



Douglas Partners

Geotechnics | Environment | Groundwater

Report on
Preliminary Geotechnical Investigation

Cricket NSW Cricket Centre
Wilson Park, Newington Road
Sydney Olympic Park

Prepared for
Cox Architecture Pty Ltd

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Report on Preliminary Geotechnical Investigation

Cricket NSW Cricket Centre

Wilson Park, Newington Road, Sydney Olympic Park

1. Introduction

This report presents the results of a preliminary geotechnical investigation undertaken for the proposed Cricket NSW Cricket Centre (CNSWCC) development at Wilson Park, Newington Road, Sydney Olympic Park. The investigation was commissioned on 1 July 2019 by Cox Architecture Pty Ltd and was undertaken in accordance with Douglas Partners Pty Ltd (DP) proposal SYD190618 dated 20 June 2019.

This report supports a State Significant Development Application (SSDA) submitted to the Minister for Planning and Public Spaces, pursuant to Part 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This SSDA seeks consent for the design, construction and operation of a new Cricket NSW Centre of Excellence at Wilson Park, within Sydney Olympic Park.

The CNSWCC will comprise a state-of-the-art, dedicated, year-round cricket, training and administration facility that services both regional and metropolitan cricketers, as well as providing facilities for community use to support sport, social, health and educational programs.

The purpose of the preliminary geotechnical investigation was to provide information on the subsurface conditions across the site. The scope of work included 44 cone penetration tests (CPTs) with pore pressure measurement (piezocones) to refusal as well as sampling and laboratory testing at 14 of the CPT locations. Details of the field work, comments relevant to design and construction, as well as factual reporting on sampling and laboratory testing undertaken for the turf design (by others) are given in this report.

DP has previously undertaken a preliminary site investigation for contamination assessment purposes and a geotechnical desktop study for the project which are reported separately (refer to report reference 86694.00.R.001 and 86694.01.R.001). DP is also undertaking additional environmental investigations for the proposed development which will be reported separately (report reference 86694.03).

2. Background

Given the redevelopment and closure of Sydney Football Stadium and its associated cricket training facilities, Cricket NSW decided to relocate its facilities to Sydney Olympic Park. The Wilson Park site has therefore been selected as the appropriate location for the development.

Wilson Park is a former gasworks site, today being used predominantly as playing fields with mature trees generally located around the peripheries. The site has a landfill leachate treatment plant located to its north-east, sharing the same boundary with the site.

3. Site History and Description

The site is located at Wilson Park, in the suburb of Sydney Olympic Park, within the Parramatta Local Government Area (LGA) and is situated at the north western corner of the Sydney Olympic Park (SOP) precinct.

The site is located in proximity to a number of regionally significant facilities and amenities including the Olympic Park Railway Station, ANZ Stadium, Qudos Bank Arena and Sydney Showground, which are all approximately 2.5 km south east of the site. Further to this, the site is located approximately 2 km west of Wentworth Point.

The site's locational context is shown in Figure 1 below.

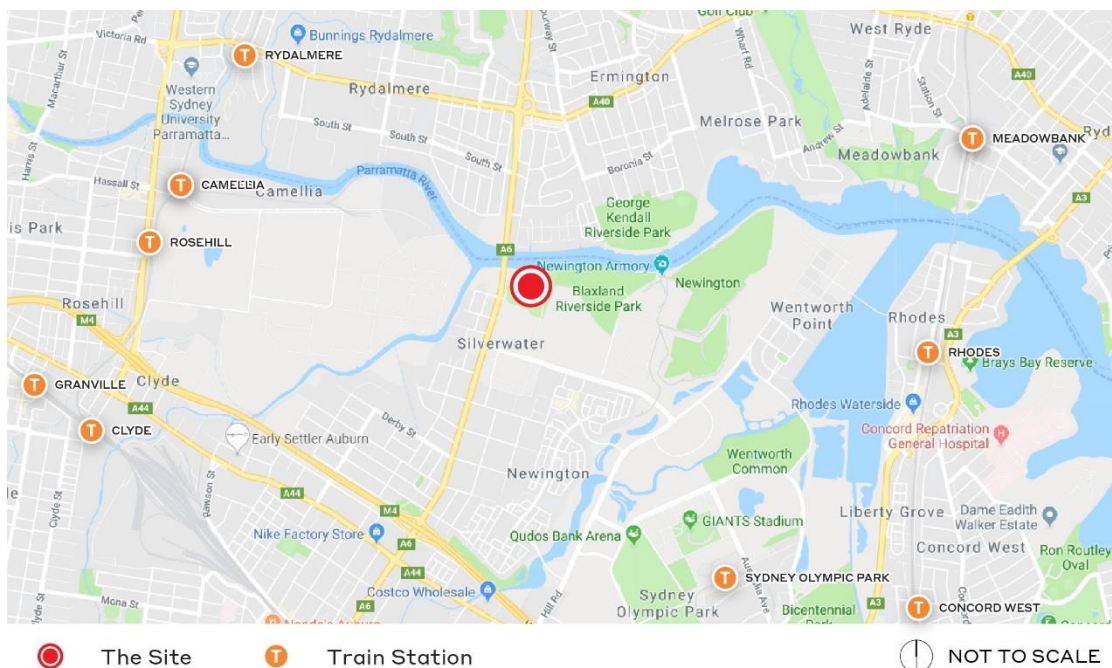


Figure 1 Locational Context

The site is irregular in shape and comprises a single allotment of land with an approximate area of 52,700m². The site is currently owned by the Sydney Olympic Park Authority (SOPA) and it is legally described as Lot C in DP 421320. The site is bounded by the Parramatta River to the north, Silverwater correctional facility to the east, industrial lands to the south and Silverwater Road to the west. An aerial image of the site is shown in Figure 2.



Figure 2 Site Aerial

The surface level of the site is generally flat with a slight rise to the south-west towards a car parking area, ranging from about RL 2 m to RL 4 m relative to the Australian Height Datum (AHD).

The site is one of ten engineered remediated landfill areas managed by Sydney Olympic Park Authority (SOPA).

A detailed review of the site history has been undertaken as part of our previous work. A brief summary of the site history based on aerial photographs and anecdotal evidence in historical reports is provided below:

- In the 1920s the site was largely cleared farm land, partly covered with an undulating mangrove swamp area bordering the Parramatta River. The area was generally poorly drained with lower portions of the site being only slightly above high tide level;
- In the 1930s the lower areas were reclaimed to form the Carnarvon Golf Club until the early 1950s when the area was developed for a petrochemical plant that featured a number of tanks and large sludge ponds which stored residues (tar sludge) from the conversion of heavy crude oil to town gas;
- The petrochemical plant was closed down in 1974 and it is understood that the sludge ponds were subsequently covered;

- Wilson Park was developed as playing fields in 1983 and used until 1992 when the park was closed to the public due to tar wastes seeping onto the playing fields;
- In 1997 remediation of the site began and generally comprised encapsulating the waste;
- Wilson Park was reopened in 2003 and is currently used as playing fields. The site is managed under the Contaminated Lands Management Act Notice No. 28040.

4. Overview of Proposed Development

The proposal relates to a SSDA to facilitate the development of a Cricket Centre for Cricket NSW at the Wilson Park site. Specifically, the works that are proposed for the SSDA include:

- A two storey centre of excellence including an internal atrium, gymnasium, community facilities, sports science and sports medicine facilities and business offices;
- An International Cricket Council compliant cricket oval 136m long x 144m wide (16,040m²) and associated seating;
- A community cricket oval with a diameter of 95m (6365m²);
- Outdoor practice nets with 71 wickets;
- A double height (8m) indoor training facility with 15 wickets;
- A single storey shed for machinery;
- Associated car parking, landscaping and public domain works; and
- Extension and augmentation of services and infrastructure as required.

5. Planning Approvals Strategy

The site is located with the Sydney Olympic Park precinct, which is identified as a State Significant site in Schedule 2 of *State Environmental Planning Policy (State and Regional Development) 2011*. As the proposed development has a capital investment value exceeding \$10 million, it is declared to be State Significant Development (SSD) for the purposes of the EP&A Act, with the Minister for Planning and Public Spaces the consent authority for the project.

This SSDA seeks approval for the detailed scope development described in Section 4 above.

The Department of Planning, Industry and Environment provided the Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement for the proposed development on 23 July 2019. This report has been prepared having regard to the SEARs as relevant.

6. Previous Investigations

DP has reviewed reports or logs from the following geotechnical investigations undertaken on or close to the site:

- Report on Geotechnical Investigations, Sewer Pump Station Upgrade, Newington Road, Silverwater by DP, project number 86146.00, dated November 2017

Report on geotechnical investigation for the sewer pumping station to the west of the site. The investigations included the drilling of one borehole using a truck mounted drilling rig. The borehole was drilled by auger and rotary techniques to a depth of 4.5 m with standard penetration tests (SPTs) undertaken at regular depth intervals, and was then advanced using NMLC-sized diamond core drilling techniques to 10.25 m. Laboratory testing comprised aggressivity testing of three soil samples and point load testing of the rock core.

- Report on Geotechnical Investigation, Proposed Amenities Building, Wilson Park, Sydney Olympic Park, project number 84455.00, dated September 2014

Geotechnical investigation for a previously proposed amenities building towards the north-west of the site. The investigations included the drilling of three boreholes (BH101 to BH103) with a truck mounted drilling rig to depths of 6 m. The boreholes were drilled using solid flight augers with SPTs carried out at depth intervals of 1.5 m. Geotechnical laboratory testing comprised moisture content, Atterberg limits and aggressivity testing.

- Report on Factual Geotechnical Investigation, Proposed Leachate Treatment Wetland, Wilson Park, Sydney Olympic Park by DP, project number 73318, dated 29 January 2013

Report on geotechnical investigation for the leachate treatment wetland to the north-east of the site. The investigations included eight boreholes to depths of between 0.7 m and 1.7 m and twelve dynamic cone penetrometer tests (DCPs). Laboratory testing comprised moisture content and Atterberg limit testing on six fill samples.

- Wilson Park Cut-Off Wall, Silverwater, Geotechnical Investigation of Sheet Piling Problems by DP, project number 23775J, dated 2000

Report on geotechnical investigations carried out to assess problems occurring during sheet piling for the cut off wall along the shoreline to the north-east of the site. The investigations included nine cone penetration tests (CPTs) to refusal at depths of between 10.30 m and 14.96 m.

- Report on Test Drilling and Water Bore Installations, Wilson Park, Newington Road Silverwater by DP, project number 23775F-1, dated December 1999

Report on geotechnical investigations at Wilson Park to delineate a sand aquifer at the site. The investigations were carried out to the north-east of the site and included the drilling of eight bores to termination at depths of between 4.9 m and 13.7 m, installation of a piezometer and installation of a water extraction bore.

- Borehole logs for 'Wilson Park Stage 1A', by CMPS&F dated 1998

Selected borehole logs from 'Wilson Park Stage 1' were referenced and attached to DP report 23775F-2. Eighteen borehole logs were attached, which were drilled to depths of between 7 m and 16 m.

- Borehole logs for 'Wilson Park Stage II', by Groundwater Technologies, dated 1994

Selected borehole logs from 'Wilson Park Stage II' were referenced and attached to DP report 23775F-2. Thirteen borehole logs were attached, which were drilled to depths of between 3 m and 6 m.

The approximate locations of all tests referenced above are shown on Drawing 1 of Appendix B. It is noted that the test locations are approximate only and have been estimated based on historical drawings with reference to existing site features.

7. Field Work Methods

The field work was carried out in general accordance with the briefing sketch SKC01 Rev P3, by TTW and included the following:

- 44 piezocones (CPT 1 to CPT 42, CPT 10A and CPT 14A) to refusal at depths of between 0.32 m and 12.66 m. A piezocone involves pushing an instrumented cone, friction sleeve and pressure sensor into the ground using hydraulic thrust from a ballasted truck-mounted testing rig. Measurements of cone resistance, sleeve friction and pore pressure are made at 20 mm depth intervals and are stored on a portable computer for subsequent interpretation;
- The groundwater level was measured following withdrawal of the piezocone rods where possible;
- Dissipation tests at two of the piezocone locations (CPT 2 and CPT 5). Each test involved stopping the piezocone at the required depth and measuring the rate of pore pressure dissipation to assess the compressibility/consolidation characteristics of the soils. The data is stored on a portable computer for subsequent interpretation, plotting and analysis;
- Drilling of shallow bores (<1 m depth) for collection of soil samples for California Bearing Ratio (CBR) and Atterberg Limits testing at 14 of the piezocone locations using a light weight excavator with an auger attachment;
- Supervision, logging and collection of soil samples by a geotechnical engineer.

Coordinates and levels for test locations were determined using a differential GPS (DGPS) receiver. The test locations are shown on Drawing 1 in Appendix B.

8. Field work results

The subsurface conditions encountered in the piezocones and shallow bores are presented on the results sheets in Appendix C. Notes defining descriptive terms and classification methods are included in Appendix A. The materials encountered can be described as follows:

- FILL – was encountered in all shallow bores and piezocones and comprised variable mixtures of sandy clay and clayey sand with layers of clay / sand / gravel. In some locations there was a distinct change in material at between 0.7 m and 1.5 m depth, which has been inferred to be the change from the capping layer to general filling. A distinct capping layer was not encountered at all test locations. The maximum depth of filling was 4.2 m.

In some of the shallow bores, construction materials such as concrete, tile, and asbestos were encountered. Piezocones do not recover samples, so the inclusion of construction materials can

not be confirmed by these tests. However, the refusal of some of the piezocones on obstructions in the fill indicates the likely presence of rocks or pieces of construction material in these locations.

- **VARIABLE CONSISTENCY CLAY** – clay, silty clay and sandy clay, varying in strength from very soft to very stiff were encountered beneath the fill in most piezocones from a depth of between 1.4 m and 4.3 m, and was up to 8.6 m thick.
- **VERY STIFF TO HARD CLAY** – very stiff to hard clay which is inferred to be residual soil, was present at most test locations from a depth of between 1.4 m and 11.4 m, and was up to 3.6 m thick. It is possible that some of this material may be tertiary-aged estuarine sediment.
- **SHALY CLAY** – comprising interbedded clay and highly weathered shale in most test locations from depths of between 3.6 m and 11.7 m.
- **BEDROCK** – all piezocones apart from 10, 10A, 14, 21, 24, 25, 33, 35, 39 and 41 refused in inferred weathered bedrock at depths of between 7.02 m and 12.66 m.

Groundwater was observed at depths of between 1.5 m and 8.6 m after withdrawal of the piezocone rods from the ground. Groundwater was not encountered in any of the shallow bores.

Tables 1A to 1E summarise the reduced levels at which different materials were encountered.

Table 1A: Summary of Strata Levels

| Stratum | Level of Top of Stratum (m, AHD) | | | | | | | | | |
|---------------------------|----------------------------------|-------|------|------|------|------|------|-------|-------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Fill / Surface | 4 | 4 | 4 | 4 | 3.9 | 3.8 | 3.9 | 3.7 | 3.7 | 4 |
| Variable Consistency Clay | -0.2 | -0.1 | 0.3 | NE | -0.1 | -0.2 | 0.9 | 0.7 | 0.7 | NE |
| Very Stiff to Hard Clay | -1 | NE | -4 | 0 | -0.6 | -3.9 | NE | -0.6 | -4.2 | NE |
| Shaly Clay | -2.3 | -4.2 | -5 | -1 | -4.1 | NE | -0.1 | -3.5 | -5.3 | NE |
| Refusal / Base of Test | -4.7 | -5.58 | -6.3 | -4.2 | -4.8 | -5.1 | -4.5 | -5.02 | -6.14 | 3.38 |
| Measured Water Level | 1.2 | | | | | 0.9 | 1.85 | 1.6 | | |

Notes: NE = Not Encountered

Table 1B: Summary of Strata Levels

| Stratum | Level of Top of Stratum (m, AHD) | | | | | | | | | |
|---------------------------|----------------------------------|------|-------|-------|------|-------|-------|-------|-------|-------|
| | 10A | 11 | 12 | 13 | 14 | 14A | 15 | 16 | 17 | 18 |
| Fill | 4 | 5.5 | 3.8 | 3.9 | 3.5 | 3.5 | 3.6 | 3.6 | 3.4 | 3.8 |
| Variable Consistency Clay | NE | NE | NE | NE | NE | 1.8 | NE | 1.3 | 1 | 1.2 |
| Very Stiff to Hard Clay | NE | 2.8 | 1.2 | 2.5 | NE | 0.6 | 1.2 | -0.9 | -4.9 | -0.2 |
| Shaly Clay | NE | 1.2 | 0.2 | -1.1 | NE | -0.3 | -1.4 | -3.6 | NE | -3.6 |
| Refusal / Base of Test | 3.36 | -3.7 | -3.64 | -3.12 | 2.26 | -3.54 | -5.08 | -5.24 | -6.56 | -4.16 |
| Measured Water Level | | -3.1 | -1.6 | | | | -2.2 | 1.8 | 0.1 | 2.1 |

Notes: NE = Not Encountered

Table 1C: Summary of Strata Levels

| Stratum | Level of Top of Stratum (m, AHD) | | | | | | | | | |
|---------------------------|----------------------------------|-------|------|------|------|------|------|-------|-------|------|
| | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| Fill | 3.5 | 2.8 | 2.2 | 2.4 | 3 | 3.2 | 4.2 | 3.4 | 3.4 | 3.6 |
| Variable Consistency Clay | 1.35 | 0 | NE | 1.2 | 0.6 | NE | NE | 0.2 | 1.4 | 1.6 |
| Very Stiff to Hard Clay | -5 | -8.6 | NE | -5.8 | -6.1 | NE | NE | -2.7 | -0.4 | -5.3 |
| Shaly Clay | -6.5 | NE | NE | NE | NE | NE | NE | -5.2 | -1.4 | -6.3 |
| Refusal / Base of Test | -7.6 | -9.86 | 1.88 | -9 | -8 | 1.92 | 2.54 | -6.54 | -6.34 | -8 |
| Measured Water Level | 2 | | | | | | | | | 2.1 |

Notes: NE = Not Encountered

Table 1D: Summary of Strata Levels

| Stratum | Level of Top of Stratum (m, AHD) | | | | | | | | | |
|---------------------------|----------------------------------|-------|-------|-------|------|-------|------|-------|-------|-------|
| | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 |
| Fill | 3.2 | 2.5 | 3.1 | 3.8 | 3.5 | 3.2 | 2.7 | 2.6 | 3.4 | 4 |
| Variable Consistency Clay | 0.7 | 1.1 | 0.8 | 1.7 | NE | 0.5 | NE | 0.9 | 0.5 | 1 |
| Very Stiff to Hard Clay | NE | -5.9 | -5.6 | -2.4 | NE | -6.8 | NE | -5.2 | -3.6 | -1.5 |
| Shaly Clay | -7.4 | -9.2 | NE | -4 | NE | NE | NE | NE | NE | NE |
| Refusal / Base of Test | -9.4 | -9.88 | -7.32 | -6.36 | 1.84 | -9.46 | 1.84 | -8.14 | -5.98 | -4.44 |
| Measured Water Level | | | | | | 1 | | | 1.9 | |

Notes: NE = Not Encountered

Table 1E: Summary of Strata Levels

| Stratum | Level of Top of Stratum (m, AHD) | | | |
|---------------------------|----------------------------------|-------|------|------|
| | 39 | 40 | 41 | 42 |
| Fill | 3.6 | 4.4 | 4.4 | 5.6 |
| Variable Consistency Clay | NE | 0.8 | NE | 1.3 |
| Very Stiff to Hard Clay | NE | -2.5 | NE | 0.34 |
| Shaly Clay | NE | -4.4 | NE | NE |
| Refusal / Base of Test | 1.66 | -4.92 | 1.92 | -4.3 |
| Measured Water Level | | 1.9 | | 1.6 |

Notes: NE = Not Encountered

9. Laboratory Testing

Twelve soil samples were analysed in a NATA-accredited laboratory for unsoaked and four day soaked California Bearing Ratio (CBR) and Atterberg Limits. The detailed results are included in Appendix E and are summarised in Table 2.

Originally 14 locations were sampled for CBR and Atterberg Limits testing (2, 4, 5, 21, 22, 25, 27, 28, 29, 31, 33, 38, 39 and 42), however, the samples collected from locations 27 and 39 included asbestos containing material which precluded CBR and Atterberg Limits testing of these samples.

The laboratory testing was undertaken primarily for the turf design which is being undertaken by others.

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Table 2: Summary of Laboratory Testing

| Test No. | Depth (m) | Strata Description | WF (%) | MDD (t/m ³) | OMC (%) | Unsoaked CBR (%) | Soaked CBR (%) | WL (%) | WP (%) | PI (%) |
|----------|-----------|---|--------|-------------------------|---------|------------------|----------------|--------|--------|--------|
| 2 | 0.2 - 0.7 | FILL / sandy CLAY: light brown, with sandstone gravel | 9.5 | 2.01 | 10.5 | 11 | 25 | 24 | 17 | 7 |
| 4 | 0.2 – 0.7 | FILL / sandy CLAY: light brown with sandstone gravel | 8.4 | 2.05 | 9.0 | 16 | 25 | 27 | 16 | 11 |
| 5 | 0.2 – 0.7 | FILL / sandy CLAY: light brown with sandstone gravel | 11.2 | 2.06 | 10.0 | 45 | 45 | 23 | 16 | 7 |
| 21 | 0.0 – 0.7 | FILL / sandy GRAVEL and COBBLES: rounded light grey with silt | 15.1 | 1.73 | 18.5 | 7 | 13 | 42 | 33 | 9 |
| 22 | 0.2 – 0.9 | FILL / sandy CLAY: grey with gravel and a trace of terracotta | 14.7 | 1.79 | 15.5 | 6 | 15 | 32 | 27 | 5 |
| 25 | 0.2 – 0.8 | FILL / silty SAND: grey, with brick tile and gravel | 7.6 | 1.94 | 13.5 | 30 | 35 | 25 | 20 | 5 |
| 28 | 0.2 – 0.8 | FILL / CLAY: orange brown with sand and a trace of gravel | 13.7 | 1.90 | 14.0 | 9 | 11 | 29 | 17 | 12 |
| 29 | 0.4 - 0.6 | FILL / sandy CLAY | 18.2 | 1.80 | 16.5 | 13 | 5 | 47 | 21 | 26 |
| 31 | 0.2 – 0.7 | FILL / sandy CLAY: orange brown with gravel and a trace of cobbles of both sedimentary and igneous origin | 15.7 | 1.80 | 16.0 | 12 | 10 | 44 | 19 | 25 |
| 33 | 0.4 – 1.0 | FILL / CLAY: grey with sand and a trace of gravel | 18.8 | 1.73 | 17.0 | 15 | 4 | 45 | 25 | 20 |
| 38 | 0.2 – 0.7 | FILL / sandy CLAY: orange brown, with some gravel | 15.6 | 1.80 | 17.5 | 8 | 6 | 36 | 19 | 17 |
| 42 | 0.1 – 0.8 | FILL / sandy CLAY: orange brown, with some gravel | 9.6 | 1.81 | 14.0 | 12 | 7 | 31 | 17 | 14 |

Notes: WF = field moisture content, MDD = maximum dry density, OMC = optimum moisture content, CBR = California bearing ratio, WL = liquid limit, WP = plastic limit, PI = plastic index

10. Geotechnical Model

A geotechnical model for the site is presented in Cross-Sections A-A' to D-D' in Drawings 2 to 5 in Appendix B. The geotechnical model can be described as follows:

- Unit 1: Fill
- Unit 2: Variable Consistency Clay (possible alluvial soil)
- Unit 3: Very Stiff to Hard or Stronger Clay (inferred residual soil, possible Tertiary-aged alluvium)
- Unit 4: Shaly Clay and Bedrock

Shallow groundwater was encountered in a number of the historical boreholes and the current piezocones. It is expected that there are at least two groundwater systems at the site. The first is a 'perched' groundwater table within the filling layer and a second much deeper regional groundwater is expected within the underlying bedrock. It is also likely that groundwater levels close to the edge of the Parramatta River are influenced by tidal fluctuations.

11. Proposed Development

It is understood that the proposed development will involve the construction of two playing fields, practice wickets, viewing platforms, training facilities and administration facilities. The building for the development is understood to be located between a set of practice wickets on the northern site boundary and the main playing field; the approximate proposed building location is shown on Drawing 1 of Appendix B.

Preliminary earthworks plans indicate that site levels will typically be raised to achieve appropriate surface levels and cross falls for site drainage. There is some lowering of the site proposed to the south east.

12. Comments

The site is one of ten engineered remediated landfill areas managed by Sydney Olympic Park Authority (SOPA). The SOPA Remediated Lands Management Plan (RLMP) notes that these areas typically have 1 m of clay capping over a waste containment mound, and subsurface cut off walls and drainage systems. All works would need to comply with the RLMP and relevant environmental regulations, of which further discussion is provided in the PSI and additional environmental investigations (Ref 86694.01 and 86694.03).

12.1 Site Preparation

12.1.1 Bulk Filling

The proposed development will require bulk filling to approximately 1 m above the current ground level.

A suitable methodology for bulk filling works on the site is as follows:

- Stripping of vegetation and top soil;
- Proof-roll the prepared subgrade areas using a large roller (e.g. 12 tonne deadweight) to check for the presence of any soft zones which may need to be rectified prior to the placement of filling. A bridging layer may be required where poor quality fill is exposed;
- Place approved filling material in maximum 250 mm thick layers and compact to a dry density ratio of at least 98% relative to Standard compaction;
- Ensure the moisture content of the filling is within 2% of optimum if it exhibits clay-like properties;
- Undertake density testing in accordance with the recommendations provided in Australian Standard AS 3798 – 2007 “Guidelines on earthworks for commercial and residential developments” or other suitable specification;
- Reinstatement of topsoil and turfing, as well as any necessary drainage.

12.1.2 Bulk Excavation

The project has been planned to minimise excavation. However, some excavation for site drainage and to level the mounds currently located on the eastern playing field will still be required. It is understood that excavations of up to approximately 1 m on the eastern half of the site are expected. It is noted that excavation of more than 0.5 m depth is not allowed without regulatory approval, hence the appropriate approvals will need to be sought. Where it is necessary to expose the contaminated filling, appropriate controls must be put in place and additional environmental approvals may be required. Further discussion on appropriate control measures, comments on the suitability for reuse of fill and preliminary waste classification for off-site disposal of excavated material are also provided in the PSI and additional environmental investigations being undertaken for this project (Ref 86694.01 and 86694.03).

The excavation is expected to intersect fill (Unit 1) and possibly variable consistency clay (Unit 2). Excavation of both units should be readily achieved with bucket and tyne attachments. The use of rock hammers may be required to break up large pieces of concrete, if encountered in the filling.

Groundwater has been measured up to about 1 m below the ground surface and may fluctuate over time. Excavation below the groundwater table is expected to prove problematic and should be avoided where possible. Consideration will need to be given to the collection and disposal of any seepage and/or surface runoff that accumulates within excavations. This water may be contaminated. Further comment about contamination of groundwater at the site is provided in the PSI and additional environmental investigations being undertaken for this project (Ref 86694.01 and 86694.03).

Bulk excavation may require construction of a new capping layer. If required, it is recommended that the capping layer be constructed as follows:

- Excavate to the design capping layer subgrade level.
- Test roll the exposed surface using at least 6 passes of a minimum 12-tonne roller. The final pass of the test roll should be completed using the roller in non vibratory mode and witnessed by an experienced geotechnical engineer to detect any ‘soft’ spots;
- Construct the capping layer to the required thickness. The filling should be placed in loose layer thicknesses not greater than 200 mm and compacted to a dry density ratio of between 100% and

103% relative to Standard compaction. The soil moisture contents should be maintained within 2% of the optimum moisture content (as determined in the Standard compaction test); and

- Density testing of the filling should be carried out at Level 1 responsibility in accordance with AS 3798 – 2007 "Guidelines for earthworks for commercial and residential developments". It is recommended that the geotechnical testing authority be engaged directly by the project principal and be independent of the earthworks contractor.

It is recommended that the material used for construction of a capping layer comprise physical properties as follows:

- A low or medium to high plasticity clay, with a plasticity index (PI) of between 10% and 40% and liquid limit (LL) of between 20% and 60%;
- Grading with greater than 90% passing the 2 mm sieve and greater than 50% finer than 0.075 mm;
- California bearing ratio greater or equal to 3%; and
- Permeability of less than 10^{-8} m/s.

The suitability of the material for use within the capping layer should also be approved from an environmental perspective.

12.1.3 Site Trafficability

During earthworks, trafficability across the site may become problematic in areas where poorly compacted and/or saturated clayey filling is exposed at or near the excavated surface. Unnecessary excavation should be avoided to minimise the exposure of 'softer' and saturated material below.

Piling rigs and other large machinery will require a suitable working platform on the site for safety and operational reasons. An assessment of the required platform capacity should be made once piling equipment has been selected. A working platform assessment by a geotechnical engineer will be required in areas of the site where heavily-loaded construction equipment is to be used.

12.2 Settlements

It is understood that earthworks are required to raise parts of the site up to approximately 1 m above the current level. The placement of additional fill may cause consolidation of the existing fill and weaker clay which has the potential to cause both total and differential settlements at the ground surface if not planned for.

Some form of ground improvement will probably be required to minimise settlements across the site although may be limited by environmental considerations. The scope of ground improvement required would depend on the tolerances for settlement of the various playing fields and practice wickets. Suitable ground improvement methodologies are discussed below:

- Impact rolling or dynamic compaction may be undertaken to reduce the amount of primary consolidation in the existing fill across the whole site (subject to environmental considerations). However, there are no guarantees of that these techniques would work on this site, and their effectiveness would need to be confirmed with site trials;

- Preloading or surcharging may be undertaken to reduce the amount of primary consolidation of the very soft and soft clays encountered at test locations 23, 26, 36, 37 and 40. The time taken to achieve adequate consolidation is dependent on the thickness of soft soil, the consolidation characteristics of the soil and the proposed load to be applied. The required period of pre-loading or surcharging is likely to vary across the site.

Additionally, a high modulus bridging layer, possibly incorporating geogrids could be considered to reduce the impact of differential settlement across the site (subject environmental considerations). The suitability / design of a high modulus bridging layer would depend on the tolerances for settlement of the various playing fields and practice wickets.

Some ongoing creep type settlement may be experienced across the site.

12.3 Foundations

It is understood that the proposed building footprint is located across test locations 4 to 18. At these test locations the ground conditions typically comprise Fill and Variable Strength Clay (Units 1 and 2) over Very Stiff to Hard Clay (Unit 3) soils at a depth of between 1.4 m and 8.3 m, and Shaly Clay / Bedrock at a depth of between 3.6 m and 10 m.

The presence of fill and variable strength clay, plus the variable depth to competent strata means that any shallow footings may be affected by total and differential settlement. Hence shallow footings would not typically be recommended for this situation.

It would be usual to recommend that the structure be founded on piles taken down into the hard residual clays/rock below the filling. If piles were used then higher bearing pressures could be adopted and differential settlements would be minimal. On this site, however, excavation works through the capping layer is not permitted without obtaining approval from the regulatory authority and therefore such approval will be needed.

12.3.1 Shallow Footings

Provided that the foundation material comprises a minimum 1 m uniform and well compacted fill material constructed in accordance with Section 9.1.2 above, then shallow foundations could be designed for a maximum allowable bearing pressure of 100 kPa.

Differential settlement should be expected and accommodated in the structural design. For example, a 1 m by 1 m pad footing with a bearing pressure of 100 kPa constructed in accordance with the above measures may be expected to settle between 10 mm to 50 mm. If differential settlement cannot be accommodated in the design of the structure it is suggested that consideration be given to founding the structure on the residual soils or bedrock using piles.

All strip/pad foundations should be founded below a line extending upwards at an angle of 30° from the base of an adjacent excavation.

Dynamic cone penetrometer (DCP) tests should be carried out by a geotechnical engineer following foundation preparation to confirm that the foundation material is suitable for the design bearing pressure.

12.3.2 Piles

It is expected that structures could be supported on piles founded on the residual clays or bedrock at the site provided installation is undertaken in accordance with an approved procedure to deal with the contaminated soils. A suitable method of sealing around the piles and pile caps may also need to be developed to reduce the potential for gas emissions from the contaminated soil layer.

A number of different piling types could be used at the site including driven, Atlas, cased-bored and grout injected Continuous Flight Auger (CFA) piles. Driven and Atlas piles are displacement piles which produce minimal spoil whereas bored and grout injected piles would produce spoil containing likely contaminated waste.

Obstructions such as large rock and concrete may be encountered in the fill. As such, some allowance for dealing with these should be made. If driven piles are used, and pre-drilling is not permitted due to contamination issues, then a 'flexible' pile configuration that can accommodate some repositioning of piles is recommended. It is noted that obstructions were encountered in test location 10 and 14.

Piles founded on the very stiff to hard or stronger residual clays or shaly clay / bedrock could be designed using the parameters given in Table 3. It is noted that higher parameters are possible within the shale bedrock at the site, however drilling of cored boreholes within the building footprint would be required to confirm the depths and achievable parameters.

Table 3: Parameters for Pile Design

| Material | Allowable Shaft Adhesion (kPa) | Allowable End Bearing Pressure* (kPa) |
|---|---|--|
| Very Stiff to Hard Residual Clay | 30 | 400 |
| Shaly Clay / Bedrock (minimum parameters) | 50 | 700 |

If the proposed buildings are piled then a suspended floor slab supported by the foundation piles is recommended to reduce the potential risks associated with settlement of the slab relative to the building. Where paths and utilities enter and exit the proposed buildings, there is a potential for differential ground surface movement and for dislocation between the two to occur. The use of hinged slabs or unpaved areas at the building perimeter is recommended.

12.4 Aggressivity

In accordance with the recommendations given in Tables 6.4.2 and 6.5.2 from AS2159 Piling Design and Installation – 2009, piles penetrating industrial waste are considered to have a classification of very severe to buried concrete and steel elements.

Lower exposure classifications may be possible for shallow foundations, but further aggressivity testing within the proposed building footprint would be required to confirm this. It is noted that aggressivity testing carried out in 2014 for the proposed amenities building to the west of the current proposed

development indicated an exposure classification of B2 is appropriate based on the recommendations in AS3600 Concrete Structures – 2009 for shallow concrete foundations located within the upper capping layer.

12.5 Underground Services

If the new buildings are supported on pile foundations, long-term settlement of the surrounding playing fields is likely to result in the filling settling away from the building floor slabs. To reduce the impact of the relative settlement on the underground services, the services can be 'hung' from the building's floor slab, in shallow trenches which are not backfilled, thus ensuring that there is no external load on the top of the service.

It is recommended that all underground services be constructed with flexible materials and connections to allow for differential movement which could result in cracking of the services.

13. Limitations

Douglas Partners (DP) has prepared this report for this project at Wilson Park, Newington Road, Silverwater in accordance with DP's proposal dated 20 June 2019 and acceptance received from Cox Architecture Pty Ltd dated 1 July 2019. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Cox Architecture Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope for work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of filling of unknown origin be noted in the report, and in particular the presence of building demolition materials, it

should be recognised that there may be some risk that such filling may contain contaminants and hazardous building materials.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the geotechnical and environmental components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About This Report

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

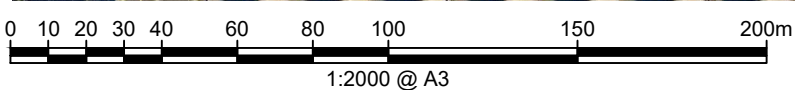
Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

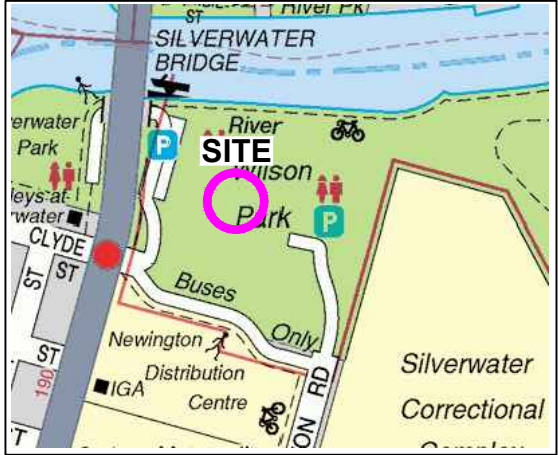
The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

Appendix B

Drawings



NOTE:
1: Base image from Nearmap.com
(Dated 1.7.2019)
2: Test locations are approximate only and have been
estimated based on historical drawings with reference to
existing features.

