The Landing Stage 4 & Stage 5 Earthworks Completion Report

WFH PROPERTIES LIMITED

One Tree Point

The Landing

Stage 4 & Stage 5

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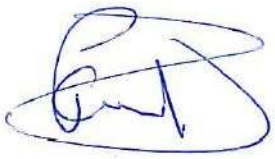
Originator:

Stefano Rotatori – Chartered Professional Engineer (Geotechnical)

ME, IntPE (NZ), CMEngNZ, CPEng





Approved for issue:

Philip Cook – Chartered Professional Engineer

BE(hons),Dip Ag, CPEng, CMEngNZ, IntPE(NZ), MACENZ,MInstD



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1. Limitations

This report, and the stated or inferred professional opinions found within, relating to the suitability of the areas being ready for building development, shall not be construed as a guarantee.

This report, and the inferred professional opinions found within does not remove the necessity for site-specific geotechnical investigation, normal inspection and design of foundations for each lot, as would be made in natural ground and NZS3604 for standard residential building foundations.

2. Executive Summary

Cook Costello was engaged by WFH Properties Ltd, to provide technical advice for earthworks and be the geo-professional for the Landing Stage 4 & 5 subdivision at One Tree Point, Northland. Cook Costello designed earthwork cuts and placement of controlled sand engineered fill, in order to enable construction of the building platforms within the proposed development.

A requirement of the consenting authority WDC (Whangarei District Council) is that a "Statement of Professional Opinion on Suitability of Land for Building Construction" (Statement of Suitability) is made by the geo-professional at the end of construction (prior to building developments). This process requires "WDC form EES-PO1" to be completed, and requires a geotechnical completion report. The completion report summarises the situation and is used to describe any departure from the standard foundation conditions expected by the building industry and outline any restrictions or recommendations if required. The purpose of this report is to provide the supporting details required for the Statement of Suitability.

The Statement of Professional Opinion on Suitability of Land for Building Construction - Form EES-PO1 has been attached to Appendix 6.

3. Introduction

Cook Costello was engaged by WFH Properties Ltd, to provide technical advice for earthworks and be the geo-professional for the Landing Stage 4 & 5 subdivision at One Tree Point, Northland. Cook Costello designed earthwork cuts and placement of controlled sand engineered fill, in order to enable construction of the building platforms within the proposed development.

Previous reports and geotechnical information at the site comprise of:

- Ormiston Associates Ltd. Geotechnical Report (dated September 2005).
- Cook Costello Earthworks Specification (dated October 2018).

This report is for completion of the subdivision works in relation to the developed sections and covers the information required by the Whangarei District Council for preparing consent notices for the future property titles and provides geotechnical information to the future lot owners. It covers the requirements of the Whangarei District Council Engineering Standards (Issue 1, operative from 1 July 2010) for subdivision completion and is an addendum to the Form EES-PO1 certificate.

On completion of the works, the developer shall provide the following:

- Geotechnical reports and plans,
- All limitations on the development of the properties, including hazards, easement requirements etc.

This report relates to the lots in Stages 4 & 5 of the subdivision. The lot numbers for Stage 4 & 5 (as shown on the Scheme Plan appended to Appendix 1) covered by this report are:

Stage 4:

- 56 Residential Lots (lots 265 – 270; 319; – 452; 380 - 428).
- Roads 4, 5, and 8.

Stage 5:

- 45 Residential Lots (lots 250 – 264; 447 – 452; 271 – 291; 316-318).
- Roads 6, 7, 10 and 19.

The subdivision has been designed and constructed to satisfy Whangarei District Council Environmental and Engineering Standards 2010.

4. Site Description

The Landing subdivision is situated at One Tree Point, approximately 17 km southeast of Whangarei Central Business District. The subdivision consists of 9 stages, with Stage 1, Stage 2 , Stage 3, Stage 4 and Stage 5 completed and Stage 6 and Stage 7 currently under construction. The scheme plan for Stages 4 & 5 can be seen in Appendix 1.

5. Geology

The property is regionally placed as part of the Marsden Point Barrier Spit, a broad peninsula, comprised of coastal SAND dunes, estuarine and alluvial sediments, that partly encloses Whangarei Harbour. These are considered young soils.

The spit has been built up by a prograding (seaward advancing) foreshore depositional process in the vicinity of the harbour entrance with sequences of aeolian influenced coastal SAND dunes and alluvial and estuarine sediments.

The GNS Science online geology map defines the underlying geology of the site as comprised of Late Pleistocene stable dune deposits. Weakly cemented sand in fixed transverse dune ridges.

The soil type in the area is defined on NZMS290 Sheet Q06/07 Hukerenui - Whangarei (SOILS) as a combination of Ruakaka Loamy Peat, One Tree Point Peaty Sand and Tangitiki Sandy Loam and Sand (imperfectly to poorly drained).

The rock type in the area is defined on NZMS290 Q06/07 Hukerenui - Whangarei (ROCK TYPES) as Sand: felspathic with some quartz, minor dark minerals and clay forming fixed dunes, minor swamp deposits; unconsolidated to very soft. Unweathered or weathered to brown-stained very soft clayey sand to depths of 5m.

6. Construction Methodology

The earthworks were carried out under Cook Costello as the supervising engineering consultants with Geocivil Ltd carrying out the physical testing. The general methodology consisted of a removal of organic material (peat and topsoil) stripped ground inspection, cut to fill, with fill being tested, and covering complete fill with organic topsoil peat.

A bulk earthworks plan showing the finished earthworks and contours is included in Appendix 2.

6.1. Earthworks

A bulk earthworks operation was carried out over the site to improve the drainage and contour of the Lots. Earthworks were also carried out to establish reasonable building platforms. Stage 4 & 5 of the Landing used the following methodology:

1. The topsoil and the peat were stripped off using motor scrapers and 50 ton Moxy dump trucks (Cat 725) with 20 – 30 ton excavators (Cat 320).
2. Cut to fill in the old sand dune complex using Sand fill was undertaken to bring the lots up to finished level.
3. Testing was undertaken to achieve a medium dense compacted sand with an allowable bearing capacity of greater than 100 kPa (Ultimate Bearing Capacity of 300kPa). This meets the requirements of the New Zealand Standard 4404 and the New Zealand Building Code.

4. Once the desired contours were achieved topsoil was spread from the temporary stockpile using Motor scrapers. This was track rolled with a D6 dozer and levelling bar.
5. Grassing of Stage 4 & 5 occurred very shortly after the top soiling process was completed.

6.2. Roading

A standard industrial/commercial roading operation was undertaken on Stage 4 & 5. The roading has been achieved using the following methodology:

1. Trim subgrade sand layer to level using Motor Scrapers and graders.
2. Check the subgrade CBR by Scala Penetrometer analysis.
3. Place lay and spread AP65 subbase layer using a Grader and 10 ton dynamic and static rollers to achieve optimum density.
4. Prepared Kerb lines using a grader and a 4 ton Dynapac roller.
5. Place, Laid, and formed slip form kerb and channels.
6. Backfilled kerb & channel using 12 Ton excavator.
7. Place lay and spread AP40 basecourse layer using a grader and 10 ton dynamic and static rollers to achieve optimum density, using a 9 ton PTR to tighten the top layer ready for sealing.
8. Check the compaction of the basecourse layer by Nuclear Densometer Readings and Benkelman Beam testing.
9. Sweep / clean the road of loose material and debris ready for seal.
10. Seal the street with waterproofing seal coat and single coat chip seal (grade 5) using automatic pressurised bitumen sprayer 6-wheel trucks with chip spreading boxes on to spread both the bitumen and chip over the surface evenly.
11. Apply asphaltic concrete over waterproofing layer using paving machine and rollers. Asphaltic concrete to be DG10 or AC10 (refer to paving plan) to comply with NZTA M/10 Specification.

7. Testing & Inspection Methodology

The relevant quality control testing for the bulk earthworks was undertaken by Cook Costello and Geocivil Ltd at the required intervals. Testing locations are appended in Appendix 3, results of the tests can be found in Appendix 4.

Supervision by the Engineers was required at key critical stages, and a series of hold points were identified and agreed with the Contractor.

7.1. Fill Testing

The Cook Costello Earthworks Specification (dated October 2018) initially suggested testing consisting of Light Weight Deflectometer (LWD),Scala Penetrometers (DCP) and Nuclear Densometers (NDM).

However, during compaction of the material, it was discovered that there was a delay of approximately 4 – 5 weeks between compaction and achieving the desired compaction results. This is due to pore-pressure build up in the compacted fill material caused by the compaction process. The delay between testing and receiving results was unacceptable in terms of constructability.

As a result, it was decided to test the fill material using Static Plate Load Tests (PLT) where fill to undercut levels was deeper than 1.5m. This allowed the testing to be conducted at the finished level, speeding up the construction process. DCPs, NDMs and LWDs were conducted at the finished level after the excess pore pressure was allowed to dissipate where fill depth to undercut was less than 1.5m depth.

Frequency of testing has been set up to be not less than:

- 1 test per layer or 200 mm thickness per material type per 2500 m^2; or
- 1 test per 500 m^3 distributed reasonably evenly throughout full depth and area; or
- 3 tests per visit; whichever requires the most tests.

As a result, the following testing has been carried out on the sand FILL areas:

- No. 103 Plate Load Tests
- No. 93 Scalas/NDMs/LWDs
- No. 5 CPTs

Locations of testing on the fill areas are shown on Drawing G01, appended to Appendix 3.

To be noted that the 300kPa ultimate bearing capacity has been calculated according to DIN 18134:2012-04 at 5mm vertical settlement (DIN 18134:2012-04: German Standard Soil Testing procedures and testing equipment – Plate load test, English translation of DIN 18134:2012-04).

7.2. Undercut Testing

The Cook Costello Earthworks Specification (dated October 2018) suggested testing consisting of Light Weight Deflectometer (LWD), Scala Penetrometers (DCP) and Nuclear Densometers (NDM). Prior to fill placement, the area was stripped of vegetation and topsoil and inspected by Cook Costello and Geocivil Ltd. Site testing with DCPs was conducted to identify areas and depths that required further undercutting. Undercutting terminates on the consolidated sand layers (i.e. hard pan) and/or at the bottom of the peat or sandy peat layer.

Enabling works, undercut and benching to competent material were inspected and approved by the supervising Engineer prior to filling.
Approximately 100 Scala penetrometer tests were carried out to assess the suitability of the undercut areas.
Locations of testing on the undercut areas are shown in Drawing G02, appended to Appendix 3.

7.3. Laboratory Testing

Laboratory testing was undertaken during construction to determine the following characteristics for the sand fill and for enabling site testing procedures. Laboratory testing is attached to Appendix 3. An Exhaustive list of laboratory testing is reported below:

- Determination of the Dry density/water content relationship – New Zealand Standard Compaction - NZS 4402: 1986 Test 4.1.1
- Determination of the particle size distribution-Dry sieving method - NZS 4407:2015 Test 3.8.2
- Determination of the Dry density/water content relationship – New Zealand Heavy Compaction - NZS 4402: 1986 Test 4.1.2
- Determination of Organic Content.
- Determination of PH(f) and PH(ox) in soil.

8. Foundation Design

8.1. Ultimate Bearing Capacity

Investigations have been carried out by or under the supervision of Geocivil Ltd or Cook Costello. The locations of tests are shown in Appendix 3. Test results are shown in Appendix 4.

In accordance with the Whangarei District Council Environmental Engineering Standards dated 2010 clause 2.7 The Councils Report on Completion of Construction undertook testing as the excavation or filling was carried out. The following testing was undertaken to support the statement of professional opinion as to the compliance of the filled/cut ground to the specification and the suitability of the land for Building Construction. (WDC Form EES-PO1). The testing undertaken in our view provides sufficient information to allow identification of any specific design requirements that necessitate the building foundation design to deviate from NZS 3604 and NZS 4229 and design parameters for detailed design of the foundations (such as bearing capacity, suitable founding depth etc).

The testing approach has been to test and demonstrate that the bearing capacity requirements of NZS3604 and NZS 4229 have been met or exceed the requirements of the definition of “Good Ground” where the tests were undertaken. It is assumed that the extent of testing represents that 300kPa ultimate bearing capacity is exceeded over the entire building platform even though not every piece of that ground/soil has been tested.

The existing depth of peat/peaty sand was determined by the Geotechnical Investigation Report carried out by Ormiston Associated Ltd for the residential subdivision (ref. # 1600/2114, dated September 2005). 51 CPTs, 25 Flight Augers, and 4 test pits were carried out on site. These tests showed a depth generally up to 5.5m of inferred organic peat, peaty sand and organic silts with good sand bearing below, over the majority of the site. Due to the ongoing long term settlement and shrinkage properties of the peat and organic soils, it was decided to remove this material as part of the bulk earthworks operations.

Scala Penetrometer and Plate Load testing were carried out to identify the compaction and ultimate bearing capacity of the sand fill layers. Scala Penetrometers were used to determine ultimate bearing capacity in cut areas. The bearing capacity results are summarised in Table 1. The provided ultimate bearing capacity of 300kPa is available below any topsoil that has been spread on site after the completion of the earthworks. To be noted that between 100 – 300 mm of topsoil has been spread throughout the site with an average of 200 mm.

Table 1: Bearing capacity summary for Stage 4 & Stage 5 of The Landing Subdivision.

Area	Depth (mbgl)	Ultimate Static Bearing Capacity (kPa)	Dependable Static Bearing Capacity (kPa)
Stage 4 & 5 (All Lots)	0.1 - 0.3	300	150

The Statement of Professional Opinion on Suitability of Land for Building Construction - Form EES-PO1 is included within Appendix 6.

8.2. Static Settlements

Foundation design should limit the probable maximum differential settlement over a horizontal distance of 6 m to no more than 25 mm under serviceability limit state load combinations of AS/NZS 1170 Part 0, unless the structure is specifically designed to prevent damage under a greater settlement.

8.3. Subsoil Class

Generally, across the entire site, the soils are consistent with site subsoil classification Class C – Shallow Soil sites as per NZS1170.5, based on estimated shear velocity (Vs) values from the CPTs presented within Ormiston Associated Ltd (ref. # 1600/2114, dated September 2005) and the calculated natural period of the site was less than 0.6 seconds.

8.4. Liquefaction Potential

8.4.1. Previous Liquefaction Analysis

As stated in the Geotechnical Investigation Report carried out by Ormiston Associated Ltd (ref. # 1600/2114, dated September 2005). The site presents a low risk for the development of liquefaction during an earthquake. The investigations at the property presented in the Ormiston Geotechnical report, in particular the CPT tests, indicates that the site is underlain by upper dense sands (qc varying from 8MPa to 20MPa) overlying a layer of loose to medium dense sands.

Groundwater is variable across the site, varying between 3.04m and 5.9m. Liquefaction does not occur above the groundwater table and this relatively deep groundwater decreases the potential of liquefaction within the shallow layers that have been cut up to the consolidated sands (hardpan) or filled using compacted sands.

In the sand-filled areas, where the unsuitable materials have been removed, sand fill has been compacted, increasing the relative density of the sands. Subsequently, further CPTs testing have been carried out to assess the liquefaction potential of the compacted sand fill. Liquefaction analysis is discussed in the next Section 1.1.1.

8.4.2. CPT Investigations

Geocivil Ltd conducted three CPTs to a 20 m target depth on 10 June 2020 where the sand fill depths were more significant within Stage 4 and Stage 5 subdivisions. To be noted that between 100 – 300 mm of topsoil has been spread throughout the site. In fact, the top 300 mm layer encountered within the CPTs records show a cone resistance between 2 and 6 MPa as recorded within the topsoil layer. However, all the test results show Dense / Very Dense Sand below the topsoil with a cone resistance qc between 10 and 20 MPa.

CPT investigations carried out on site are summarised in Table 2. Detailed testing results are shown in Appendix 4, CPTs test locations are shown in Appendix 3.

Table 2: CPT Investigation results.

Test ID	Depth (m)	Groundwater Table (m)	Depth (m)	qc (MPa)[1]	Interpreted Soil Description
CPTF	1.36	Not Encountered	0 – 0.25	3	**Silty SAND** and **Sandy SILT**
			0.25 – 1.36	18	**SAND** and **Silty SAND**
CPTG	0.86	Not Encountered	0 – 0.45	5	**SAND and Silty SAND**
			0.45 – 0.86	20	**SAND**
CPT I	3.46	Not Encountered	0.0 – 0.35	4.5	**Silty SAND** and **Sandy SILT**
			0.35 – 0.80	12	**SAND and Silty SAND**
			0.80 – 1.70	16	**SAND**
			1.70 – 3.20	13	**SAND and Silty SAND**
			3.18 – 3.46	20	**SAND**
CPTL	15.6	5.2	0.0 – 2.6	9.5 - 12	**SAND and Silty SAND**
			2.6 – 3.0	5	**Silty SAND** and **Sandy SILT**
			3.0 – 9.5	6 - 20	**SAND and Silty SAND**
			9.5 -	4 - 9	**Silty SAND** and **Sandy SILT**

1. Cone tip resistance

8.4.3. Peak Ground Acceleration

According to NZS 1170.5:2004, Importance Level 2 buildings are required to be designed to resist earthquake shaking with an annual probability of exceedance of 1/500 (i.e. a 500-year return period).

This is the ultimate limit state (ULS) design seismic loading. Structures are expected to retain their structural integrity during the ULS earthquake, and not collapse or endanger life.

Peak horizontal ground accelerations (PGA) have been calculated in accordance with MBIE/NZGS Module 1 (2016) using the following formula:

$PGA = C_{0,1000} R f g / 1.3$

$C_{0,1000}$ = 0.13 for Whangarei (NZTA Bridge Manual Commentary (2018) Table C6)

R = 1.0 for a 500-year return period event (NZS 1170.5)

f = 1.33 for Class C

Thus, the PGA = 0.13 x 1.0 x 1.33 g / 1.3 = 0.13 g for ULS.

The seismic parameters are summarised in Table 3.

Table 3: Seismic parameters.

Importance Level	Limit State	Peak Ground Acceleration, PGA or C(T)	Effective Magnitude, M_w
2	ULS[1]	0.13	5.8
2	SLS[2]	0.03	5.8

1. Ultimate Limit State
2. Serviceability Limit State

8.4.4. Method of Analysis

CPT results have been analysed using CLiq software to assess the potential soil liquefaction and settlement. Boulanger & Idriss (2014) was used to evaluate the liquefaction potential (triggering) of the soil strata at the site, the method proposed by Zhang et al. (2002) was used for settlement calculations.

Liquefaction analysis results are attached in Appendix 5.

The assessment of liquefaction has been undertaken under ultimate limit state design (ULS) criteria and serviceability limit state design (SLS) criteria. The serviceability limit state is the point where a structure can no longer be used for its intended purpose but would still be structurally sound. The tolerances for serviceability depend on the intended use of the structure and can vary significantly (Section 2 of NZS 1170.5:2004).

A groundwater level of 3.0 mbgl was conservatively considered during earthquake events for the liquefaction analysis which is the shallowest recorded value within the Geotechnical Investigation Report carried out by Ormiston Associated Ltd.

8.4.5. Liquefaction Severity Number (LSN)

The Liquefaction Severity Number (LSN) is a method developed by Van Ballegooy et al (2013) which provides an estimate of liquefaction damage manifesting at the ground surface. The LSN parameter

refines the calculated settlement by including a depth weighting function and can be used to differentiate the most severe damage land from the least affected land. Table 4 provides the LSN ranges and associated damage classifications.

Table 4: LSN Ranges and damage classifications

LSN Range	Damage Classification
0 – 10	Little to No expression of liquefaction
10 – 20	Minor expression of liquefaction
20 – 30	Moderate expression of liquefaction
30 – 40	Moderate to severe expression of liquefaction
40 – 50	Major expression of liquefaction
50+	Severe damage

8.4.6. Ultimate Limit State

A PGA value of 0.13 g and an earthquake magnitude (M_w) of 5.8 have been used for liquefaction analysis in accordance with NZGS Module 1 and the NZTA Bridge Manual guidelines.

8.4.6.1. Liquefaction Severity Number

The LSN for the ULS design case was 2.6 only for CPTL and nil for CPTF, G and I. This indicates *Little to no expression of liquefaction* according to Table 4. Refer to Figure 1 below.

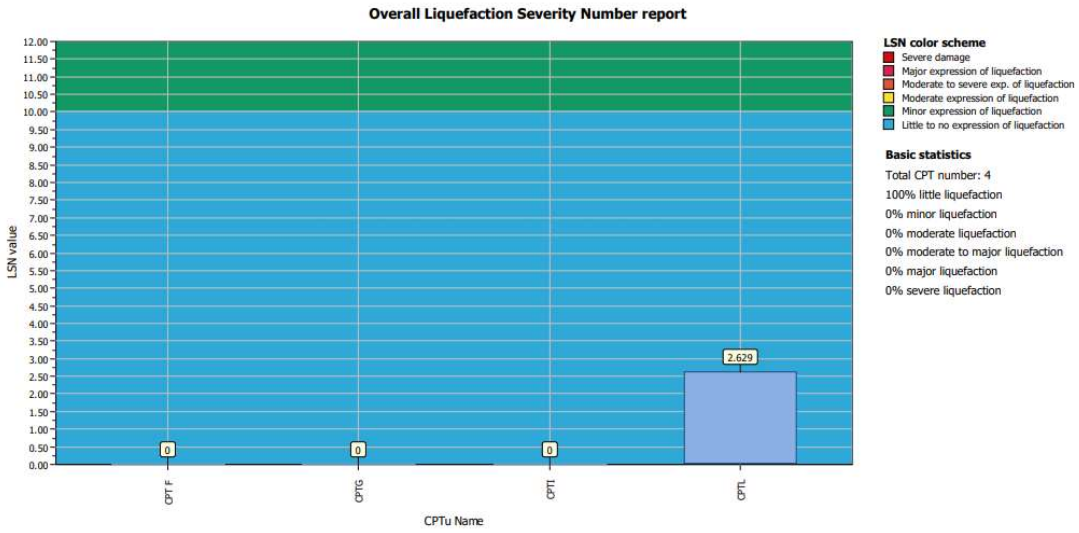

Figure 1: LSN results summary (ULS).

8.4.6.2. Liquefaction Induced Subsidence

up to 20 mm of settlement has been noted under the ULS design earthquake parameters for CPTL. Refer to the liquefaction results attached in Appendix 5.

8.4.6.3. Lateral Displacement

Lateral displacement is not considered to be an issue on site due to the presence of relatively flat ground.

8.4.7. Serviceability Limit State

A PGA value of 0.03 g and an earthquake magnitude (Mw) of 5.8 have been used for liquefaction analysis for the SLS case in accordance with NZGS Module 1 and the NZTA Bridge Manual guidelines.

8.4.7.1. Liquefaction Severity Number

The LSN for the SLS design case was nil. This indicates *Little to no expression of liquefaction* according to Table 4. Refer to Figure 2 below.



Figure 2: LSN results summary (SLS).

8.4.7.2. Liquefaction Induced Subsidence

No settlement has been noted under the SLS design earthquake parameter. Refer to the liquefaction results attached in Appendix 5.

8.4.8. Liquefaction Summary

Liquefaction potential is considered to be low. Little to no expression of liquefaction is expected within Stages 4 & 5 subdivision. Liquefaction analysis results are attached in Appendix 5. Up to 20 mm of settlements could be expected under the ULS earthquake case that are within the tolerance of the building code that is 25 mm over 6 m according to Clause B1/VM1 for static settlements.

8.5. Acid Sulphate Risk

8.5.1. Acid Sulphate Testing Discussion

The Landing Stage 4 & 5 subdivision is mapped on the Whangarei District Council Map to be in the Acid Sulphate Risk Area. Acid Sulphate Soil Field PH Tests have been conducted on site following the Acid

Sulfate Soils Laboratory Methods Guidelines, Version 2.1, Section H, published by Department of Natural Resources, Mines and Energy, Indooroopilly, Queensland, Australia, June 2004. This Australian guide applies to soils below an RL of 5.0m.

Given the vicinity with Stage 3, no further testing was carried out for Stages 4 & 5. Outcomes of further testing would not have changed the conservative approach the mitigation measures for foundation design recommended in Sections 8.5.2 and 8.5.3.

Field pH (pH_F) recording has been undertaken on site at the invert level (Test B) of proposed infrastructures (i.e. stormwater and sewer pipes) and 1 m above the invert level (Test A) in 10 different locations. Field testing is appended to Appendix 4.

For both Test A and Test B cases, field pH peroxide test (pH_{OX}) was performed on each of the 10 samples adding 30% of H_2O_2 (Hydrogen peroxide) to the 10 samples taken from the field in order to determine soil pH following complete oxidation.

After the reaction, the rate of the reaction indicates the level of sulfides present. The reaction is characterised by heat and gas evolution. A soil containing very little sulfides only rate an 'X' (Slight Reaction) however a soil containing high levels of sulfides is likely to rate an 'XXXX' (Very Vigorous Reaction). All the soil reaction of the pH_{OX} tests undertaken by Geocivil are characterised by an "X", therefore soils are likely to contain very little sulfides. Also, according to the ASS Sampling & Analysis Guidelines, 1998, a pH_{OX} value at least one unit below field pH_F indicates potential presence of acid sulphate soils. The greater the difference between the two measurements, the more indicative the value is of a PASS (Potential Acid Sulphate Soils). The lower the final pH_{OX} value is, the better the indication of a positive result. The lab testing generally shows a pH_{OX} value less than one unit below field pH, therefore the presence of acid sulphate soils could be little. Another qualitative indication of little sulphides is that If the measured $pH_{OX} < 3$. The more the pH_{OX} drops below 3, the more positive the presence of sulfides is. There is one pH_{OX} value recorded below 3.

These results are consistent with local observations of good quality concrete that had been in the ground for a long time and has been excavated and shows no sulphate acid damage.

However, the PH_F and pH_{OX} values are comprised between 2.92 and 5.22. According to NZS 3101:Part 1:2006 Section 3.4.3.2, an acidity represented by a PH of 5.0 to 5.5 may be considered as a practical limit of tolerance of high-quality concrete in contact with any acids. For pH lower than 5.0, the environment shall be assessed as exposure classification U. As per Section 3.8, NZS 3101, Exposure Classification U represents an exposure environment not specified in Table 3.1 of NZS 3101 for which the degree of severity should be assessed by the designer. Concrete in members subject to exposure classification U shall be specified to ensure durability under the particular exposure environment and for the chosen design life. Protective coatings may be taken into account in the assessment of concrete requirements.

Alternatively, as reported in the Acid Sulphate Soil Planning Policy Basic Guide prepared for WDC by Opus International Consultants, Australian Standard AS 2159 – 2009 Section 6 is relevant when

designing concrete and steel structures to withstand corrosive environments. This standard refers to piles, however the knowledge can be transferred to other structures.

8.5.2. Mitigation measure for Shallow Foundations

Given the acid sulphate soils risk and low pH values recorded on site, it is recommended installing a waterproof membrane underneath any shallow foundations, the membrane should be extended up to the edge of the foundations. If the above recommendations are followed, concrete exposure class can be A1 according to NZS3101.

8.5.3. Mitigation measure for Deep Foundations

8.5.3.1. Concrete

In case of deep concrete foundations were used on site, it is recommended referring to the Australian Standard AS 2159 – 2009 Section 6 when designing concrete and steel structures to withstand corrosive environments.

The exposure classification of concrete is *Very Severe* according to Table 6.4.2 (C) of AS 2159 – 2009, considering a pH less than 4 and soil Conditions A (high permeability soils). It is recommended to refer to Table 6.4.3 of AS 2159 – 2009 to select the minimum strength of concrete and concrete cover relevant for the *Very Severe* Exposure Classification and design life.

8.5.3.2. Steel

If steel elements are used in the ground (i.e. driven H-steel piles, etc.), it Is recommended adopting the Severe Exposure Classification shown inTable 6.5.2 (C) of AS 2159 – 2009, considering a pH less than 3 and soil Conditions A (high permeability soils).

A uniform corrosion allowance of 0.04-0.1 mm/year should be adopted during the design of any underground steel structure.

8.5.3.3. Timber

No precautions are required to be taken for timber piles. Timber is not susceptible to corrosion by acid.

8.6. Proposed Building Foundations

The test results indicate that the sites (once the peat / topsoil layer is removed) are suitable for standard foundations for buildings.

If a shallow concrete strip footing or concrete slab on grade is to be used, any organic soil such as peat and topsoil in the building footprint is to be excavated and replaced with an engineered hard fill layer of compacted aggregate in accordance with NZS 4431 or AS 3798:2007.

The Sandy material for all lots in Stage 4 & 5 is consistent with a Class A site as defined by AS 2870:2011 indicating little to no ground movement from moisture changes is expected.

This means that the finished ground within the lots is suitable for the erection of buildings on “Good Ground” in terms of NZS 3604:2011 (Timber Framed Buildings) & NZS 4229:2013 (Concrete Masonry Buildings Not Requiring Specific Engineering Design) and related documents providing that:

- Standard check of excavated foundations is carried out at time of construction.
- Buildings subject to heavy loads or vibrations will require specific design.
- Buildings not meeting the criteria for NZS3604:2011 and NZS4229:2013 will require specific design.

This report and the inferred professional opinions found within does not remove the necessity for normal inspection and design of foundations, as would be made in natural ground.

For the additional investigation, test sites should be situated under the building areas for each site and should be selected to give adequate information about the soil over the entire plan area of the proposed building. There shall be a minimum of four test sites for a building up to 200 m^2, with at least one additional test site for each additional 100 m^2 plan area of building as recommended by NZS3604.

9. Conclusions

Cook Costello was engaged by WFH Properties Ltd, to provide technical advice for earthworks and be the geo-professional for the Landing Stage 4-5 subdivision at One Tree Point, Northland. Cook Costello designed earthwork cuts and placement of controlled sand engineered fill, in order to enable construction of the building platforms within the proposed development.

All lots have been subject to bulk earthworks to provide sites suitable for standard foundations for typical residential buildings. Any heavy structures or heavy industry users will require specific design and further investigations. A layer of topsoil was spread over the lots to ensure moisture is retained and grass will grow to prevent wind-blown erosion.

Based on our investigations we make the following conclusions and recommendations:

- The test results indicate that the sites (once the peat/topsoil layer is removed) are suitable for standard foundations for buildings.
- An ultimate bearing capacity of 300kPa is available below any peat / topsoil that has been spread on site after the completion of the earthworks. To be noted that between 100 – 300 mm of topsoil has been spread throughout the site with an average of 200 mm.
- The site is consistent with Subsoil Class C – Shallow Soil sites as per NZS1170.5.
- Liquefaction potential is low. Little to no expression of liquefaction is expected within Stage 4 and Stage 5 subdivisions.
- Up to 20 mm of settlements could be expected under the ULS earthquake case that are within the tolerancy of the building code that is 25 mm over 6 m according to Clause B1/VM4 for static settlements.
- Foundation design should limit the probable maximum differential settlement over a horizontal distance of 6 m to no more than 25 mm under serviceability limit state load combinations of AS/NZS 1170 Part 0, unless the structure is specifically designed to prevent damage under a greater settlement.
- The Landing Stages 4 & 5 subdivisions are mapped on the Whangarei District Council Map to be in the Acid Sulphate Risk Area that is a well-known hazard in the area and well addressed with standard construction measures (i.e. waterproof membrane for shallow foundations).

  Acid Sulphate Soil Field PH Tests have been conducted. Results of lab testing suggest that soils are likely to contain very little sulfides.

  - However, the PH_F and pH_{OX} values are comprised between 2.92 and 5.22. According to NZS 3101:Part 1:2006 Section 3.4.3.2, an acidity represented by a PH of 5.0 to 5.5 may be considered as a practical limit of tolerance of high-quality concrete in contact with any acids.

- For pH lower than 5.0, the environment shall be assessed as exposure classification U as per NZS 3101.
- Alternatively, as reported in the Acid Sulphate Soil Planning Policy Basic Guide prepared for WDC by Opus International Consultants, Australian Standard AS 2159 – 2009 Section 6 is relevant when designing concrete and steel structures to withstand corrosive environments.
- It is recommended installing a waterproof membrane underneath any shallow foundations, the membrane should be extended up to the edge of the foundations to mitigate the presence of corrosive environment. If the above recommendations are followed, concrete exposure class can be A1 according to NZS3101.
- In case of deep concrete foundations were used on site, it is recommended referring to the Australian Standard AS 2159 – 2009 Section 6 when designing concrete and steel structures to withstand corrosive environments. The exposure classification of concrete is *Very Severe* according to Table 6.4.2 (C) of AS 2159 – 2009, considering a pH less than 4 and soil Conditions A (high permeability soils). It is recommended to refer to Table 6.4.3 of AS 2159 – 2009 to select the minimum strength of concrete and concrete cover relevant for the *Very Severe* Exposure Classification and design life.
- If steel elements are used in the ground (i.e. driven H-steel piles, etc.), it Is recommended adopting the Severe Exposure Classification shown in Table 6.5.2 (C) of AS 2159 – 2009, considering a pH less than 3 and soil Conditions A (high permeability soils).A uniform corrosion allowance of 0.04-0.1 mm/year should be adopted during the design of any underground steel structure.
- No precautions are required to be taken for timber piles. Timber is not susceptible to corrosion by acid.

- If a shallow concrete strip footing or concrete slab on grade is to be used, any organic soil such as peat and topsoil in the building footprint is to be excavated and replaced with an engineered hard fill layer of compacted aggregate in accordance with NZS 4431 or AS 3798:2007.
- The Sandy material for all lots in Stage 4-5 is consistent with a Class A site as defined by AS 2870:2011 indicating little to no ground movement from moisture changes is expected.
- The finished ground within the lots is suitable for the erection of buildings on “Good Ground” in terms of NZS 3604:2011 (Timber Framed Buildings) & NZS 4229:2013 (Concrete Masonry Buildings Not Requiring Specific Engineering Design) and related documents providing that:
  - Standard check of excavated foundations is carried out at time of construction.
  - Buildings subject to heavy loads or vibrations will require specific design.
  - Buildings not meeting the criteria for NZS3604:2011 and NZS4229:2013 will require specific design.

- This report and the inferred professional opinions found within does not remove the necessity for site-specific geotechnical investigation, normal inspection and design of foundations, as would be made in natural ground.

10. Limitations

This report has been prepared for the benefit of WFH Properties Limited as our client with respect to a geotechnical completion report for Stage 4 & 5 of The Landing Subdivision, One Tree Point. It shall not be relied upon for any other purpose. The reliance by other parties on the information or opinions contained in this report shall, without our prior review and agreement in writing, be at such parties' sole risk.

Opinions and judgments expressed herein are based on our understanding and interpretation of current regulatory standards and should not be construed as legal opinions. Where opinions or judgments are to be relied on they should be independently verified with appropriate legal advice. Any recommendations, opinions, or guidance provided by Cook Costello in this report are limited to technical engineering requirements and are not made under the Financial Advisers Act 2008.

Recommendations and opinions in this report are based on data from testing undertaken on site. The nature and continuity of subsoil conditions away from the tests are inferred and it must be appreciated that actual conditions could vary considerably from the assumed model.

During excavation and construction the site should be examined by a Cook Costello Engineer or Engineering Geologist to judge whether the exposed subsoil's are compatible with the inferred conditions on which the report has been based. It is possible that the nature of the exposed subsoil's may require further investigation and the modification of the design based on this report. In any event it is essential that the firm is notified if there is any variation in subsoil conditions from those described in the report as it may affect the design parameters recommended in the report.

Cook Costello have performed the services for this project in accordance with the standard agreement for consulting services and current professional standards for environmental site assessment. No guarantees are either expressed or implied.

There is no investigation which is thorough enough to preclude the presence of materials at the site which presently, or in the future, may be considered hazardous. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable now may in the future become subject to different regulatory standards which cause them to become unacceptable and require further remediation for this site to be suitable for the existing or proposed land use activities.

This report is generally appropriate for engineering use for five years, however it should be considered that future seismic events may change soil parameters and as a result, a new assessment of the site may be necessitated. Local changes in groundwater tables may also necessitate a reassessment of the site. It is recommended that if an interpretive report is more than two years old, or the proposed building that the report originally applied to have changed significantly, (e.g., layout, height, weight of building materials, foundation loads etc.) and/or design loadings have changed (e.g., design PGA levels), then the report is reviewed by the geotechnical engineer for current applicability.

Appendix 1 – Scheme Plan

SIZE A3

N

POWHAITERE RD

KAHUKAKA ROAD

KAURINUI CRESCENT

ONE TREE POINT ROAD

DP 521901

LOT 2 DP 212015

LOT 3 DP 128994

PT LOT 7 DP 23910

PT LOT 7 DP 23910

LOT 1 DP 375132

551

602

603

STAGE 8

STAGE 7

STAGE 6

STAGE 5

STAGE 4

ROAD 10

ROAD 6

ROAD 19

ROAD 7

ROAD 5

ROAD 4

ROAD 8

STACE HOPPER DRIVE

IMPORTANT NOTE: PRODUCER STATEMENTS

PS4 WILL NOT BE ISSUED AT COMPLETION OF WORKS UNLESS ALL REQUIRED TESTS AND INSPECTIONS HAVE BEEN NOTIFIED TO COOK COSTELLO AND COMPLETED DURING CONSTRUCTION

PHILIP COOK
WDC IQP#014

SCALE 1:2000

0 20 40 60 80 100 SCALE 1:2000

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REV.	REVISION DETAILS	DRAWN	APP.
D	JOAL 713 MOVED & LOT BDYS CHANGED	11/01/21 KH	PC
C	NEW IQP DETAILS	18/03/20 KH	PC
B	JOAL 707 REMOVED & LOTS 252-254 CHANGED	28/02/20 AP	GM

PROJECT DETAILS
WFH PROPERTIES LIMITED
THE LANDING - STAGES 4 & 5
ONE TREE POINT
RUAKAKA

TITLE
PROPOSED LAYOUT
STAGES 4 & 5

DATE CREATED	DRAWN	DESIGNED	APPROVED
29/11/2019	K HANSARD	A PARKER	G McGREGOR

CCL REF NO	SCALE	STATUS
14333-004	1:2000 @ A3	FOR APPROVAL

DWG NUMBER	REVISION
DD201	D

DATE PLOTTED: Thursday, March 04, 2021 00:10:01 FILE PATH: c:\12dS\temp\12dSynergy\12dSynergyServerService\3300\38052df1-fb11-465c-b7fb-123c0a6aa1f2\14333-004-DD200-Proposed Layout.dwg

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Appendix 2 – Finished Contours Plan

KAURINUI CRESCENT

ONE TREE POINT ROAD

DP 521901

LOT 2
DP 212015

LOT 3
DP 128994

PT LOT 7
DP 23910

PT LOT 7
DP 23910

LOT 1
DP 375132

N

Cutfill legend 0.5m

Lower Value		Upper Value		Colour
-10	to	-4.5	m	
-4.5	to	-4.0	m	
-4.0	to	-3.5	m	
-3.5	to	-3.0	m	
-3.0	to	-2.5	m	
-2.5	to	-2.0	m	
-2.0	to	-1.5	m	
-1.5	to	-1.0	m	
-1.0	to	-0.5	m	
-0.5	to	0.5	m	
0.5	to	1.0	m	
1.0	to	1.5	m	
1.5	to	2.0	m	
2.0	to	2.5	m	
2.5	to	3.0	m	
3.0	to	3.5	m	
3.5	to	4.0	m	
4.0	to	4.5	m	
4.5	to	5.0	m	

REV.	REVISION DETAILS	DRAWN	APP.
B			
A	1ST ISSUE	17-09-21	KH SR

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PROJECT DETAILS

WFH PROPERTIES LIMITED
THE LANDING - STAGES 4 & 5
ONE TREE POINT
RUAKAKA

TITLE

BULK EARTHWORKS PLAN
FINISHED EARTHWORK
CONTOURS
STAGE 4

DATE CREATED	CCL REF NO
17/09/2021	14333-004

DRAWN	DESIGNED	APPROVED
K HANSARD	K WATSON	S ROTATORI

SCALE	STATUS
1:1500 @ A3	AS BUILT

DWG NUMBER	REVISION
AS EW 1D	A

NOT FOR CONSTRUCTION

SCALE 1:1500

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SCALE 1:1500

DATE PLOTTED: Friday, 17 September 2021 12:21:58 pm FILE PATH: Z:\14000-14499\14333 - WFH Properties OTP_STAGE 4 & 5\CAD\14333-004 As Builts Finished Earthwork Contours.dwg

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KITEMAUNGA AVENUE

KAURINUI CRESCENT

KAHUKAKA ROAD

DP 521901

603

706

N

Cutfill legend 0.5m

Lower Value		Upper Value		Colour
-10	to	-4.5	m	
-4.5	to	-4.0	m	
-4.0	to	-3.5	m	
-3.5	to	-3.0	m	
-3.0	to	-2.5	m	
-2.5	to	-2.0	m	
-2.0	to	-1.5	m	
-1.5	to	-1.0	m	
-1.0	to	-0.5	m	
-0.5	to	0.5	m	
0.5	to	1.0	m	
1.0	to	1.5	m	
1.5	to	2.0	m	
2.0	to	2.5	m	
2.5	to	3.0	m	
3.0	to	3.5	m	
3.5	to	4.0	m	
4.0	to	4.5	m	
4.5	to	5.0	m	

REV.	REVISION DETAILS	DRAWN	APP.
B			
A	1ST ISSUE	17-09-21	
		KH	SR

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PROJECT DETAILS

WFH PROPERTIES LIMITED
THE LANDING - STAGES 4 & 5
ONE TREE POINT
RUAKAKA

TITLE

BULK EARTHWORKS PLAN
FINISHED EARTHWORK
CONTOURS
STAGE 5

DATE CREATED	CCL REF NO
17/09/2021	14333-004

DRAWN	DESIGNED	APPROVED
K HANSARD	K WATSON	S ROTATORI

SCALE	STATUS
1:1250 @ A3	AS BUILT

DWG NUMBER	REVISION
AS EW 2D	A

NOT FOR CONSTRUCTION

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SCALE 1:1250

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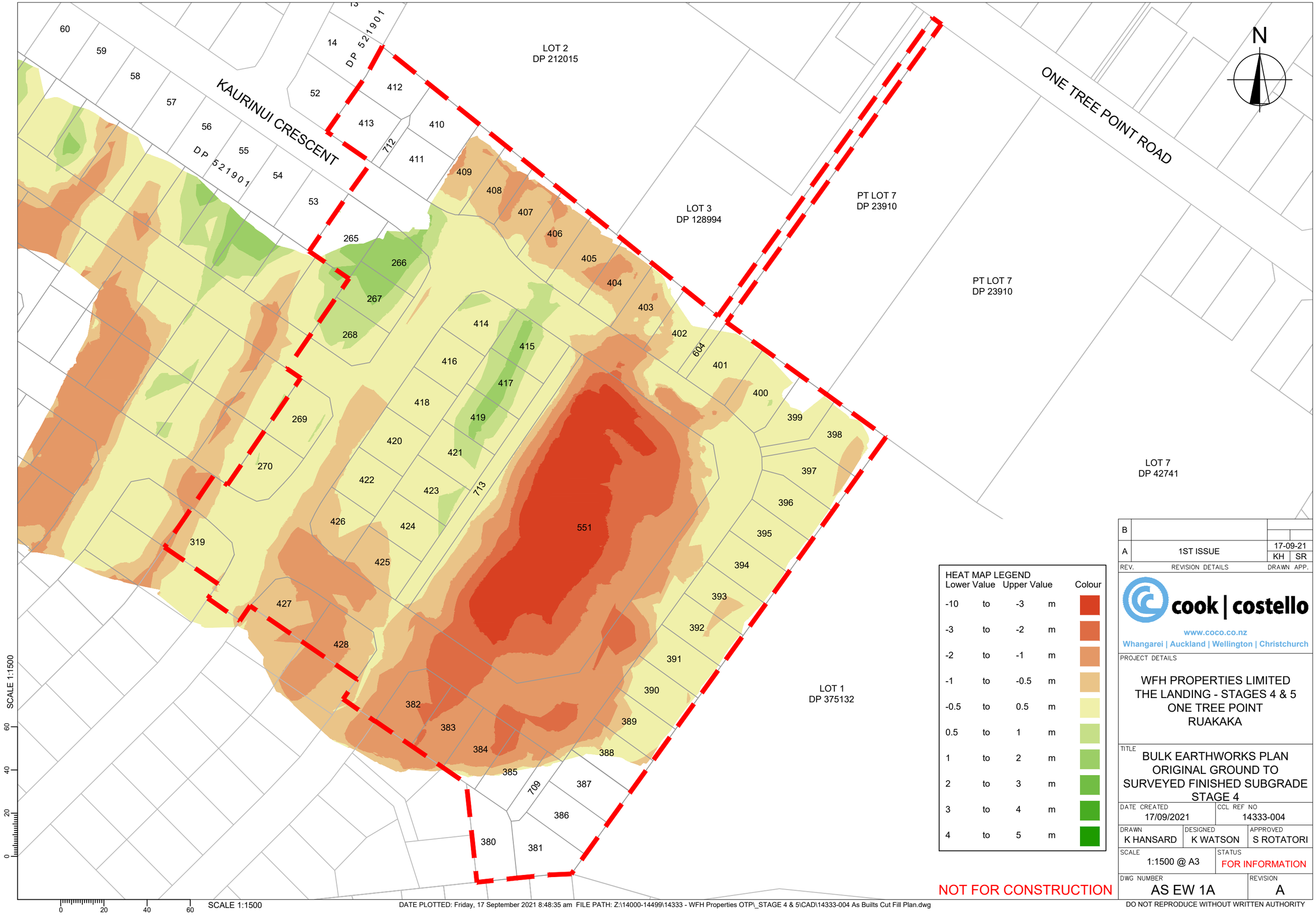

HEAT MAP LEGEND

Lower Value		Upper Value		Colour
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-3	to	-2	m	
-2	to	-1	m	
-1	to	-0.5	m	
-0.5	to	0.5	m	
0.5	to	1	m	
1	to	2	m	
2	to	3	m	
3	to	4	m	
4	to	5	m	

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SCALE 1:1500

0 20 40 60

SCALE 1:1500

DATE PLOTTED: Friday, 17 September 2021 8:48:35 am FILE PATH: Z:\14000-14499\14333 - WFH Properties OTP_STAGE 4 & 5\CAD\14333-004 As Builts Cut Fill Plan.dwg

REV.	REVISION DETAILS	DRAWN	APP.
B			
A	1ST ISSUE	17-09-21 KH	SR

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PROJECT DETAILS

WFH PROPERTIES LIMITED
THE LANDING - STAGES 4 & 5
ONE TREE POINT
RUAKAKA

TITLE

BULK EARTHWORKS PLAN
ORIGINAL GROUND TO
SURVEYED FINISHED SUBGRADE
STAGE 4

DATE CREATED	CCL REF NO
17/09/2021	14333-004

DRAWN	DESIGNED	APPROVED
K HANSARD	K WATSON	S ROTATORI

SCALE	STATUS
1:1500 @ A3	FOR INFORMATION

DWG NUMBER	REVISION
AS EW 1A	A

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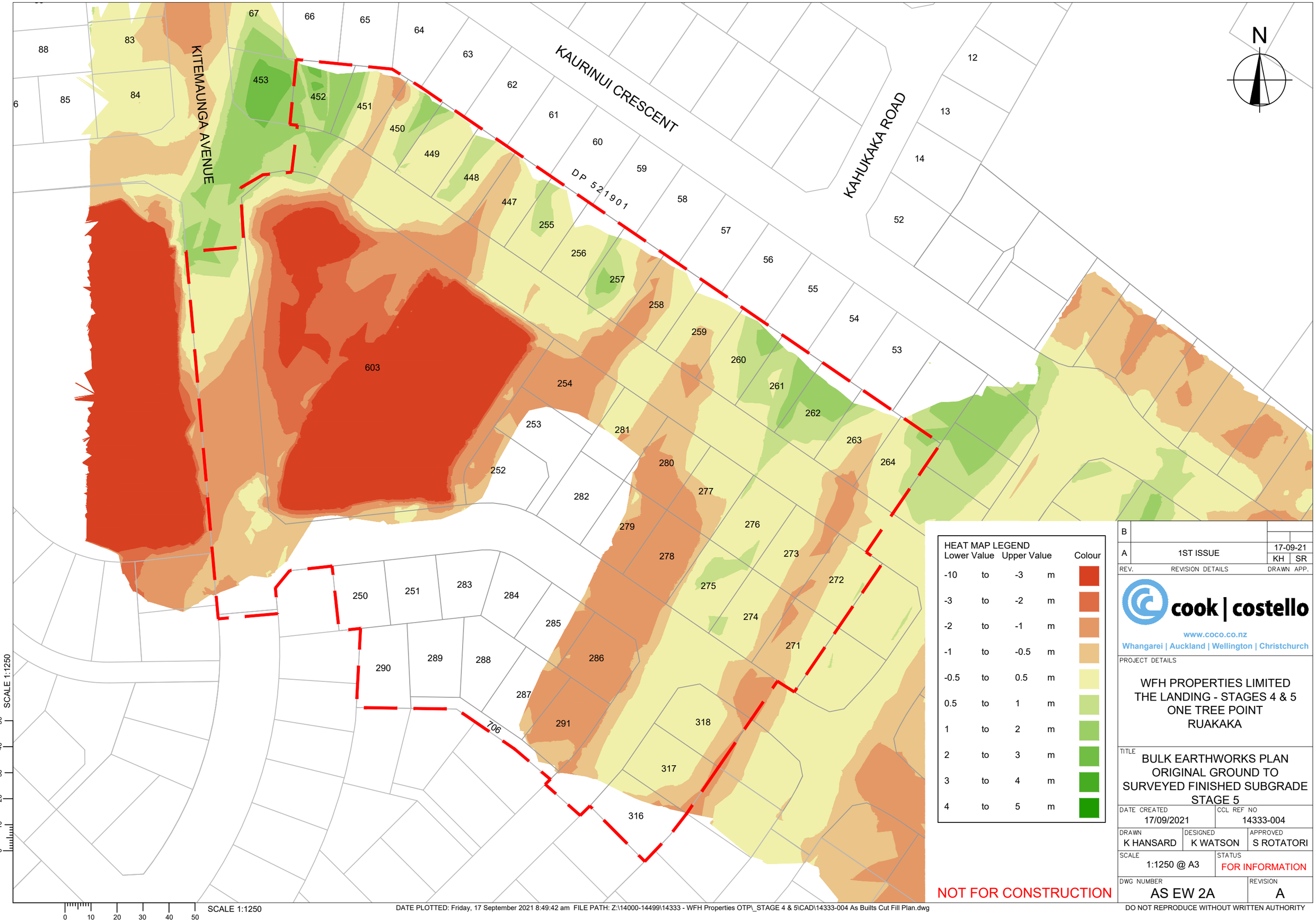

HEAT MAP LEGEND

Lower Value		Upper Value		Colour
-10	to	-3	m	
-3	to	-2	m	
-2	to	-1	m	
-1	to	-0.5	m	
-0.5	to	0.5	m	
0.5	to	1	m	
1	to	2	m	
2	to	3	m	
3	to	4	m	
4	to	5	m	

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REV.	REVISION DETAILS	DRAWN	APP.
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A	1ST ISSUE	17-09-21	KH SR

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PROJECT DETAILS

WFH PROPERTIES LIMITED
THE LANDING - STAGES 4 & 5
ONE TREE POINT
RUAKAKA

TITLE

BULK EARTHWORKS PLAN
ORIGINAL GROUND TO
SURVEYED FINISHED SUBGRADE
STAGE 5

DATE CREATED	CCL REF NO
17/09/2021	14333-004

DRAWN	DESIGNED	APPROVED
K HANSARD	K WATSON	S ROTATORI

SCALE	STATUS
1:1250 @ A3	FOR INFORMATION

DWG NUMBER	REVISION
AS EW 2A	A

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DATE PLOTTED: Friday, 17 September 2021 8:49:42 am FILE PATH: Z:\14000-14499\14333 - WFH Properties OTP_STAGE 4 & 5\CAD\14333-004 As Builts Cut Fill Plan.dwg

Appendix 3 – Site Testing Locations

N

POWHAITERE RD

KAURINUI CRESCENT

KAHUKAKA ROAD

ONE TREE POINT ROAD

DP 521901

LOT 2
DP 212015

LOT 3
DP 128994

PT LOT 7
DP 23910

PT LOT 7
DP 23910

LOT 2
DP 358186

DP 514519

STAGE 5

STAGE 4

CPTF

CPTG

CPTI

CPTL

CPTA Cone Penetration Test

DEPTH RANGE FILE Lower_value		Upper_value		Colour
-300	to	-5	m	
-5	to	-4.5	m	
-4.5	to	-4	m	
-4	to	-3.5	m	
-3.5	to	-3	m	
-3	to	-2.5	m	
-2.5	to	-2	m	
-2	to	-1.5	m	
-1.5	to	-1	m	
-1	to	-.5	m	
-.5	to	0	m	
0	to	.5	m	
.5	to	1	m	
1	to	1.5	m	
1.5	to	2	m	
2	to	2.5	m	
2.5	to	3	m	
3	to	3.5	m	
3.5	to	4	m	
4	to	4.5	m	
4.5	to	5	m	
5	to	300	m	

KEY:

SP01 LWDS / NDMS / SCALA

PLT01 PLATE LOAD TEST / CPT

CPTG cone penetration test

NOTES:

1. DEPTHS BASED ON SURVEYED UNDERCUT INFORMATION RECEIVED FROM BOB HICK EARTHMOVING LTD COMPARED WITH FINISHED DESIGN SUBGRADE LEVELS.

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SCALE 1:2000

0 20 40 60 80 100

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REV.	REVISION DETAILS	DRAWN	APP.
C			
B			
A	1ST ISSUE	02-10-19	AP

PROJECT DETAILS
WFH PROPERTIES LIMITED
THE LANDING
ONE TREE POINT
RUAKAKA

TITLE
STAGE 4 AND 5
SAND BULK EARTHWORKS
SURVEYED UNDERCUT TO SUBGRADE

DATE CREATED	DRAWN	DESIGNED	APPROVED
02-10-2019	AP	AP	
CCL REF NO	SCALE		STATUS
14333-004	1:2000 @ A3		FOR INFORMATION
DWG NUMBER			REVISION
G01			A

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Appendix 4 – Site Testing Results

166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: -

Date of Issue: 20/03/2020

Date of Re-Issue: -

Test Report No. W20-159

PROJECT: **The Landing - Subgrade Testing 04-09-19**

CLIENT: Cook Costello
2 Norfolk Street

ATTENTION: Mr Stefano Rotatori

TEST METHODS: Determination of the penetration resistance using a dynamic cone (scala) Penetrometer
NZS 4402: 1988 Test 6.5.2
Light Weight Deflectometer (LWD) (not accredited)
ASTM E2835-11 (not accredited)

SAMPLING METHOD: N/A

TEST RESULTS: As per attached sheets

A. Millar
Laboratory Technician

J. Agnew
Approved Signatory

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

GEO CIVIL
TEST RIGHT • BUILD RIGHT

166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

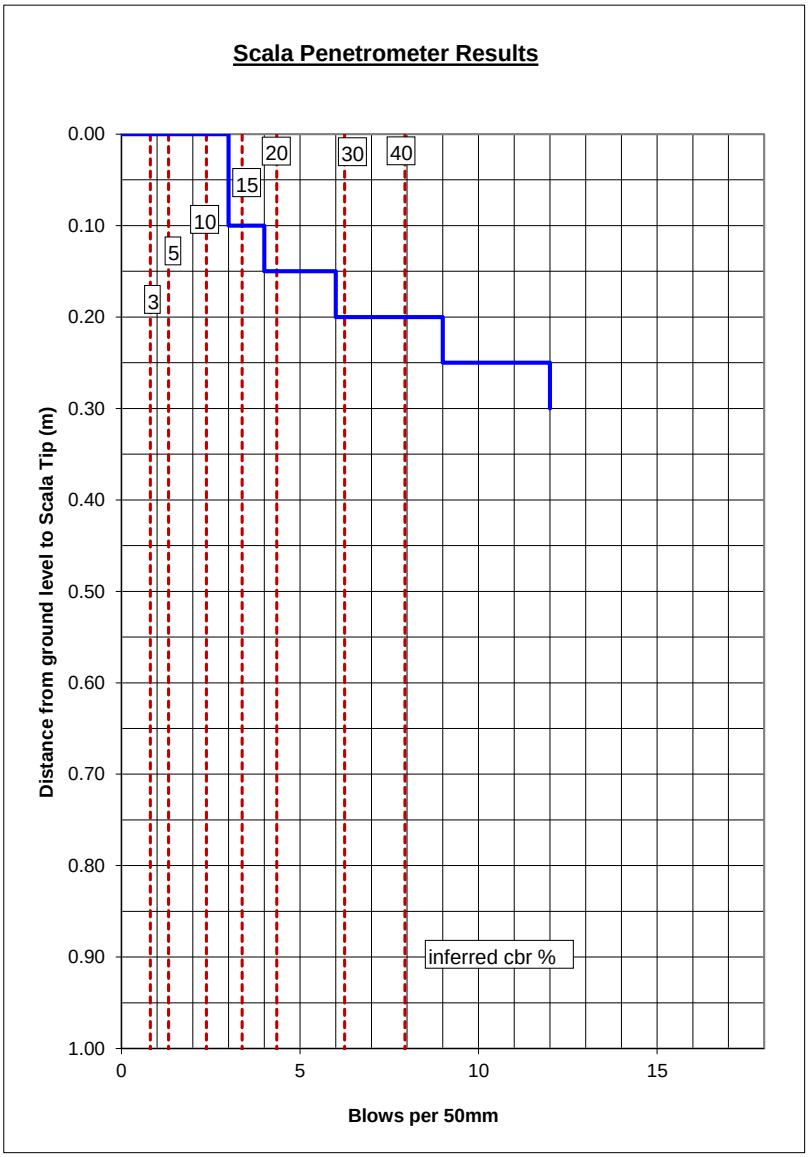
Scala No: SP370
Ref : 14333
Report No: W20-159
Page: 2 of 14

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	58	33.89	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
4	8	24	10	0.15
6	12	36	16	0.20
9	18	54	25	0.25
12	24	72	37	0.30

Scala Penetrometer Results



Recorded By: D.O
Date: 4/09/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

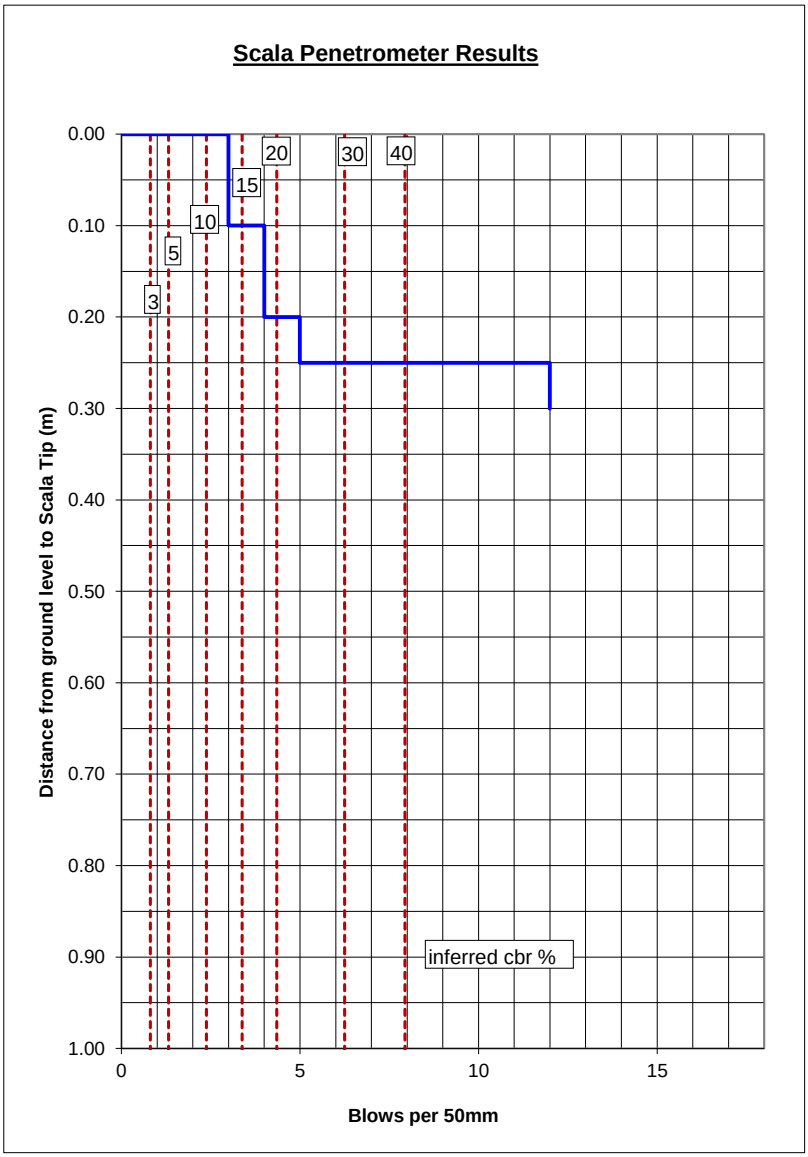
Scala No: SP371
Ref : 14333
Report No: W20-159
Page: 3 of 14

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	59	28.81	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
4	8	24	10	0.15
4	8	24	14	0.20
5	10	30	19	0.25
12	24	72	31	0.30

Scala Penetrometer Results



Recorded By: D.O
Date: 4/09/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

GEO CIVIL
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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

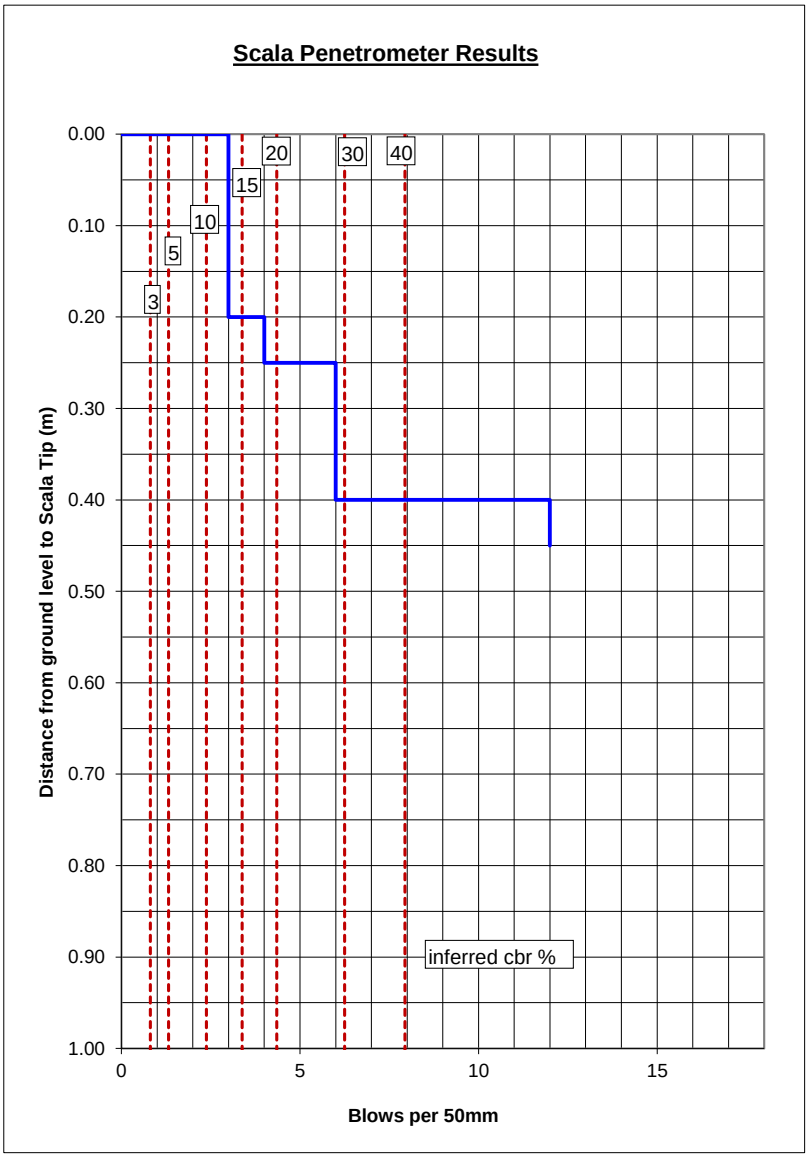
Scala No: SP372
Ref : 14333
Report No: W20-159
Page: 4 of 14

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	60	55.69	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
3	6	18	9	0.15
3	6	18	12	0.20
4	8	24	16	0.25
6	12	36	22	0.30
6	12	36	28	0.35
6	12	36	34	0.40
12	24	72	46	0.45

Scala Penetrometer Results



Recorded By: D.O
Date: 4/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

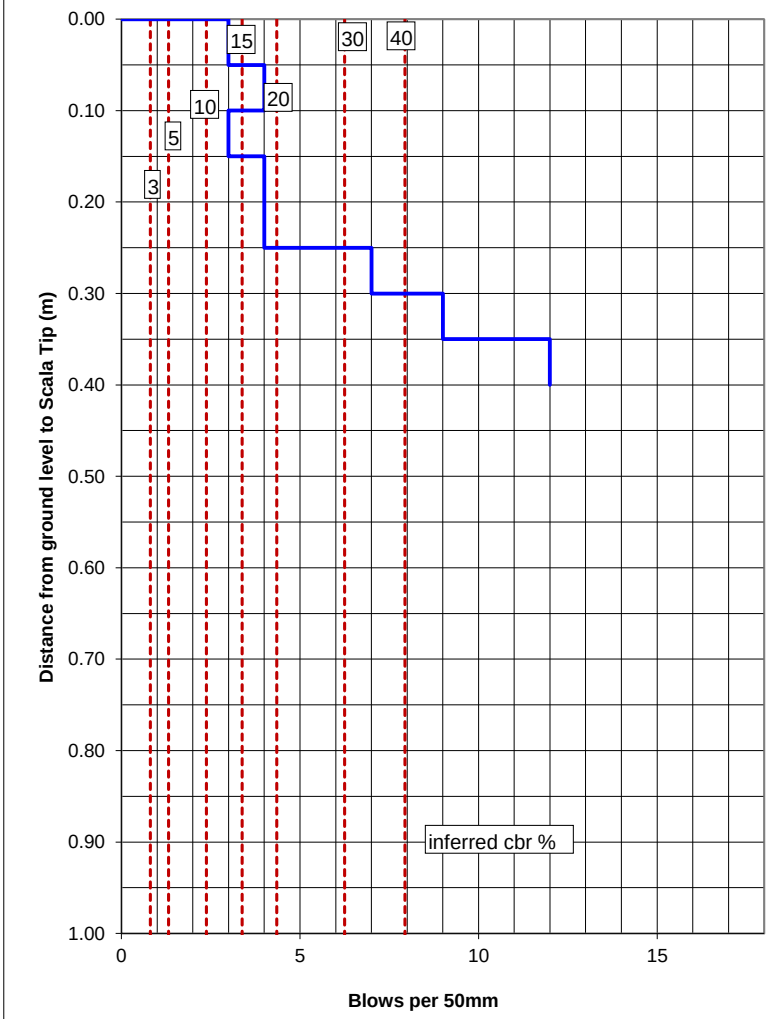
Scala No: SP373
Ref : 14333
Report No: W20-159
Page: 5 of 14

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	61	40.32	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
3	6	18	10	0.15
4	8	24	14	0.20
4	8	24	18	0.25
7	14	42	25	0.30
9	18	54	34	0.35
12	24	72	46	0.40

Scala Penetrometer Results



Recorded By: D.O
Date: 4/09/2019
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Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

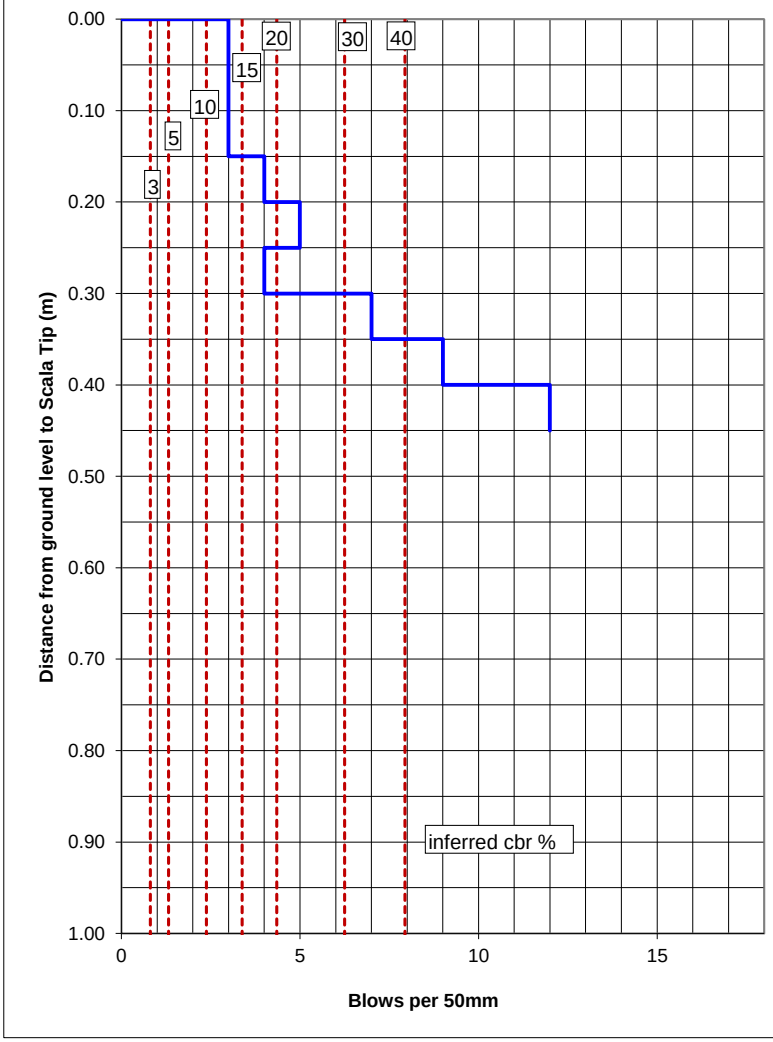
Scala No: SP374
Ref : 14333
Report No: W20-159
Page: 6 of 14

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	62	46.78	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
3	6	18	9	0.15
4	8	24	13	0.20
5	10	30	18	0.25
4	8	24	22	0.30
7	14	42	29	0.35
9	18	54	38	0.40
12	24	72	50	0.45

Scala Penetrometer Results



Recorded By: D.O
Date: 4/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

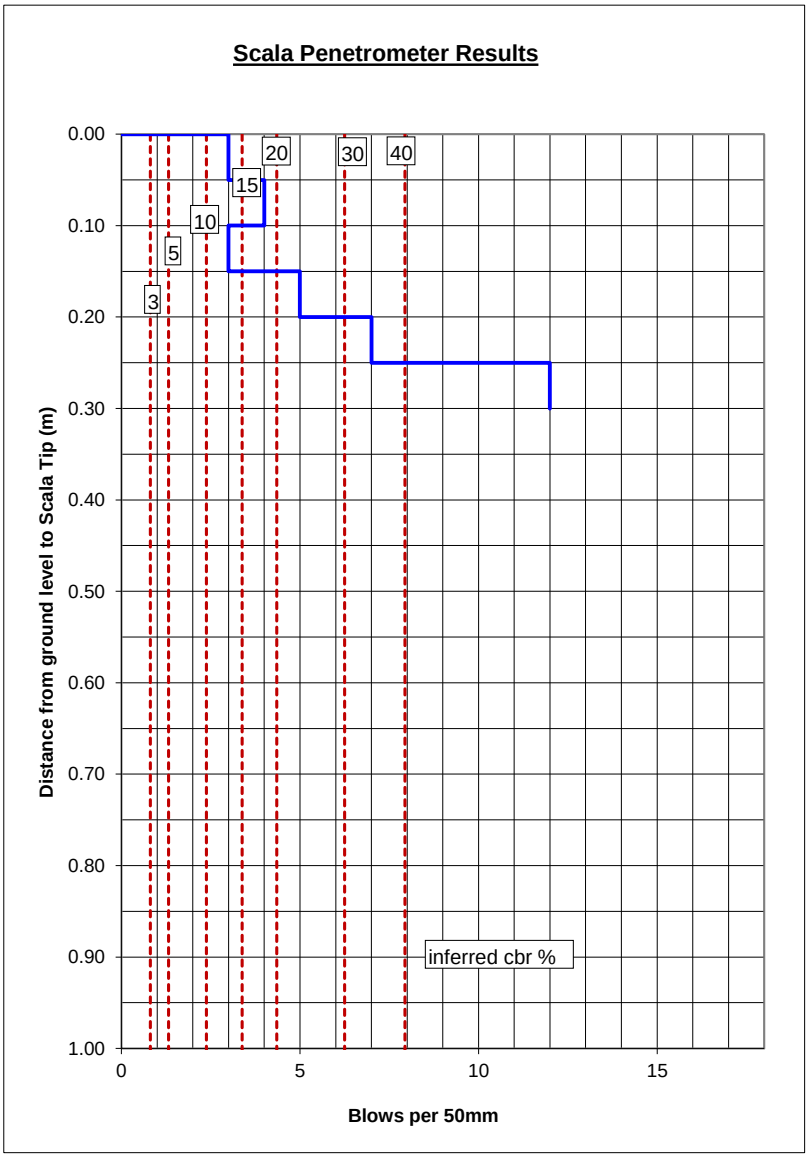
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP375
Ref : 14333
Report No: W20-159
Page: 7 of 14

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	63	25.68	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
3	6	18	10	0.15
5	10	30	15	0.20
7	14	42	22	0.25
12	24	72	34	0.30



Recorded By: D.O
Date: 4/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

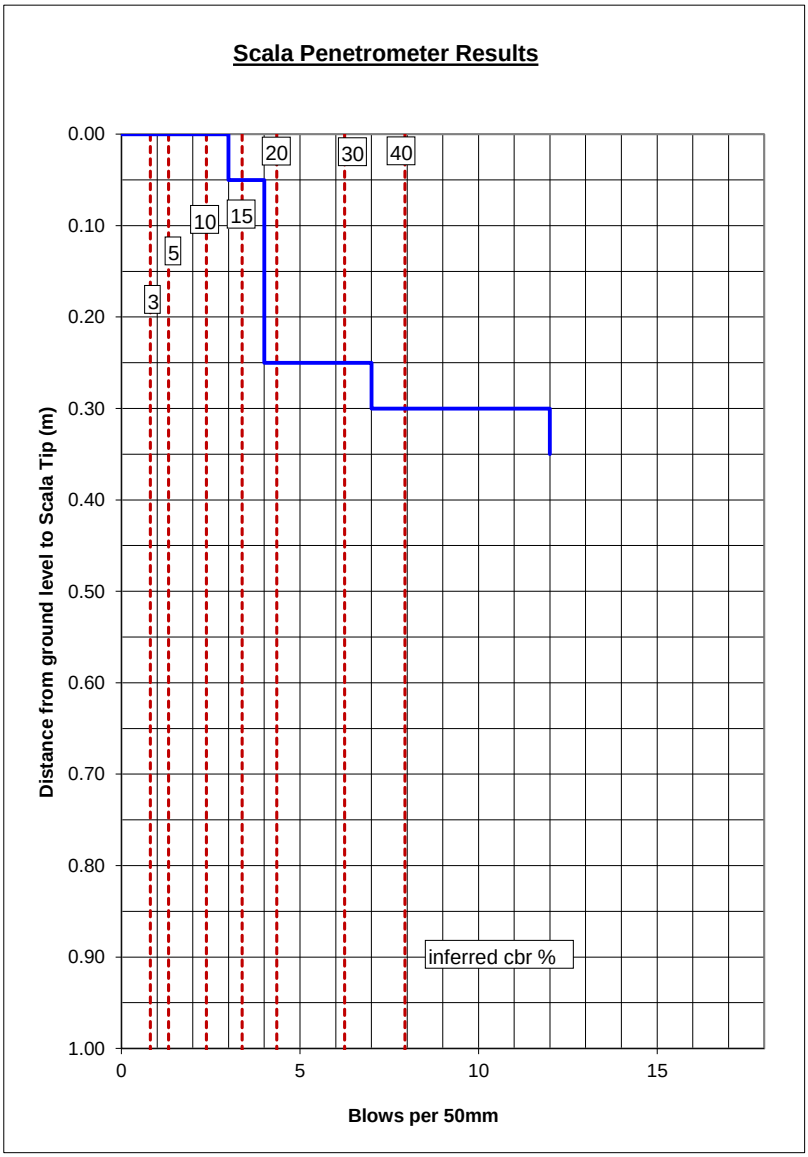
Scala No: SP376
Ref : 14333
Report No: W20-159
Page: 8 of 14

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	64	35.89	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
4	8	24	11	0.15
4	8	24	15	0.20
4	8	24	19	0.25
7	14	42	26	0.30
12	24	72	38	0.35

Scala Penetrometer Results



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Date: 4/09/2019
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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

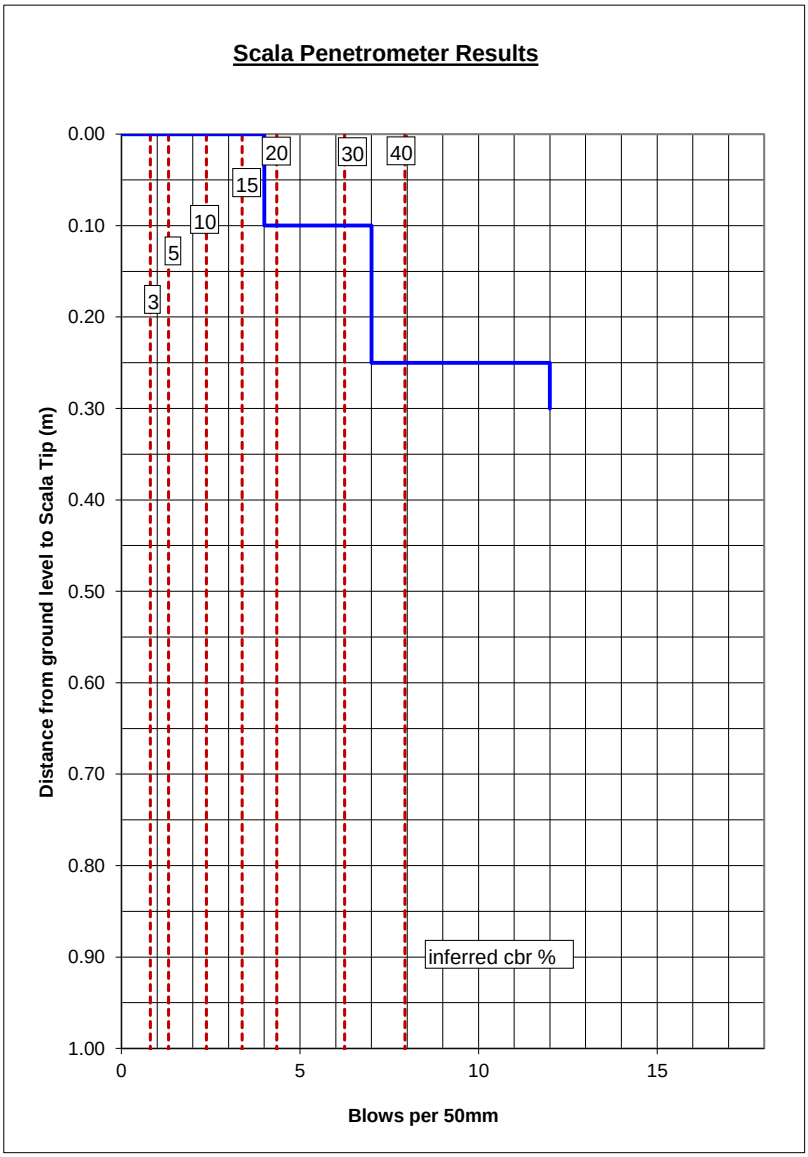
Scala No: SP377
Ref : 14333
Report No: W20-159
Page: 9 of 14

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	65	30.08	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
4	8	24	8	0.10
7	14	42	15	0.15
7	14	42	22	0.20
7	14	42	29	0.25
12	24	72	41	0.30

Scala Penetrometer Results



Recorded By: D.O
Date: 4/09/2019
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DYNAMIC CONE (SCALA) PENETROMETER

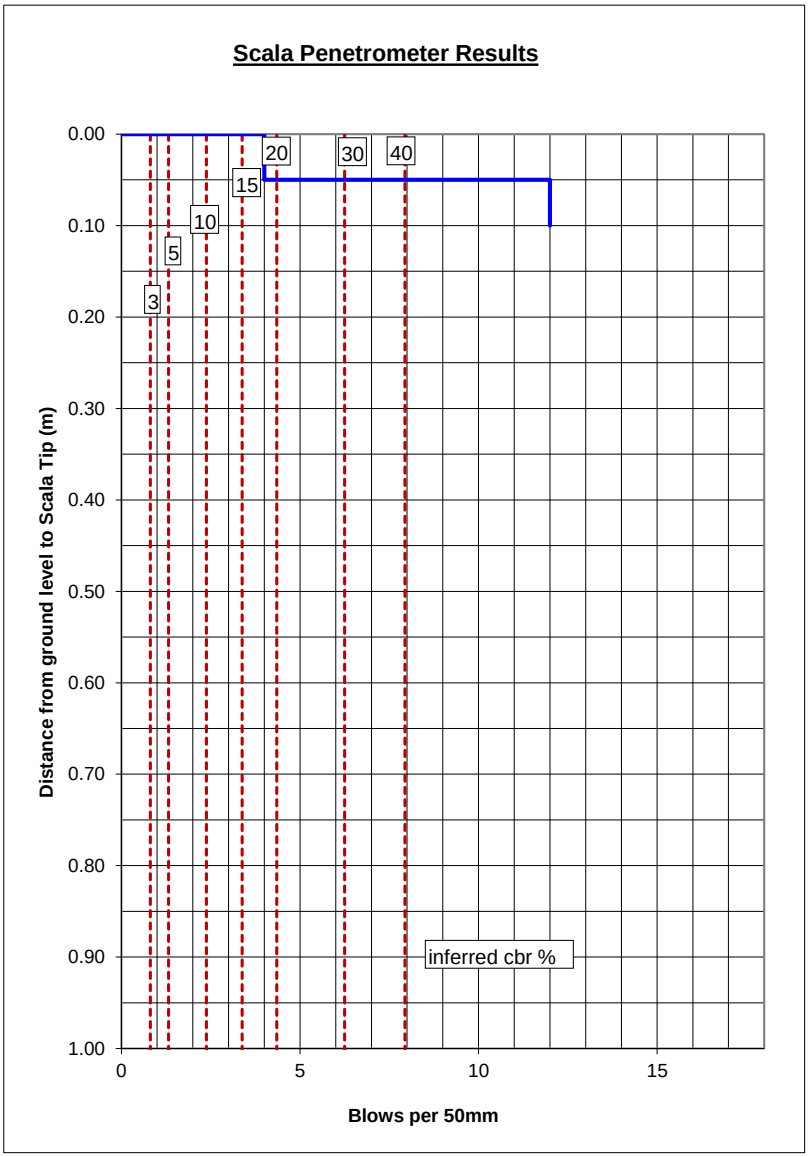
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No:	8020-1727	**Scala No:**	SP378
Client:	Cook Costello	**Ref :**	14333
Job:	The Landing	**Report No:**	W20-159
Location:	Subgrade	**Page:**	10 of 14
Start Depth (m):	0		

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	66	57.84	**MPa**

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
12	24	72	16	0.10



Recorded By:	D.O
Date:	4/09/2019
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Date:	19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

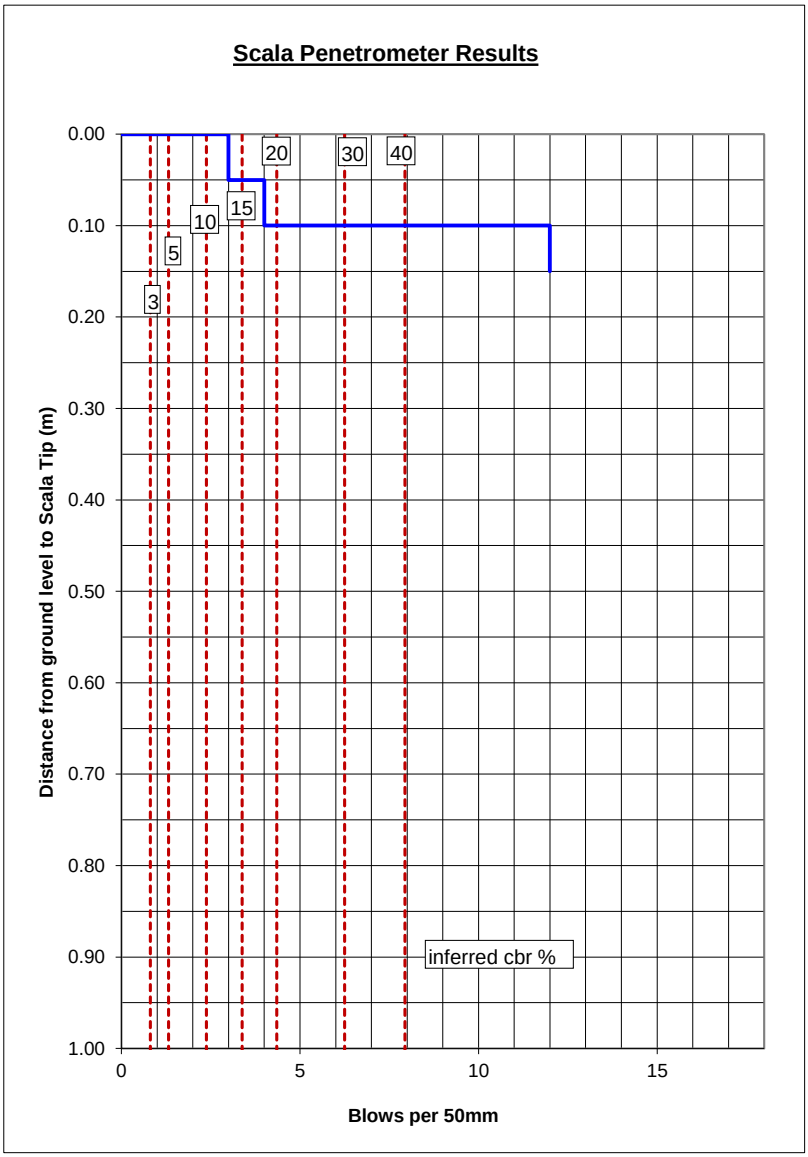
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP379
Ref : 14333
Report No: W20-159
Page: 11 of 14

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	67	44.2	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
12	24	72	19	0.15



Recorded By: D.O
Date: 4/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

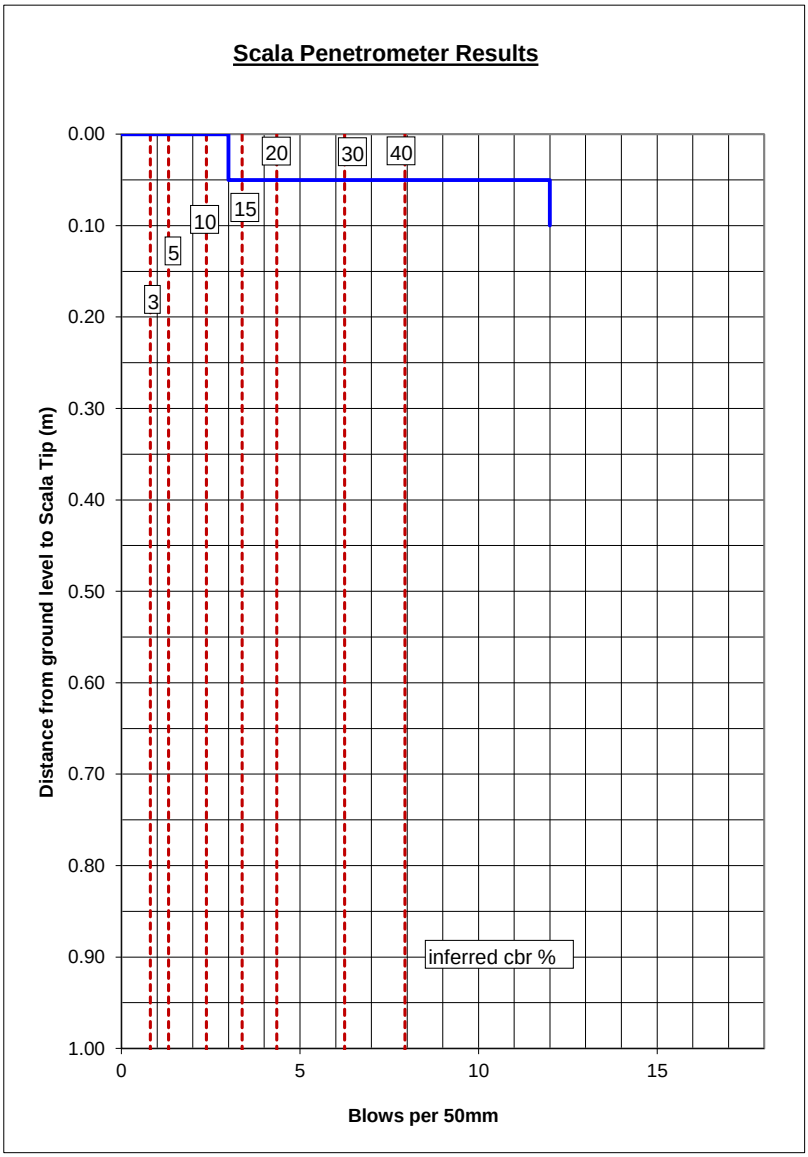
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No:	8020-1727	**Scala No:**	SP380
Client:	Cook Costello	**Ref :**	14333
Job:	The Landing	**Report No:**	W20-159
Location:	Subgrade	**Page:**	12 of 14
Start Depth (m):	0		

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	68	74.01	**MPa**

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
12	24	72	15	0.10



Recorded By: D.O
Date: 4/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

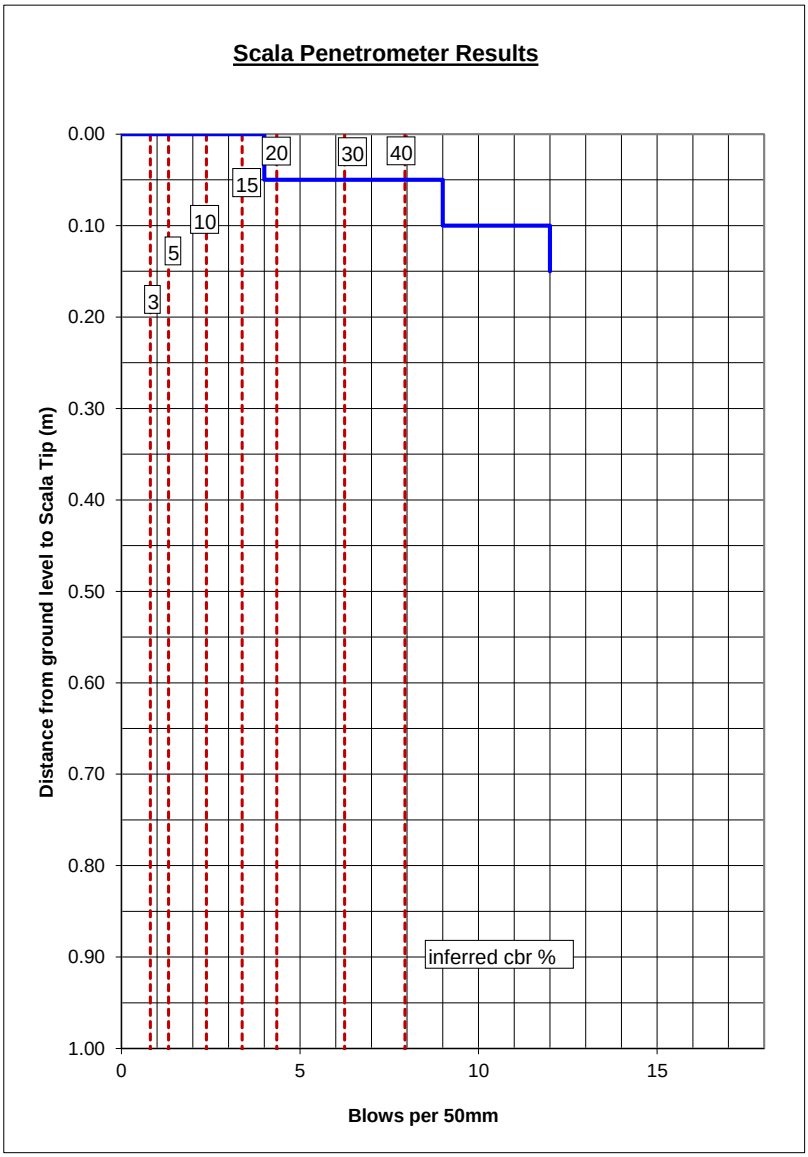
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP381
Ref : 14333
Report No: W20-159
Page: 13 of 14

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	69	77.05	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
9	18	54	13	0.10
12	24	72	25	0.15



Recorded By: D.O
Date: 4/09/2019
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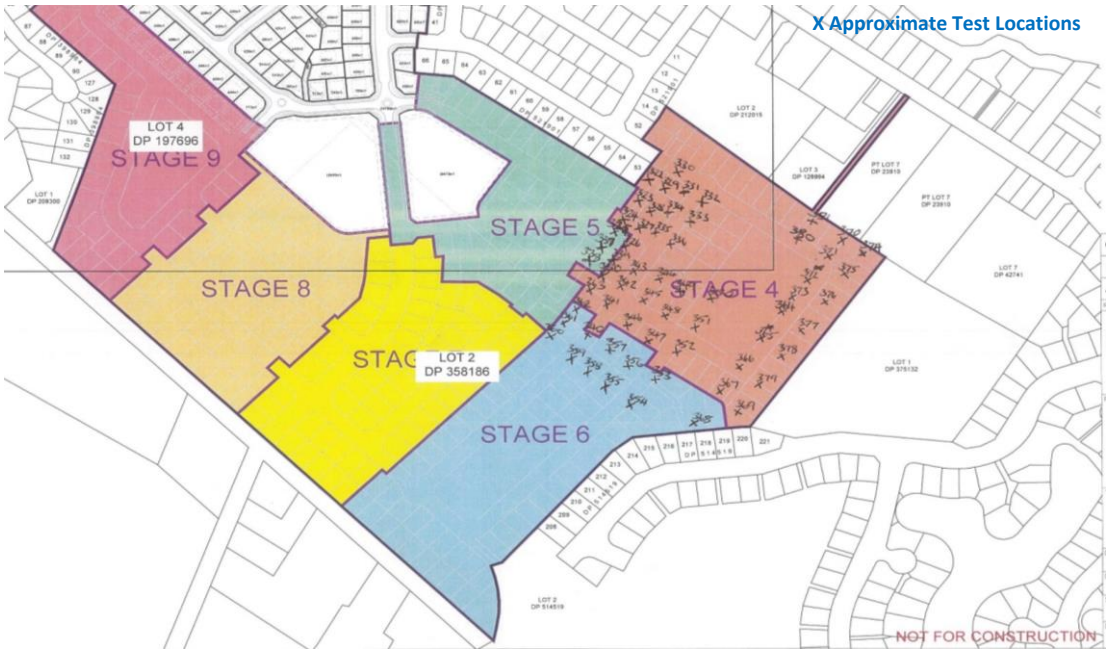
SITE PLAN

Lab Job No:	8020-1727	**Tested by:**	D.O/J.A
Client:	Cook Costello	**Date:**	20-29/08/2019
Project:	The Landing	**Page:**	14 of 14
Location:	Subgrade		
Report No:	W20-159		
REF:	14333		



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TEST REPORT

Lab Job No: 8020-1727

Your ref.: 14333

Date of Issue: 6/04/2020

Date of Re-Issue: -

Page: 1 of 31

Test Report No. W20-161

PROJECT: **The Landing- Subgrade Testing, 06/09/19 -**

CLIENT: Cook Costello
2 Norfolk Street

ATTENTION: Mr Stefano Rotatori

TEST METHODS: Determination of the penetration resistance using a dynamic cone (scala) Penetrometer
NZS 4402: 1988 Test 6.5.2
Light Weight Deflectometer (LWD) (not accredited)
ASTM E2835-11 (not accredited)

SAMPLING METHOD: N/A

TEST RESULTS: As per attached sheets

A. Millar
Admin

J. Agnew
Approved Signatory

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

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

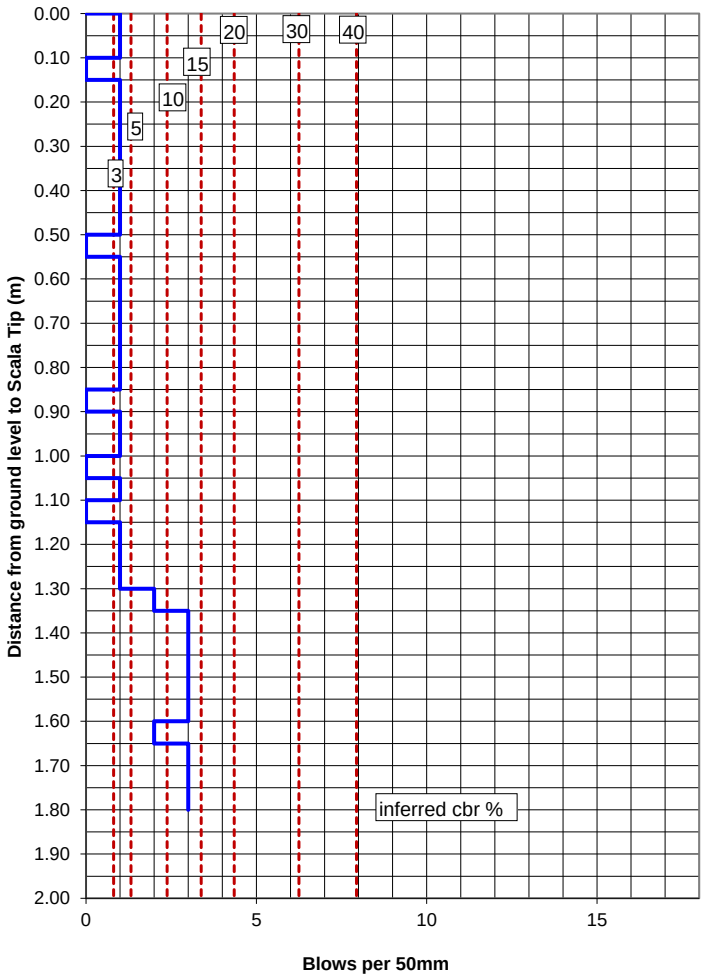
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: OTP - CH14
Start Depth (m): Subgrade Height

Scala No: SP382
Ref : 14333
Report No: W20-161
Page: 2 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
1	2	6	2	0.10
0	0	0	2	0.15
1	2	6	3	0.20
1	2	6	4	0.25
1	2	6	5	0.30
1	2	6	6	0.35
1	2	6	7	0.40
1	2	6	8	0.45
1	2	6	9	0.50
0	0	0	9	0.55
1	2	6	10	0.60
1	2	6	11	0.65
1	2	6	12	0.70
1	2	6	13	0.75
1	2	6	14	0.80
1	2	6	15	0.85
0	0	0	15	0.90
1	2	6	16	0.95
1	2	6	17	1.00
0	0	0	17	1.05
1	2	6	18	1.10
0	0	0	18	1.15
1	2	6	19	1.20
1	2	6	20	1.25
1	2	6	21	1.30
2	4	12	23	1.35
3	6	18	26	1.40
3	6	18	29	1.45
3	6	18	32	1.50
3	6	18	35	1.55
3	6	18	38	1.60
2	4	12	40	1.65
3	6	18	43	1.70
3	6	18	46	1.75
3	6	18	49	1.80

Scala Penetrometer Results



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Date: 6/09/2019
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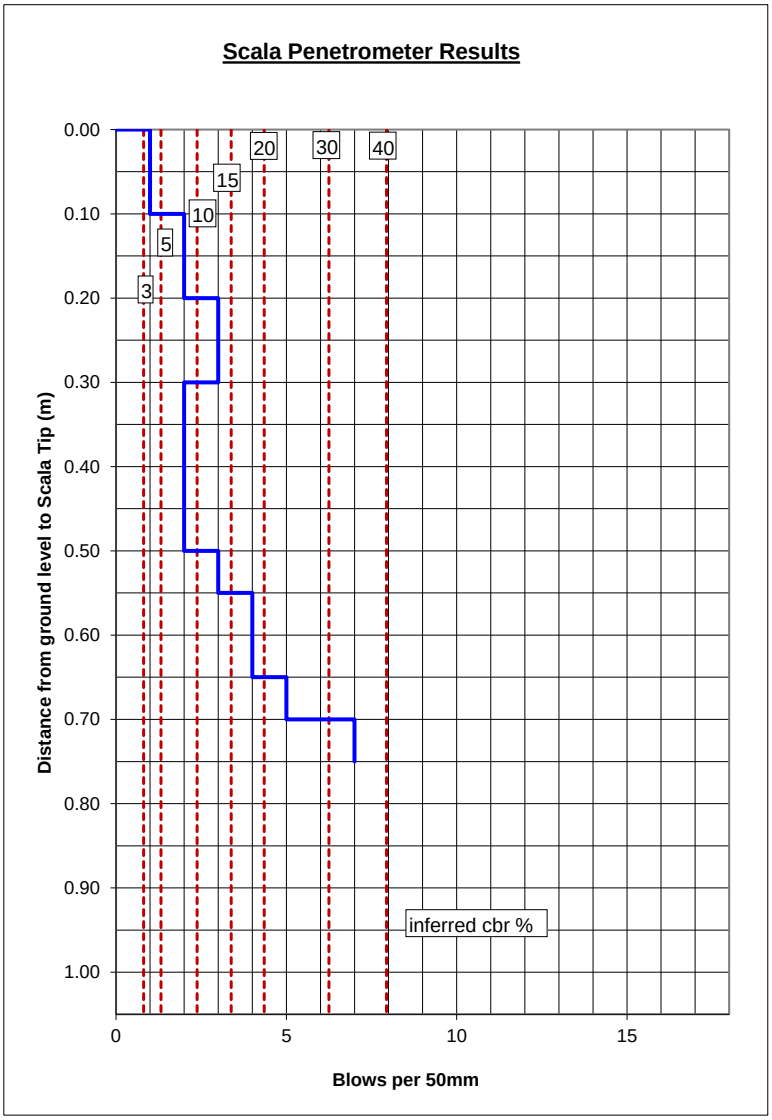
DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No:	8020-1727	**Scala No:**	SP383
Client:	Cook Costello	**Ref :**	14333
Job:	The Landing (Hibiscus)	**Report No:**	W20-161
Location:	OTP - CH34	**Page:**	3 of 31
Start Depth (m):	Subgrade Height		

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
1	2	6	2	0.10
2	4	12	4	0.15
2	4	12	6	0.20
3	6	18	9	0.25
3	6	18	12	0.30
2	4	12	14	0.35
2	4	12	16	0.40
2	4	12	18	0.45
2	4	12	20	0.50
3	6	18	23	0.55
4	8	24	27	0.60
4	8	24	31	0.65
5	10	30	36	0.70
7	14	42	43	0.75



Recorded By: D.O
Date: 6/09/2019
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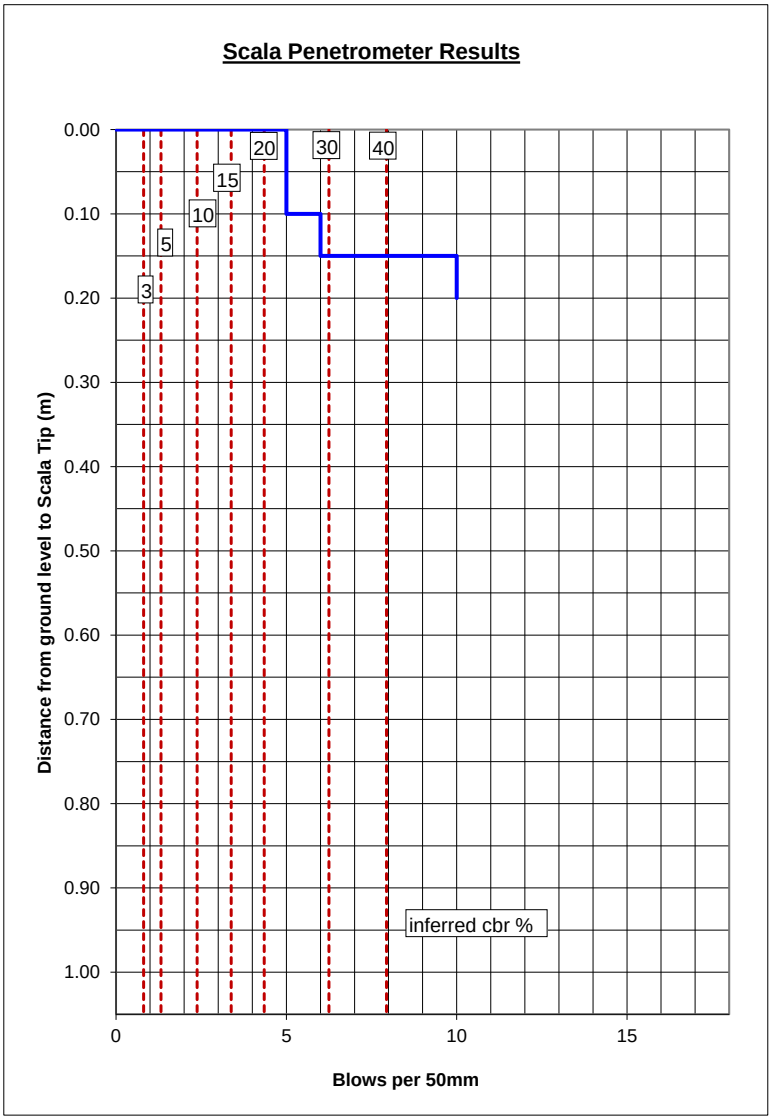
DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No:	8020-1727	**Scala No:**	SP384
Client:	Cook Costello	**Ref :**	14333
Job:	The Landing (Hibiscus)	**Report No:**	W20-161
Location:	OTP - CH54	**Page:**	4 of 31
Start Depth (m):	Subgrade Height		

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
5	10	30	5	0.05
5	10	30	10	0.10
6	12	36	16	0.15
10	20	60	26	0.20



Recorded By:	D.O
Date:	6/09/2019
Checked by:	AM
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DYNAMIC CONE (SCALA) PENETROMETER

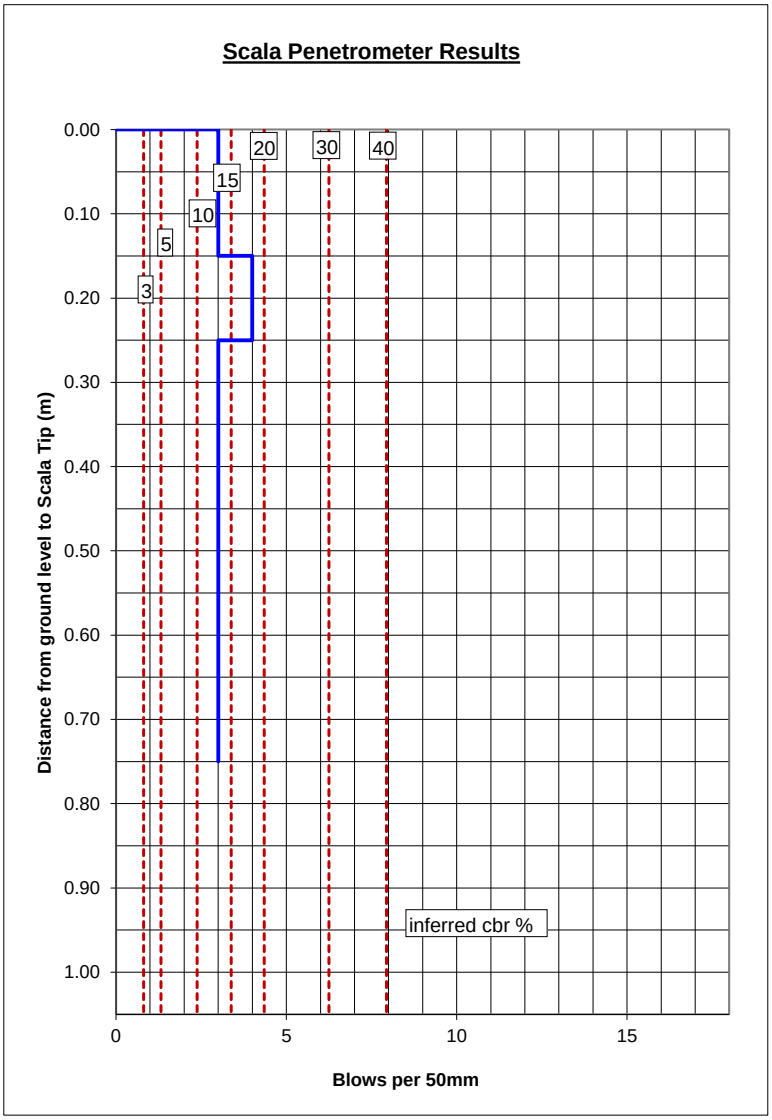
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: OTP - CH74
Start Depth (m): Subgrade Height

Scala No: SP385
Ref : 14333
Report No: W20-161
Page: 5 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
3	6	18	9	0.15
4	8	24	13	0.20
4	8	24	17	0.25
3	6	18	20	0.30
3	6	18	23	0.35
3	6	18	26	0.40
3	6	18	29	0.45
3	6	18	32	0.50
3	6	18	35	0.55
3	6	18	38	0.60
3	6	18	41	0.65
3	6	18	44	0.70
3	6	18	47	0.75



Recorded By: D.O
Date: 6/09/2019
Checked by: AM
Date: 19/03/2020

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Whangarei
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DYNAMIC CONE (SCALA) PENETROMETER

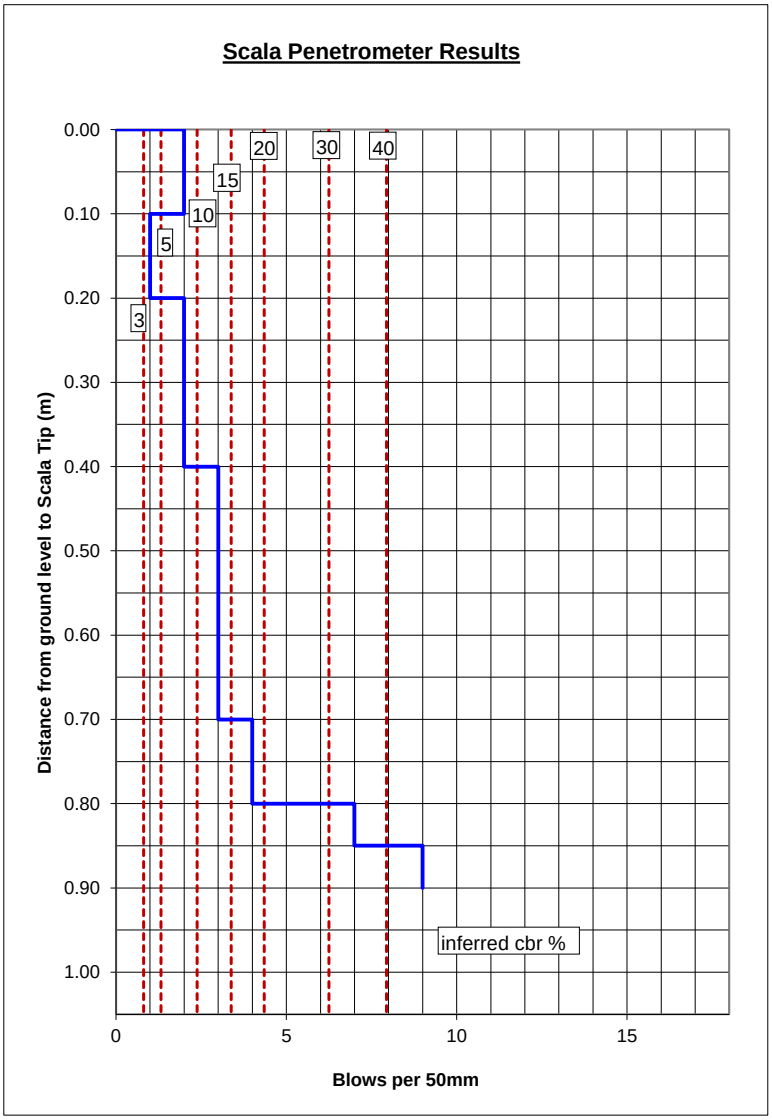
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: OTP - CH94
Start Depth (m): Subgrade Height

Scala No: SP386
Ref : 14333
Report No: W20-161
Page: 6 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
2	4	12	4	0.10
1	2	6	5	0.15
1	2	6	6	0.20
2	4	12	8	0.25
2	4	12	10	0.30
2	4	12	12	0.35
2	4	12	14	0.40
3	6	18	17	0.45
3	6	18	20	0.50
3	6	18	23	0.55
3	6	18	26	0.60
3	6	18	29	0.65
3	6	18	32	0.70
4	8	24	36	0.75
4	8	24	40	0.80
7	14	42	47	0.85
9	18	54	56	0.90



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Date: 6/09/2019
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Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

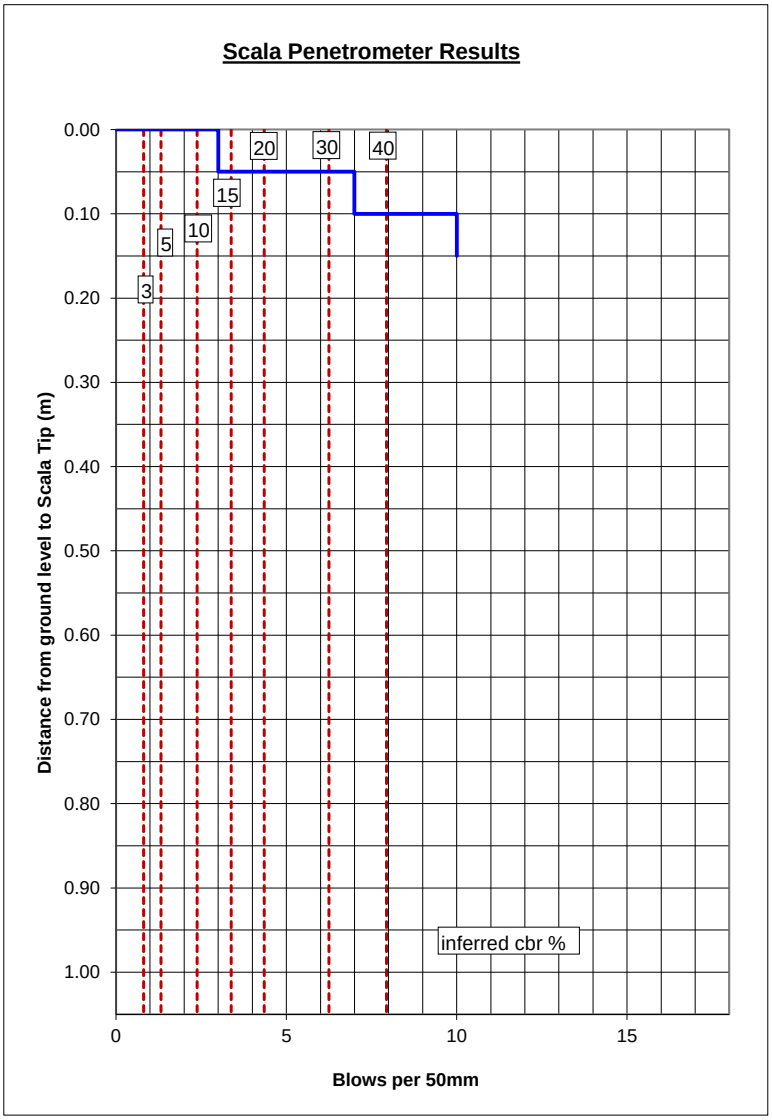
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: OTP - CH114
Start Depth (m): Subgrade Height

Scala No: SP387
Ref : 14333
Report No: W20-161
Page: 7 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
7	14	42	10	0.10
10	20	60	20	0.15



Recorded By: D.O
Date: 6/09/2019
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Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

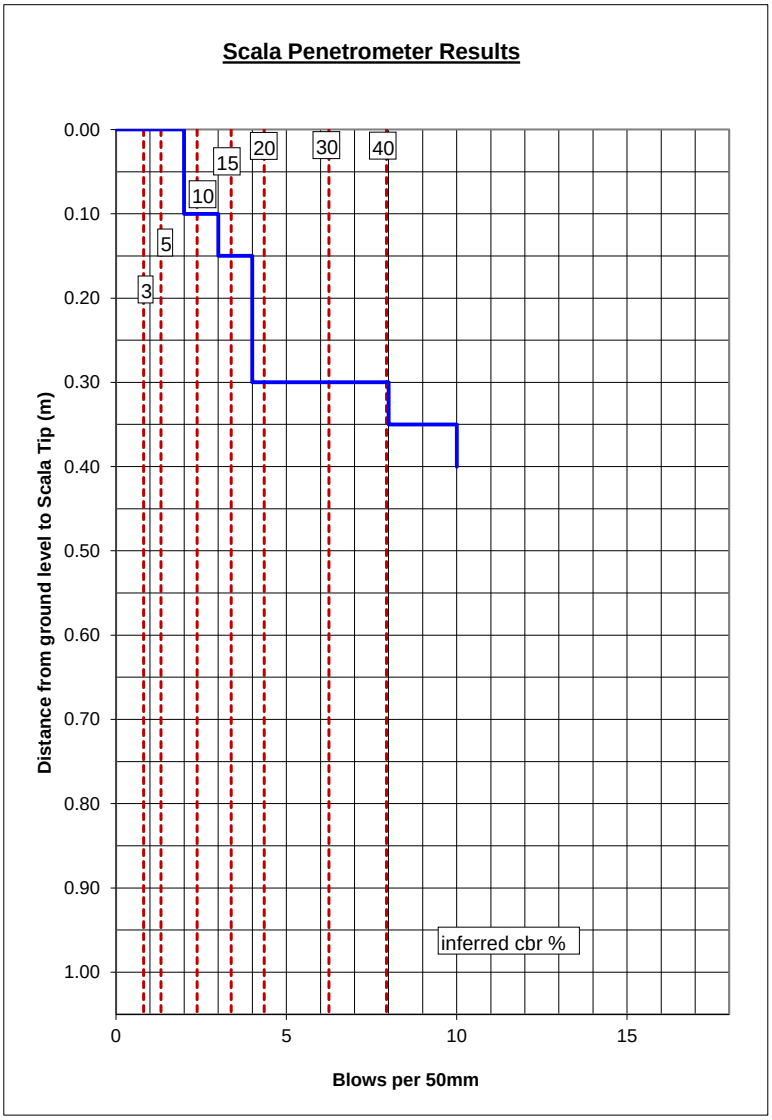
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: OTP - CH134
Start Depth (m): Subgrade Height

Scala No: SP388
Ref : 14333
Report No: W20-161
Page: 8 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
2	4	12	4	0.10
3	6	18	7	0.15
4	8	24	11	0.20
4	8	24	15	0.25
4	8	24	19	0.30
8	16	48	27	0.35
10	20	60	37	0.40



Recorded By: D.O
Date: 6/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

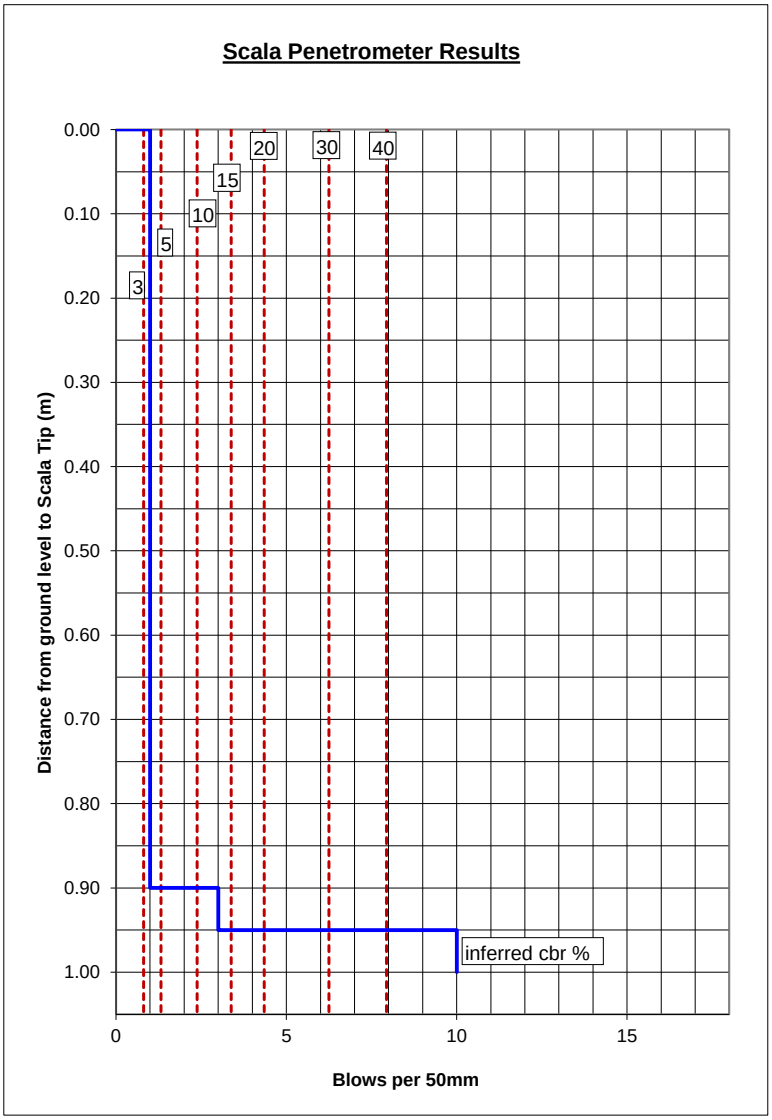
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: OTP - CH154
Start Depth (m): Subgrade Height

Scala No: SP389
Ref : 14333
Report No: W20-161
Page: 9 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
1	2	6	2	0.10
1	2	6	3	0.15
1	2	6	4	0.20
1	2	6	5	0.25
1	2	6	6	0.30
1	2	6	7	0.35
1	2	6	8	0.40
1	2	6	9	0.45
1	2	6	10	0.50
1	2	6	11	0.55
1	2	6	12	0.60
1	2	6	13	0.65
1	2	6	14	0.70
1	2	6	15	0.75
1	2	6	16	0.80
1	2	6	17	0.85
1	2	6	18	0.90
3	6	18	21	0.95
10	20	60	31	1.00



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DYNAMIC CONE (SCALA) PENETROMETER

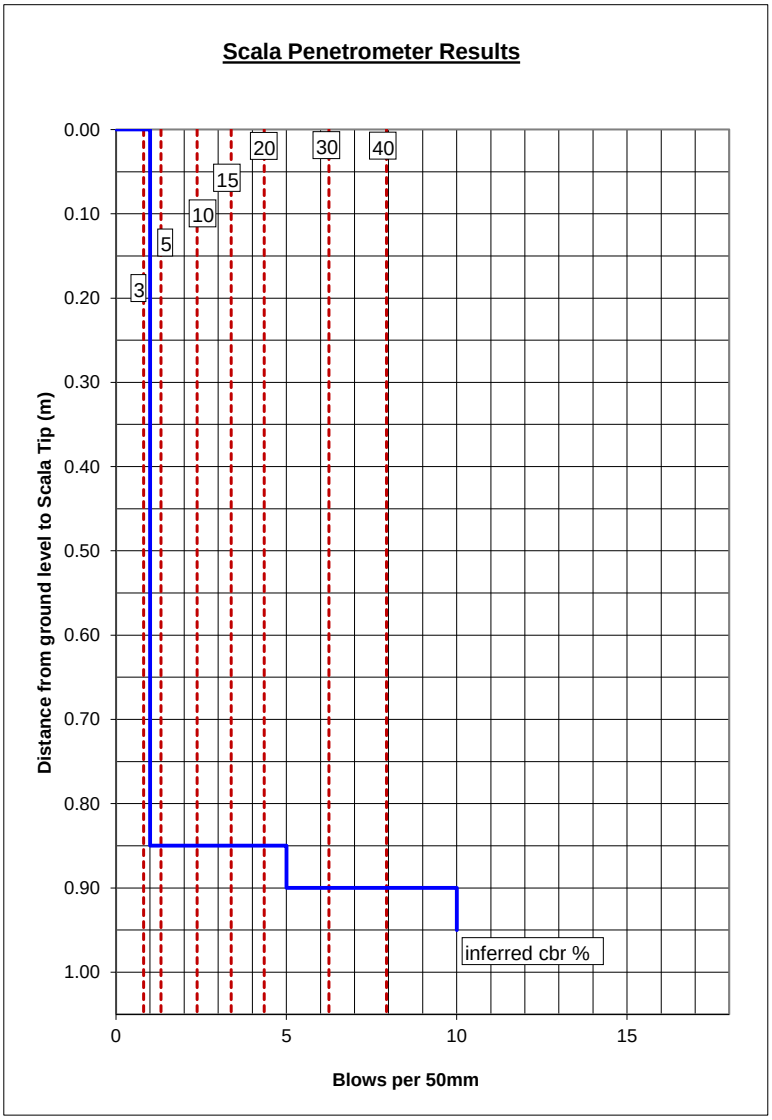
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: OTP - CH174
Start Depth (m): Subgrade Height

Scala No: SP390
Ref : 14333
Report No: W20-161
Page: 10 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
1	2	6	2	0.10
1	2	6	3	0.15
1	2	6	4	0.20
1	2	6	5	0.25
1	2	6	6	0.30
1	2	6	7	0.35
1	2	6	8	0.40
1	2	6	9	0.45
1	2	6	10	0.50
1	2	6	11	0.55
1	2	6	12	0.60
1	2	6	13	0.65
1	2	6	14	0.70
1	2	6	15	0.75
1	2	6	16	0.80
1	2	6	17	0.85
5	10	30	22	0.90
10	20	60	32	0.95



Recorded By: D.O
Date: 6/09/2019
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DYNAMIC CONE (SCALA) PENETROMETER

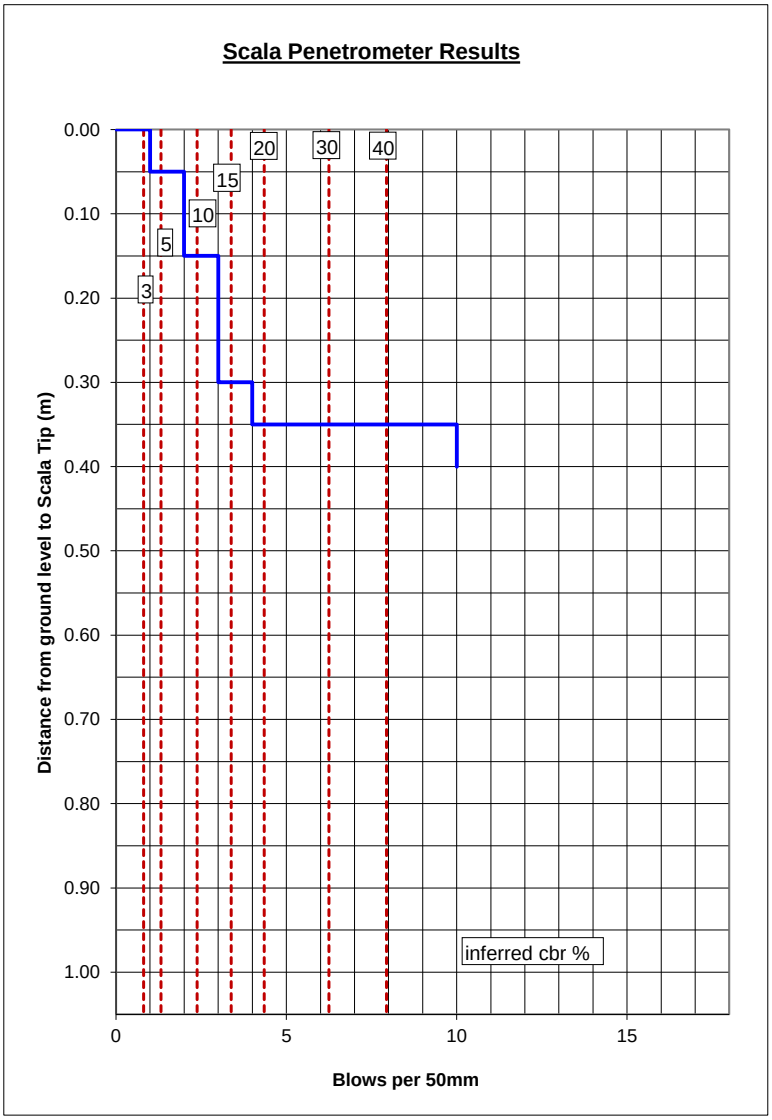
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: OTP - CH194
Start Depth (m): Subgrade Height

Scala No: SP391
Ref : 14333
Report No: W20-161
Page: 11 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
2	4	12	3	0.10
2	4	12	5	0.15
3	6	18	8	0.20
3	6	18	11	0.25
3	6	18	14	0.30
4	8	24	18	0.35
10	20	60	28	0.40



Recorded By: D.O
Date: 6/09/2019
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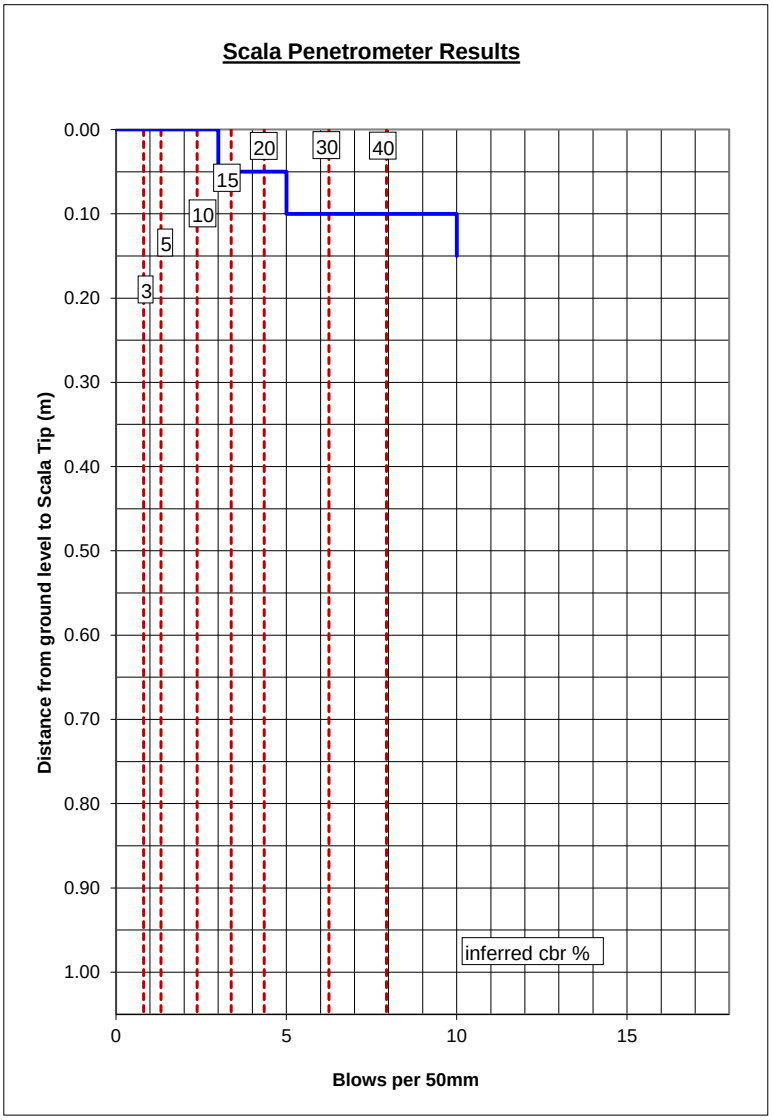
DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No:	8020-1727	**Scala No:**	SP392
Client:	Cook Costello	**Ref :**	14333
Job:	The Landing (Hibiscus)	**Report No:**	W20-191
Location:	OTP - CH214 (Entrance)	**Page:**	12 of 31
Start Depth (m):	Subgrade Height		

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
5	10	30	8	0.10
10	20	60	18	0.15



Recorded By: D.O
Date: 6/09/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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DYNAMIC CONE (SCALA) PENETROMETER

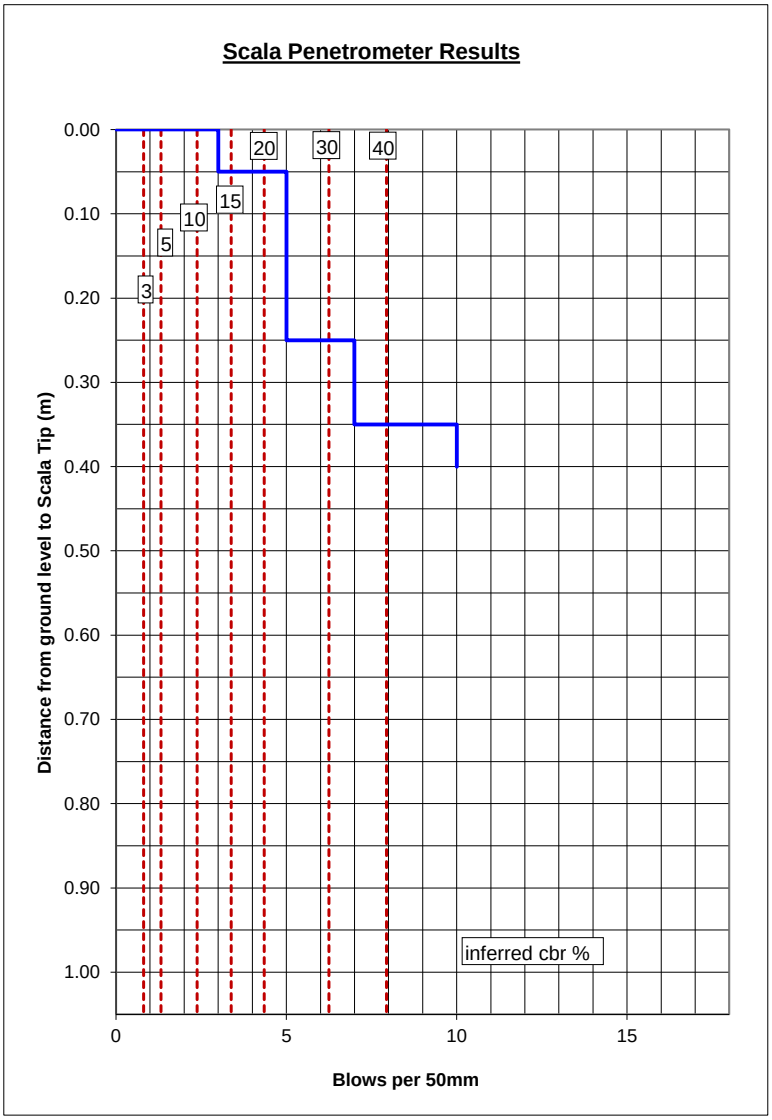
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: OTP - CH224 (Entrance)
Start Depth (m): Subgrade Height

Scala No: SP393
Ref : 14333
Report No: W20-161
Page: 13 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
5	10	30	8	0.10
5	10	30	13	0.15
5	10	30	18	0.20
5	10	30	23	0.25
7	14	42	30	0.30
7	14	42	37	0.35
10	20	60	47	0.40



Recorded By: D.O
Date: 6/09/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

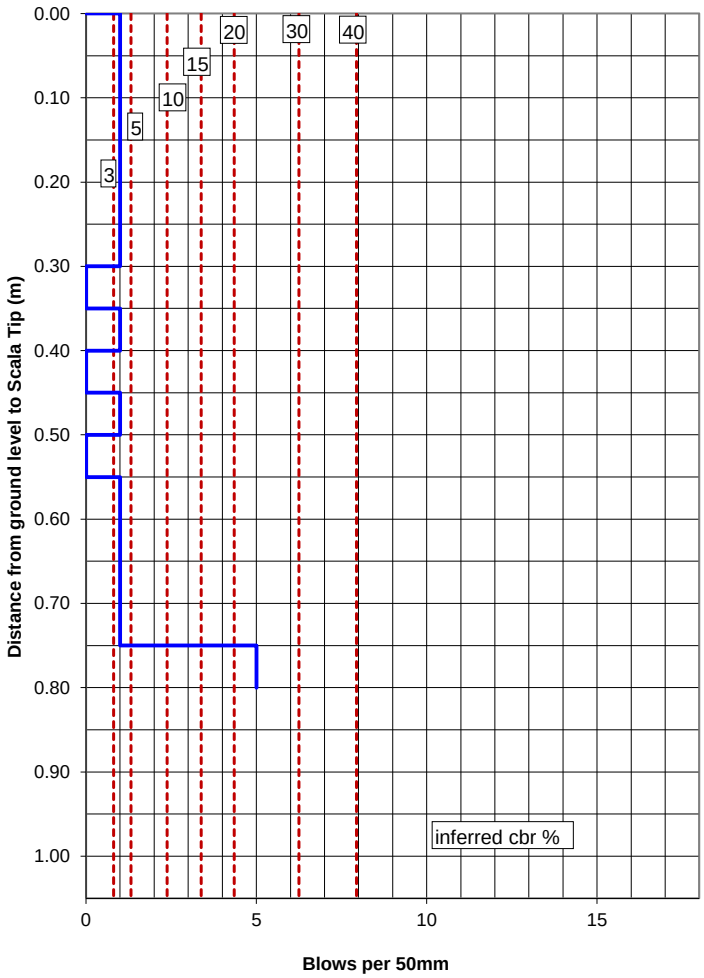
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: OTP - CH234
Start Depth (m): 400mm below Subgrade

Scala No: SP394
Ref : 14333
Report No: W20-161
Page: 14 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
1	2	6	2	0.10
1	2	6	3	0.15
1	2	6	4	0.20
1	2	6	5	0.25
1	2	6	6	0.30
0	0	0	6	0.35
1	2	6	7	0.40
0	0	0	7	0.45
1	2	6	8	0.50
0	0	0	8	0.55
1	2	6	9	0.60
1	2	6	10	0.65
1	2	6	11	0.70
1	2	6	12	0.75
5	10	30	17	0.80

Scala Penetrometer Results



Recorded By: D.O
Date: 6/09/2019
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Date: 19/03/2020

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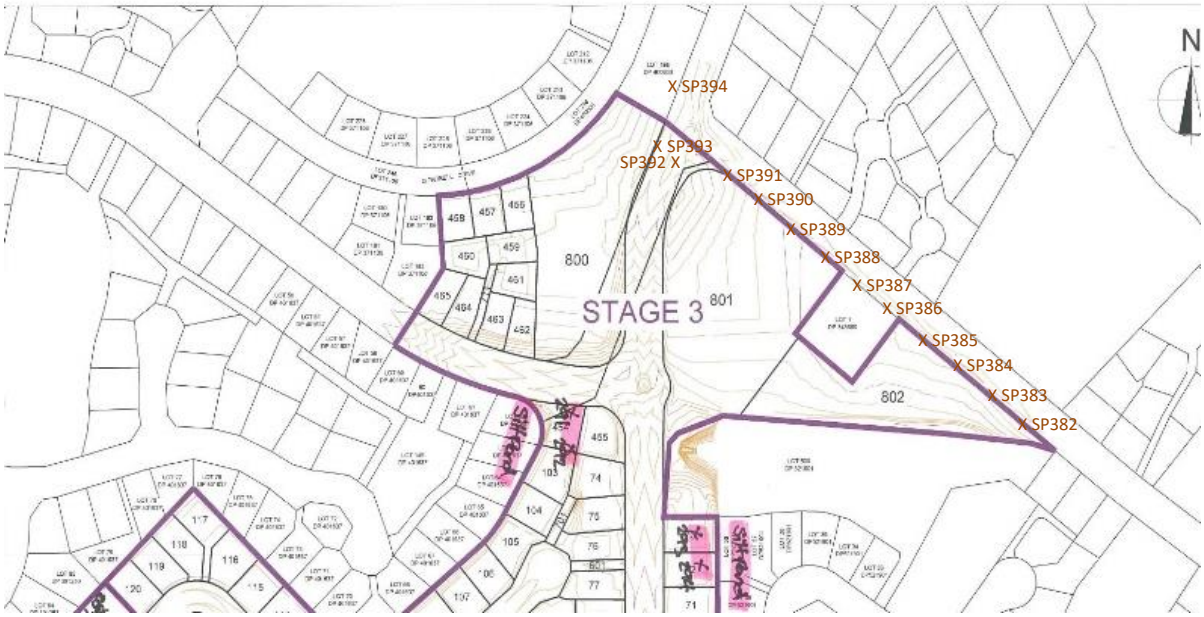
SITE PLAN

Lab Job No:	8020-1727	**Tested by:**	D.O
Client:	Cook Costello	**Date:**	6/09/2019
Project:	The Landing (Hibiscus)	**Page:**	15 of 31
Location:	One Tree Point		
Report No:			
REF:	14333		

X Approximate Test Locations



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DYNAMIC CONE (SCALA) PENETROMETER

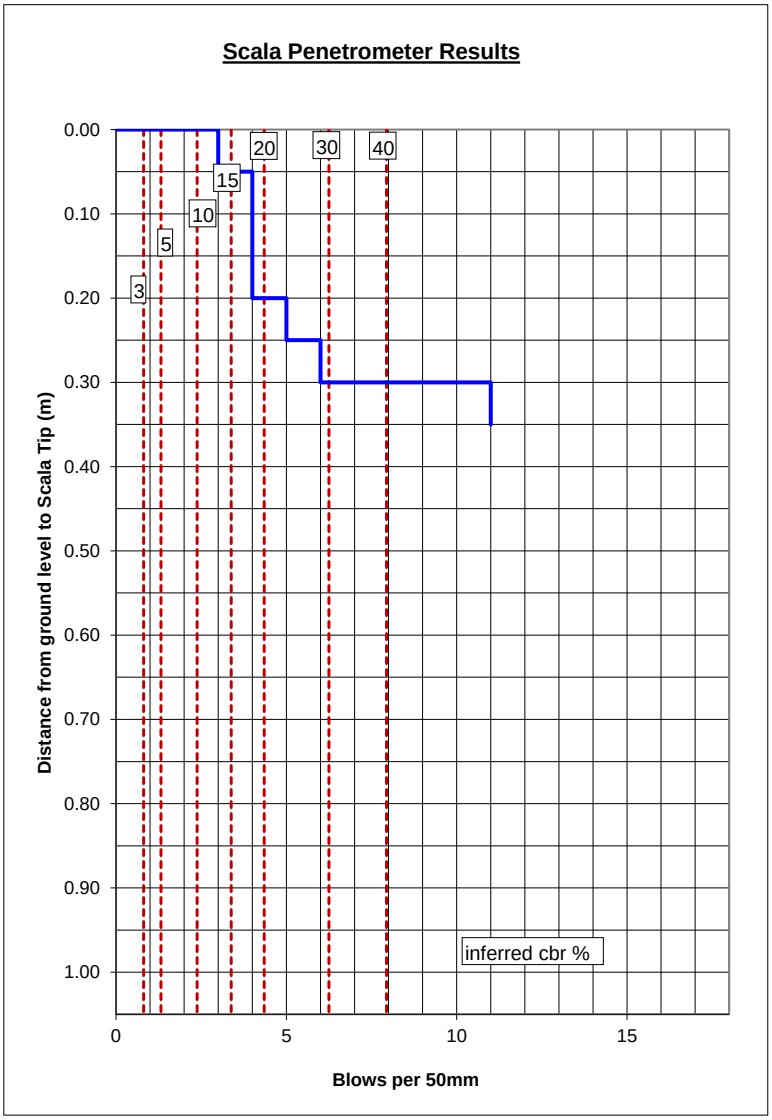
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

Scala No: SP395
Ref : 14333
Report No: W20-161
Page: 16 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
4	8	24	11	0.15
4	8	24	15	0.20
5	10	30	20	0.25
6	12	36	26	0.30
11	22	66	37	0.35



Recorded By: D.O
Date: 12/09/2019
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DYNAMIC CONE (SCALA) PENETROMETER

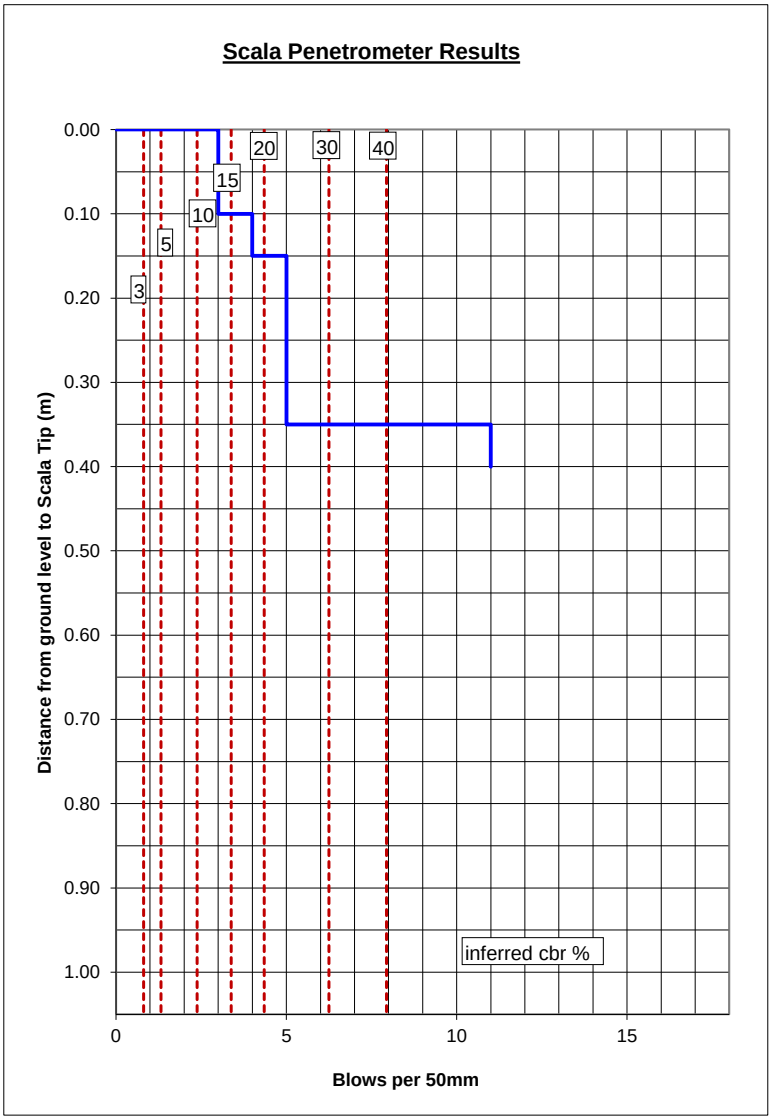
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

Scala No: SP396
Ref : 14333
Report No: W20-161
Page: 17 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
4	8	24	10	0.15
5	10	30	15	0.20
5	10	30	20	0.25
5	10	30	25	0.30
5	10	30	30	0.35
11	22	66	41	0.40



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Date: 12/09/2019
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DYNAMIC CONE (SCALA) PENETROMETER

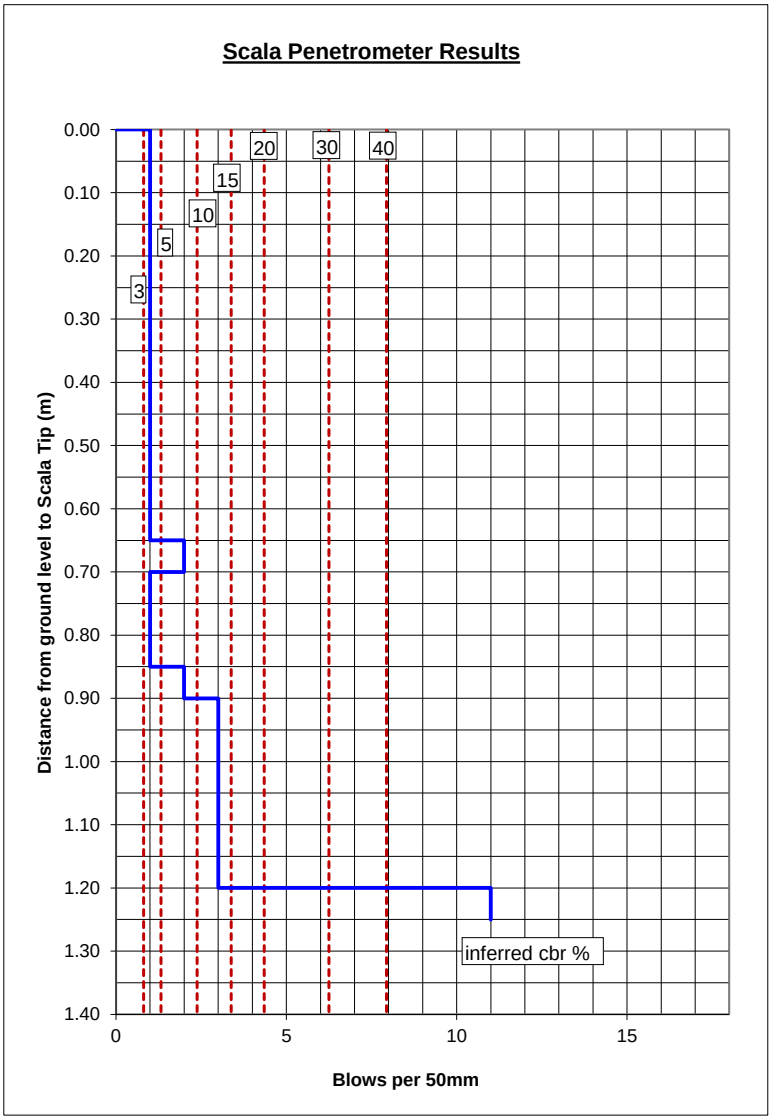
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

Scala No: SP397
Ref : 14333
Report No: W20-161
Page: 18 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
1	2	6	2	0.10
1	2	6	3	0.15
1	2	6	4	0.20
1	2	6	5	0.25
1	2	6	6	0.30
1	2	6	7	0.35
1	2	6	8	0.40
1	2	6	9	0.45
1	2	6	10	0.50
1	2	6	11	0.55
1	2	6	12	0.60
1	2	6	13	0.65
2	4	12	15	0.70
1	2	6	16	0.75
1	2	6	17	0.80
1	2	6	18	0.85
2	4	12	20	0.90
3	6	18	23	0.95
3	6	18	26	1.00
3	6	18	29	1.05
3	6	18	32	1.10
3	6	18	35	1.15
3	6	18	38	1.20
11	22	66	49	1.25



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Date: 12/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

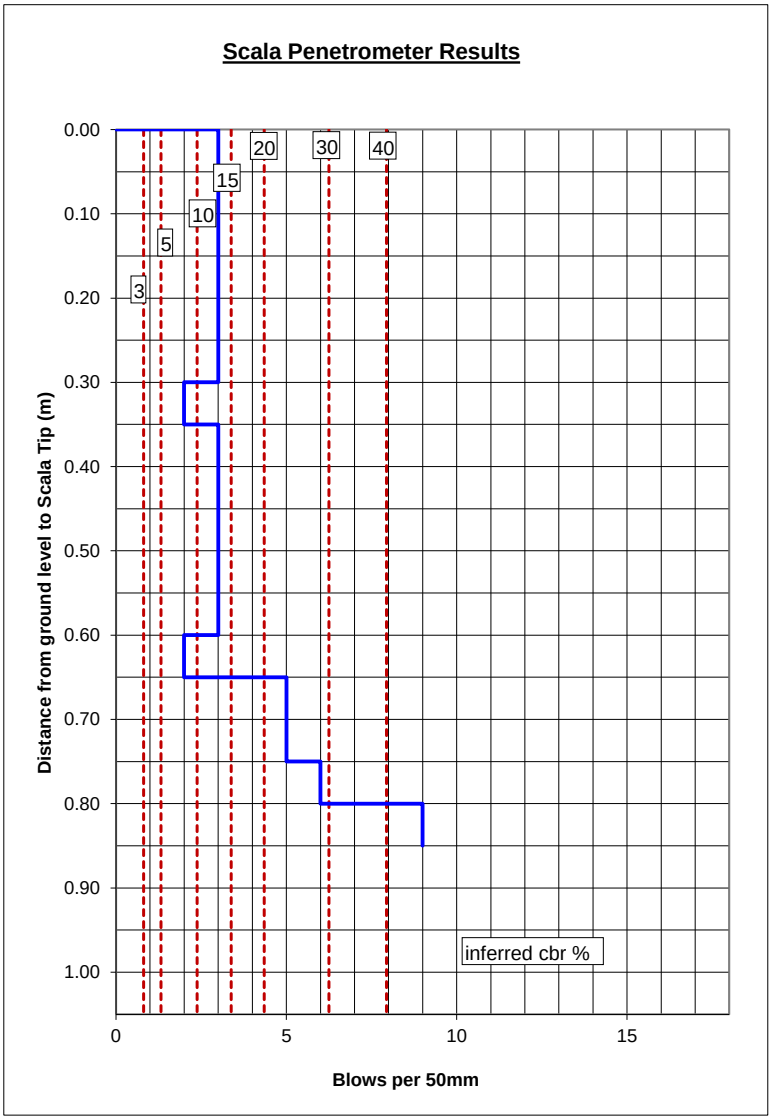
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

Scala No: SP398
Ref : 14333
Report No: W20-161
Page: 19 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
3	6	18	9	0.15
3	6	18	12	0.20
3	6	18	15	0.25
3	6	18	18	0.30
2	4	12	20	0.35
3	6	18	23	0.40
3	6	18	26	0.45
3	6	18	29	0.50
3	6	18	32	0.55
3	6	18	35	0.60
2	4	12	37	0.65
5	10	30	42	0.70
5	10	30	47	0.75
6	12	36	53	0.80
9	18	54	62	0.85



Recorded By: D.O
Date: 12/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

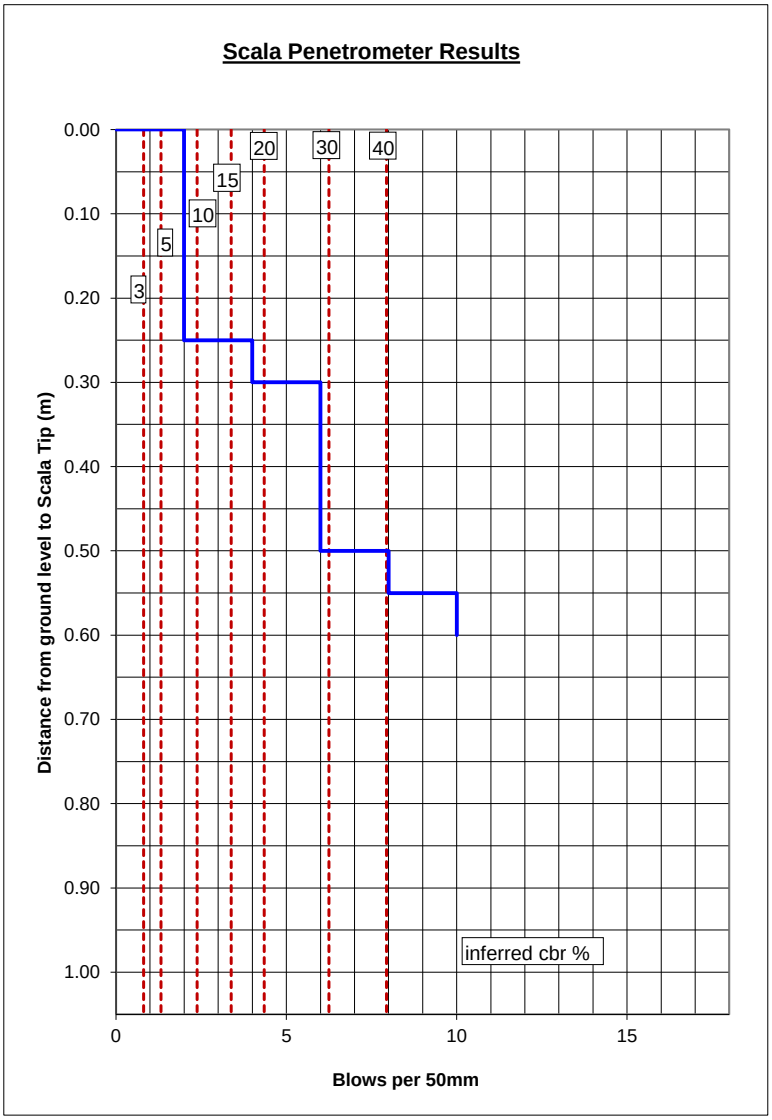
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

