Quirino Limited

# GEOTECHNICAL SUITABILITY REPORT FOR PROPOSED RESIDENTIAL DEVELOPMENT

482-484 Kerikeri Road

**Project Reference: 25575**
**3 May 2024**

# DOCUMENT CONTROL

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| Prepared By | Reviewed By |
|---|---|
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# 1 EXECUTIVE SUMMARY

Based on the investigation and appraisal of the site reported herein, the proposed residential development has been assessed as stable and is generally considered to be suitable for conventional construction in accordance with the relevant codes of practice.

Overall, mostly hard, dense material was encountered with hand auger testing. All foundations will need to be specifically designed to accommodate moderately expansive soils. Due to moderately steep slopes, further investigation and design may be required at the building consent stage dependent on the final earthworks design.

A building restriction line setback 5m form man made slopes of 1V:1H is recommended to ensure a suitable margin of stability.

All other geotechnical hazards at the site have been assessed as either not present or of acceptable risk provided that the various mitigation measures and good practice recommendations made in this report are adopted.

# 2 INTRODUCTION

This report supersedes the previous version '0'. Minor changes have been made. LDE Ltd has been engaged by Quirino Limited to undertake a geotechnical suitability assessment for a proposed residential building development at 482-484 Kerikeri Road. An eco community comprising of 12 new dwellings along with a commercial development encompassing eatery and food store are proposed for the site. The proposed scheme plan is shown below and attached as Appendix A.