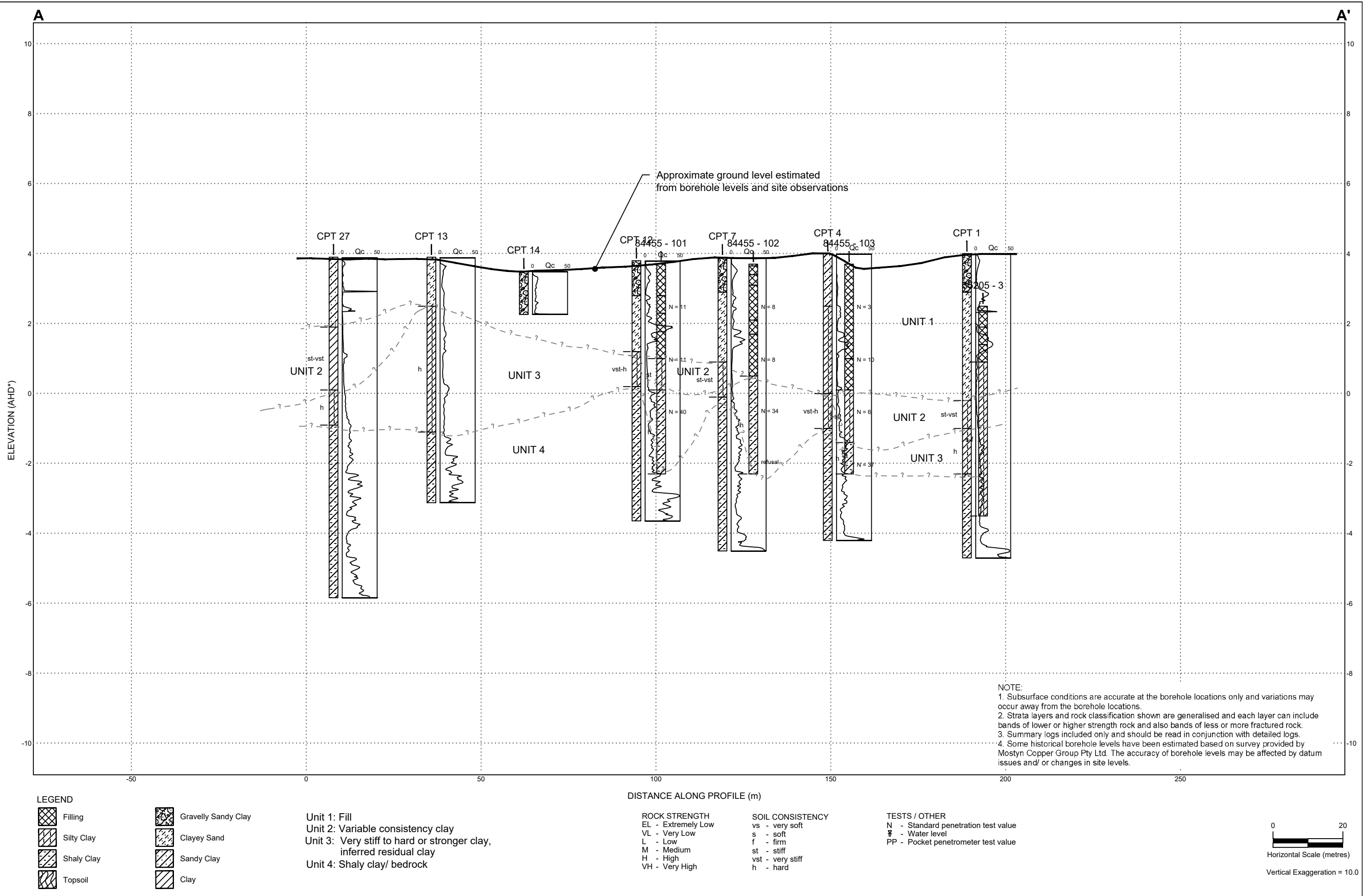


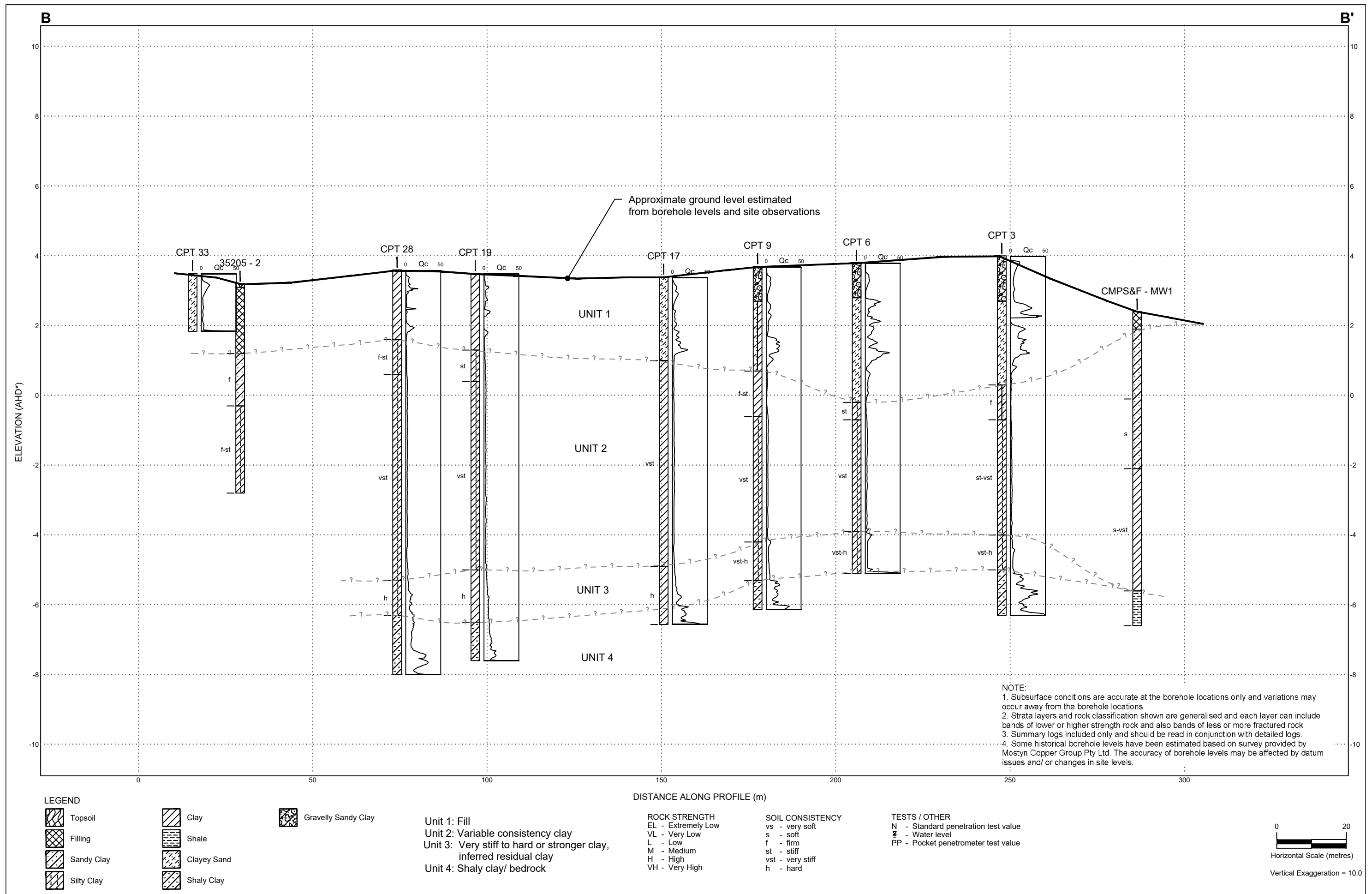
Locality Plan

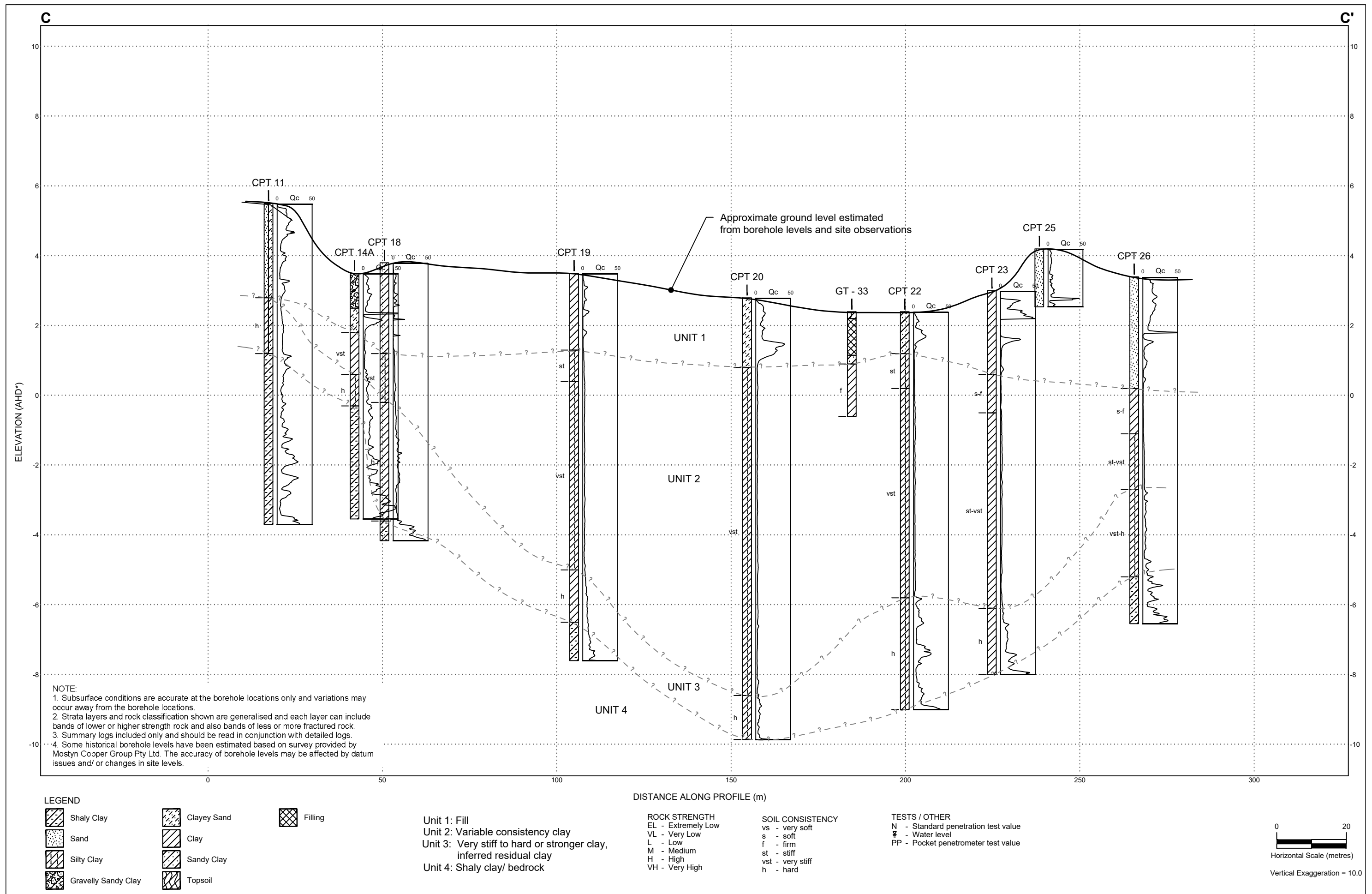
LEGEND

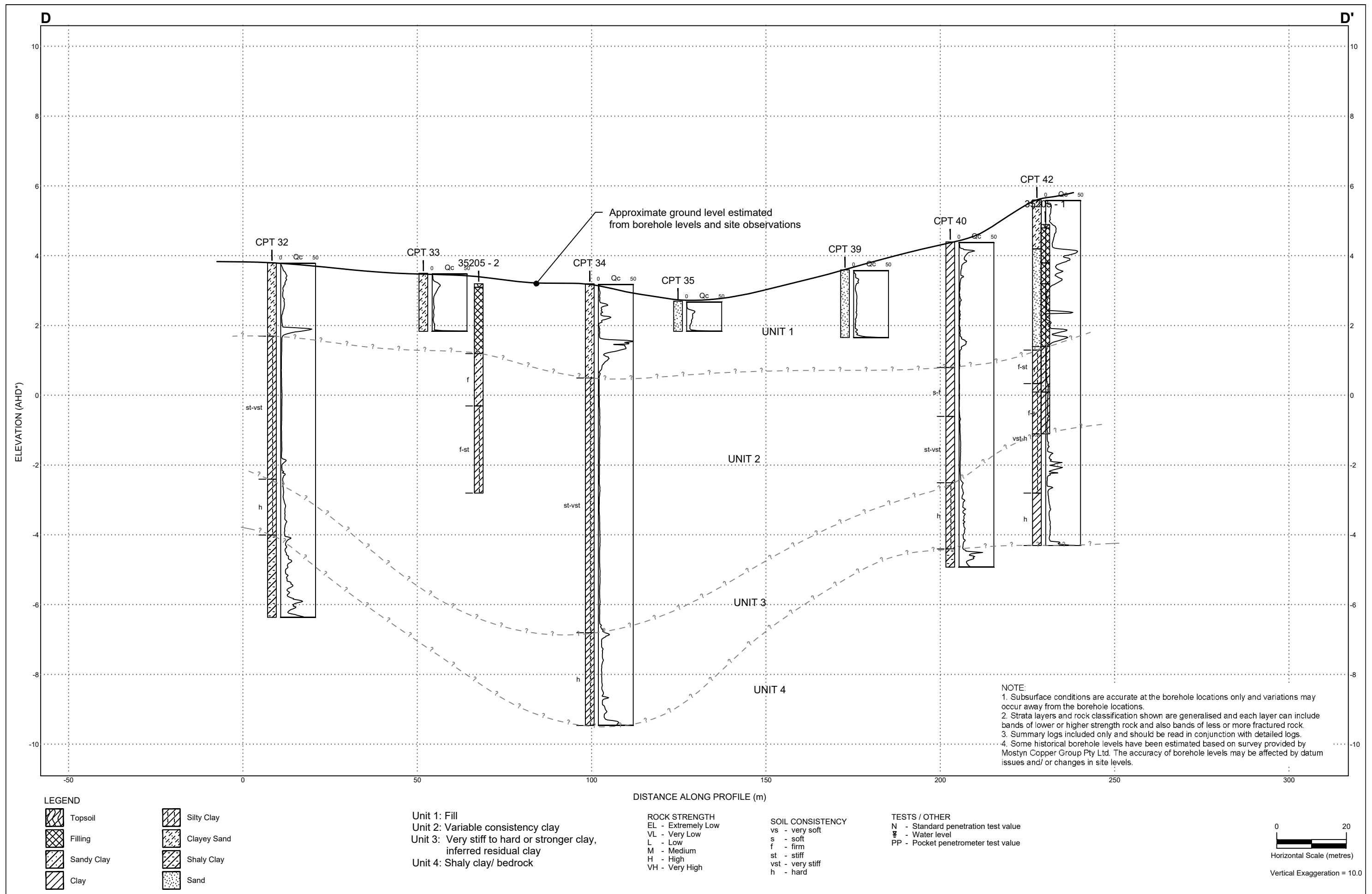
- PREVIOUS INVESTIGATION
- DP borehole and CPT (Proj. 23775 F& J, 1999 to 2000)
 - DP borehole (Proj. 35205, 2002)
 - CMPS&F borehole (1998)
 - Groundwater Technologies borehole (1994)
 - DP borehole and DCP (Proj. 73318, 2013)
 - DP borehole (Proj. 84455, 2014)
 - DP borehole (Proj. 86146, 2017)

- CURRENT INVESTIGATION
- CPT
 - CPT and CBR/ Atterberg limits sample
 - Geotechnical Cross Section A-A'









Appendix C

Field Work Results



Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low

reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:
4,6,7
N=13
- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:
15, 30/40 mm

Sampling Methods

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.



Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are generally based on Australian Standard AS1726:2017, Geotechnical Site Investigations. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

| Type | Particle size (mm) |
|---------|--------------------|
| Boulder | >200 |
| Cobble | 63 - 200 |
| Gravel | 2.36 - 63 |
| Sand | 0.075 - 2.36 |
| Silt | 0.002 - 0.075 |
| Clay | <0.002 |

The sand and gravel sizes can be further subdivided as follows:

| Type | Particle size (mm) |
|---------------|--------------------|
| Coarse gravel | 19 - 63 |
| Medium gravel | 6.7 - 19 |
| Fine gravel | 2.36 - 6.7 |
| Coarse sand | 0.6 - 2.36 |
| Medium sand | 0.21 - 0.6 |
| Fine sand | 0.075 - 0.21 |

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

The proportions of secondary constituents of soils are described as follows:

In fine grained soils (>35% fines)

| Term | Proportion of sand or gravel | Example |
|-----------|------------------------------|---------------------------|
| And | Specify | Clay (60%) and Sand (40%) |
| Adjective | >30% | Sandy Clay |
| With | 15 - 30% | Clay with sand |
| Trace | 0 - 15% | Clay with trace sand |

In coarse grained soils (>65% coarse)

- with clays or silts

| Term | Proportion of fines | Example |
|-----------|---------------------|---------------------------|
| And | Specify | Sand (70%) and Clay (30%) |
| Adjective | >12% | Clayey Sand |
| With | 5 - 12% | Sand with clay |
| Trace | 0 - 5% | Sand with trace clay |

In coarse grained soils (>65% coarse)

- with coarser fraction

| Term | Proportion of coarser fraction | Example |
|-----------|--------------------------------|-----------------------------|
| And | Specify | Sand (60%) and Gravel (40%) |
| Adjective | >30% | Gravelly Sand |
| With | 15 - 30% | Sand with gravel |
| Trace | 0 - 15% | Sand with trace gravel |

The presence of cobbles and boulders shall be specifically noted by beginning the description with 'Mix of Soil and Cobbles/Boulders' with the word order indicating the dominant first and the proportion of cobbles and boulders described together.

Soil Descriptions

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

| Description | Abbreviation | Undrained shear strength (kPa) |
|-------------|--------------|--------------------------------|
| Very soft | VS | <12 |
| Soft | S | 12 - 25 |
| Firm | F | 25 - 50 |
| Stiff | St | 50 - 100 |
| Very stiff | VSt | 100 - 200 |
| Hard | H | >200 |
| Friable | Fr | - |

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

| Relative Density | Abbreviation | Density Index (%) |
|------------------|--------------|-------------------|
| Very loose | VL | <15 |
| Loose | L | 15-35 |
| Medium dense | MD | 35-65 |
| Dense | D | 65-85 |
| Very dense | VD | >85 |

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Extremely weathered material – formed from in-situ weathering of geological formations. Has soil strength but retains the structure or fabric of the parent rock;
- Alluvial soil – deposited by streams and rivers;

- Estuarine soil – deposited in coastal estuaries;
- Marine soil – deposited in a marine environment;
- Lacustrine soil – deposited in freshwater lakes;
- Aeolian soil – carried and deposited by wind;
- Colluvial soil – soil and rock debris transported down slopes by gravity;
- Topsoil – mantle of surface soil, often with high levels of organic material.
- Fill – any material which has been moved by man.

Moisture Condition – Coarse Grained Soils

For coarse grained soils the moisture condition should be described by appearance and feel using the following terms:

- Dry (D) Non-cohesive and free-running.
- Moist (M) Soil feels cool, darkened in colour.
Soil tends to stick together.
Sand forms weak ball but breaks easily.
- Wet (W) Soil feels cool, darkened in colour.
Soil tends to stick together, free water forms when handling.

Moisture Condition – Fine Grained Soils

For fine grained soils the assessment of moisture content is relative to their plastic limit or liquid limit, as follows:

- 'Moist, dry of plastic limit' or 'w < PL' (i.e. hard and friable or powdery).
- 'Moist, near plastic limit' or 'w ≈ PL' (i.e. soil can be moulded at moisture content approximately equal to the plastic limit).
- 'Moist, wet of plastic limit' or 'w > PL' (i.e. soils usually weakened and free water forms on the hands when handling).
- 'Wet' or 'w ≈ LL' (i.e. near the liquid limit).
- 'Wet' or 'w > LL' (i.e. wet of the liquid limit).



Rock Strength

Rock strength is defined by the Unconfined Compressive Strength and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $Is_{(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

| Strength Term | Abbreviation | Unconfined Compressive Strength MPa | Point Load Index * $Is_{(50)}$ MPa |
|----------------|--------------|-------------------------------------|------------------------------------|
| Very low | VL | 0.6 - 2 | 0.03 - 0.1 |
| Low | L | 2 - 6 | 0.1 - 0.3 |
| Medium | M | 6 - 20 | 0.3 - 1.0 |
| High | H | 20 - 60 | 1 - 3 |
| Very high | VH | 60 - 200 | 3 - 10 |
| Extremely high | EH | >200 | >10 |

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$. It should be noted that the UCS to $Is_{(50)}$ ratio varies significantly for different rock types and specific ratios should be determined for each site.

Degree of Weathering

The degree of weathering of rock is classified as follows:

| Term | Abbreviation | Description |
|---|--------------|---|
| Residual Soil | RS | Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported. |
| Extremely weathered | XW | Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible |
| Highly weathered | HW | The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores. |
| Moderately weathered | MW | The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock. |
| Slightly weathered | SW | Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock. |
| Fresh | FR | No signs of decomposition or staining. |
| <i>Note: If HW and MW cannot be differentiated use DW (see below)</i> | | |
| Distinctly weathered | DW | Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores. |

Rock Descriptions

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

| Term | Description |
|--------------------|---|
| Fragmented | Fragments of <20 mm |
| Highly Fractured | Core lengths of 20-40 mm with occasional fragments |
| Fractured | Core lengths of 30-100 mm with occasional shorter and longer sections |
| Slightly Fractured | Core lengths of 300 mm or longer with occasional sections of 100-300 mm |
| Unbroken | Core contains very few fractures |

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq 100 \text{ mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

| Term | Separation of Stratification Planes |
|---------------------|-------------------------------------|
| Thinly laminated | < 6 mm |
| Laminated | 6 mm to 20 mm |
| Very thinly bedded | 20 mm to 60 mm |
| Thinly bedded | 60 mm to 0.2 m |
| Medium bedded | 0.2 m to 0.6 m |
| Thickly bedded | 0.6 m to 2 m |
| Very thickly bedded | > 2 m |

Symbols & Abbreviations

Douglas Partners



Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

| | |
|------|--------------------------|
| C | Core drilling |
| R | Rotary drilling |
| SFA | Spiral flight augers |
| NMLC | Diamond core - 52 mm dia |
| NQ | Diamond core - 47 mm dia |
| HQ | Diamond core - 63 mm dia |
| PQ | Diamond core - 81 mm dia |

Water

| | |
|---|-------------|
| ▷ | Water seep |
| ▽ | Water level |

Sampling and Testing

| | |
|-----------------|--------------------------------|
| A | Auger sample |
| B | Bulk sample |
| D | Disturbed sample |
| E | Environmental sample |
| U ₅₀ | Undisturbed tube sample (50mm) |
| W | Water sample |
| pp | Pocket penetrometer (kPa) |
| PID | Photo ionisation detector |
| PL | Point load strength Is(50) MPa |
| S | Standard Penetration Test |
| V | Shear vane (kPa) |

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

| | |
|-----|-----------------|
| B | Bedding plane |
| Cs | Clay seam |
| Cv | Cleavage |
| Cz | Crushed zone |
| Ds | Decomposed seam |
| F | Fault |
| J | Joint |
| Lam | Lamination |
| Pt | Parting |
| Sz | Sheared Zone |
| V | Vein |

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

| | |
|----|----------------|
| h | horizontal |
| v | vertical |
| sh | sub-horizontal |
| sv | sub-vertical |

Coating or Infilling Term

| | |
|-----|----------|
| cln | clean |
| co | coating |
| he | healed |
| inf | infilled |
| stn | stained |
| ti | tight |
| vn | veneer |

Coating Descriptor

| | |
|-----|--------------|
| ca | calcite |
| cbs | carbonaceous |
| cly | clay |
| fe | iron oxide |
| mn | manganese |
| slt | silty |

Shape

| | |
|----|------------|
| cu | curved |
| ir | irregular |
| pl | planar |
| st | stepped |
| un | undulating |

Roughness

| | |
|----|--------------|
| po | polished |
| ro | rough |
| sl | slickensided |
| sm | smooth |
| vr | very rough |

Other

| | |
|-----|------------|
| fg | fragmented |
| bnd | band |
| qtz | quartz |

Symbols & Abbreviations

Graphic Symbols for Soil and Rock

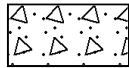
General



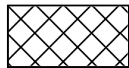
Asphalt



Road base



Concrete



Filling

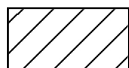
Soils



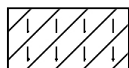
Topsoil



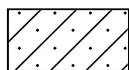
Peat



Clay



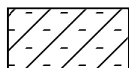
Silty clay



Sandy clay



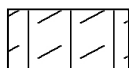
Gravelly clay



Shaly clay



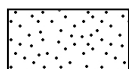
Silt



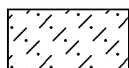
Clayey silt



Sandy silt



Sand



Clayey sand



Silty sand



Gravel



Sandy gravel



Cobbles, boulders



Talus

Sedimentary Rocks



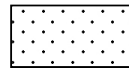
Boulder conglomerate



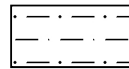
Conglomerate



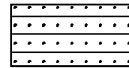
Conglomeratic sandstone



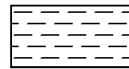
Sandstone



Siltstone



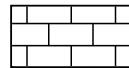
Laminite



Mudstone, claystone, shale

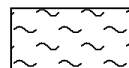


Coal

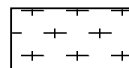


Limestone

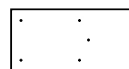
Metamorphic Rocks



Slate, phyllite, schist

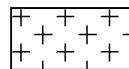


Gneiss

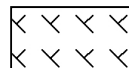


Quartzite

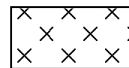
Igneous Rocks



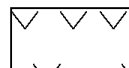
Granite



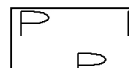
Dolerite, basalt, andesite



Dacite, epidote



Tuff, breccia



Porphyry

Cone Penetration Tests Douglas Partners



Introduction

The Cone Penetration Test (CPT) is a sophisticated soil profiling test carried out in-situ. A special cone shaped probe is used which is connected to a digital data acquisition system. The cone and adjoining sleeve section contain a series of strain gauges and other transducers which continuously monitor and record various soil parameters as the cone penetrates the soils.

The soil parameters measured depend on the type of cone being used, however they always include the following basic measurements

- Cone tip resistance q_c
- Sleeve friction f_s
- Inclination (from vertical) i
- Depth below ground z

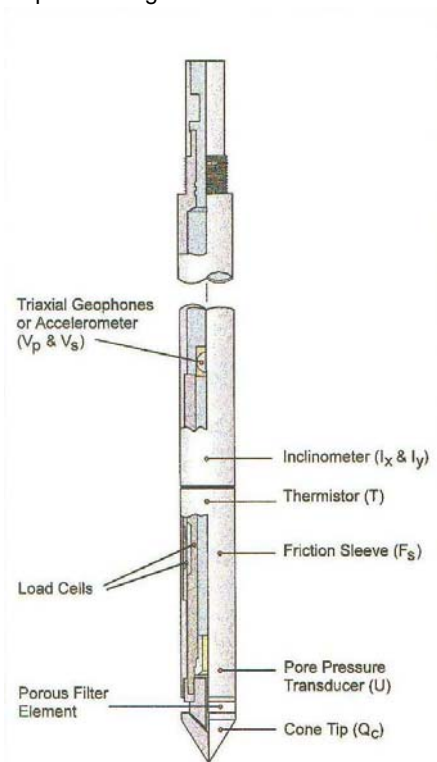


Figure 1: Cone Diagram

The inclinometer in the cone enables the verticality of the test to be confirmed and, if required, the vertical depth can be corrected.

The cone is thrust into the ground at a steady rate of about 20 mm/sec, usually using the hydraulic rams of a purpose built CPT rig, or a drilling rig. The testing is carried out in accordance with the Australian Standard AS1289 Test 6.5.1.



Figure 2: Purpose built CPT rig

The CPT can penetrate most soil types and is particularly suited to alluvial soils, being able to detect fine layering and strength variations. With sufficient thrust the cone can often penetrate a short distance into weathered rock. The cone will usually reach refusal in coarse filling, medium to coarse gravel and on very low strength or better rock. Tests have been successfully completed to more than 60 m.

Types of CPTs

Douglas Partners (and its subsidiary GroundTest) owns and operates the following types of CPT cones:

| Type | Measures |
|--------------|--|
| Standard | Basic parameters (q_c , f_s , i & z) |
| Piezococone | Dynamic pore pressure (u) plus basic parameters. Dissipation tests estimate consolidation parameters |
| Conductivity | Bulk soil electrical conductivity (σ) plus basic parameters |
| Seismic | Shear wave velocity (V_s), compression wave velocity (V_p), plus basic parameters |

Strata Interpretation

The CPT parameters can be used to infer the Soil Behaviour Type (SBT), based on normalised values of cone resistance (Q_t) and friction ratio (Fr). These are used in conjunction with soil classification charts, such as the one below (after Robertson 1990)

Cone Penetration Tests

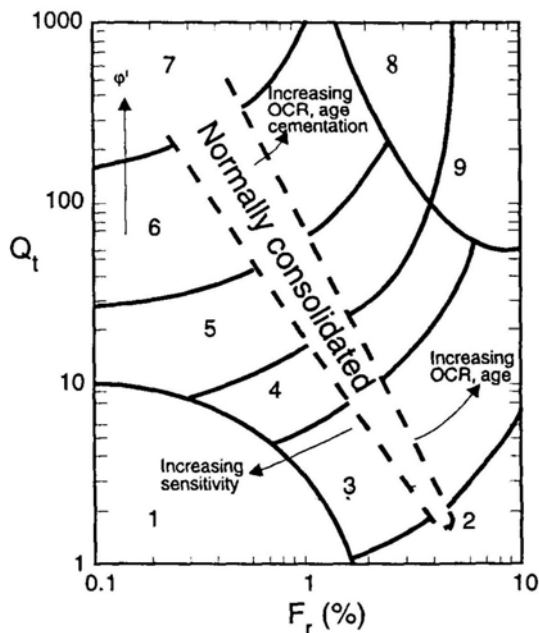


Figure 3: Soil Classification Chart

DP's in-house CPT software provides computer aided interpretation of soil strata, generating soil descriptions and strengths for each layer. The software can also produce plots of estimated soil parameters, including modulus, friction angle, relative density, shear strength and over consolidation ratio.

DP's CPT software helps our engineers quickly evaluate the critical soil layers and then focus on developing practical solutions for the client's project.

Engineering Applications

There are many uses for CPT data. The main applications are briefly introduced below:

Settlement

CPT provides a continuous profile of soil type and strength, providing an excellent basis for settlement analysis. Soil compressibility can be estimated from cone derived moduli, or known consolidation parameters for the critical layers (eg. from laboratory testing). Further, if pore pressure dissipation tests are undertaken using a piezocone, in-situ consolidation coefficients can be estimated to aid analysis.

Pile Capacity

The cone is, in effect, a small scale pile and, therefore, ideal for direct estimation of pile capacity. DP's in-house program ConePile can analyse most pile types and produces pile capacity versus depth plots. The analysis methods are based on proven static theory and empirical studies, taking account of scale effects, pile materials and method of installation. The results are expressed in limit state format, consistent with the Piling Code AS2159.

Dynamic or Earthquake Analysis

CPT and, in particular, Seismic CPT are suitable for dynamic foundation studies and earthquake response analyses, by profiling the low strain shear modulus G_0 . Techniques have also been developed relating CPT results to the risk of soil liquefaction.

Other Applications

Other applications of CPT include ground improvement monitoring (testing before and after works), salinity and contaminant plume mapping (conductivity cone), preloading studies and verification of strength gain.

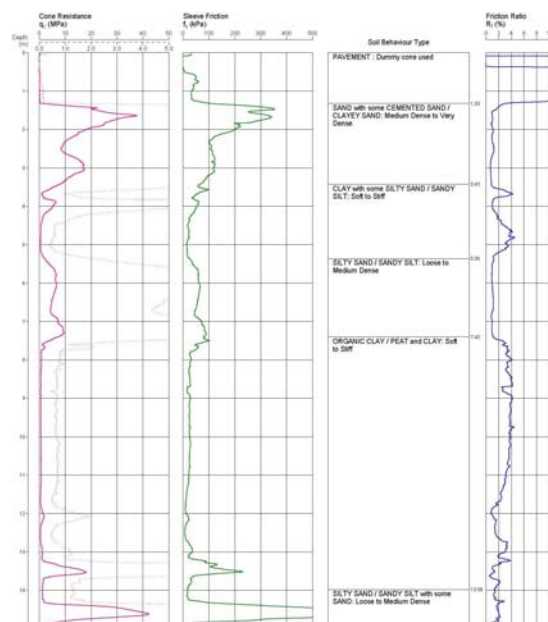


Figure 4: Sample Cone Plot

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 4 AHD*
EASTING: 319792
NORTHING: 6255529
DIP/AZIMUTH: 90°/--

BORE No: CBR 02
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|---|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | TOPSOIL / silty SAND SM: brown with clay, moist. | | | | | | | | |
| | 0.2 | FILL / sandy CLAY CL: low plasticity, light brown, with sandstone gravel, w < PI, borderline cohesive / non cohesive material | | B | 0.2 | | | | | |
| | 0.7 | Bore discontinued at 0.7m Target depth achieved | | | 0.7 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | > | Water seep | S | Standard penetration test |
| E | Environmental sample | ≡ | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 4 AHD*
EASTING: 319739
NORTHING: 6255498
DIP/AZIMUTH: 90°/--

BORE No: CBR 04
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|--|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | TOPSOIL / silty SAND SM: with a trace of gravel, dry | | | | | | | | |
| | 0.2 | FILL / sandy CLAY CL: low plasticity, light brown with sandstone gravel, w < PI, borderline cohesive / non cohesive material | | B | 0.2 | | | | | |
| | 0.7 | Bore discontinued at 0.7m Target depth achieved | | | 0.7 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | > | Water seep | S | Standard penetration test |
| E | Environmental sample | ≡ | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 3.9 AHD*
EASTING: 319784
NORTHING: 62554834
DIP/AZIMUTH: 90°/--

BORE No: CBR 05
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|---|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | TOPSOIL / silty SAND SM: brown with clay, moist. | | | | | | | | |
| | 0.2 | FILL / sandy CLAY CL: low plasticity, light brown, with sandstone gravel, w < PL, borderline cohesive / non cohesive material | | B | 0.2 | | | | | |
| | 0.7 | Bore discontinued at 0.7m Target depth achieved | | | 0.7 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND


| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | > | Water seep | S | Standard penetration test |
| E | Environmental sample | ≡ | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 2.2 AHD*
EASTING: 319862
NORTHING: 6255348
DIP/AZIMUTH: 90°/--

BORE No: CBR 21
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|--|--|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | FILL / sandy GRAVEL and COBBLES GW: rounded light grey with silt, dry. |  | | 0.0 | | | | | |
| | | 0.3: with a trace of brick | | B | | | | | | |
| | 0.7 | Bore discontinued at 0.7m Target depth achieved | | | 0.7 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | > | Water seep | S | Standard penetration test |
| E | Environmental sample | ≡ | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 2.4 AHD*
EASTING: 319874
NORTHING: 6255356
DIP/AZIMUTH: 90°/--

BORE No: CBR 22
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|---|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | TOPSOIL / silty SAND SM: fine to medium grained with a trace of gravel and terracotta, dry | | | | | | | | |
| | 0.2 | FILL / sandy CLAY CL: low plasticity, grey with gravel and a trace of terracotta, w < PI, slight hydrocarbon odour. | | | 0.2 | | | | | |
| | | | | B | | | PID 3.9 ppm | | | |
| | 0.9 | Bore discontinued at 0.9m Target depth achieved | | | 0.9 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | > | Water seep | S | Standard penetration test |
| E | Environmental sample | ≡ | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 4.2 AHD*
EASTING: 319909
NORTHING: 6255339
DIP/AZIMUTH: 90°/--

BORE No: CBR 25
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|--|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | FILL / silty SAND SM: grey, with brick, tile and gravel, dry | | | | | | | | |
| | | 0.3m: brick and tile content reducing | | | 0.3 | | | | | |
| | | | | B | | | | | | |
| | 0.8 | Bore discontinued at 0.8m Target depth achieved | | | 0.8 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | > | Water seep | S | Standard penetration test |
| E | Environmental sample | ≡ | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 3.9 AHD*
EASTING: 319710
NORTHING: 6255359
DIP/AZIMUTH: 90°/--

BORE No: CBR 27
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|--|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | TOPSOIL / silty SAND SM: fine to medium grained light grey, dry | | | | | | | | |
| | 0.15 | FILL / sandy CLAY CL: low plasticity, grey brown, w < PI, with a trace of concrete, wood, sandstone gravel / cobbles, and ACM. | | | 0.15 | | | | | |
| | | | B | | | | | | | |
| | 0.6 | Bore discontinued at 0.6m Refusal on obstruction in filling | | | 0.6 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | > | Water seep | S | Standard penetration test |
| E | Environmental sample | ≡ | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 3.6 AHD*
EASTING: 319771
NORTHING: 6255350
DIP/AZIMUTH: 90°/--

BORE No: CBR 28
PROJECT No: 86694.02
DATE: 24/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|--|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | TOPSOIL / silty SAND SM: fine to medium grained, grey, dry | | | | | | | | |
| | 0.1 | FILL / CLAY CL: low plasticity, orange brown with sand and a trace of gravel, w < PI | | | 0.1 | | | | | |
| | | | | B | | | | | | |
| | 0.8 | Bore discontinued at 0.8m Target depth achieved | | | 0.8 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | W | Water seep | S | Standard penetration test |
| E | Environmental sample | W | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 3.2 AHD*
EASTING: 319836
NORTHING: 6255334
DIP/AZIMUTH: 90°/--

BORE No: CBR 29
PROJECT No: 86694.02
DATE: 24/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|--|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | TOPSOIL / silty SAND SM: fine to medium grained, grey brown, dry | | | | | | | | |
| | 0.4 | FILL / sandy CLAY Cl: medium plasticity, light brown, w < Pl | | B | 0.4 | | | | | |
| | | | | | 0.6 | | | | | |
| | 0.7 | Bore discontinued at 0.7m Target depth achieved | | | | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

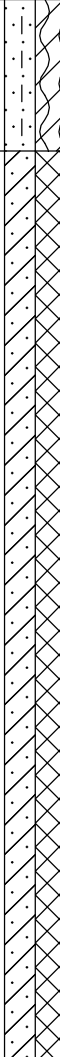
| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | > | Water seep | S | Standard penetration test |
| E | Environmental sample | ≡ | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 3.1 AHD*
EASTING: 319884
NORTHING: 6255324
DIP/AZIMUTH: 90°/--

BORE No: CBR 31
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|--------------|--|--|----------------------------|-------|--------|-----------------------|-------|---------------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| 3 | 0.1 | TOPSOIL / silty SAND SM: fine to medium grained, light grey, dry |  | | 0.1 | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | 0.7 | Bore discontinued at 0.7m Refusal on obstruction in fill | | | 0.7 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

| SAMPLING & IN SITU TESTING LEGEND | | | |
|-----------------------------------|----------------------|-------|--|
| A | Auger sample | G | Gas sample |
| B | Bulk sample | P | Piston sample |
| BLK | Block sample | U | Tube sample (x mm dia.) |
| C | Core drilling | W | Water sample |
| D | Disturbed sample | W | Water seep |
| E | Environmental sample | W | Water level |
| | | PID | Photo ionisation detector (ppm) |
| | | PL(A) | Point load axial test Is(50) (MPa) |
| | | PL(D) | Point load diametral test Is(50) (MPa) |
| | | pp | Pocket penetrometer (kPa) |
| | | S | Standard penetration test |
| | | V | Shear vane (kPa) |



BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 3.1 AHD*
EASTING: 319884
NORTHING: 6255324
DIP/AZIMUTH: 90°/--

BORE No: CBR 31A
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|--|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | TOPSOIL / silty SAND SM: fine to medium grained, light grey, dry | | | | | | | | |
| | 0.1 | FILL / sandy CLAY CI: medium plasticity, orange brown, with gravel and a trace of cobbles of both sedimentary and igneous origin, w < PI | | | | | | | | |
| | 0.5 | Bore discontinued at 0.5m Refusal on obstruction in fill | | | | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | > | Water seep | S | Standard penetration test |
| E | Environmental sample | ≡ | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 3.5 AHD*
EASTING: 319760
NORTHING: 6255292
DIP/AZIMUTH: 90°/--

BORE No: CBR 33
PROJECT No: 86694.02
DATE: 24/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|---|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | TOPSOIL / silty SAND SM: fine to medium grained, grey, dry | | | | | | | | |
| | 0.35 | FILL / CLAY CI: medium plasticity, grey with sand and a trace of gravel | | | 0.4 | | | | | |
| | 1.0 | Bore discontinued at 1.0m | | | 1.0 | | | | | |

RIG: 3.5t Excavator
TYPE OF BORING: 300mm diameter solid flight auger
WATER OBSERVATIONS: No free groundwater
REMARKS: Location coordinates are in MGA94 Zone 56.

DRILLER: BM

LOGGED: SB

CASING: Uncased

SAMPLING & IN SITU TESTING LEGEND

| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | W | Water seep | S | Standard penetration test |
| E | Environmental sample | W | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 4 AHD*
EASTING: 319938
NORTHING: 6255276
DIP/AZIMUTH: 90°/--

BORE No: CBR 38
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|--|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | TOPSOIL / silty SAND SM: fine to medium grained, grey, dry | | | | | | | | |
| | 0.1 | FILL / sandy CLAY CL: low plasticity, orange brown, with some gravel, w < PL | | | 0.1 | | | | | |
| | | | | B | | | | | | |
| | 0.8 | Bore discontinued at 0.8m Target depth achieved | | | 0.8 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND


| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | W | Water seep | S | Standard penetration test |
| E | Environmental sample | W | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 3.6 AHD*
EASTING: 319872
NORTHING: 6255249
DIP/AZIMUTH: 90°/--

BORE No: CBR 39
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|-----------|--|--|----------------------------|-------|--------|--------------------|-------|---------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | | FILL / sandy CLAY CL: low plasticity, grey brown, w < PI, trace building rubble and ACM. |  | | 0.0 | | | | | |
| | | | | B | | | | | | |
| | 0.8 | Bore discontinued at 0.8m Target depth achieved | | | 0.8 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND



| | | | | | |
|-----|----------------------|---|-------------------------|-------|--|
| A | Auger sample | G | Gas sample | PID | Photo ionisation detector (ppm) |
| B | Bulk sample | P | Piston sample | PL(A) | Point load axial test Is(50) (MPa) |
| BLK | Block sample | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C | Core drilling | W | Water sample | pp | Pocket penetrometer (kPa) |
| D | Disturbed sample | W | Water seep | S | Standard penetration test |
| E | Environmental sample | W | Water level | V | Shear vane (kPa) |

BOREHOLE LOG

CLIENT: Cox Architecture Pty Ltd
PROJECT: Cricket NSW Cricket Centre
LOCATION: Wilson Park, Newington Road, SOPA

SURFACE LEVEL: 5.6 AHD*
EASTING: 319919
NORTHING: 6255215
DIP/AZIMUTH: 90°/--

BORE No: CBR 42
PROJECT No: 86694.02
DATE: 23/7/2019
SHEET 1 OF 1

| RL | Depth (m) | Description of Strata | Graphic Log | Sampling & In Situ Testing | | | | Water | Well Construction Details | |
|----|--------------|--|--|----------------------------|-------|--------|-----------------------|-------|---------------------------------|--|
| | | | | Type | Depth | Sample | Results & Comments | | | |
| | 0.1 | TOPSOIL / silty SAND SM: fine to medium grained, grey, dry |  | | | | | | | |
| | | FILL / sandy CLAY CL: low plasticity, orange brown, with some gravel, w < PL |  | | 0.1 | | | | | |
| | | | | B | | | | | | |
| | 0.8 | Bore discontinued at 0.8m Target depth achieved | | | 0.8 | | | | | |

RIG: 3.5t Excavator

DRILLER: BM

LOGGED: SB

CASING: Uncased

TYPE OF BORING: 300mm diameter solid flight auger

WATER OBSERVATIONS: No free groundwater

REMARKS: Location coordinates are in MGA94 Zone 56.

| SAMPLING & IN SITU TESTING LEGEND | | | |
|-----------------------------------|----------------------|-------|--|
| A | Auger sample | G | Gas sample |
| B | Bulk sample | P | Piston sample |
| BLK | Block sample | U | Tube sample (x mm dia.) |
| C | Core drilling | W | Water sample |
| D | Disturbed sample | W | Water seep |
| E | Environmental sample | W | Water level |
| | | PID | Photo ionisation detector (ppm) |
| | | PL(A) | Point load axial test Is(50) (MPa) |
| | | PL(D) | Point load diametral test Is(50) (MPa) |
| | | pp | Pocket penetrometer (kPa) |
| | | S | Standard penetration test |
| | | V | Shear vane (kPa) |



CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 4.0m AHD

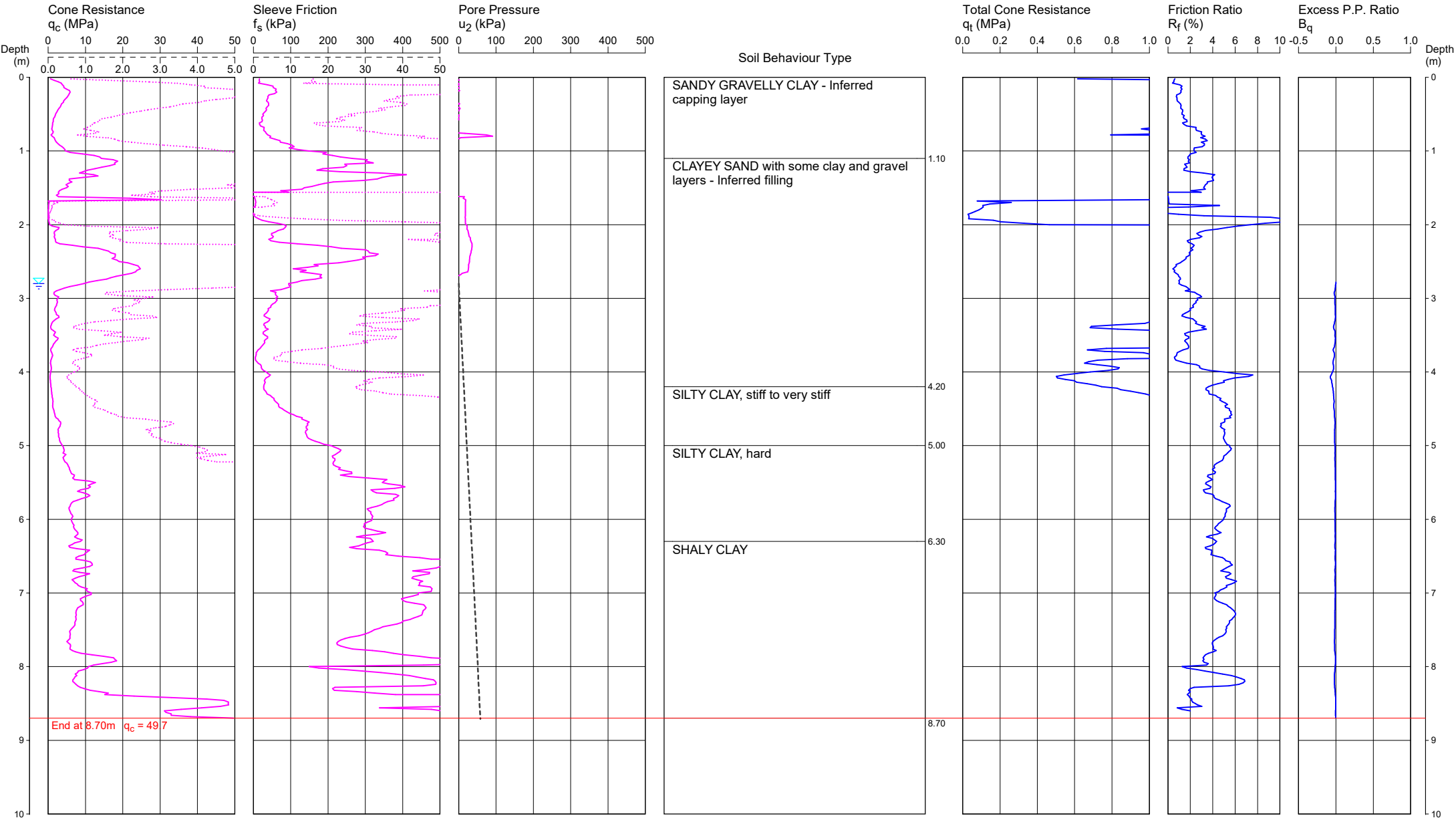
COORDINATES: 319754E 6255535N

CPT 1

Page 1 of 1

DATE 23/07/2019

PROJECT No: 86694.02



REMARKS: DUMMY CONE FROM 1.66 TO 2.0 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\1.CP5
Cone ID: 160917 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

Water depth after test: 2.8 m

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 4.0m AHD

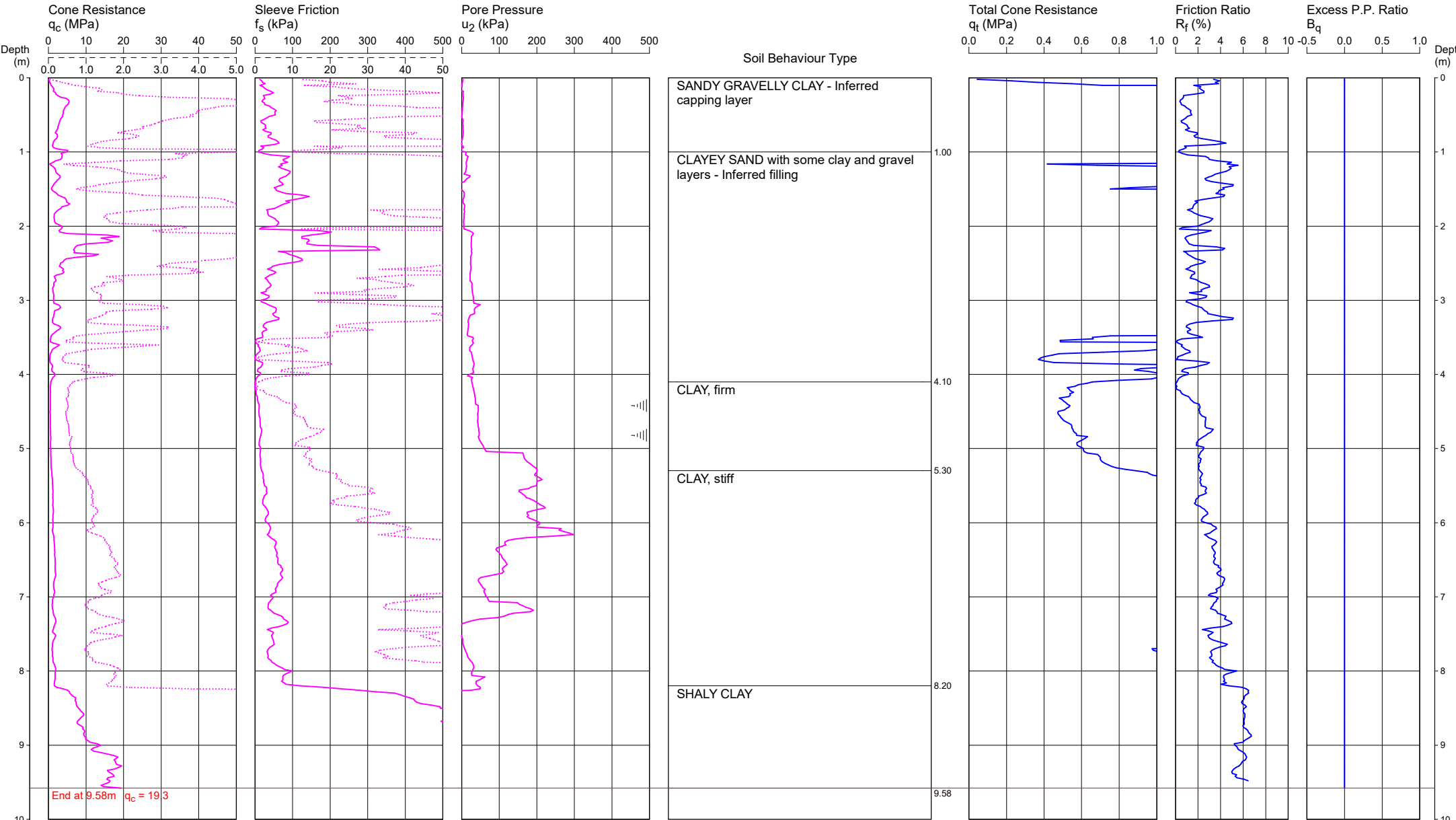
COORDINATES: 319792E 6255529N

CPT 2

Page 1 of 1

DATE 24/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR
REFUSAL.HOLE COLLAPSE AT 3.5 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\2.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