Scala No: SP399
Ref : 14333
Report No: W20-161
Page: 20 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
2	4	12	4	0.10
2	4	12	6	0.15
2	4	12	8	0.20
2	4	12	10	0.25
4	8	24	14	0.30
6	12	36	20	0.35
6	12	36	26	0.40
6	12	36	32	0.45
6	12	36	38	0.50
8	16	48	46	0.55
10	20	60	56	0.60



Recorded By: D.O
Date: 6/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

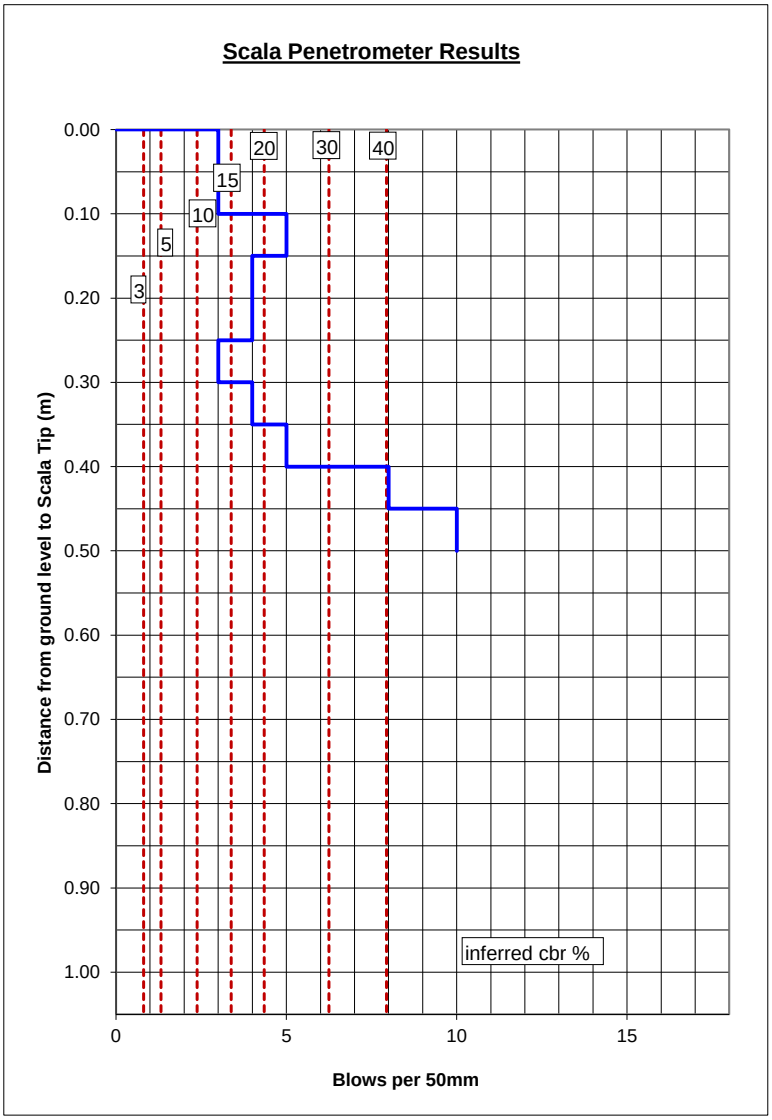
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

Scala No: SP400
Ref : 14333
Report No: W20-161
Page: 21 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
5	10	30	11	0.15
4	8	24	15	0.20
4	8	24	19	0.25
3	6	18	22	0.30
4	8	24	26	0.35
5	10	30	31	0.40
8	16	48	39	0.45
10	20	60	49	0.50



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Date: 12/09/2019
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DYNAMIC CONE (SCALA) PENETROMETER

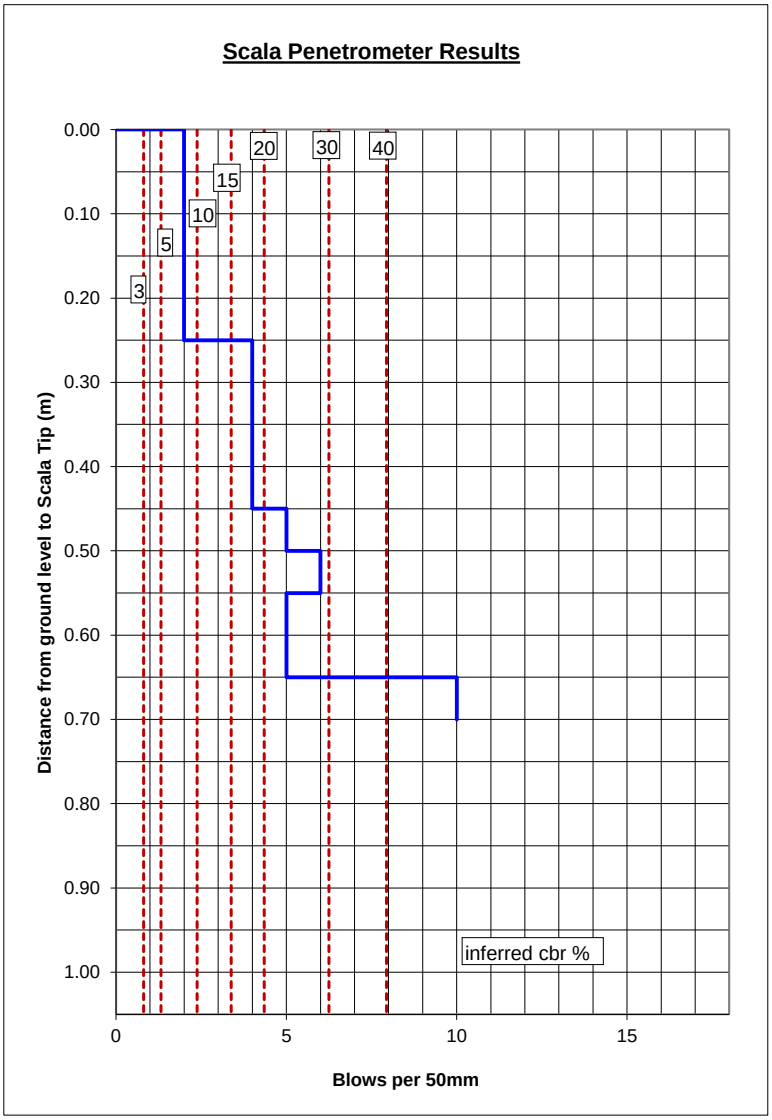
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

Scala No: SP401
Ref : 14333
Report No: W20-161
Page: 22 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
2	4	12	4	0.10
2	4	12	6	0.15
2	4	12	8	0.20
2	4	12	10	0.25
4	8	24	14	0.30
4	8	24	18	0.35
4	8	24	22	0.40
4	8	24	26	0.45
5	10	30	31	0.50
6	12	36	37	0.55
5	10	30	42	0.60
5	10	30	47	0.65
10	20	60	57	0.70



Recorded By: D.O
Date: 12/09/2019
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DYNAMIC CONE (SCALA) PENETROMETER

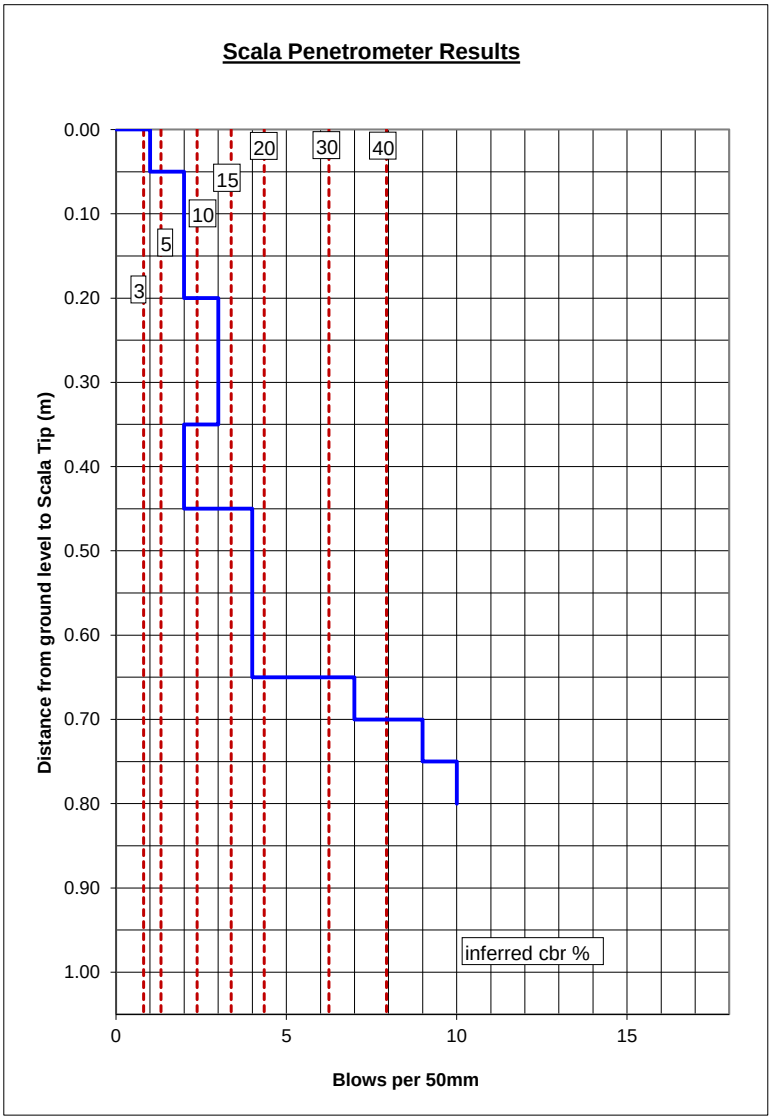
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

Scala No: SP402
Ref : 14333
Report No: W20-161
Page: 23 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
2	4	12	3	0.10
2	4	12	5	0.15
2	4	12	7	0.20
3	6	18	10	0.25
3	6	18	13	0.30
3	6	18	16	0.35
2	4	12	18	0.40
2	4	12	20	0.45
4	8	24	24	0.50
4	8	24	28	0.55
4	8	24	32	0.60
4	8	24	36	0.65
7	14	42	43	0.70
9	18	54	52	0.75
10	20	60	62	0.80



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Date: 12/09/2019
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Date: 19/03/2020

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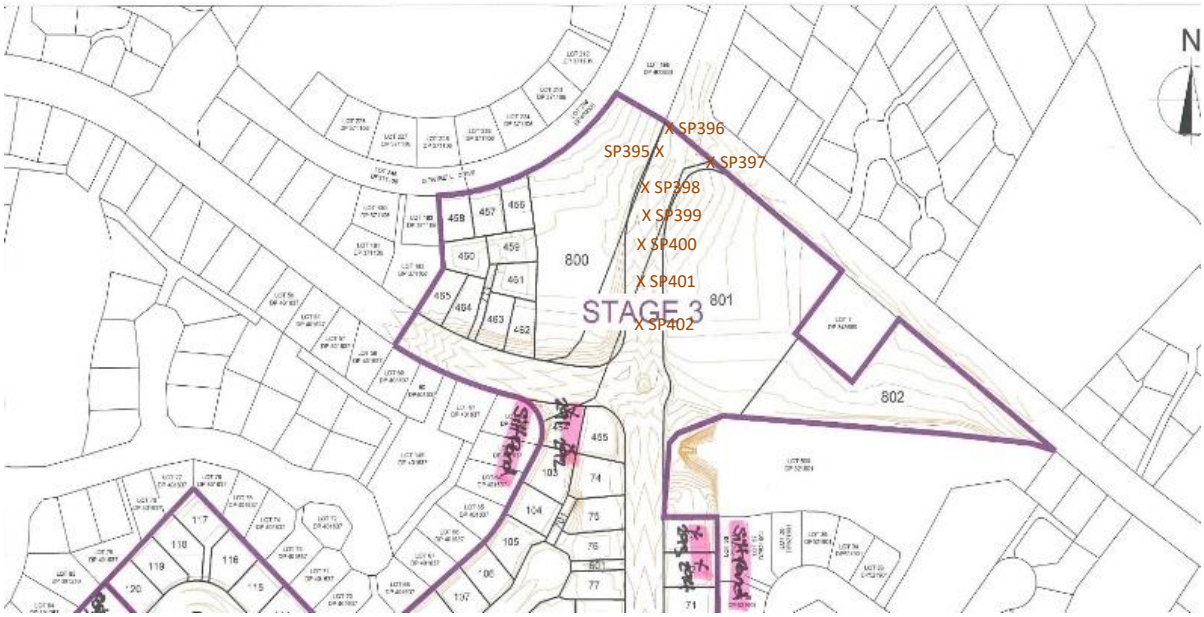
SITE PLAN

Lab Job No:	8020-1727	**Tested by:**	D.O
Client:	Cook Costello	**Date:**	12/09/2019
Project:	The Landing (Hibiscus)	**Page:**	24 of 31
Location:	One Tree Point		
Report No:			
REF:	14333		

X Approximate Test Locations



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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

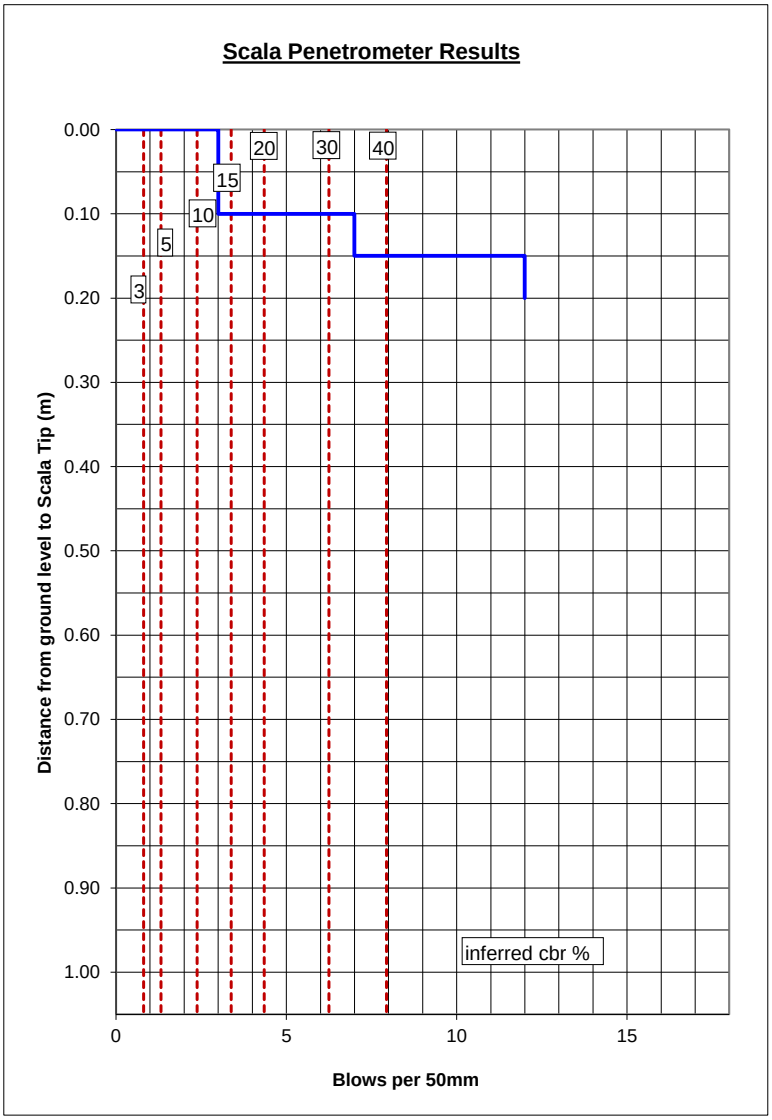
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

LWD Reading (Mpa) : 49.3

Scala No: SP403
Ref : 14333
Report No: W20-161
Page: 25 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
7	14	42	13	0.15
12	24	72	25	0.20



Recorded By: D.O
Date: 12/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

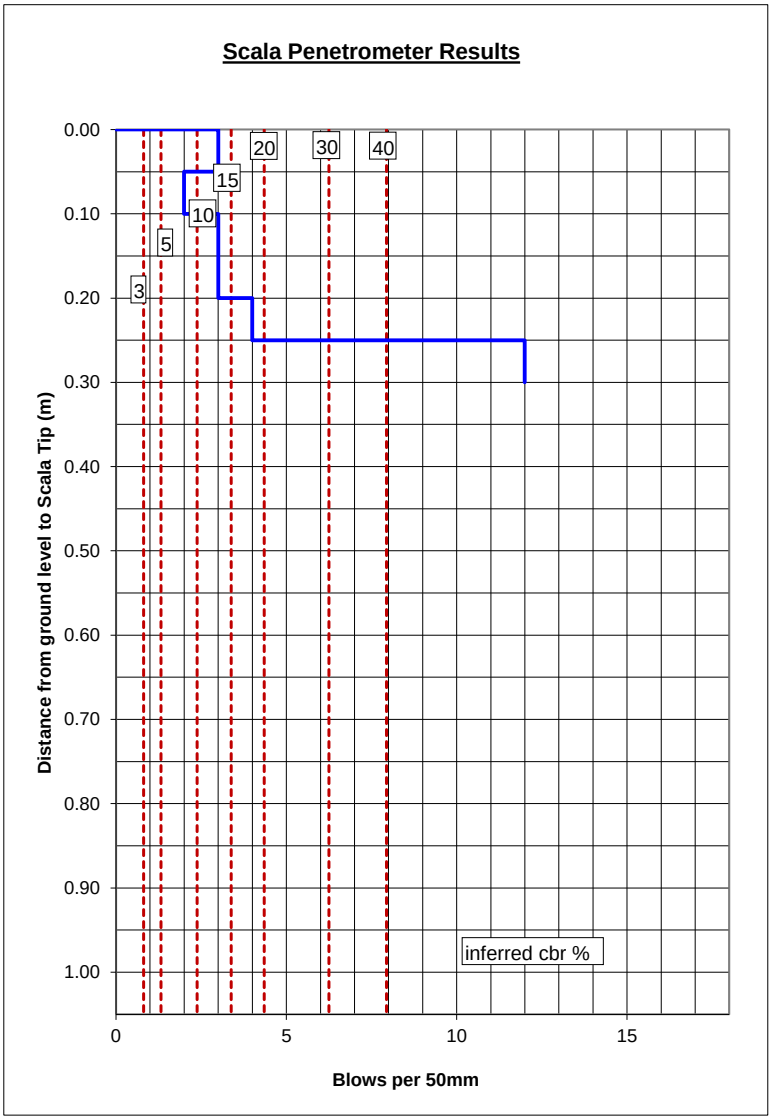
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

LWD Reading (Mpa) : 58.9

Scala No: SP404
Ref : 14333
Report No: W20-161
Page: 26 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
2	4	12	5	0.10
3	6	18	8	0.15
3	6	18	11	0.20
4	8	24	15	0.25
12	24	72	27	0.30



Recorded By: D.O
Date: 12/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

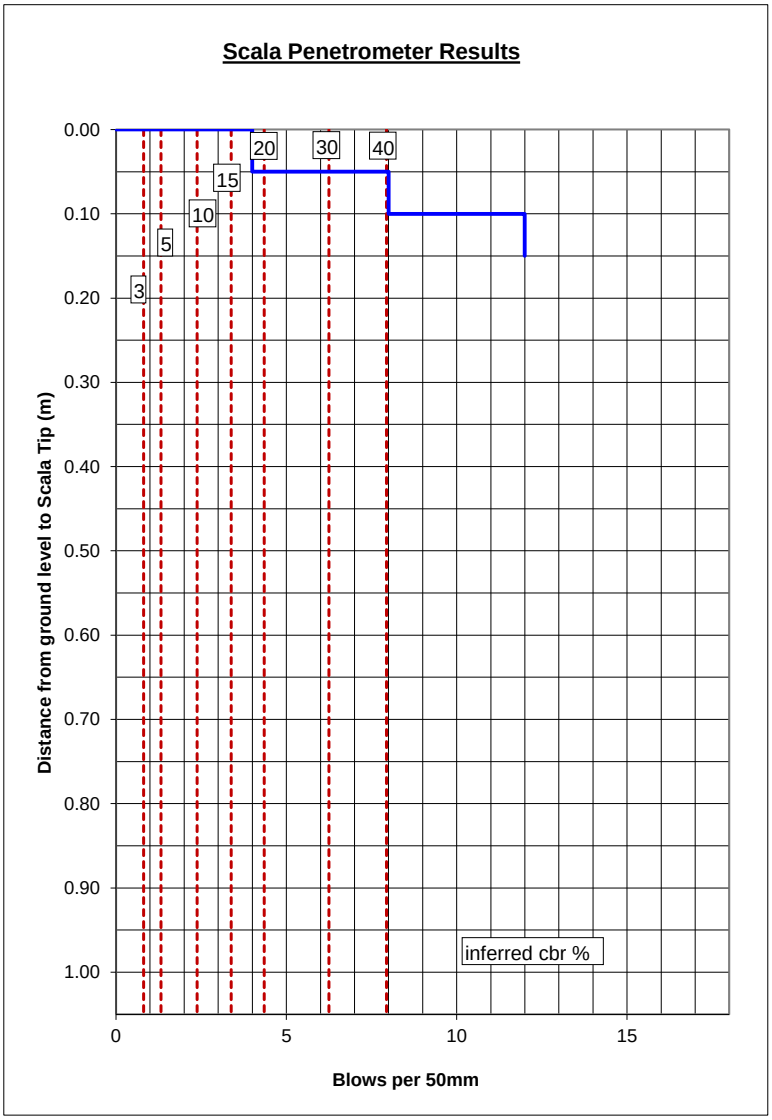
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

LWD Reading (Mpa) : 55

Scala No: SP405
Ref : 14333
Report No: W20-161
Page: 27 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
8	16	48	12	0.10
12	24	72	24	0.15



Recorded By: D.O
Date: 12/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

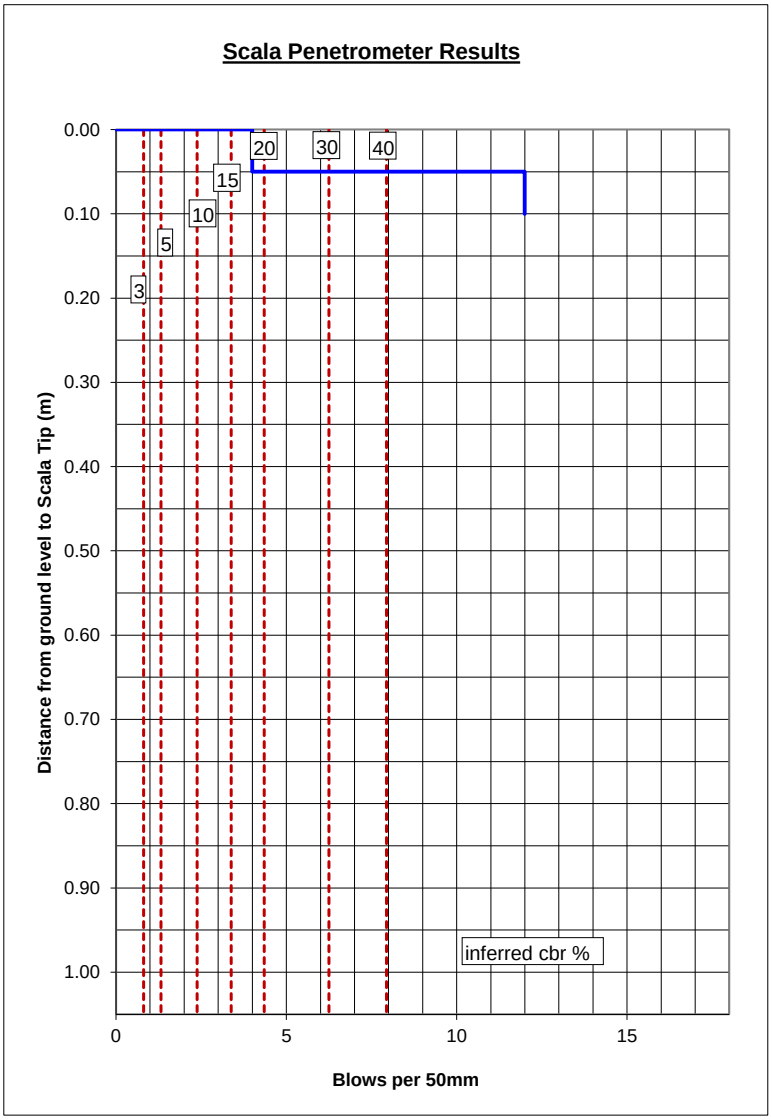
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

LWD Reading (Mpa) : 35.5

Scala No: SP406
Ref : 14333
Report No: W20-161
Page: 28 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
12	24	72	16	0.10



Recorded By: D.O
Date: 12/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

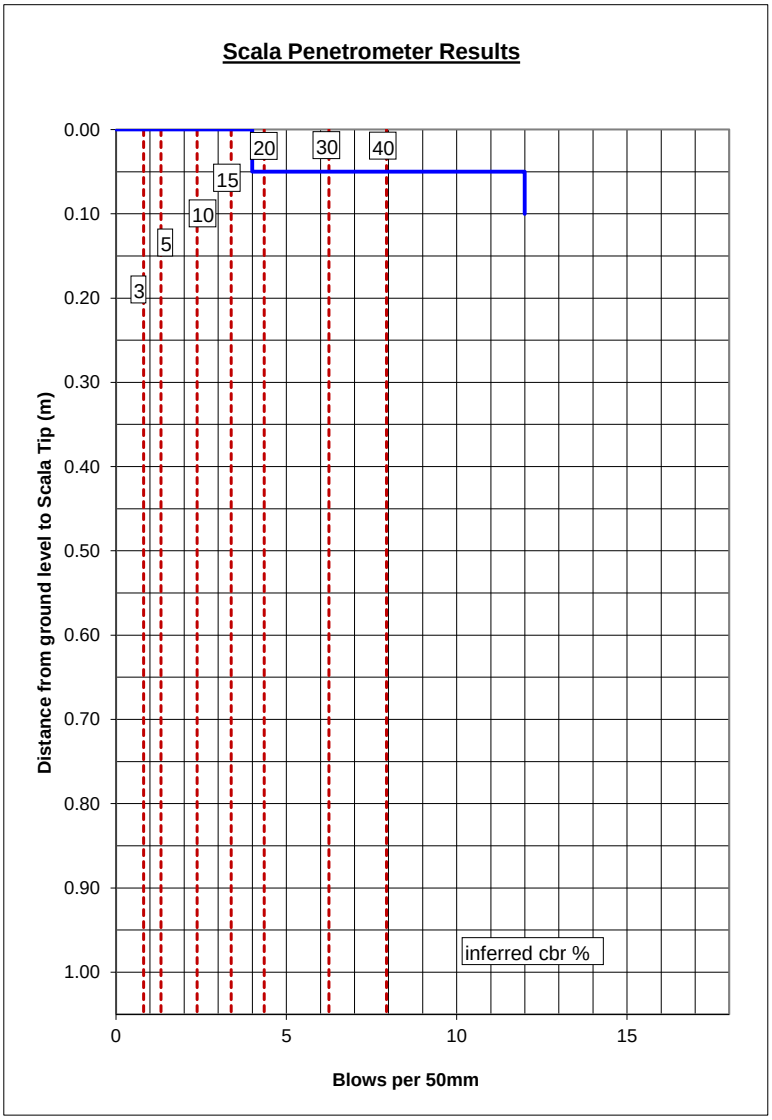
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

LWD Reading (Mpa) : 39.8

Scala No: SP407
Ref : 14333
Report No: W20-161
Page: 29 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
12	24	72	16	0.10



Recorded By: D.O
Date: 12/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

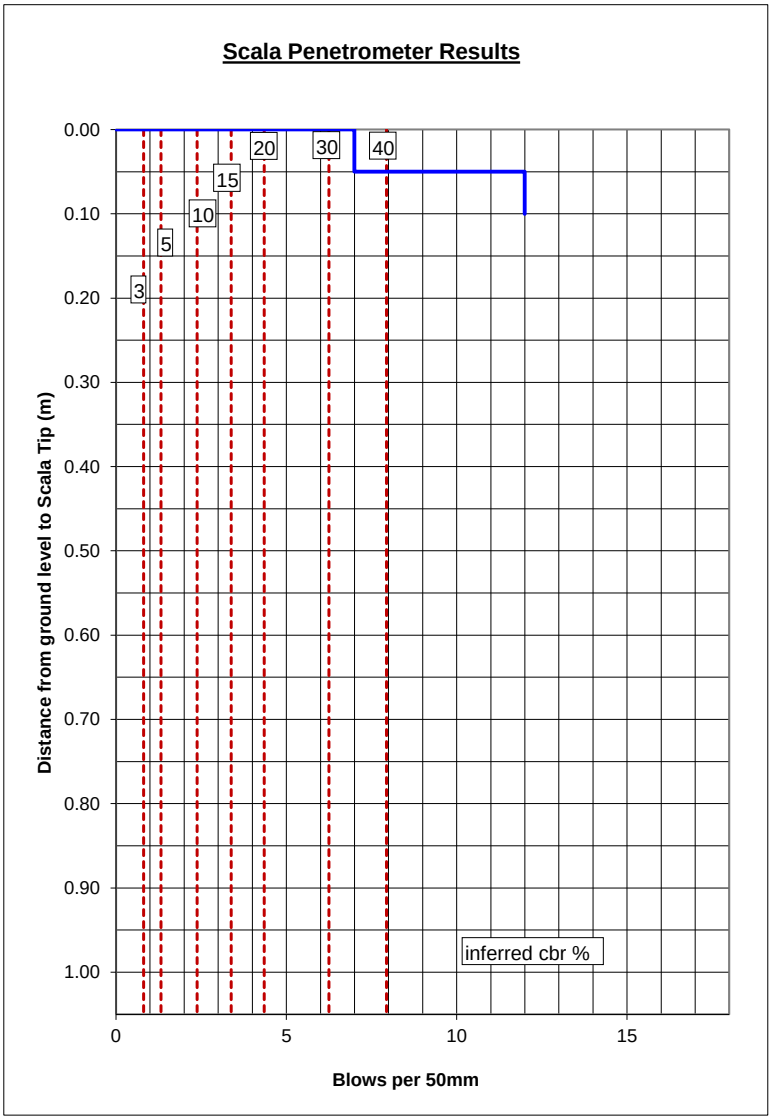
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

LWD Reading (Mpa) : 56.5

Scala No: SP408
Ref : 14333
Report No: W20-161
Page: 30 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
7	14	42	7	0.05
12	24	72	19	0.10



Recorded By: D.O
Date: 12/09/2019
Checked by: AM
Date: 19/03/2020

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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

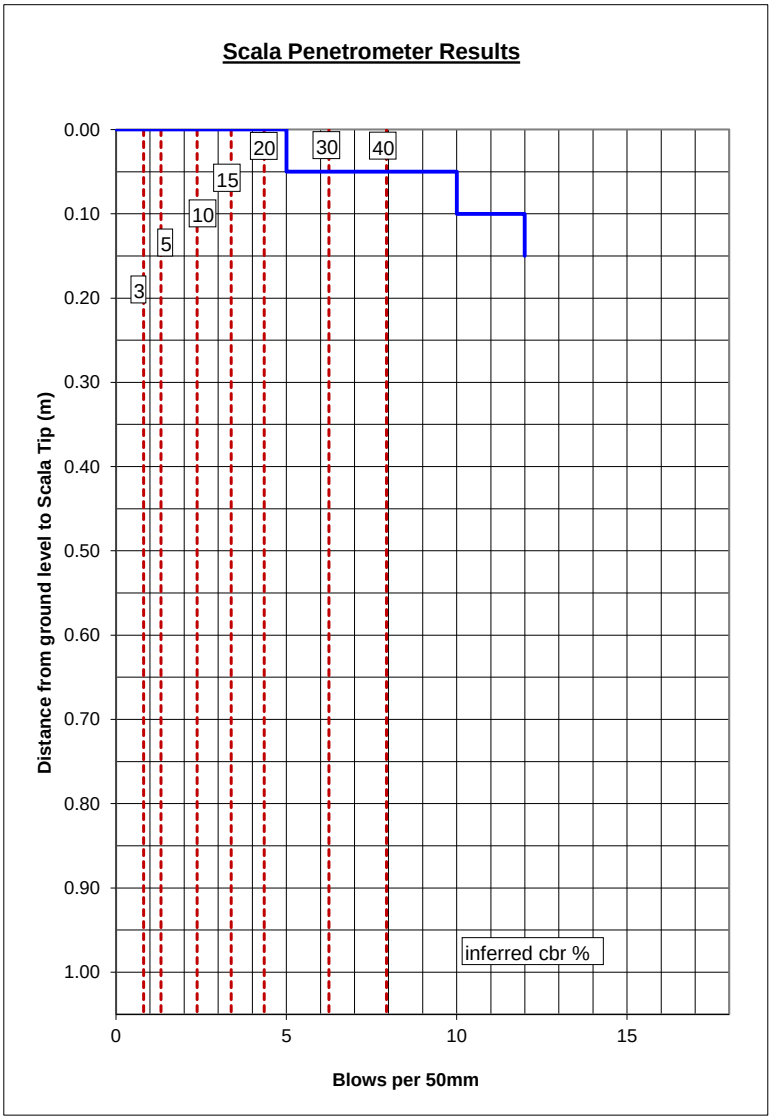
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

LWD Reading (Mpa) : 64.8

Scala No: SP409
Ref : 14333
Report No: W20-161
Page: 30 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
5	10	30	5	0.05
10	20	60	15	0.10
12	24	72	27	0.15



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Date: 12/09/2019
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DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

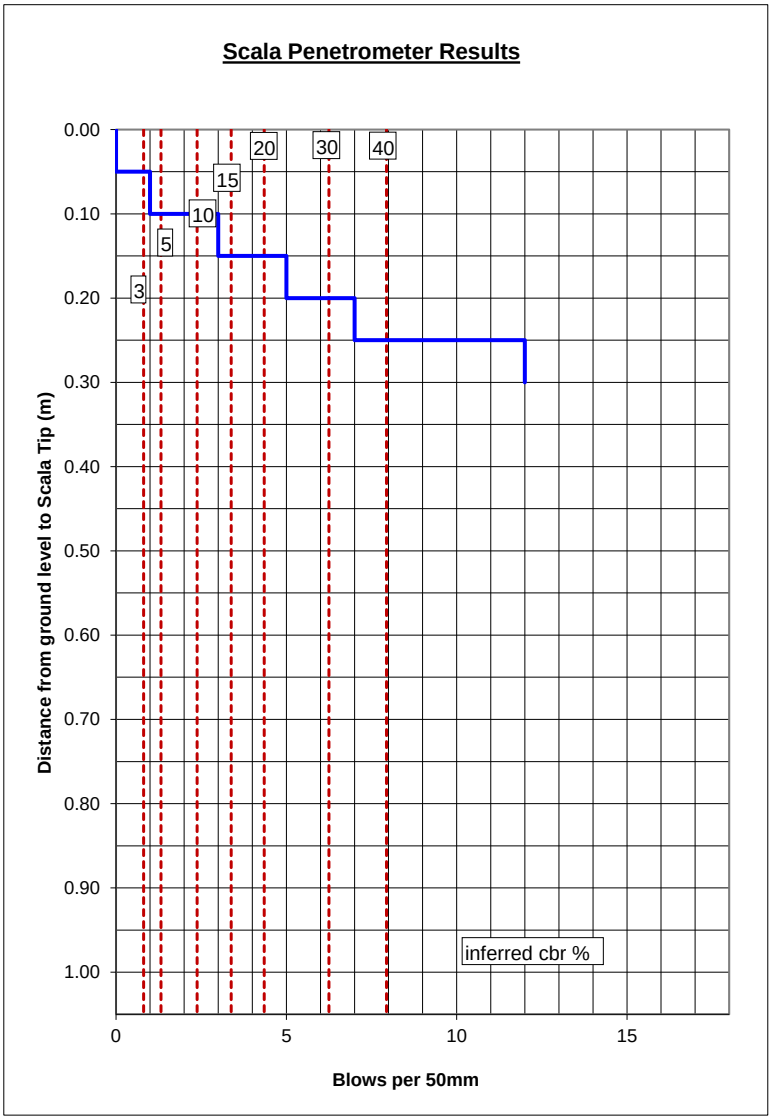
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing (Hibiscus)
Location: One Tree Point
Start Depth (m): 0

LWD Reading (Mpa) : 38.5

Scala No: SP410
Ref : 14333
Report No: W20-161
Page: 31 of 31

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
0	0	0	0	0.05
1	2	6	1	0.10
3	6	18	4	0.15
5	10	30	9	0.20
7	14	42	16	0.25
12	24	72	28	0.30



Recorded By: D.O
Date: 12/09/2019
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Date: 19/03/2020

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TEST REPORT

Lab Job No: 8020-1727

Your ref.: 14333

Date of Issue: 20/03/2020

Date of Re-Issue: -

Test Report No. W20-155

PROJECT: **The Landing- Subgrade Testing, 09/08/19 - 21/08/19**

CLIENT: Cook Costello
2 Norfolk Street

ATTENTION: Mr Stefano Rotatori

TEST METHODS: Determination of the penetration resistance using a dynamic cone (scala) Penetrometer
NZS 4402: 1988 Test 6.5.2
Light Weight Deflectometer (LWD) (not accredited)
ASTM E2835-11 (not accredited)

SAMPLING METHOD: N/A

TEST RESULTS: As per attached sheets

A.Millar
Admin

S. Kokich
Approved Signatory

IANZ ACCREDITED LABORATORY
Tests indicated as not accredited are outside the scope of the laboratory's accreditation

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DYNAMIC CONE (SCALA) PENETROMETER

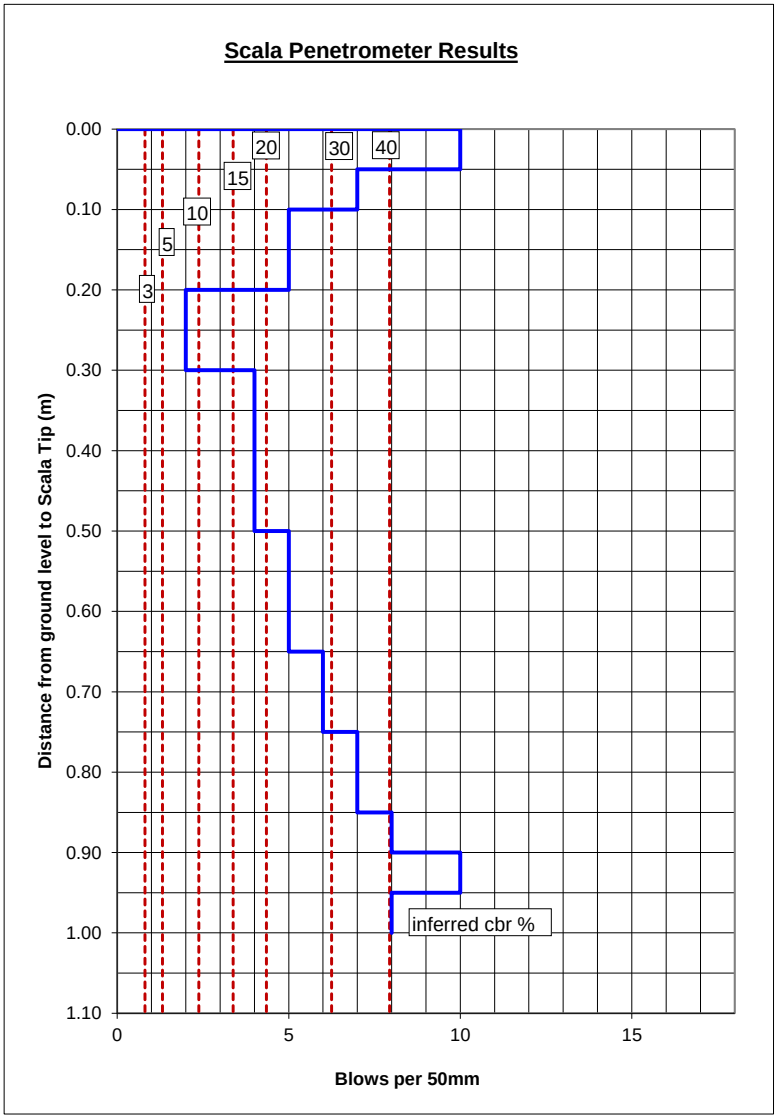
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP317
Ref : 14333
Report No: W20-155
Page: 2 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
10	20	60	10	0.05
7	14	42	17	0.10
5	10	30	22	0.15
5	10	30	27	0.20
2	4	12	29	0.25
2	4	12	31	0.30
4	8	24	35	0.35
4	8	24	39	0.40
4	8	24	43	0.45
4	8	24	47	0.50
5	10	30	52	0.55
5	10	30	57	0.60
5	10	30	62	0.65
6	12	36	68	0.70
6	12	36	74	0.75
7	14	42	81	0.80
7	14	42	88	0.85
8	16	48	96	0.90
10	20	60	106	0.95
8	16	48	114	1.00



Recorded By: D.O
Date: 9/08/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

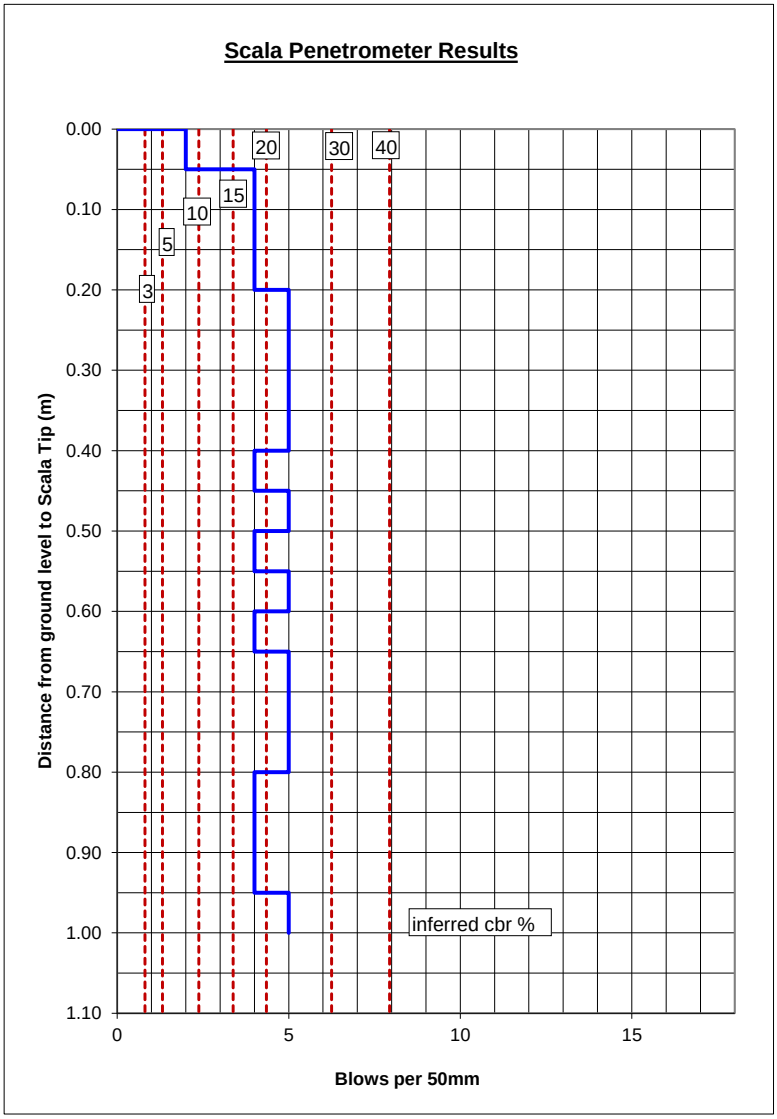
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP318
Ref : 14333
Report No: W20-155
Page: 3 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
4	8	24	6	0.10
4	8	24	10	0.15
4	8	24	14	0.20
5	10	30	19	0.25
5	10	30	24	0.30
5	10	30	29	0.35
5	10	30	34	0.40
4	8	24	38	0.45
5	10	30	43	0.50
4	8	24	47	0.55
5	10	30	52	0.60
4	8	24	56	0.65
5	10	30	61	0.70
5	10	30	66	0.75
5	10	30	71	0.80
4	8	24	75	0.85
4	8	24	79	0.90
4	8	24	83	0.95
5	10	30	88	1.00



Recorded By: D.O
Date: 9/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

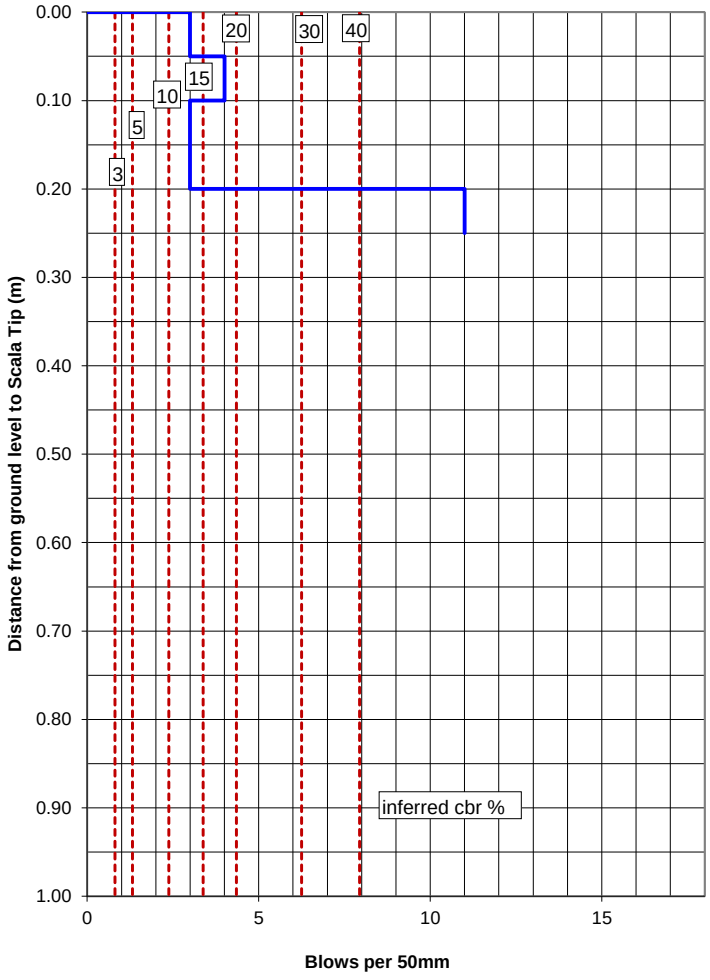
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP319
Ref : 14333
Report No: W20-155
Page: 4 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
3	6	18	10	0.15
3	6	18	13	0.20
11	22	66	24	0.25

Scala Penetrometer Results



Recorded By: D.O
Date: 9/08/2019
Checked by: AM
Date: 19/03/2020

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

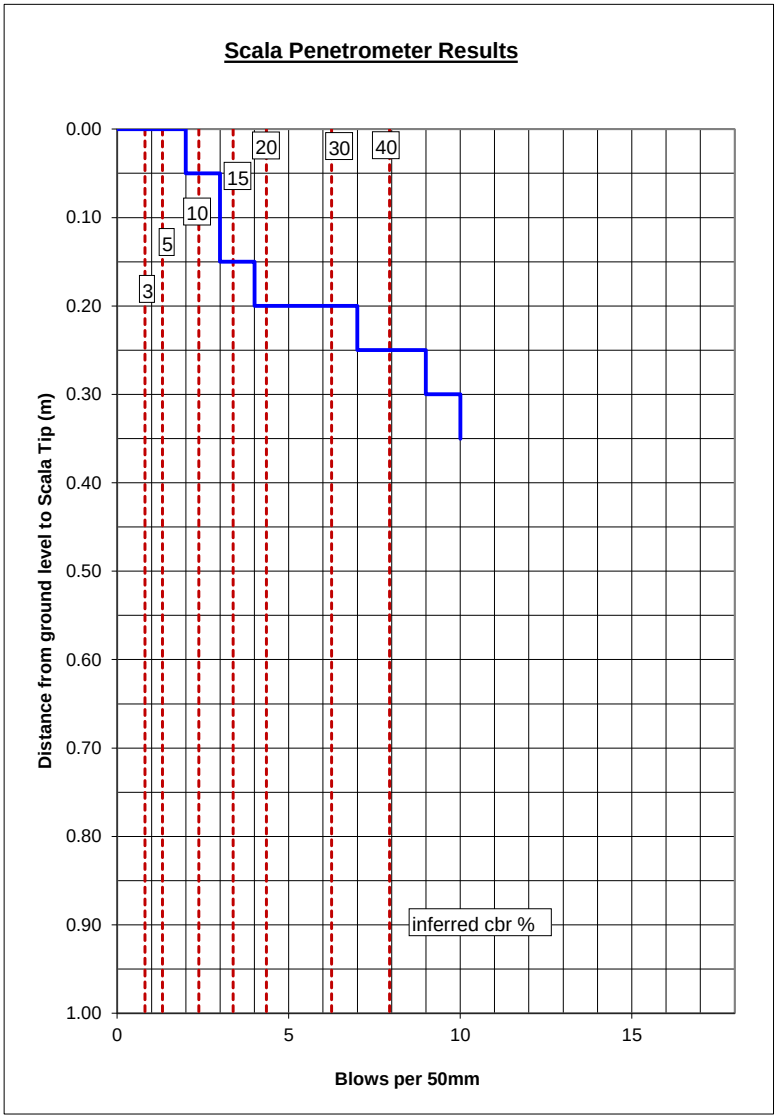
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP320
Ref : 14333
Report No: W20-155
Page: 5 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
4	8	24	12	0.20
7	14	42	19	0.25
9	18	54	28	0.30
10	20	60	38	0.35



Recorded By: D.O
Date: 9/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

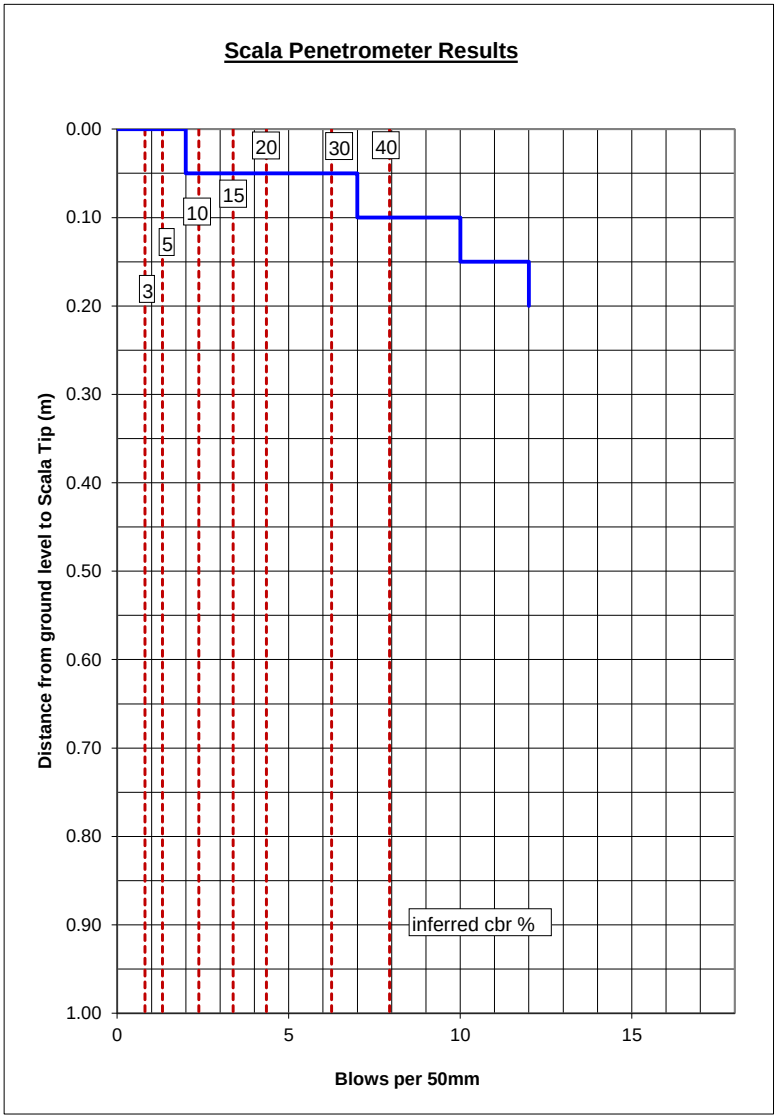
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP321
Ref : 14333
Report No: W20-155
Page: 6 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
7	14	42	9	0.10
10	20	60	19	0.15
12	24	72	31	0.20



Recorded By: D.O
Date: 9/08/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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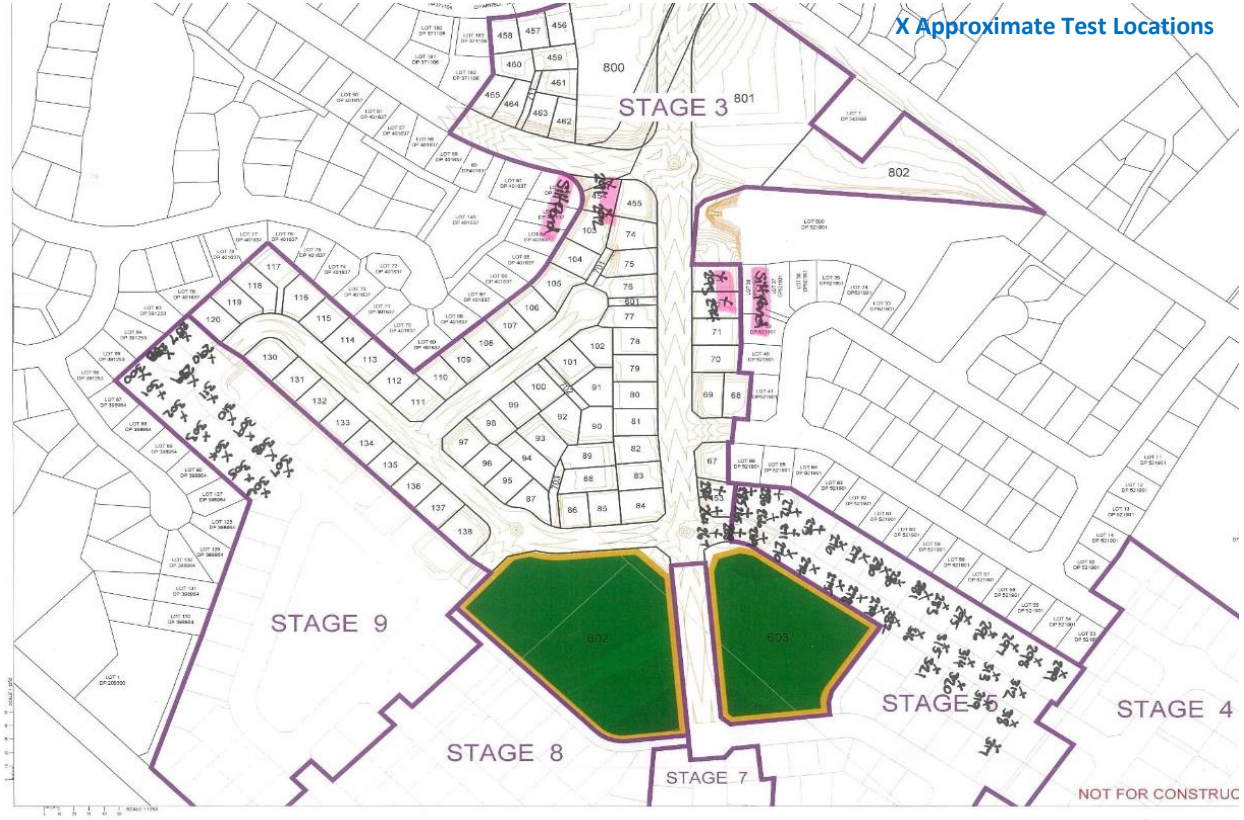
Approved Signatory

166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

SITE PLAN

Lab Job No:	8020-1727	**Tested by:**	D.O/J.A
Client:	Cook Costello	**Date:**	20-29/08/2019
Project:	The Landing	**Page:**	7 of 24
Location:	Subgrade		
Report No:	W20-155		
REF:	14333		



Site Plan
23/03/2020
8020-1727, CCL 14333, The Landing, field testing, Hicks

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

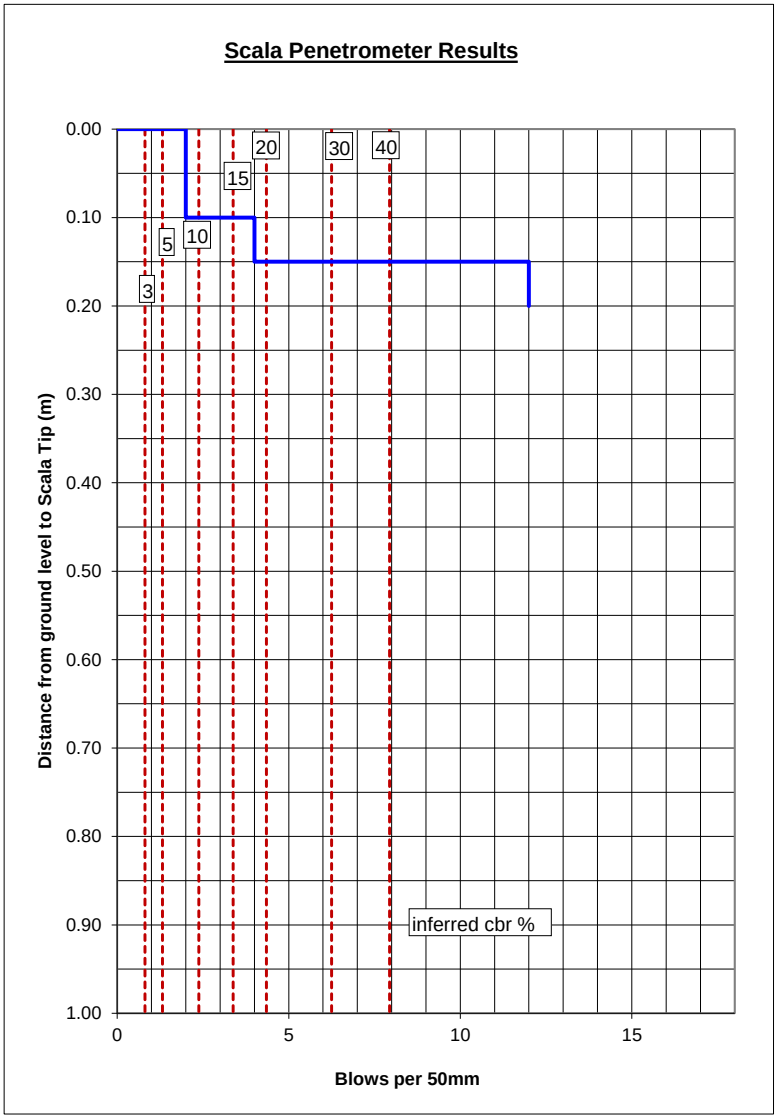
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP322
Ref : 14333
Report No: W20-155
Page: 8 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
2	4	12	4	0.10
4	8	24	8	0.15
12	24	72	20	0.20



Recorded By: D.O
Date: 20/08/2019
Checked by: AM
Date: 19/03/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

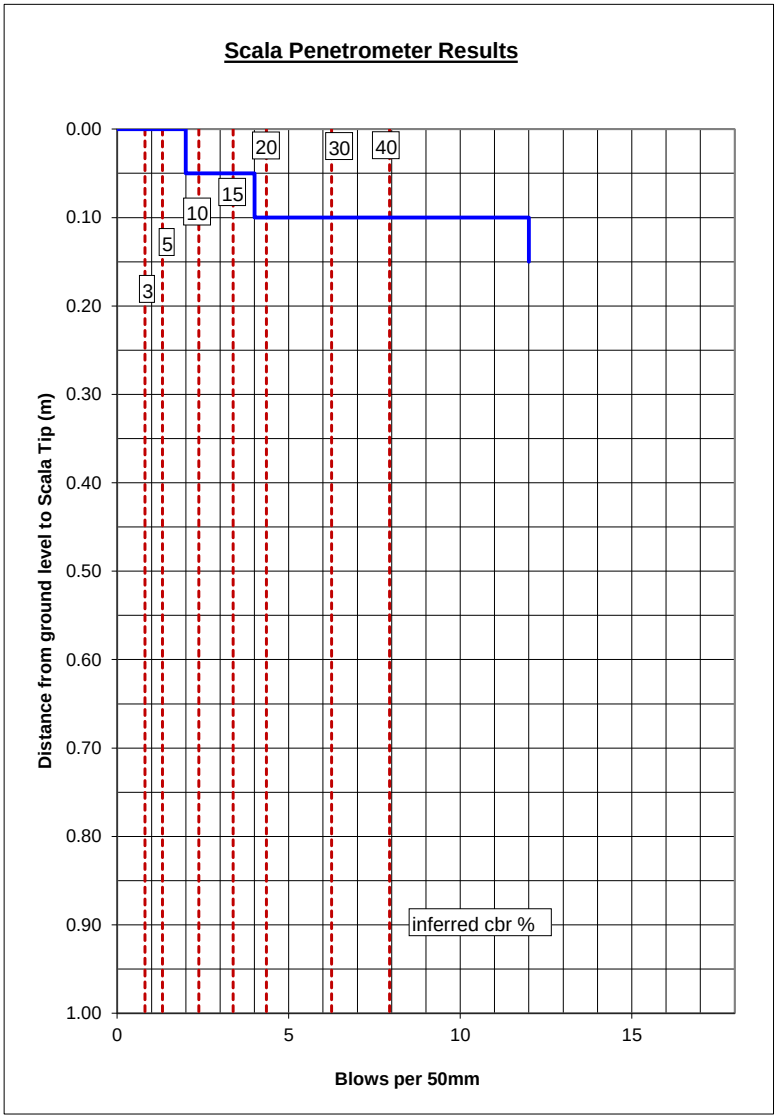
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP323
Ref : 14333
Report No: W20-155
Page: 9 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
4	8	24	6	0.10
12	24	72	18	0.15



Recorded By: D.O
Date: 20/08/2019
Checked by: AM
Date: 19/03/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

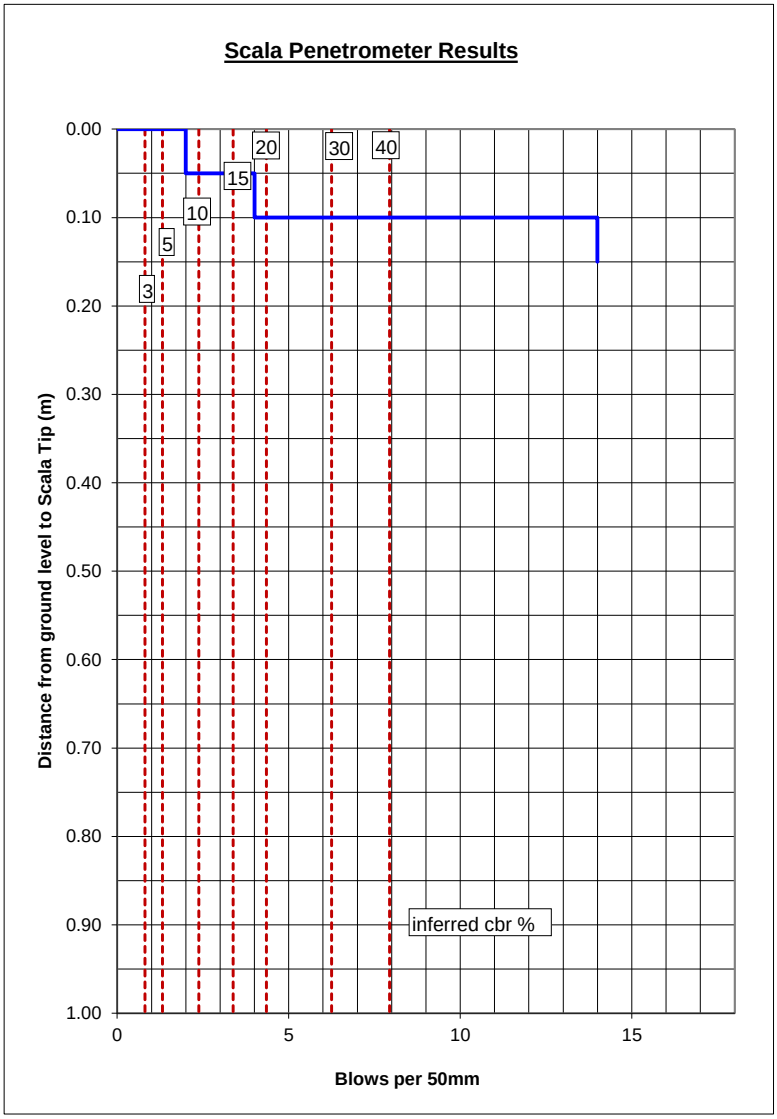
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP324
Ref : 14333
Report No: W20-155
Page: 10 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
4	8	24	6	0.10
14	28	84	20	0.15



Recorded By: D.O
Date: 20/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

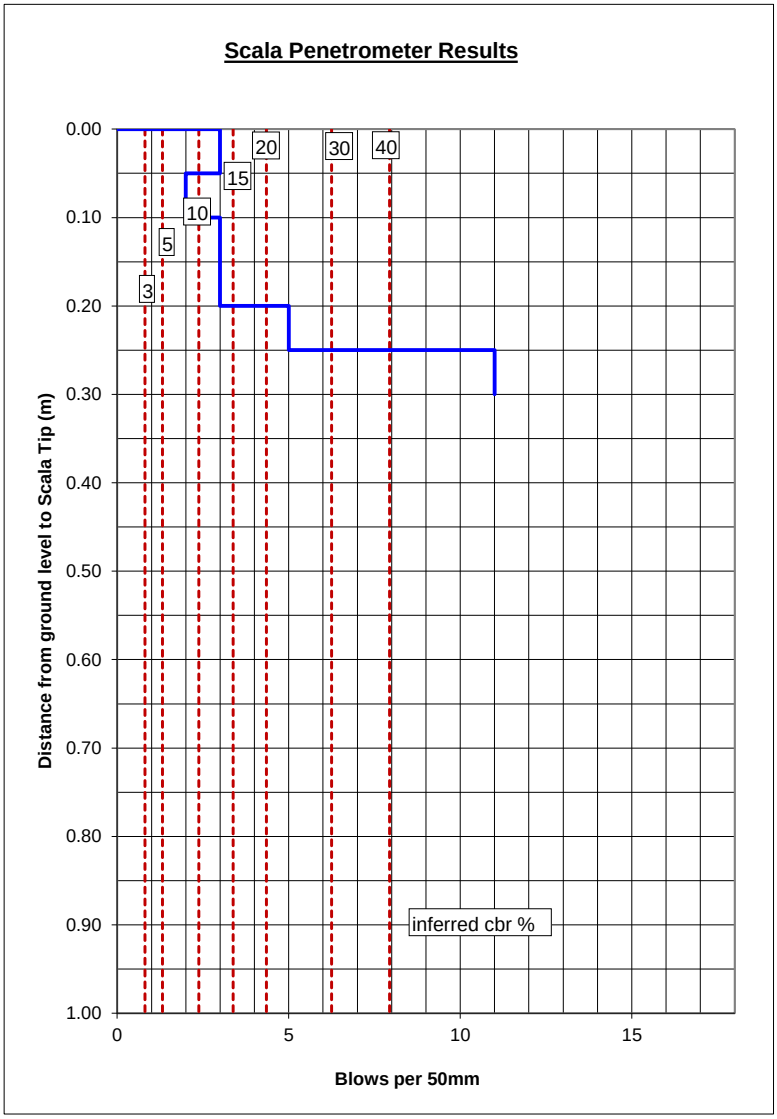
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP325
Ref : 14333
Report No: W20-155
Page: 11 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
2	4	12	5	0.10
3	6	18	8	0.15
3	6	18	11	0.20
5	10	30	16	0.25
11	22	66	27	0.30



Recorded By: D.O
Date: 20/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

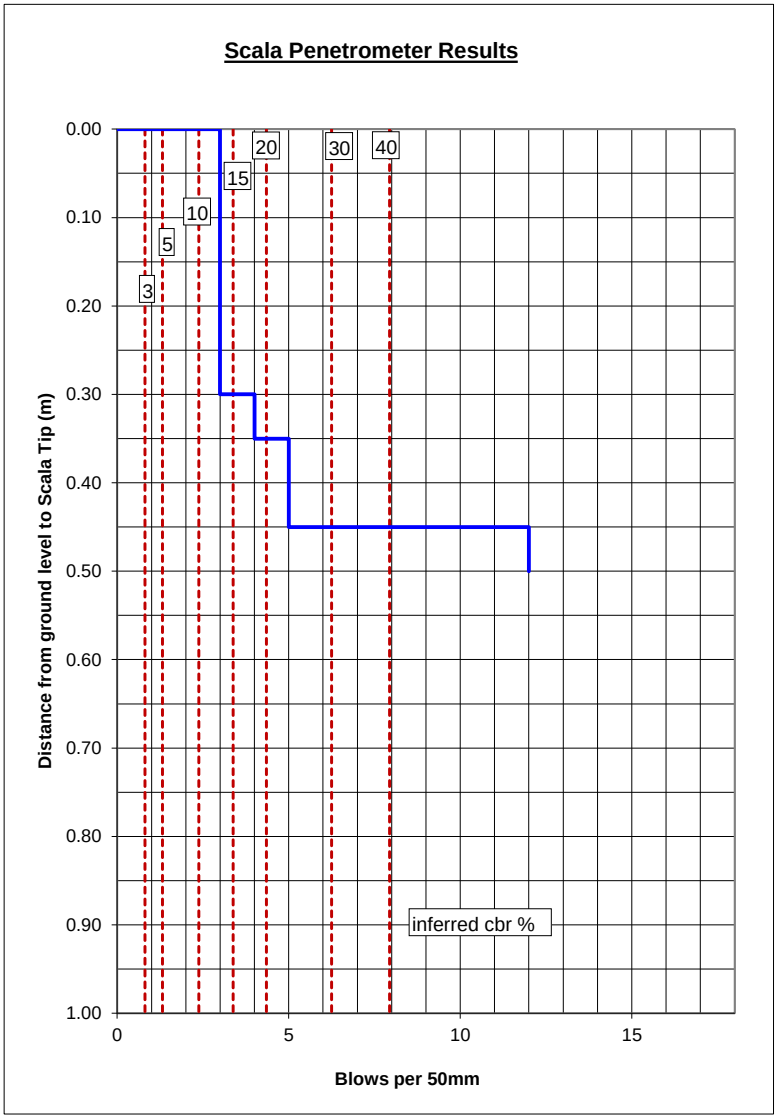
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP326
Ref : 14333
Report No: W20-155
Page: 12 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
3	6	18	9	0.15
3	6	18	12	0.20
3	6	18	15	0.25
3	6	18	18	0.30
4	8	24	22	0.35
5	10	30	27	0.40
5	10	30	32	0.45
12	24	72	44	0.50



Recorded By: D.O
Date: 20/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

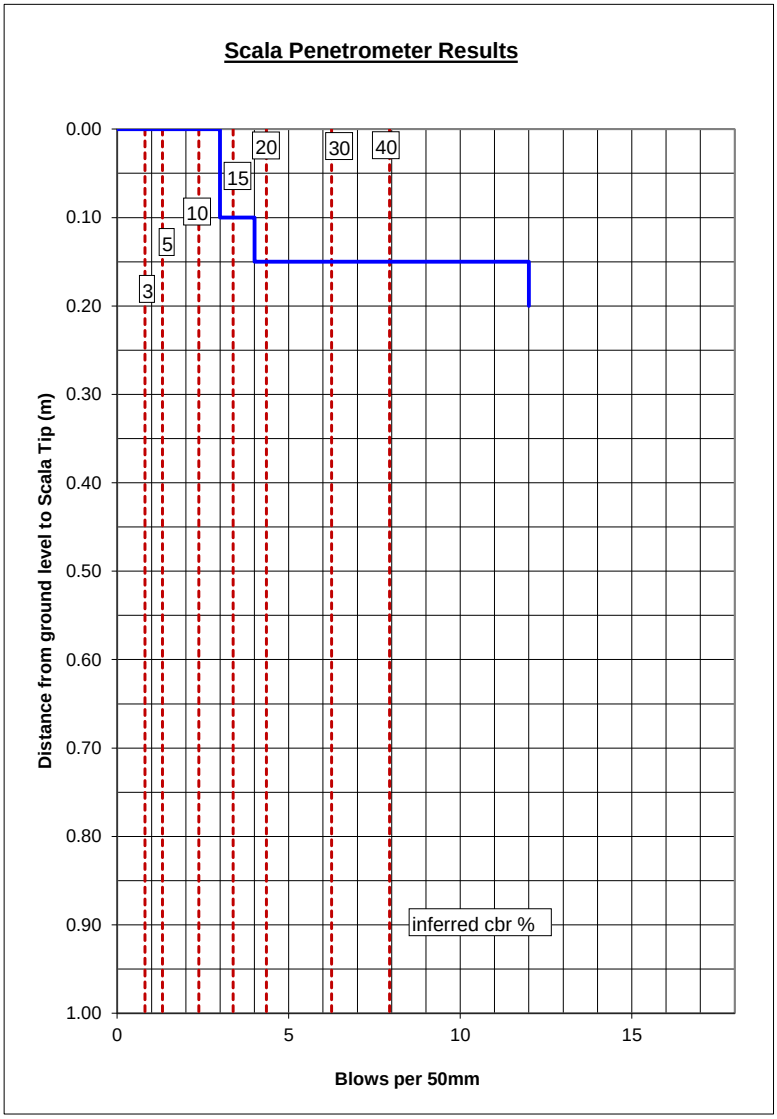
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP327
Ref : 14333
Report No: W20-155
Page: 13 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
4	8	24	10	0.15
12	24	72	22	0.20



Recorded By: D.O
Date: 20/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

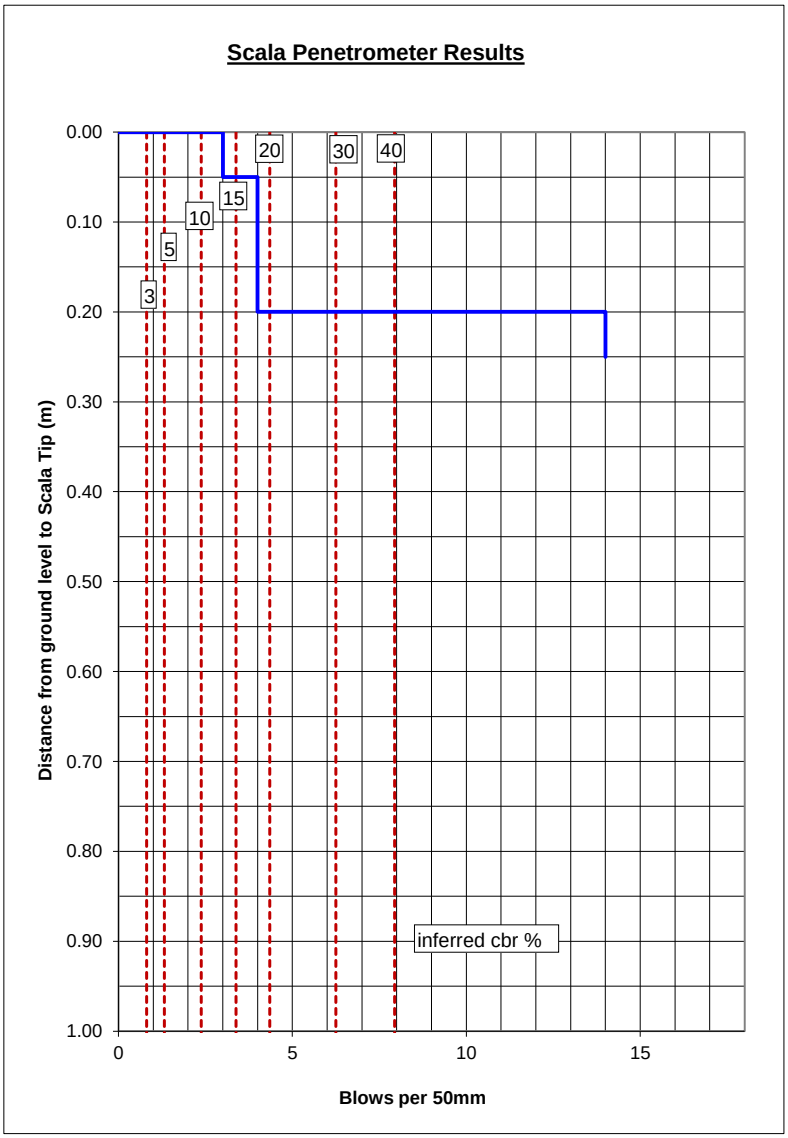
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP328
Ref : 14333
Report No: W20-155
Page: 14 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
4	8	24	11	0.15
4	8	24	15	0.20
14	28	84	29	0.25



Recorded By: D.O
Date: 20/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

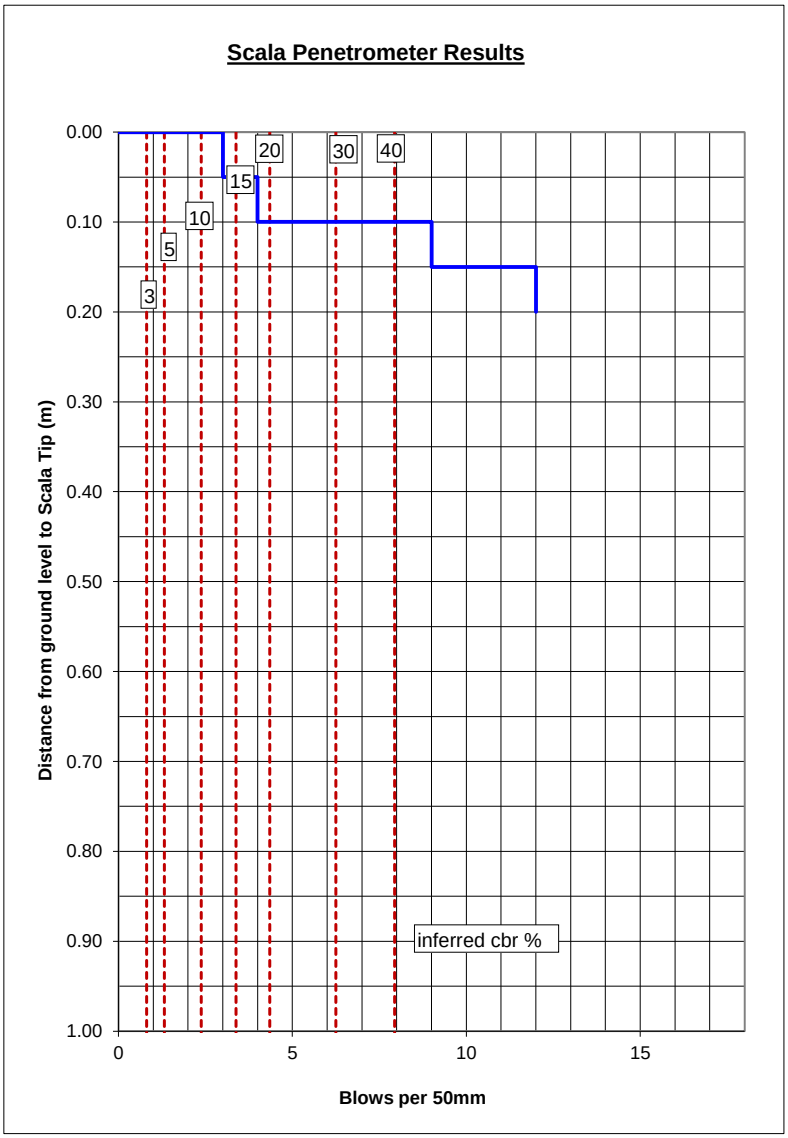
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP329
Ref : 14333
Report No: W20-155
Page: 15 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
9	18	54	16	0.15
12	24	72	28	0.20



Recorded By: D.O
Date: 20/08/2019
Checked by: AM
Date: 19/03/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

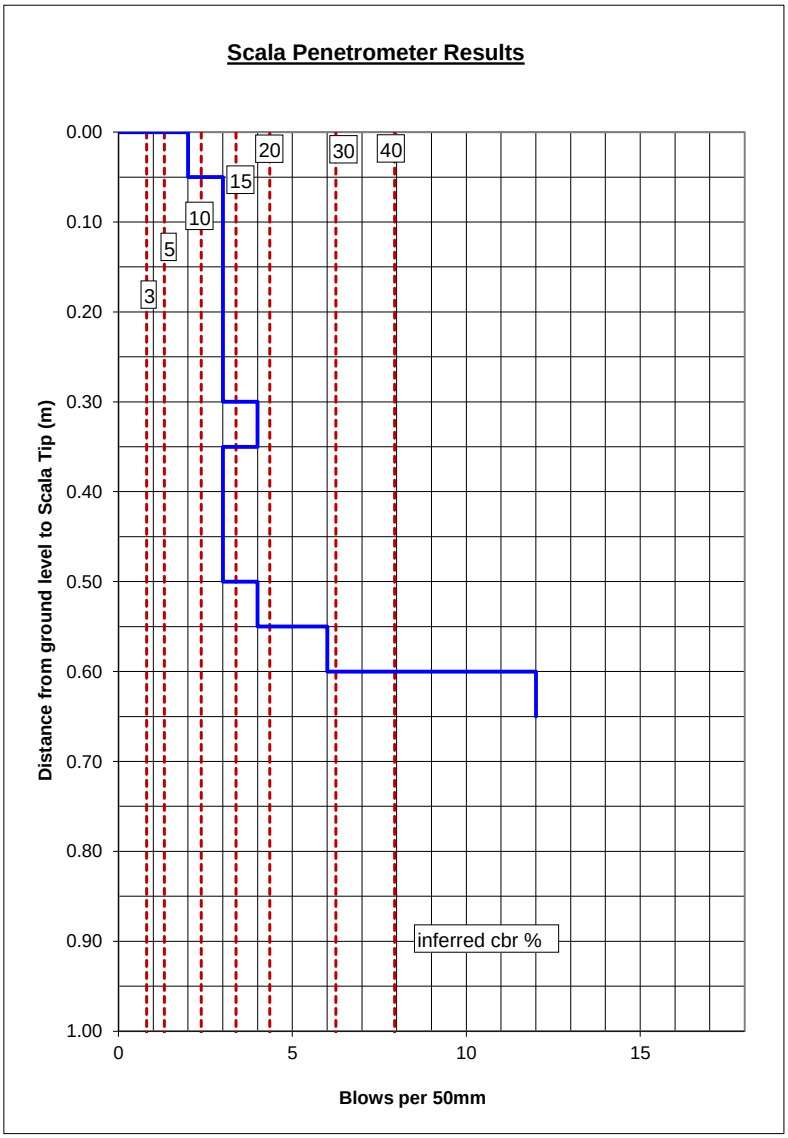
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP330
Ref : 14333
Report No: W20-155
Page: 16 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
3	6	18	11	0.20
3	6	18	14	0.25
3	6	18	17	0.30
4	8	24	21	0.35
3	6	18	24	0.40
3	6	18	27	0.45
3	6	18	30	0.50
4	8	24	34	0.55
6	12	36	40	0.60
12	24	72	52	0.65



Recorded By: D.O
Date: 20/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

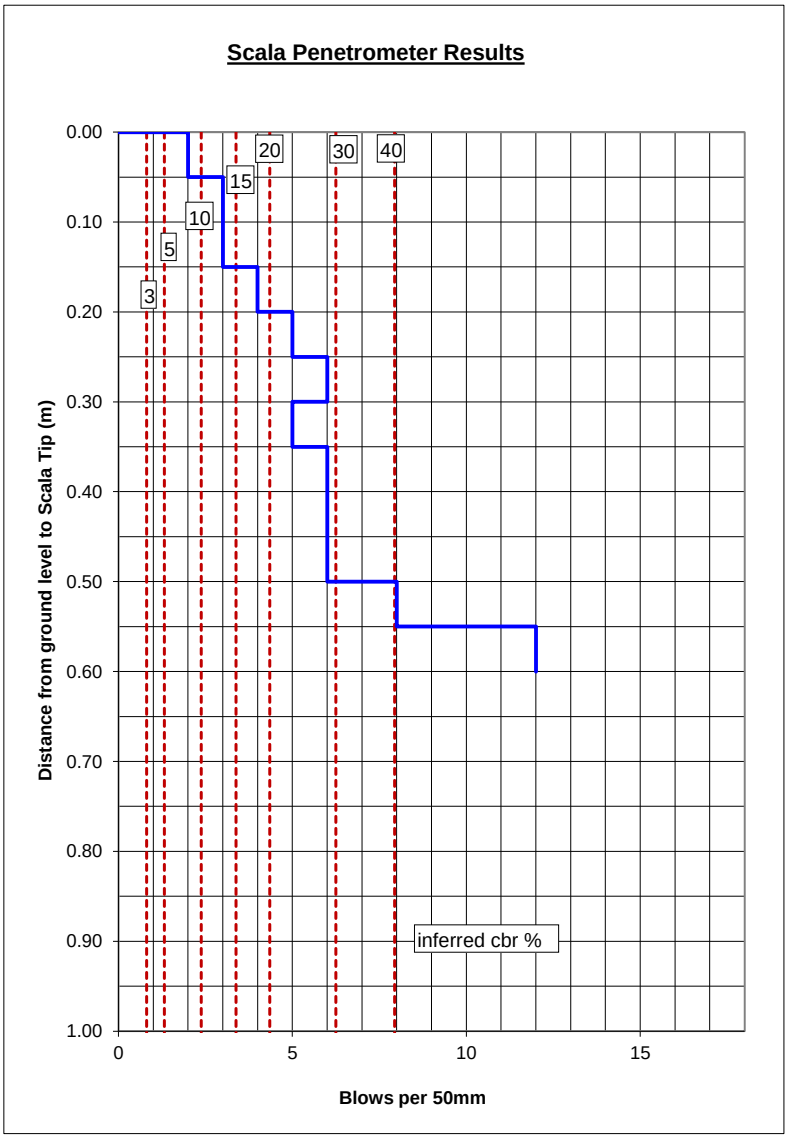
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP331
Ref : 14333
Report No: W20-155
Page: 17 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
4	8	24	12	0.20
5	10	30	17	0.25
6	12	36	23	0.30
5	10	30	28	0.35
6	12	36	34	0.40
6	12	36	40	0.45
6	12	36	46	0.50
8	16	48	54	0.55
12	24	72	66	0.60



Recorded By: D.O
Date: 21/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

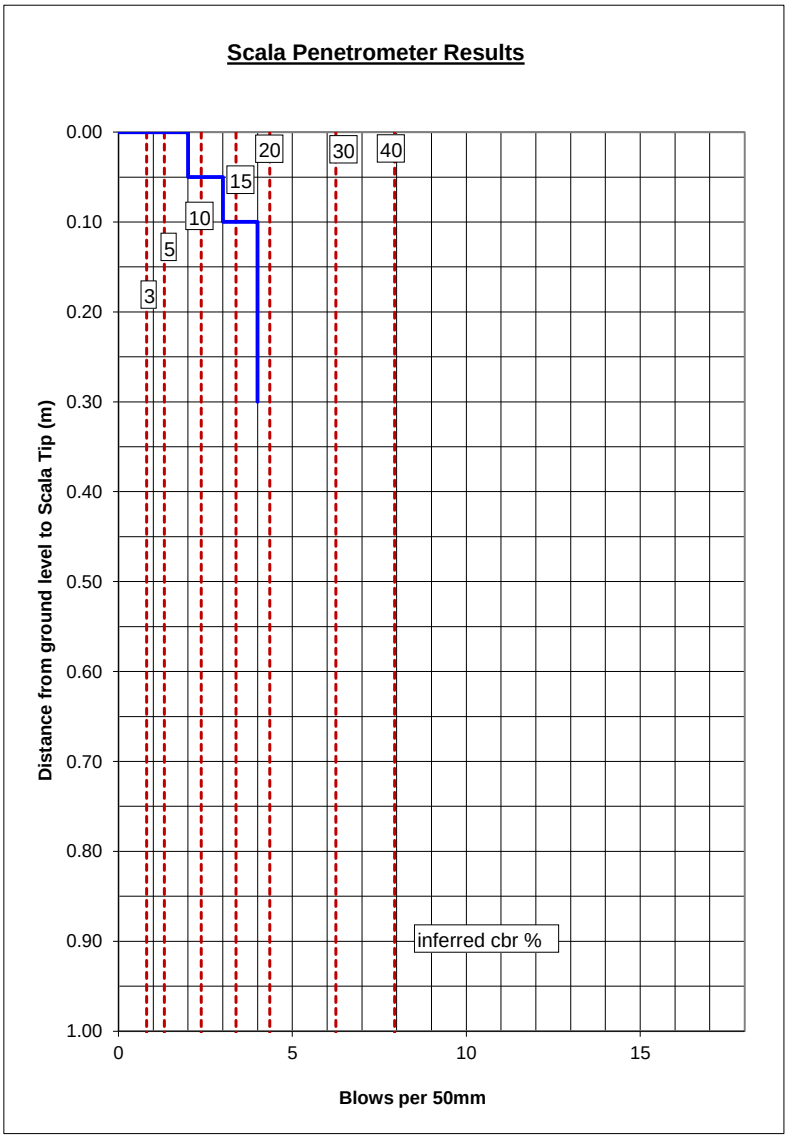
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP332
Ref : 14333
Report No: W20-155
Page: 18 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
4	8	24	9	0.15
4	8	24	13	0.20
4	8	24	17	0.25
4	8	24	21	0.30



Recorded By: D.O
Date: 21/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

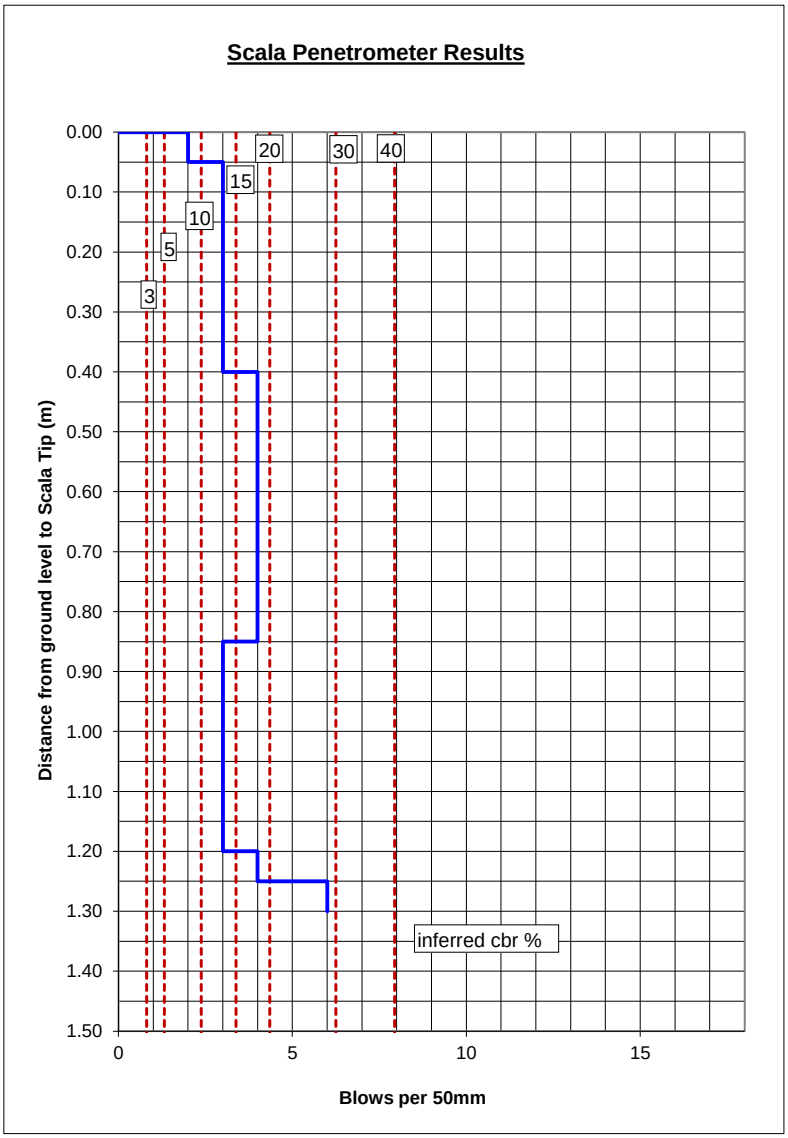
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP333
Ref : 14333
Report No: W20-155
Page: 19 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
3	6	18	11	0.20
3	6	18	14	0.25
3	6	18	17	0.30
3	6	18	20	0.35
3	6	18	23	0.40
4	8	24	27	0.45
4	8	24	31	0.50
4	8	24	35	0.55
4	8	24	39	0.60
4	8	24	43	0.65
4	8	24	47	0.70
4	8	24	51	0.75
4	8	24	55	0.80
4	8	24	59	0.85
3	6	18	62	0.90
3	6	18	65	0.95
3	6	18	68	1.00
3	6	18	71	1.05
3	6	18	74	1.10
3	6	18	77	1.15
3	6	18	80	1.20
4	8	24	84	1.25
6	12	36	90	1.30



Recorded By: D.O
Date: 21/08/2019
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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

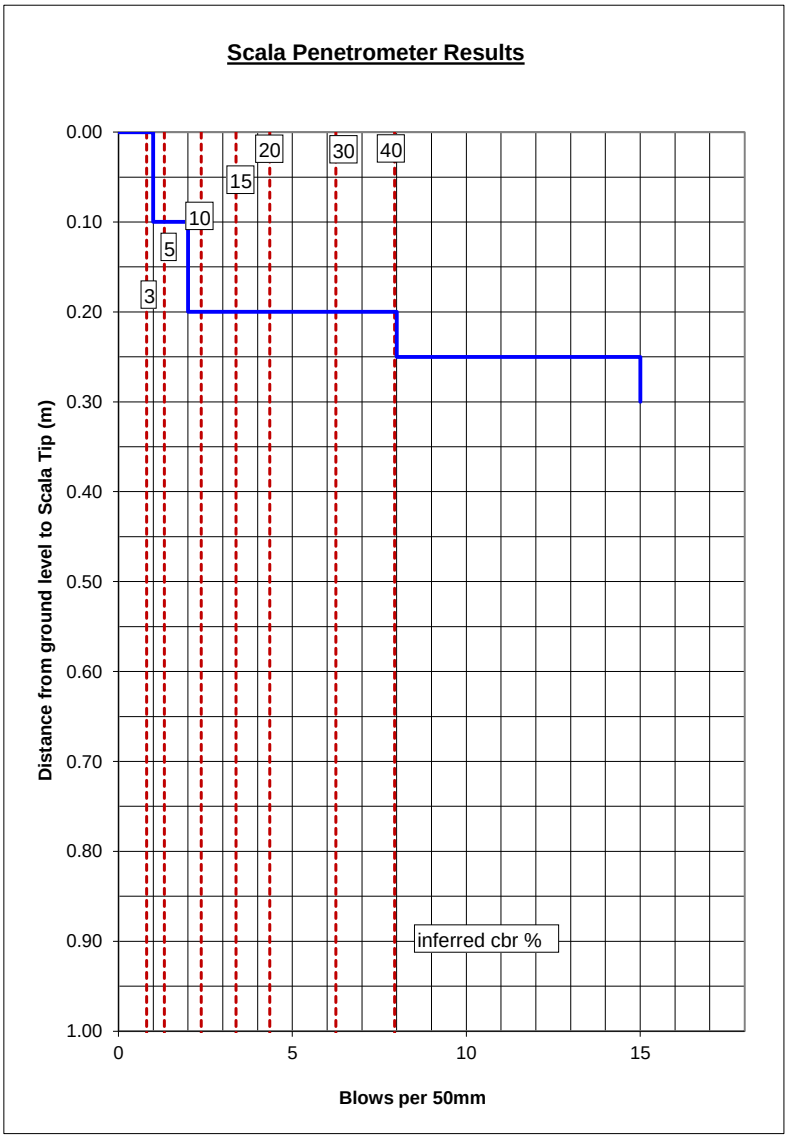
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP334
Ref : 14333
Report No: W20-155
Page: 20 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
1	2	6	2	0.10
2	4	12	4	0.15
2	4	12	6	0.20
8	16	48	14	0.25
15	30	90	29	0.30



Recorded By: D.O
Date: 21/08/2019
Checked by: AM
Date: 19/03/2020

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

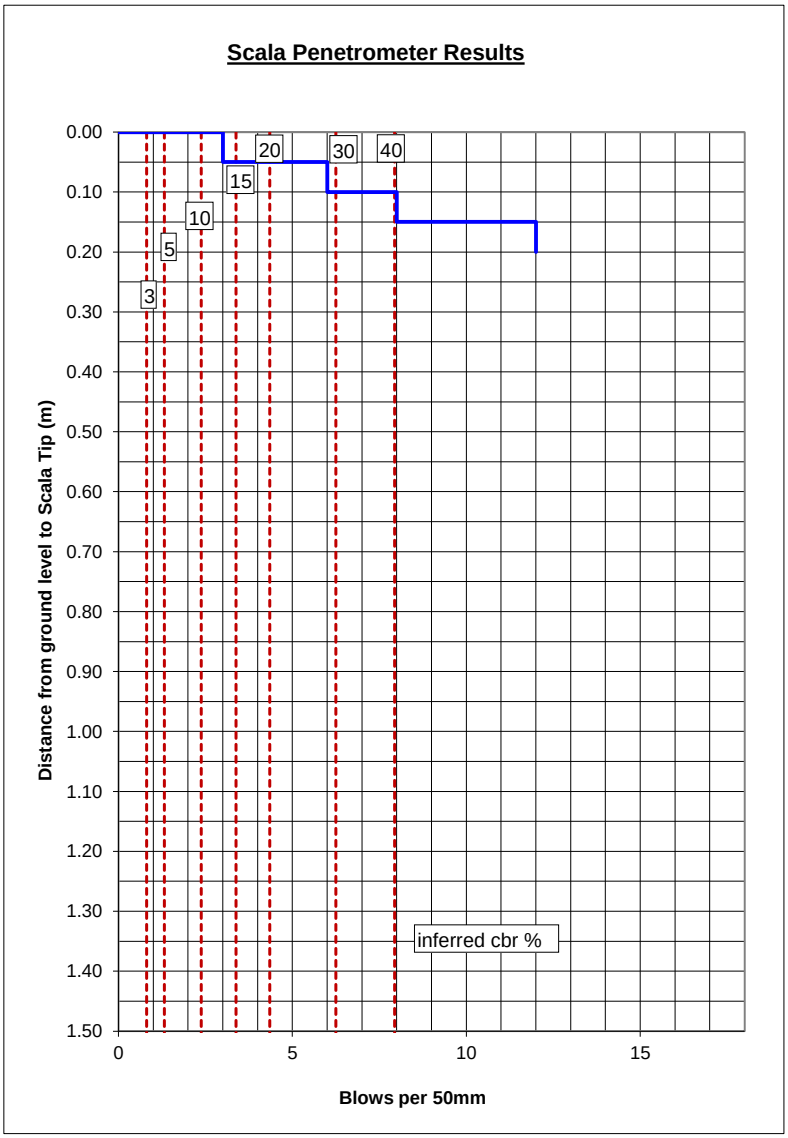
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP335
Ref : 14333
Report No: W20-155
Page: 21 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
6	12	36	9	0.10
8	16	48	17	0.15
12	24	72	29	0.20



Recorded By: D.O
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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

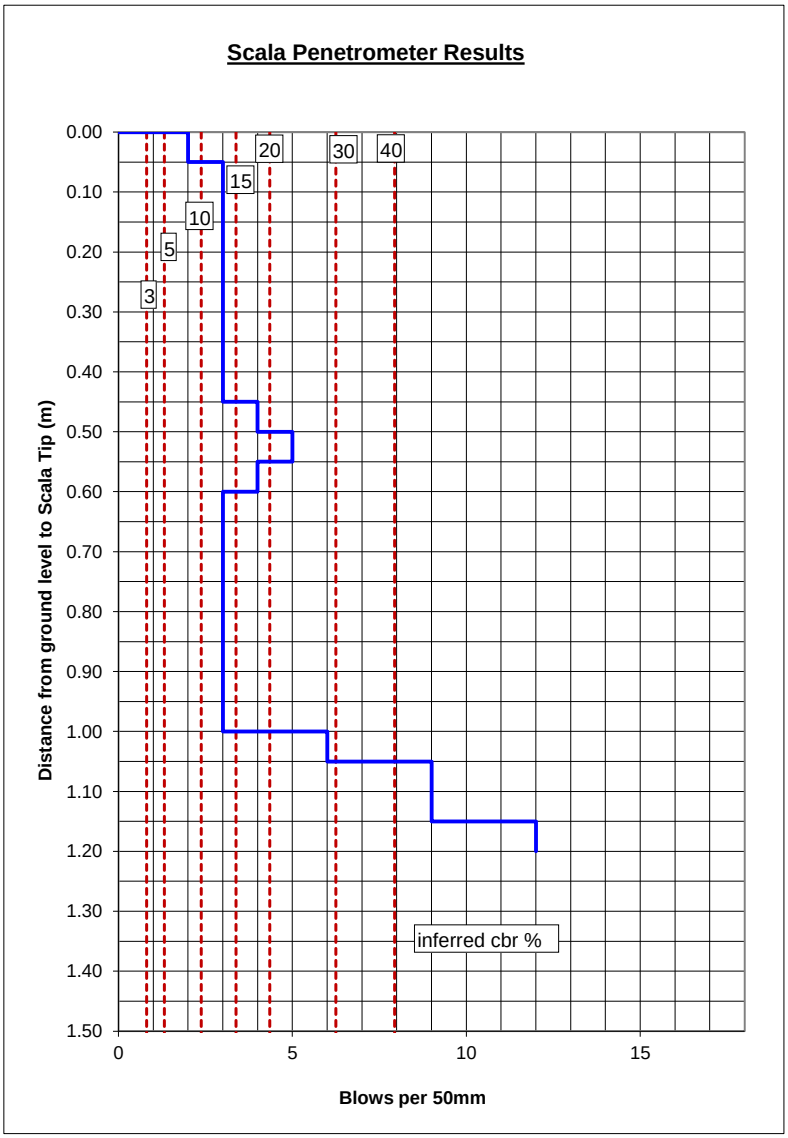
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP336
Ref : 14333
Report No: W20-155
Page: 22 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
3	6	18	11	0.20
3	6	18	14	0.25
3	6	18	17	0.30
3	6	18	20	0.35
3	6	18	23	0.40
3	6	18	26	0.45
4	8	24	30	0.50
5	10	30	35	0.55
4	8	24	39	0.60
3	6	18	42	0.65
3	6	18	45	0.70
3	6	18	48	0.75
3	6	18	51	0.80
3	6	18	54	0.85
3	6	18	57	0.90
3	6	18	60	0.95
3	6	18	63	1.00
6	12	36	69	1.05
9	18	54	78	1.10
9	18	54	87	1.15
12	24	72	99	1.20



Recorded By: D.O
Date: 21/08/2019
Checked by: AM
Date: 19/03/2020

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

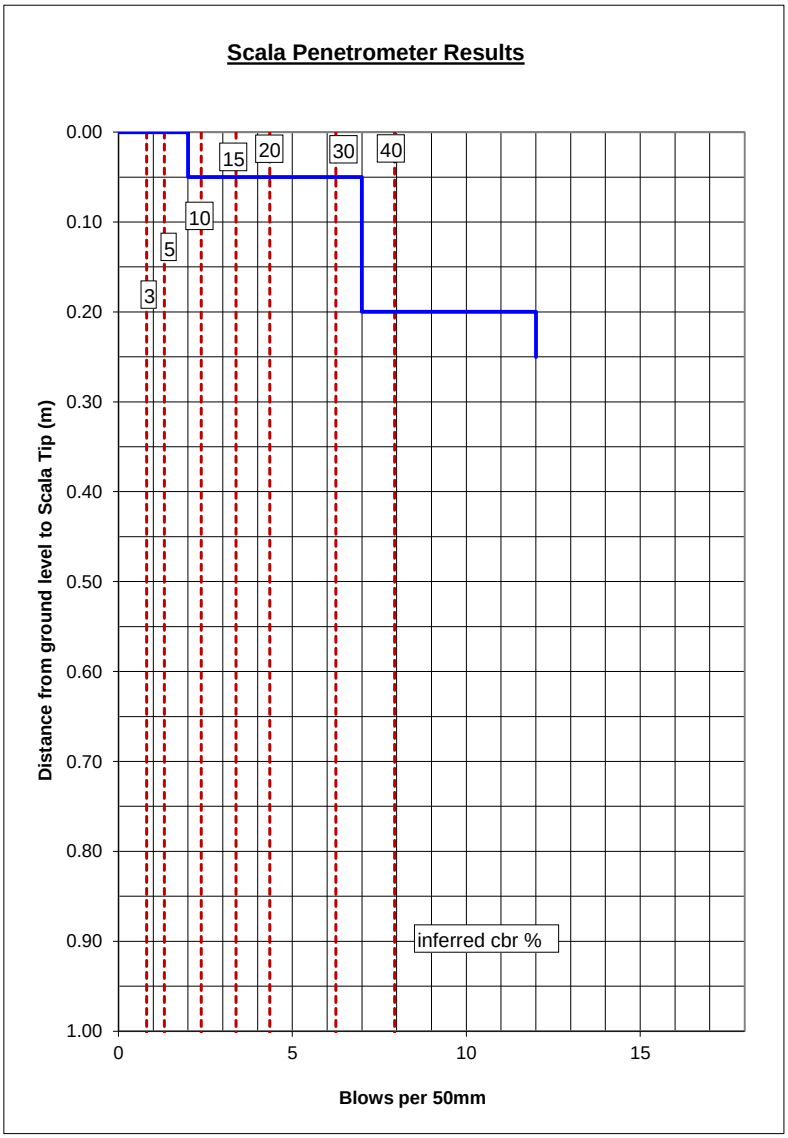
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP337
Ref : 14333
Report No: W20-155
Page: 23 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
7	14	42	9	0.10
7	14	42	16	0.15
7	14	42	23	0.20
12	24	72	35	0.25



Recorded By: D.O
Date: 21/08/2019
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Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

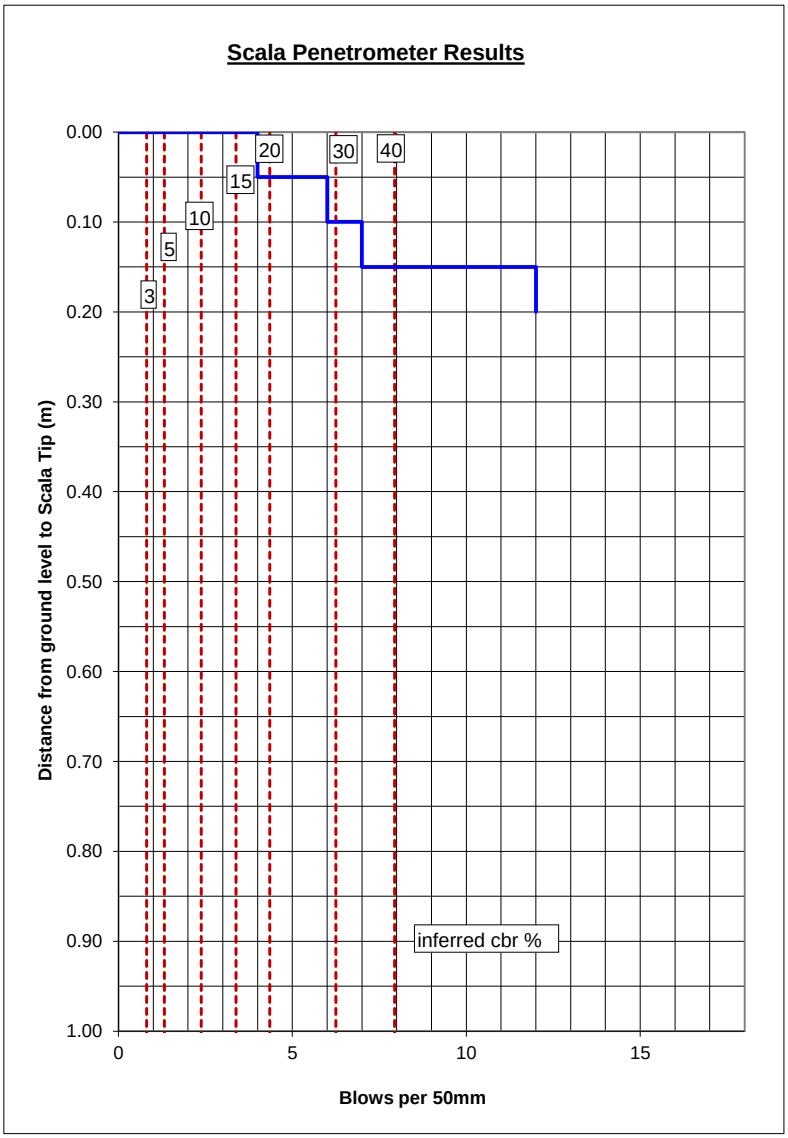
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP338
Ref : 14333
Report No: W20-155
Page: 24 of 24

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
6	12	36	10	0.10
7	14	42	17	0.15
12	24	72	29	0.20



Recorded By: D.O
Date: 21/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8022-1727

Your ref.: 14333

Date of Issue: 23/03/2020

Date of Re-Issue: -

Page: 1 of 32

Test Report No. W20-156

PROJECT: **The Landing - Subgrade Testing, 23/08/19 - 02/09/19**

CLIENT: Cook Costello
2 Norfolk Street

ATTENTION: Mr Stefano Rotatori

TEST METHODS: Determination of the penetration resistance using a dynamic cone (scala) Penetrometer
NZS 4402: 1988 Test 6.5.2
Light Weight Deflectometer (LWD) (not accredited)
ASTM E2835-11 (not accredited)

SAMPLING METHOD: N/A

TEST RESULTS: As per attached sheets

A.Millar
Admin

S. Kokich
Approved Signatory

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

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

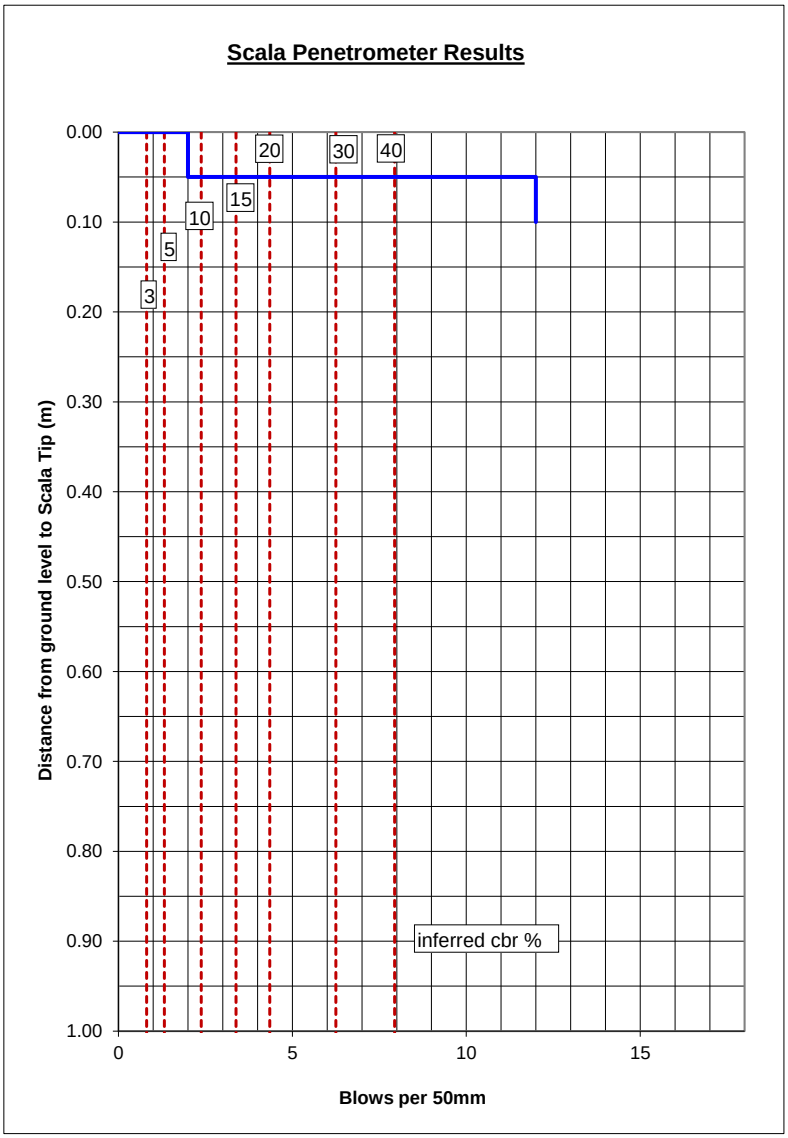
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP339
Ref : 14333
Report No: W20-156
Page: 2 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
12	24	72	14	0.10



Recorded By: D.O
Date: 23/08/2019
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Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

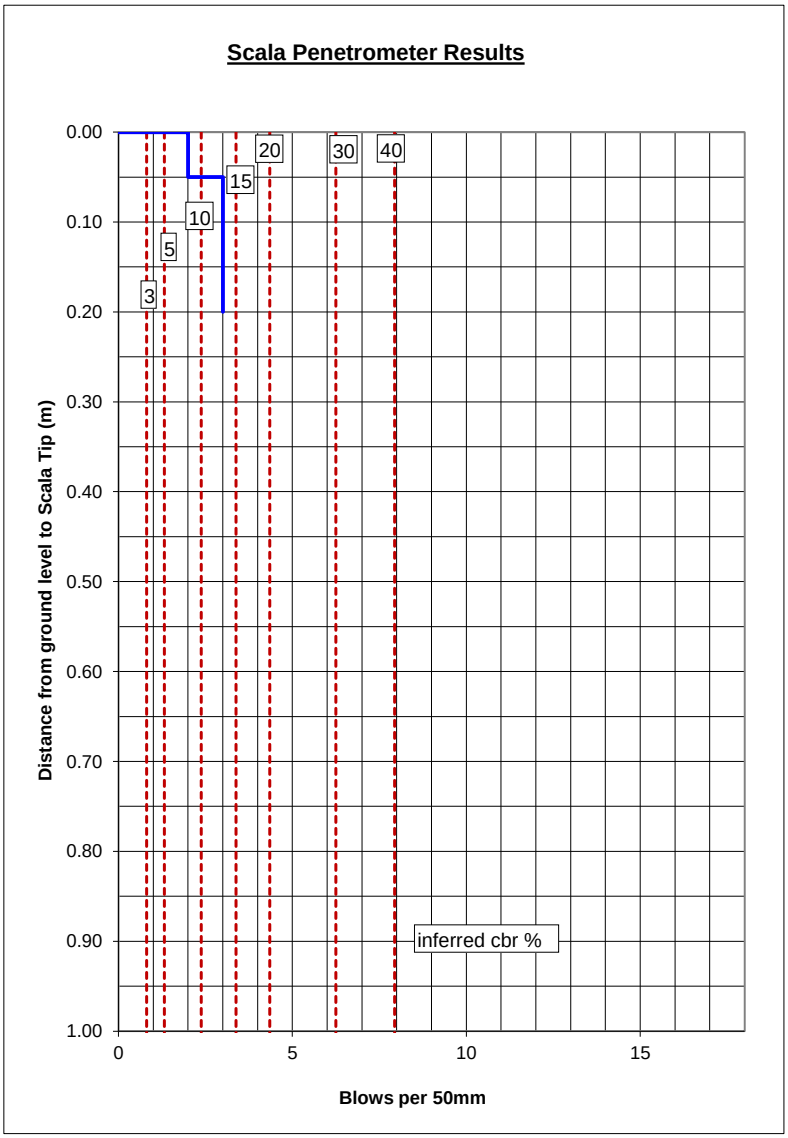
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP340
Ref : 14333
Report No: W20-156
Page: 3 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
3	6	18	11	0.20
3	6	18	14	0.25
3	6	18	17	0.30
4	8	24	21	0.35
5	10	30	26	0.40
7	14	42	33	0.45
12	24	72	45	0.50



Recorded By: D.O
Date: 26/08/2019
Checked by: AM
Date: 19/03/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

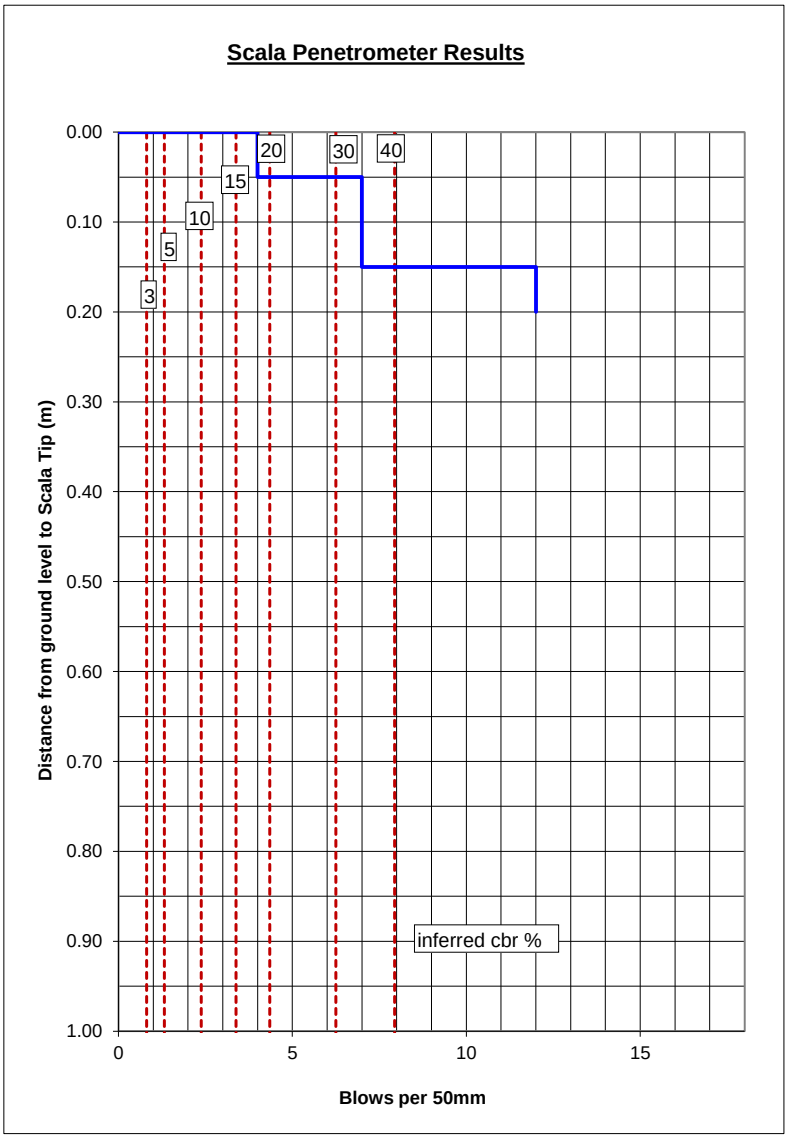
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP341
Ref : 14333
Report No: W20-156
Page: 4 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
7	14	42	11	0.10
7	14	42	18	0.15
12	24	72	30	0.20



Recorded By: D.O
Date: 26/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

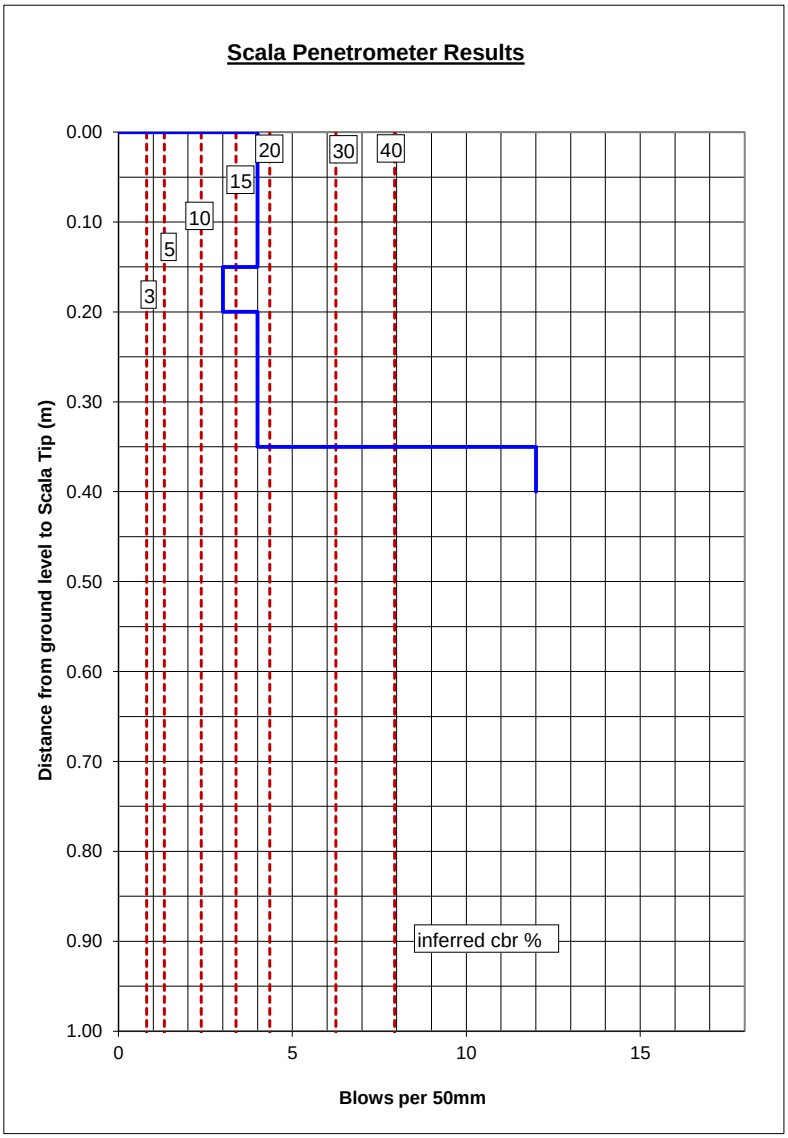
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP342
Ref : 14333
Report No: W20-156
Page: 5 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
4	8	24	8	0.10
4	8	24	12	0.15
3	6	18	15	0.20
4	8	24	19	0.25
4	8	24	23	0.30
4	8	24	27	0.35
12	24	72	39	0.40



Recorded By: D.O
Date: 26/08/2019
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Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

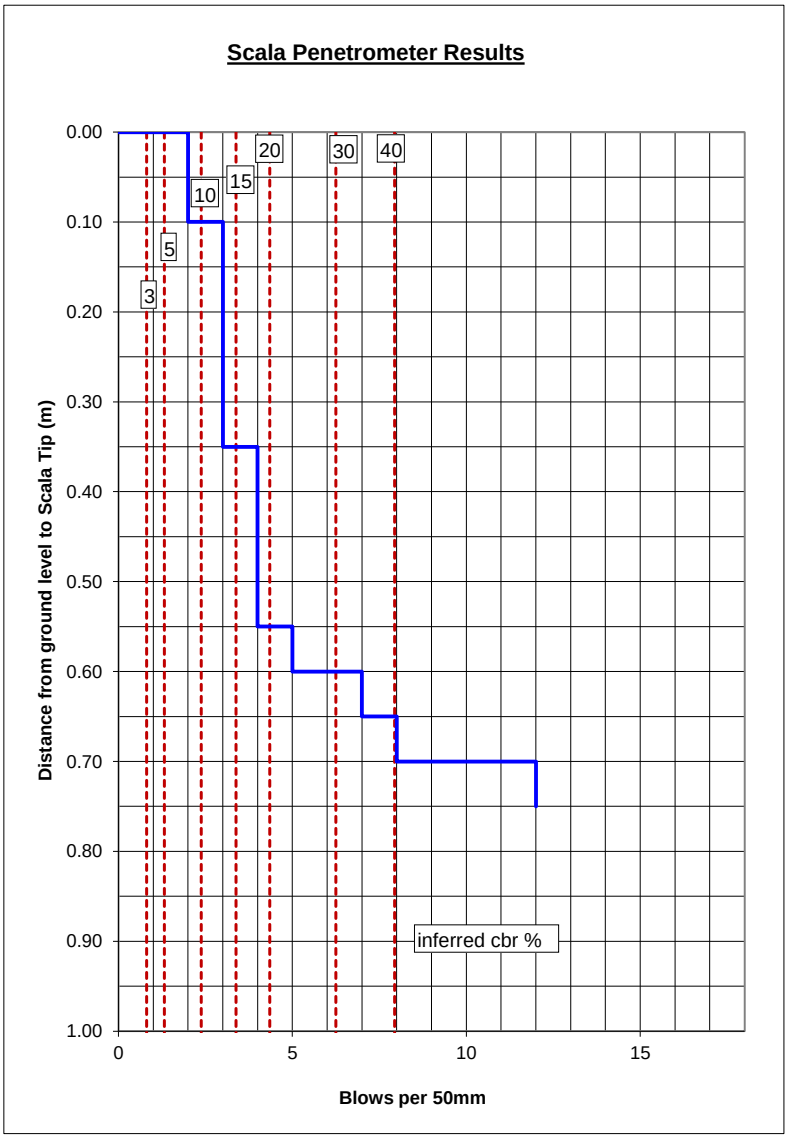
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP343
Ref : 14333
Report No: W20-156
Page: 6 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
2	4	12	4	0.10
3	6	18	7	0.15
3	6	18	10	0.20
3	6	18	13	0.25
3	6	18	16	0.30
3	6	18	19	0.35
4	8	24	23	0.40
4	8	24	27	0.45
4	8	24	31	0.50
4	8	24	35	0.55
5	10	30	40	0.60
7	14	42	47	0.65
8	16	48	55	0.70
12	24	72	67	0.75



Recorded By: D.O
Date: 26/08/2019
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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

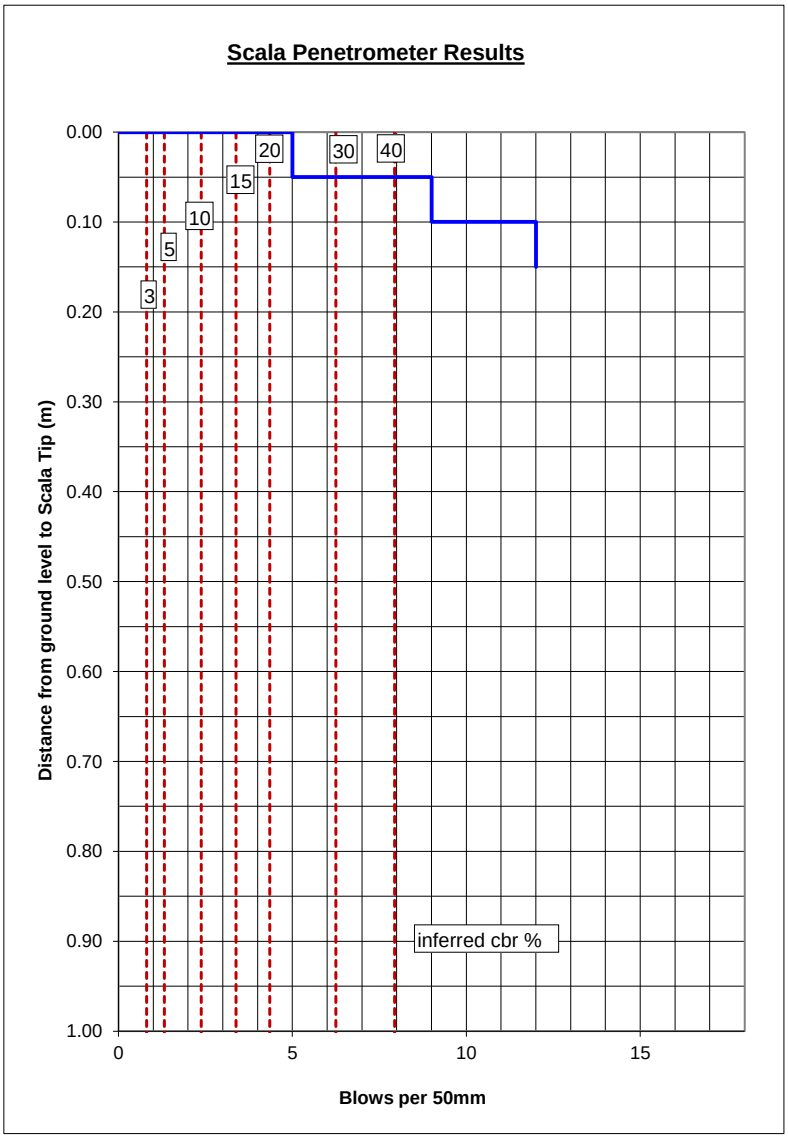
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP344
Ref : 14333
Report No: W20-156
Page: 7 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
5	10	30	5	0.05
9	18	54	14	0.10
12	24	72	26	0.15



Recorded By: D.O
Date: 26/08/2019
Checked by: AM
Date: 19/03/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

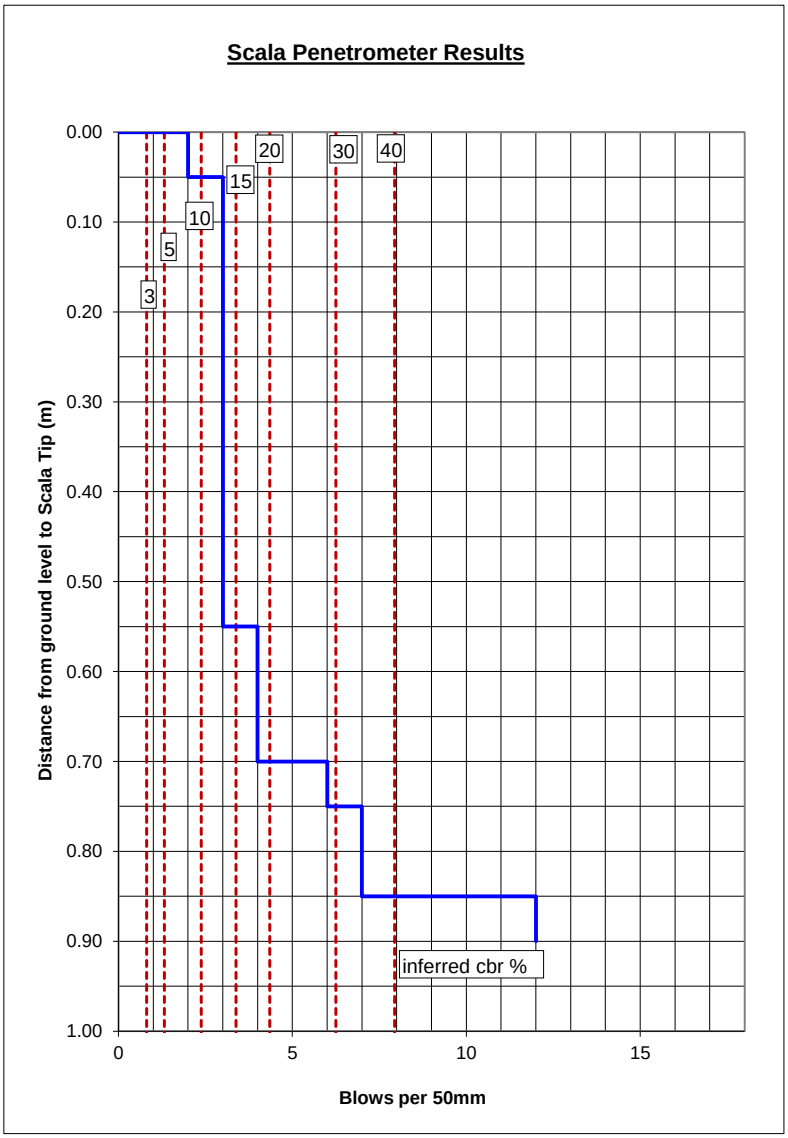
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP345
Ref : 14333
Report No: W20-155
Page: 8 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
3	6	18	11	0.20
3	6	18	14	0.25
3	6	18	17	0.30
3	6	18	20	0.35
3	6	18	23	0.40
3	6	18	26	0.45
3	6	18	29	0.50
3	6	18	32	0.55
4	8	24	36	0.60
4	8	24	40	0.65
4	8	24	44	0.70
6	12	36	50	0.75
7	14	42	57	0.80
7	14	42	64	0.85
12	24	72	76	0.90



Recorded By: D.O
Date: 26/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP346
Ref : 14333
Report No: W20-156
Page: 9 of 32

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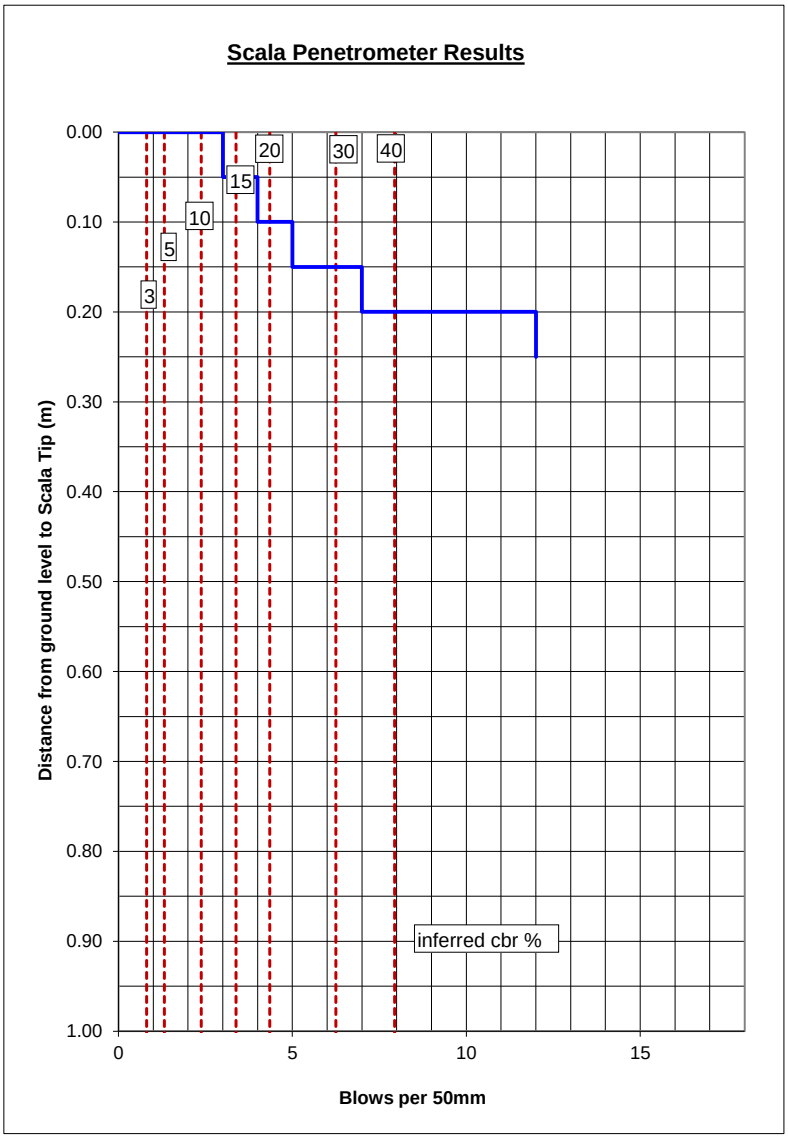
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
5	10	30	12	0.15
7	14	42	19	0.20
12	24	72	31	0.25



Recorded By: D.O
Date: 26/08/2019
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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

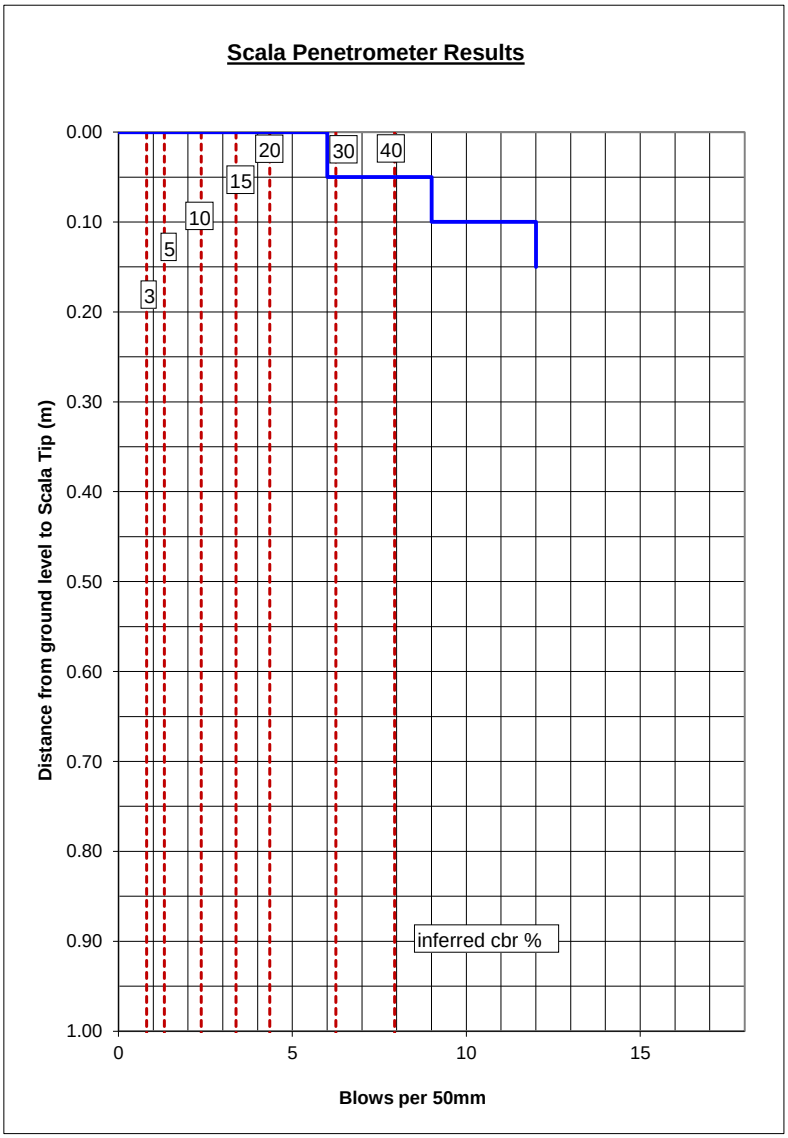
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP347
Ref : 14333
Report No: W20-156
Page: 10 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
6	12	36	6	0.05
9	18	54	15	0.10
12	24	72	27	0.15



Recorded By: D.O
Date: 26/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

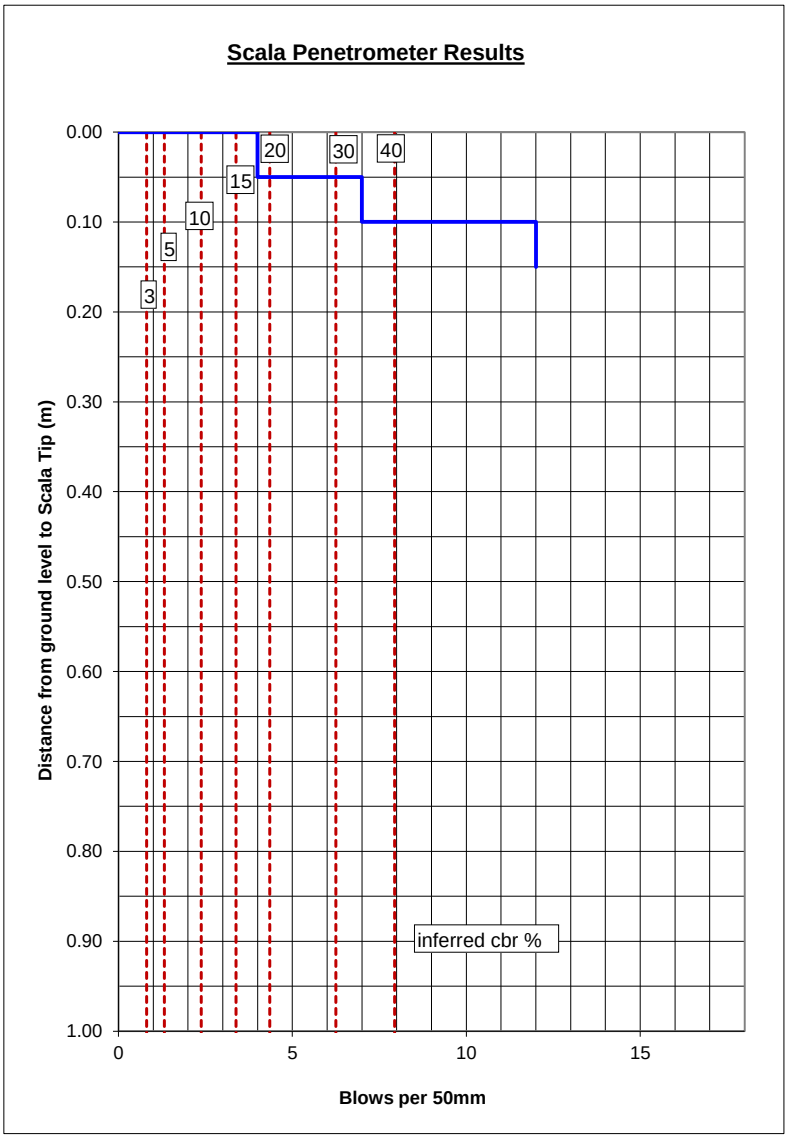
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP348
Ref : 14333
Report No: W20-156
Page: 11 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
7	14	42	11	0.10
12	24	72	23	0.15



Recorded By: D.O
Date: 26/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

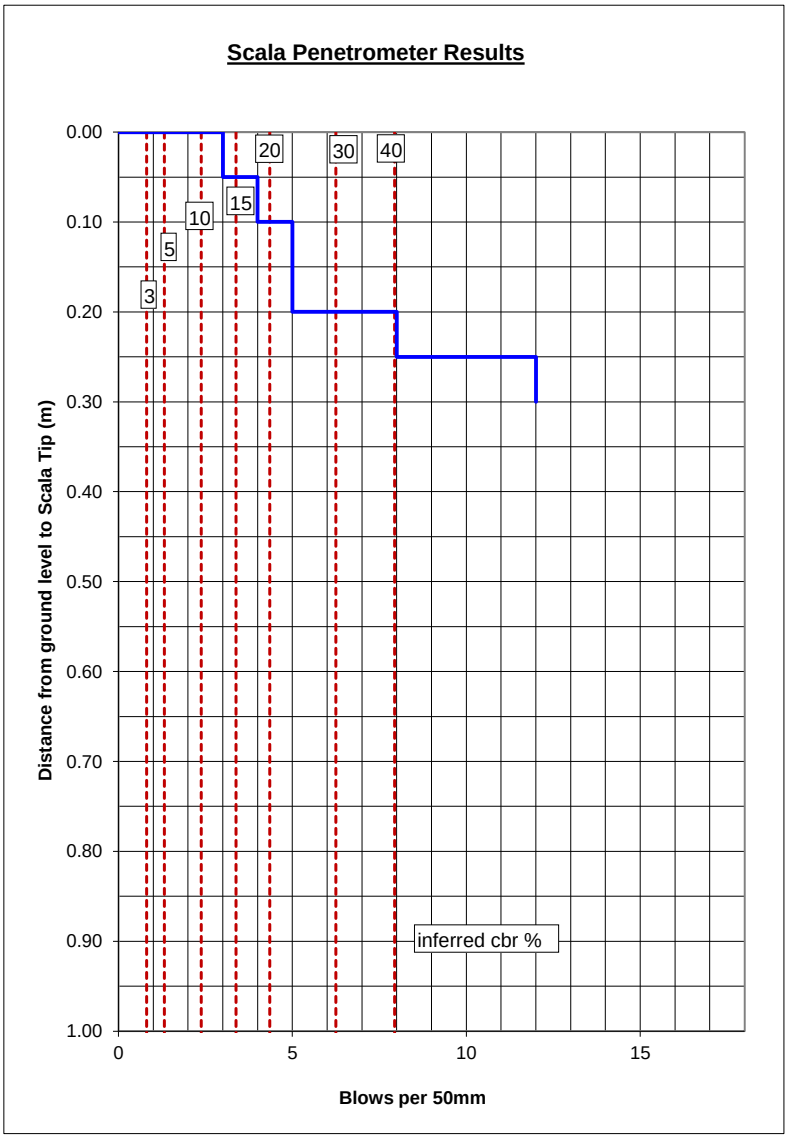
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP349
Ref : 14333
Report No: W20-156
Page: 12 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
5	10	30	12	0.15
5	10	30	17	0.20
8	16	48	25	0.25
12	24	72	37	0.30



Recorded By: D.O
Date: 26/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

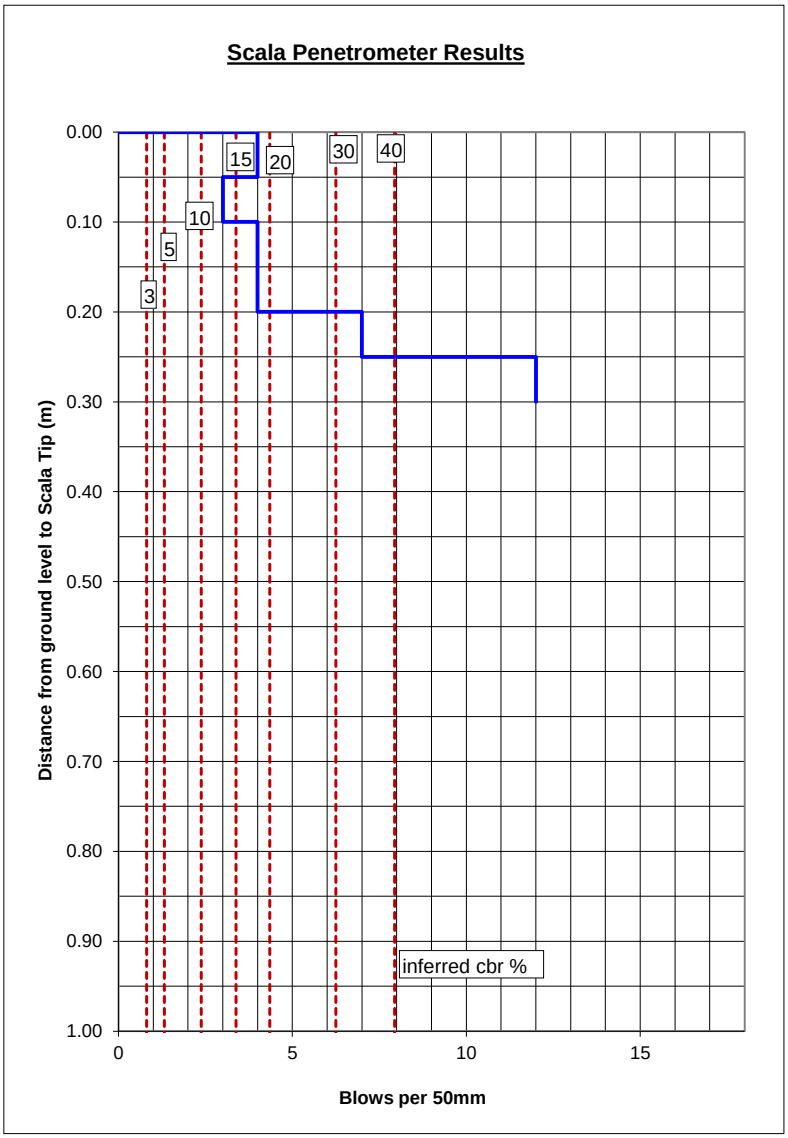
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP350
Ref : 14333
Report No: W20-156
Page: 13 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
3	6	18	7	0.10
4	8	24	11	0.15
4	8	24	15	0.20
7	14	42	22	0.25
12	24	72	34	0.30



Recorded By: D.O
Date: 26/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP351
Ref : 14333
Report No: W20-156
Page: 14 of 32

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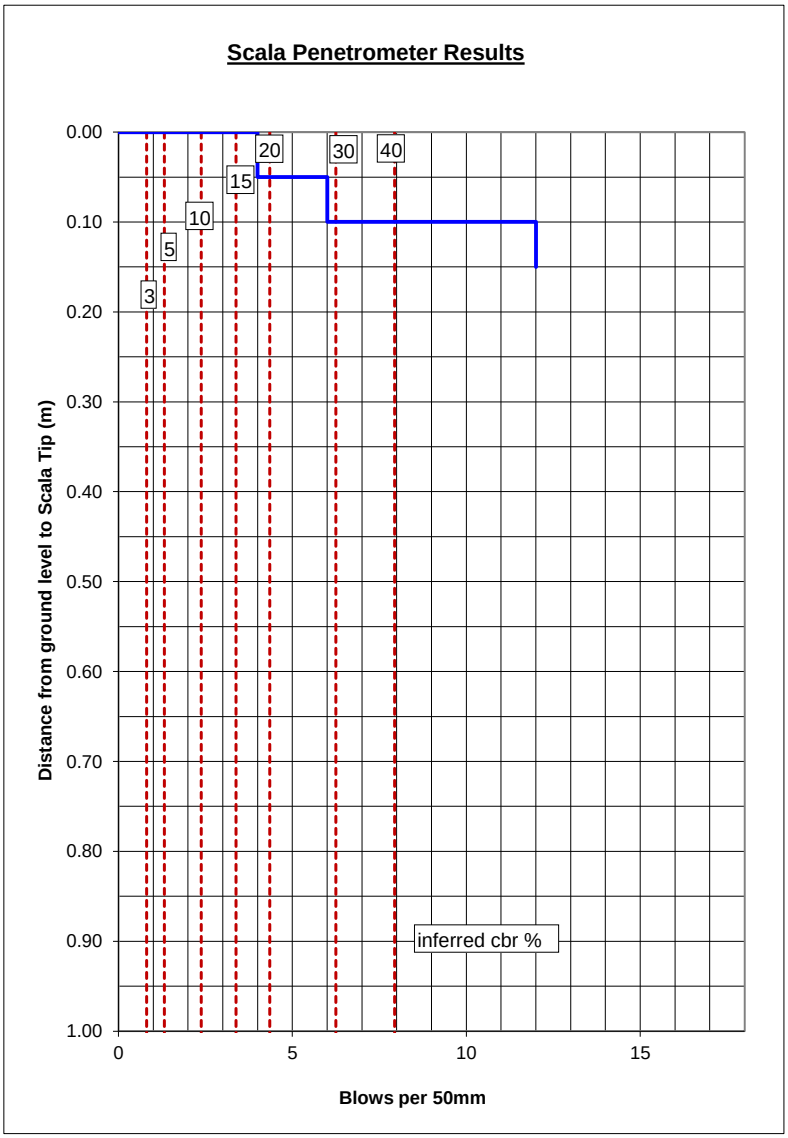
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
6	12	36	10	0.10
12	24	72	22	0.15



Recorded By: D.O
Date: 26/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

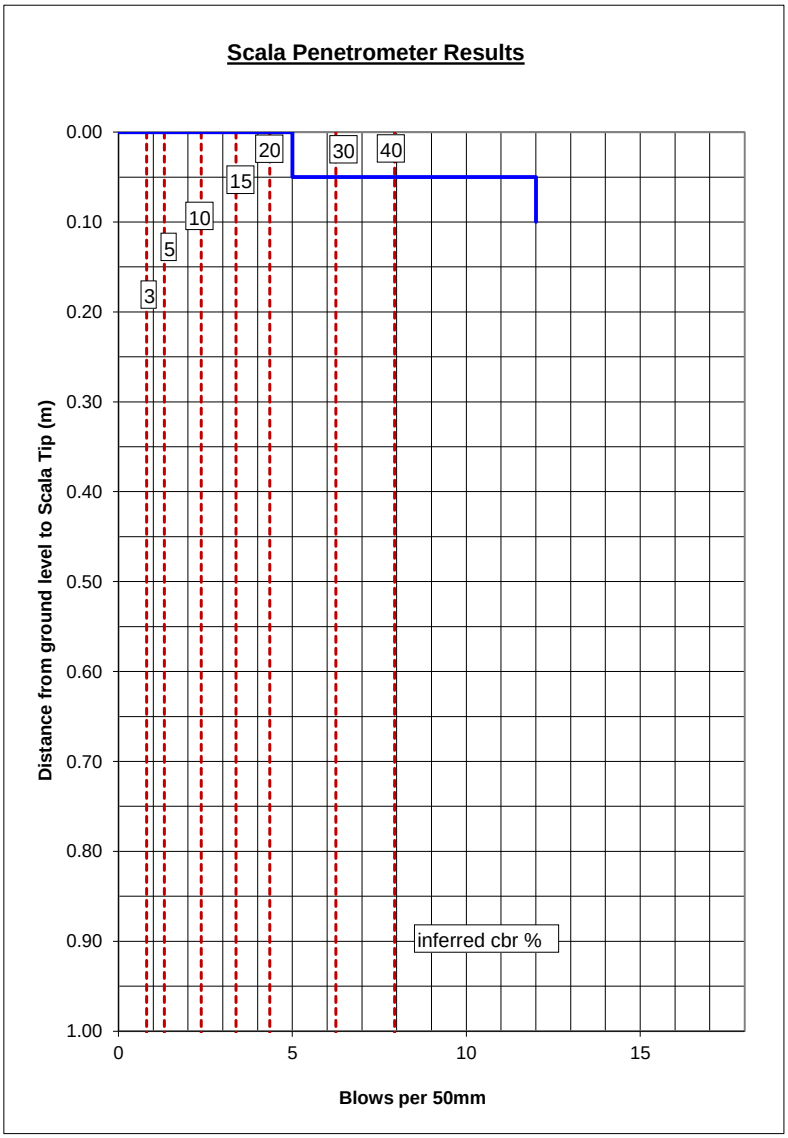
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP352
Ref : 14333
Report No: W20-156
Page: 15 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
5	10	30	5	0.05
12	24	72	17	0.10



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Date: 26/08/2019
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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

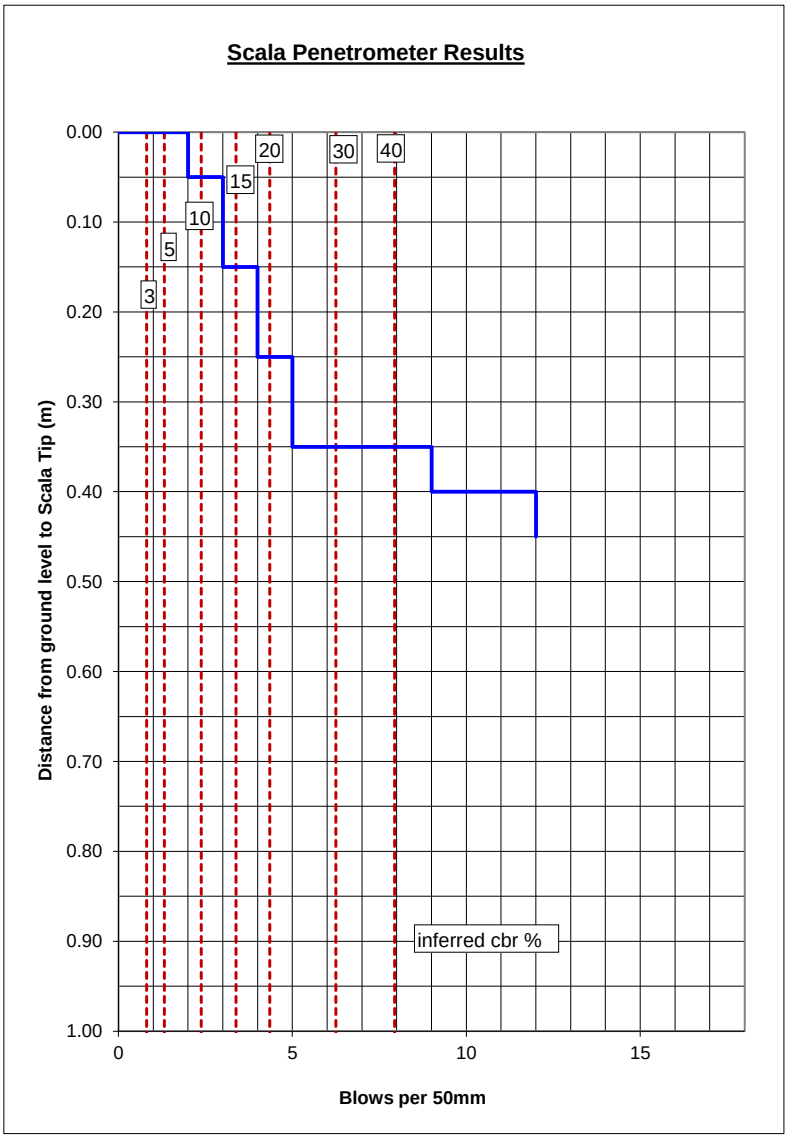
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP353
Ref : 14333
Report No: W20-156
Page: 16 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	50	33.04	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
4	8	24	12	0.20
4	8	24	16	0.25
5	10	30	21	0.30
5	10	30	26	0.35
9	18	54	35	0.40
12	24	72	47	0.45