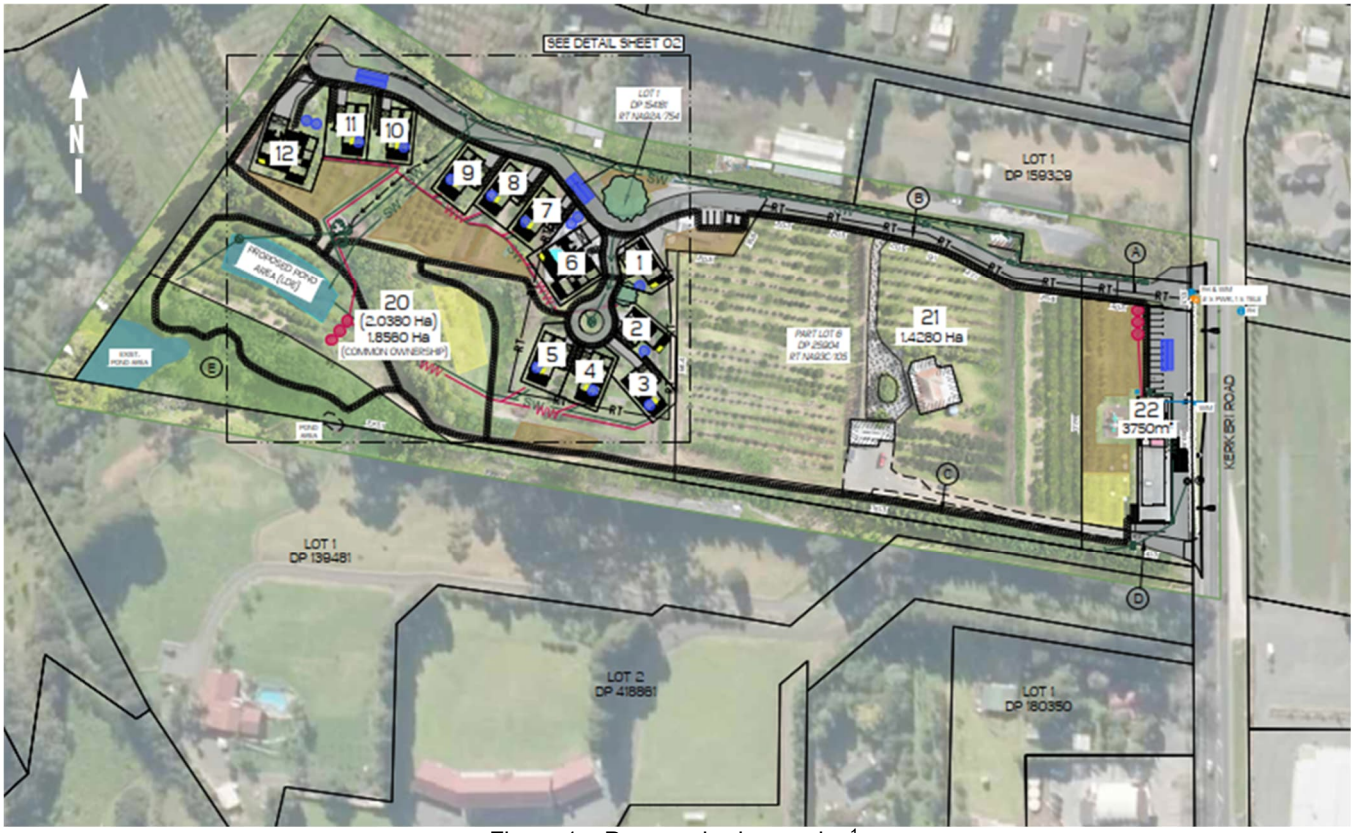



Figure 1 – Proposed scheme plan[1].

The purpose of the investigation was to determine the geotechnical suitability of the site for the proposed development in accordance with the Resource Management Act (1991) and Far North District Council (FNDC) Engineering Standards (2023). The scope of our suitability assessment included consideration of any existing or potential geotechnical hazards at locations of the new buildings, consideration of engineering requirements for residential construction, and the servicing of buildings with respect to access, wastewater, and stormwater disposal.

## 2.1 Proposed Development

The proposed development will include the subdivision of the property into 15 new allotments. Lot 22 will consist of the existing commercial property along Kerikeri Road, Lot 21 will consist of the existing dwelling and horticultural activity on Part Lot 6 DO 25904. Lots 1-12 are new allotments encompassing proposed new dwellings and Lot 20 is proposed to consist the remainder of the property surrounding Lots 1-12 which will be placed in common ownership. Below shows a map of the area that will be developed across Lot 1 DP 154181 (482) and Part Lot 6 DP 25904 (484A and 484B).[2] The total area is 4.38 hectares.

A new road, stormwater pond, shared pathways and common effluent disposal field are also proposed as part of the overall development.

[1] Reyburn & Bryant, Quirino Limited, Proposed Subdivision of Lot 1 DP 154181 & Part Lot 6 DP 25904, S17837 Sheet 1, Revision D
[2] Far North Maps Far North District Council (fndc.govt.nz) Property and Land


Figure 2 - Boundary map (FNDC property and land GIS). Boundary is yellow line.

# 3 Desktop Study

## 3.1 Site Description

Onsite there are existing power and water services that connect to the existing dwellings, however new connections will need to be made for the new sites.

The site is accessible via two accessways connecting to Kerikeri Road. The northern driveway leads to two existing dwellings and a workshop on Lot 1 DP 154181 and the southern driveway provides access to the western section of Part Lot 6 DP 25904.

The eastern side of the property is relatively flat. From approximately 200m west of Kerikeri Road, the site begins to slope more steeply towards the west and south-west at approximately between 1V:3H and 1V:5H.

Directly south-west of the existing pool on Lot 1 DP 154181 a cut bench (Terrace A) has been formed by excavating two batters, one running approximately east-west and one running approximately north-south. These batters have been formed at approximately 1V:1H and are between 2m to 5m in height. The flat area formed by these batters is between 20m to 30m in width with another man made slope of approximately 1V:2H and some 7m in height located to the south-west of Terrace A leading down to Terrace B (See Geotechnical Investigation Plan).

Terrace B appears to have also been constructed through excavations into the hill. This has resulted in a very steep cut batter of approximately 1V:1H and some 5m in height being formed along the north-western corner of Terrace B.

The site is currently an orchard of citrus trees, with mature bamboo and other shrubs lining the edges of the property.

Figure 3 - Onsite image showing slopes on western side (looking east).

An existing pond is located partially within the property in its western most corner. The pond and extends to nearby properties to the west and north and receives overland flow paths from Kerikeri Road.

## 3.2 Hazard Mapping

A review of the Northland Regional Council (NRC) GIS hazard maps shows that the site is not mapped as being at risk from any recognised natural hazard. This include risks for liquefaction, Tsunami, land instability and flooding.

## 3.3 Historical Aerial Imagery

A review of historical and recent aerial imagery has been undertaken, with images sourced from Retrolens[3] and Google Earth. The site appears to have remained in a similar condition from 2003 to the present, with no evidence of site disturbance or changes in land use.

[3] Retrolens – Historical Imagery Resource. https://retrolens.co.nz/map/. Imagery licensed by LINZ CC-BY 3.0.

## 3.4 Geological Mapping

The 1:250,000 geological map of the region[4] shows the site as being underlain by the Kerikeri Volcanic Group (Figure 4).