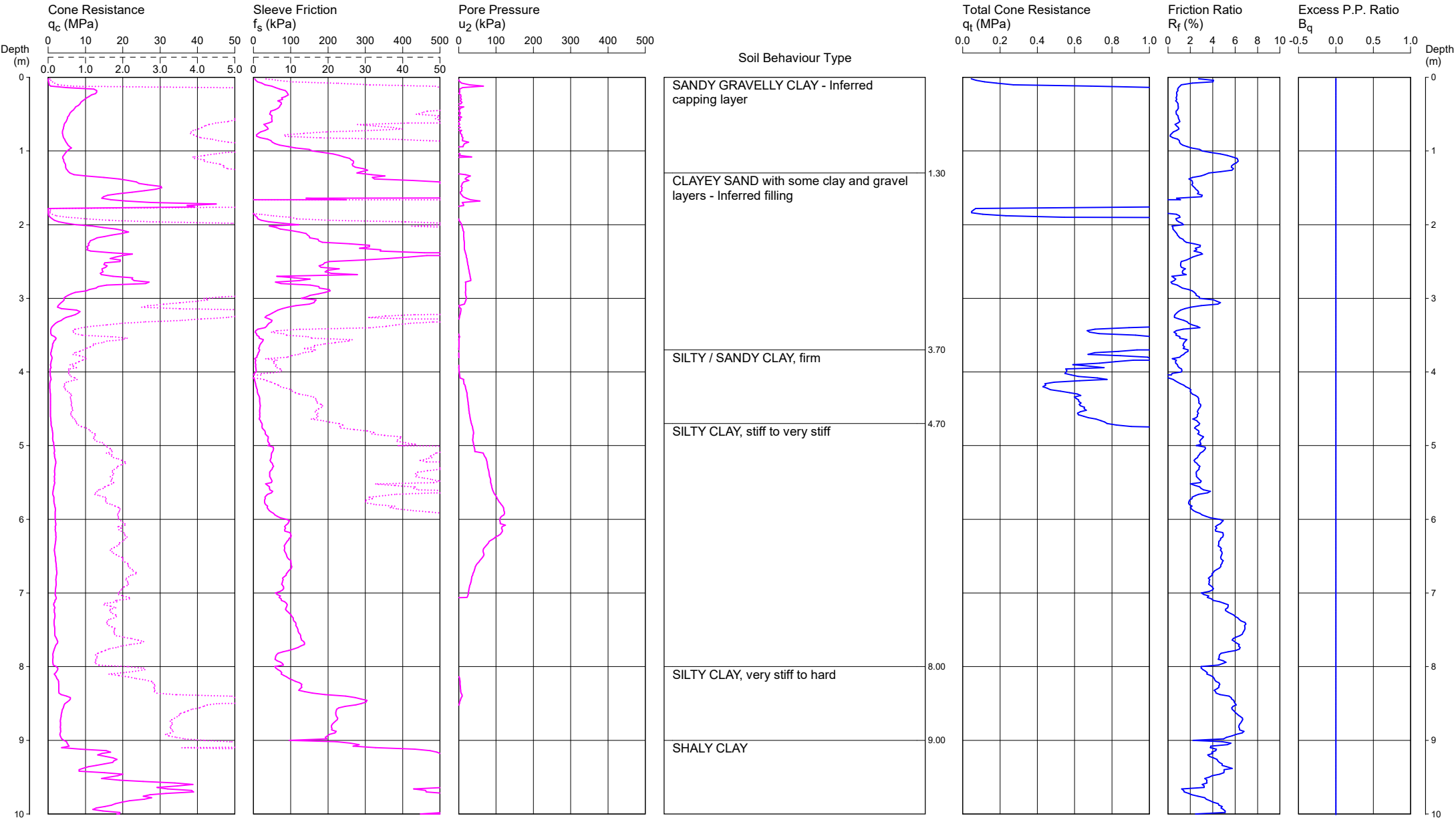
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 4.0m AHD
COORDINATES: 319834E 6255512N

CPT 3

Page 1 of 2

DATE 25/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.76 TO 2.1 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO TRUCK LIFTING AT NEAR REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\3.CP5
Cone ID: 160917 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

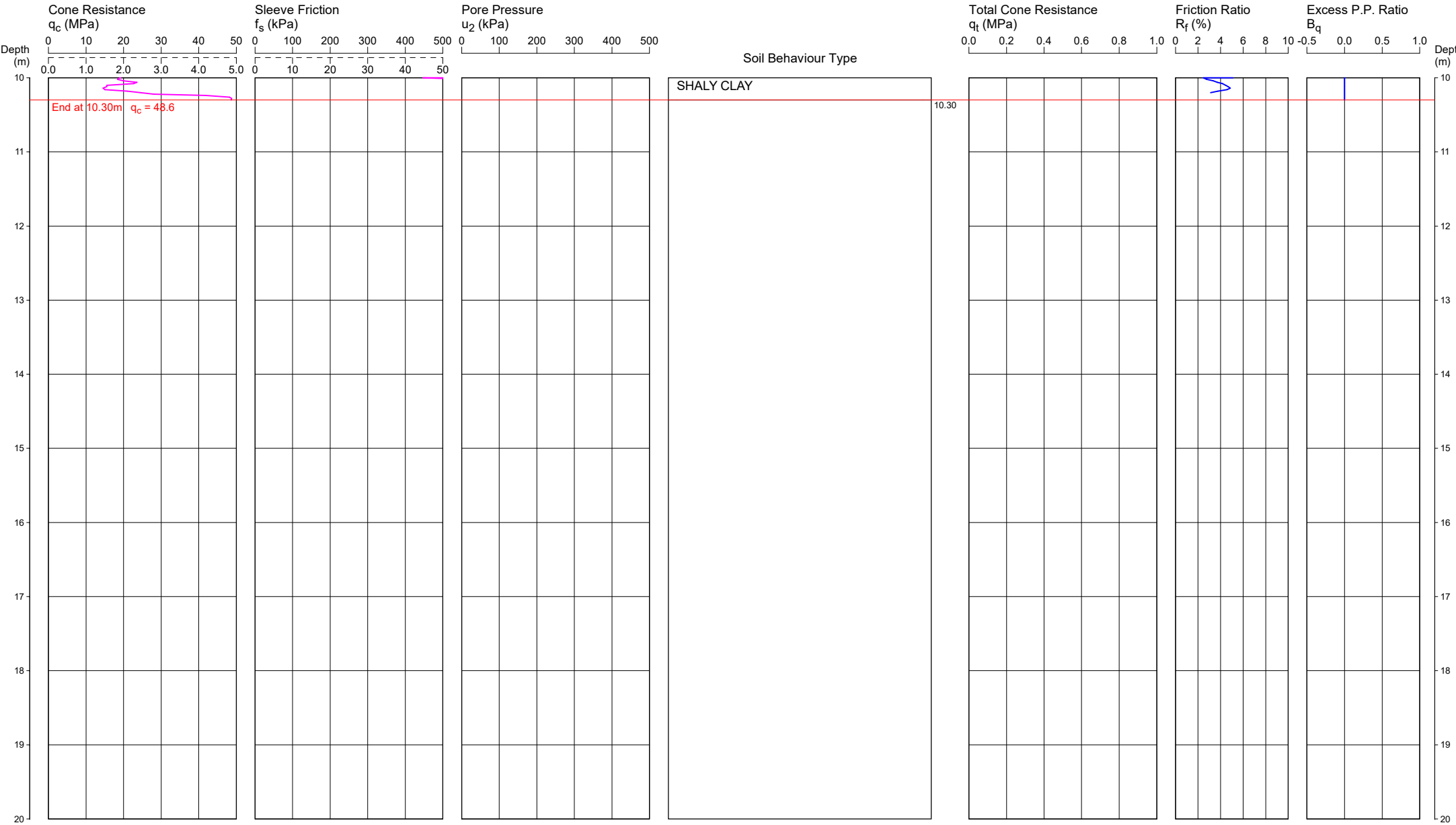
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 4.0m AHD
COORDINATES: 319834E 6255512N

CPT 3

Page 2 of 2

DATE 25/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.76 TO 2.1 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO TRUCK LIFTING AT NEAR REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\3.CP5
Cone ID: 160917 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 4.0 m AHD

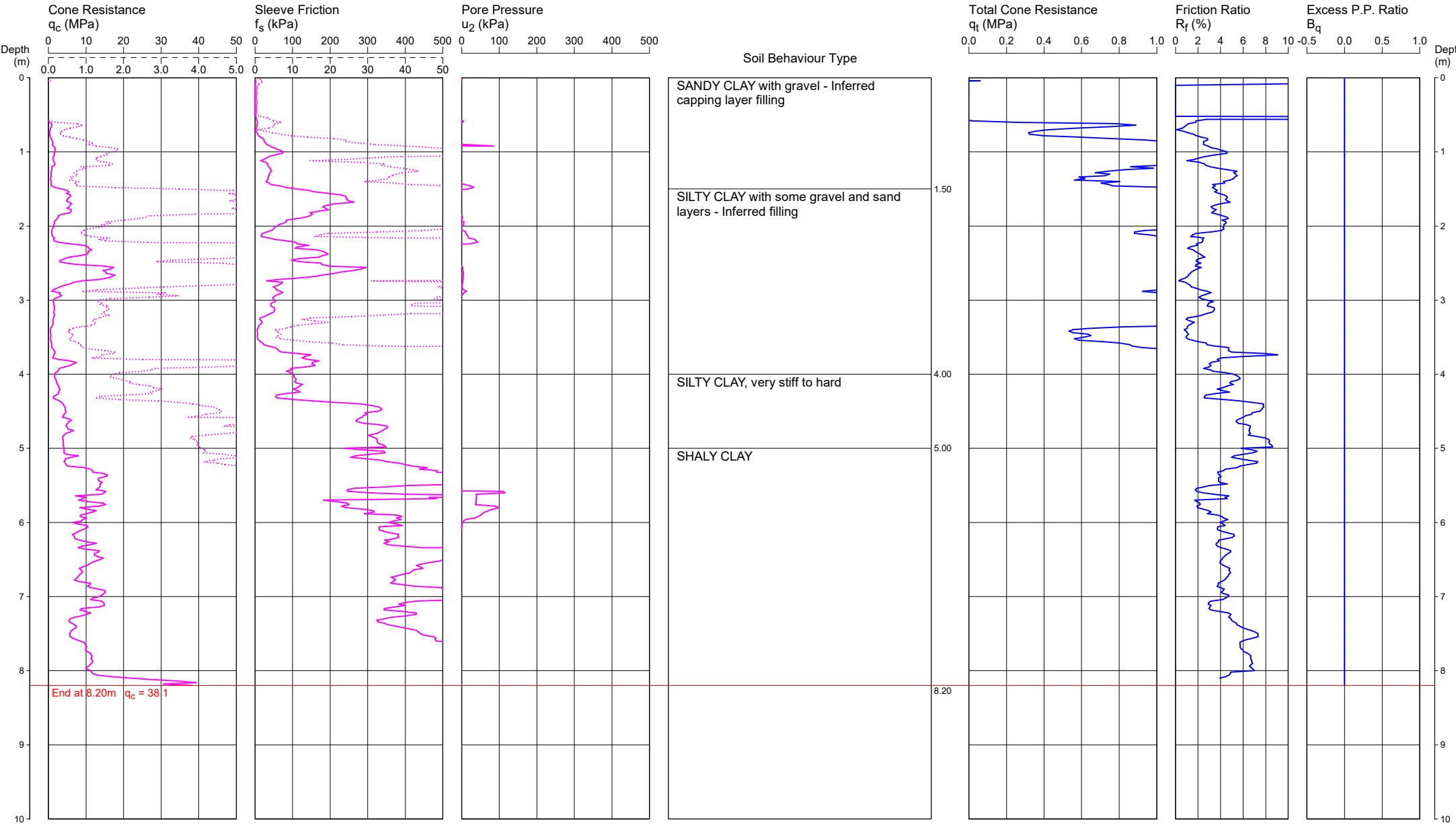
COORDINATES: 319739E 6255498N

CPT 4

Page 1 of 1

DATE 23/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.65 m DEPTH.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\4.CP5
Cone ID: 171006 Type: I-CFXYP20-10

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

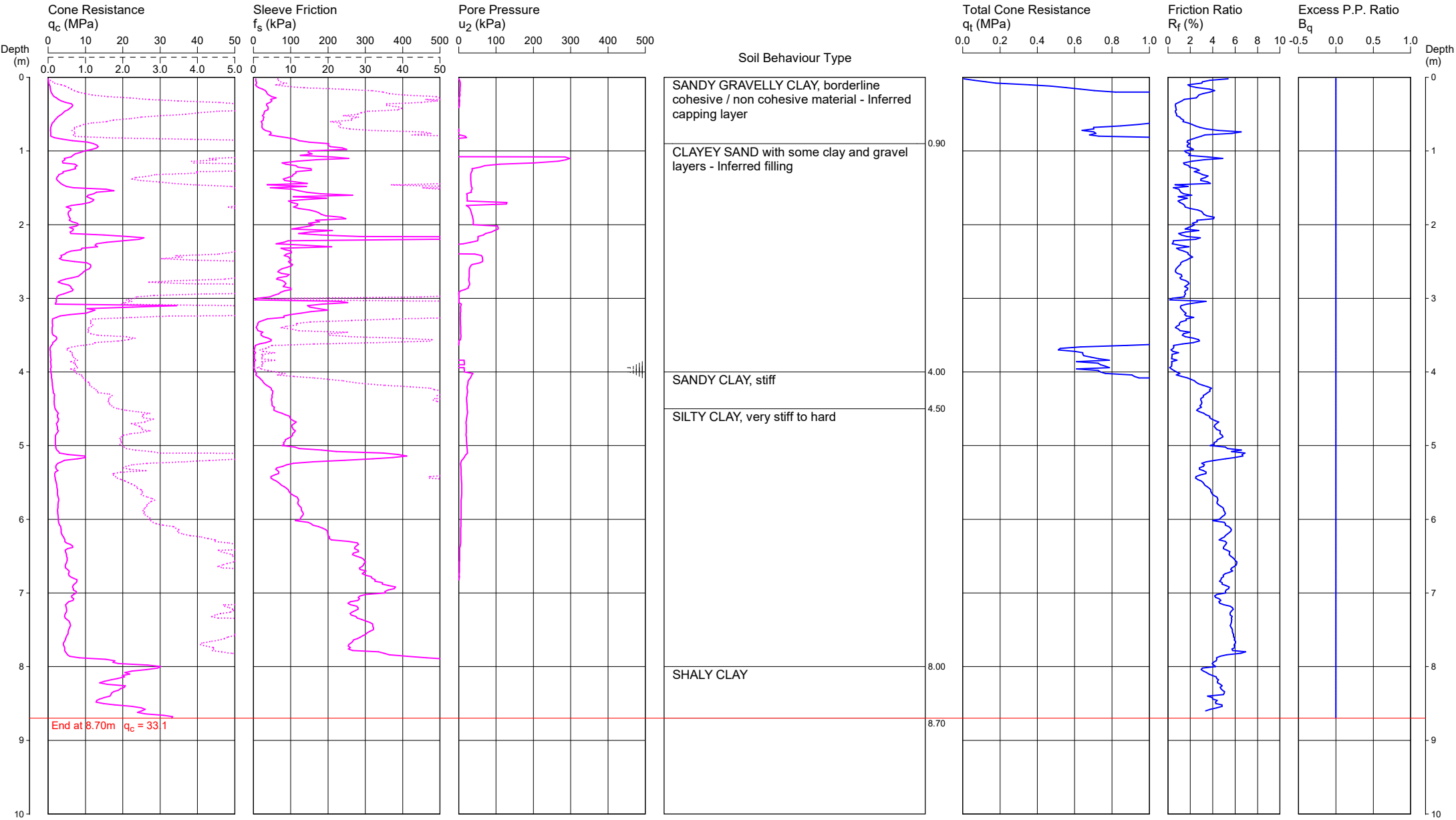
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.9m AHD
COORDINATES: 319784E 6255483N

CPT 5

Page 1 of 1

DATE 24/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL.
HOLE COLLAPSE AT 1.5 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\5.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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-||| Dissipation Test

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.8m AHD

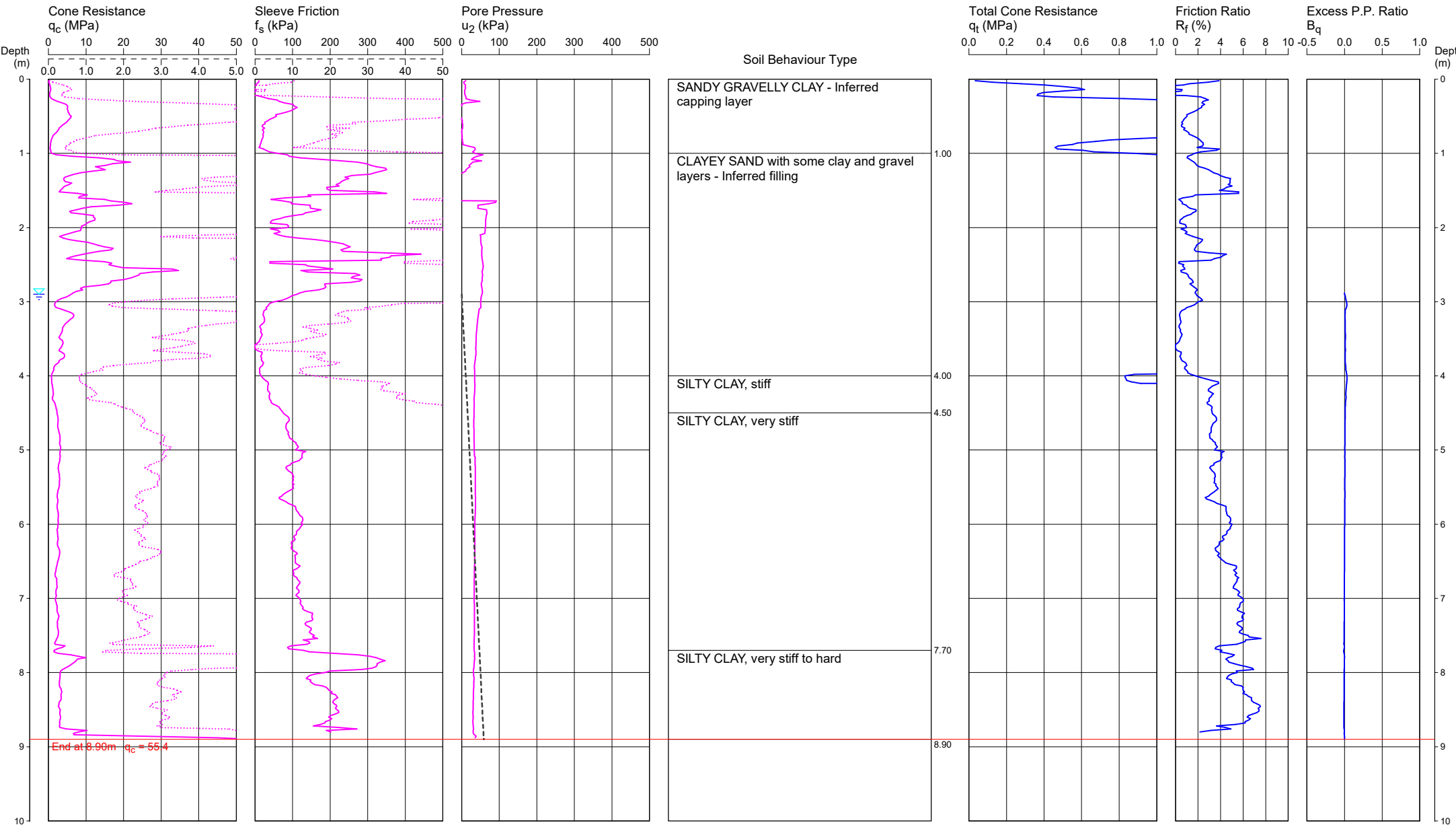
COORDINATES: 319816E 6255474N

CPT 6

Page 1 of 1

DATE 25/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\6.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.9m AHD

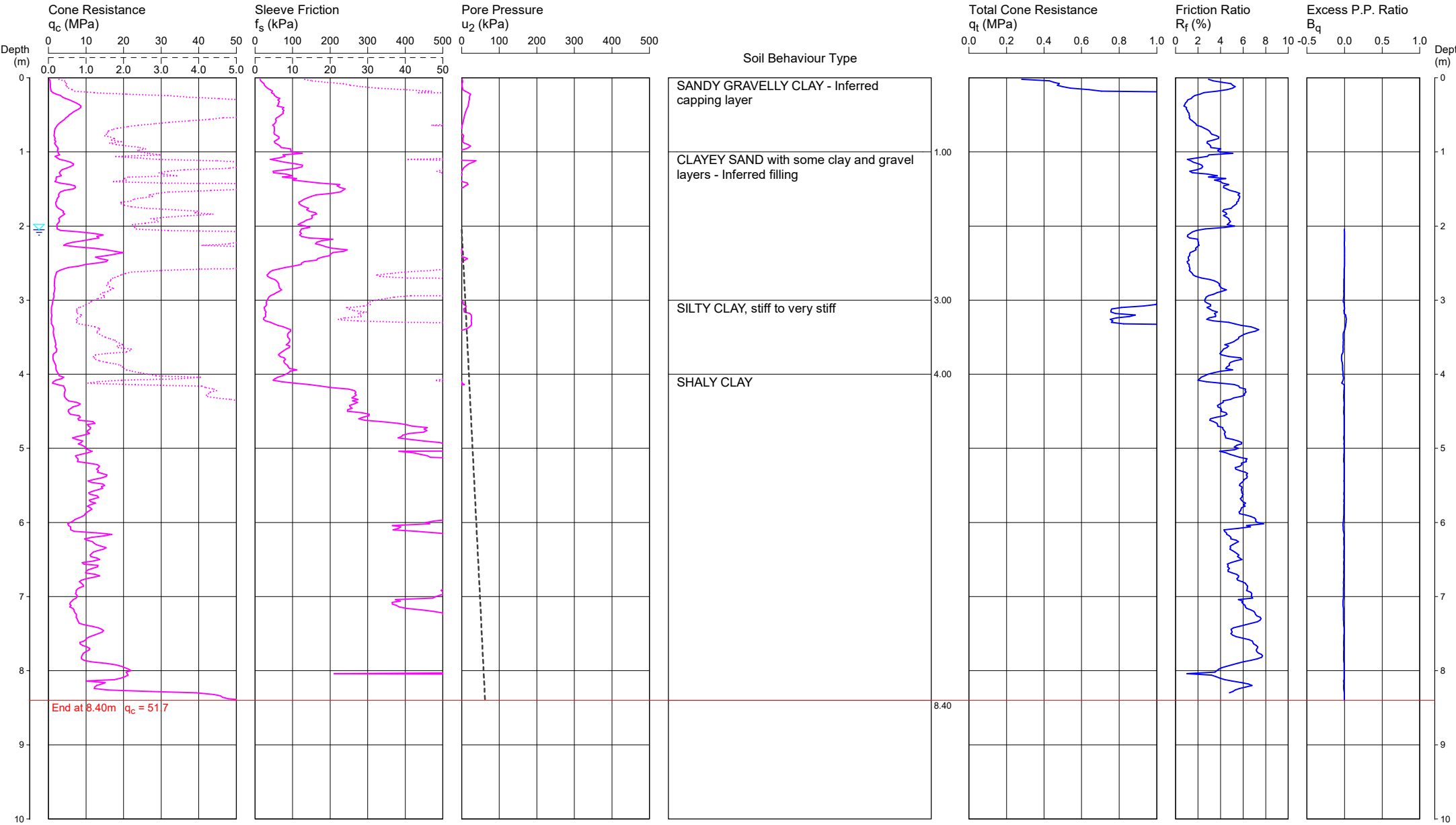
COORDINATES: 319734E 6255468N

CPT 7

Page 1 of 1

DATE 23/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.6 m DEPTH.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\7.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.7m AHD

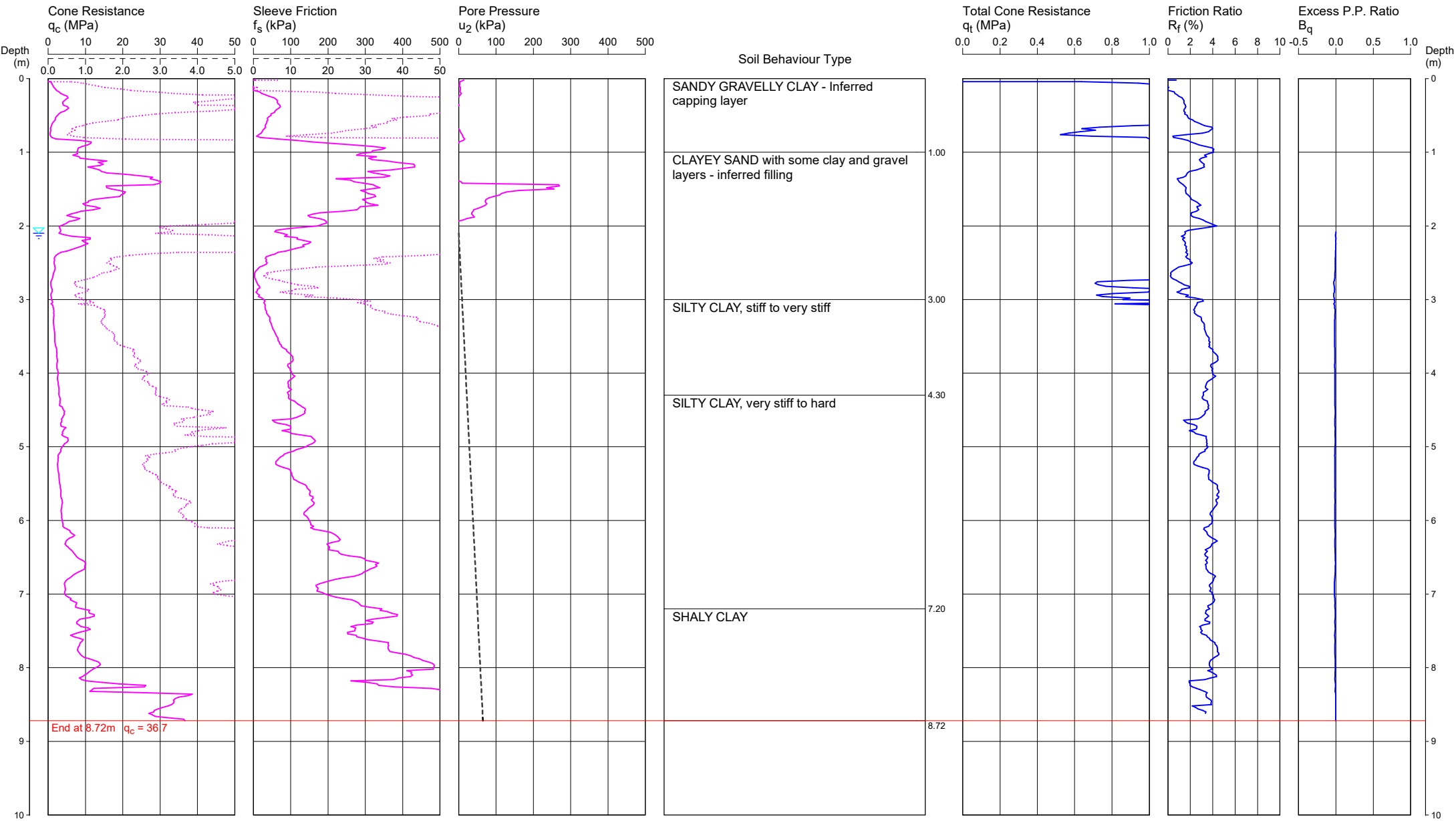
COORDINATES: 319776E 6255455N

CPT 8

Page 1 of 1

DATE 24/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.1 m DEPTH.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT
NEAR REFUSAL.

Water depth after test: 2.1 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\8.CP5
Cone ID: 160917 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.7m AHD

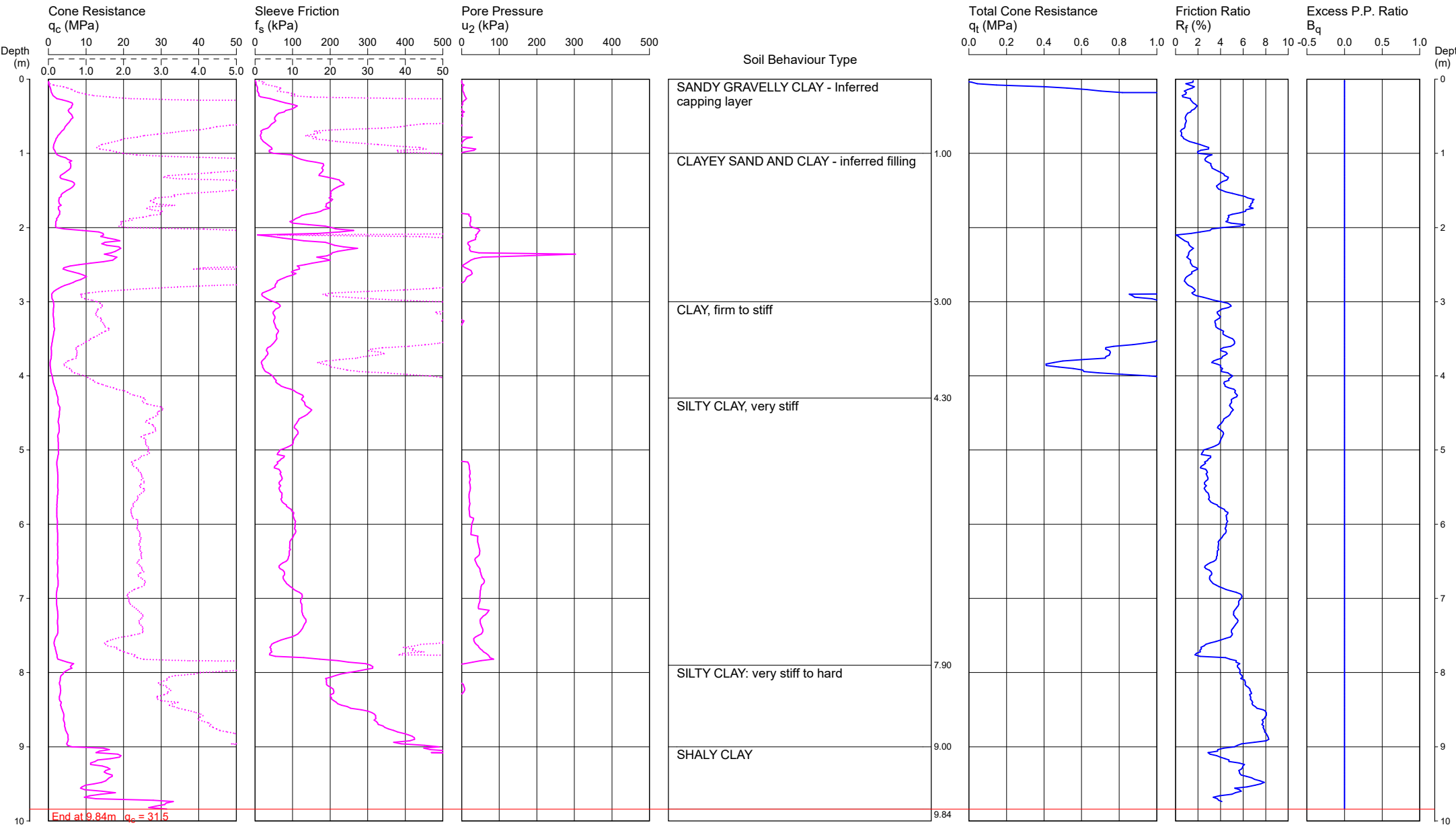
COORDINATES: 319804E 6255448N

CPT 9

Page 1 of 1

DATE 25/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH. TEST DISCONTINUED DUE TO CONE TIP REFUSAL.
HOLE COLLAPSE AT 2.1 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\9.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 4.0m AHD
COORDINATES: 319695E 6255400N

CPT 10

Page 1 of 1

DATE 31/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.62 TO 0.62 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO DUMMY CONE REFUSAL ON OBSTRUCTION.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\10.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

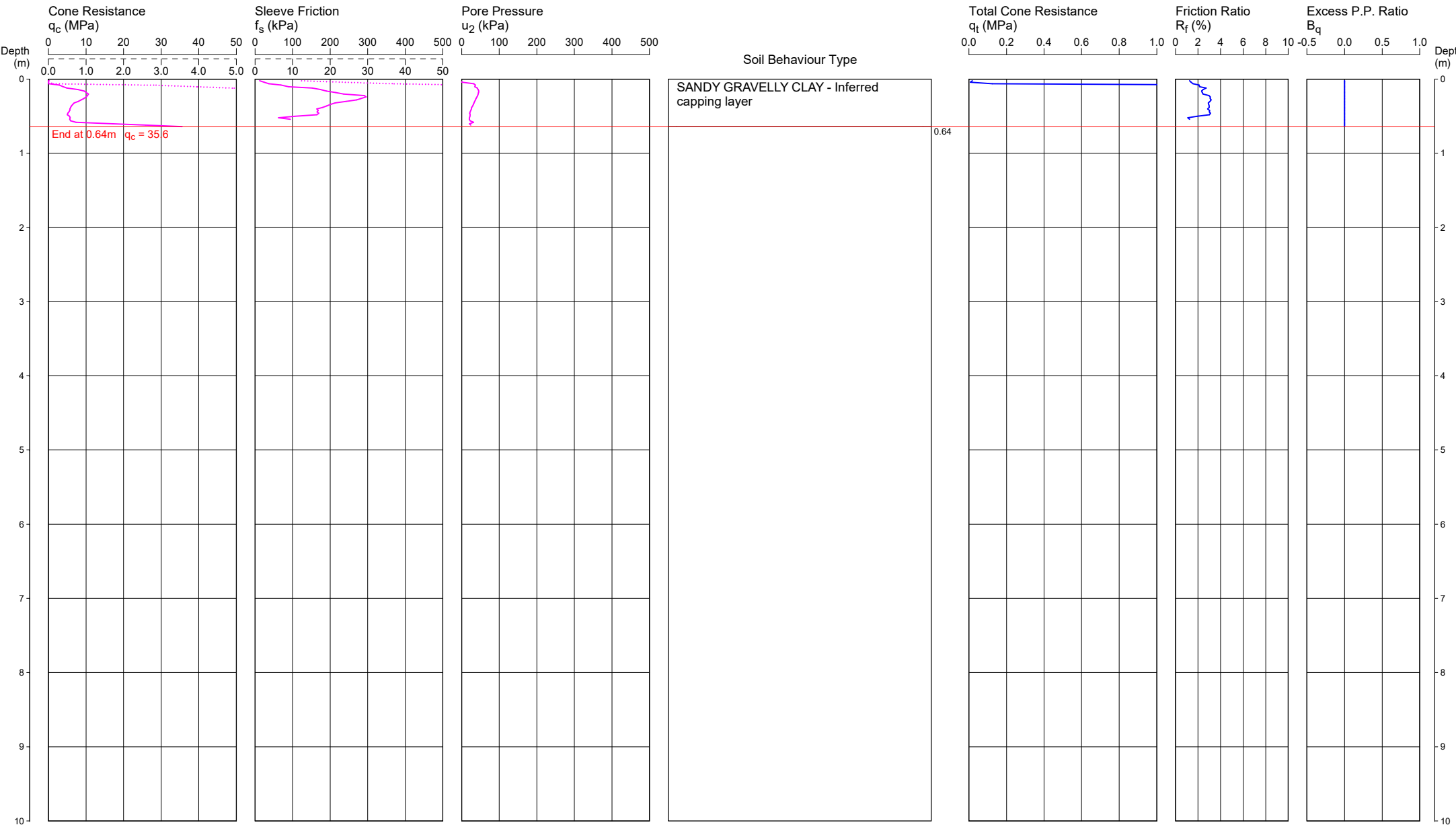
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 4.0m AHD
COORDINATES: 319695E 6255400N

CPT 10A

Page 1 of 1

DATE 31/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.64 TO 0.66 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO DUMMY CONE REFUSAL ON OBSTRUCTION.

File: P:\86694.02 - SILVERWATER, Wilson Park, Geo INV\4.0 Field Work\4.2 Testing\All CPT\10A.CP5
Cone ID: 120539
Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

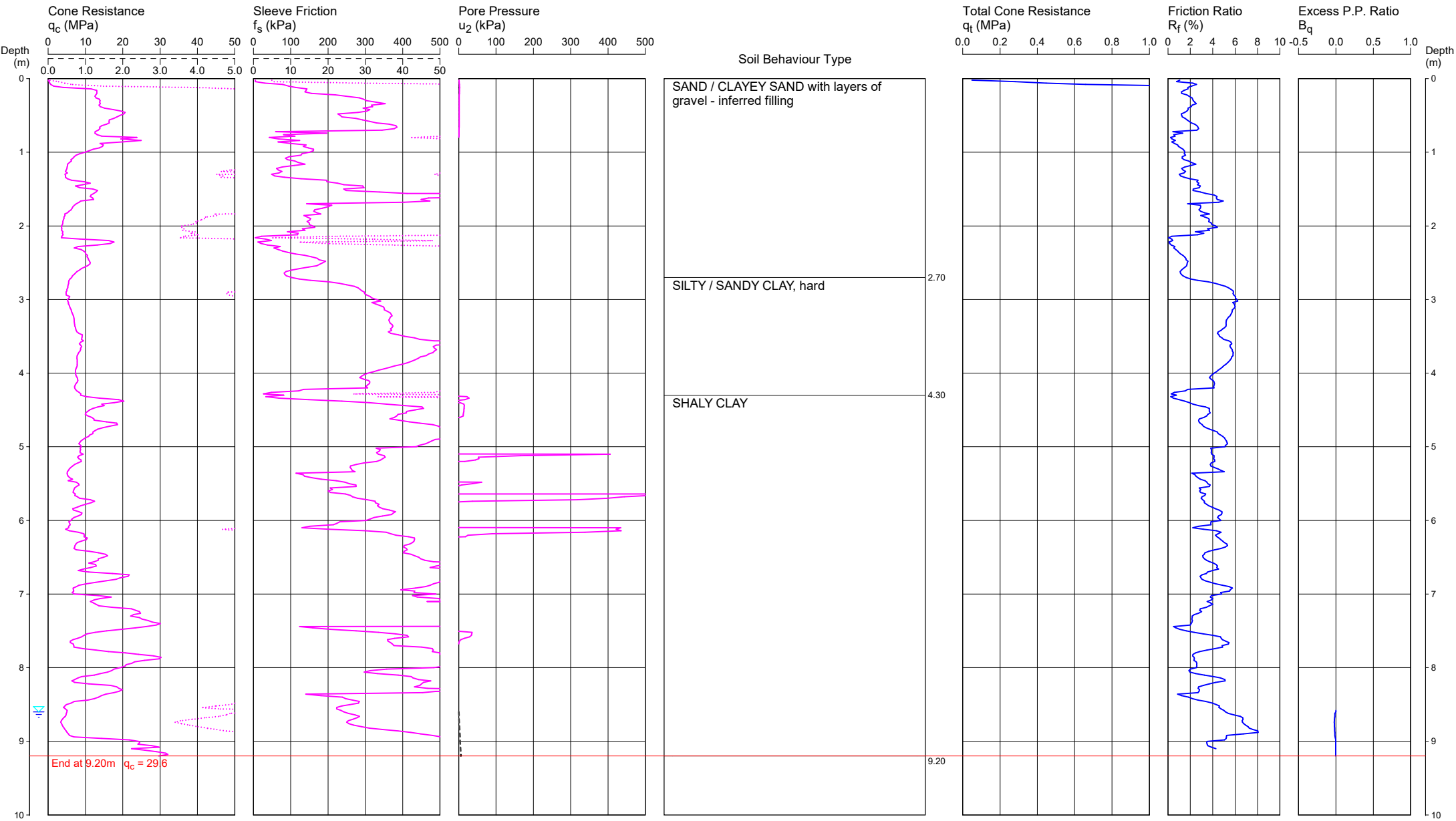
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 5.5m AHD
COORDINATES: 319705E 6255426N

CPT 11

Page 1 of 1

DATE 31/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\11.CP5
Cone ID: 160917 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

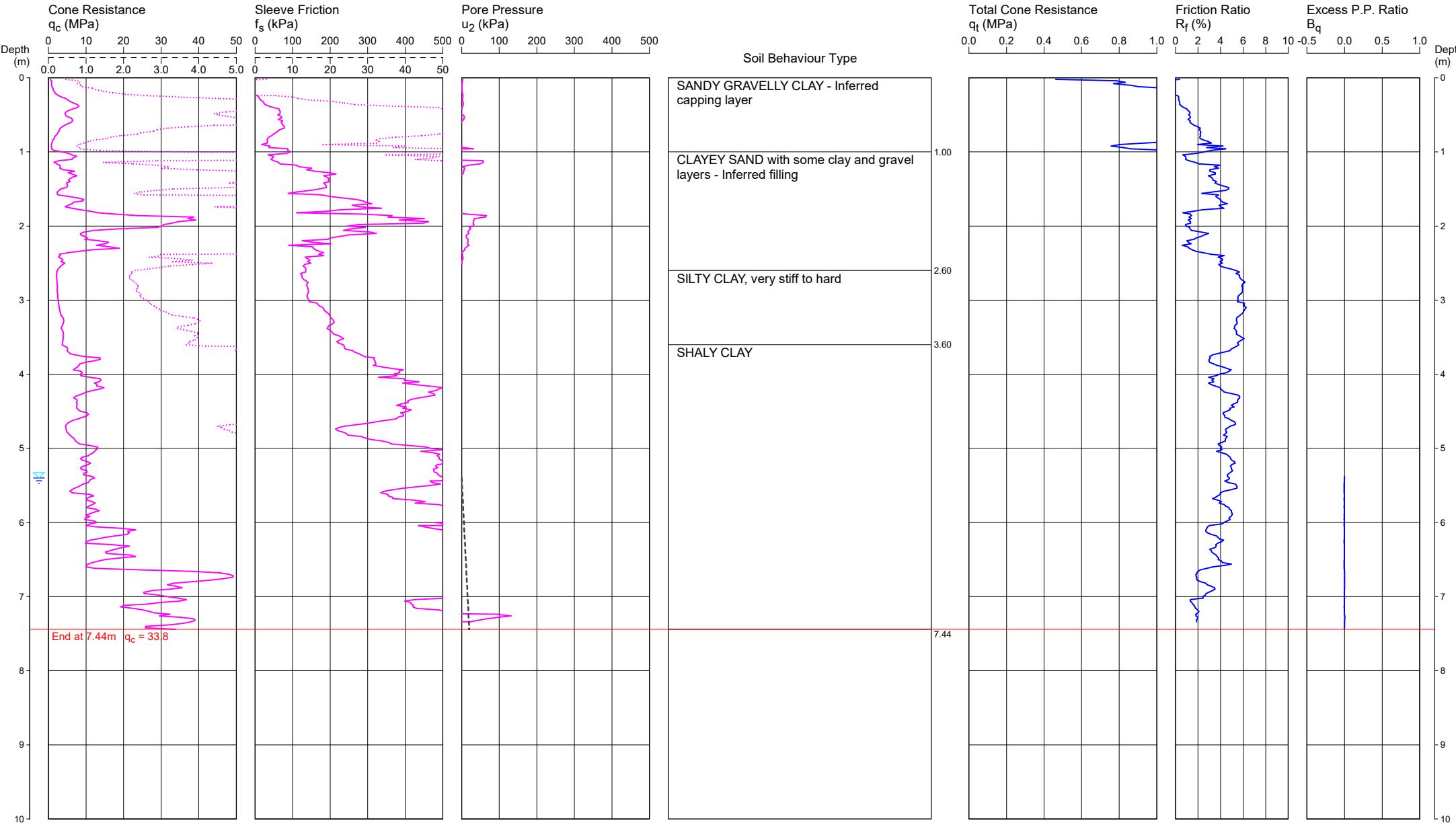
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.8m AHD
COORDINATES: 319738E 6255441N

CPT 12

Page 1 of 1

DATE 24/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING
AT NEAR REFUSAL.