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

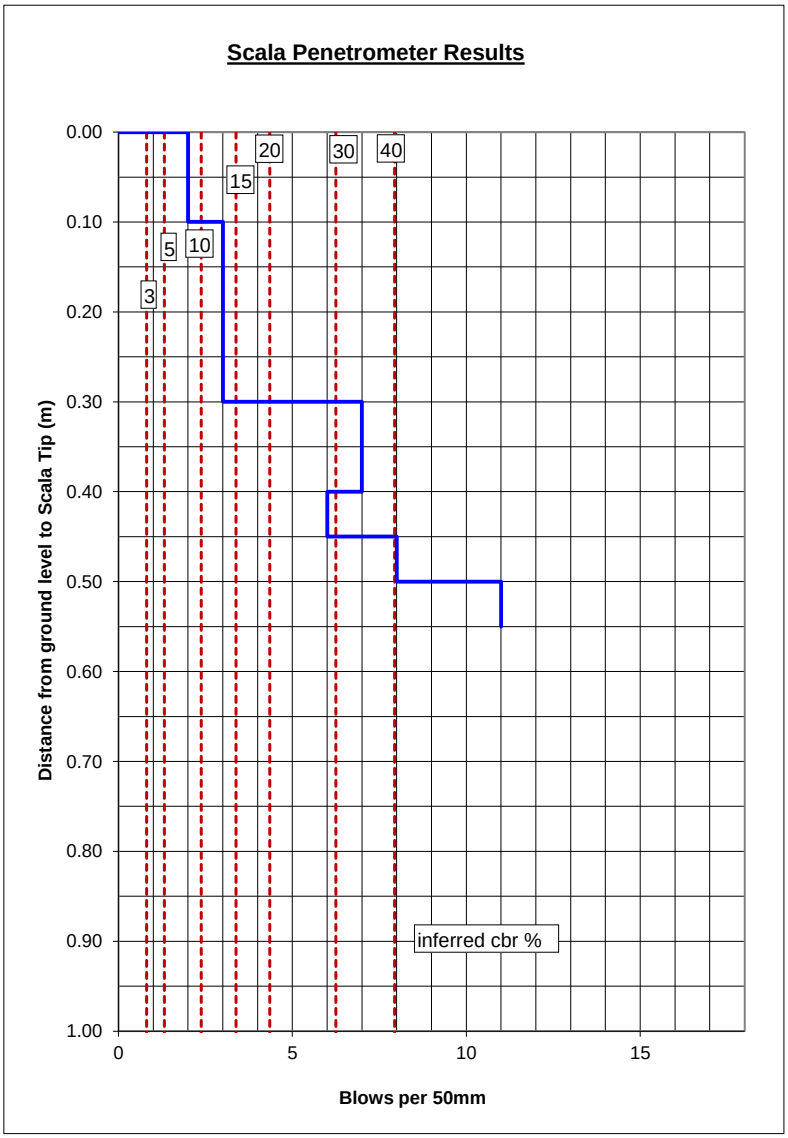
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP354
Ref : 14333
Report No: W20-156
Page: 17 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	49	28.92	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
2	4	12	4	0.10
3	6	18	7	0.15
3	6	18	10	0.20
3	6	18	13	0.25
3	6	18	16	0.30
7	14	42	23	0.35
7	14	42	30	0.40
6	12	36	36	0.45
8	16	48	44	0.50
11	22	66	55	0.55



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

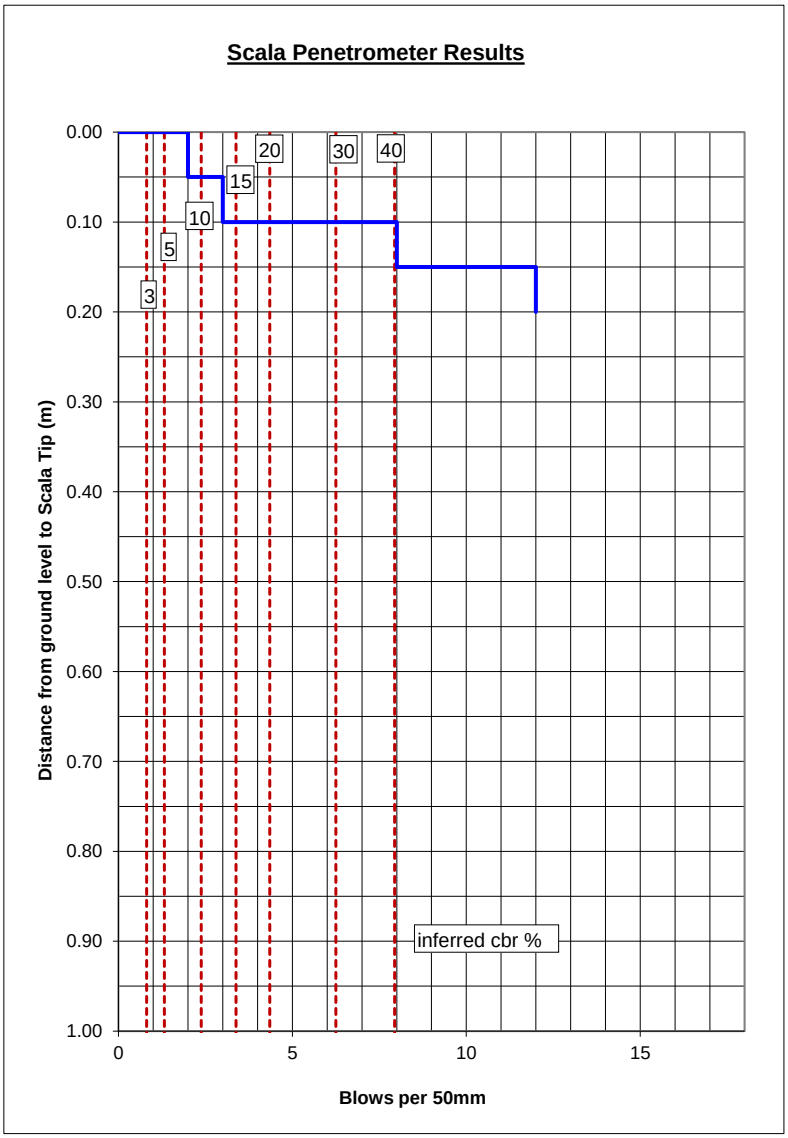
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP355
Ref : 14333
Report No: W20-156
Page: 18 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	48	33.63	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
8	16	48	13	0.15
12	24	72	25	0.20



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

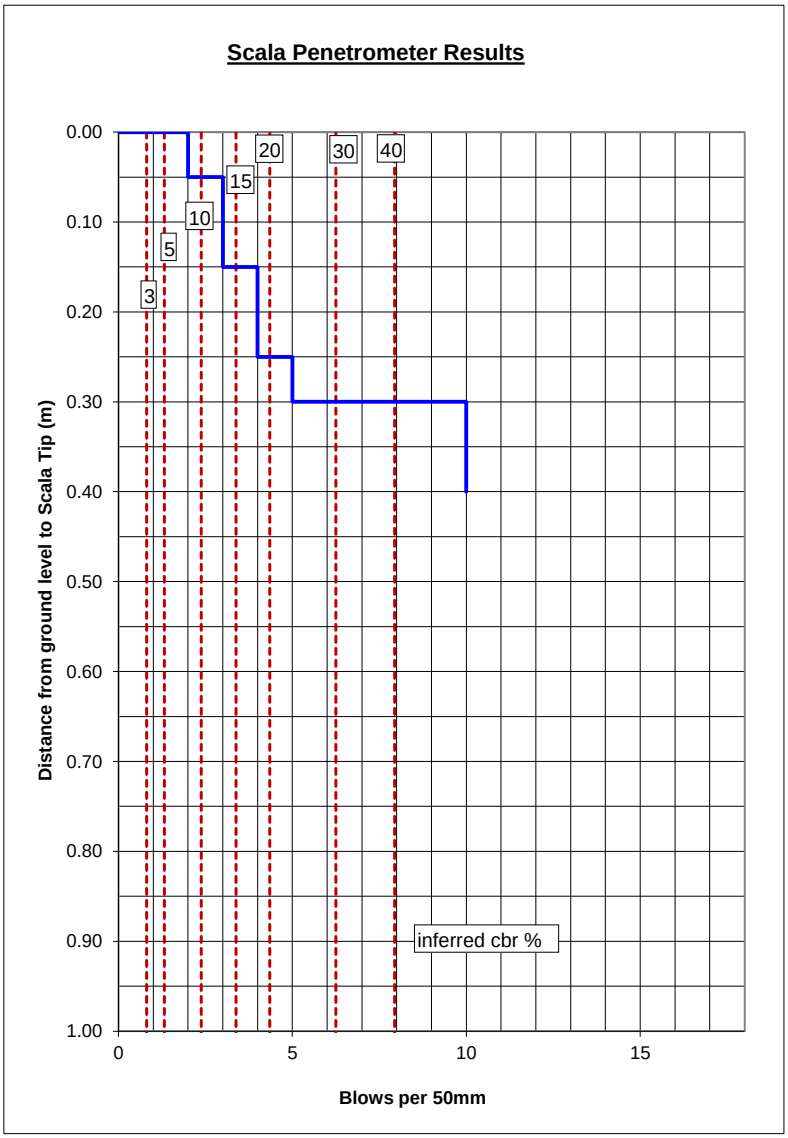
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP356
Ref : 14333
Report No: W20-156
Page: 19 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	47	32.94	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
4	8	24	12	0.20
4	8	24	16	0.25
5	10	30	21	0.30
10	20	60	31	0.35
10	20	60	41	0.40



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

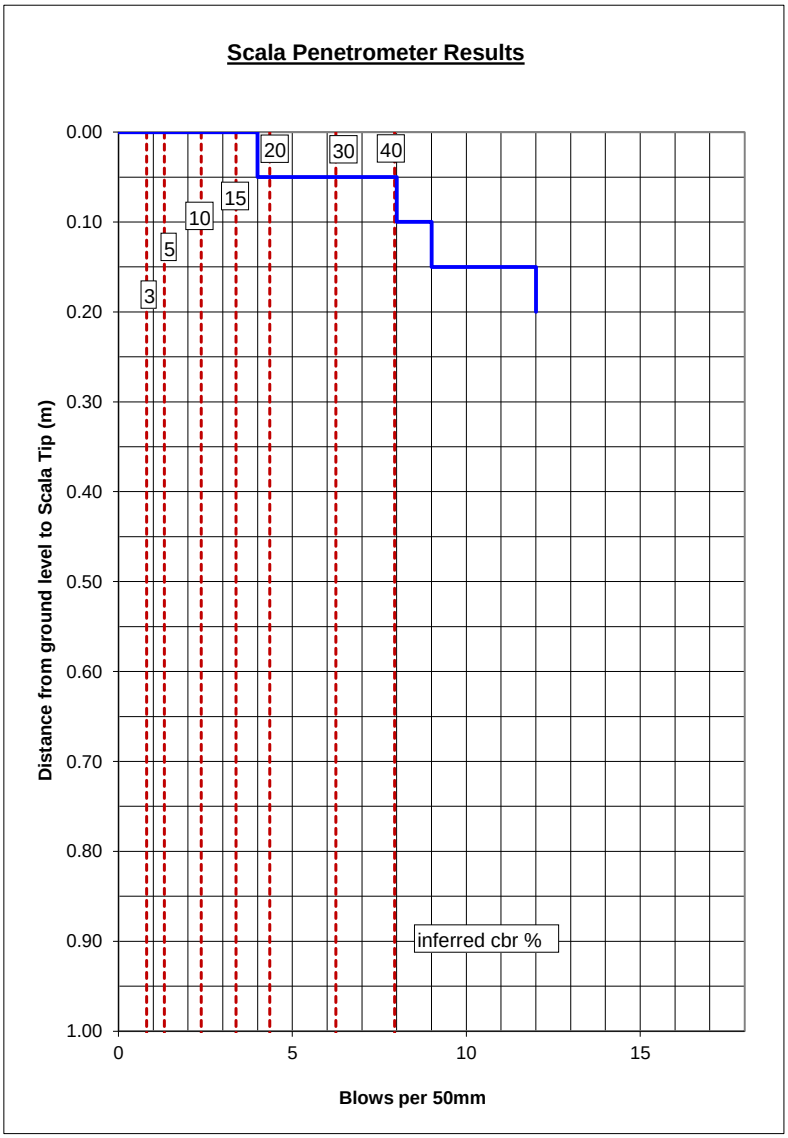
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP357
Ref : 14333
Report No: W20-156
Page: 20 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	46	38.04	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
8	16	48	12	0.10
9	18	54	21	0.15
12	24	72	33	0.20



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

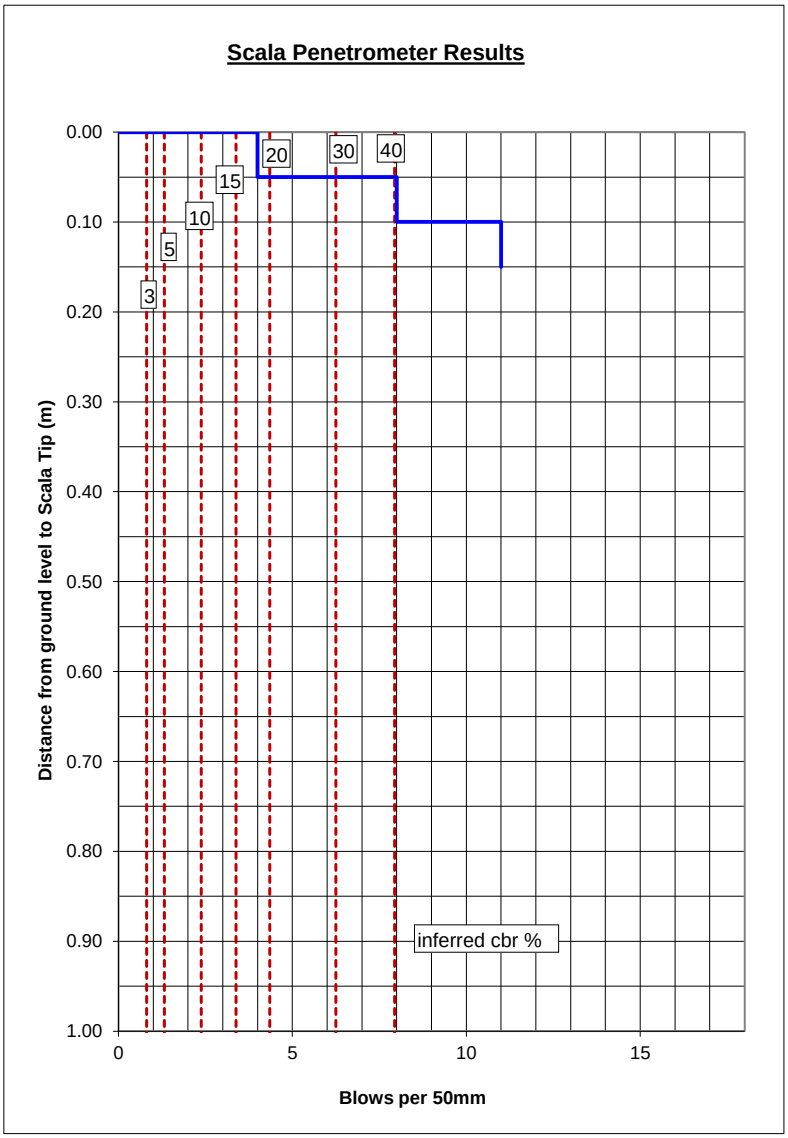
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP358
Ref : 14333
Report No: W20-156
Page: 21 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	45	27.34	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
8	16	48	12	0.10
11	22	66	23	0.15



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

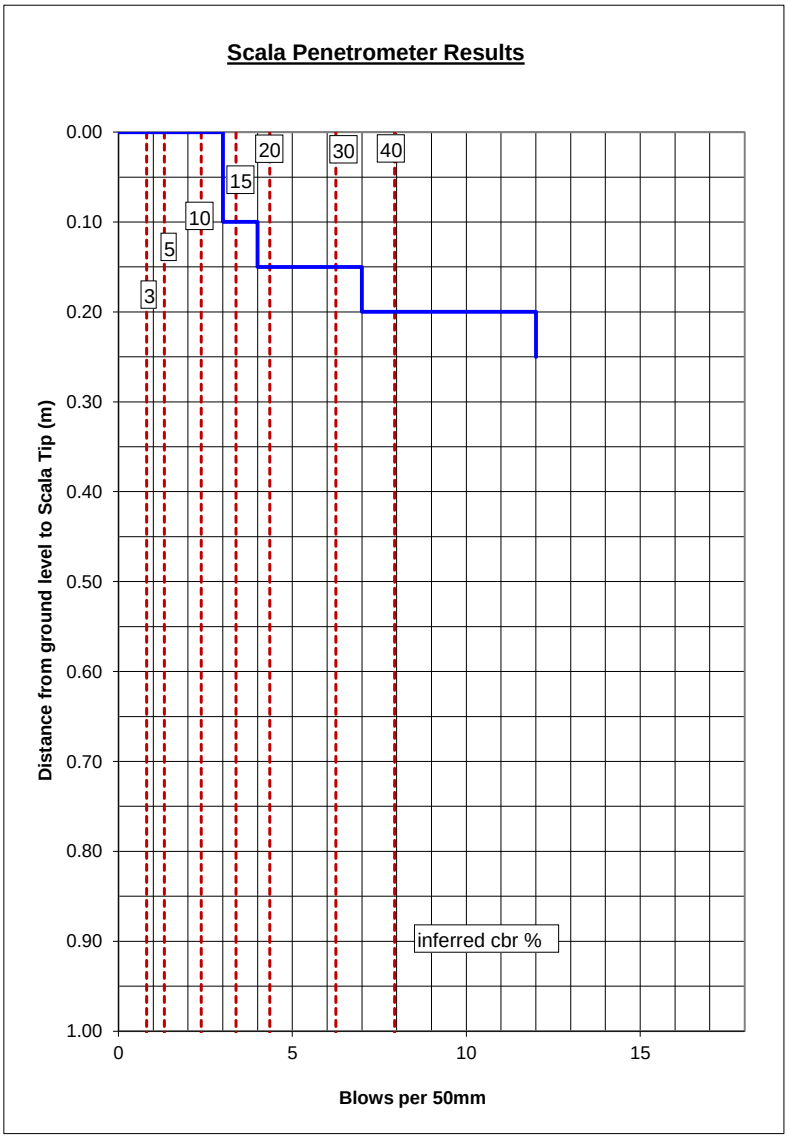
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP359
Ref : 14333
Report No: W20-156
Page: 22 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	44	25.8	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
4	8	24	10	0.15
7	14	42	17	0.20
12	24	72	29	0.25



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

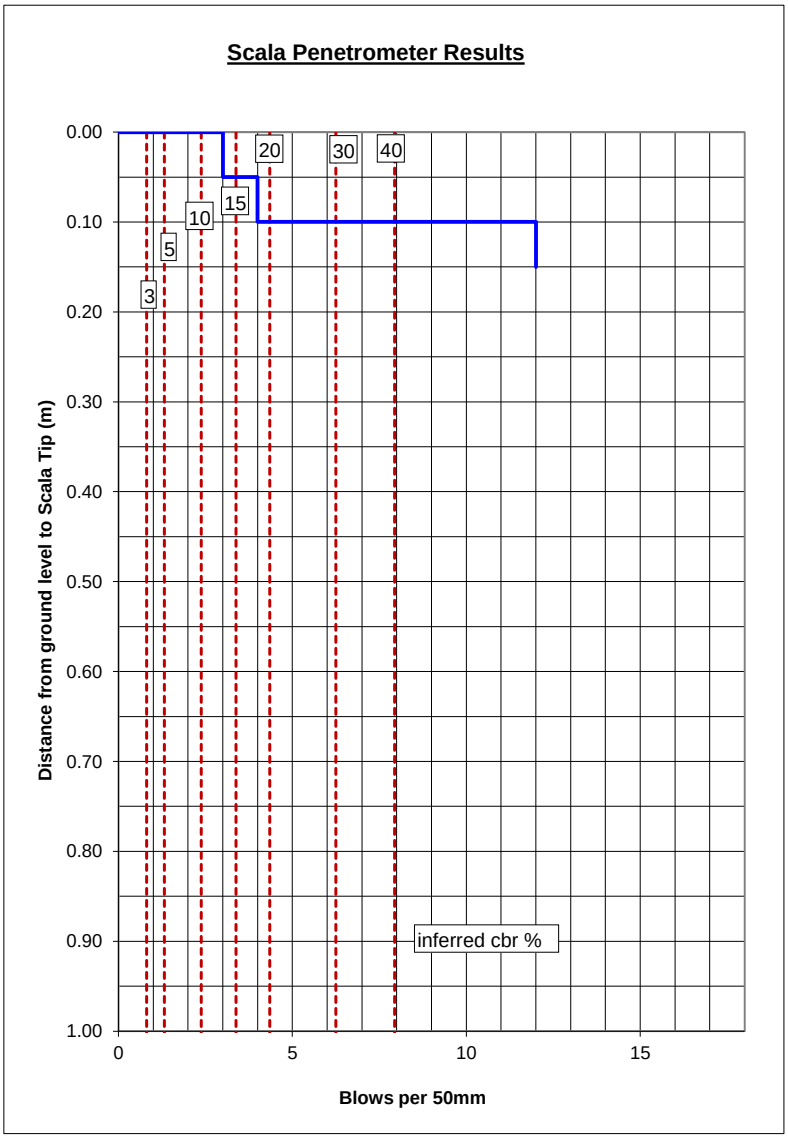
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP360
Ref : 14333
Report No: W20-156
Page: 23 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	43	24.3	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
12	24	72	19	0.15



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

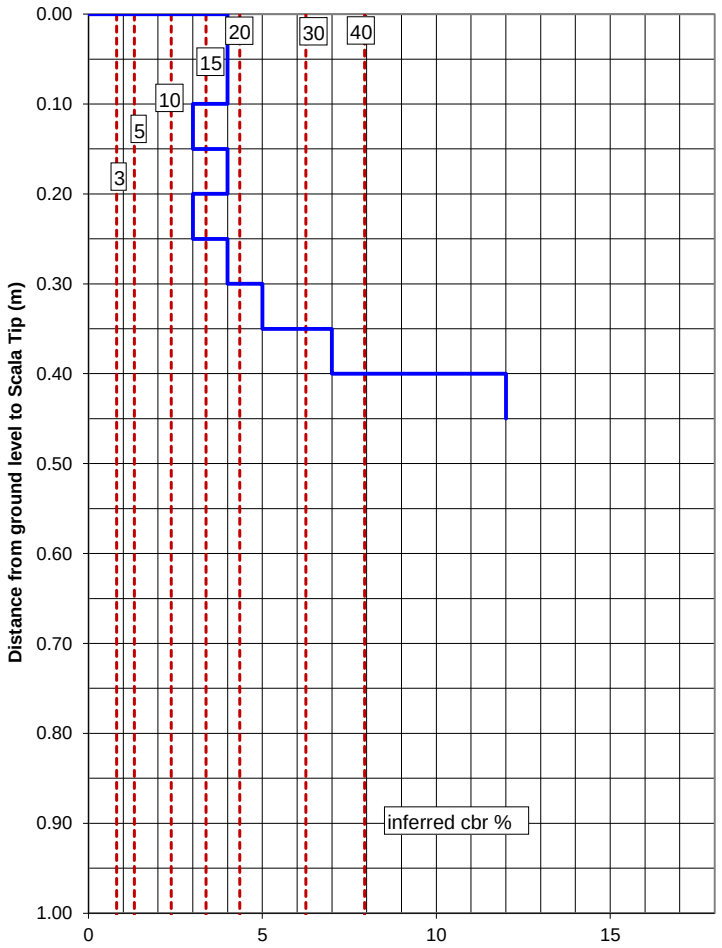
Scala No: SP361
Ref : 14333
Report No: W20-156
Page: 24 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	42	44.64	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
4	8	24	8	0.10
3	6	18	11	0.15
4	8	24	15	0.20
3	6	18	18	0.25
4	8	24	22	0.30
5	10	30	27	0.35
7	14	42	34	0.40
12	24	72	46	0.45

Scala Penetrometer Results



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

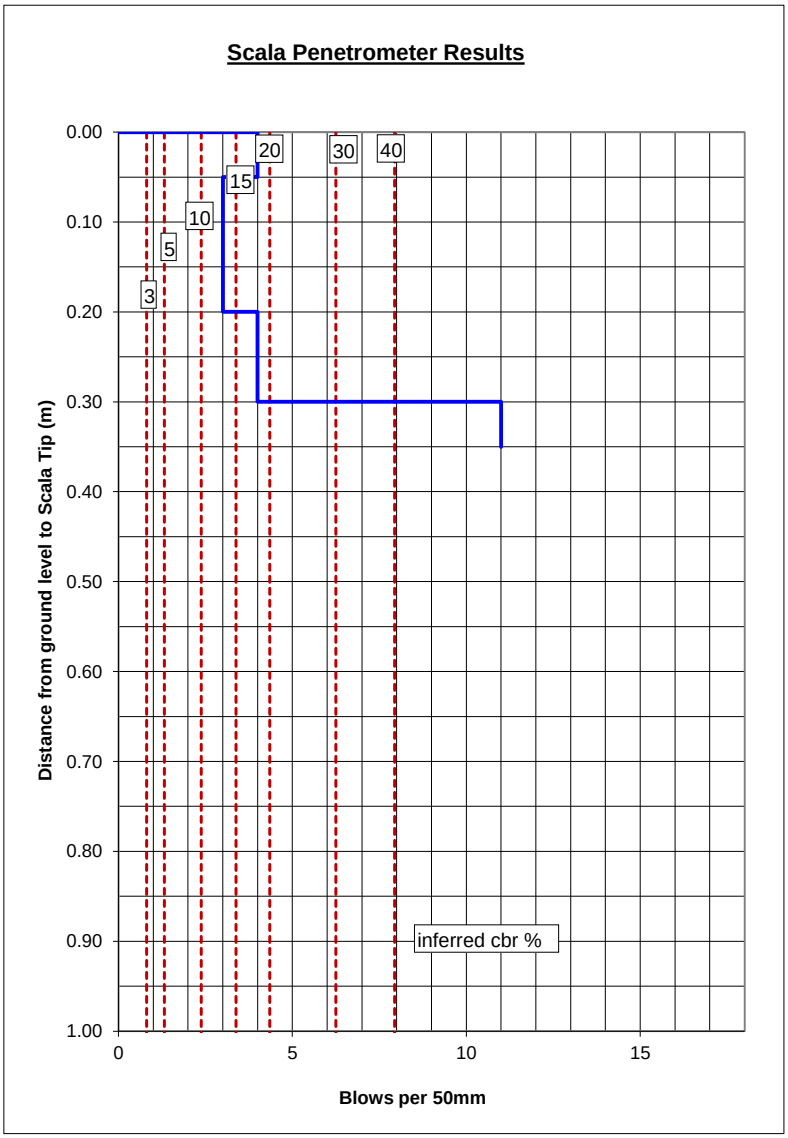
Scala No: SP362
Ref : 14333
Report No: W20-156
Page: 25 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	41	34.09	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
3	6	18	7	0.10
3	6	18	10	0.15
3	6	18	13	0.20
4	8	24	17	0.25
4	8	24	21	0.30
11	22	66	32	0.35

Scala Penetrometer Results



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

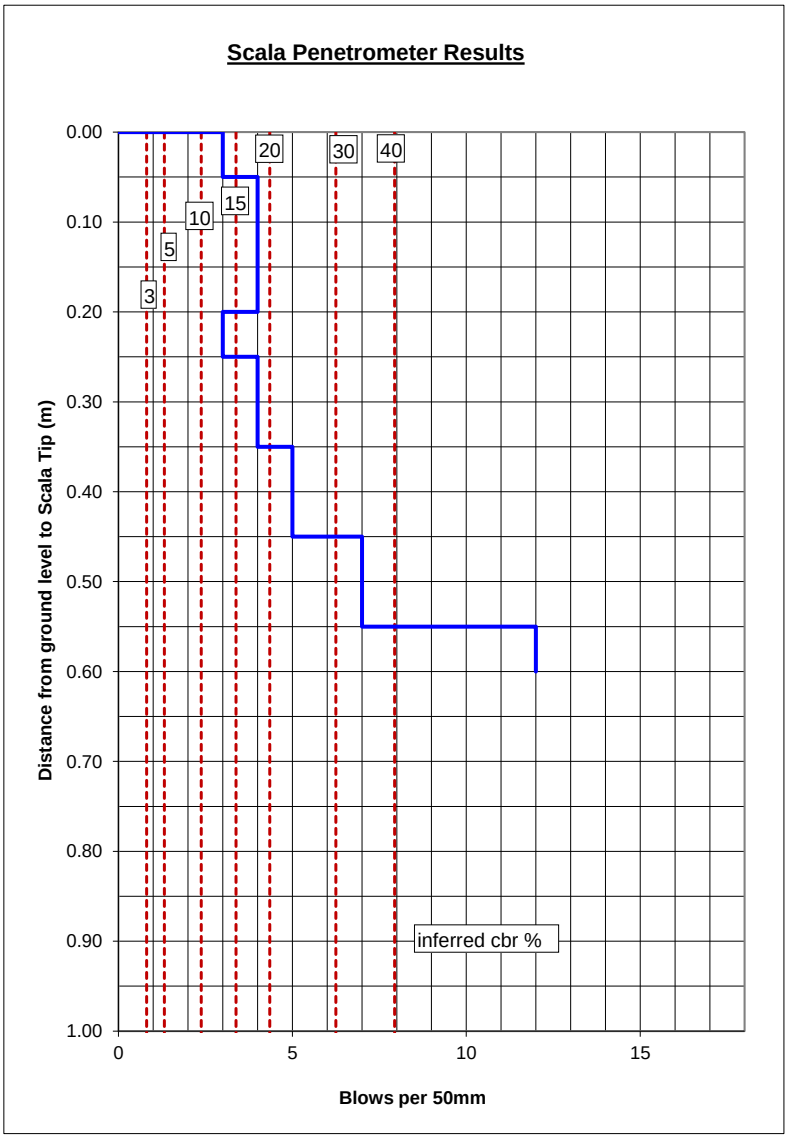
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP363
Ref : 14333
Report No: W20-156
Page: 26 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	40	48.7	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
4	8	24	7	0.10
4	8	24	11	0.15
4	8	24	15	0.20
3	6	18	18	0.25
4	8	24	22	0.30
4	8	24	26	0.35
5	10	30	31	0.40
5	10	30	36	0.45
7	14	42	43	0.50
7	14	42	50	0.55
12	24	72	62	0.60



Recorded By: D.O
Date: 29/08/2019
Checked by: AM
Date: 19/03/2020

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Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

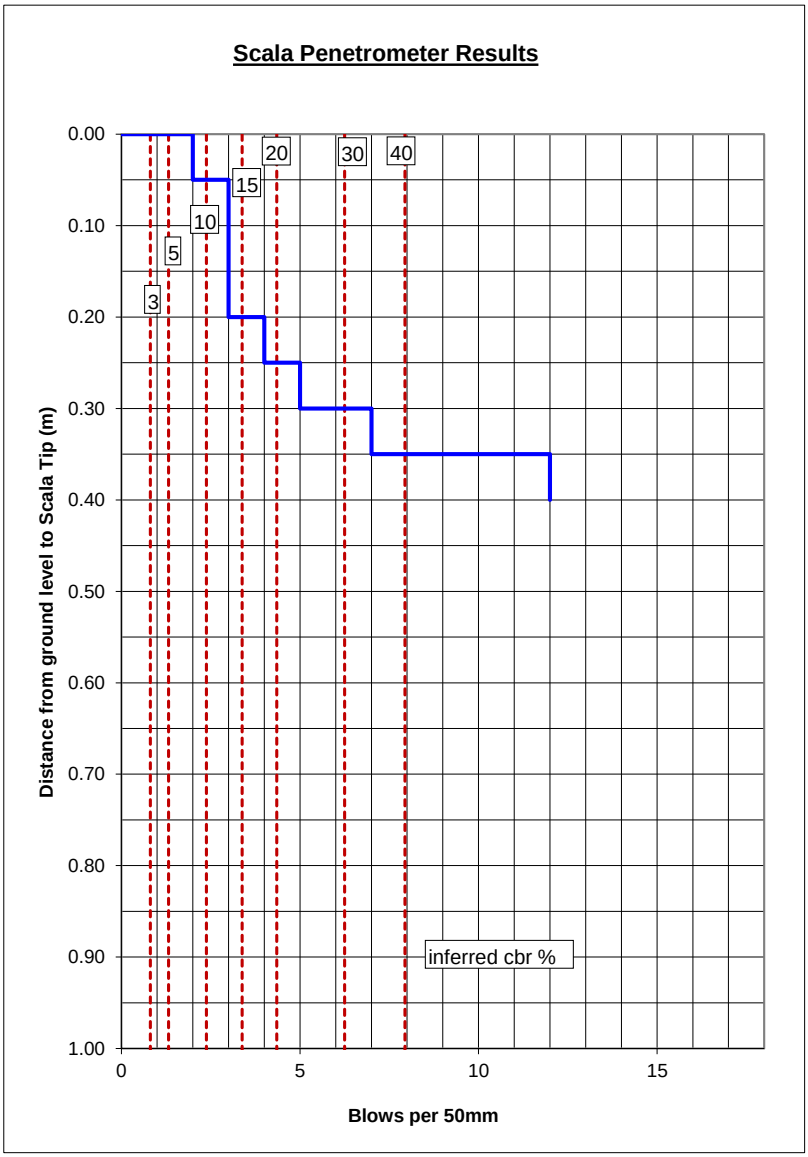
Scala No: SP364
Ref : 14333
Report No: W20-156
Page: 27 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	51	52	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
3	6	18	11	0.20
4	8	24	15	0.25
5	10	30	20	0.30
7	14	42	27	0.35
12	24	72	39	0.40

Scala Penetrometer Results



Recorded By: D.O / L.C
Date: 2/09/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Site Plan
23/03/2020
8020-1727, CCL 14333, The Landing, field testing, Hicks

S.Kokich
Approved Signatory

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

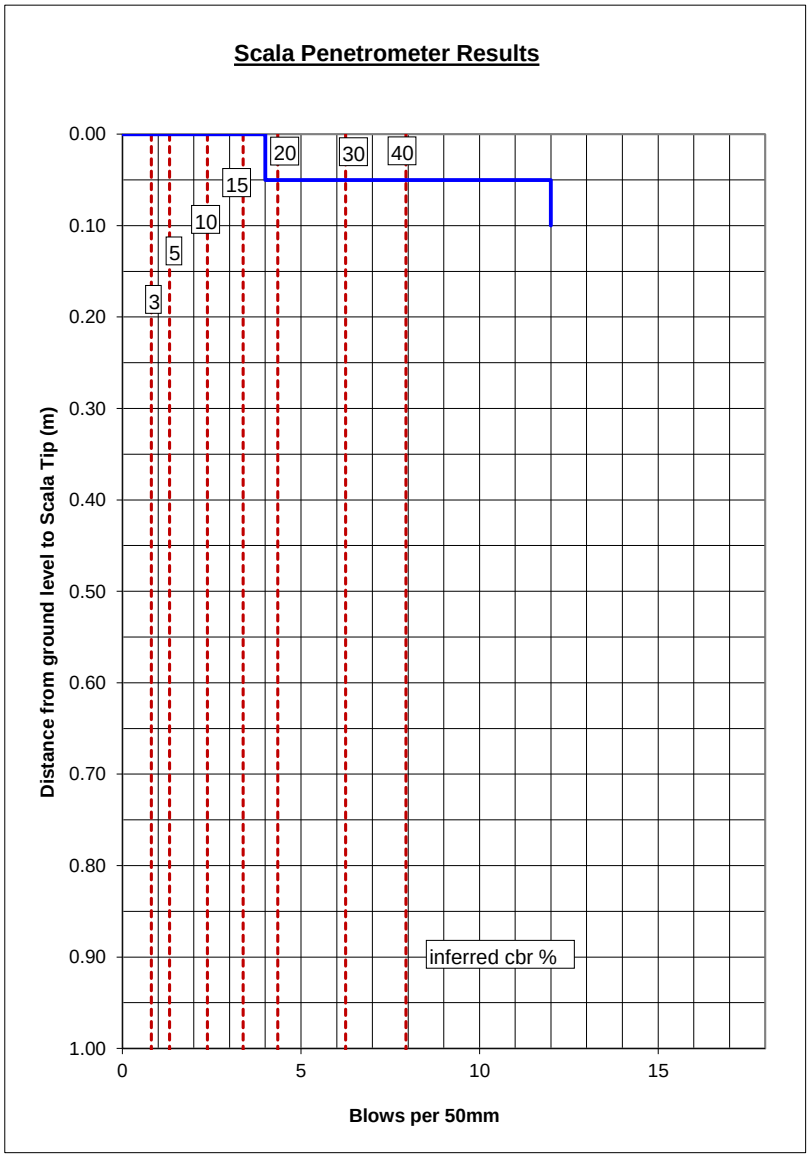
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP365
Ref : 14333
Report No: W20-156
Page: 28 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	52	59.68	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
12	24	72	16	0.10



Recorded By: D.O / L.C
Date: 2/09/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

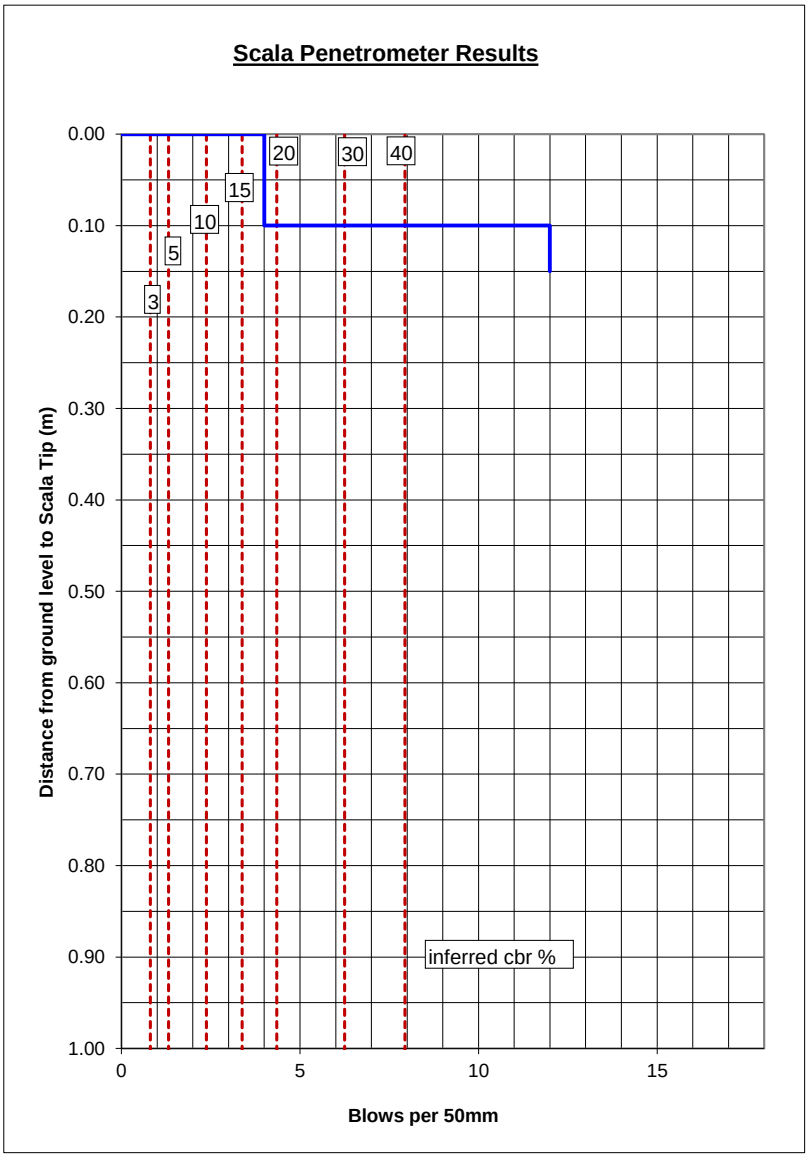
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP366
Ref : 14333
Report No: W20-156
Page: 29 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	53	32.01	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
4	8	24	8	0.10
12	24	72	20	0.15



Recorded By: D.O / L.C
Date: 2/09/2019
Checked by: AM
Date: 19/03/2020

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Approved Signatory

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

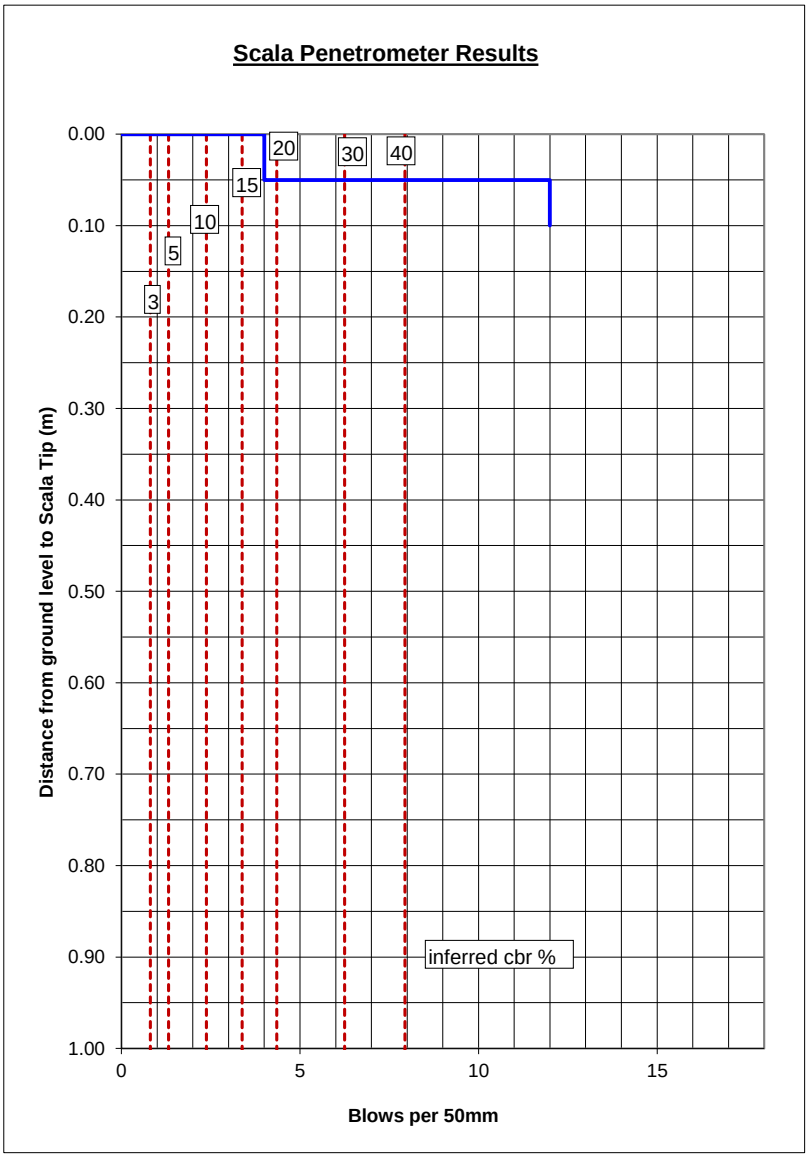
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP367
Ref : 14333
Report No: W20-156
Page: 30 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	54	36.64	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
12	24	72	16	0.10



Recorded By: D.O / L.C
Date: 2/09/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

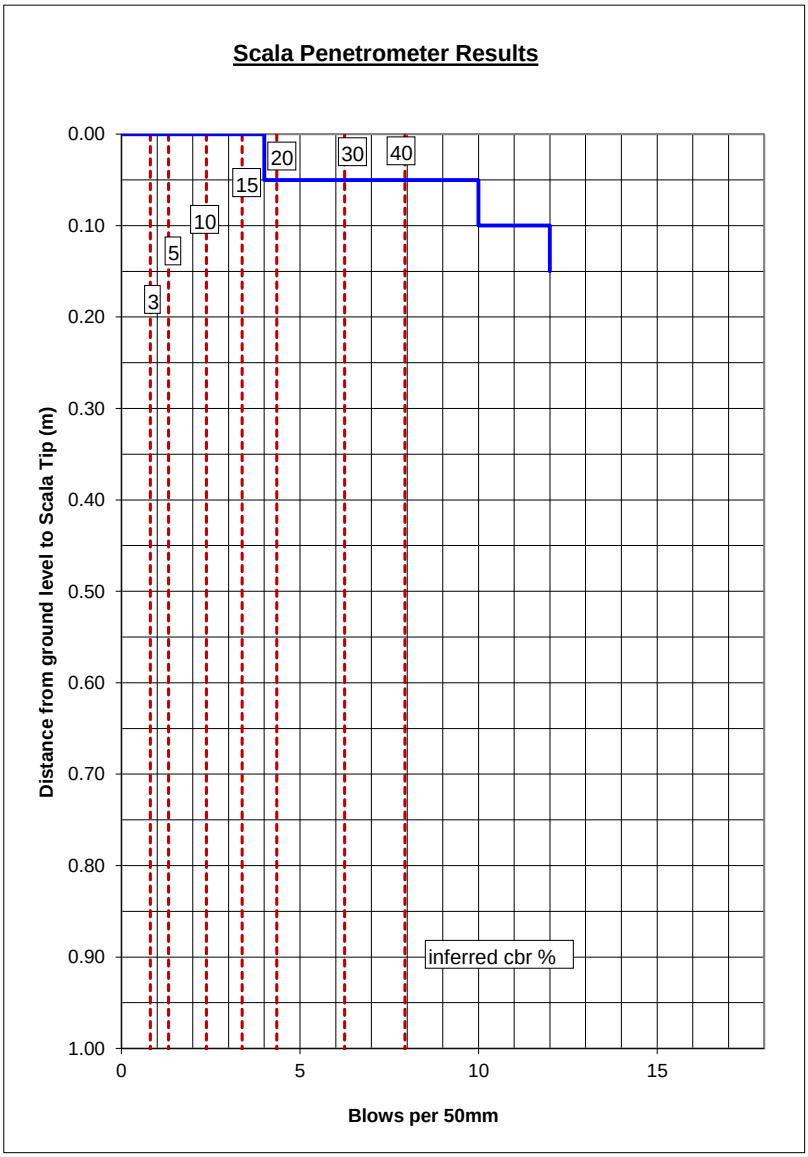
Scala No: SP368
Ref : 14333
Report No: W20-156
Page: 31 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	55	46.01	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
10	20	60	14	0.10
12	24	72	26	0.15

Scala Penetrometer Results



Recorded By: D.O / L.C
Date: 2/09/2019
Checked by: AM
Date: 19/03/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

S.Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

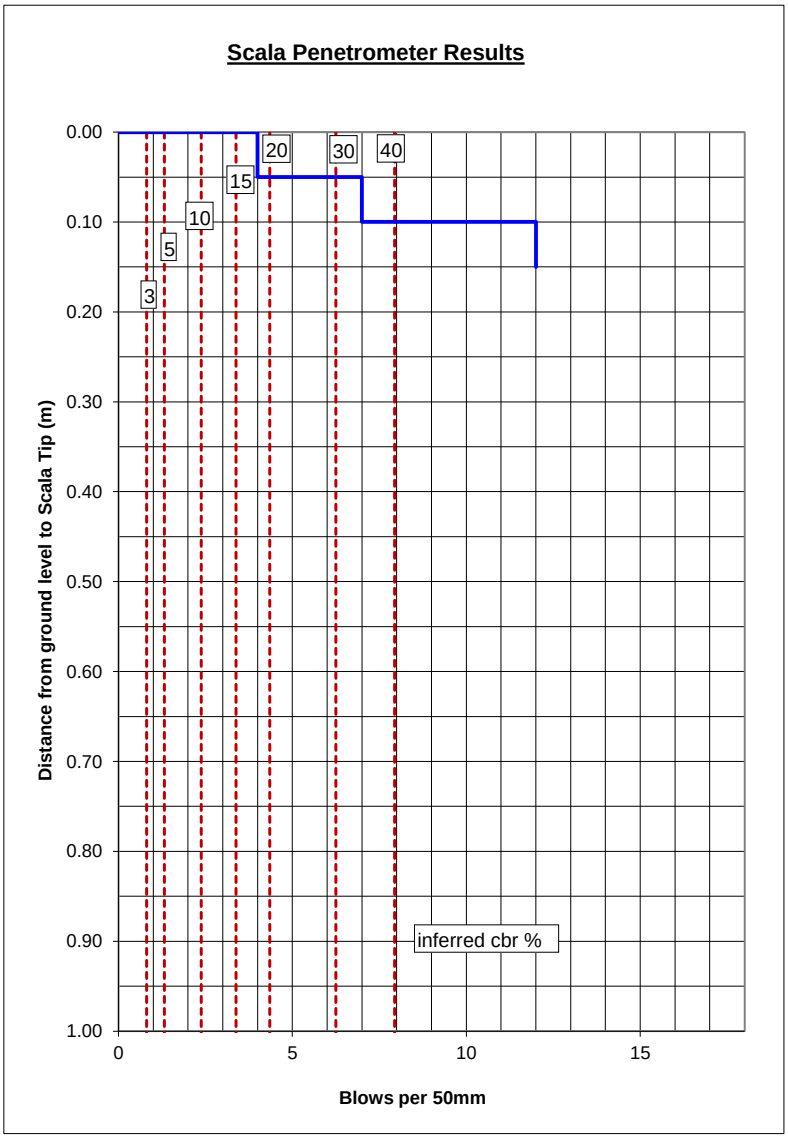
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: Subgrade
Start Depth (m): 0

Scala No: SP369
Ref : 14333
Report No: W20-156
Page: 32 of 32

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

LWD Test No.	56	79.51	MPa

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
7	14	42	11	0.10
12	24	72	23	0.15



Recorded By: D.O / L.C
Date: 2/09/2019
Checked by: AM
Date: 19/03/2020

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S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: -

Date of Issue: 20/03/2020

Date of Re-Issue: -

Test Report No. W20-083

PROJECT: **The Landing - Stage 4 & 5 fill testing**

CLIENT: Cook Costello
2 Norfolk Street

ATTENTION: Mr Stefano Rotatori

TEST METHODS: Determination of the penetration resistance using a dynamic cone (scala) Penetrometer
NZS 4402: 1988 Test 6.5.2
Light Weight Deflectometer (LWD) (not accredited)
ASTM E2835-11 (not accredited)

SAMPLING METHOD: N/A

TEST RESULTS: As per attached sheets

N. Turton
Laboratory Technician

J. Agnew
Approved Signatory

IANZ ACCREDITED LABORATORY
Tests indicated as not accredited are outside the scope of the laboratory's accreditation

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

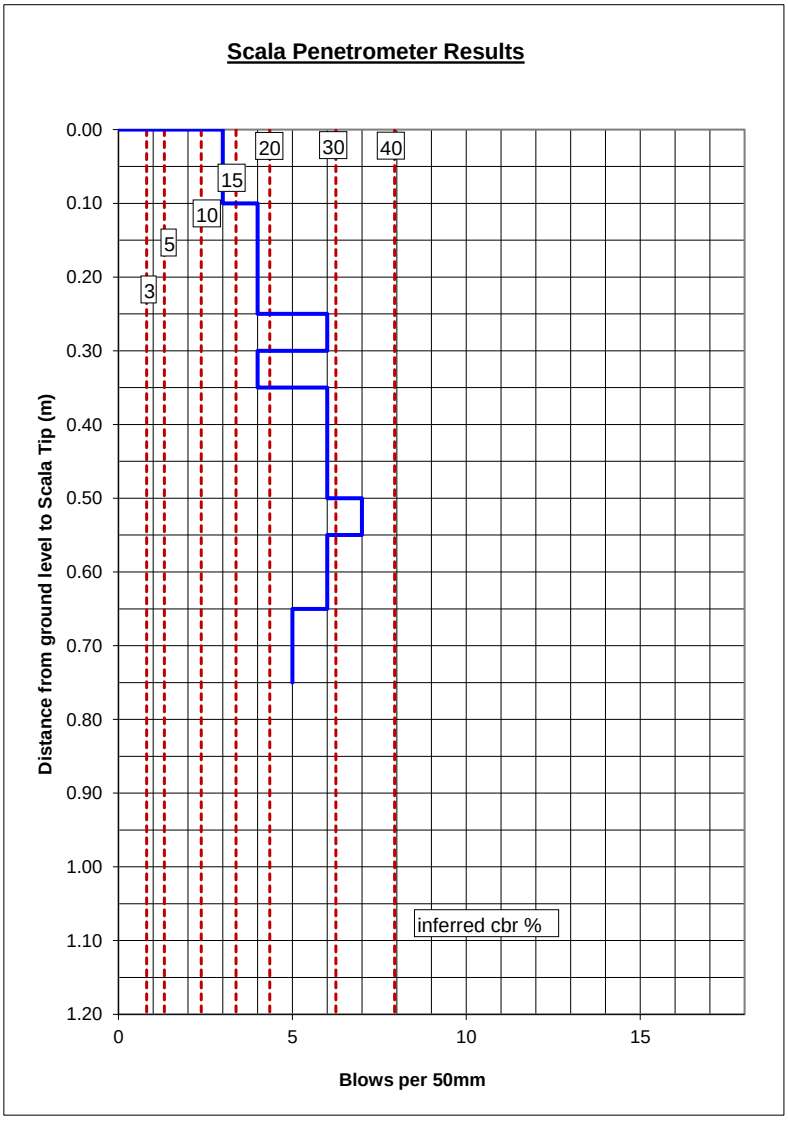
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 50.9 Mpa

Scala No: FSP01
Ref : 14333
Report No: W20-083
Page: 2 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
4	8	24	10	0.15
4	8	24	14	0.20
4	8	24	18	0.25
6	12	36	24	0.30
4	8	24	28	0.35
6	12	36	34	0.40
6	12	36	40	0.45
6	12	36	46	0.50
7	14	42	53	0.55
6	12	36	59	0.60
6	12	36	65	0.65
5	10	30	70	0.70
5	10	30	75	0.75



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

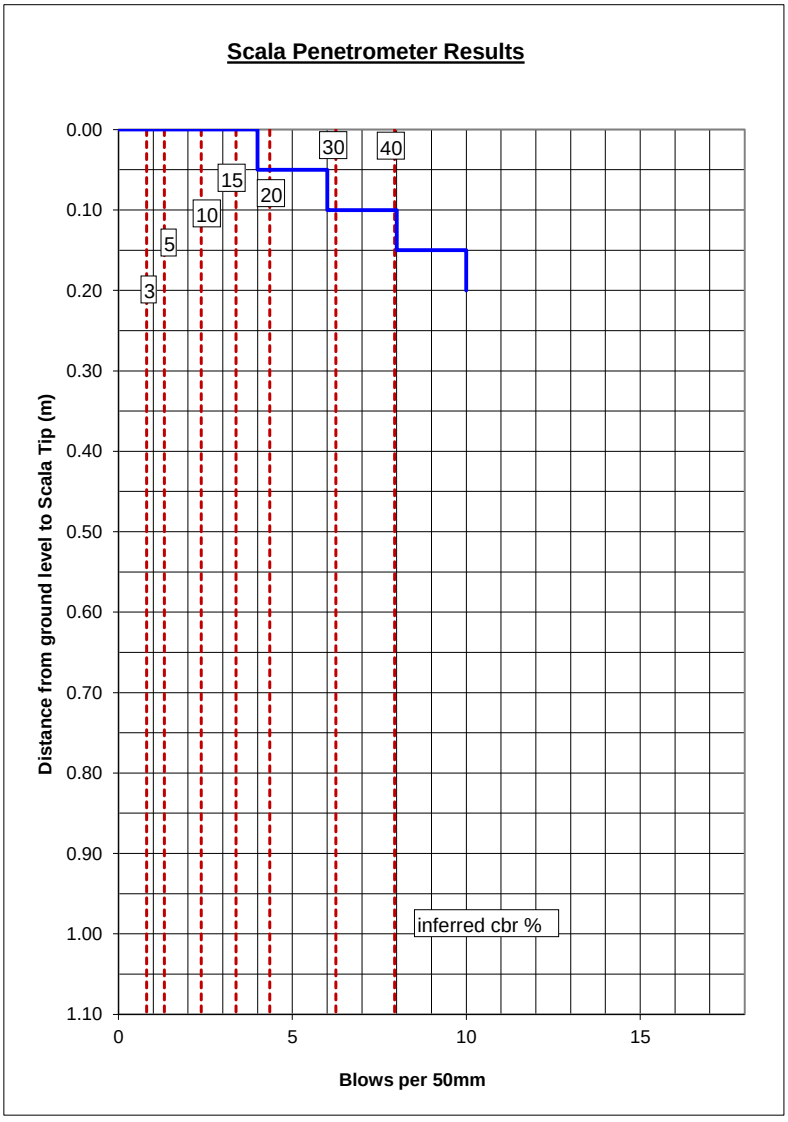
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 91.1 Mpa

Scala No: FSP02
Ref : 14333
Report No: W20-083

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
6	12	36	10	0.10
8	16	48	18	0.15
10	20	60	28	0.20



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

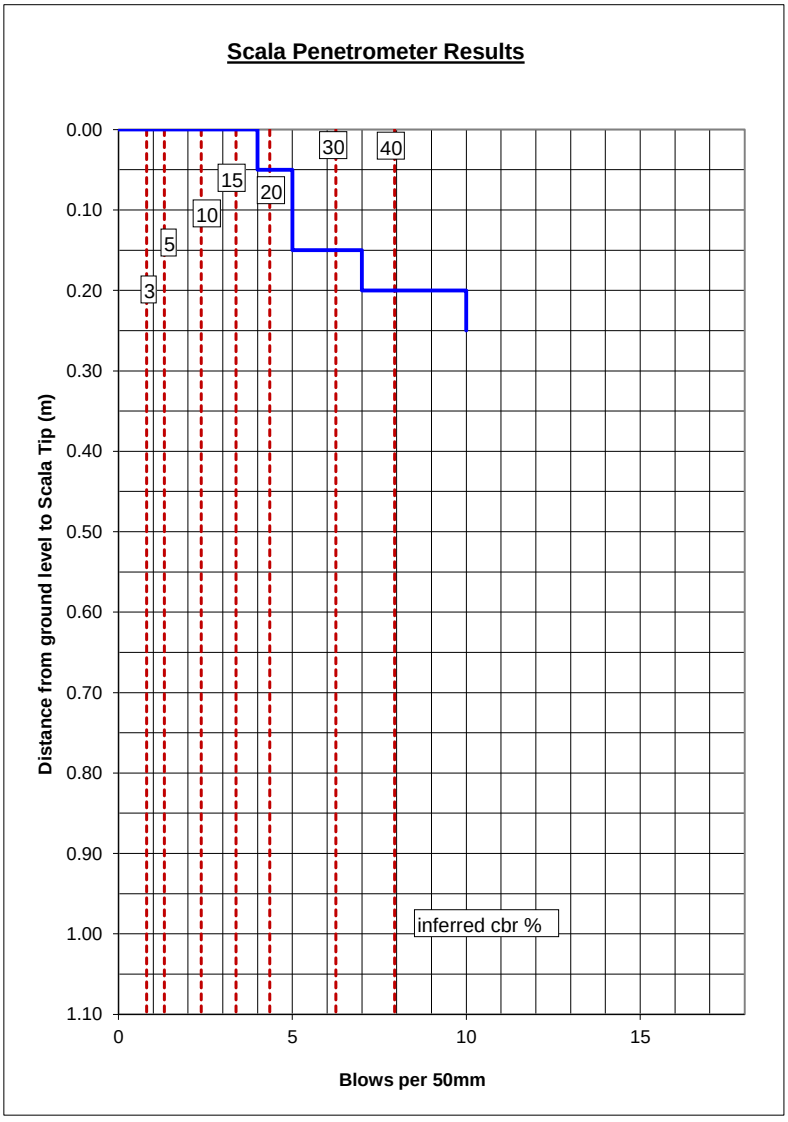
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 71.7 Mpa

Scala No: FSP03
Ref : 14333
Report No: W20-083
Page: 4 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
5	10	30	9	0.10
5	10	30	14	0.15
7	14	42	21	0.20
10	20	60	31	0.25



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

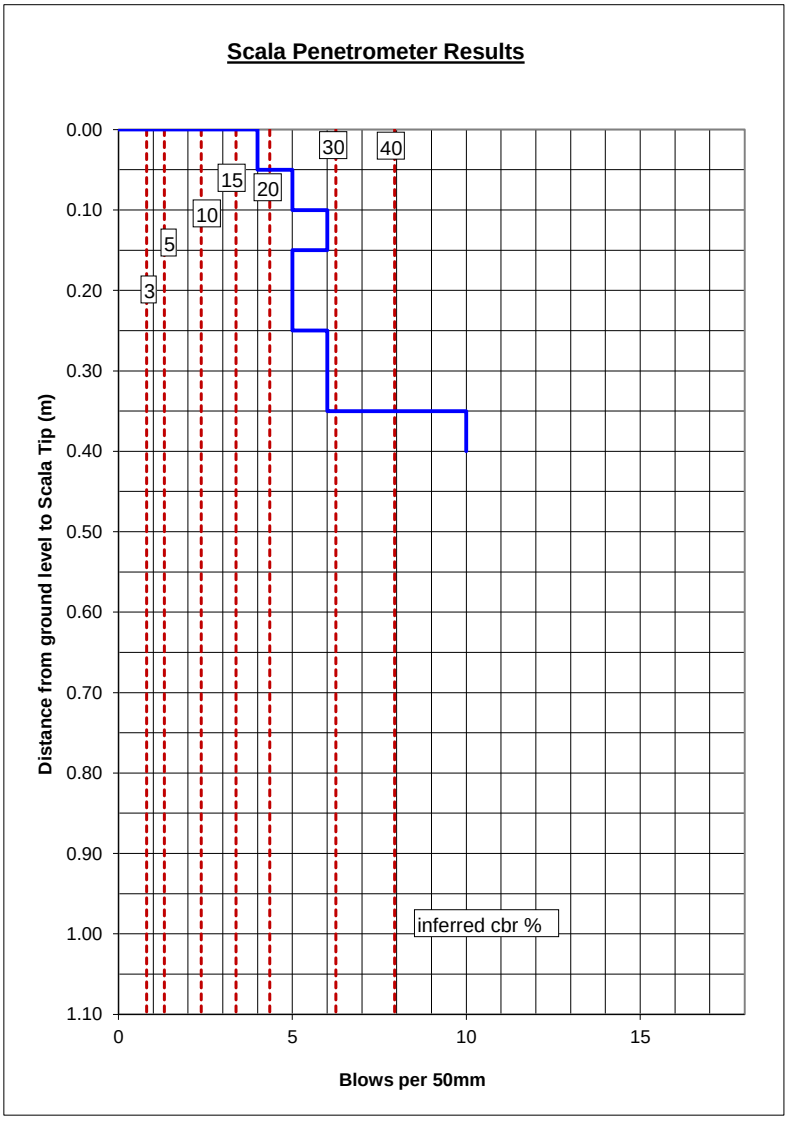
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 63.9 Mpa

Scala No: FSP04
Ref : 14333
Report No: W20-083

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
5	10	30	9	0.10
6	12	36	15	0.15
5	10	30	20	0.20
5	10	30	25	0.25
6	12	36	31	0.30
6	12	36	37	0.35
10	20	60	47	0.40



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

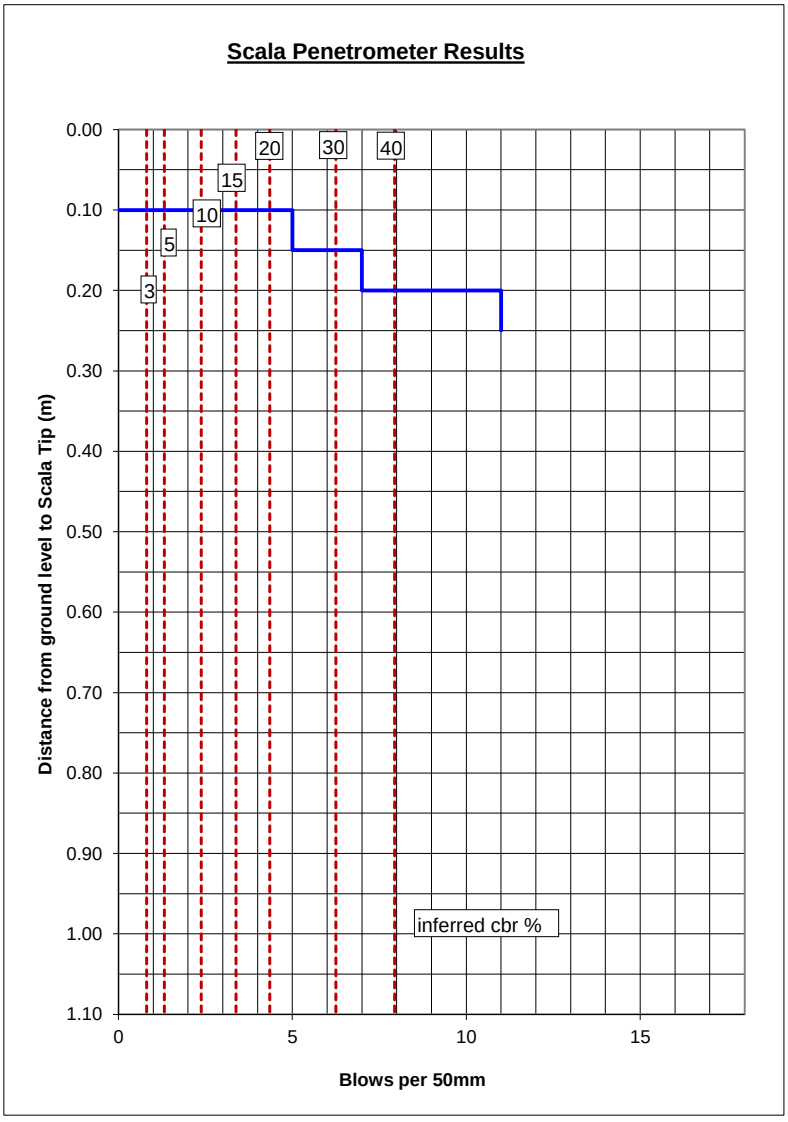
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 69.9 Mpa

Scala No: FSP05
Ref : 14333
Report No: W20-083
Page: 6 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
5	10	30	5	0.15
7	14	42	12	0.20
11	22	66	23	0.25



Recorded By: MA
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

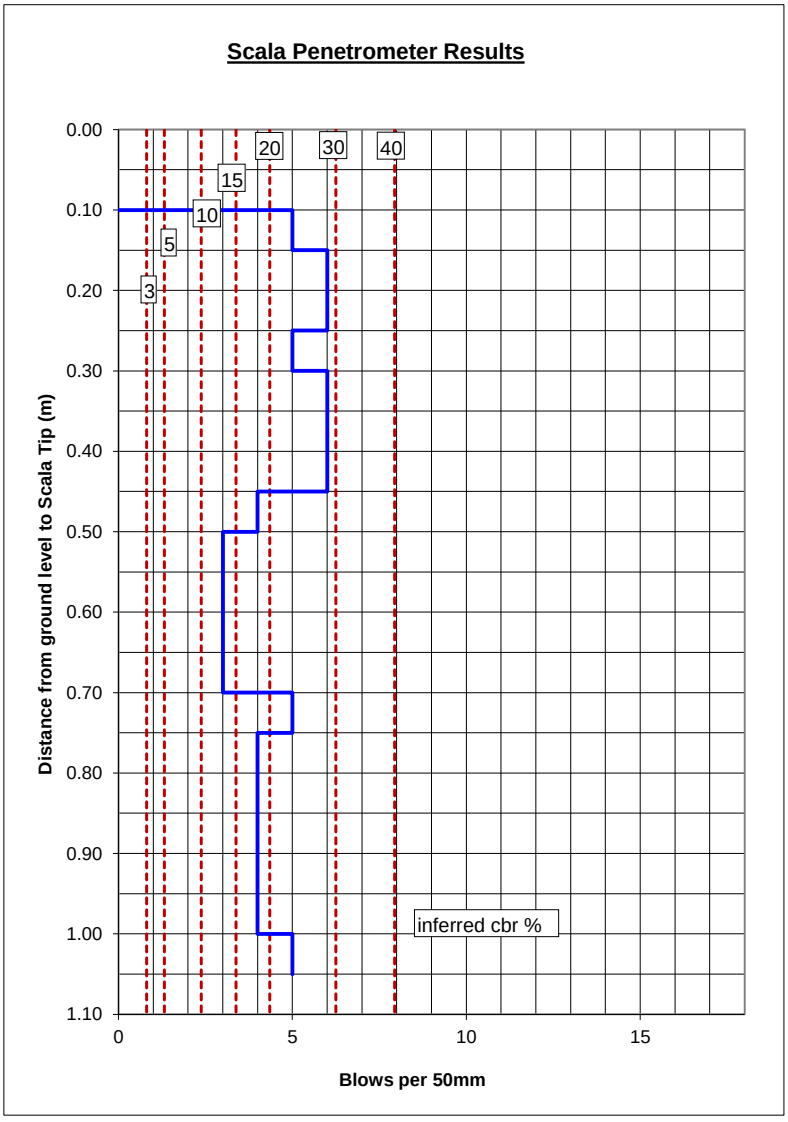
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 82.7 Mpa

Scala No: FSP06
Ref : 14333
Report No: W20-083
Page: 7 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
5	10	30	5	0.15
6	12	36	11	0.20
6	12	36	17	0.25
5	10	30	22	0.30
6	12	36	28	0.35
6	12	36	34	0.40
6	12	36	40	0.45
4	8	24	44	0.50
3	6	18	47	0.55
3	6	18	50	0.60
3	6	18	53	0.65
3	6	18	56	0.70
5	10	30	61	0.75
4	8	24	65	0.80
4	8	24	69	0.85
4	8	24	73	0.90
4	8	24	77	0.95
4	8	24	81	1.00
5	10	30	86	1.05



Recorded By: MA
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

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Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

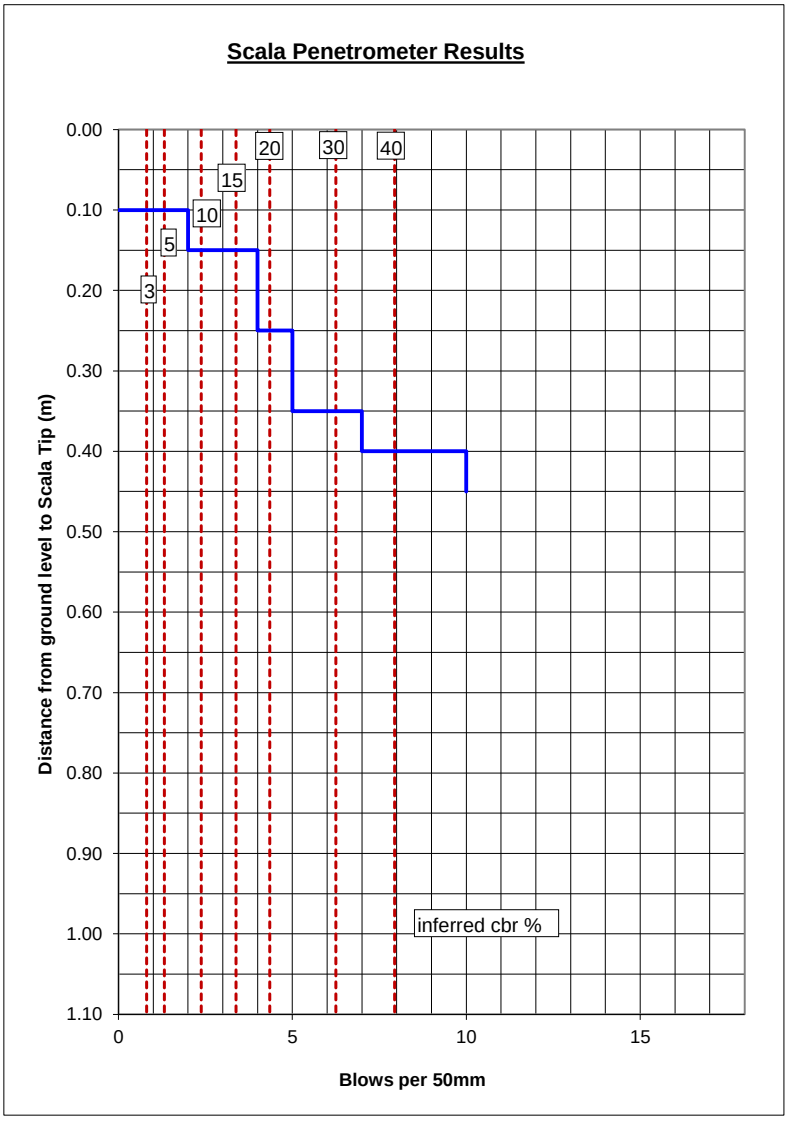
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 99.6 Mpa

Scala No: FSP07
Ref : 14333
Report No: W20-083
Page: 8 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
2	4	12	2	0.15
4	8	24	6	0.20
4	8	24	10	0.25
5	10	30	15	0.30
5	10	30	20	0.35
7	14	42	27	0.40
10	20	60	37	0.45



Recorded By: MA
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 98.7 Mpa

Scala No: FSP08
Ref : 14333
Report No: W20-083
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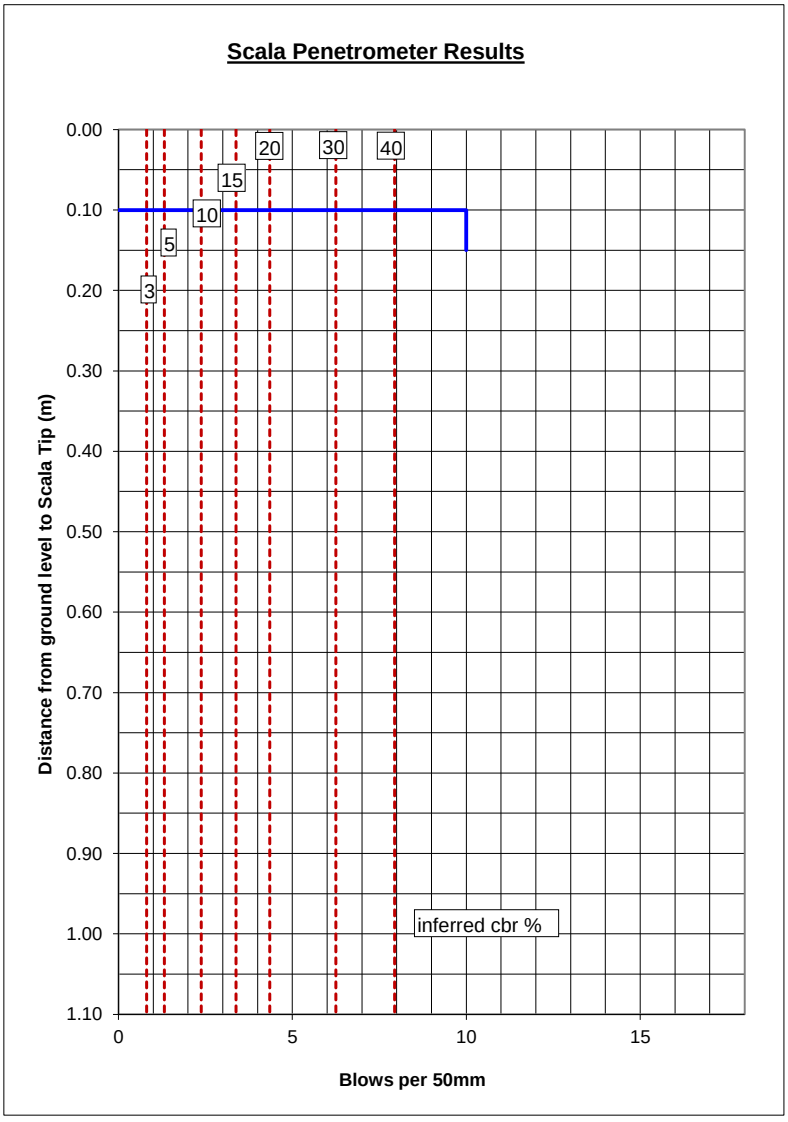
The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
10	20	60	10	0.15



Recorded By: MA
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

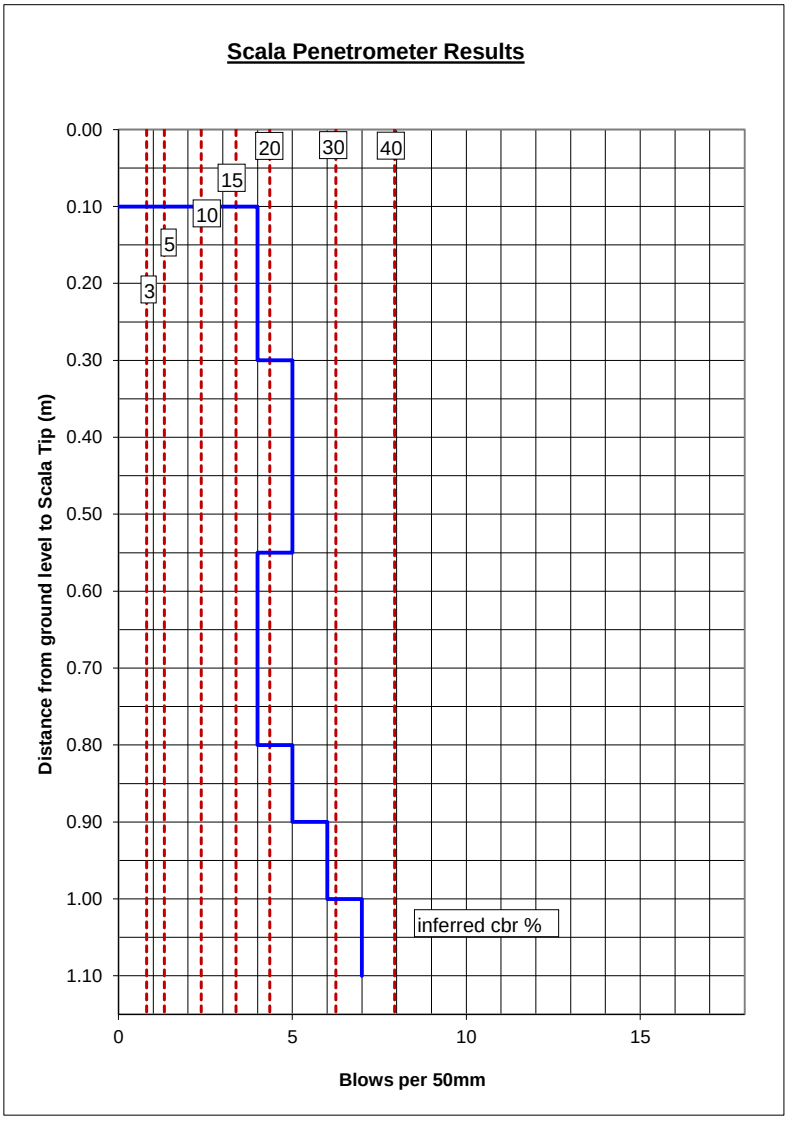
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 91.1 Mpa

Scala No: FSP09
Ref : 14333
Report No: W20-083
Page: 10 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
4	8	24	4	0.15
4	8	24	8	0.20
4	8	24	12	0.25
4	8	24	16	0.30
5	10	30	21	0.35
5	10	30	26	0.40
5	10	30	31	0.45
5	10	30	36	0.50
5	10	30	41	0.55
4	8	24	45	0.60
4	8	24	49	0.65
4	8	24	53	0.70
4	8	24	57	0.75
4	8	24	61	0.80
5	10	30	66	0.85
5	10	30	71	0.90
6	12	36	77	0.95
6	12	36	83	1.00
7	14	42	90	1.05
7	14	42	97	1.10



Recorded By: MA
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

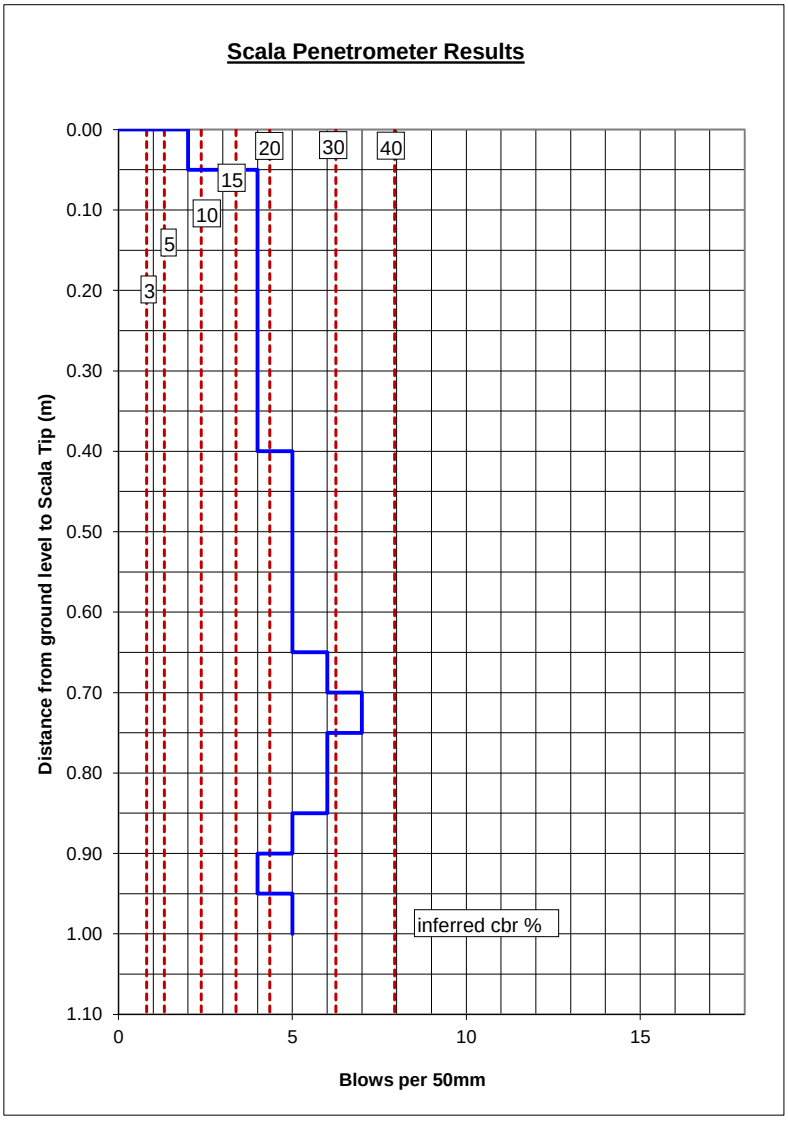
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 49.5 Mpa

Scala No: FSP10
Ref : 14333
Report No: W20-083
Page: 11 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
4	8	24	6	0.10
4	8	24	10	0.15
4	8	24	14	0.20
4	8	24	18	0.25
4	8	24	22	0.30
4	8	24	26	0.35
4	8	24	30	0.40
5	10	30	35	0.45
5	10	30	40	0.50
5	10	30	45	0.55
5	10	30	50	0.60
5	10	30	55	0.65
6	12	36	61	0.70
7	14	42	68	0.75
6	12	36	74	0.80
6	12	36	80	0.85
5	10	30	85	0.90
4	8	24	89	0.95
5	10	30	94	1.00



Recorded By: MA
Date: 30/01/2020
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Date: 13/02/2020

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J. Agnew
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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

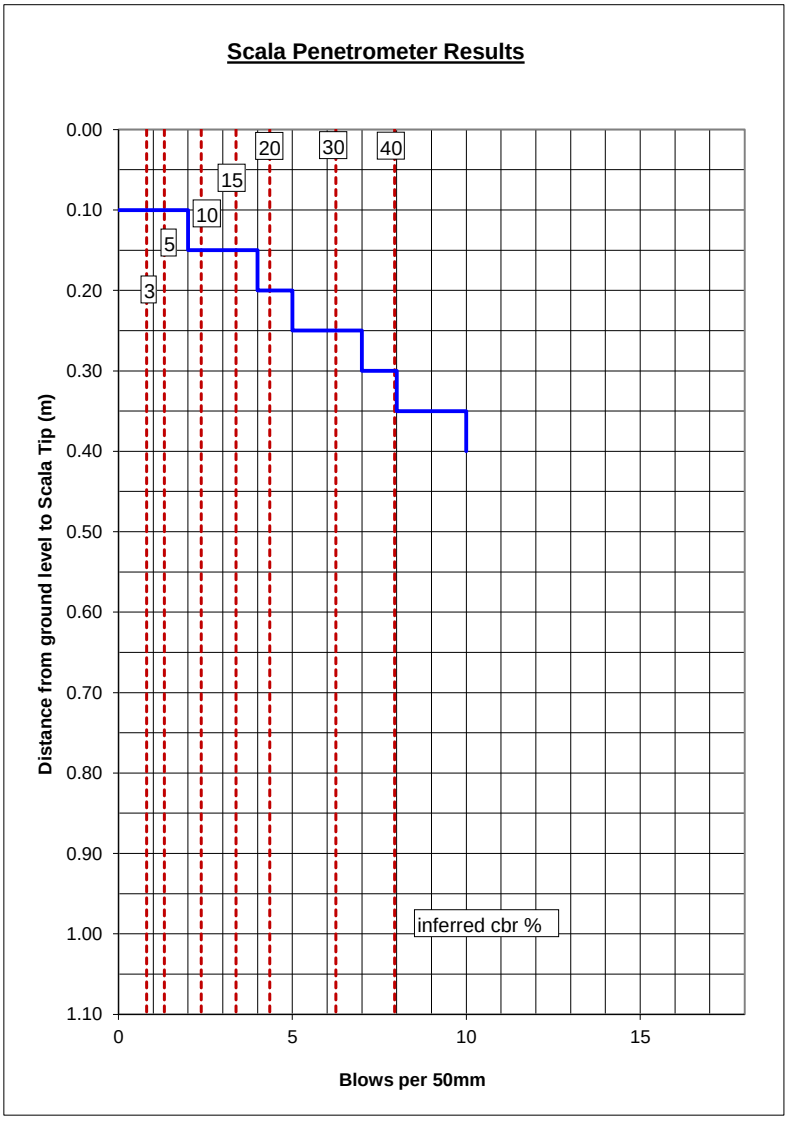
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 69.4 Mpa

Scala No: FSP11
Ref : 14333
Report No: W20-083
Page: 12 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
2	4	12	2	0.15
4	8	24	6	0.20
5	10	30	11	0.25
7	14	42	18	0.30
8	16	48	26	0.35
10	20	60	36	0.40



Recorded By: MA
Date: 30/01/2020
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Date: 13/02/2020

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166 Bank Street
Whangarei
P: 09 438 4417
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DYNAMIC CONE (SCALA) PENETROMETER

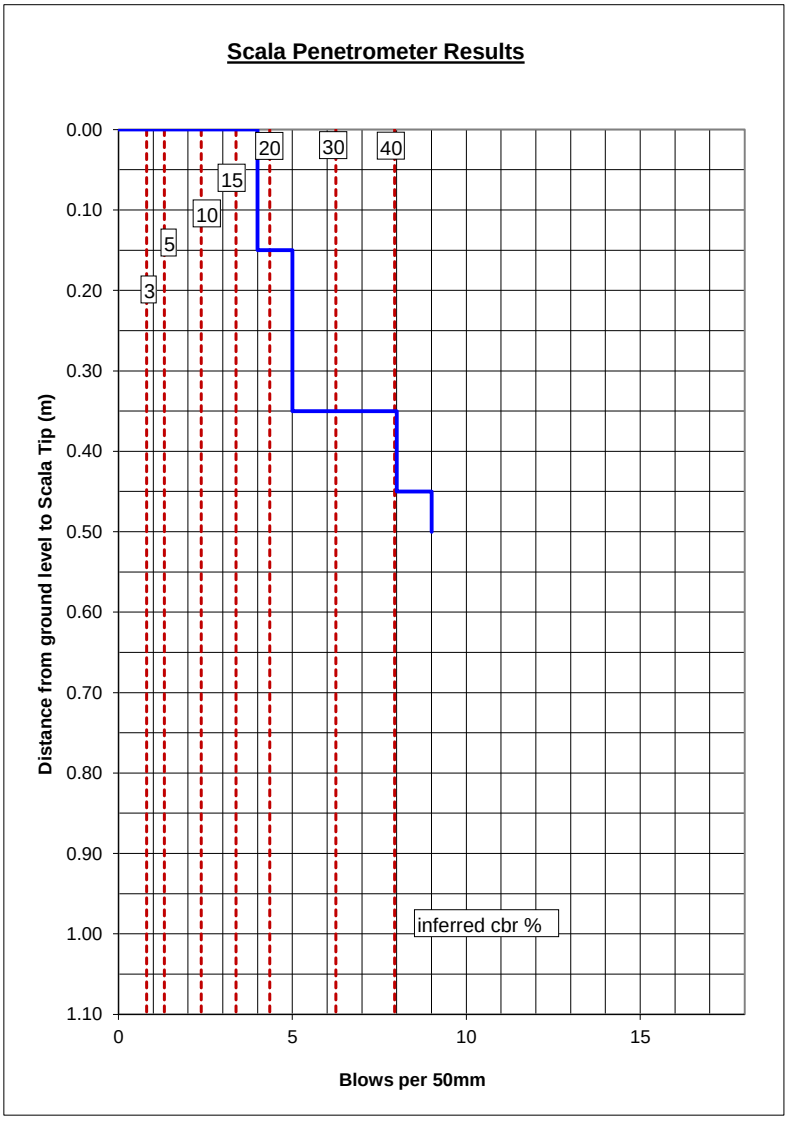
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 77.6 Mpa

Scala No: FSP12
Ref : 14333
Report No: W20-083
Page: 13 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
4	8	24	8	0.10
4	8	24	12	0.15
5	10	30	17	0.20
5	10	30	22	0.25
5	10	30	27	0.30
5	10	30	32	0.35
8	16	48	40	0.40
8	16	48	48	0.45
9	18	54	57	0.50



Recorded By: MA
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

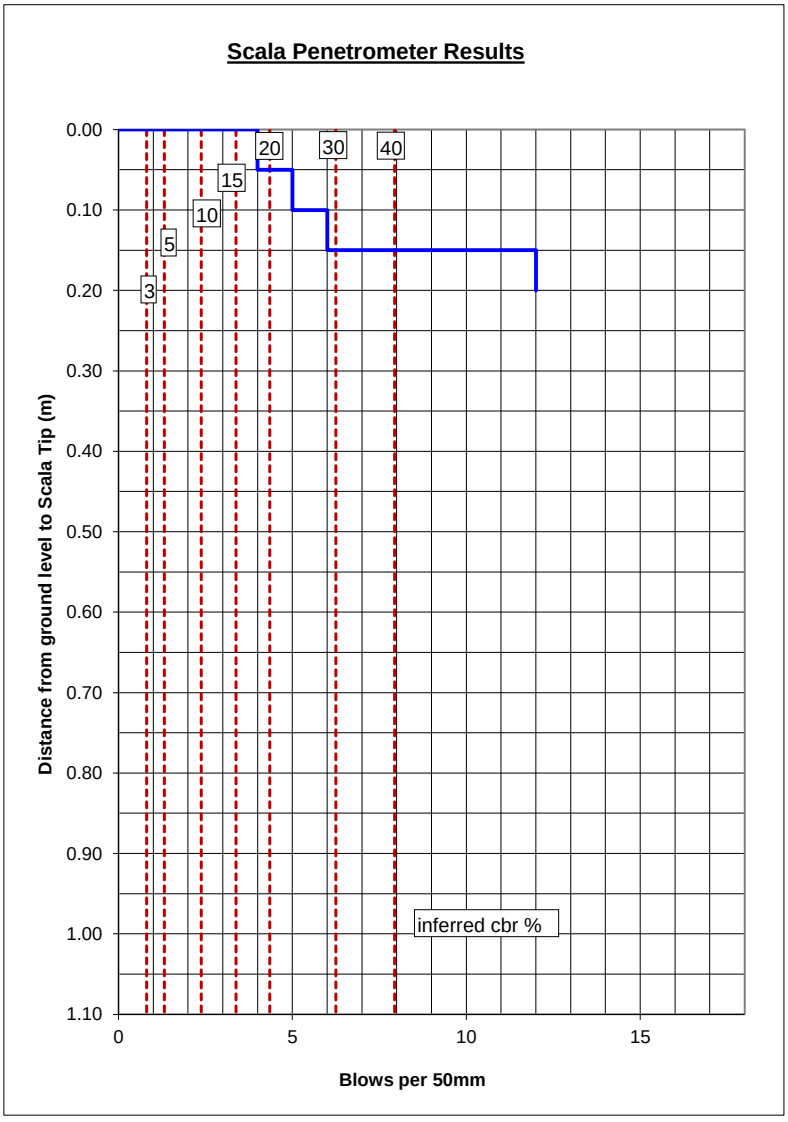
NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 54.1 Mpa

Scala No: FSP13
Ref : 14333
Report No: W20-083

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
5	10	30	9	0.10
6	12	36	15	0.15
12	24	72	27	0.20



Recorded By: MA
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 50.6 Mpa

Scala No: FSP14
Ref : 14333
Report No: W20-083
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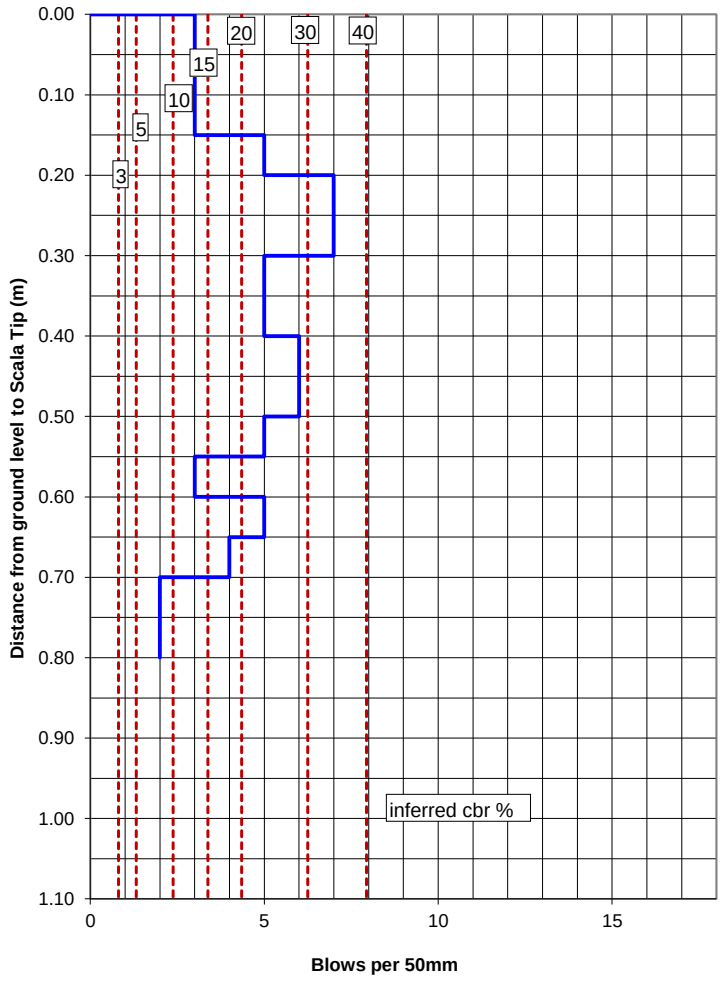
The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
3	6	18	6	0.10
3	6	18	9	0.15
5	10	30	14	0.20
7	14	42	21	0.25
7	14	42	28	0.30
5	10	30	33	0.35
5	10	30	38	0.40
6	12	36	44	0.45
6	12	36	50	0.50
5	10	30	55	0.55
3	6	18	58	0.60
5	10	30	63	0.65
4	8	24	67	0.70
2	4	12	69	0.75
2	4	12	71	0.80

Scala Penetrometer Results



Recorded By: MA
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

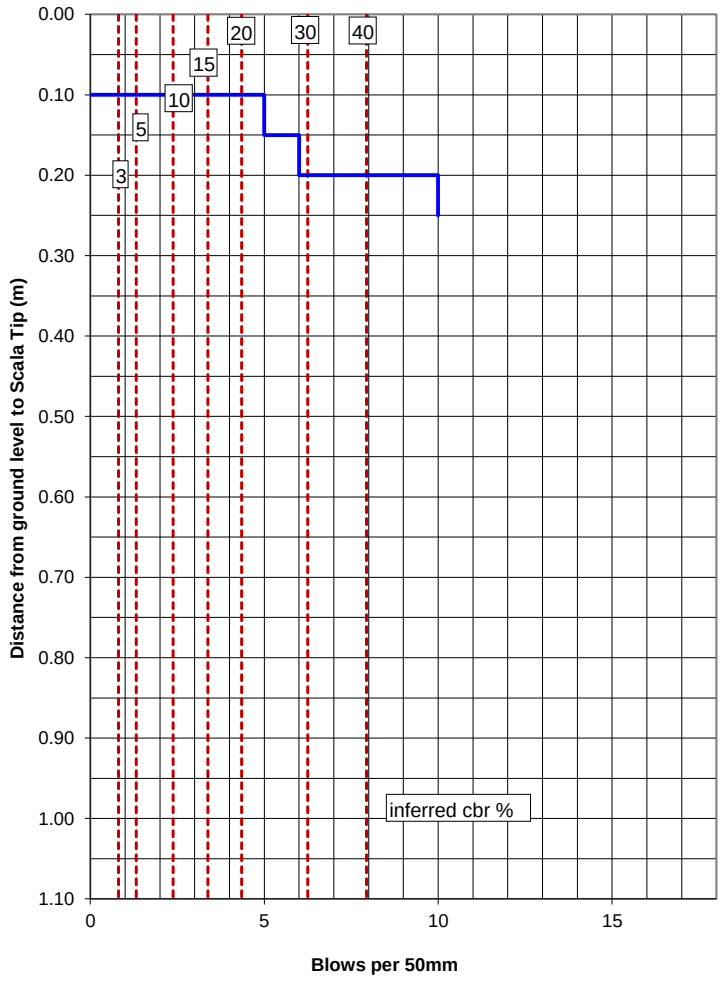
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 131.6 Mpa

Scala No: FSP15
Ref : 14333
Report No: W20-083
Page: 16 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
5	10	30	5	0.15
6	12	36	11	0.20
10	20	60	21	0.25

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

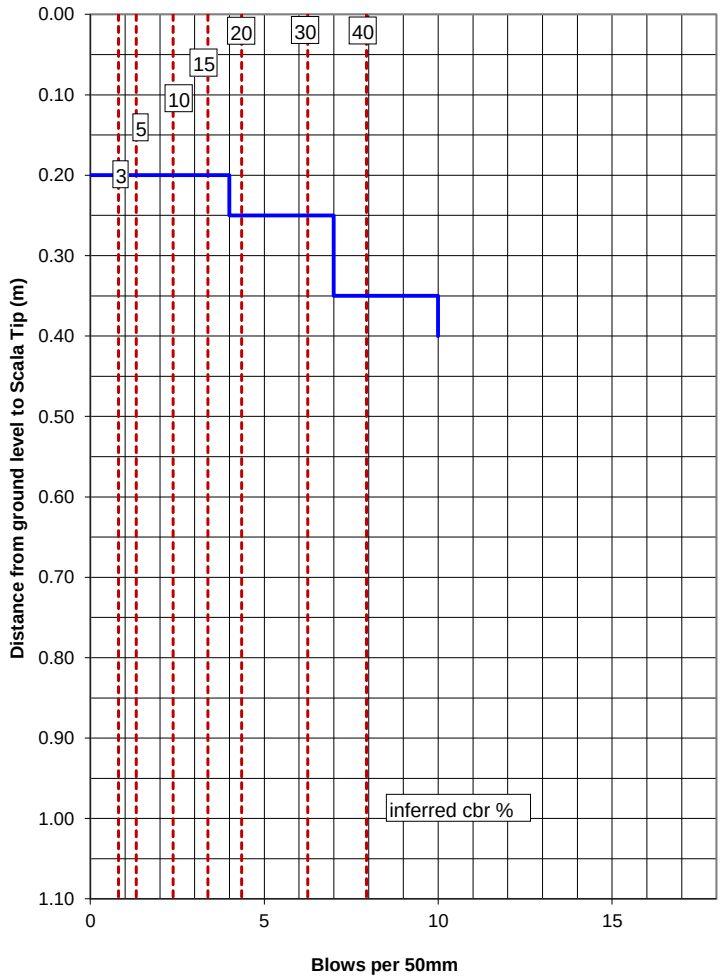
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 63.7 Mpa

Scala No: FSP16
Ref : 14333
Report No: W20-083
Page: 17 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
4	8	24	4	0.25
7	14	42	11	0.30
7	14	42	18	0.35
10	20	60	28	0.40

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

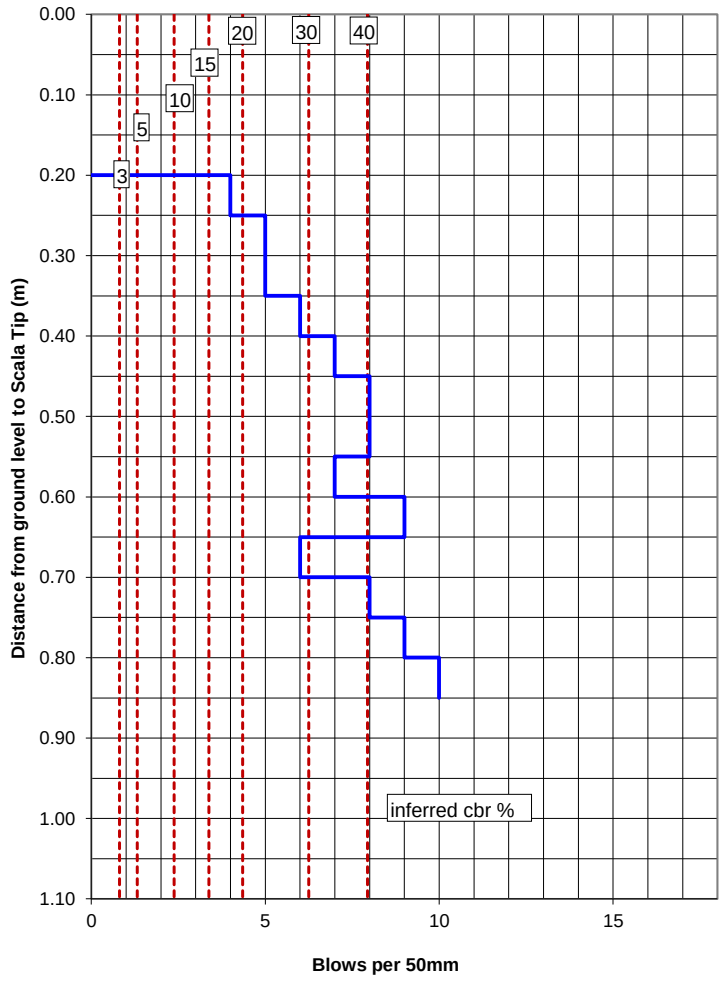
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 50.3 Mpa

Scala No: FSP17
Ref : 14333
Report No: W20-083
Page: 18 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
4	8	24	4	0.25
5	10	30	9	0.30
5	10	30	14	0.35
6	12	36	20	0.40
7	14	42	27	0.45
8	16	48	35	0.50
8	16	48	43	0.55
7	14	42	50	0.60
9	18	54	59	0.65
6	12	36	65	0.70
8	16	48	73	0.75
9	18	54	82	0.80
10	20	60	92	0.85

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
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Date: 13/02/2020

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Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

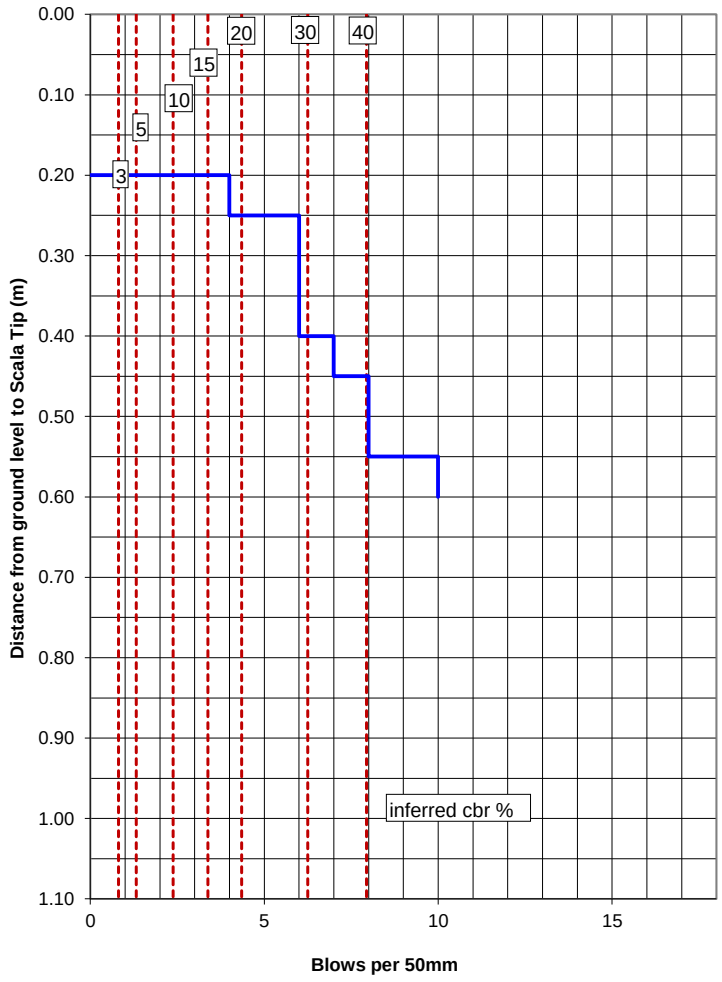
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 69.2 Mpa

Scala No: FSP18
Ref : 14333
Report No: W20-083
Page: 19 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
4	8	24	4	0.25
6	12	36	10	0.30
6	12	36	16	0.35
6	12	36	22	0.40
7	14	42	29	0.45
8	16	48	37	0.50
8	16	48	45	0.55
10	20	60	55	0.60

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

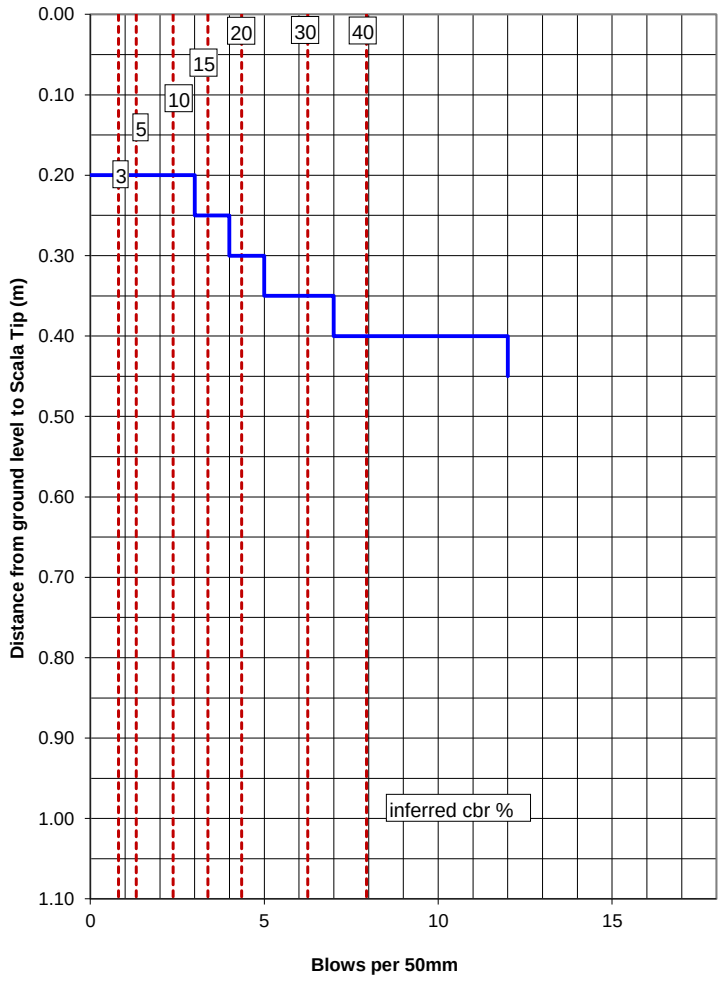
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 62.9 Mpa

Scala No: FSP19
Ref : 14333
Report No: W20-083
Page: 20 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
3	6	18	3	0.25
4	8	24	7	0.30
5	10	30	12	0.35
7	14	42	19	0.40
12	24	72	31	0.45

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

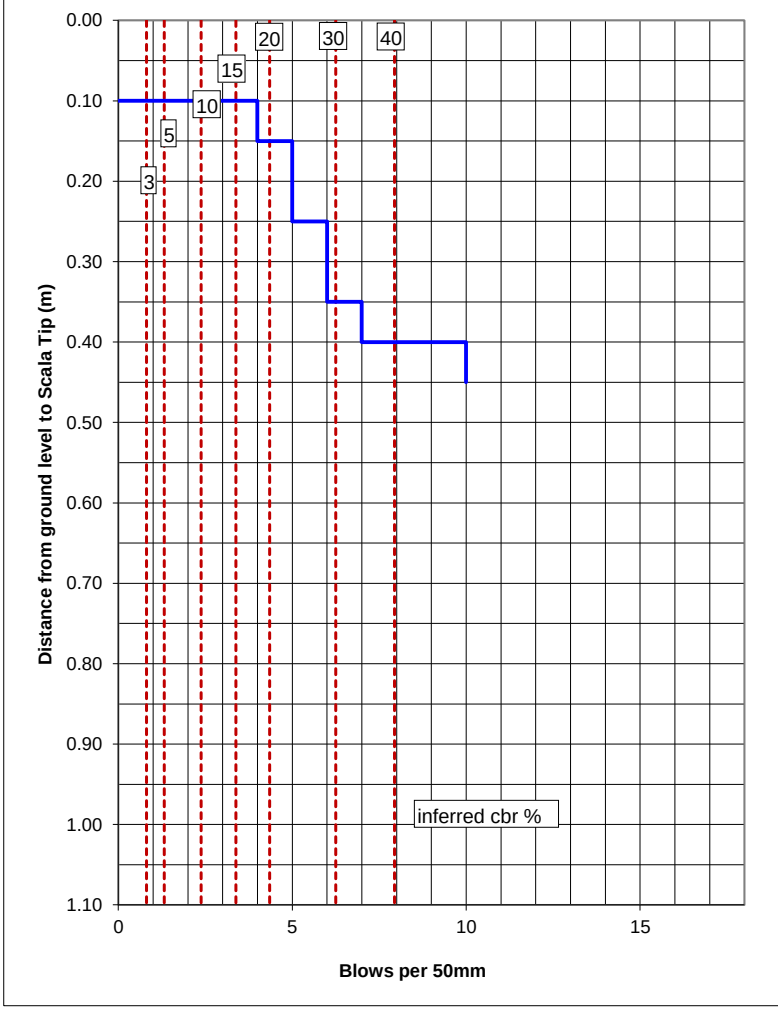
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 54 Mpa

Scala No: FSP20
Ref : 14333
Report No: W20-083
Page: 21 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
4	8	24	4	0.15
5	10	30	9	0.20
5	10	30	14	0.25
6	12	36	20	0.30
6	12	36	26	0.35
7	14	42	33	0.40
10	20	60	43	0.45

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
Checked by: NT
Date: 13/02/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

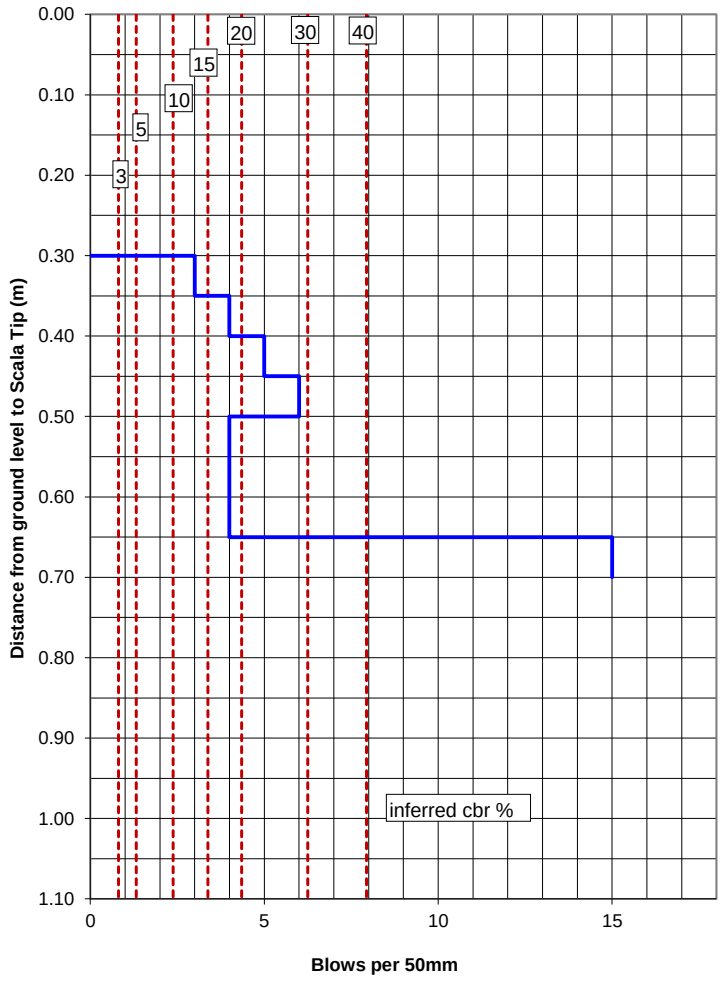
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.3
LWD 61.3 Mpa

Scala No: FSP21
Ref : 14333
Report No: W20-083
Page: 22 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.30
3	6	18	3	0.35
4	8	24	7	0.40
5	10	30	12	0.45
6	12	36	18	0.50
4	8	24	22	0.55
4	8	24	26	0.60
4	8	24	30	0.65
15	30	90	45	0.70

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
Checked by: NT
Date: 13/02/2020

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

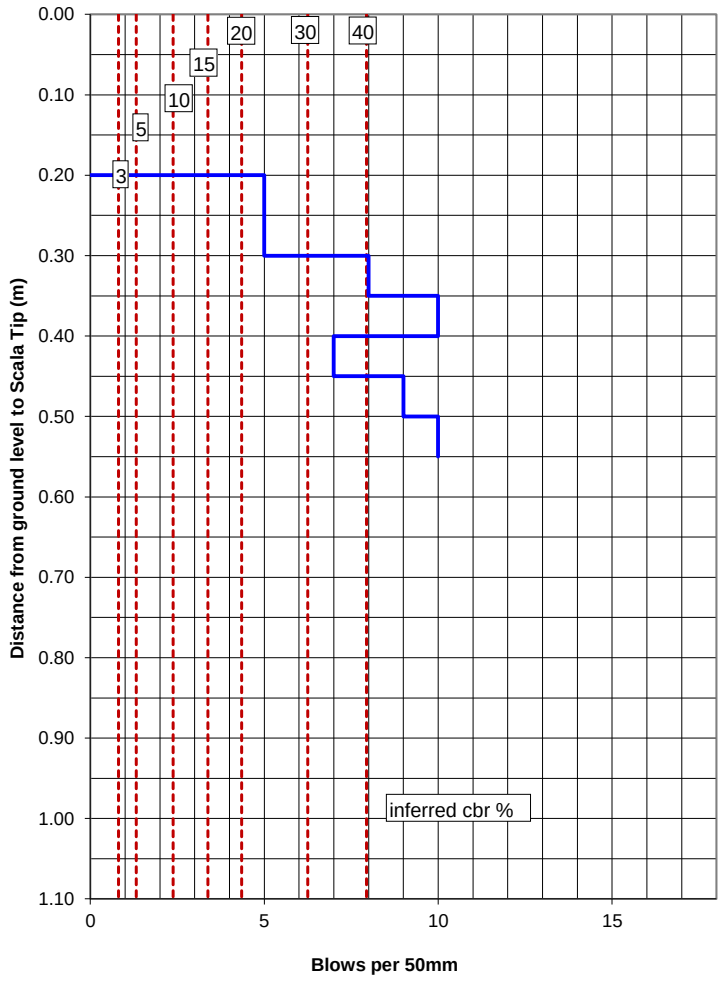
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 59.1 Mpa

Scala No: FSP22
Ref : 14333
Report No: W20-083
Page: 23 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
5	10	30	5	0.25
5	10	30	10	0.30
8	16	48	18	0.35
10	20	60	28	0.40
7	14	42	35	0.45
9	18	54	44	0.50
10	20	60	54	0.55

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

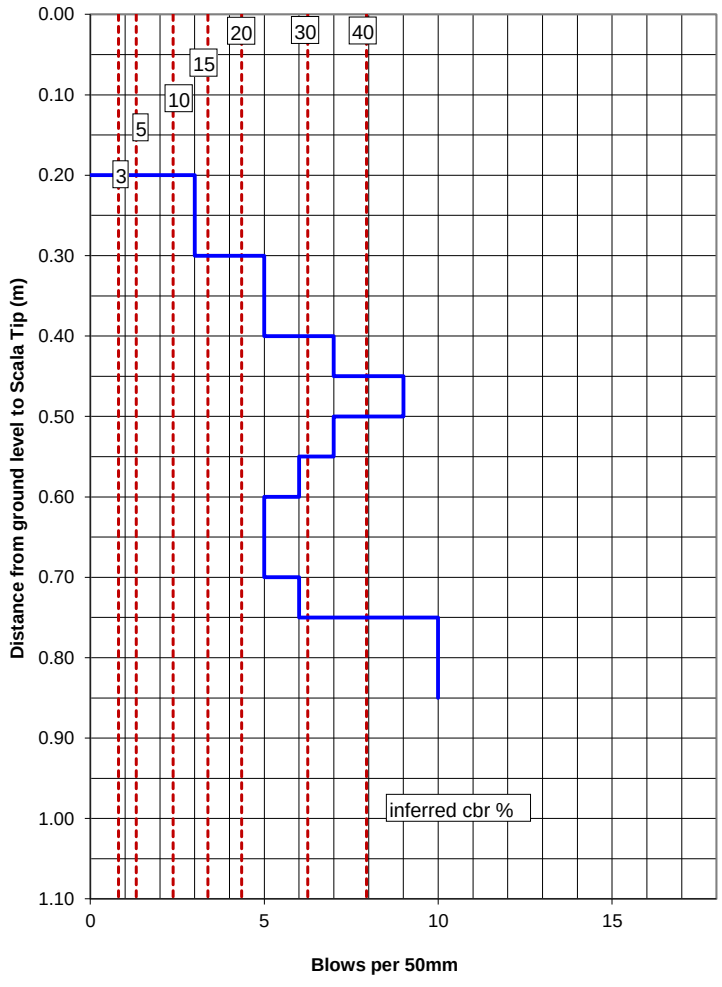
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 53.6 Mpa

Scala No: FSP23
Ref : 14333
Report No: W20-083
Page: 24 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
3	6	18	3	0.25
3	6	18	6	0.30
5	10	30	11	0.35
5	10	30	16	0.40
7	14	42	23	0.45
9	18	54	32	0.50
7	14	42	39	0.55
6	12	36	45	0.60
5	10	30	50	0.65
5	10	30	55	0.70
6	12	36	61	0.75
10	20	60	71	0.80
10	20	60	81	0.85

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
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Date: 13/02/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

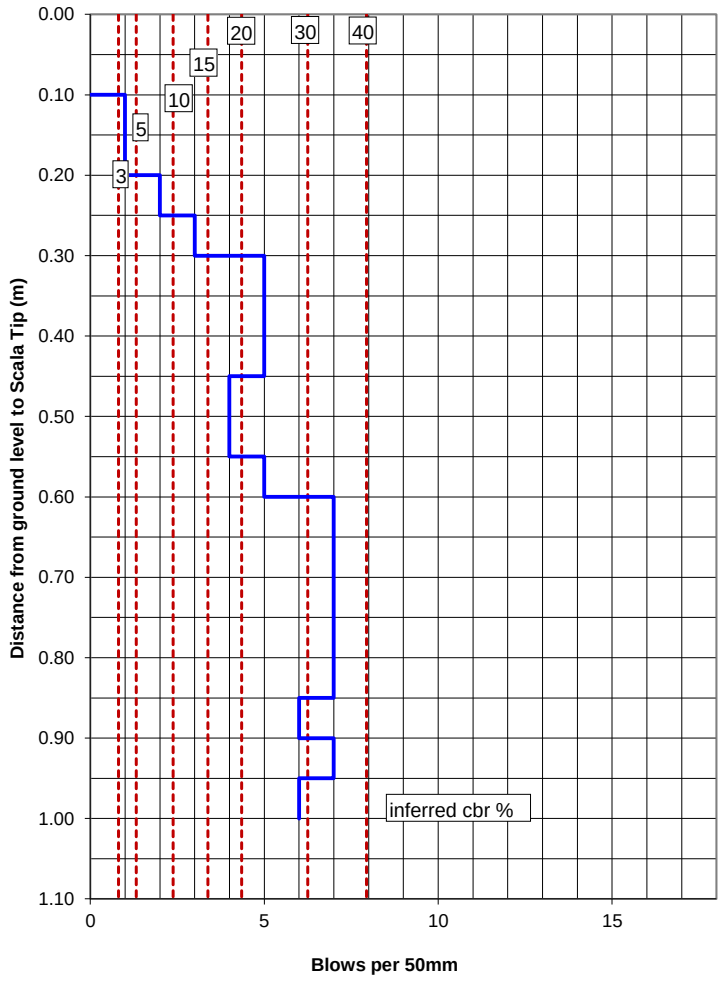
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 47.6 Mpa

Scala No: FSP24
Ref : 14333
Report No: W20-083
Page: 25 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
1	2	6	1	0.15
1	2	6	2	0.20
2	4	12	4	0.25
3	6	18	7	0.30
5	10	30	12	0.35
5	10	30	17	0.40
5	10	30	22	0.45
4	8	24	26	0.50
4	8	24	30	0.55
5	10	30	35	0.60
7	14	42	42	0.65
7	14	42	49	0.70
7	14	42	56	0.75
7	14	42	63	0.80
7	14	42	70	0.85
6	12	36	76	0.90
7	14	42	83	0.95
6	12	36	89	1.00

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
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Date: 13/02/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

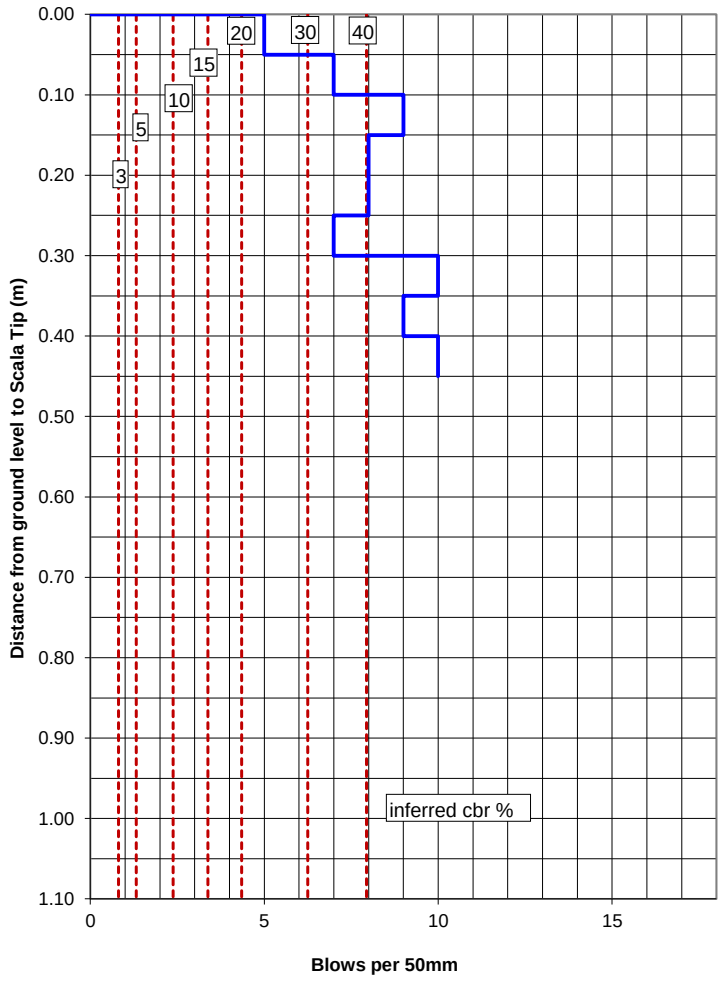
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 59.7 Mpa

Scala No: FSP25
Ref : 14333
Report No: W20-083
Page: 26 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
5	10	30	5	0.05
7	14	42	12	0.10
9	18	54	21	0.15
8	16	48	29	0.20
8	16	48	37	0.25
7	14	42	44	0.30
10	20	60	54	0.35
9	18	54	63	0.40
10	20	60	73	0.45

Scala Penetrometer Results



Recorded By: LG
Date: 23/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

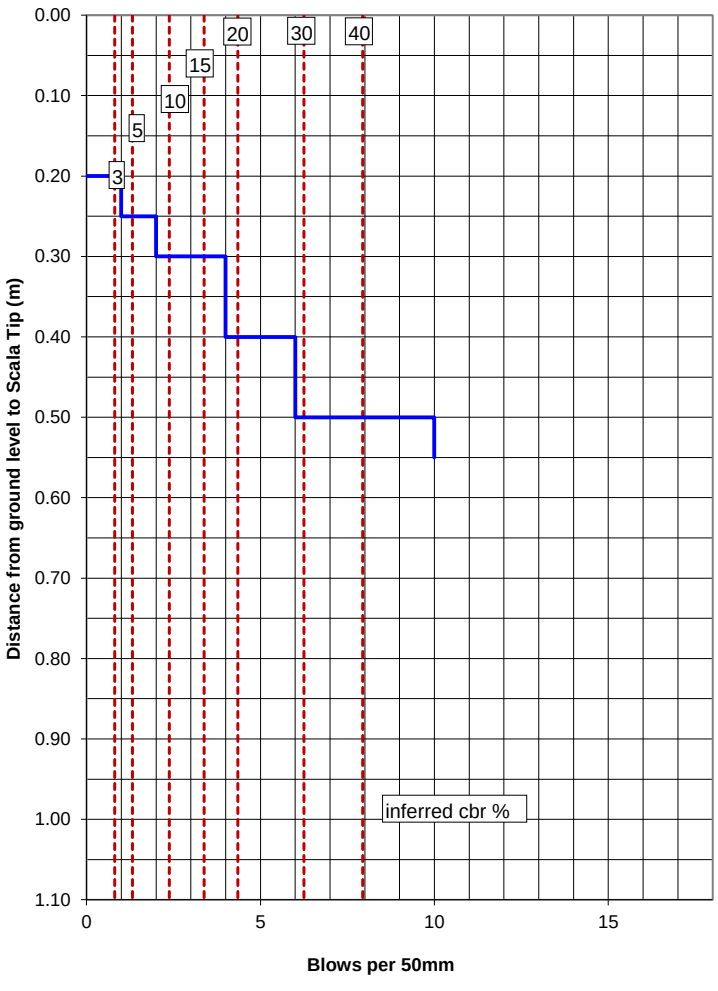
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 70.5 Mpa

Scala No: FSP26
Ref : 14333
Report No: W20-083
Page: 27 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
1	2	6	1	0.25
2	4	12	3	0.30
4	8	24	7	0.35
4	8	24	11	0.40
6	12	36	17	0.45
6	12	36	23	0.50
10	20	60	33	0.55

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

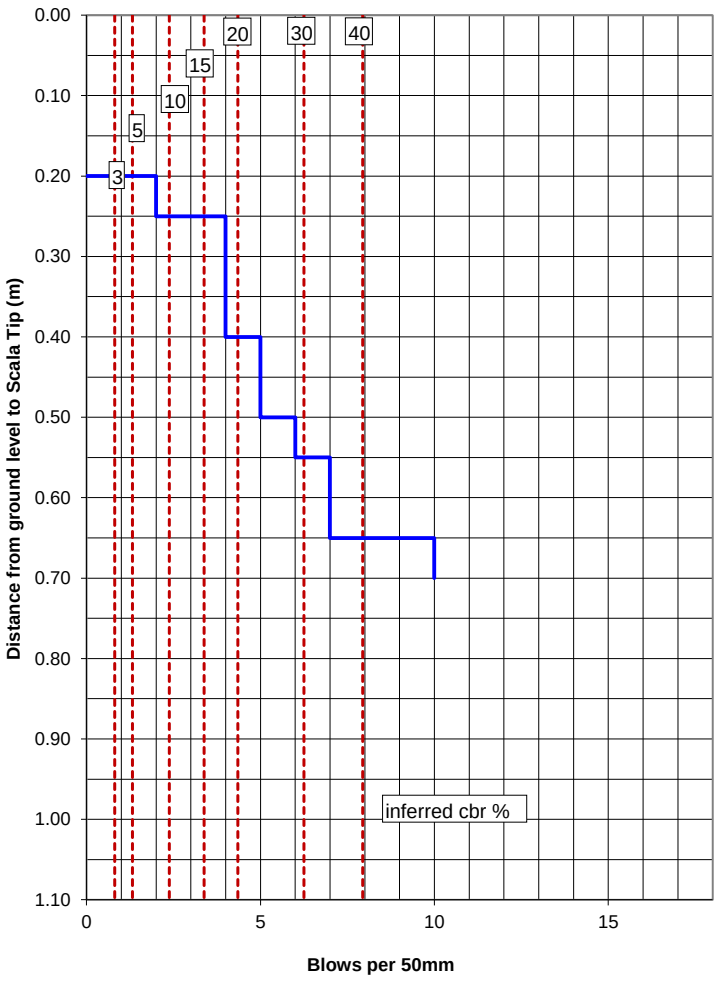
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 42.2 Mpa

Scala No: FSP27
Ref : 14333
Report No: W20-083
Page: 28 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
4	8	24	6	0.30
4	8	24	10	0.35
4	8	24	14	0.40
5	10	30	19	0.45
5	10	30	24	0.50
6	12	36	30	0.55
7	14	42	37	0.60
7	14	42	44	0.65
10	20	60	54	0.70

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

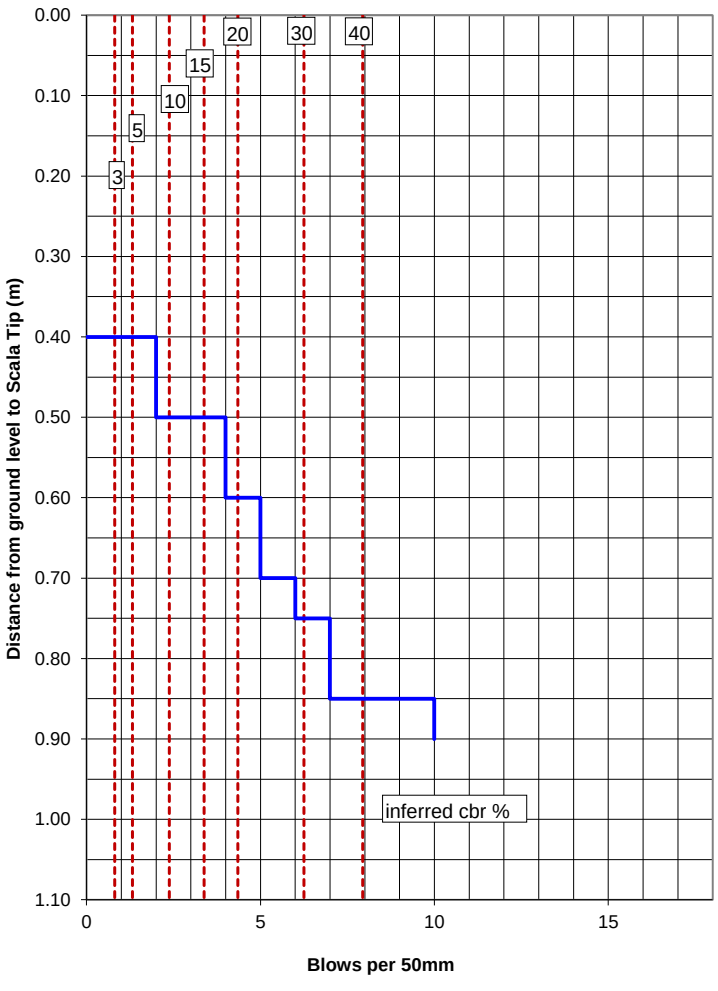
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.4
LWD 83.3 Mpa

Scala No: FSP28
Ref : 14333
Report No: W20-083
Page: 29 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.40
2	4	12	2	0.45
2	4	12	4	0.50
4	8	24	8	0.55
4	8	24	12	0.60
5	10	30	17	0.65
5	10	30	22	0.70
6	12	36	28	0.75
7	14	42	35	0.80
7	14	42	42	0.85
10	20	60	52	0.90

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

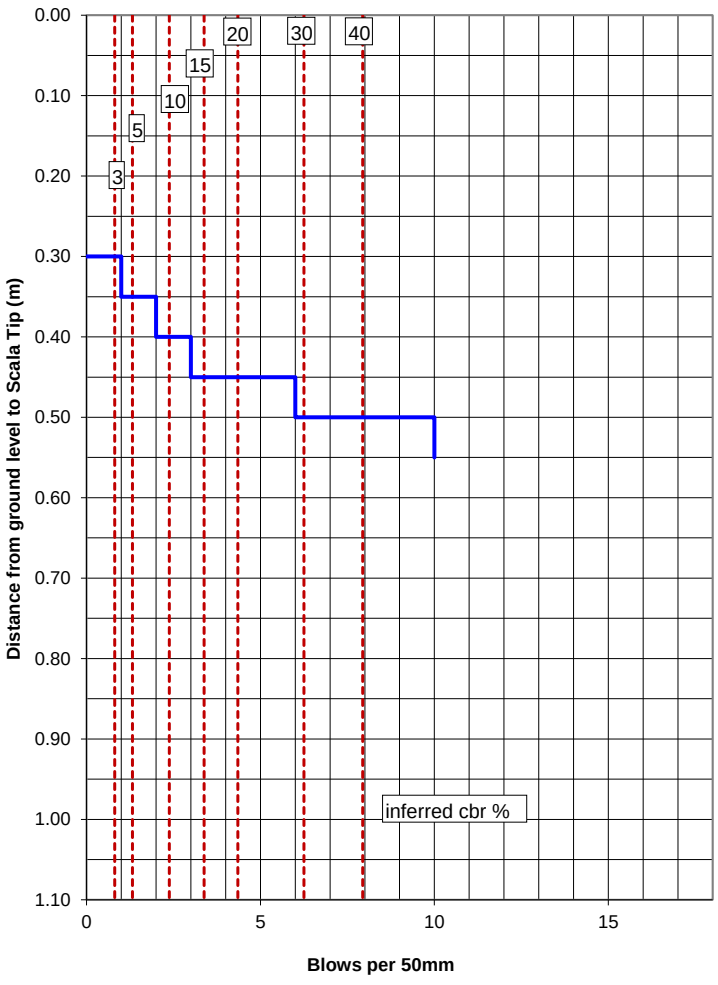
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.3
LWD 52.1 Mpa

Scala No: FSP29
Ref : 14333
Report No: W20-083
Page: 30 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.30
1	2	6	1	0.35
2	4	12	3	0.40
3	6	18	6	0.45
6	12	36	12	0.50
10	20	60	22	0.55

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

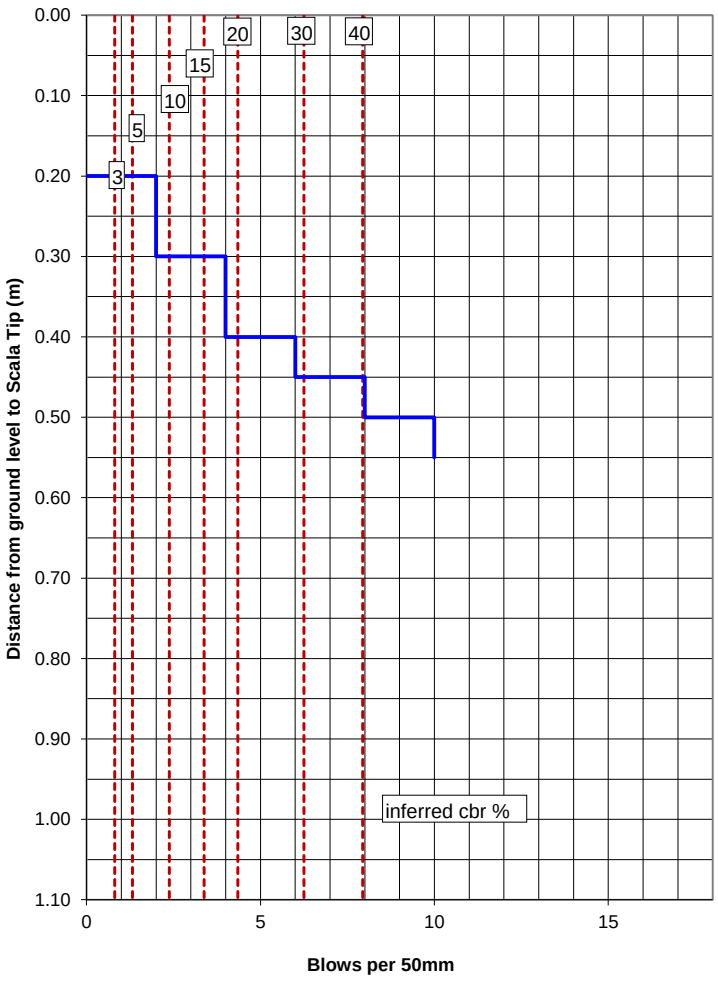
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 47.8 Mpa

Scala No: FSP30
Ref : 14333
Report No: W20-083
Page: 31 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
2	4	12	4	0.30
4	8	24	8	0.35
4	8	24	12	0.40
6	12	36	18	0.45
8	16	48	26	0.50
10	20	60	36	0.55

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

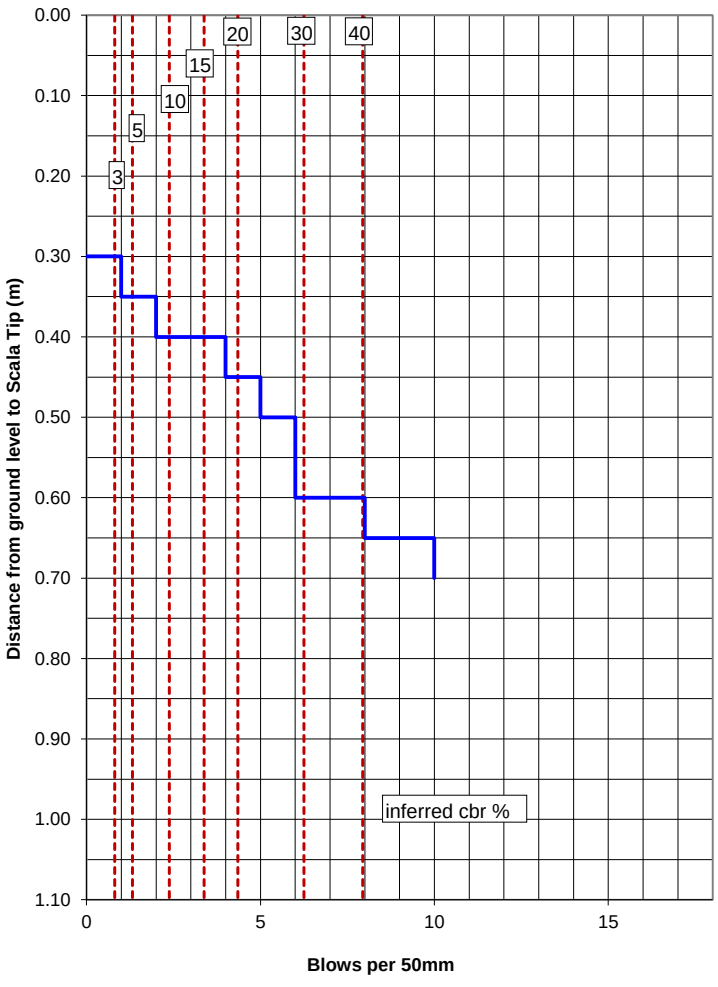
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.3
LWD 83.9 Mpa

Scala No: FSP31
Ref : 14333
Report No: W20-083
Page: 32 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.30
1	2	6	1	0.35
2	4	12	3	0.40
4	8	24	7	0.45
5	10	30	12	0.50
6	12	36	18	0.55
6	12	36	24	0.60
8	16	48	32	0.65
10	20	60	42	0.70

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

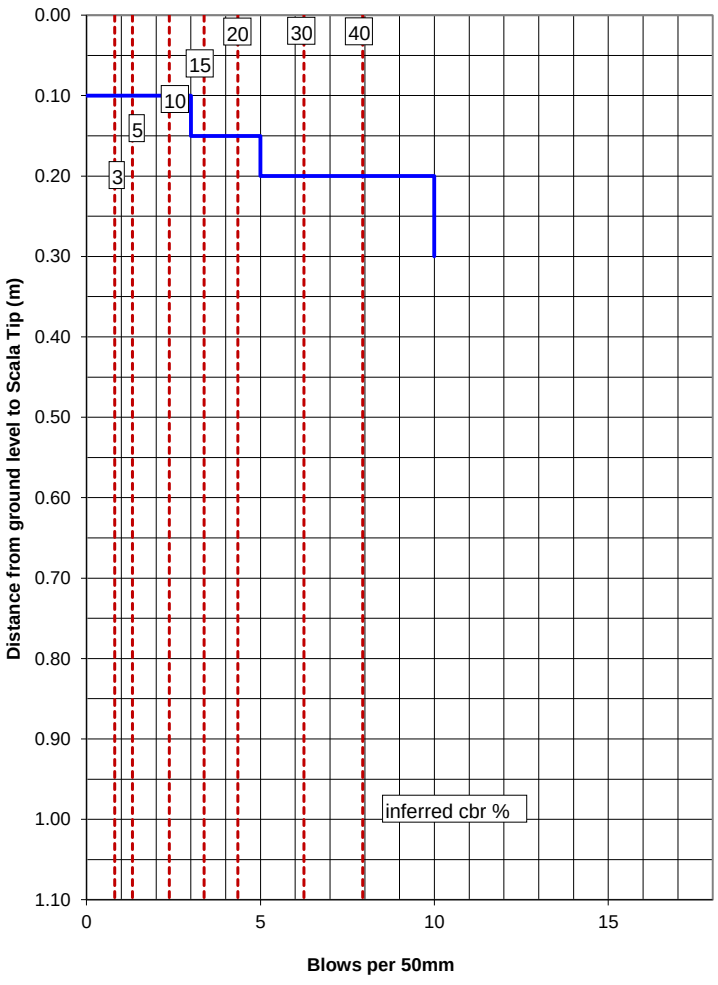
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 84.6 Mpa

Scala No: FSP32
Ref : 14333
Report No: W20-083
Page: 33 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
3	6	18	3	0.15
5	10	30	8	0.20
10	20	60	18	0.25
10	20	60	28	0.30

Scala Penetrometer Results



Recorded By: MA
Date: 23/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

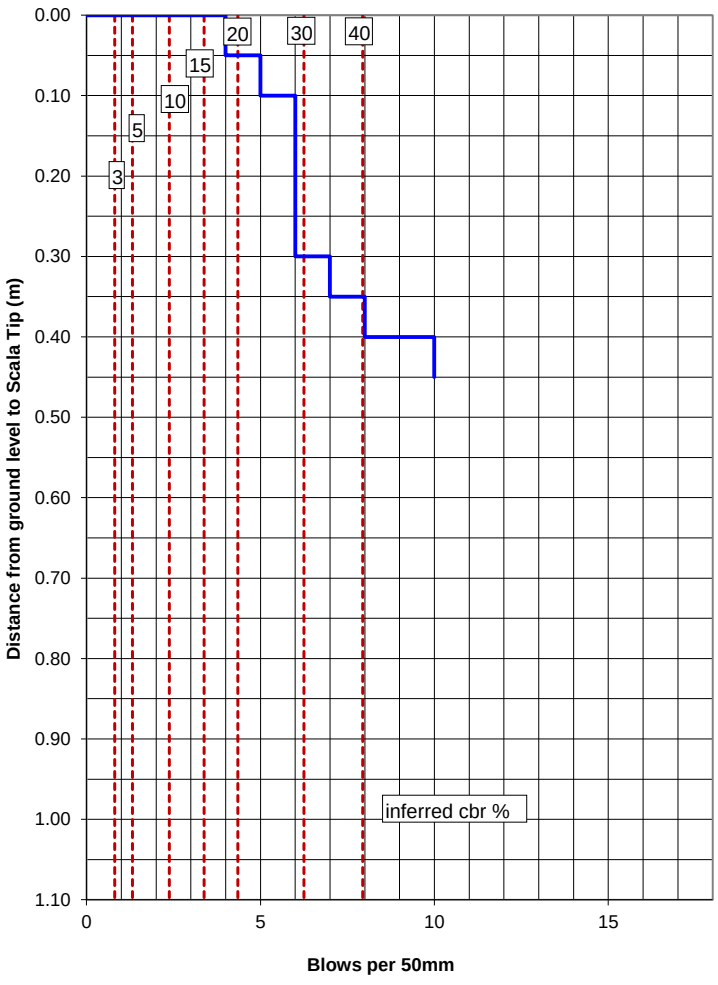
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 72.9 Mpa

Scala No: FSP33
Ref : 14333
Report No: W20-083
Page: 34 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
4	8	24	4	0.05
5	10	30	9	0.10
6	12	36	15	0.15
6	12	36	21	0.20
6	12	36	27	0.25
6	12	36	33	0.30
7	14	42	40	0.35
8	16	48	48	0.40
10	20	60	58	0.45

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

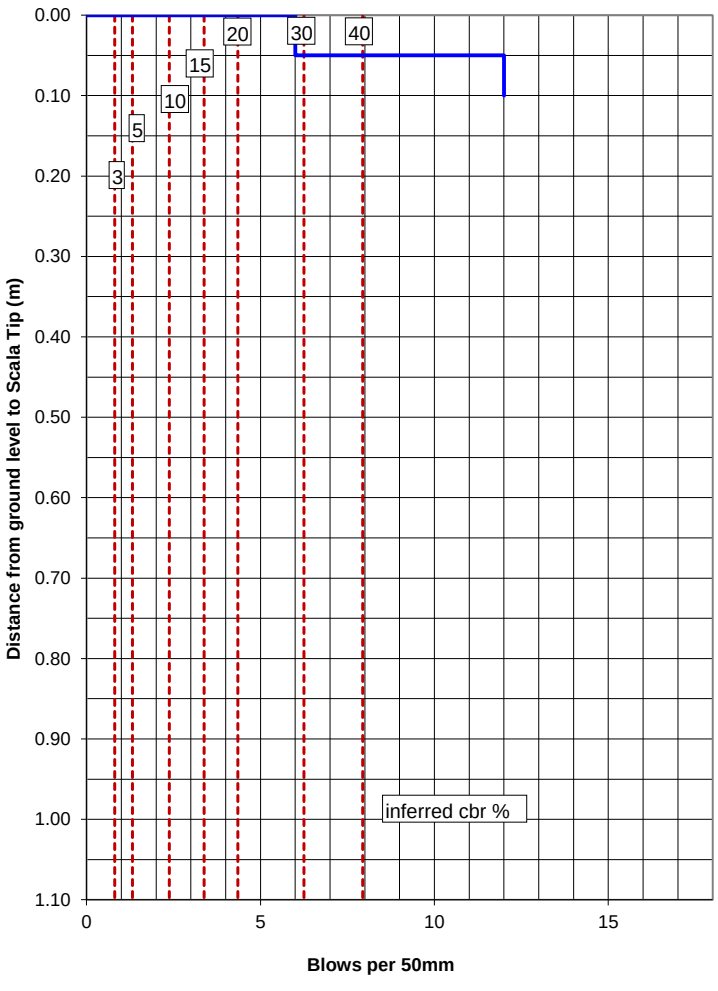
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 135.5 Mpa

Scala No: FSP34
Ref : 14333
Report No: W20-083
Page: 35 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
6	12	36	6	0.05
12	24	72	18	0.10

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

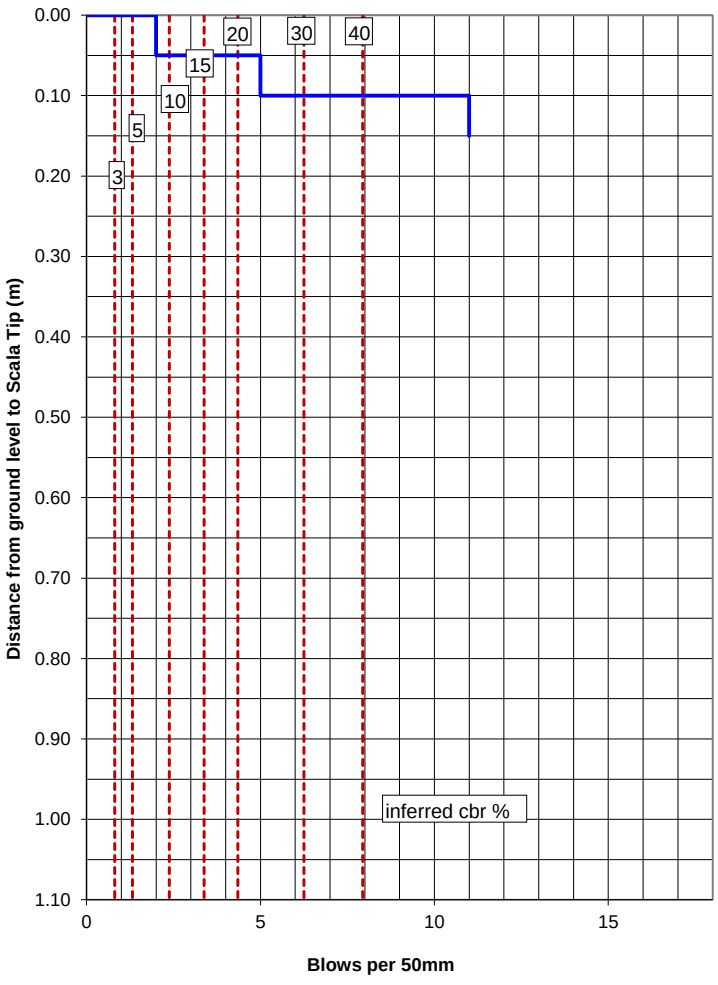
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 65.4 Mpa

Scala No: FSP35
Ref : 14333
Report No: W20-083
Page: 36 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
5	10	30	7	0.10
11	22	66	18	0.15

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

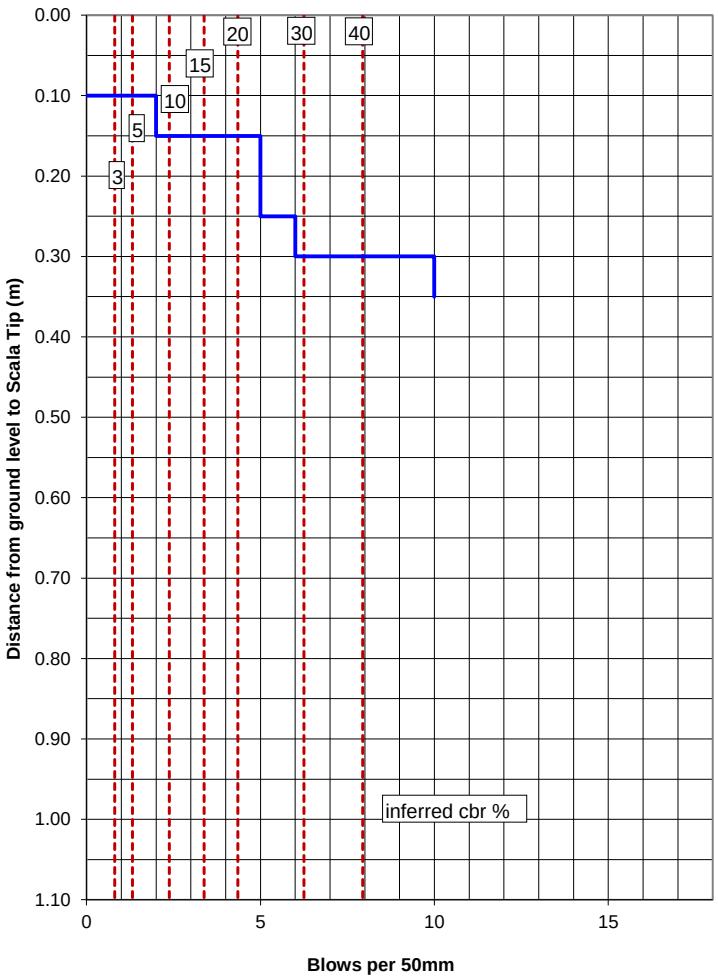
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 60.8 Mpa

Scala No: FSP36
Ref : 14333
Report No: W20-083
Page: 37 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
2	4	12	2	0.15
5	10	30	7	0.20
5	10	30	12	0.25
6	12	36	18	0.30
10	20	60	28	0.35

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

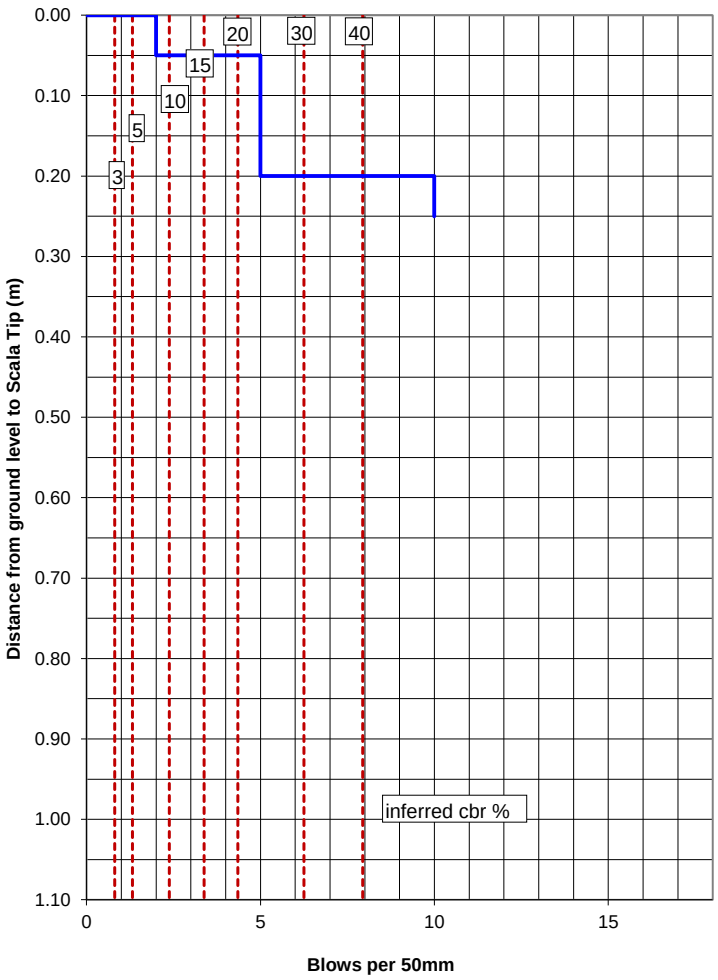
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 84.6 Mpa

Scala No: FSP37
Ref : 14333
Report No: W20-083
Page: 38 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
5	10	30	7	0.10
5	10	30	12	0.15
5	10	30	17	0.20
10	20	60	27	0.25