Figure 4 - Geological Map of site and surrounding area (GNS geological map over Google Earth).

# 4 Ground Conditions

## 4.1 Subsurface Investigations

Our investigation of the sites included the following work:

- Twenty-nine 50mm hand augered boreholes (HA01 to HA028) put down to a target depth of 3m or refusal. These included two at each proposed dwelling and four at the commercial premises. Measurements of the undrained shear strength were taken at 200mm intervals within cohesive soils encountered down through the boreholes using a calibrated shear vane. HA23 was repeated as HA23a due to shallow refusal. Scala penetrometer tests were advanced from the base of select boreholes.
- Forty-eight Scala penetrometer tests were put down along proposed access/roads and carparking areas to provide preliminary information for high level pavement/roading assessments.

[4] Edbrooke, S.W.; Brook, F.J. (compilers) 2009: Geology of the Whangarei area: scale 1:250 000. Lower Hutt: GNS Science. Institute of Geological & Nuclear Sciences 1:250,000 geological map 2. 68 p. + 1 folded map

The locations of the subsurface investigations are on the Geotechnical Investigation Plan in Appendix B. Logs of the boreholes and penetrometer tests are presented in Appendix C.

The field work was completed in January 2024 after a period of prolonged dry weather.

## 4.2 Subsurface Conditions

In summary, our investigations generally encountered a profile of high strength residual soils and completely weathered basalt, consistent with the mapped Kerikeri Volcanics Group at the site.

Topsoil was encountered at the surface at each test site to a depth of 100 to 300mm, comprising dry to moist, slightly organic silt.

Residual soil was encountered below topsoil, comprising very stiff, highly plastic, clayey silts and silty clay soil with varying levels of gravel content, interbedded with silty fine sand. Shear strengths through this unit were typically >100kPa in the soil profile, with frequent results exceeding 150kPa or being unable to penetrate.

Undrained, peak corrected shear strengths through this residual soil unit ranged from 113kPa to 243+ kPa, with one anomalous result of 72kPa at 1.2m deep in HA02.

A number of boreholes resulted in the auger and dynamic cone penetrometer (DCP) being unable to penetrate on what is inferred to be boulders. Soil found to be too hard was either clay or sandy silt containing fine to medium gravels. Depths that were unable to penetrate through ranged from 0.8m to 2.35m. Some auger holes contained soft material resulting in 1-2 blows/50mm on the scala penetrometer before hitting the hard material. These holes included HA09 (soft at 1.3m), HA10 (soft at 2.4m), HA12 (soft 1.1m), HA13 (soft at 2.3m)

We also encountered some soft materials in our dynamic cone penetrometer road tests. Results in these tests showed 1-2 blows/50mm between topsoil and 1m deep. These are listed in the table below.

Table 1 - 1-2 blows/50mm

| Test Number | Depth (m) | Test Number | Depth (m) |
|---|---|---|---|
| DCP01 | 0.2-0.8 | DCP18 | 0.2-0.65 |
| DCP02 | 0.2-0.8 | DCP21 | 0.3-0.65 |
| DCP04 | 0.8-0.8 | DCP26 | 0.25-0.9 |
| DCP07 | 0.25-0.8 | DCP 36 | 0.2-0.9 |
| DCP14 | 0.25-0.8 | DCP38 | 0.2-0.85 |
| DCP15 | 0.2-0.9 | DCP40 | 0.2-0.9 |

| | | | |
|---|---|---|---|
| DCP17 | 0.2-0.6 | | |

Bedrock was not encountered in the investigation. Based on the geomorphology of the site and our experience in this unit, it is expected that slightly weathered to fresh bedrock lies at some 12 – 15m depth below the site.

## 4.3 Soil Moisture Profile and Groundwater Conditions

Testing was performed during an extremely hot period, which resulted in some very dry and friable soil. However, as we tested deeper, soils became moist and in some cases wet. HA23a, HA21, HA20 and HA15 were wet from a depth of between 1.1m -2.8m. Groundwater or complete saturation was not observed in any testing.

The moisture content of the near surface soils is expected to be higher during the winter months or extended periods of wet weather resulting in their saturation at times. The extent of the wetting front will be dependent on the duration of the period of rainfall, but may extend down some 1m to 2m of the surface. Similarly, the groundwater table is expected to rise some 1m to 2m during extended periods of wet weather. In our opinion complete saturation of the ground is possible, but is a low probability occurrence.