Water depth after test: 5.4 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\12.CP5
Cone ID: 160917 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.9m AHD

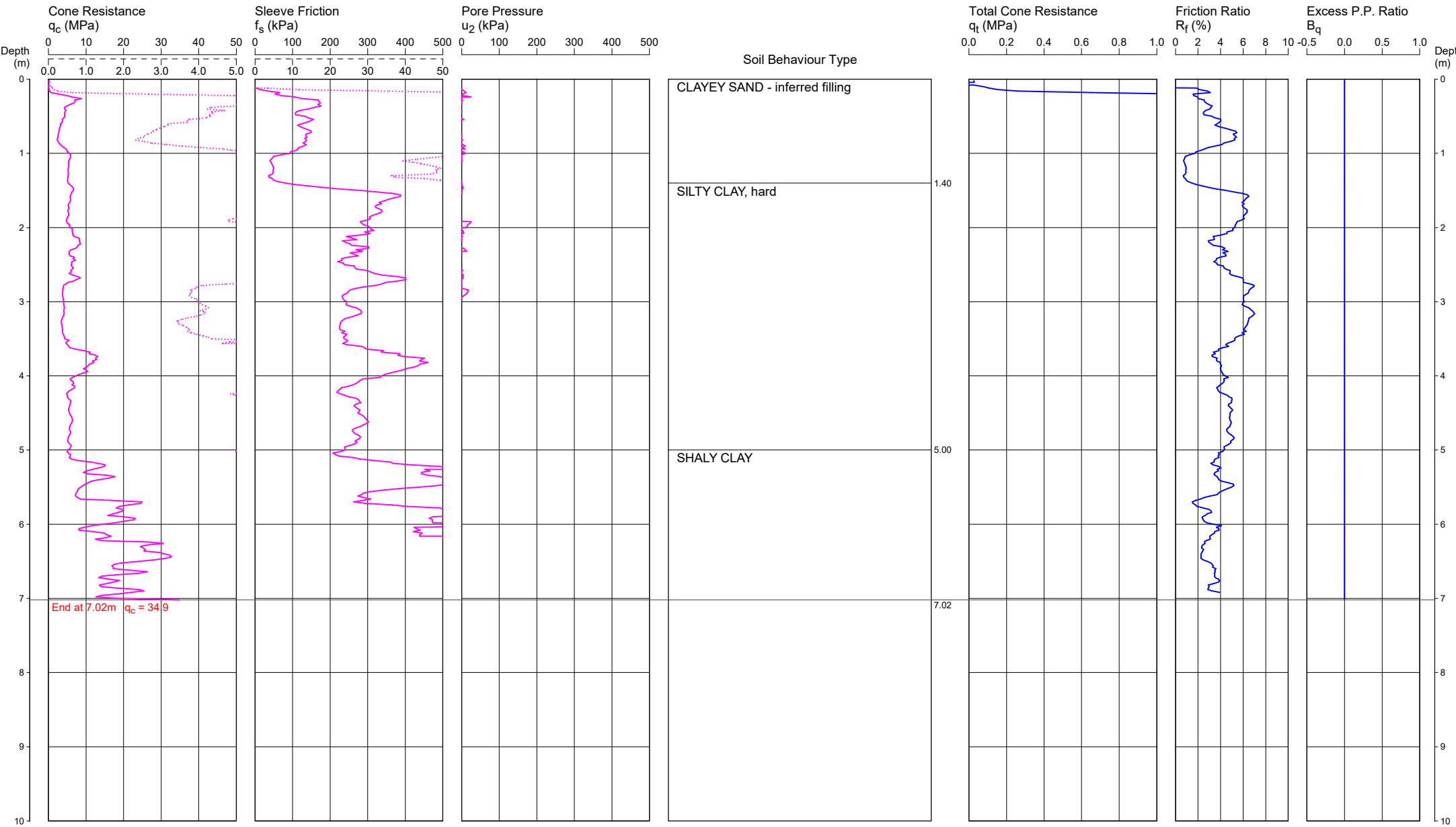
COORDINATES: 319711E 6255388N

CPT 13

Page 1 of 1

DATE 31/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL. HOLE COLLAPSE AT 6.9 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\13.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.5m AHD

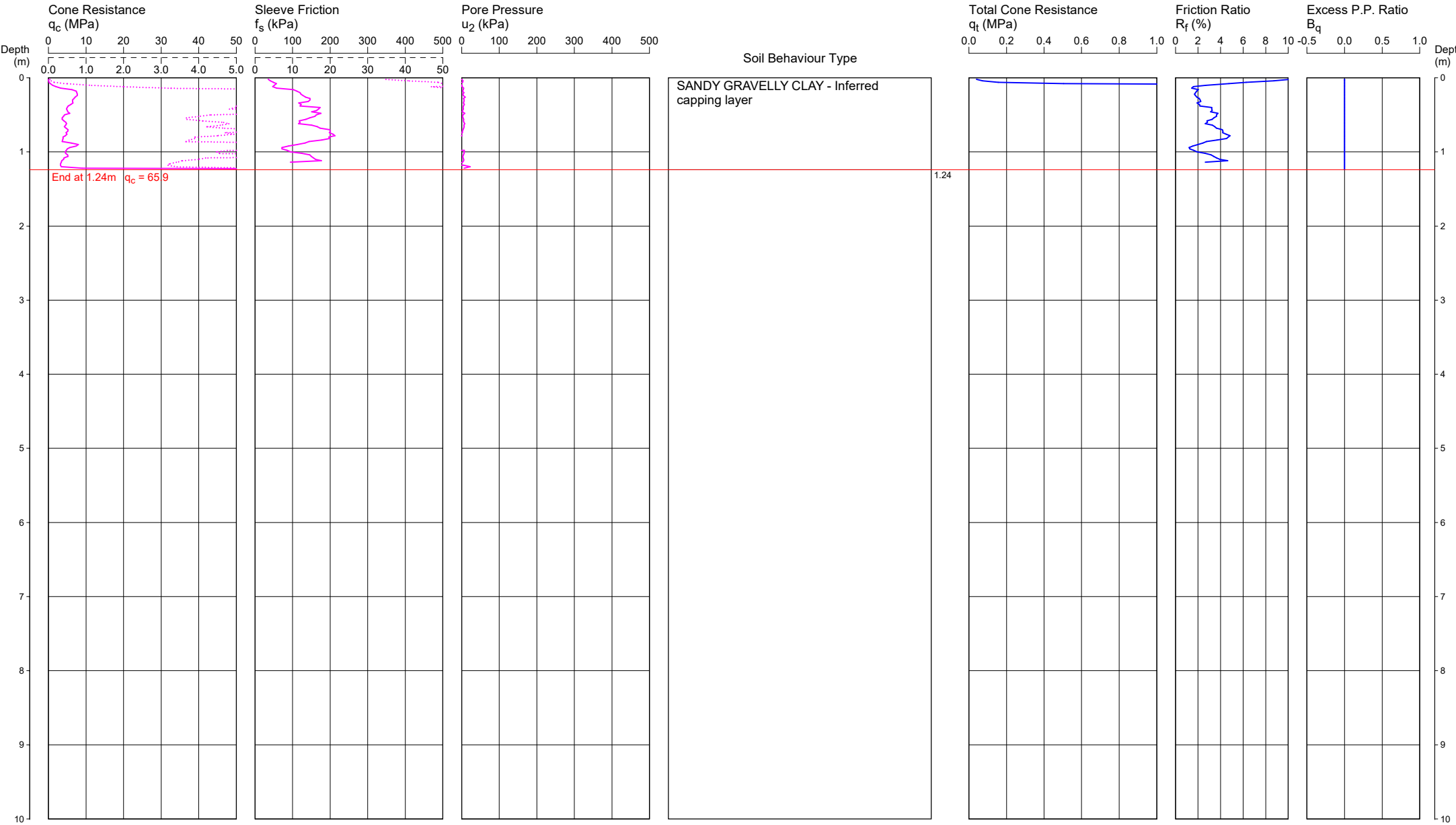
COORDINATES: 319726E 6255411N

CPT 14

Page 1 of 1

DATE 23/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL ON
OBSTRUCTION.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\14.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

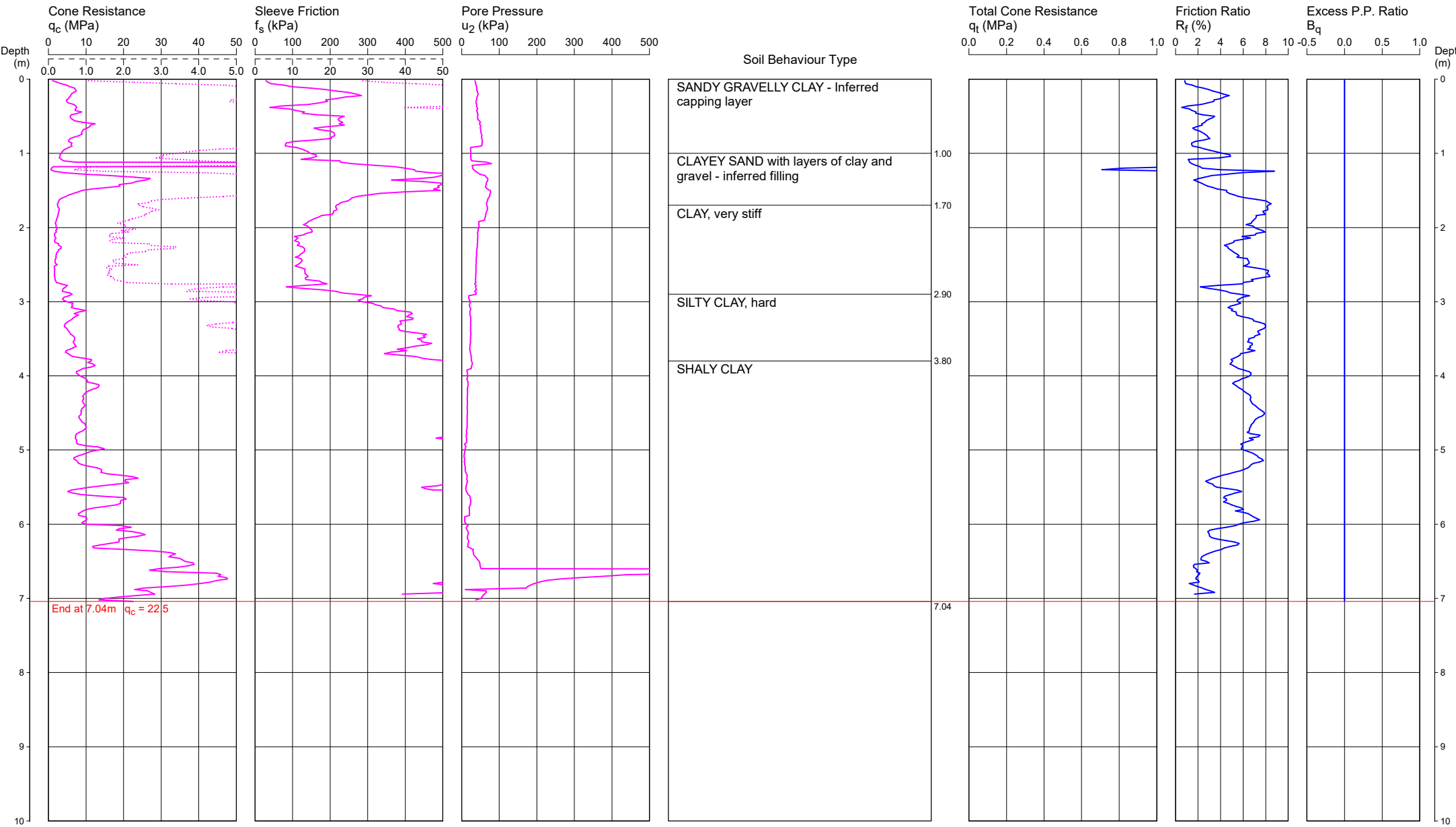
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.5m AHD
COORDINATES: 319726E 6255411N

CPT 14A

Page 1 of 1

DATE 23/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH.DUMMY CONE FROM 1.16 TO 1.4 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO CONE TIP REFUSAL. DRY TO 7 m.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\14A.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.6m AHD

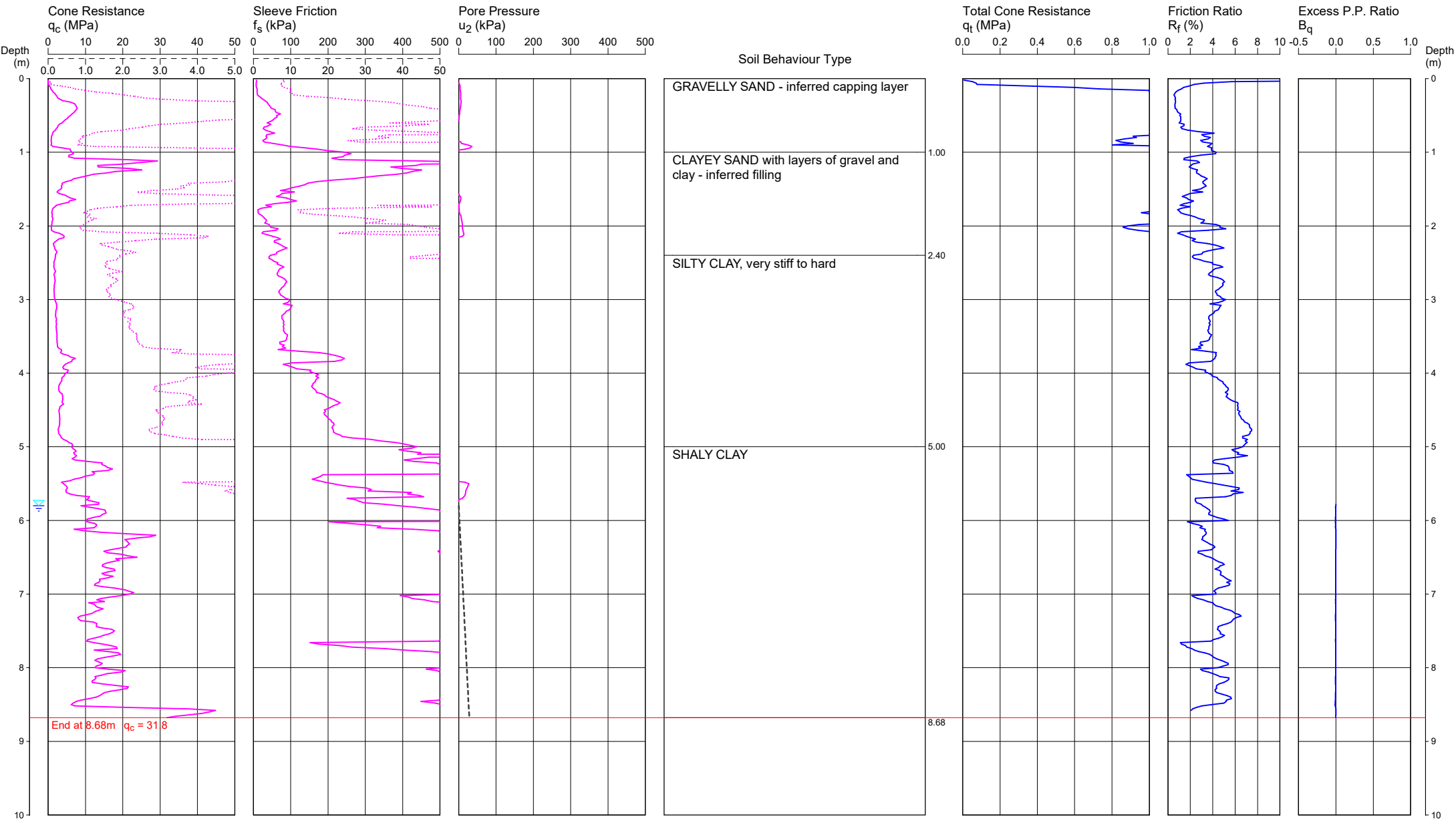
COORDINATES: 319749E 6255424N

CPT 15

Page 1 of 1

DATE 24/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT
NEAR REFUSAL.

Water depth after test: 5.8 m.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\15.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

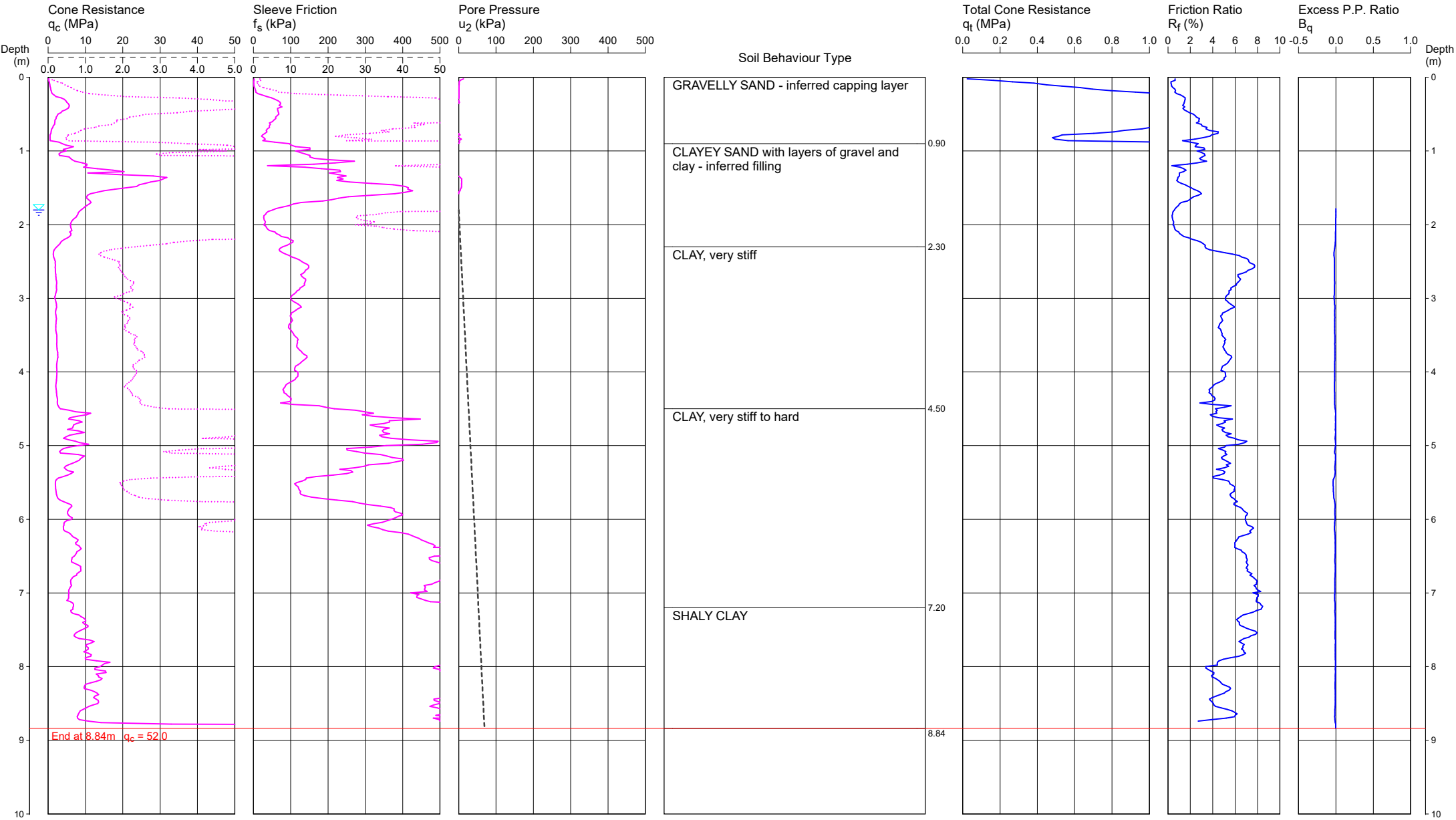
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.6m AHD
COORDINATES: 319765E 6255435N

CPT 16

Page 1 of 1

DATE 24/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.3 m DEPTH.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\16.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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Water depth after test: 1.8 m

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

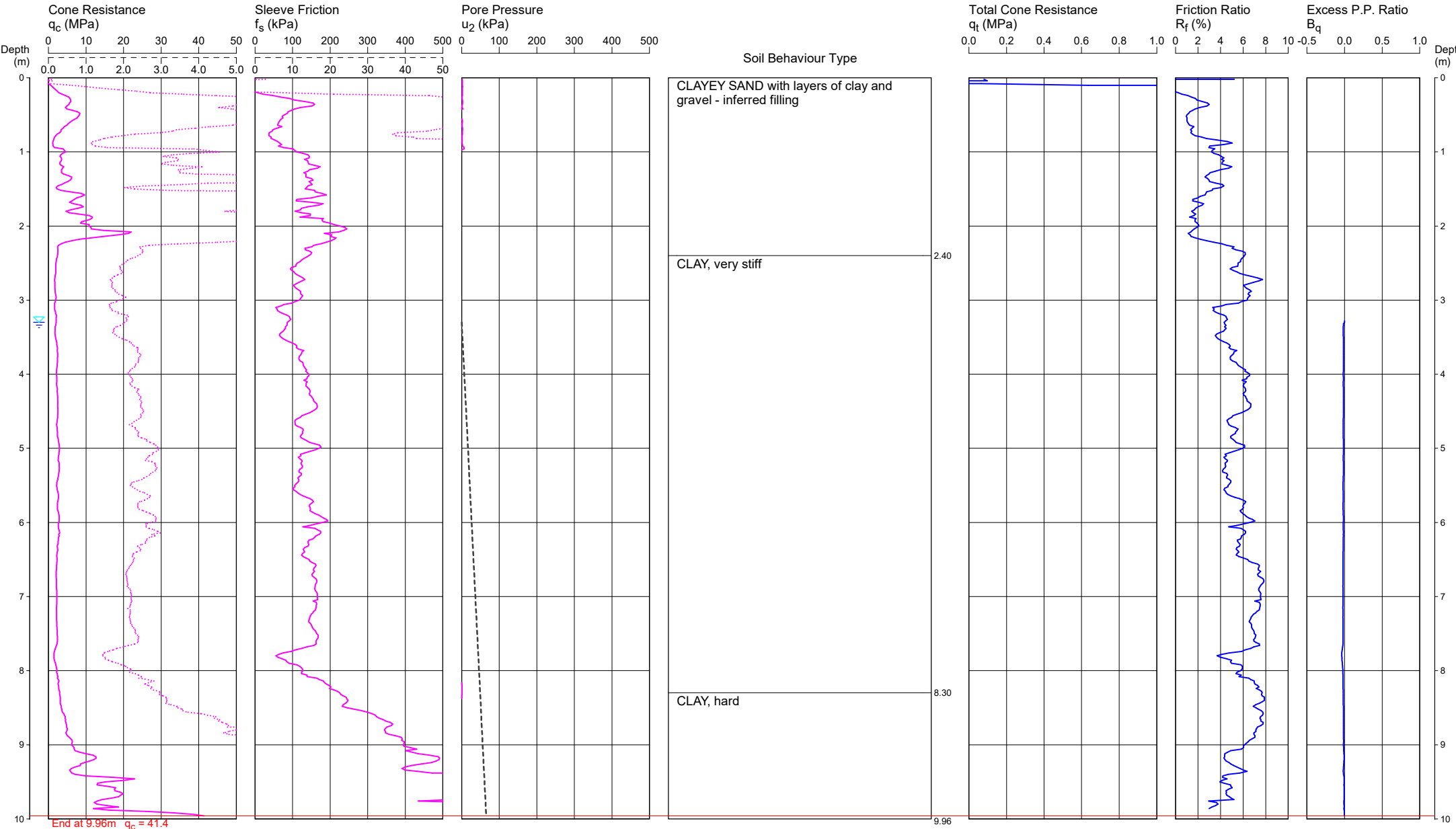
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.4m
COORDINATES: 319797E 6255422N

CPT 17

Page 1 of 1

DATE 25/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\17.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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Water depth after test: 3.3 m

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

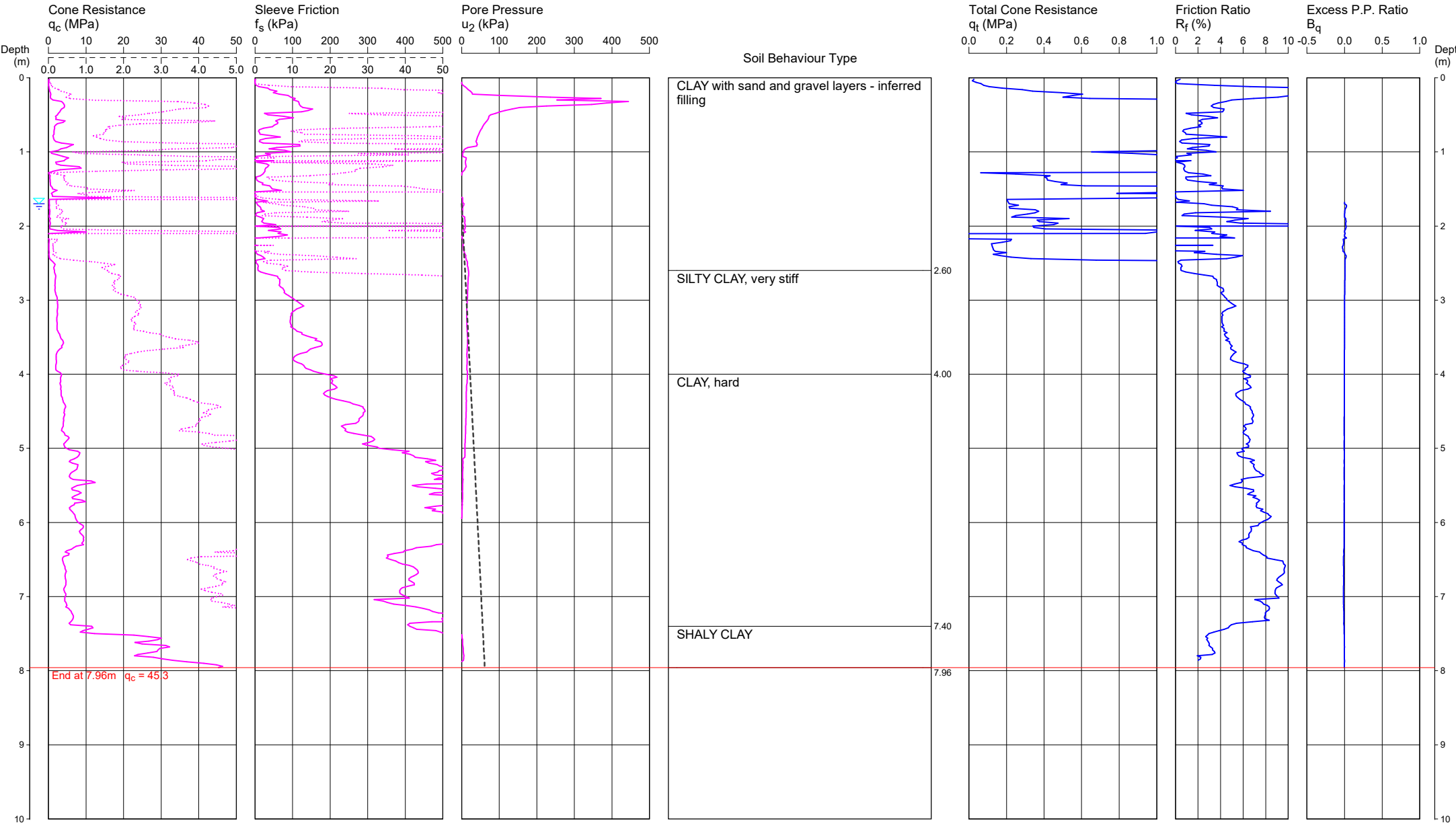
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.8m AHD
COORDINATES: 319726E 6255384N

CPT 18

Page 1 of 1

DATE 30/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.62 TO 2.0 & 2.08 TO 2.5 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL.

Water depth after test: 1.7 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\18.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.5m AHD

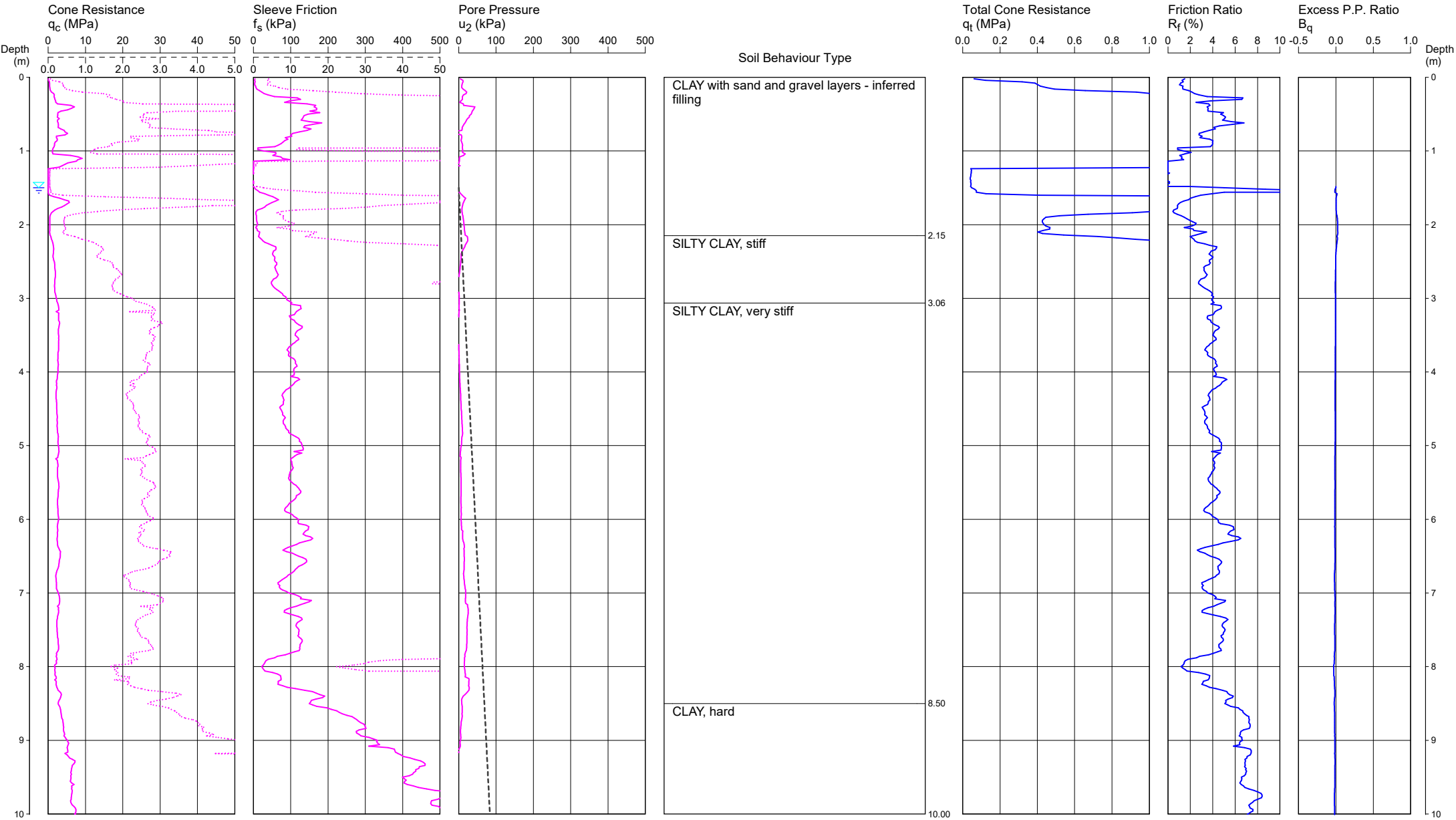
COORDINATES: 319779E 6255371N

CPT 19

Page 1 of 2

DATE 30/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.22 TO 1.6 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

Water depth after test: 1.5 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\19.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

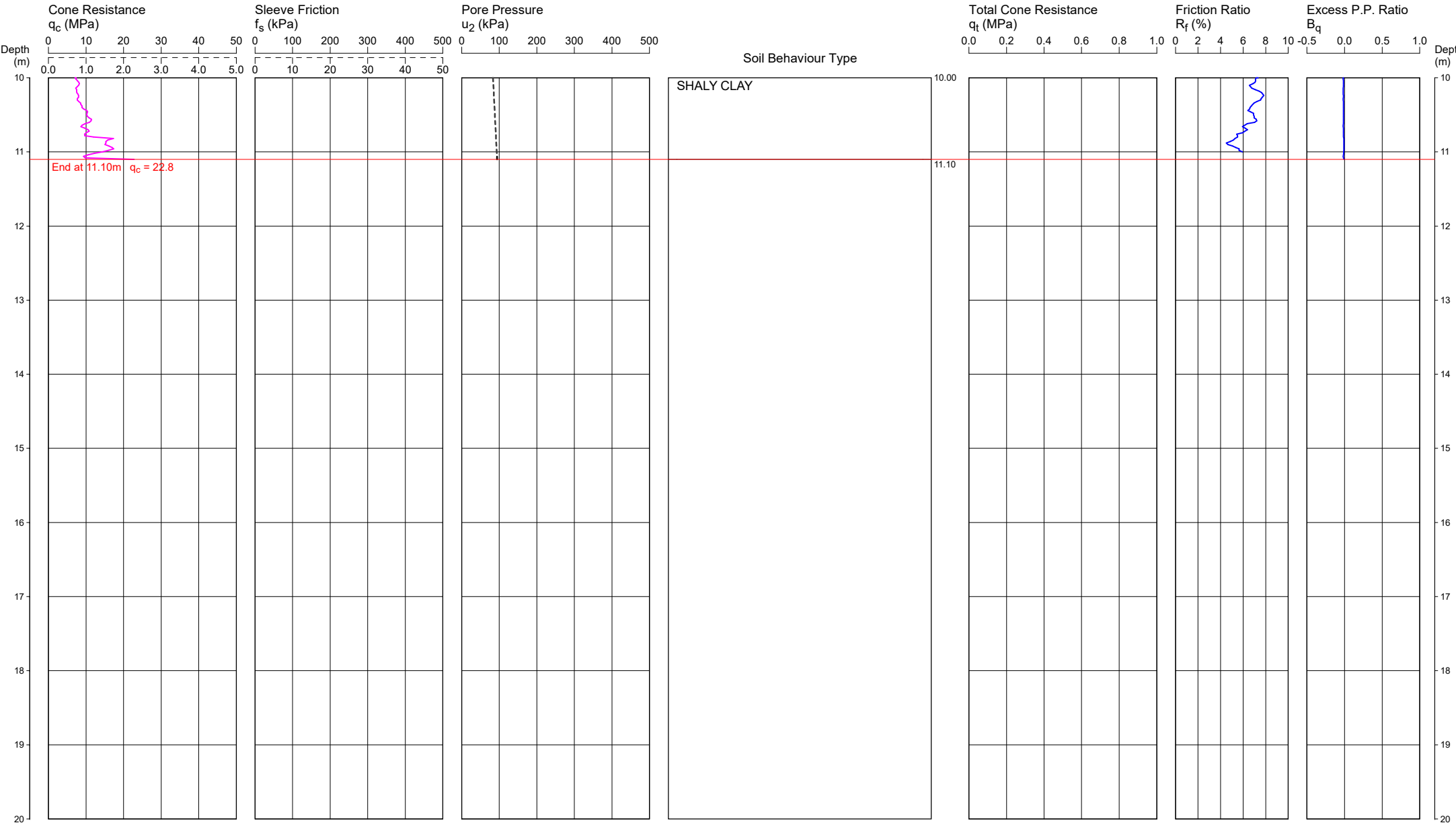
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.5m AHD
COORDINATES: 319779E 6255371N

CPT 19

Page 2 of 2

DATE 30/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.22 TO 1.6 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

Water depth after test: 1.5 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\19.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 2.8m AHD

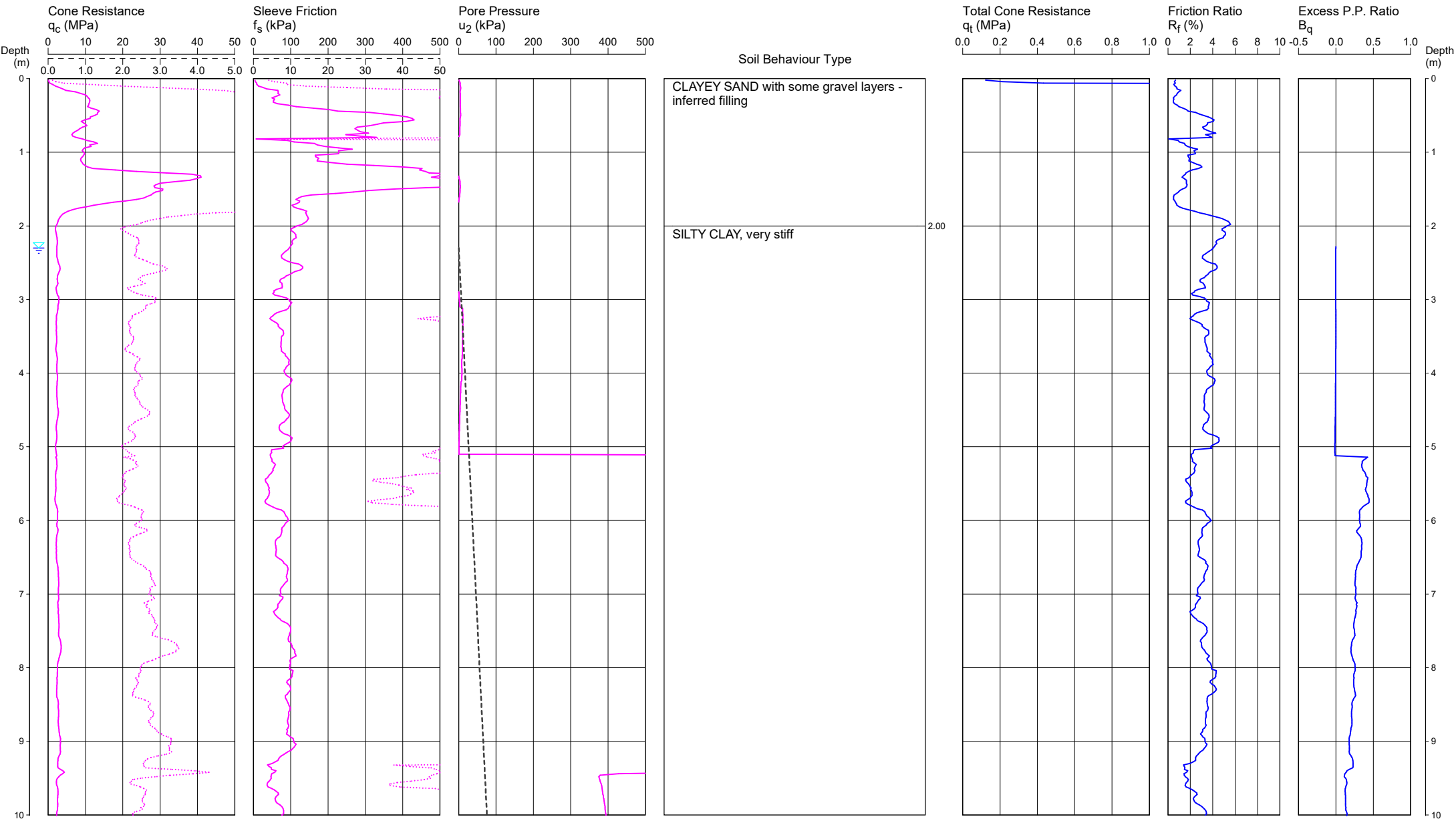
COORDINATES: 319835E 6255382N

CPT 20

Page 1 of 2

DATE 31/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL. GROUNDWATER OBSERVED AT 2.3 m AFTER WITHDRAWAL OF RODS.

Water depth after test: 2.3 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\20.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

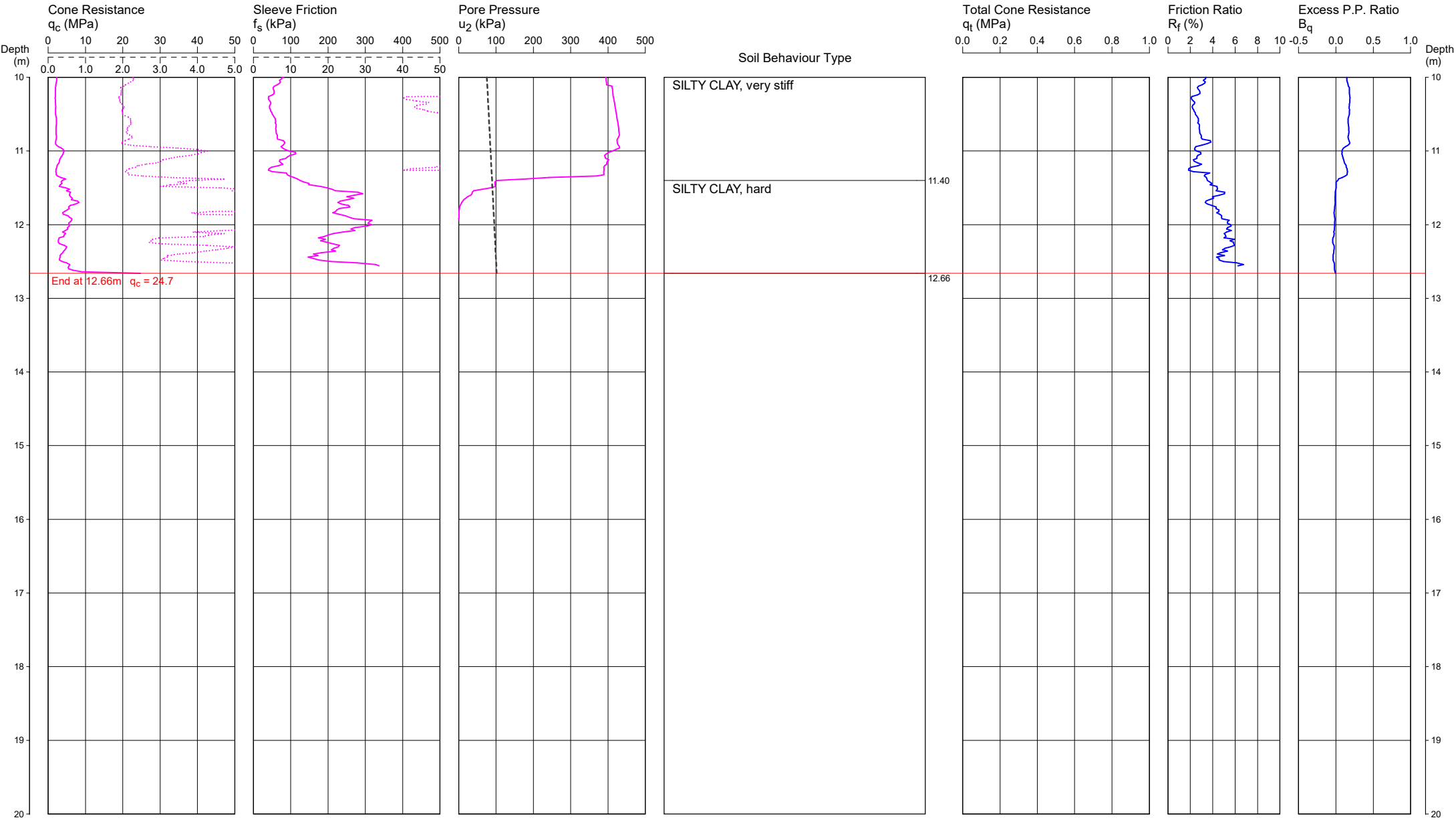
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 2.8m AHD
COORDINATES: 319835E 6255382N

CPT 20

Page 2 of 2

DATE 31/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL. GROUNDWATER OBSERVED AT 2.3 m AFTER WITHDRAWAL OF RODS.