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

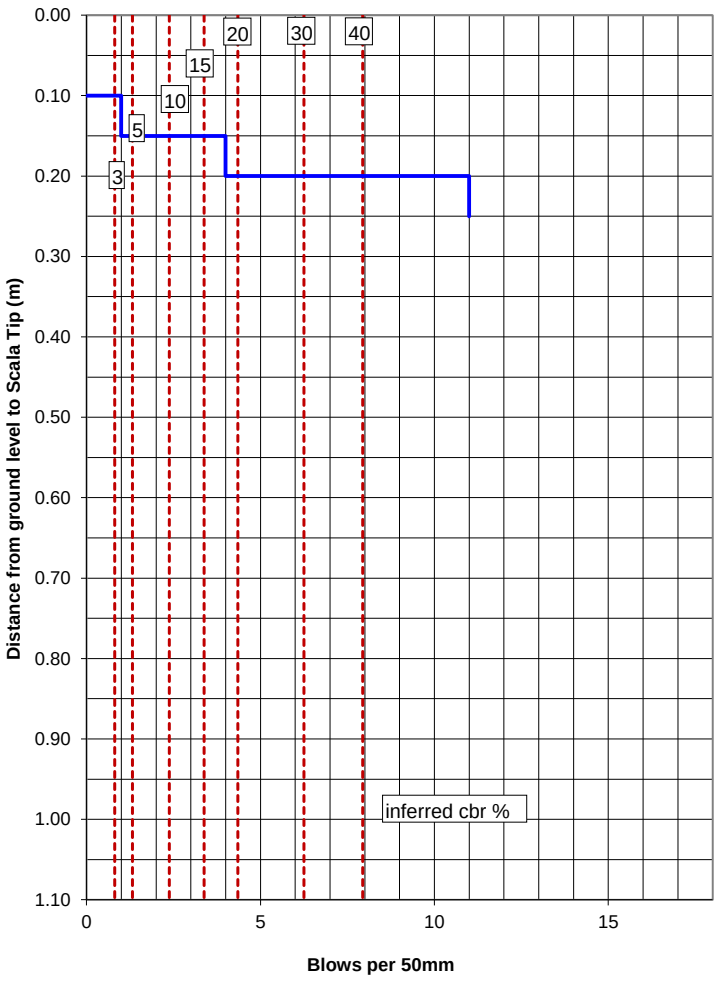
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 87.2 Mpa

Scala No: FSP38
Ref : 14333
Report No: W20-083
Page: 39 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
1	2	6	1	0.15
4	8	24	5	0.20
11	22	66	16	0.25

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

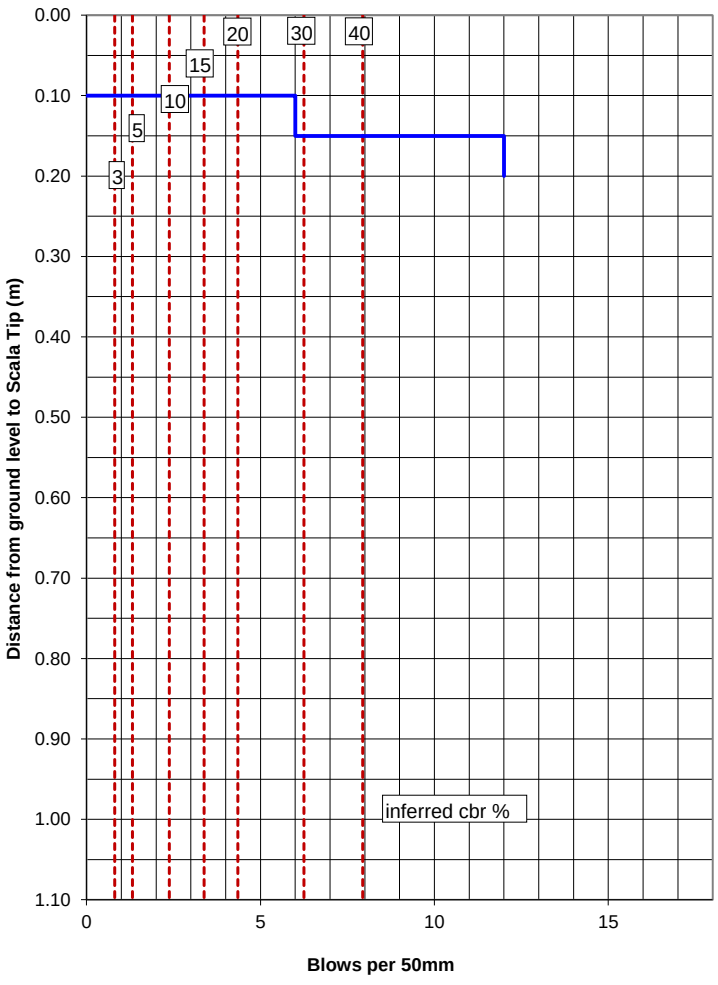
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 51.6 Mpa

Scala No: FSP39
Ref : 14333
Report No: W20-083
Page: 40 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
6	12	36	6	0.15
12	24	72	18	0.20

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

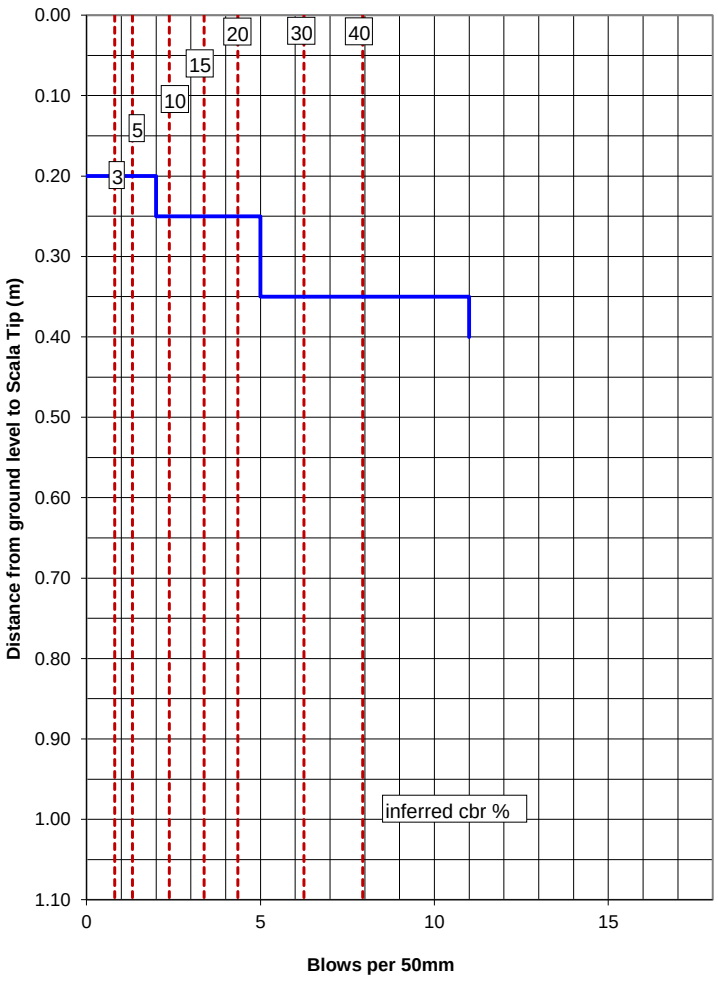
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 76.8 Mpa

Scala No: FSP40
Ref : 14333
Report No: W20-083
Page: 41 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
5	10	30	7	0.30
5	10	30	12	0.35
11	22	66	23	0.40

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

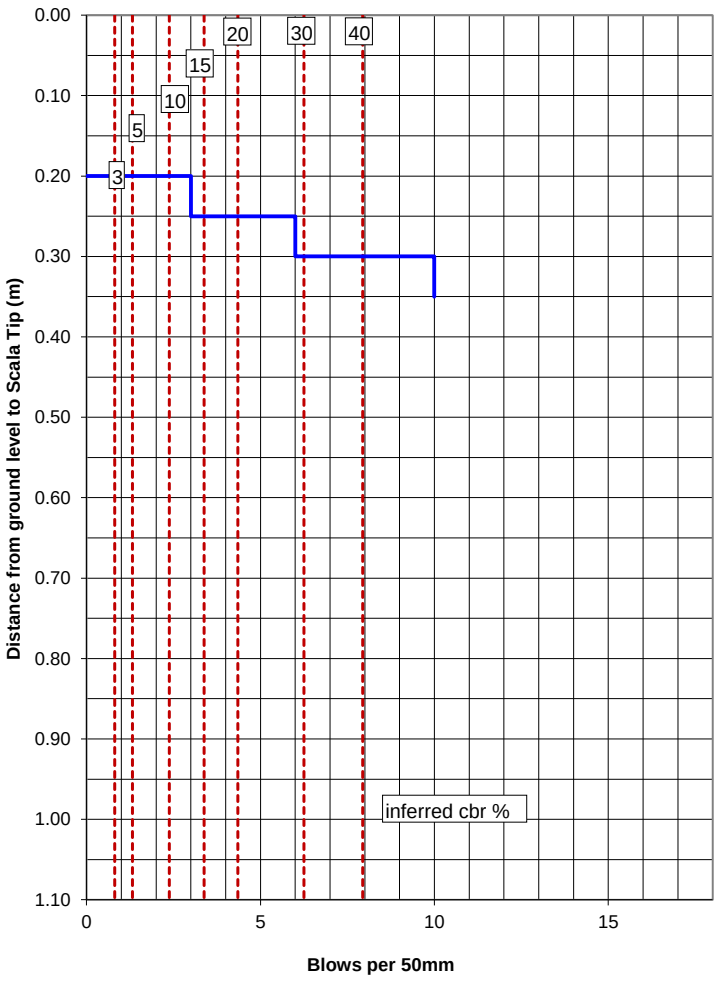
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 106.1

Scala No: FSP41
Ref : 14333
Report No: W20-083
Page: 42 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
3	6	18	3	0.25
6	12	36	9	0.30
10	20	60	19	0.35

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

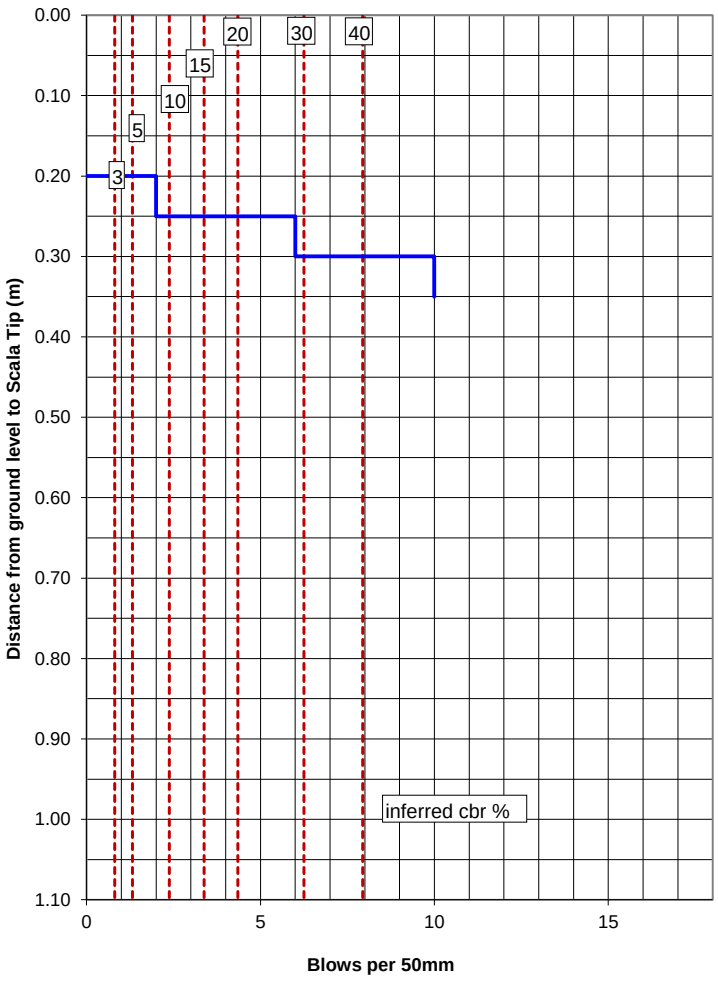
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 97

Scala No: FSP42
Ref : 14333
Report No: W20-083
Page: 43 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
6	12	36	8	0.30
10	20	60	18	0.35

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

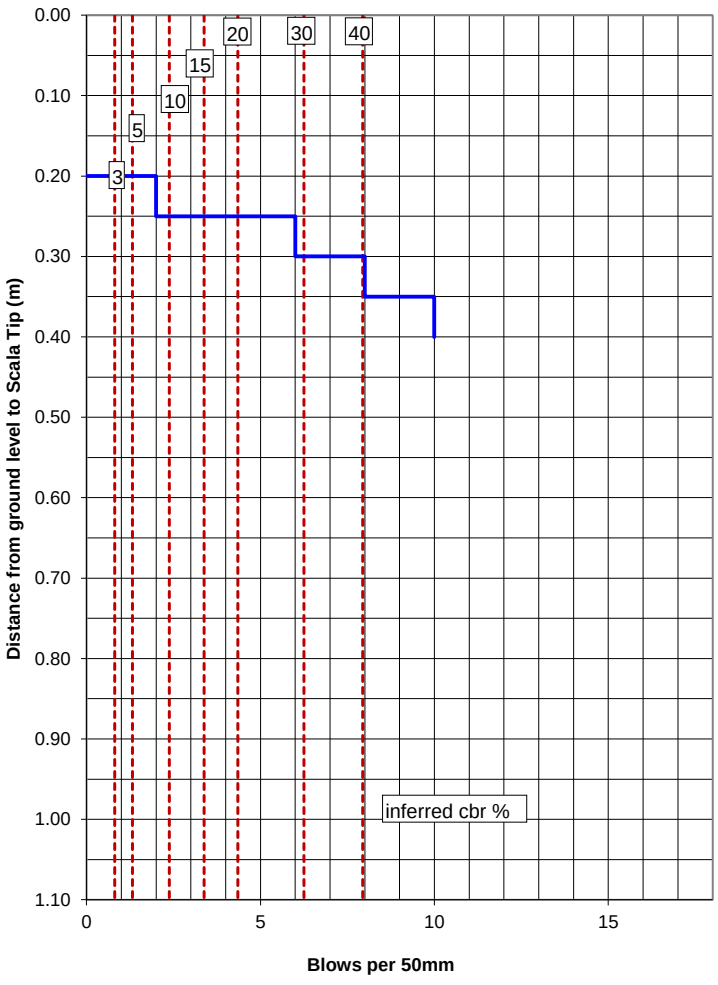
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 73.3

Scala No: FSP43
Ref : 14333
Report No: W20-083
Page: 44 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
6	12	36	8	0.30
8	16	48	16	0.35
10	20	60	26	0.40

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

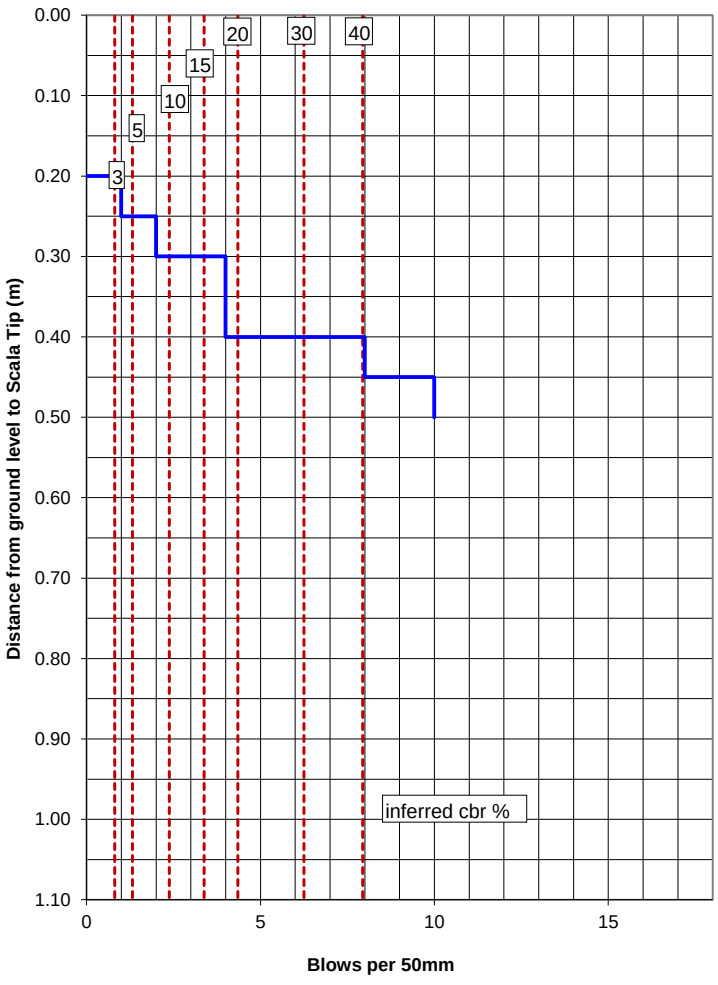
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 79.5

Scala No: FSP44
Ref : 14333
Report No: W20-083
Page: 45 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
1	2	6	1	0.25
2	4	12	3	0.30
4	8	24	7	0.35
4	8	24	11	0.40
8	16	48	19	0.45
10	20	60	29	0.50

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

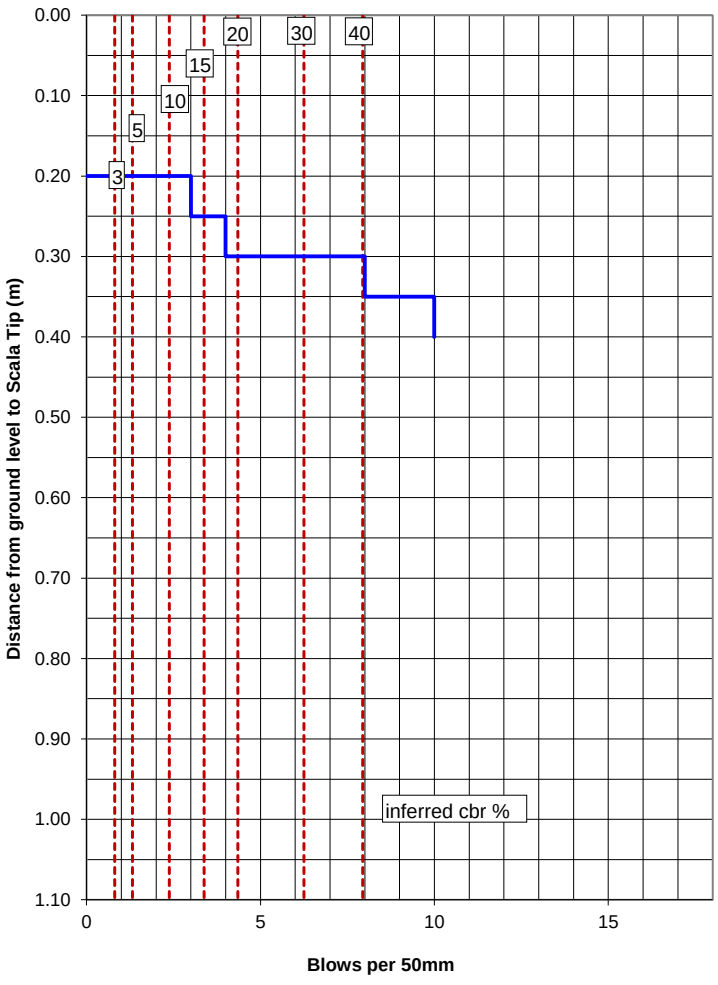
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 57.1

Scala No: FSP45
Ref : 14333
Report No: W20-083
Page: 46 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
3	6	18	3	0.25
4	8	24	7	0.30
8	16	48	15	0.35
10	20	60	25	0.40

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

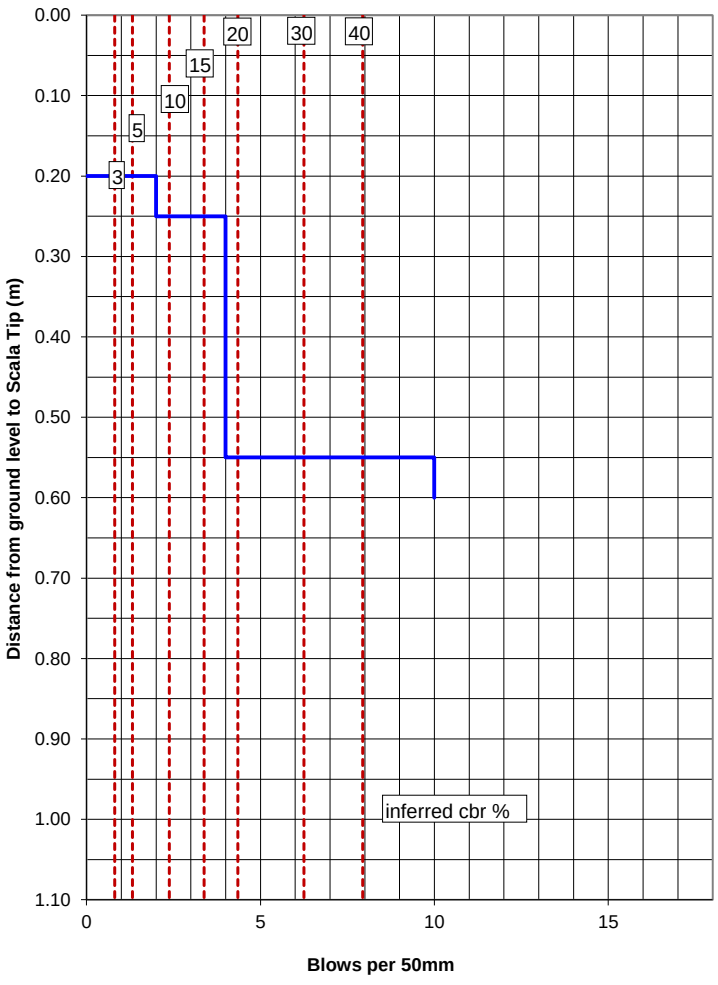
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 36.2

Scala No: FSP46
Ref : 14333
Report No: W20-083
Page: 47 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
4	8	24	6	0.30
4	8	24	10	0.35
4	8	24	14	0.40
4	8	24	18	0.45
4	8	24	22	0.50
4	8	24	26	0.55
10	20	60	36	0.60

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

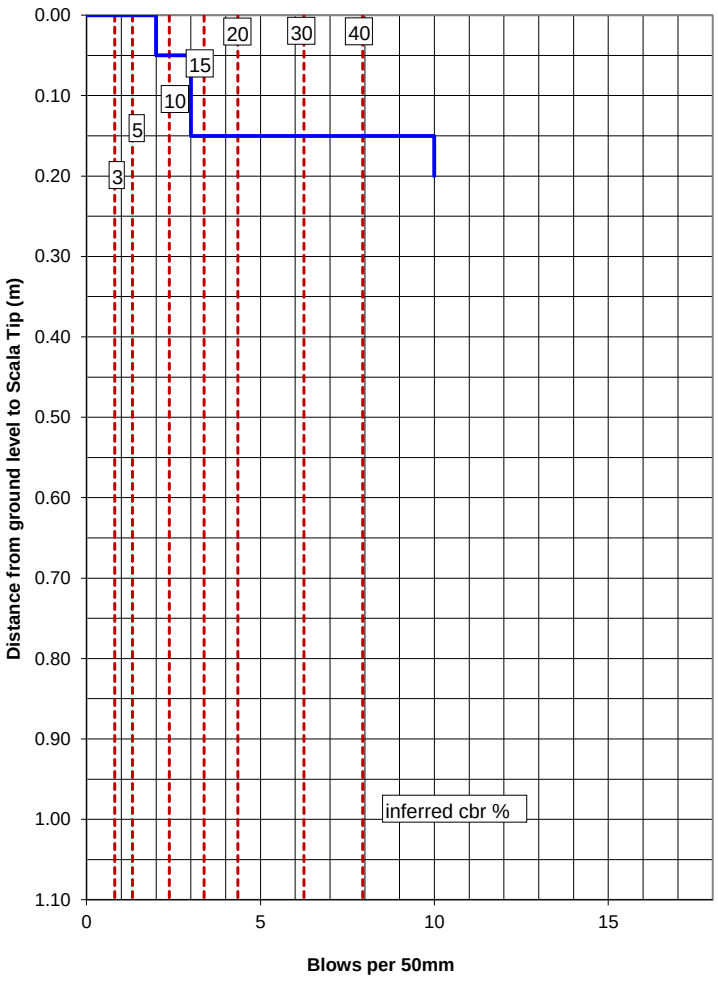
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 57.8

Scala No: FSP47
Ref : 14333
Report No: W20-083
Page: 48 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
10	20	60	18	0.20

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

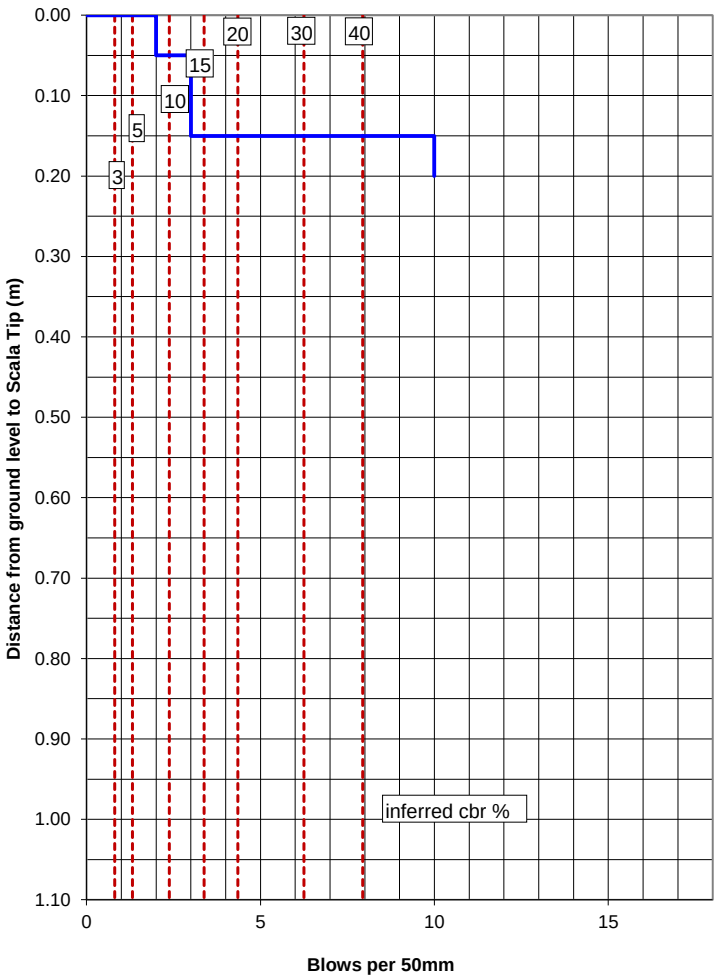
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 33.2

Scala No: FSP48
Ref : 14333
Report No: W20-083
Page: 49 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
3	6	18	5	0.10
3	6	18	8	0.15
10	20	60	18	0.20

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

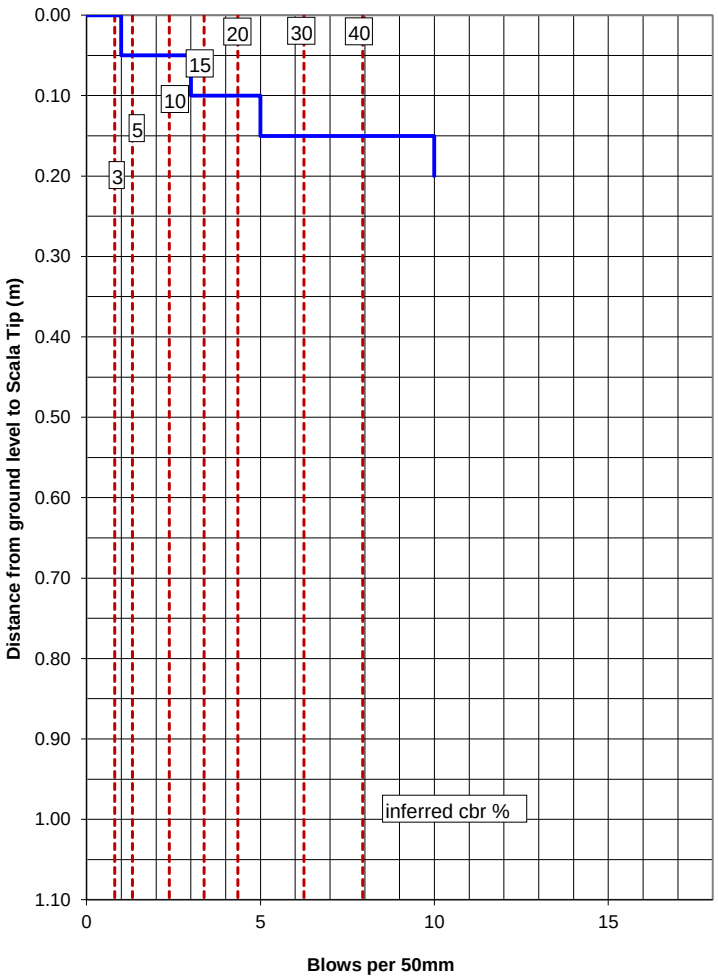
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 50.7

Scala No: FSP49
Ref : 14333
Report No: W20-083
Page: 50 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
3	6	18	4	0.10
5	10	30	9	0.15
10	20	60	19	0.20

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 71.7

Scala No: FSP50
Ref : 14333
Report No: W20-083
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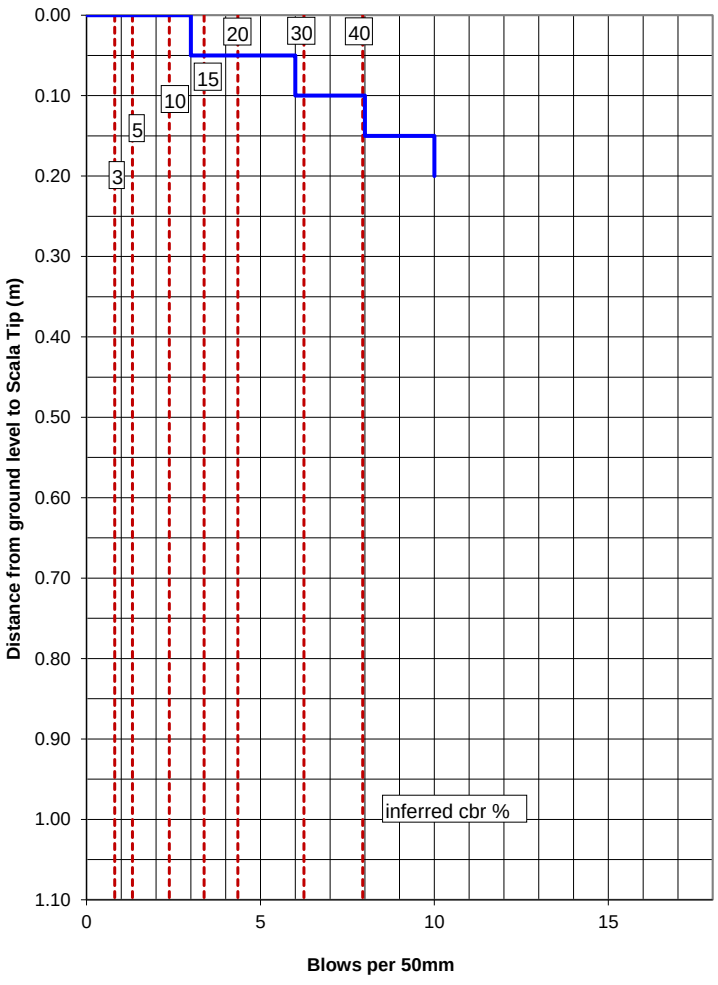
The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
3	6	18	3	0.05
6	12	36	9	0.10
8	16	48	17	0.15
10	20	60	27	0.20

Scala Penetrometer Results



Recorded By: LG
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 67.2

Scala No: FSP51
Ref : 14333
Report No: W20-083
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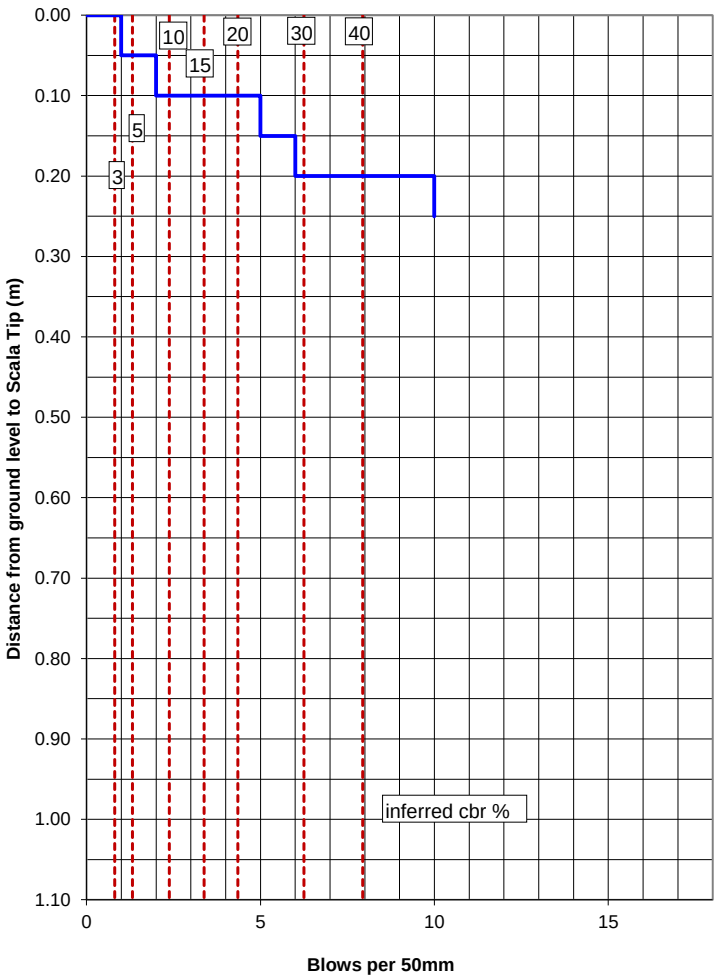
The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
2	4	12	3	0.10
5	10	30	8	0.15
6	12	36	14	0.20
10	20	60	24	0.25

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 58.4

Scala No: FSP52
Ref : 14333
Report No: W20-083
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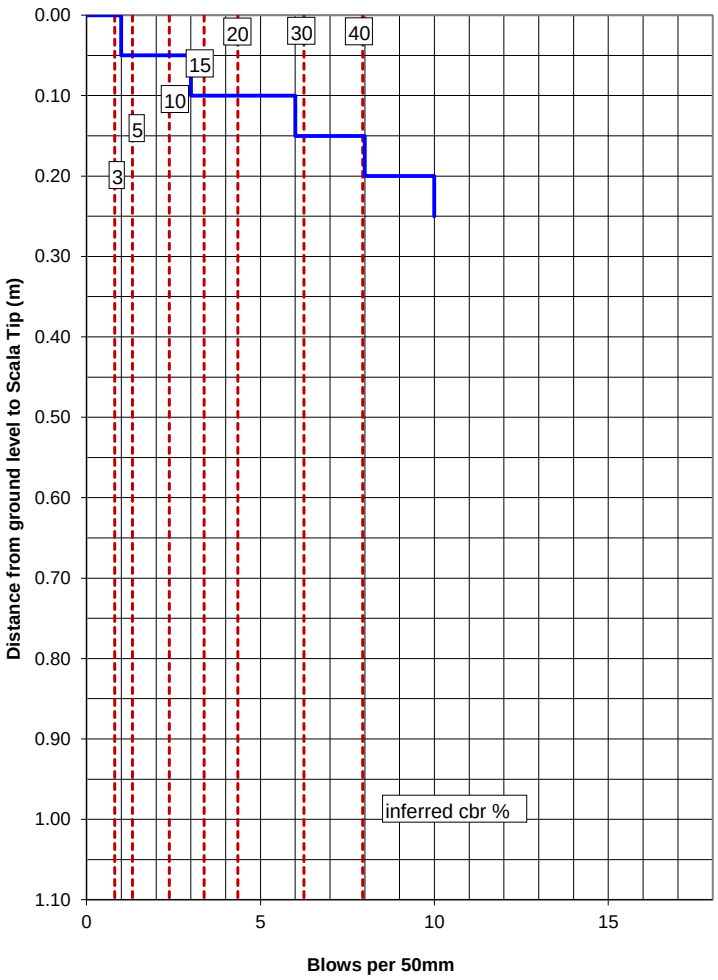
The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
3	6	18	4	0.10
6	12	36	10	0.15
8	16	48	18	0.20
10	20	60	28	0.25

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

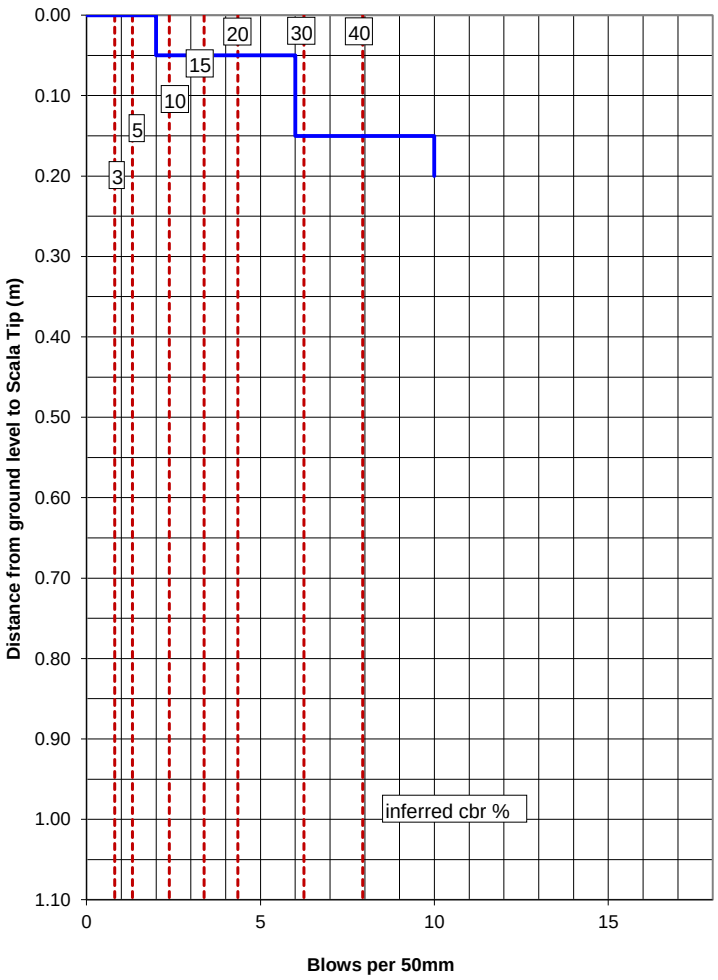
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 68

Scala No: FSP53
Ref : 14333
Report No: W20-083
Page: 54 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
6	12	36	8	0.10
6	12	36	14	0.15
10	20	60	24	0.20

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 76.3

Scala No: FSP54
Ref : 14333
Report No: W20-083
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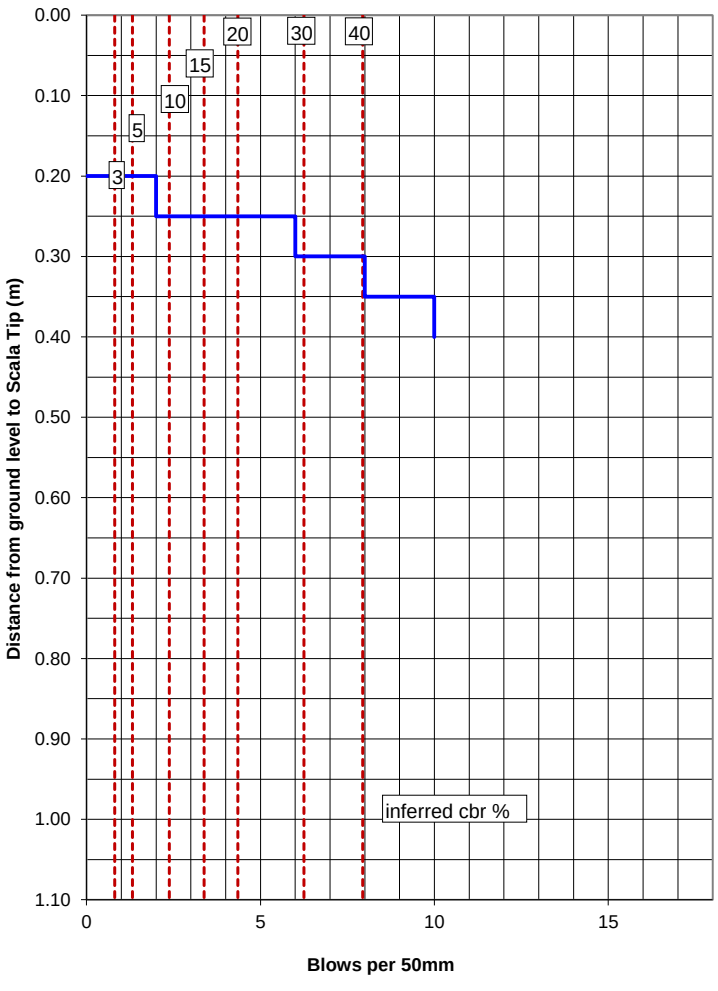
The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
6	12	36	8	0.30
8	16	48	16	0.35
10	20	60	26	0.40

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 71

Scala No: FSP55
Ref : 14333
Report No: W20-083
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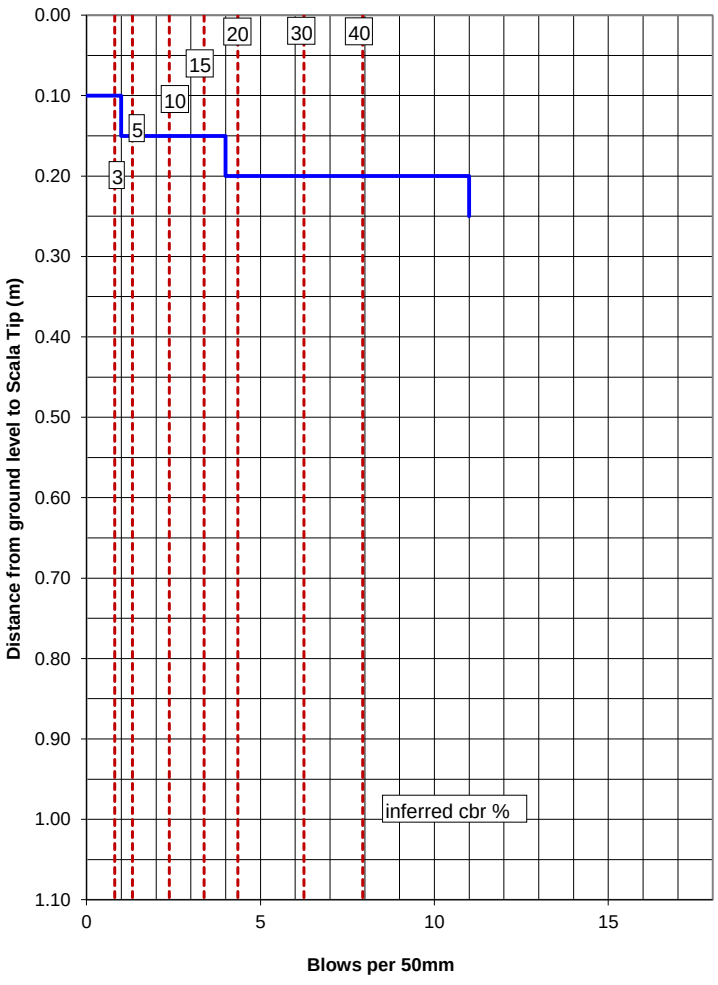
The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
1	2	6	1	0.15
4	8	24	5	0.20
11	22	66	16	0.25

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

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J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

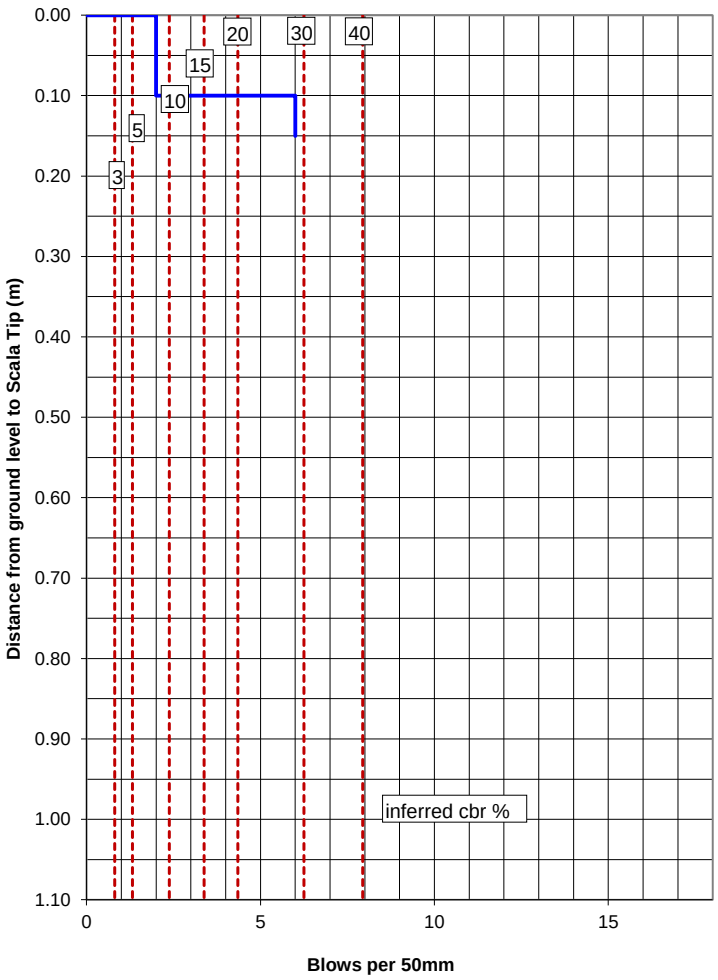
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 58.1

Scala No: FSP56
Ref : 14333
Report No: W20-083
Page: 57 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
2	4	12	4	0.10
6	12	36	10	0.15
6	12	36	16	0.20
11	22	66	27	0.25

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

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J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

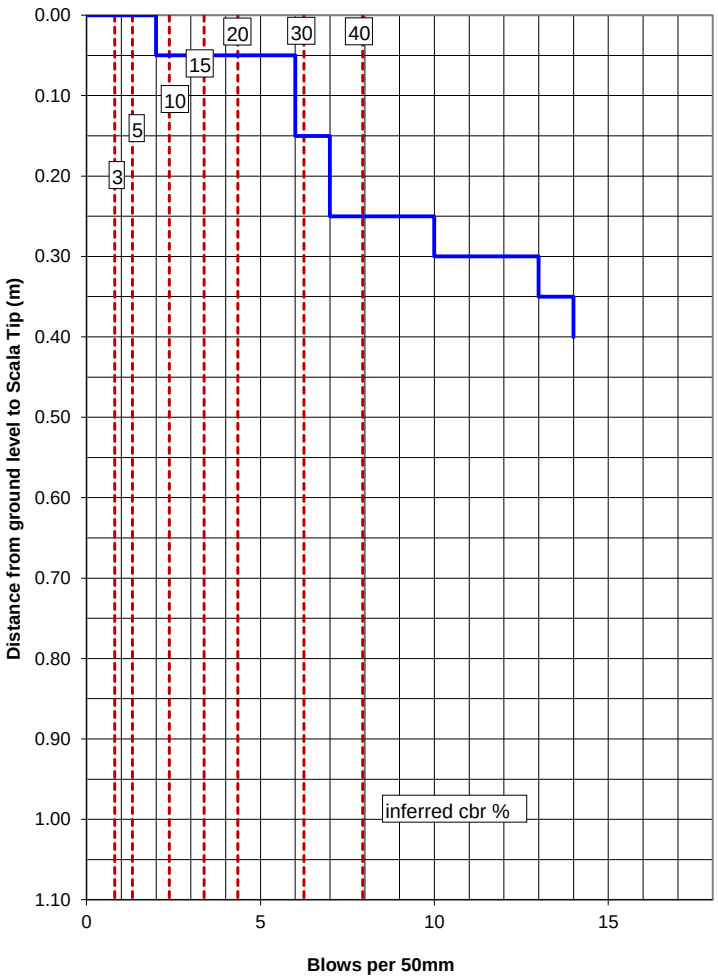
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 68.2

Scala No: FSP57
Ref : 14333
Report No: W20-083
Page: 58 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
6	12	36	8	0.10
6	12	36	14	0.15
7	14	42	21	0.20
7	14	42	28	0.25
10	20	60	38	0.30
13	26	78	51	0.35
14	28	84	65	0.40

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

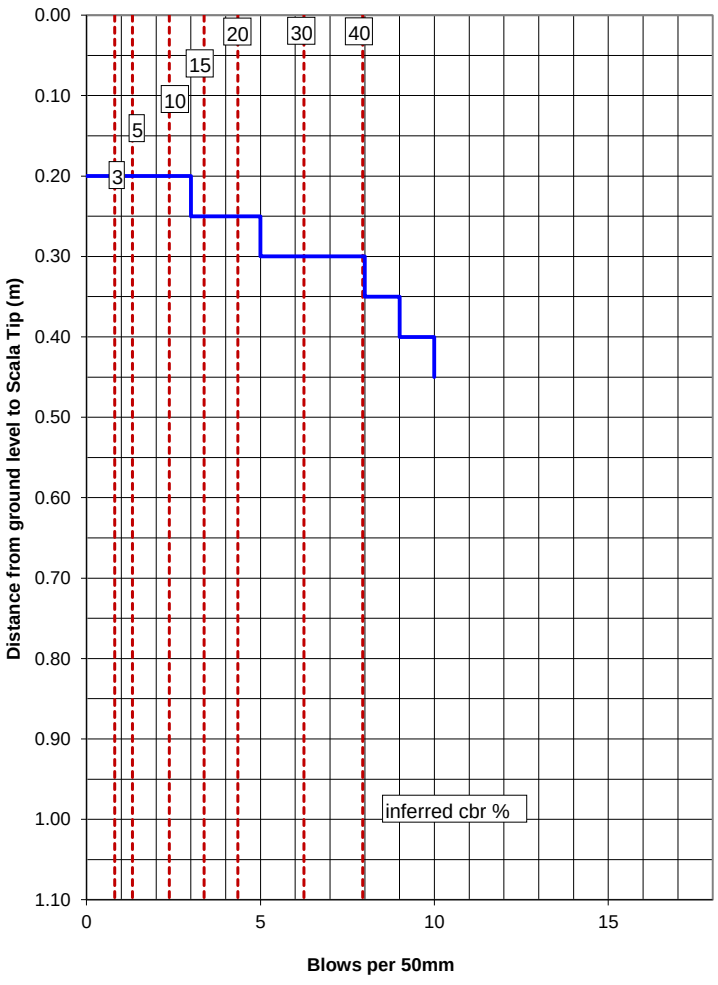
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 87.2

Scala No: FSP58
Ref : 14333
Report No: W20-083
Page: 59 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
3	6	18	3	0.25
5	10	30	8	0.30
8	16	48	16	0.35
9	18	54	25	0.40
10	20	60	35	0.45

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

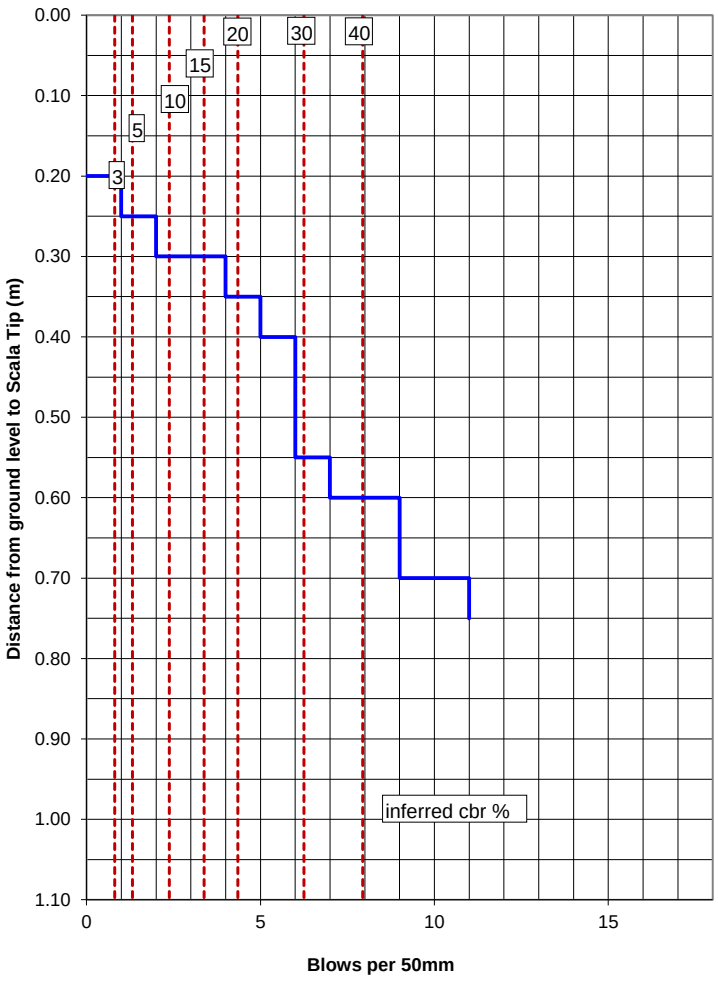
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 60.3

Scala No: FSP59
Ref : 14333
Report No: W20-083
Page: 60 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
1	2	6	1	0.25
2	4	12	3	0.30
4	8	24	7	0.35
5	10	30	12	0.40
6	12	36	18	0.45
6	12	36	24	0.50
6	12	36	30	0.55
7	14	42	37	0.60
9	18	54	46	0.65
9	18	54	55	0.70
11	22	66	66	0.75

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

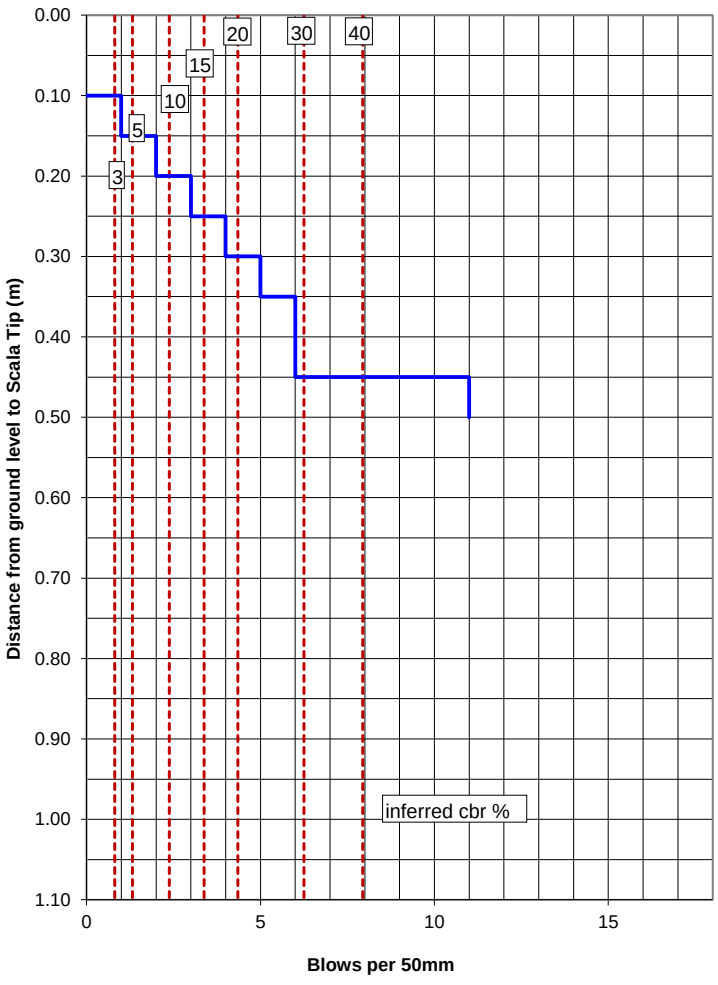
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 83.6

Scala No: FSP60
Ref : 14333
Report No: W20-083
Page: 61 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
1	2	6	1	0.15
2	4	12	3	0.20
3	6	18	6	0.25
4	8	24	10	0.30
5	10	30	15	0.35
6	12	36	21	0.40
6	12	36	27	0.45
11	22	66	38	0.50

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

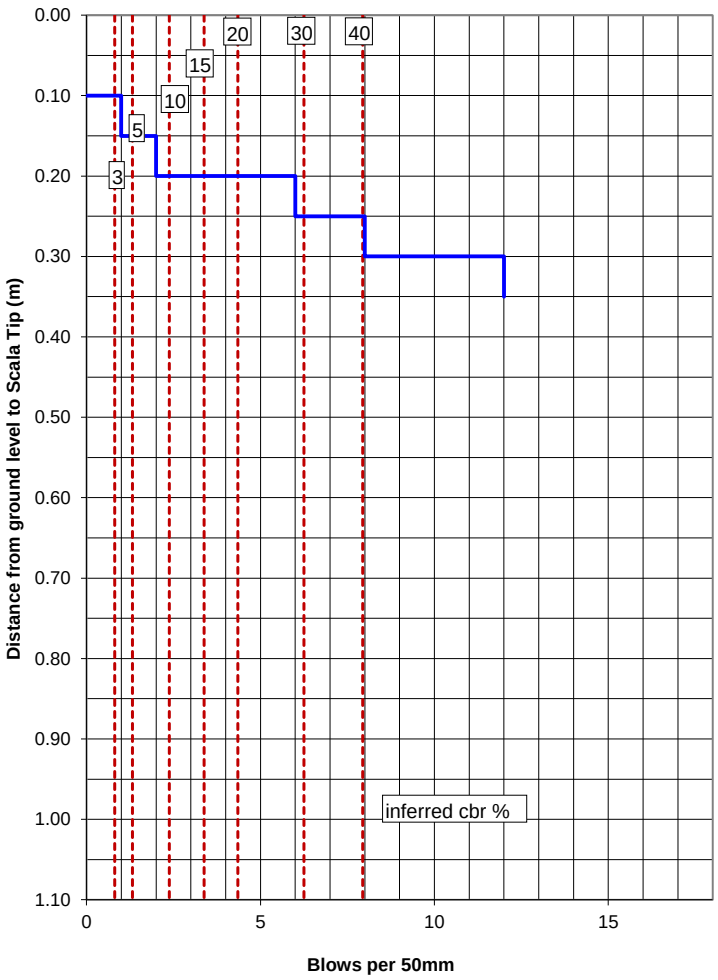
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 95.3

Scala No: FSP61
Ref : 14333
Report No: W20-083
Page: 62 of 93

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
1	2	6	1	0.15
2	4	12	3	0.20
6	12	36	9	0.25
8	16	48	17	0.30
12	24	72	29	0.35

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

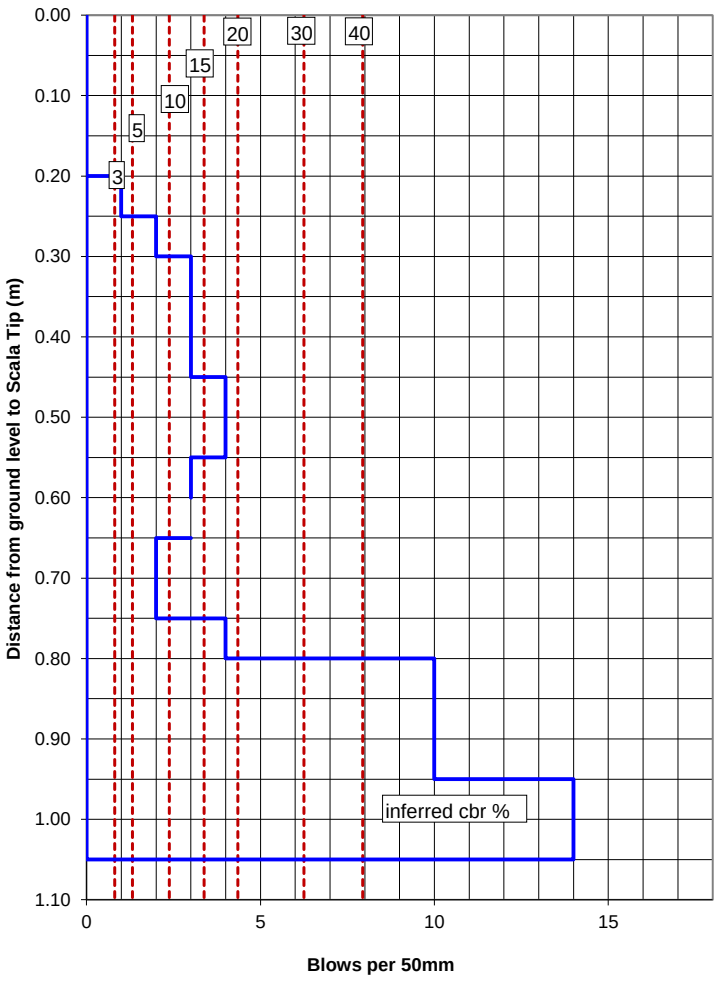
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 26.4

Scala No: FSP62
Ref : 14333
Report No: W20-083
Page: 63 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
1	2	6	1	0.25
2	4	12	3	0.30
3	6	18	6	0.35
3	6	18	9	0.40
3	6	18	12	0.45
4	8	24	16	0.50
4	8	24	20	0.55
3	6	18	23	0.60
3	6	18	26	0.65
2	4	12	28	0.70
2	4	12	30	0.75
4	8	24	34	0.80
10	20	60	44	0.85
10	20	60	54	0.90
10	20	60	64	0.95
14	28	84	78	1.00
14	28	84	92	1.05

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

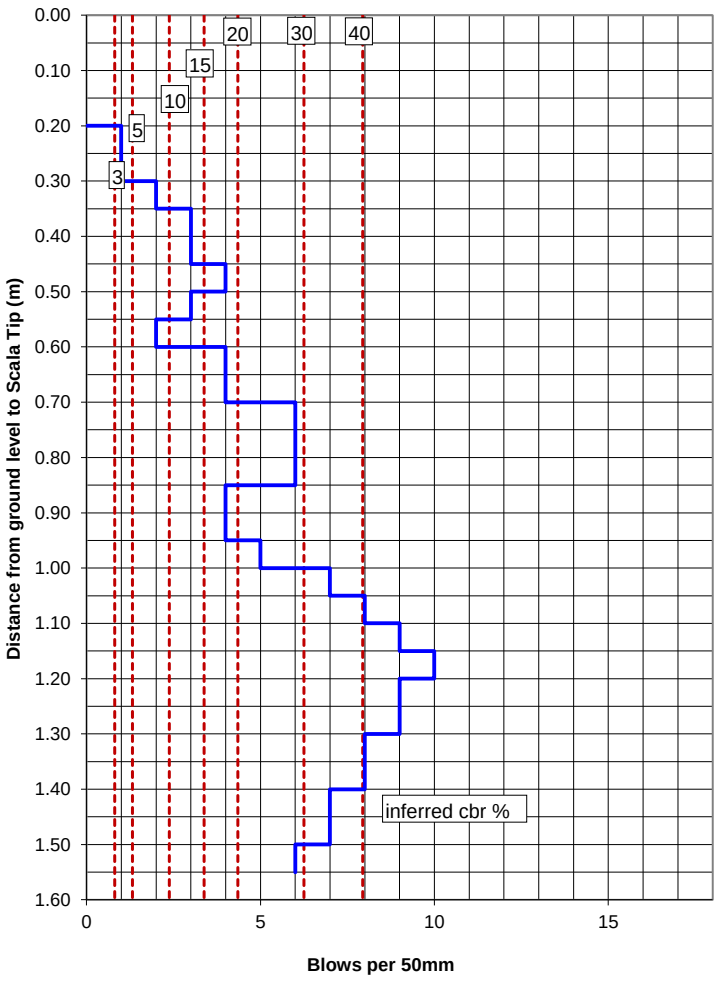
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 46.8

Scala No: FSP63
Ref : 14333
Report No: W20-083
Page: 64 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
1	2	6	1	0.25
1	2	6	2	0.30
2	4	12	4	0.35
3	6	18	7	0.40
3	6	18	10	0.45
4	8	24	14	0.50
3	6	18	17	0.55
2	4	12	19	0.60
4	8	24	23	0.65
4	8	24	27	0.70
6	12	36	33	0.75
6	12	36	39	0.80
6	12	36	45	0.85
4	8	24	49	0.90
4	8	24	53	0.95
5	10	30	58	1.00
7	14	42	65	1.05
8	16	48	73	1.10
9	18	54	82	1.15
10	20	60	92	1.20
9	18	54	101	1.25
9	18	54	110	1.30
8	16	48	118	1.35
8	16	48	126	1.40
7	14	42	133	1.45
7	14	42	140	1.50
6	12	36	146	1.55

Scala Penetrometer Results



Recorded By: MA
Date: 22/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

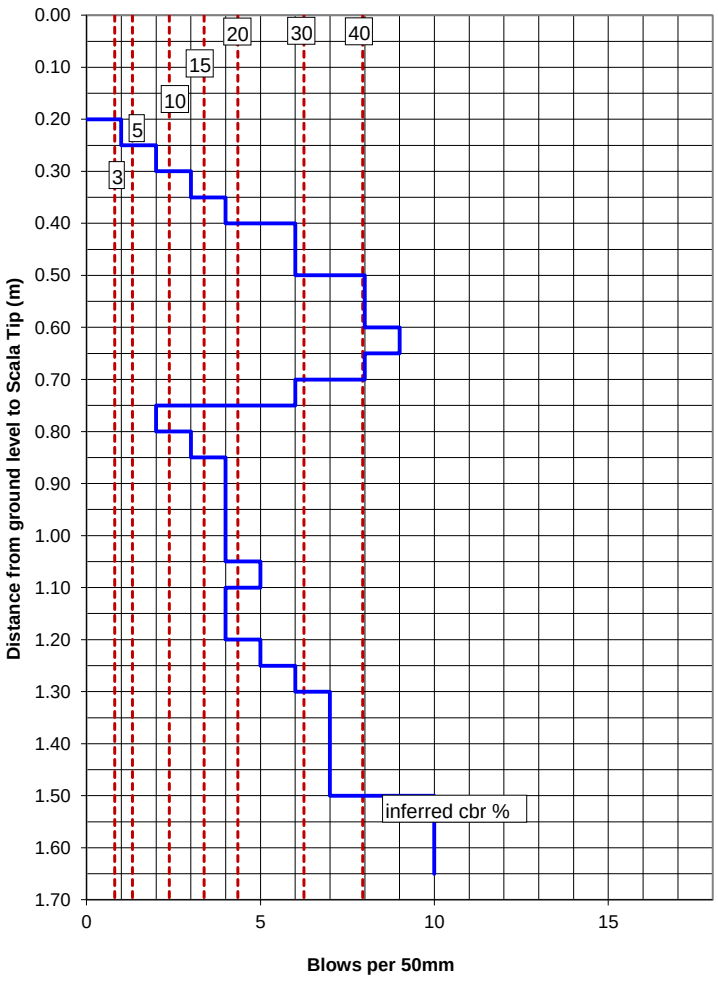
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 52

Scala No: FSP64
Ref : 14333
Report No: W20-083
Page: 65 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
1	2	6	1	0.25
2	4	12	3	0.30
3	6	18	6	0.35
4	8	24	10	0.40
6	12	36	16	0.45
6	12	36	22	0.50
8	16	48	30	0.55
8	16	48	38	0.60
9	18	54	47	0.65
8	16	48	55	0.70
6	12	36	61	0.75
2	4	12	63	0.80
3	6	18	66	0.85
4	8	24	70	0.90
4	8	24	74	0.95
4	8	24	78	1.00
4	8	24	82	1.05
5	10	30	87	1.10
4	8	24	91	1.15
4	8	24	95	1.20
5	10	30	100	1.25
6	12	36	106	1.30
7	14	42	113	1.35
7	14	42	120	1.40
7	14	42	127	1.45
7	14	42	134	1.50
10	20	60	144	1.55
10	20	60	154	1.60
10	20	60	164	1.65

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

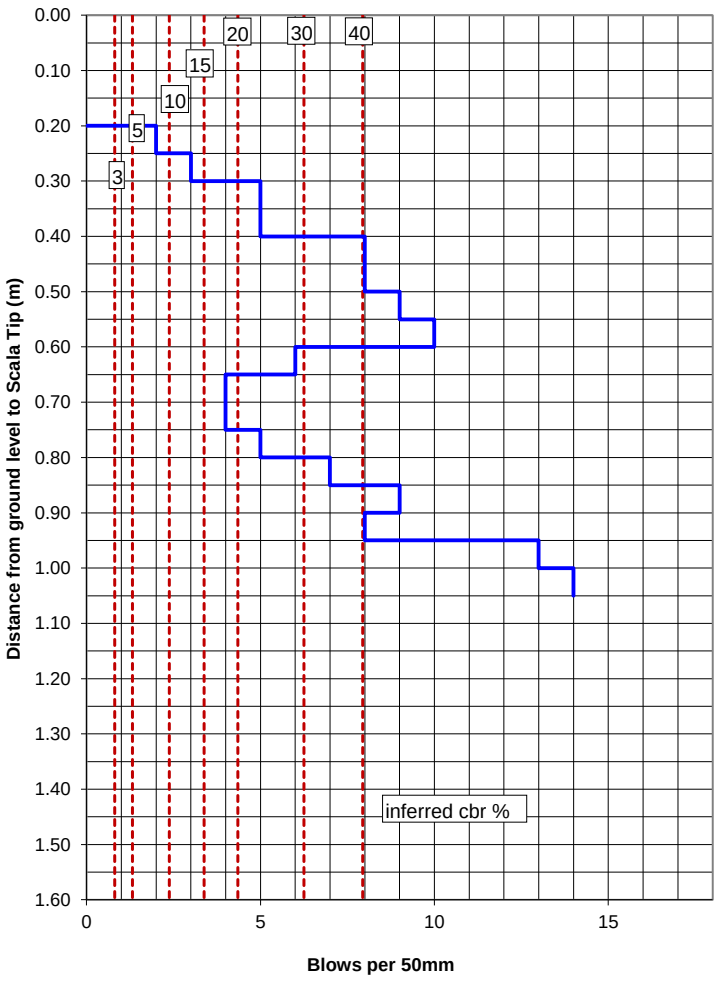
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 31.6

Scala No: FSP65
Ref : 14333
Report No: W20-083
Page: 66 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
3	6	18	5	0.30
5	10	30	10	0.35
5	10	30	15	0.40
8	16	48	23	0.45
8	16	48	31	0.50
9	18	54	40	0.55
10	20	60	50	0.60
6	12	36	56	0.65
4	8	24	60	0.70
4	8	24	64	0.75
5	10	30	69	0.80
7	14	42	76	0.85
9	18	54	85	0.90
8	16	48	93	0.95
13	26	78	106	1.00
14	28	84	120	1.05

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

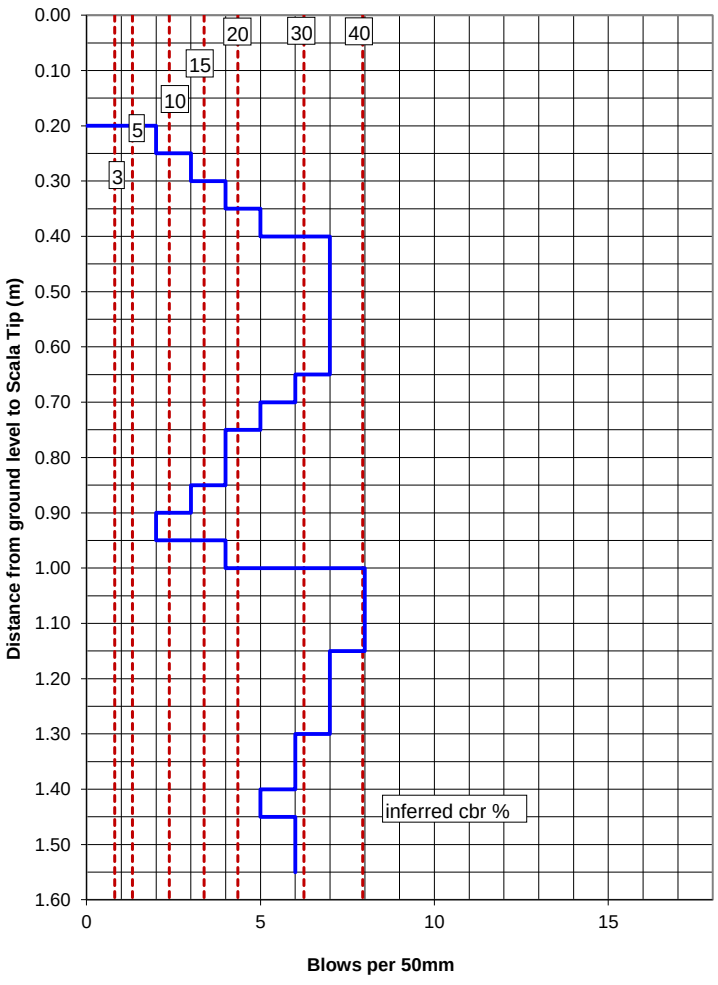
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 50.2

Scala No: FSP66
Ref : 14333
Report No: W20-083
Page: 67 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
3	6	18	5	0.30
4	8	24	9	0.35
5	10	30	14	0.40
7	14	42	21	0.45
7	14	42	28	0.50
7	14	42	35	0.55
7	14	42	42	0.60
7	14	42	49	0.65
6	12	36	55	0.70
5	10	30	60	0.75
4	8	24	64	0.80
4	8	24	68	0.85
3	6	18	71	0.90
2	4	12	73	0.95
4	8	24	77	1.00
8	16	48	85	1.05
8	16	48	93	1.10
8	16	48	101	1.15
7	14	42	108	1.20
7	14	42	115	1.25
7	14	42	122	1.30
6	12	36	128	1.35
6	12	36	134	1.40
5	10	30	139	1.45
6	12	36	145	1.50
6	12	36	151	1.55

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 60

Scala No: FSP67
Ref : 14333
Report No: W20-083
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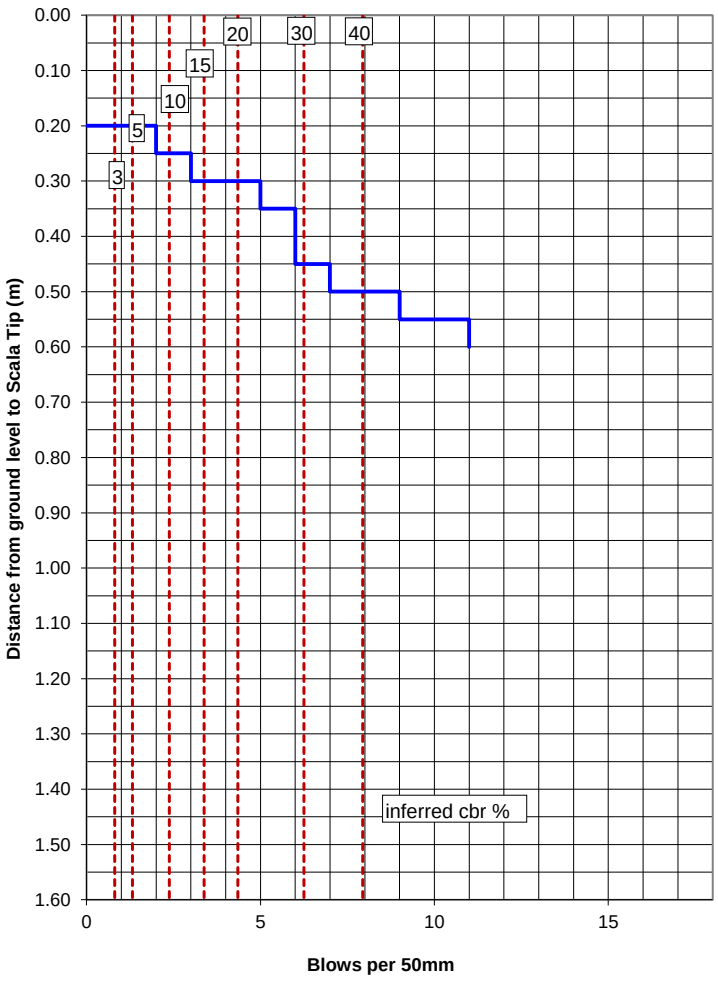
The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
3	6	18	5	0.30
5	10	30	10	0.35
6	12	36	16	0.40
6	12	36	22	0.45
7	14	42	29	0.50
9	18	54	38	0.55
11	22	66	49	0.60

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 36.7

Scala No: FSP68
Ref : 14333
Report No: W20-083
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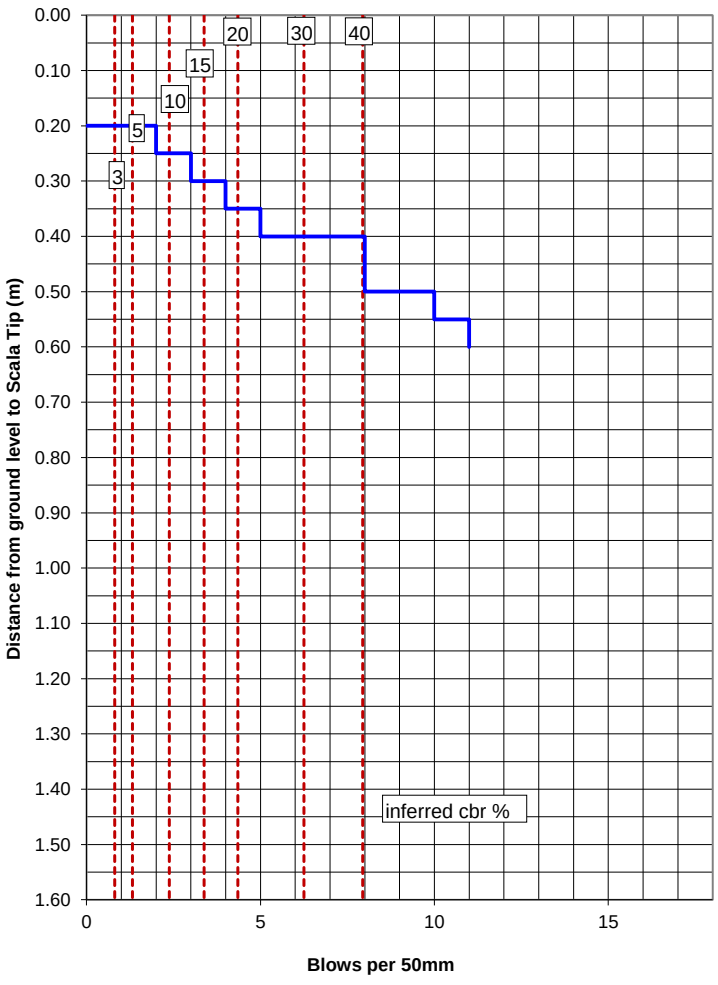
The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
3	6	18	5	0.30
4	8	24	9	0.35
5	10	30	14	0.40
8	16	48	22	0.45
8	16	48	30	0.50
10	20	60	40	0.55
11	22	66	51	0.60

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

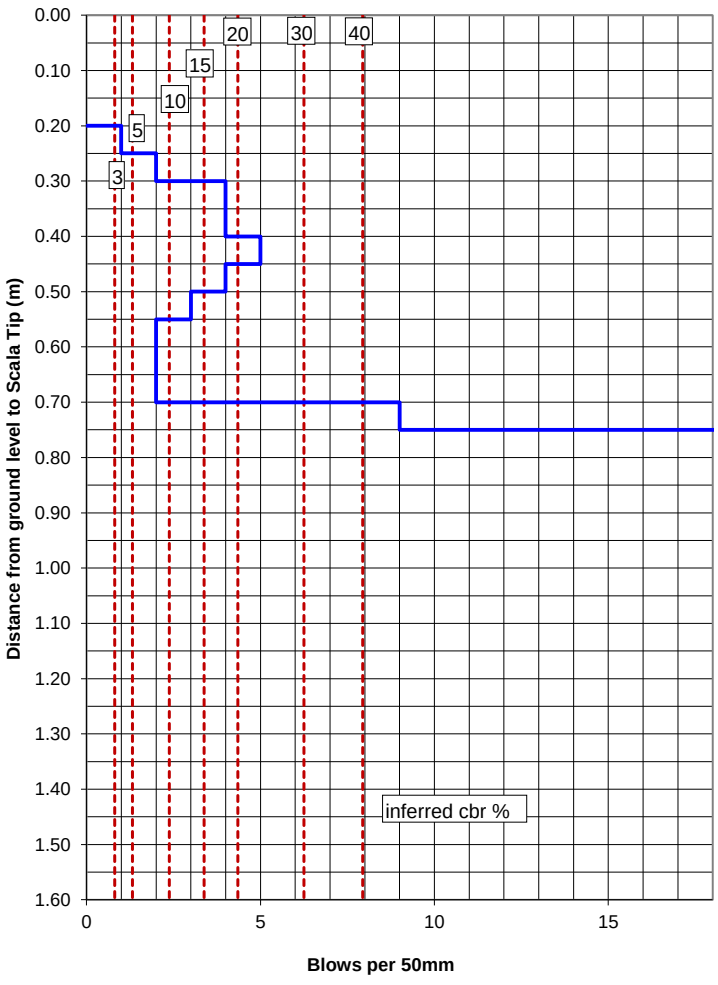
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 35.9

Scala No: FSP69
Ref : 14333
Report No: W20-083
Page: 70 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
1	2	6	1	0.25
2	4	12	3	0.30
4	8	24	7	0.35
4	8	24	11	0.40
5	10	30	16	0.45
4	8	24	20	0.50
3	6	18	23	0.55
2	4	12	25	0.60
2	4	12	27	0.65
2	4	12	29	0.70
9	18	54	38	0.75
20	40	120	58	0.80

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

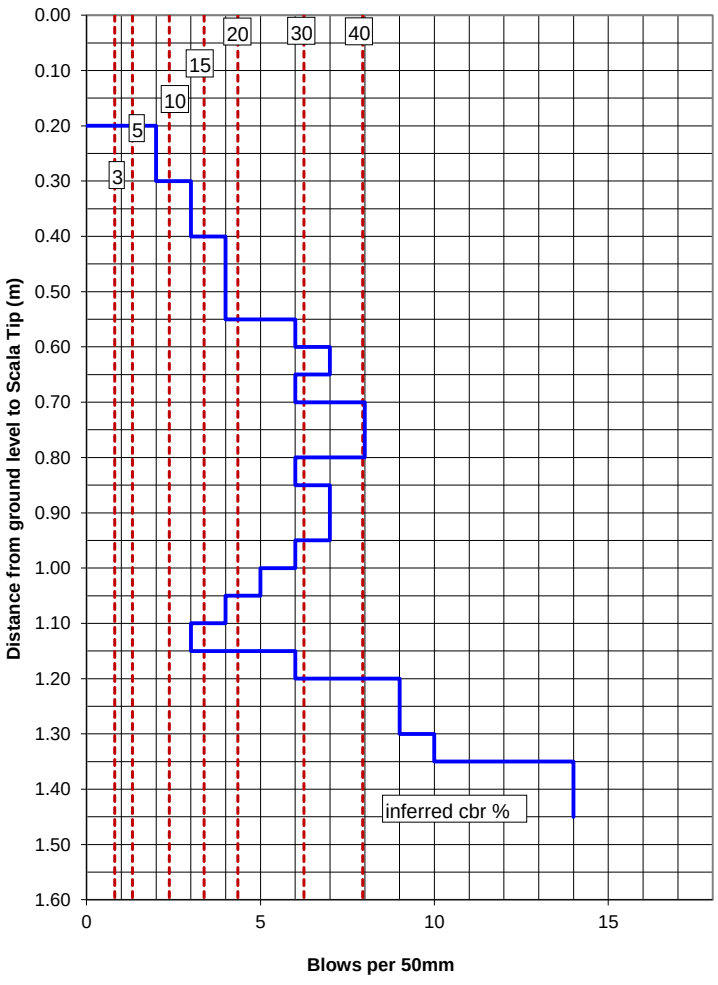
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 25.2

Scala No: FSP70
Ref : 14333
Report No: W20-083
Page: 71 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
2	4	12	4	0.30
3	6	18	7	0.35
3	6	18	10	0.40
4	8	24	14	0.45
4	8	24	18	0.50
4	8	24	22	0.55
6	12	36	28	0.60
7	14	42	35	0.65
6	12	36	41	0.70
8	16	48	49	0.75
8	16	48	57	0.80
6	12	36	63	0.85
7	14	42	70	0.90
7	14	42	77	0.95
6	12	36	83	1.00
5	10	30	88	1.05
4	8	24	92	1.10
3	6	18	95	1.15
6	12	36	101	1.20
9	18	54	110	1.25
9	18	54	119	1.30
10	20	60	129	1.35
14	28	84	143	1.40
14	28	84	157	1.45

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

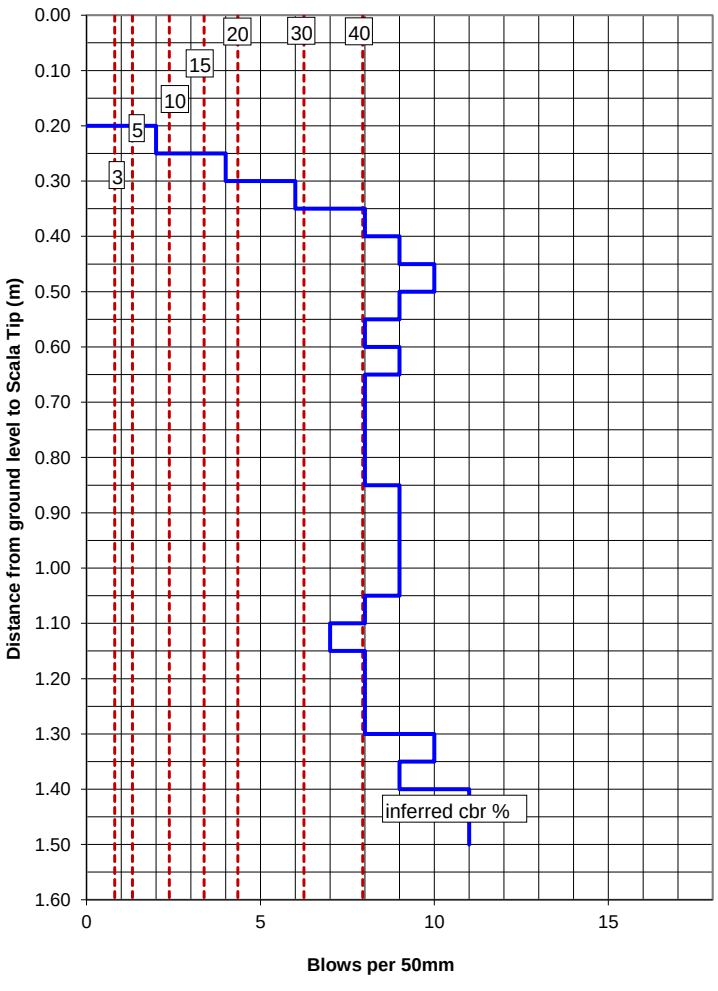
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 44.7

Scala No: FSP71
Ref : 14333
Report No: W20-083
Page: 72 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
4	8	24	6	0.30
6	12	36	12	0.35
8	16	48	20	0.40
9	18	54	29	0.45
10	20	60	39	0.50
9	18	54	48	0.55
8	16	48	56	0.60
9	18	54	65	0.65
8	16	48	73	0.70
8	16	48	81	0.75
8	16	48	89	0.80
8	16	48	97	0.85
9	18	54	106	0.90
9	18	54	115	0.95
9	18	54	124	1.00
9	18	54	133	1.05
8	16	48	141	1.10
7	14	42	148	1.15
8	16	48	156	1.20
8	16	48	164	1.25
8	16	48	172	1.30
10	20	60	182	1.35
9	18	54	191	1.40
11	22	66	202	1.45
11	22	66	213	1.50

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

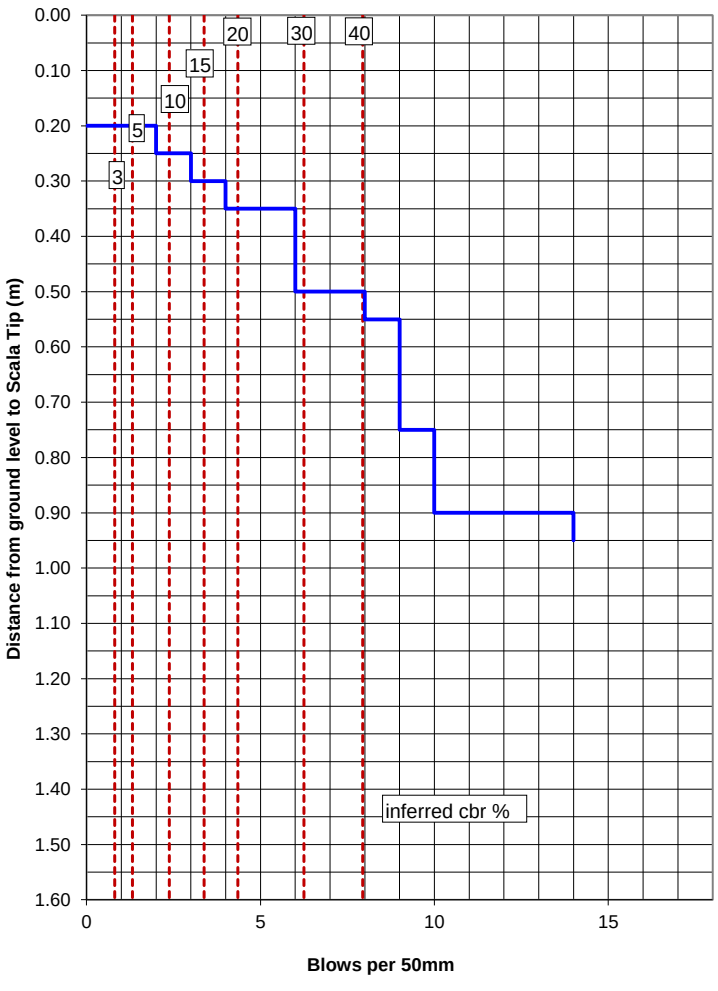
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 49

Scala No: FSP72
Ref : 14333
Report No: W20-083
Page: 73 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
3	6	18	5	0.30
4	8	24	9	0.35
6	12	36	15	0.40
6	12	36	21	0.45
6	12	36	27	0.50
8	16	48	35	0.55
9	18	54	44	0.60
9	18	54	53	0.65
9	18	54	62	0.70
9	18	54	71	0.75
10	20	60	81	0.80
10	20	60	91	0.85
10	20	60	101	0.90
14	28	84	115	0.95

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

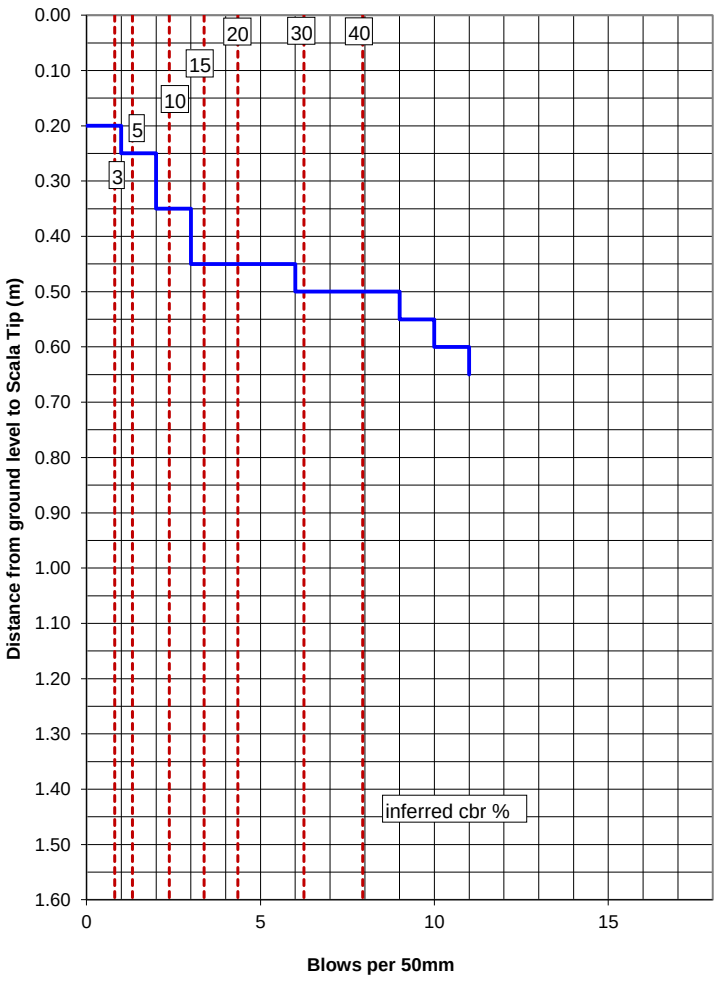
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 37.3

Scala No: FSP73
Ref : 14333
Report No: W20-083
Page: 74 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
1	2	6	1	0.25
2	4	12	3	0.30
2	4	12	5	0.35
3	6	18	8	0.40
3	6	18	11	0.45
6	12	36	17	0.50
9	18	54	26	0.55
10	20	60	36	0.60
11	22	66	47	0.65

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

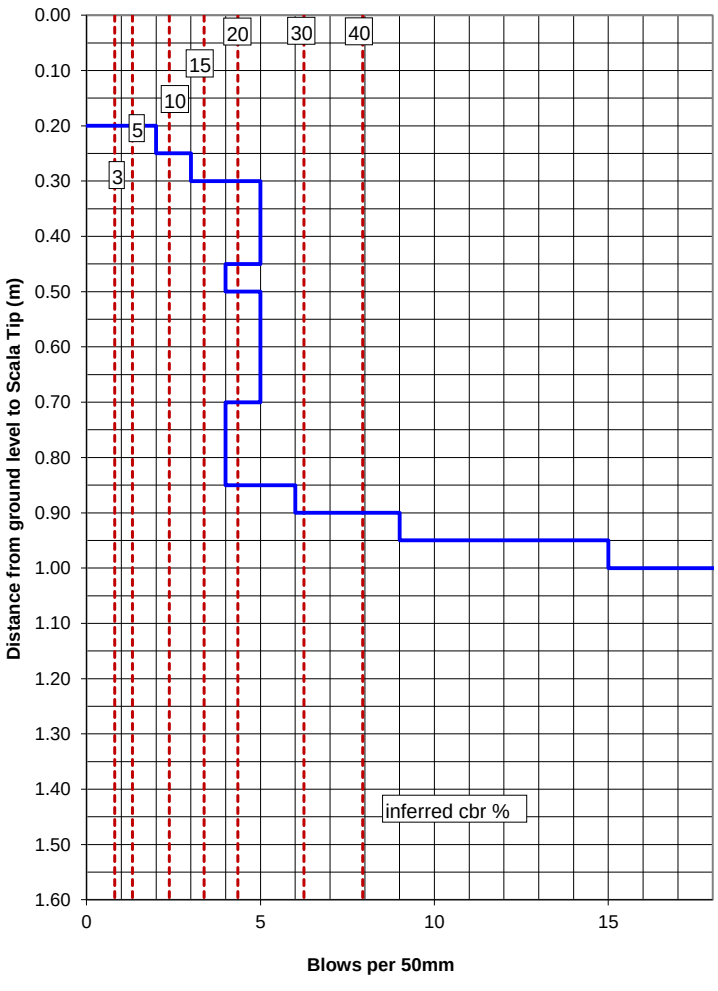
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 37.3

Scala No: FSP74
Ref : 14333
Report No: W20-083
Page: 75 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
3	6	18	5	0.30
5	10	30	10	0.35
5	10	30	15	0.40
5	10	30	20	0.45
4	8	24	24	0.50
5	10	30	29	0.55
5	10	30	34	0.60
5	10	30	39	0.65
5	10	30	44	0.70
4	8	24	48	0.75
4	8	24	52	0.80
4	8	24	56	0.85
6	12	36	62	0.90
9	18	54	71	0.95
15	30	90	86	1.00
19	38	114	105	1.05

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

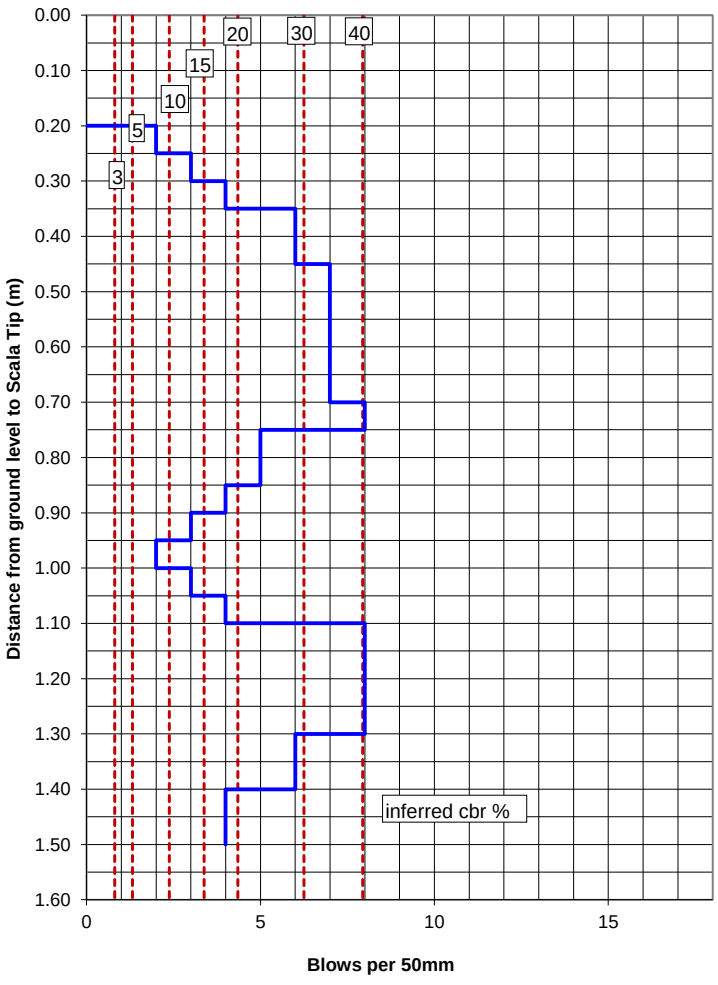
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 31.9

Scala No: FSP75
Ref : 14333
Report No: W20-083
Page: 76 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
3	6	18	5	0.30
4	8	24	9	0.35
6	12	36	15	0.40
6	12	36	21	0.45
7	14	42	28	0.50
7	14	42	35	0.55
7	14	42	42	0.60
7	14	42	49	0.65
7	14	42	56	0.70
8	16	48	64	0.75
5	10	30	69	0.80
5	10	30	74	0.85
4	8	24	78	0.90
3	6	18	81	0.95
2	4	12	83	1.00
3	6	18	86	1.05
4	8	24	90	1.10
8	16	48	98	1.15
8	16	48	106	1.20
8	16	48	114	1.25
8	16	48	122	1.30
6	12	36	128	1.35
6	12	36	134	1.40
4	8	24	138	1.45
4	8	24	142	1.50
4	8	24	146	1.55

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

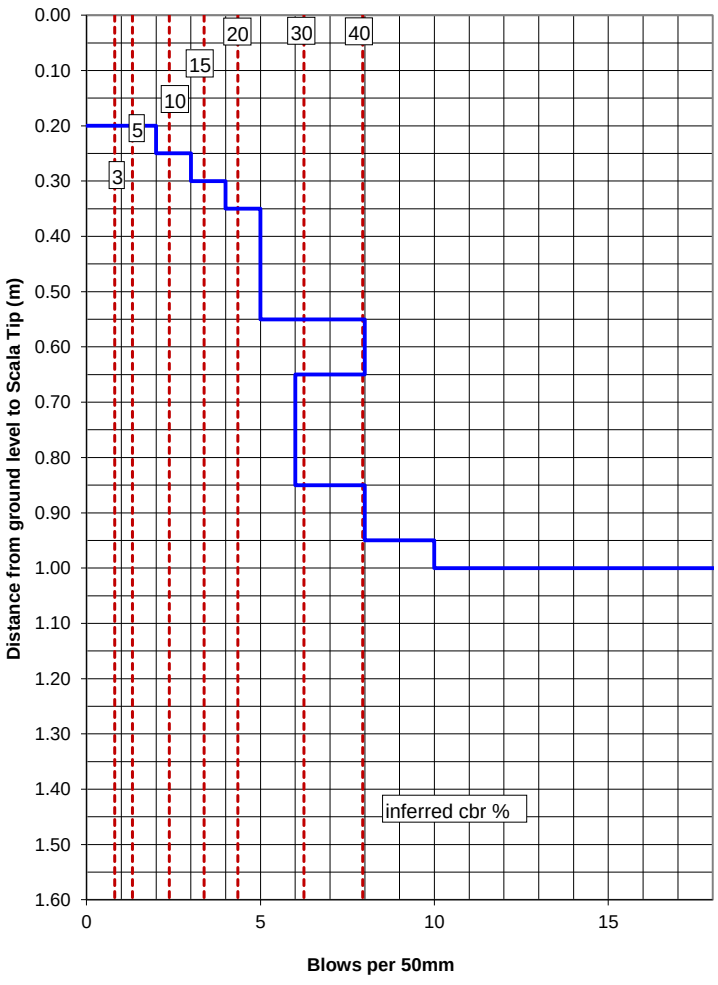
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 42.4

Scala No: FSP76
Ref : 14333
Report No: W20-083
Page: 77 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
3	6	18	5	0.30
4	8	24	9	0.35
5	10	30	14	0.40
5	10	30	19	0.45
5	10	30	24	0.50
5	10	30	29	0.55
8	16	48	37	0.60
8	16	48	45	0.65
6	12	36	51	0.70
6	12	36	57	0.75
6	12	36	63	0.80
6	12	36	69	0.85
8	16	48	77	0.90
8	16	48	85	0.95
10	20	60	95	1.00
20	40	120	115	1.05

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

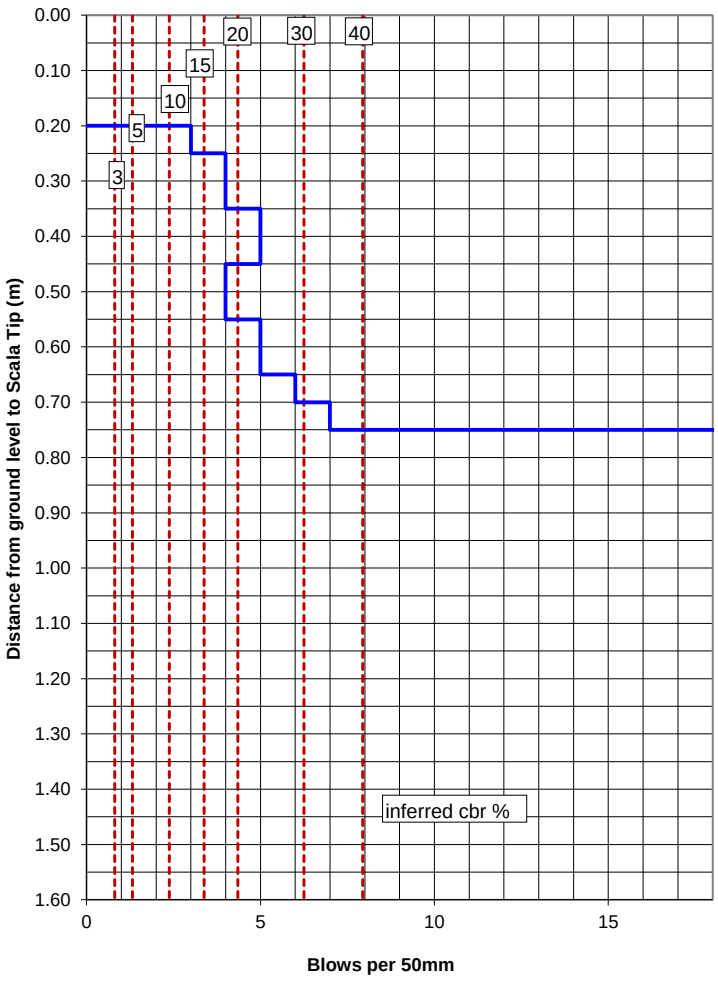
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 47.1

Scala No: FSP77
Ref : 14333
Report No: W20-083
Page: 78 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
3	6	18	3	0.25
4	8	24	7	0.30
4	8	24	11	0.35
5	10	30	16	0.40
5	10	30	21	0.45
4	8	24	25	0.50
4	8	24	29	0.55
5	10	30	34	0.60
5	10	30	39	0.65
6	12	36	45	0.70
7	14	42	52	0.75
20	40	120	72	0.80

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

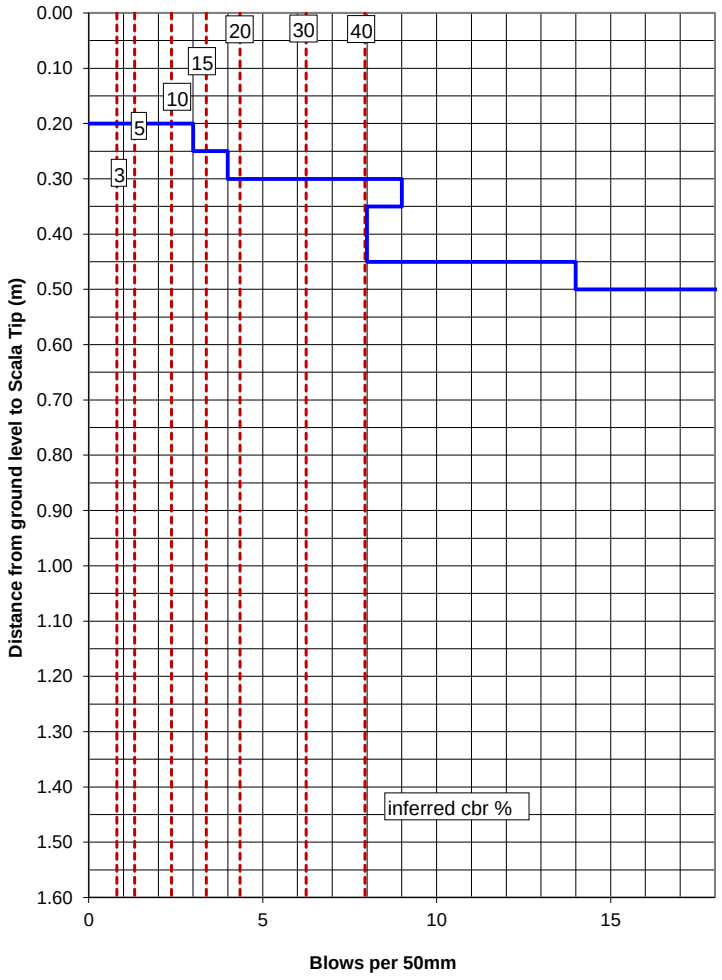
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 47.1

Scala No: FSP78
Ref : 14333
Report No: W20-083
Page: 79 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
3	6	18	3	0.25
4	8	24	7	0.30
9	18	54	16	0.35
8	16	48	24	0.40
8	16	48	32	0.45
14	28	84	46	0.50
20	40	120	66	0.55

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

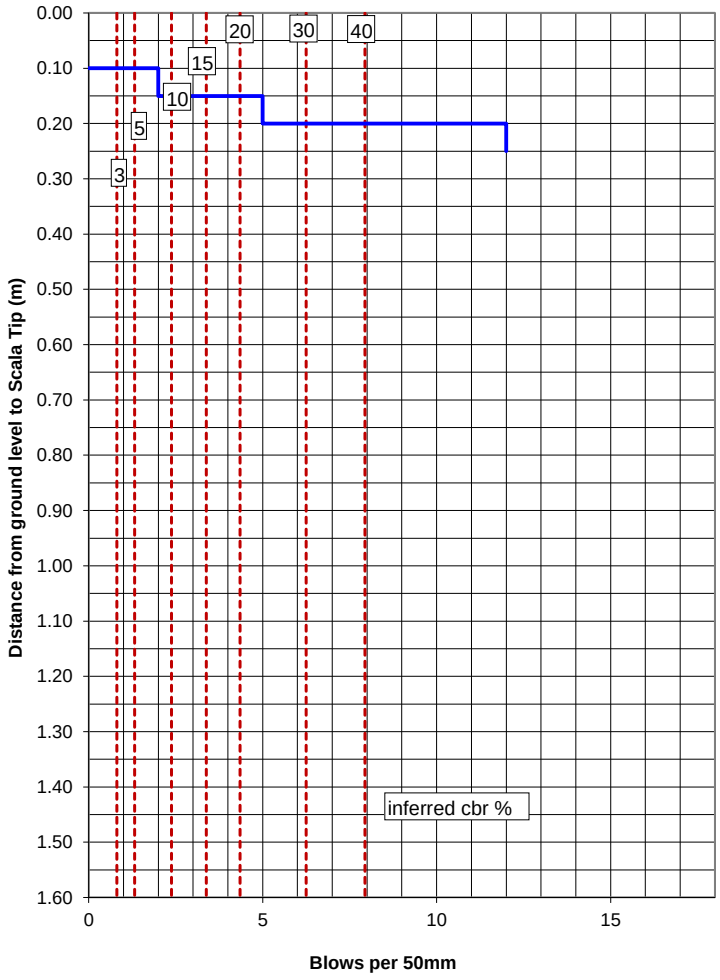
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 53.7

Scala No: FSP79
Ref : 14333
Report No: W20-083
Page: 80 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
2	4	12	2	0.15
5	10	30	7	0.20
12	24	72	19	0.25

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

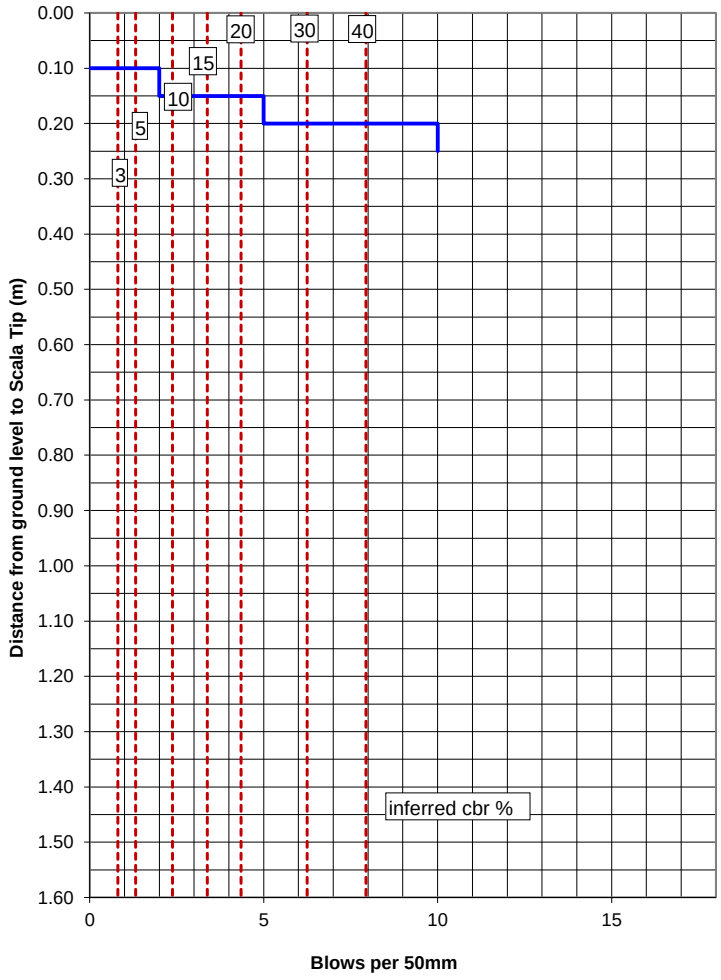
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.1
LWD 116

Scala No: FSP80
Ref : 14333
Report No: W20-083
Page: 81 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.10
2	4	12	2	0.15
5	10	30	7	0.20
10	20	60	17	0.25

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

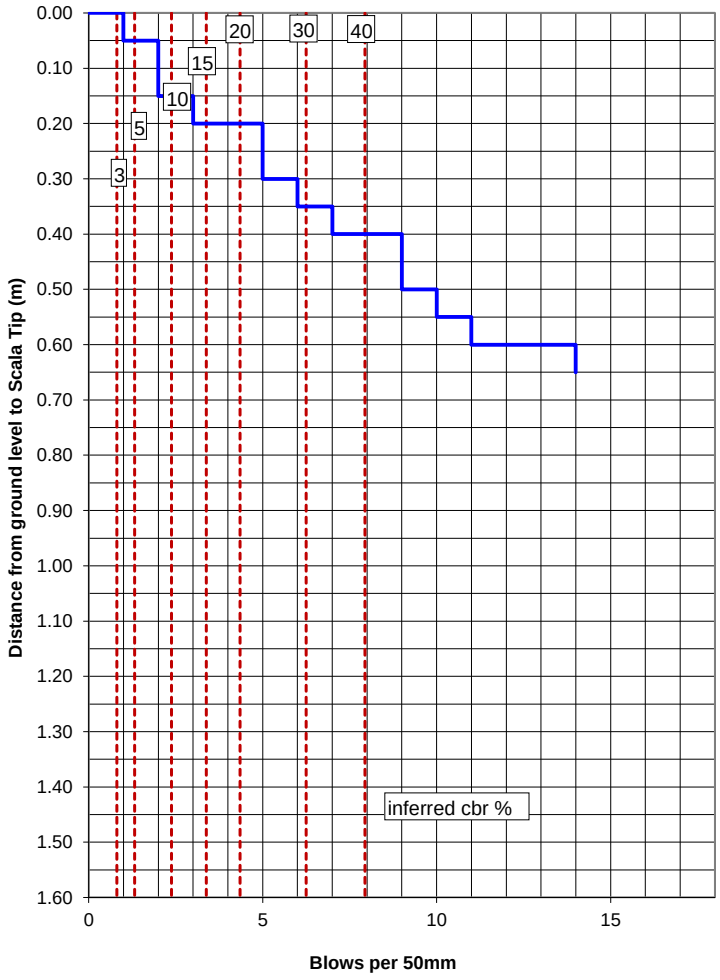
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 48

Scala No: FSP81
Ref : 14333
Report No: W20-083
Page: 82 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
1	2	6	1	0.05
2	4	12	3	0.10
2	4	12	5	0.15
3	6	18	8	0.20
5	10	30	13	0.25
5	10	30	18	0.30
6	12	36	24	0.35
7	14	42	31	0.40
9	18	54	40	0.45
9	18	54	49	0.50
10	20	60	59	0.55
11	22	66	70	0.60
14	28	84	84	0.65

Scala Penetrometer Results



Recorded By: LG
Date: 17/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

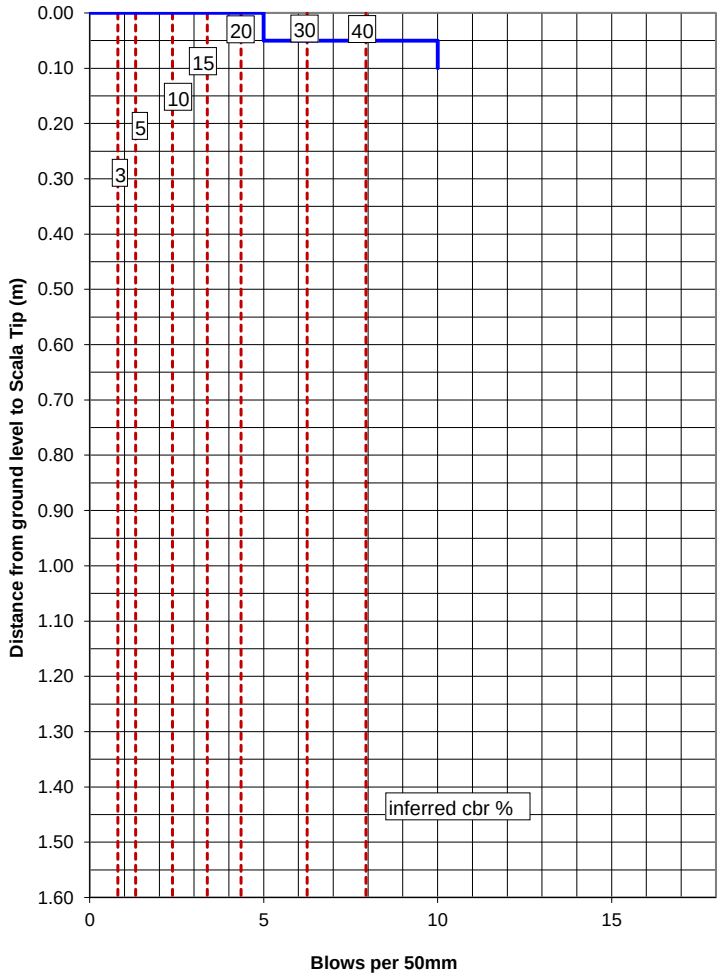
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 84.3

Scala No: FSP82
Ref : 14333
Report No: W20-083
Page: 83 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
5	10	30	5	0.05
10	20	60	15	0.10

Scala Penetrometer Results



Recorded By: MA
Date: 30/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

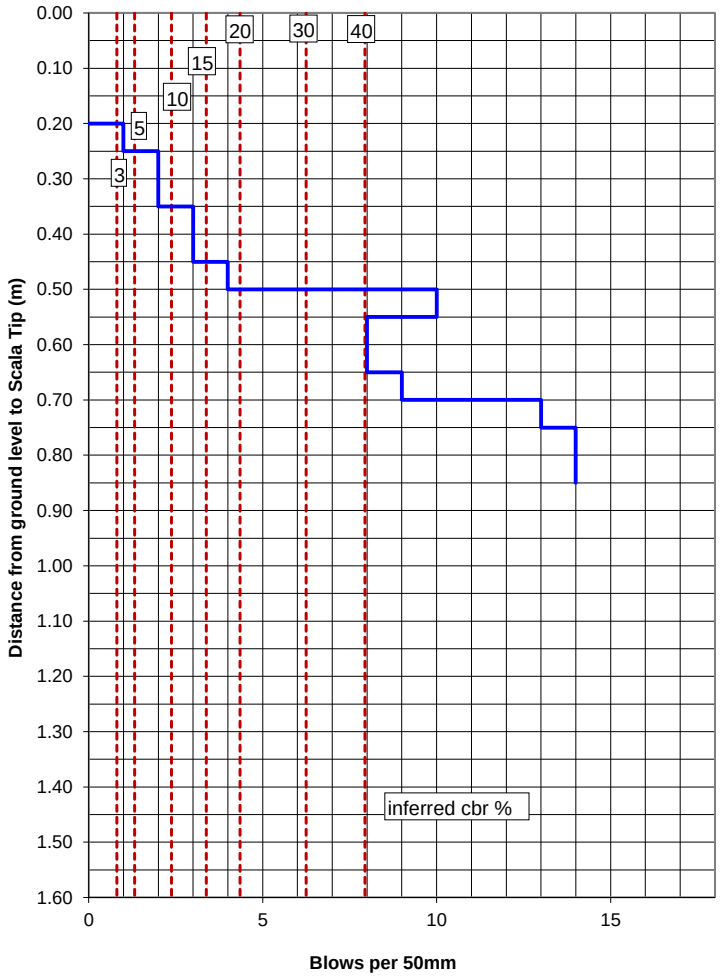
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 40.9

Scala No: FSP83
Ref : 14333
Report No: W20-083
Page: 84 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
1	2	6	1	0.25
2	4	12	3	0.30
2	4	12	5	0.35
3	6	18	8	0.40
3	6	18	11	0.45
4	8	24	15	0.50
10	20	60	25	0.55
8	16	48	33	0.60
8	16	48	41	0.65
9	18	54	50	0.70
13	26	78	63	0.75
14	28	84	77	0.80
14	28	84	91	0.85

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

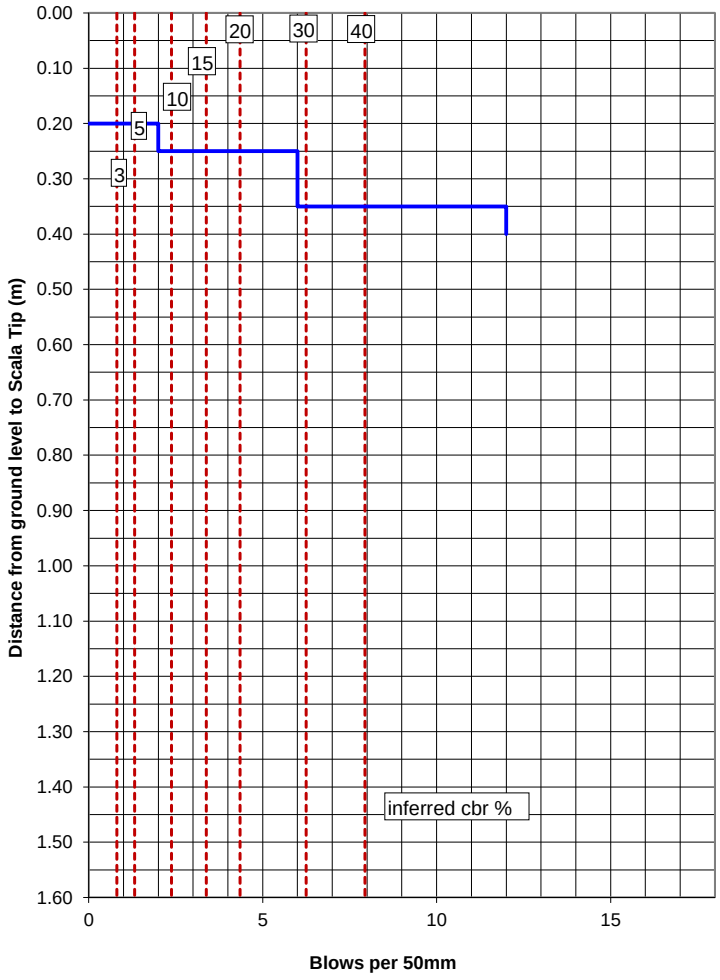
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 94.9

Scala No: FSP84
Ref : 14333
Report No: W20-083
Page: 85 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
6	12	36	8	0.30
6	12	36	14	0.35
12	24	72	26	0.40

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

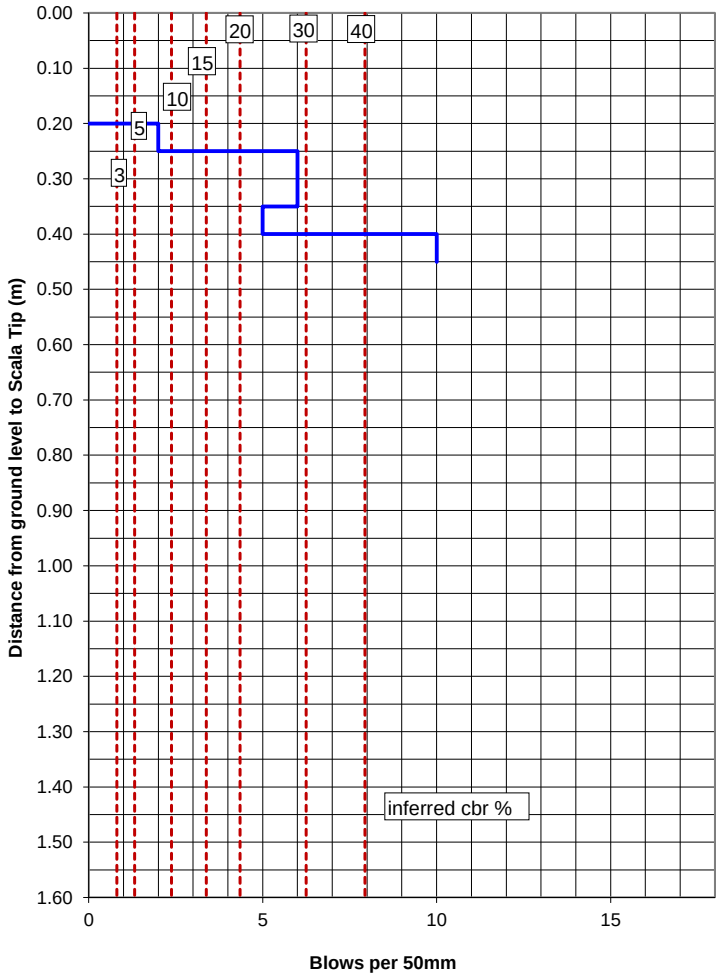
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 121

Scala No: FSP85
Ref : 14333
Report No: W20-083
Page: 86 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
2	4	12	2	0.25
6	12	36	8	0.30
6	12	36	14	0.35
5	10	30	19	0.40
10	20	60	29	0.45

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

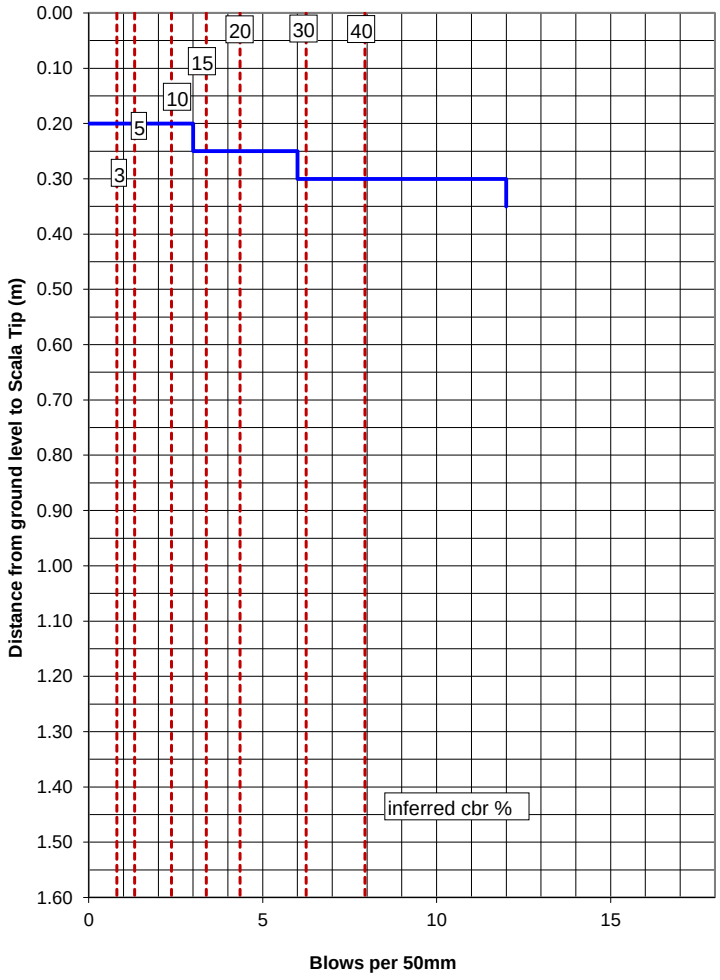
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 51

Scala No: FSP86
Ref : 14333
Report No: W20-083
Page: 87 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
3	6	18	3	0.25
6	12	36	9	0.30
12	24	72	21	0.35

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

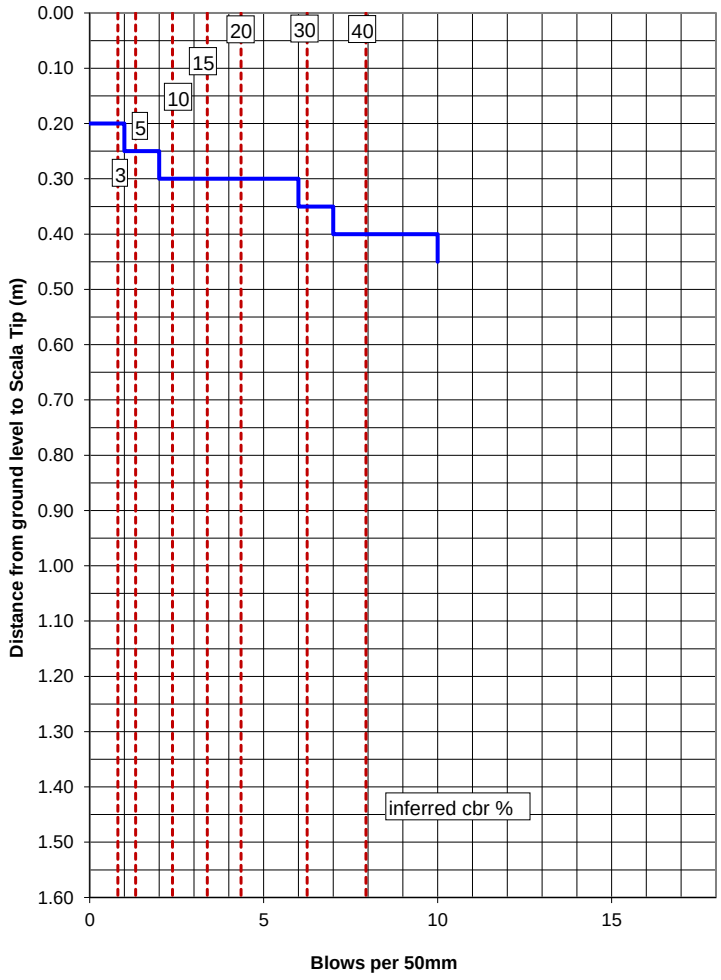
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0.2
LWD 43.2

Scala No: FSP87
Ref : 14333
Report No: W20-083
Page: 88 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.20
1	2	6	1	0.25
2	4	12	3	0.30
6	12	36	9	0.35
7	14	42	16	0.40
10	20	60	26	0.45

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 63

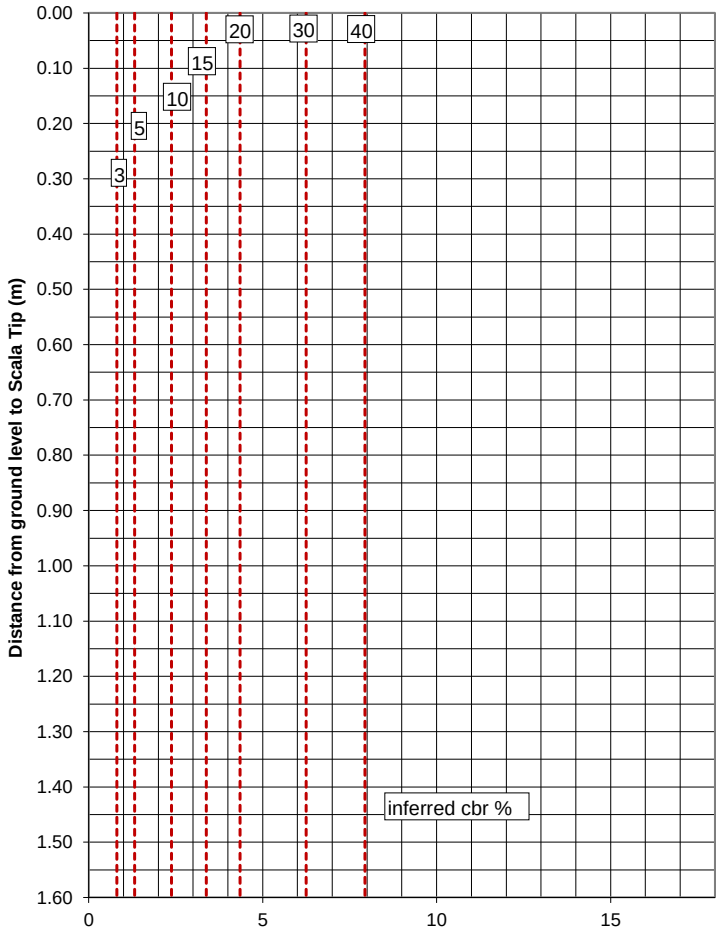
Scala No: FSP88
Ref : 14333
Report No: W20-083
Page: 89 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

No Scala - services present

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 74.7

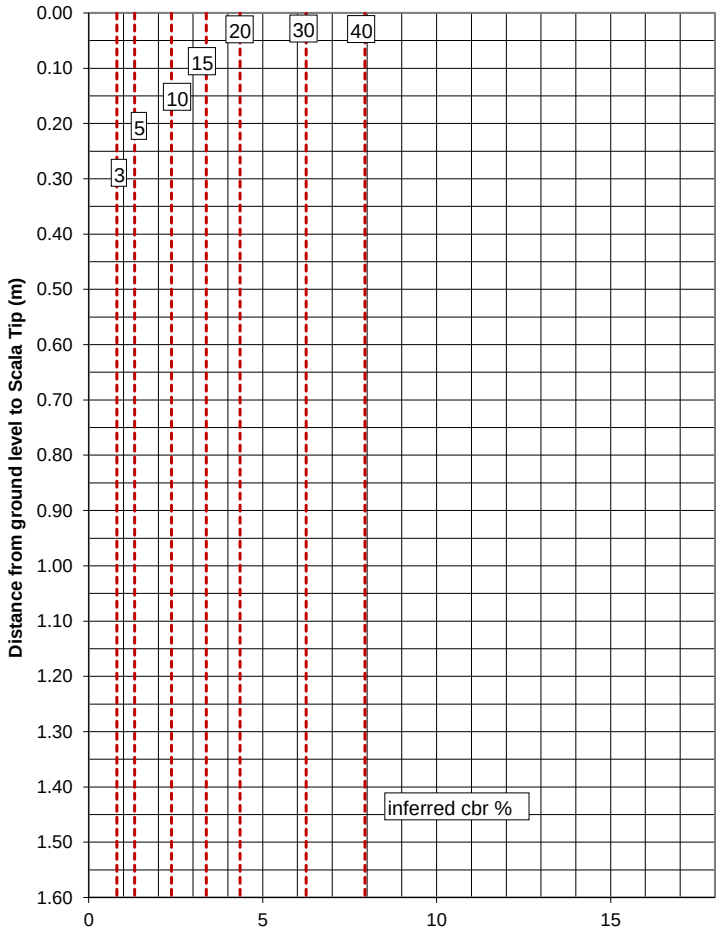
Scala No: FSP89
Ref : 14333
Report No: W20-083
Page: 90 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

No Scala - services present

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

J. Agnew
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

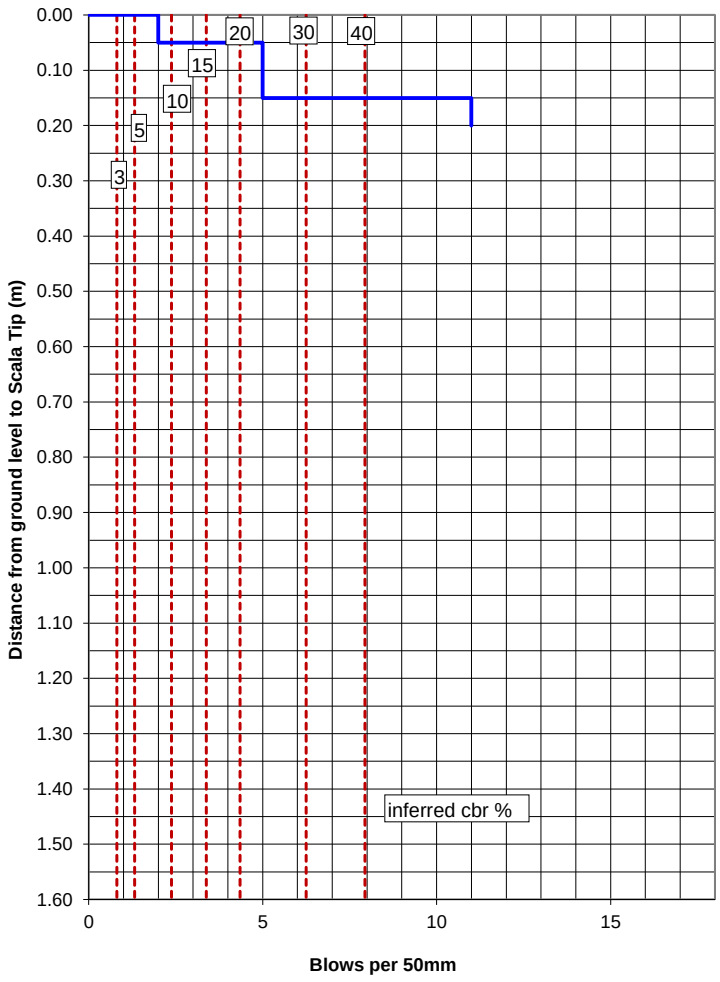
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 62.7

Scala No: FSP90
Ref : 14333
Report No: W20-083
Page: 91 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
5	10	30	7	0.10
5	10	30	12	0.15
11	22	66	23	0.20

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DYNAMIC CONE (SCALA) PENETROMETER

NZS 4402 :1988 Test 6.5.2 Procedure 2

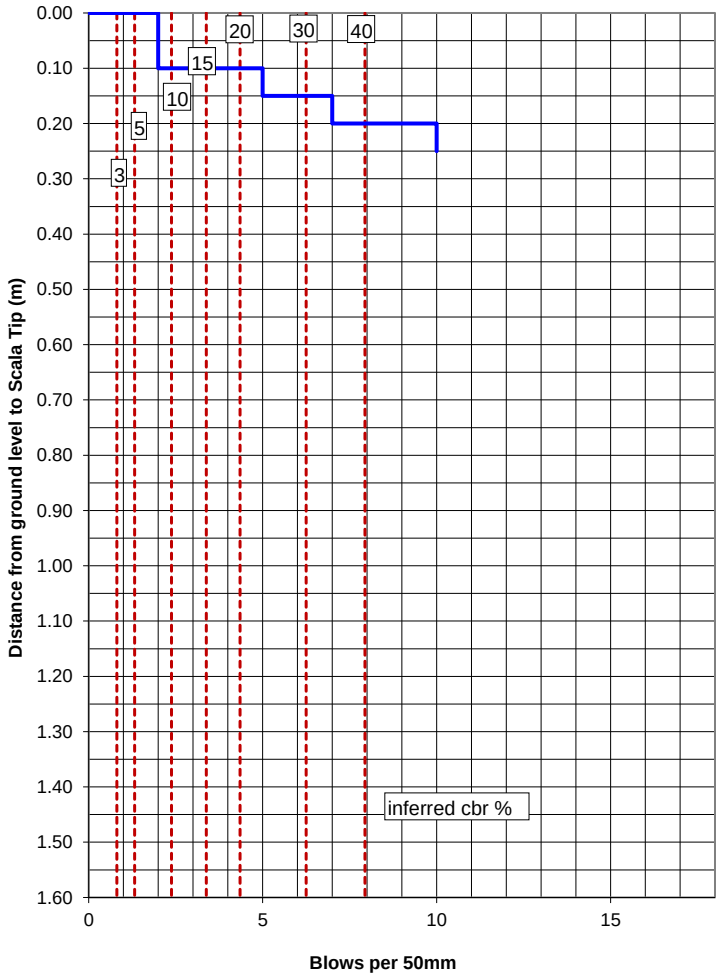
Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point - Stage 4 and 5 fill testing
Start Depth (m): 0
LWD 42.5

Scala No: FSP91
Ref : 14333
Report No: W20-083
Page: 92 of 92

The line are the suggested correlation of CBR values based on Figure 5.3, Correlation of Dynamic Cone Penetration and CBR AUSTROADS (2004) "Pavement Design - a guide to the design of road Pavements"
(This comment is excluded from endorsement)

Blows / 50mm	Blows / 100mm	Blows / 300mm	Total Blows	depth (m)
0	0	0	0	0.00
2	4	12	2	0.05
2	4	12	4	0.10
5	10	30	9	0.15
7	14	42	16	0.20
10	20	60	26	0.25

Scala Penetrometer Results



Recorded By: LG
Date: 15/01/2020
Checked by: NT
Date: 13/02/2020

Note: All readings taken below 1.5m from start depth are outside the scope of this test

Wellington Laboratory
47c Kenepuru Drive
Porirua, Wellington
M: 021 796 477
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: 14333

Date of Issue: 10/03/2021

Date of Re-Issue: -

Test Report No. W20-099

PROJECT: **The Landing - Stage 4 & 5 fill testing**

CLIENT: Cook Costello
2 Norfolk St

ATTENTION: Stefano Rotatori

TEST METHODS: Static Plate Load Test (not accredited)
DIN 18134:2012-04

REMARKS / DEVIATIONS:

SAMPLING METHOD: N/A

TEST RESULTS: As per attached sheets

Nikita Turton
Laboratory Technician

Martin Adams
General Manager

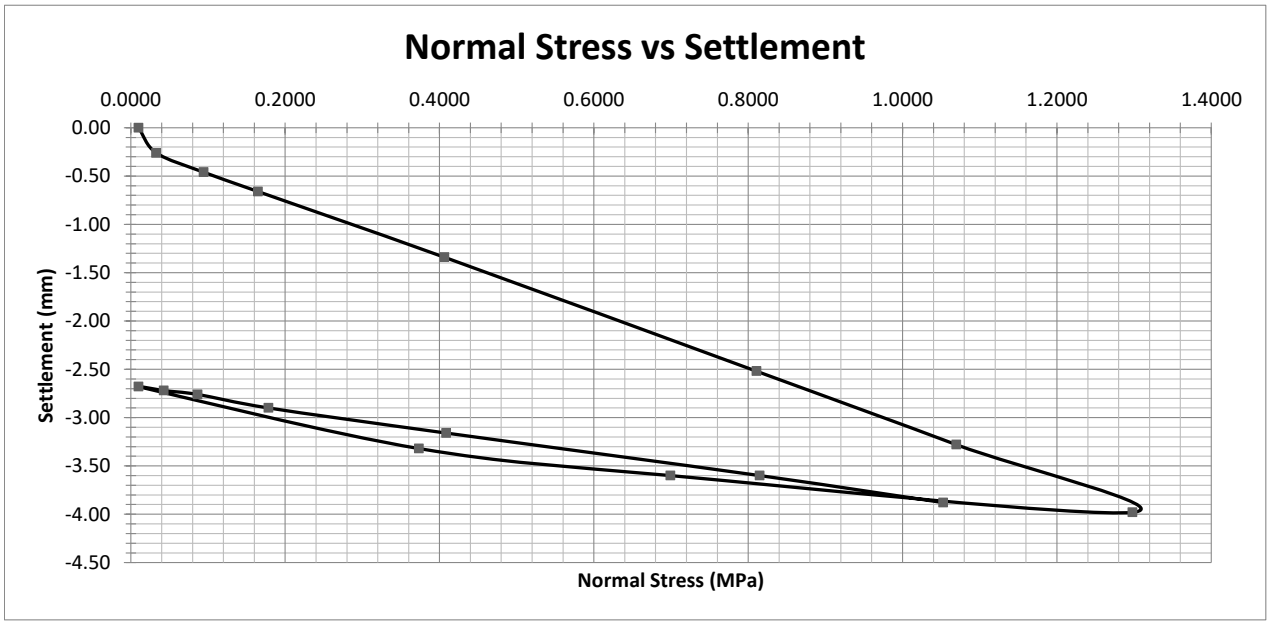
This report shall not be reproduced except in full, without written approval of the laboratory

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	5/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-01**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0330	-0.26	
3	0.088	0.0944	-0.46	
4	0.187	0.1648	-0.66	
5	0.424	0.4063	-1.34	
6	0.848	0.8108	-2.52	
7	1.098	1.0697	-3.28	
8	1.348	1.2980	-3.98	
9	0.674	0.6994	-3.60	Unloaded
10	0.337	0.3733	-3.32	
11	0.010	0.0102	-2.68	
12	0.031	0.0426	-2.72	Secondary load
13	0.088	0.0866	-2.76	
14	0.187	0.1784	-2.90	
15	0.424	0.4089	-3.16	
16	0.848	0.8150	-3.60	
17	1.098	1.0528	-3.88	



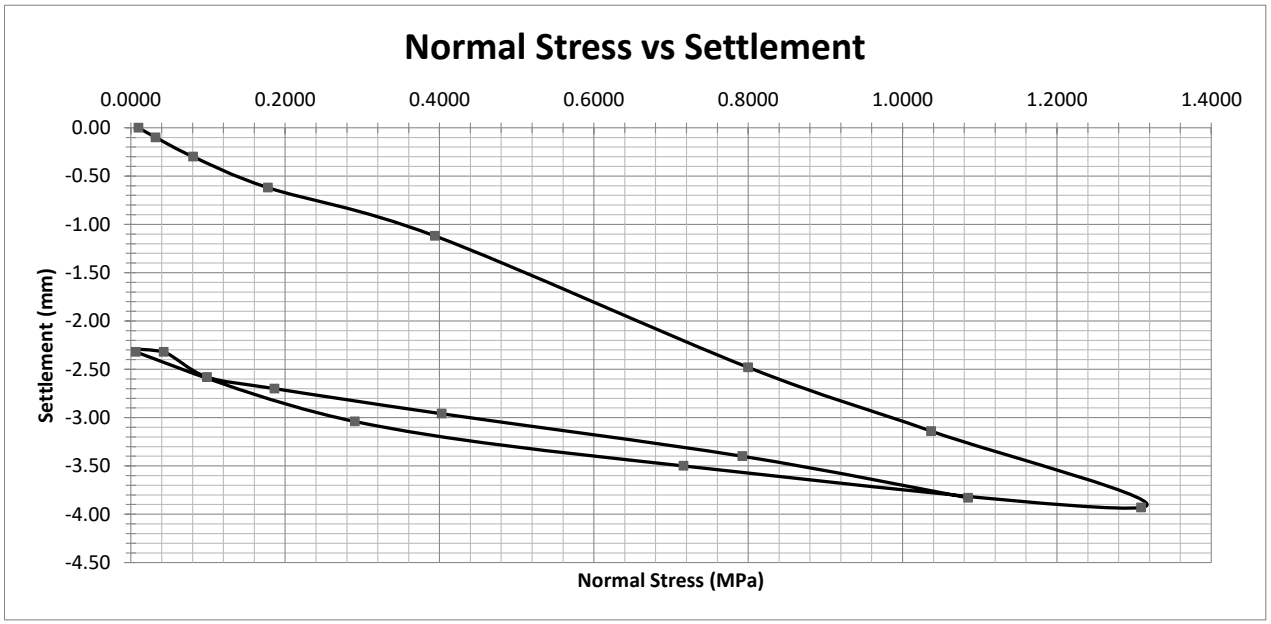
Ev1 (MPa)	77.04	Ev2 (MPa)	199.77
Ev2/Ev1=2.59			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	5/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-02**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0323	-0.10	
3	0.088	0.0808	-0.30	
4	0.187	0.1778	-0.62	
5	0.424	0.3941	-1.12	
6	0.848	0.7999	-2.48	
7	1.098	1.0371	-3.14	
8	1.348	1.3092	-3.93	
9	0.674	0.7161	-3.50	Unloaded
10	0.337	0.2902	-3.04	
11	0.010	0.0065	-2.32	
12	0.031	0.0427	-2.32	Secondary load
13	0.088	0.0987	-2.58	
14	0.187	0.1863	-2.70	
15	0.424	0.4028	-2.96	
16	0.848	0.7925	-3.40	
17	1.098	1.0849	-3.83	



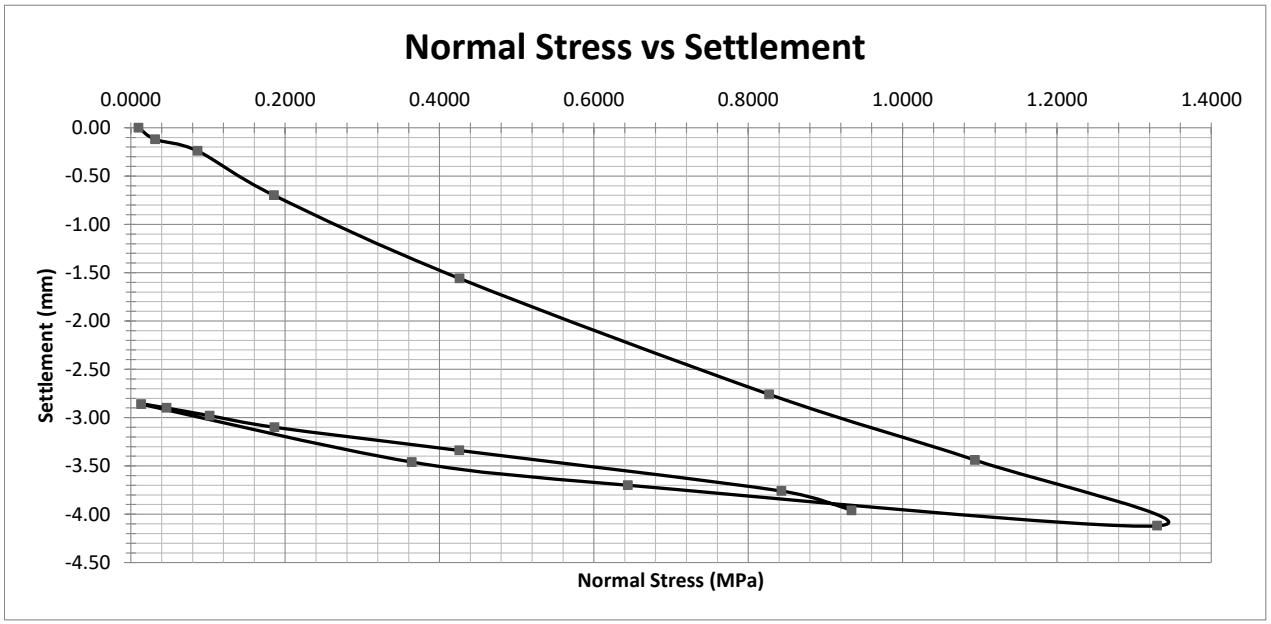
Ev1 (MPa)	75.25	Ev2 (MPa)	175.51
Ev2/Ev1=2.33			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	3/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-03**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0315	-0.12	
3	0.088	0.0865	-0.24	
4	0.187	0.1856	-0.70	
5	0.424	0.4260	-1.56	
6	0.848	0.8273	-2.76	
7	1.098	1.0940	-3.44	
8	1.348	1.3300	-4.12	
9	0.674	0.6443	-3.70	Unloaded
10	0.337	0.3641	-3.46	
11	0.010	0.0134	-2.86	
12	0.031	0.0464	-2.90	Secondary load
13	0.088	0.1021	-2.98	
14	0.187	0.1863	-3.10	
15	0.424	0.4257	-3.34	
16	0.848	0.8432	-3.76	
17	1.098	0.9340	-3.96	



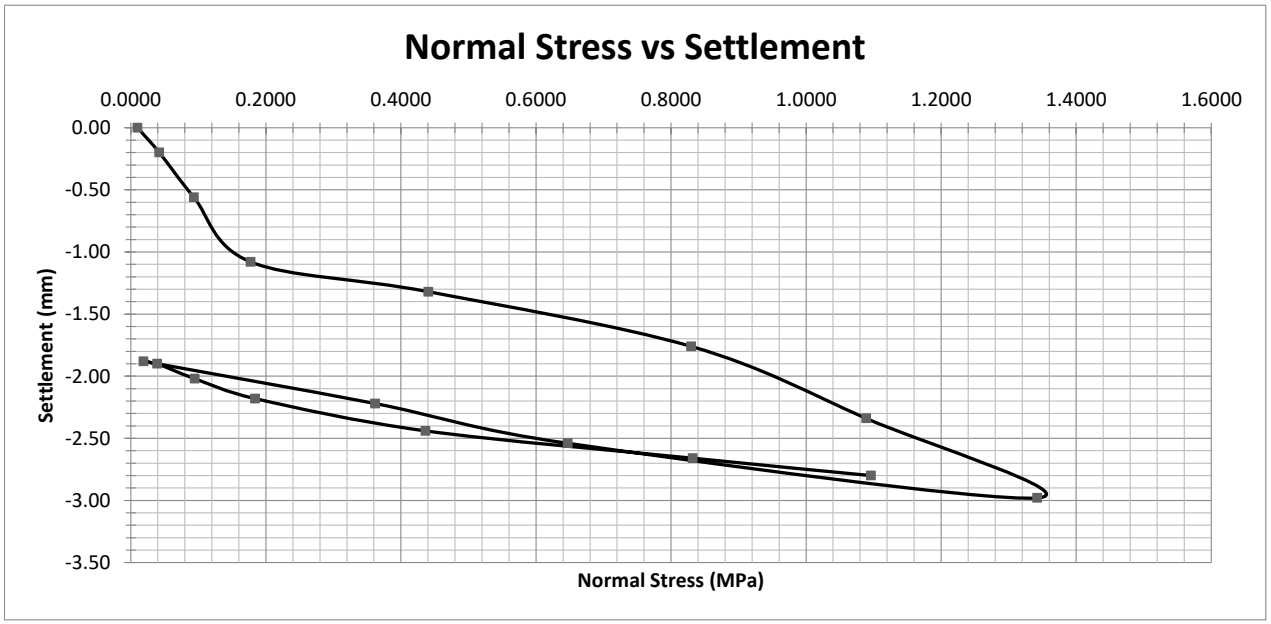
Ev1 (MPa)	72.95	Ev2 (MPa)	198.17
Ev2/Ev1=2.72			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	3/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-04**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0422	-0.20	
3	0.088	0.0934	-0.56	
4	0.187	0.1776	-1.08	
5	0.424	0.4408	-1.32	
6	0.848	0.8299	-1.76	
7	1.098	1.0891	-2.34	
8	1.348	1.3422	-2.98	
9	0.674	0.6471	-2.54	Unloaded
10	0.337	0.3619	-2.22	
11	0.010	0.0188	-1.88	
12	0.031	0.0389	-1.90	Secondary load
13	0.088	0.0947	-2.02	
14	0.187	0.1840	-2.18	
15	0.424	0.4364	-2.44	
16	0.848	0.8322	-2.66	
17	1.098	1.0961	-2.80	



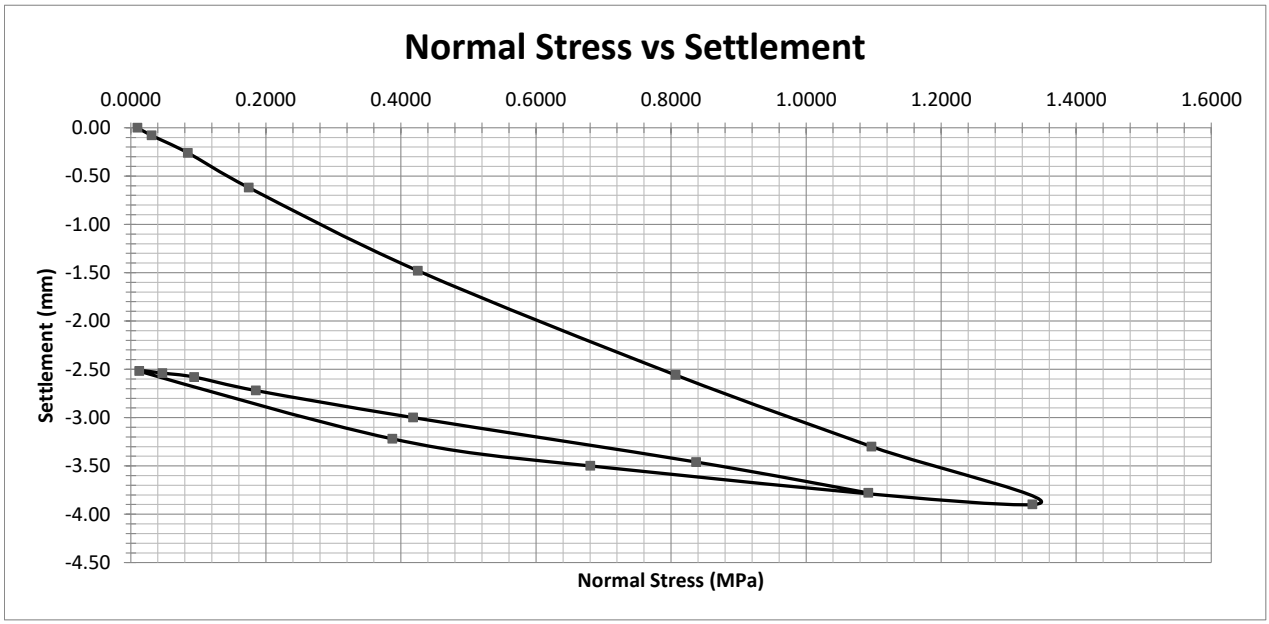
Ev1 (MPa)	121.96	Ev2 (MPa)	341.36
Ev2/Ev1=2.8			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	3/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-05**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0309	-0.08	
3	0.088	0.0846	-0.26	
4	0.187	0.1749	-0.62	
5	0.424	0.4251	-1.48	
6	0.848	0.8071	-2.56	
7	1.098	1.0969	-3.30	
8	1.348	1.3354	-3.90	
9	0.674	0.6805	-3.50	Unloaded
10	0.337	0.3875	-3.22	
11	0.010	0.0128	-2.52	
12	0.031	0.0467	-2.54	Secondary load
13	0.088	0.0939	-2.58	
14	0.187	0.1853	-2.72	
15	0.424	0.4183	-3.00	
16	0.848	0.8374	-3.46	
17	1.098	1.0923	-3.78	