## 4.4 Seismic Subsoil Category

We consider that the site is a Class C shallow soil site as defined by NZS 1170.5 (2004) “Structural Design Actions: Part 5: Earthquake actions – New Zealand”. This is due to the surface layer of highly weathered or completely weathered rock or soil of greater than 3m in depth.

# 5 Natural Hazards and Ground Deformation Potential

## 5.1 Definition and Legislation

This section summarises our assessment of the natural hazards within close proximity to the proposed subdivision as broadly required by Section 106 of the Resource Management Act (1991 and subsequent amendments) and including geotechnical hazards given Section 71(3) of the Building Act (2004). This includes erosion, inundation, subsidence, and slippage.

This section also includes our assessment of ground beneath the building site which is outside the definition of “Good Ground” as defined by NZS3604 (2011) “Timber Framed Buildings”.

## 5.2 Earthquake Hazards

### 5.2.1 Tsunami

Tsunami pose a risk to any low lying coastal areas of New Zealand and can pose a risk of expected loss of life greater than (double) that of the near-source earthquake event itself. However, tsunami is not specifically identified under the Building Act (2004) in comparison to the specified inundation sources (flooding, overland flow, storm surge, tidal effects, and ponding).

Although tsunami will result in inundation of coastal lowlands, there are currently no prescriptive methods or specific code designs that need to be considered in building design, and it should be appreciated that to date some form of tsunami risk is knowingly or unknowingly accepted by the wider population and society of New Zealand for any low lying titled land adjacent to the coast.

As the site has an approximate elevation of greater than 70m, the level of tsunami inundation risk is considered to be low for 1:100 and 1:500 year return events. It is therefore considered that additional design considerations are not required to mitigate against the potential adverse effects of wave heights associated with tsunami inundation at the site.

## 5.3 Liquefaction

As the site is located on an elevated ridge landform with residual clay soils underlain by bedrock materials, the geomorphic and engineering geological setting of the site does not meet the criteria for the build-up of pore water pressures and the development of potential liquefaction conditions. Therefore, the site is not considered to be at risk of liquefaction induced settlement or lateral spreading in response to earthquake shaking.

## 5.4 Slope Instability

### 5.4.1 Visual Stability Assessment

A review of aerial imagery as well as a walk over of the site showed no physical evidence of widespread or deep-seated instability in the form of historic scarps, wet boggy areas or hummocky and uneven ground.

The site has a fall from the northern boundary towards the south of generally between 8°-10° and a slope at the western section of the property towards the west, of approximately 26° (Fig 3) leading down into the existing pond.

There are several very steep batters located on the property of approximately 1V:1H. We did not observe any indications of slope stability on these batters in the form of historical slip scarps, tension cracks or hummocky/uneven terrain. Placement of fill or loading of these slopes by construction of dwellings could however result in reductions of stability of these slopes. We recommend a building restriction line (BRL) setback 5m from all top of banks of slopes steeper than 1V:1H on the site.

Location of buildings behind the proposed BRLs will need to be confirmed at the building consent stage by a registered surveyor.

On all slopes of steeper than 1V:3H where filling is required, retaining shall be utilised to ensure the stability of these slopes, this will require specific assessment at the time of building consent including numerical slope stability analysis.

### 5.4.2 Pond Construction Stability

The construction of the pond will result in a wedge of fill material of between 2.5m (near pond crest and approximately 10m-13m removed from the break in slope) thinning out to no fill at several metres back from the break in slope (leading to an approximately 1V:2H slope which runs down to the existing pond area) along the southern extent of the pond. Stability modelling of this additional fill placement has not been undertaken as part of this report, however it is considered that this can be completed as part of detailed design and that there are multiple mitigation measures that can be applied to the proposed fill to resolve any issues with stability associated with these works. These include but are not limited to;

- In-ground palisade wall along break in slope
- Increase in outside edge batter angle and support with stacked rocks or other gravity wall type solution

The permanent storage depth of the pond is approximately 0.9m in depth with 100 year flood levels (1% ARI) indicated to be only slightly more than this at approximately 1.3m depth. Based on the relatively shallow depth of water storage in the pond and the large distance to the natural slope at the edge of the proposed fill wedge, it is not considered that stability modelling of rapid draw down effects will be required.

In our previous experience, formation of internal pond batters at angles of less than 1V:2.5H generally provides stable bunds slopes for ponds. The proposed pond bund slopes are indicated to be formed at slopes of 1V:3H with a 1V:8H safety bench further reducing the overall pond slope to less than 1V:3H this is considered to be suitable and will in our opinion provide a stable pond bund slope.