Water depth after test: 2.3 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\20.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 2.2m AHD

COORDINATES: 319862E 6255348N

CPT 21

Page 1 of 1

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.32 TO 0.5 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO DUMMY CONE REFUSAL ON OBSTRUCTION.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\21.cpt
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 2.4m AHD

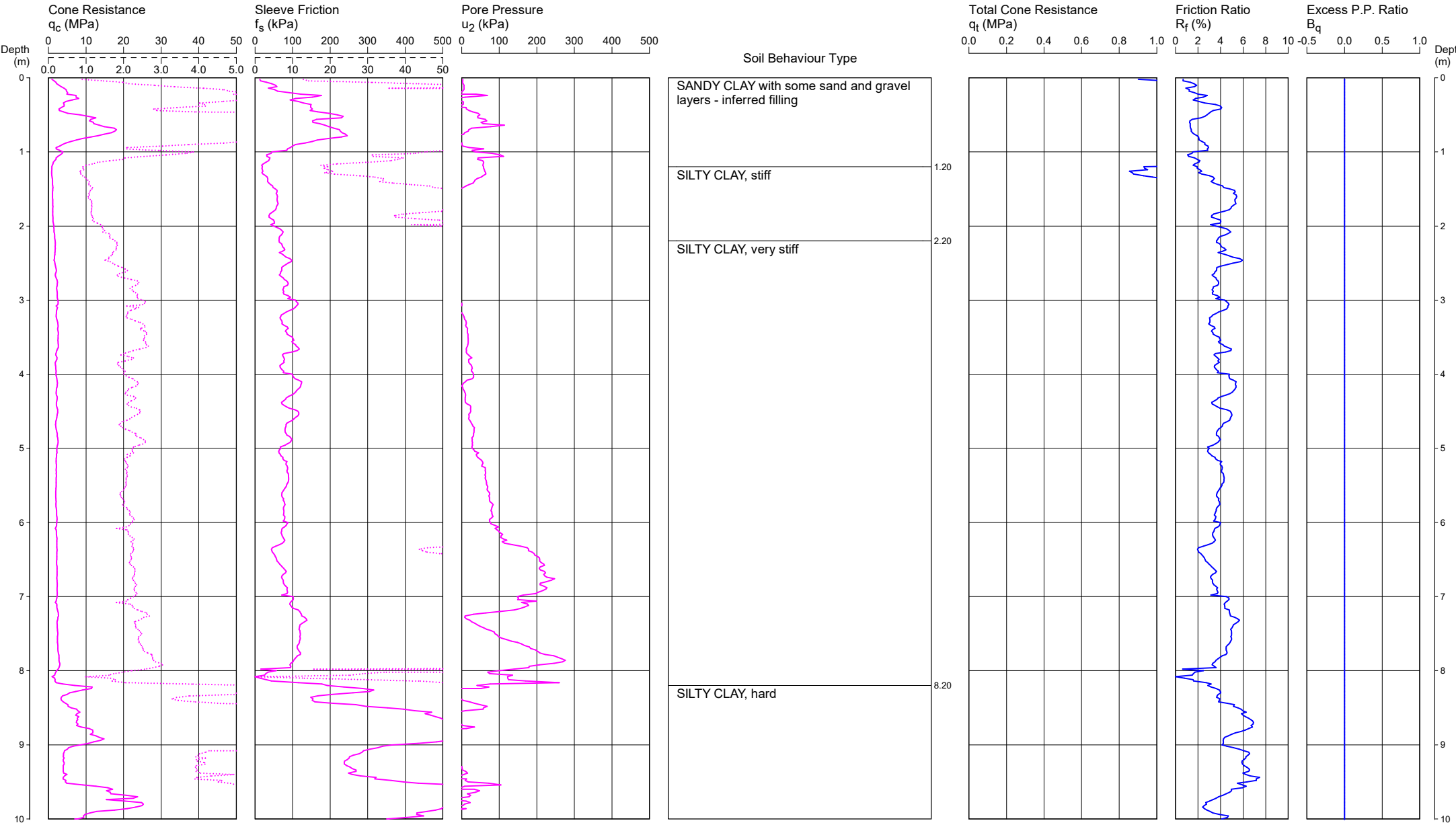
COORDINATES: 319874E 6255356N

CPT 22

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DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. TEST DISCONTINUED DUE TO CONE TIP REFUSAL.
HOLE COLLAPSE AT 1.0 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\22.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 2.4m AHD

COORDINATES: 319874E 6255356N

CPT 22

Page 2 of 2

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. TEST DISCONTINUED DUE TO CONE TIP REFUSAL.
HOLE COLLAPSE AT 1.0 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\22.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.0m

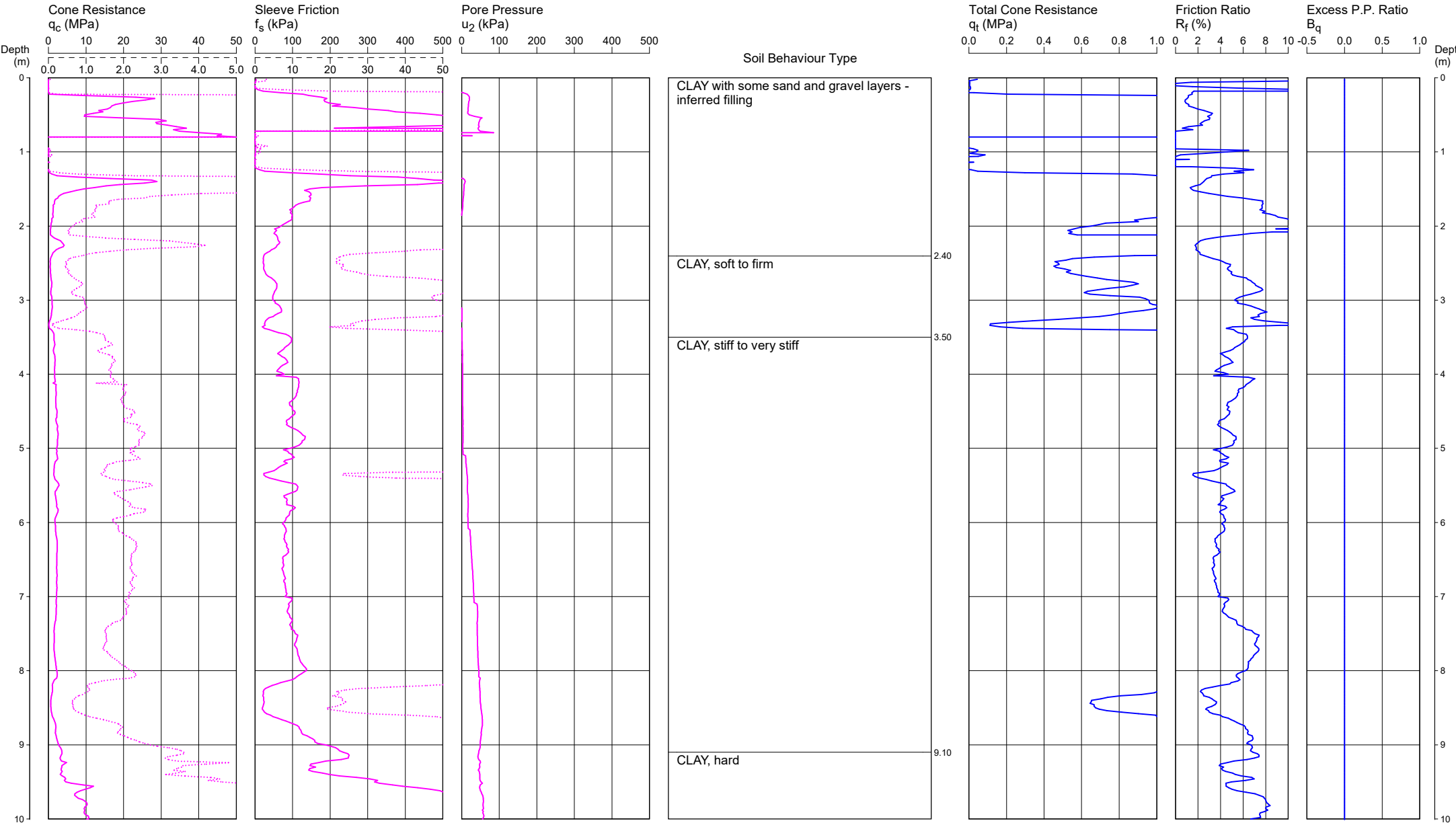
COORDINATES: 319902E 6255361N

CPT 23

Page 1 of 2

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: DUMMY CONE FROM 0.00 TO 0.30 m & 0.8 TO 1.4 DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.
HOLE COLLAPSE AT 2.2 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\23.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

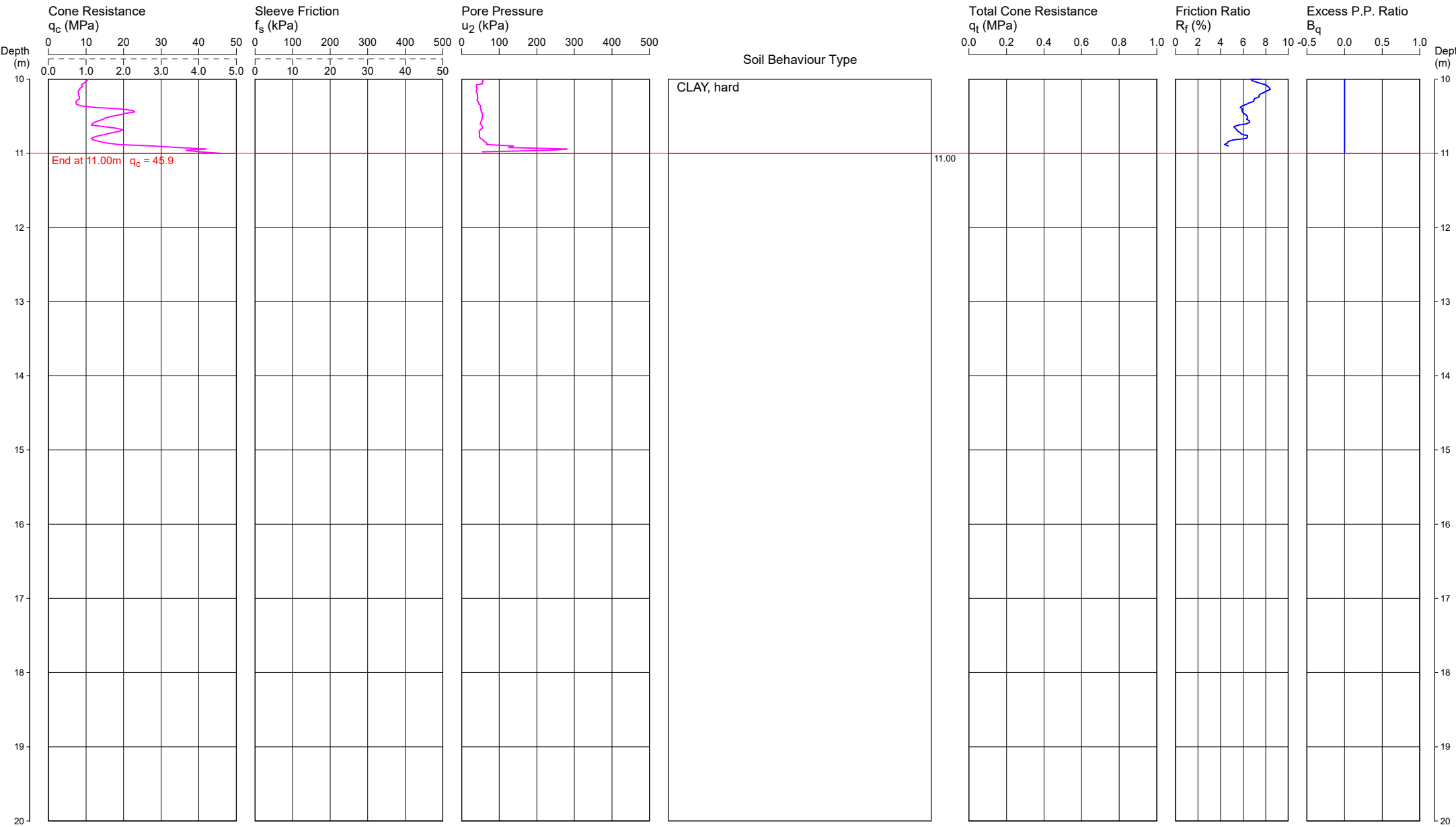
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.0m
COORDINATES: 319902E 6255361N

CPT 23

Page 2 of 2

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: DUMMY CONE FROM 0.00 TO 0.30 m & 0.8 TO 1.4 DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.
HOLE COLLAPSE AT 2.2 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\23.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

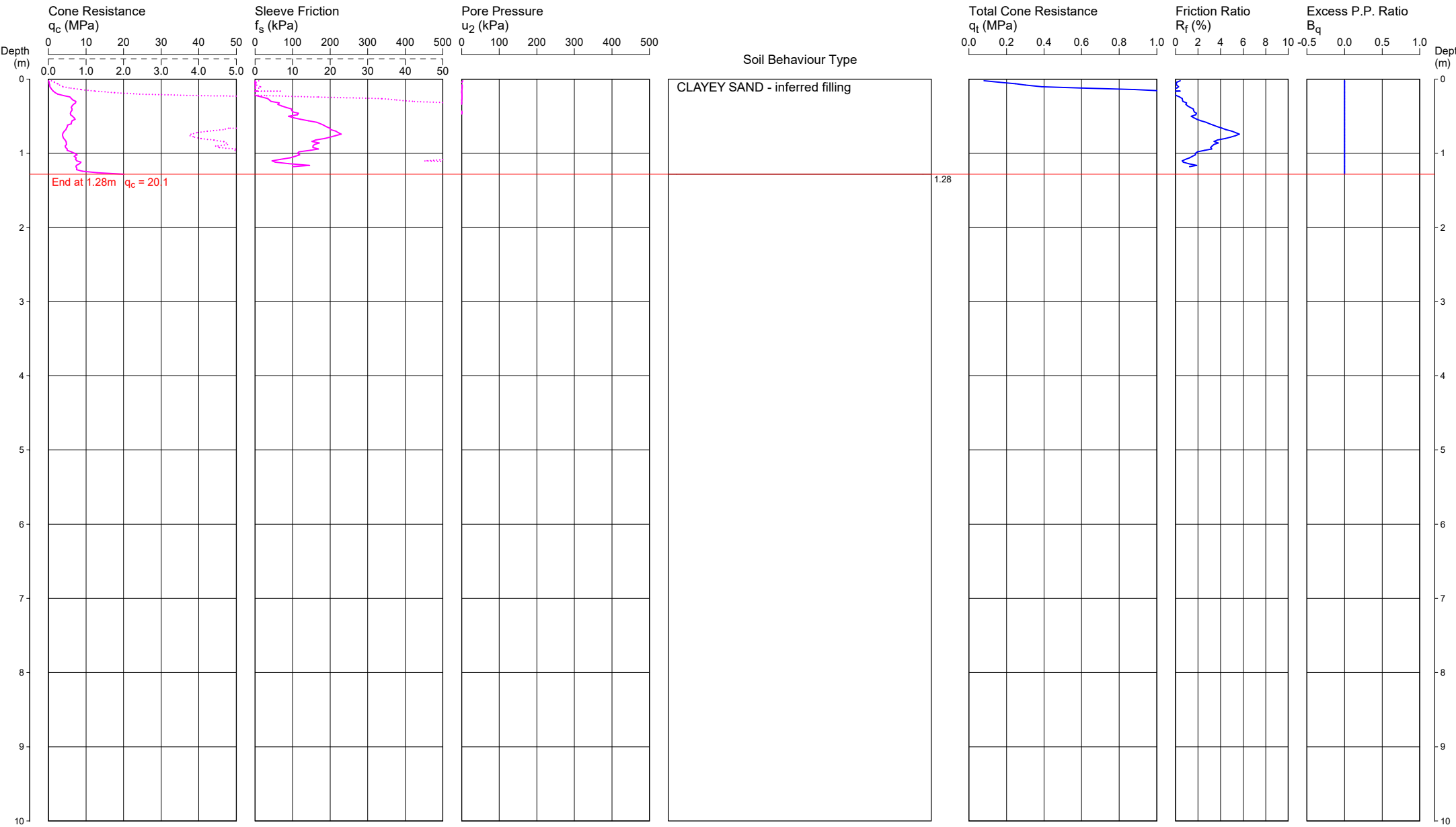
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.2m AHD
COORDINATES: 319912E 6255381N

CPT 24

Page 1 of 1

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.3 m. DUMMY CONE FROM 1.28 TO 1.3 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO DUMMY CONE REFUSAL ON OBSTRUCTION.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\24.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

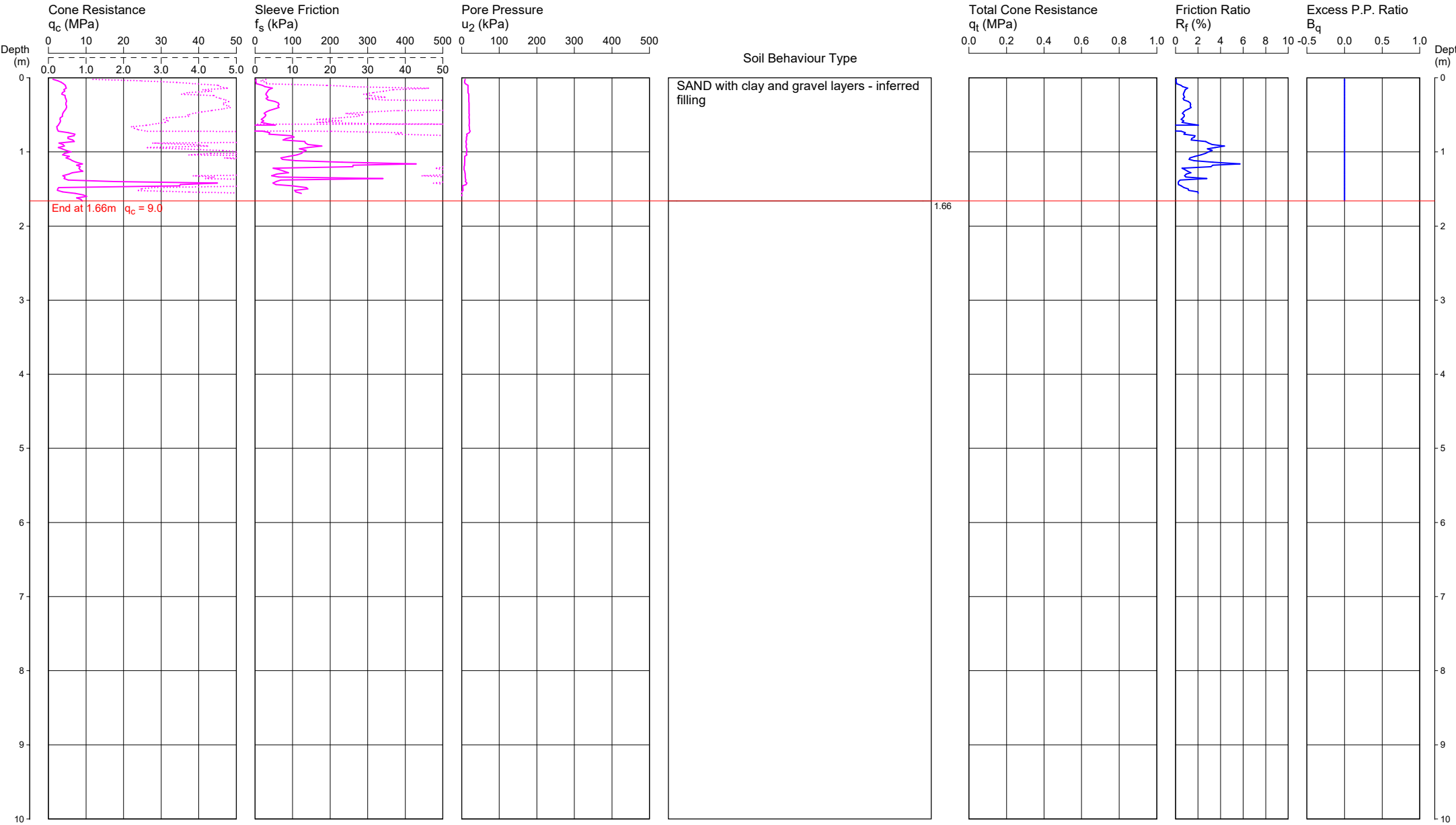
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 4.2m AHD
COORDINATES: 319909E 6255339N

CPT 25

Page 1 of 1

DATE 26/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.46 TO 1.8 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING IN THE DUMMY HOLE.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\25.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

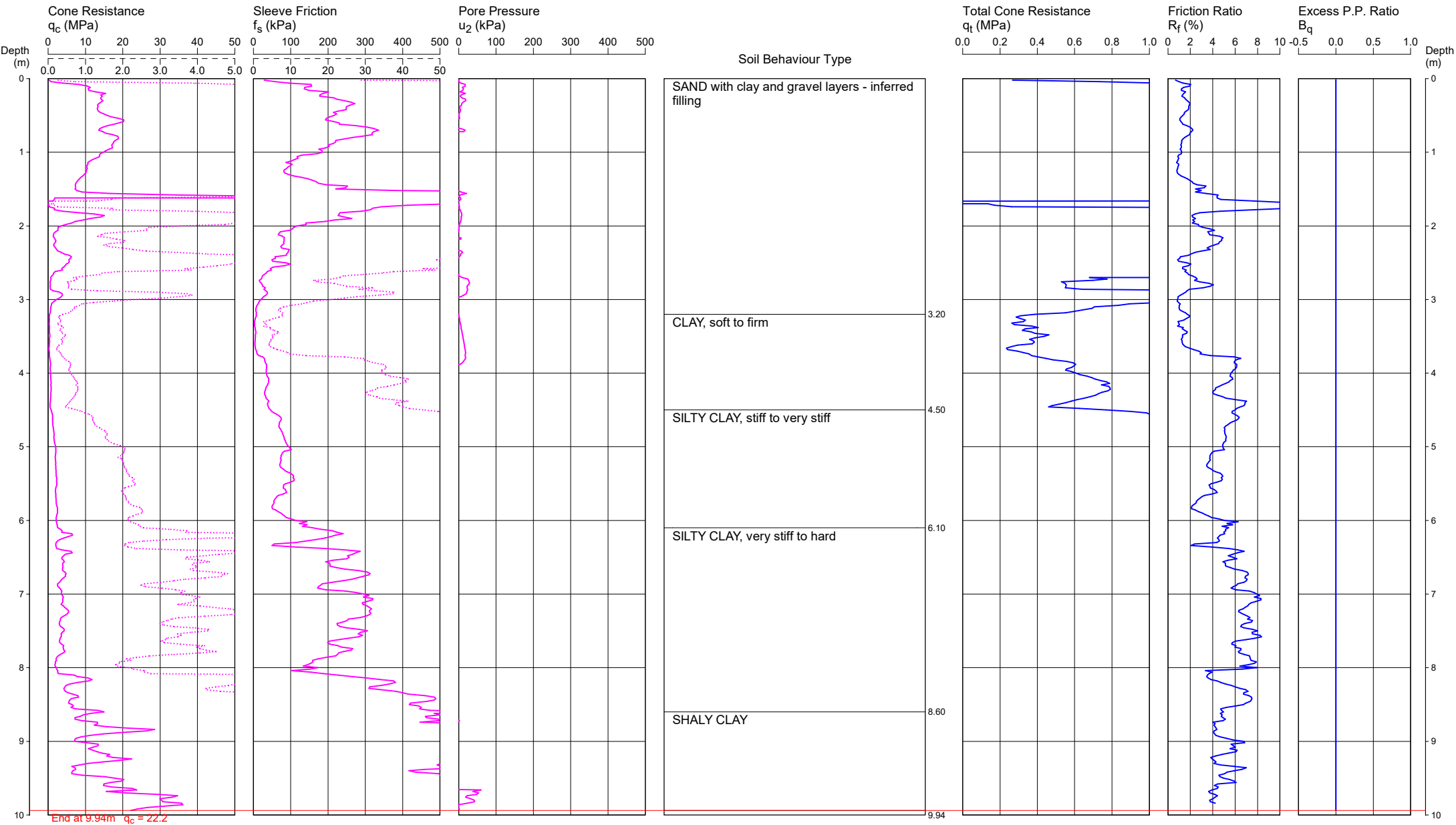
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.4m AHD
COORDINATES: 319936E 6255334N

CPT 26

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DATE 26/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.6 TO 1.9 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.
HOLE COLLAPSE AT 0.0 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\26.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.9m AHD

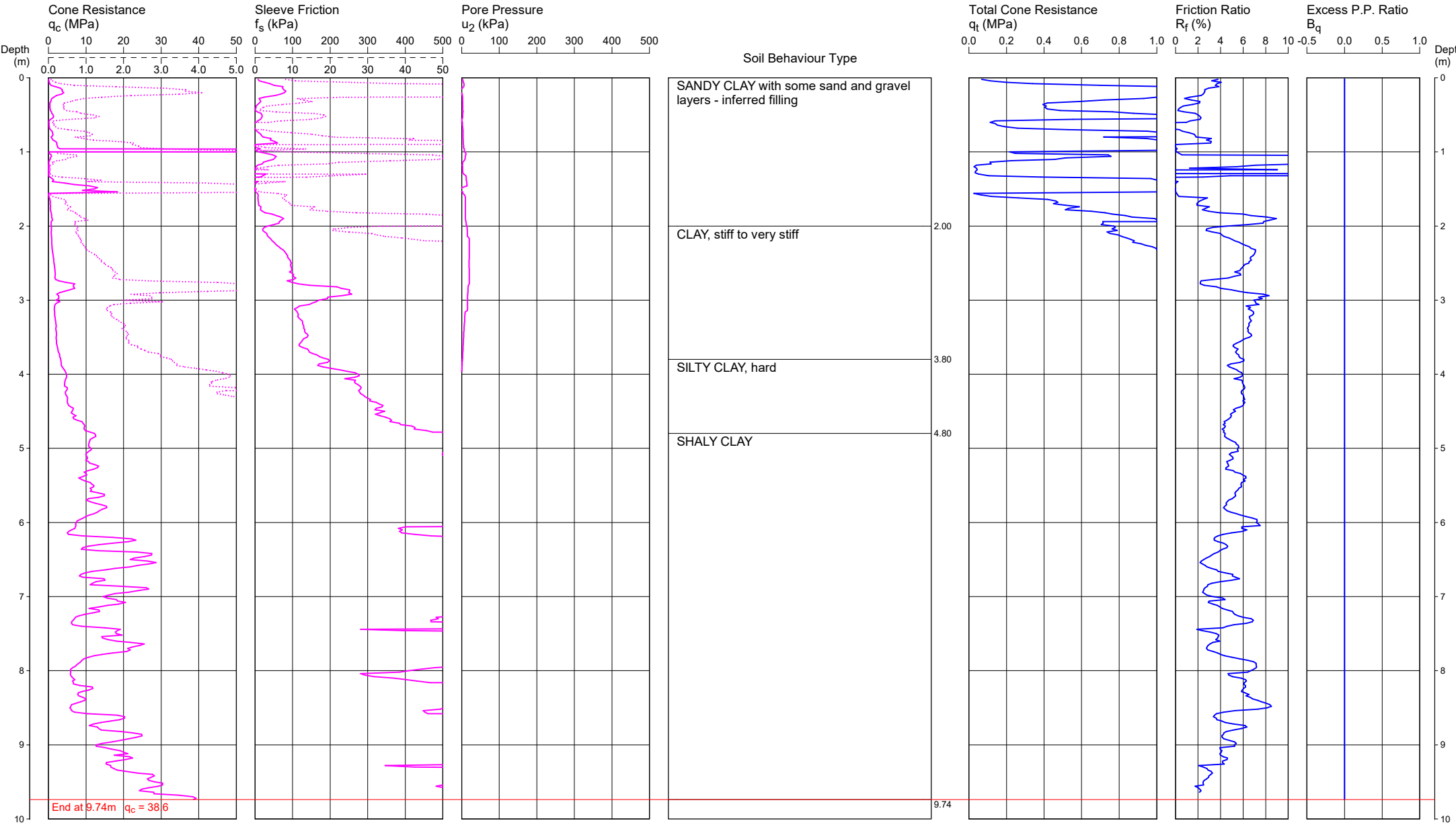
COORDINATES: 319710E 6255359N

CPT 27

Page 1 of 1

DATE 30/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.98 TO 1.4 & 1.54 TO 2.0 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL. HOLE COLLAPSE AT 1.8 m AFTER WITHDRAWAL OF RODS.

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

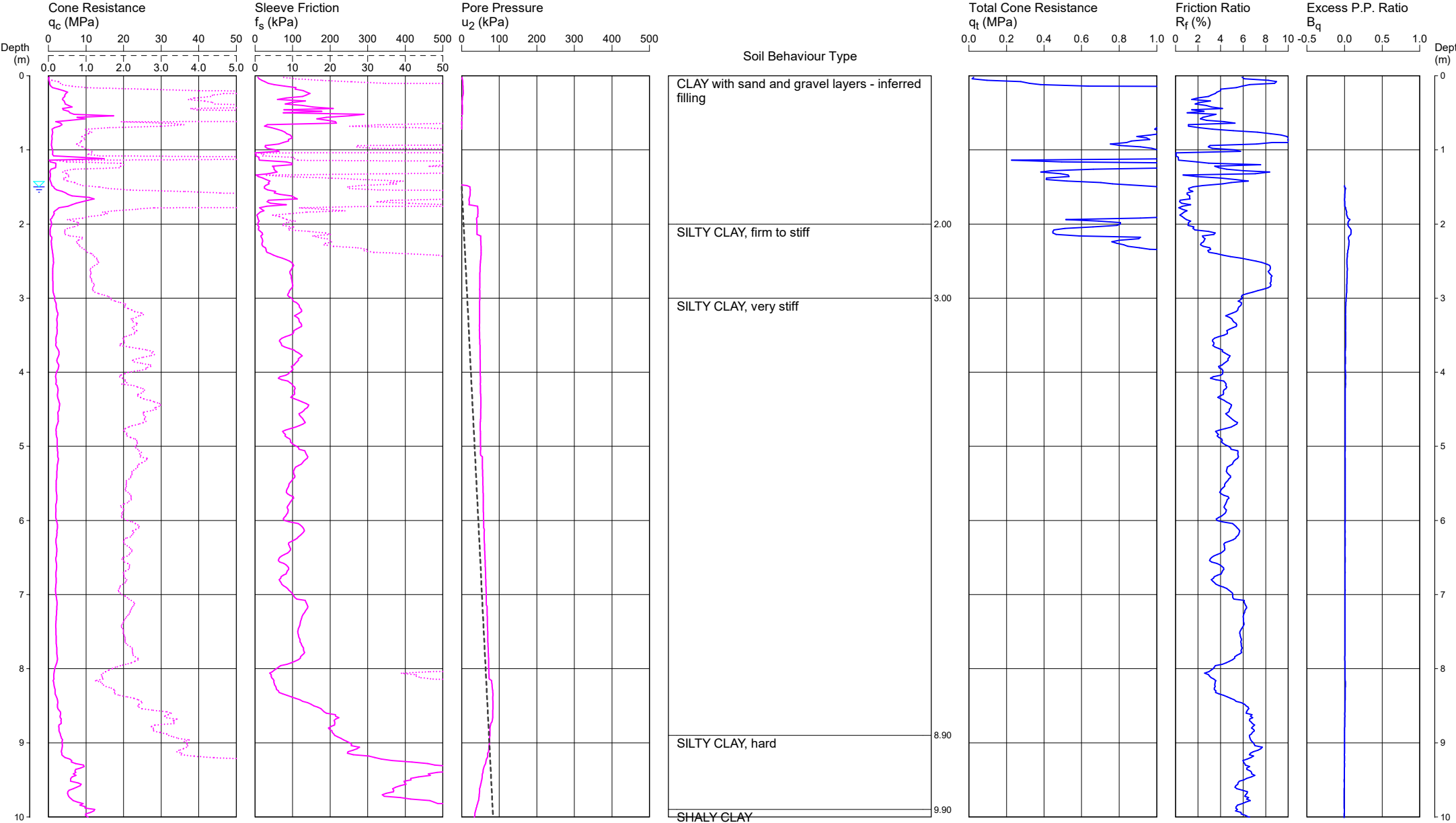
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.6m AHD
COORDINATES: 319771E 6255350N

CPT 28

Page 1 of 2

DATE 30/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.12 TO 1.50 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL.

Water depth after test: 1.5 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\28.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

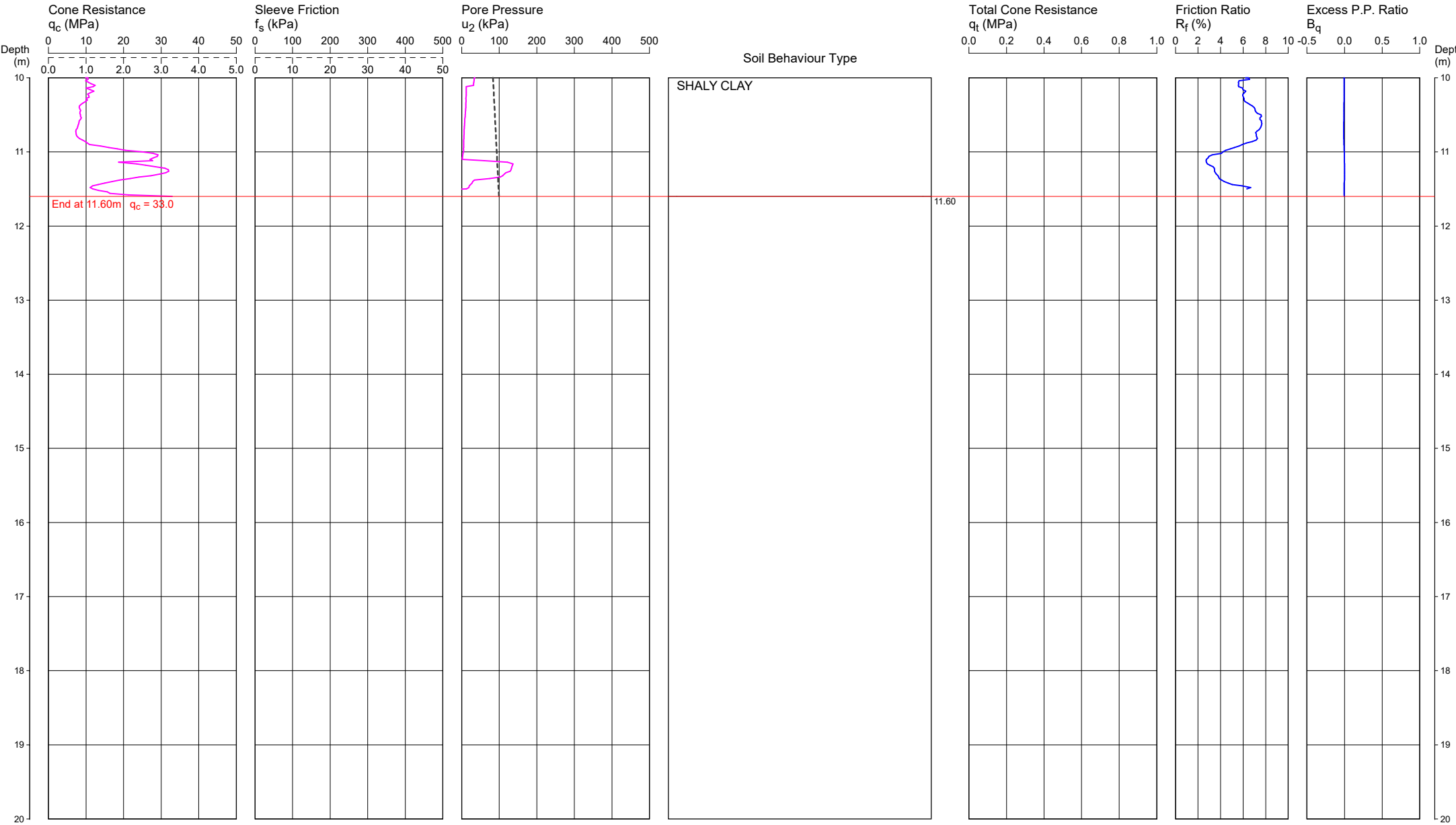
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.6m AHD
COORDINATES: 319771E 6255350N

CPT 28

Page 2 of 2

DATE 30/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.12 TO 1.50 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL.

Water depth after test: 1.5 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\28.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.2m AHD

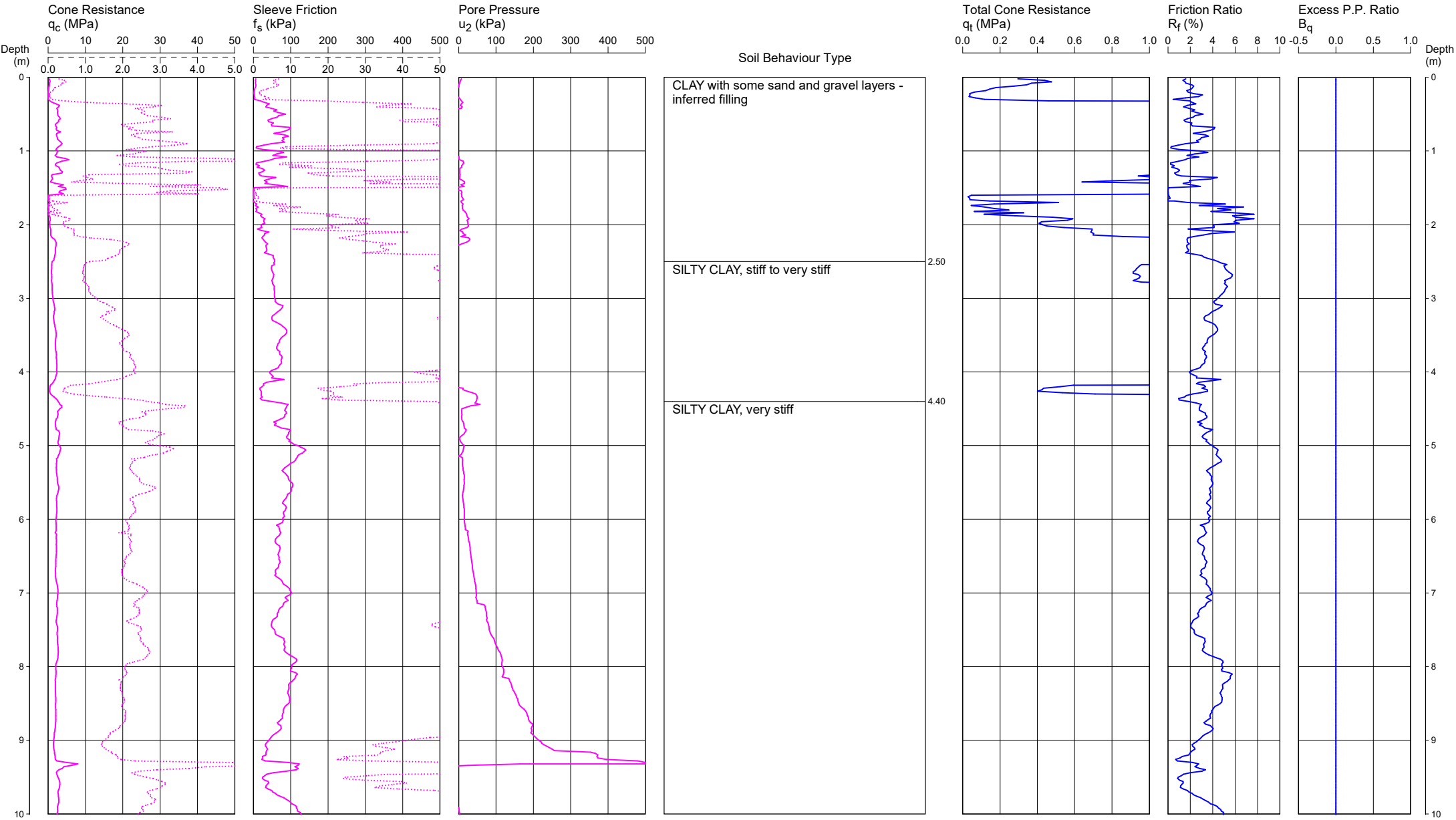
COORDINATES: 319836E 6255336N

CPT 29

Page 1 of 2

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.58 TO 2.20 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL. HOLE COLLAPSE AT 1.3 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\29.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

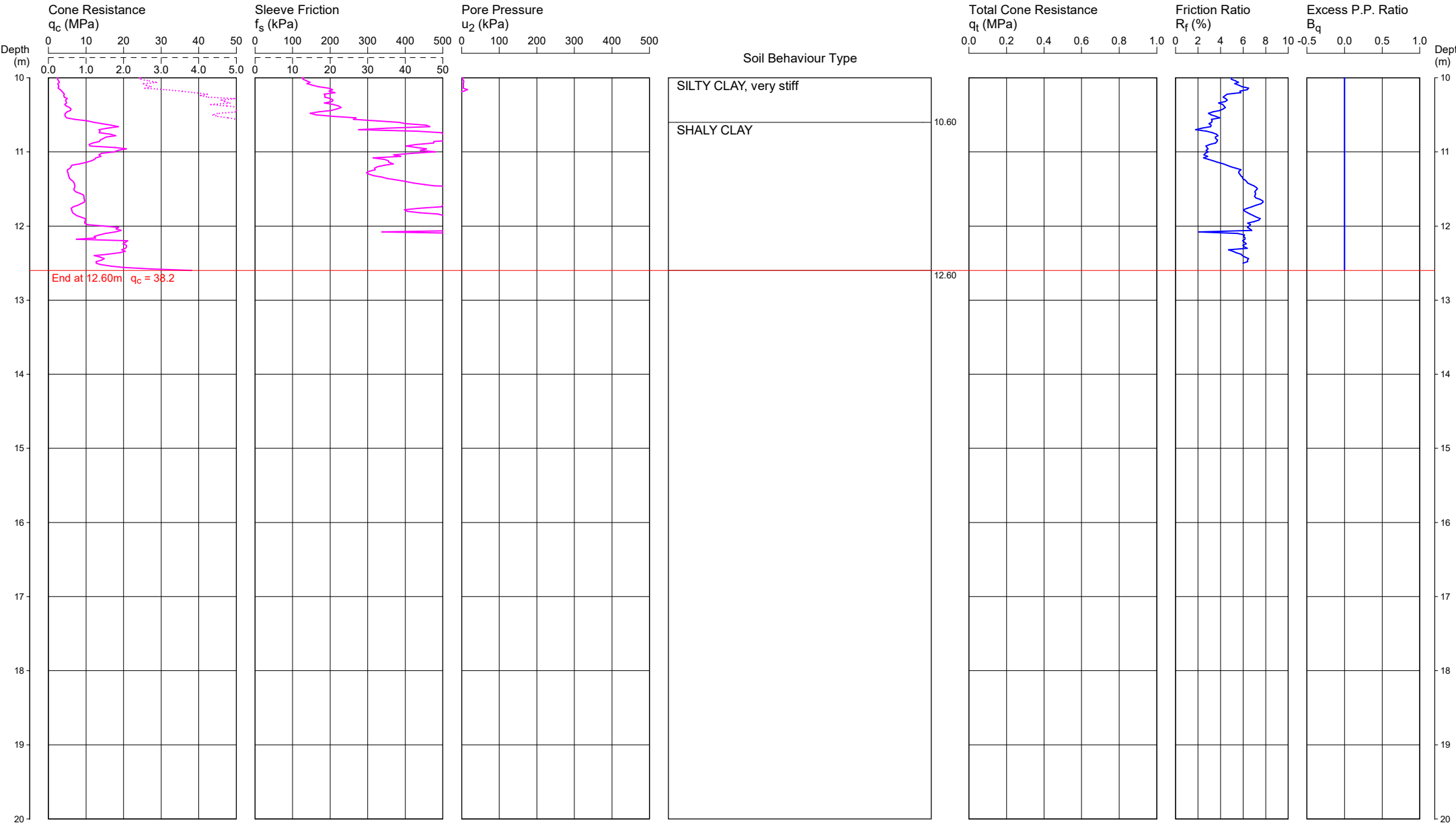
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.2m AHD
COORDINATES: 319836E 6255336N

CPT 29

Page 2 of 2

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.58 TO 2.20 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL. HOLE COLLAPSE AT 1.3 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\29.CP5
Cone ID: 171006 Type: I-CFXYP20-10
ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 2.5m AHD

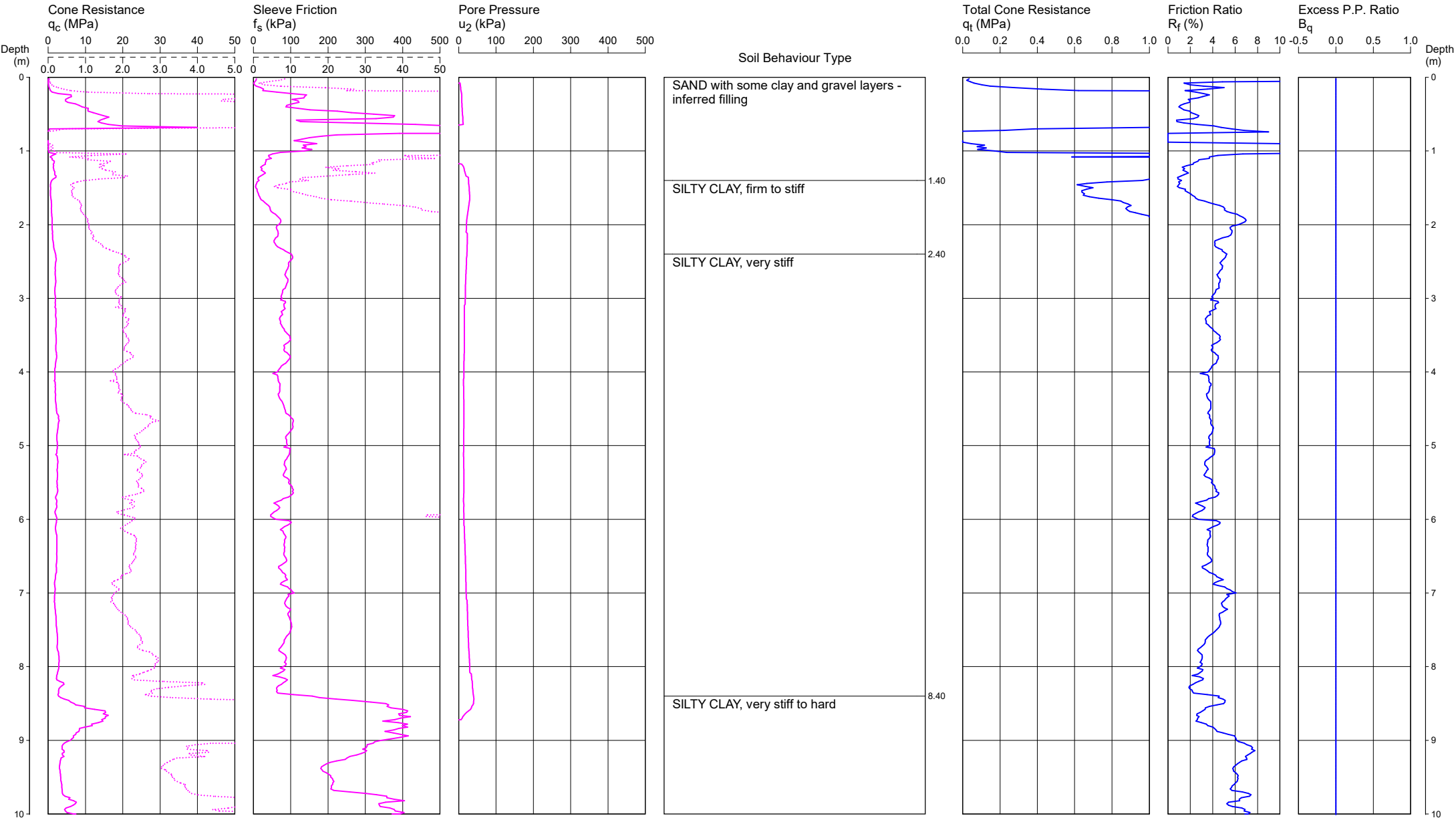
COORDINATES: 319848E 6255320N

CPT 30

Page 1 of 2

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.68 TO 1.3 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL.HOLE COLLAPSE AT 0.6 m AFTER WITHDRAWAL OF RODS.