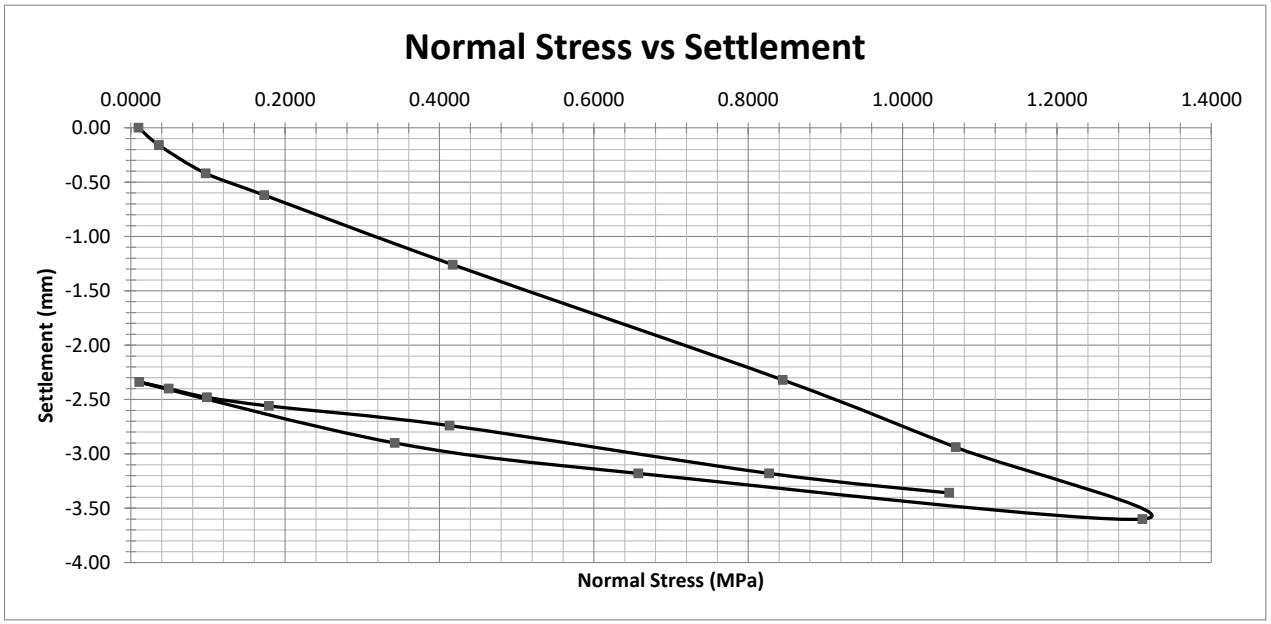
Ev1 (MPa)	77.00	Ev2 (MPa)	192.26
Ev2/Ev1=2.5			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	5/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-06**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0365	-0.16	
3	0.088	0.0972	-0.42	
4	0.187	0.1730	-0.62	
5	0.424	0.4172	-1.26	
6	0.848	0.8447	-2.32	
7	1.098	1.0690	-2.94	
8	1.348	1.3109	-3.60	
9	0.674	0.6578	-3.18	Unloaded
10	0.337	0.3422	-2.90	
11	0.010	0.0109	-2.34	
12	0.031	0.0492	-2.40	Secondary load
13	0.088	0.0987	-2.48	
14	0.187	0.1792	-2.56	
15	0.424	0.4132	-2.74	
16	0.848	0.8273	-3.18	
17	1.098	1.0607	-3.36	



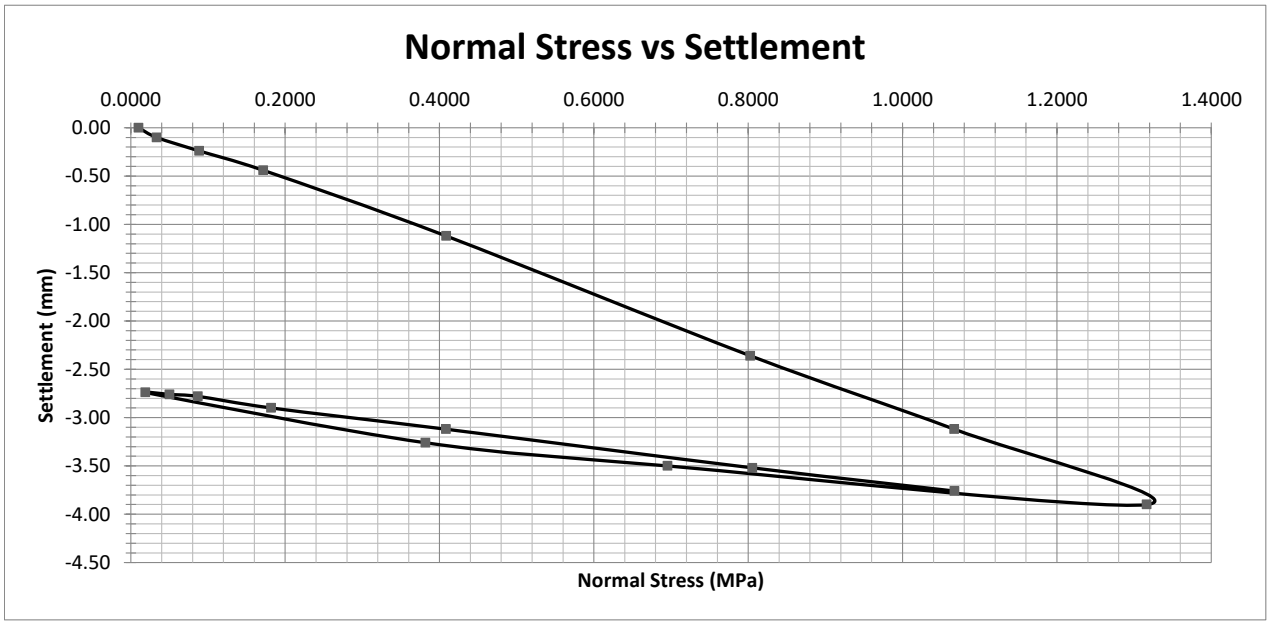
Ev1 (MPa)	85.41	Ev2 (MPa)	241.22
Ev2/Ev1=2.82			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	5/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-07**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0335	-0.10	
3	0.088	0.0887	-0.24	
4	0.187	0.1715	-0.44	
5	0.424	0.4086	-1.12	
6	0.848	0.8027	-2.36	
7	1.098	1.0670	-3.12	
8	1.348	1.3164	-3.90	
9	0.674	0.6955	-3.50	Unloaded
10	0.337	0.3818	-3.26	
11	0.010	0.0188	-2.74	
12	0.031	0.0502	-2.76	Secondary load
13	0.088	0.0870	-2.78	
14	0.187	0.1819	-2.90	
15	0.424	0.4084	-3.12	
16	0.848	0.8054	-3.52	
17	1.098	1.0675	-3.76	



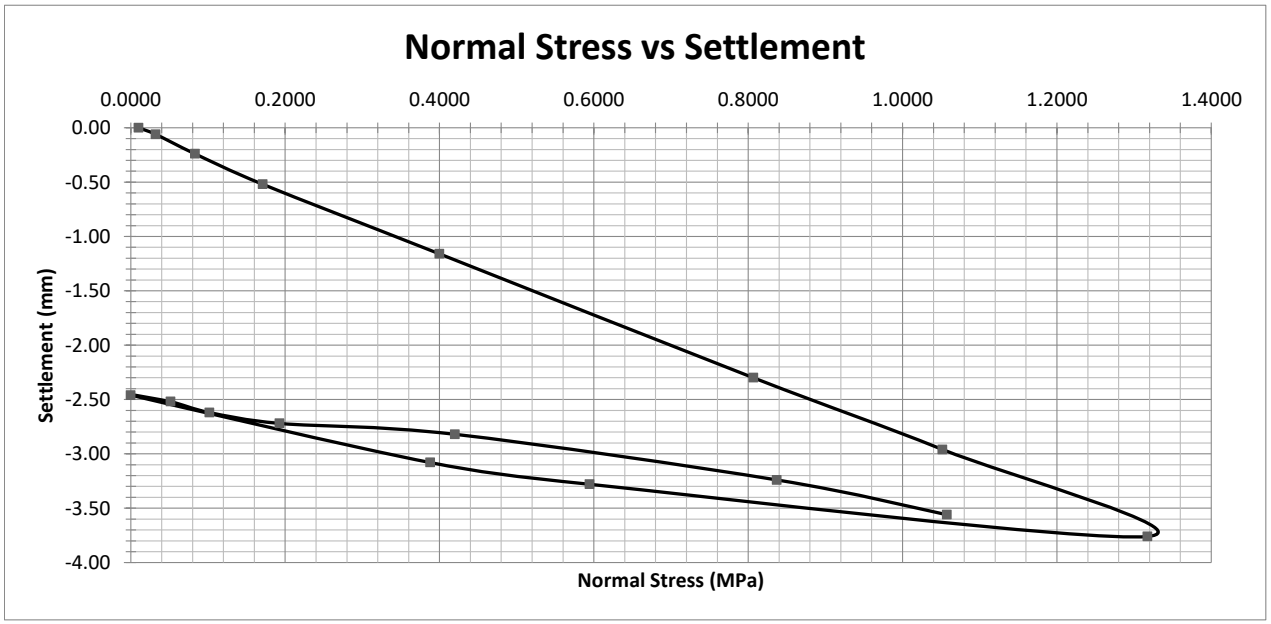
Ev1 (MPa)	75.47	Ev2 (MPa)	230.15
Ev2/Ev1=3.05			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	5/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-08**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0320	-0.06	
3	0.088	0.0832	-0.24	
4	0.187	0.1709	-0.52	
5	0.424	0.3999	-1.16	
6	0.848	0.8067	-2.30	
7	1.098	1.0517	-2.96	
8	1.348	1.3174	-3.76	
9	0.674	0.5946	-3.28	Unloaded
10	0.337	0.3879	-3.08	
11	0.010	0.0000	-2.46	
12	0.031	0.0514	-2.52	Secondary load
13	0.088	0.1020	-2.62	
14	0.187	0.1928	-2.72	
15	0.424	0.4200	-2.82	
16	0.848	0.8372	-3.24	
17	1.098	1.0574	-3.56	



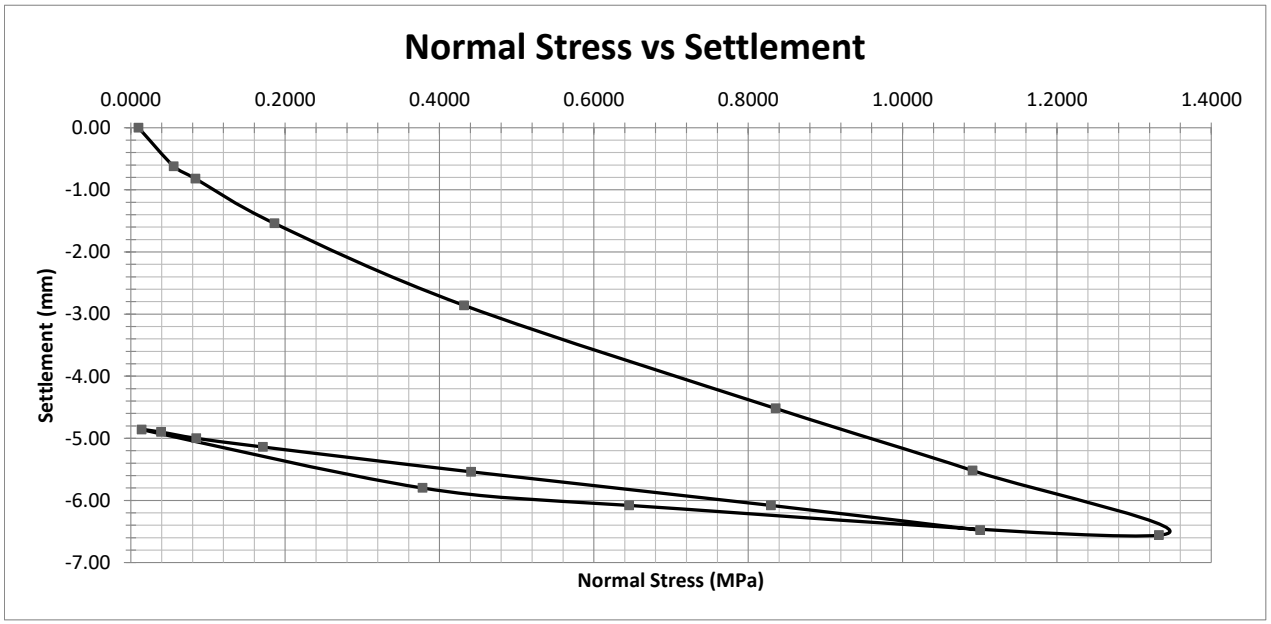
Ev1 (MPa)	78.20	Ev2 (MPa)	216.46
Ev2/Ev1=2.77			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	3/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-09**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0556	-0.62	
3	0.088	0.0838	-0.82	
4	0.187	0.1862	-1.54	
5	0.424	0.4319	-2.86	
6	0.848	0.8357	-4.52	
7	1.098	1.0909	-5.52	
8	1.348	1.3322	-6.56	
9	0.674	0.6457	-6.08	Unloaded
10	0.337	0.3780	-5.80	
11	0.010	0.0142	-4.86	
12	0.031	0.0393	-4.90	Secondary load
13	0.088	0.0850	-5.00	
14	0.187	0.1713	-5.14	
15	0.424	0.4412	-5.54	
16	0.848	0.8294	-6.08	
17	1.098	1.1006	-6.48	



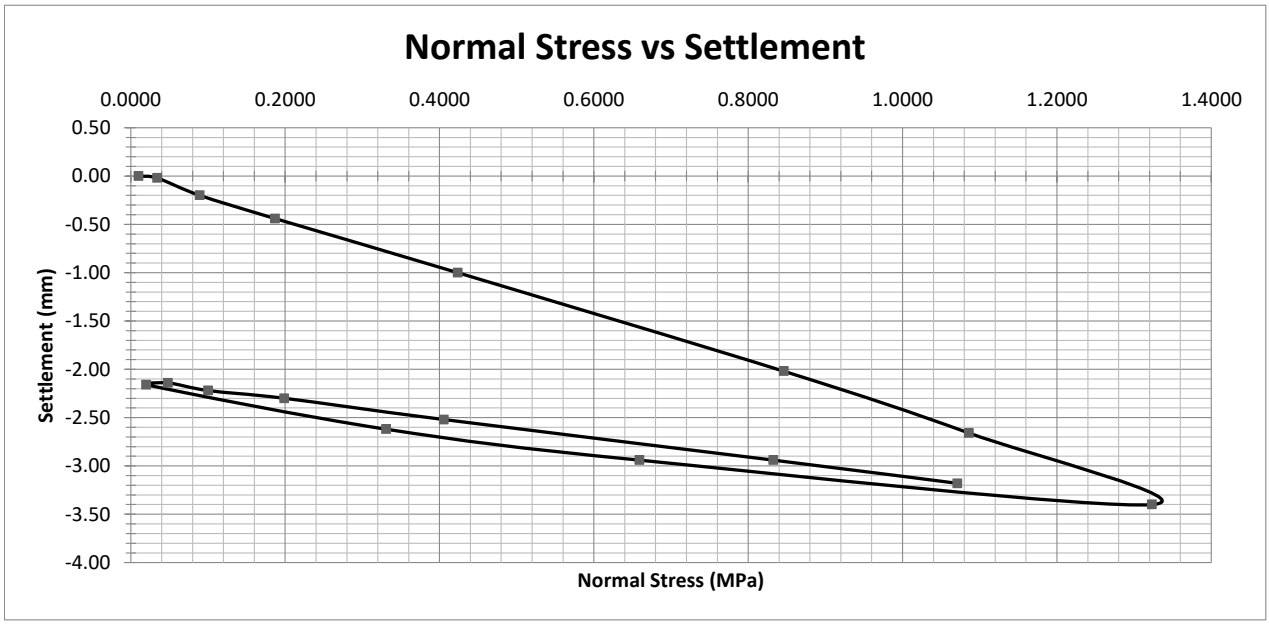
Ev1 (MPa)	49.21	Ev2 (MPa)	155.96
Ev2/Ev1=3.17			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	4/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-10**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0341	-0.02	
3	0.088	0.0893	-0.20	
4	0.187	0.1870	-0.44	
5	0.424	0.4236	-1.00	
6	0.848	0.8461	-2.02	
7	1.098	1.0861	-2.66	
8	1.348	1.3230	-3.40	
9	0.674	0.6590	-2.94	Unloaded
10	0.337	0.3308	-2.62	
11	0.010	0.0200	-2.16	
12	0.031	0.0480	-2.14	Secondary load
13	0.088	0.1003	-2.22	
14	0.187	0.1990	-2.30	
15	0.424	0.4057	-2.52	
16	0.848	0.8327	-2.94	
17	1.098	1.0711	-3.18	



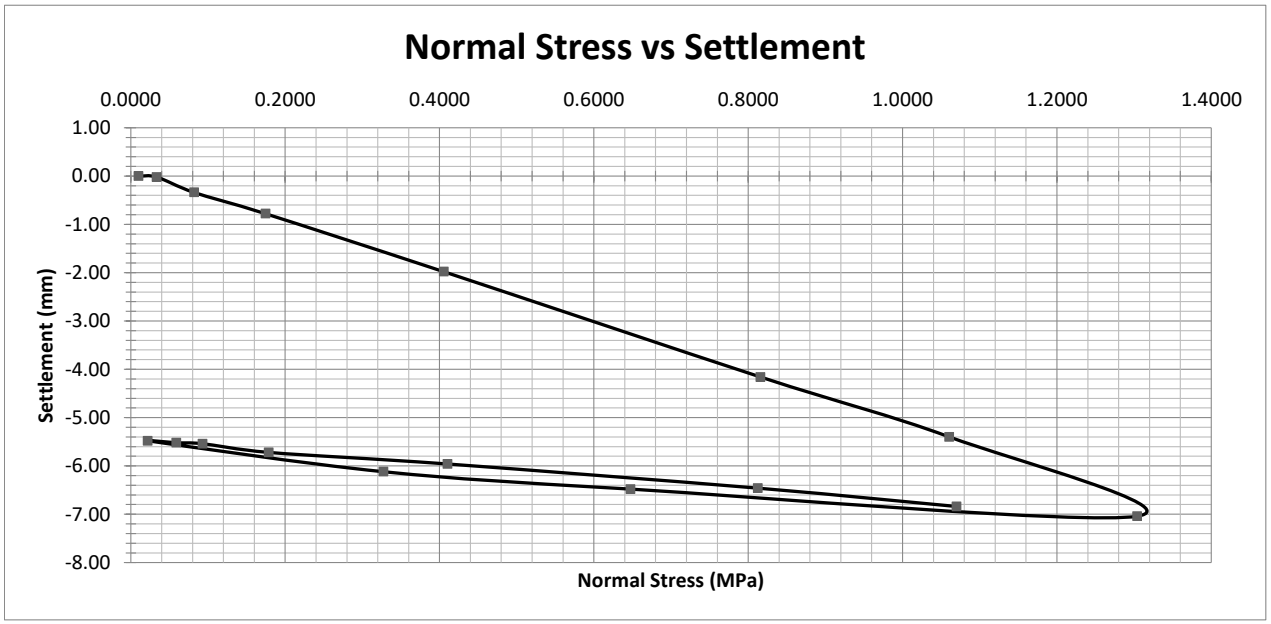
Ev1 (MPa)	88.05	Ev2 (MPa)	225.07
Ev2/Ev1=2.56			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	5/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-11**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0335	-0.02	
3	0.088	0.0821	-0.34	
4	0.187	0.1747	-0.78	
5	0.424	0.4056	-1.98	
6	0.848	0.8160	-4.16	
7	1.098	1.0606	-5.40	
8	1.348	1.3042	-7.04	
9	0.674	0.6477	-6.48	Unloaded
10	0.337	0.3275	-6.12	
11	0.010	0.0221	-5.48	
12	0.031	0.0589	-5.52	Secondary load
13	0.088	0.0932	-5.54	
14	0.187	0.1788	-5.72	
15	0.424	0.4103	-5.96	
16	0.848	0.8125	-6.46	
17	1.098	1.0701	-6.84	



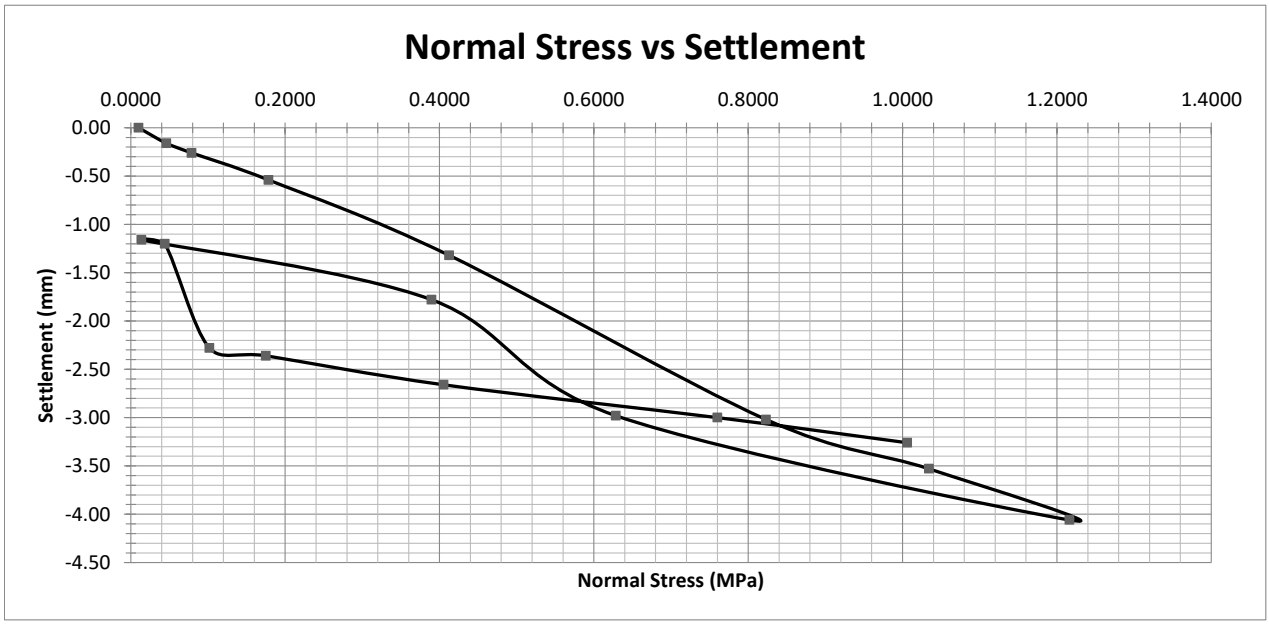
Ev1 (MPa)	41.61	Ev2 (MPa)	172.83
Ev2/Ev1=4.15			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	5/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-12**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0460	-0.16	
3	0.088	0.0788	-0.26	
4	0.187	0.1784	-0.54	
5	0.424	0.4124	-1.32	
6	0.848	0.8232	-3.02	
7	1.098	1.0342	-3.53	
8	1.348	1.2164	-4.06	
9	0.674	0.6284	-2.98	Unloaded
10	0.337	0.3898	-1.78	
11	0.010	0.0137	-1.16	
12	0.031	0.0439	-1.20	Secondary load
13	0.088	0.1019	-2.28	
14	0.187	0.1749	-2.36	
15	0.424	0.4052	-2.66	
16	0.848	0.7602	-3.00	
17	1.098	1.0060	-3.26	



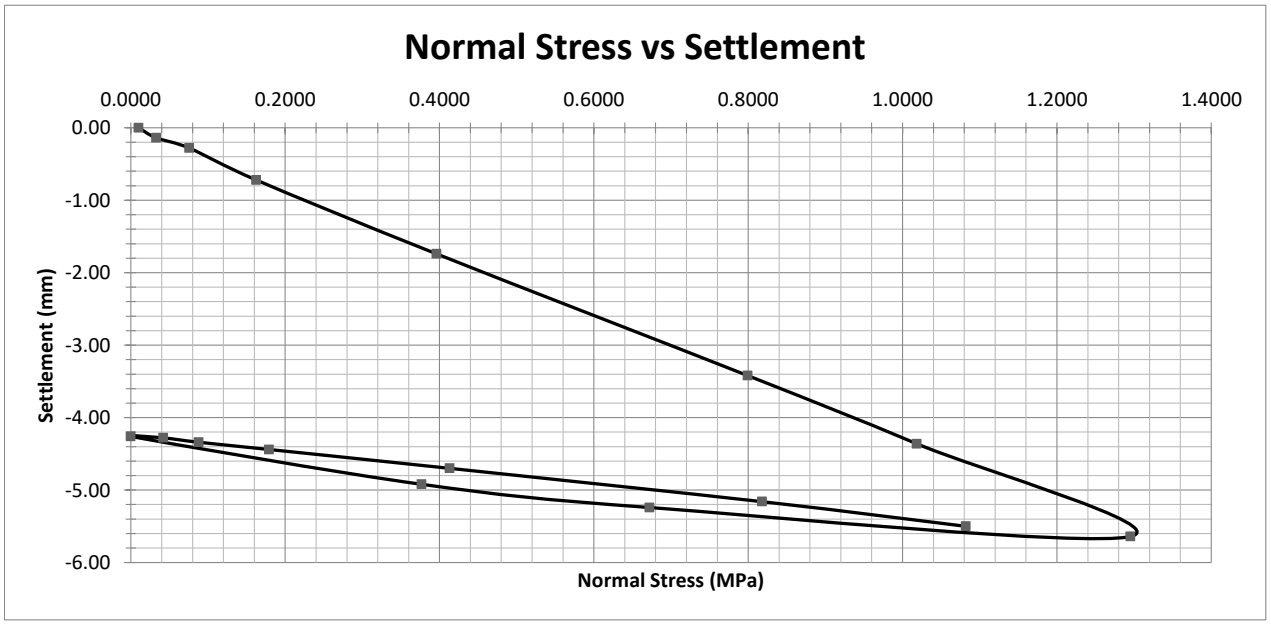
Ev1 (MPa)	53.02	Ev2 (MPa)	193.94
Ev2/Ev1=3.66			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	5/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-13**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0330	-0.14	
3	0.088	0.0757	-0.28	
4	0.187	0.1623	-0.72	
5	0.424	0.3961	-1.74	
6	0.848	0.7993	-3.42	
7	1.098	1.0182	-4.36	
8	1.348	1.2954	-5.64	
9	0.674	0.6720	-5.24	Unloaded
10	0.337	0.3766	-4.92	
11	0.010	0.0000	-4.26	
12	0.031	0.0419	-4.28	Secondary load
13	0.088	0.0880	-4.34	
14	0.187	0.1792	-4.44	
15	0.424	0.4131	-4.70	
16	0.848	0.8180	-5.16	
17	1.098	1.0820	-5.50	



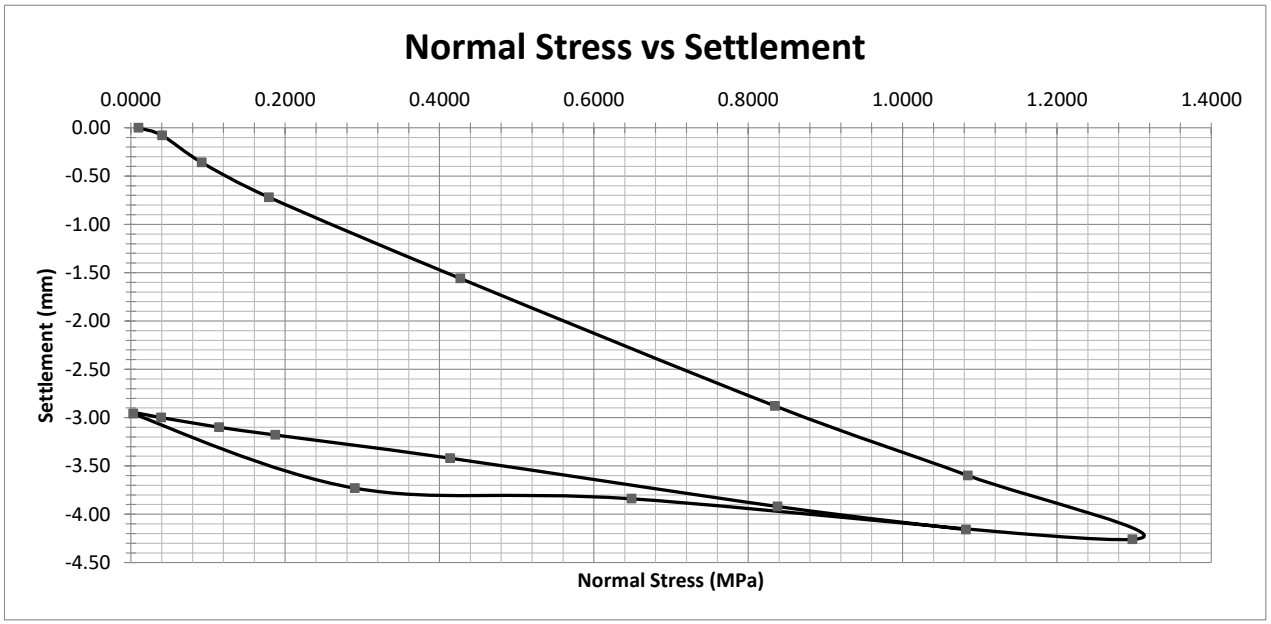
Ev1 (MPa)	51.91	Ev2 (MPa)	191.07
Ev2/Ev1=3.68			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	4/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-14**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0405	-0.08	
3	0.088	0.0920	-0.36	
4	0.187	0.1792	-0.72	
5	0.424	0.4270	-1.56	
6	0.848	0.8348	-2.88	
7	1.098	1.0848	-3.60	
8	1.348	1.2981	-4.26	
9	0.674	0.6488	-3.84	Unloaded
10	0.337	0.2902	-3.73	
11	0.010	0.0031	-2.96	
12	0.031	0.0392	-3.00	Secondary load
13	0.088	0.1144	-3.10	
14	0.187	0.1874	-3.18	
15	0.424	0.4137	-3.42	
16	0.848	0.8379	-3.92	
17	1.098	1.0824	-4.16	



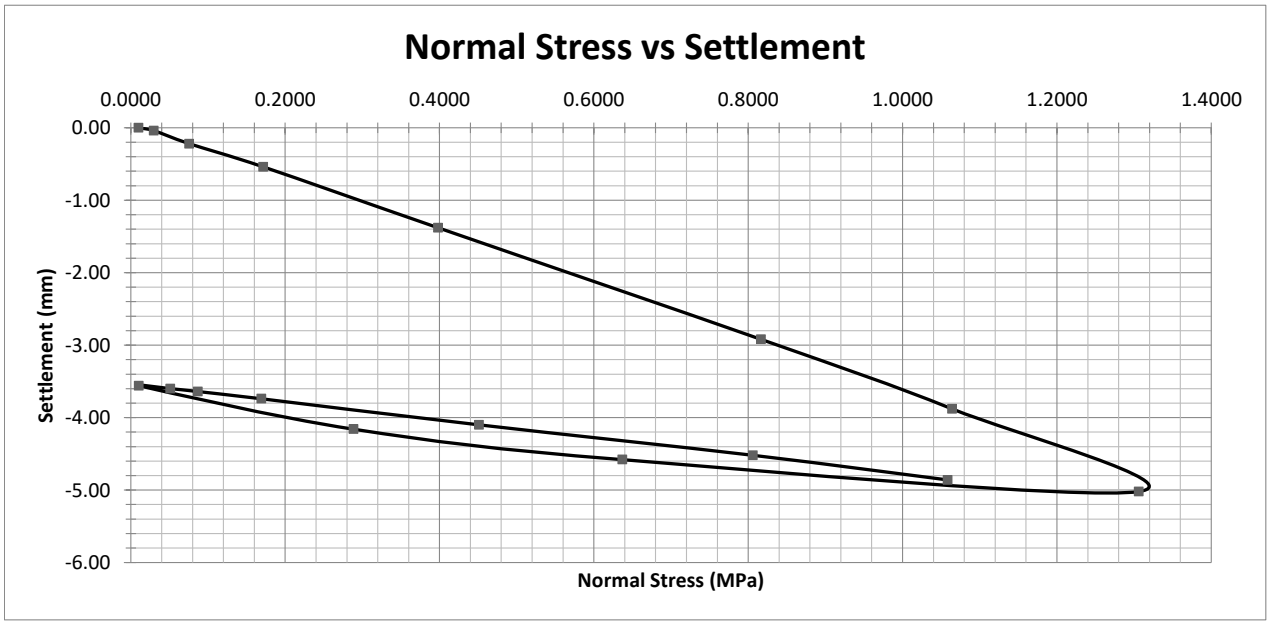
Ev1 (MPa)	68.85	Ev2 (MPa)	203.70
Ev2/Ev1=2.96			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	5/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-15**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0297	-0.04	
3	0.088	0.0758	-0.22	
4	0.187	0.1717	-0.54	
5	0.424	0.3981	-1.38	
6	0.848	0.8166	-2.92	
7	1.098	1.0643	-3.88	
8	1.348	1.3063	-5.02	
9	0.674	0.6369	-4.58	Unloaded
10	0.337	0.2886	-4.16	
11	0.010	0.0105	-3.56	
12	0.031	0.0511	-3.60	Secondary load
13	0.088	0.0870	-3.64	
14	0.187	0.1692	-3.74	
15	0.424	0.4513	-4.10	
16	0.848	0.8060	-4.52	
17	1.098	1.0586	-4.86	



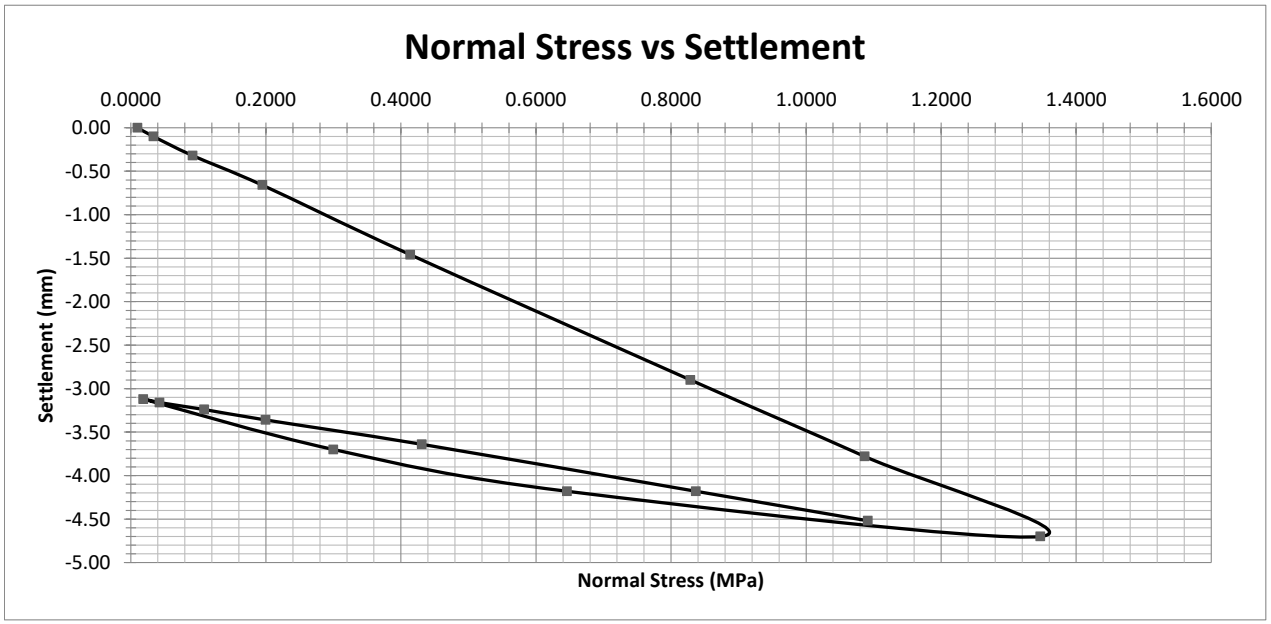
Ev1 (MPa)	59.32	Ev2 (MPa)	179.44
Ev2/Ev1=3.03			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-16**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0335	-0.10	
3	0.088	0.0915	-0.32	
4	0.187	0.1948	-0.66	
5	0.424	0.4139	-1.46	
6	0.848	0.8287	-2.90	
7	1.098	1.0868	-3.78	
8	1.348	1.3471	-4.70	
9	0.674	0.6458	-4.18	Unloaded
10	0.337	0.3001	-3.70	
11	0.010	0.0185	-3.12	
12	0.031	0.0424	-3.16	Secondary load
13	0.088	0.1085	-3.24	
14	0.187	0.1995	-3.36	
15	0.424	0.4308	-3.64	
16	0.848	0.8367	-4.18	
17	1.098	1.0916	-4.52	



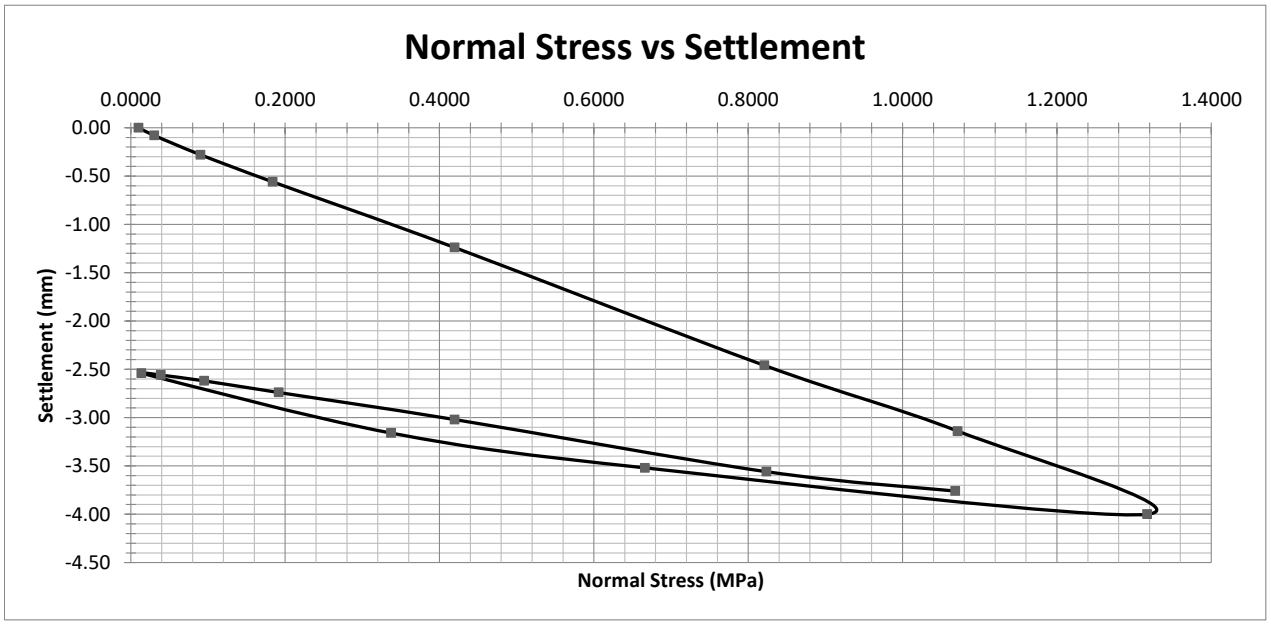
Ev1 (MPa)	64.39	Ev2 (MPa)	171.47
Ev2/Ev1=2.66			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-17**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0304	-0.08	
3	0.088	0.0905	-0.28	
4	0.187	0.1838	-0.56	
5	0.424	0.4197	-1.24	
6	0.848	0.8211	-2.46	
7	1.098	1.0715	-3.14	
8	1.348	1.3172	-4.00	
9	0.674	0.6662	-3.52	Unloaded
10	0.337	0.3374	-3.16	
11	0.010	0.0137	-2.54	
12	0.031	0.0389	-2.56	Secondary load
13	0.088	0.0952	-2.62	
14	0.187	0.1916	-2.74	
15	0.424	0.4196	-3.02	
16	0.848	0.8239	-3.56	
17	1.098	1.0685	-3.76	



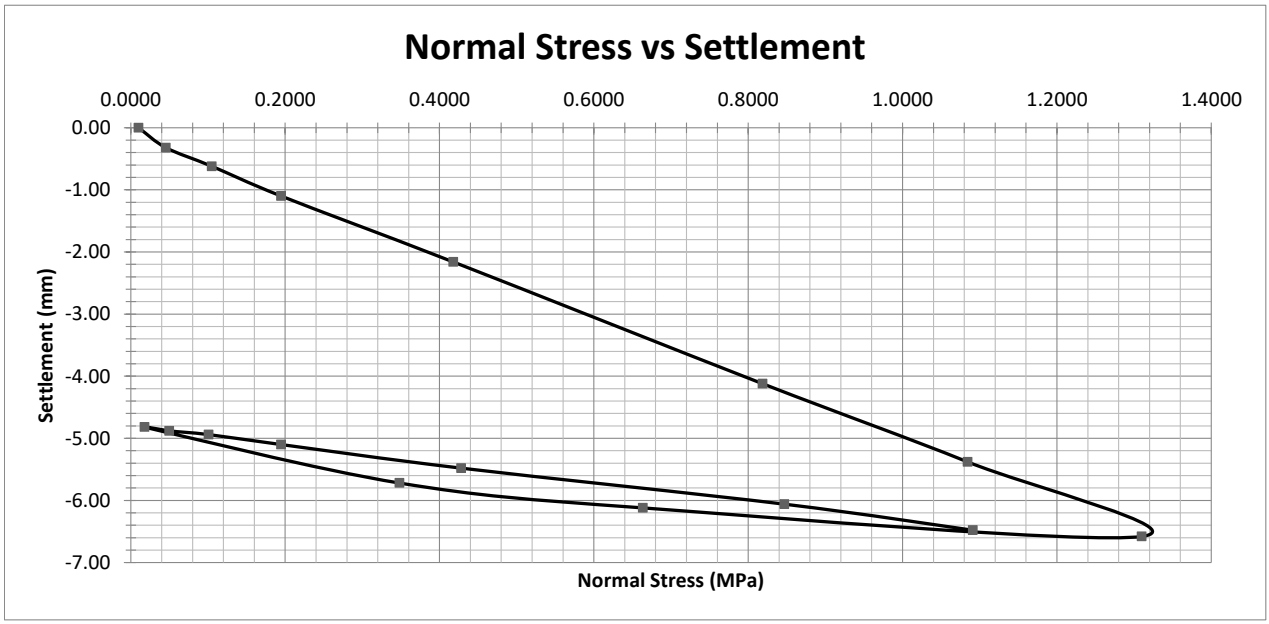
Ev1 (MPa)	74.95	Ev2 (MPa)	193.33
Ev2/Ev1=2.58			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-18**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0454	-0.32	
3	0.088	0.1050	-0.62	
4	0.187	0.1949	-1.10	
5	0.424	0.4178	-2.16	
6	0.848	0.8185	-4.12	
7	1.098	1.0844	-5.38	
8	1.348	1.3100	-6.58	
9	0.674	0.6634	-6.12	Unloaded
10	0.337	0.3482	-5.72	
11	0.010	0.0179	-4.82	
12	0.031	0.0500	-4.88	Secondary load
13	0.088	0.1009	-4.94	
14	0.187	0.1947	-5.10	
15	0.424	0.4281	-5.48	
16	0.848	0.8468	-6.06	
17	1.098	1.0913	-6.48	



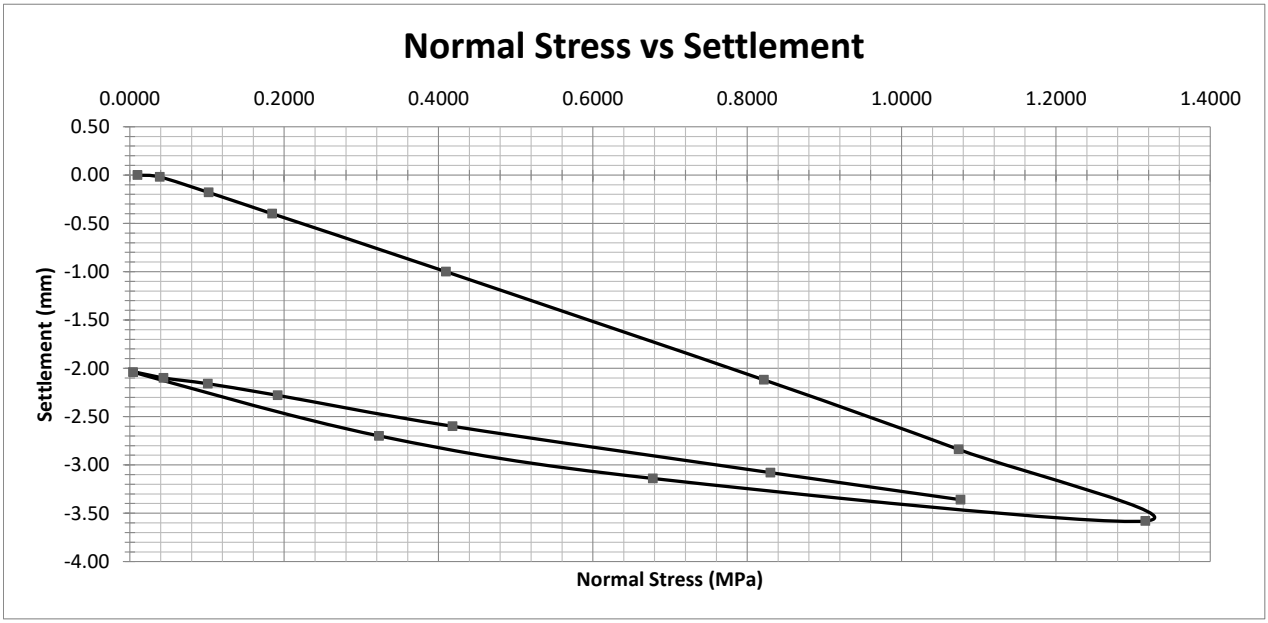
Ev1 (MPa)	45.85	Ev2 (MPa)	147.55
Ev2/Ev1=3.22			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-19**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0389	-0.02	
3	0.088	0.1021	-0.18	
4	0.187	0.1845	-0.40	
5	0.424	0.4096	-1.00	
6	0.848	0.8217	-2.12	
7	1.098	1.0740	-2.84	
8	1.348	1.3161	-3.58	
9	0.674	0.6778	-3.14	Unloaded
10	0.337	0.3231	-2.70	
11	0.010	0.0044	-2.04	
12	0.031	0.0437	-2.10	Secondary load
13	0.088	0.1013	-2.16	
14	0.187	0.1917	-2.28	
15	0.424	0.4182	-2.60	
16	0.848	0.8304	-3.08	
17	1.098	1.0765	-3.36	



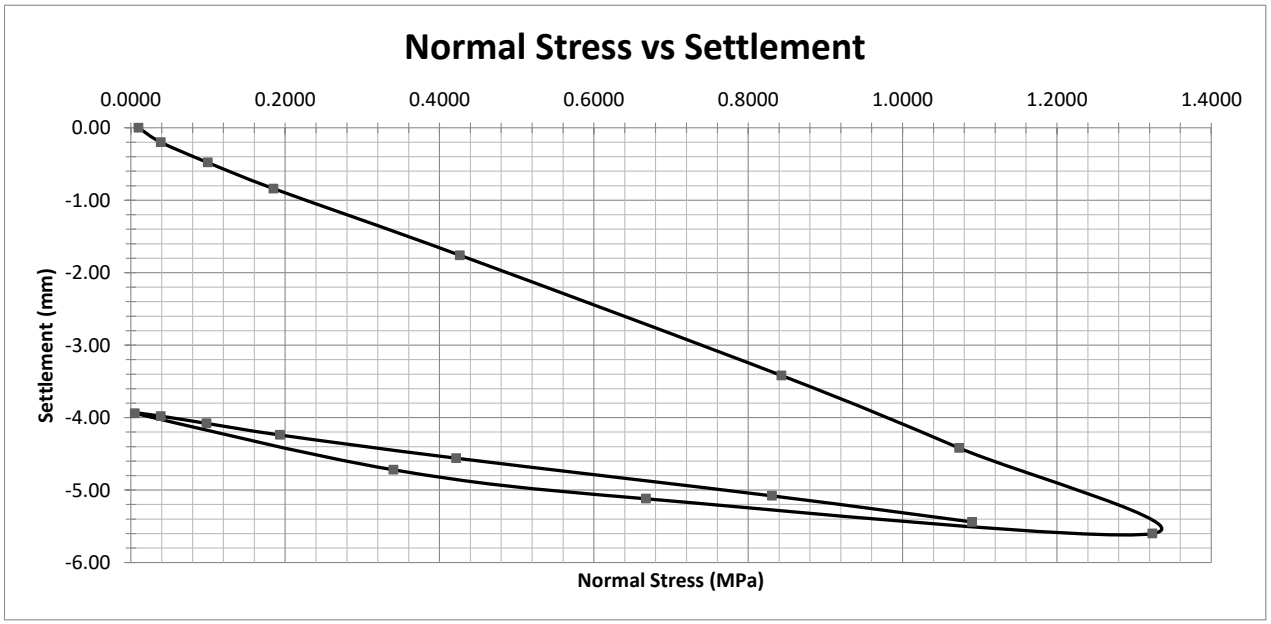
Ev1 (MPa)	81.20	Ev2 (MPa)	187.73
Ev2/Ev1=2.31			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-20**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0389	-0.20	
3	0.088	0.0997	-0.48	
4	0.187	0.1850	-0.84	
5	0.424	0.4265	-1.76	
6	0.848	0.8433	-3.42	
7	1.098	1.0735	-4.42	
8	1.348	1.3240	-5.60	
9	0.674	0.6677	-5.12	Unloaded
10	0.337	0.3402	-4.72	
11	0.010	0.0052	-3.94	
12	0.031	0.0389	-3.98	Secondary load
13	0.088	0.0983	-4.08	
14	0.187	0.1934	-4.24	
15	0.424	0.4216	-4.56	
16	0.848	0.8309	-5.08	
17	1.098	1.0902	-5.44	



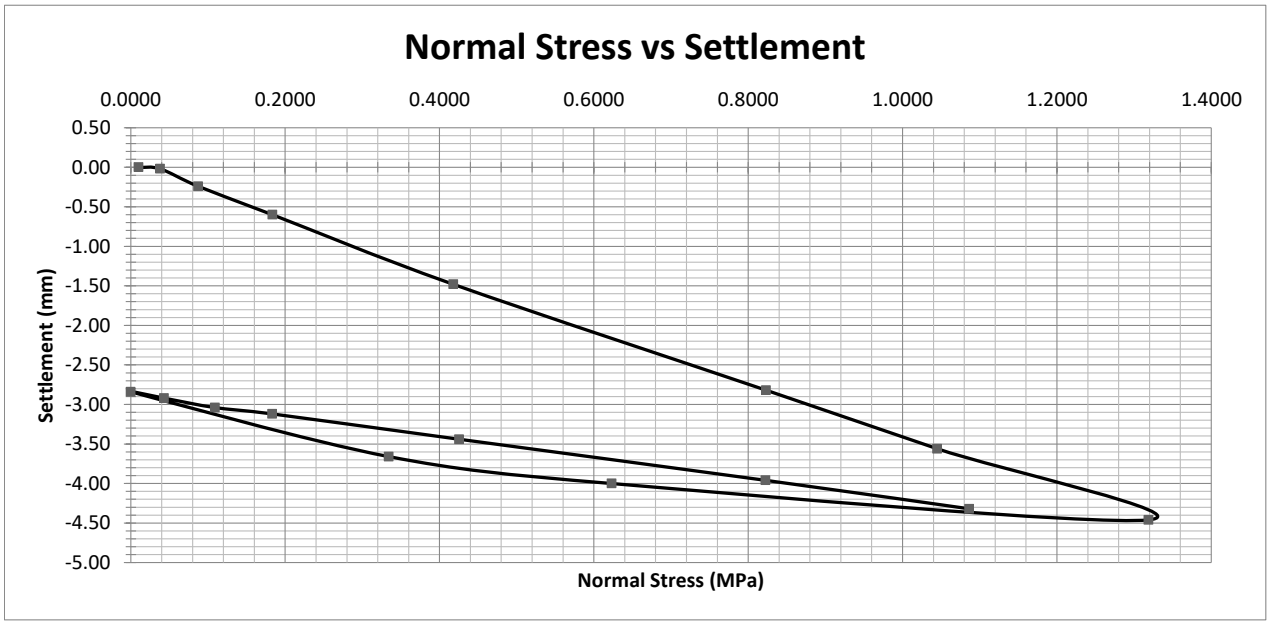
Ev1 (MPa)	54.46	Ev2 (MPa)	168.03
Ev2/Ev1=3.09			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-21**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0381	-0.02	
3	0.088	0.0871	-0.24	
4	0.187	0.1835	-0.60	
5	0.424	0.4178	-1.48	
6	0.848	0.8232	-2.82	
7	1.098	1.0449	-3.56	
8	1.348	1.3188	-4.46	
9	0.674	0.6229	-4.00	Unloaded
10	0.337	0.3344	-3.66	
11	0.010	0.0000	-2.84	
12	0.031	0.0431	-2.92	Secondary load
13	0.088	0.1091	-3.04	
14	0.187	0.1833	-3.12	
15	0.424	0.4253	-3.44	
16	0.848	0.8225	-3.96	
17	1.098	1.0864	-4.32	



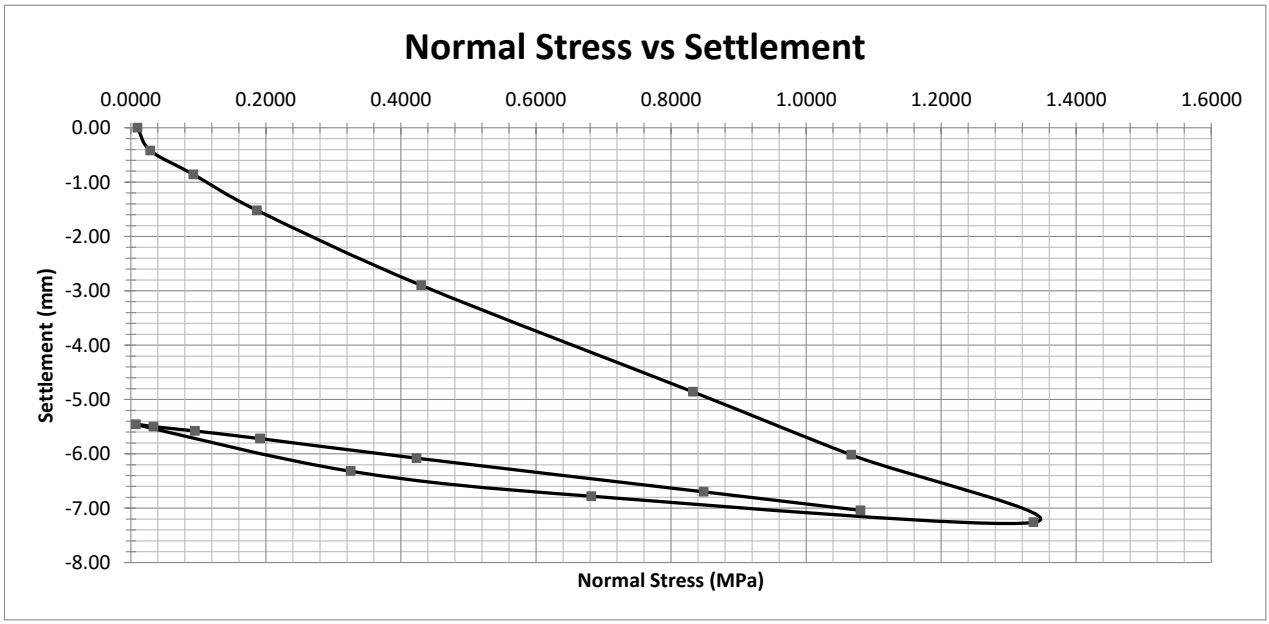
Ev1 (MPa)	65.37	Ev2 (MPa)	43.56
Ev2/Ev1=0.67			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-22**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0289	-0.42	
3	0.088	0.0929	-0.86	
4	0.187	0.1870	-1.52	
5	0.424	0.4301	-2.90	
6	0.848	0.8324	-4.86	
7	1.098	1.0671	-6.02	
8	1.348	1.3370	-7.26	
9	0.674	0.6822	-6.78	Unloaded
10	0.337	0.3255	-6.32	
11	0.010	0.0075	-5.46	
12	0.031	0.0337	-5.50	Secondary load
13	0.088	0.0951	-5.58	
14	0.187	0.1916	-5.72	
15	0.424	0.4233	-6.08	
16	0.848	0.8487	-6.70	
17	1.098	1.0808	-7.04	



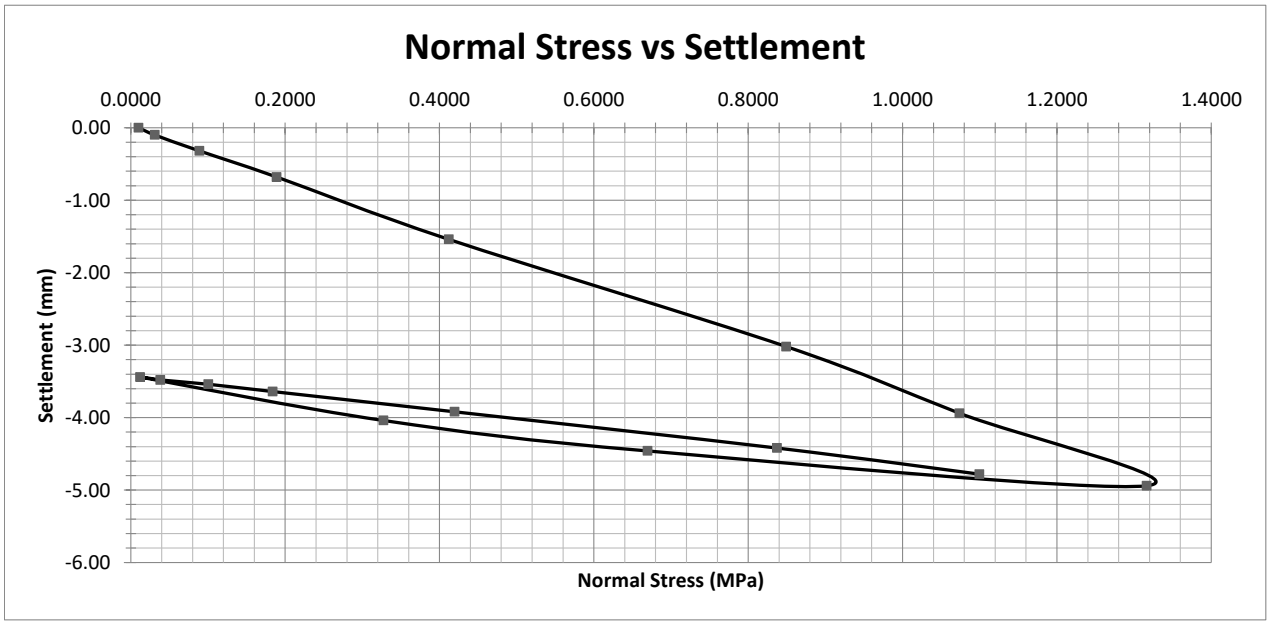
Ev1 (MPa)	43.51	Ev2 (MPa)	25.66
Ev2/Ev1=0.59			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-23**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0311	-0.10	
3	0.088	0.0891	-0.32	
4	0.187	0.1891	-0.68	
5	0.424	0.4120	-1.54	
6	0.848	0.8494	-3.02	
7	1.098	1.0738	-3.94	
8	1.348	1.3164	-4.94	
9	0.674	0.6696	-4.46	Unloaded
10	0.337	0.3276	-4.04	
11	0.010	0.0122	-3.44	
12	0.031	0.0383	-3.48	Secondary load
13	0.088	0.1007	-3.54	
14	0.187	0.1838	-3.64	
15	0.424	0.4197	-3.92	
16	0.848	0.8374	-4.42	
17	1.098	1.0995	-4.78	



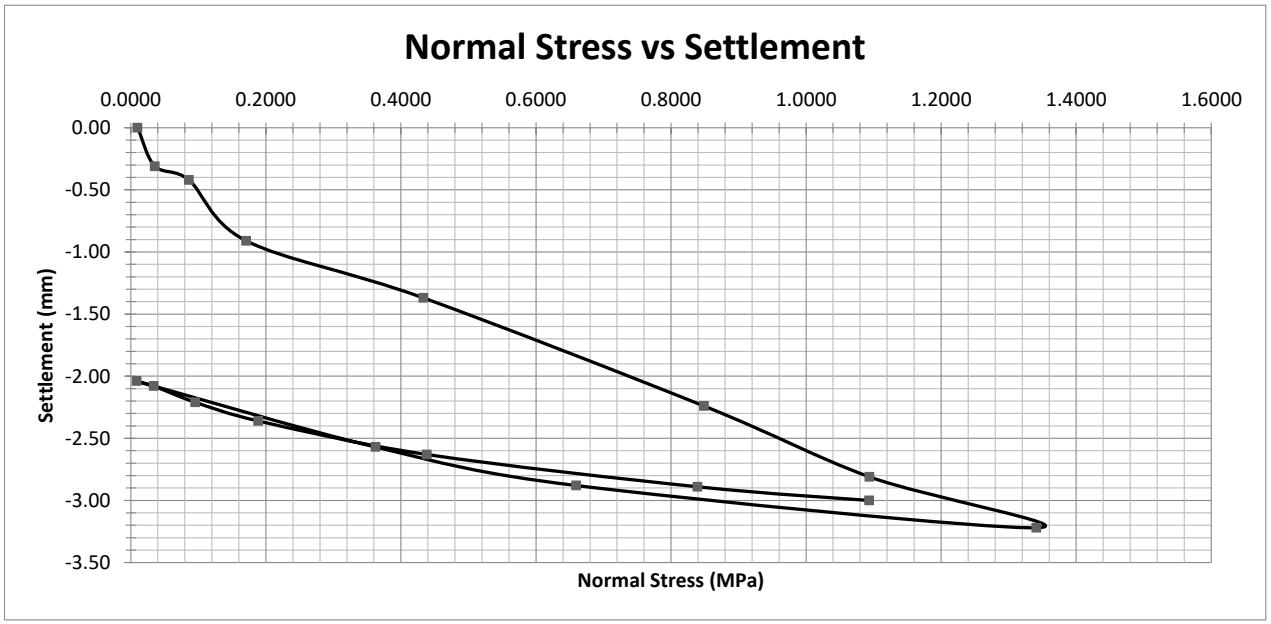
Ev1 (MPa)	60.54	Ev2 (MPa)	180.60
Ev2/Ev1=2.98			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	29/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-24**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0357	-0.31	
3	0.088	0.0860	-0.42	
4	0.187	0.1709	-0.91	
5	0.424	0.4335	-1.37	
6	0.848	0.8488	-2.24	
7	1.098	1.0937	-2.81	
8	1.348	1.3411	-3.22	
9	0.674	0.6597	-2.88	Unloaded
10	0.337	0.3624	-2.57	
11	0.010	0.0088	-2.04	
12	0.031	0.0342	-2.08	Secondary load
13	0.088	0.0954	-2.21	
14	0.187	0.1886	-2.36	
15	0.424	0.4382	-2.63	
16	0.848	0.8392	-2.89	
17	1.098	1.0936	-3.00	



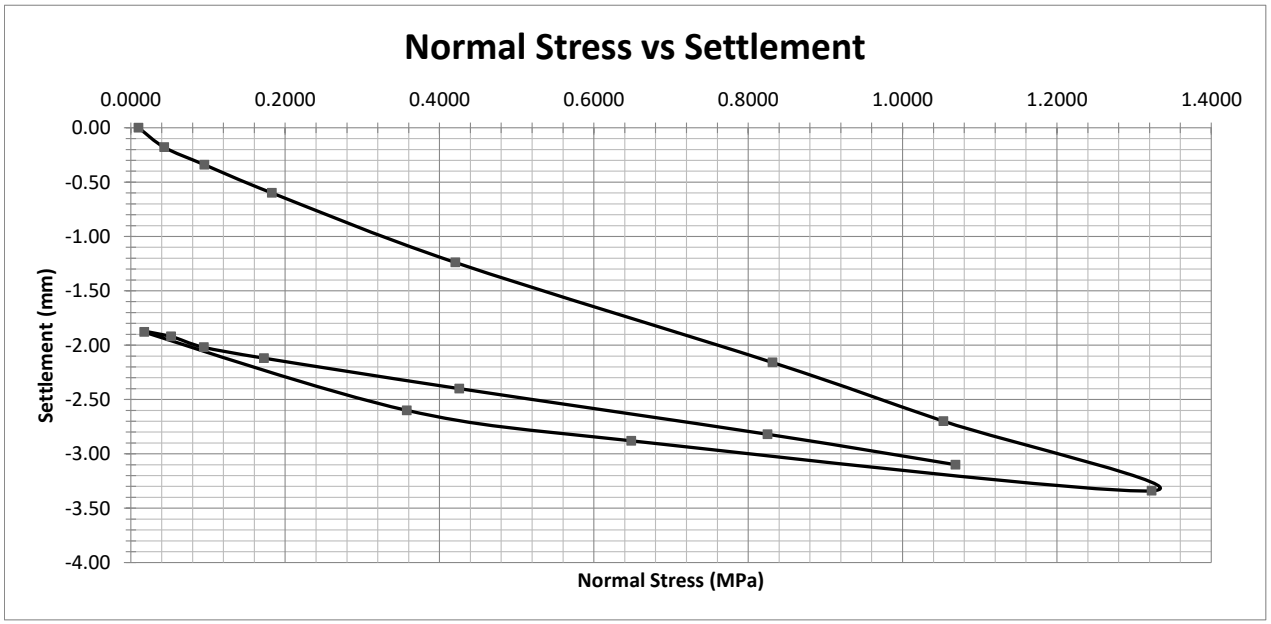
Ev1 (MPa)	102.47	Ev2 (MPa)	330.63
Ev2/Ev1=3.23			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-25**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0434	-0.18	
3	0.088	0.0954	-0.34	
4	0.187	0.1829	-0.60	
5	0.424	0.4207	-1.24	
6	0.848	0.8316	-2.16	
7	1.098	1.0532	-2.70	
8	1.348	1.3229	-3.34	
9	0.674	0.6485	-2.88	Unloaded
10	0.337	0.3578	-2.60	
11	0.010	0.0174	-1.88	
12	0.031	0.0521	-1.92	Secondary load
13	0.088	0.0946	-2.02	
14	0.187	0.1728	-2.12	
15	0.424	0.4257	-2.40	
16	0.848	0.8252	-2.82	
17	1.098	1.0688	-3.10	



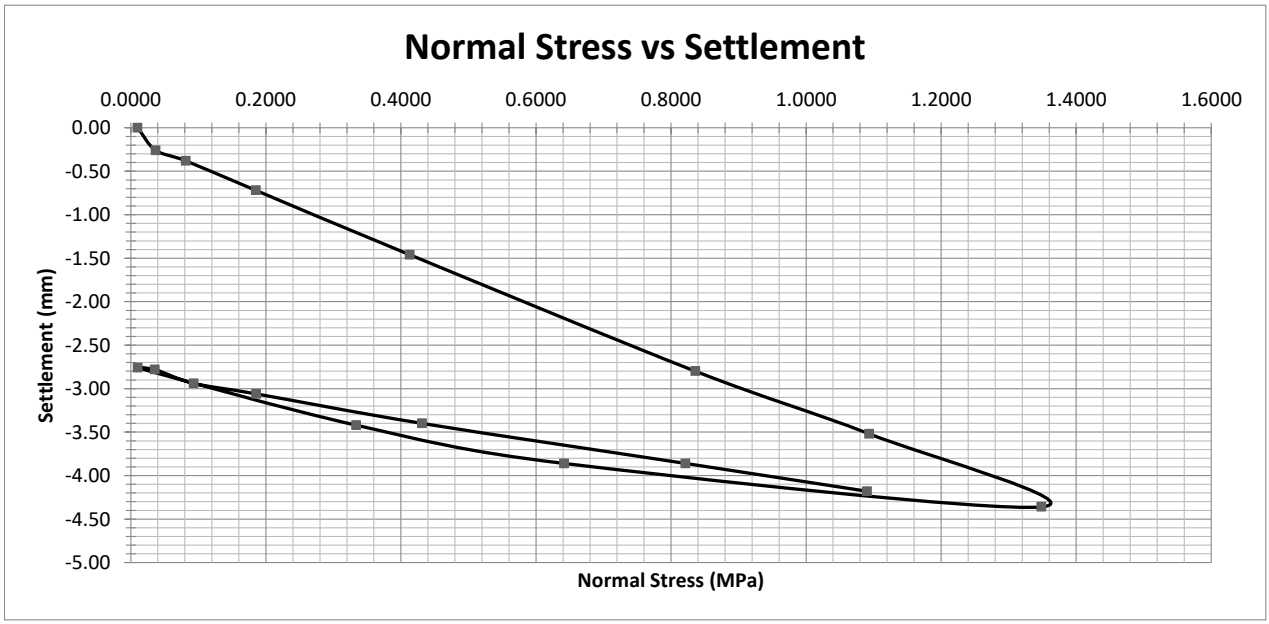
Ev1 (MPa)	92.22	Ev2 (MPa)	205.47
Ev2/Ev1=2.23			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	29/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-26**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0368	-0.26	
3	0.088	0.0813	-0.38	
4	0.187	0.1852	-0.72	
5	0.424	0.4130	-1.46	
6	0.848	0.8361	-2.80	
7	1.098	1.0933	-3.52	
8	1.348	1.3484	-4.36	
9	0.674	0.6416	-3.86	Unloaded
10	0.337	0.3336	-3.42	
11	0.010	0.0102	-2.76	
12	0.031	0.0357	-2.78	Secondary load
13	0.088	0.0932	-2.94	
14	0.187	0.1855	-3.06	
15	0.424	0.4315	-3.40	
16	0.848	0.8214	-3.86	
17	1.098	1.0903	-4.18	



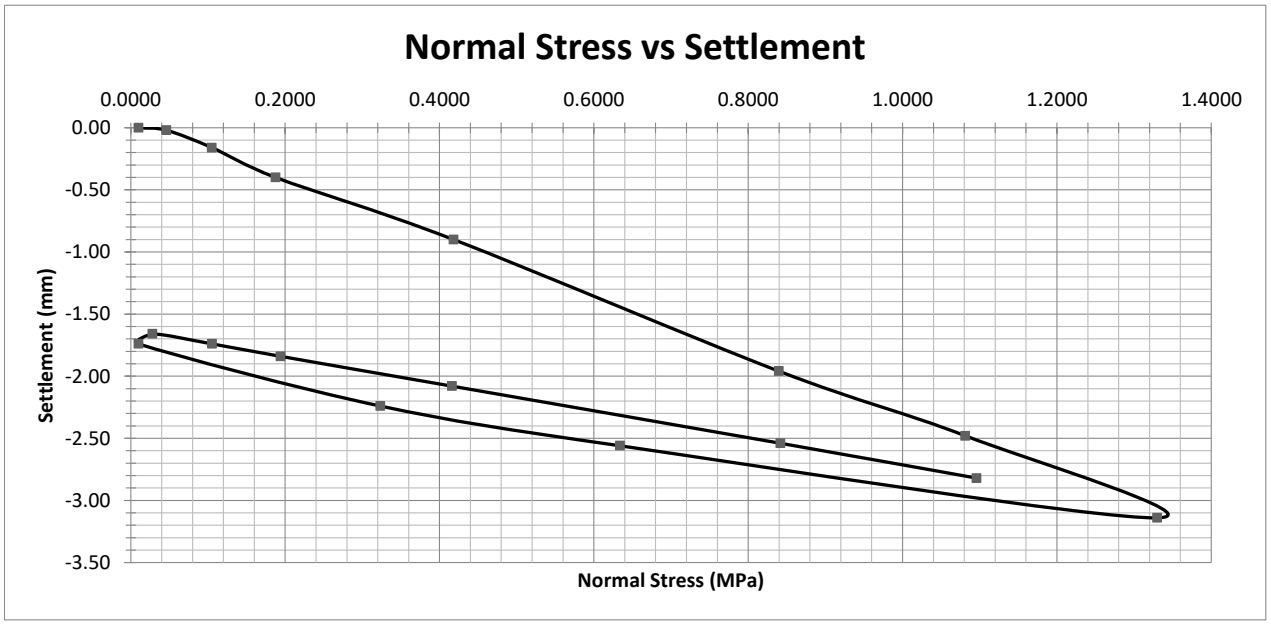
Ev1 (MPa)	72.08	Ev2 (MPa)	184.52
Ev2/Ev1=2.56			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-27**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0460	-0.02	
3	0.088	0.1051	-0.16	
4	0.187	0.1876	-0.40	
5	0.424	0.4182	-0.90	
6	0.848	0.8399	-1.96	
7	1.098	1.0814	-2.48	
8	1.348	1.3301	-3.14	
9	0.674	0.6338	-2.56	Unloaded
10	0.337	0.3233	-2.24	
11	0.010	0.0099	-1.74	
12	0.031	0.0282	-1.66	Secondary load
13	0.088	0.1054	-1.74	
14	0.187	0.1940	-1.84	
15	0.424	0.4161	-2.08	
16	0.848	0.8418	-2.54	
17	1.098	1.0958	-2.82	



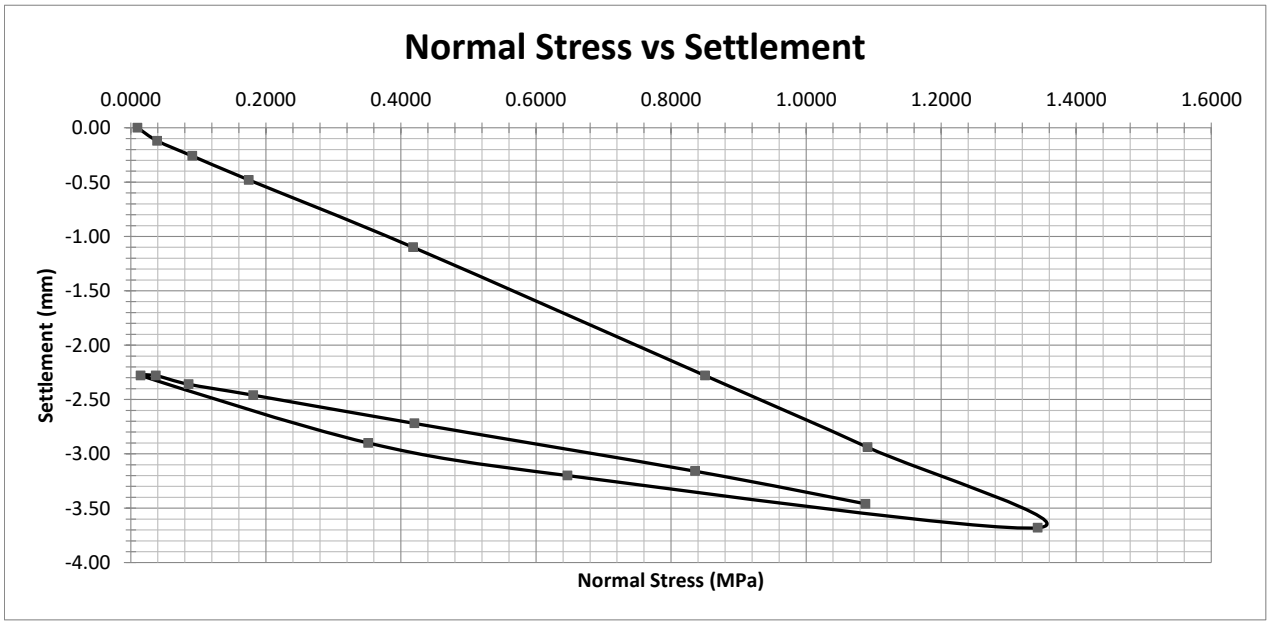
Ev1 (MPa)	93.42	Ev2 (MPa)	206.72
Ev2/Ev1=2.21			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	29/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-28**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0390	-0.12	
3	0.088	0.0911	-0.26	
4	0.187	0.1747	-0.48	
5	0.424	0.4180	-1.10	
6	0.848	0.8504	-2.28	
7	1.098	1.0912	-2.94	
8	1.348	1.3431	-3.68	
9	0.674	0.6469	-3.20	Unloaded
10	0.337	0.3517	-2.90	
11	0.010	0.0147	-2.28	
12	0.031	0.0372	-2.28	Secondary load
13	0.088	0.0856	-2.36	
14	0.187	0.1812	-2.46	
15	0.424	0.4200	-2.72	
16	0.848	0.8358	-3.16	
17	1.098	1.0882	-3.46	



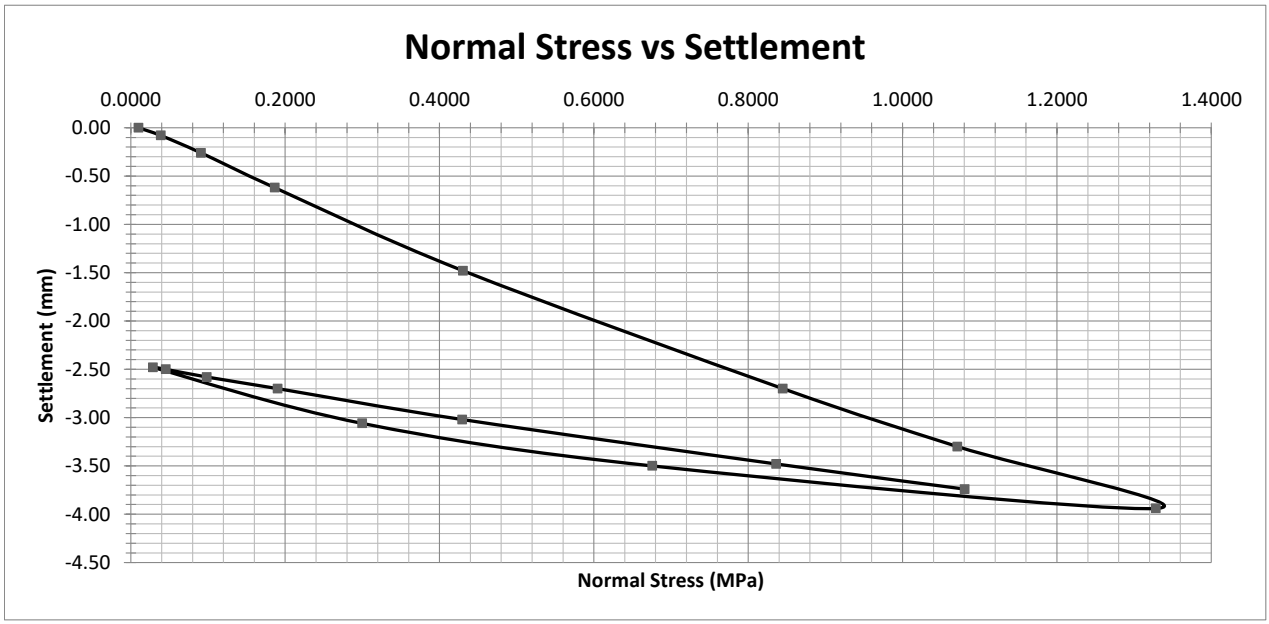
Ev1 (MPa)	82.85	Ev2 (MPa)	203.94
Ev2/Ev1=2.46			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	30/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-29**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0388	-0.08	
3	0.088	0.0910	-0.26	
4	0.187	0.1865	-0.62	
5	0.424	0.4305	-1.48	
6	0.848	0.8449	-2.70	
7	1.098	1.0712	-3.30	
8	1.348	1.3281	-3.94	
9	0.674	0.6758	-3.50	Unloaded
10	0.337	0.3000	-3.06	
11	0.010	0.0287	-2.48	
12	0.031	0.0453	-2.50	Secondary load
13	0.088	0.0986	-2.58	
14	0.187	0.1904	-2.70	
15	0.424	0.4296	-3.02	
16	0.848	0.8364	-3.48	
17	1.098	1.0806	-3.74	



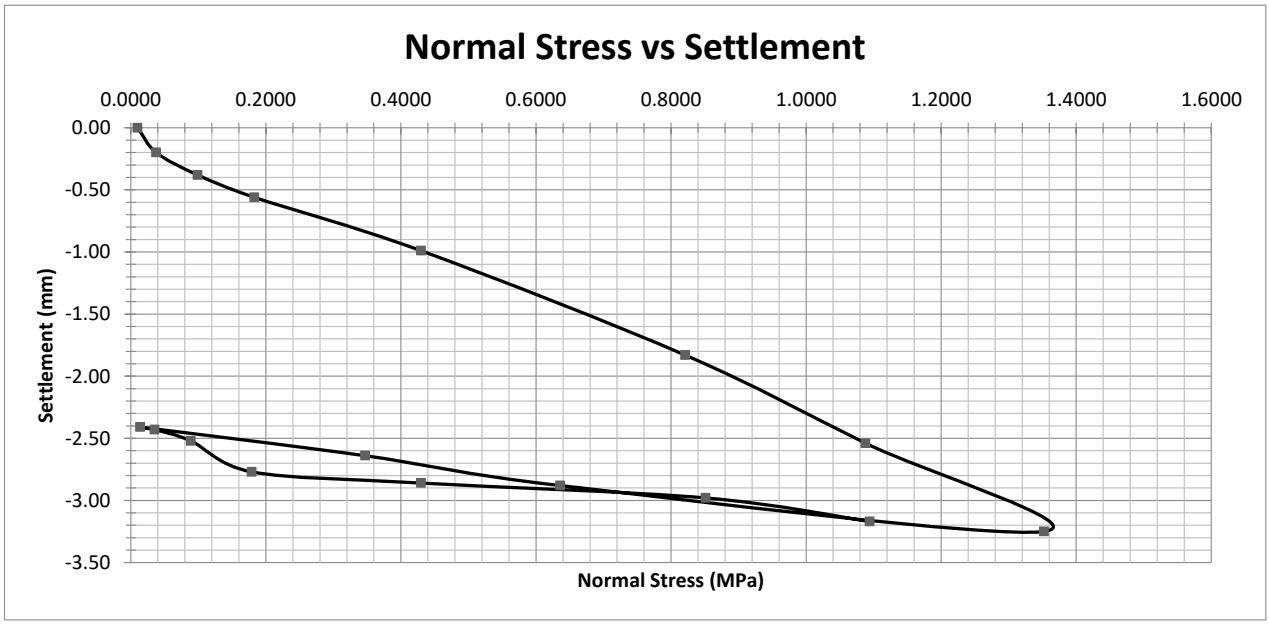
Ev1 (MPa)	74.82	Ev2 (MPa)	195.78
Ev2/Ev1=2.62			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	29/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-30**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0377	-0.20	
3	0.088	0.0989	-0.38	
4	0.187	0.1828	-0.56	
5	0.424	0.4298	-0.99	
6	0.848	0.8210	-1.83	
7	1.098	1.0882	-2.54	
8	1.348	1.3523	-3.25	
9	0.674	0.6359	-2.88	Unloaded
10	0.337	0.3470	-2.64	
11	0.010	0.0139	-2.41	
12	0.031	0.0351	-2.43	Secondary load
13	0.088	0.0887	-2.52	
14	0.187	0.1789	-2.77	
15	0.424	0.4299	-2.86	
16	0.848	0.8514	-2.98	
17	1.098	1.0944	-3.17	



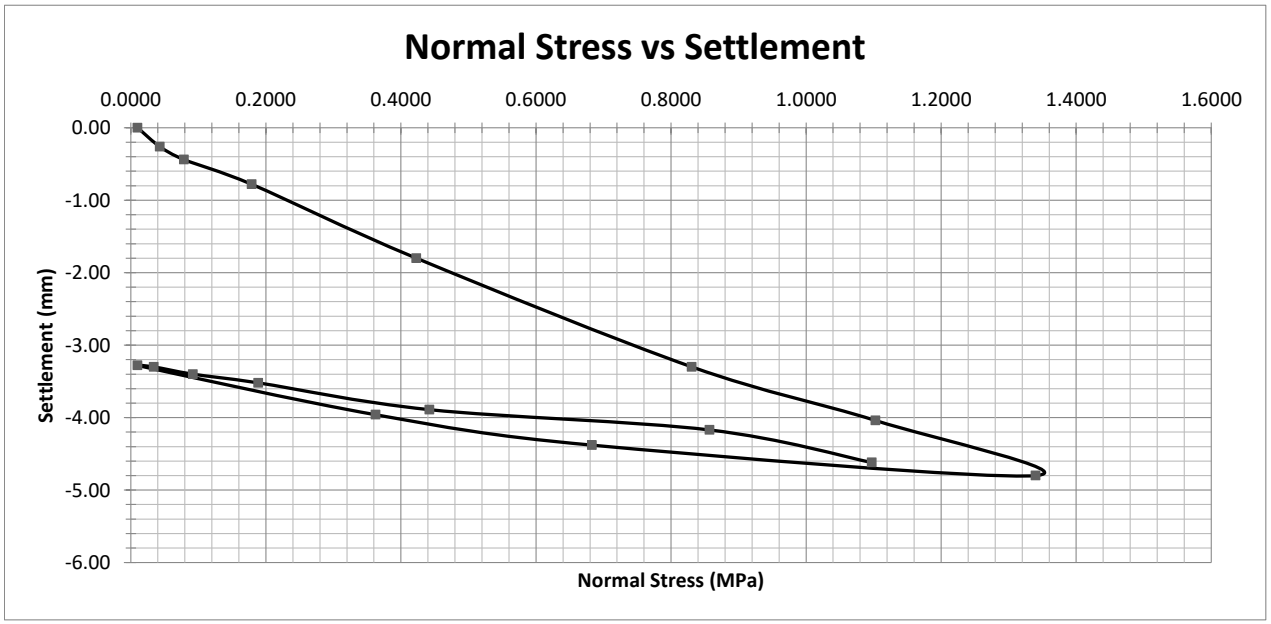
Ev1 (MPa)	99.45	Ev2 (MPa)	464.45
Ev2/Ev1=4.67			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	29/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-31**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0429	-0.26	
3	0.088	0.0789	-0.44	
4	0.187	0.1790	-0.78	
5	0.424	0.4229	-1.80	
6	0.848	0.8307	-3.30	
7	1.098	1.1028	-4.04	
8	1.348	1.3399	-4.80	
9	0.674	0.6831	-4.38	Unloaded
10	0.337	0.3624	-3.96	
11	0.010	0.0098	-3.28	
12	0.031	0.0342	-3.30	Secondary load
13	0.088	0.0918	-3.40	
14	0.187	0.1886	-3.52	
15	0.424	0.4421	-3.89	
16	0.848	0.8572	-4.17	
17	1.098	1.0972	-4.62	



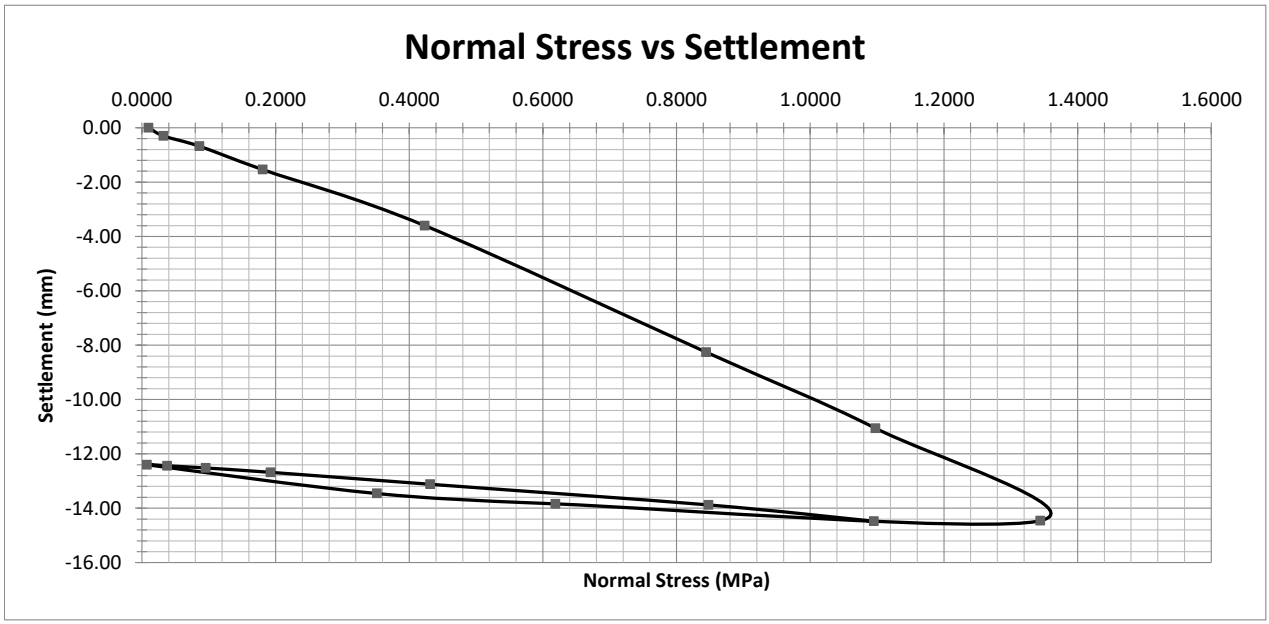
Ev1 (MPa)	64.54	Ev2 (MPa)	194.94
Ev2/Ev1=3.02			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	29/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-32**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0323	-0.30	
3	0.088	0.0862	-0.68	
4	0.187	0.1807	-1.54	
5	0.424	0.4231	-3.60	
6	0.848	0.8444	-8.26	
7	1.098	1.0977	-11.06	
8	1.348	1.3443	-14.46	
9	0.674	0.6187	-13.84	Unloaded
10	0.337	0.3515	-13.46	
11	0.010	0.0075	-12.40	
12	0.031	0.0378	-12.44	Secondary load
13	0.088	0.0954	-12.52	
14	0.187	0.1925	-12.68	
15	0.424	0.4315	-13.12	
16	0.848	0.8478	-13.88	
17	1.098	1.0954	-14.48	



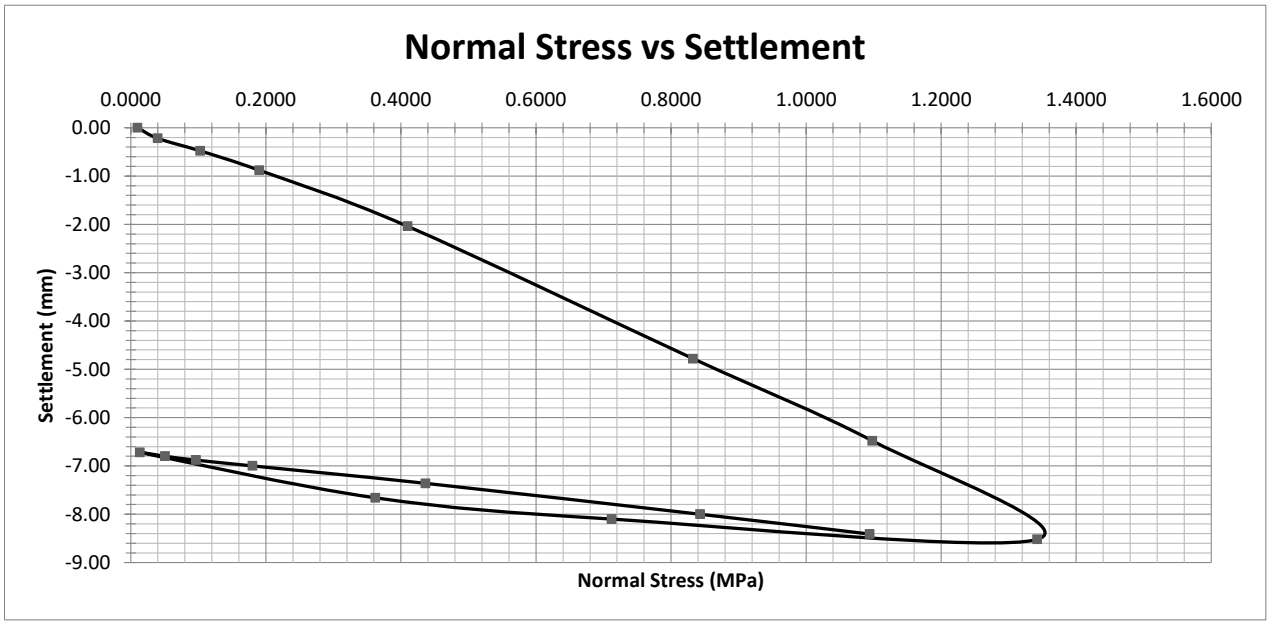
Ev1 (MPa)	21.01	Ev2 (MPa)	112.70
Ev2/Ev1=5.36			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	29/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-33**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0399	-0.22	
3	0.088	0.1030	-0.48	
4	0.187	0.1902	-0.88	
5	0.424	0.4100	-2.04	
6	0.848	0.8327	-4.78	
7	1.098	1.0980	-6.48	
8	1.348	1.3424	-8.52	
9	0.674	0.7122	-8.10	Unloaded
10	0.337	0.3622	-7.66	
11	0.010	0.0133	-6.72	
12	0.031	0.0506	-6.80	Secondary load
13	0.088	0.0968	-6.88	
14	0.187	0.1804	-7.00	
15	0.424	0.4364	-7.36	
16	0.848	0.8429	-8.00	
17	1.098	1.0941	-8.41	



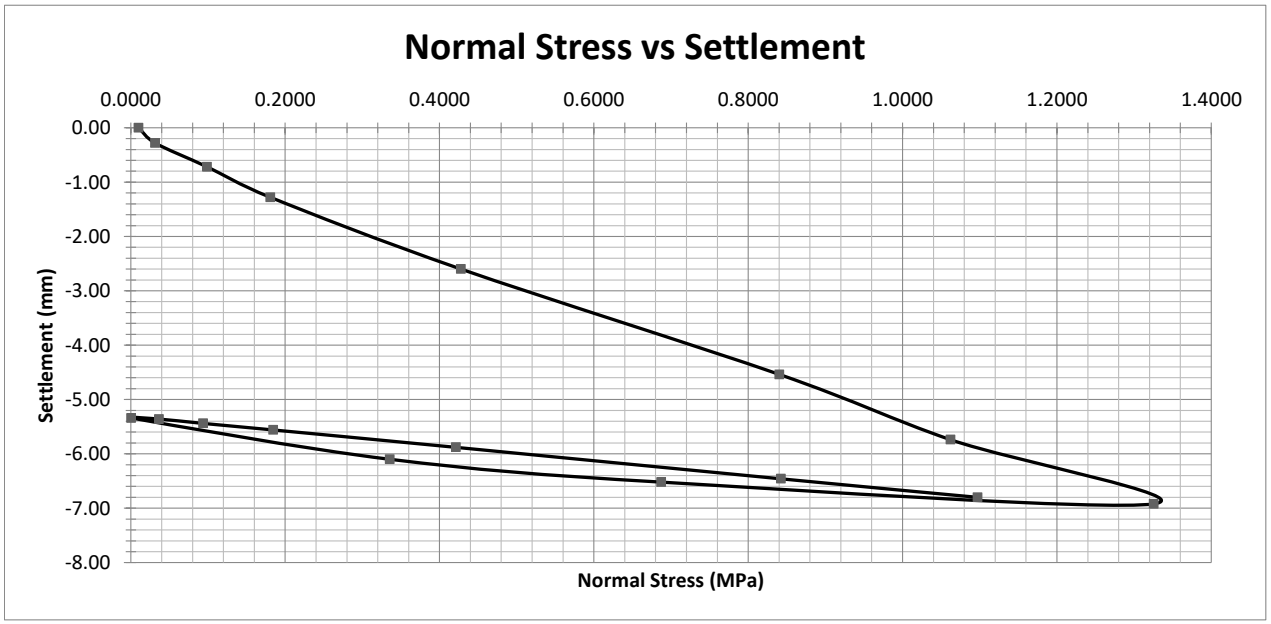
Ev1 (MPa)	35.62	Ev2 (MPa)	144.20
Ev2/Ev1=4.05			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	23/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-34**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0314	-0.28	
3	0.088	0.0990	-0.72	
4	0.187	0.1809	-1.28	
5	0.424	0.4277	-2.60	
6	0.848	0.8406	-4.54	
7	1.098	1.0622	-5.74	
8	1.348	1.3254	-6.92	
9	0.674	0.6874	-6.52	Unloaded
10	0.337	0.3357	-6.10	
11	0.010	0.0005	-5.34	
12	0.031	0.0366	-5.36	Secondary load
13	0.088	0.0937	-5.44	
14	0.187	0.1845	-5.56	
15	0.424	0.4212	-5.88	
16	0.848	0.8426	-6.46	
17	1.098	1.0972	-6.80	



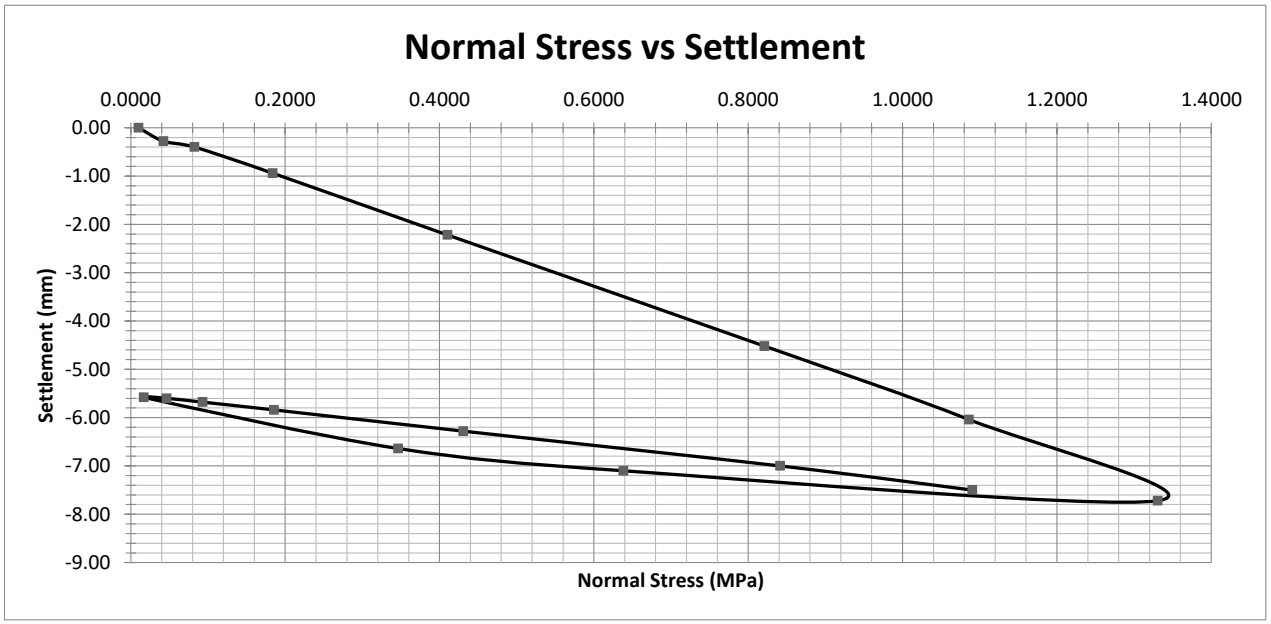
Ev1 (MPa)	44.28	Ev2 (MPa)	165.44
Ev2/Ev1=3.74			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO/MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	22/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-35**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0424	-0.28	
3	0.088	0.0825	-0.40	
4	0.187	0.1838	-0.94	
5	0.424	0.4105	-2.22	
6	0.848	0.8211	-4.52	
7	1.098	1.0859	-6.04	
8	1.348	1.3305	-7.72	
9	0.674	0.6382	-7.10	Unloaded
10	0.337	0.3466	-6.64	
11	0.010	0.0167	-5.58	
12	0.031	0.0463	-5.60	Secondary load
13	0.088	0.0932	-5.68	
14	0.187	0.1856	-5.84	
15	0.424	0.4308	-6.28	
16	0.848	0.8413	-7.00	
17	1.098	1.0905	-7.50	



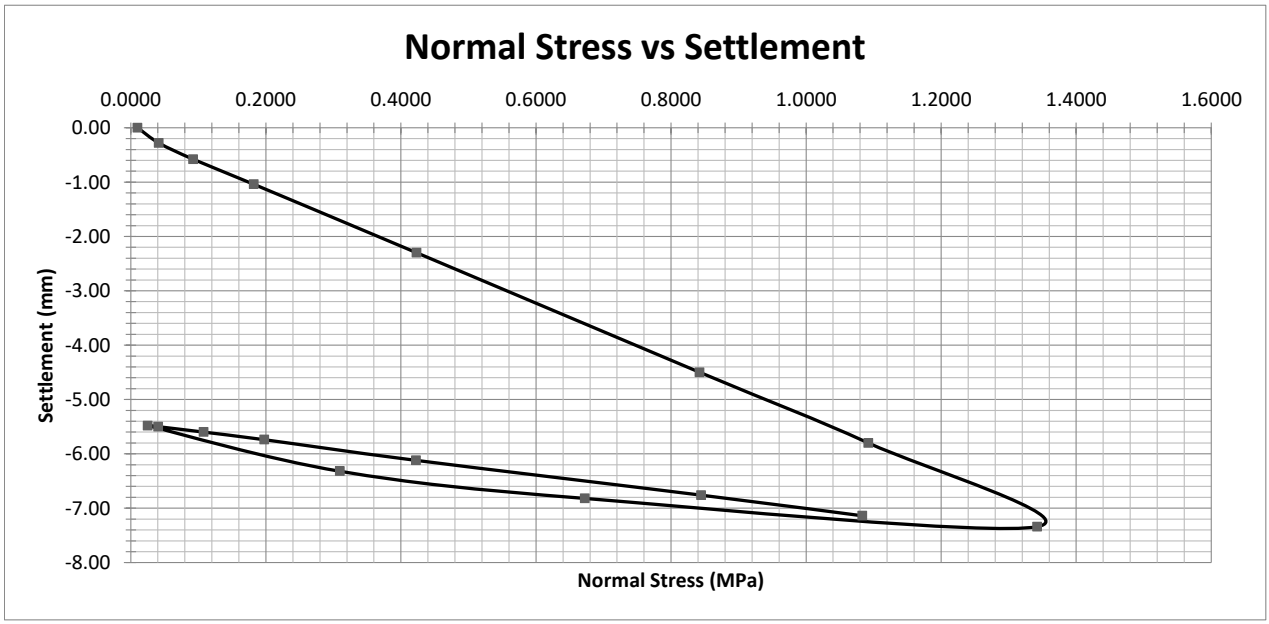
Ev1 (MPa)	39.15	Ev2 (MPa)	122.70
Ev2/Ev1=3.13			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	23/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-36**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0415	-0.28	
3	0.088	0.0925	-0.58	
4	0.187	0.1821	-1.04	
5	0.424	0.4233	-2.30	
6	0.848	0.8425	-4.50	
7	1.098	1.0922	-5.80	
8	1.348	1.3424	-7.34	
9	0.674	0.6723	-6.82	Unloaded
10	0.337	0.3095	-6.32	
11	0.010	0.0250	-5.48	
12	0.031	0.0405	-5.50	Secondary load
13	0.088	0.1080	-5.60	
14	0.187	0.1978	-5.74	
15	0.424	0.4226	-6.12	
16	0.848	0.8447	-6.76	
17	1.098	1.0835	-7.14	



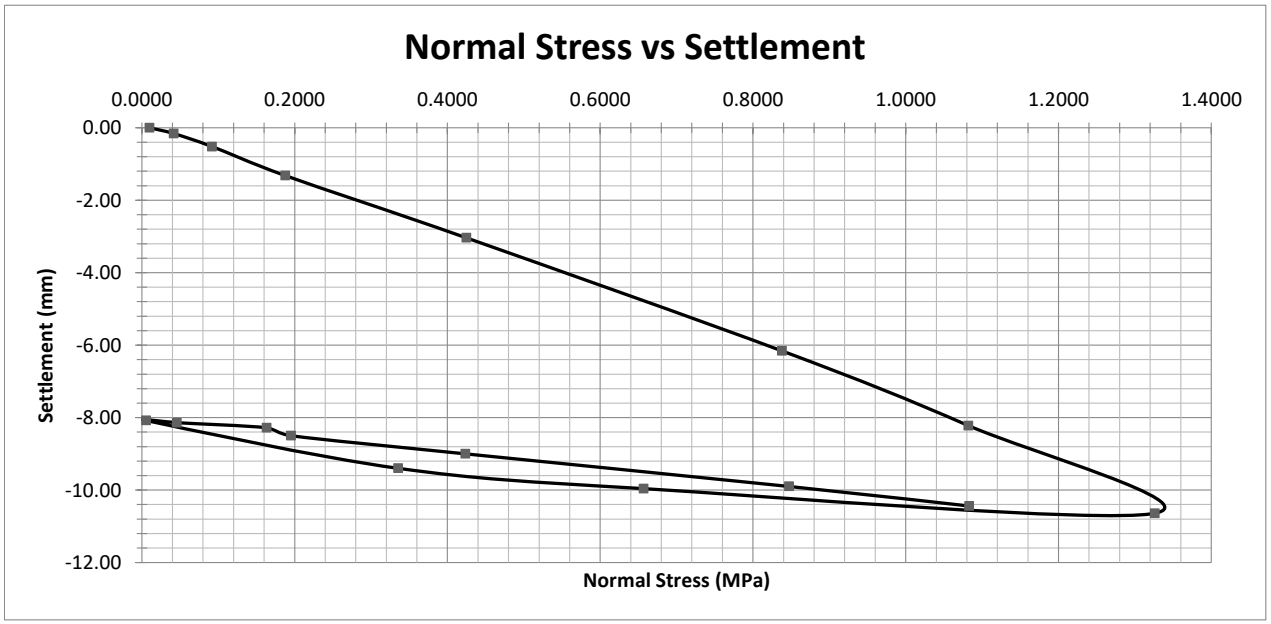
Ev1 (MPa)	41.94	Ev2 (MPa)	143.85
Ev2/Ev1=3.43			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	23/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-37**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0416	-0.16	
3	0.088	0.0920	-0.52	
4	0.187	0.1877	-1.32	
5	0.424	0.4250	-3.04	
6	0.848	0.8381	-6.16	
7	1.098	1.0820	-8.22	
8	1.348	1.3260	-10.64	
9	0.674	0.6568	-9.96	Unloaded
10	0.337	0.3356	-9.40	
11	0.010	0.0055	-8.08	
12	0.031	0.0458	-8.14	Secondary load
13	0.088	0.1633	-8.28	
14	0.187	0.1954	-8.50	
15	0.424	0.4236	-9.00	
16	0.848	0.8474	-9.90	
17	1.098	1.0830	-10.44	



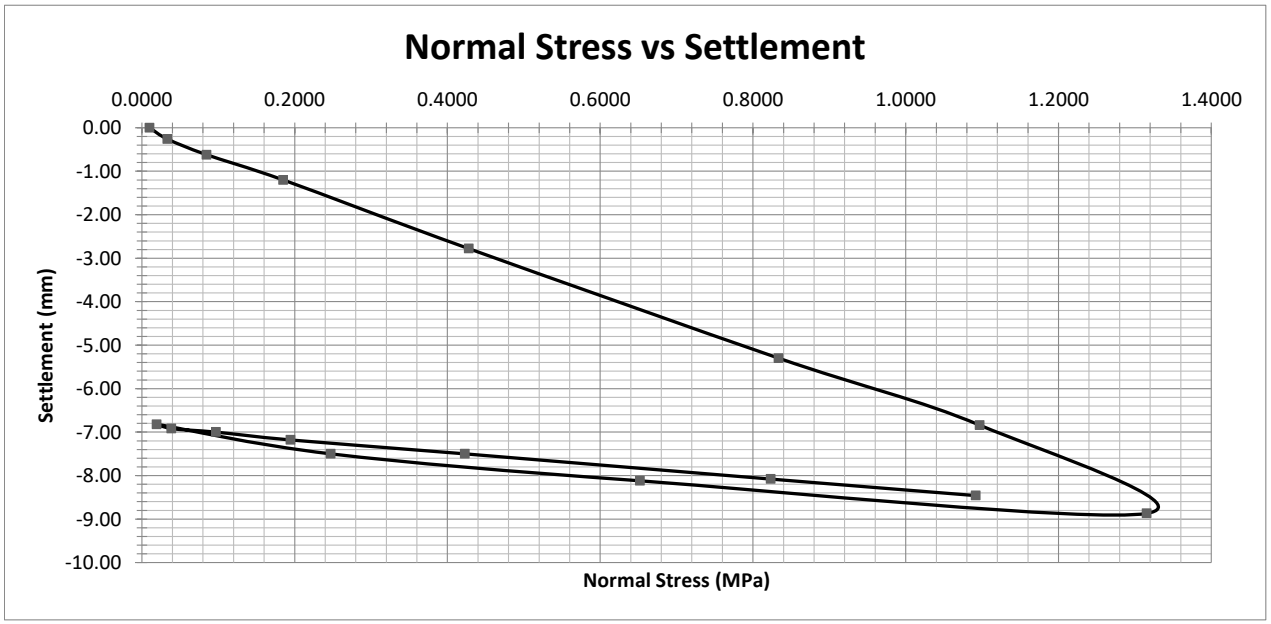
Ev1 (MPa)	28.13	Ev2 (MPa)	100.77
Ev2/Ev1=3.58			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	23/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-38**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0334	-0.26	
3	0.088	0.0847	-0.62	
4	0.187	0.1850	-1.20	
5	0.424	0.4279	-2.78	
6	0.848	0.8337	-5.30	
7	1.098	1.0968	-6.84	
8	1.348	1.3154	-8.87	
9	0.674	0.6522	-8.12	Unloaded
10	0.337	0.2473	-7.50	
11	0.010	0.0195	-6.82	
12	0.031	0.0386	-6.92	Secondary load
13	0.088	0.0969	-7.00	
14	0.187	0.1947	-7.18	
15	0.424	0.4230	-7.50	
16	0.848	0.8234	-8.08	
17	1.098	1.0916	-8.46	



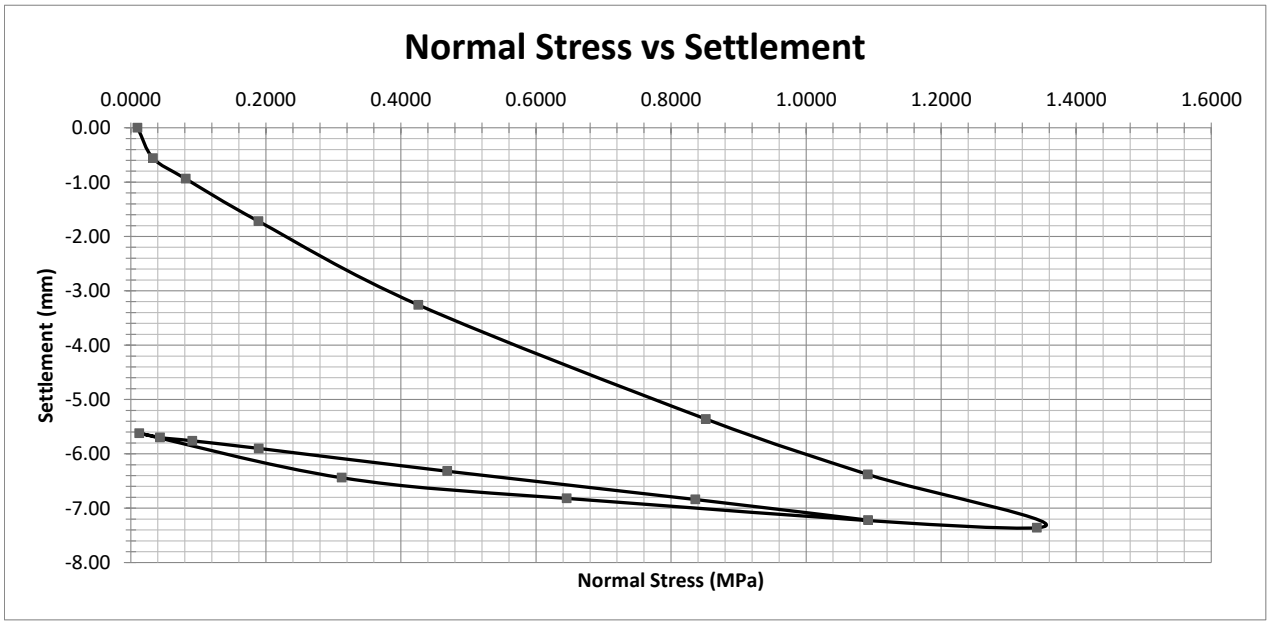
Ev1 (MPa)	34.55	Ev2 (MPa)	155.75
Ev2/Ev1=4.51			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	23/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-39**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0330	-0.56	
3	0.088	0.0814	-0.94	
4	0.187	0.1890	-1.72	
5	0.424	0.4258	-3.26	
6	0.848	0.8517	-5.36	
7	1.098	1.0916	-6.38	
8	1.348	1.3420	-7.36	
9	0.674	0.6457	-6.82	Unloaded
10	0.337	0.3124	-6.44	
11	0.010	0.0127	-5.62	
12	0.031	0.0433	-5.70	Secondary load
13	0.088	0.0912	-5.76	
14	0.187	0.1896	-5.90	
15	0.424	0.4686	-6.32	
16	0.848	0.8362	-6.84	
17	1.098	1.0919	-7.22	



Ev1 (MPa)	43.53	Ev2 (MPa)	154.86
Ev2/Ev1=3.56			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

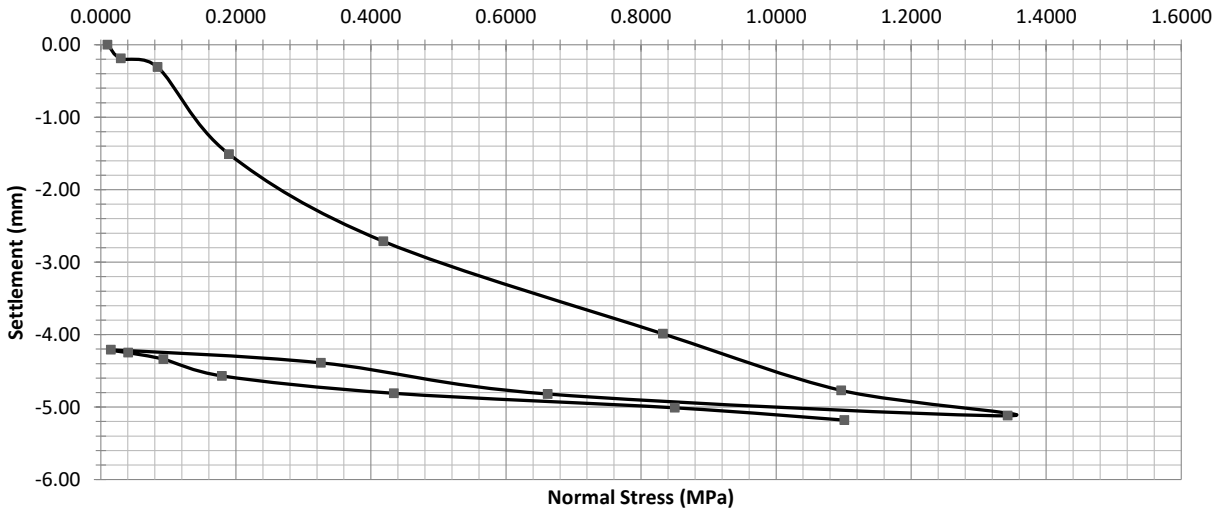
STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	23/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-40**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0296	-0.19	
3	0.088	0.0842	-0.31	
4	0.187	0.1899	-1.51	
5	0.424	0.4187	-2.71	
6	0.848	0.8327	-3.99	
7	1.098	1.0966	-4.77	
8	1.348	1.3431	-5.12	
9	0.674	0.6620	-4.82	Unloaded
10	0.337	0.3262	-4.39	
11	0.010	0.0148	-4.21	
12	0.031	0.0407	-4.25	Secondary load
13	0.088	0.0929	-4.34	
14	0.187	0.1794	-4.57	
15	0.424	0.4340	-4.81	
16	0.848	0.8502	-5.01	
17	1.098	1.1013	-5.18	

Normal Stress vs Settlement



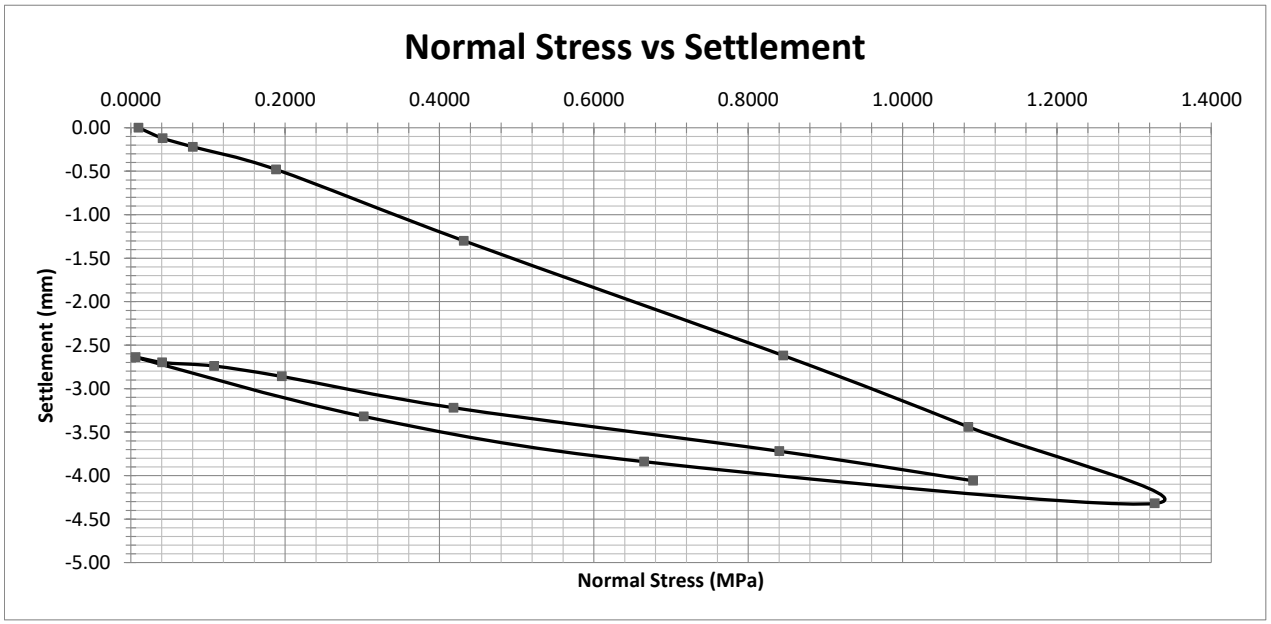
Ev1 (MPa)	59.78	Ev2 (MPa)	338.72
Ev2/Ev1=5.67			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	28/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-41**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0412	-0.12	
3	0.088	0.0806	-0.22	
4	0.187	0.1882	-0.48	
5	0.424	0.4315	-1.30	
6	0.848	0.8456	-2.62	
7	1.098	1.0854	-3.44	
8	1.348	1.3270	-4.32	
9	0.674	0.6653	-3.84	Unloaded
10	0.337	0.3019	-3.32	
11	0.010	0.0064	-2.64	
12	0.031	0.0406	-2.70	Secondary load
13	0.088	0.1081	-2.74	
14	0.187	0.1958	-2.86	
15	0.424	0.4183	-3.22	
16	0.848	0.8406	-3.72	
17	1.098	1.0916	-4.06	



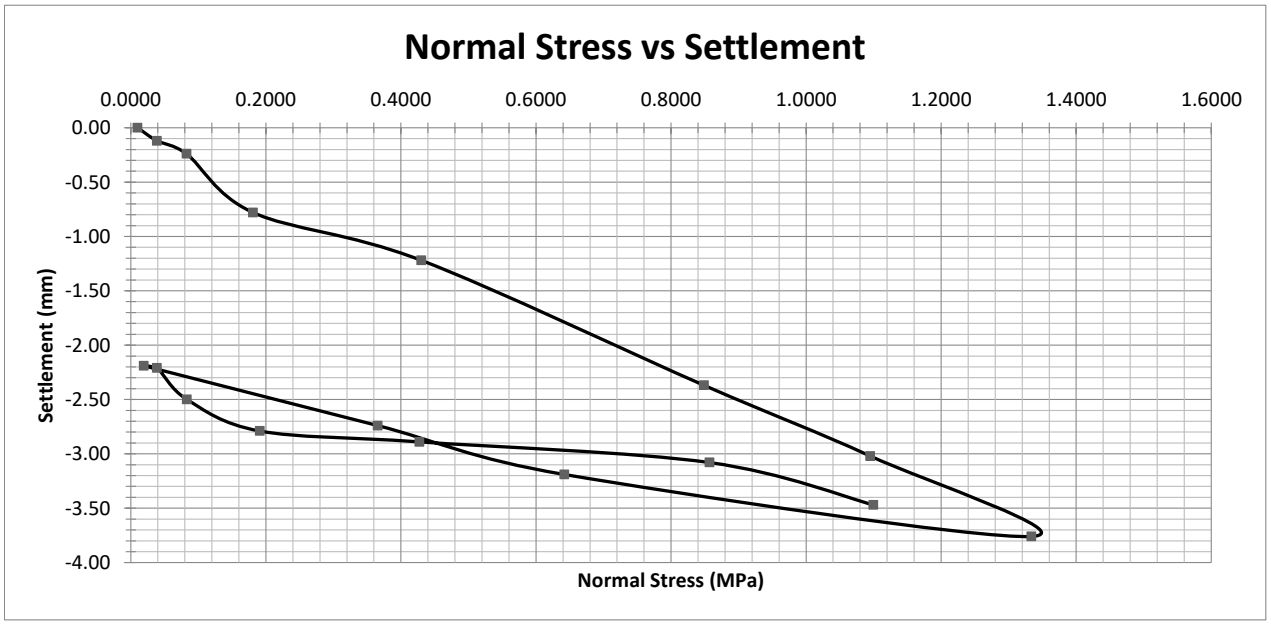
Ev1 (MPa)	68.86	Ev2 (MPa)	172.84
Ev2/Ev1=2.51			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	24/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-42**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0388	-0.12	
3	0.088	0.0825	-0.24	
4	0.187	0.1811	-0.78	
5	0.424	0.4302	-1.22	
6	0.848	0.8490	-2.37	
7	1.098	1.0949	-3.02	
8	1.348	1.3338	-3.76	
9	0.674	0.6422	-3.19	Unloaded
10	0.337	0.3658	-2.74	
11	0.010	0.0192	-2.19	
12	0.031	0.0387	-2.21	Secondary load
13	0.088	0.0832	-2.50	
14	0.187	0.1910	-2.79	
15	0.424	0.4276	-2.89	
16	0.848	0.8571	-3.08	
17	1.098	1.0998	-3.47	



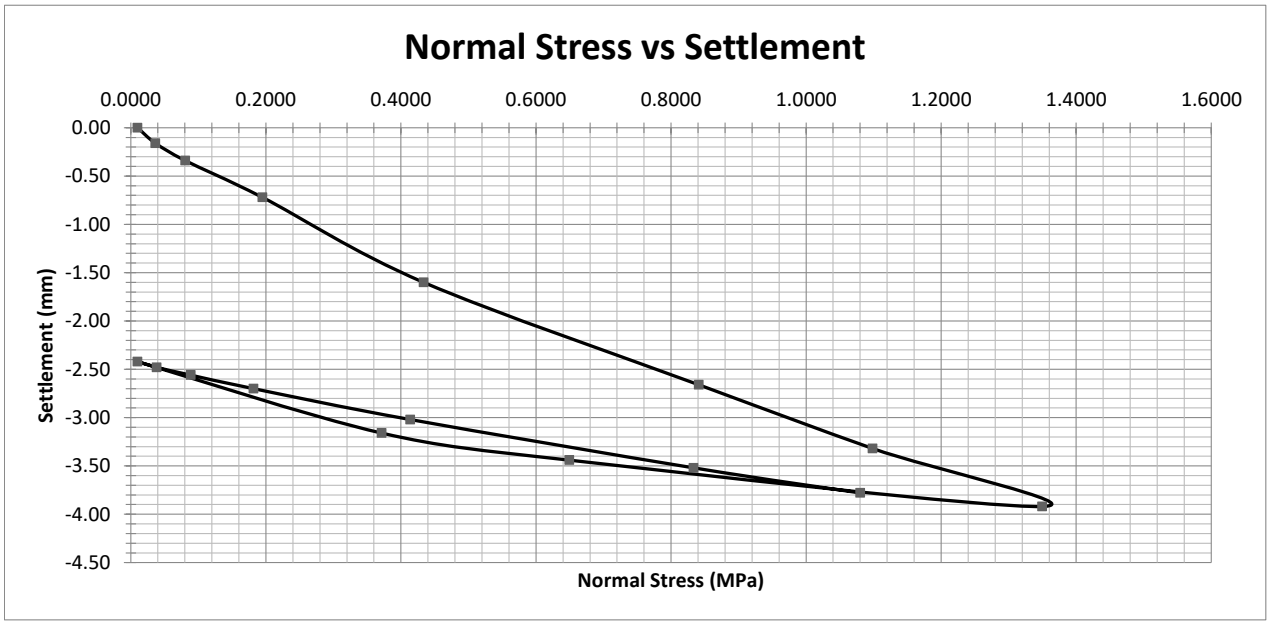
Ev1 (MPa)	82.62	Ev2 (MPa)	267.71
Ev2/Ev1=3.24			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	24/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-43**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0364	-0.16	
3	0.088	0.0806	-0.34	
4	0.187	0.1948	-0.72	
5	0.424	0.4336	-1.60	
6	0.848	0.8410	-2.66	
7	1.098	1.0987	-3.32	
8	1.348	1.3498	-3.92	
9	0.674	0.6494	-3.44	Unloaded
10	0.337	0.3714	-3.16	
11	0.010	0.0098	-2.42	
12	0.031	0.0385	-2.48	Secondary load
13	0.088	0.0888	-2.56	
14	0.187	0.1816	-2.70	
15	0.424	0.4139	-3.02	
16	0.848	0.8335	-3.52	
17	1.098	1.0804	-3.78	



Ev1 (MPa)	78.95	Ev2 (MPa)	191.06
Ev2/Ev1=2.42			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

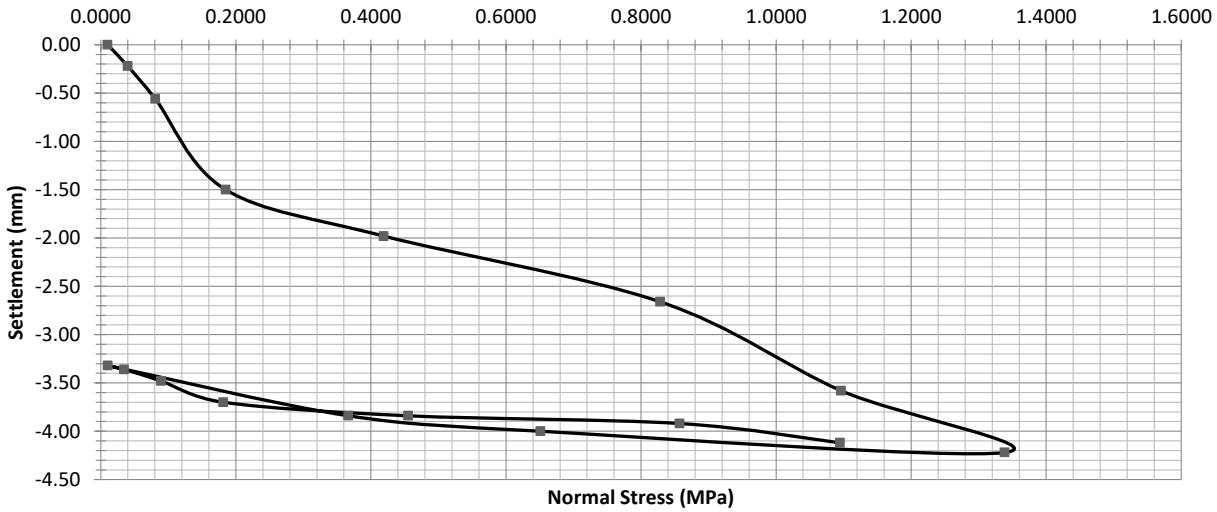
STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	3/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-44**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0397	-0.22	
3	0.088	0.0807	-0.56	
4	0.187	0.1849	-1.50	
5	0.424	0.4190	-1.98	
6	0.848	0.8282	-2.66	
7	1.098	1.0961	-3.58	
8	1.348	1.3385	-4.22	
9	0.674	0.6512	-4.00	Unloaded
10	0.337	0.3666	-3.84	
11	0.010	0.0105	-3.32	
12	0.031	0.0345	-3.36	Secondary load
13	0.088	0.0893	-3.48	
14	0.187	0.1812	-3.70	
15	0.424	0.4552	-3.84	
16	0.848	0.8570	-3.92	
17	1.098	1.0946	-4.12	

Normal Stress vs Settlement



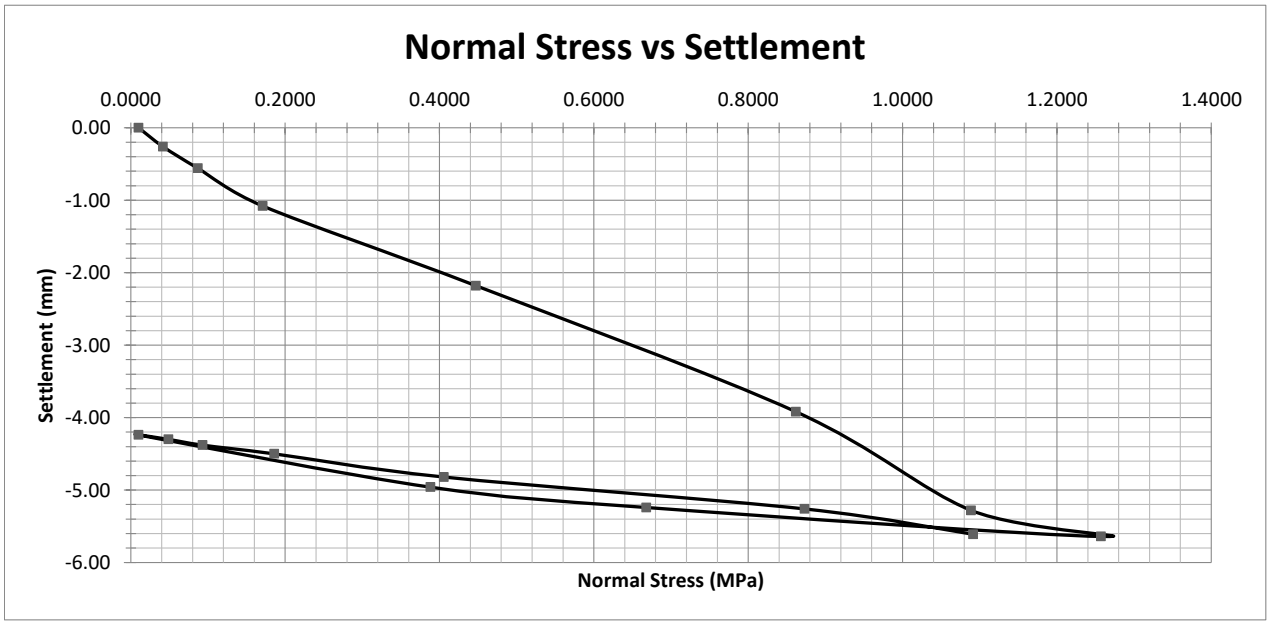
Ev1 (MPa)	80.74	Ev2 (MPa)	460.53
Ev2/Ev1=5.7			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O
Site:	The Landing (stage 4&5 fill)	**Tested by:**	24/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-45**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0416	-0.26	
3	0.088	0.0870	-0.56	
4	0.187	0.1710	-1.08	
5	0.424	0.4472	-2.18	
6	0.848	0.8620	-3.92	
7	1.098	1.0888	-5.28	
8	1.348	1.2571	-5.64	
9	0.674	0.6679	-5.24	Unloaded
10	0.337	0.3885	-4.96	
11	0.010	0.0102	-4.24	
12	0.031	0.0487	-4.30	Secondary load
13	0.088	0.0932	-4.38	
14	0.187	0.1858	-4.50	
15	0.424	0.4056	-4.82	
16	0.848	0.8732	-5.26	
17	1.098	1.0914	-5.61	



Ev1 (MPa)	50.46	Ev2 (MPa)	188.72
Ev2/Ev1=3.74			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

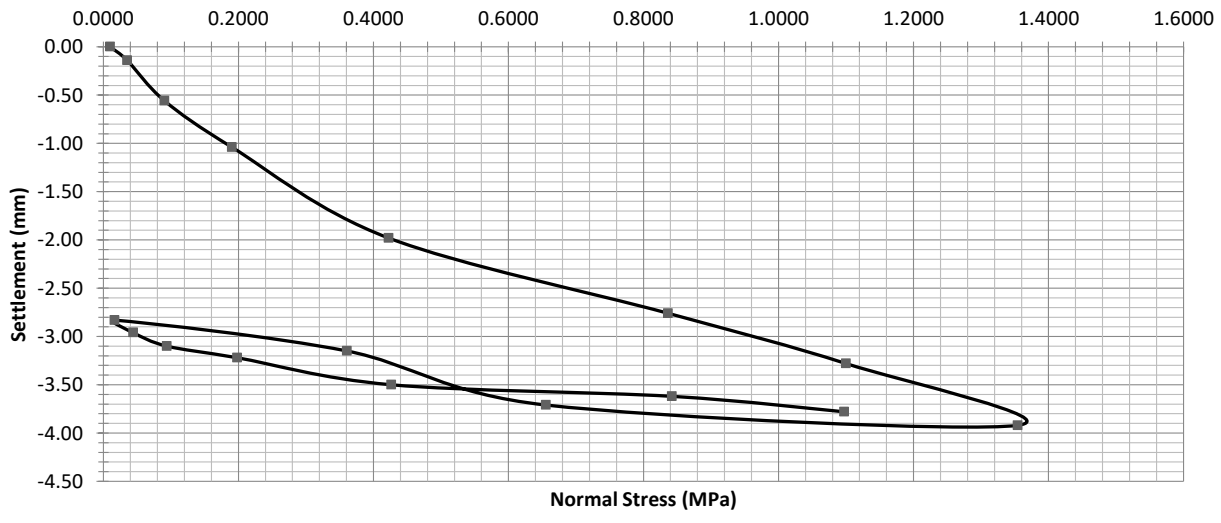
STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	28/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-46**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0352	-0.14	
3	0.088	0.0906	-0.56	
4	0.187	0.1904	-1.04	
5	0.424	0.4224	-1.98	
6	0.848	0.8365	-2.76	
7	1.098	1.0999	-3.28	
8	1.348	1.3543	-3.92	
9	0.674	0.6556	-3.71	Unloaded
10	0.337	0.3607	-3.15	
11	0.010	0.0164	-2.83	
12	0.031	0.0441	-2.96	Secondary load
13	0.088	0.0941	-3.10	
14	0.187	0.1980	-3.22	
15	0.424	0.4264	-3.50	
16	0.848	0.8423	-3.62	
17	1.098	1.0972	-3.78	

Normal Stress vs Settlement



Ev1 (MPa)	84.25	Ev2 (MPa)	410.28
Ev2/Ev1=4.87			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

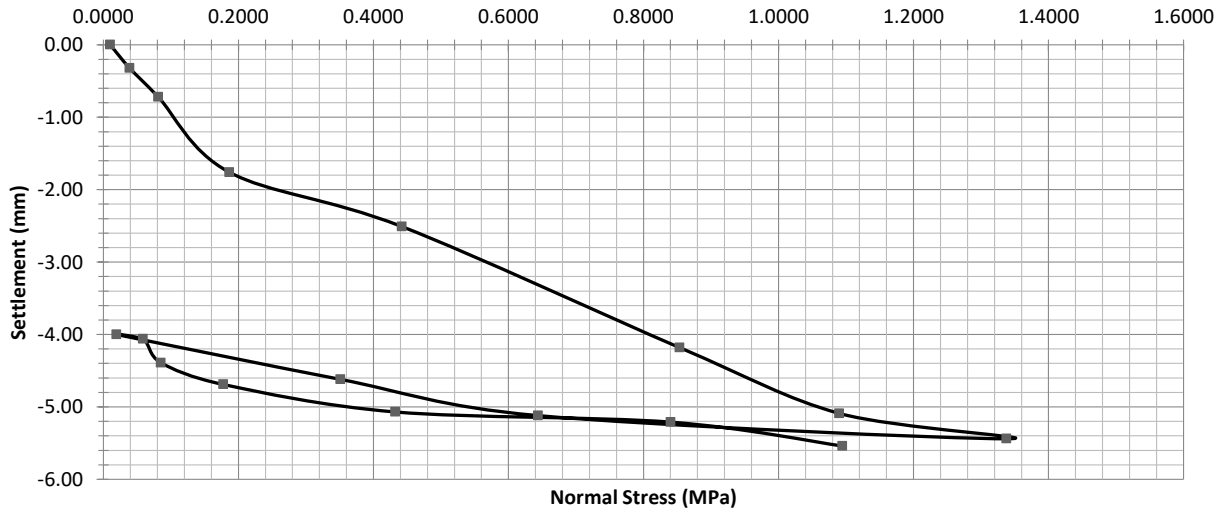
STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	28/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-47**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0387	-0.32	
3	0.088	0.0812	-0.72	
4	0.187	0.1866	-1.76	
5	0.424	0.4421	-2.51	
6	0.848	0.8533	-4.18	
7	1.098	1.0900	-5.09	
8	1.348	1.3376	-5.44	
9	0.674	0.6439	-5.12	Unloaded
10	0.337	0.3511	-4.62	
11	0.010	0.0194	-4.00	
12	0.031	0.0587	-4.06	Secondary load
13	0.088	0.0851	-4.39	
14	0.187	0.1774	-4.69	
15	0.424	0.4324	-5.07	
16	0.848	0.8402	-5.21	
17	1.098	1.0944	-5.54	

Normal Stress vs Settlement



Ev1 (MPa)	57.93	Ev2 (MPa)	247.28
Ev2/Ev1=4.27			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

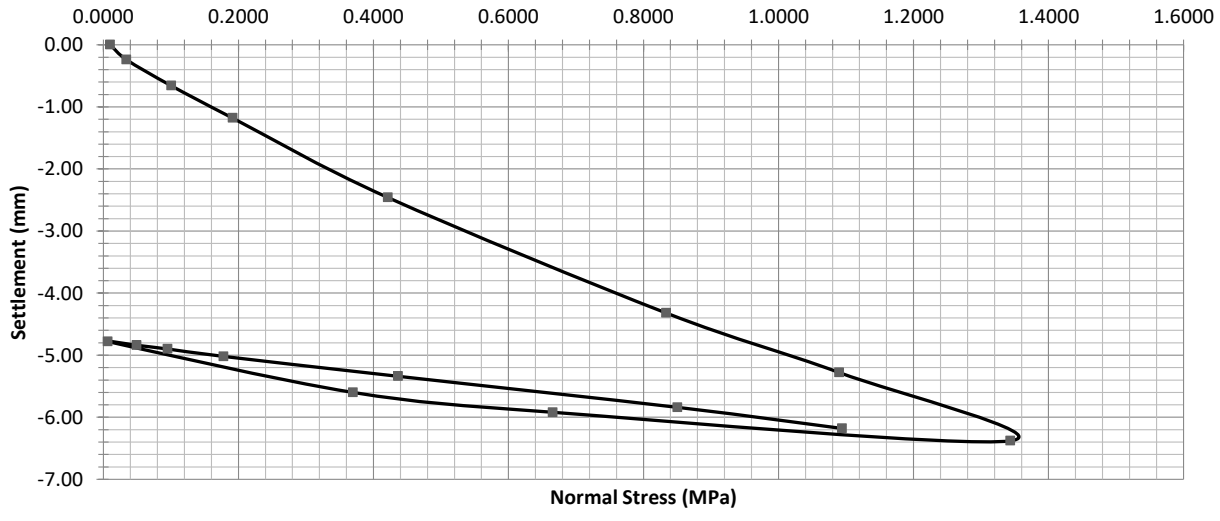
STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	28/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-48**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0342	-0.24	
3	0.088	0.1006	-0.66	
4	0.187	0.1914	-1.18	
5	0.424	0.4214	-2.46	
6	0.848	0.8335	-4.32	
7	1.098	1.0899	-5.28	
8	1.348	1.3434	-6.38	
9	0.674	0.6658	-5.92	Unloaded
10	0.337	0.3697	-5.60	
11	0.010	0.0064	-4.78	
12	0.031	0.0491	-4.84	Secondary load
13	0.088	0.0951	-4.90	
14	0.187	0.1780	-5.02	
15	0.424	0.4364	-5.34	
16	0.848	0.8502	-5.84	
17	1.098	1.0940	-6.18	

Normal Stress vs Settlement



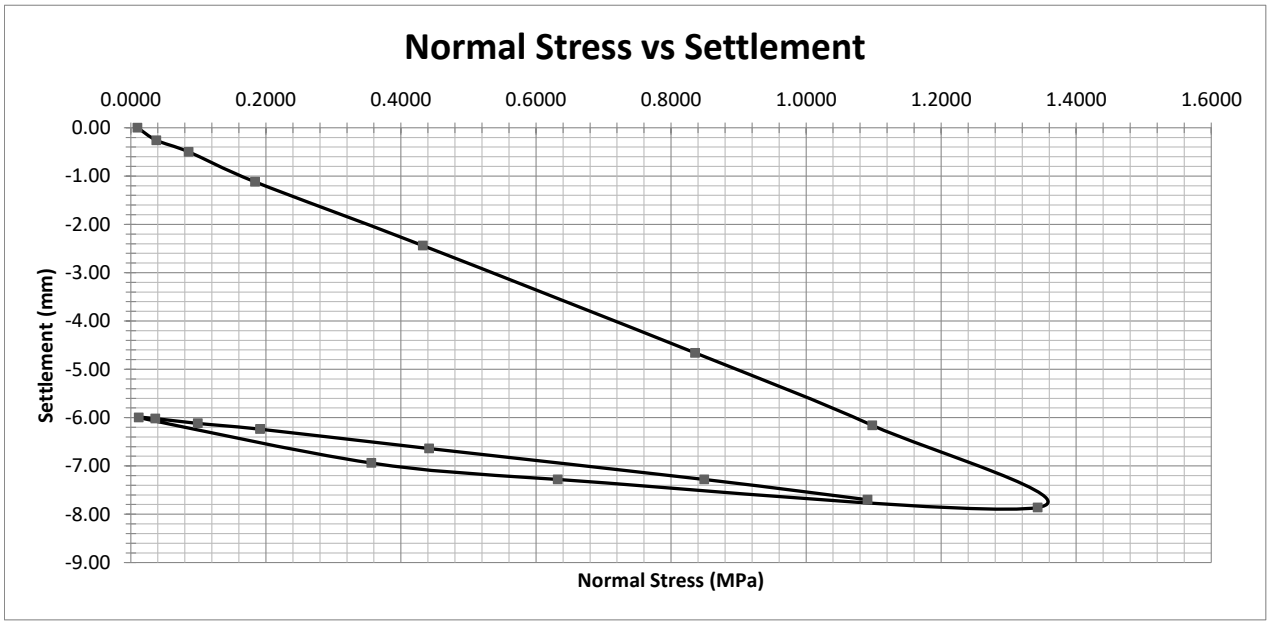
Ev1 (MPa)	48.50	Ev2 (MPa)	177.01
Ev2/Ev1=3.65			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O / L.G
Site:	The Landing (stage 4&5 fill)	**Tested by:**	24/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-49**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0381	-0.26	
3	0.088	0.0859	-0.50	
4	0.187	0.1840	-1.12	
5	0.424	0.4326	-2.44	
6	0.848	0.8357	-4.66	
7	1.098	1.0980	-6.16	
8	1.348	1.3431	-7.86	
9	0.674	0.6324	-7.28	Unloaded
10	0.337	0.3562	-6.94	
11	0.010	0.0120	-6.00	
12	0.031	0.0364	-6.02	Secondary load
13	0.088	0.0992	-6.12	
14	0.187	0.1916	-6.24	
15	0.424	0.4417	-6.64	
16	0.848	0.8492	-7.28	
17	1.098	1.0913	-7.70	



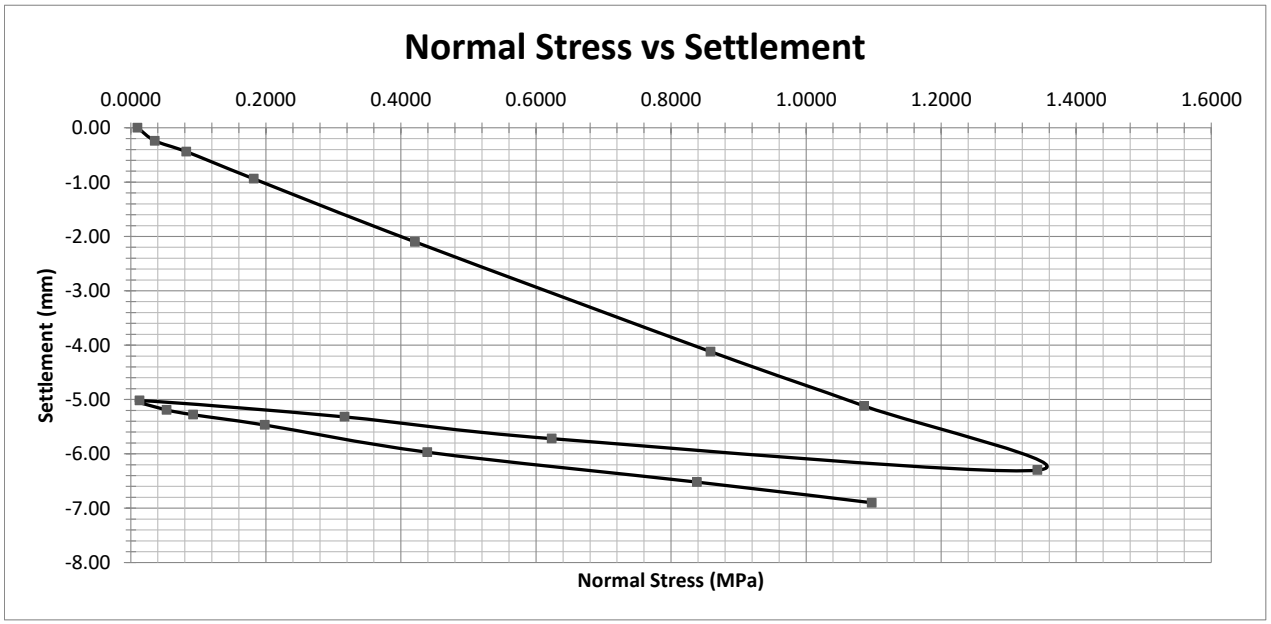
Ev1 (MPa)	39.29	Ev2 (MPa)	139.18
Ev2/Ev1=3.54			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	28/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-50**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0357	-0.24	
3	0.088	0.0822	-0.44	
4	0.187	0.1821	-0.94	
5	0.424	0.4209	-2.10	
6	0.848	0.8588	-4.12	
7	1.098	1.0861	-5.12	
8	1.348	1.3426	-6.30	
9	0.674	0.6233	-5.72	Unloaded
10	0.337	0.3165	-5.32	
11	0.010	0.0129	-5.02	
12	0.031	0.0529	-5.19	Secondary load
13	0.088	0.0922	-5.28	
14	0.187	0.1986	-5.47	
15	0.424	0.4393	-5.97	
16	0.848	0.8386	-6.52	
17	1.098	1.0975	-6.90	



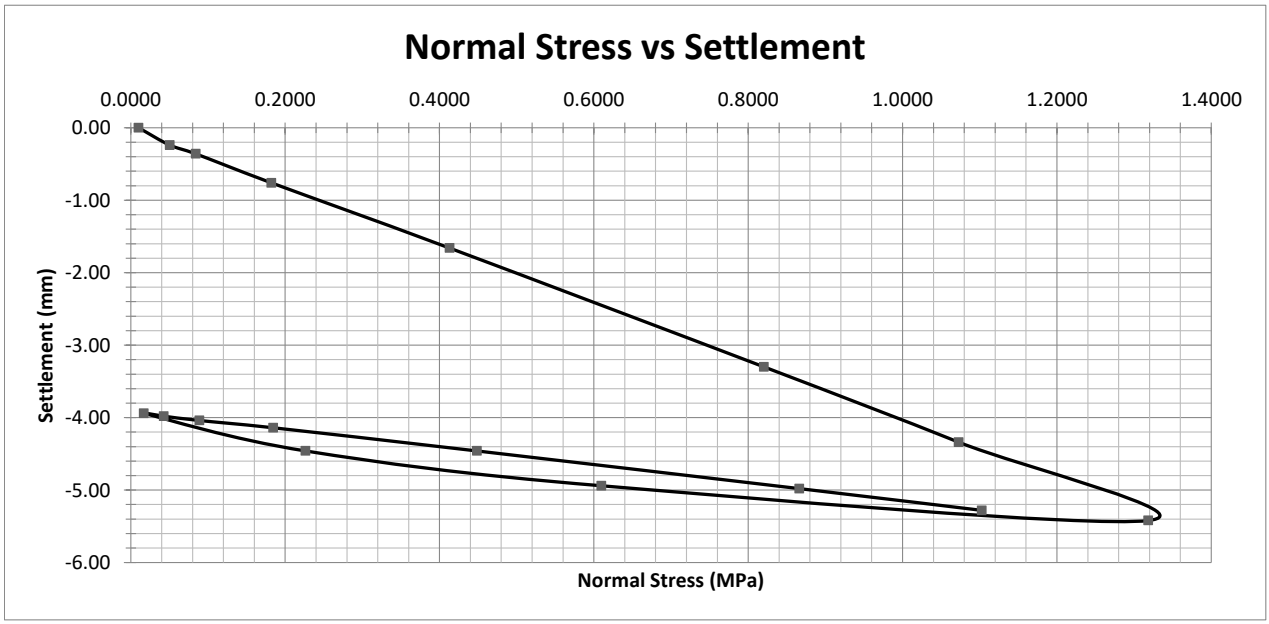
Ev1 (MPa)	48.50	Ev2 (MPa)	146.99
Ev2/Ev1=3.03			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	22/01/2019
Job No:	8020-1727	**Test No.:**	**PLT-51**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0505	-0.24	
3	0.088	0.0842	-0.36	
4	0.187	0.1822	-0.76	
5	0.424	0.4130	-1.66	
6	0.848	0.8204	-3.30	
7	1.098	1.0729	-4.34	
8	1.348	1.3185	-5.42	
9	0.674	0.6097	-4.94	Unloaded
10	0.337	0.2264	-4.46	
11	0.010	0.0167	-3.94	
12	0.031	0.0426	-3.98	Secondary load
13	0.088	0.0890	-4.04	
14	0.187	0.1845	-4.14	
15	0.424	0.4485	-4.46	
16	0.848	0.8664	-4.98	
17	1.098	1.1028	-5.28	



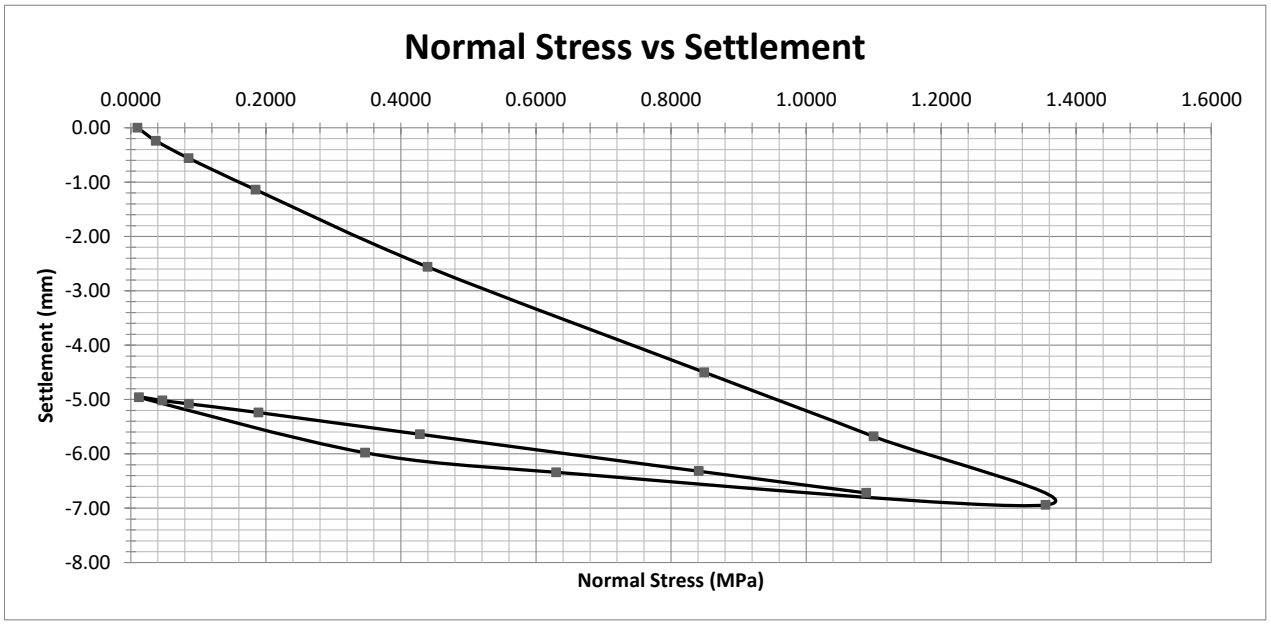
Ev1 (MPa)	55.36	Ev2 (MPa)	181.57
Ev2/Ev1=3.28			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	22/01/2019
Job No:	8020-1727	**Test No.:**	**PLT-52**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0372	-0.24	
3	0.088	0.0856	-0.56	
4	0.187	0.1848	-1.14	
5	0.424	0.4394	-2.56	
6	0.848	0.8495	-4.50	
7	1.098	1.0999	-5.68	
8	1.348	1.3547	-6.94	
9	0.674	0.6300	-6.34	Unloaded
10	0.337	0.3469	-5.98	
11	0.010	0.0124	-4.96	
12	0.031	0.0467	-5.02	Secondary load
13	0.088	0.0862	-5.08	
14	0.187	0.1892	-5.24	
15	0.424	0.4281	-5.64	
16	0.848	0.8410	-6.32	
17	1.098	1.0890	-6.72	



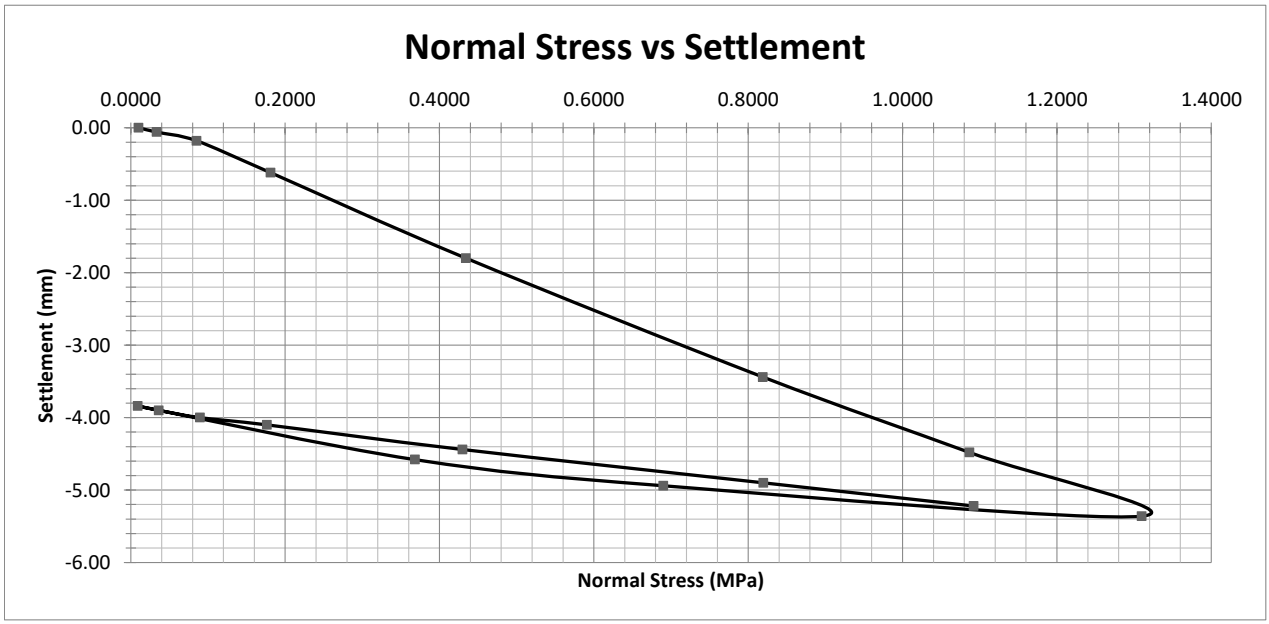
Ev1 (MPa)	44.77	Ev2 (MPa)	137.31
Ev2/Ev1=3.07			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	31/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-53**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0334	-0.06	
3	0.088	0.0853	-0.18	
4	0.187	0.1812	-0.62	
5	0.424	0.4343	-1.80	
6	0.848	0.8190	-3.44	
7	1.098	1.0866	-4.48	
8	1.348	1.3100	-5.36	
9	0.674	0.6900	-4.94	Unloaded
10	0.337	0.3682	-4.58	
11	0.010	0.0090	-3.84	
12	0.031	0.0362	-3.90	Secondary load
13	0.088	0.0896	-4.00	
14	0.187	0.1763	-4.10	
15	0.424	0.4299	-4.44	
16	0.848	0.8198	-4.90	
17	1.098	1.0922	-5.22	