## 5.5 Compressible Ground and Consolidation Settlement

Topsoil was encountered in hand testing (up to 0.3m in some areas) This layer of topsoil and any identified areas of uncontrolled fill material will either need to be removed and replaced with engineered hardfill or piled through to a layer of suitable bearing capacity to ensure that excessive settlement of proposed new buildings does not occur.

## 5.6 Ground Shrinkage and Swelling Potential

Plastic soils can be subject to shrinkage and swelling due to soil moisture content variations which can result in apparent heaving and settlement of buildings, particularly between seasons. The magnitude of movement is a

function of the reactivity of the clay minerals and the amount of clay as a fraction near surface soils. These factors are in turn associated with geological origin and the degree and nature of in-situ weathering.

The near surface soils at the site were found to be highly plastic and predominantly clay. Based on our experience and past laboratory testing in similar geological conditions, we expect that the soils are moderately to highly expansive, with a liquid limit greater than 50% and linear shrinkage greater than 15%. The sites are therefore outside the definition of 'Good Ground' as defined in NZS3604 (2011).

Without further site-specific laboratory testing to classify the soils, we recommended that design of concrete slab foundations assume Class M (moderately reactive) in accordance with the New Zealand Building Code (NZBC). Specific recommendations for foundation design are given in Section 6 below.

## 5.7 Conclusions

From our assessment of the natural hazard and ground deformation risks presented to the proposed development we consider that the site is suitable for development, provided that the recommendations given in Section 6 are adopted.

# 6 Engineering Recommendations

## 6.1 Site Preparation and Earthworks

Excavations of up to 2.5m are proposed for the western most cul-de-sac on the access road near Lots 10-12. Additionally, a small area of up 1.7m cut is present at the pond.

Filling of up to 2.5m high is proposed to construct the stormwater pond. Placement of approximately 1.9m of fill material between Lot 9 and Lot 10 will be required along the main road access to maintain suitable gradients as outlined in council standards.

Pond batters are proposed to be formed at maximum slopes of 1V:3H both internally and externally with a 1V:8H safety bench proposed below permanent water level for Health & Safety reasons.

### 6.1.1 Cuts

All excavations to form level building platforms and road access shall be formed no steeper than 1V:2H to a maximum height of 1.5m or shall otherwise be supported by an engineered retaining structure.

### 6.1.2 Fills

Fill batters shall be formed no steeper than 1V:2.5H to a maximum height of 1.5m or shall otherwise require specific engineering assessment or be supported by an engineered retaining structure. Fill placed on slopes steeper than

1V:3H shall require retaining and shall have specific engineering assessment at the time of building consent. If retaining walls do not include shear pins (e.g. masonry block, gravity wall/MSE wall, this will require numerical slope stability assessment at the time of building consent.

All fill forming part of the building platform needs to be placed in a controlled manner to an engineering specification that follows the general methodology given in NZS 4431 (2022) “Engineered fill construction for lightweight structures”. This includes the design, inspection and certification of the fill by a Chartered Professional Engineer or Professional Engineering Geologist. This will be particularly important to enable the building proposed for the site to be able to be constructed in accordance with NZS3604 (2011) “Timber Framed Buildings”.

The following specification is recommended for earth fills:

1. All topsoil and unsuitable materials, including low strength ground, uncontrolled fill, rubbish etc shall be stripped from the footprint area of the fill.

2. Where fill is placed on subgrade slopes steeper than 1V:5H the subgrade shall be benched. Fill should not be placed on slopes steeper than 1V:3H without specific assessment.

3. The stripped subgrade surface should be inspected by the certifying engineer prior to placing any fill.

4. Compaction control should be principally in terms of a minimum allowable shear strength and maximum allowable air voids. Recommended compaction control criteria are presented in the table below.

5. The testing frequency and specification should be confirmed with the contractor prior to commencing work.

6. Fill should be in maximum lifts of 0.6m in height, built up in 200mm layers (uncompacted).

7. Provision should be made to ensure that the earthworks are conducted with due respect for the weather. The fill should not be placed on to wet ground, especially if ponded water is present.