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

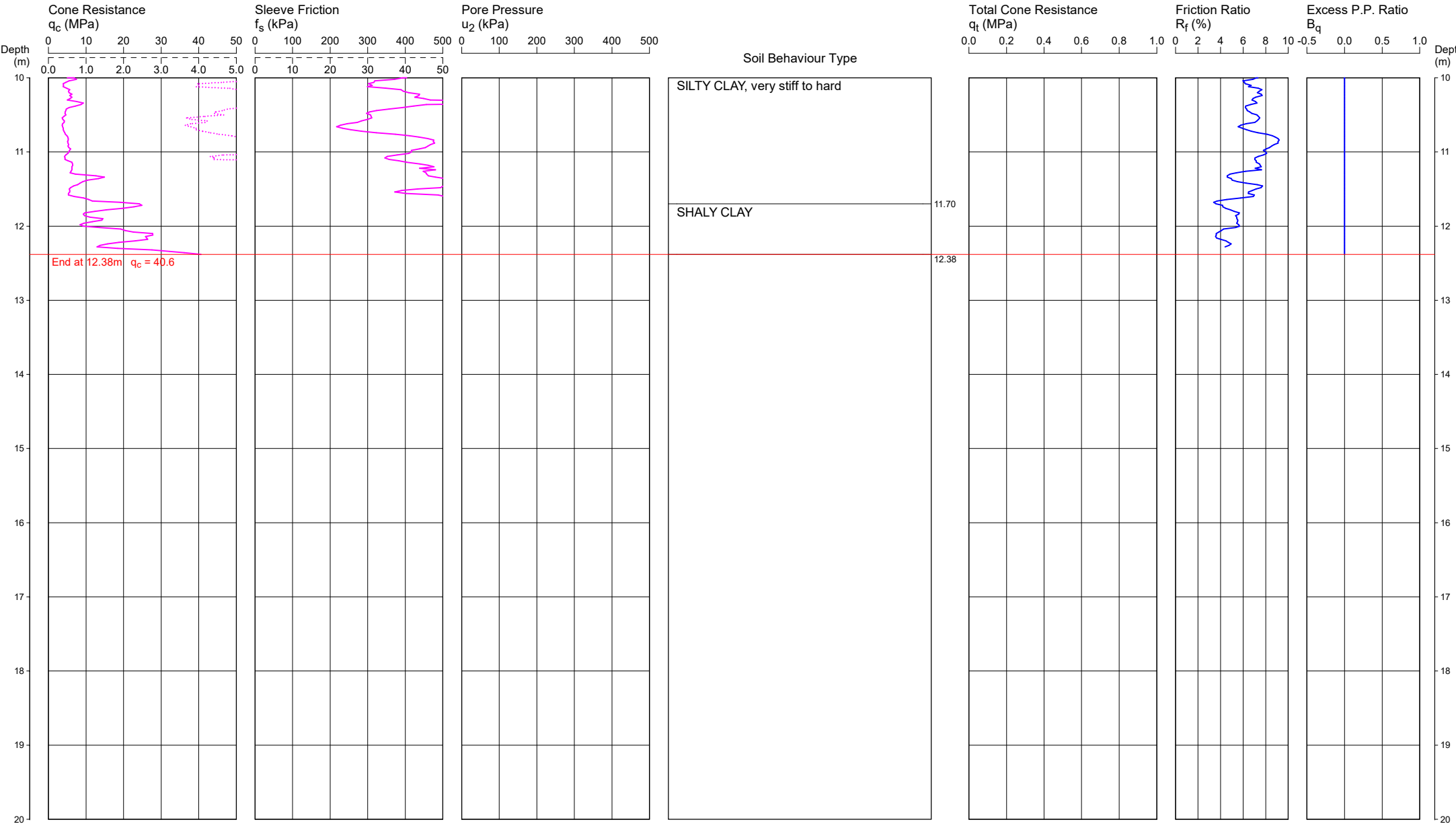
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 2.5m AHD
COORDINATES: 319848E 6255320N

CPT 30

Page 2 of 2

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.68 TO 1.3 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL.HOLE COLLAPSE AT 0.6 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\30.CP5
Cone ID: 120539 Type: I-CFXYP20-10
ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.1m AHD

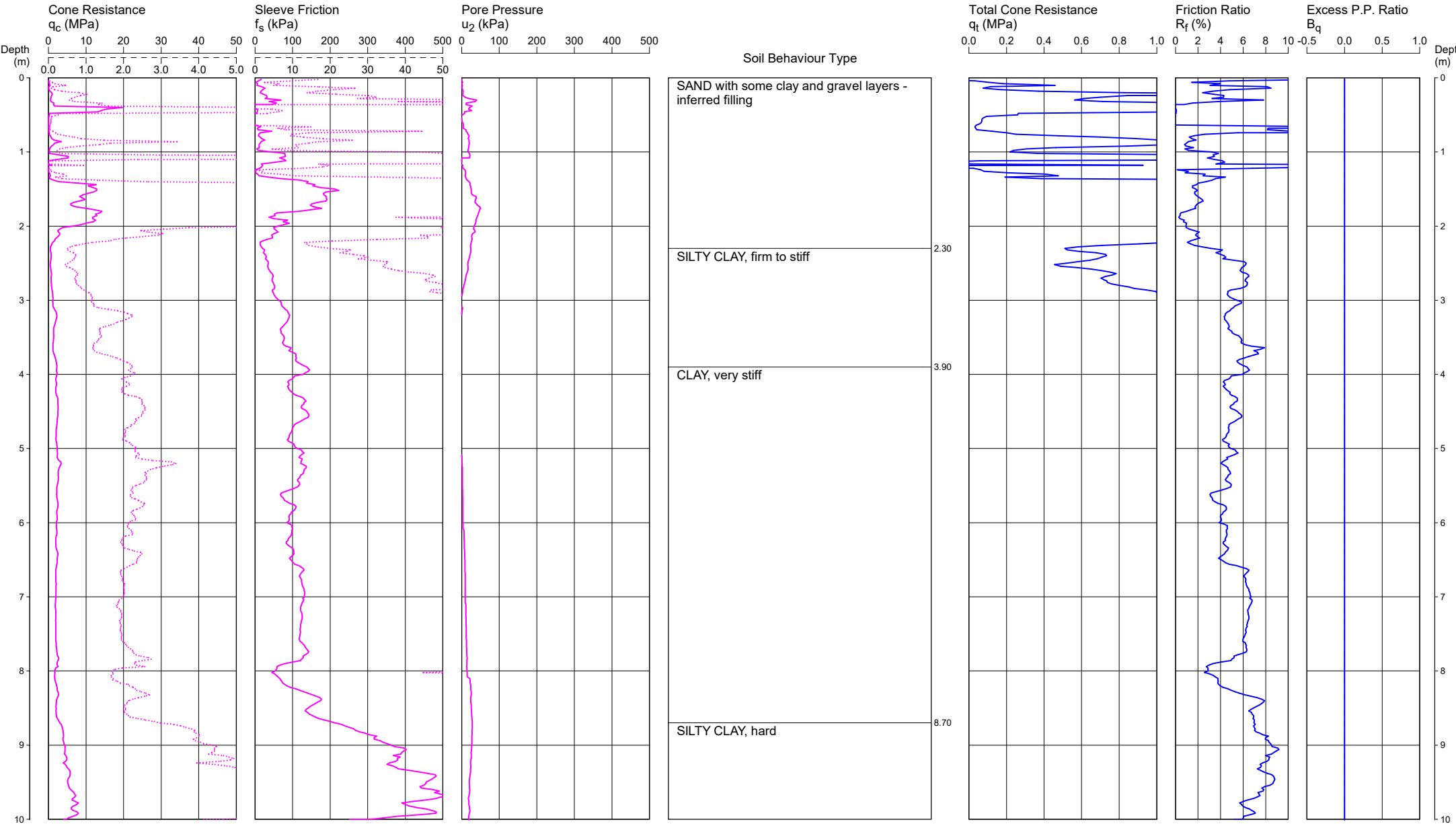
COORDINATES: 319884E 6255324N

CPT 31

Page 1 of 2

DATE 26/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.46 TO 0.8 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\31.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.1m AHD

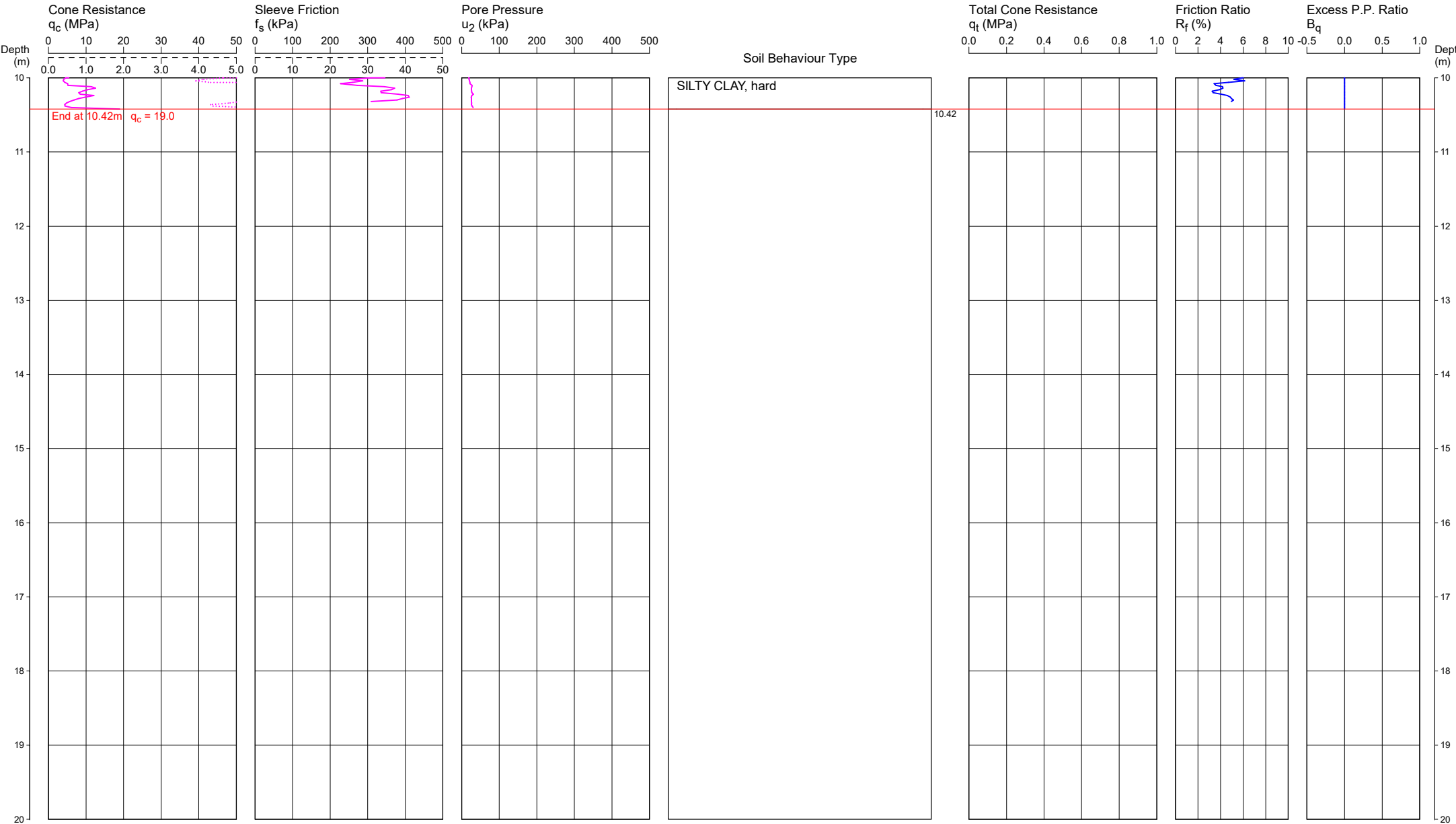
COORDINATES: 319884E 6255324N

CPT 31

Page 2 of 2

DATE 26/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.46 TO 0.8 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\31.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
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CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.8

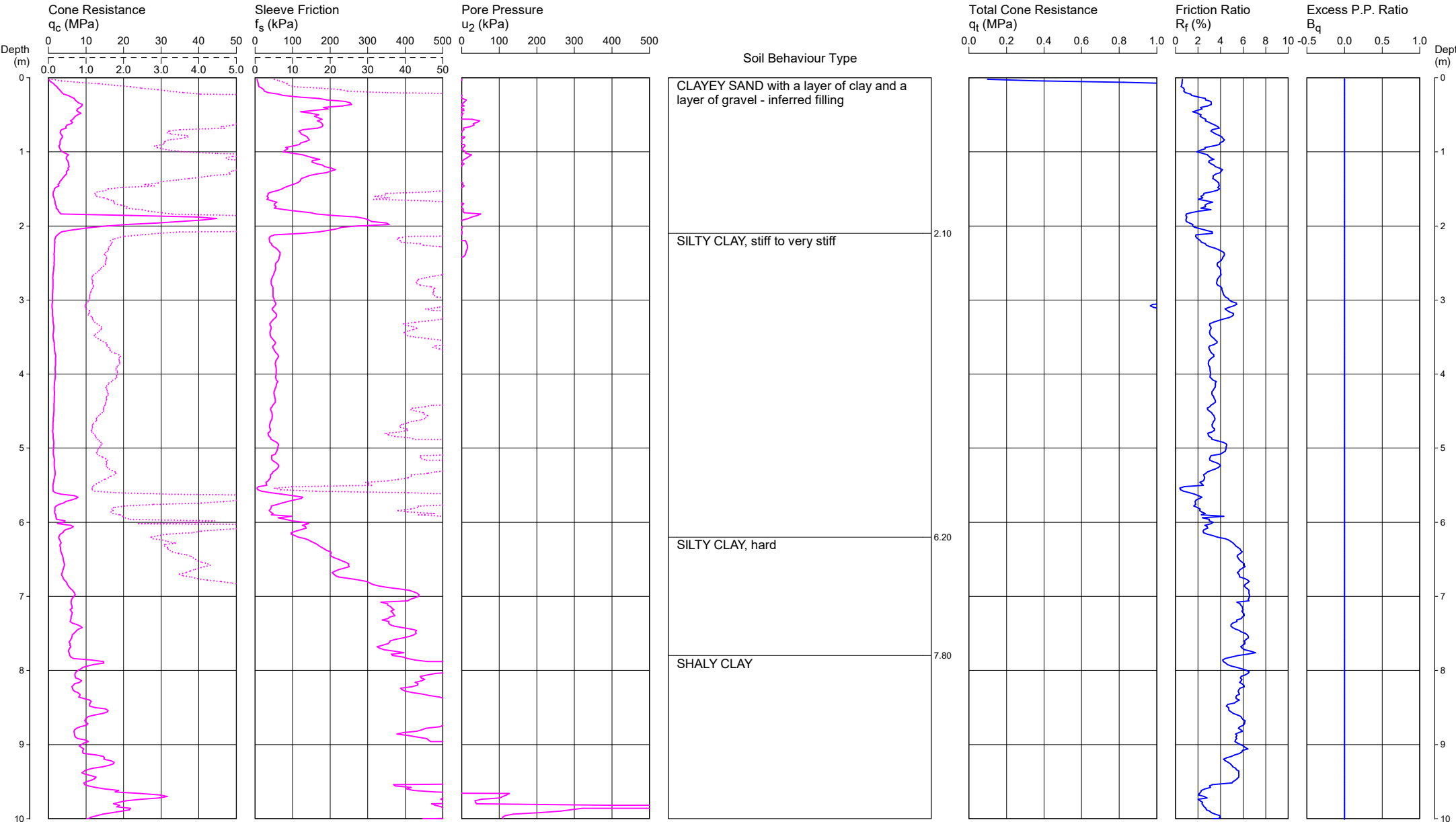
COORDINATES: 319720E 6255309N

CPT 32

Page 1 of 2

DATE 31/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL. HOLE COLLAPSE AT 10.0 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\32.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

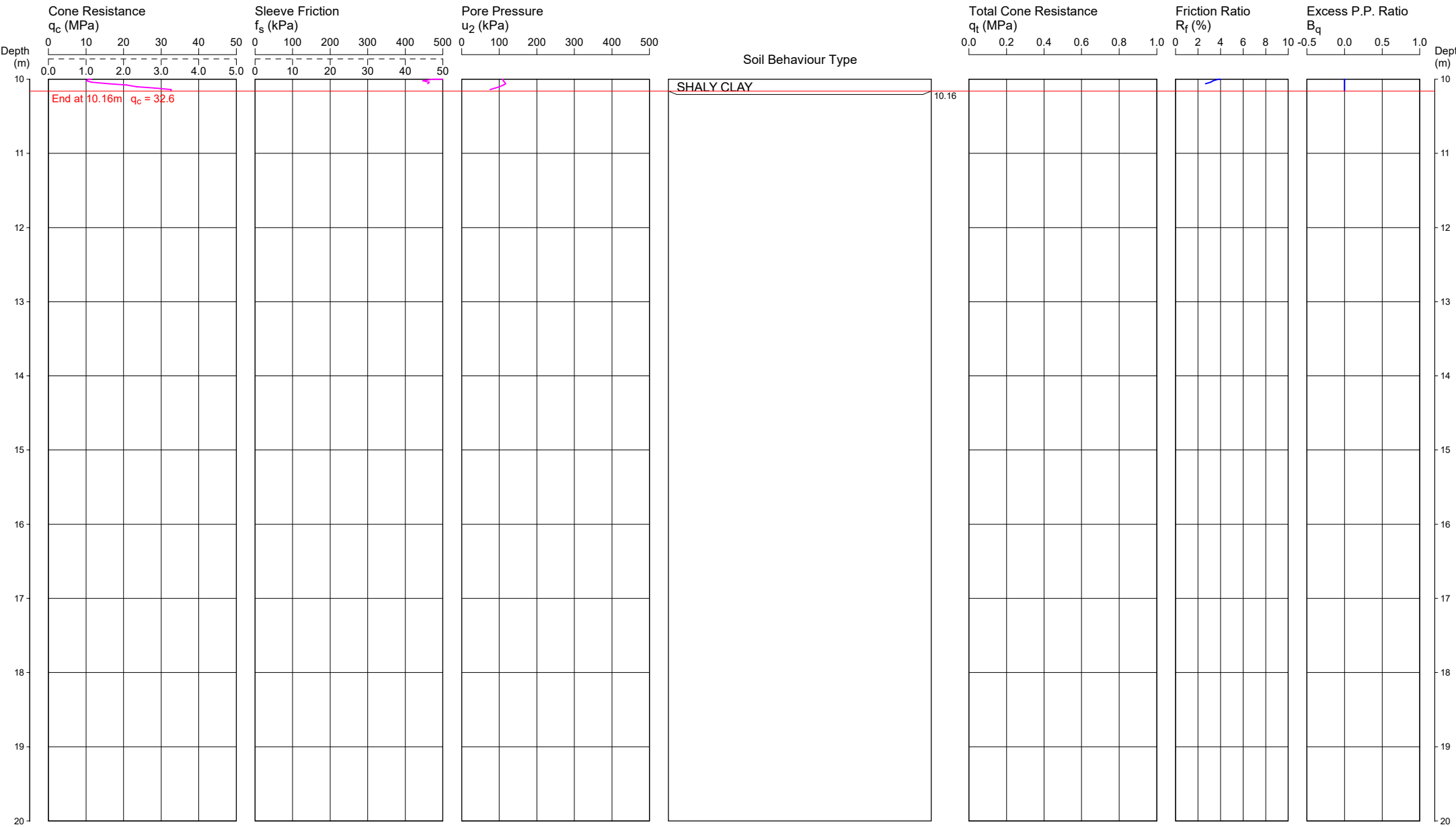
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.8
COORDINATES: 319720E 6255309N

CPT 32

Page 2 of 2

DATE 31/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL. HOLE COLLAPSE AT 10.0 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\32.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.5m AHD

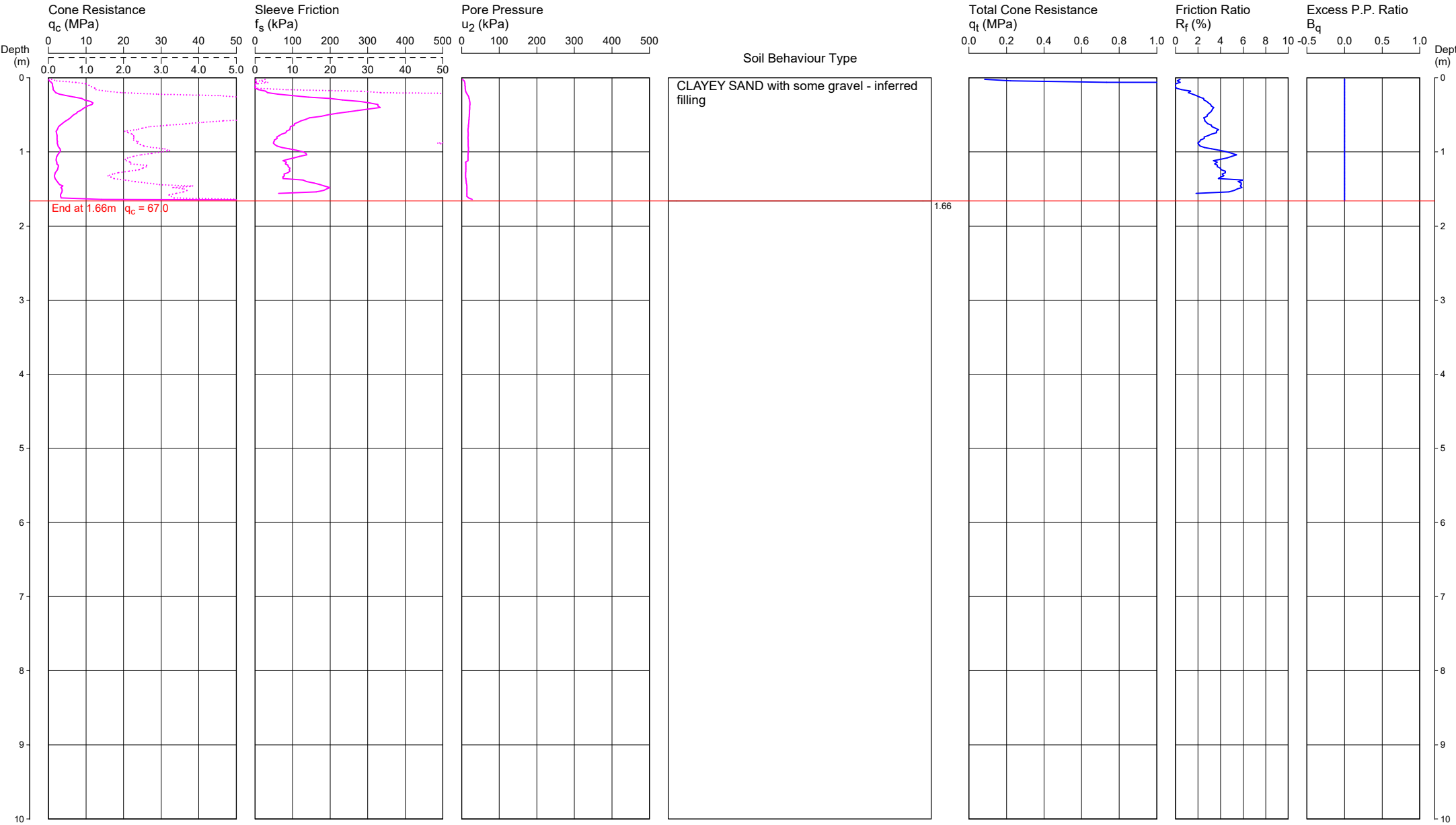
COORDINATES: 319760E 6255292N

CPT 33

Page 1 of 1

DATE 30/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.66 TO 1.66 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO DUMMY CONE REFUSAL ON OBSTRUCTION.
HOLE COLLAPSE AT 1.0 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\33.CP5
Cone ID: 171006 Type: I-CFXYP20-10
ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.2m AHD

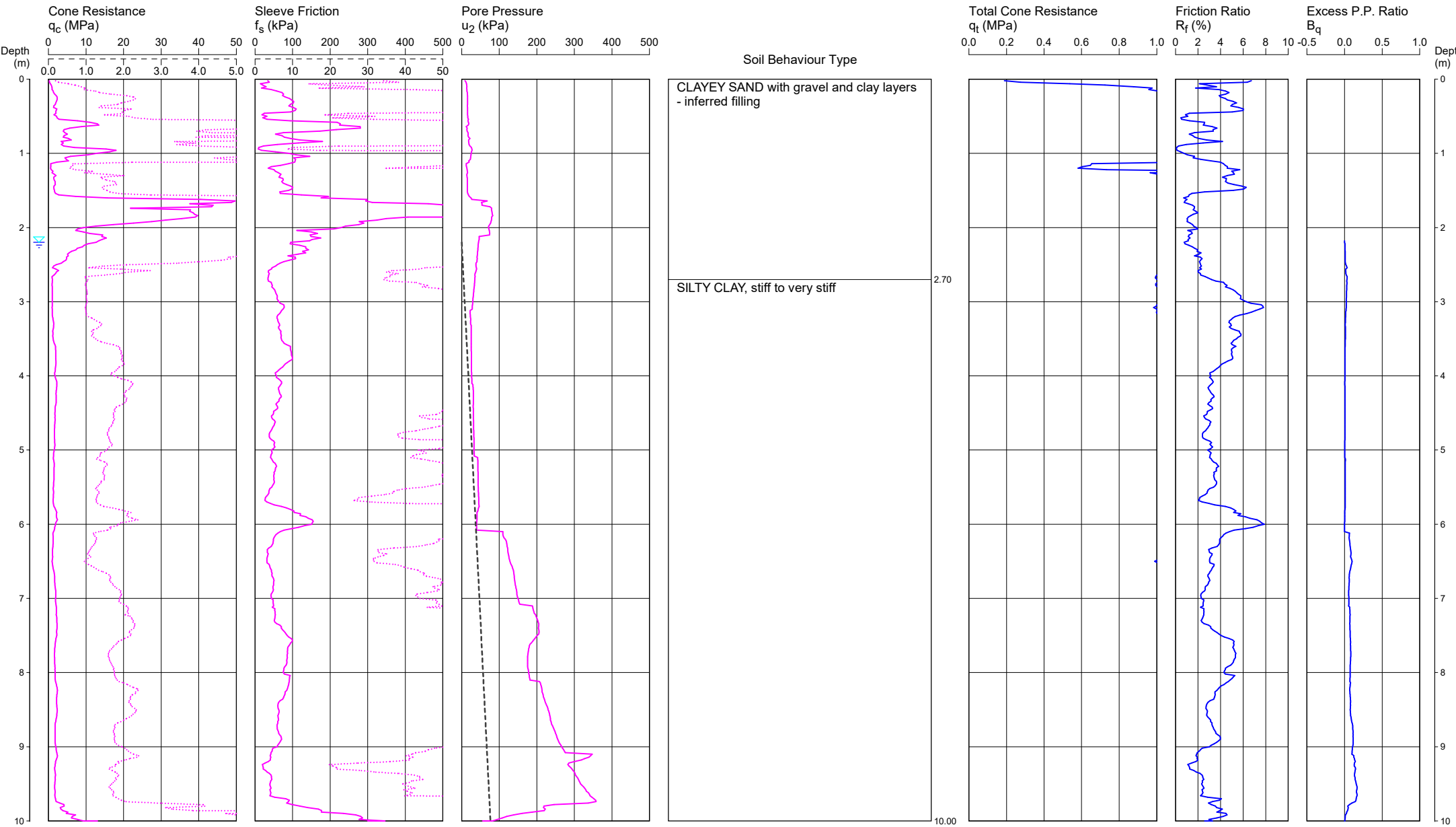
COORDINATES: 319811E 6255292N

CPT 34

Page 1 of 2

DATE 30/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT
NEAR REFUSAL.

Water depth after test: 2.2 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\34.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

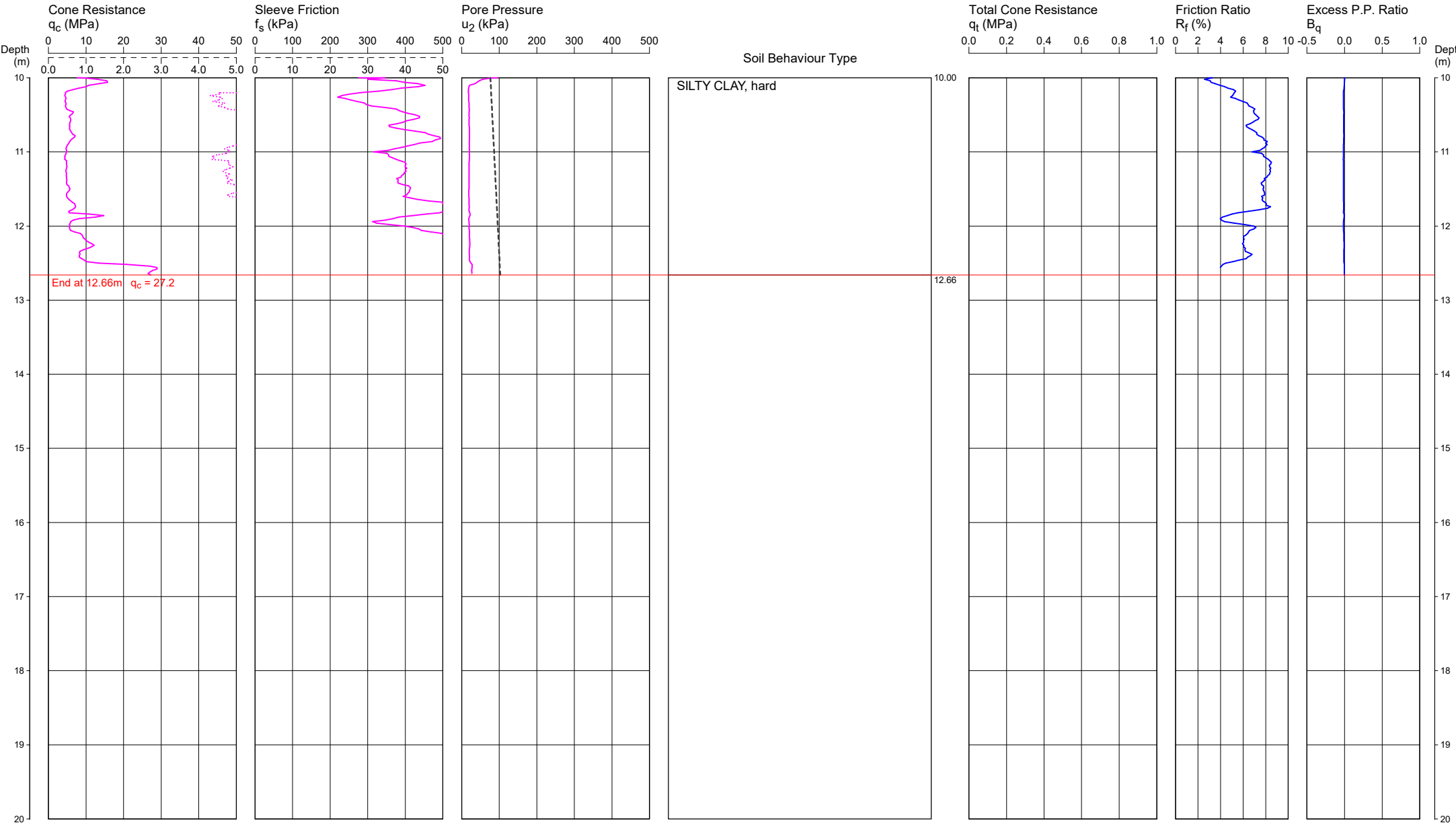
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 3.2m AHD
COORDINATES: 319811E 6255292N

CPT 34

Page 2 of 2

DATE 30/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT
NEAR REFUSAL.