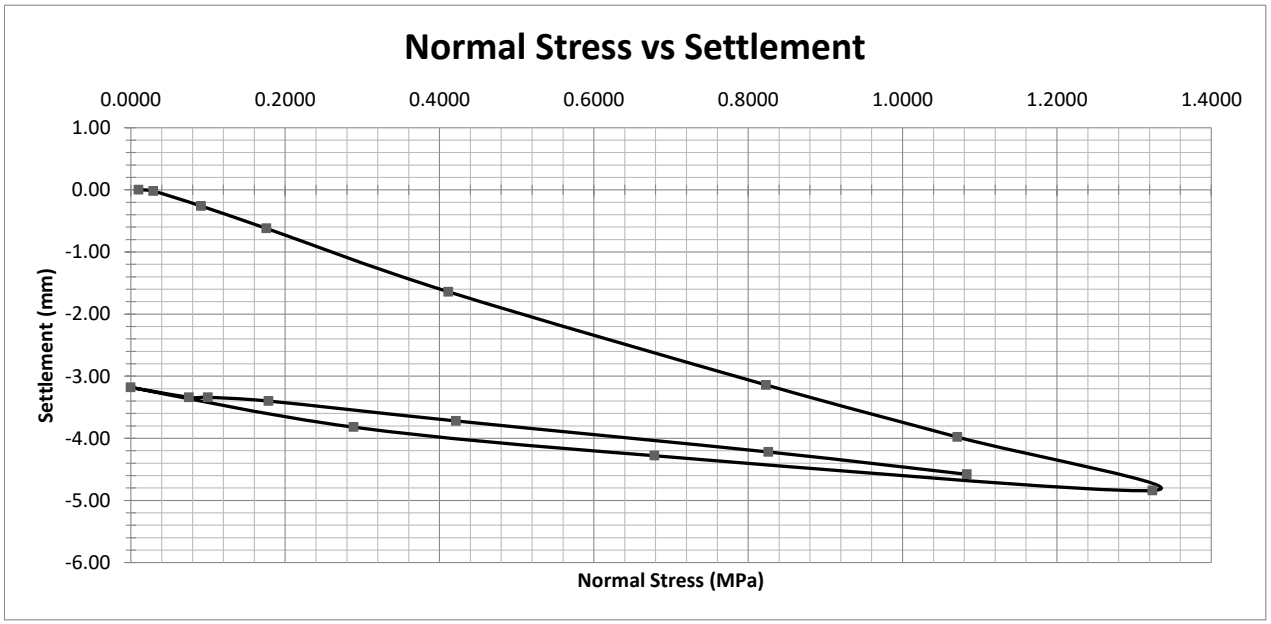
Ev1 (MPa)	53.36	Ev2 (MPa)	185.95
Ev2/Ev1=3.49			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	22/01/2019
Job No:	8020-1727	**Test No.:**	**PLT-54**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0290	-0.02	
3	0.088	0.0910	-0.26	
4	0.187	0.1756	-0.62	
5	0.424	0.4113	-1.64	
6	0.848	0.8230	-3.14	
7	1.098	1.0711	-3.98	
8	1.348	1.3240	-4.84	
9	0.674	0.6784	-4.28	Unloaded
10	0.337	0.2887	-3.82	
11	0.010	0.0000	-3.18	
12	0.031	0.0755	-3.34	Secondary load
13	0.088	0.0999	-3.34	
14	0.187	0.1784	-3.40	
15	0.424	0.4212	-3.72	
16	0.848	0.8262	-4.22	
17	1.098	1.0834	-4.58	



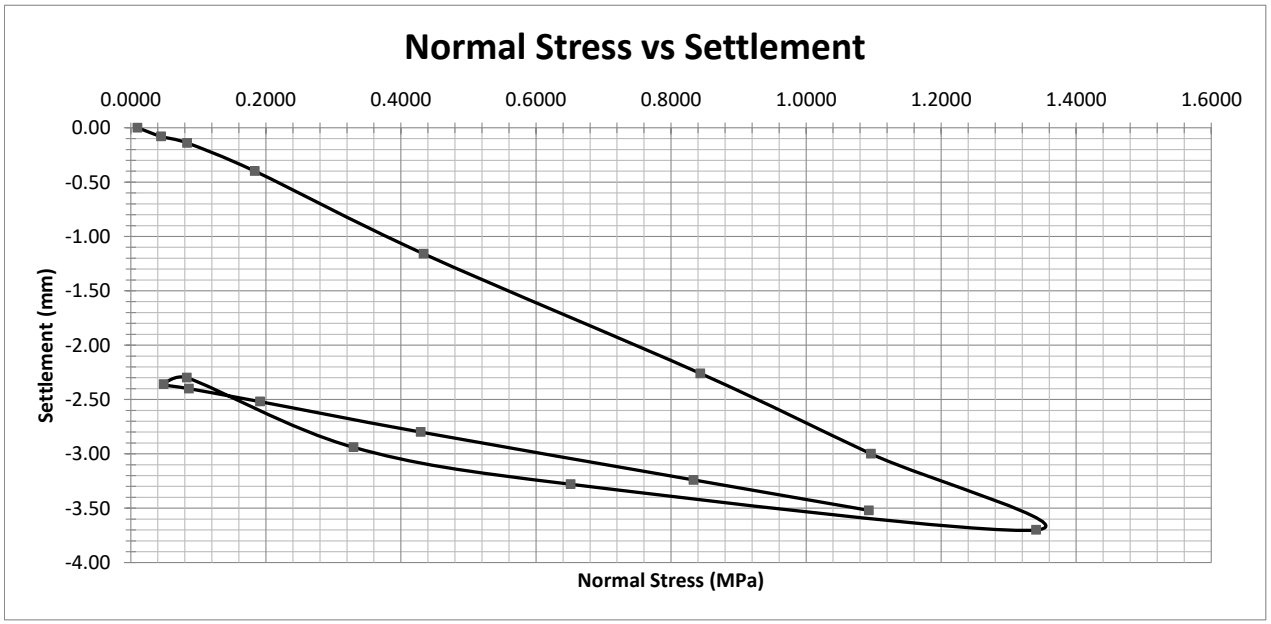
Ev1 (MPa)	60.34	Ev2 (MPa)	175.73
Ev2/Ev1=2.91			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	3/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-55**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0448	-0.08	
3	0.088	0.0835	-0.14	
4	0.187	0.1839	-0.40	
5	0.424	0.4337	-1.16	
6	0.848	0.8434	-2.26	
7	1.098	1.0961	-3.00	
8	1.348	1.3409	-3.70	
9	0.674	0.6515	-3.28	Unloaded
10	0.337	0.3299	-2.94	
11	0.010	0.0830	-2.30	
12	0.031	0.0489	-2.36	Secondary load
13	0.088	0.0860	-2.40	
14	0.187	0.1916	-2.52	
15	0.424	0.4295	-2.80	
16	0.848	0.8335	-3.24	
17	1.098	1.0931	-3.52	



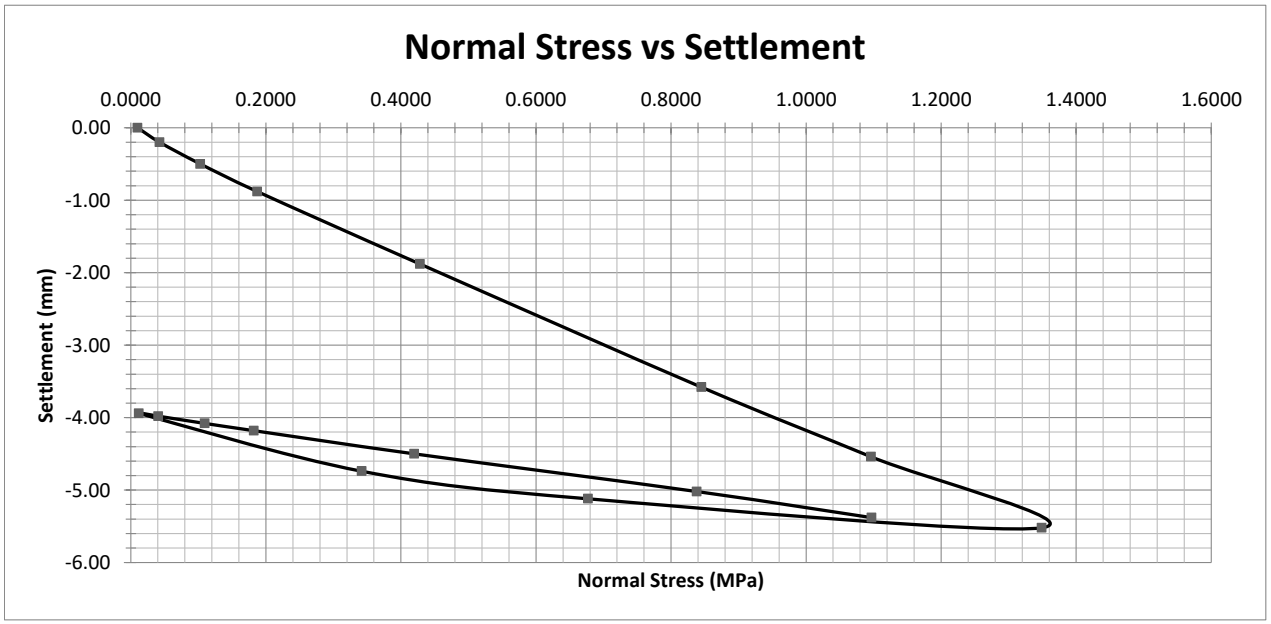
Ev1 (MPa)	80.01	Ev2 (MPa)	202.27
Ev2/Ev1=2.53			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	17/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-56**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0427	-0.20	
3	0.088	0.1030	-0.50	
4	0.187	0.1872	-0.88	
5	0.424	0.4281	-1.88	
6	0.848	0.8450	-3.58	
7	1.098	1.0961	-4.54	
8	1.348	1.3490	-5.52	
9	0.674	0.6769	-5.12	Unloaded
10	0.337	0.3419	-4.74	
11	0.010	0.0119	-3.94	
12	0.031	0.0405	-3.98	Secondary load
13	0.088	0.1096	-4.08	
14	0.187	0.1822	-4.18	
15	0.424	0.4197	-4.50	
16	0.848	0.8381	-5.02	
17	1.098	1.0970	-5.38	



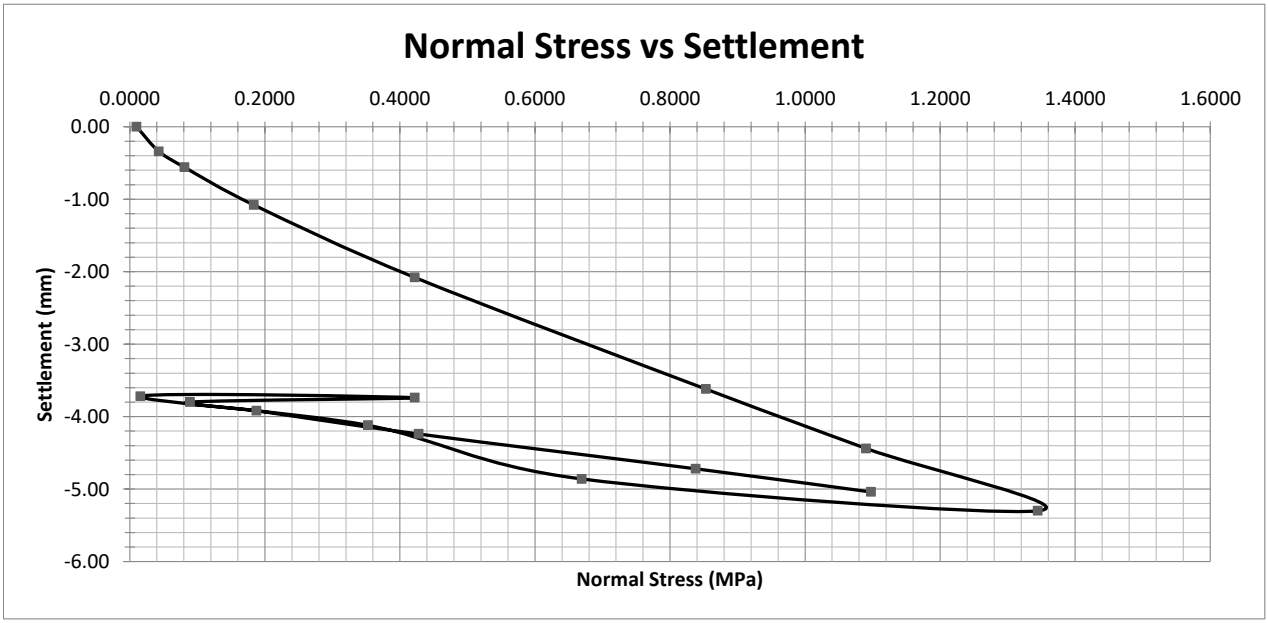
Ev1 (MPa)	55.49	Ev2 (MPa)	172.24
Ev2/Ev1=3.1			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	17/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-57**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0429	-0.34	
3	0.088	0.0811	-0.56	
4	0.187	0.1838	-1.08	
5	0.424	0.4220	-2.08	
6	0.848	0.8531	-3.62	
7	1.098	1.0905	-4.44	
8	1.348	1.3448	-5.30	
9	0.674	0.6692	-4.86	Unloaded
10	0.337	0.3527	-4.12	
11	0.010	0.0156	-3.72	
12	0.031	0.4220	-3.74	Secondary load
13	0.088	0.0894	-3.80	
14	0.187	0.1877	-3.92	
15	0.424	0.4278	-4.24	
16	0.848	0.8381	-4.72	
17	1.098	1.0978	-5.04	



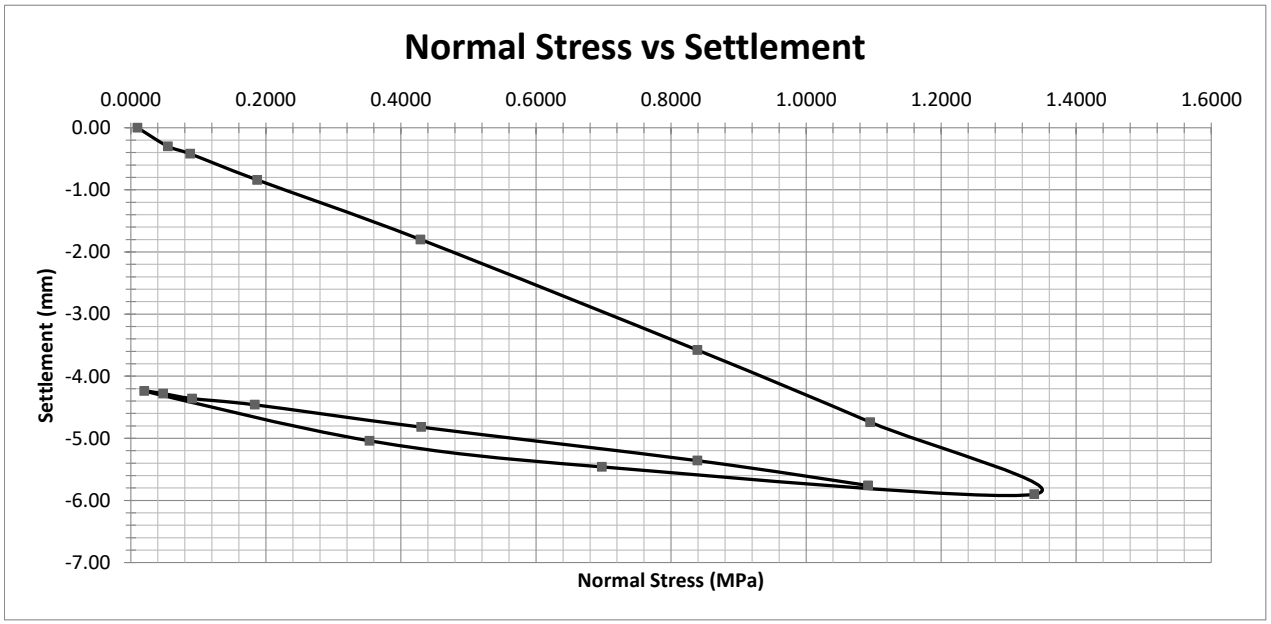
Ev1 (MPa)	61.73	Ev2 (MPa)	160.13
Ev2/Ev1=2.59			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	17/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-58**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0550	-0.30	
3	0.088	0.0879	-0.42	
4	0.187	0.1872	-0.84	
5	0.424	0.4292	-1.80	
6	0.848	0.8392	-3.58	
7	1.098	1.0951	-4.74	
8	1.348	1.3379	-5.90	
9	0.674	0.6976	-5.46	Unloaded
10	0.337	0.3537	-5.04	
11	0.010	0.0202	-4.24	
12	0.031	0.0480	-4.28	Secondary load
13	0.088	0.0907	-4.36	
14	0.187	0.1836	-4.46	
15	0.424	0.4301	-4.82	
16	0.848	0.8391	-5.36	
17	1.098	1.0920	-5.76	



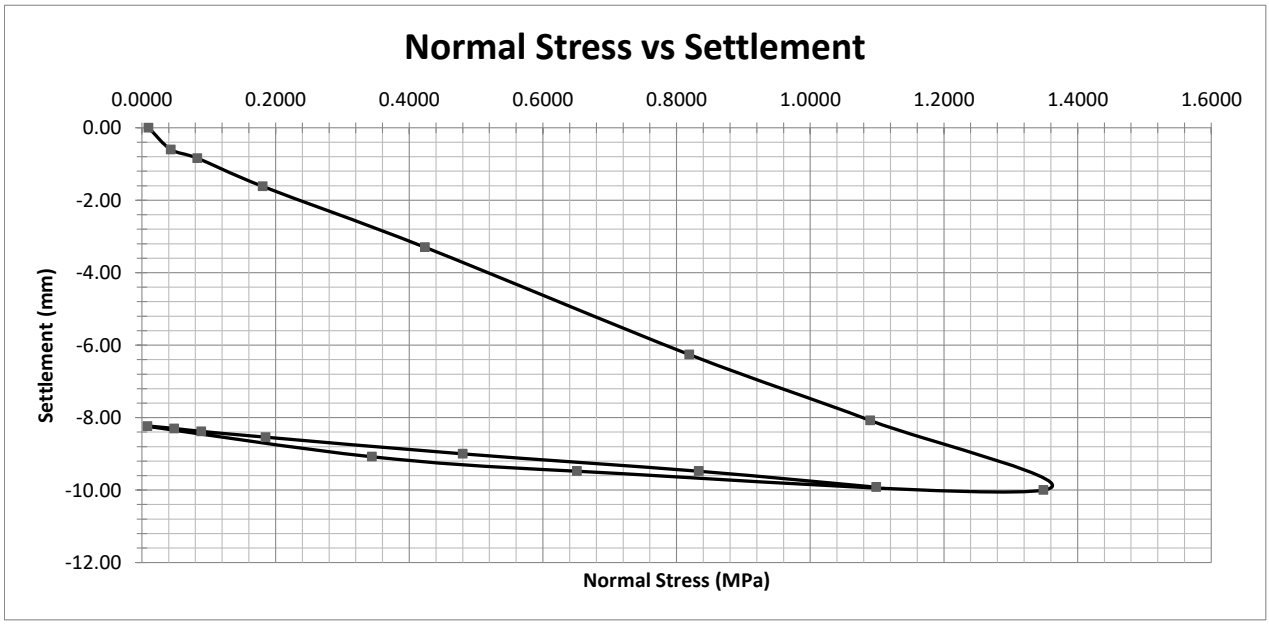
Ev1 (MPa)	51.83	Ev2 (MPa)	158.85
Ev2/Ev1=3.07			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	17/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-59**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0432	-0.60	
3	0.088	0.0830	-0.84	
4	0.187	0.1809	-1.62	
5	0.424	0.4237	-3.30	
6	0.848	0.8190	-6.26	
7	1.098	1.0899	-8.08	
8	1.348	1.3490	-10.00	
9	0.674	0.6512	-9.48	Unloaded
10	0.337	0.3441	-9.08	
11	0.010	0.0085	-8.24	
12	0.031	0.0485	-8.30	Secondary load
13	0.088	0.0890	-8.38	
14	0.187	0.1853	-8.54	
15	0.424	0.4800	-9.00	
16	0.848	0.8332	-9.48	
17	1.098	1.0988	-9.92	



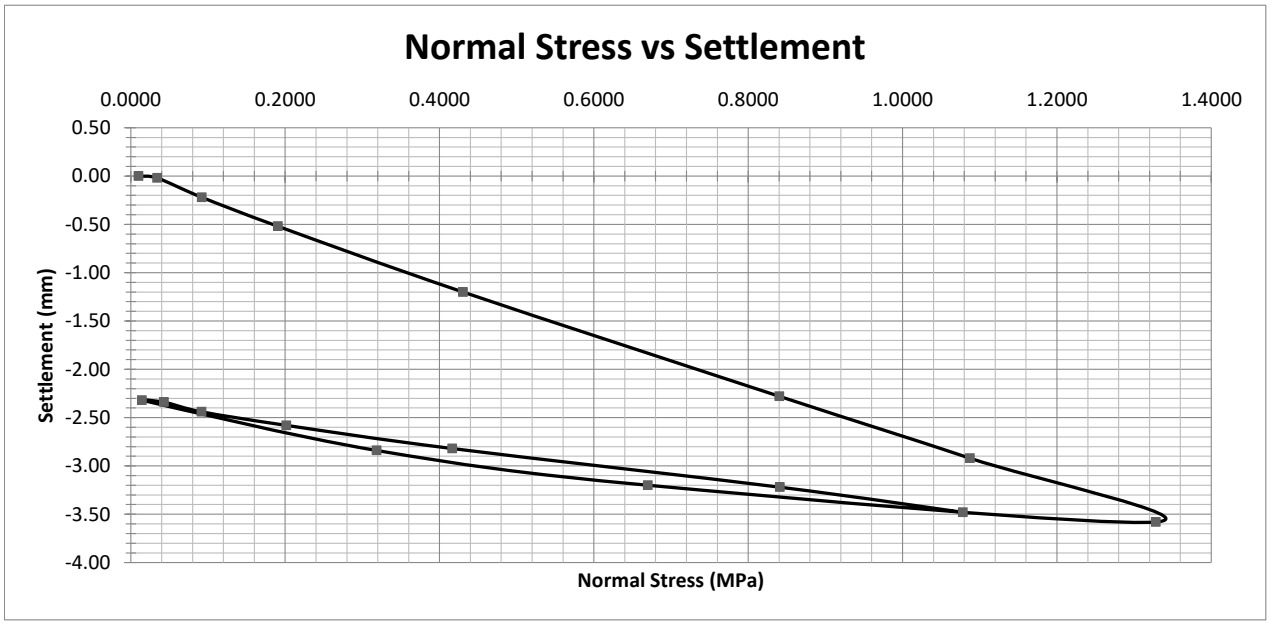
Ev1 (MPa)	31.24	Ev2 (MPa)	149.53
Ev2/Ev1=4.79			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	20/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-60**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0341	-0.02	
3	0.088	0.0920	-0.22	
4	0.187	0.1907	-0.52	
5	0.424	0.4304	-1.20	
6	0.848	0.8405	-2.28	
7	1.098	1.0873	-2.92	
8	1.348	1.3283	-3.58	
9	0.674	0.6701	-3.20	Unloaded
10	0.337	0.3185	-2.84	
11	0.010	0.0146	-2.32	
12	0.031	0.0429	-2.34	Secondary load
13	0.088	0.0917	-2.44	
14	0.187	0.2015	-2.58	
15	0.424	0.4165	-2.82	
16	0.848	0.8410	-3.22	
17	1.098	1.0781	-3.48	



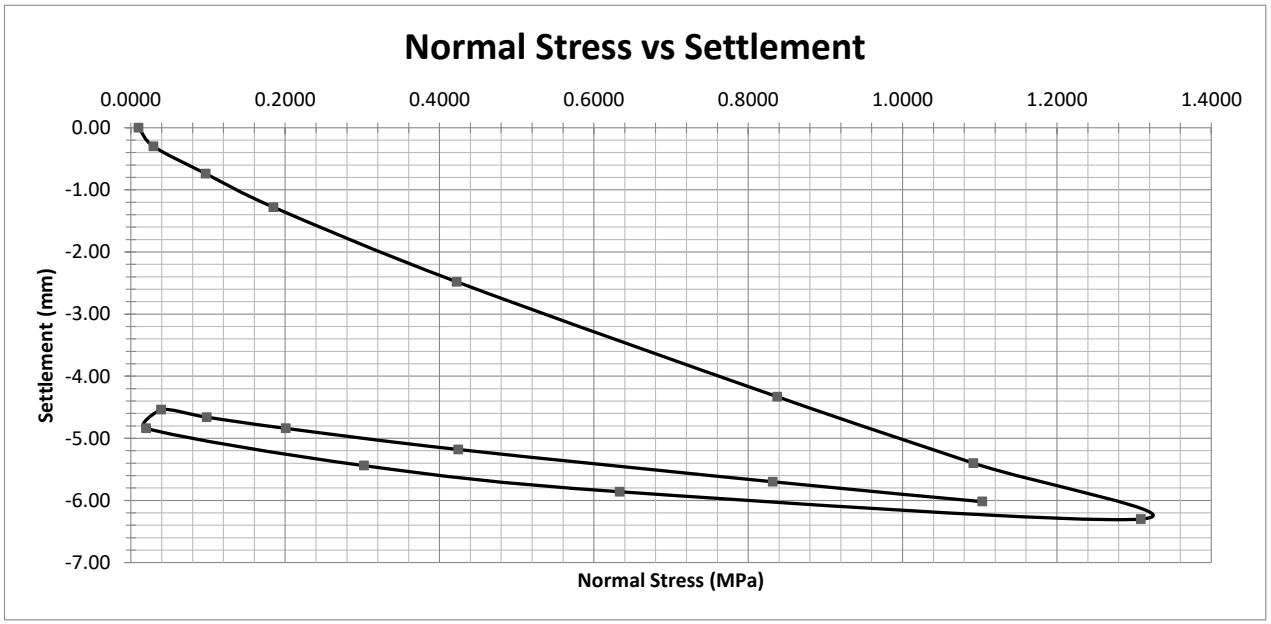
Ev1 (MPa)	31.24	Ev2 (MPa)	149.41
Ev2/Ev1=4.78			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	20/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-61**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0294	-0.30	
3	0.088	0.0972	-0.74	
4	0.187	0.1850	-1.28	
5	0.424	0.4223	-2.48	
6	0.848	0.8376	-4.33	
7	1.098	1.0919	-5.40	
8	1.348	1.3087	-6.30	
9	0.674	0.6337	-5.86	Unloaded
10	0.337	0.3023	-5.44	
11	0.010	0.0200	-4.84	
12	0.031	0.0392	-4.54	Secondary load
13	0.088	0.0986	-4.66	
14	0.187	0.2010	-4.84	
15	0.424	0.4243	-5.18	
16	0.848	0.8321	-5.70	
17	1.098	1.1035	-6.02	



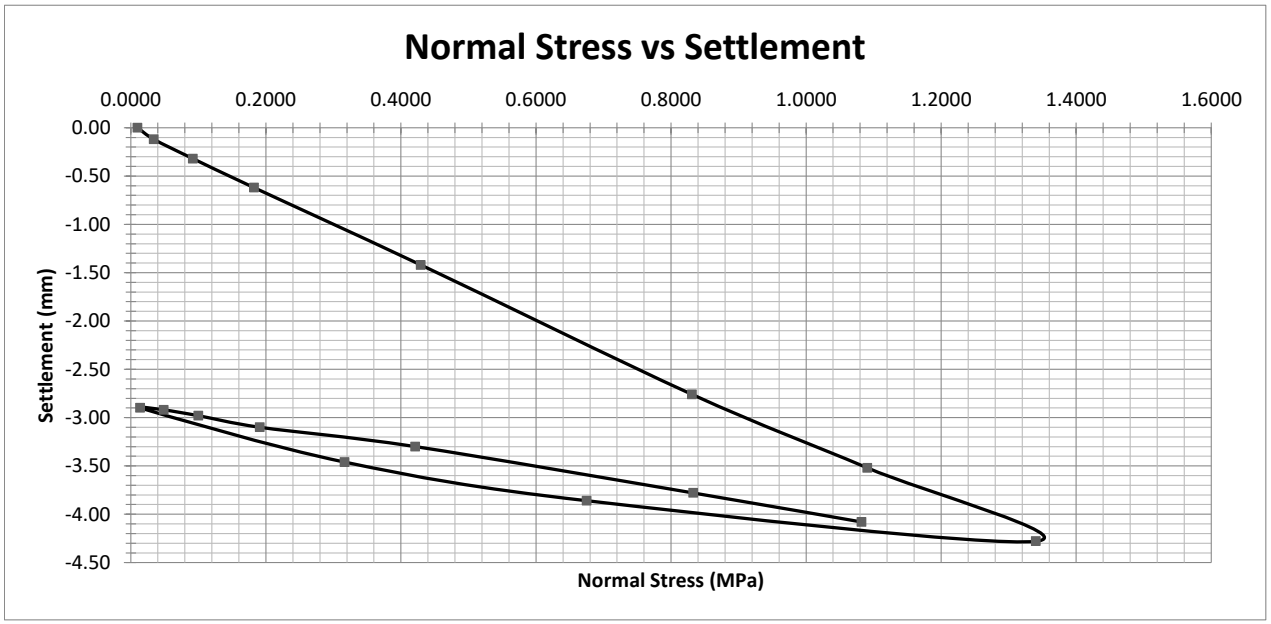
Ev1 (MPa)	48.58	Ev2 (MPa)	173.79
Ev2/Ev1=3.58			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	16/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-62**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0342	-0.12	
3	0.088	0.0921	-0.32	
4	0.187	0.1826	-0.62	
5	0.424	0.4295	-1.42	
6	0.848	0.8311	-2.76	
7	1.098	1.0906	-3.52	
8	1.348	1.3404	-4.28	
9	0.674	0.6752	-3.86	Unloaded
10	0.337	0.3165	-3.46	
11	0.010	0.0140	-2.90	
12	0.031	0.0489	-2.92	Secondary load
13	0.088	0.1000	-2.98	
14	0.187	0.1911	-3.10	
15	0.424	0.4213	-3.30	
16	0.848	0.8330	-3.78	
17	1.098	1.0820	-4.08	



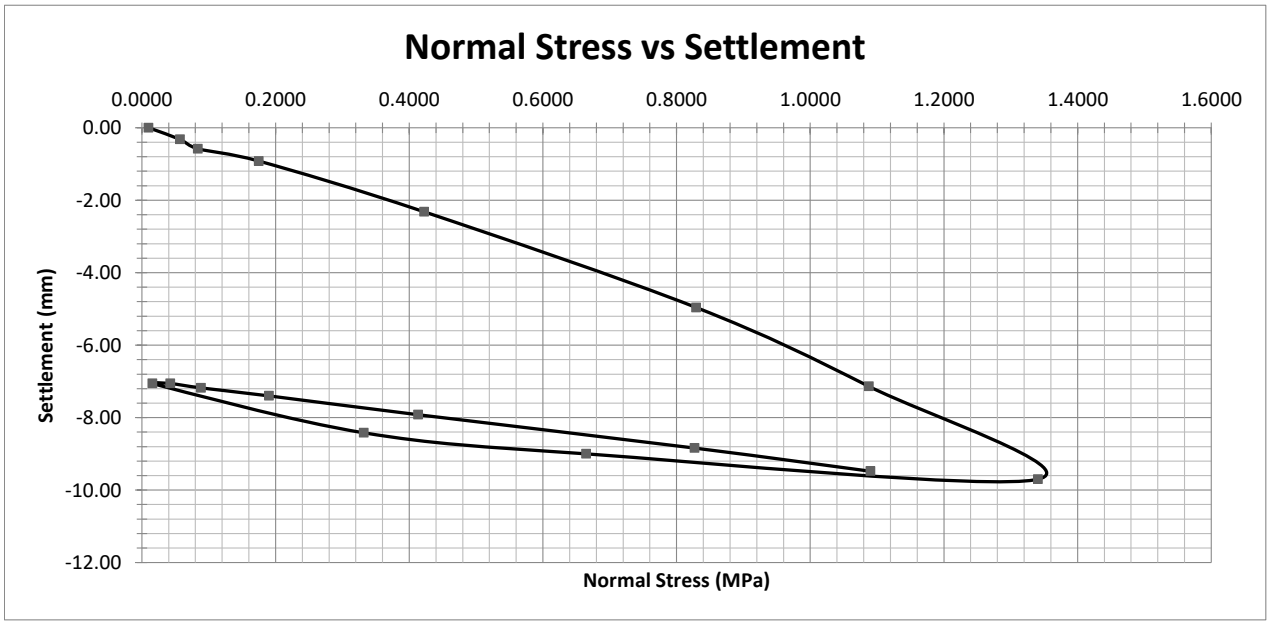
Ev1 (MPa)	70.45	Ev2 (MPa)	197.78
Ev2/Ev1=2.81			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	22/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-63**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0570	-0.32	
3	0.088	0.0836	-0.58	
4	0.187	0.1751	-0.92	
5	0.424	0.4224	-2.32	
6	0.848	0.8292	-4.96	
7	1.098	1.0880	-7.14	
8	1.348	1.3409	-9.70	
9	0.674	0.6646	-9.00	Unloaded
10	0.337	0.3322	-8.42	
11	0.010	0.0157	-7.06	
12	0.031	0.0427	-7.06	Secondary load
13	0.088	0.0884	-7.18	
14	0.187	0.1902	-7.40	
15	0.424	0.4132	-7.92	
16	0.848	0.8268	-8.84	
17	1.098	1.0900	-9.48	



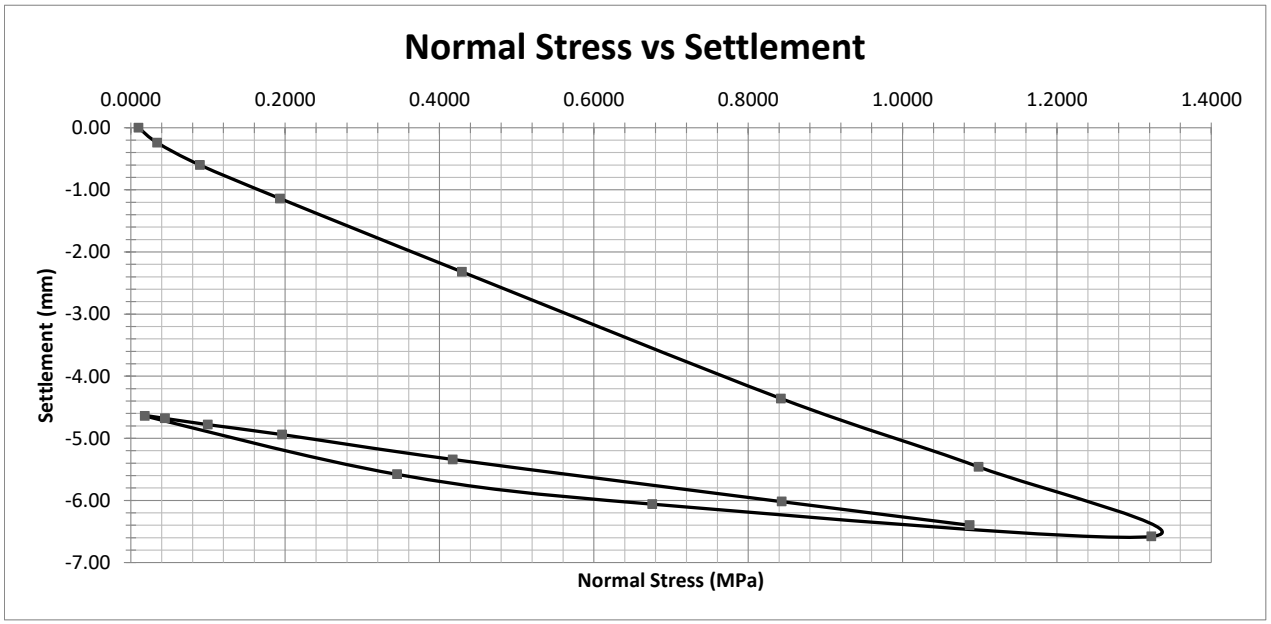
Ev1 (MPa)	31.87	Ev2 (MPa)	97.59
Ev2/Ev1=3.06			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	21/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-64**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0342	-0.24	
3	0.088	0.0896	-0.60	
4	0.187	0.1934	-1.14	
5	0.424	0.4291	-2.32	
6	0.848	0.8426	-4.36	
7	1.098	1.0985	-5.46	
8	1.348	1.3226	-6.58	
9	0.674	0.6757	-6.06	Unloaded
10	0.337	0.3450	-5.58	
11	0.010	0.0182	-4.64	
12	0.031	0.0444	-4.68	Secondary load
13	0.088	0.0999	-4.78	
14	0.187	0.1961	-4.94	
15	0.424	0.4172	-5.34	
16	0.848	0.8434	-6.02	
17	1.098	1.0872	-6.40	



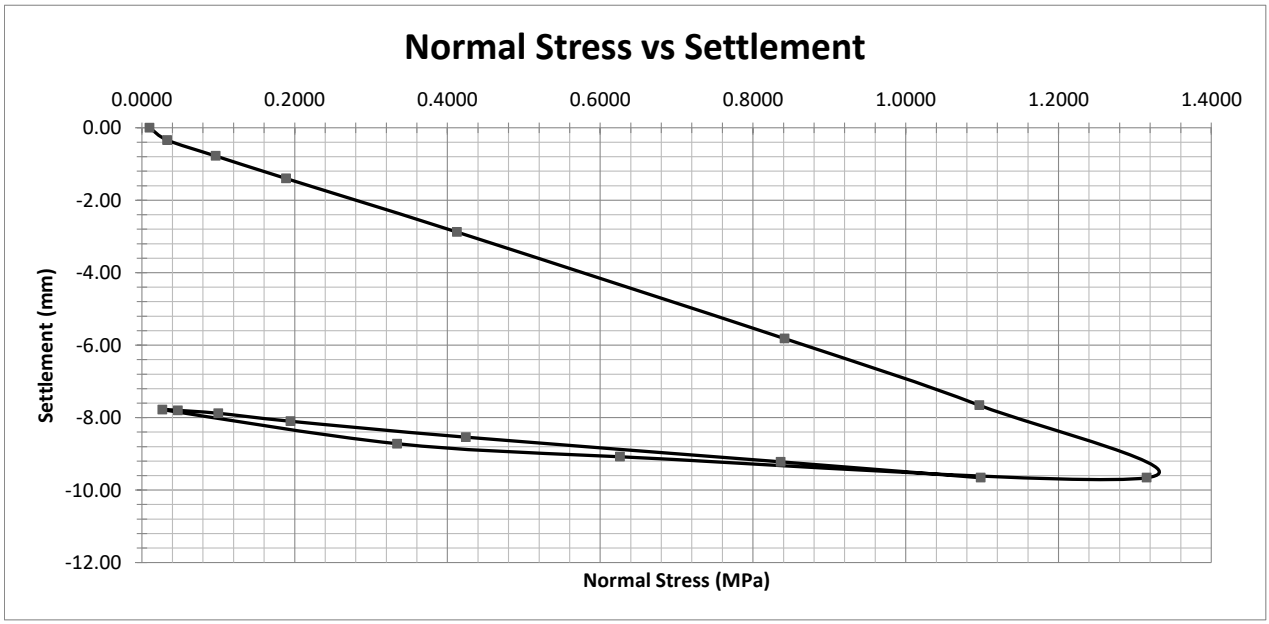
Ev1 (MPa)	46.22	Ev2 (MPa)	138.91
Ev2/Ev1=3.01			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	21/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-65**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0332	-0.34	
3	0.088	0.0966	-0.78	
4	0.187	0.1887	-1.40	
5	0.424	0.4127	-2.88	
6	0.848	0.8416	-5.82	
7	1.098	1.0964	-7.66	
8	1.348	1.3154	-9.66	
9	0.674	0.6260	-9.08	Unloaded
10	0.337	0.3343	-8.72	
11	0.010	0.0270	-7.78	
12	0.031	0.0471	-7.80	Secondary load
13	0.088	0.1000	-7.88	
14	0.187	0.1945	-8.10	
15	0.424	0.4241	-8.54	
16	0.848	0.8364	-9.22	
17	1.098	1.0982	-9.66	



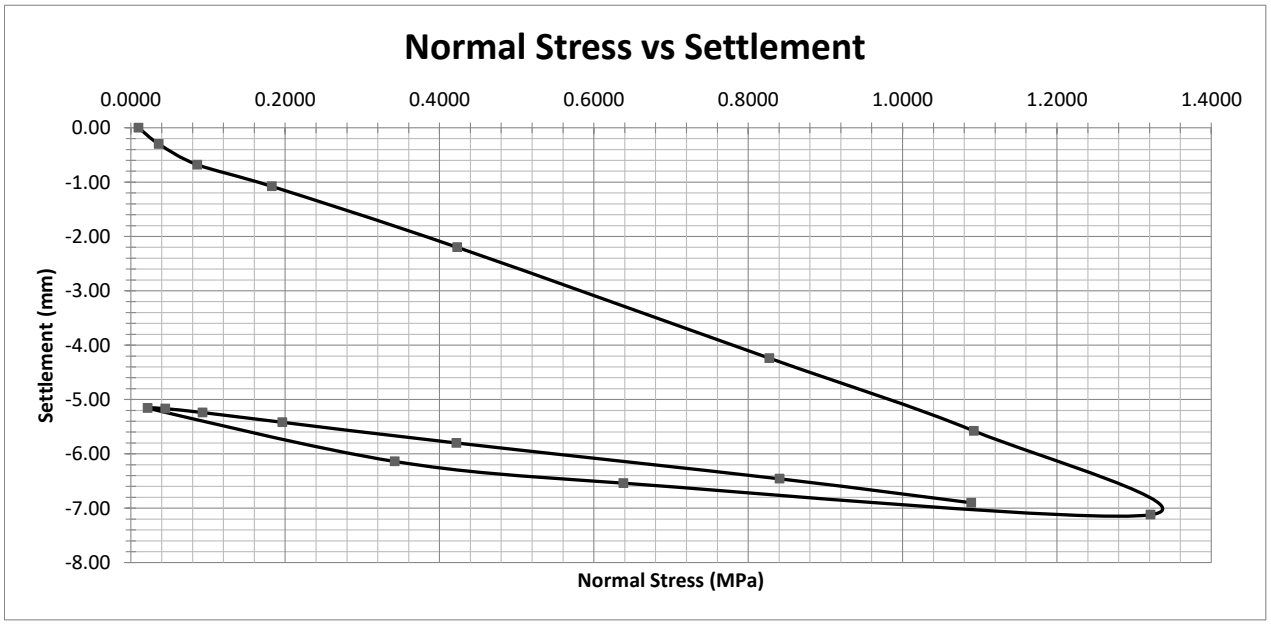
Ev1 (MPa)	31.60	Ev2 (MPa)	130.69
Ev2/Ev1=4.14			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	21/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-66**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0364	-0.30	
3	0.088	0.0863	-0.68	
4	0.187	0.1829	-1.08	
5	0.424	0.4230	-2.20	
6	0.848	0.8274	-4.24	
7	1.098	1.0926	-5.58	
8	1.348	1.3216	-7.12	
9	0.674	0.6385	-6.54	Unloaded
10	0.337	0.3419	-6.14	
11	0.010	0.0221	-5.16	
12	0.031	0.0446	-5.17	Secondary load
13	0.088	0.0932	-5.24	
14	0.187	0.1966	-5.42	
15	0.424	0.4220	-5.80	
16	0.848	0.8408	-6.46	
17	1.098	1.0890	-6.90	



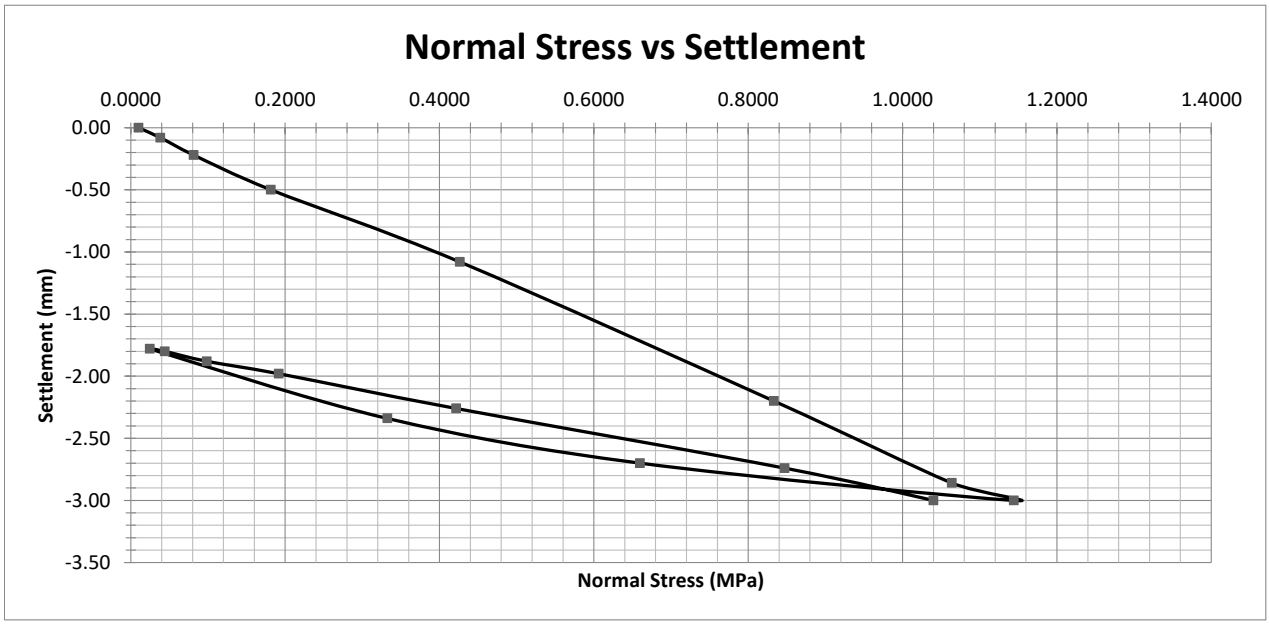
Ev1 (MPa)	43.71	Ev2 (MPa)	136.12
Ev2/Ev1=3.11			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	4/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-67**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0383	-0.08	
3	0.088	0.0815	-0.22	
4	0.187	0.1816	-0.50	
5	0.424	0.4263	-1.08	
6	0.848	0.8333	-2.20	
7	1.098	1.0639	-2.86	
8	1.348	1.1442	-3.00	
9	0.674	0.6599	-2.70	Unloaded
10	0.337	0.3325	-2.34	
11	0.010	0.0248	-1.78	
12	0.031	0.0441	-1.80	Secondary load
13	0.088	0.0986	-1.88	
14	0.187	0.1917	-1.98	
15	0.424	0.4217	-2.26	
16	0.848	0.8473	-2.74	
17	1.098	1.0400	-3.00	



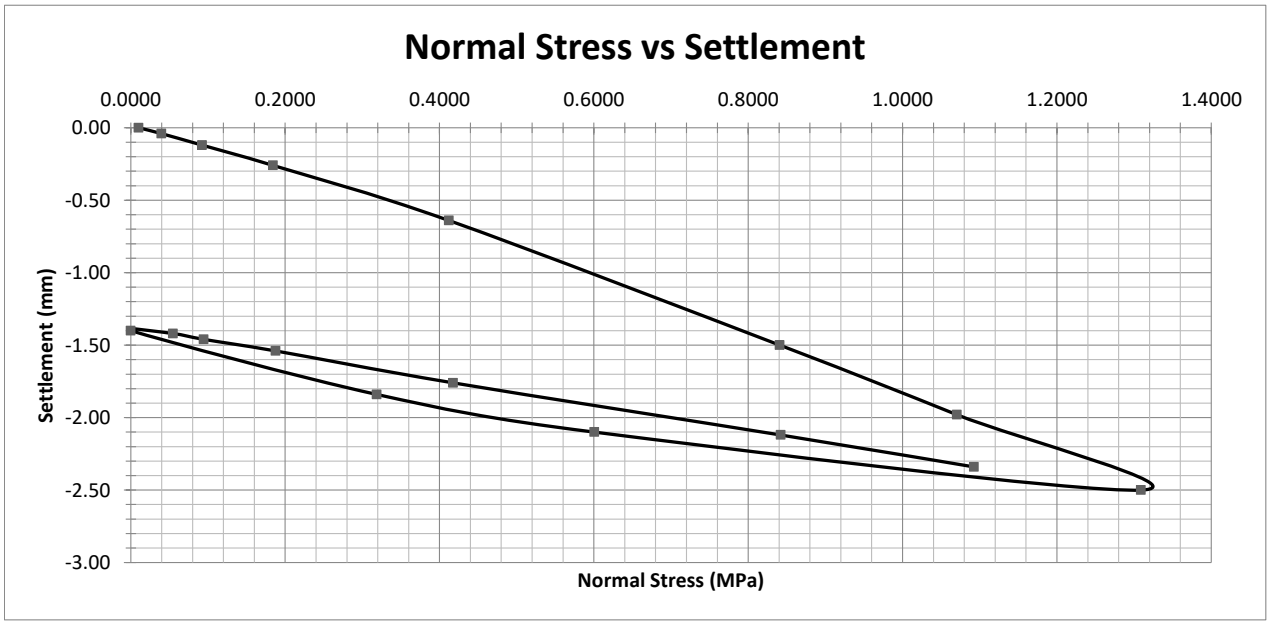
Ev1 (MPa)	84.78	Ev2 (MPa)	189.24
Ev2/Ev1=2.23			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	Roller lifting

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	21/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-68**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0395	-0.04	
3	0.088	0.0925	-0.12	
4	0.187	0.1843	-0.26	
5	0.424	0.4122	-0.64	
6	0.848	0.8409	-1.50	
7	1.098	1.0704	-1.98	
8	1.348	1.3090	-2.50	
9	0.674	0.6007	-2.10	Unloaded
10	0.337	0.3186	-1.84	
11	0.010	0.0000	-1.40	
12	0.031	0.0546	-1.42	Secondary load
13	0.088	0.0945	-1.46	
14	0.187	0.1877	-1.54	
15	0.424	0.4176	-1.76	
16	0.848	0.8422	-2.12	
17	1.098	1.0924	-2.34	



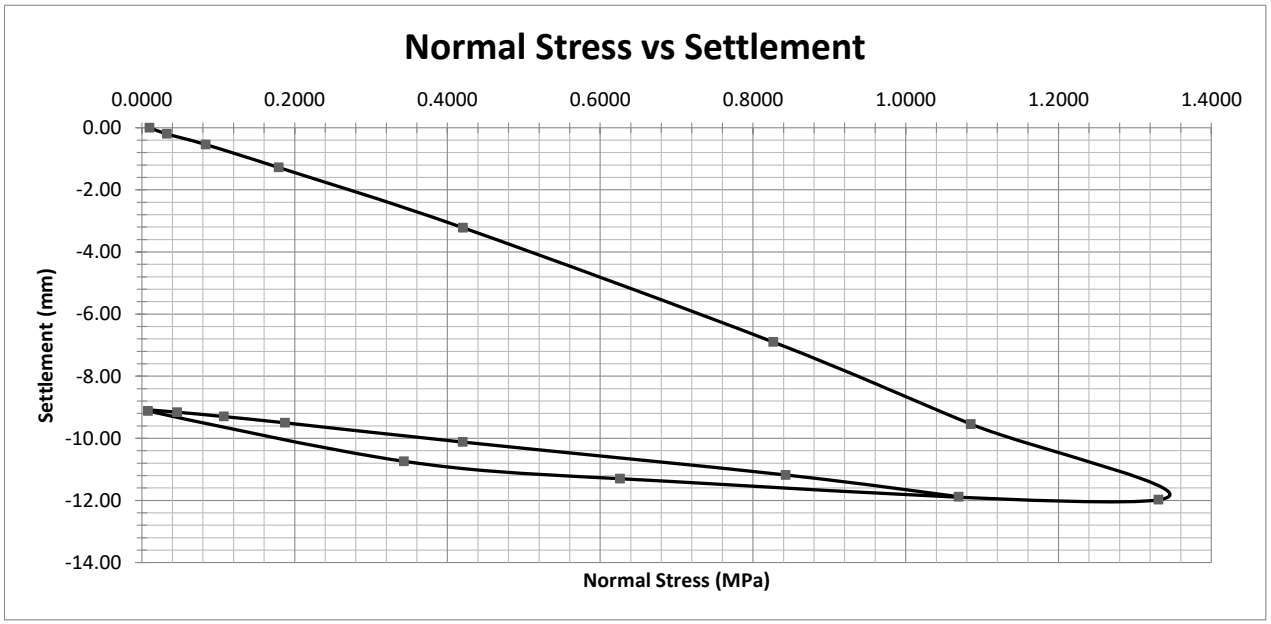
Ev1 (MPa)	115.94	Ev2 (MPa)	255.15
Ev2/Ev1=2.2			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	22/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-69**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0328	-0.20	
3	0.088	0.0835	-0.54	
4	0.187	0.1790	-1.28	
5	0.424	0.4205	-3.22	
6	0.848	0.8266	-6.90	
7	1.098	1.0851	-9.54	
8	1.348	1.3310	-11.98	
9	0.674	0.6259	-11.30	Unloaded
10	0.337	0.3432	-10.74	
11	0.010	0.0080	-9.12	
12	0.031	0.0460	-9.16	Secondary load
13	0.088	0.1072	-9.30	
14	0.187	0.1873	-9.50	
15	0.424	0.4200	-10.12	
16	0.848	0.8430	-11.18	
17	1.098	1.0695	-11.88	



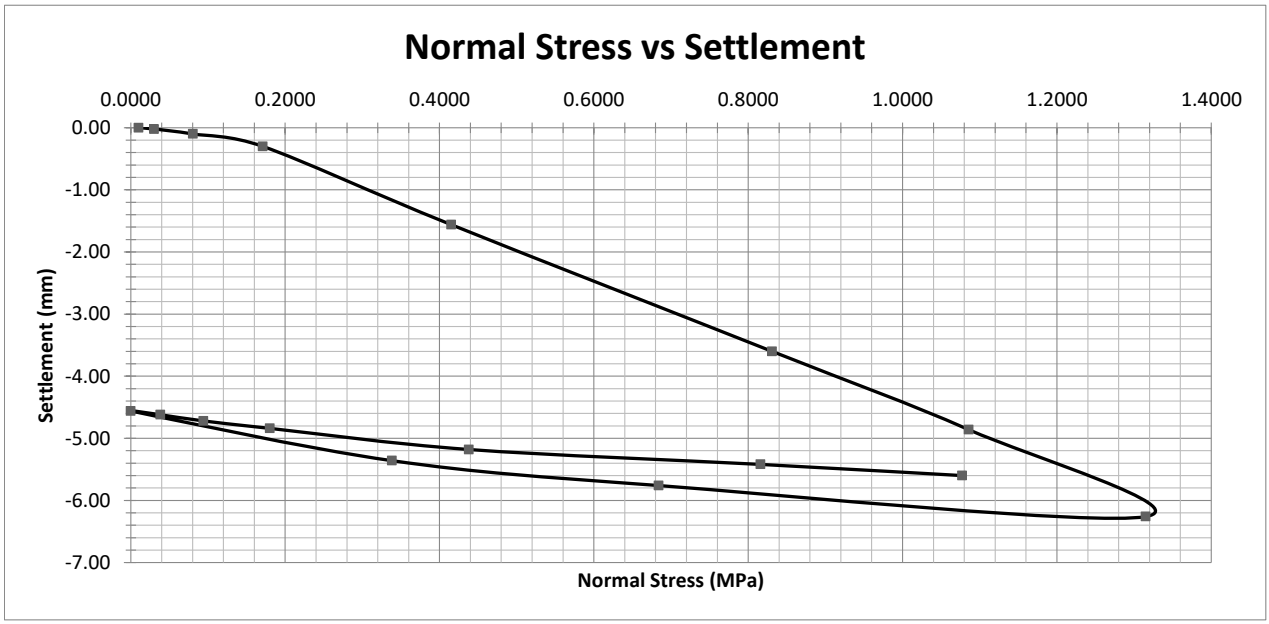
Ev1 (MPa)	24.74	Ev2 (MPa)	83.49
Ev2/Ev1=3.38			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	31/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-70**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0301	-0.02	
3	0.088	0.0806	-0.10	
4	0.187	0.1710	-0.30	
5	0.424	0.4151	-1.56	
6	0.848	0.8309	-3.60	
7	1.098	1.0856	-4.86	
8	1.348	1.3151	-6.26	
9	0.674	0.6839	-5.76	Unloaded
10	0.337	0.3384	-5.36	
11	0.010	0.0000	-4.56	
12	0.031	0.0382	-4.62	Secondary load
13	0.088	0.0942	-4.72	
14	0.187	0.1802	-4.84	
15	0.424	0.4381	-5.18	
16	0.848	0.8160	-5.42	
17	1.098	1.0773	-5.60	



Ev1 (MPa)	45.83	Ev2 (MPa)	283.24
Ev2/Ev1=6.18			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

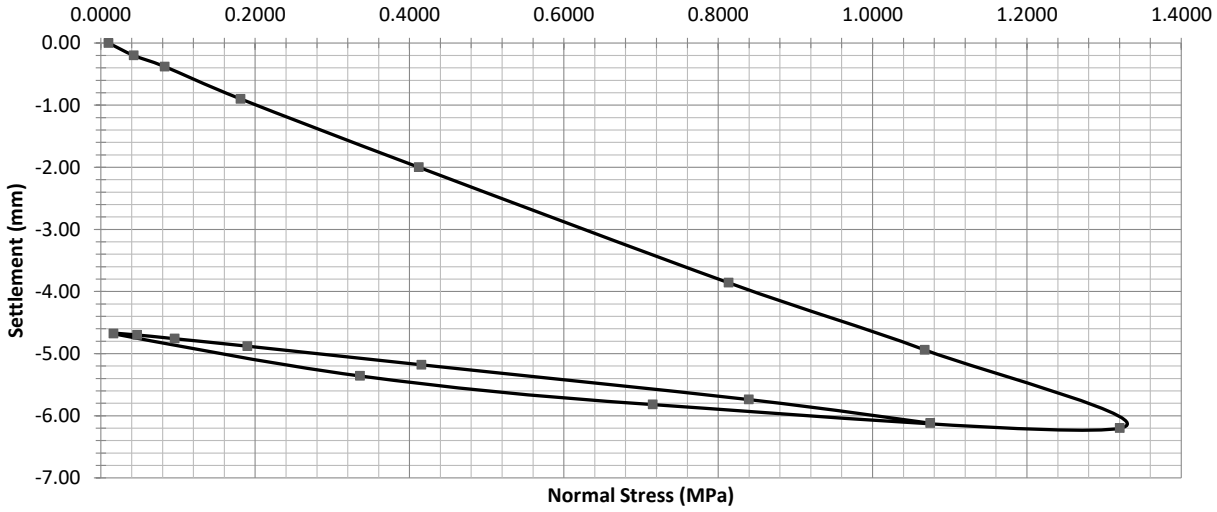
STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	31/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-71**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0426	-0.20	
3	0.088	0.0829	-0.38	
4	0.187	0.1812	-0.90	
5	0.424	0.4120	-2.00	
6	0.848	0.8137	-3.86	
7	1.098	1.0677	-4.94	
8	1.348	1.3206	-6.20	
9	0.674	0.7153	-5.82	Unloaded
10	0.337	0.3361	-5.36	
11	0.010	0.0164	-4.68	
12	0.031	0.0470	-4.70	Secondary load
13	0.088	0.0958	-4.76	
14	0.187	0.1900	-4.88	
15	0.424	0.4155	-5.18	
16	0.848	0.8399	-5.74	
17	1.098	1.0748	-6.12	

Normal Stress vs Settlement



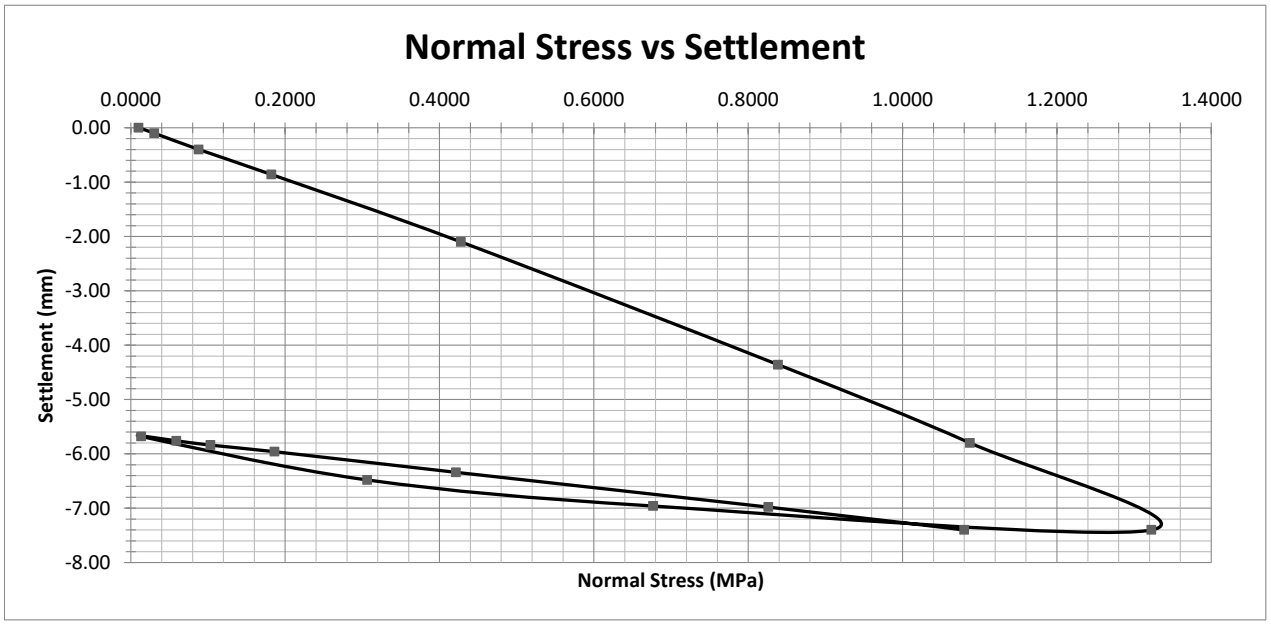
Ev1 (MPa)	48.28	Ev2 (MPa)	160.30
Ev2/Ev1=3.32			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	22/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-72**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0306	-0.10	
3	0.088	0.0880	-0.40	
4	0.187	0.1822	-0.86	
5	0.424	0.4277	-2.10	
6	0.848	0.8389	-4.36	
7	1.098	1.0875	-5.80	
8	1.348	1.3226	-7.40	
9	0.674	0.6769	-6.96	Unloaded
10	0.337	0.3063	-6.48	
11	0.010	0.0134	-5.68	
12	0.031	0.0590	-5.76	Secondary load
13	0.088	0.1034	-5.84	
14	0.187	0.1863	-5.96	
15	0.424	0.4214	-6.34	
16	0.848	0.8260	-6.98	
17	1.098	1.0800	-7.40	



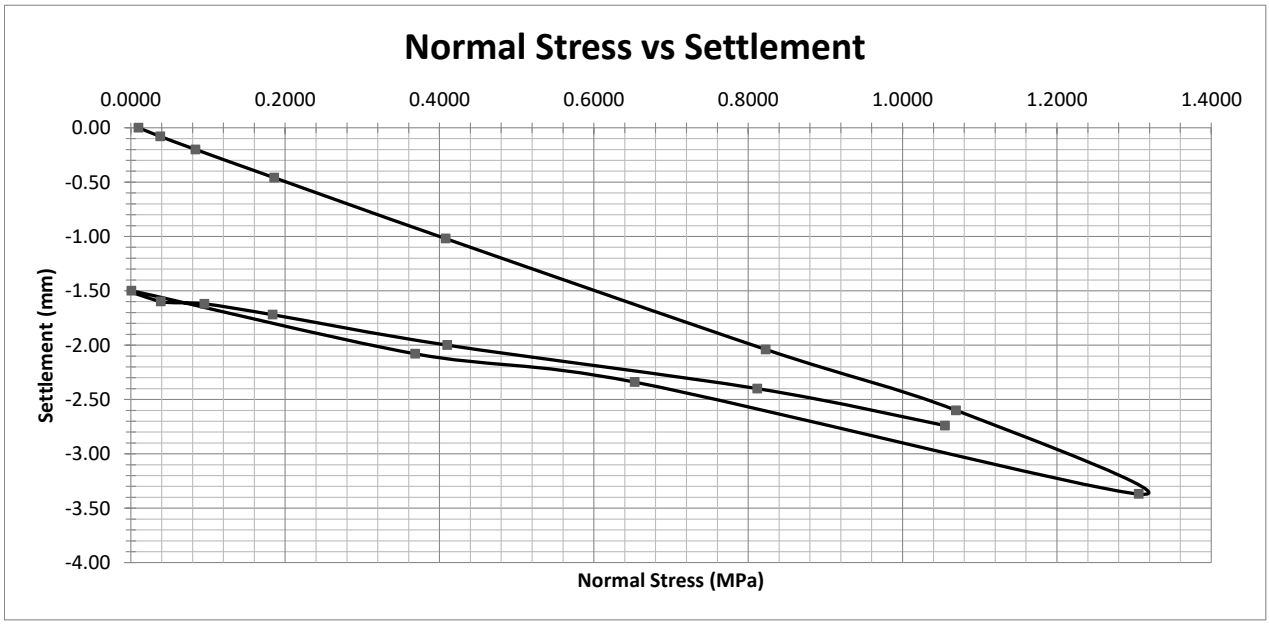
Ev1 (MPa)	40.33	Ev2 (MPa)	140.09
Ev2/Ev1=3.47			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	31/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-73**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0382	-0.08	
3	0.088	0.0839	-0.20	
4	0.187	0.1860	-0.46	
5	0.424	0.4080	-1.02	
6	0.848	0.8229	-2.04	
7	1.098	1.0695	-2.60	
8	1.348	1.3061	-3.37	
9	0.674	0.6529	-2.34	Unloaded
10	0.337	0.3687	-2.08	
11	0.010	0.0008	-1.50	
12	0.031	0.0390	-1.60	Secondary load
13	0.088	0.0955	-1.62	
14	0.187	0.1838	-1.72	
15	0.424	0.4101	-2.00	
16	0.848	0.8120	-2.40	
17	1.098	1.0552	-2.74	



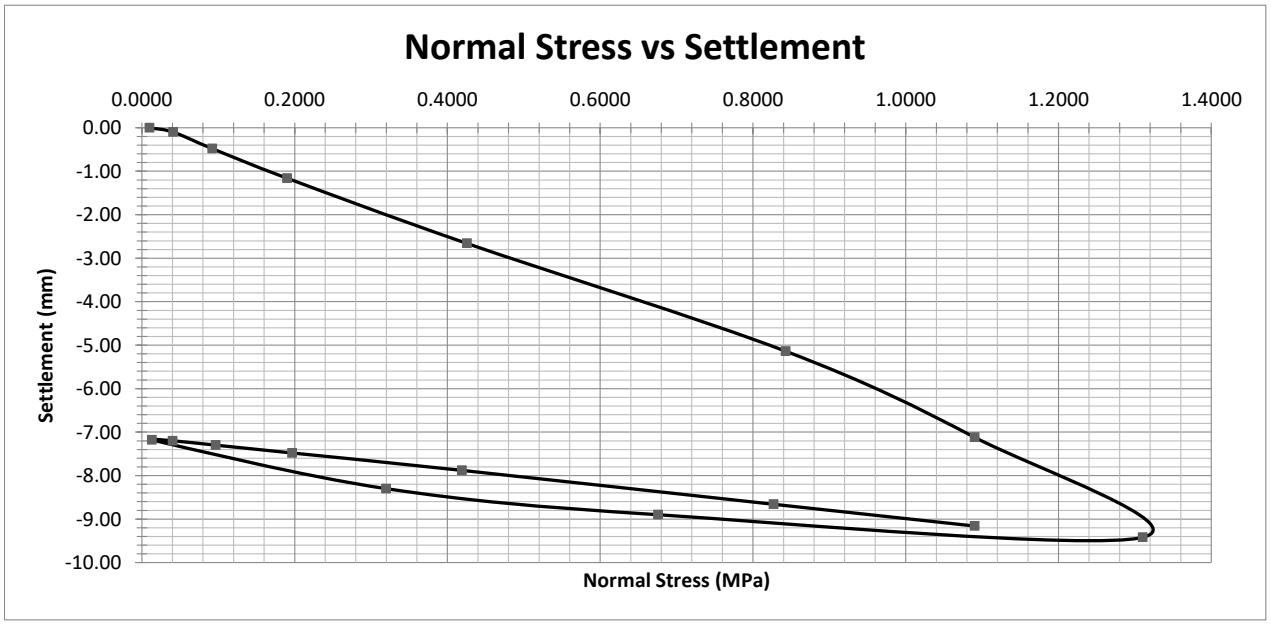
Ev1 (MPa)	88.73	Ev2 (MPa)	195.51
Ev2/Ev1=2.2			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	21/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-74**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0409	-0.10	
3	0.088	0.0921	-0.48	
4	0.187	0.1900	-1.16	
5	0.424	0.4255	-2.66	
6	0.848	0.8429	-5.14	
7	1.098	1.0903	-7.12	
8	1.348	1.3103	-9.42	
9	0.674	0.6758	-8.90	Unloaded
10	0.337	0.3197	-8.30	
11	0.010	0.0130	-7.18	
12	0.031	0.0403	-7.20	Secondary load
13	0.088	0.0966	-7.30	
14	0.187	0.1968	-7.48	
15	0.424	0.4190	-7.88	
16	0.848	0.8272	-8.66	
17	1.098	1.0903	-9.16	



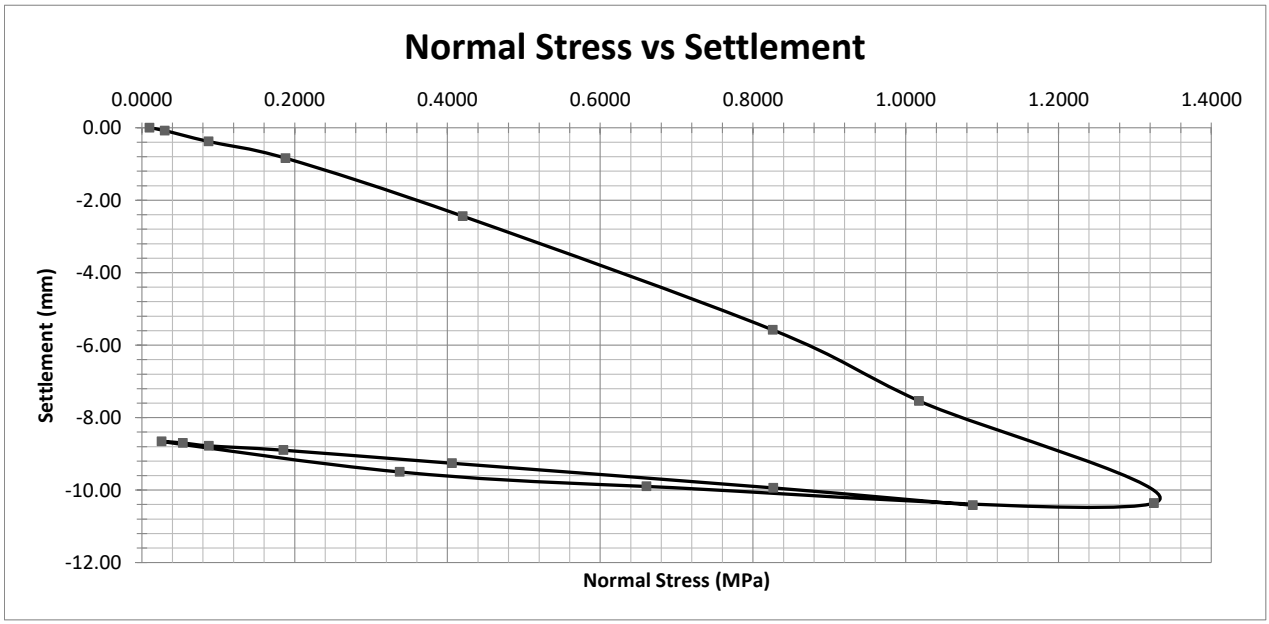
Ev1 (MPa)	32.07	Ev2 (MPa)	119.33
Ev2/Ev1=3.72			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	22/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-75**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0301	-0.08	
3	0.088	0.0873	-0.38	
4	0.187	0.1882	-0.84	
5	0.424	0.4200	-2.44	
6	0.848	0.8259	-5.58	
7	1.098	1.0175	-7.54	
8	1.348	1.3250	-10.36	
9	0.674	0.6607	-9.90	Unloaded
10	0.337	0.3375	-9.50	
11	0.010	0.0259	-8.66	
12	0.031	0.0538	-8.70	Secondary load
13	0.088	0.0877	-8.78	
14	0.187	0.1852	-8.90	
15	0.424	0.4059	-9.26	
16	0.848	0.8266	-9.94	
17	1.098	1.0881	-10.42	



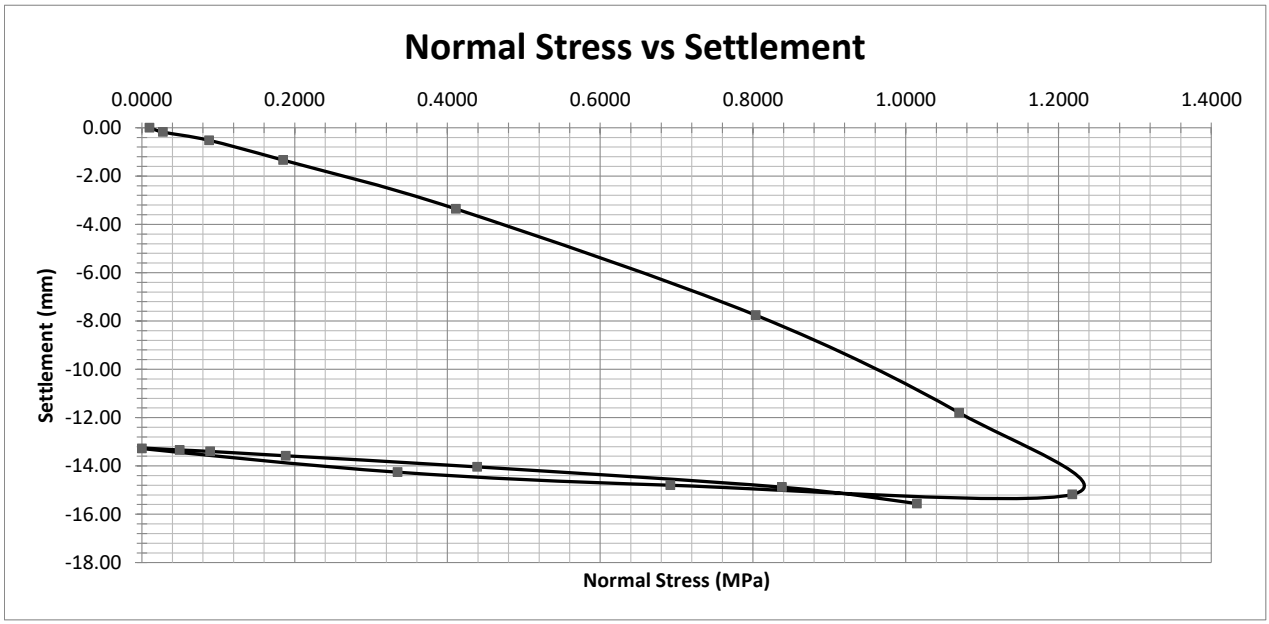
Ev1 (MPa)	28.19	Ev2 (MPa)	134.05
Ev2/Ev1=4.75			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	23/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-76**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0277	-0.18	
3	0.088	0.0880	-0.52	
4	0.187	0.1849	-1.34	
5	0.424	0.4111	-3.36	
6	0.848	0.8037	-7.76	
7	1.098	1.0700	-11.80	
8	1.348	1.2181	-15.18	
9	0.674	0.6919	-14.80	Unloaded
10	0.337	0.3349	-14.26	
11	0.010	0.0000	-13.28	
12	0.031	0.0497	-13.34	Secondary load
13	0.088	0.0896	-13.40	
14	0.187	0.1884	-13.58	
15	0.424	0.4391	-14.04	
16	0.848	0.8379	-14.88	
17	1.098	1.0148	-15.56	



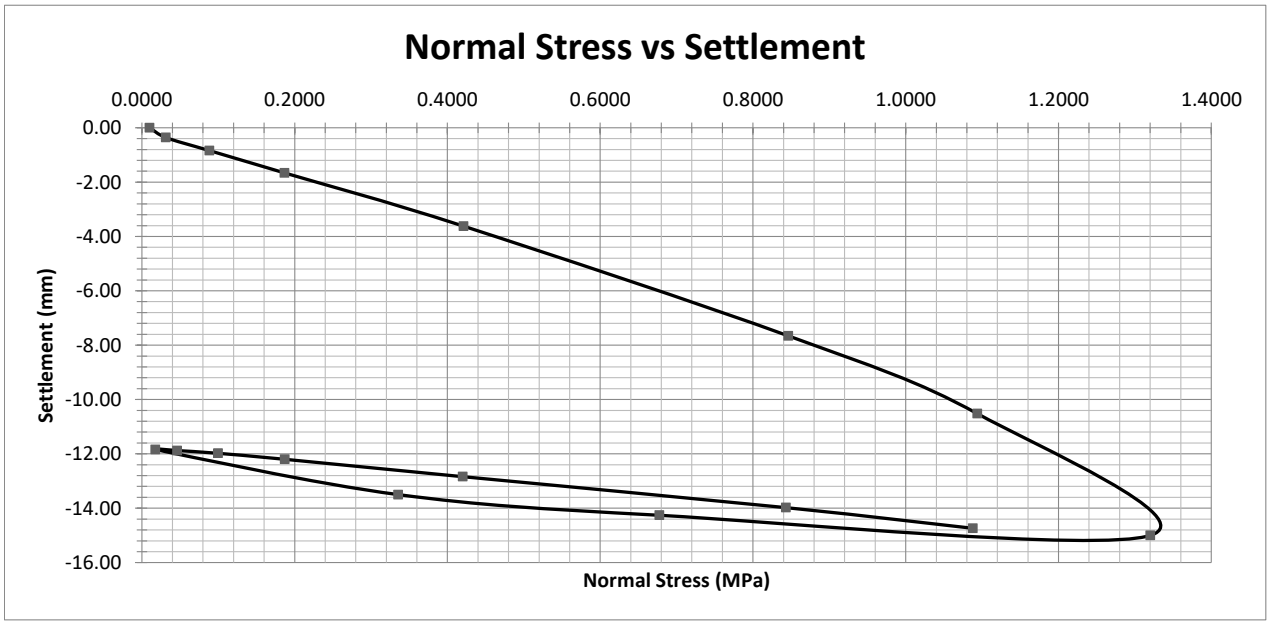
Ev1 (MPa)	18.58	Ev2 (MPa)	94.48
Ev2/Ev1=5.09			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	max load not reached

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	21/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-77**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0314	-0.36	
3	0.088	0.0884	-0.84	
4	0.187	0.1866	-1.66	
5	0.424	0.4210	-3.62	
6	0.848	0.8464	-7.66	
7	1.098	1.0937	-10.52	
8	1.348	1.3204	-15.00	
9	0.674	0.6774	-14.26	Unloaded
10	0.337	0.3356	-13.50	
11	0.010	0.0175	-11.84	
12	0.031	0.0463	-11.88	Secondary load
13	0.088	0.0999	-11.98	
14	0.187	0.1870	-12.20	
15	0.424	0.4201	-12.84	
16	0.848	0.8433	-13.98	
17	1.098	1.0881	-14.74	



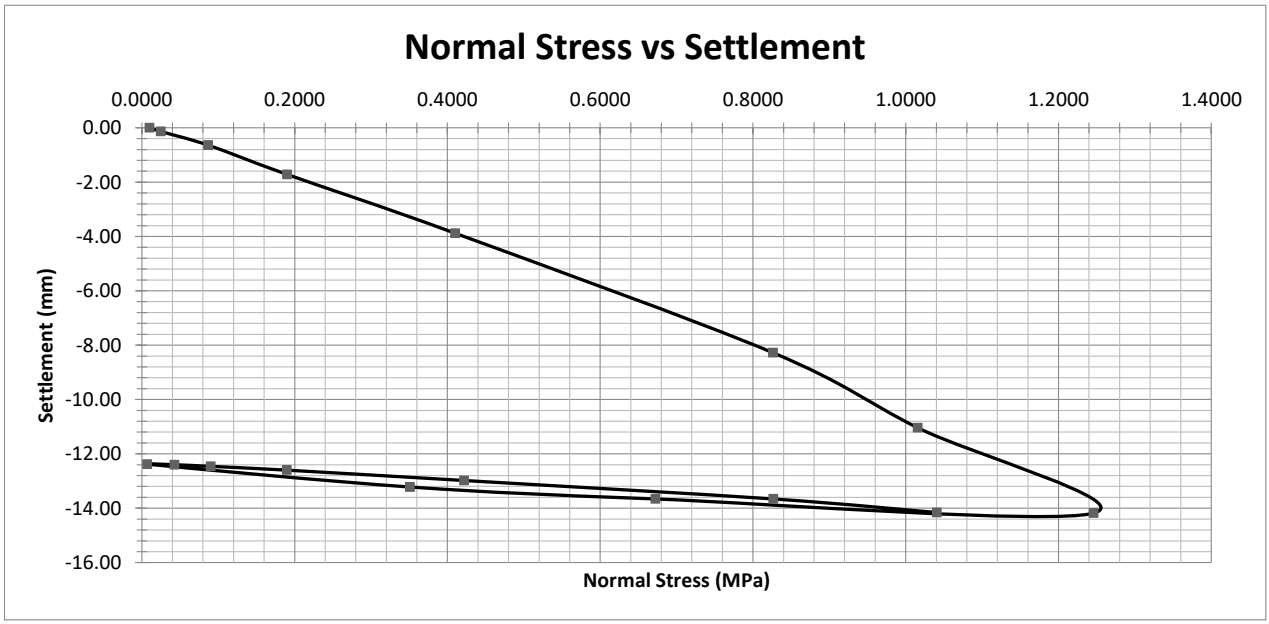
Ev1 (MPa)	20.93	Ev2 (MPa)	80.06
Ev2/Ev1=3.82			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	21/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-78**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0250	-0.14	
3	0.088	0.0867	-0.64	
4	0.187	0.1903	-1.72	
5	0.424	0.4100	-3.88	
6	0.848	0.8263	-8.28	
7	1.098	1.0156	-11.04	
8	1.348	1.2462	-14.18	
9	0.674	0.6724	-13.66	Unloaded
10	0.337	0.3510	-13.22	
11	0.010	0.0069	-12.38	
12	0.031	0.0427	-12.40	Secondary load
13	0.088	0.0900	-12.46	
14	0.187	0.1897	-12.60	
15	0.424	0.4217	-12.98	
16	0.848	0.8268	-13.66	
17	1.098	1.0408	-14.16	



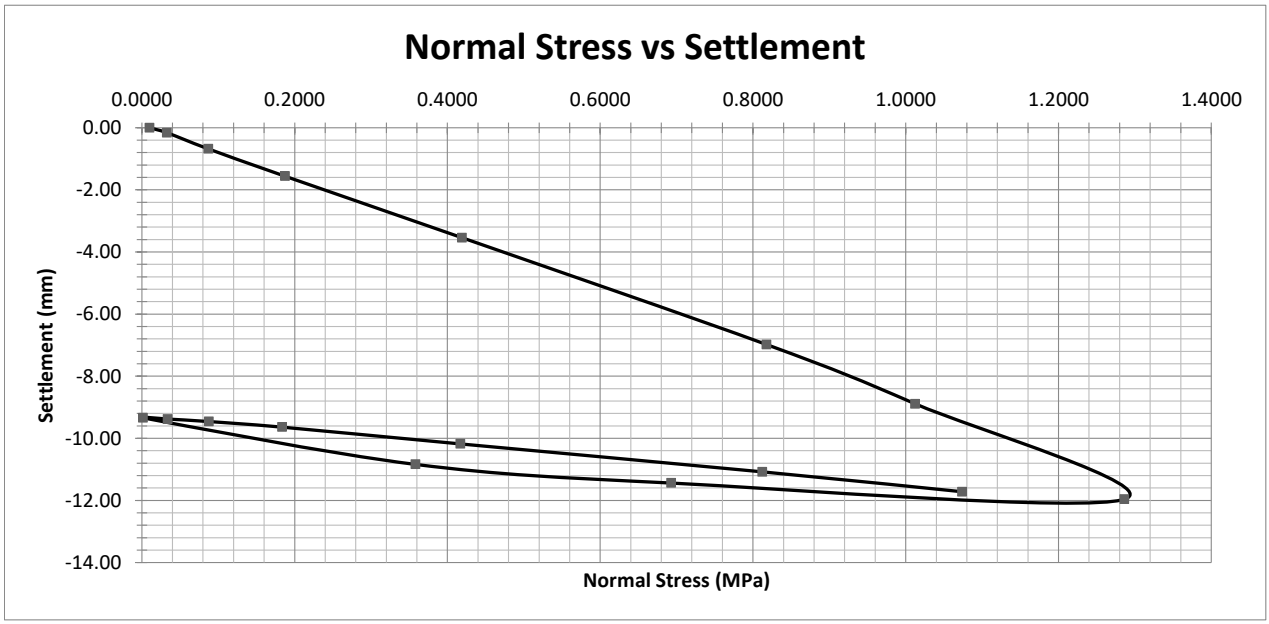
Ev1 (MPa)	19.76	Ev2 (MPa)	123.69
Ev2/Ev1=6.26			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	max load not reached

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	21/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-79**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0327	-0.16	
3	0.088	0.0870	-0.68	
4	0.187	0.1873	-1.56	
5	0.424	0.4190	-3.54	
6	0.848	0.8178	-6.98	
7	1.098	1.0125	-8.89	
8	1.348	1.2864	-11.96	
9	0.674	0.6931	-11.44	Unloaded
10	0.337	0.3582	-10.84	
11	0.010	0.0014	-9.34	
12	0.031	0.0337	-9.38	Secondary load
13	0.088	0.0877	-9.46	
14	0.187	0.1835	-9.64	
15	0.424	0.4171	-10.18	
16	0.848	0.8123	-11.08	
17	1.098	1.0740	-11.72	



Ev1 (MPa)	24.40	Ev2 (MPa)	97.11
Ev2/Ev1=3.98			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

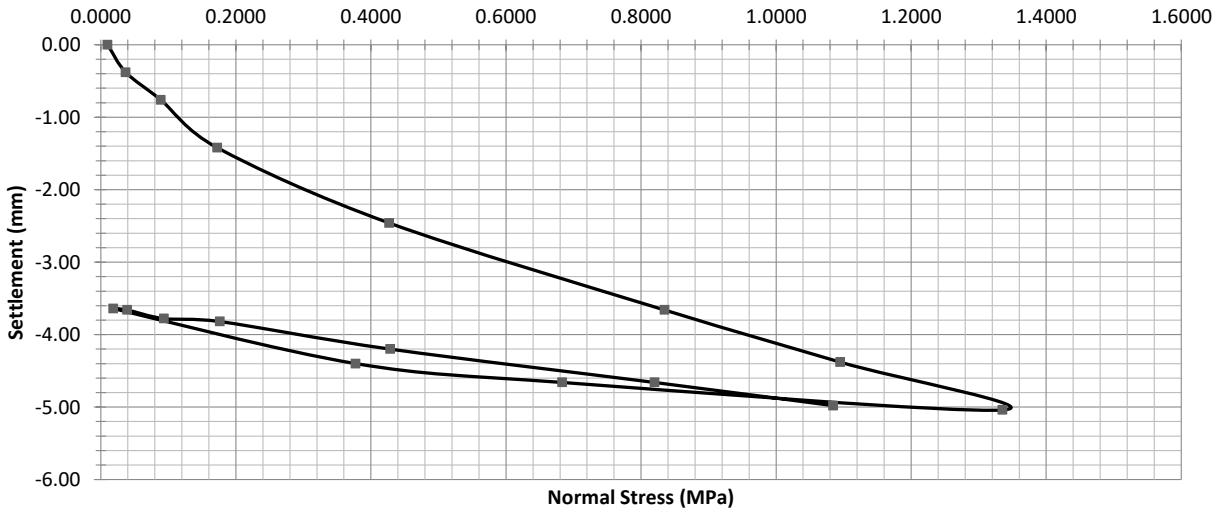
STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	31/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-80**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0369	-0.38	
3	0.088	0.0887	-0.76	
4	0.187	0.1723	-1.42	
5	0.424	0.4271	-2.46	
6	0.848	0.8348	-3.66	
7	1.098	1.0951	-4.38	
8	1.348	1.3353	-5.04	
9	0.674	0.6833	-4.66	Unloaded
10	0.337	0.3774	-4.40	
11	0.010	0.0185	-3.64	
12	0.031	0.0390	-3.66	Secondary load
13	0.088	0.0937	-3.78	
14	0.187	0.1764	-3.82	
15	0.424	0.4285	-4.20	
16	0.848	0.8200	-4.66	
17	1.098	1.0847	-4.98	

Normal Stress vs Settlement



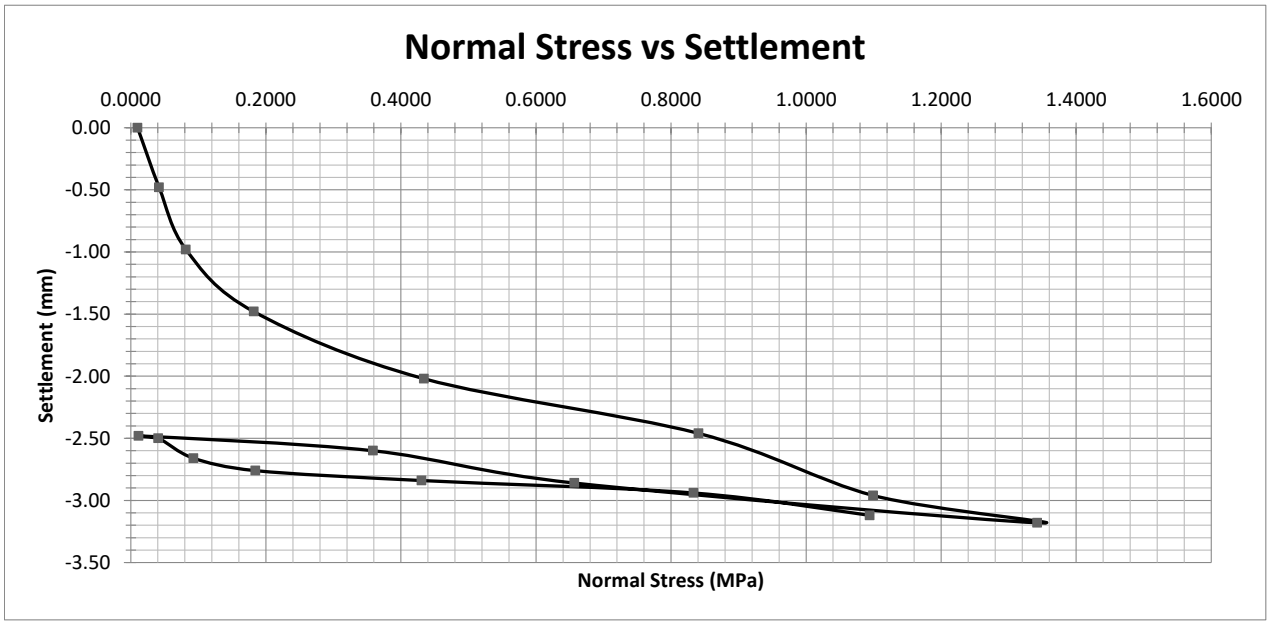
Ev1 (MPa)	65.39	Ev2 (MPa)	183.29
Ev2/Ev1=2.8			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	31/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-81**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0419	-0.48	
3	0.088	0.0816	-0.98	
4	0.187	0.1821	-1.48	
5	0.424	0.4339	-2.02	
6	0.848	0.8406	-2.46	
7	1.098	1.0992	-2.96	
8	1.348	1.3424	-3.18	
9	0.674	0.6569	-2.86	Unloaded
10	0.337	0.3587	-2.60	
11	0.010	0.0115	-2.48	
12	0.031	0.0408	-2.50	Secondary load
13	0.088	0.0927	-2.66	
14	0.187	0.1844	-2.76	
15	0.424	0.4307	-2.84	
16	0.848	0.8333	-2.94	
17	1.098	1.0941	-3.12	



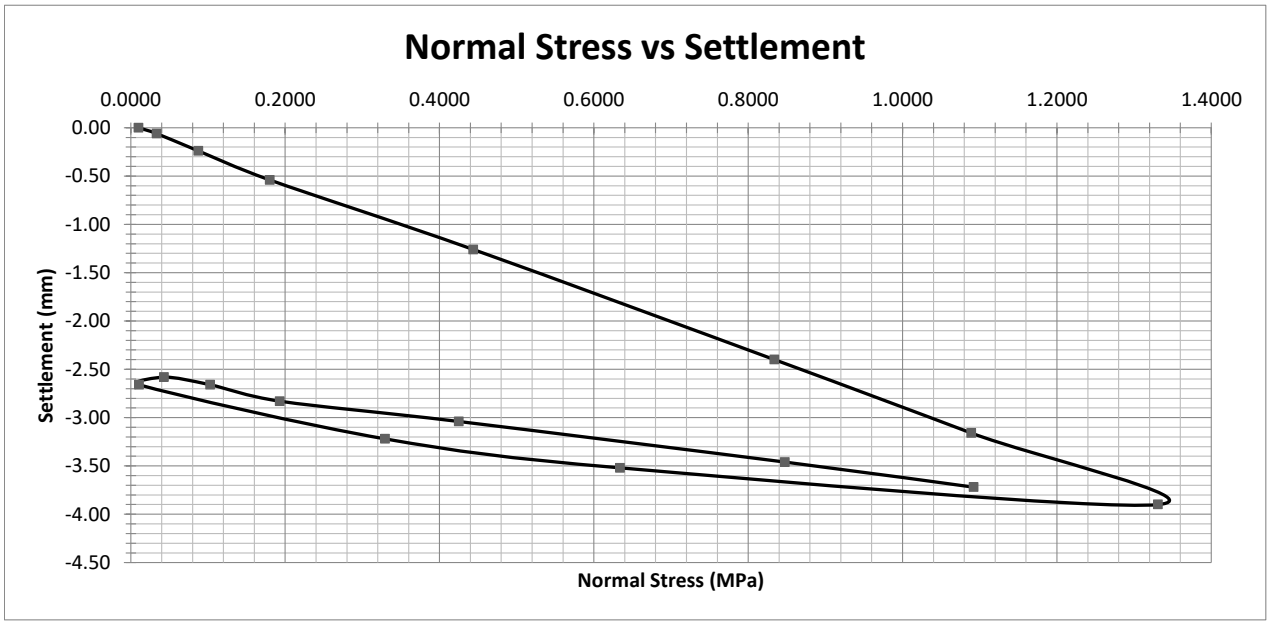
Ev1 (MPa)	122.49	Ev2 (MPa)	533.44
Ev2/Ev1=4.36			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	16/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-82**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0334	-0.06	
3	0.088	0.0876	-0.24	
4	0.187	0.1800	-0.54	
5	0.424	0.4438	-1.26	
6	0.848	0.8340	-2.40	
7	1.098	1.0892	-3.16	
8	1.348	1.3311	-3.90	
9	0.674	0.6341	-3.52	Unloaded
10	0.337	0.3295	-3.22	
11	0.010	0.0106	-2.66	
12	0.031	0.0430	-2.58	Secondary load
13	0.088	0.1030	-2.66	
14	0.187	0.1932	-2.83	
15	0.424	0.4250	-3.04	
16	0.848	0.8476	-3.46	
17	1.098	1.0923	-3.72	



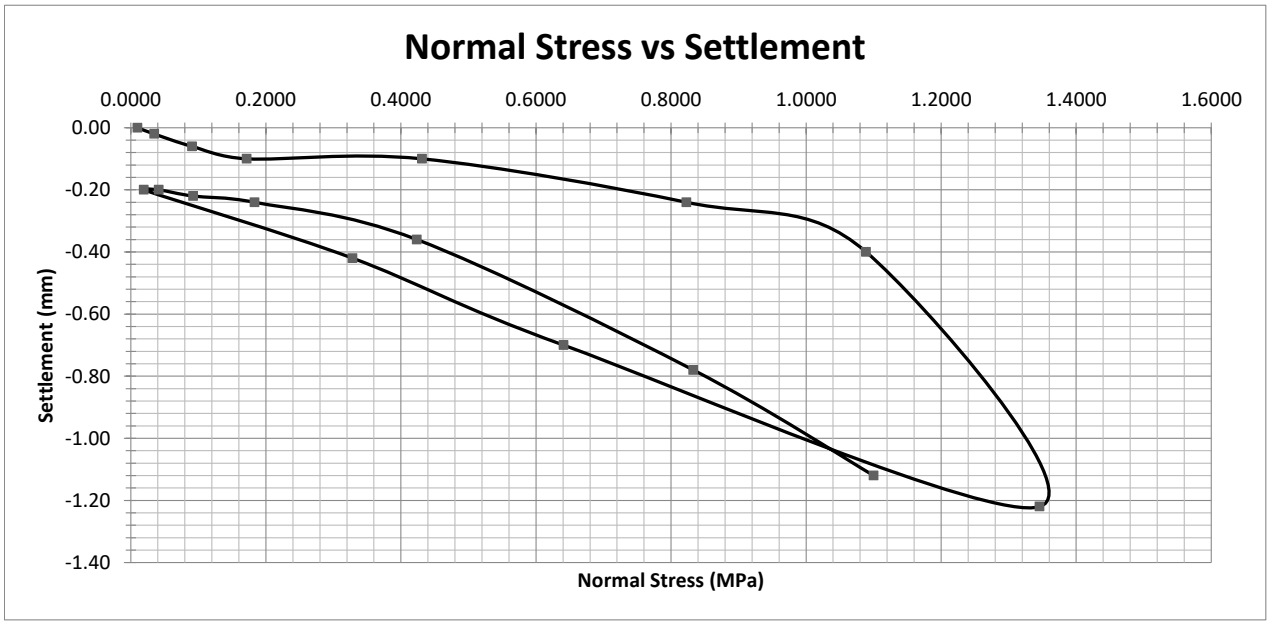
Ev1 (MPa)	76.73	Ev2 (MPa)	219.56
Ev2/Ev1=2.86			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O / L.G
Site:	The Landing (stage 4&5 fill)	**Tested by:**	15/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-83**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0347	-0.02	
3	0.088	0.0908	-0.06	
4	0.187	0.1716	-0.10	
5	0.424	0.4312	-0.10	
6	0.848	0.8230	-0.24	
7	1.098	1.0889	-0.40	
8	1.348	1.3458	-1.22	
9	0.674	0.6410	-0.70	Unloaded
10	0.337	0.3285	-0.42	
11	0.010	0.0192	-0.20	
12	0.031	0.0415	-0.20	Secondary load
13	0.088	0.0925	-0.22	
14	0.187	0.1833	-0.24	
15	0.424	0.4237	-0.36	
16	0.848	0.8330	-0.78	
17	1.098	1.1001	-1.12	



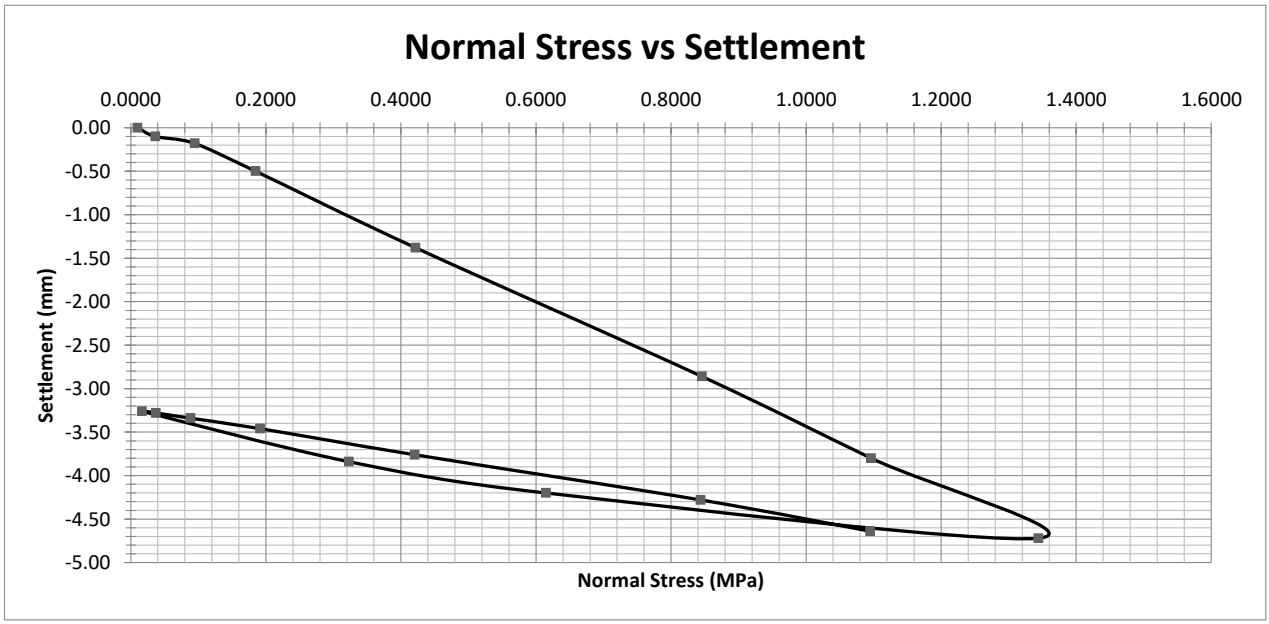
Ev1 (MPa)	313.27	Ev2 (MPa)	224.14
Ev2/Ev1=0.72			
Begin Time:	11:54:00 AM	**End Time**	12:41:00 PM
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O / L.G
Site:	The Landing (stage 4&5 fill)	**Tested by:**	15/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-84**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0362	-0.10	
3	0.088	0.0946	-0.18	
4	0.187	0.1848	-0.50	
5	0.424	0.4217	-1.38	
6	0.848	0.8457	-2.86	
7	1.098	1.0963	-3.80	
8	1.348	1.3441	-4.72	
9	0.674	0.6148	-4.20	Unloaded
10	0.337	0.3230	-3.84	
11	0.010	0.0166	-3.26	
12	0.031	0.0373	-3.28	Secondary load
13	0.088	0.0884	-3.34	
14	0.187	0.1914	-3.46	
15	0.424	0.4203	-3.76	
16	0.848	0.8437	-4.28	
17	1.098	1.0950	-4.64	



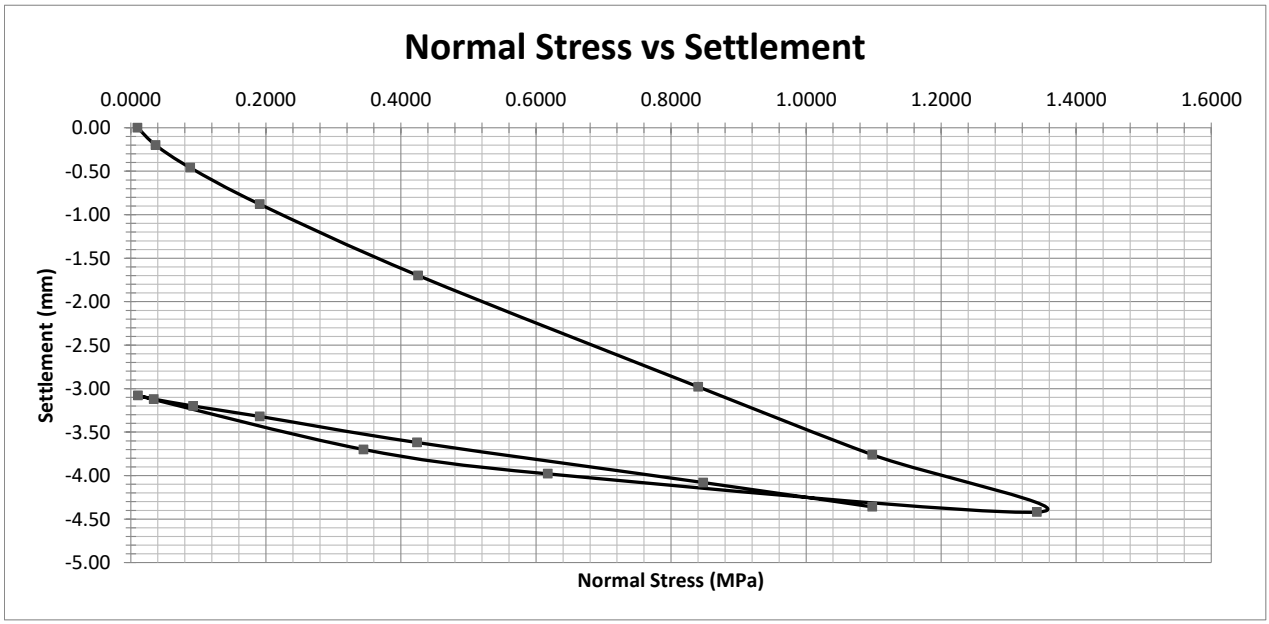
Ev1 (MPa)	62.86	Ev2 (MPa)	173.19
Ev2/Ev1=2.76			
Begin Time:	11:54:00 AM	**End Time**	12:41:00 PM
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O / L.G
Site:	The Landing (stage 4&5 fill)	**Tested by:**	15/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-85**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0369	-0.20	
3	0.088	0.0881	-0.46	
4	0.187	0.1911	-0.88	
5	0.424	0.4257	-1.70	
6	0.848	0.8405	-2.98	
7	1.098	1.0981	-3.76	
8	1.348	1.3420	-4.42	
9	0.674	0.6174	-3.98	Unloaded
10	0.337	0.3448	-3.70	
11	0.010	0.0106	-3.08	
12	0.031	0.0340	-3.12	Secondary load
13	0.088	0.0923	-3.20	
14	0.187	0.1911	-3.32	
15	0.424	0.4241	-3.62	
16	0.848	0.8477	-4.08	
17	1.098	1.0982	-4.36	



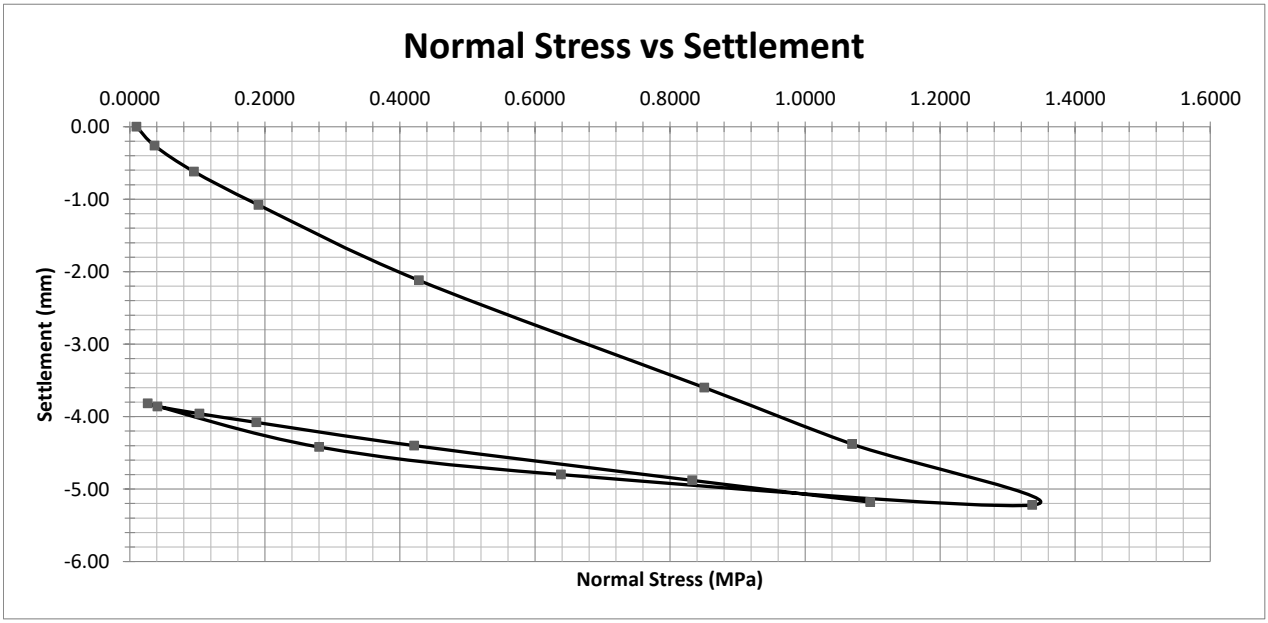
Ev1 (MPa)	70.28	Ev2 (MPa)	199.27
Ev2/Ev1=2.84			
Begin Time:	11:54:00 AM	**End Time**	12:41:00 PM
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	20/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-86**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0366	-0.26	
3	0.088	0.0952	-0.62	
4	0.187	0.1908	-1.08	
5	0.424	0.4281	-2.12	
6	0.848	0.8509	-3.60	
7	1.098	1.0697	-4.38	
8	1.348	1.3366	-5.22	
9	0.674	0.6387	-4.80	Unloaded
10	0.337	0.2804	-4.42	
11	0.010	0.0266	-3.82	
12	0.031	0.0412	-3.86	Secondary load
13	0.088	0.1033	-3.96	
14	0.187	0.1876	-4.08	
15	0.424	0.4212	-4.40	
16	0.848	0.8330	-4.88	
17	1.098	1.0965	-5.18	



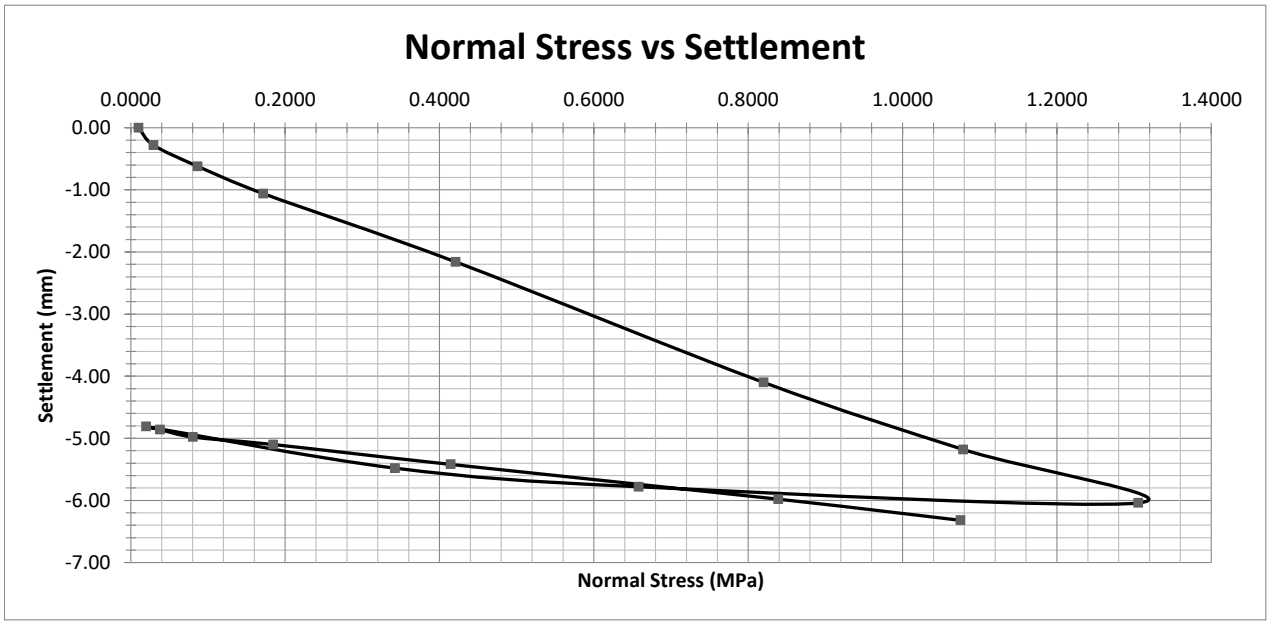
Ev1 (MPa)	59.75	Ev2 (MPa)	188.06
Ev2/Ev1=3.15			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O / L.G
Site:	The Landing (stage 4&5 fill)	**Tested by:**	14/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-87**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0294	-0.28	
3	0.088	0.0866	-0.62	
4	0.187	0.1716	-1.06	
5	0.424	0.4210	-2.16	
6	0.848	0.8200	-4.10	
7	1.098	1.0786	-5.18	
8	1.348	1.3055	-6.04	
9	0.674	0.6581	-5.78	Unloaded
10	0.337	0.3424	-5.48	
11	0.010	0.0200	-4.81	
12	0.031	0.0379	-4.86	Secondary load
13	0.088	0.0805	-4.98	
14	0.187	0.1846	-5.10	
15	0.424	0.4145	-5.42	
16	0.848	0.8392	-5.98	
17	1.098	1.0750	-6.32	



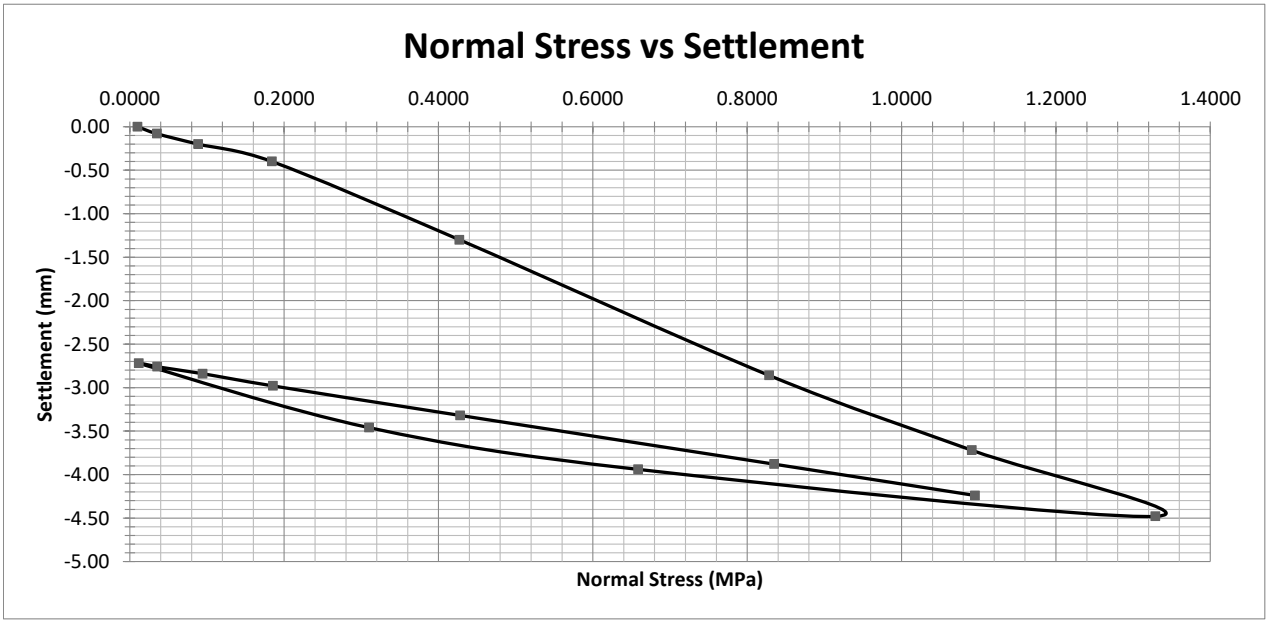
Ev1 (MPa)	49.66	Ev2 (MPa)	164.99
Ev2/Ev1=3.32			
Begin Time:	11:54:00 AM	**End Time**	12:41:00 PM
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O / L.G
Site:	The Landing (stage 4&5 fill)	**Tested by:**	14/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-88**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0351	-0.08	
3	0.088	0.0886	-0.20	
4	0.187	0.1842	-0.40	
5	0.424	0.4272	-1.30	
6	0.848	0.8285	-2.86	
7	1.098	1.0910	-3.72	
8	1.348	1.3290	-4.48	
9	0.674	0.6587	-3.94	Unloaded
10	0.337	0.3100	-3.46	
11	0.010	0.0116	-2.72	
12	0.031	0.0355	-2.76	Secondary load
13	0.088	0.0945	-2.84	
14	0.187	0.1855	-2.98	
15	0.424	0.4282	-3.32	
16	0.848	0.8350	-3.88	
17	1.098	1.0953	-4.24	



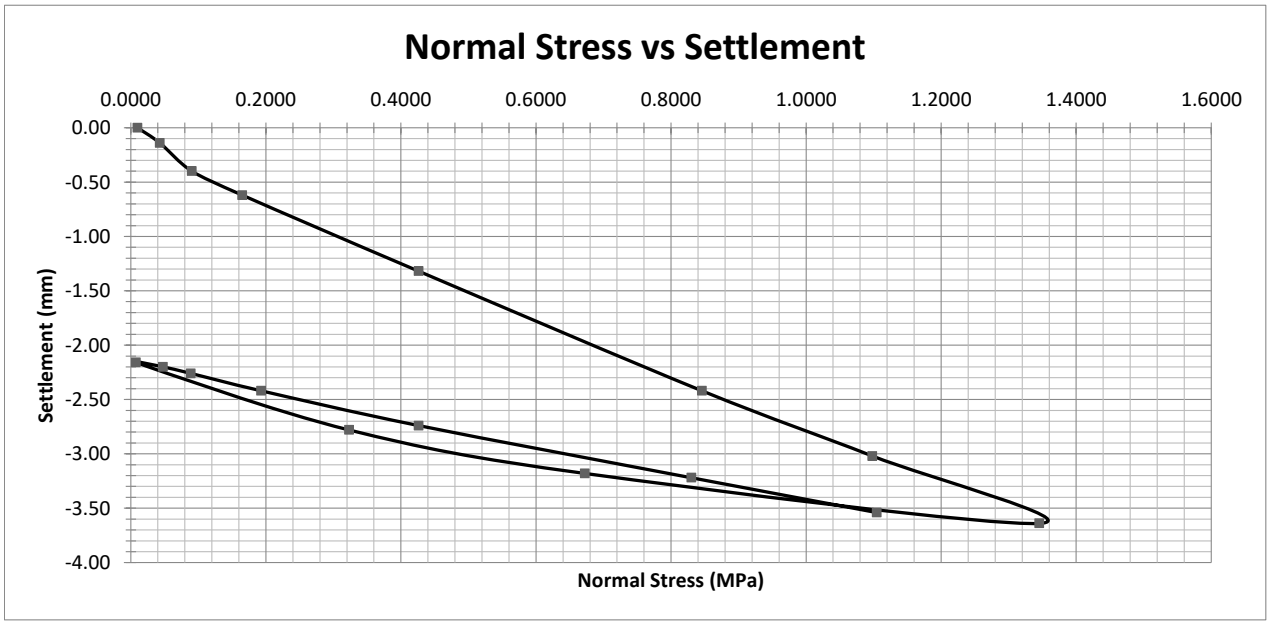
Ev1 (MPa)	64.22	Ev2 (MPa)	162.28
Ev2/Ev1=2.53			
Begin Time:	11:54:00 AM	**End Time**	12:41:00 PM
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O J.A
Site:	The Landing (stage 4&5 fill)	**Tested by:**	16/03/2020
Job No:	8020-1727	**Test No.:**	**PLT-89**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0430	-0.14	
3	0.088	0.0905	-0.40	
4	0.187	0.1651	-0.62	
5	0.424	0.4264	-1.32	
6	0.848	0.8458	-2.42	
7	1.098	1.0982	-3.02	
8	1.348	1.3454	-3.64	
9	0.674	0.6723	-3.18	Unloaded
10	0.337	0.3231	-2.78	
11	0.010	0.0076	-2.16	
12	0.031	0.0477	-2.20	Secondary load
13	0.088	0.0890	-2.26	
14	0.187	0.1932	-2.42	
15	0.424	0.4264	-2.74	
16	0.848	0.8302	-3.22	
17	1.098	1.1046	-3.54	



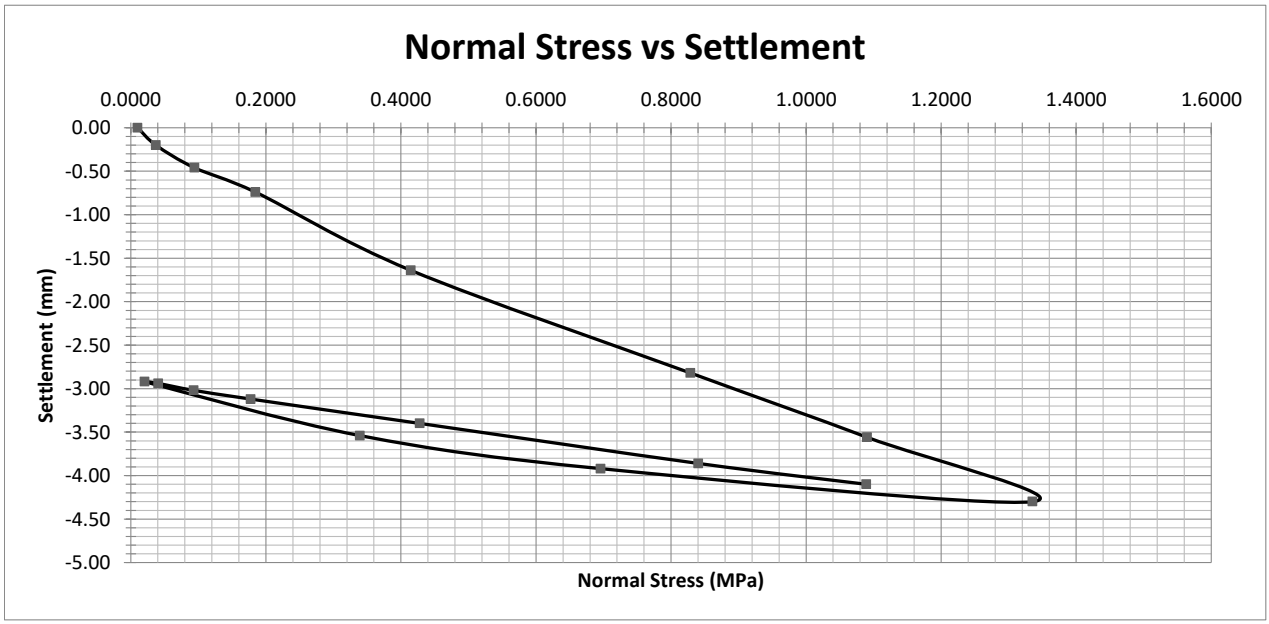
Ev1 (MPa)	85.69	Ev2 (MPa)	184.36
Ev2/Ev1=2.15			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	31/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-90**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0372	-0.20	
3	0.088	0.0942	-0.46	
4	0.187	0.1845	-0.74	
5	0.424	0.4147	-1.64	
6	0.848	0.8287	-2.82	
7	1.098	1.0905	-3.56	
8	1.348	1.3351	-4.30	
9	0.674	0.6958	-3.92	Unloaded
10	0.337	0.3394	-3.54	
11	0.010	0.0204	-2.92	
12	0.031	0.0405	-2.94	Secondary load
13	0.088	0.0931	-3.02	
14	0.187	0.1775	-3.12	
15	0.424	0.4279	-3.40	
16	0.848	0.8403	-3.86	
17	1.098	1.0892	-4.10	



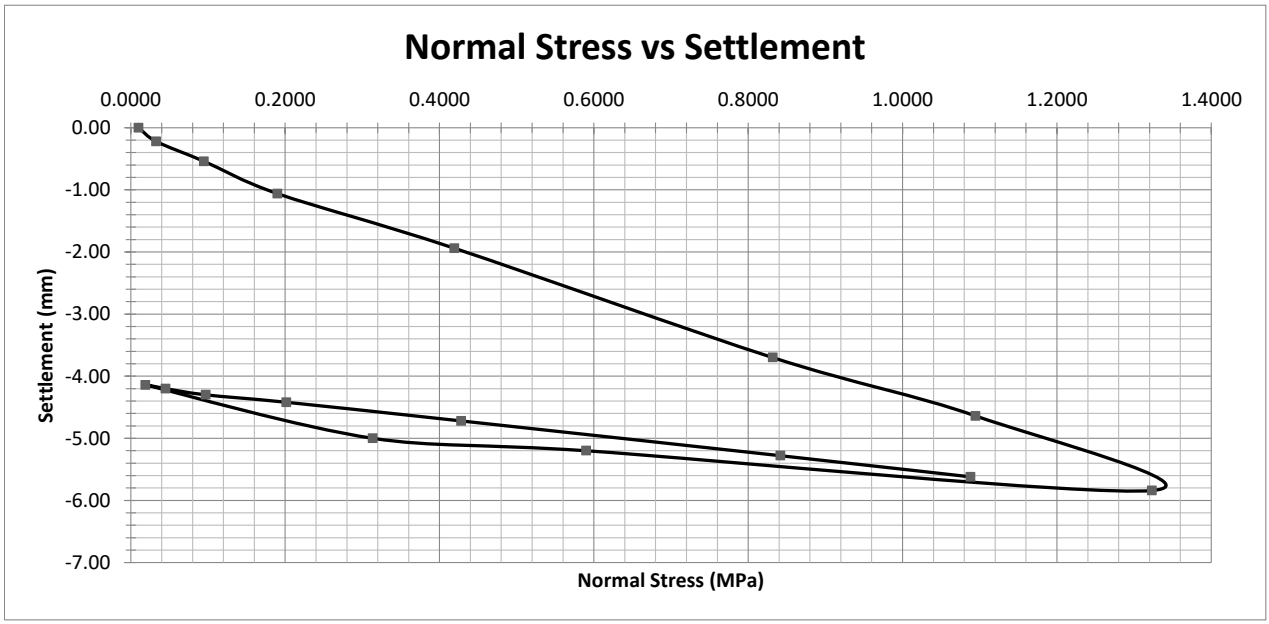
Ev1 (MPa)	72.19	Ev2 (MPa)	209.60
Ev2/Ev1=2.9			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	LG
Site:	The Landing (stage 4&5 fill)	**Tested by:**	20/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-91**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0328	-0.22	
3	0.088	0.0948	-0.54	
4	0.187	0.1899	-1.06	
5	0.424	0.4193	-1.94	
6	0.848	0.8318	-3.70	
7	1.098	1.0947	-4.64	
8	1.348	1.3233	-5.84	
9	0.674	0.5900	-5.20	Unloaded
10	0.337	0.3136	-5.00	
11	0.010	0.0190	-4.14	
12	0.031	0.0450	-4.20	Secondary load
13	0.088	0.0973	-4.30	
14	0.187	0.2017	-4.42	
15	0.424	0.4281	-4.72	
16	0.848	0.8418	-5.28	
17	1.098	1.0882	-5.62	



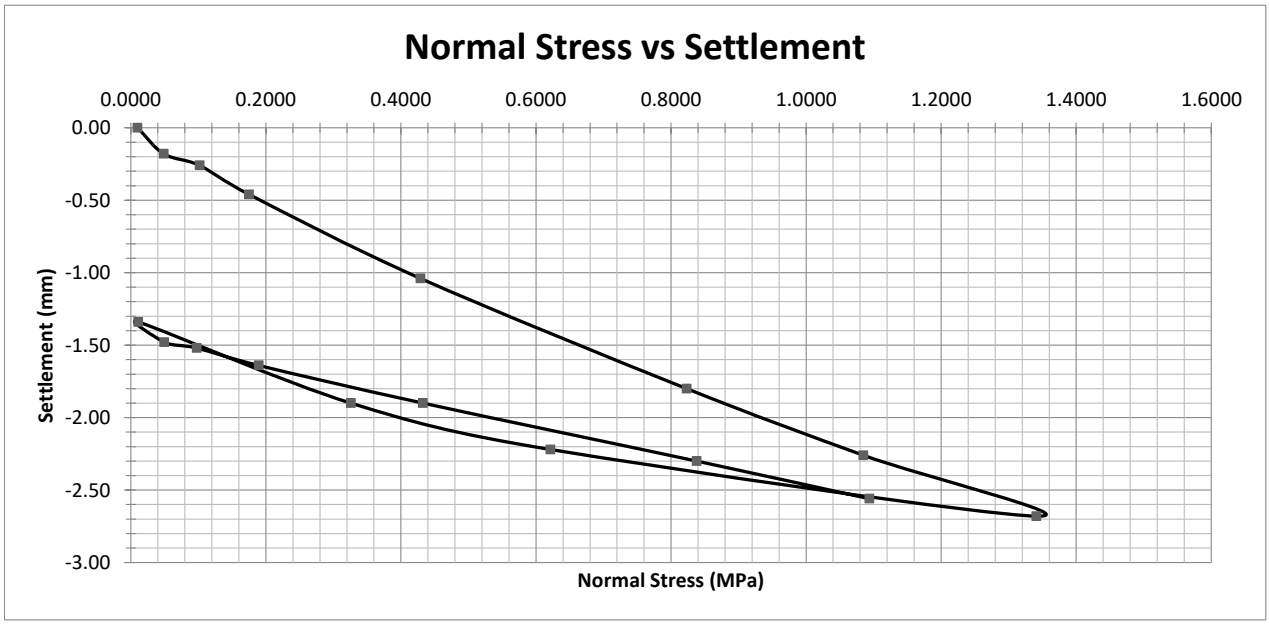
Ev1 (MPa)	53.16	Ev2 (MPa)	166.33
Ev2/Ev1=3.13			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	31/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-92**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0488	-0.18	
3	0.088	0.1021	-0.26	
4	0.187	0.1750	-0.46	
5	0.424	0.4291	-1.04	
6	0.848	0.8231	-1.80	
7	1.098	1.0849	-2.26	
8	1.348	1.3410	-2.68	
9	0.674	0.6216	-2.22	Unloaded
10	0.337	0.3259	-1.90	
11	0.010	0.0110	-1.34	
12	0.031	0.0495	-1.48	Secondary load
13	0.088	0.0976	-1.52	
14	0.187	0.1894	-1.64	
15	0.424	0.4326	-1.90	
16	0.848	0.8381	-2.30	
17	1.098	1.0939	-2.56	



Ev1 (MPa)	114.76	Ev2 (MPa)	222.19
Ev2/Ev1=1.94			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

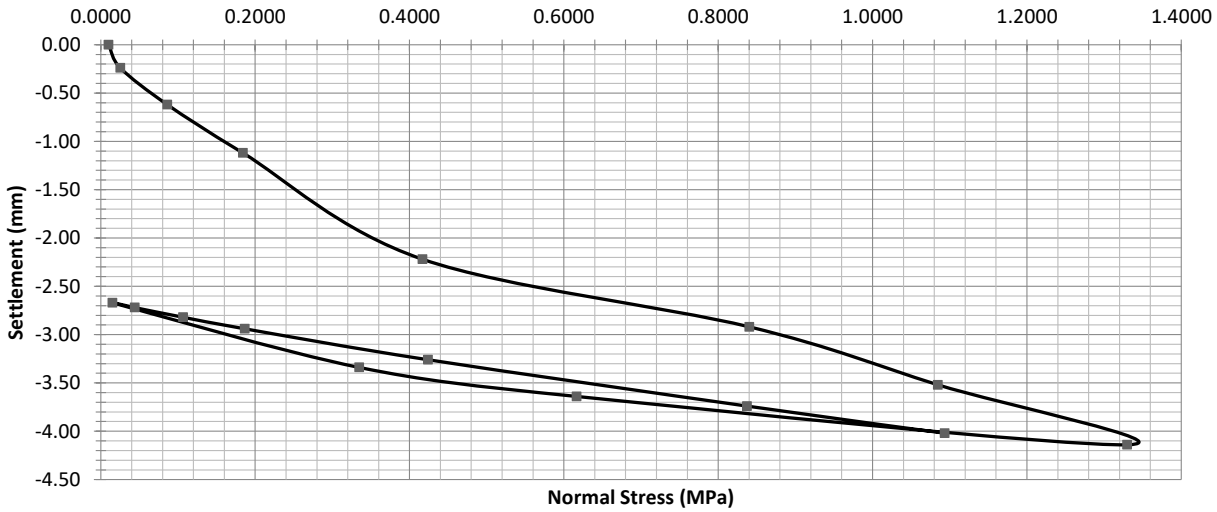
STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O / L.G
Site:	The Landing (stage 4&5 fill)	**Tested by:**	14/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-93**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0253	-0.24	
3	0.088	0.0862	-0.62	
4	0.187	0.1842	-1.12	
5	0.424	0.4168	-2.22	
6	0.848	0.8406	-2.92	
7	1.098	1.0848	-3.52	
8	1.348	1.3300	-4.14	
9	0.674	0.6167	-3.64	Unloaded
10	0.337	0.3349	-3.34	
11	0.010	0.0150	-2.67	
12	0.031	0.0439	-2.72	Secondary load
13	0.088	0.1065	-2.82	
14	0.187	0.1866	-2.94	
15	0.424	0.4241	-3.26	
16	0.848	0.8375	-3.74	
17	1.098	1.0934	-4.02	

Normal Stress vs Settlement



Ev1 (MPa)	80.25	Ev2 (MPa)	190.66
Ev2/Ev1=2.38			
Begin Time:	11:54:00 AM	**End Time**	12:41:00 PM
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

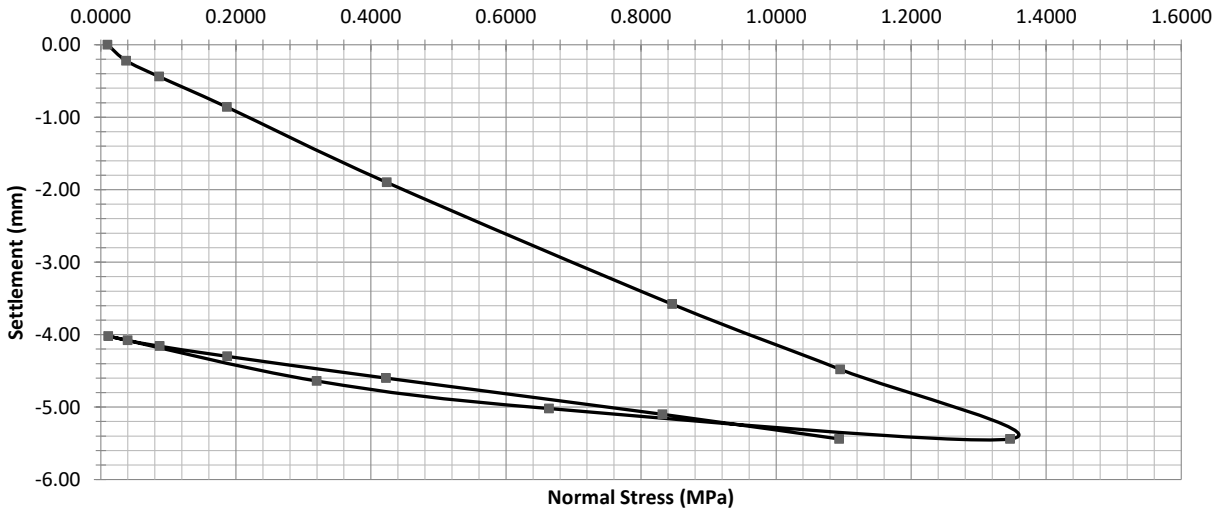
STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O / L.G
Site:	The Landing (stage 4&5 fill)	**Tested by:**	14/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-94**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0375	-0.22	
3	0.088	0.0864	-0.44	
4	0.187	0.1867	-0.86	
5	0.424	0.4236	-1.90	
6	0.848	0.8461	-3.58	
7	1.098	1.0951	-4.48	
8	1.348	1.3464	-5.44	
9	0.674	0.6638	-5.02	Unloaded
10	0.337	0.3196	-4.64	
11	0.010	0.0112	-4.02	
12	0.031	0.0398	-4.08	Secondary load
13	0.088	0.0871	-4.16	
14	0.187	0.1872	-4.30	
15	0.424	0.4223	-4.60	
16	0.848	0.8320	-5.10	
17	1.098	1.0936	-5.44	

Normal Stress vs Settlement



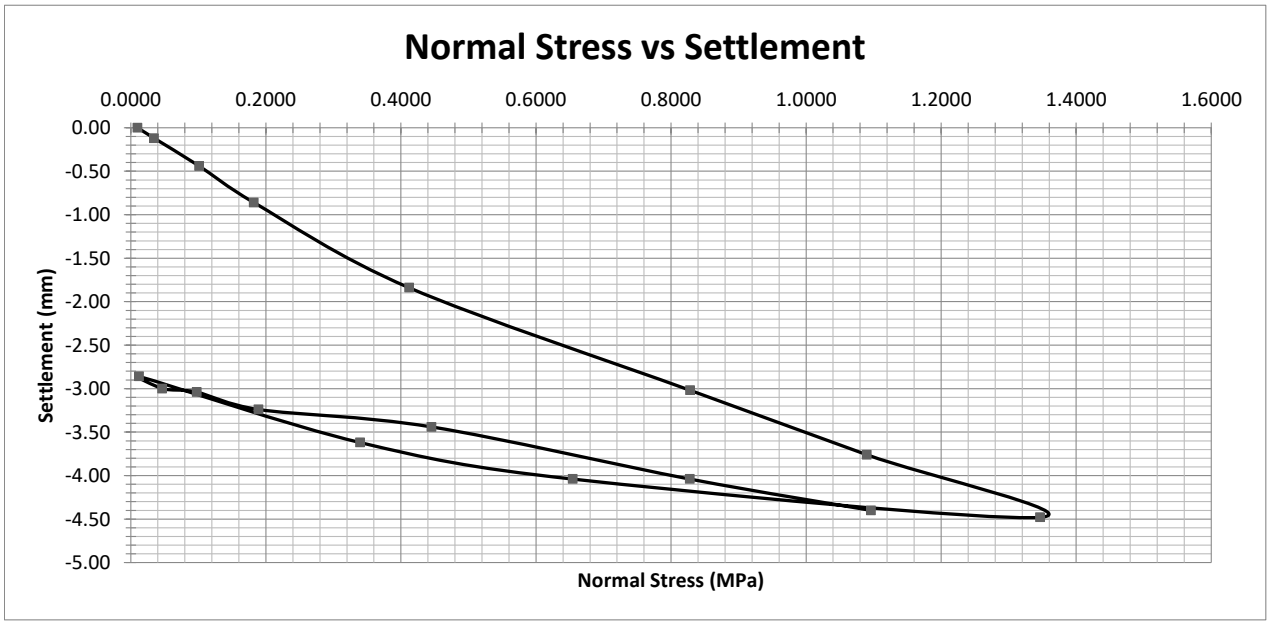
Ev1 (MPa)	56.46	Ev2 (MPa)	178.95
Ev2/Ev1=3.17			
Begin Time:	11:54:00 AM	**End Time**	12:41:00 PM
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	3/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-95**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0345	-0.12	
3	0.088	0.1012	-0.44	
4	0.187	0.1822	-0.86	
5	0.424	0.4122	-1.84	
6	0.848	0.8285	-3.02	
7	1.098	1.0899	-3.76	
8	1.348	1.3464	-4.48	
9	0.674	0.6544	-4.04	Unloaded
10	0.337	0.3395	-3.62	
11	0.010	0.0122	-2.86	
12	0.031	0.0463	-3.00	Secondary load
13	0.088	0.0976	-3.04	
14	0.187	0.1891	-3.24	
15	0.424	0.4453	-3.44	
16	0.848	0.8279	-4.04	
17	1.098	1.0960	-4.40	



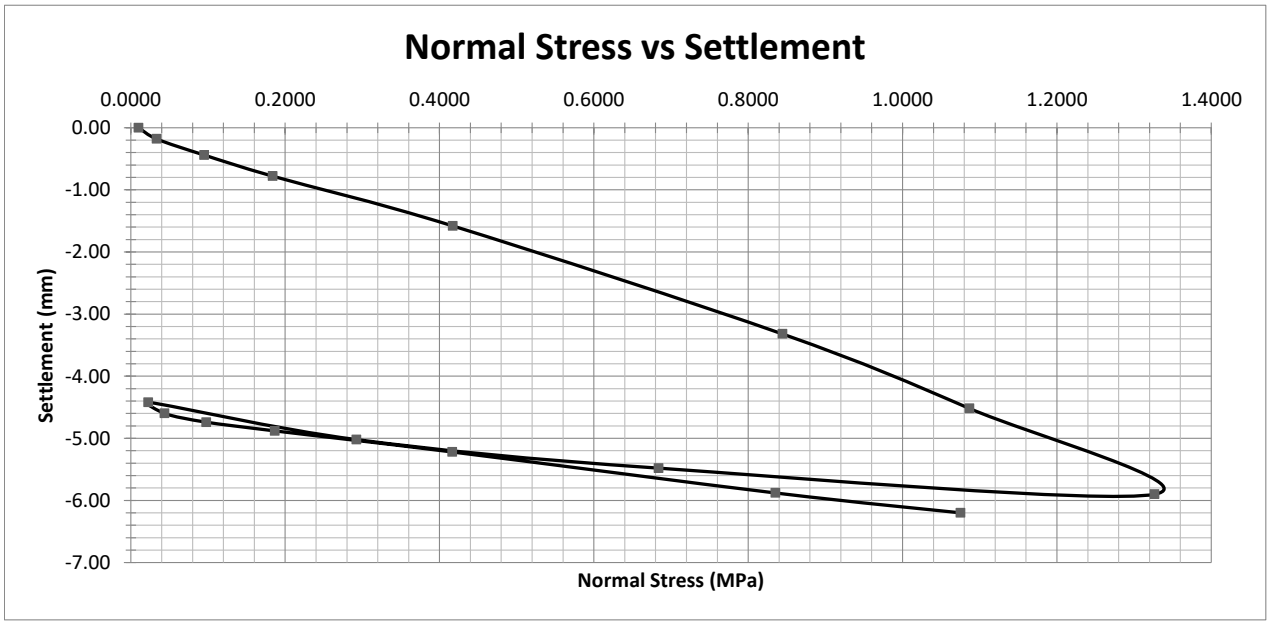
Ev1 (MPa)	69.06	Ev2 (MPa)	163.99
Ev2/Ev1=2.37			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O / L.G
Site:	The Landing (stage 4&5 fill)	**Tested by:**	14/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-96**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0334	-0.18	
3	0.088	0.0952	-0.44	
4	0.187	0.1840	-0.78	
5	0.424	0.4171	-1.58	
6	0.848	0.8444	-3.32	
7	1.098	1.0868	-4.52	
8	1.348	1.3267	-5.90	
9	0.674	0.6840	-5.48	Unloaded
10	0.337	0.2923	-5.02	
11	0.010	0.0228	-4.42	
12	0.031	0.0436	-4.60	Secondary load
13	0.088	0.0978	-4.74	
14	0.187	0.1865	-4.88	
15	0.424	0.4165	-5.22	
16	0.848	0.8354	-5.88	
17	1.098	1.0753	-6.20	



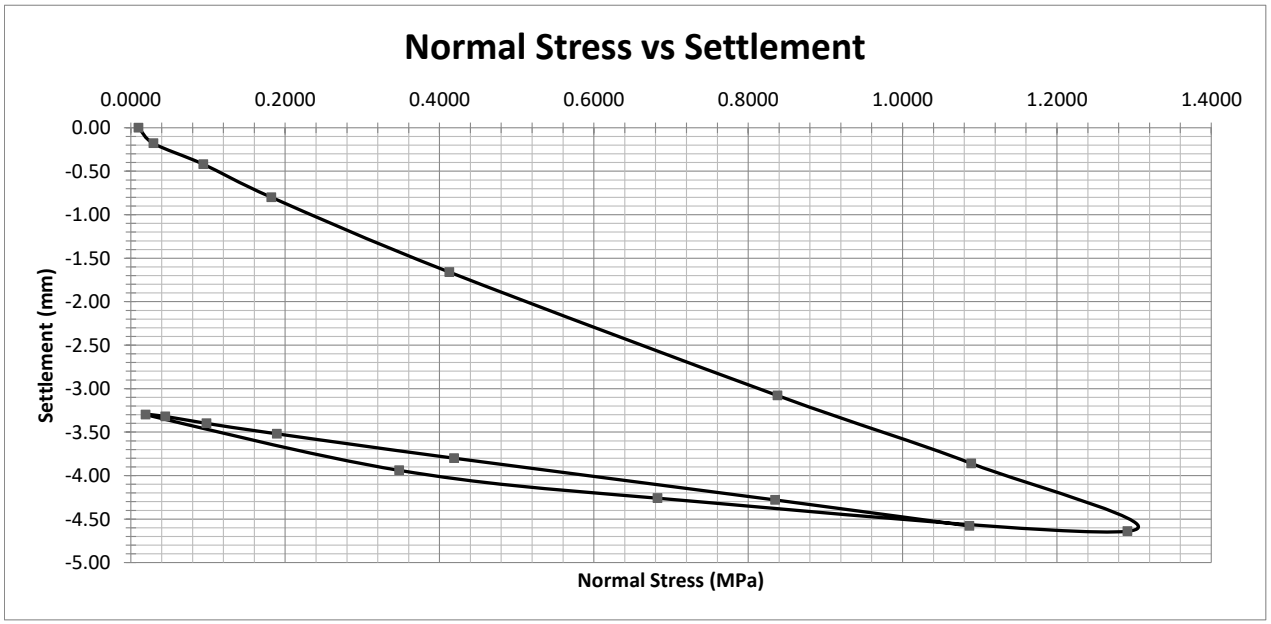
Ev1 (MPa)	52.20	Ev2 (MPa)	151.16
Ev2/Ev1=2.9			
Begin Time:	11:54:00 AM	**End Time**	12:41:00 PM
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O / L.G
Site:	The Landing (stage 4&5 fill)	**Tested by:**	14/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-97**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0293	-0.18	
3	0.088	0.0941	-0.42	
4	0.187	0.1822	-0.80	
5	0.424	0.4128	-1.66	
6	0.848	0.8381	-3.08	
7	1.098	1.0890	-3.86	
8	1.348	1.2916	-4.64	
9	0.674	0.6826	-4.26	Unloaded
10	0.337	0.3479	-3.94	
11	0.010	0.0194	-3.30	
12	0.031	0.0448	-3.32	Secondary load
13	0.088	0.0983	-3.40	
14	0.187	0.1894	-3.52	
15	0.424	0.4188	-3.80	
16	0.848	0.8350	-4.28	
17	1.098	1.0868	-4.58	



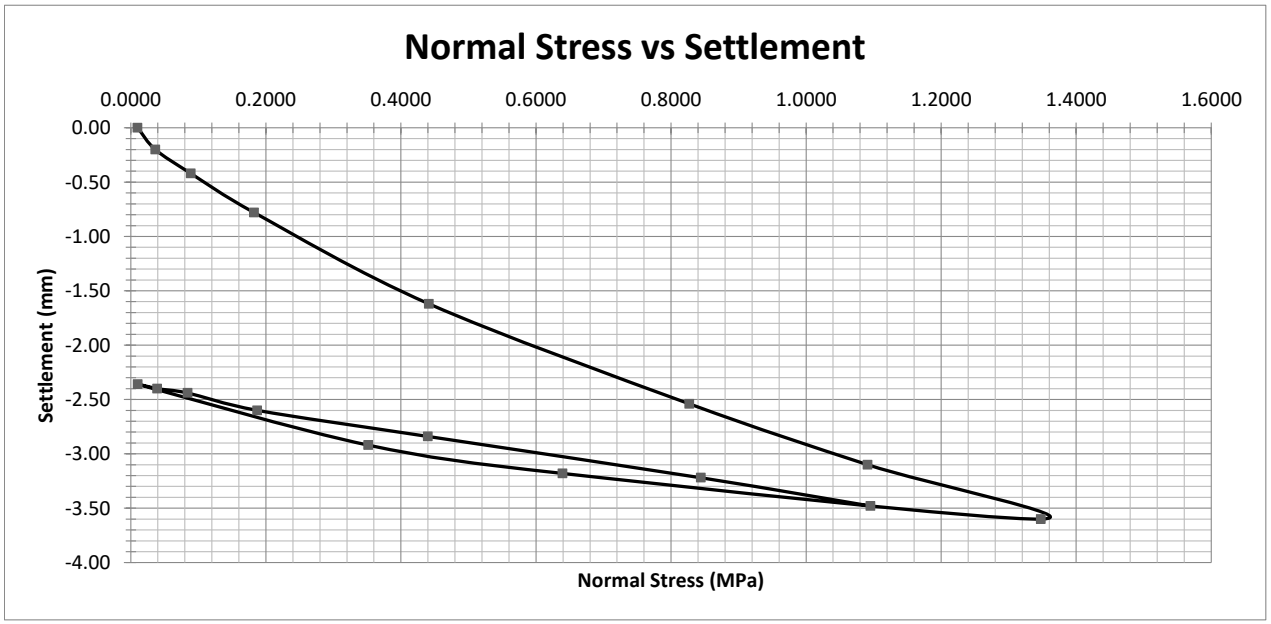
Ev1 (MPa)	64.62	Ev2 (MPa)	190.29
Ev2/Ev1=2.94			
Begin Time:	11:54:00 AM	**End Time**	12:41:00 PM
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:	Light Brown silty sandy GRAVEL	**Remarks:**	Max Pressure not achieved

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	31/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-98**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0362	-0.20	
3	0.088	0.0888	-0.42	
4	0.187	0.1825	-0.78	
5	0.424	0.4414	-1.62	
6	0.848	0.8272	-2.54	
7	1.098	1.0912	-3.10	
8	1.348	1.3477	-3.60	
9	0.674	0.6393	-3.18	Unloaded
10	0.337	0.3517	-2.92	
11	0.010	0.0103	-2.36	
12	0.031	0.0389	-2.40	Secondary load
13	0.088	0.0840	-2.44	
14	0.187	0.1874	-2.60	
15	0.424	0.4400	-2.84	
16	0.848	0.8443	-3.22	
17	1.098	1.0955	-3.48	



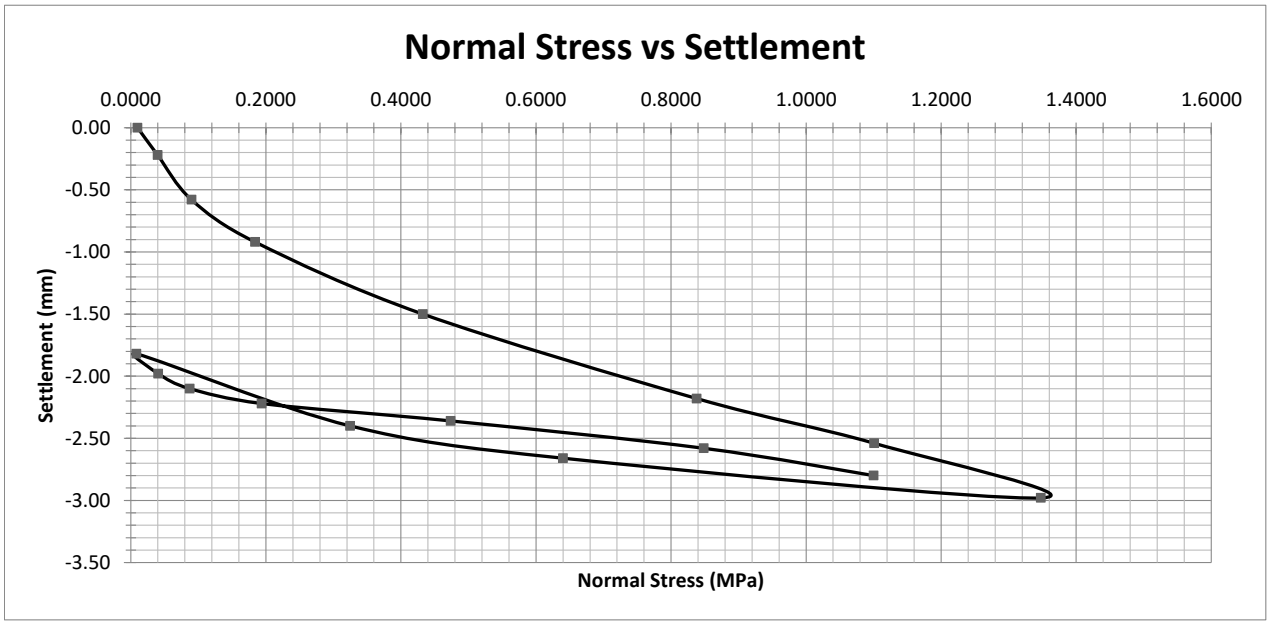
Ev1 (MPa)	87.62	Ev2 (MPa)	228.75
Ev2/Ev1=2.61			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	DO
Site:	The Landing (stage 4&5 fill)	**Tested by:**	31/01/2020
Job No:	8020-1727	**Test No.:**	**PLT-99**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0397	-0.22	
3	0.088	0.0899	-0.58	
4	0.187	0.1841	-0.92	
5	0.424	0.4325	-1.50	
6	0.848	0.8382	-2.18	
7	1.098	1.1008	-2.54	
8	1.348	1.3479	-2.98	
9	0.674	0.6400	-2.66	Unloaded
10	0.337	0.3247	-2.40	
11	0.010	0.0084	-1.82	
12	0.031	0.0408	-1.98	Secondary load
13	0.088	0.0872	-2.10	
14	0.187	0.1940	-2.22	
15	0.424	0.4739	-2.36	
16	0.848	0.8485	-2.58	
17	1.098	1.0999	-2.80	



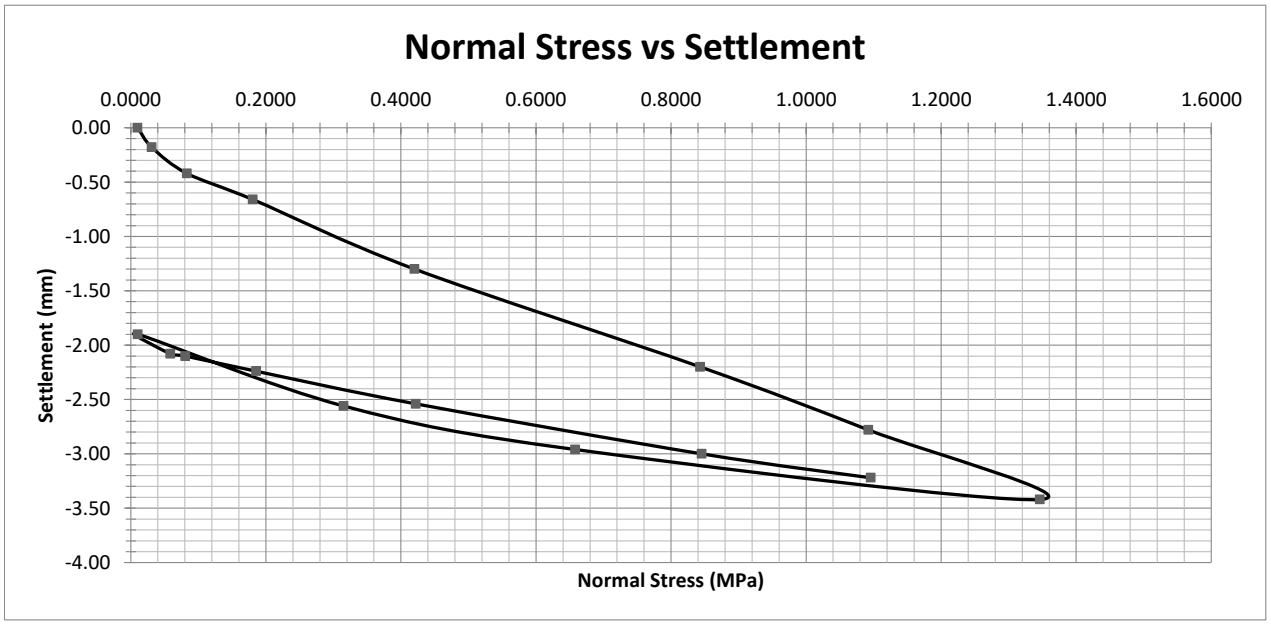
Ev1 (MPa)	115.07	Ev2 (MPa)	333.53
Ev2/Ev1=2.9			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	D.O J.A
Site:	The Landing (stage 4&5 fill)	**Tested by:**	16/03/2020
Job No:	8020-1727	**Test No.:**	**PLT-100**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0311	-0.18	
3	0.088	0.0830	-0.42	
4	0.187	0.1805	-0.66	
5	0.424	0.4200	-1.30	
6	0.848	0.8432	-2.20	
7	1.098	1.0923	-2.78	
8	1.348	1.3460	-3.42	
9	0.674	0.6580	-2.96	Unloaded
10	0.337	0.3153	-2.56	
11	0.010	0.0104	-1.90	
12	0.031	0.0586	-2.08	Secondary load
13	0.088	0.0806	-2.10	
14	0.187	0.1858	-2.24	
15	0.424	0.4221	-2.54	
16	0.848	0.8453	-3.00	
17	1.098	1.0956	-3.22	