Table 2. Recommended fill compaction criteria.

| **Compaction Criteria (Non-cohesive fill)** | | |
|---|---|---|
| Scala Penetrometer | Average not less than | 2 blows per 50mm |
| Clegg Hamer | Minimum impact value | 25 |
| **Compaction Criteria (Cohesive fill)** | | |
| Nuclear Densometer (NDM) | Shear strength | Minimum 120kPa |
| | Air Voids Ratio | Maximum 10% |

*Specific Gravity testing is not typically required for house sites where a small volume of cohesive filling is required, however this will require on-site assessment of moisture content by a experienced geotechnical professional at the time of NDM testing.

### 6.1.3 Retaining Walls

Several retaining walls are likely to be required along the proposed Road where fill exceeds recommended depths and batter slopes. Masonry Block retaining walls will also be required to raise garage areas for individual houses

and will be generally less than 1.5m in height with one house likely to require a masonry block retaining wall of up to 2.3m in height.

The following recommendations are made to assist with the engineering design of the retaining walls:

1. The effective strength parameters of 30° friction angle, 0kPa cohesion, and unit weight of 18kN/m$^3$ should be used in the wall design. An undrained shear strength of 80kPa can be assumed at a depth of 0.2m below ground level.
2. Timber pole retaining structures shall be design for active earth pressures, masonry block retaining walls supporting concrete slabs shall be designed for at rest earth pressures.
3. Allowances should be made for sloping ground above and below the walls.
4. If vehicles can access above walls these shall be designed for vehicle loading.
5. Where buildings are within 1.5x height of retaining structures, the retaining structures shall be designed for the buildings surcharge load.
6. Enhanced behind wall drainage is recommended for timber pole retaining structures. The excavation for the drainage unit should be lined in a non-woven geotextile (filter cloth) prior to placement of the drainage metal to minimise the potential for siltation. A 100mm diameter slotted drainage coil surrounded with at least 50mm of drainage metal should be placed at the base of the drainage unit. Drainage metal should comprise clean 10mm to 20mm angular durable gravel (drainage metal) which should extend up to 70% of the wall height. The top of the drainage unit should be wrapped in filter cloth.
7. For timber pole retaining structures, low permeability soil should be placed into the top of the excavation above the drainage unit. The soil should be compacted in layers not exceeding 200mm using a small compactor (e.g. “wacker packer”) to achieve a minimum strength of 1 blow per 50mm using a Scala penetrometer or 80kPa using a hand held shear vane.
8. For timber pole retaining structures, the drainage coil should be connected to the stormwater system for the development or should discharge to an area of low gradient well away from any fill.

At the construction stage the pole holes should be checked by a Building Inspector or Suitably Qualified Professional to ensure that the soils encountered are consistent with those described in this report and that the depth of the excavation meets or exceeds the engineering design requirements. The wall designer should be contacted immediately should differing conditions be encountered. Alteration of the design may be required.

It is also important that adequate behind wall drainage is installed, and as such the drainage unit should be inspected by a Building Inspector or Suitably Qualified Professional prior to its backfilling.

For timber pole retaining walls, the poles should be fully encased with concrete in accordance with the design. This includes ensuring that the poles are centred within the pile hole. All deleterious material should be removed from the excavation. Backfilling with soil shall not be carried out.

### 6.1.4 Site Access Road and Road Construction

Plans supplied show that it is intended to construct a shared access as an extension off the existing driveway to 482 Kerikeri Road (which run along the northern boundary of the site). The design of these access ways is covered in a separate report by LDE Ltd.

### 6.1.5 Site Contouring and Topsoiling

As soon as possible, all final cut-slopes and fill slopes should be covered with topsoil a minimum of 0.10m thick to prevent the ground from drying out readily resulting in the development of cracks.

The finished ground level should be graded so that water cannot pond against, beneath or around the building and retaining walls for the economic life of structure. To achieve this, it will be important that the building platform beneath the topsoil grades away from the site.

Contouring should avoid the potential for concentration and discharge of surface water over point locations which could result in soil erosion or instability.

## 6.2 Foundation Design and Construction Recommendations

Based on our investigation and appraisal of the building site, subject to the buildings being located behind any building restriction lines, supported by engineered retaining walls or engineered fill platforms, we consider that conventional shallow pile, concrete slab-on-grade, or waffle raft-slab foundations will be suitable for the sites.

Soils on the site have been classified at Class M (moderately expansive) in terms of the New Zealand Building Code (NZBC) with a characteristic surface movement (ys) of 44mm. Concrete slab foundation designs will either require specific engineering design for the above NZBC expansive soil classification or the acceptable solutions from B1/AS1 amendment 20 may be adopted.

