE : HDPE
 FRICTION REDUCER : None

TEST TYPE : TE2
 APPLICATION CLASS : 2
 RIG : CPT 006
 OPERATOR : MO
 FILE NAME : 1180407-CPT 10
 WEATHER : Sunny & Hot

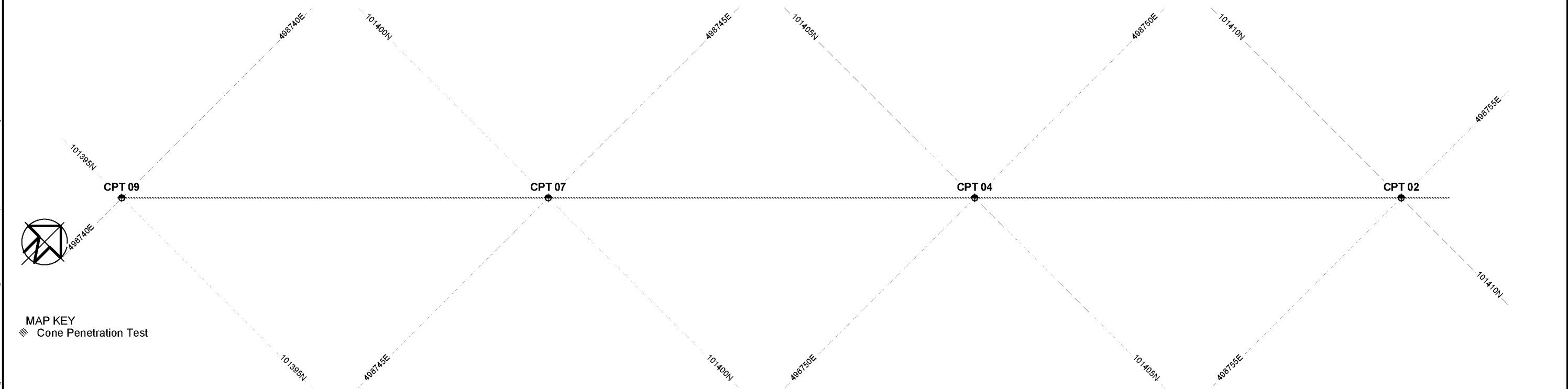
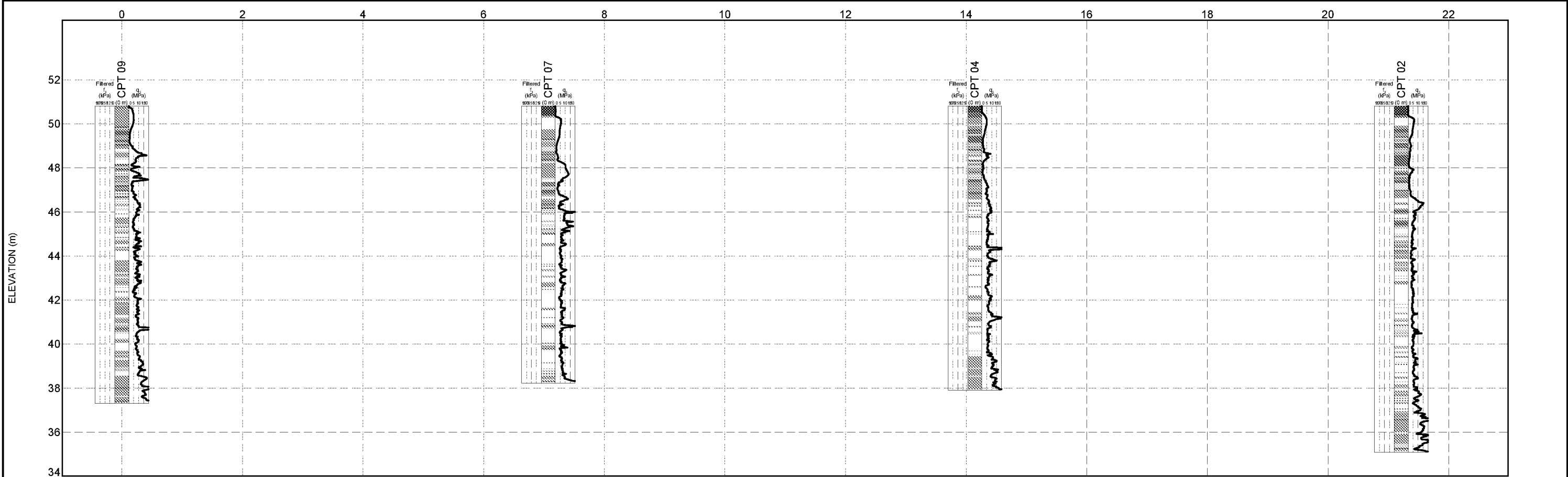
CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	273 mV	271 mV	-0.022 MPa
Sleeve	272 mV	267 mV	-0.004 kPa
Pore Pressure 2	285 mV	284 mV	0 kPa
X-Y Inclinator	2441 mV	2369 mV	

Groundwater Level
 Dissipation Test

APPENDIX C

Cross Section



- SBT 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 |

IN SITU
SITE INVESTIGATION

TITLE SLR Consulting Climping Grevatts Lane Inferred Subsurface Section		DRAWN Luisa Dhimitri	DATE 12/10/2018
		CHECKED Darren Ward	DATE 12/10/2018
SCALE H 1:66 V 1:180		A3	
PROJECT No 1180407		FIGURE No 1	



IN SITU SITE INVESTIGATION

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

Company No.: 8339499
VAT No.: 922 3581 41

EUROPEAN OFFICES

United Kingdom