Water depth after test: 2.2 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\34.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 2.7m AHD

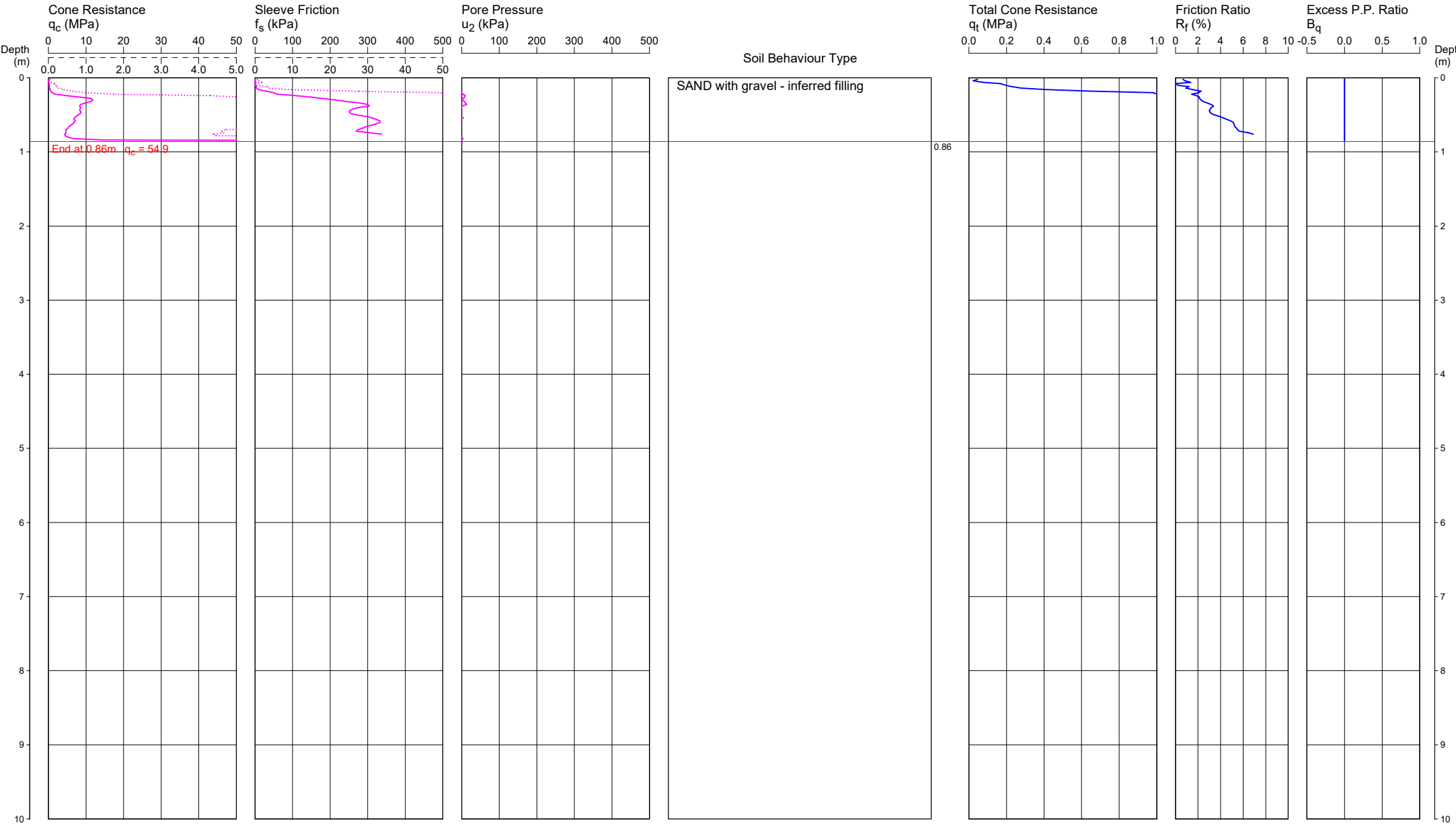
COORDINATES: 319829E 6255268N

CPT 35

Page 1 of 1

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.86 TO 0.86m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO DUMMY CONE REFUSAL ON OBSTRUCTION.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\35.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 2.6m AHD

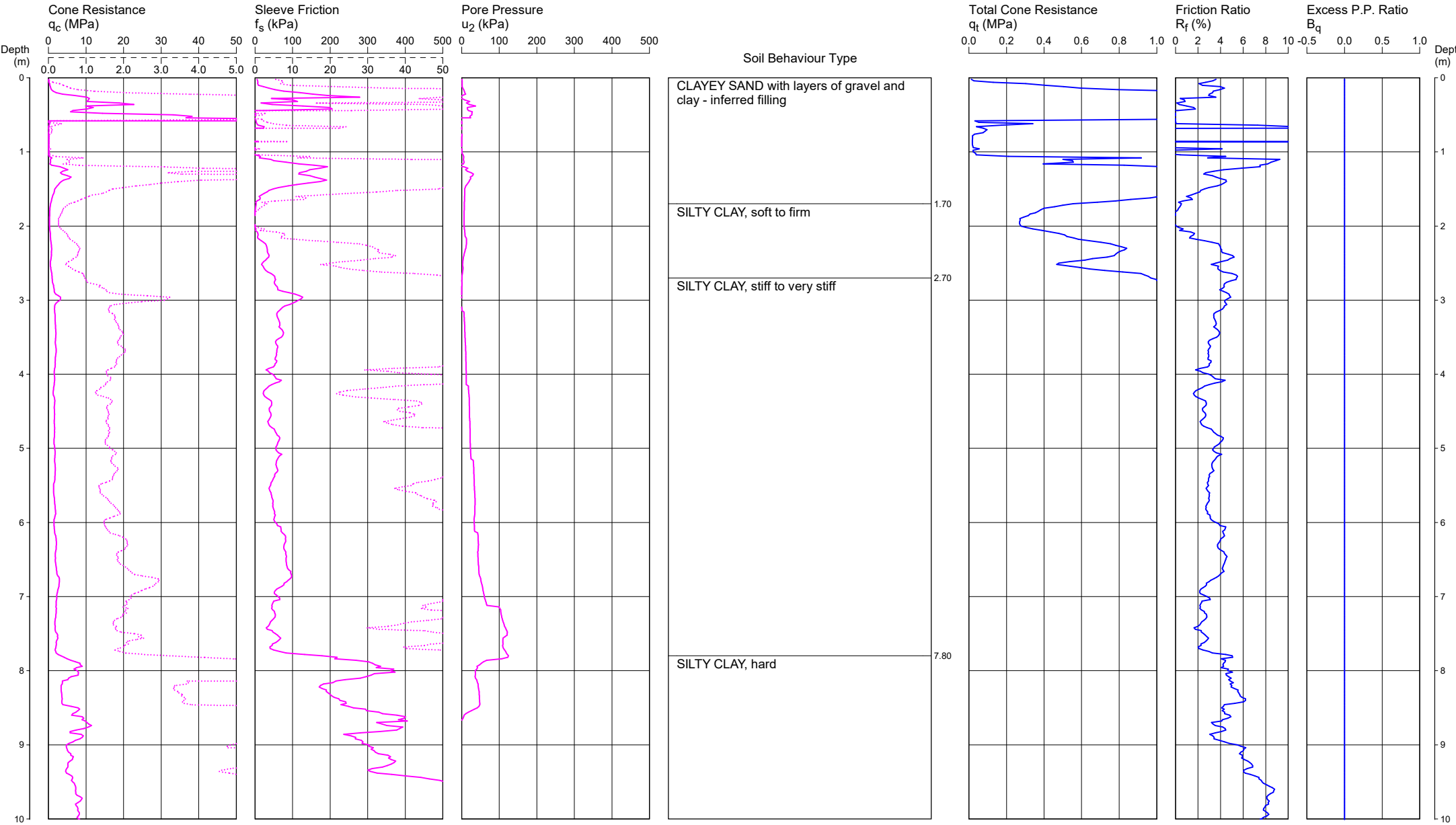
COORDINATES: 319843E 6255292N

CPT 36

Page 1 of 2

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.56 TO 1.2 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO CONE TIP REFUSAL. HOLE COLLAPSE AT 0.7 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\36.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

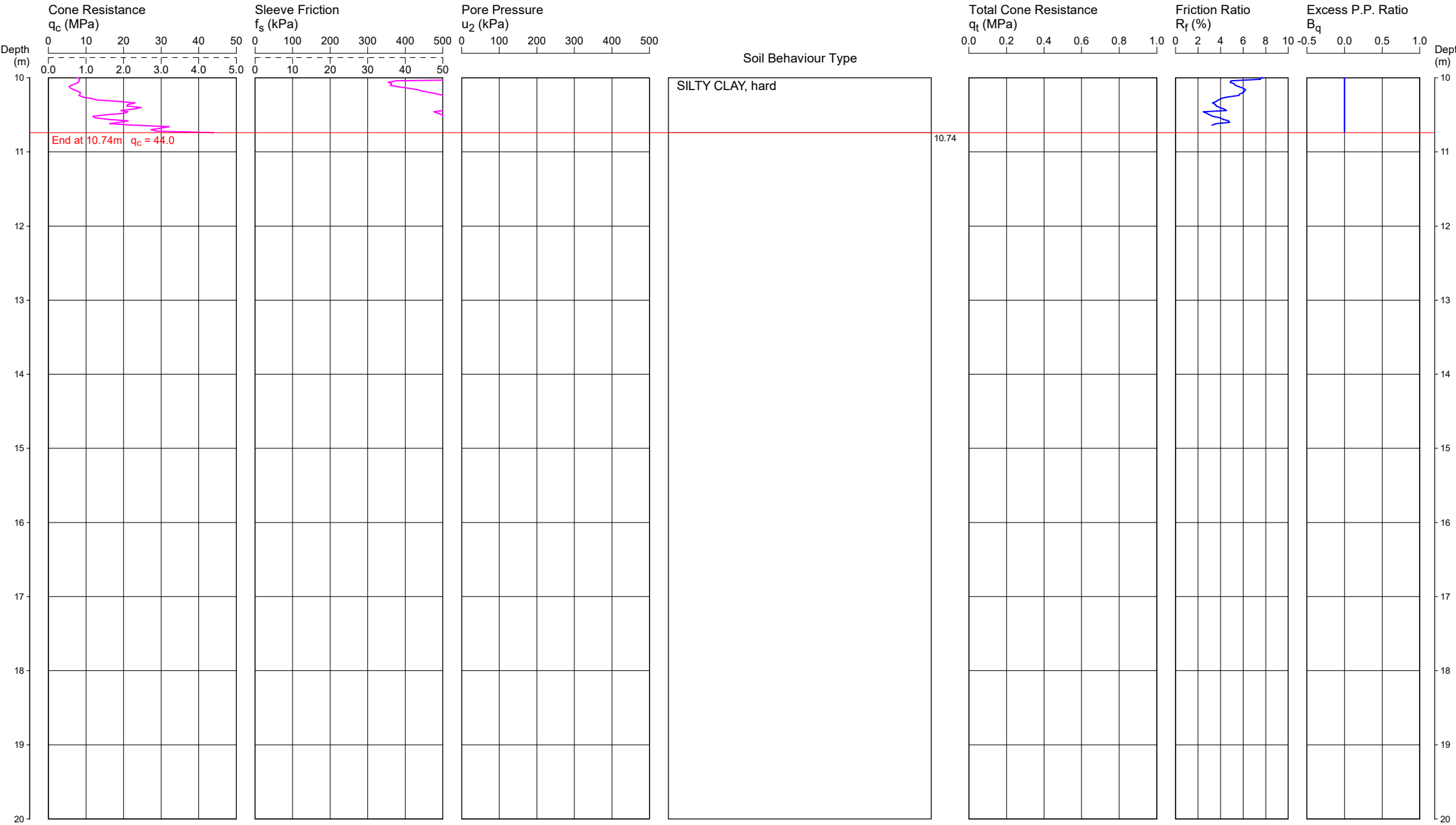
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 2.6m AHD
COORDINATES: 319843E 6255292N

CPT 36

Page 2 of 2

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 0.56 TO 1.2 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO CONE TIP REFUSAL.HOLE COLLAPSE AT 0.7 m AFTER WITHDRAWAL OF RODS.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\36.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.4m AHD

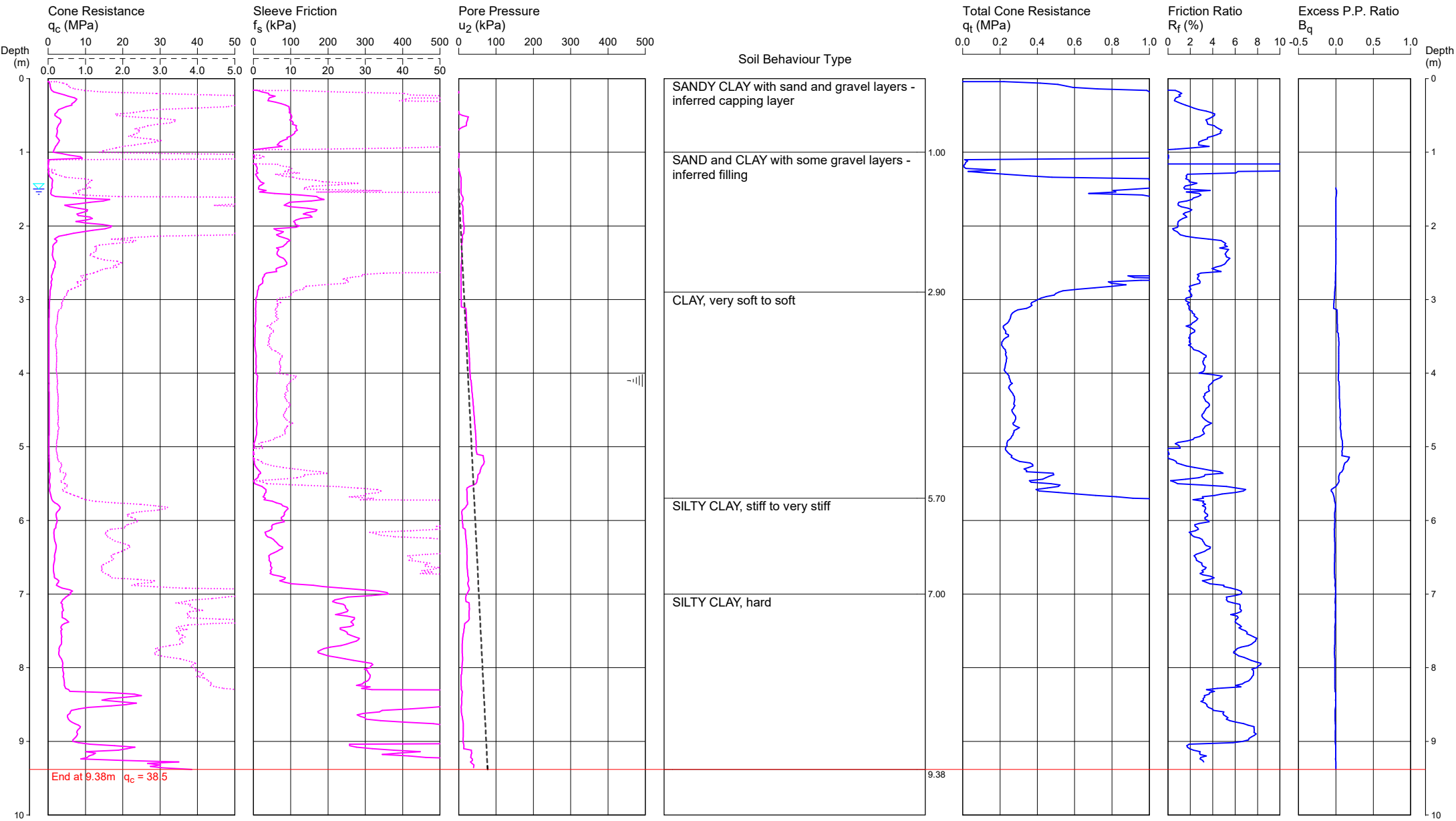
COORDINATES: 319892E 6255282N

CPT 37

Page 1 of 1

DATE 26/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.08 TO 1.4 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL.

Water depth after test: 1.5 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\37.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

-||| Dissipation Test

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

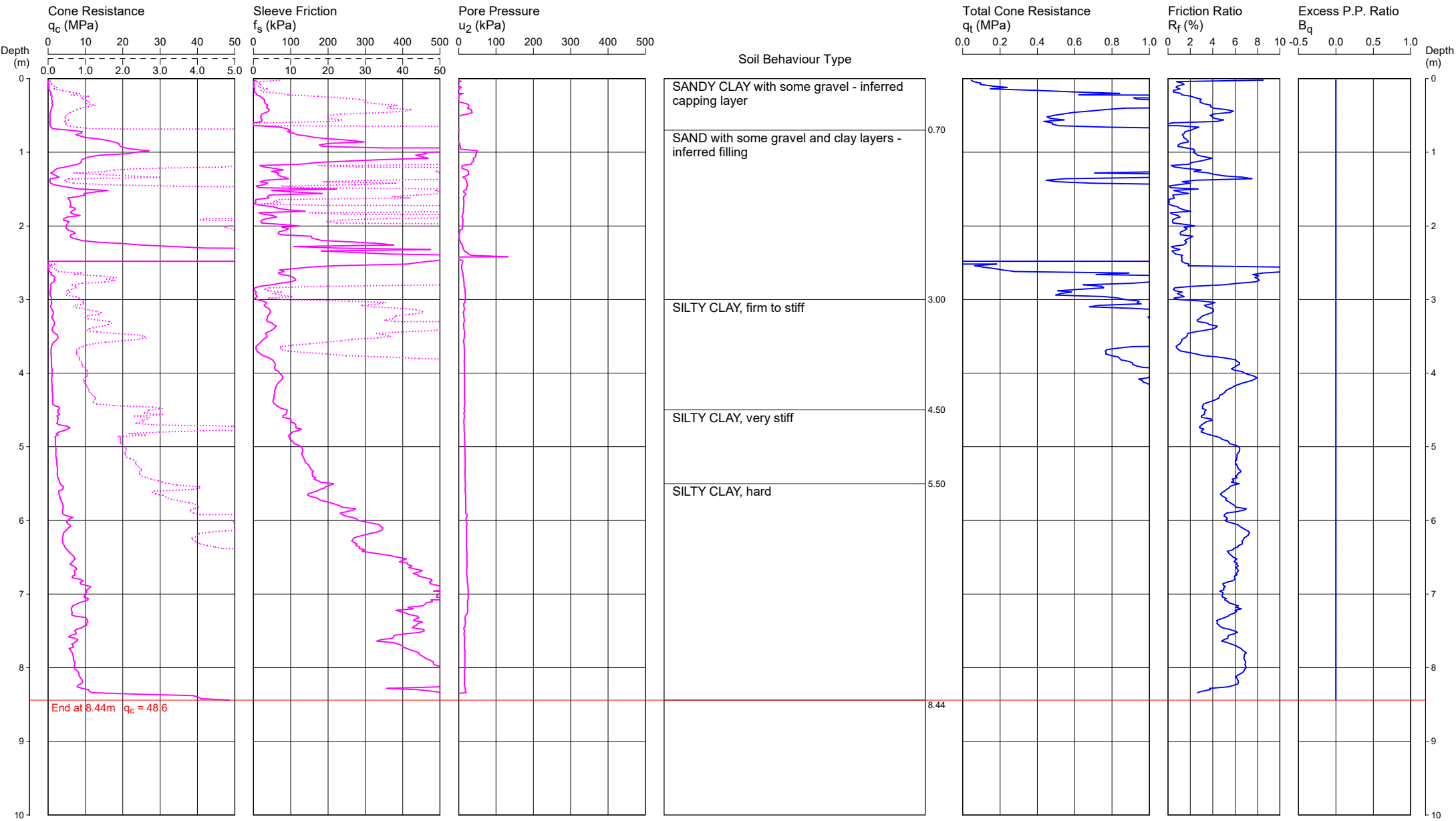
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 4.0m AHD
COORDINATES: 319938E 6255276N

CPT 38

Page 1 of 1

DATE 26/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 2.48 TO 2.9 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\38.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

LOCATION: Wilson Park, SILVERWATER

REDUCED LEVEL: 3.6m AHD

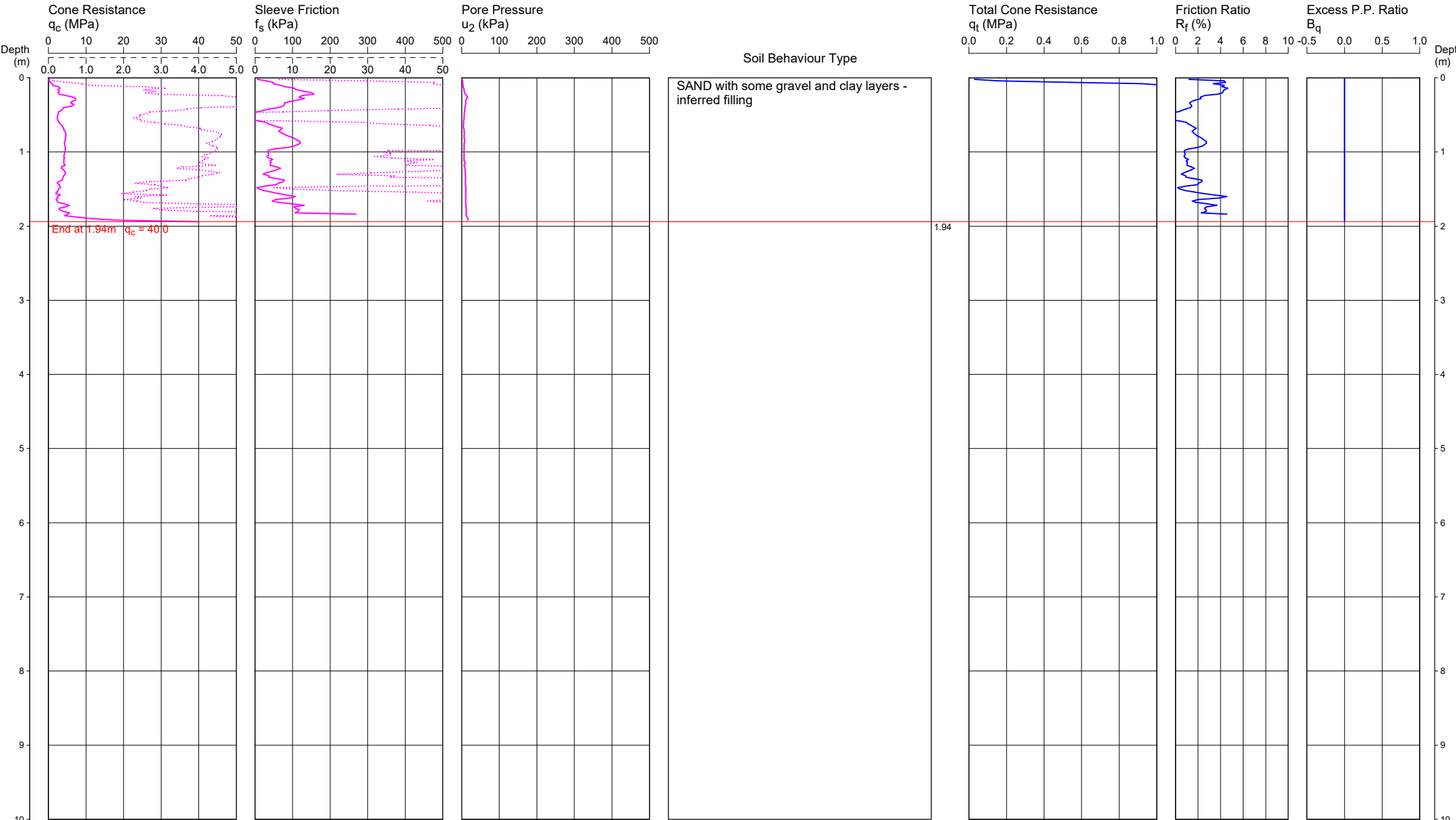
COORDINATES: 319872E 6255249N

CPT 39

Page 1 of 1

DATE 29/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.94 TO 2.44 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO DUMMY CONE REFUSAL ON OBSTRUCTION.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\39.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

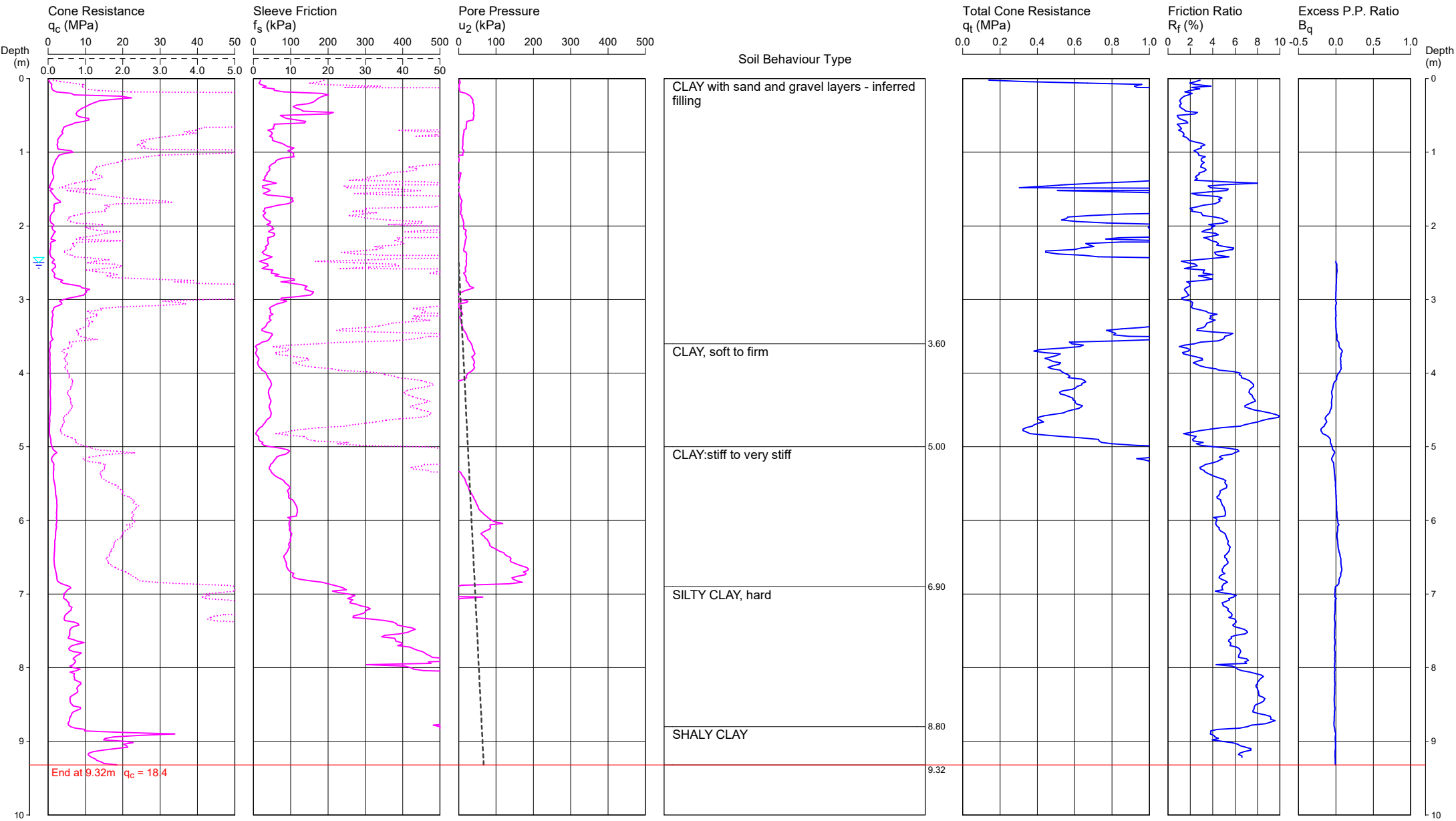
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 4.4m AHD
COORDINATES: 319900E 6255235N

CPT 40

Page 1 of 1

DATE 26/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m DEPTH. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING AT NEAR REFUSAL.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\40.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

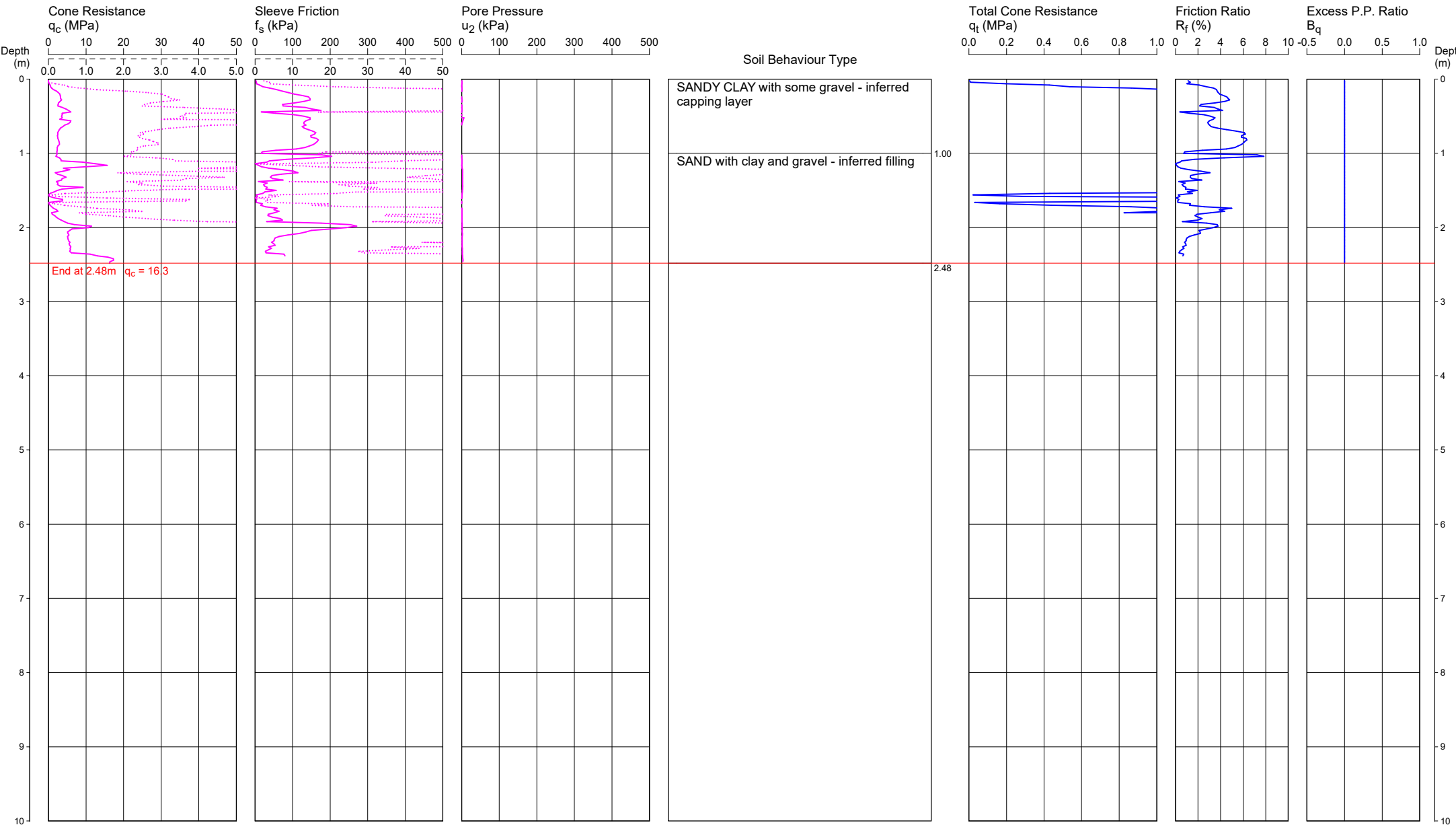
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 4.4m AHD
COORDINATES: 319926E 6255254N

CPT 41

Page 1 of 1

DATE 26/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 1.64 TO 2.0 m DEPTH TO PENETRATE FILLING. TEST DISCONTINUED DUE TO EXCESSIVE CONE BENDING ON OBSTRUCTION.

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\41.CP5
Cone ID: 171006 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

CONE PENETRATION TEST

CLIENT: Cox Architecture Pty Ltd

PROJECT: Western Sydney Cricket and Community Centre Development

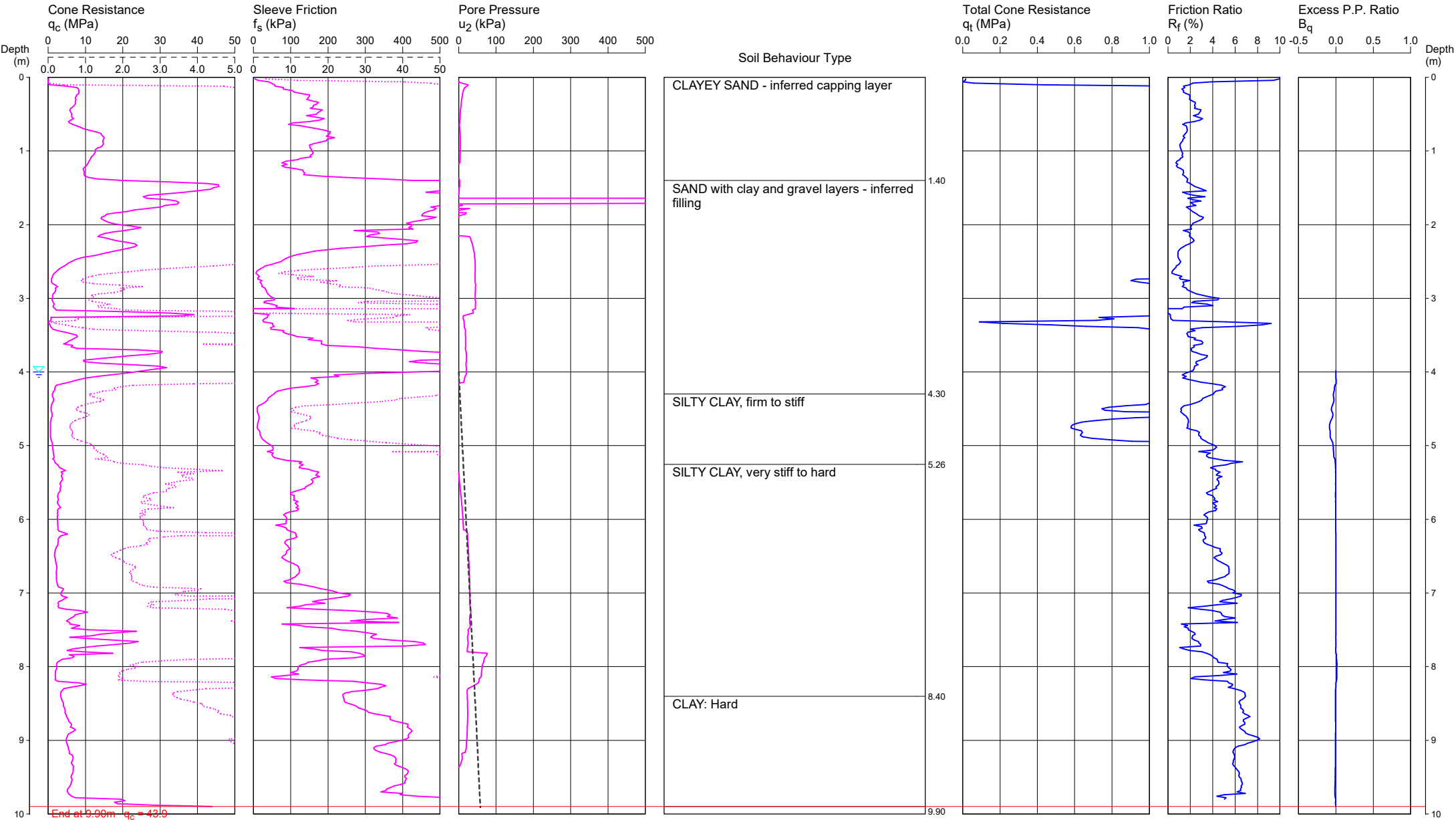
LOCATION: Wilson Park, SILVERWATER
REDUCED LEVEL: 5.6m AHD
COORDINATES: 319919E 6255215N

CPT 42

Page 1 of 1

DATE 26/07/2019

PROJECT No: 86694.02



REMARKS: HAND AUGER TO 0.2 m. DUMMY CONE FROM 3.24 TO 3.6 m DEPTH TO PENETRATE FILLING.
TEST DISCONTINUED DUE TO CONE TIP REFUSAL.
GROUNDWATER OBSERVED AT 4 m AFTER WITHDRAWAL OF RODS.

Water depth after test: 4 m

File: C:\Users\sam.balian\Desktop\86694.02 - SILVERWATER, Wilson Park, Geo INV - Copy\4.0 Field Work\4.2 Testing\All CPT\42.CP5
Cone ID: 120539 Type: I-CFXYP20-10

ConePlot Version 5.9.2
© 2003 Douglas Partners Pty Ltd

Appendix D

Dissipation Test Results

DISSIPATION TEST

CLIENT Cox Architecture Pty Ltd

PROJECT Western Sydney and Community Centre Development

LOCATION Wilson Park, SILVERWATER

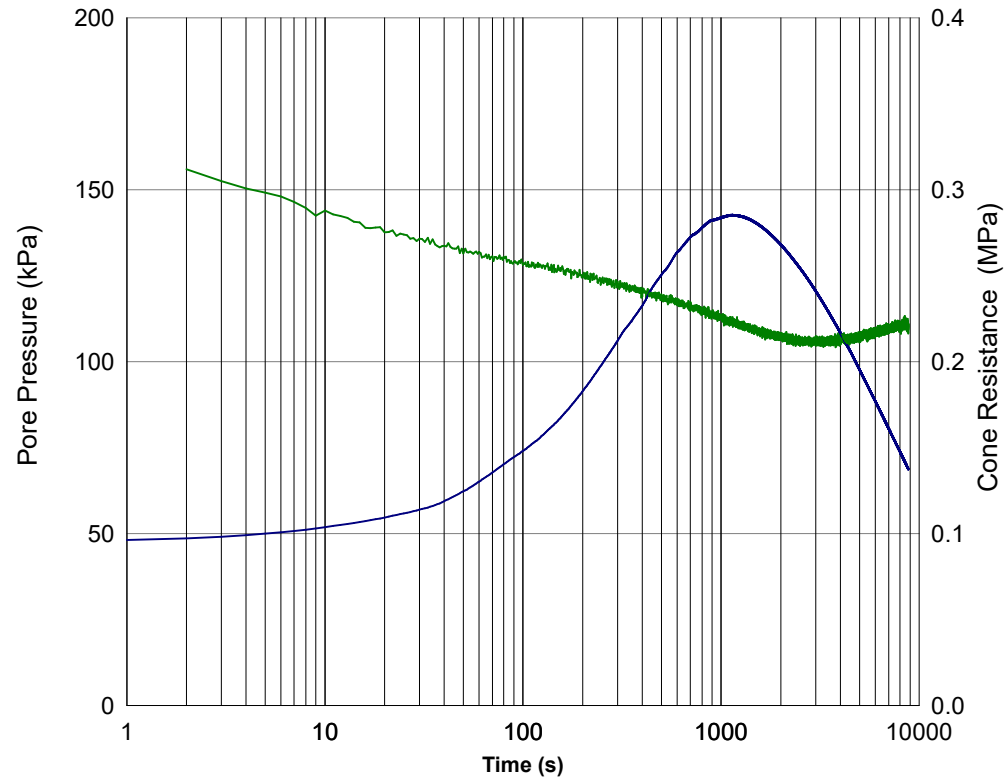
PROJECT No 86694.02

CPT 2

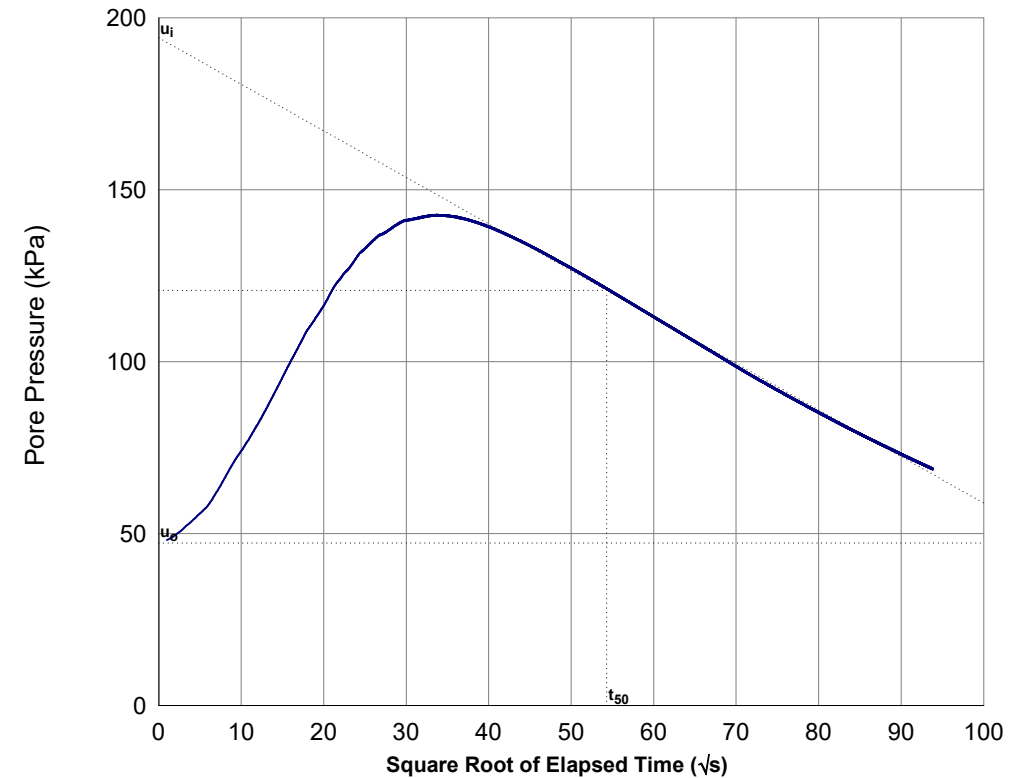
DEPTH 4.82m

DATE 24/07/2019

PORE PRESSURE / CONE RESISTANCE



ROOT-TIME GRAPH



Water Level after test:

Estimated hydrostatic pore pressure (u_0): 47.3 kPa
Estimated Initial Pore Pressure (u_i): 194.2 kPa
Final Measured Pore Pressure: 68.9 kPa
Time for 50% pore pressure reduction (t_{50}): 2948 seconds
49.1 minutes

c_h : 7 m²/year
Location of Filter Element: 2 (behind tip)
Diameter of Cone: 35.7 mm

Reference: 'EVALUATION OF FIELD CPTU DISSIPATION DATA IN OVERCONSOLIDATED FINE-GRAINED SOILS'
J.P. Sully, R.G. Campanella XIII ICSMFE, 1994 New Delhi, India

REMARKS:

File: 2.T02
Cone ID: 120539 Type: I-CFXYP20-10

| |
|---------|
| Date |
| Plotted |
| Checked |

DISSIPATION TEST

CLIENT Cox Architecture Pty Ltd

PROJECT Western Sydney and Community Centre Development

LOCATION Wilson Park, SILVERWATER

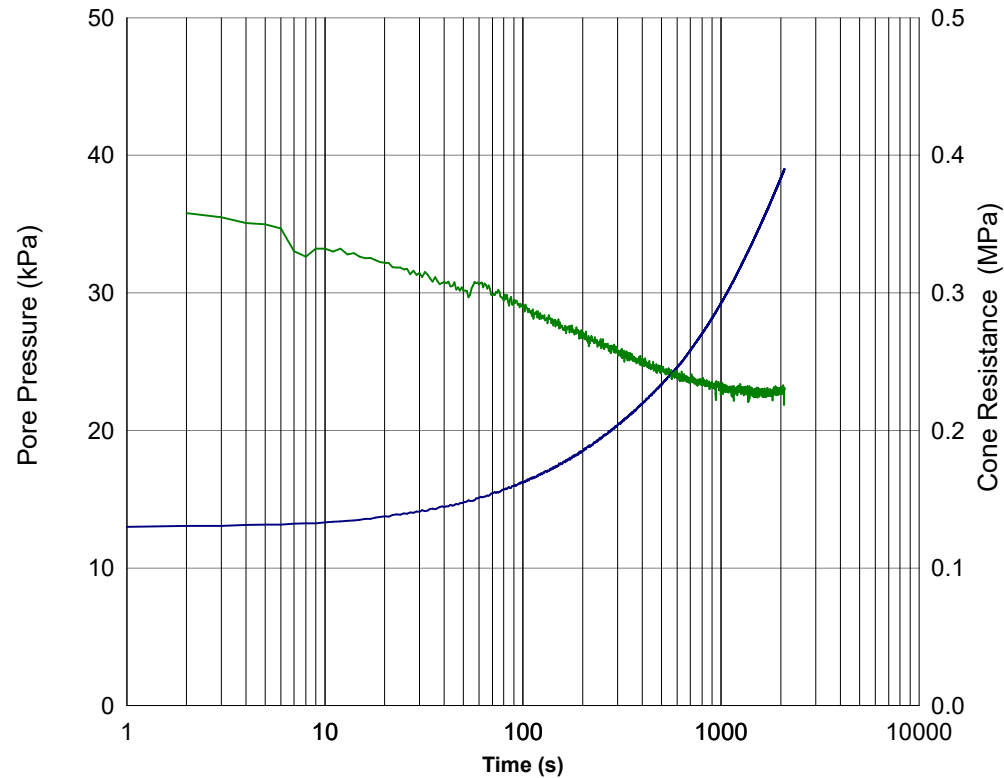
PROJECT No 86694.02

CPT 5

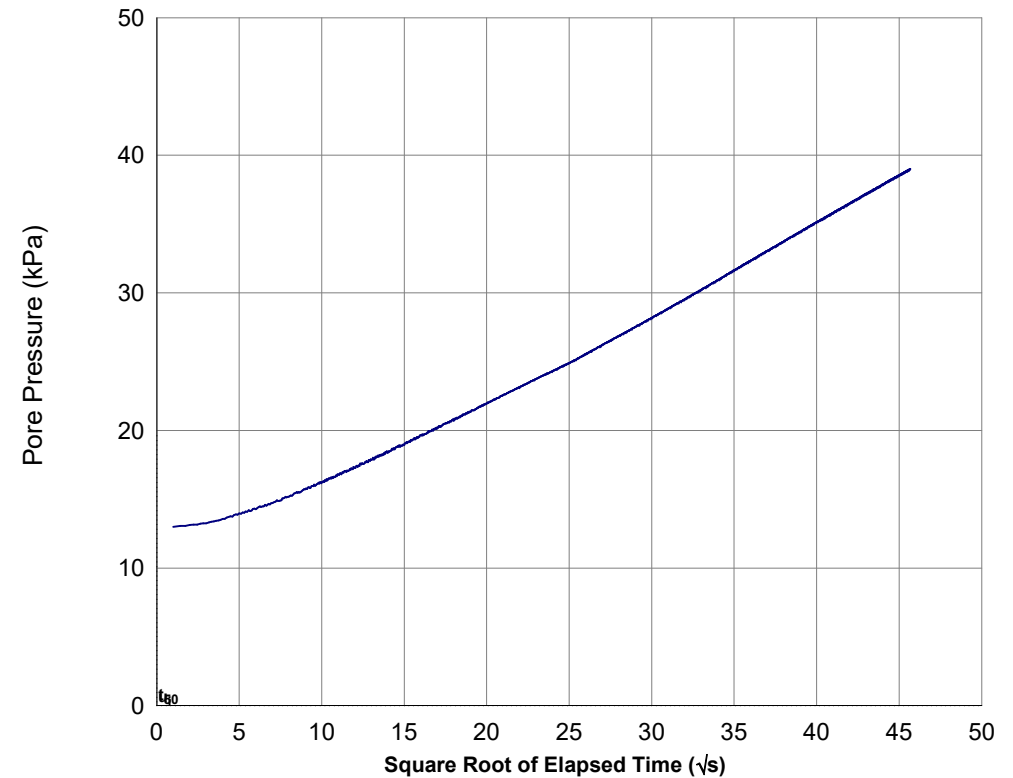
DEPTH 4.0m

DATE 24/07/2019

PORE PRESSURE / CONE RESISTANCE



ROOT-TIME GRAPH



Water Level after test:

Estimated hydrostatic pore pressure (u_0): 39.2 kPa
 Estimated Initial Pore Pressure (u_i): 0.0 kPa
 Final Measured Pore Pressure: 39.0 kPa
 Time for 50% pore pressure reduction (t_{50}): 0 seconds
 0.0 minutes

c_h : not defined
 Location of Filter Element: 2 (behind tip)
 Diameter of Cone: 35.7 mm

Reference: 'EVALUATION OF FIELD CPTU DISSIPATION DATA IN OVERCONSOLIDATED FINE-GRAINED SOILS'
 J.P. Sully, R.G. Campanella XIII ICSMFE, 1994 New Delhi, India

REMARKS:

File: 5.T02
 Cone ID: 171006 Type: I-CFXYP20-10

| |
|---------|
| Date |
| Plotted |
| Checked |

Appendix E

Laboratory Test Results

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697A
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 33 (0.4-1.0m)
Material: FILL / CLAY : grey with sand and a trace of gravel



Douglas Partners Pty Ltd

Sydney Laboratory

96 Hermitage Road West Ryde NSW 2114

Phone: (02) 9809 0666

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Email: andrew.hutchings@douglaspartners.com.au

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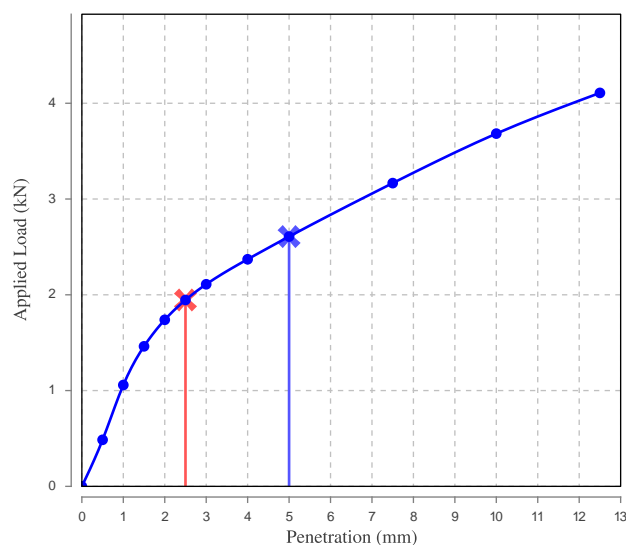
Andrew Hutchings