Piled foundations consisting bored and poured timber piles may be sized in accordance with NZS3604 but shall be embedded a minimum of 600mm below cleared ground level to allow for potential shrink/swell movement resultant form seasonal soil moisture variations.

Conventional slab-on-grade foundations may be adopted without specific design in accordance with B1/AS1 Section 3.2: ‘Slab-on-ground on expansive soils’, for site Class M (moderately expansive).

Raft-slab foundations are expected to be suitable for the site, subject to specific design in accordance with AS2870 (2011) and the recommendations of BRANZ Study Report 120A. Design should assume characteristic soil movement of 44mm (Class M, moderately expansive in terms of the NZBC).

Expansive soil site classifications may be revised at the building consent stage subject to laboratory testing and taking into account finished platform levels and the effects of any cuts or fills.

A strength reduction factor of 0.5 shall be utilised for all ultimate limit state design purposes.

The foundation drawings should be reviewed by LDE Ltd at the building consent stage to determine if the proposed structure and foundation are suitable for the ground conditions.

## 6.3 Verification Checks

### 6.3.1 Fill Placed Beneath Foundations

As required by NZS3604 (2011) and NZS4229 (2013), any fill beneath the building will need to be certified by a Chartered Professional Engineer or Professional Engineering Geologist in accordance with NZS4431 (2022). A "Certificate of Suitability of Earthfill for Residential Development" will also be required in accordance with NZS3604 (2011) and NZS4229 (2013).

In order for the fill to be certified, the excavation will need to be inspected by the certifying Engineer or Engineer's representative to ensure that all compressible materials are removed prior to the placement of the new fill.

Verification strength testing of the backfill by the certifying Engineer or Engineer's representative will also be required to ensure that the minimum fill strengths specified in this report have been achieved.

## 6.4 Stormwater and Wastewater Management

Stormwater and wastewater management are addressed in a separate civil infrastructure report by LDE Ltd.

# 7 Section 106 Statement

Subject to adoption in full of the recommendations within this report, it is our opinion in terms of section 106 of the Resource Management Act that;

1. the land in respect of which a consent is sought, or any structure on that land, is not and is not likely to be subject to material damage by one or more natural hazards; and

2. any subsequent use that is likely to be made of the land is not likely to accelerate, worsen, or result in material damage to the land, other land or structures by one or more natural hazards: and

3. sufficient provision has been made for legal and physical access to each allotment to be created by the development.

# 8 LIMITATIONS

This report should be read and reproduced in its entirety including the limitations to understand the context of the opinions and recommendations given.