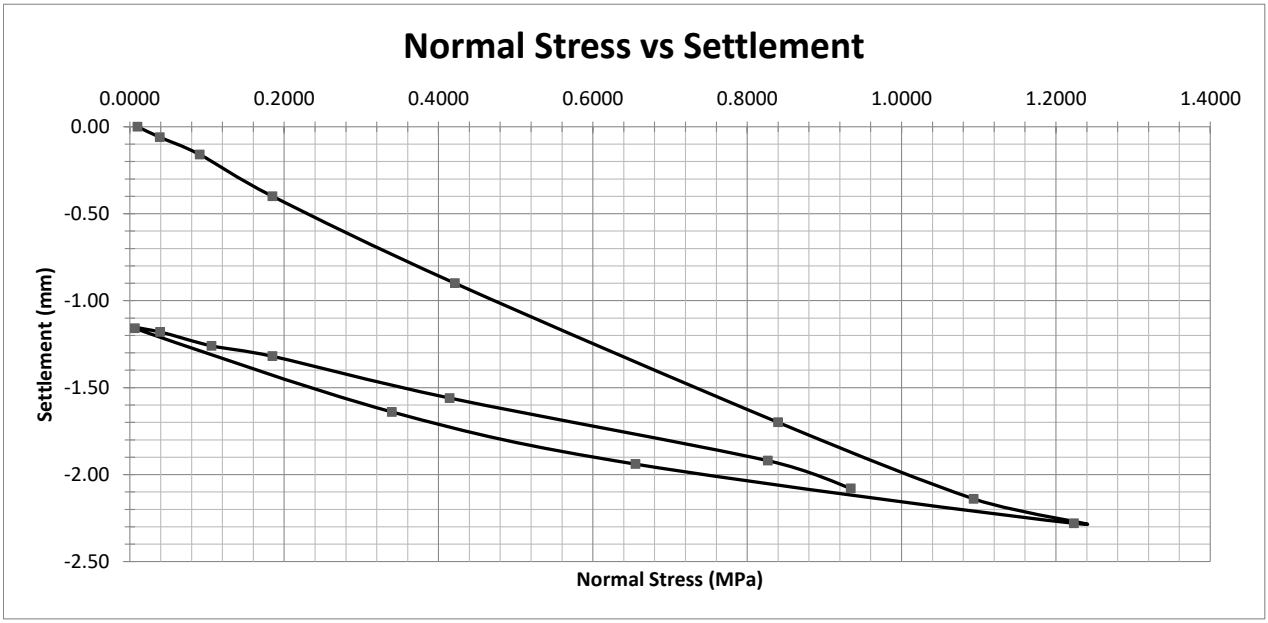
Ev1 (MPa)	94.38	Ev2 (MPa)	213.81
Ev2/Ev1=2.27			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	4/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-101**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0388	-0.06	
3	0.088	0.0907	-0.16	
4	0.187	0.1850	-0.40	
5	0.424	0.4214	-0.90	
6	0.848	0.8401	-1.70	
7	1.098	1.0937	-2.14	
8	1.348	1.2236	-2.28	
9	0.674	0.6554	-1.94	Unloaded
10	0.337	0.3398	-1.64	
11	0.010	0.0068	-1.16	
12	0.031	0.0393	-1.18	Secondary load
13	0.088	0.1061	-1.26	
14	0.187	0.1848	-1.32	
15	0.424	0.4145	-1.56	
16	0.848	0.8268	-1.92	
17	1.098	0.9343	-2.08	



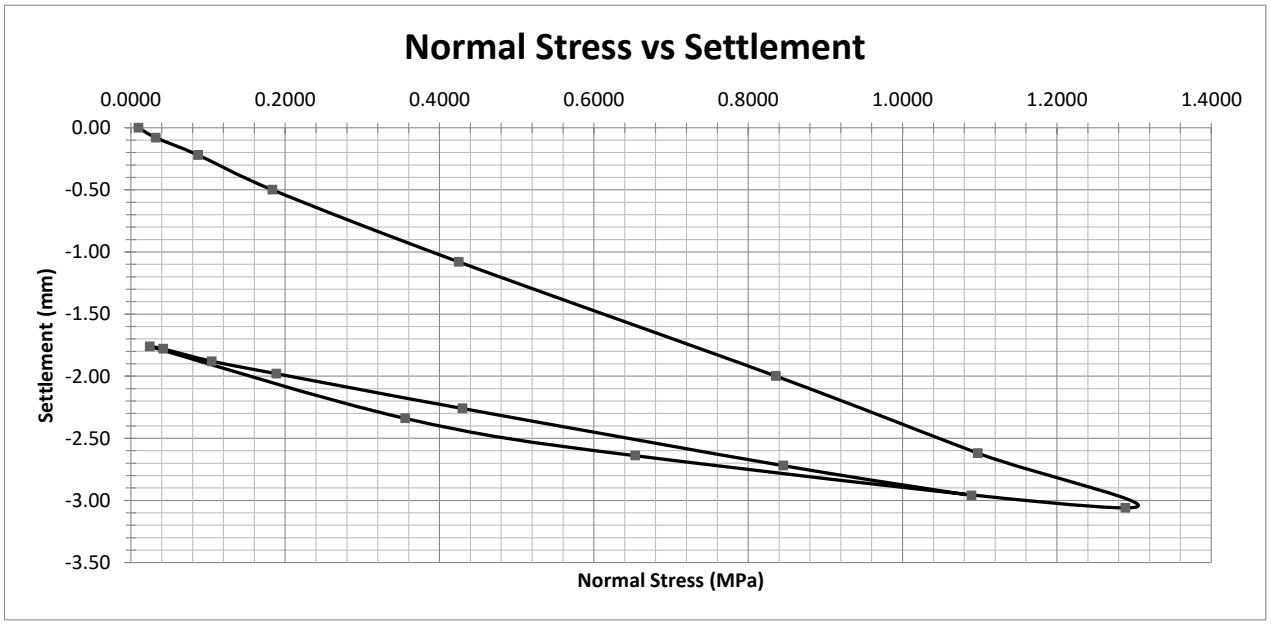
Ev1 (MPa)	117.43	Ev2 (MPa)	229.13
Ev2/Ev1=1.95			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	Roller lifting

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	4/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-102**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0324	-0.08	
3	0.088	0.0873	-0.22	
4	0.187	0.1835	-0.50	
5	0.424	0.4250	-1.08	
6	0.848	0.8361	-2.00	
7	1.098	1.0977	-2.62	
8	1.348	1.2888	-3.06	
9	0.674	0.6537	-2.64	Unloaded
10	0.337	0.3558	-2.34	
11	0.010	0.0246	-1.76	
12	0.031	0.0419	-1.78	Secondary load
13	0.088	0.1051	-1.88	
14	0.187	0.1887	-1.98	
15	0.424	0.4298	-2.26	
16	0.848	0.8454	-2.72	
17	1.098	1.0893	-2.96	



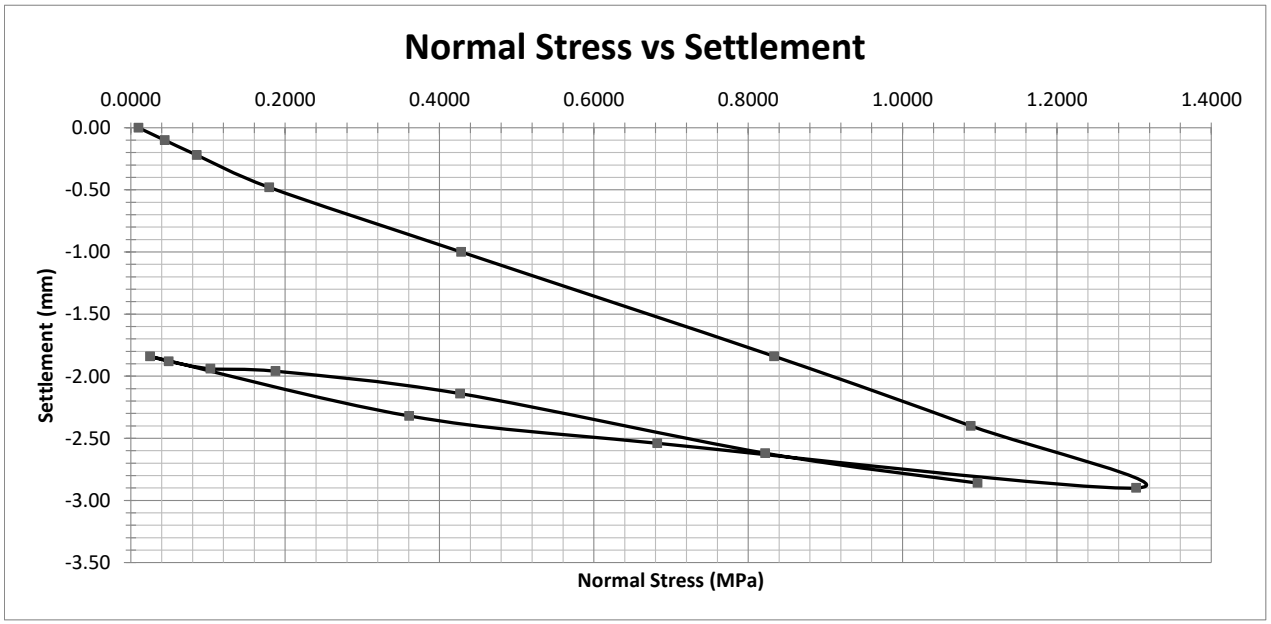
Ev1 (MPa)	95.61	Ev2 (MPa)	206.13
Ev2/Ev1=2.16			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	Roller lifting

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	4/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-103**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0440	-0.10	
3	0.088	0.0854	-0.22	
4	0.187	0.1794	-0.48	
5	0.424	0.4281	-1.00	
6	0.848	0.8338	-1.84	
7	1.098	1.0883	-2.40	
8	1.348	1.3027	-2.90	
9	0.674	0.6823	-2.54	Unloaded
10	0.337	0.3609	-2.32	
11	0.010	0.0250	-1.84	
12	0.031	0.0491	-1.88	Secondary load
13	0.088	0.1033	-1.94	
14	0.187	0.1877	-1.96	
15	0.424	0.4267	-2.14	
16	0.848	0.8221	-2.62	
17	1.098	1.0972	-2.86	



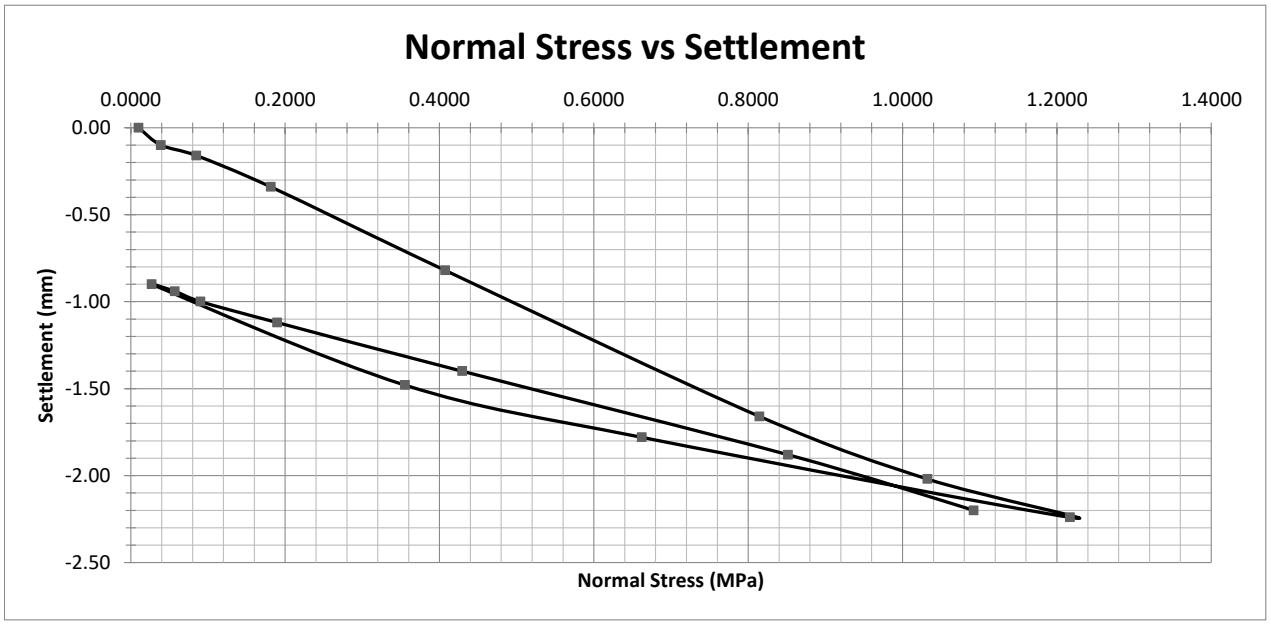
Ev1 (MPa)	103.14	Ev2 (MPa)	225.34
Ev2/Ev1=2.18			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	Roller lifting

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	3/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-104**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0390	-0.10	
3	0.088	0.0850	-0.16	
4	0.187	0.1814	-0.34	
5	0.424	0.4073	-0.82	
6	0.848	0.8146	-1.66	
7	1.098	1.0323	-2.02	
8	1.348	1.2169	-2.24	
9	0.674	0.6621	-1.78	Unloaded
10	0.337	0.3554	-1.48	
11	0.010	0.0269	-0.90	
12	0.031	0.0569	-0.94	Secondary load
13	0.088	0.0905	-1.00	
14	0.187	0.1896	-1.12	
15	0.424	0.4295	-1.40	
16	0.848	0.8515	-1.88	
17	1.098	1.0923	-2.20	



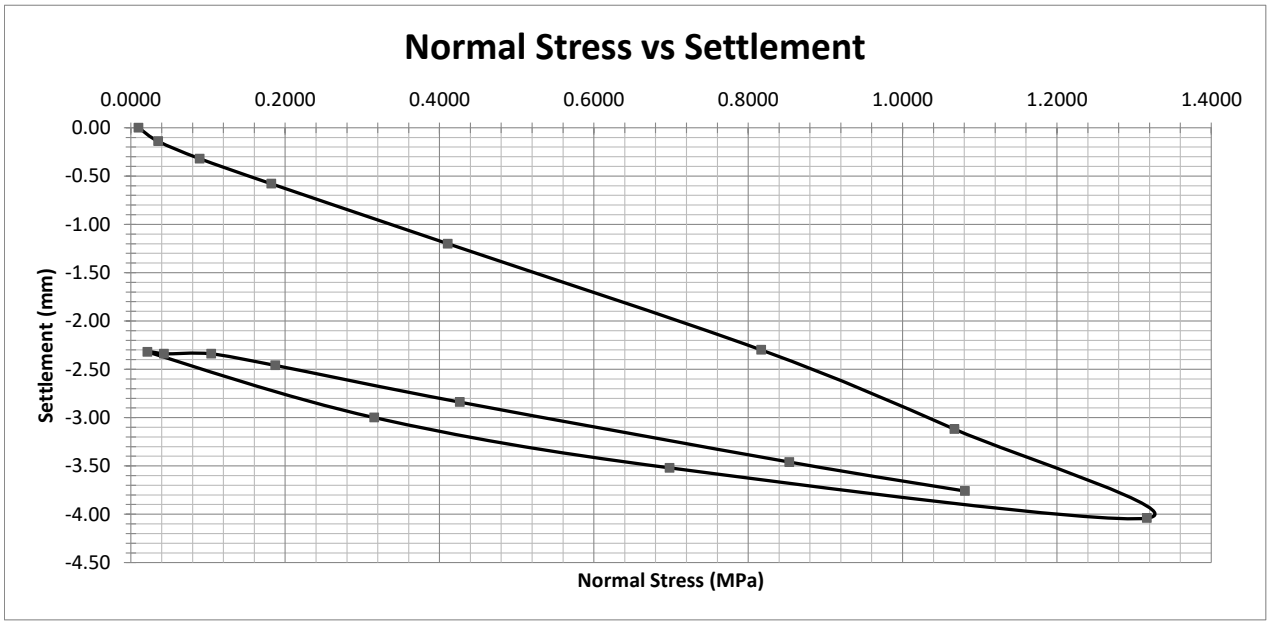
Ev1 (MPa)	118.78	Ev2 (MPa)	187.71
Ev2/Ev1=1.58			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	Dumptruck lifting

STATIC PLATE LOAD TEST

DIN 18134:2012-04

Client:	Cook Costello	**Date:**	MA
Site:	The Landing (stage 4&5 fill)	**Tested by:**	4/02/2020
Job No:	8020-1727	**Test No.:**	**PLT-105**
Report No:	**W20-099**		
Client Reference:	14333	**Checked by:**	NT
		Date:	17/02/2020

Loading Stage	Preferred Normal Stress (MPa)	Actual Normal Stress (MPa)	Settlement of Loading Plate (mm)	Load Cycle
1	0.010	0.0100	0.00	Primary load
2	0.031	0.0354	-0.14	
3	0.088	0.0893	-0.32	
4	0.187	0.1821	-0.58	
5	0.424	0.4108	-1.20	
6	0.848	0.8169	-2.30	
7	1.098	1.0673	-3.12	
8	1.348	1.3167	-4.04	
9	0.674	0.6982	-3.52	Unloaded
10	0.337	0.3156	-3.00	
11	0.010	0.0216	-2.32	
12	0.031	0.0430	-2.34	Secondary load
13	0.088	0.1043	-2.34	
14	0.187	0.1874	-2.46	
15	0.424	0.4264	-2.84	
16	0.848	0.8534	-3.46	
17	1.098	1.0810	-3.76	



Ev1 (MPa)	75.78	Ev2 (MPa)	156.79
Ev2/Ev1=2.07			
Begin Time:	N/A	**End Time**	N/A
Coordinates:			NZTM Format
Device:	HMP PDG pro (0799)	**Weather/Temp:**	Sunny, with Breeze
Plate Size:	300mm	**Bedding Assistance:**	Fine to Medium Sand
Soil:		**Remarks:**	Roller lifting

Whangarei Laboratory
166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: 14333

Date of Issue: 3/09/2019

Date of Re-Issue: -

Test Report No. W19-554

This report replaces report W19-392

PROJECT: **The Landing - Laboratory Testing**

CLIENT: Cook Costello
2 Norfolk Street
Whangarei

ATTENTION: Stefano Rotatori

TEST METHODS: Determination of the Dry density / water content relationship – New Zealand Standard Compaction
NZS 4402: 1986 Test 4.1.1
Determination of the particle size distribution-Dry sieving method
NZS 4407:2015 Test 3.8.2
Determination of the Dry density / water content relationship – New Zealand Heavy Compaction
NZS 4402: 1986 Test 4.1.2

SAMPLING METHOD: N/A

TEST RESULTS: As per attached sheets

M. Adams
General Manager

S. Kokich
Approved Signatory

IANZ ACCREDITED LABORATORY
All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-307
Client:	Cook Costello	**Tested By:**	J.A
Project:	The Landing	**Date:**	3/05/2019
Location:	Cut Stockpile	**Checked By:**	M.A
		Date:	4/07/2019
Date Received:	24/04/2019	**Page:**	2 of 6
Report No:	W19-554		
REF:	14333		

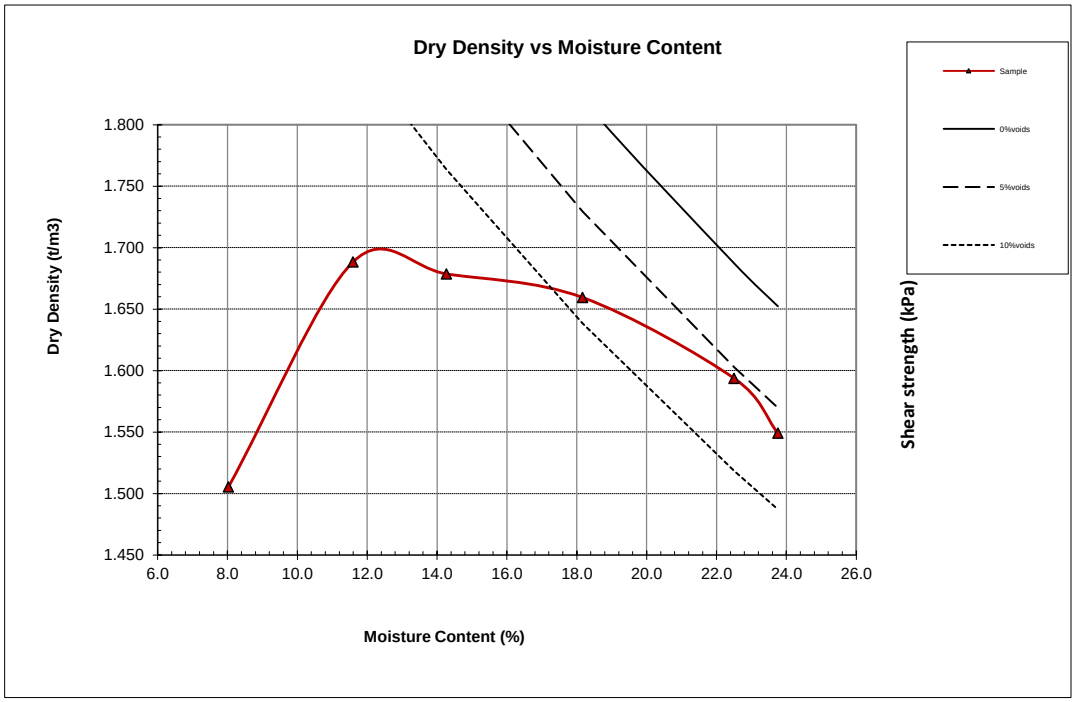
Sample Description: SAND, minor amorphous organics, sand is fine to medium, well graded, wet, dark brown

Compaction used: New Zealand Standard Compaction Test performed on:
Whole sample

History:

Total mass of sample: - g

Mass retained on 19mm BS test sieve: - g



Test Results	
Water Content (%)	**Dry Density (t/m^3)**
8.0	1.505
11.6	1.688
14.3	1.679
18.2	1.659
22.5	1.594
23.8	1.549

Solid Density (t/m^3) =	**2.72**	**Assumed**
Optimum Water Content (%) =	**12**	
Max Dry Density (t/m^3) =	**1.69**	
Natural Water Content (%) =	**18**	

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

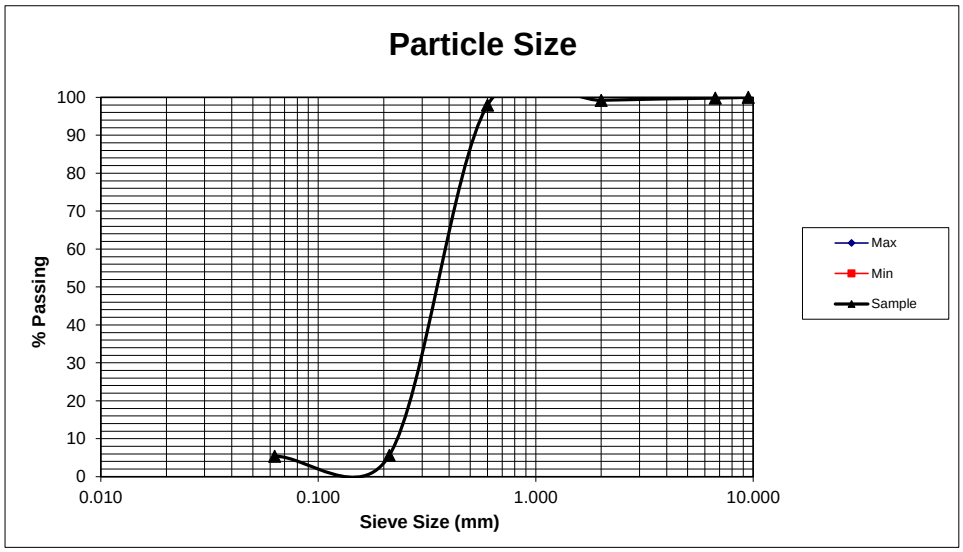
DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION - GRAPH

NZS 4402:1986 Test 2.8.1

Lab Job No:	8020-1727	**Sample No:**	19-307
Client:	Cook Costello	**Tested By:**	B.C
Location:	The Landing Cut Stockpile	**Date:** **Checked By:**	24/05/2019 M.A
Date Received:	24/04/2019	**Date:**	5/07/2019
Report No:	W19-554	**Page:**	3 of 6
REF:	14333		
Sampling Method:	Excavated test pit – SNA	**Sampled By:**	D.O.
Date Sampled:	24/04/2019		
Test Details:	Wet sieving method		
History:	Natural state		

Description of Sample: **SAND, minor amorphous organics, sand is fine to medium, well graded, wet, dark brown**

	% Passing		
Sieve Size	**Max**	**Min**	**Sample**
9.5			100
6.7			100
2.00			99
0.600			98
0.212			6
0.063			5



The percentage passing the finest sieve was obtained by difference

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-309
Client:	Cook Costello	**Tested By:**	M.A
Project:	The Landing	**Date:**	7/05/2019
Location:	Cut Stockpile	**Checked By:**	M.A
		Date:	5/07/2019
Date Received:	7/05/2019	**Page:**	4 of 6
Report No:	W19-554		
REF:	14333		
Sampling Method:	Excavated test pit – SNA	**Sampled By:**	J.A.
Date Sampled:	7/05/2019		
Compaction used:	New Zealand Standard Compaction Test performed on: Fraction Passing 19mm test sieve		
History:	Natural		
Sample Description:	**SAND, minor amorphous organics, sand is fine to medium, well graded, wet, dark brown**		

Total mass of sample: 5,000 g

Mass retained on 19.0mm BS test sieve: 0 g

Bulk Density	**(t/m^3)**	**1.937**
Water Content	**(%)**	**14.5**
Dry Density	**(t/m^3)**	**1.69**
Solid Density (Assumed)	**(t/m^3)**	**2.72**
Air Voids	**(%)**	**13**
Shear Vane Reading	**(kPa)**	**-**

Comments: Sample tested at an assumed Optimum Water Content

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND STANDARD COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-352
Client:	Cook Costello	**Tested By:**	D.O
Project:	The Landing	**Date:**	22/05/2019
Location:	Area 1 Fill	**Checked By:**	M.A
		Date:	5/07/2019
Date Received:	21/05/2019	**Page:**	5 of 6
Report No:	W19-554		
REF:	14333		

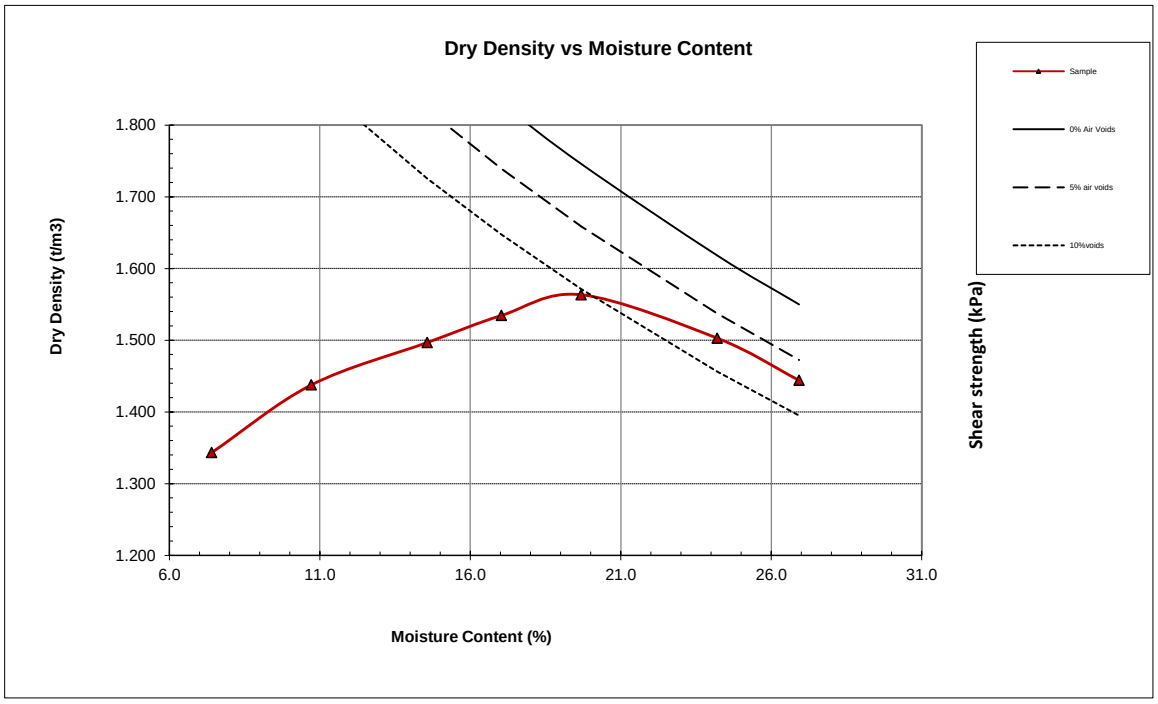
Sample Description: SAND, minor peat, traces of very weak cemented gravels, moist. Sand is well graded, fine-medium

Compaction used: New Zealand Standard Compaction Test performed on:
Whole sample

History:

Total mass of sample: 60000 g

Mass retained on 19mm BS test sieve: 0 g



Test Results	
Water Content (%)	**Dry Density (t/m^3)**
7.4	1.343
10.7	1.438
14.6	1.497
17.0	1.534
19.7	1.563
24.2	1.503
26.9	1.444

Solid Density (t/m^3) =	**2.66**	**Assumed**
Optimum Water Content (%) =	**19.5**	
Max Dry Density (t/m^3) =	**1.57**	
Natural Water Content (%) =	**17.0**	

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-390
Client:	Cook Costello	**Tested By:**	D.O
Project:	The Landing	**Date:**	29/05/2019
Location:	Area 1 Fill	**Checked By:**	M.A
		Date:	3/09/2019
Date Received:	29/05/2019	**Page:**	6 of 6
Report No:	W19-554		
REF:	14333		

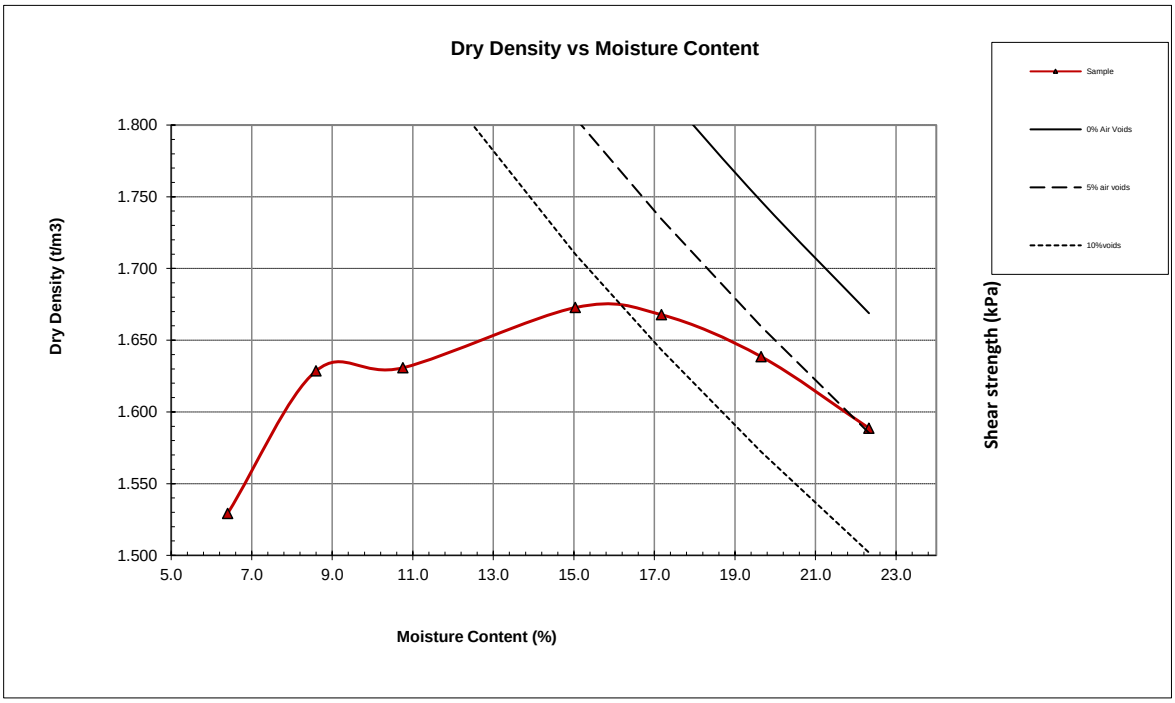
Sample Description: SAND, traces of peat, traces of very weak cemented gravels, wet. Sand is; well graded, fine-medium

Compaction used: New Zealand Standard Compaction Test performed on:
Whole sample

History: Natural

Total mass of sample: 60000 g

Mass retained on 19mm BS test sieve: 0 g



Test Results	
Water Content (%)	**Dry Density (t/m^3)**
6.4	1.529
8.6	1.629
10.8	1.631
15.0	1.673
17.2	1.668
19.7	1.639
22.3	1.589

Solid Density (t/m^3) =	**2.66**	**Assumed**
Optimum Water Content (%) =	**15.0**	
Max Dry Density (t/m^3) =	**1.67**	
Natural Water Content (%) =	**15.0**	

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: 14333

Date of Issue: 18/02/2020

Date of Re-Issue: -

Test Report No. W20-073

PROJECT: **The Landing - Laboratory Testing, Stage 3**

CLIENT: Cook Costello
2 Norfolk Street
Whangarei

ATTENTION: Stefano Rotatori

TEST METHODS: Determination of the Dry density / water content relationship – New Zealand Heavy Compaction
NZS 4402: 1986 Test 4.1.2
Determination of the particle size distribution-wet sieving method
NZS 4402:1986 Test 2.8.1

SAMPLING METHOD: Hand sampled – SNA

TEST RESULTS: As per attached sheets

M. Adams
General Manager

S. Kokich
Approved Signatory

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

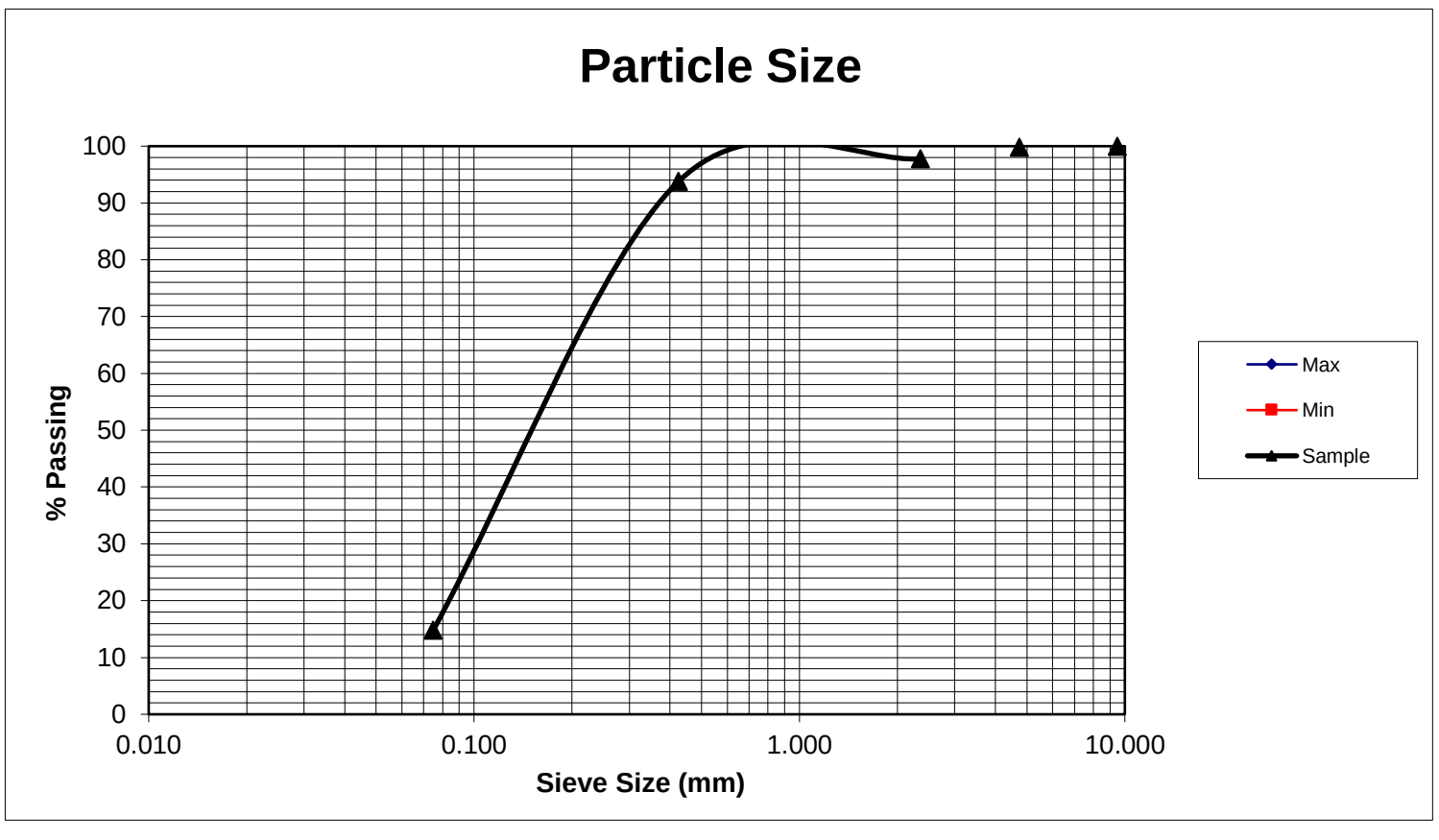
DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION - GRAPH

NZS 4402:1986 Test 2.8.1

Lab Job No:	8020-1727	**Sample No:**	19-746
Client:	Cook Costello	**Tested By:**	B.C
Location:	The Landing Fill for playground on borrow area - Stage 3	**Date:**	7/11/2019
		Checked By:	M.A
Date Received:	30/10/2019	**Date:**	12/02/2020
Report No:	W20-073	**Page:**	2 of 4
REF:	14333-003		
Sampling Method:	Hand sampled – Sampling not accredited	**Sampled By:**	D.O
Date Sampled:	30/10/2019		
Test Details:	Wet sieving method		
History:	Natural state		

Description of Sample: SAND, minor peat, dark brown with brown mottling, moist. Sand is; well graded, fine-medium

	% Passing		
Sieve Size	**Max**	**Min**	**Sample**
9.5			100
0			100
4.75			100
2.360			98
0.425			94
0.075			15



The percentage passing the finest sieve was obtained by difference

S.Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-746
Client:	Cook Costello	**Tested By:**	L.C
Project:	The Landing	**Date:**	27/11/2019
Location:	Fill for playground on borrow area - Stage 3	**Checked By:**	M.A
		Date:	12/02/2020
Date Received:	30/10/2019	**Page:**	3 of 4
Report No:	W20-073		
REF:	14333-003		

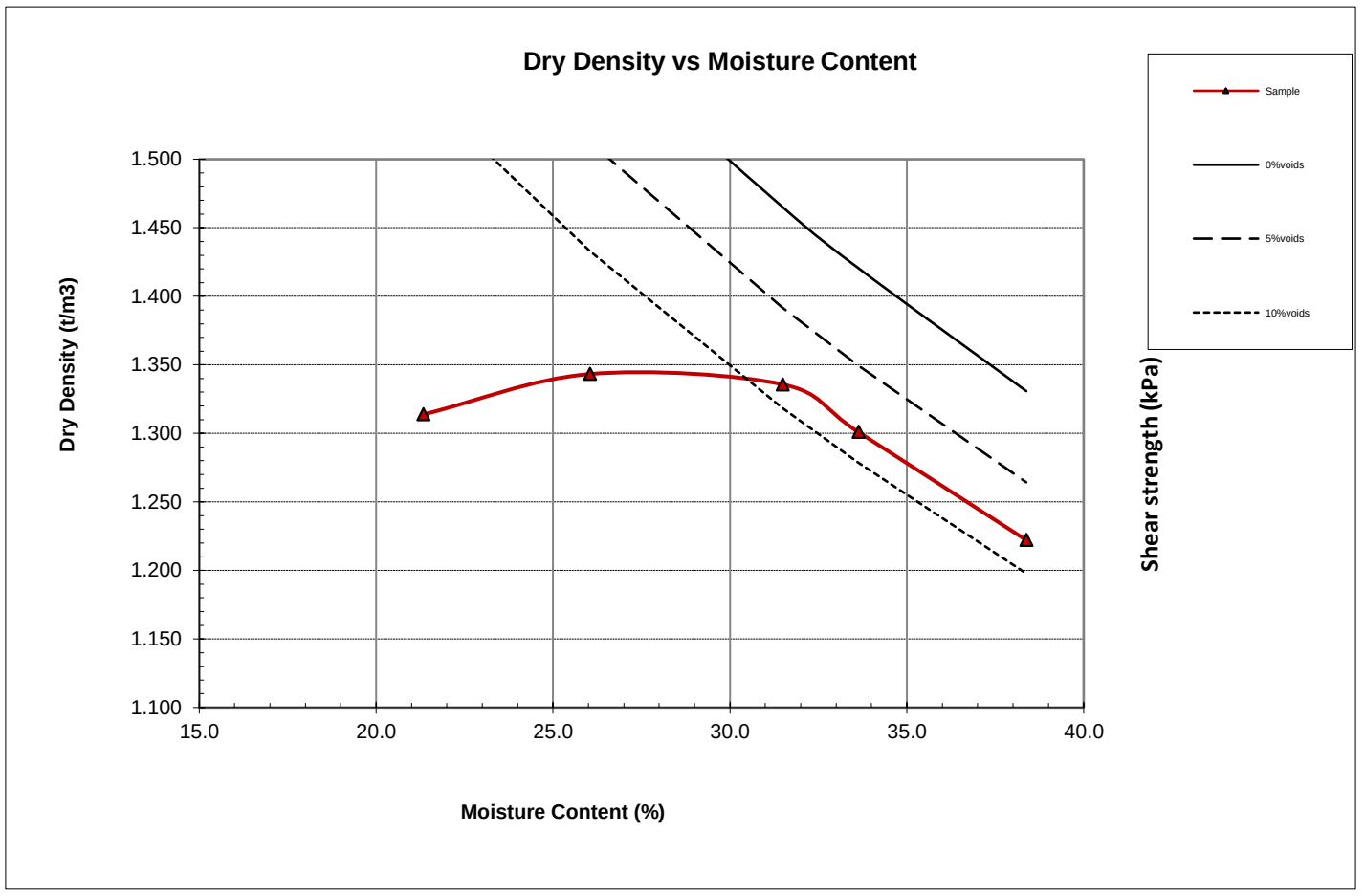
Sample Description: SAND, minor peat, dark brown with brown mottling, moist. Sand is; well graded, fine-medium

Compaction used: New Zealand Standard Compaction Test performed on:
Whole sample

History: Natural

Total mass of sample: 23874 g

Mass retained on 19mm BS test sieve: 0 g



Test Results	
Water Content (%)	**Dry Density (t/m^3)**
21.3	1.314
26.0	1.343
31.5	1.336
33.6	1.301
38.4	1.222

Solid Density (t/m^3) =	**2.72**	**Assumed**
Optimum Water Content (%) =	**26.0**	
Max Dry Density (t/m^3) =	**1.34**	
Natural Water Content (%) =	**34**	

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-448
Client:	Cook Costello	**Tested By:**	D.O
Project:	The Landing	**Date:**	27/06/2019
Location:	Area 3 fill	**Checked By:**	MA
		Date:	12/02/2020
Date Received:	21/06/2019	**Page:**	4 of 4
Report No:	W20-073		
REF:	14333		

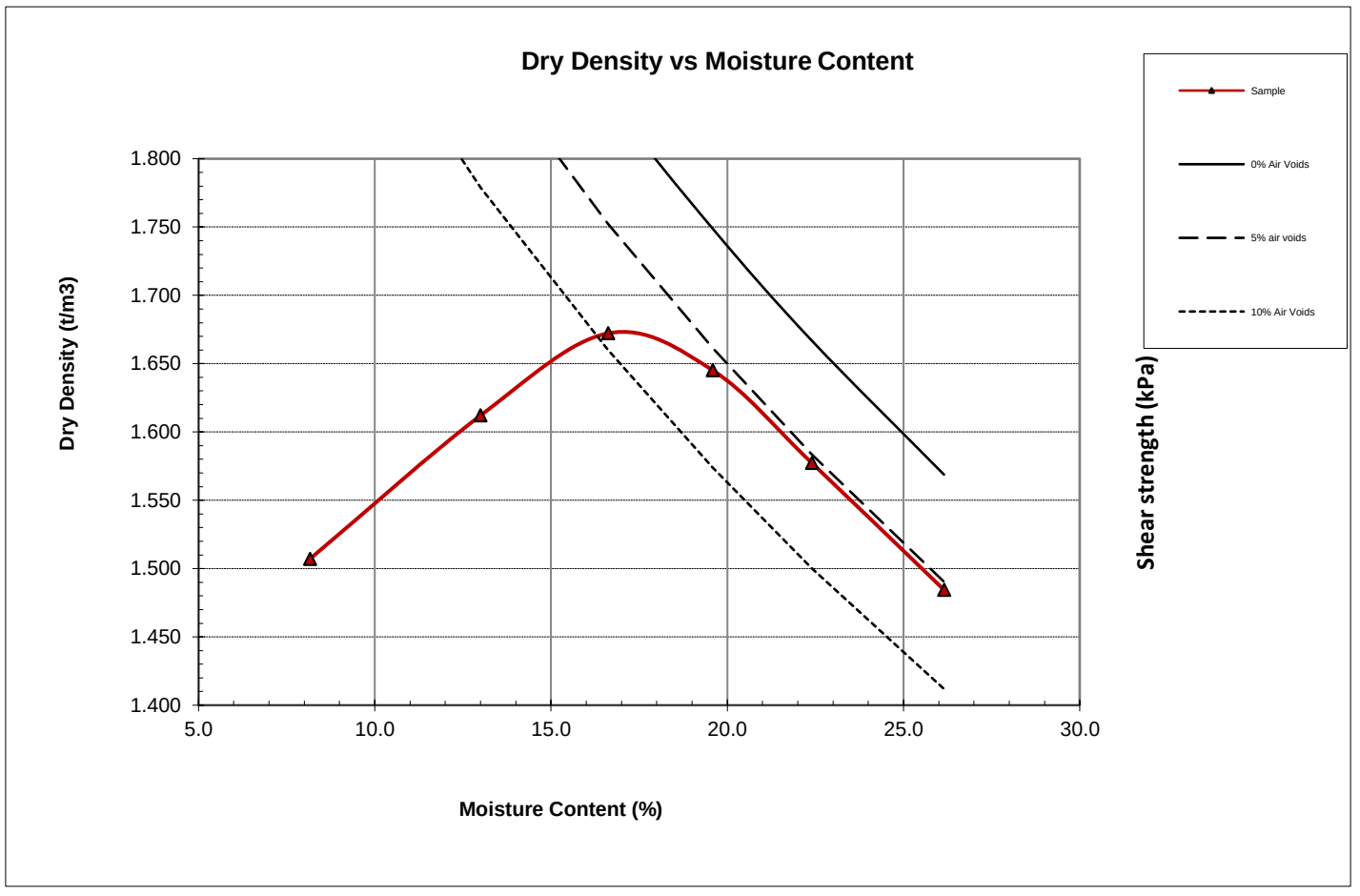
Sample Description: SAND, minor very weak cemented sand particles, traces of peat, dark brown with minor orangey brown and black mottiling, moist-wet. Sand is; fine-medium, well graded

Compaction used: New Zealand Standard Compaction Test performed on:
Whole sample

History: Natural

Total mass of sample: 60000 g

Mass retained on 19mm BS test sieve: 0 g



Test Results	
Water Content (%)	**Dry Density (t/m^3)**
8.2	1.507
13.0	1.612
16.6	1.672
19.6	1.645
22.4	1.577
26.1	1.484

Solid Density (t/m^3) =	**2.66**	**Assumed**
Optimum Water Content (%) =	**17.0**	
Max Dry Density (t/m^3) =	**1.67**	
Natural Water Content (%) =	**20**	

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: 14333

Date of Issue: 24/07/2019

Date of Re-Issue: -

Test Report No. W19-362

PROJECT: **The Landing , Lime treated soil, pH testing**

CLIENT: Cook Costello
2 Norfolk St

ATTENTION: Stefano Rotatori

TEST METHODS: Determination of the pH
NZS 4402 : 1986 Test 3.3

SAMPLING METHOD: Hand sampled – SNA

TEST RESULTS: As per attached sheets

G. Breckon
Laboratory Technician

S. Kokich
Senior Laboratory Technician

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF THE pH LEVELS

NZS 4402:1986 Test 3.3

Lab Job No.:	8020-1727	**Sample No.:**	19-307
Client:	Cook Costello	**Tested By:**	D.K
Job:	The Landing	**Date:**	16/05/2019
Location:	Cut Stockpile	**Checked By:**	G.B
Depth:	-	**Date:**	24/07/2019
Date Received:	24/04/2019	**Page:**	2 of 2
Report No.:	W19-362		
Ref:	14333	**Sampled by:**	D.O.

Sample	pH	Average pH
NAT	4.8 4.8	4.8
1% Lime	6.2 6.3	6.25
2% Lime	6.5 6.6	6.55
3% Lime	6.8 6.8	13.6

Whangarei Laboratory
166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: 14333

Date of Issue: 9/08/2019

Date of Re-Issue: -

Page: 1 of 2

Test Report No. W19-429

PROJECT: **The Landing - Laboratory Testing, CBRs**

CLIENT: Cook Costello
2 Norfolk Street
Whangarei

ATTENTION: Stefano Rotatori

TEST METHODS: Determination of the California Bearing Ratio (CBR) (remoulded samples)
NZS 4407:2015 Test 3.15

SAMPLING METHOD: Hand sampled – SNA

TEST RESULTS: As per attached sheets

G. Breckon
Laboratory Technician

S. Kokich
Approved Signatory

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

Determination of the California Bearing Ratio

NZS 4407:2015 Test 3.15

Lab Job No: 8020-1727
Client: Cook Costello
Job: The Landing
Location: One Tree Point
REF: 14333
Report No: W19-429

Checked By: G.B
Date: 24/07/2019
Page: 2 of 2
Sampled By: D.O/J.A
Sampling Method: Hand test pit – SNA
Date received: 1/07/2019

Sample No	Sample Location / Description	Treatment	Bulk Density (t/m^3)	Dry Density (t/m^3)	Water Content		CBR (%)	Penetration (mm)	Swell (%)	% Over size material	Operator	Date tested	Comments
					As Compacted (%)	Under plunger (%)							
19-453	CBR Location 1 SAND, traces peat, moist. Sand is well graded, fine-medium	NIL	2.01	1.69	19.1	20.0	**4.5**	5.0	0.0	9	L.C	5/07/2019	-
19-454	CBR Location 2 SAND, traces peat, moist. Sand is well graded, fine-medium	NIL	2.05	1.75	17.5	16.8	**25**	5.0	0.0	0	L.C	5/07/2019	-
19-455	CBR Location 3 SAND, fine to medium, minor peat, some slightly cemented extremely weak framents up to 20mm, dark brown, moist to wet	NIL	1.92	1.62	18.6	19.5	**7**	5.0	-0.2	0	L.C	8/07/2019	-
19-456	CBR Location 4 SAND, traces peat, moist. Sand is well graded, fine-medium	NIL	1.87	1.60	16.6	17.8	**30**	5.0	0.0	0	L.C	8/07/2019	-
19-457	CBR Location 5 SAND, traces peat, moist. Sand is well graded, fine-medium	NIL	1.91	1.66	15.1	16.6	**30**	5.0	0.0	0	L.C	8/07/2019	-
19-458	CBR Location 6 SAND, fine to medium, minor peat, some slightly cemented extremely weak framents up to 20mm, dark brown, moist to wet	NIL	1.98	1.66	18.7	19.0	**7**	5.0	-0.2	0	0	0/01/1900	-
19-459	CBR Location 7 SAND, fine to medium, minor peat, some slightly cemented extremely weak framents up to 20mm, dark brown, moist to wet	NIL	1.97	1.65	19.3	19.8	**8**	5.0	-0.2	0	L.C	8/07/2019	-
19-460	CBR Location 8 SAND, fine to medium, minor peat, some slightly cemented extremely weak framents up to 20mm, dark brown, moist to wet	NIL	2.02	1.71	18.1	18.8	**9**	5.0	-0.2	0	L.C	8/07/2019	-
19-461	CBR Location 9 SAND, moist. Sand is well graded, fine-medium	NIL	1.79	1.64	8.9	19.5	**35**	5.0	0.0	0	L.C	8/07/2019	-

Note:

1 All samples compacted in accordance with NZ Heavy Compaction NZS 4402:1986 Test 4.1.2
2 A surcharge mass of 4kg was used for all samples.
3 All samples were soaked for 4 days prior to testing.
4 Lime treated samples were cured for 3 days prior to soaking.
5 Plunger penetration rate was 1mm/min for all samples.
6 Tests performed on material passing 19mm test sieve.
7 All results obtained in accordance with the above test method.

Whangarei Laboratory
166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: 14333

Date of Issue: 9/08/2019

Date of Re-Issue: -

Page: 1 of 2

Test Report No. W19-467

PROJECT: **The Landing - Laboratory Testing, drier CBRs**

CLIENT: Cook Costello
2 Norfolk Street
Whangarei

ATTENTION: Stefano Rotatori

TEST METHODS: Determination of the California Bearing Ratio (CBR) (remoulded samples)
NZS 4407:2015 Test 3.15

SAMPLING METHOD: Hand sampled – SNA

TEST RESULTS: As per attached sheets

G. Breckon
Laboratory Technician

S. Kokich
Approved Signatory

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Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

Determination of the California Bearing Ratio

NZS 4407:2015 Test 3.15

Lab Job No:	8020-1727	**Checked By:**	G.B
Client:	Cook Costello	**Date:**	24/07/2019
Job:	The Landing	**Page:**	2 of 2
Location:	One Tree Point	**Sampled By:**	D.O/J.A
REF:	14333	**Sampling Method:**	Hand test pit – SNA
Report No:	W19-467	**Date received:**	1/07/2019

Sample No	Sample Location / Description	Treatment	Bulk Density (t/m^3)	Dry Density (t/m^3)	Water Content		CBR (%)	Penetration (mm)	Swell (%)	% Over size material	Operator	Date tested	Comments
					As Compacted (%)	Under plunger (%)							
19-455	CBR Location 3 SAND, fine to medium, minor peat, some slightly cemented extremely weak fragments up to 20mm, dark brown, moist to wet	Nil	1.88	1.65	13.8	16.2	**50**	5.0	0.0	0	S.K	15/07/2019	dried 3-4% by weight prior to compaction
19-458	CBR Location 6 SAND, fine to medium, minor peat, some slightly cemented extremely weak fragments up to 20mm, dark brown, moist to wet	Nil	1.87	1.67	12.0	17.7	**50**	2.5*	0.0	0	S.K	15/07/2019	dried 3-4% by weight prior to compaction
19-459	CBR Location 7 SAND, fine to medium, minor peat, some slightly cemented extremely weak fragments up to 20mm, dark brown, moist to wet	Nil	1.92	1.67	15.0	18.1	**55**	2.5*	0.0	0	S.K	15/07/2019	dried 3-4% by weight prior to compaction
19-460	CBR Location 8 SAND, fine to medium, minor peat, some slightly cemented extremely weak fragments up to 20mm, dark brown, moist to wet	Nil	2.00	1.76	14.1	15.7	**75**	2.5*	0.0	0	S.K	15/07/2019	dried 3-4% by weight prior to compaction

Note:

1 All samples compacted in accordance with NZ Heavy Compaction NZS 4402:1986 Test 4.1.2
2 A surcharge mass of 4kg was used for all samples.
3 All samples were soaked for 4 days prior to testing.
4 Lime treated samples were cured for 3 days prior to soaking.
5 Plunger penetration rate was 1mm/min for all samples.
6 Tests performed on material passing 19mm test sieve.
7 All results obtained in accordance with the above test method.
* maximum force reached before 5mm pentration

Whangarei Laboratory
166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: 14333

Date of Issue: 18/02/2020

Date of Re-Issue: -

Test Report No. W20-073

PROJECT: **The Landing - Laboratory Testing, Stage 3**

CLIENT: Cook Costello
2 Norfolk Street
Whangarei

ATTENTION: Stefano Rotatori

TEST METHODS: Determination of the Dry density / water content relationship – New Zealand Heavy Compaction
NZS 4402: 1986 Test 4.1.2
Determination of the particle size distribution-wet sieving method
NZS 4402:1986 Test 2.8.1

SAMPLING METHOD: Hand sampled – SNA

TEST RESULTS: As per attached sheets

M. Adams
General Manager

S. Kokich
Approved Signatory

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

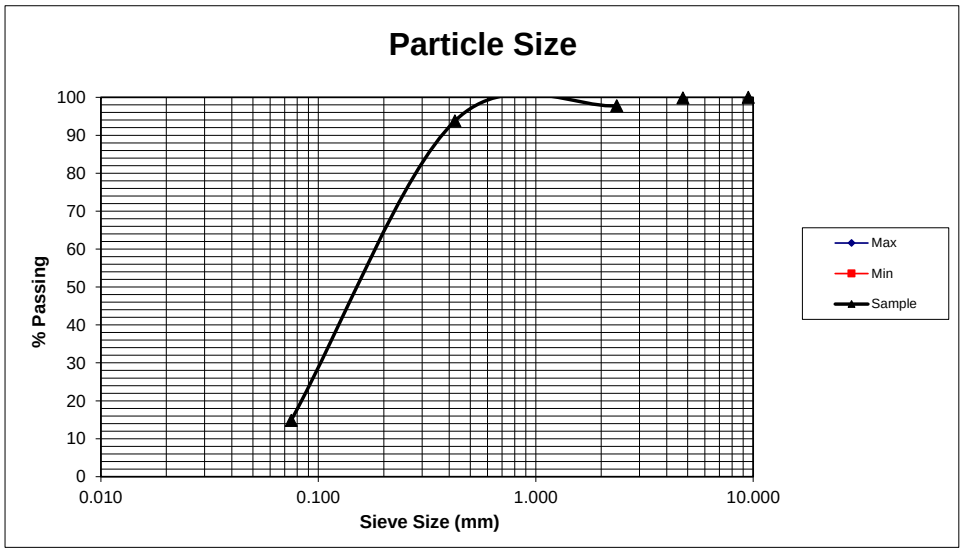
DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION - GRAPH

NZS 4402:1986 Test 2.8.1

Lab Job No:	8020-1727	**Sample No:**	19-746
Client:	Cook Costello	**Tested By:**	B.C
Location:	The Landing Fill for playground on borrow area - Stage 3	**Date:** **Checked By:**	7/11/2019 M.A
Date Received:	30/10/2019	**Date:**	12/02/2020
Report No:	W20-073	**Page:**	2 of 4
REF:	14333-003		
Sampling Method:	Hand sampled – Sampling not accredited	**Sampled By:**	D.O
Date Sampled:	30/10/2019		
Test Details:	Wet sieving method		
History:	Natural state		

Description of Sample: SAND, minor peat, dark brown with brown mottling, moist. Sand is; well graded, fine-medium

	% Passing		
Sieve Size	**Max**	**Min**	**Sample**
9.5			100
0			100
4.75			100
2.360			98
0.425			94
0.075			15



The percentage passing the finest sieve was obtained by difference

S.Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-746
Client:	Cook Costello	**Tested By:**	L.C
Project:	The Landing	**Date:**	27/11/2019
Location:	Fill for playground on borrow area - Stage 3	**Checked By:**	M.A
		Date:	12/02/2020
Date Received:	30/10/2019	**Page:**	3 of 4
Report No:	W20-073		
REF:	14333-003		

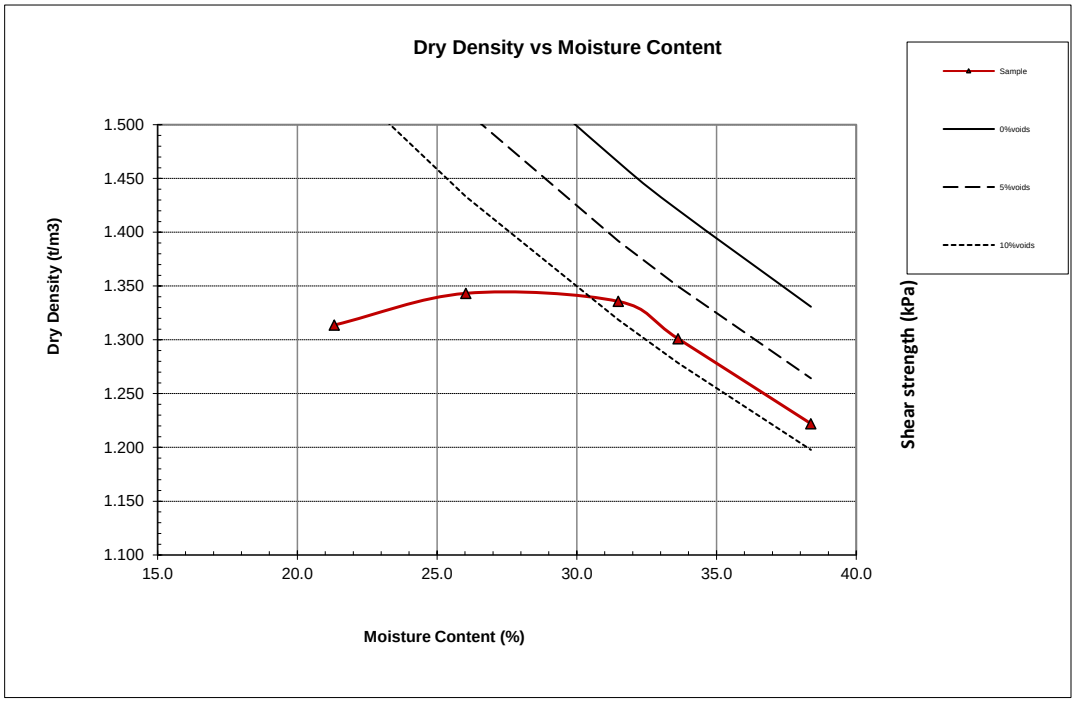
Sample Description: SAND, minor peat, dark brown with brown mottling, moist. Sand is; well graded, fine-medium

Compaction used: New Zealand Standard Compaction Test performed on:
Whole sample

History: Natural

Total mass of sample: 23874 g

Mass retained on 19mm BS test sieve: 0 g



Test Results	
Water Content (%)	**Dry Density (t/m^3)**
21.3	1.314
26.0	1.343
31.5	1.336
33.6	1.301
38.4	1.222

Solid Density (t/m^3) =	**2.72**	**Assumed**
Optimum Water Content (%) =	**26.0**	
Max Dry Density (t/m^3) =	**1.34**	
Natural Water Content (%) =	**34**	

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-448
Client:	Cook Costello	**Tested By:**	D.O
Project:	The Landing	**Date:**	27/06/2019
Location:	Area 3 fill	**Checked By:**	MA
		Date:	12/02/2020
Date Received:	21/06/2019	**Page:**	4 of 4
Report No:	W20-073		
REF:	14333		

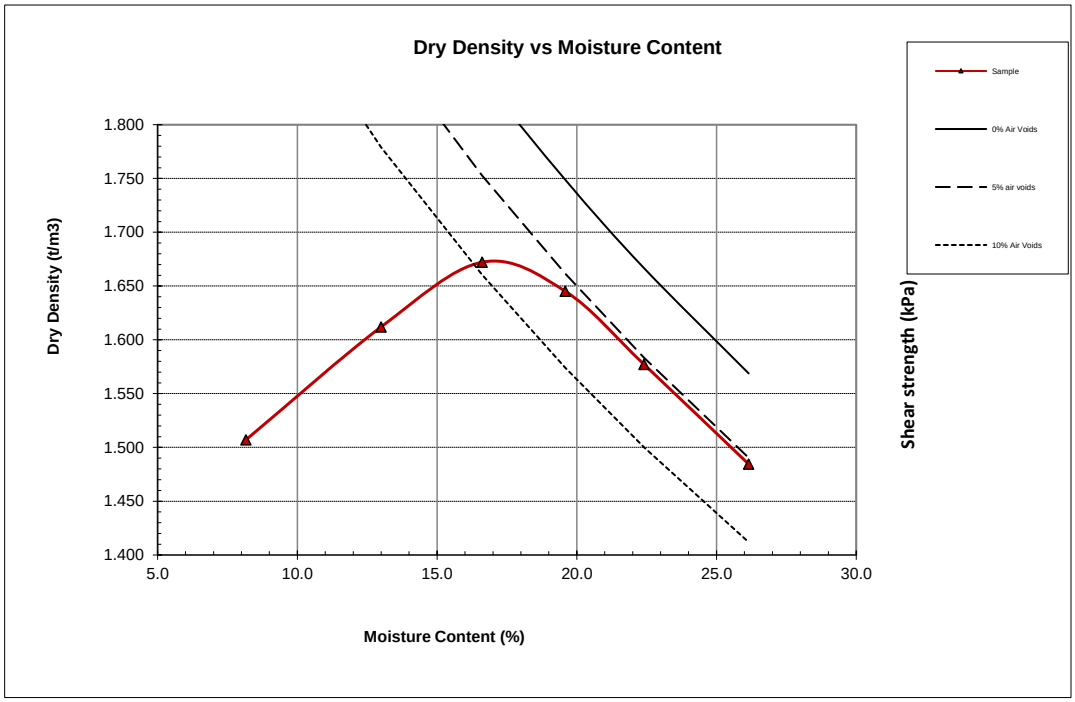
Sample Description: SAND, minor very weak cemented sand particles, traces of peat, dark brown with minor orangey brown and black mottiling, moist-wet. Sand is; fine-medium, well graded

Compaction used: New Zealand Standard Compaction Test performed on:
Whole sample

History: Natural

Total mass of sample: 60000 g

Mass retained on 19mm BS test sieve: 0 g



Test Results	
Water Content (%)	**Dry Density (t/m^3)**
8.2	1.507
13.0	1.612
16.6	1.672
19.6	1.645
22.4	1.577
26.1	1.484

Solid Density (t/m^3) =	**2.66**	**Assumed**
Optimum Water Content (%) =	**17.0**	
Max Dry Density (t/m^3) =	**1.67**	
Natural Water Content (%) =	**20**	

S. Kokich
Approved Signatory

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

T 0508 HILL LAB (44 555 22)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Certificate of Analysis

Client:	Geocivil Limited	**Lab No:**	2170618	SPv1
Contact:	Martin Adams C/- Geocivil Limited 166 Bank Street Whangarei 0110	**Date Received:** **Date Reported:** **Quote No:** **Order No:** **Client Reference:** **Submitted By:**	04-May-2019 16-May-2019 8020-1727 8020-1727 Martin Adams	

Sample Type: Soil

	Sample Name:	19-307				
	Lab Number:	2170618.2				
Organic Matter	g/100g dry wt	3.7	-	-	-	-
Ash	g/100g dry wt	96	-	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Organic Matter	Calculation: 100 - Ash (dry wt).	0.04 g/100g dry wt	2
Ash	Ignition in muffle furnace 550°C, 6hr, gravimetric. APHA 2540 G 23rd ed. 2017.	0.04 g/100g dry wt	2

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Graham Corban MSc Tech (Hons)
Client Services Manager - Environmental

Whangarei Laboratory
166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: 14333

Date of Issue: 23/09/2019

Date of Re-Issue: -

Test Report No. W19-597

PROJECT: **The Landing - Laboratory Testing, Heavy compaction**

CLIENT: Cook Costello
2 Norfolk Street
Whangarei

ATTENTION: Stefano Rotatori

TEST METHODS: Determination of the Dry density / water content relationship – New Zealand Heavy Compaction
NZS 4402: 1986 Test 4.1.2

SAMPLING METHOD: Hand sampled – SNA

TEST RESULTS: As per attached sheets

G. Breckon
Laboratory Technician

S. Kokich
Approved Signatory

IANZ ACCREDITED LABORATORY
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DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-543
Client:	Cook Costello	**Tested By:**	L.C
Project:	The Landing	**Date:**	5/09/2019
Location:	Area 3 fill	**Checked By:**	G.B
		Date:	23/09/2019
Date Received:	4/09/2019	**Page:**	2 of 2
Report No:	W19-597		
REF:	-		

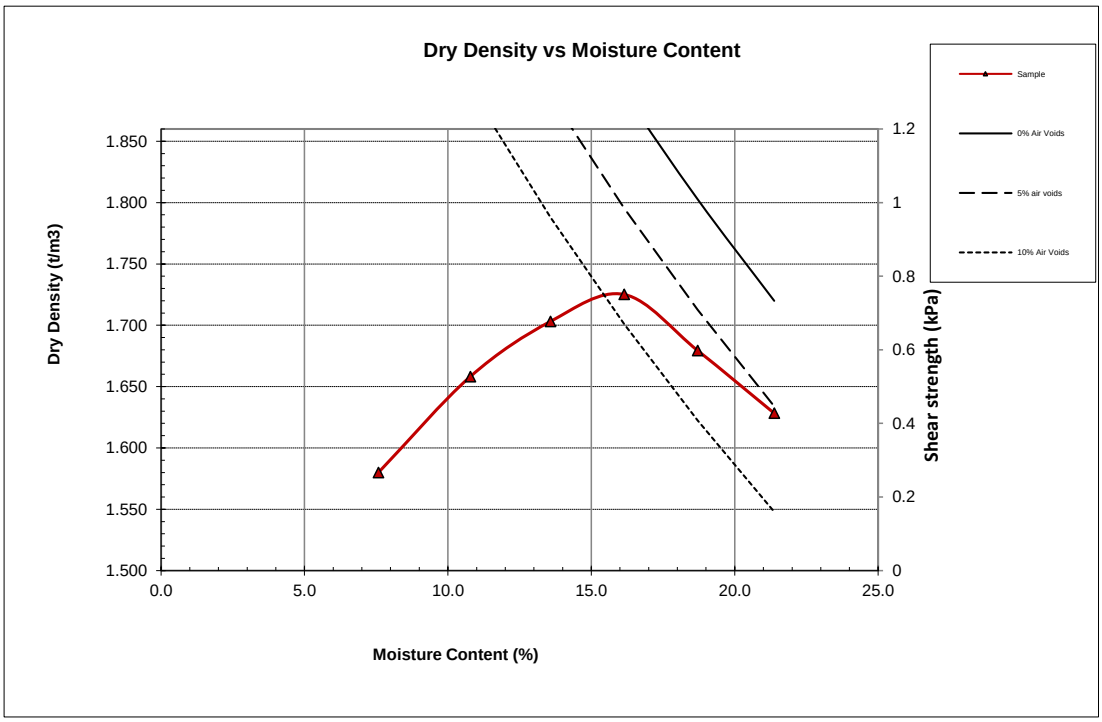
Sample Description: SAND, traces of peat, traces of very weak cemented gravels, wet. Sand is; well graded, fine-medium

Compaction used: New Zealand Standard Compaction Test performed on:
Fraction Passing 19mm test sieve

History: Natural

Total mass of sample: 60000 g

Mass retained on 19mm BS test sieve: 0 g



Test Results			
Water Content (%)	Dry Density (t/m^3)	Shear Vane (kPa)	
		Peak	Residual
7.6	1.580		
10.8	1.658		
13.6	1.703		
16.1	1.725		
18.7	1.679		
21.4	1.628		

N/A

Solid Density (t/m^3) =	**2.72**	**Assumed**
Optimum Water Content (%) =	**16**	
Max Dry Density (t/m^3) =	**1.73**	
Natural Water Content (%) =	**16**	

S. Kokich
Approved Signatory

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166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: -

Date of Issue: 5/07/2019

Date of Re-Issue: -

Test Report No. W19-392

PROJECT: **The Landing - Laboratory Testing**

CLIENT: Cook Costello
2 Norfolk Street
Whangarei

ATTENTION: Stefano Rotatori

TEST METHODS: Determination of the Dry density / water content relationship – New Zealand Standard Compaction
NZS 4402: 1986 Test 4.1.1
Determination of the particle size distribution-Dry sieving method
NZS 4407:2015 Test 3.8.2
Determination of the Dry density / water content relationship – New Zealand Heavy Compaction
NZS 4402: 1986 Test 4.1.2

SAMPLING METHOD: N/A

TEST RESULTS: As per attached sheets

M. Adams
General Manager

S. Kokich
Approved Signatory

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166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-307
Client:	Cook Costello	**Tested By:**	J.A
Project:	The Landing	**Date:**	3/05/2019
Location:	Cut Stockpile	**Checked By:**	M.A
		Date:	4/07/2019
Date Received:	24/04/2019	**Page:**	2 of 6
Report No:	W19-392		
REF:	14333		

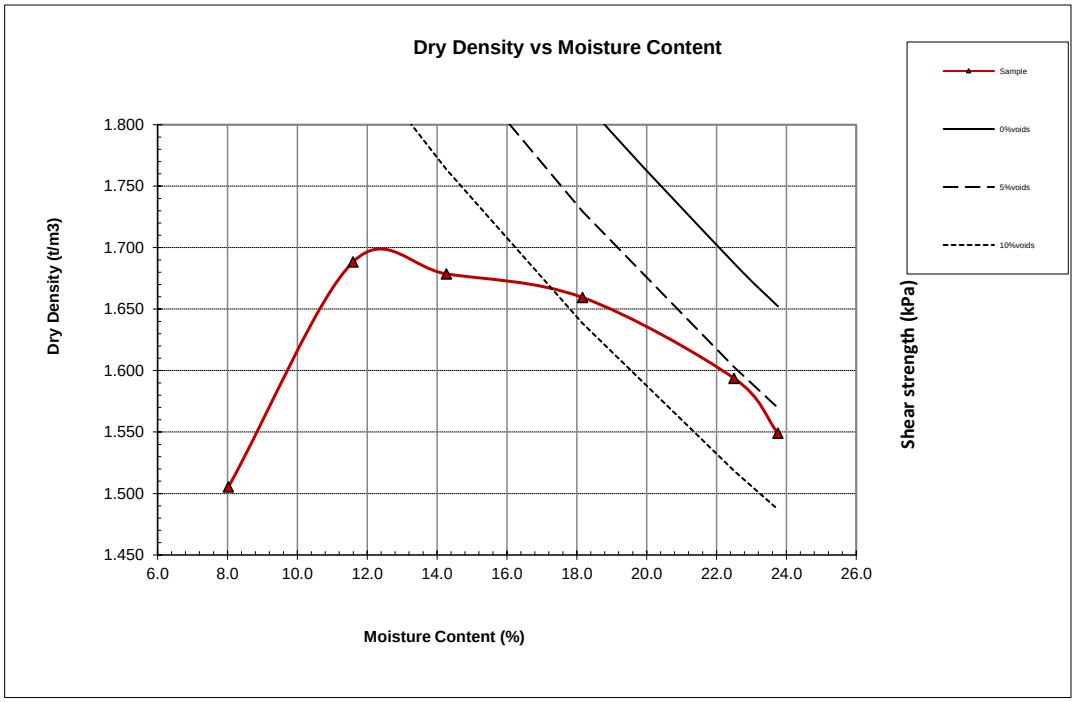
Sample Description: SAND, minor amorphous organics, sand is fine to medium, well graded, wet, dark brown

Compaction used: New Zealand Standard Compaction Test performed on:
Whole sample

History:

Total mass of sample: - g

Mass retained on 19mm BS test sieve: - g



Test Results	
Water Content (%)	**Dry Density (t/m^3)**
8.0	1.505
11.6	1.688
14.3	1.679
18.2	1.659
22.5	1.594
23.8	1.549

Solid Density (t/m^3) =	**2.72**	**Assumed**
Optimum Water Content (%) =	**12**	
Max Dry Density (t/m^3) =	**1.69**	
Natural Water Content (%) =	**18**	

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

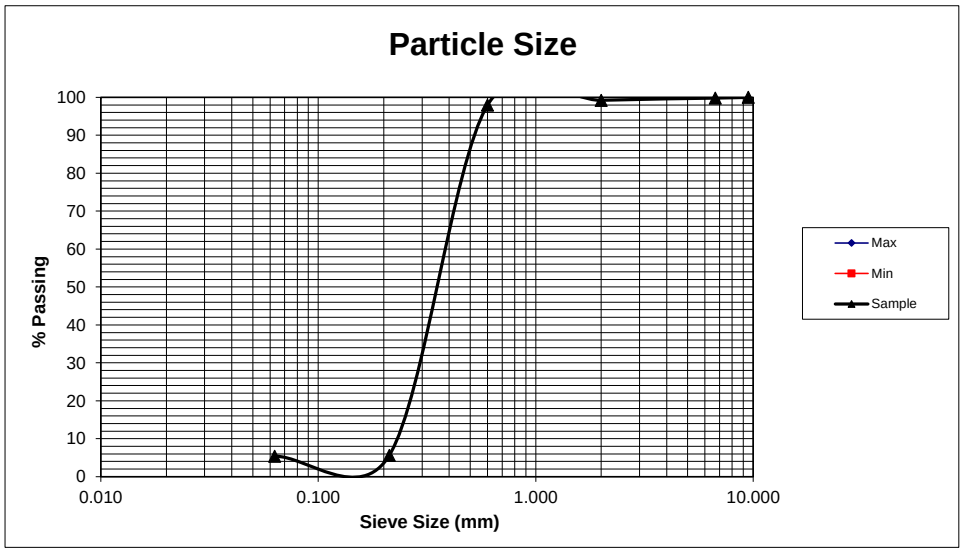
DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION - GRAPH

NZS 4402:1986 Test 2.8.1

Lab Job No:	8020-1727	**Sample No:**	19-307
Client:	Cook Costello	**Tested By:**	B.C
Location:	The Landing Cut Stockpile	**Date:** **Checked By:**	24/05/2019 M.A
Date Received:	24/04/2019	**Date:**	5/07/2019
Report No:	W19-392	**Page:**	3 of 6
REF:	14333		
Sampling Method:	Excavated test pit – SNA	**Sampled By:**	D.O.
Date Sampled:	24/04/2019		
Test Details:	Wet sieving method		
History:	Natural state		

Description of Sample: **SAND, minor amorphous organics, sand is fine to medium, well graded, wet, dark brown**

	% Passing		
Sieve Size	**Max**	**Min**	**Sample**
9.5			100
6.7			100
2			99
0.600			98
0.212			6
0.063			5



The percentage passing the finest sieve was obtained by difference

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
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E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-309
Client:	Cook Costello	**Tested By:**	M.A
Project:	The Landing	**Date:**	7/05/2019
Location:	Cut Stockpile	**Checked By:**	M.A
		Date:	5/07/2019
Date Received:	7/05/2019	**Page:**	4 of 6
Report No:	W19-392		
REF:	14333		
Sampling Method:	Excavated test pit – SNA	**Sampled By:**	J.A.
Date Sampled:	7/05/2019		
Compaction used:	New Zealand Standard Compaction Test performed on: Fraction Passing 19mm test sieve		
History:	Natural		
Sample Description:	**SAND, minor amorphous organics, sand is fine to medium, well graded, wet, dark brown**		

Total mass of sample: 5,000 g

Mass retained on 19.0mm BS test sieve: 0 g

Bulk Density	**(t/m^3)**	**1.937**
Water Content	**(%)**	**14.5**
Dry Density	**(t/m^3)**	**1.69**
Solid Density (Assumed)	**(t/m^3)**	**2.72**
Air Voids	**(%)**	**13**
Shear Vane Reading	**(kPa)**	**-**

Comments: Sample tested at an assumed Optimum Water Content

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND STANDARD COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-352
Client:	Cook Costello	**Tested By:**	D.O
Project:	The Landing	**Date:**	22/05/2019
Location:	Area 1 Fill	**Checked By:**	M.A
		Date:	5/07/2019
Date Received:	21/05/2019	**Page:**	5 of 6
Report No:	W19-392		
REF:	14333		

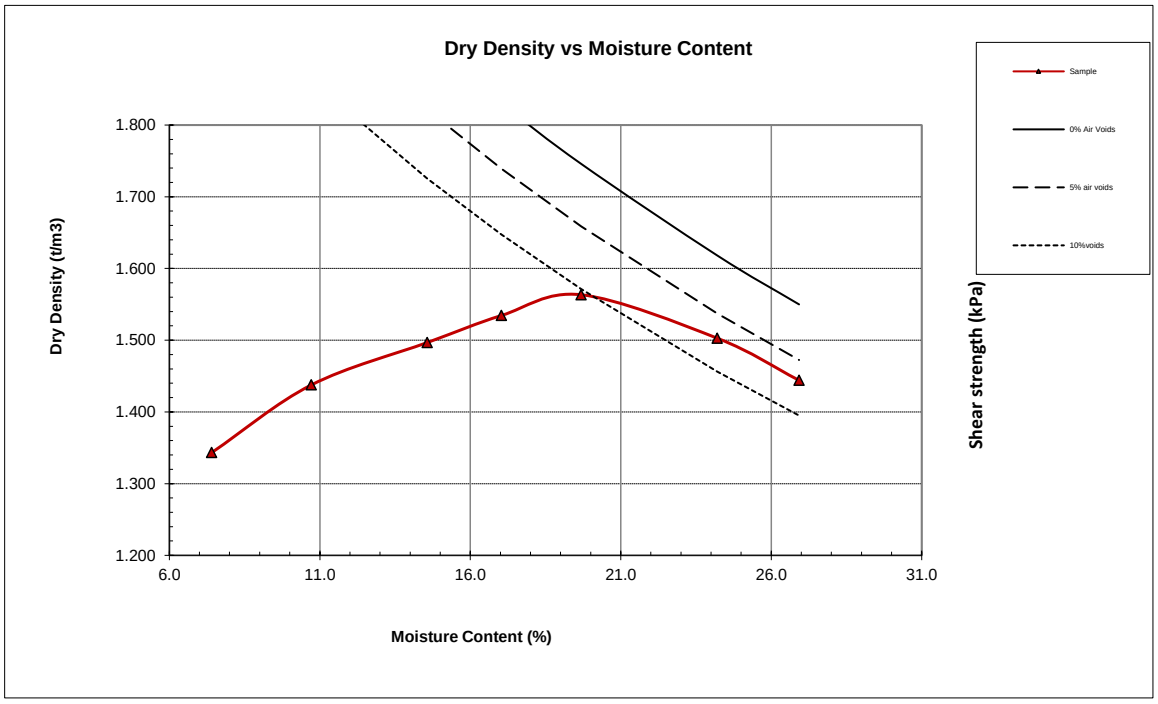
Sample Description: SAND, minor peat, traces of very weak cemented gravels, moist. Sand is well graded, fine-medium

Compaction used: New Zealand Standard Compaction Test performed on:
Whole sample

History:

Total mass of sample: 60000 g

Mass retained on 19mm BS test sieve: 0 g



Test Results	
Water Content (%)	**Dry Density (t/m^3)**
7.4	1.343
10.7	1.438
14.6	1.497
17.0	1.534
19.7	1.563
24.2	1.503
26.9	1.444

Solid Density (t/m^3) =	**2.66**	**Assumed**
Optimum Water Content (%) =	**19.5**	
Max Dry Density (t/m^3) =	**1.57**	
Natural Water Content (%) =	**17.0**	

S. Kokich
Approved Signatory

Whangarei Laboratory
166 Bank Street
Whangarei
P: 09 438 4417
E: info@geocivil.co.nz

DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP

NEW ZEALAND HEAVY COMPACTION

NZS 4402:1986 Test 4.1.1

Lab Job No:	8020-1727	**Sample No.:**	19-390
Client:	Cook Costello	**Tested By:**	D.O
Project:	The Landing	**Date:**	29/05/2019
Location:	Area 1 Fill	**Checked By:**	M.A
		Date:	5/07/2019
Date Received:	29/05/2019	**Page:**	6 of 6
Report No:	W19-392		
REF:	14333		

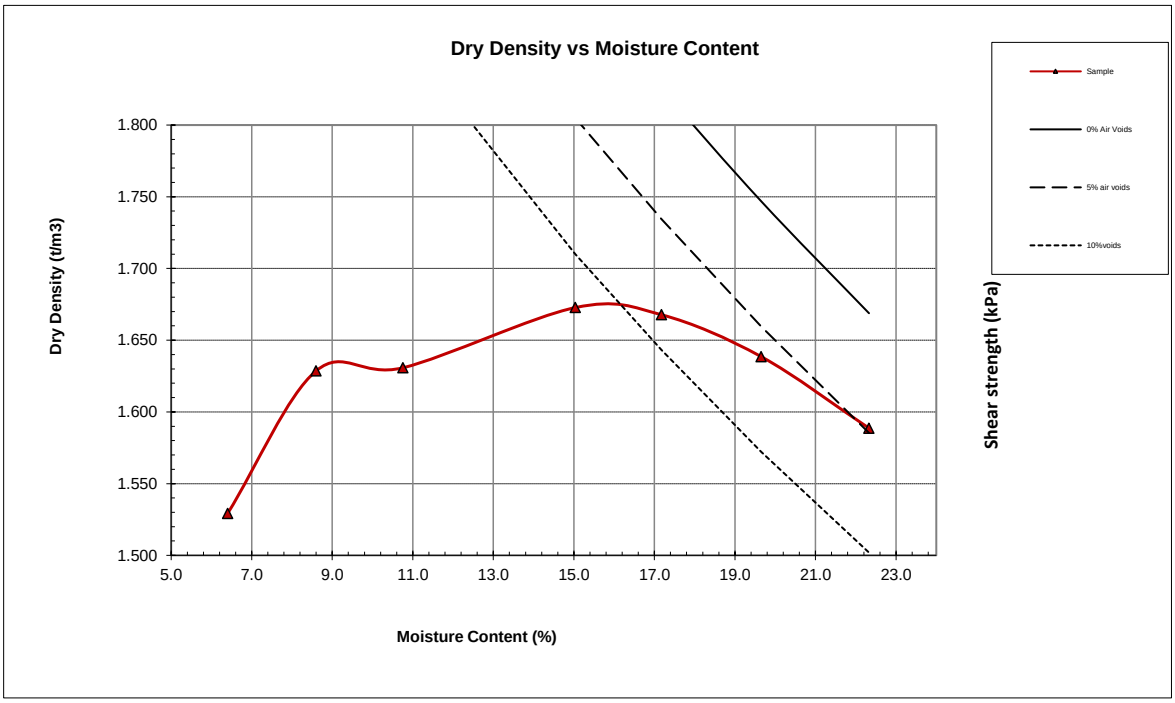
Sample Description: SAND, traces of peat, traces of very weak cemented gravels, wet. Sand is; well graded, fine-medium

Compaction used: New Zealand Standard Compaction Test performed on:
Whole sample

History:

Total mass of sample: 60000 g

Mass retained on 19mm BS test sieve: 0 g



Test Results	
Water Content (%)	**Dry Density (t/m^3)**
6.4	1.529
8.6	1.629
10.8	1.631
15.0	1.673
17.2	1.668
19.7	1.639
22.3	1.589

Solid Density (t/m^3) =	**2.66**	**Assumed**
Optimum Water Content (%) =	**15.0**	
Max Dry Density (t/m^3) =	**1.57**	
Natural Water Content (%) =	**15.0**	

S. Kokich
Approved Signatory

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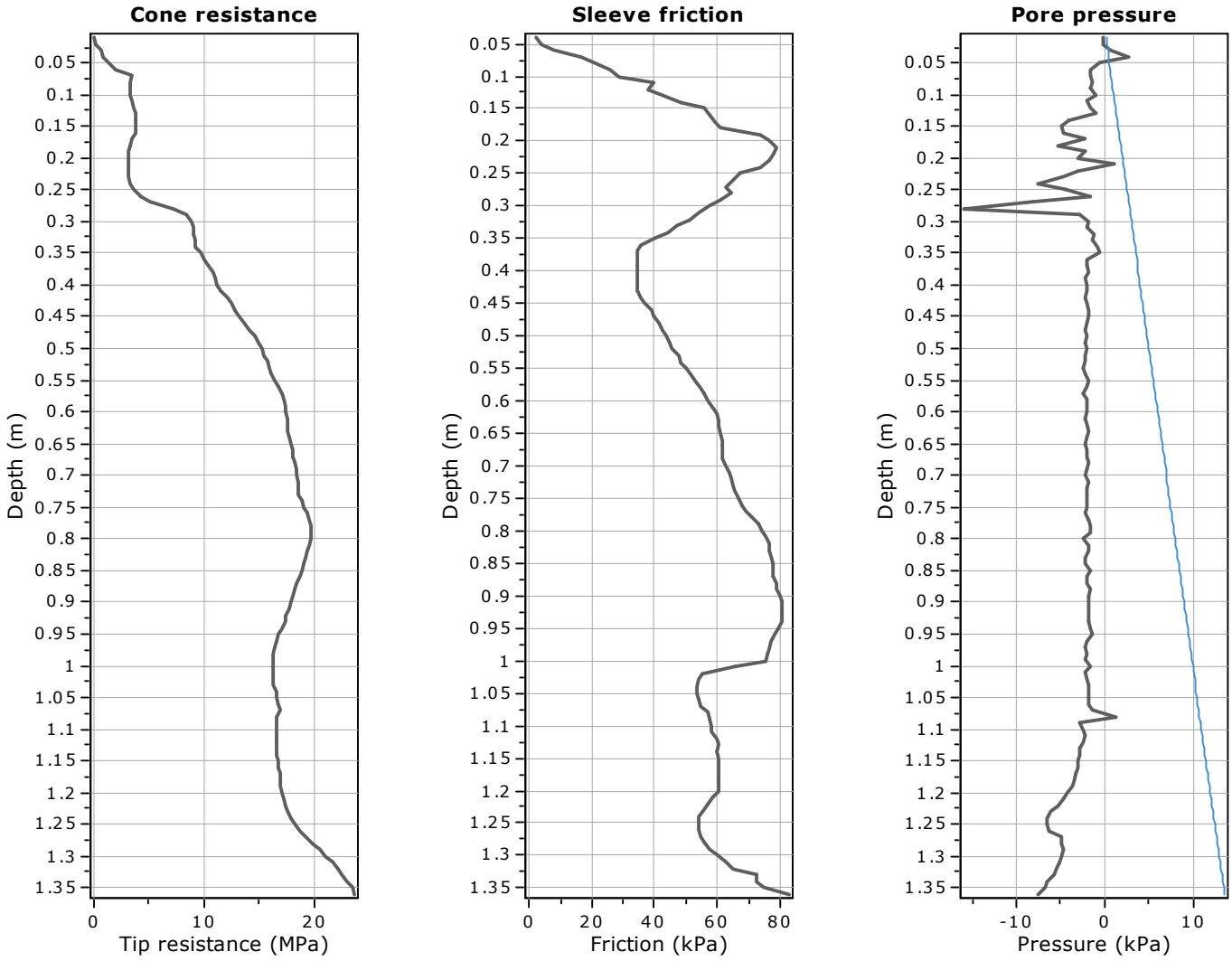
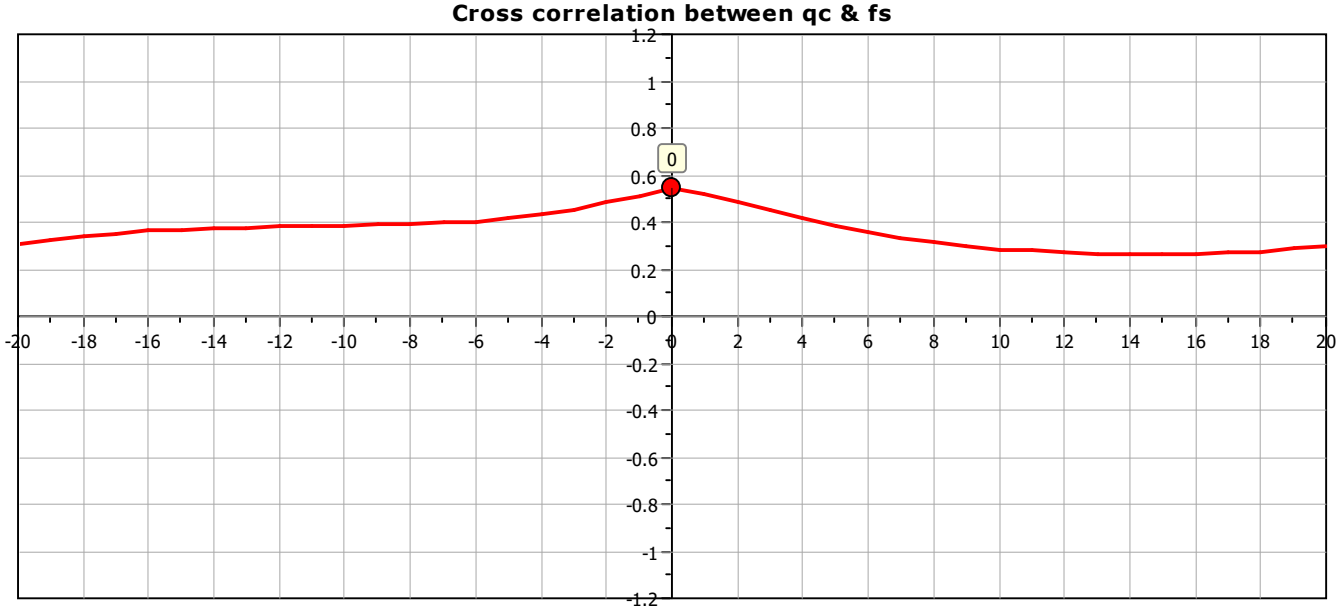
CPT: CPT-F
Total depth: 1.36 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

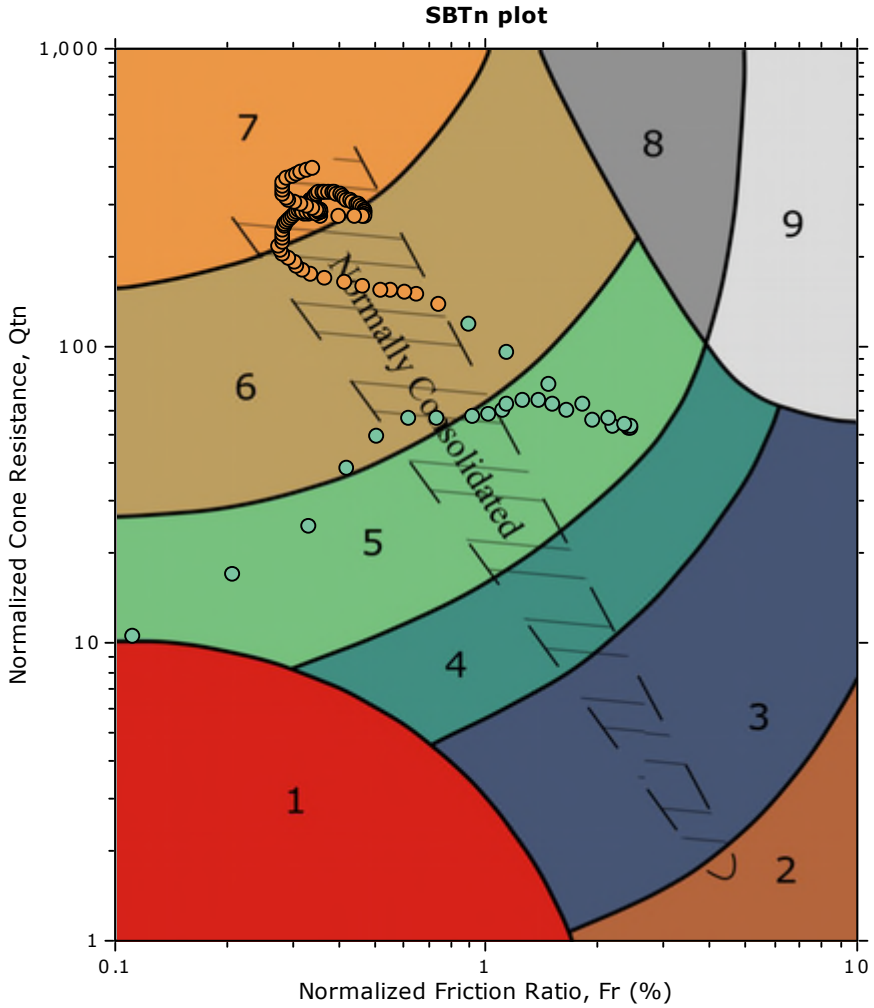
Project:
Location:

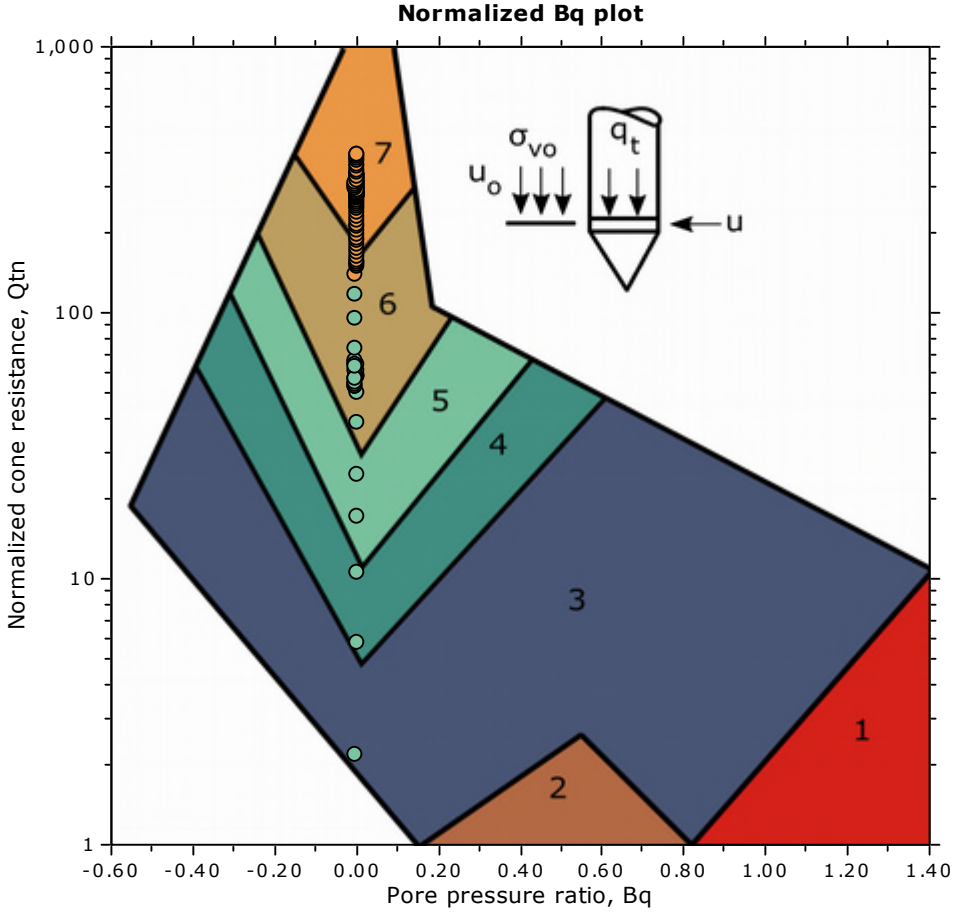


The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



SBT - Bq plots (normalized)





SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty clay	7. Gravelly sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to clayey sand
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

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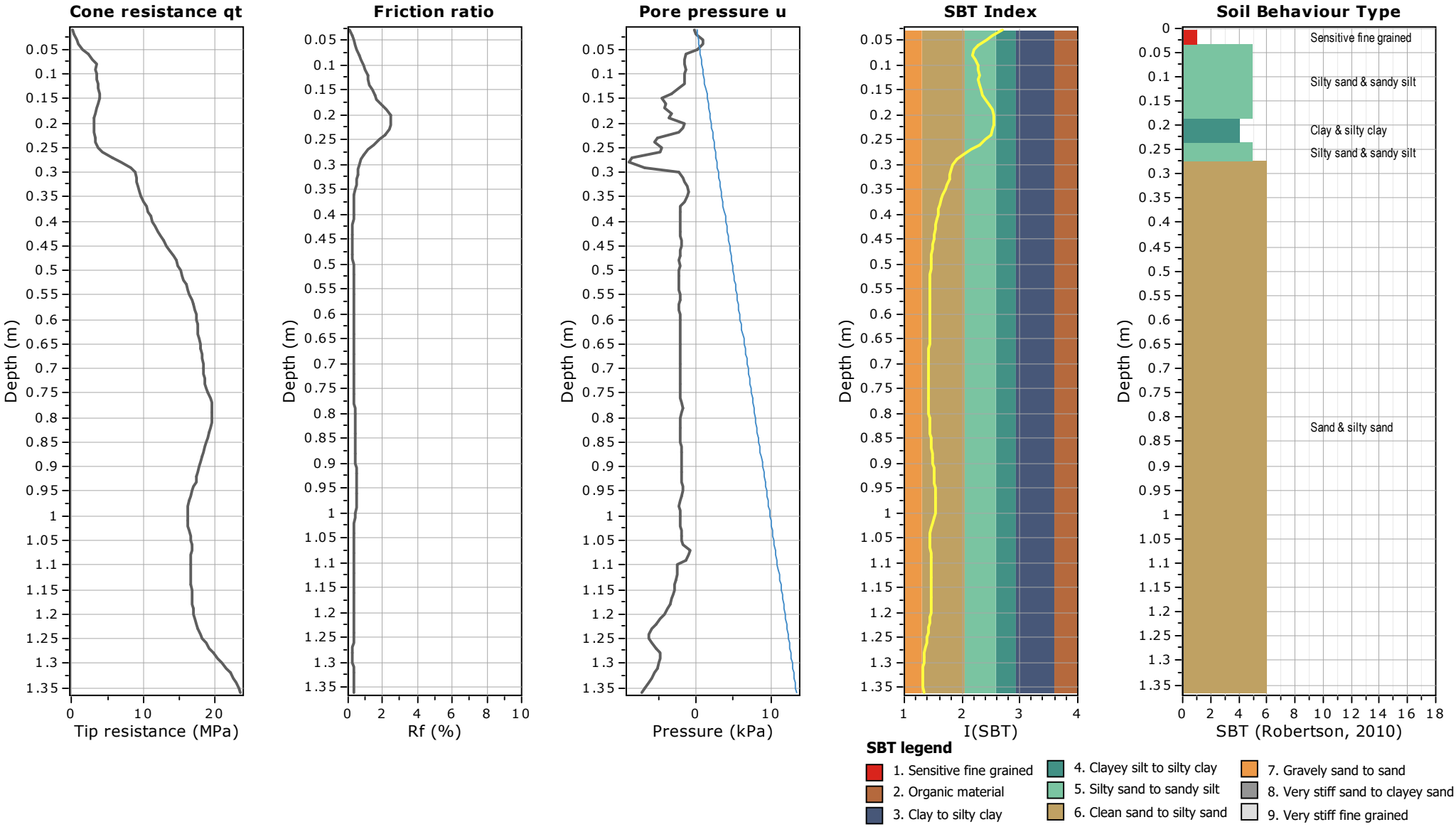
CPT: CPT-F
Total depth: 1.36 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



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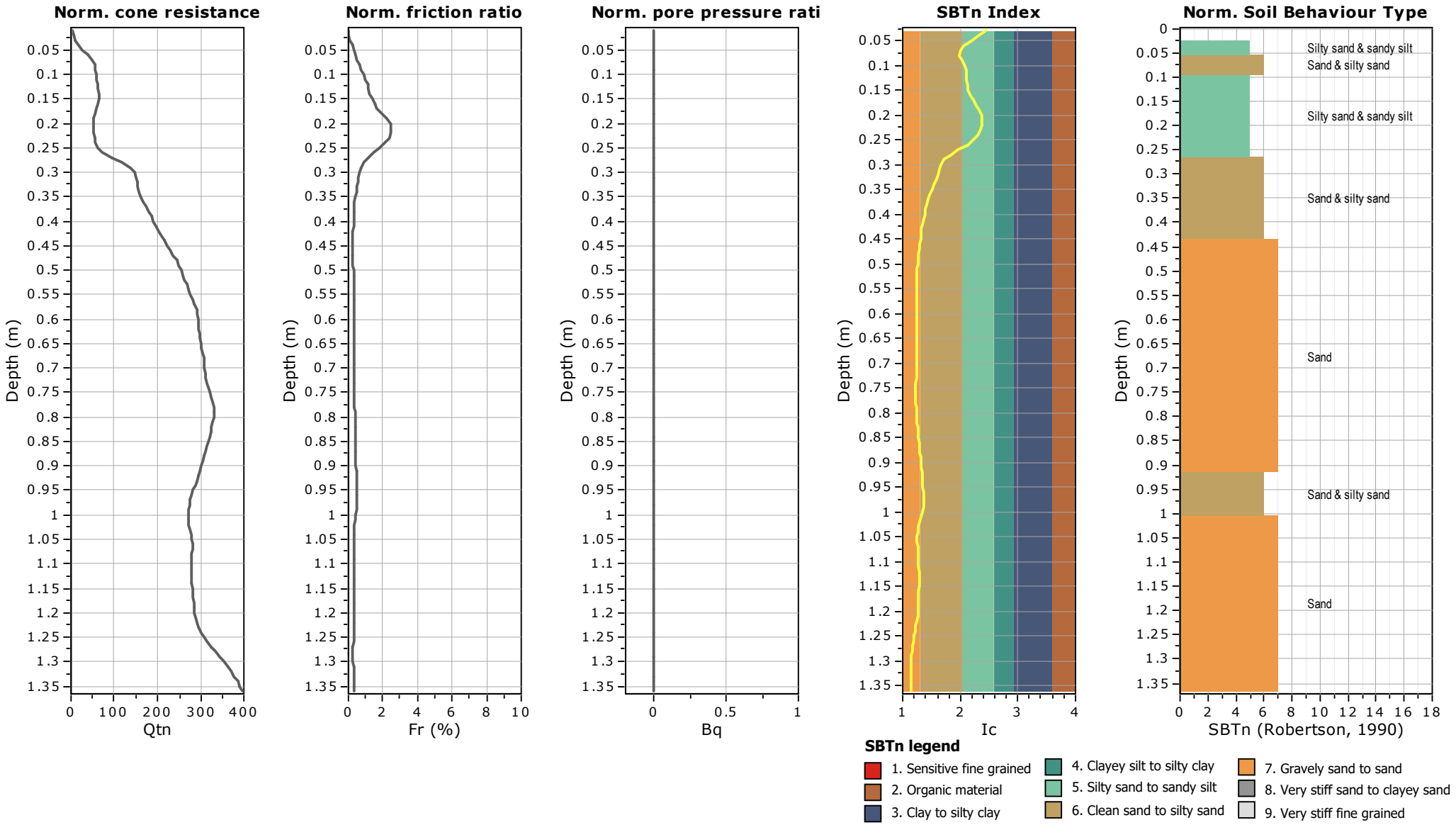
CPT: CPT-F
Total depth: 1.36 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



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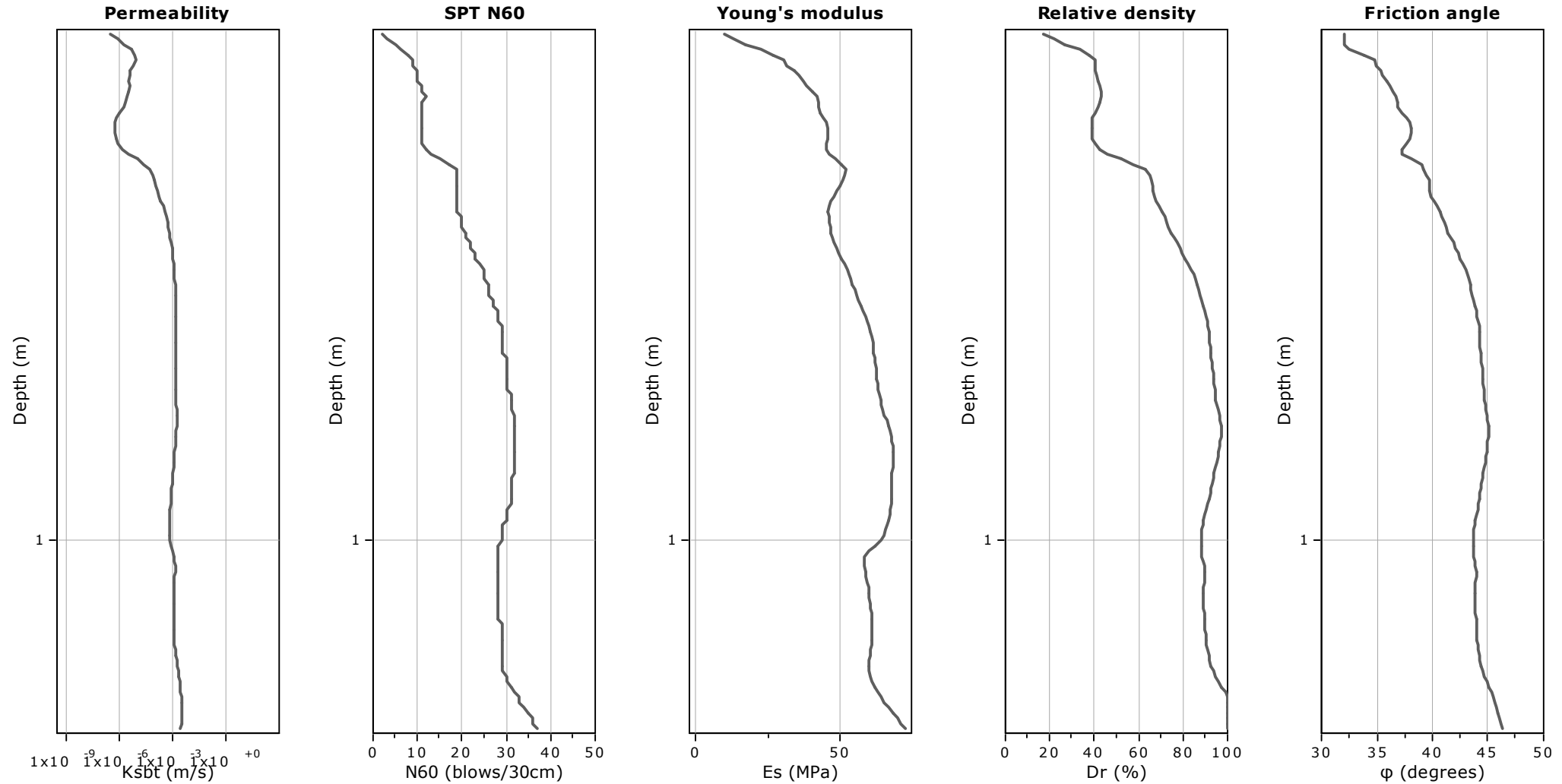
CPT: CPT-F
Total depth: 1.36 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



Calculation parameters

Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

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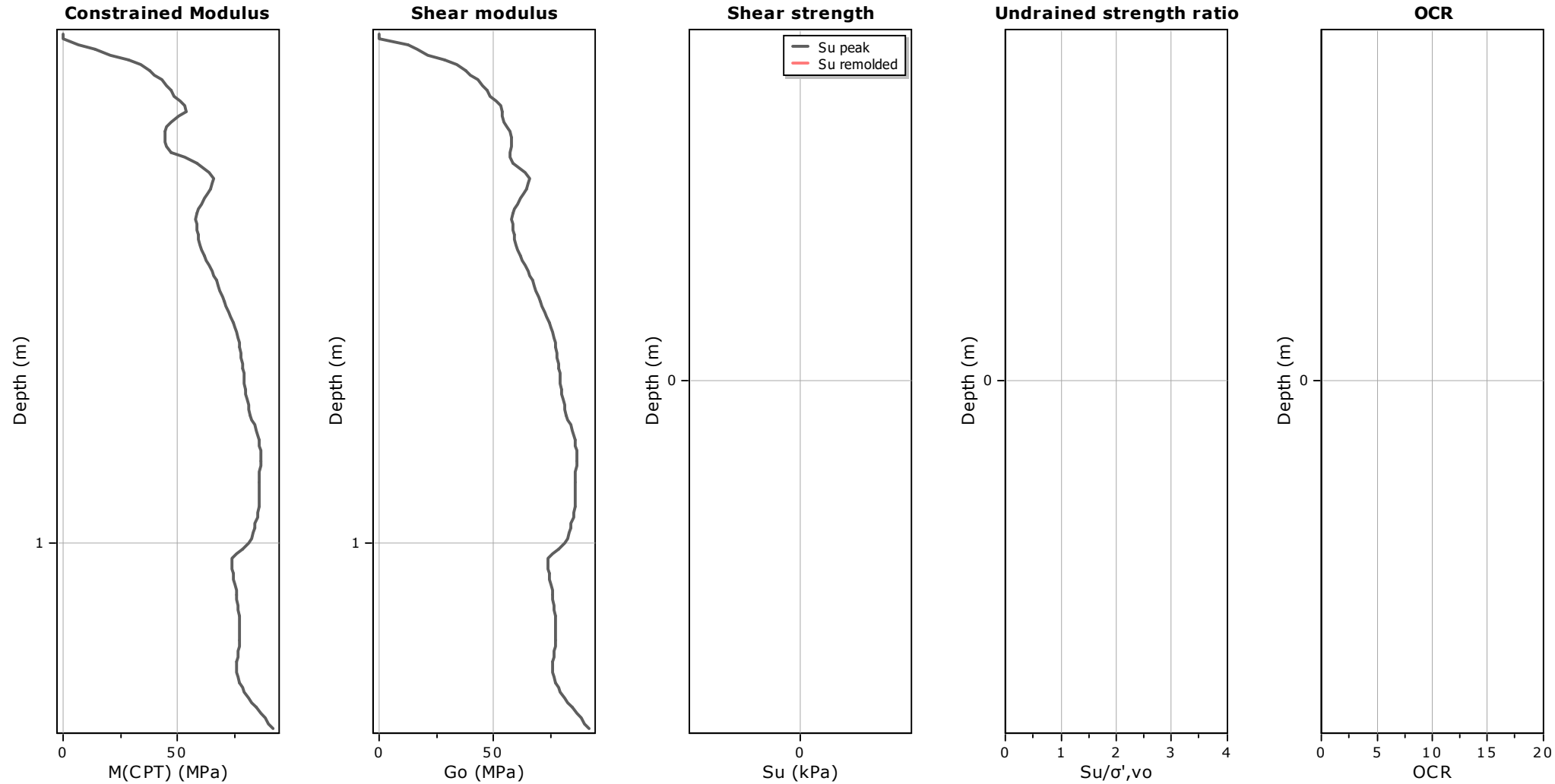
CPT: CPT-F
Total depth: 1.36 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



Calculation parameters

Constrained modulus: Based on variable *alpha* using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable *alpha* using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14
OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data

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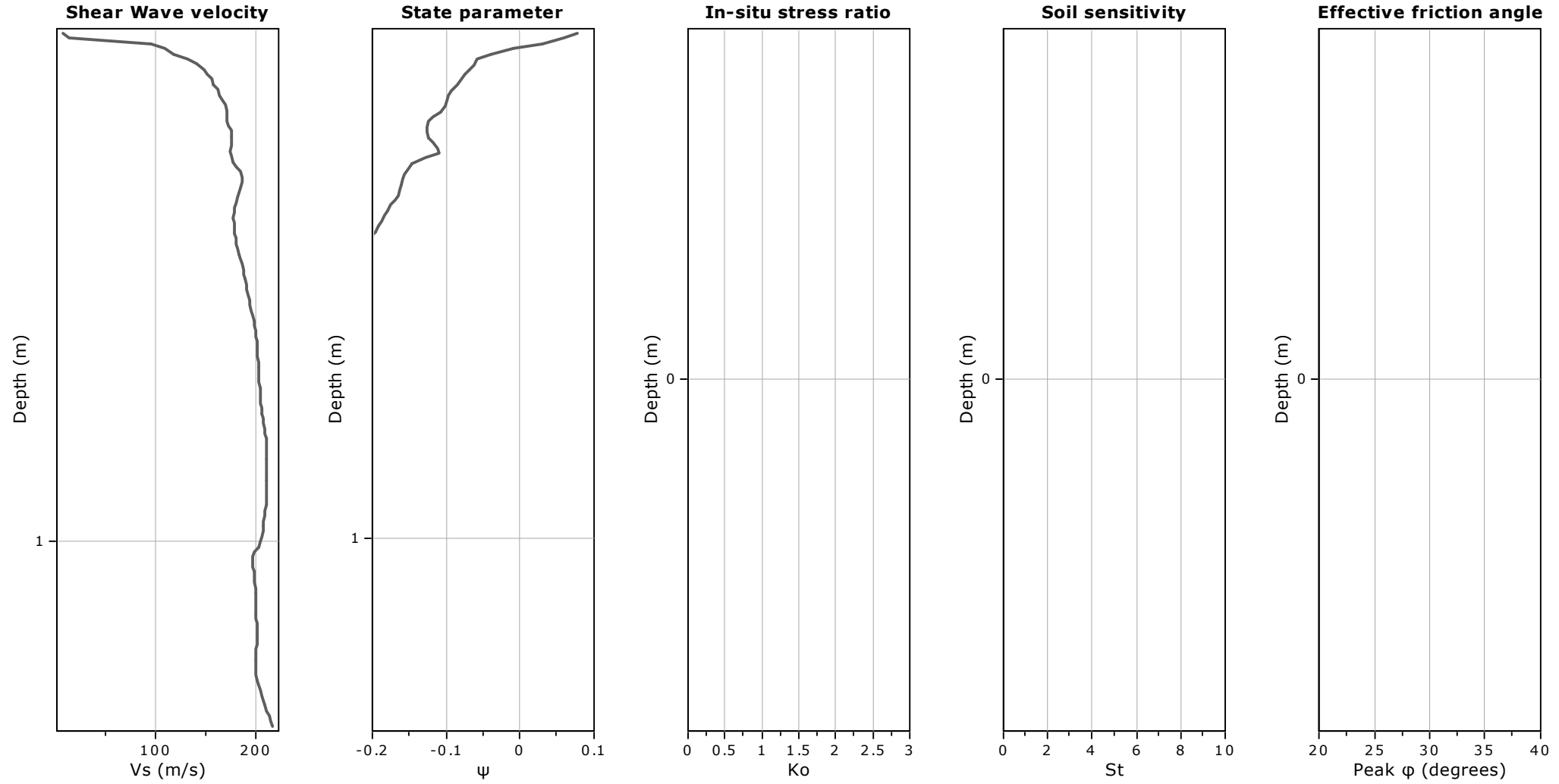
CPT: CPT-F
Total depth: 1.36 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



Calculation parameters

Soil Sensitivity factor, N_S: 7.00
User defined estimation data

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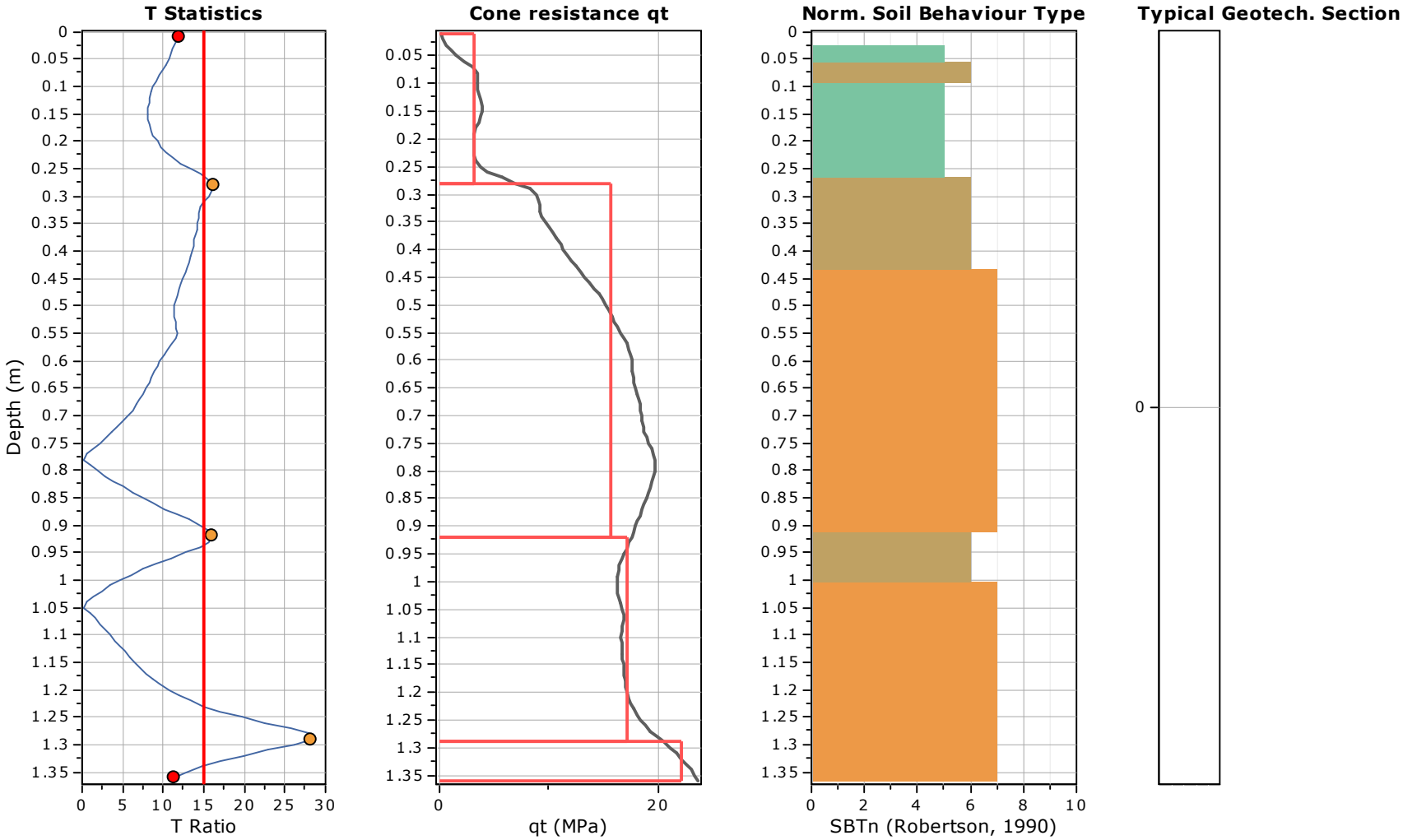
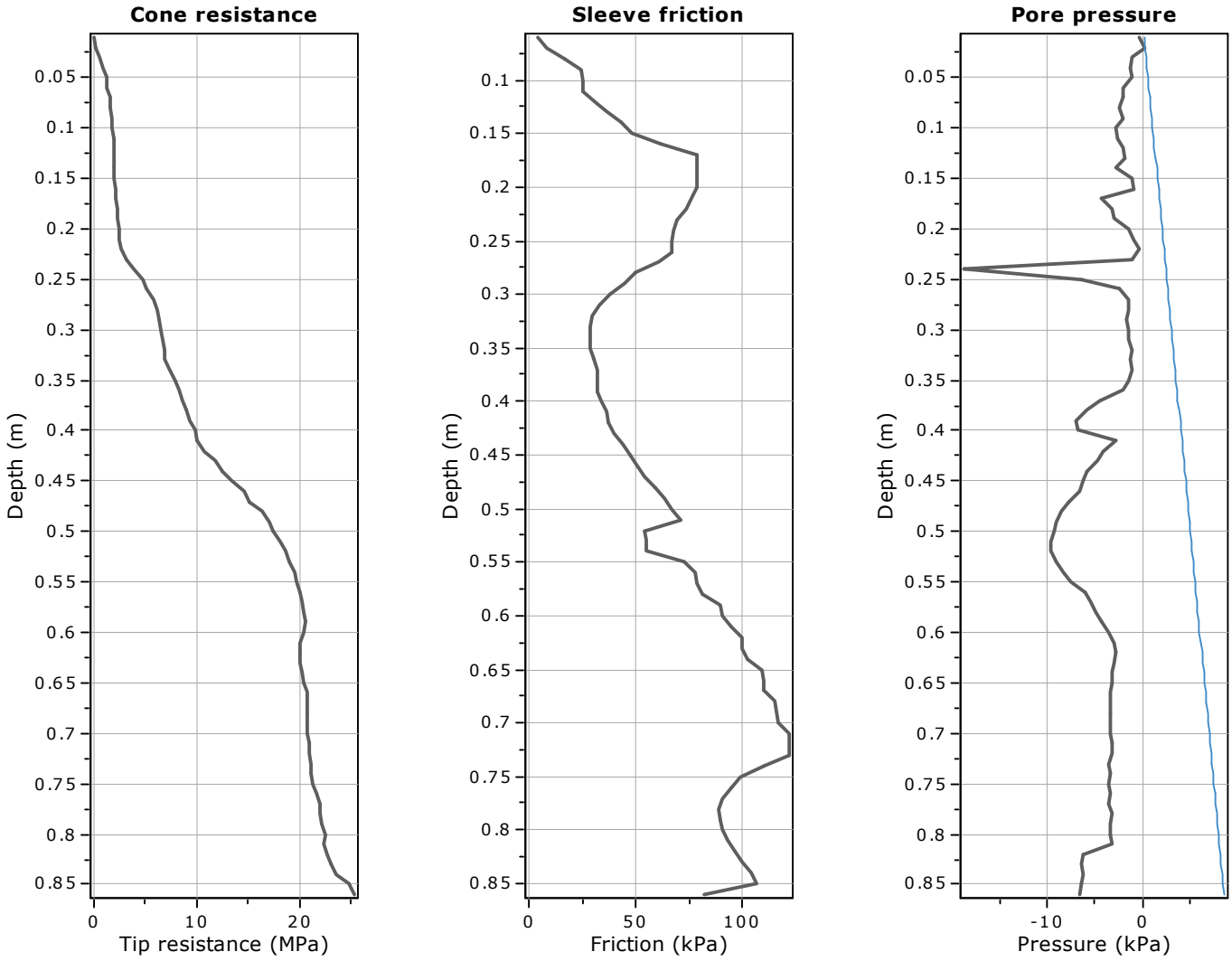
Project:
Location:

CPT: CPT-F
Total depth: 1.36 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

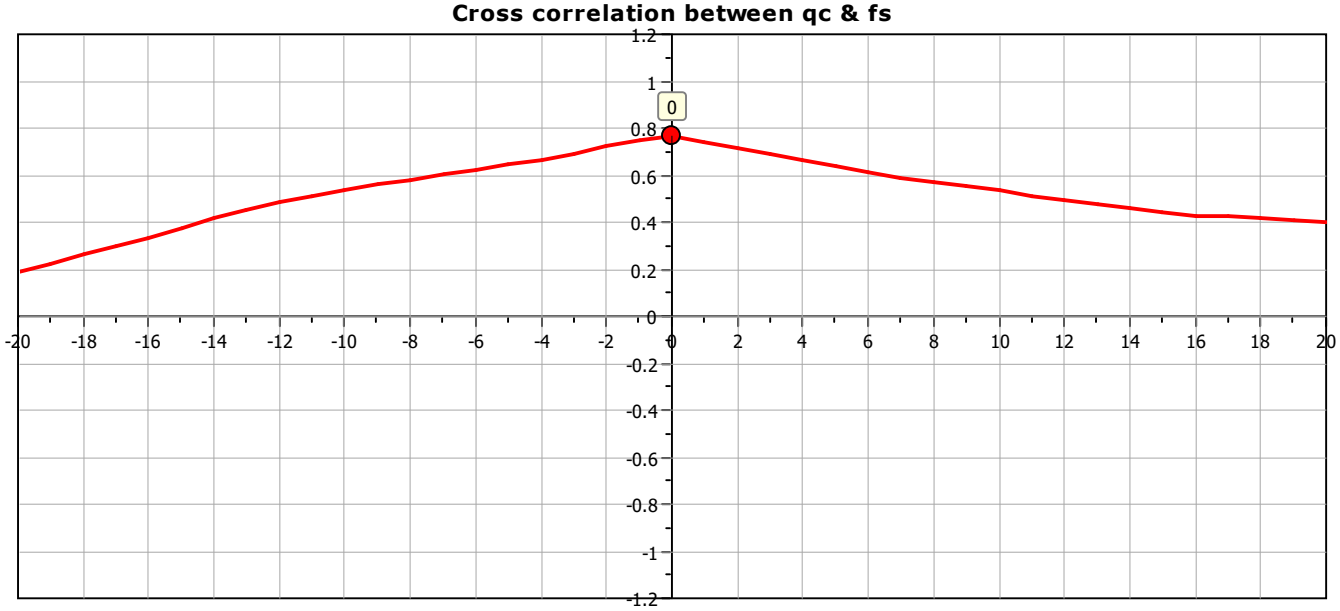
AUTO LAYER DETECTION REPORT

Auto layer detection algorithm is performed according to the procedure descreibed in "Statistical Methods for Soil Layer Boundary Location Using the Cone Penetration Test" by R. G. Campanella and Damika S. Wickremesinghe. The software uses the **T ratio** statistic method described in page 4 of the above mentioned publication.

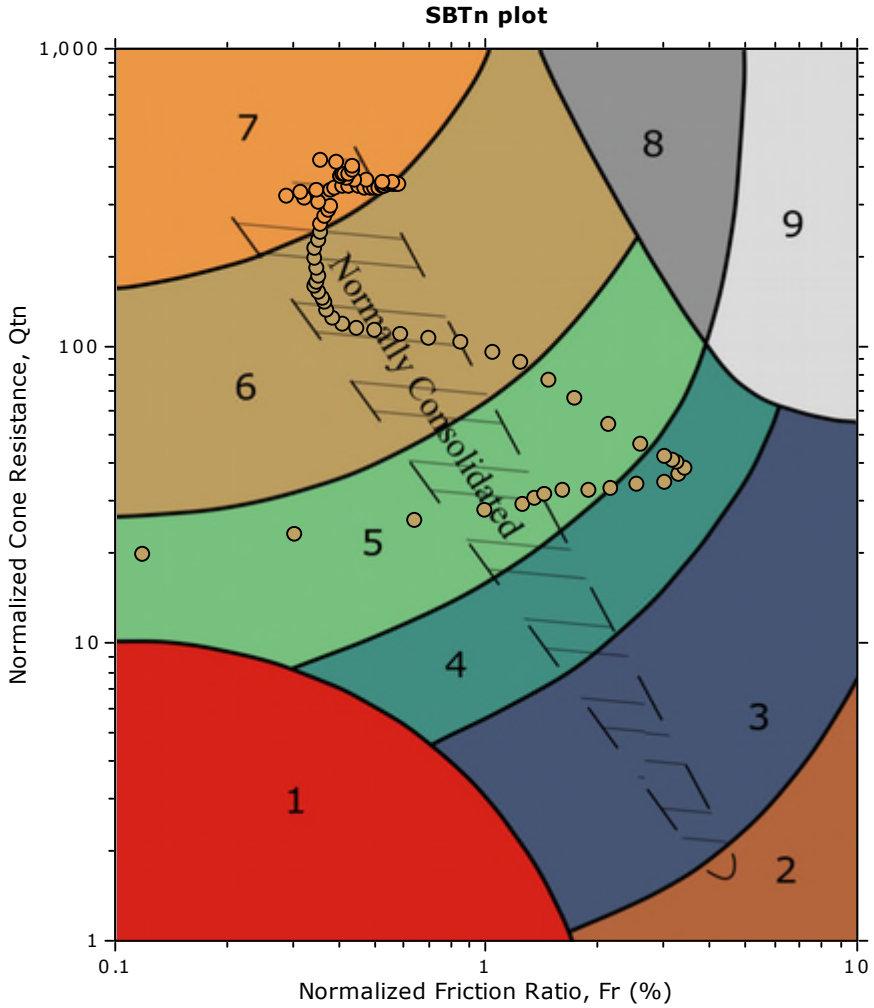


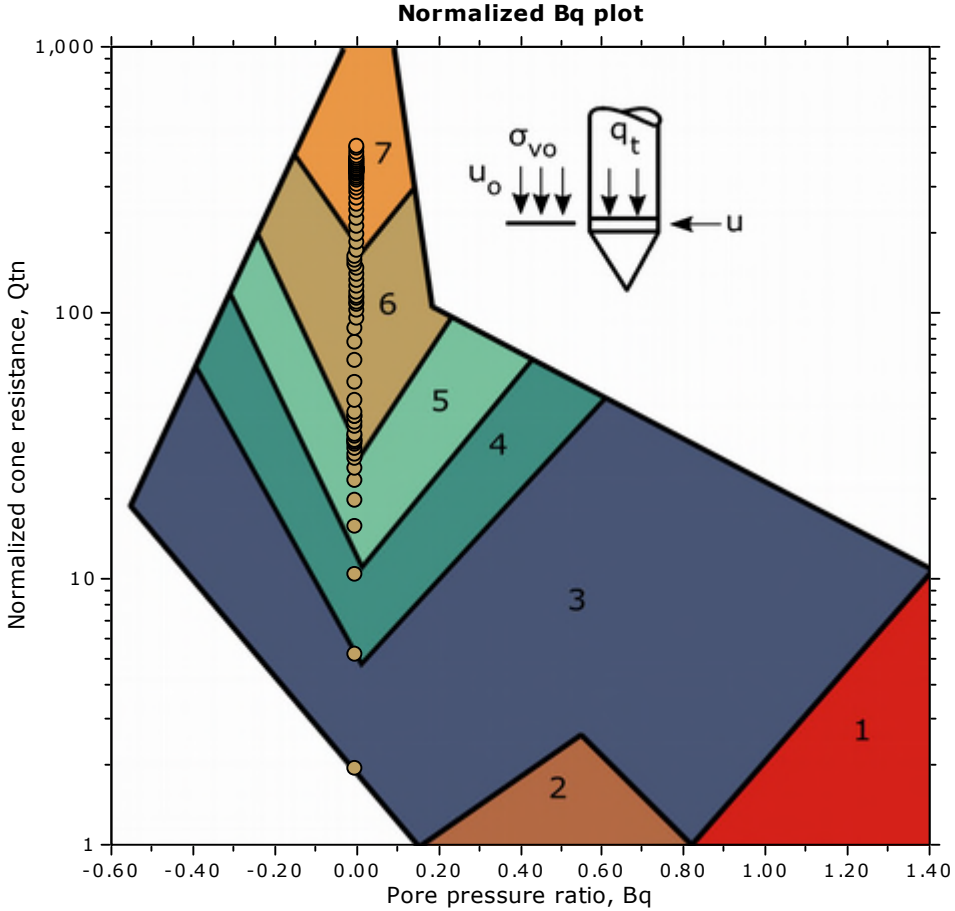


The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



SBT - Bq plots (normalized)





SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty clay	7. Gravelly sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to clayey sand
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

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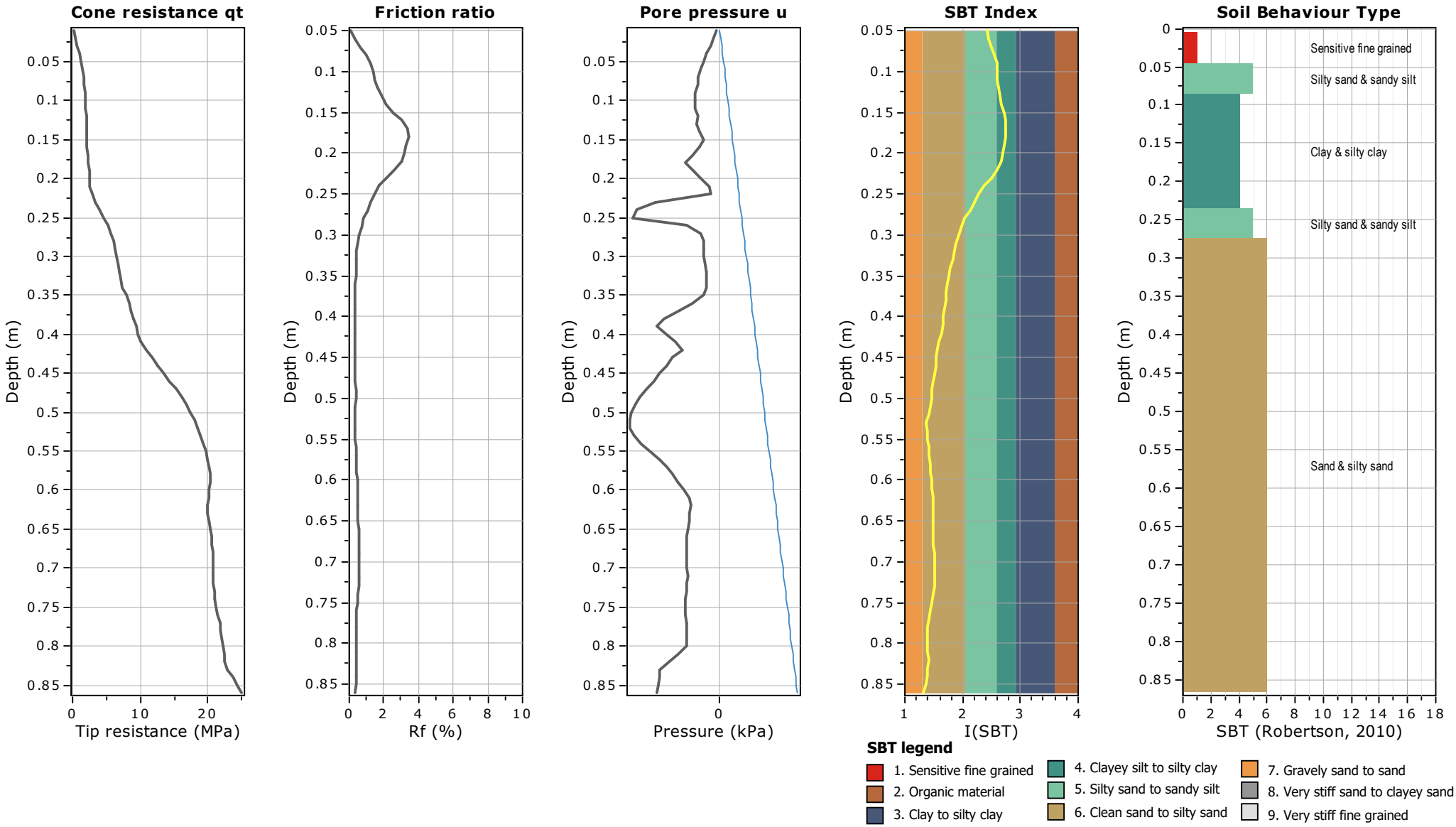
CPT: CPT-G
Total depth: 0.86 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



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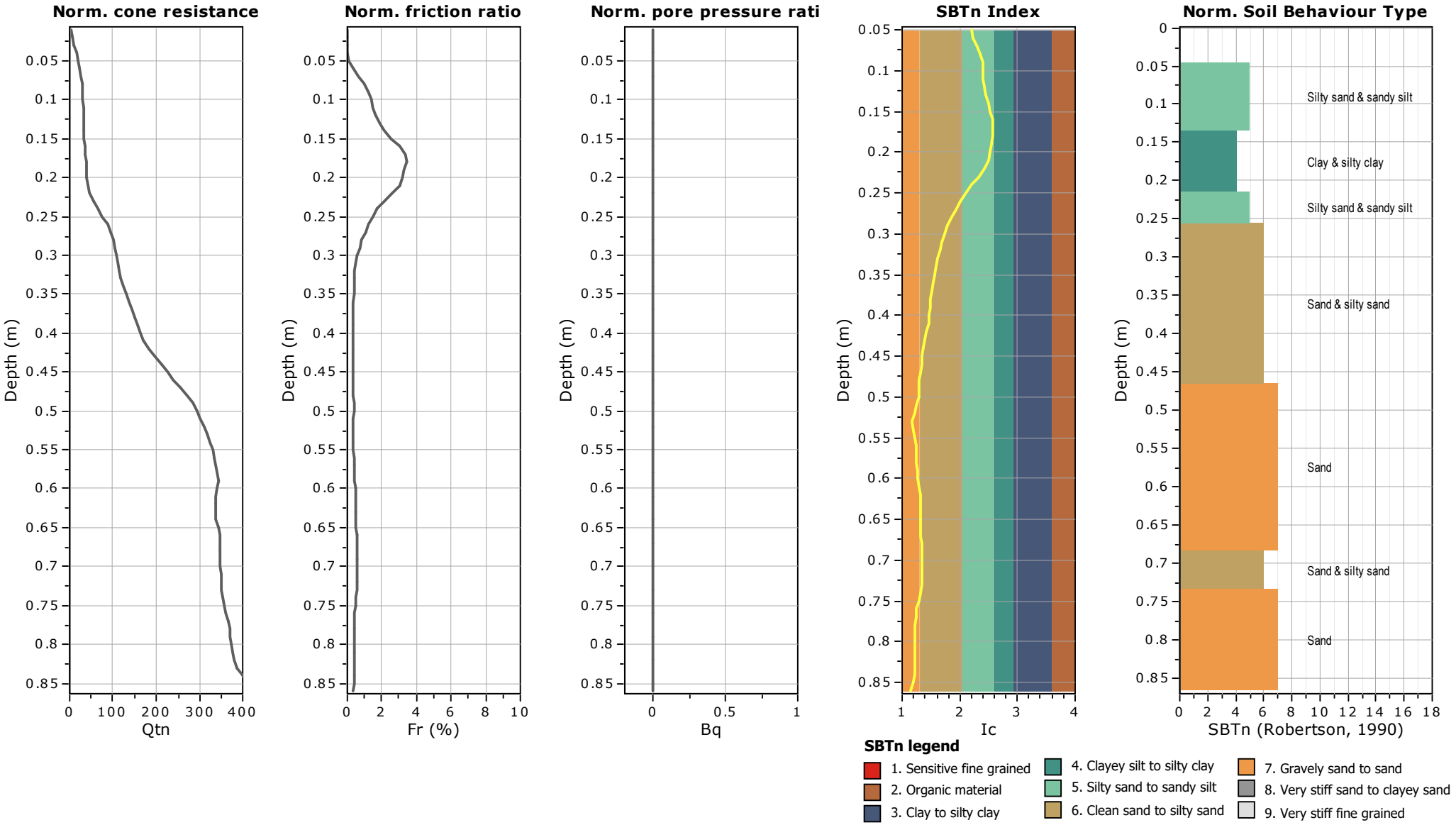
http://www.geologismiki.gr

CPT: CPT-G
Total depth: 0.86 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



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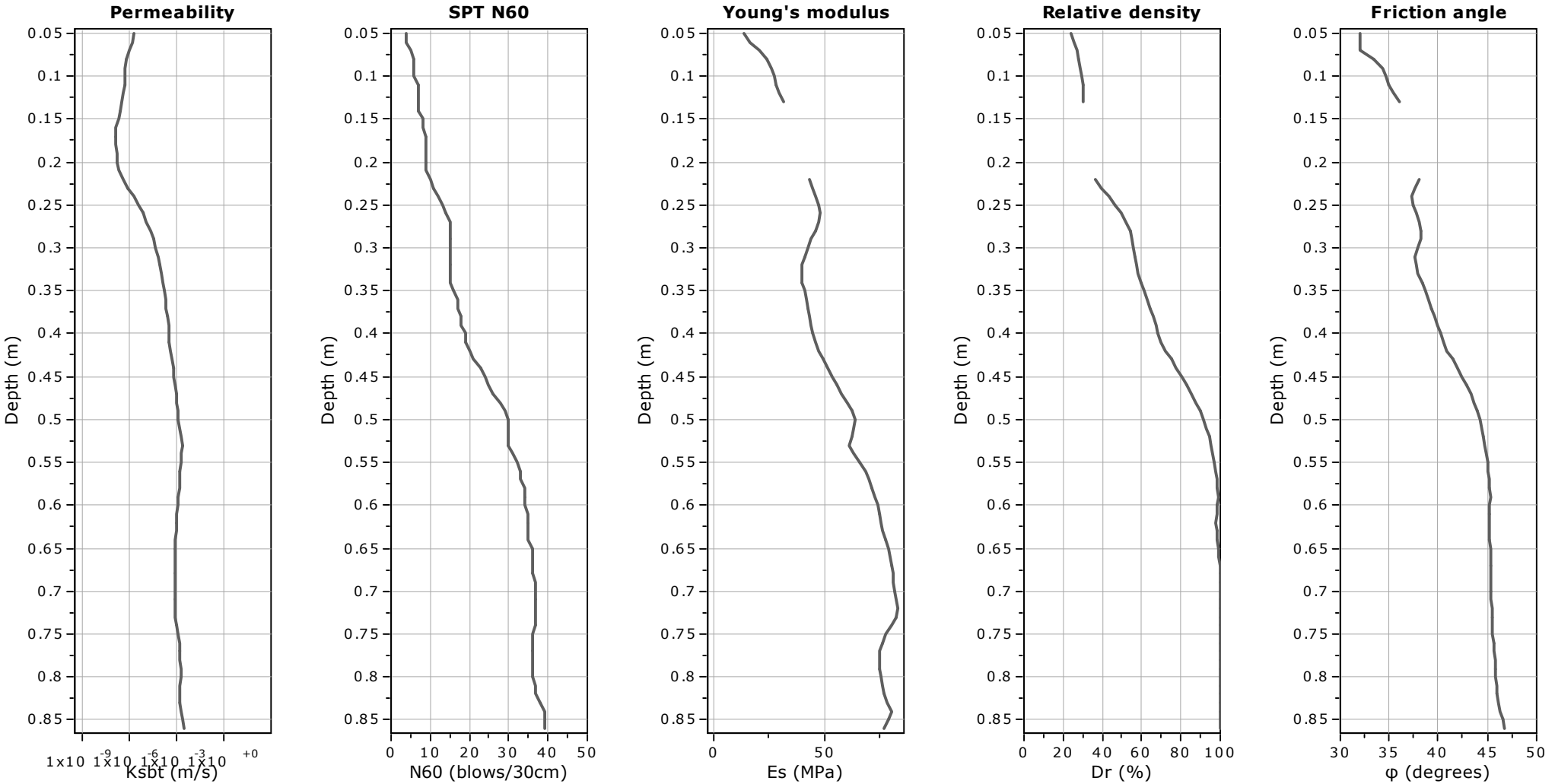
CPT: CPT-G
Total depth: 0.86 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



Calculation parameters

Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

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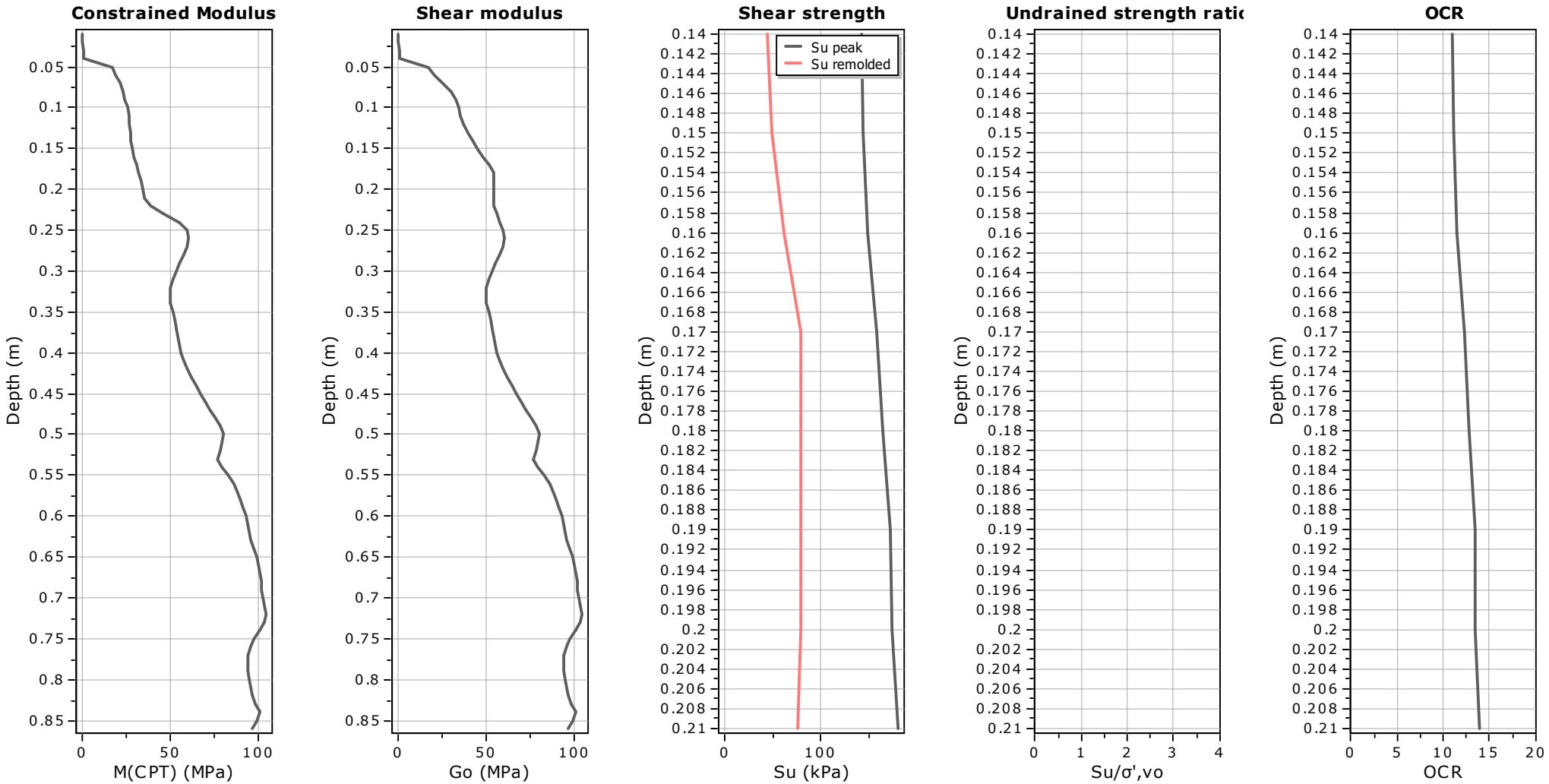
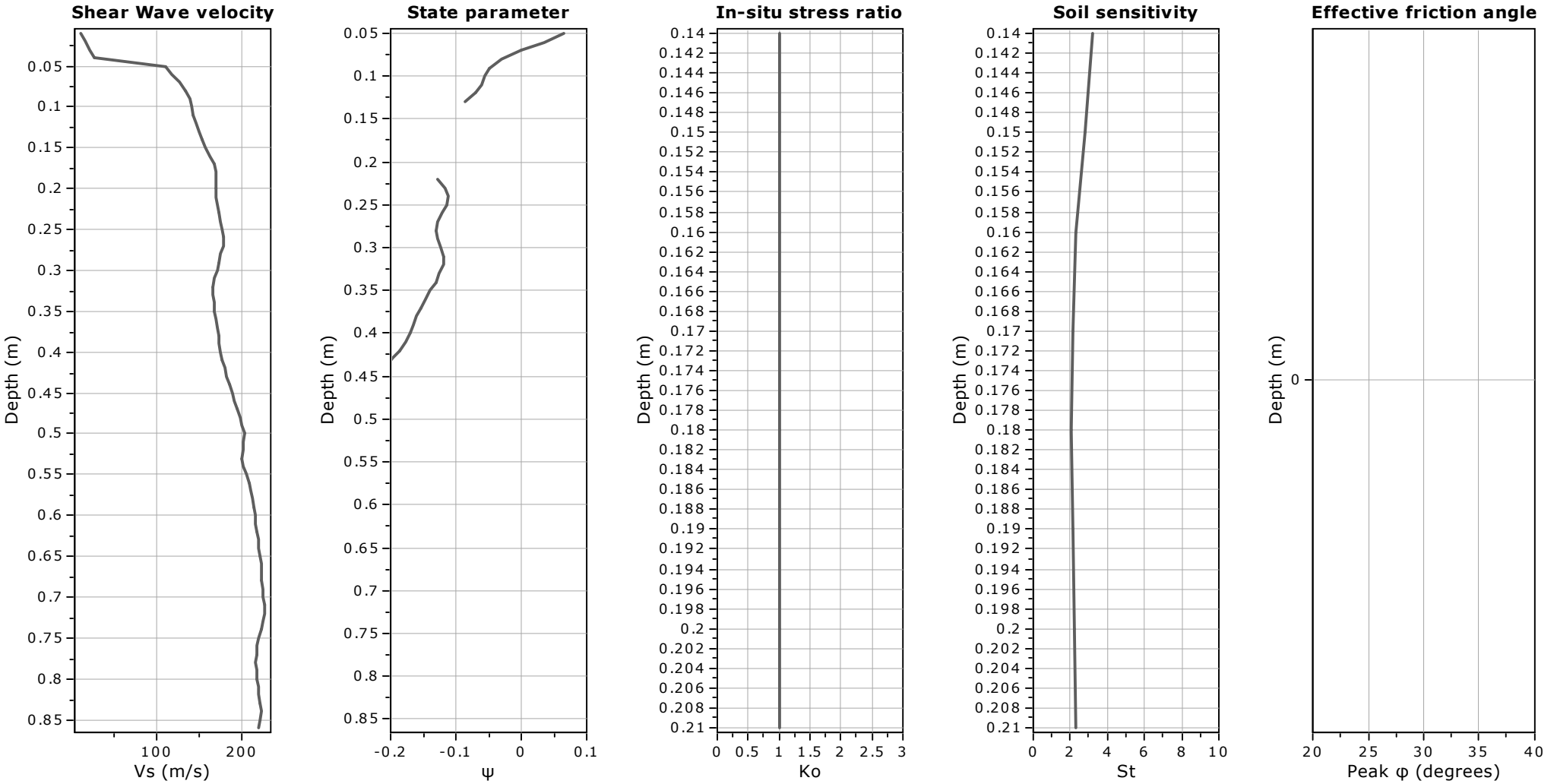
CPT: CPT-G
Total depth: 0.86 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



Calculation parameters

Constrained modulus: Based on variable *alpha* using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable *alpha* using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14
OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data