Approved Signatory: Andrew Hutchings
 Senior Geotechnician
 NATA Accredited Laboratory Number: 828

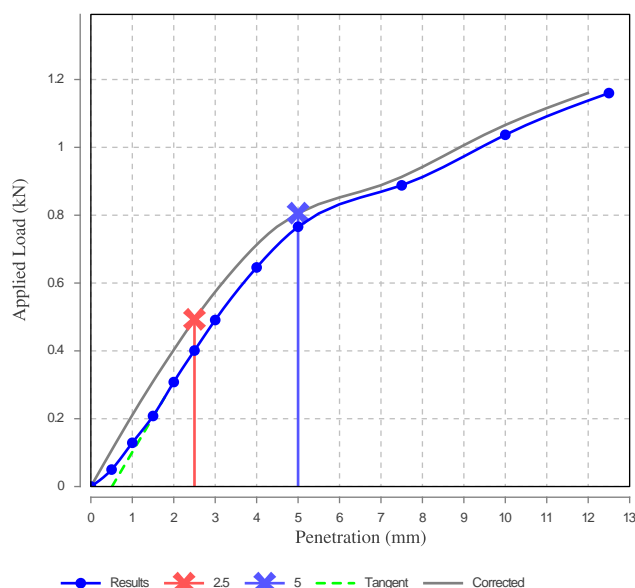
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 2.5 mm | | |
| CBR % | 15 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.73 | | |
| Optimum Moisture Content (%) | 17.0 | | |
| Laboratory Density Ratio (%) | 98.5 | | |
| Laboratory Moisture Ratio (%) | 109.5 | | |
| Moisture Content at Placement (%) | 18.5 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 72 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 1.9 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 4.0 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.73 | | |
| Optimum Moisture Content (%) | 17.0 | | |
| Laboratory Density Ratio (%) | 98.5 | | |
| Laboratory Moisture Ratio (%) | 109.5 | | |
| Dry Density after Soaking (t/m^3) | 1.66 | | |
| Field Moisture Content (%) | 18.8 | | |
| Moisture Content at Placement (%) | 18.5 | | |
| Moisture Content Top 30mm (%) | 26.5 | | |
| Moisture Content Rest of Sample (%) | 21.0 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 72 | | |
| Swell (%) | 2.5 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 1.9 | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697A
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 33 (0.4-1.0m)
Material: FILL / CLAY : grey with sand and a trace of gravel



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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 45 | | |
| Plastic Limit (%) | 25 | | |
| Plasticity Index (%) | 20 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697B
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 21 (0-0.7m)
Material: FILL / sandy GRAVEL and COBBLES : rounded light grey with silt



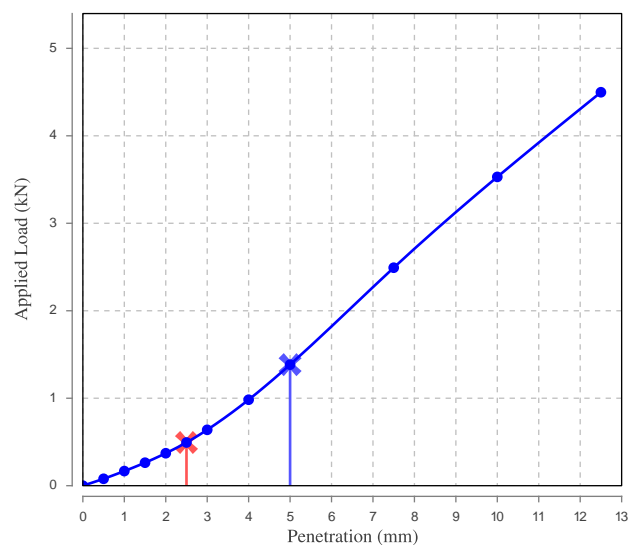
Andrew Hutchings

Approved Signatory: Andrew Hutchings
 Senior Geotechnician
 NATA Accredited Laboratory Number: 828

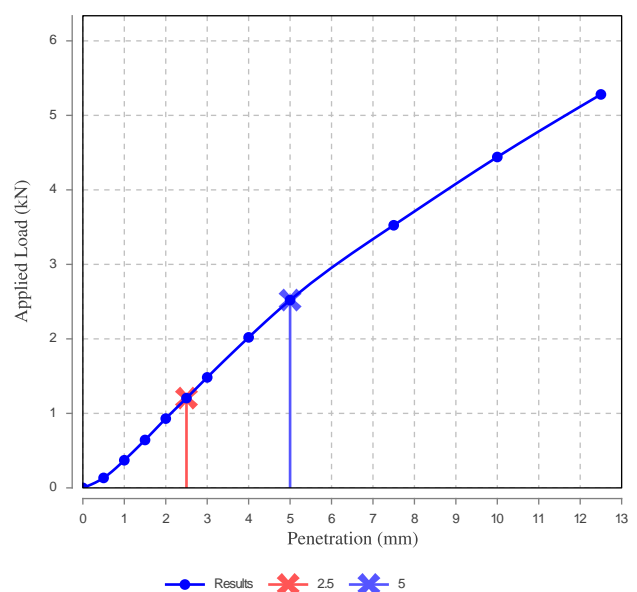
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 7 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.73 | | |
| Optimum Moisture Content (%) | 18.5 | | |
| Laboratory Density Ratio (%) | 99.5 | | |
| Laboratory Moisture Ratio (%) | 101.5 | | |
| Moisture Content at Placement (%) | 18.8 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 24 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 58.4 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 13 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.73 | | |
| Optimum Moisture Content (%) | 18.5 | | |
| Laboratory Density Ratio (%) | 99.5 | | |
| Laboratory Moisture Ratio (%) | 100.0 | | |
| Dry Density after Soaking (t/m^3) | 1.71 | | |
| Field Moisture Content (%) | 15.1 | | |
| Moisture Content at Placement (%) | 18.5 | | |
| Moisture Content Top 30mm (%) | 20.3 | | |
| Moisture Content Rest of Sample (%) | 18.9 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 74 | | |
| Swell (%) | 1.0 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 58.4 | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697B
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 21 (0-0.7m)
Material: FILL / sandy GRAVEL and COBBLES : rounded light grey with silt



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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 42 | | |
| Plastic Limit (%) | 33 | | |
| Plasticity Index (%) | 9 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697C
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 28 (0.2-0.8m)
Material: FILL / CLAY : orange brown with sand and a trace of gravel



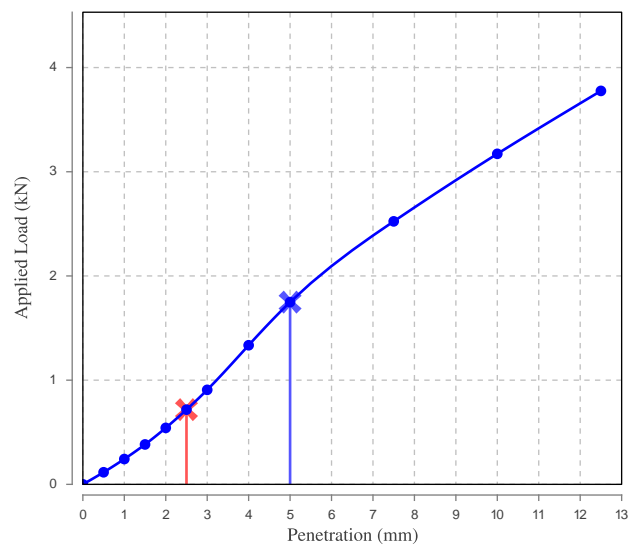
Andrew Hutchings

Approved Signatory: Andrew Hutchings
 Senior Geotechnician
 NATA Accredited Laboratory Number: 828

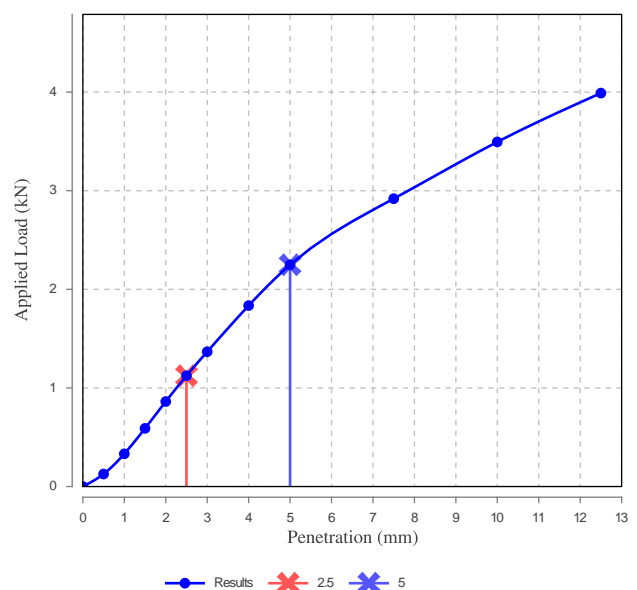
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 9 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.90 | | |
| Optimum Moisture Content (%) | 14.0 | | |
| Laboratory Density Ratio (%) | 99.0 | | |
| Laboratory Moisture Ratio (%) | 100.5 | | |
| Moisture Content at Placement (%) | 13.9 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 72 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 2.3 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 11 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.90 | | |
| Optimum Moisture Content (%) | 14.0 | | |
| Laboratory Density Ratio (%) | 99.5 | | |
| Laboratory Moisture Ratio (%) | 98.0 | | |
| Dry Density after Soaking (t/m^3) | 1.89 | | |
| Field Moisture Content (%) | 13.7 | | |
| Moisture Content at Placement (%) | 13.5 | | |
| Moisture Content Top 30mm (%) | 16.3 | | |
| Moisture Content Rest of Sample (%) | 14.4 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 72 | | |
| Swell (%) | 0.0 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 2.3 | | |
| 4 day soak | | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697C
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 28 (0.2-0.8m)
Material: FILL / CLAY : orange brown with sand and a trace of gravel



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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 29 | | |
| Plastic Limit (%) | 17 | | |
| Plasticity Index (%) | 12 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697D
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 38 (0.2-0.7m)
Material: FILL / sandy CLAY : orange brown, with some gravel



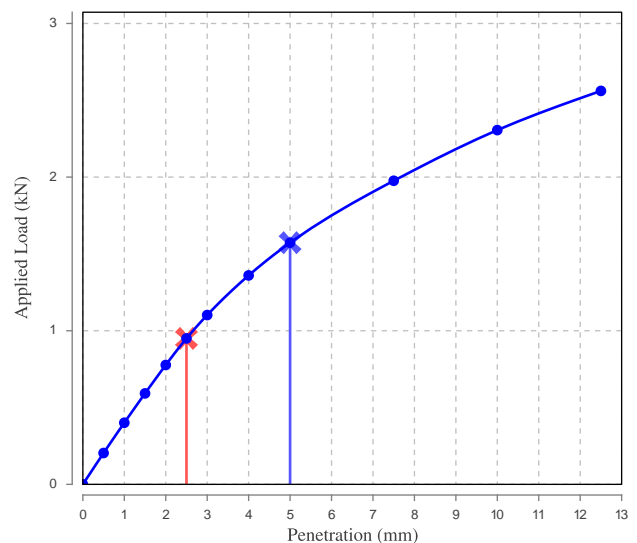
Andrew Hutchings

Approved Signatory: Andrew Hutchings
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 NATA Accredited Laboratory Number: 828

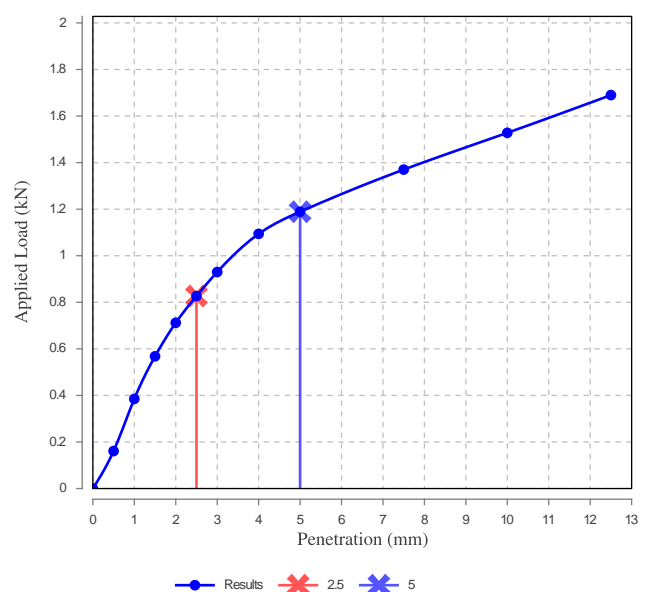
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 8 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.80 | | |
| Optimum Moisture Content (%) | 17.5 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 98.5 | | |
| Moisture Content at Placement (%) | 17.1 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 48 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 2.1 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 2.5 mm | | |
| CBR % | 6 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.80 | | |
| Optimum Moisture Content (%) | 17.5 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 99.0 | | |
| Dry Density after Soaking (t/m^3) | 1.79 | | |
| Field Moisture Content (%) | 15.6 | | |
| Moisture Content at Placement (%) | 17.2 | | |
| Moisture Content Top 30mm (%) | 19.5 | | |
| Moisture Content Rest of Sample (%) | 17.5 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 50 | | |
| Swell (%) | 0.5 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 2.1 | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697D
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 38 (0.2-0.7m)
Material: FILL / sandy CLAY : orange brown, with some gravel



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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 36 | | |
| Plastic Limit (%) | 19 | | |
| Plasticity Index (%) | 17 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697E
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 4 (0.2-0.7m)
Material: FILL / sandy CLAY : light brown with sandstone gravel



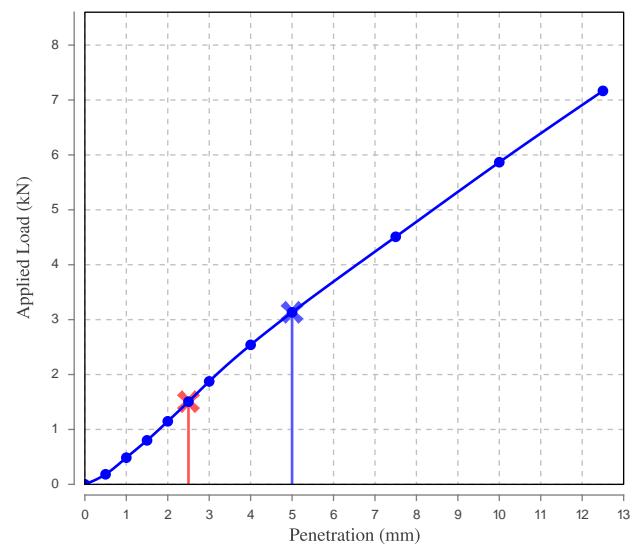
Andrew Hutchings

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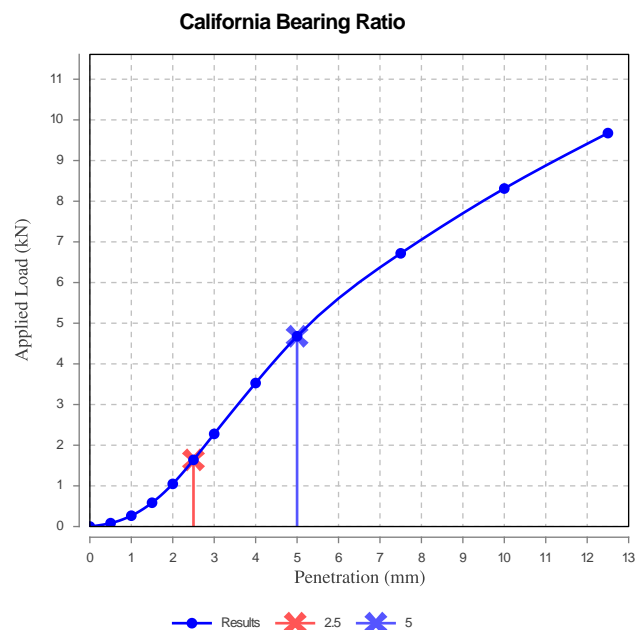
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 16 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m ³) | 2.05 | | |
| Optimum Moisture Content (%) | 9.0 | | |
| Laboratory Density Ratio (%) | 99.5 | | |
| Laboratory Moisture Ratio (%) | 102.0 | | |
| Moisture Content at Placement (%) | 9.3 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 48 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 0.6 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 25 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m ³) | 2.05 | | |
| Optimum Moisture Content (%) | 9.0 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 104.5 | | |
| Dry Density after Soaking (t/m ³) | 2.05 | | |
| Field Moisture Content (%) | 8.4 | | |
| Moisture Content at Placement (%) | 9.5 | | |
| Moisture Content Top 30mm (%) | 12.0 | | |
| Moisture Content Rest of Sample (%) | 10.3 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 48 | | |
| Swell (%) | 0.0 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 0.6 | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697E
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 4 (0.2-0.7m)
Material: FILL / sandy CLAY : light brown with sandstone gravel



Douglas Partners

Geotechnics | Environment | Groundwater

Douglas Partners Pty Ltd

Sydney Laboratory

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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 27 | | |
| Plastic Limit (%) | 16 | | |
| Plasticity Index (%) | 11 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697F
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 2 (0.2-0.7m)
Material: FILL / sandy CLAY : light brown, with sandstone gravel



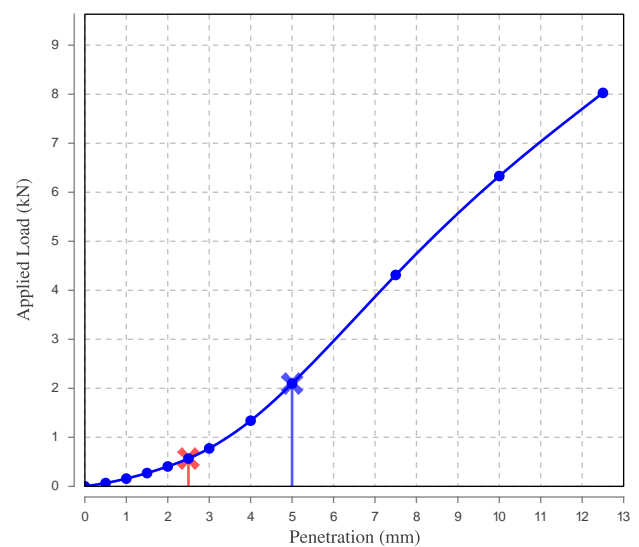
Andrew Hutchings

Approved Signatory: Andrew Hutchings
 Senior Geotechnician
 NATA Accredited Laboratory Number: 828

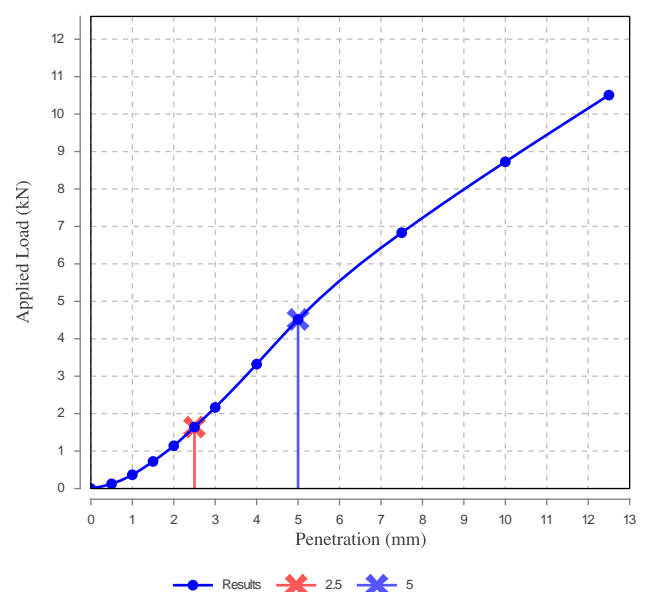
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 11 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 2.01 | | |
| Optimum Moisture Content (%) | 10.5 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 103.0 | | |
| Moisture Content at Placement (%) | 10.6 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 27.5 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 1.2 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 25 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 2.01 | | |
| Optimum Moisture Content (%) | 10.5 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 100.0 | | |
| Dry Density after Soaking (t/m^3) | 2.01 | | |
| Field Moisture Content (%) | 9.5 | | |
| Moisture Content at Placement (%) | 10.3 | | |
| Moisture Content Top 30mm (%) | 12.0 | | |
| Moisture Content Rest of Sample (%) | 10.6 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 72 | | |
| Swell (%) | 0.0 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 1.2 | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697F
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 2 (0.2-0.7m)
Material: FILL / sandy CLAY : light brown, with sandstone gravel



Douglas Partners Pty Ltd

Sydney Laboratory

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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 24 | | |
| Plastic Limit (%) | 17 | | |
| Plasticity Index (%) | 7 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697G
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 42 (0.1-0.8m)
Material: FILL / sandy CLAY : orange brown, with some gravel



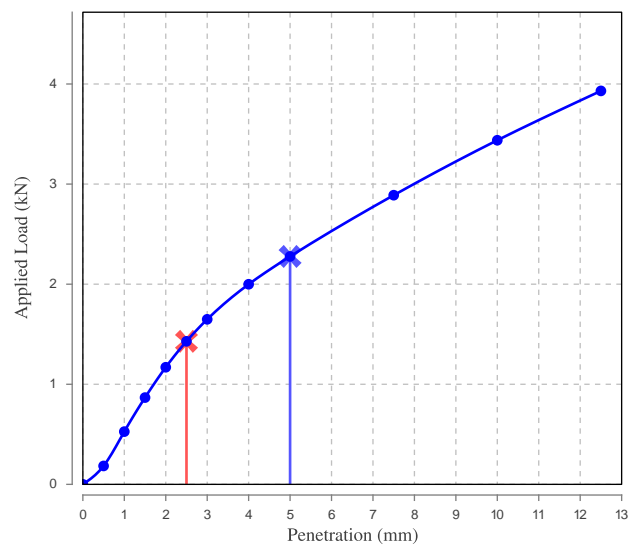
Andrew Hutchings

Approved Signatory: Andrew Hutchings
 Senior Geotechnician
 NATA Accredited Laboratory Number: 828

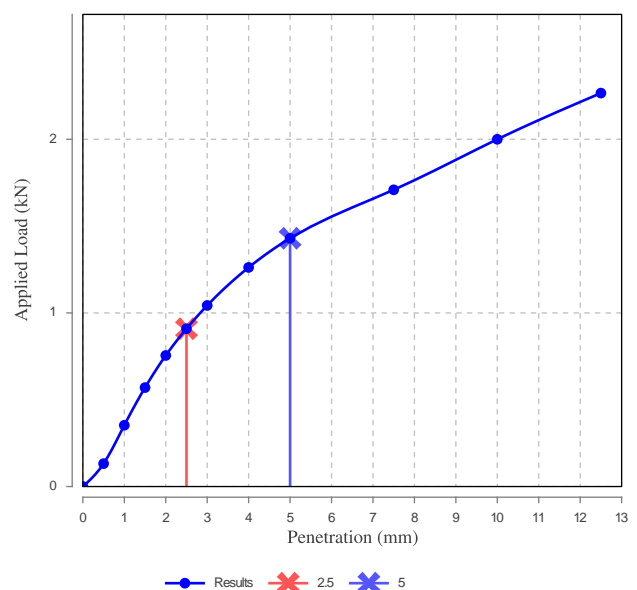
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 12 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.81 | | |
| Optimum Moisture Content (%) | 14.0 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 100.5 | | |
| Moisture Content at Placement (%) | 14.3 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | | | |
| Curing Hours | 72 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 7 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.81 | | |
| Optimum Moisture Content (%) | 14.0 | | |
| Laboratory Density Ratio (%) | 100.5 | | |
| Laboratory Moisture Ratio (%) | 100.0 | | |
| Dry Density after Soaking (t/m^3) | 1.80 | | |
| Field Moisture Content (%) | 9.6 | | |
| Moisture Content at Placement (%) | 14.2 | | |
| Moisture Content Top 30mm (%) | 17.9 | | |
| Moisture Content Rest of Sample (%) | 16.2 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 72 | | |
| Swell (%) | 0.5 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697G
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 42 (0.1-0.8m)
Material: FILL / sandy CLAY : orange brown, with some gravel



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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 31 | | |
| Plastic Limit (%) | 17 | | |
| Plasticity Index (%) | 14 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697H
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 31 (0.2-0.7m)
Material: FILL / sandy CLAY : orange brown, with gravel and a trace of cobbles of both sedimentary and igneous origin



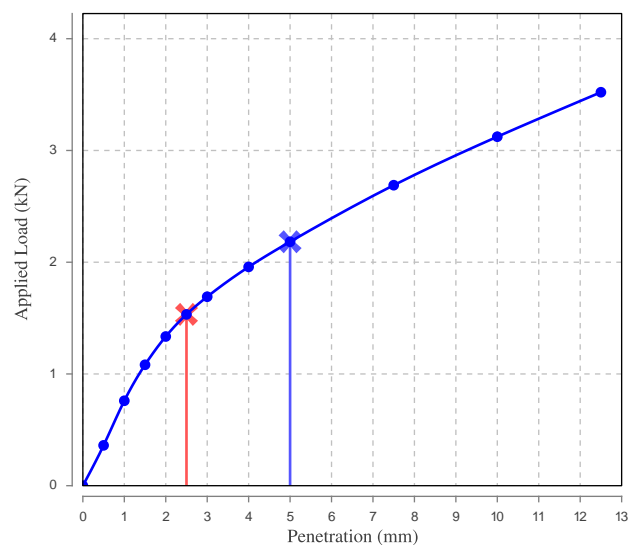
Andrew Hutchings

Approved Signatory: Andrew Hutchings
 Senior Geotechnician
 NATA Accredited Laboratory Number: 828

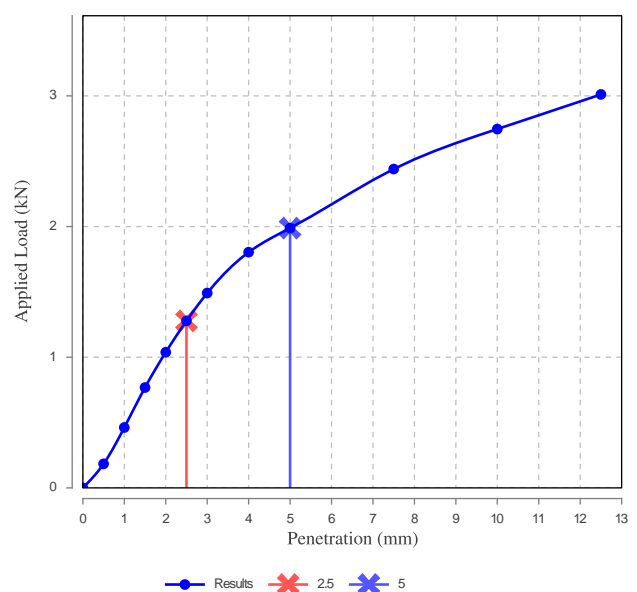
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 2.5 mm | | |
| CBR % | 12 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.80 | | |
| Optimum Moisture Content (%) | 16.0 | | |
| Laboratory Density Ratio (%) | 99.5 | | |
| Laboratory Moisture Ratio (%) | 102.5 | | |
| Moisture Content at Placement (%) | 16.6 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 72 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 81.8 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 10 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.80 | | |
| Optimum Moisture Content (%) | 16.0 | | |
| Laboratory Density Ratio (%) | 99.5 | | |
| Laboratory Moisture Ratio (%) | 102.5 | | |
| Dry Density after Soaking (t/m^3) | 1.78 | | |
| Field Moisture Content (%) | 15.7 | | |
| Moisture Content at Placement (%) | 16.6 | | |
| Moisture Content Top 30mm (%) | 18.1 | | |
| Moisture Content Rest of Sample (%) | 17.5 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 73 | | |
| Swell (%) | 0.5 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 81.8 | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697H
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 31 (0.2-0.7m)
Material: FILL / sandy CLAY : orange brown, with gravel and a trace of cobbles of both sedimentary and igneous origin



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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 44 | | |
| Plastic Limit (%) | 19 | | |
| Plasticity Index (%) | 25 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-46971
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 22 (0.2-0.9m)
Material: FILL / sandy CLAY : grey with gravel and a trace of terracotta



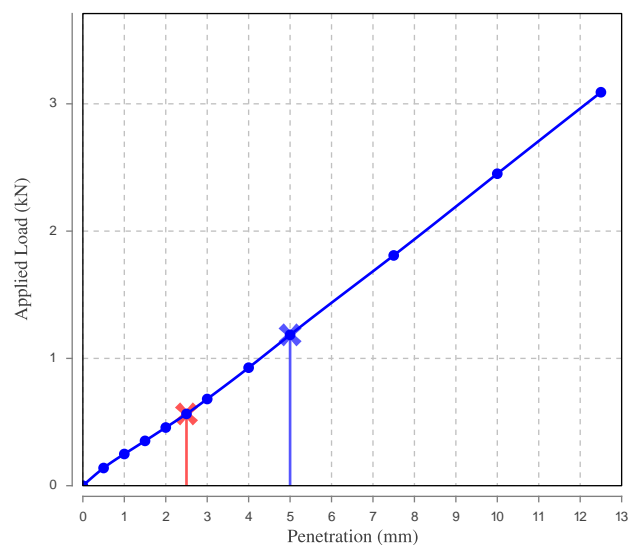
Andrew Hutchings

Approved Signatory: Andrew Hutchings
 Senior Geotechnician
 NATA Accredited Laboratory Number: 828

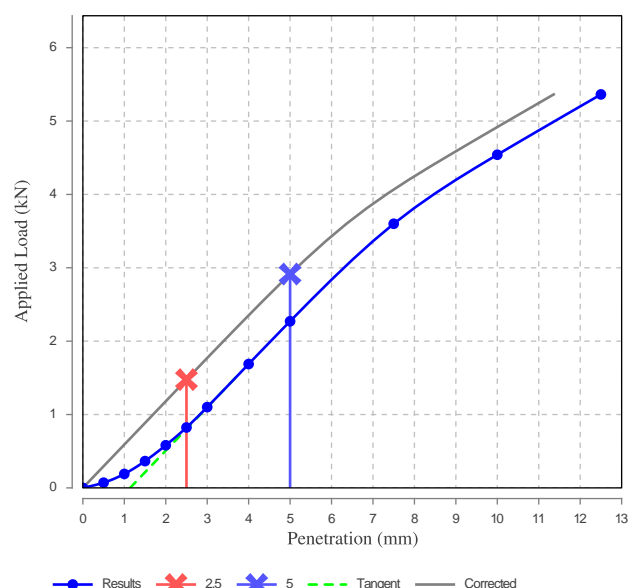
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 6 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.79 | | |
| Optimum Moisture Content (%) | 15.5 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 102.0 | | |
| Moisture Content at Placement (%) | 15.9 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 48 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 2.7 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 15 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.79 | | |
| Optimum Moisture Content (%) | 15.5 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 101.5 | | |
| Dry Density after Soaking (t/m^3) | 1.79 | | |
| Field Moisture Content (%) | 14.7 | | |
| Moisture Content at Placement (%) | 15.8 | | |
| Moisture Content Top 30mm (%) | 16.9 | | |
| Moisture Content Rest of Sample (%) | 16.5 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 48 | | |
| Swell (%) | 0.5 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 2.7 | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697I
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 22 (0.2-0.9m)
Material: FILL / sandy CLAY : grey with gravel and a trace of terracotta



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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 32 | | |
| Plastic Limit (%) | 27 | | |
| Plasticity Index (%) | 5 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697J
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 5 (0.2-0.7m)
Material: FILL / sandy CLAY : light brown, with sandstone gravel



Andrew Hutchings

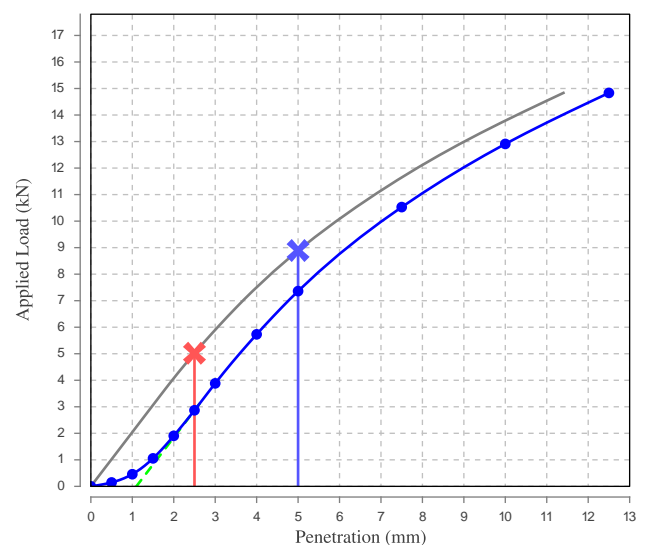
Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

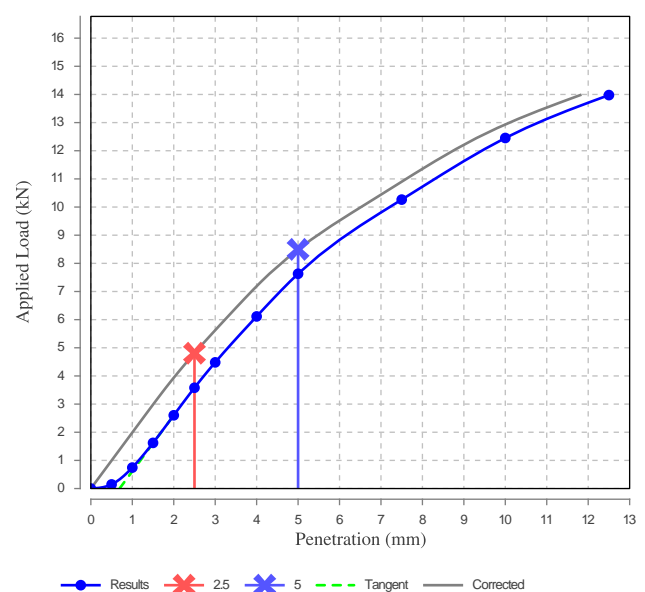
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 45 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 2.06 | | |
| Optimum Moisture Content (%) | 10.0 | | |
| Laboratory Density Ratio (%) | 101.0 | | |
| Laboratory Moisture Ratio (%) | 92.0 | | |
| Moisture Content at Placement (%) | 9.4 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 48 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 0.8 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 45 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 2.06 | | |
| Optimum Moisture Content (%) | 10.0 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 98.0 | | |
| Dry Density after Soaking (t/m^3) | 2.06 | | |
| Field Moisture Content (%) | 11.2 | | |
| Moisture Content at Placement (%) | 10.0 | | |
| Moisture Content Top 30mm (%) | 11.0 | | |
| Moisture Content Rest of Sample (%) | 9.5 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 72 | | |
| Swell (%) | 0.0 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 0.8 | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697J
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 5 (0.2-0.7m)
Material: FILL / sandy CLAY : light brown, with sandstone gravel



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Sydney Laboratory

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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 23 | | |
| Plastic Limit (%) | 16 | | |
| Plasticity Index (%) | 7 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697K
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 25 (0.2-0.8m)
Material: FILL / silty SAND : grey, with brick, tile and gravel



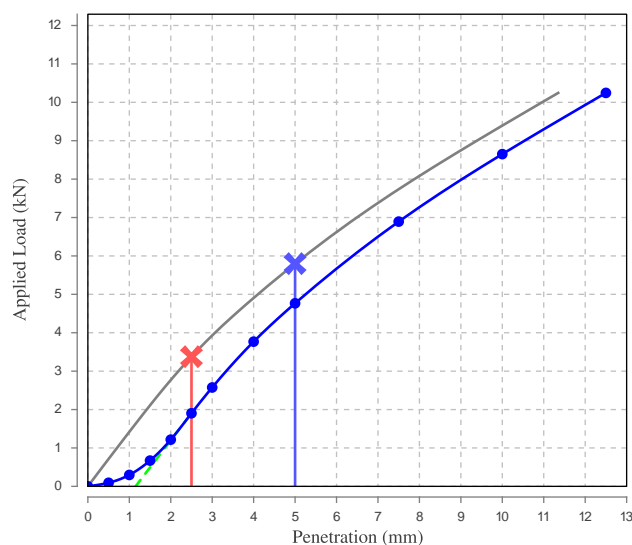
Andrew Hutchings

Approved Signatory: Andrew Hutchings
 Senior Geotechnician
 NATA Accredited Laboratory Number: 828

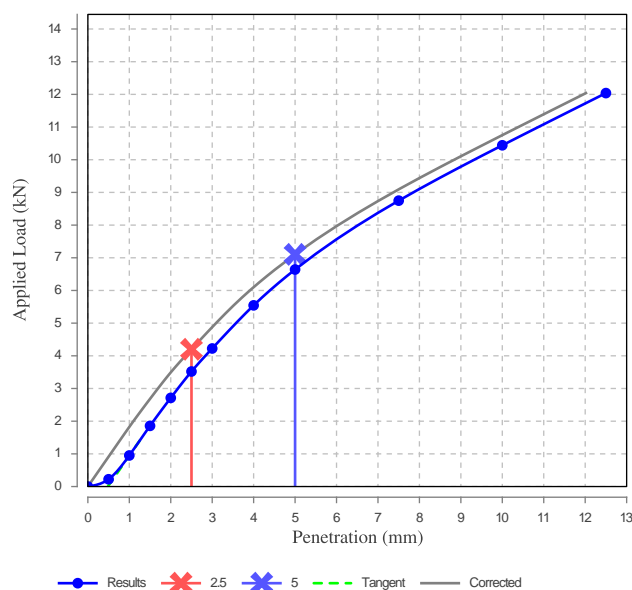
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 30 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.94 | | |
| Optimum Moisture Content (%) | 13.5 | | |
| Laboratory Density Ratio (%) | | | |
| Laboratory Moisture Ratio (%) | 100.0 | | |
| Moisture Content at Placement (%) | 13.4 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 48 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 4.1 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 35 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.94 | | |
| Optimum Moisture Content (%) | 13.5 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 98.0 | | |
| Dry Density after Soaking (t/m^3) | 1.94 | | |
| Field Moisture Content (%) | 7.6 | | |
| Moisture Content at Placement (%) | 13.1 | | |
| Moisture Content Top 30mm (%) | 15.1 | | |
| Moisture Content Rest of Sample (%) | 13.9 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 72 | | |
| Swell (%) | 0.0 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 4.1 | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697K
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 25 (0.2-0.8m)
Material: FILL / silty SAND : grey, with brick, tile and gravel



Douglas Partners Pty Ltd

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96 Hermitage Road West Ryde NSW 2114

Phone: (02) 9809 0666

Fax: (02) 9809 0666

Email: andrew.hutchings@douglaspartners.com.au

Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 25 | | |
| Plastic Limit (%) | 20 | | |
| Plasticity Index (%) | 5 | | |

Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
 Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697L
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 29 (0.4-0.6m)



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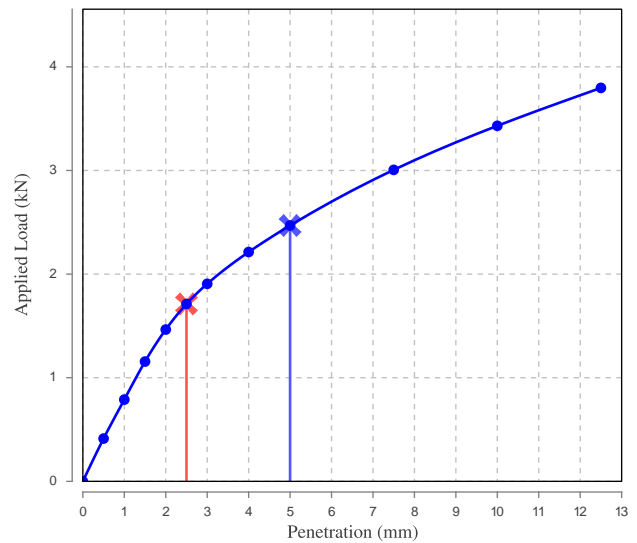
Andrew Hutchings

Approved Signatory: Andrew Hutchings
 Senior Geotechnician
 NATA Accredited Laboratory Number: 828

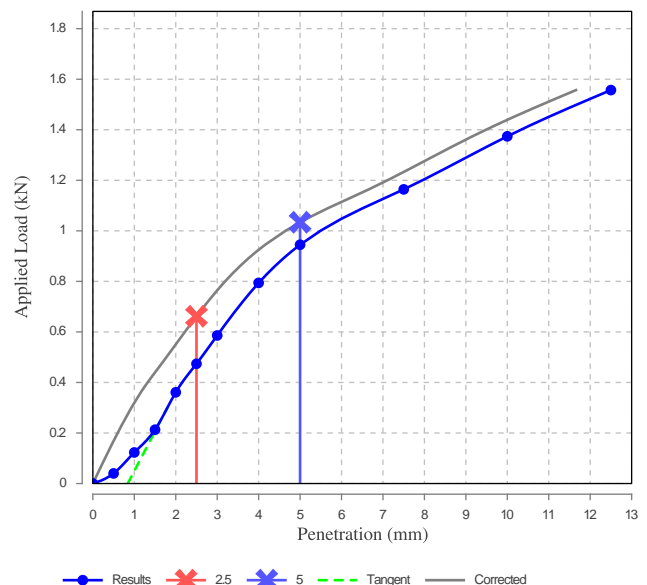
| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 2.5 mm | | |
| CBR % | 13 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.80 | | |
| Optimum Moisture Content (%) | 16.5 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 99.5 | | |
| Moisture Content at Placement (%) | 16.5 | | |
| Moisture Content Top 30mm (%) | | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | Unsoaked | | |
| Curing Hours | 96 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 1.6 | | |

| California Bearing Ratio (AS 1289 6.1.1 & 2.1.1) | | Min | Max |
|--|-----------------------|-----|-----|
| CBR taken at | 5 mm | | |
| CBR % | 5 | | |
| Method of Compactive Effort | Standard | | |
| Method used to Determine MDD | AS 1289 5.1.1 & 2.1.1 | | |
| Method used to Determine Plasticity | Visual Assessment | | |
| Maximum Dry Density (t/m^3) | 1.80 | | |
| Optimum Moisture Content (%) | 16.5 | | |
| Laboratory Density Ratio (%) | 100.0 | | |
| Laboratory Moisture Ratio (%) | 98.0 | | |
| Dry Density after Soaking (t/m^3) | 1.77 | | |
| Field Moisture Content (%) | 18.2 | | |
| Moisture Content at Placement (%) | 16.3 | | |
| Moisture Content Top 30mm (%) | 22.9 | | |
| Moisture Content Rest of Sample (%) | 18.2 | | |
| Mass Surcharge (kg) | 4.5 | | |
| Soaking Period (days) | 4 | | |
| Curing Hours | 96 | | |
| Swell (%) | 1.5 | | |
| Oversize Material (mm) | 19 | | |
| Oversize Material Included | Excluded | | |
| Oversize Material (%) | 1.6 | | |

California Bearing Ratio



California Bearing Ratio



Material Test Report

Report Number: 86694.02-1
Issue Number: 1
Date Issued: 16/08/2019
Client: Cox Architecture Pty Ltd
Level 6, 155 Clarence Street, Sydney NSW 2000
Contact: Anthony Crozier
Project Number: 86694.02
Project Name: Western Sydney Cricket and Community Centre
Project Location: Wilson Park, 4 Newington Road, Silverwater
Work Request: 4697
Sample Number: 19-4697L
Date Sampled: 26/07/2019
Dates Tested: 26/07/2019 - 15/08/2019
Sampling Method: Sampled by Engineering Department
Sample Location: 29 (0.4-0.6m)



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Approved Signatory: Andrew Hutchings
Senior Geotechnician

NATA Accredited Laboratory Number: 828

| Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1) | | Min | Max |
|--|------------|-----|-----|
| Sample History | Oven Dried | | |
| Preparation Method | Dry Sieve | | |
| Liquid Limit (%) | 47 | | |
| Plastic Limit (%) | 21 | | |
| Plasticity Index (%) | 26 | | |