Calculation parameters

Soil Sensitivity factor, N_S: 7.00

User defined estimation data

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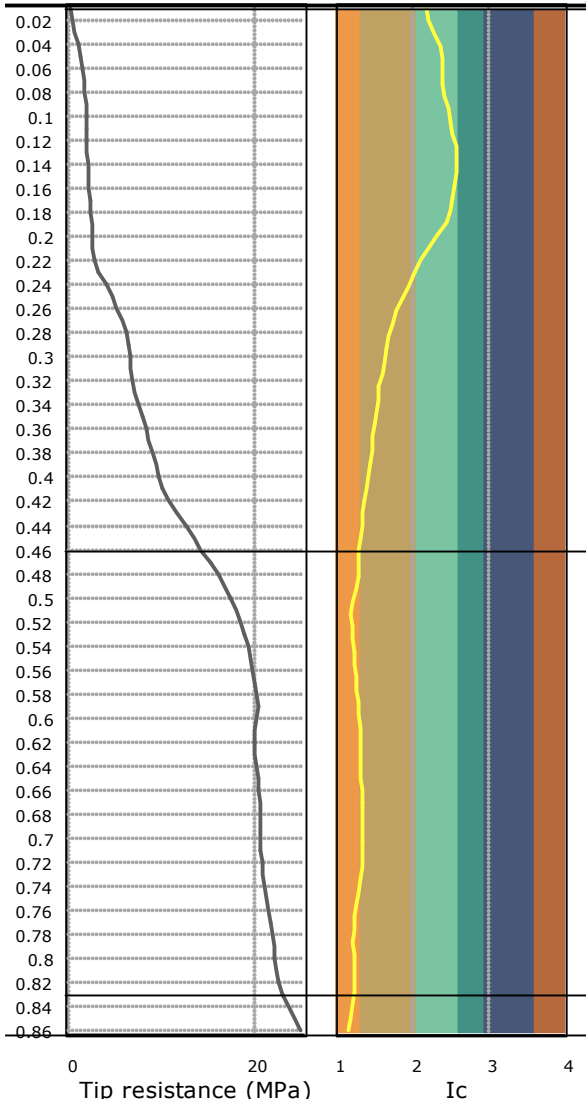
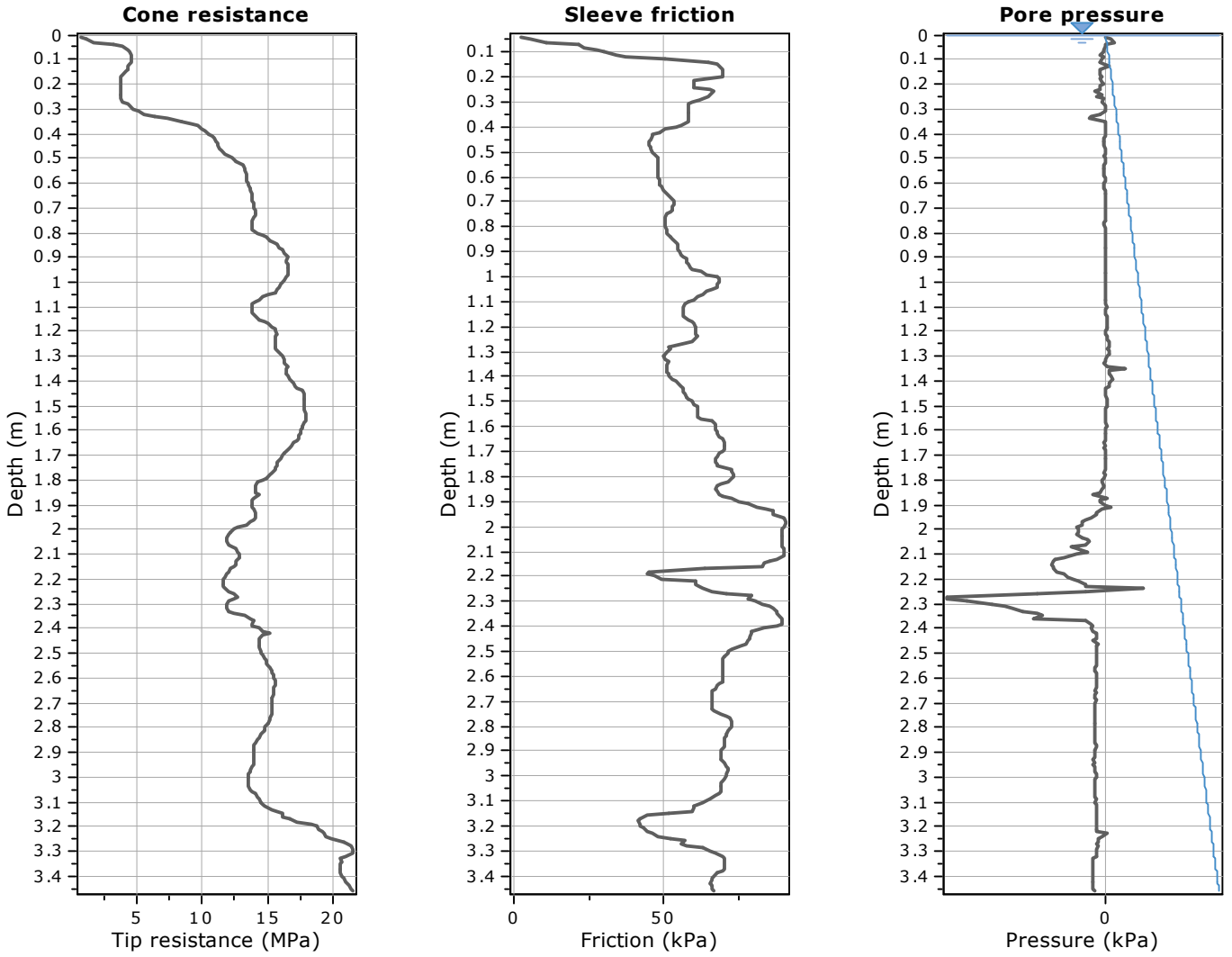
CPT: CPT-G
Total depth: 0.86 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

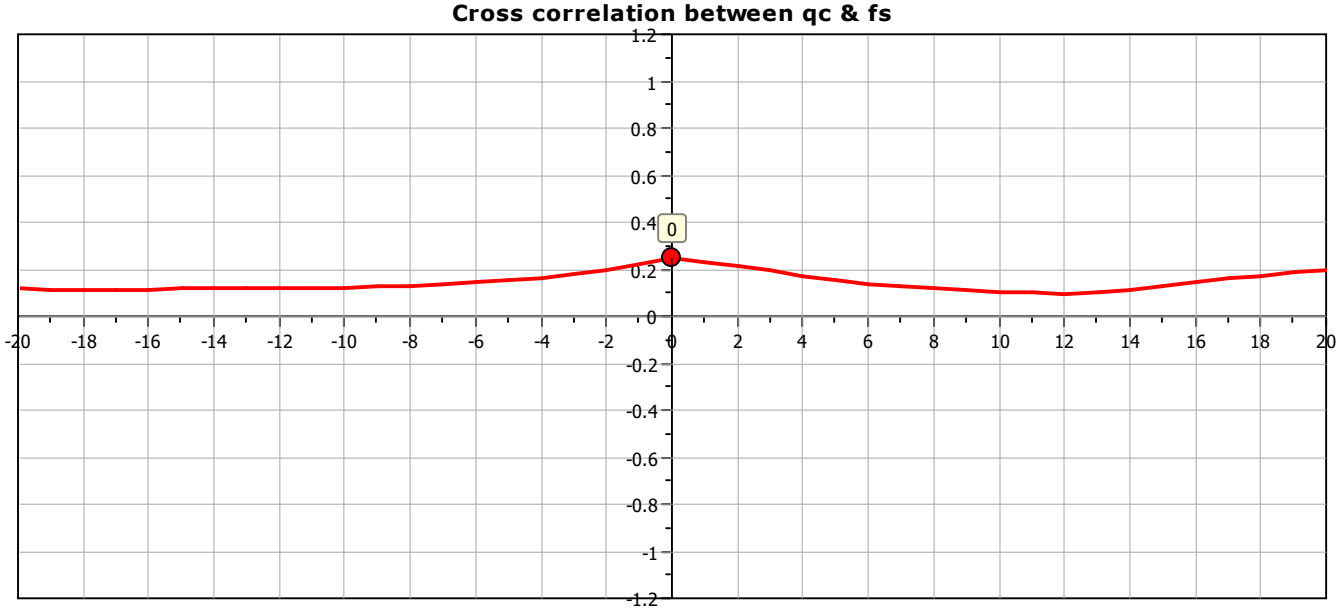
Project:
Location:



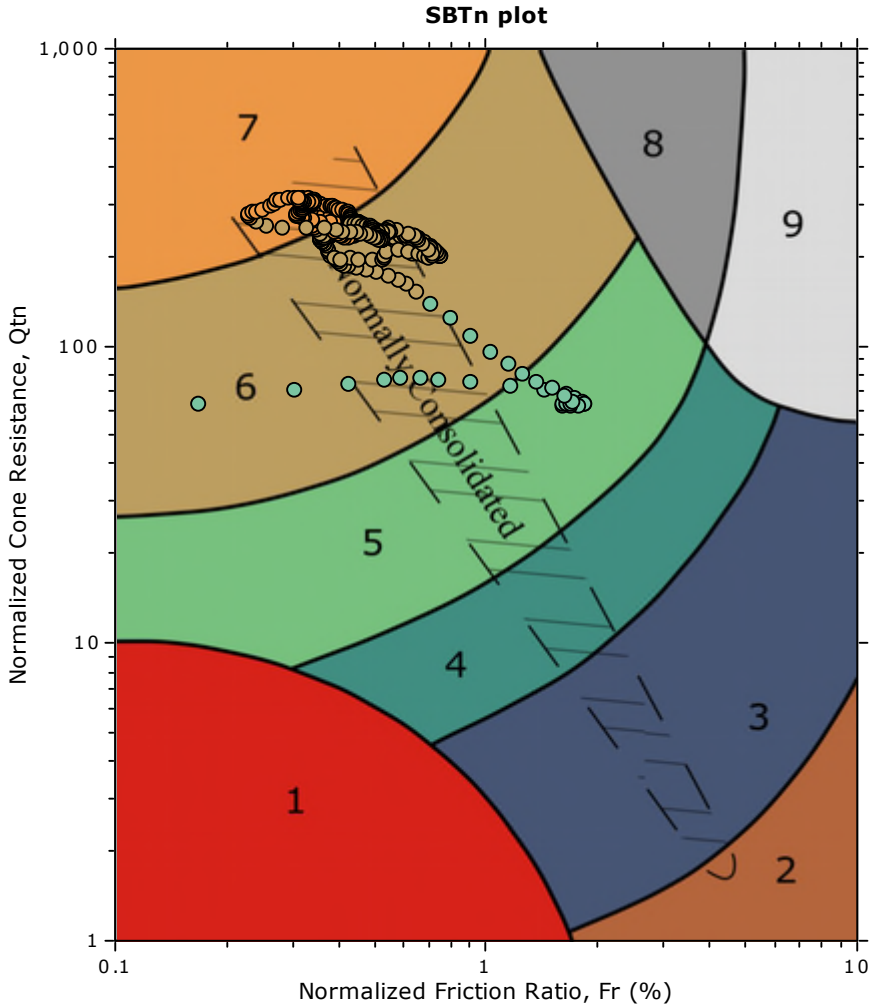
Description	qt (MPa)	Ksbt (m/s)	N60	Es (MPa)	Dr	Phi (°)	M (MPa)	Go (MPa)	Su (kPa)	Su ratio	OCR	Gamma (kN/m³)
0.01 Sand & silty sand	5.1	1.23E-4	12.8	39.8	52.0	37.8	40.4	45.7	-	-	-	17.3
0.46 Sand	20.1	1.22E-3	34.0	73.1	97.3	45.1	91.6	91.6	-	-	-	19.3
0.83 Sand	23.8	1.85E-3	38.7	79.3	100.0	46.3	99.4	99.4	-	-	-	19.5

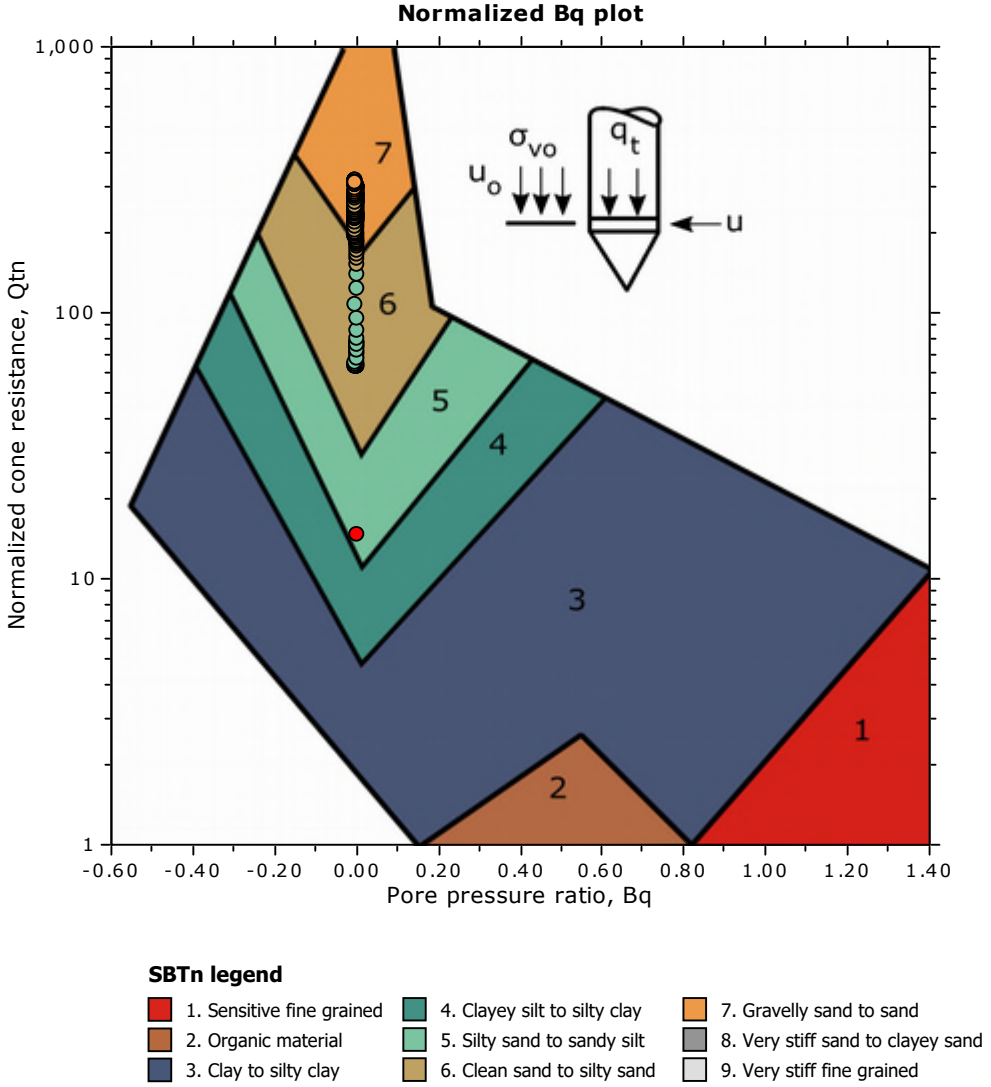


The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



SBT - Bq plots (normalized)





SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty clay	7. Gravelly sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to clayey sand
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

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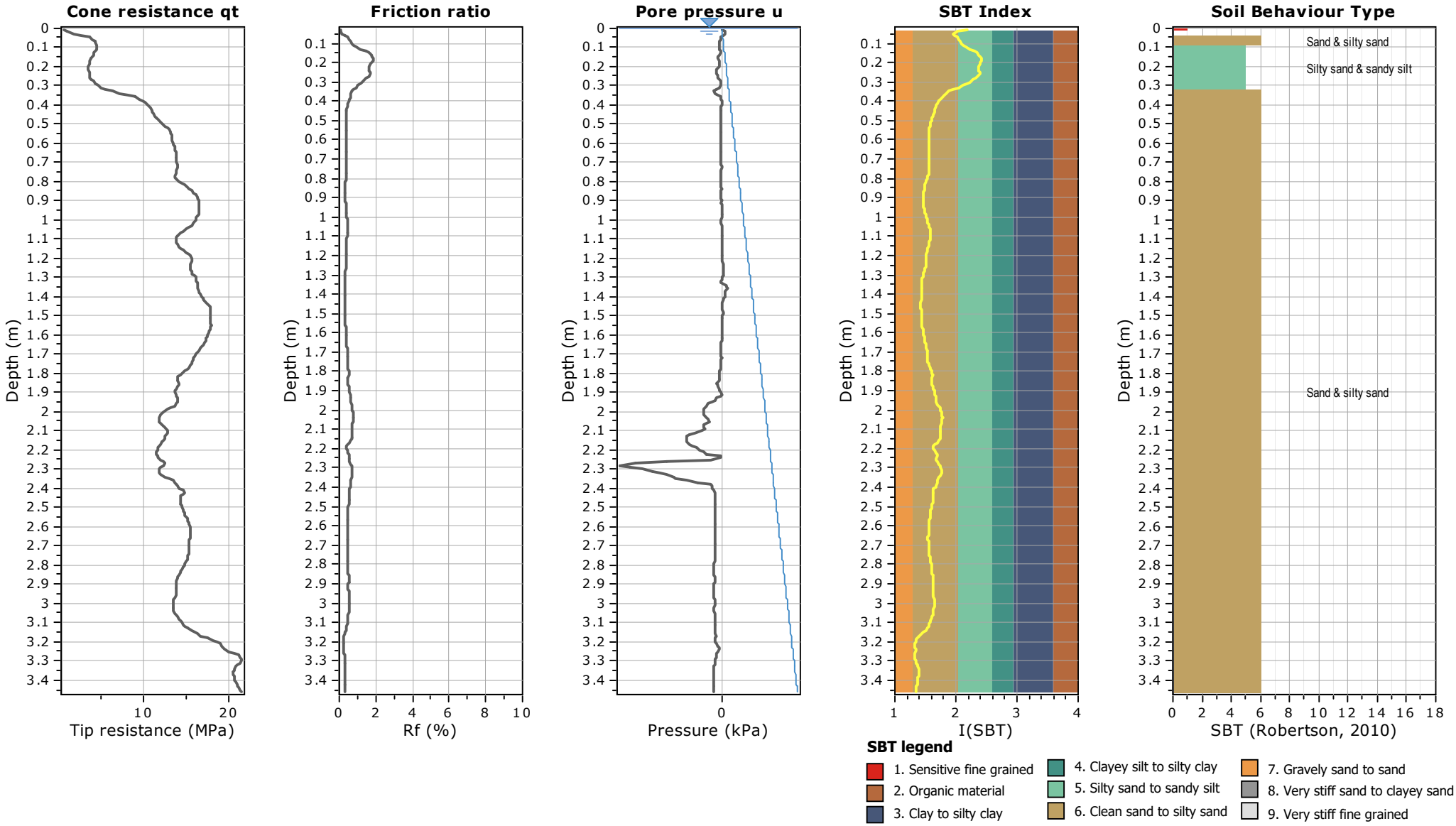
CPT: CPT-I
Total depth: 3.46 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



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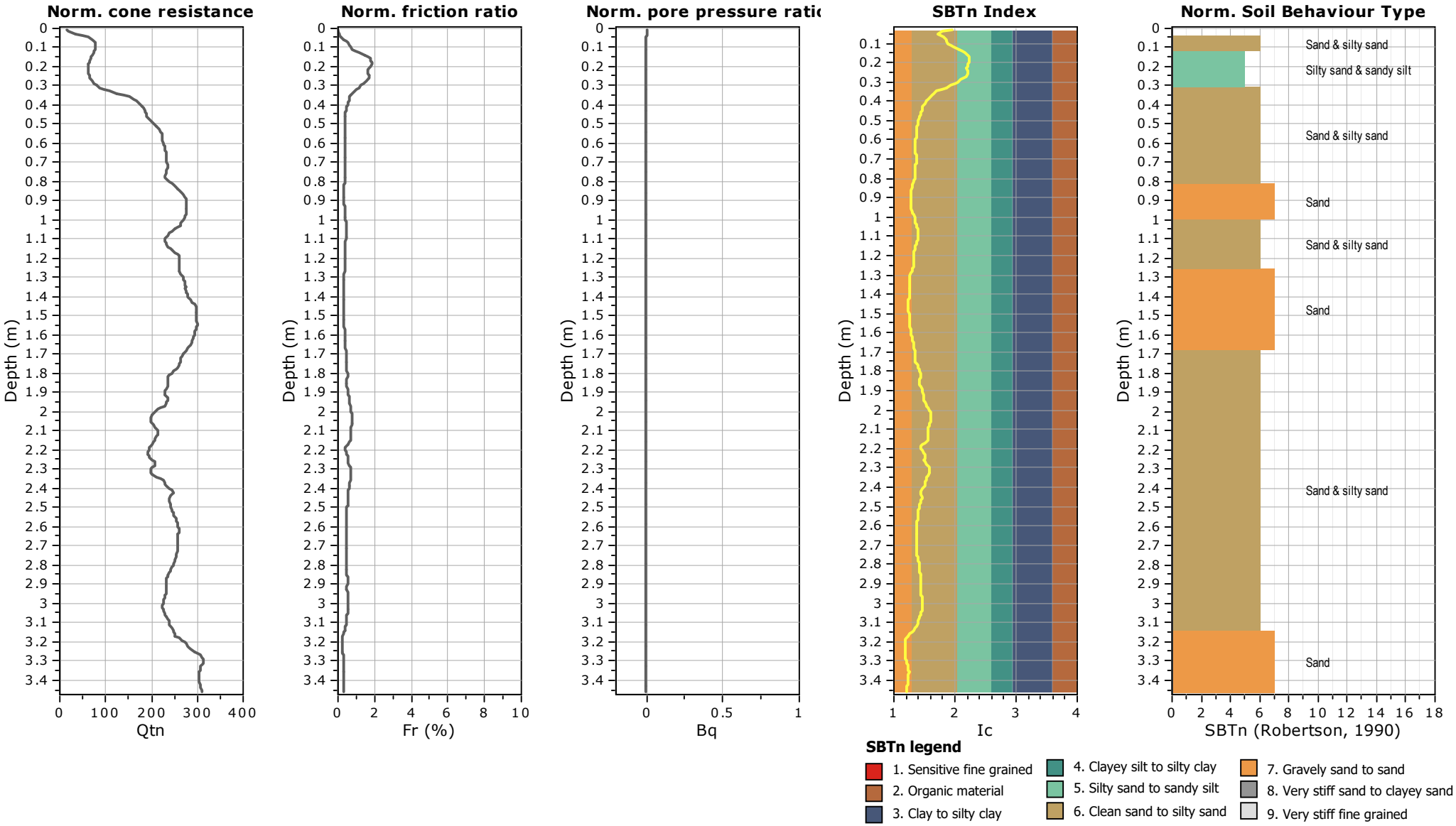
CPT: CPT-I
Total depth: 3.46 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



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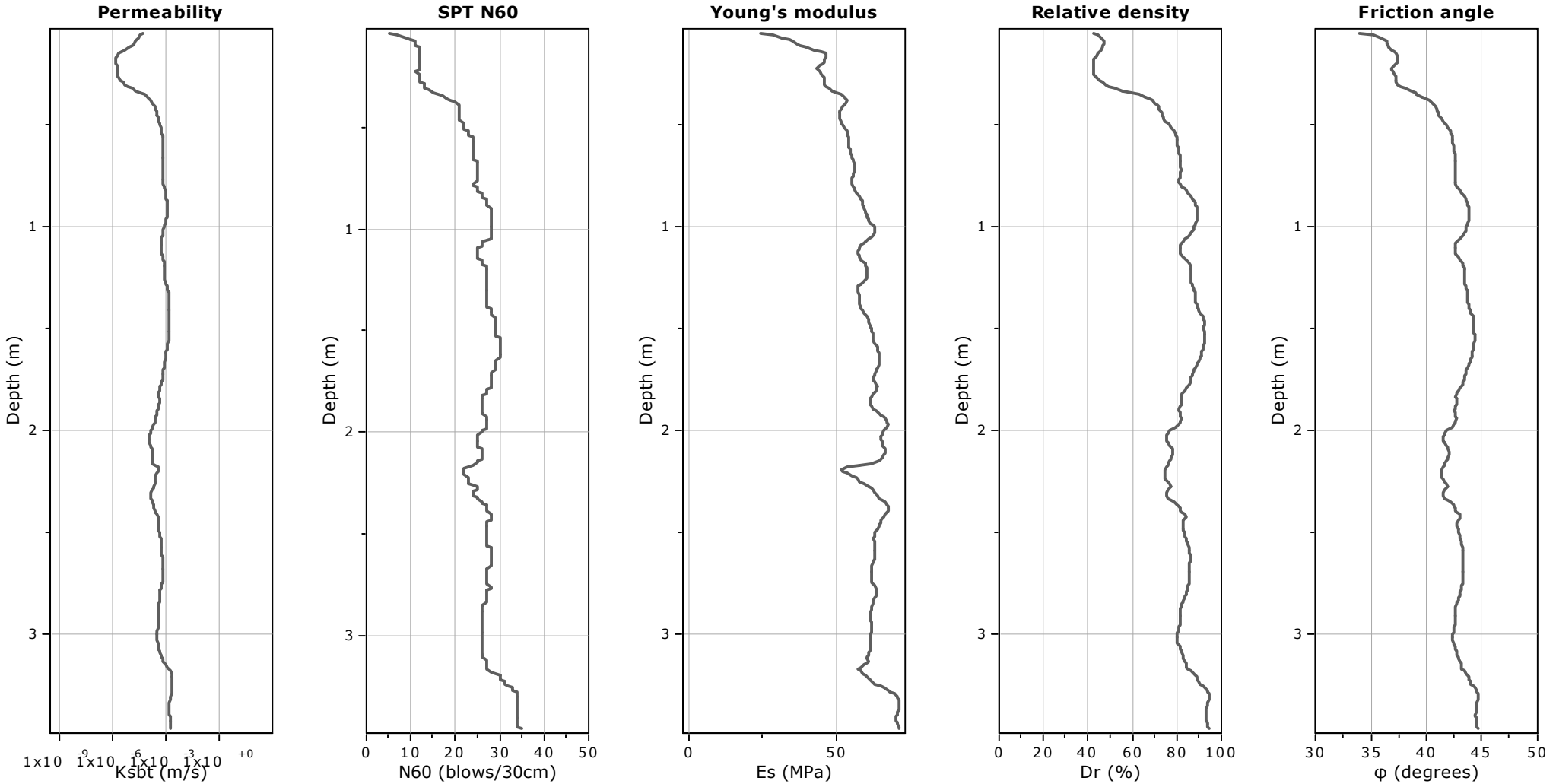
CPT: CPT-I
Total depth: 3.46 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



Calculation parameters

Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
Phi: Based on Kulhawy & Mayne (1990)
User defined estimation data

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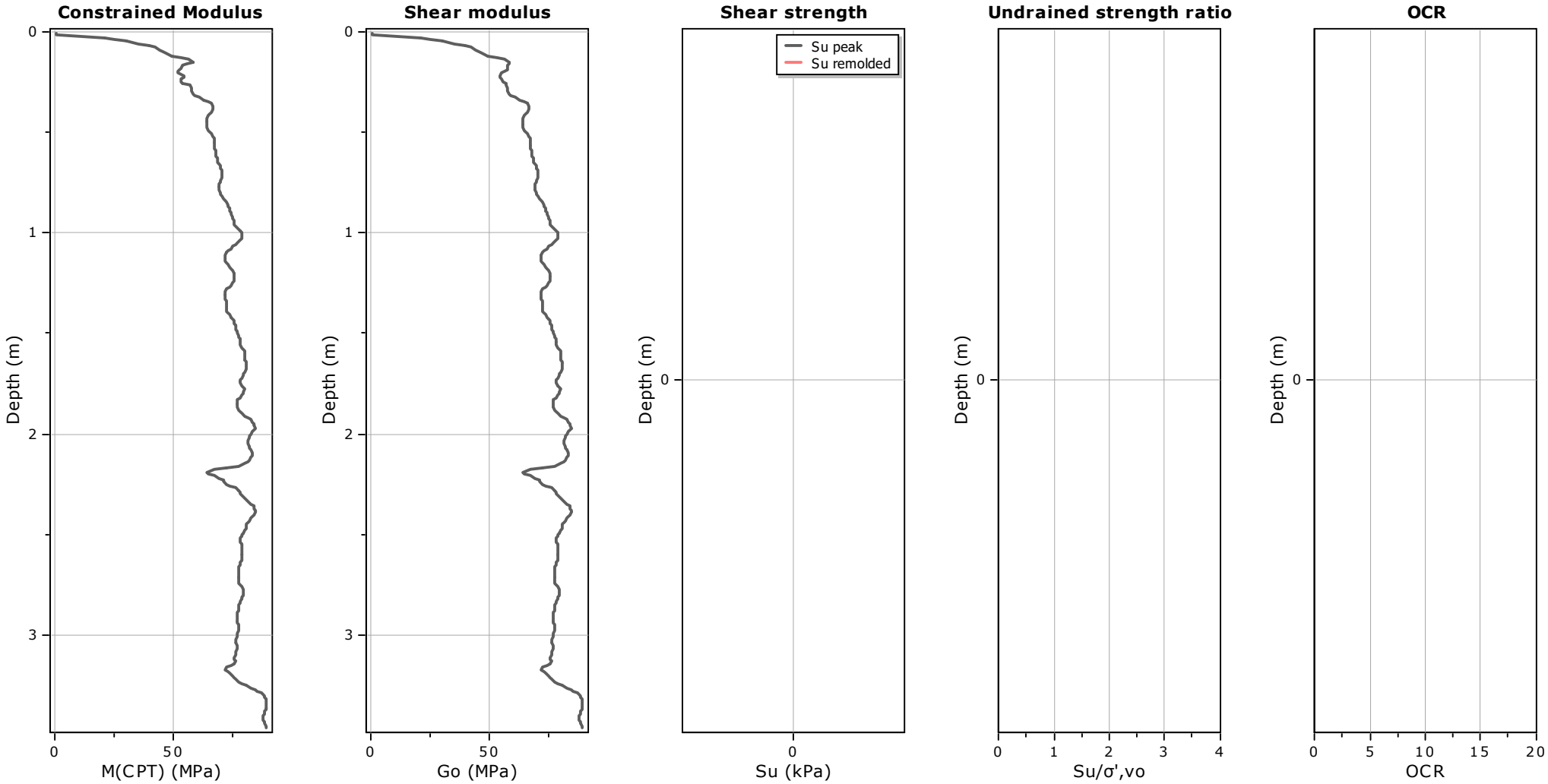
CPT: CPT-I
Total depth: 3.46 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



Calculation parameters

Constrained modulus: Based on variable *alpha* using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable *alpha* using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14
OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data

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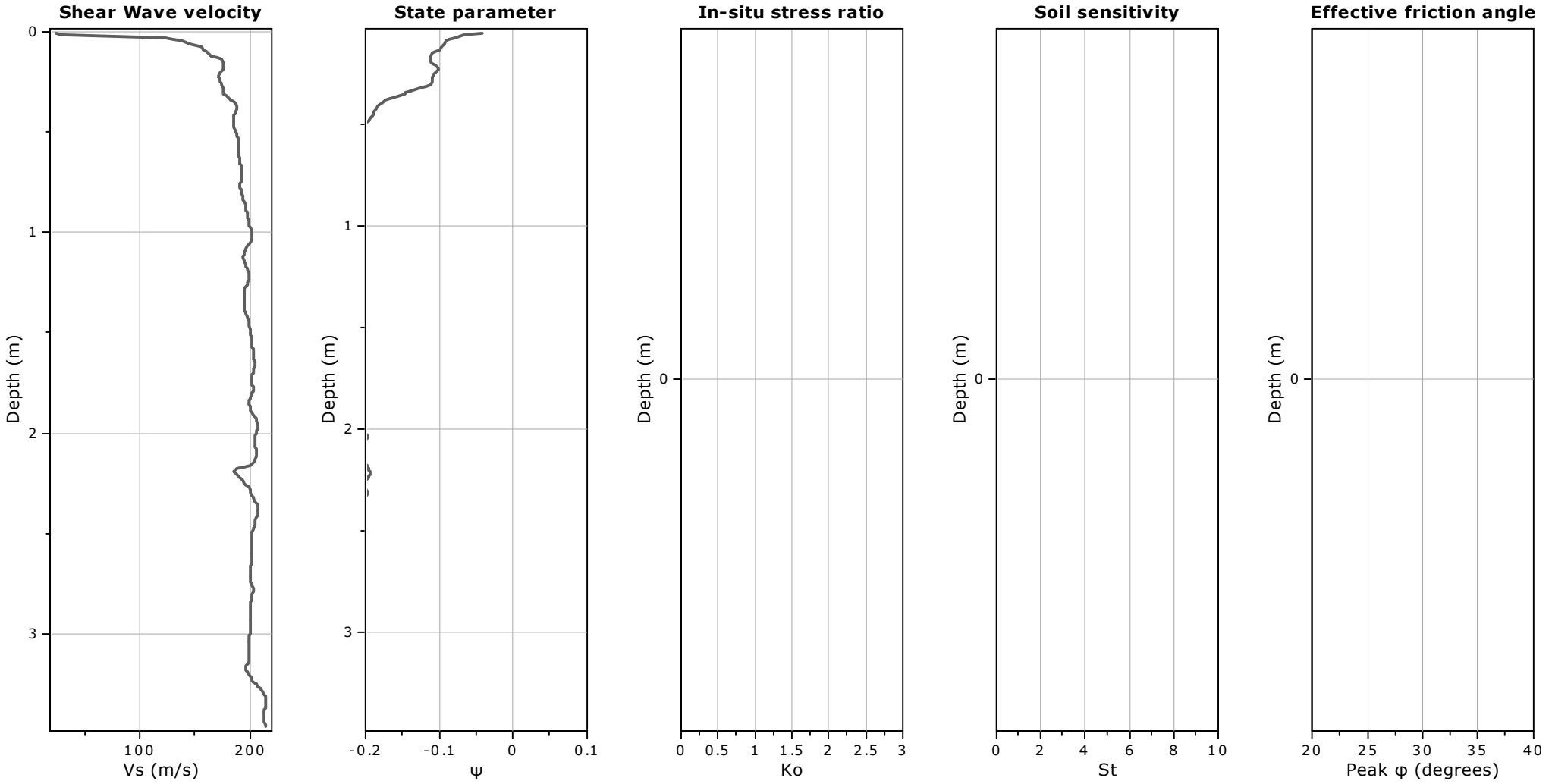
CPT: CPT-I
Total depth: 3.46 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



Calculation parameters

Soil Sensitivity factor, N_S: 7.00
User defined estimation data

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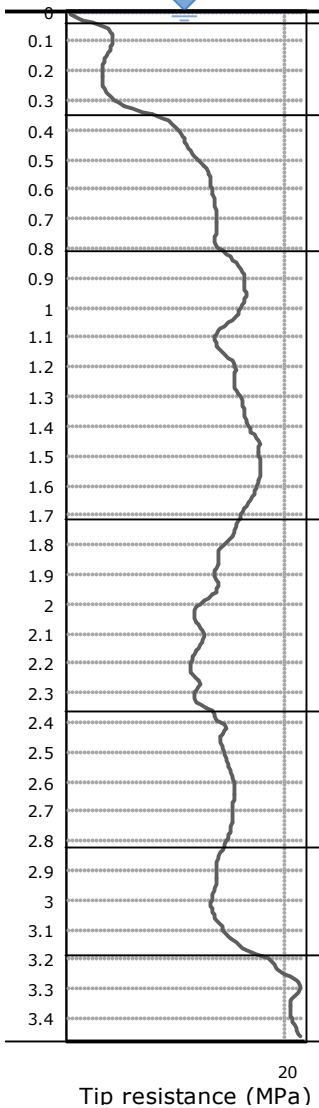
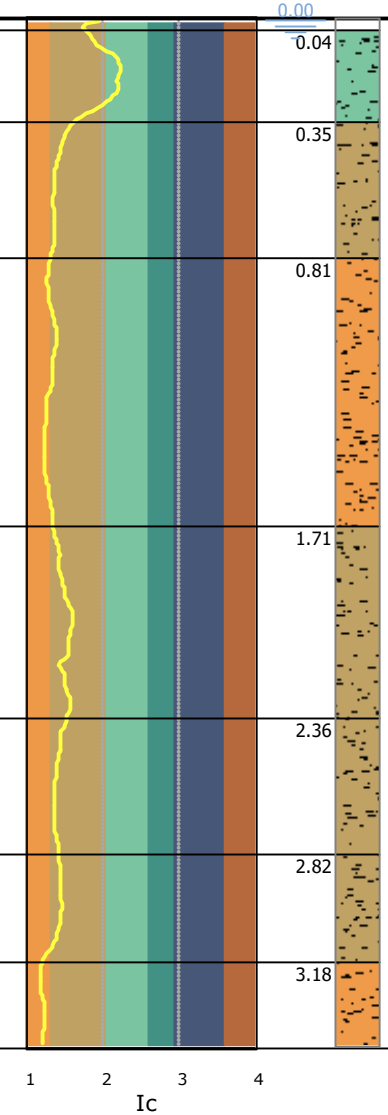
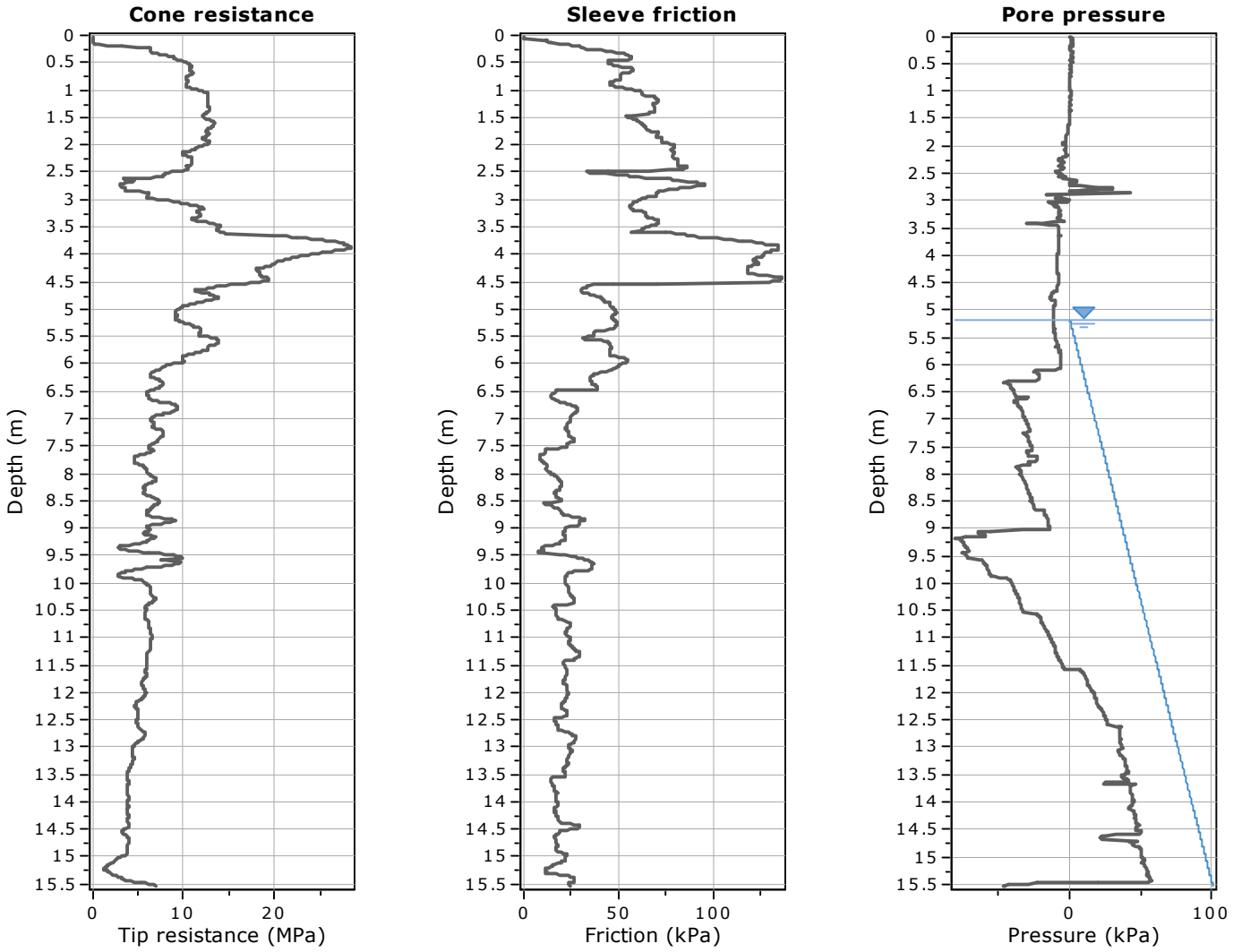
CPT: CPT-I
Total depth: 3.46 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:

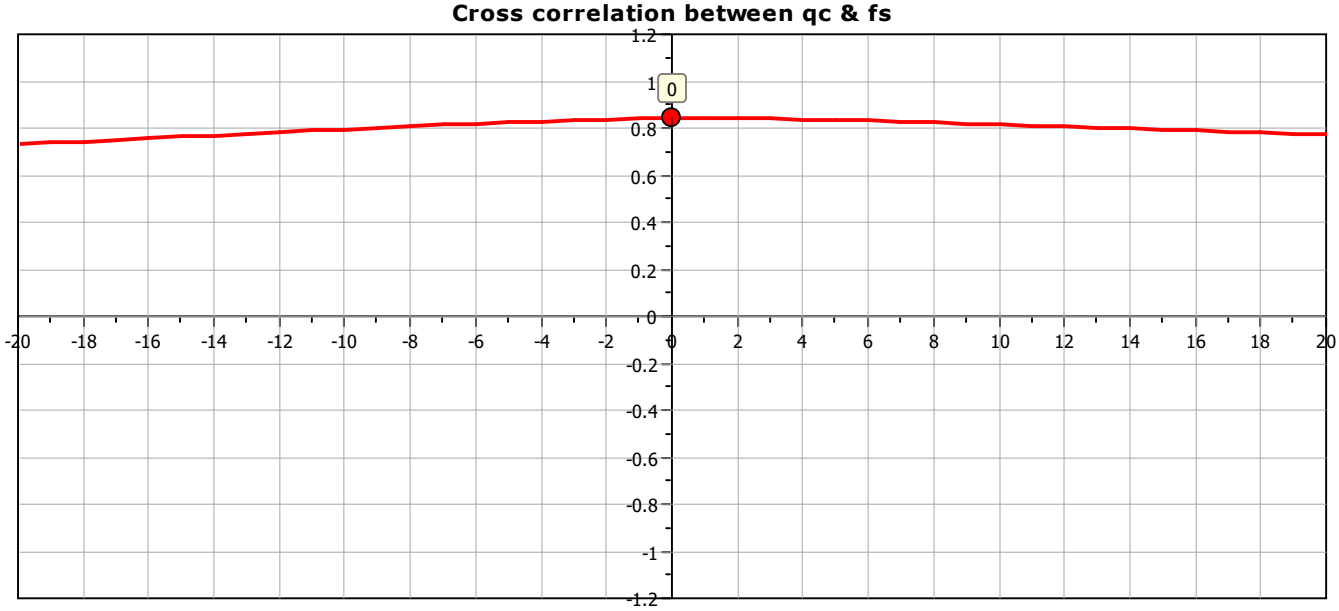




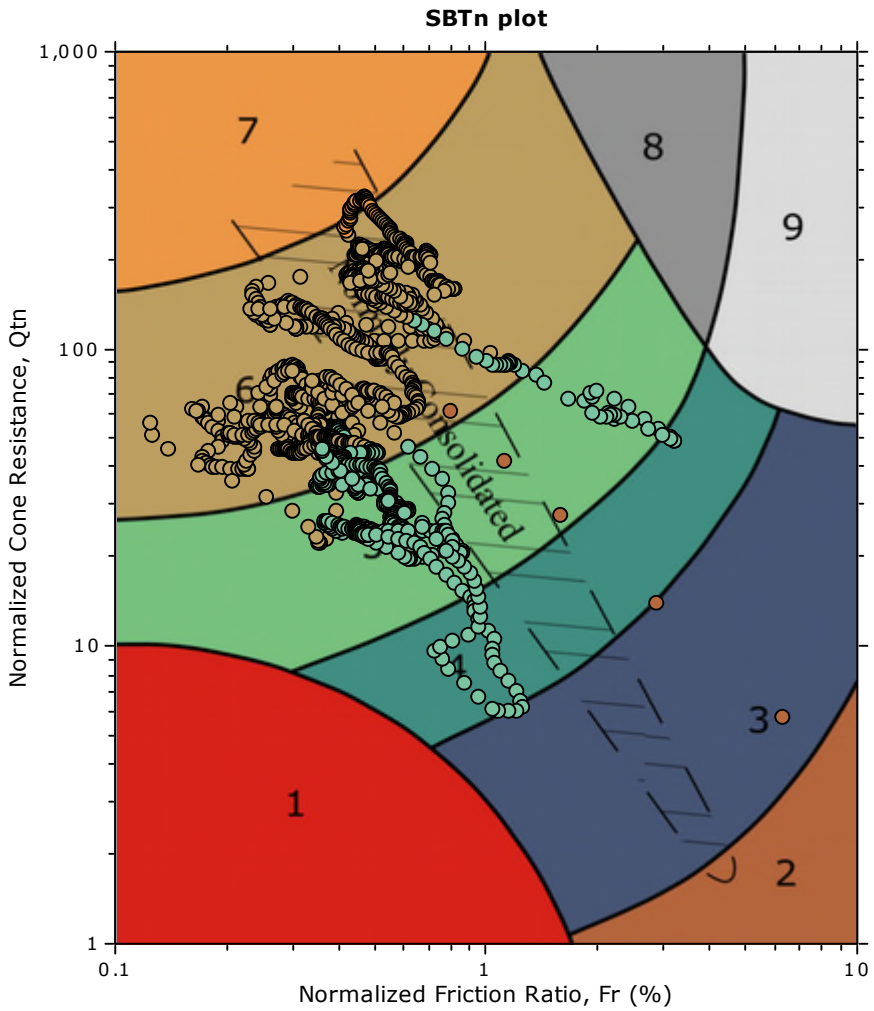
Depth (m)	Description	qt (MPa)	Ksbt (m/s)	N60	Es (MPa)	Dr	Phi (°)	M (MPa)	Go (MPa)	Su (kPa)	Su ratio	OCR	Gamma (kN/m³)
0.04	Silty sand & sandy silt	4.5	1.18E-5	12.3	42.7	46.3	37.1	51.6	52.6	-	-	-	17.9
0.35	Sand & silty sand	12.6	5.21E-4	23.2	53.8	77.6	41.9	67.5	67.5	-	-	-	18.5
0.81	Sand	16.2	1.04E-3	27.7	60.2	88.0	43.6	75.5	75.5	-	-	-	18.7
1.71	Sand & silty sand	13.2	2.86E-4	25.6	62.8	79.2	42.2	78.7	78.7	-	-	-	19.0
2.36	Sand & silty sand	14.9	4.86E-4	27.3	63.5	84.3	43.1	79.5	79.5	-	-	-	19.0
2.82	Sand & silty sand	14.3	5.18E-4	26.3	61.0	82.0	42.7	76.5	76.5	-	-	-	18.8
3.18	Sand	20.3	1.88E-3	32.8	67.4	92.4	44.3	84.5	84.5	-	-	-	18.8

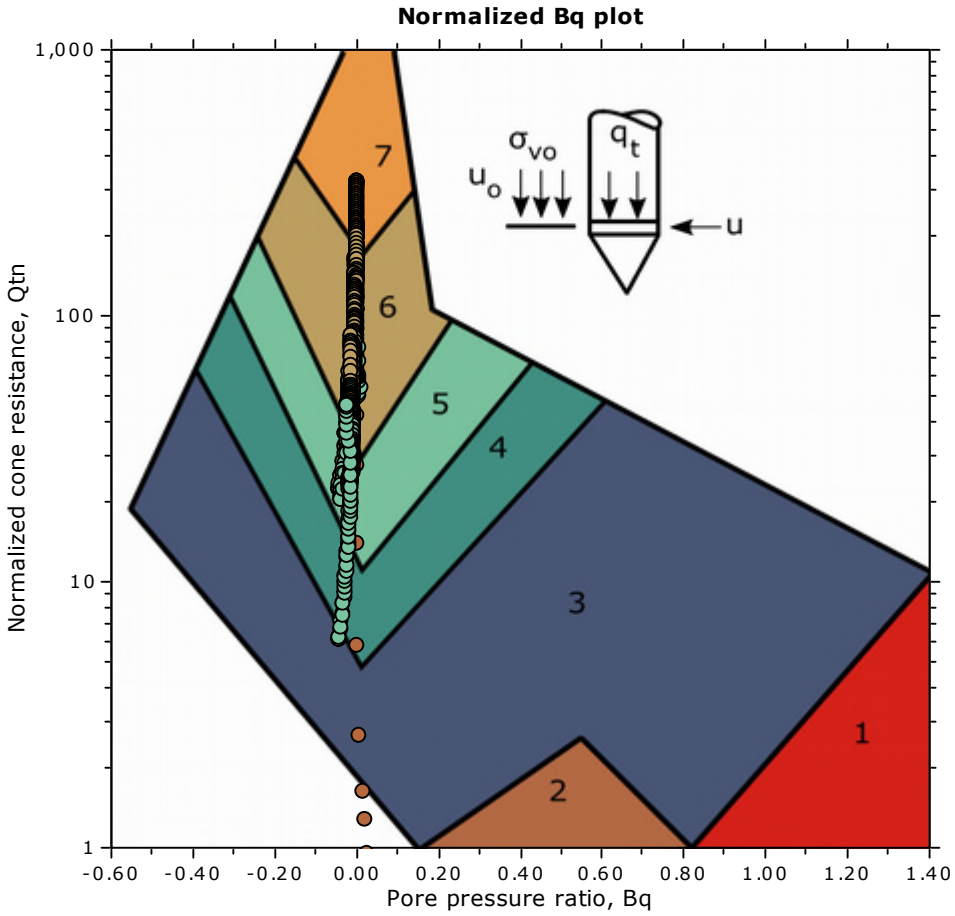


The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



SBT - Bq plots (normalized)





SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty clay	7. Gravelly sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to clayey sand
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

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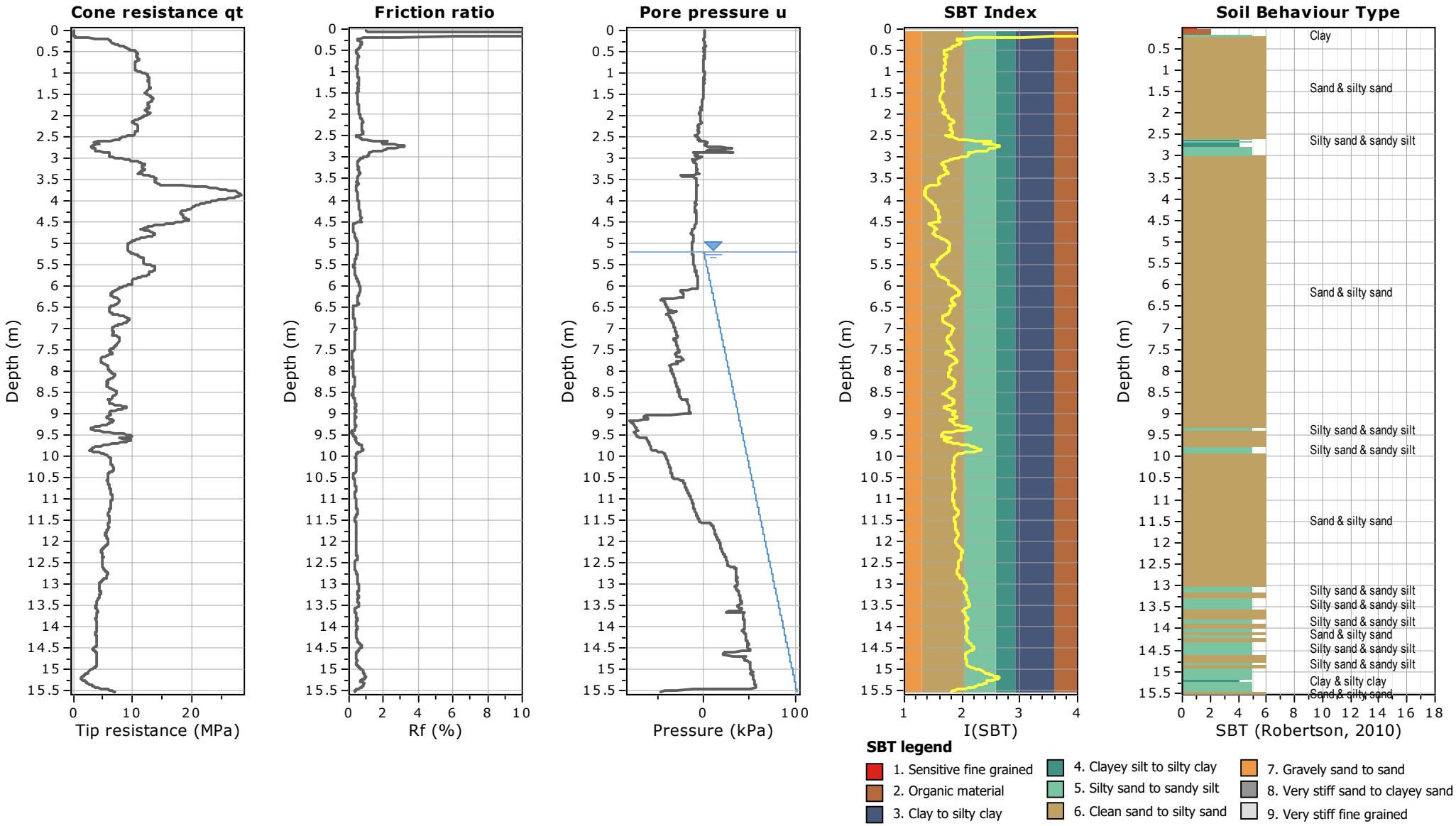
CPT: CPT-L
Total depth: 15.54 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



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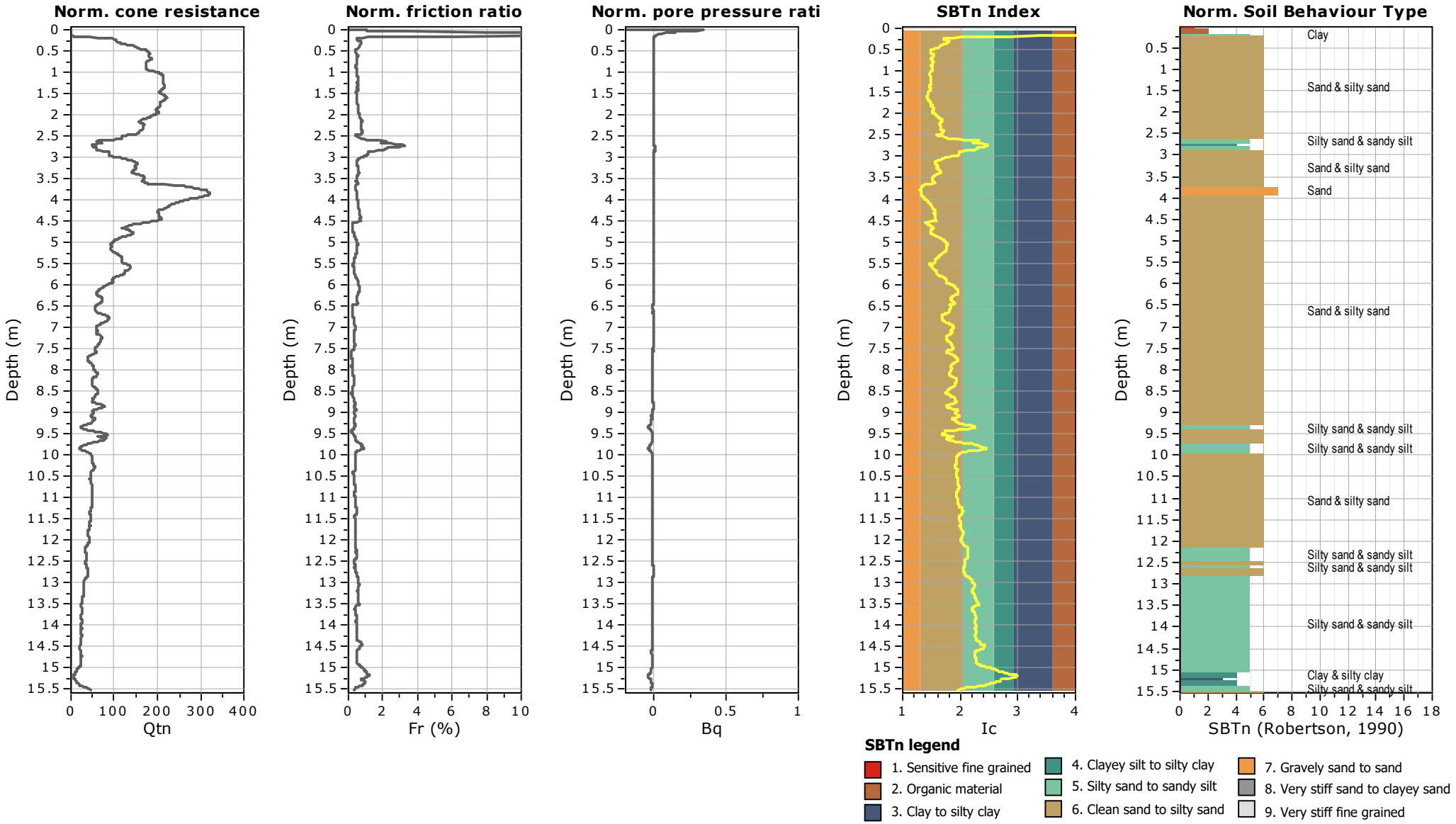
CPT: CPT-L
Total depth: 15.54 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



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CPT: CPT-L
Total depth: 15.54 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
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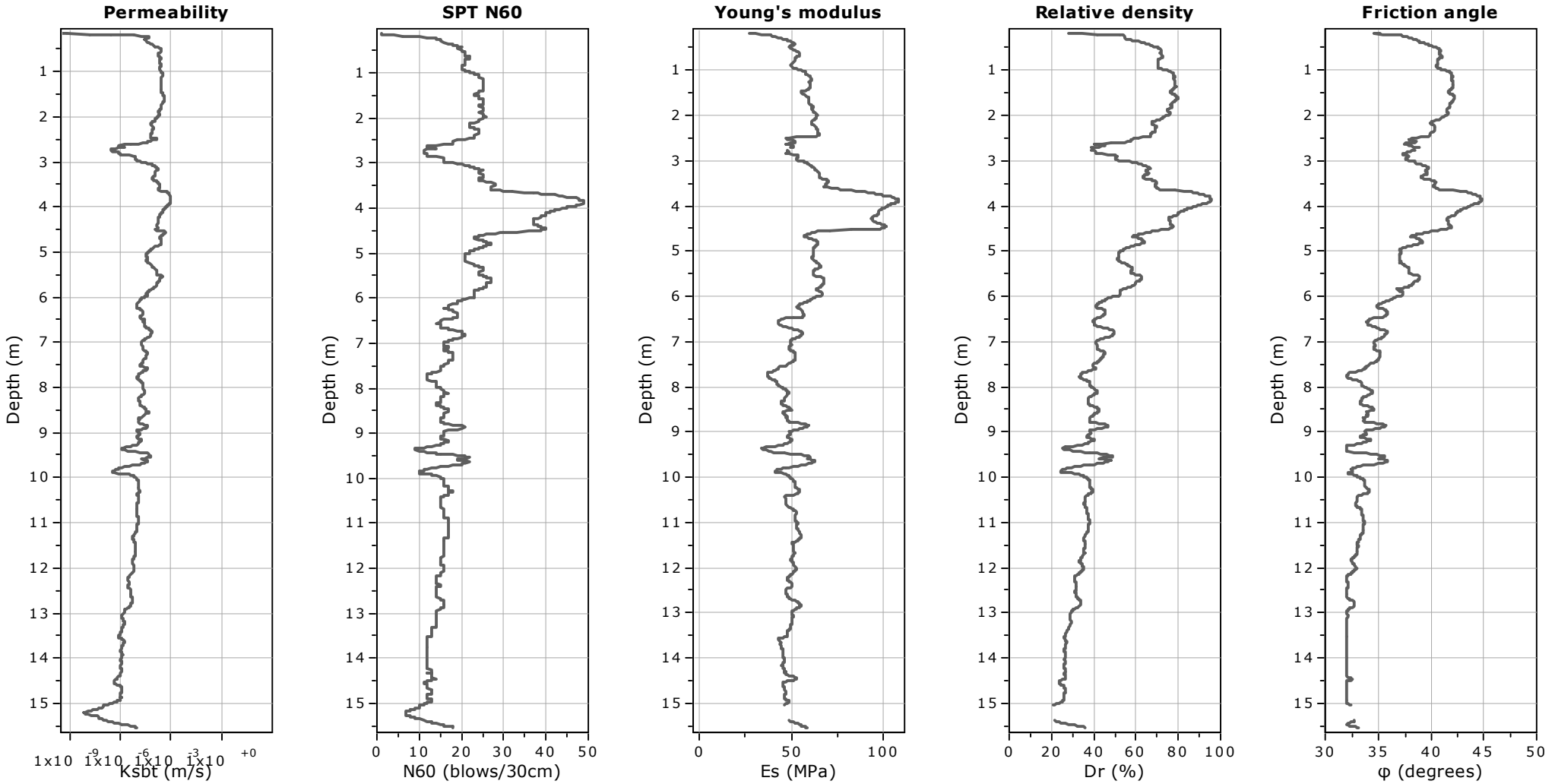
Project:
Location:



Calculation parameters

Permeability: Based on SBT_n
SPT N_{60}: Based on I_c and q_t
Young's modulus: Based on variable alpha using I_c (Robertson, 2009)
Relative density constant, C_{Dr}: 350.0
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CPT: CPT-L
Total depth: 15.54 m, Date: 14/09/2021
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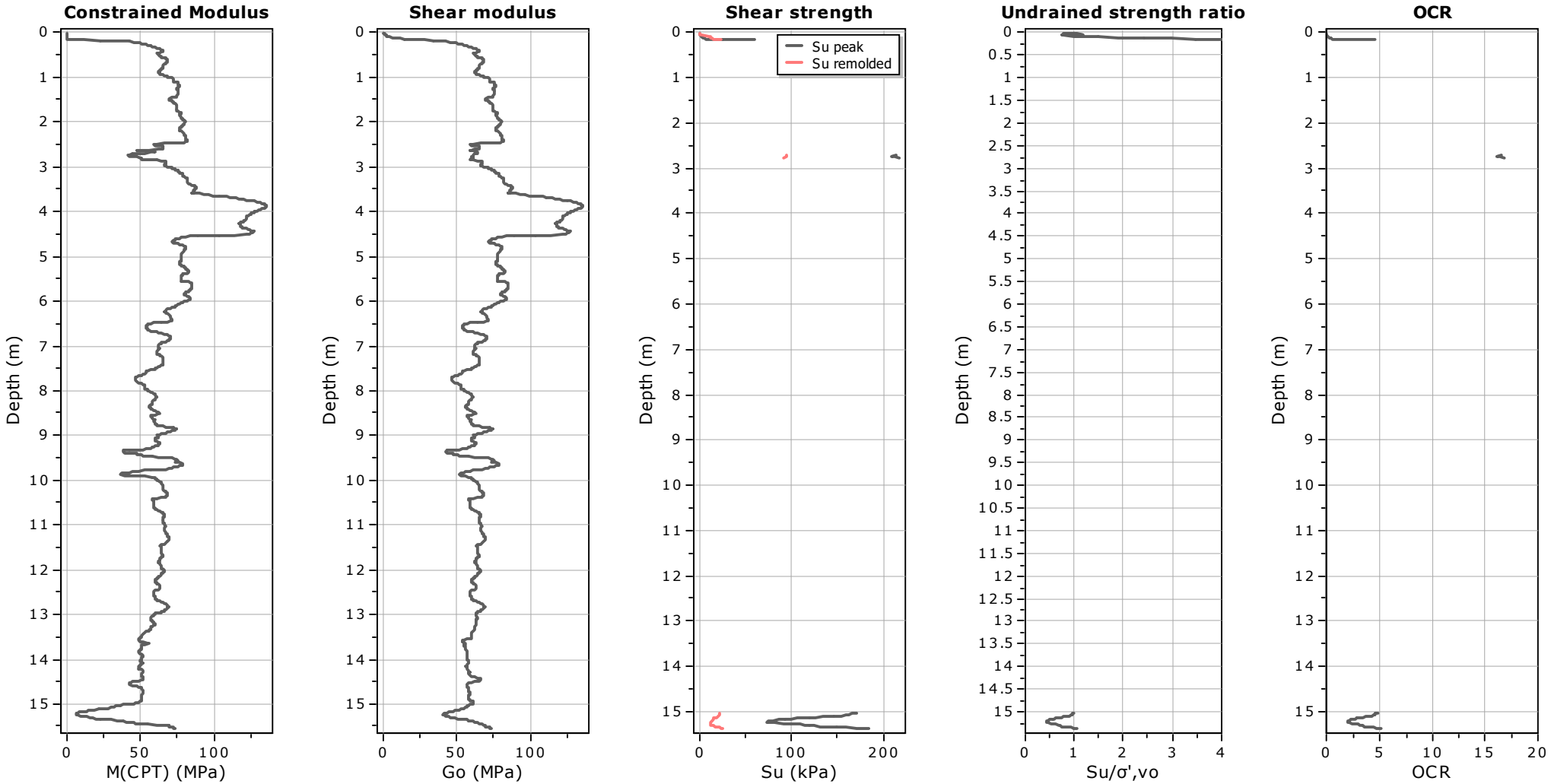
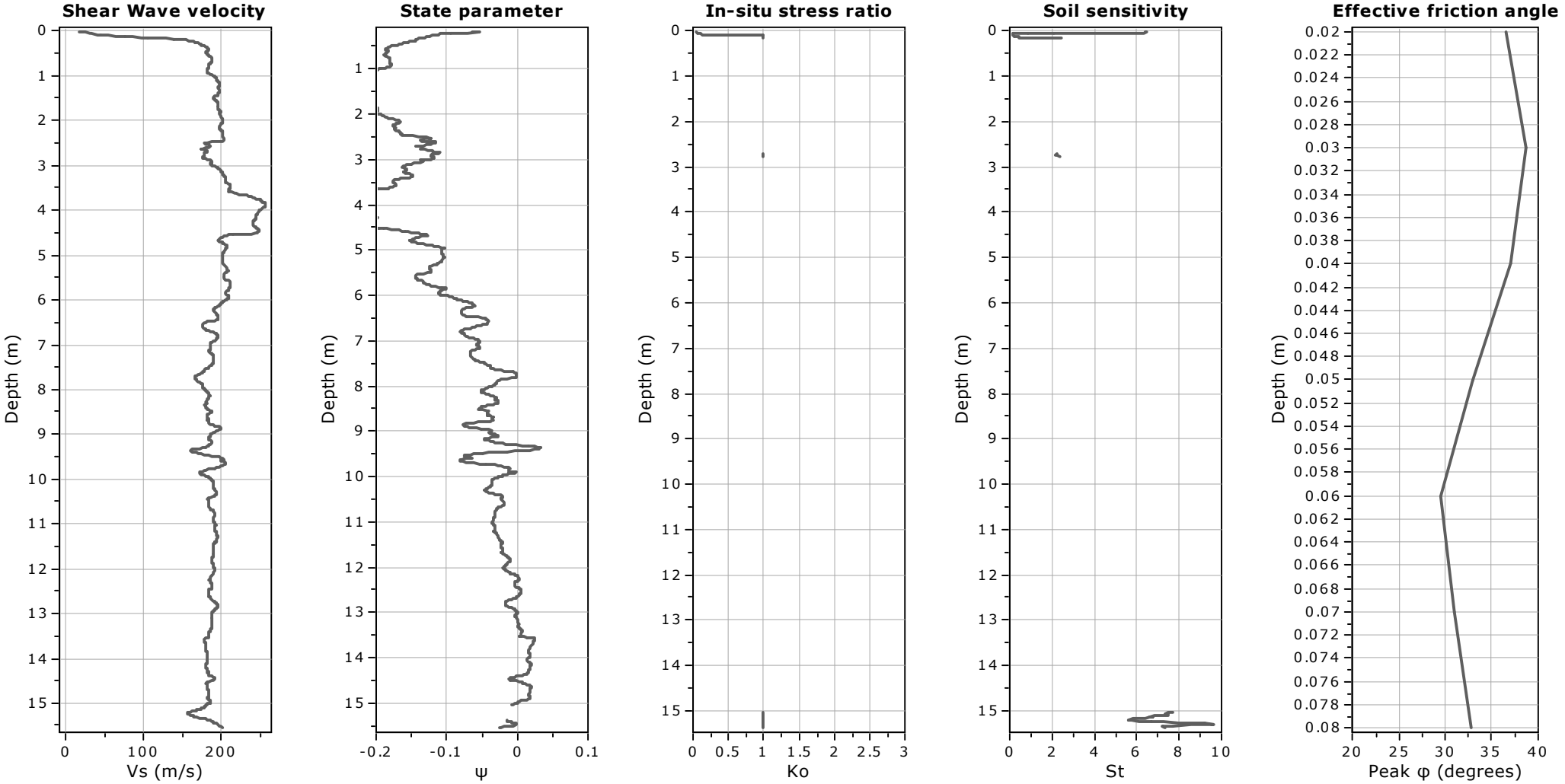


Calculation parameters

Constrained modulus: Based on variable *alpha* using I_c and Q_{tn} (Robertson, 2009)
Go: Based on variable *alpha* using I_c (Robertson, 2009)
Undrained shear strength cone factor for clays, N_{kt}: 14

OCR factor for clays, N_{kt}: 0.33
User defined estimation data
Flat Dilatometer Test data



Calculation parameters

Soil Sensitivity factor, N_S: 7.00

User defined estimation data

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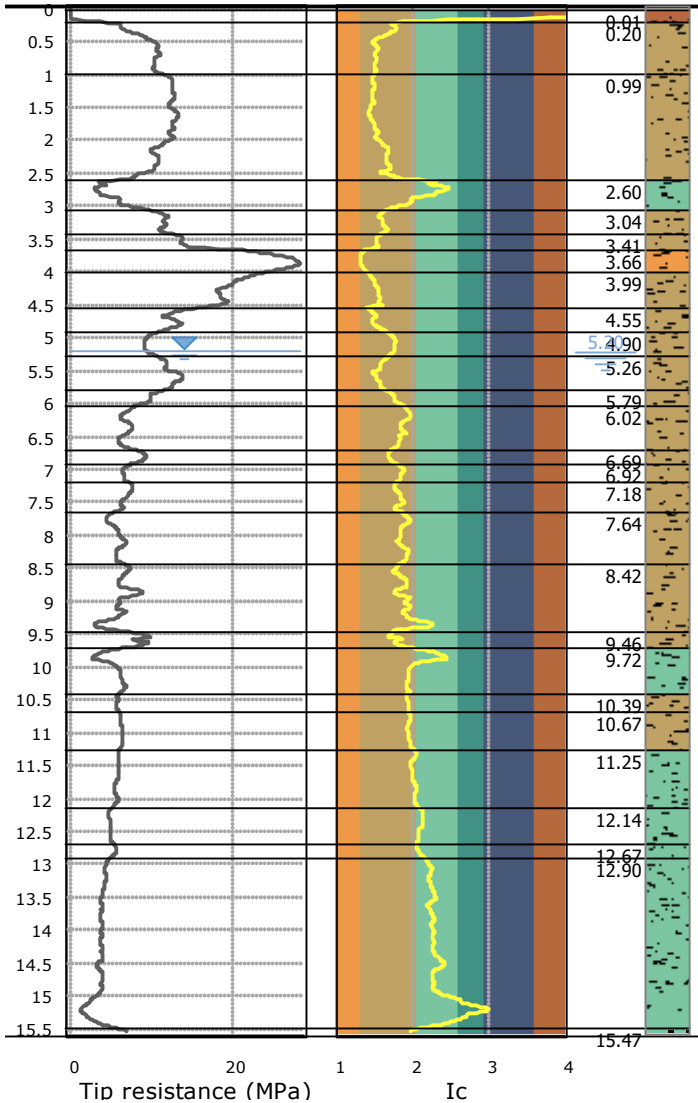
CPT: CPT-L
Total depth: 15.54 m, Date: 14/09/2021
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type:
Cone Operator:

Project:
Location:



Depth (m)	Description	qt (MPa)	Ksbt (m/s)	N60	Es (MPa)	Dr	Phi (°)	M (MPa)	Go (MPa)	Su (kPa)	Su ratio	OCR	Gamma (kN/m³)
0.01	Organic soil	0.5	1.32E-6	3.8	-	-	-	6.0	12.7	7.6	0.1	0.6	14.9
0.20	Sand & silty sand	9.5	1.71E-4	19.3	49.8	67.1	40.0	62.4	62.4	-	-	-	18.3
0.99	Sand & silty sand	11.8	2.08E-4	23.6	59.7	73.4	41.1	74.8	74.8	-	-	-	18.8
2.60	Silty sand & sandy silt	5.0	7.38E-6	14.2	51.2	47.1	37.9	57.9	63.8	-	-	-	18.5
3.04	Sand & silty sand	11.4	1.10E-4	23.9	63.1	64.5	39.4	79.1	79.1	-	-	-	18.7
3.41	Sand & silty sand	14.4	2.09E-4	28.5	71.2	70.3	40.6	89.2	89.2	-	-	-	18.9
3.66	Sand	26.2	8.03E-4	45.8	101.2	92.0	44.3	126.9	126.9	-	-	-	19.7
3.99	Sand & silty sand	19.7	2.42E-4	38.8	95.9	78.7	42.1	120.2	120.2	-	-	-	19.6
4.55	Sand & silty sand	12.9	2.64E-4	25.2	61.5	62.1	38.8	77.0	77.0	-	-	-	18.1
4.90	Sand & silty sand	9.6	4.72E-5	21.8	61.9	52.8	37.1	77.6	77.6	-	-	-	18.3
5.26	Sand & silty sand	12.4	1.56E-4	25.3	64.9	59.1	38.2	81.4	81.4	-	-	-	18.3
5.79	Sand & silty sand	10.0	4.73E-5	23.0	65.0	52.6	37.2	81.4	81.4	-	-	-	18.4
6.02	Sand & silty sand	6.9	1.91E-5	17.3	52.5	43.0	35.2	65.7	65.7	-	-	-	17.6
6.69	Sand & silty sand	8.7	5.85E-5	19.5	53.7	48.1	35.5	67.3	67.3	-	-	-	17.5
6.92	Sand & silty sand	6.7	2.12E-5	16.4	49.6	41.9	34.7	62.1	62.1	-	-	-	17.4
7.18	Sand & silty sand	7.0	2.86E-5	16.6	48.7	42.3	34.6	61.1	61.1	-	-	-	17.2
7.64	Sand & silty sand	5.7	1.77E-5	14.3	43.3	37.7	33.4	54.3	54.3	-	-	-	16.7
8.42	Sand & silty sand	6.2	1.84E-5	15.6	47.7	38.3	33.8	59.5	59.7	-	-	-	17.0
9.46	Sand & silty sand	8.6	3.68E-5	20.0	58.0	45.1	35.2	72.7	72.7	-	-	-	17.7
9.72	Silty sand & sandy silt	5.5	7.72E-6	15.0	50.0	34.9	33.4	60.1	62.7	-	-	-	17.3
10.39	Sand & silty sand	5.8	1.11E-5	15.1	47.4	36.1	33.0	59.4	59.4	-	-	-	16.9
10.67	Sand & silty sand	6.3	1.00E-5	16.6	52.5	37.3	33.5	65.8	65.8	-	-	-	17.3
11.25	Silty sand & sandy silt	5.8	6.50E-6	15.8	51.7	34.9	32.9	64.8	64.8	-	-	-	17.3
12.14	Silty sand & sandy silt	4.9	3.60E-6	14.2	48.4	31.4	32.1	60.6	60.6	-	-	-	17.0
12.67	Silty sand & sandy silt	5.5	4.36E-6	15.7	52.9	33.3	32.6	66.3	66.3	-	-	-	17.3
12.90	Silty sand & sandy silt	3.7	9.86E-7	12.1	47.4	26.6	32.0	47.2	58.1	-	-	-	16.9
15.47	Silty sand & sandy silt	6.0	5.11E-6	16.7	56.2	33.0	32.5	70.0	70.5	-	-	-	17.3

Whangarei Laboratory
166 Bank Street
Whangarei
M: 027 656 5226
E: info@geocivil.co.nz

TEST REPORT

Lab Job No: 8020-1727

Your ref.: -

Date of Issue: 24/07/2020

Date of Re-Issue: -

Test Report No. W19-323

PROJECT: **The Landing**

CLIENT: Cook Costello
2 Norfolk St
Whangarei

ATTENTION: Mr Aaron Parker

TEST METHODS: Determination of pH(f) and pH(ox) in soil (Not accredited)
Ref: Acid sulphate Soils Laboratory Methods Guidelines - Dept Natural Resources, Queensland
Section H Field tests 1.2-1.3

SAMPLING METHOD: Hand sampled – SNA

TEST RESULTS: As per attached sheets

M. Adams
General Manager

S. Kokich
Supervisor

IANZ ACCREDITED LABORATORY
Tests indicated as not accredited are outside the scope of the laboratory's accreditation

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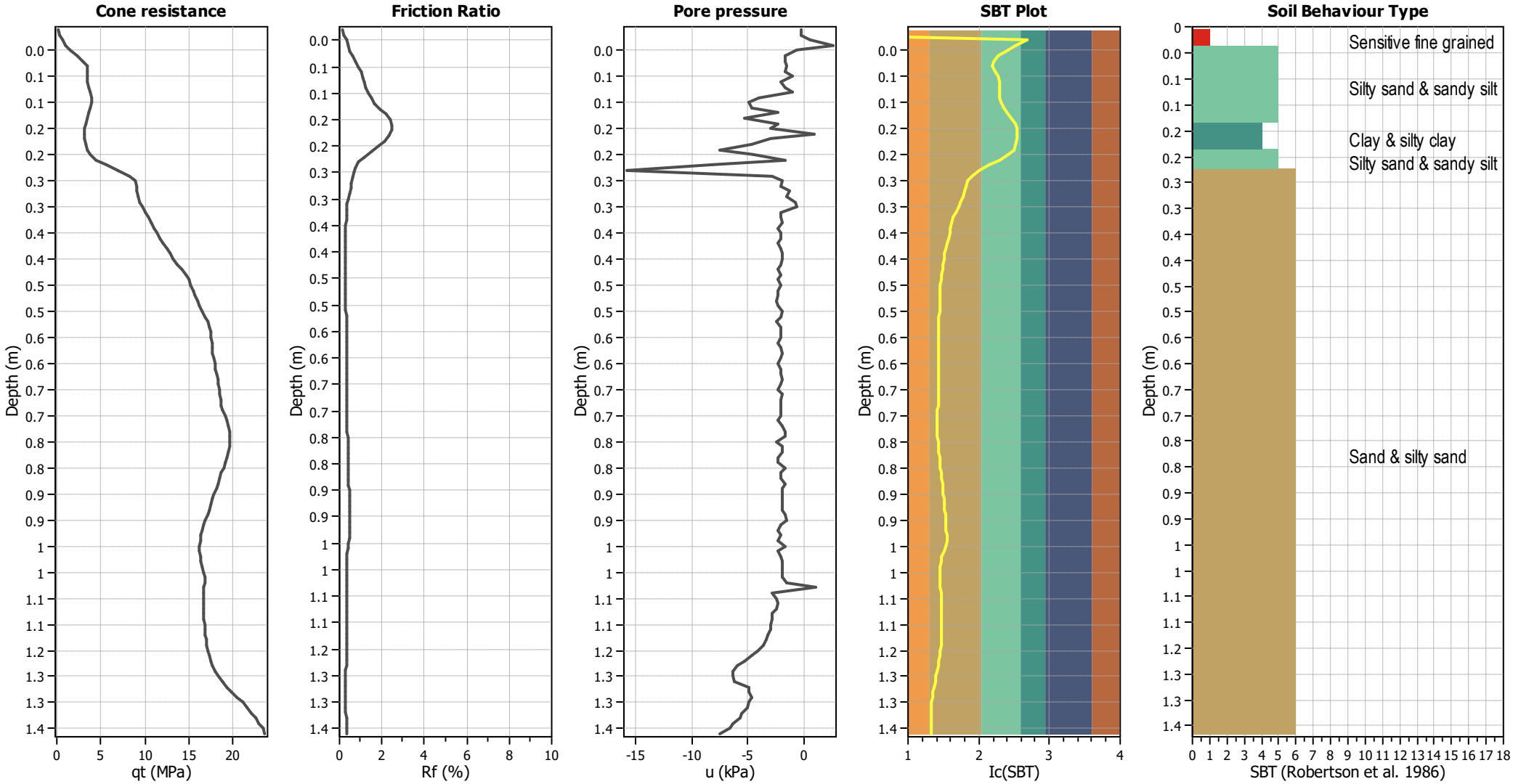
The Landing - Acid Sulphate Testing to invert of proposed infrastructure **Report:** W19-323 **Technician:** MA **Date:** 17/04/2019 **Page:** 2 of 2

						Test B				Test A				
Test #	Location	X Coord	Y Coord	Depth of Peat (to sand) (m)	Depth of sand to Invert (m)	Invert Level (RL)	pH(f)	pH(ox)	Reaction	1m above invert (RL)	pH(f)	pH(ox)	Reaction	Comments
1	Rd10 CH80	372313.83	916731.75	0.85	1.50	6.35	5.22	4.48	X	7.35	5.14	4.43	X	
2	Rd10 CH180	372313.86	916631.75	1.30	3.50	3.70	4.10	3.68	X	4.70	4.20	3.56	X	
3	Rd10 CH280	372313.89	916531.75	1.00	2.50	4.70	4.16	3.70	X	5.70	4.21	3.77	X	
4	Rd10 CH380	372315.55	916441.82	0.50	3.00	5.40	4.56	3.88	X	6.40	4.42	3.49	X	
5	Rd11 (Plover) CH70	372222.07	916671.37	0.80	1.50	6.00	4.32	3.97	X	7.00	4.36	3.71	X	
6	Rd13 CH20	372300.18	916387.73	1.30	1.90	5.90*	4.55	3.03	X	6.70	4.03	3.34	X	* not to depth
7	Rd13 CH120	372203.06	916393.58	0.20	1.80	6.30	4.35	3.93	X	7.30	4.03	3.51	X	
8	Rd14 CH20	372127.18	916468.27	0.20	2.50	6.00	3.52	2.92	X	6.60*	3.76	3.20	X	* not to depth (7.00 still peat)
9	Rd14 CH130	372046.72	916542.09	0.40	2.20	6.80	3.76	3.80	X	7.80	3.60	3.03	X	
10	Rd18 CH100	372215.69	916521.01	0.30	2.50	5.10	4.92	3.96	X	6.10	4.85	3.18	X	

Reference Method: Acid sulphate Soils Laboratory Methods Guidelines - Dept Natural Resources, Queensland: Section H: Field tests 1.2-1.3.

Appendix 5 – Liquefaction Results

CPT basic interpretation plots



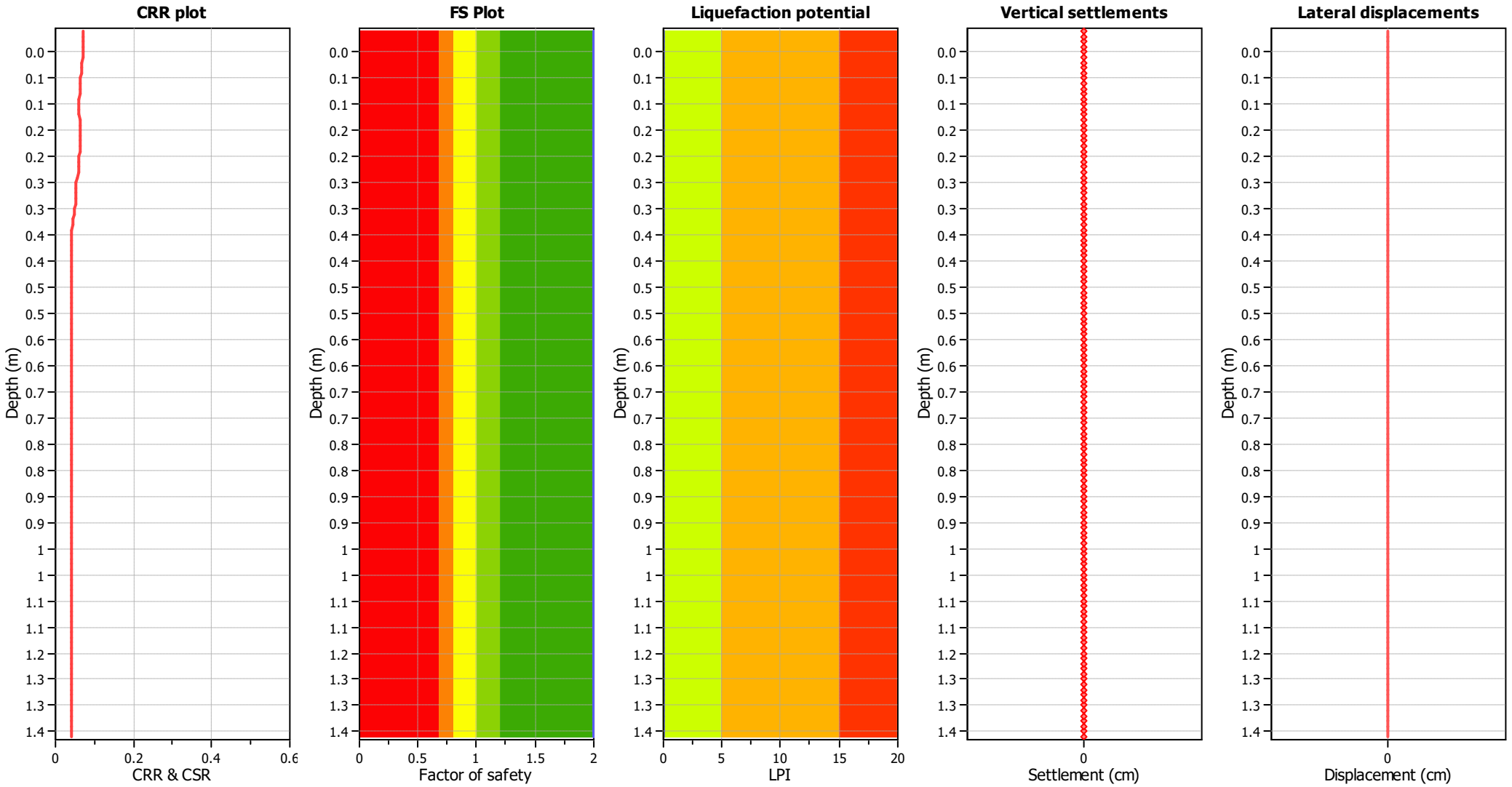
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.13	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.13	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

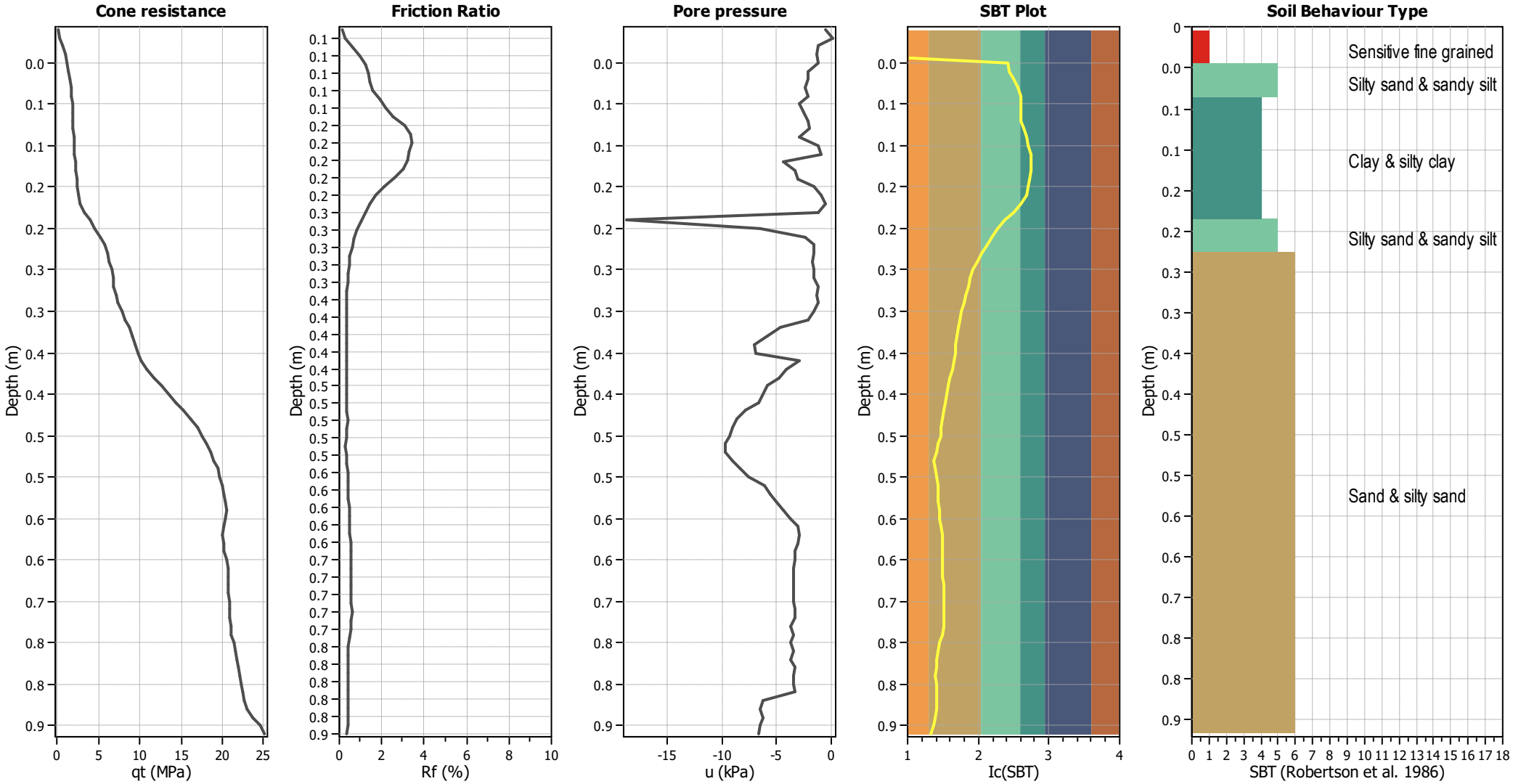
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

CPT basic interpretation plots



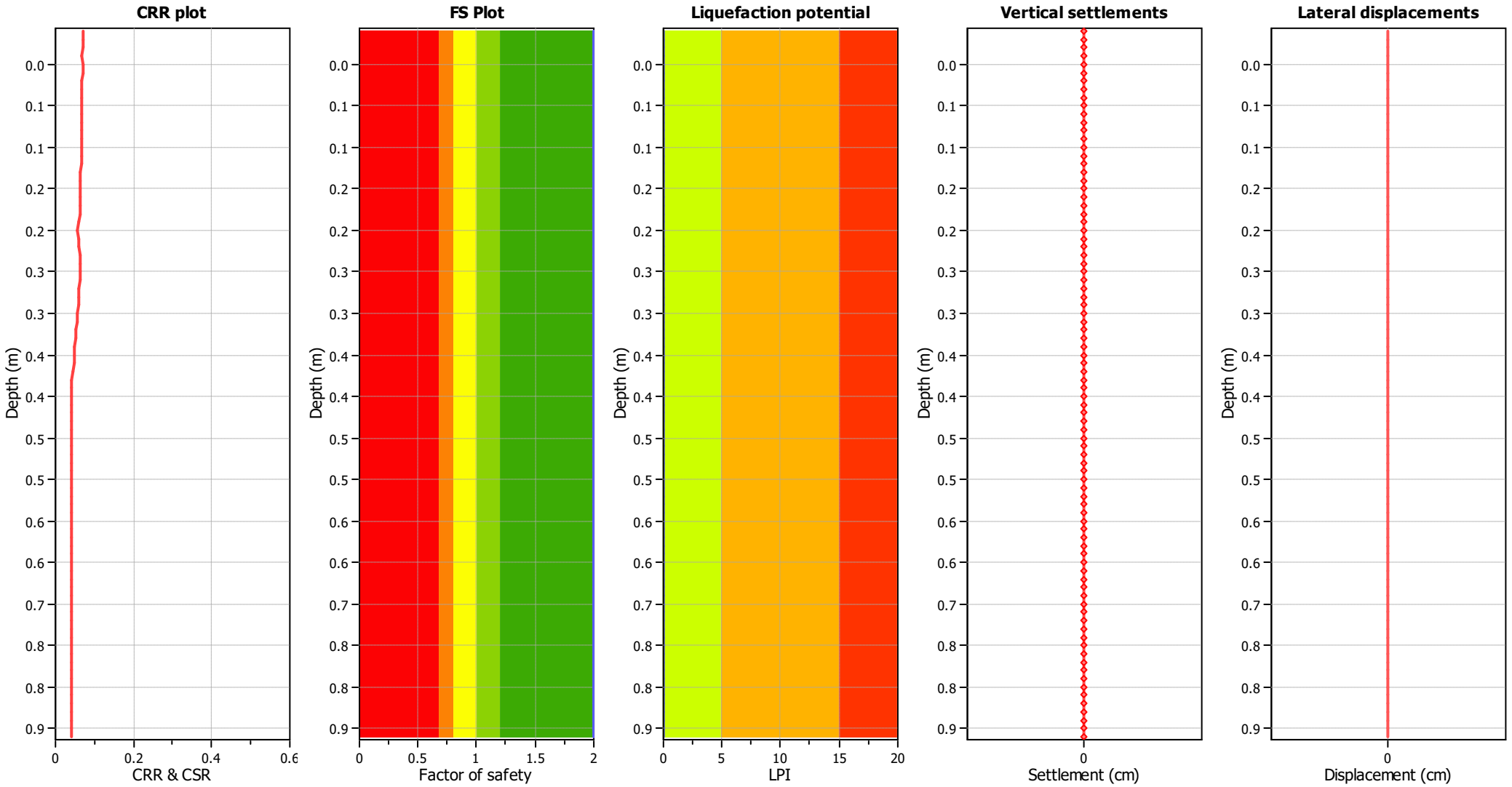
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.13	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
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Peak ground acceleration:	0.13	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

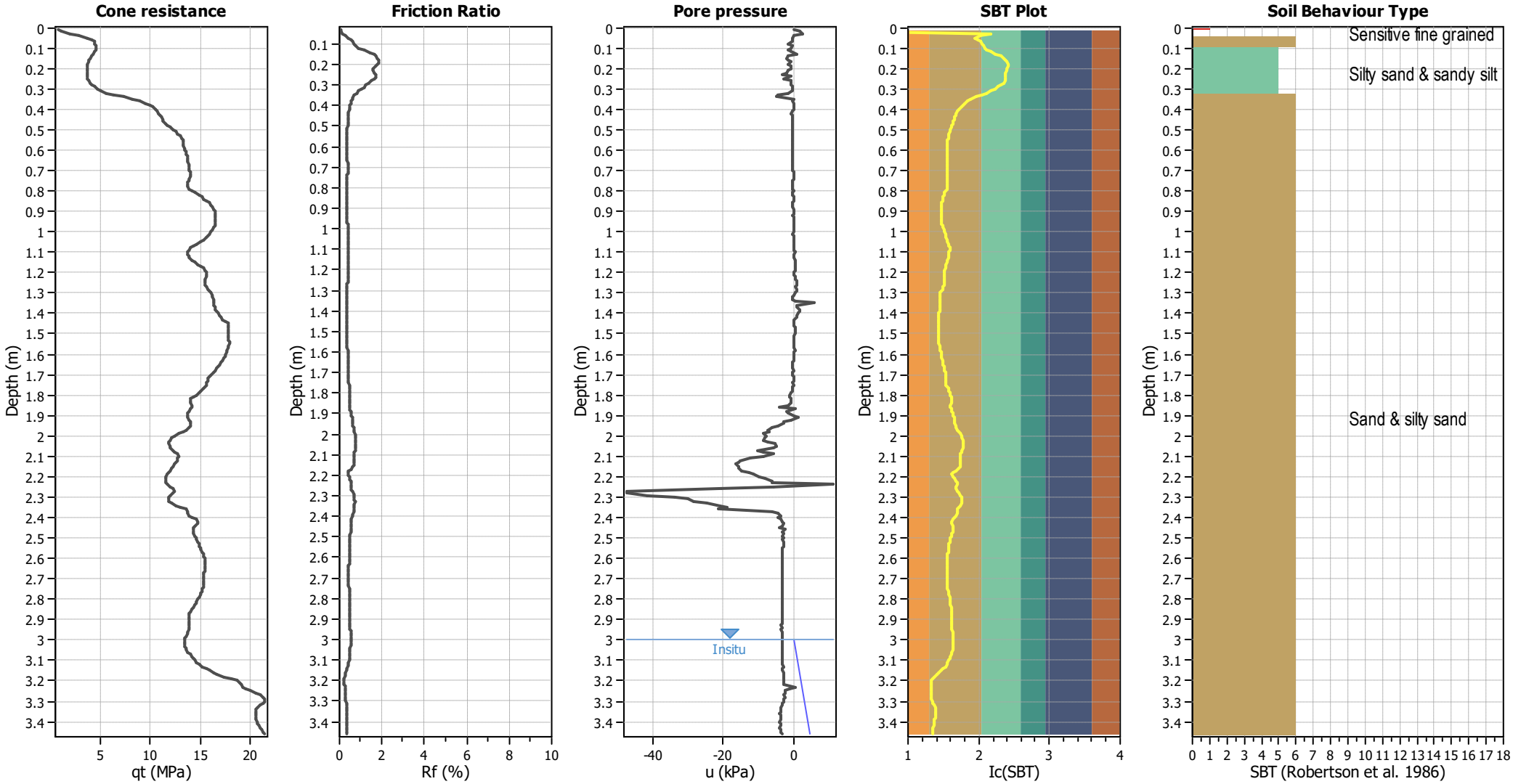
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

CPT basic interpretation plots



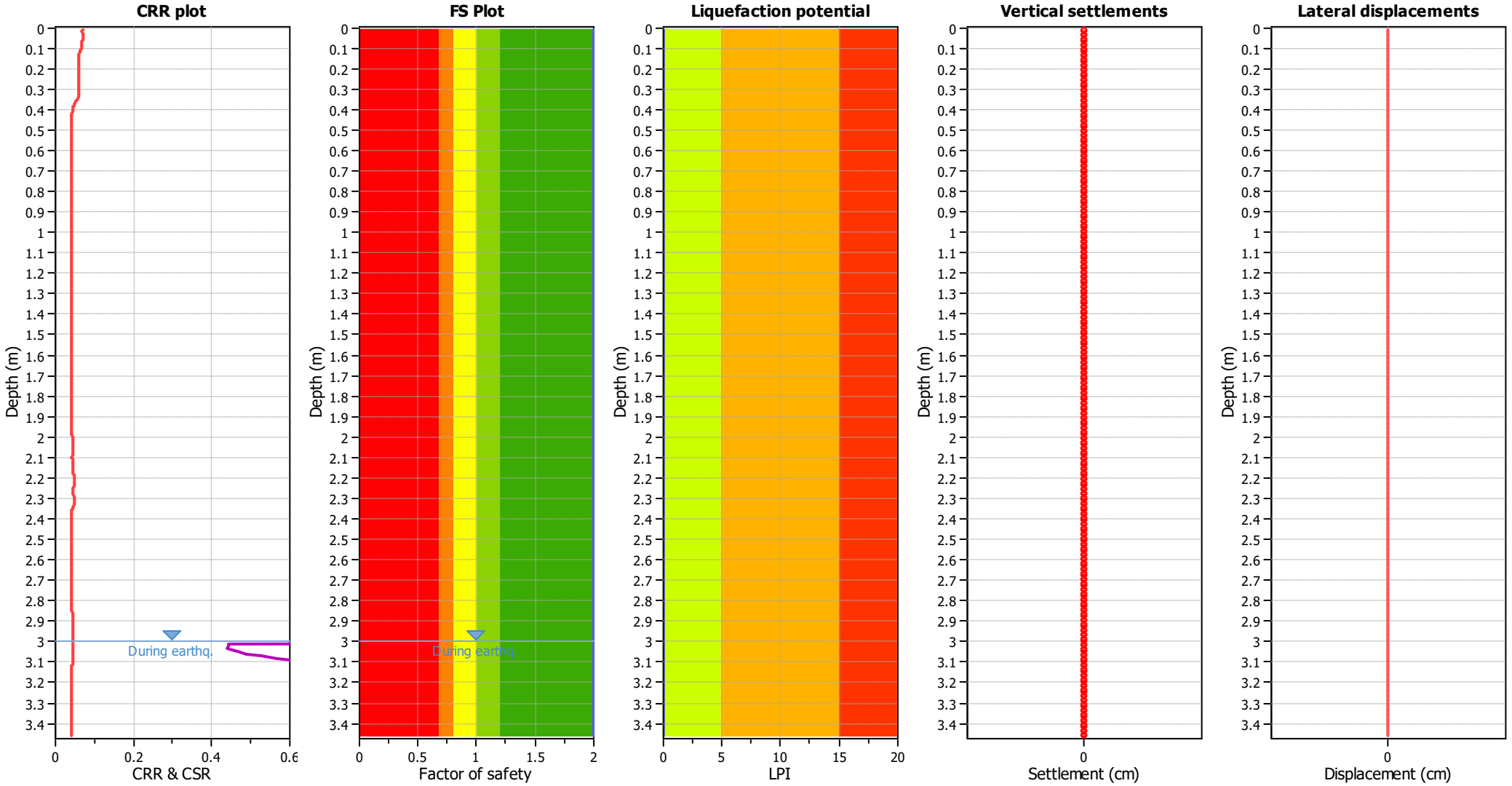
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.13	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.13	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

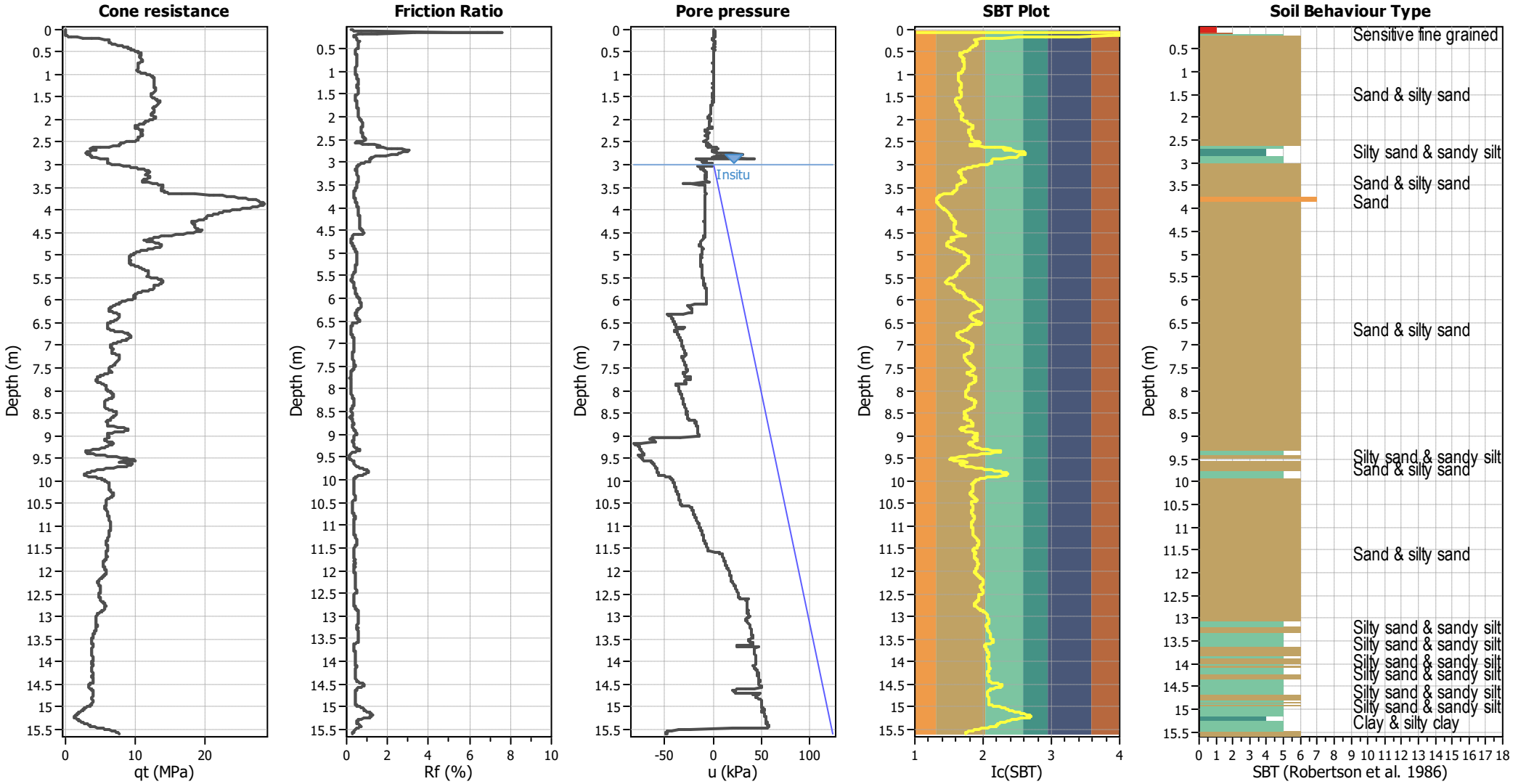
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

CPT basic interpretation plots



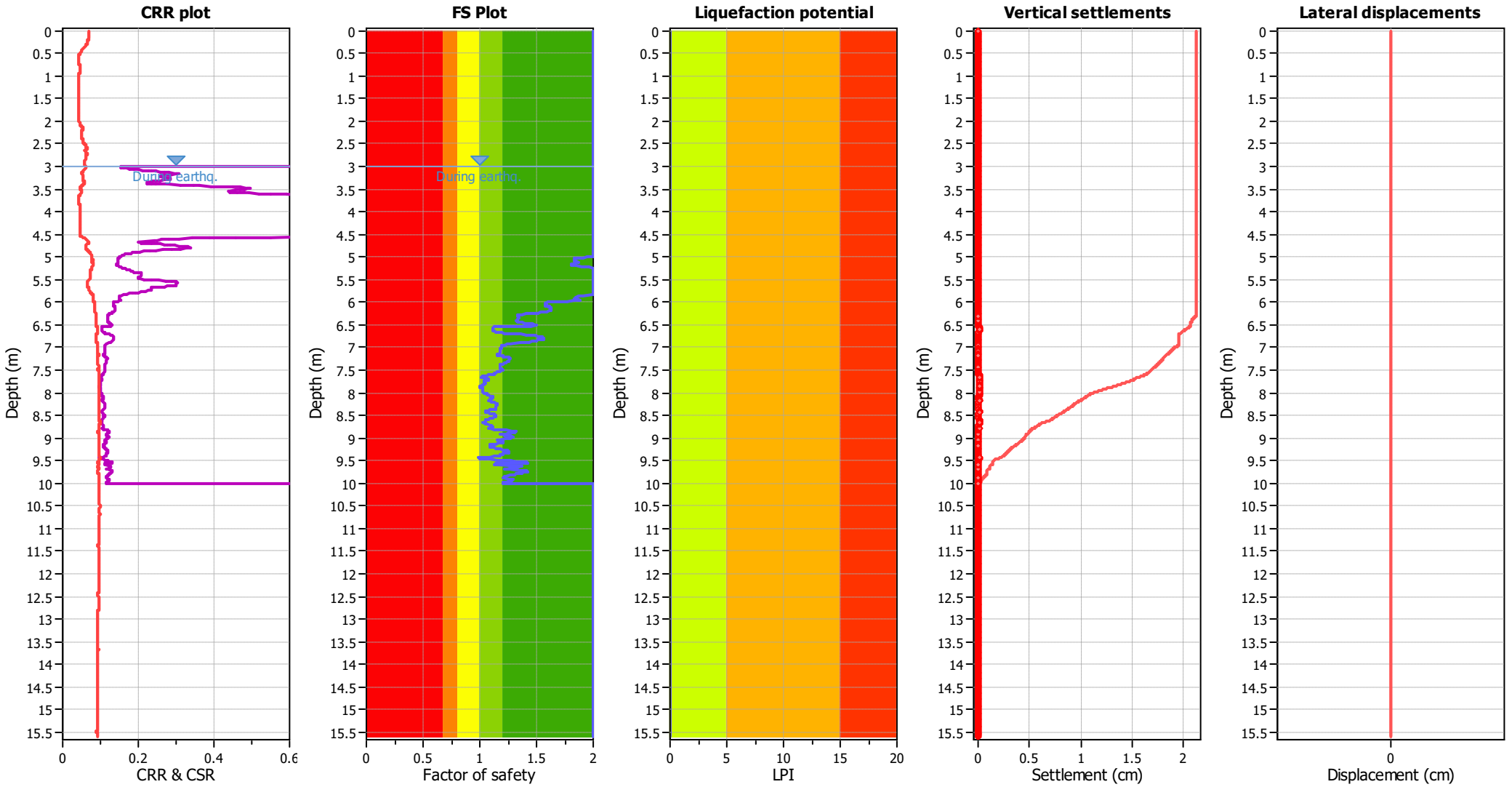
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.13	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.13	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

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- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

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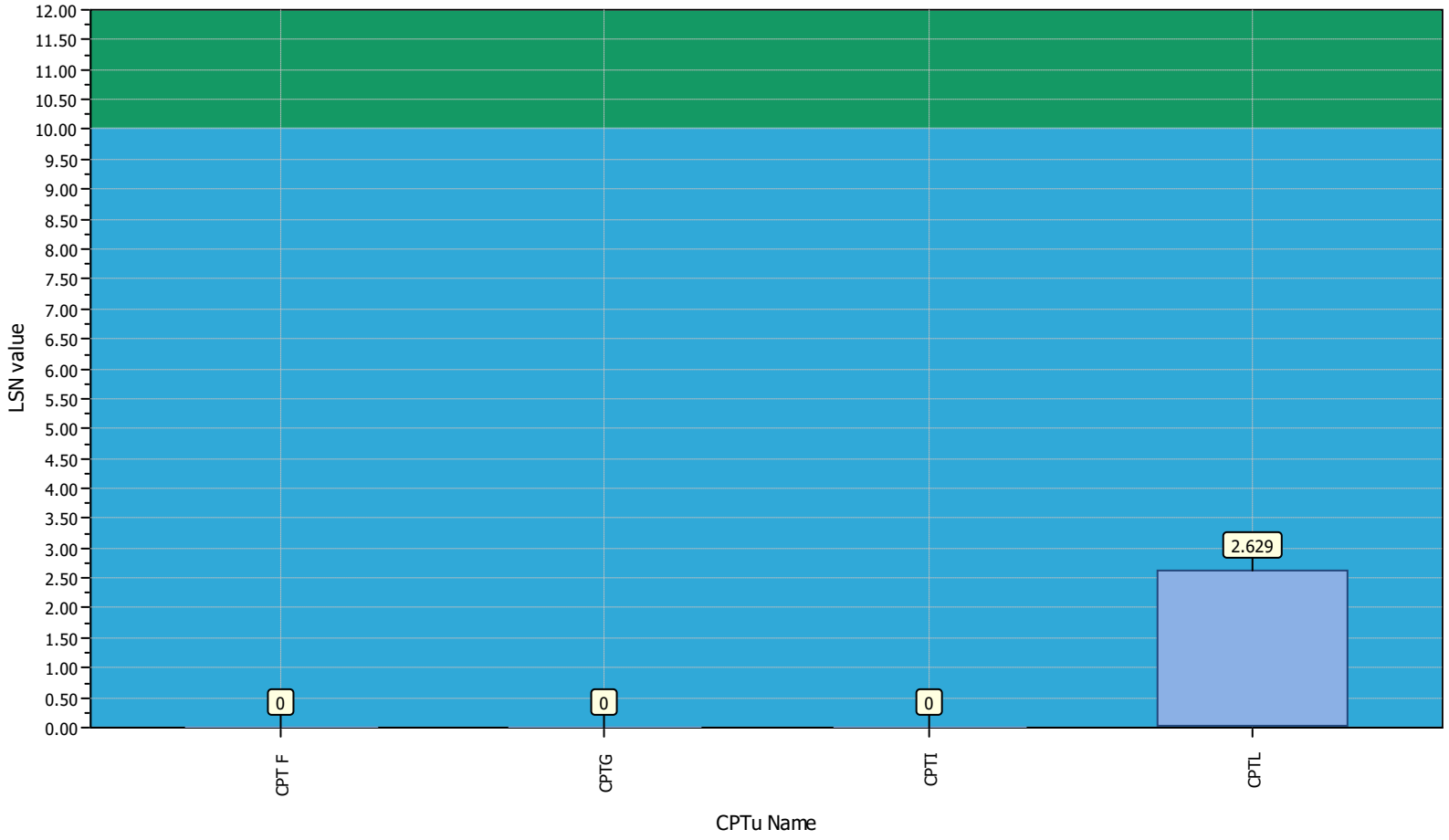
Project title : 14333 - Stage 4 & Stage 5 - The Landing - Liquefaction analysis - ULS

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

Basic statistics

Total CPT number: 4

100% little liquefaction

0% minor liquefaction

0% moderate liquefaction

0% moderate to major liquefaction

0% major liquefaction

0% severe liquefaction

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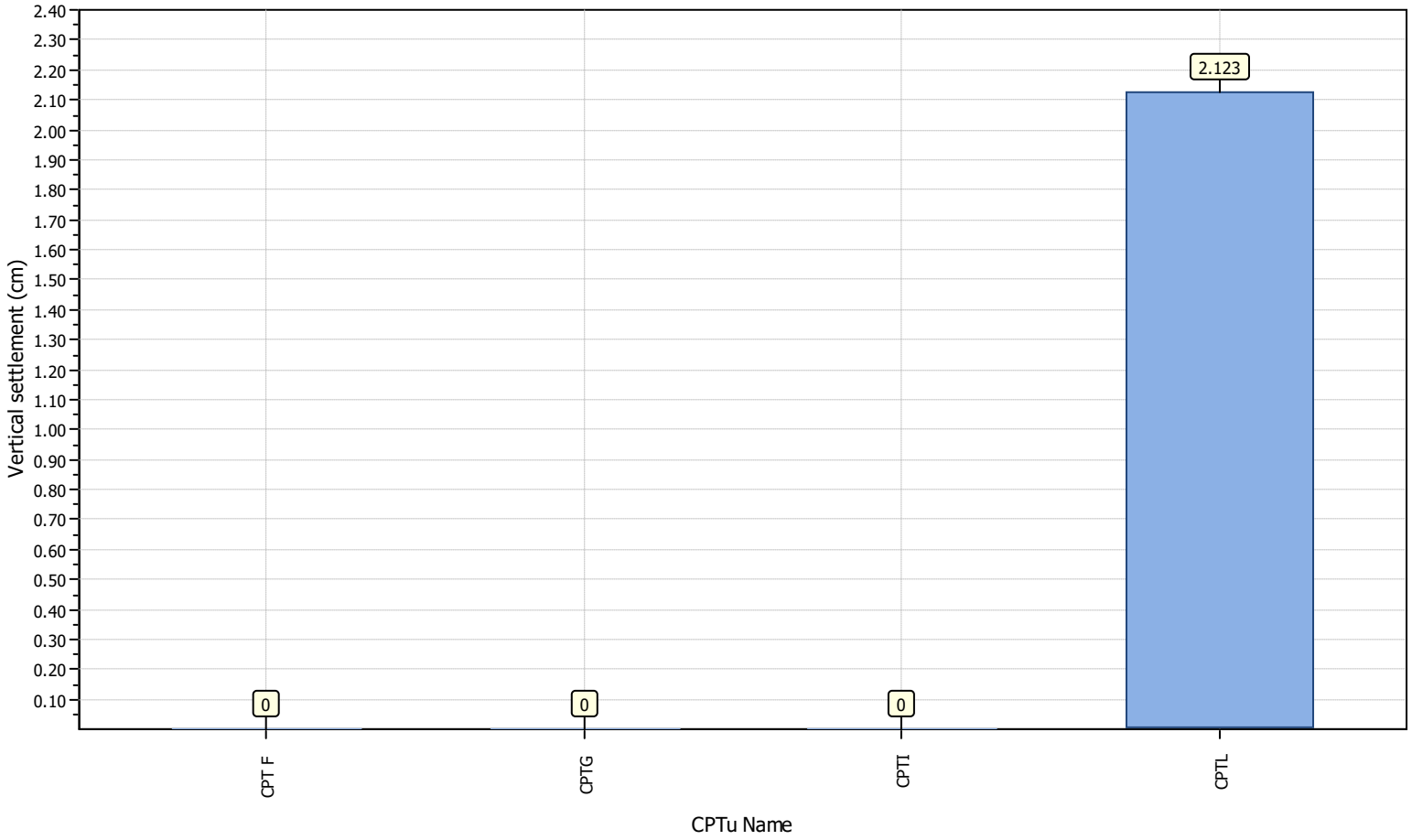
Project title : 14333 - Stage 4 & Stage 5 - The Landing - Liquefaction analysis - ULS

Overall vertical settlements report



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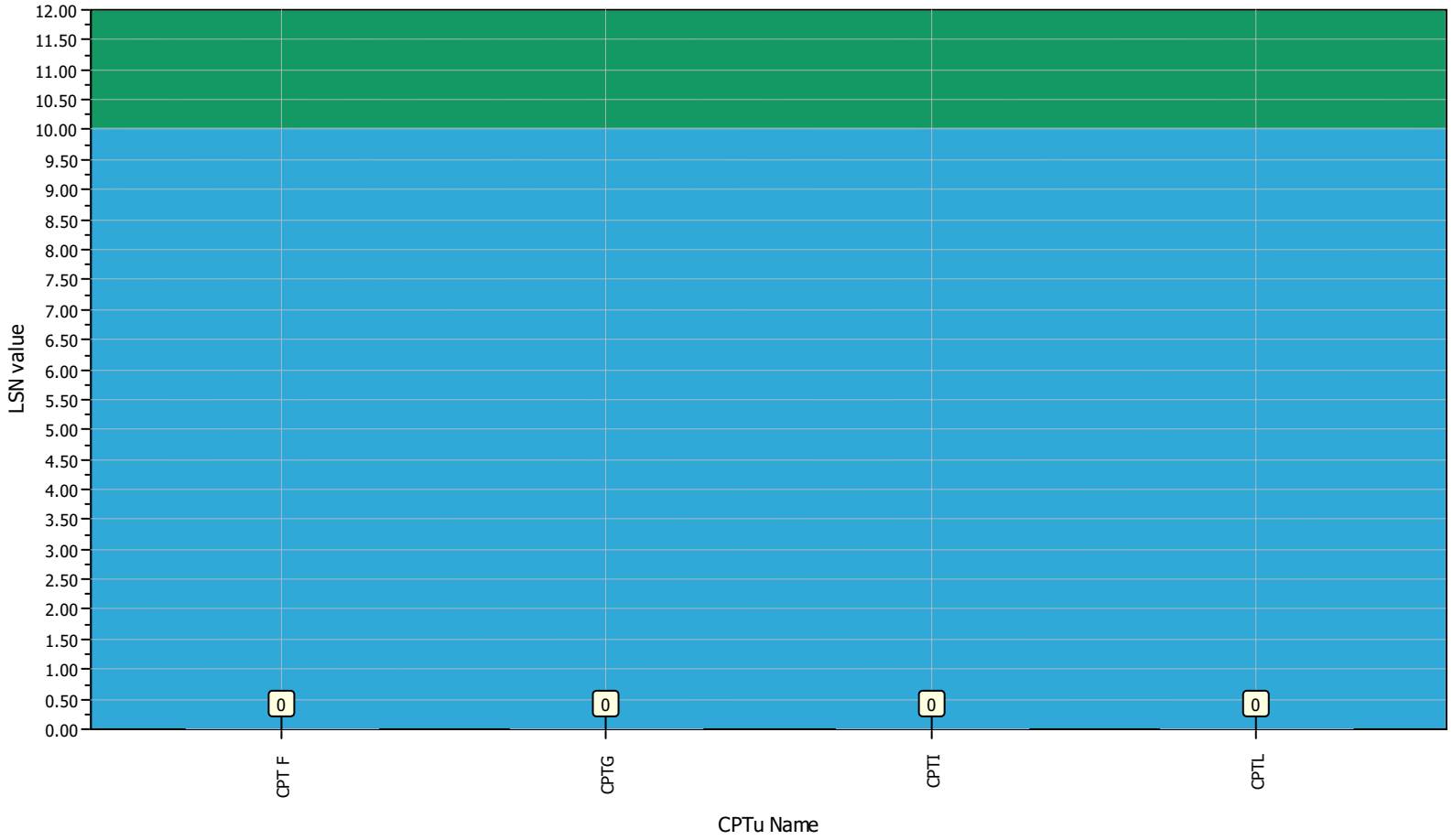
Project title : 14333 - Stage 4 & Stage 5 - The Landing - Liquefaction analysis - SLS

Location : Stage 4 & Stage 5 - The Landing

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

Basic statistics

Total CPT number: 4

100% little liquefaction

0% minor liquefaction

0% moderate liquefaction

0% moderate to major liquefaction

0% major liquefaction

0% severe liquefaction

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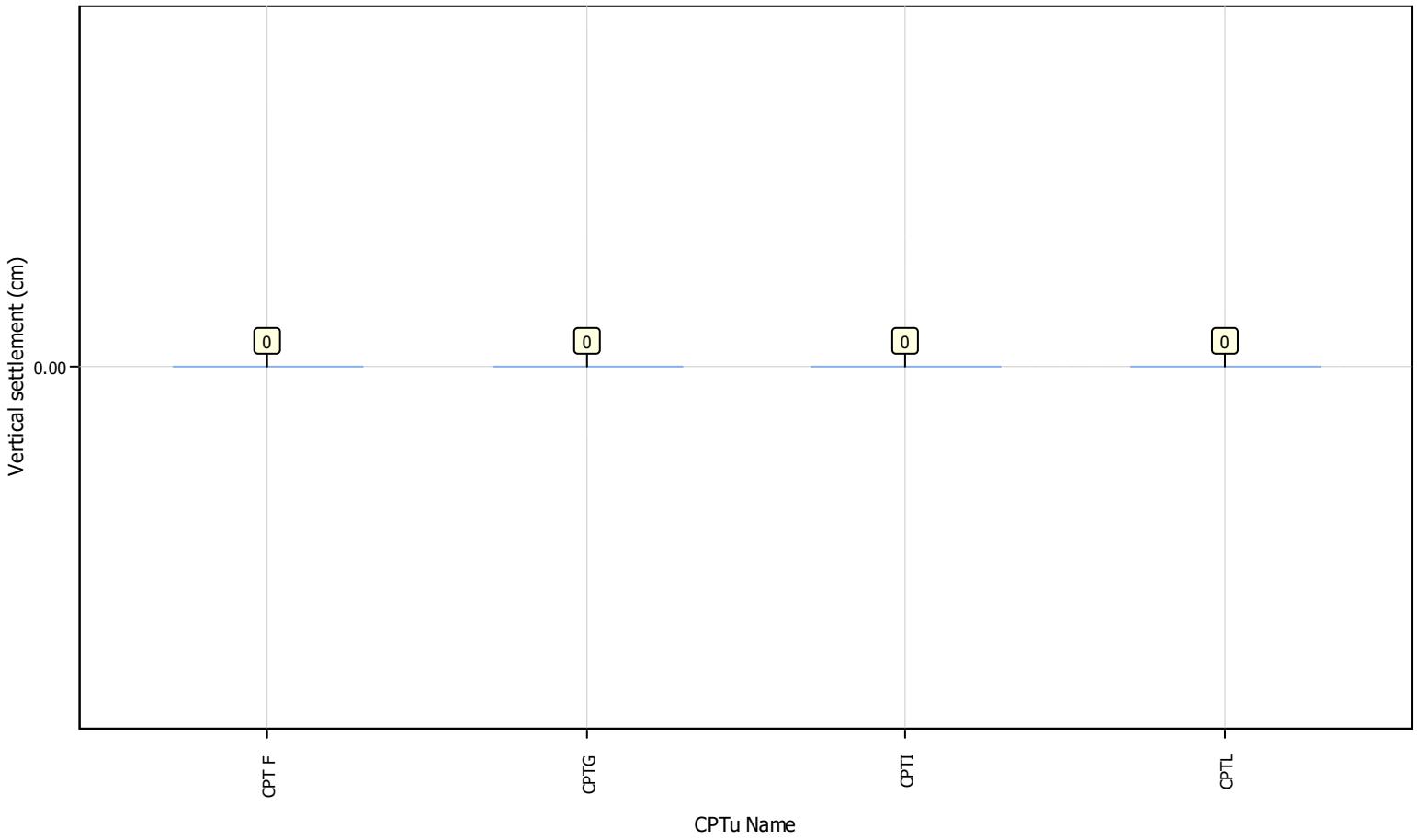
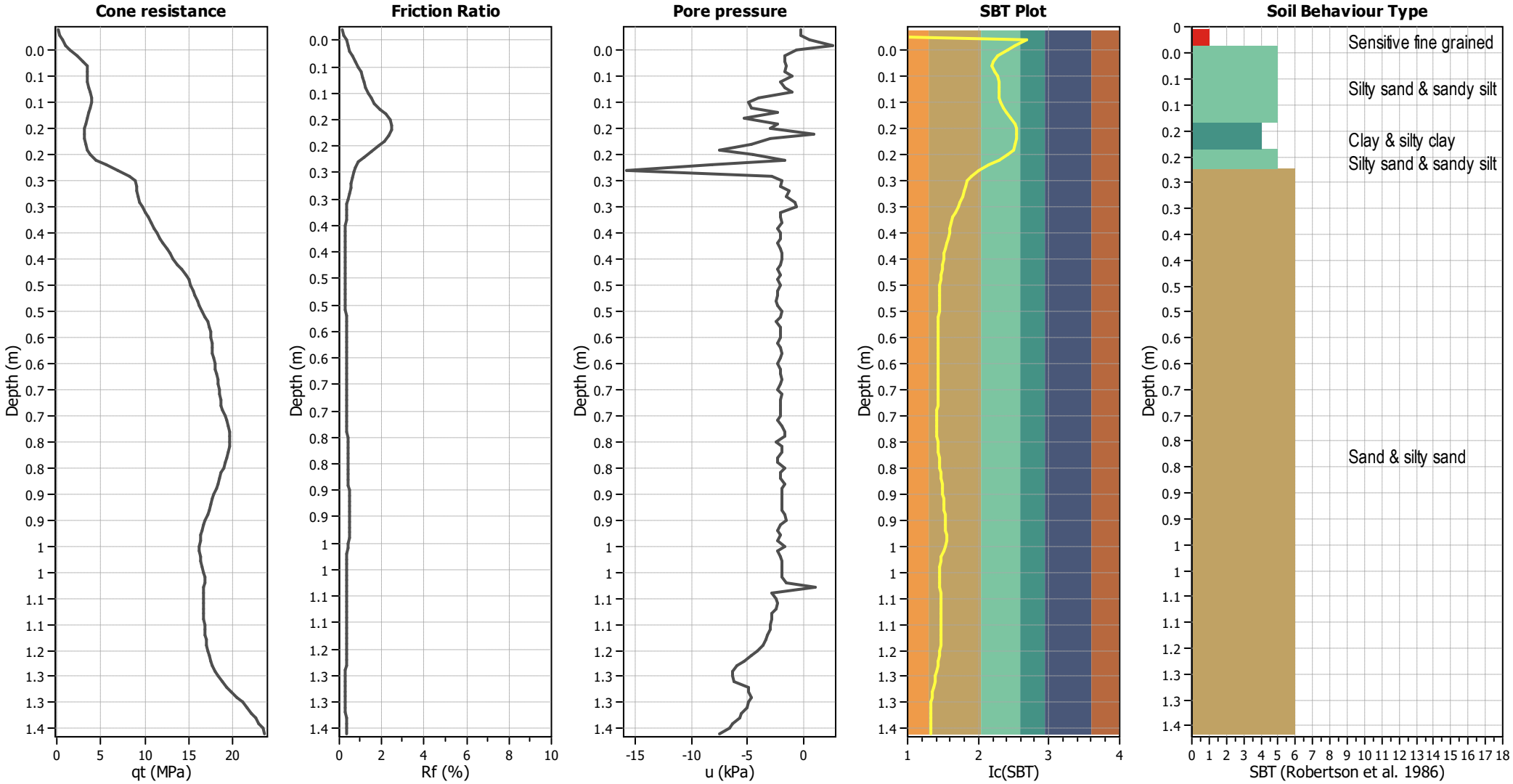
Project title : 14333 - Stage 4 & Stage 5 - The Landing - Liquefaction analysis - SLS

Location : Stage 4 & Stage 5 - The Landing

Overall vertical settlements report



CPT basic interpretation plots



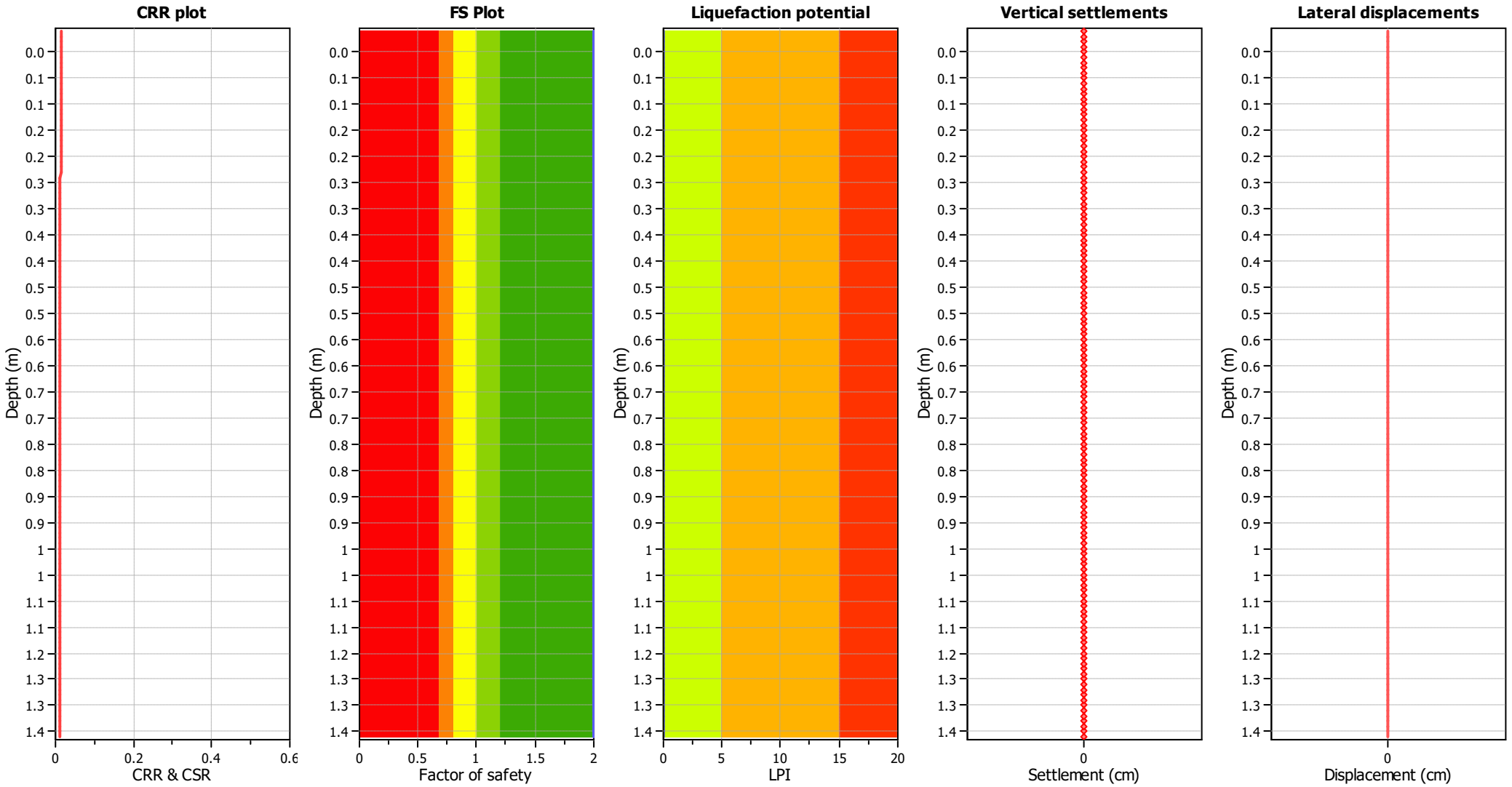
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.03	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.03	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

F.S. color scheme

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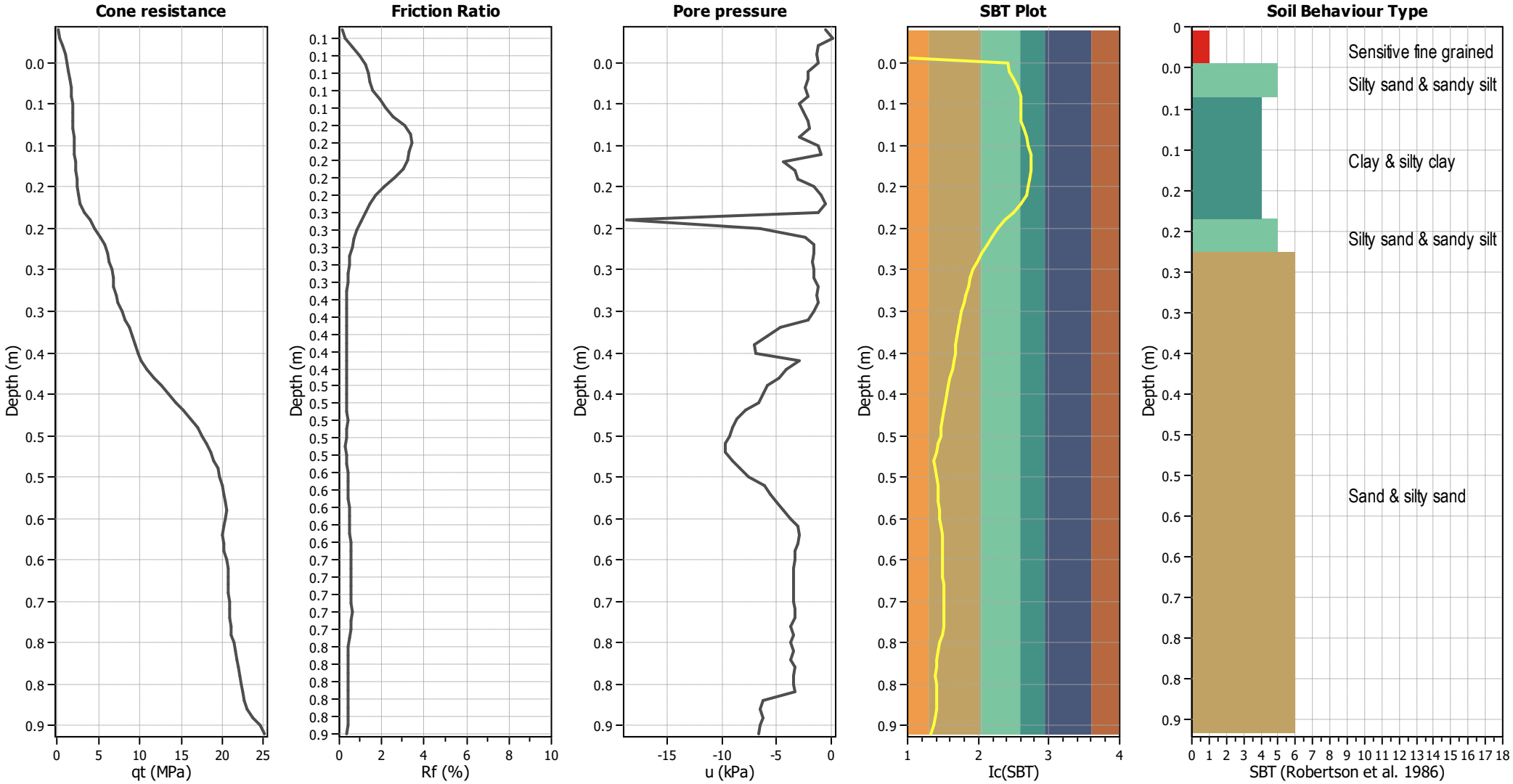
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

CPT basic interpretation plots



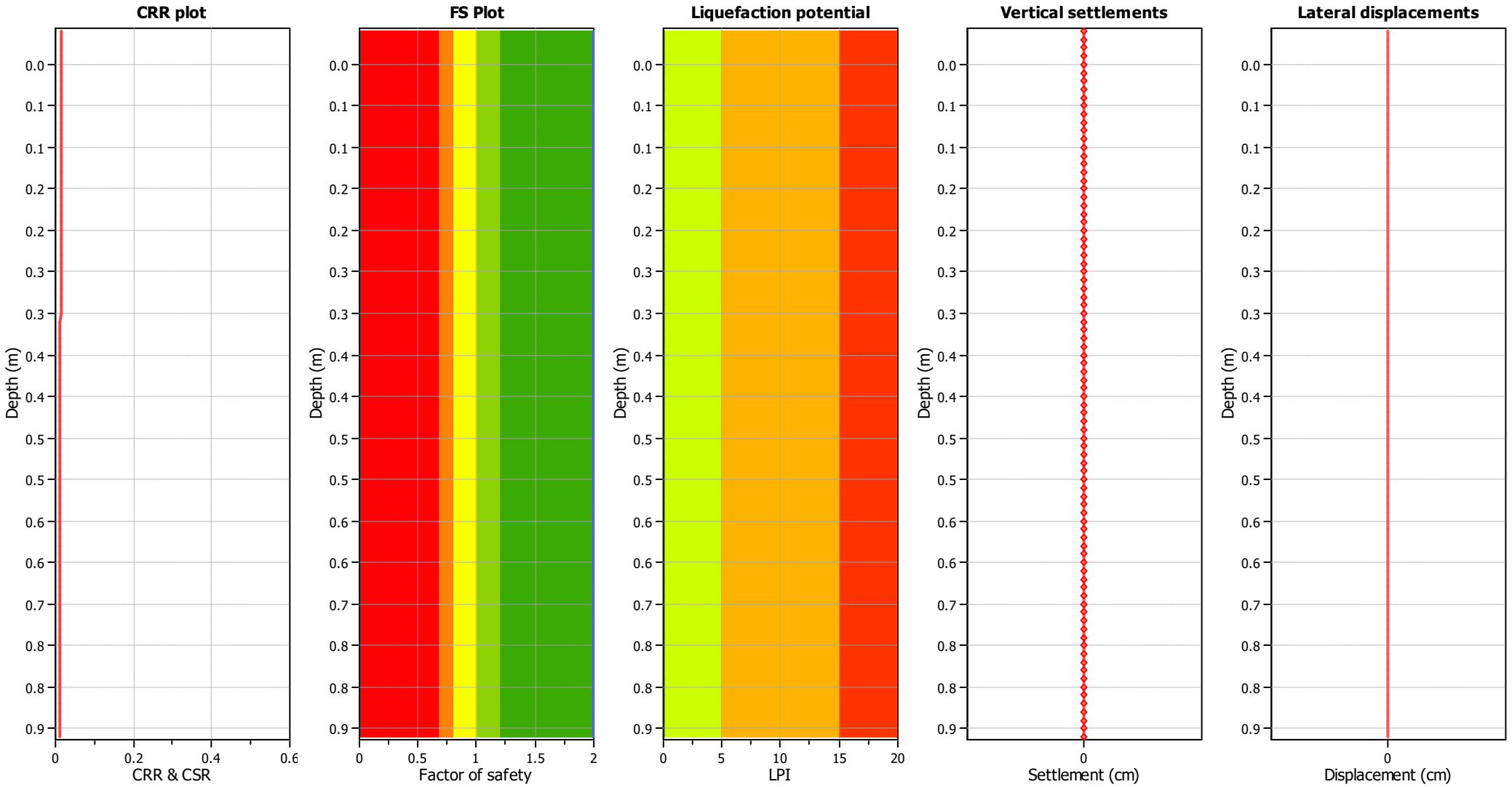
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.03	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

SBT legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	No
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	5.80	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sand & Clay
Peak ground acceleration:	0.03	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

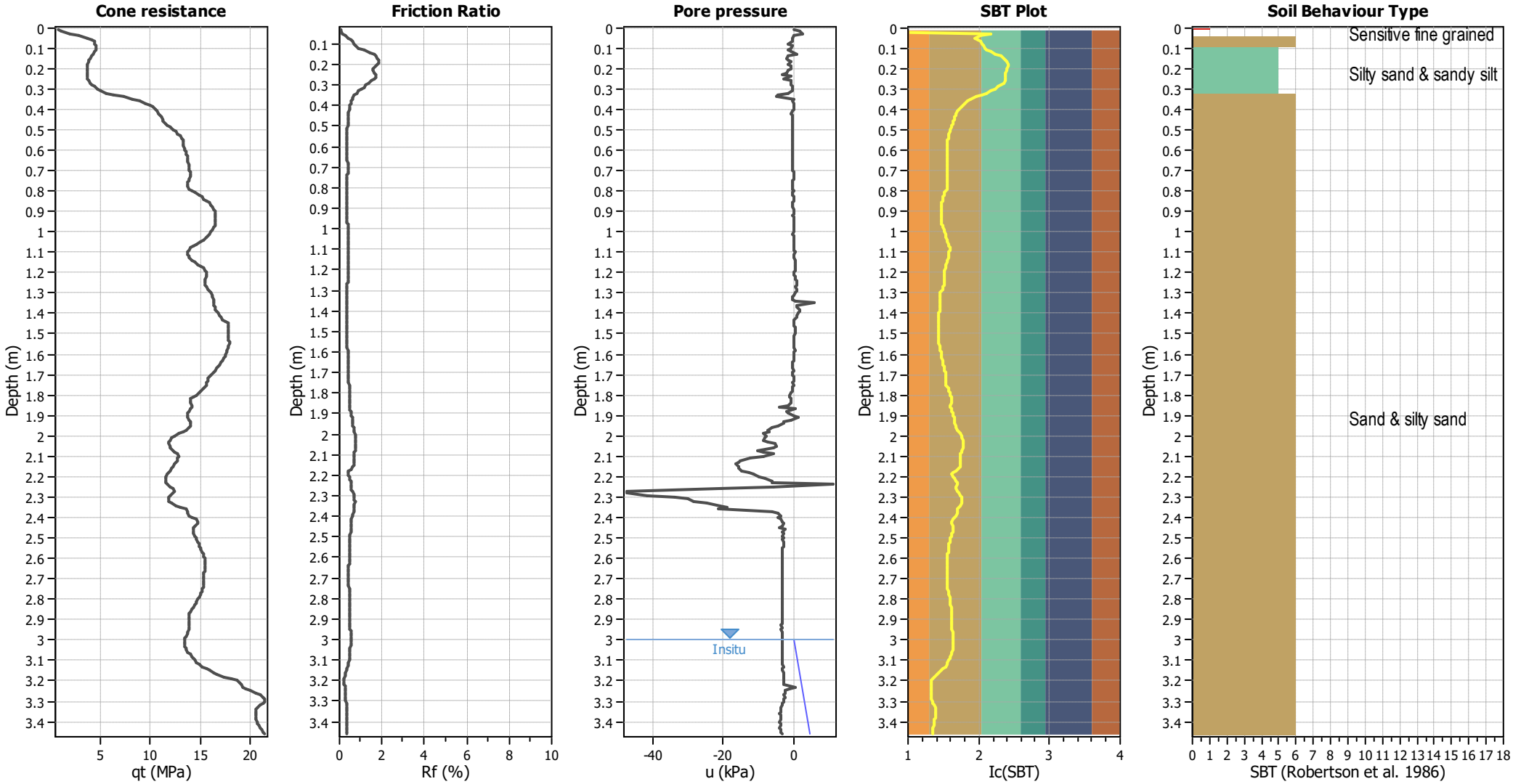
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

CPT basic interpretation plots



Input parameters and analysis data

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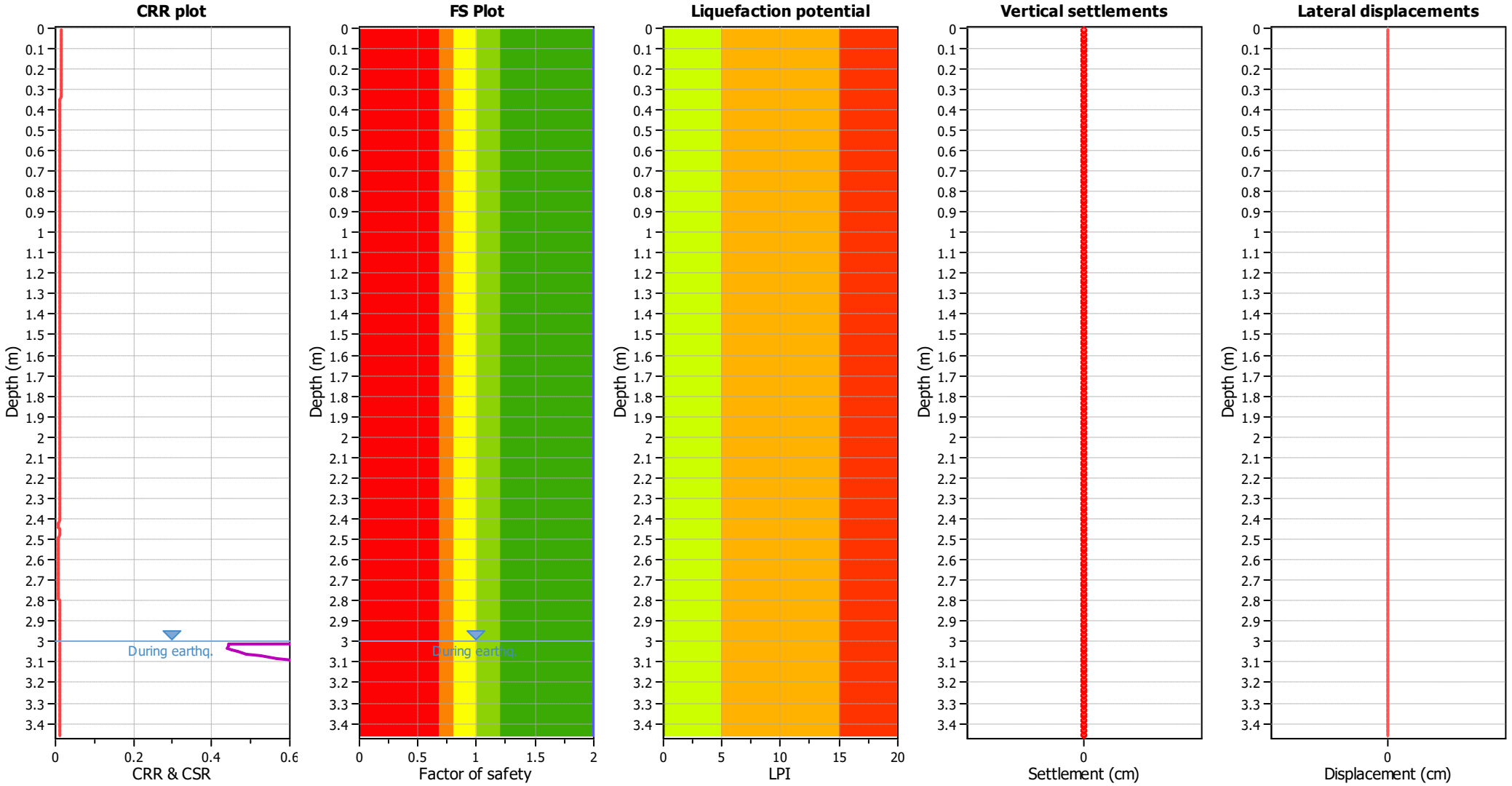
Peak ground acceleration:	0.03	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	3.00 m	Fill height:	N/A	Limit depth:	10.00 m

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

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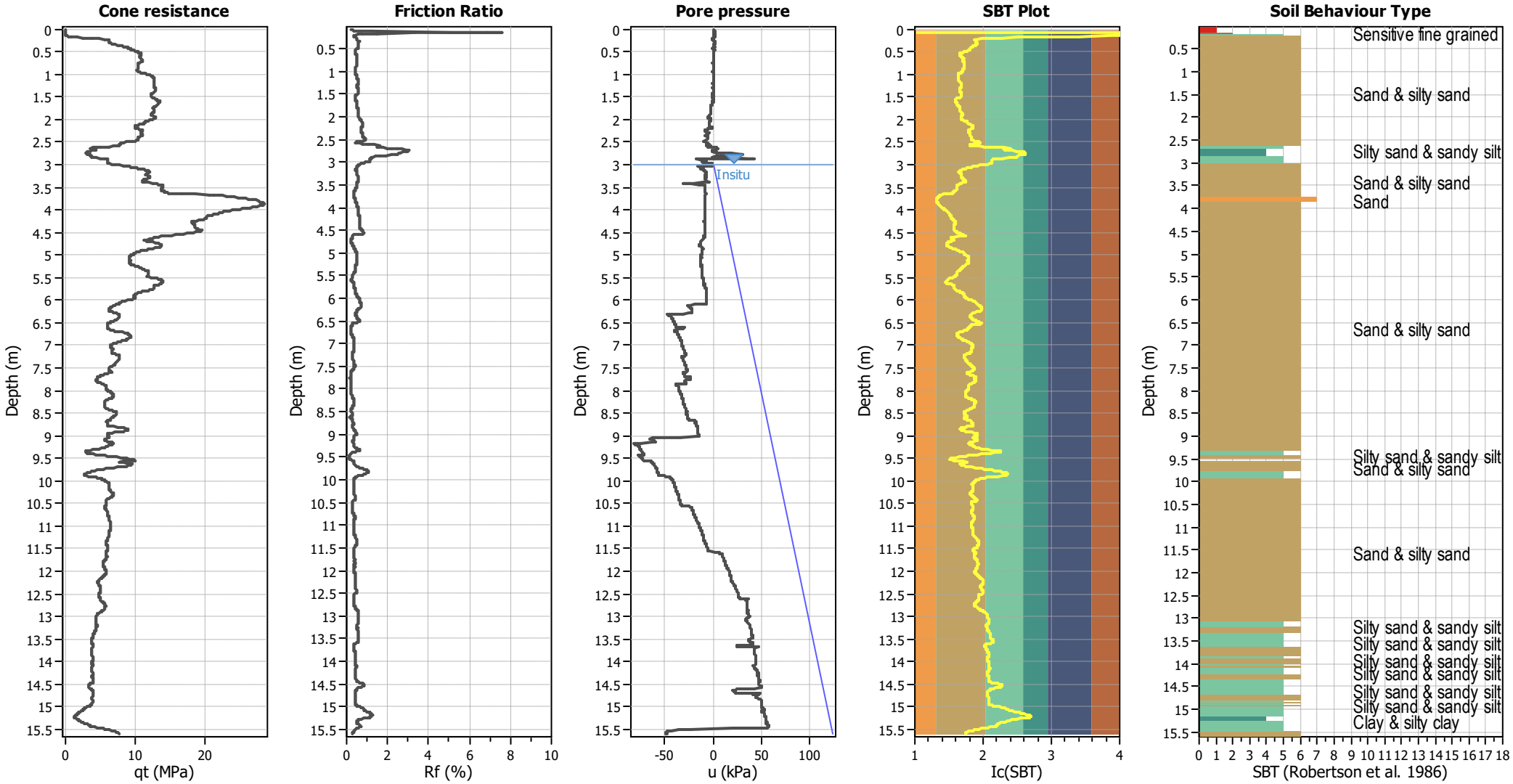
CPT basic interpretation plots



Input parameters and analysis data

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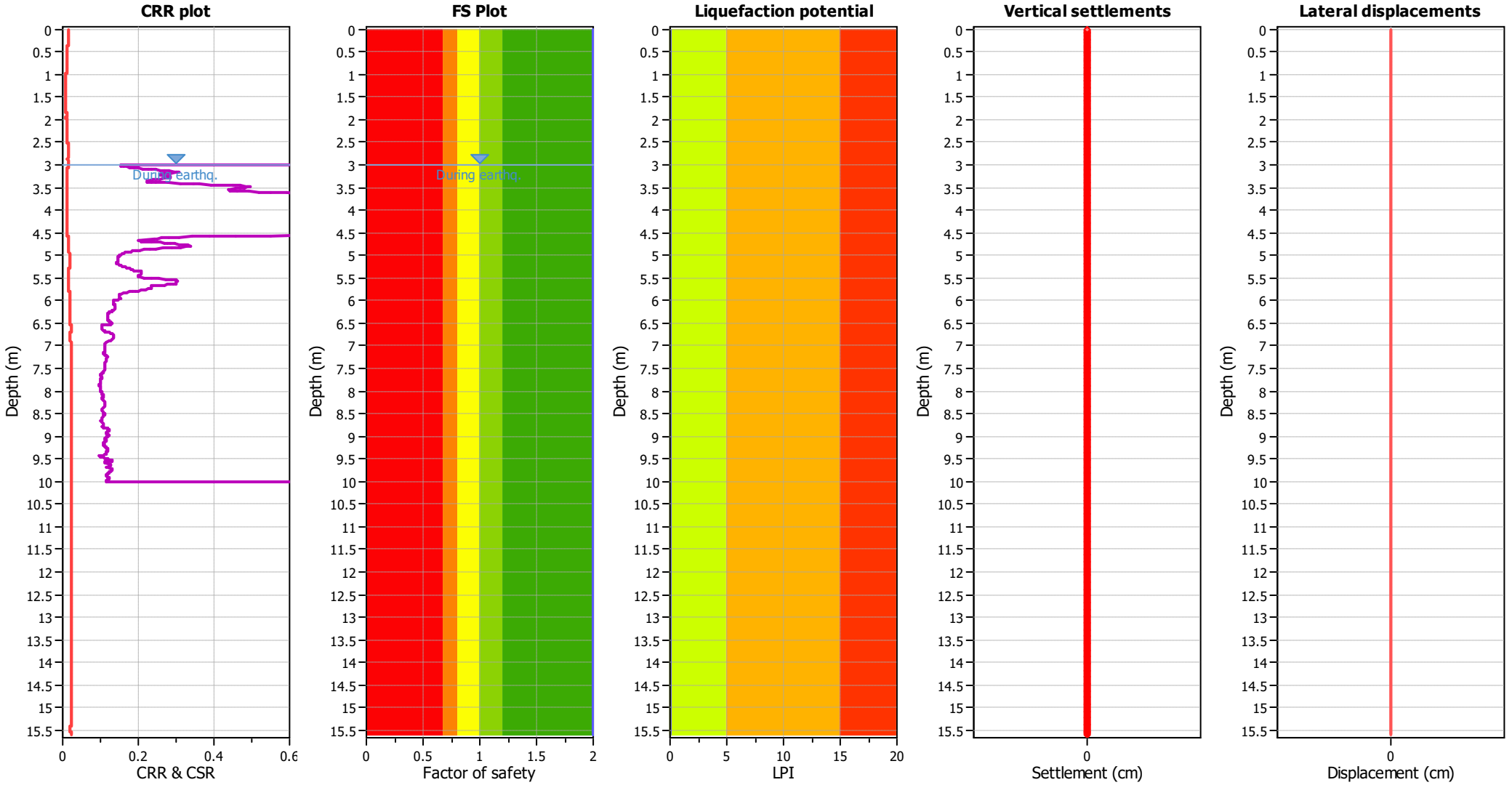
Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	3.00 m	Fill weight:	N/A
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LPI color scheme

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Appendix 6 – Statement of Professional Opinion on Suitability of Land for Building Construction - Form EES-PO1

WHANGAREI DISTRICT COUNCIL Forum North ·
Private Bag 9023 · Whangarei 0148 · New Zealand Telephone (09) 430 4200 ·
0800 WDC INFO · 0800 932 463 · Facsimile (09) 438 7632 Website
http//www.wdc.govt.nz · E-mail mailroom@wdc.govt.nz



Statement of Professional Opinion on Suitability of Land for Building Construction
Form EES-PO1

Development The Landing – Stage 4 and Stage 5, One Tree Point

Developer WFH POPERTIES LIMITED

Location One Tree Point

I *(full name)* Stefano Rotatori

of *(Name and address of firm)* Cook Costello Ltd, Norfolk House, 2 Norfolk Street, Whangarei, Northland

Hereby confirm that

1 I am a geo-professional as defined in **Section 1.2** of the WDC EES and was retained by the developer as the geo-professional on the above development

2 The extent of my preliminary investigations are described in my Report(s) number 14333-004 dated 17/09/2021 & the conclusions and recommendations of that/those document(s) have been re-evaluated in the preparation of this report. The extent of my inspections during construction, & the results of all tests and/or re-evaluations carried out are as described in my geotechnical completion report dated 17/09/2021.

3 In my professional opinion, not to be construed as a guarantee, I consider that:

a The earth fills shown on the attached Plan No AS EW 1D, AS EW 2D, AS EW 1A, AS EW 2A appended within Appendix 2 of the Completion Report dated 17/09/2021 have been placed in compliance with the requirements of Council & my specification

b The completed works take into account land slope & foundation stability considerations, subject to the appended foundation recommendations and earthworks restrictions, *(which should be read in conjunction with the appended final site contour plan* AS EW 1D, AS EW 2D, AS EW 1A, AS EW 2A*)*

c Subject to 3(a) and 3(b) above, the original ground not affected by filling satisfies the description of 'good ground' as described in NZS3604/NZS4229

d Subject to 3(a) & 3(b) above, the filled ground satisfies the description of 'good ground' as described in NZS3604/NZS4229

e The original ground not affected by filling & the filled ground are not subject to erosion, subsidence, or slippage in accordance with the provisions of section 106 of the Resource Management Act 1991provided that:

(i) Site-specific geotechnical investigation and design of foundations are to be carried out at the detailed design of buildings.
(ii) Standard inspection of excavated foundations is to be carried out at time of construction
(iii) Buildings subject to heavy loads or vibrations will require specific design.

4 This professional opinion is furnished to the TA & the developer for their purposes alone on the express condition that it will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection of any building.

5 This certificate shall be read in conjunction with my geotechnical report referred to in clause 2 above & shall not be copied or reproduced except in conjunction with the full geotechnical completion report.

Signature	*Qualifications*	*Date*
	ME, IntPE (NZ), CMEngNZ, CPEng # 1027758	17/09/2021