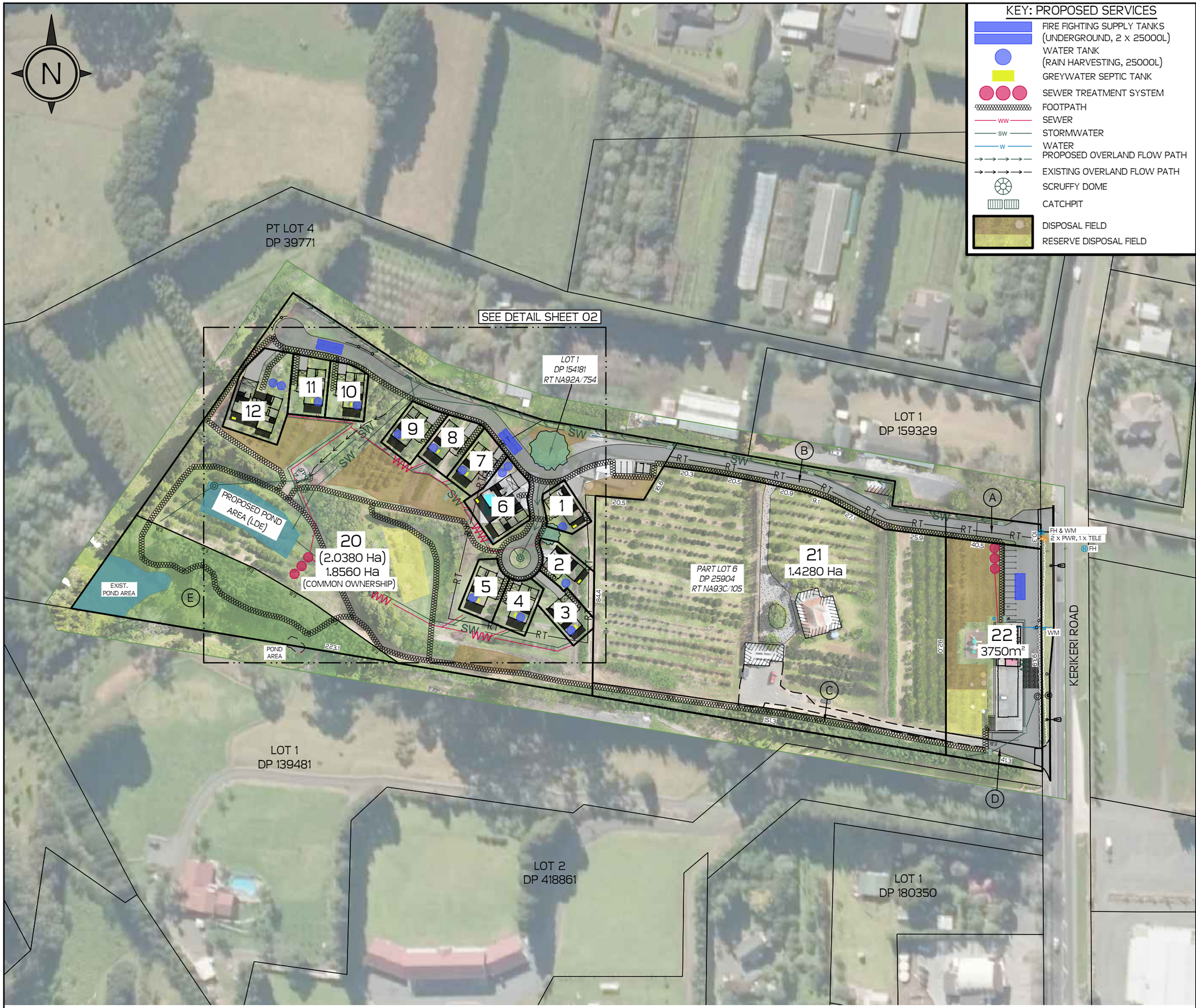
This report has been prepared exclusively for Quirino Limited in accordance with the brief given to us or the agreed scope and they will be deemed the exclusive owner on full and final payment of the invoice. Information, opinions, and recommendations contained within this report can only be used for the purposes with which it was intended. LDE accepts no liability or responsibility whatsoever for any use or reliance on the report by any party other than the owner or parties working for or on behalf of the owner, such as local authorities, and for purposes beyond those for which it was intended.

This report was prepared in general accordance with current standards, codes and best practice at the time of this report. These may be subject to change.

Opinions given in this report are based on visual methods and subsurface investigations at discrete locations designed to the constraints of the project scope to provide the best assessment of the environment. It must be appreciated that the nature and continuity of the subsurface materials between these locations are inferred and that actual conditions could vary from that described herein. We should be contacted immediately if the conditions are found to differ from those described in this report.

# APPENDIX A

# SCHEME PLAN




## KEY: PROPOSED SERVICES

- FIRE FIGHTING SUPPLY TANKS (UNDERGROUND, 2 x 25000L)
- WATER TANK (RAIN HARVESTING, 25000L)
- GREYWATER SEPTIC TANK
- SEWER TREATMENT SYSTEM
- FOOTPATH
- WW — SEWER
- SW — STORMWATER
- W — WATER
- PROPOSED OVERLAND FLOW PATH
- EXISTING OVERLAND FLOW PATH
- SCRUFFY DOME
- CATCHPIT
- DISPOSAL FIELD
- RESERVE DISPOSAL FIELD

## CAUTION:

1. THIS DRAWING SHOULD NOT BE AMENDED MANUALLY.
2. AREAS & DIMENSIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO FINAL SURVEY.
3. THE VENDOR & PURCHASER MUST CONTACT THE SURVEYOR IF SALE & PURCHASE AGREEMENTS ARE ENTERED INTO USING THIS PLAN.
4. SERVICES MUST NOT BE POSITIONED USING THIS PLAN.
5. DO NOT SCALE OFF DRAWINGS.
6. THIS PLAN IS COPYRIGHT TO REYBURN & BRYANT (1999) LIMITED.
7. SUBDIVISION DESIGNED BY REYBURN & BRYANT - WHANGAREI - NEW ZEALAND
8. 04m 2014-2016 RURAL AERIAL SOURCED FROM AERIAL SURVEYS LTD INFORMATION AVAILABLE ON LINZ DATA SERVICE
9. DRONE IMAGE SOURCED FROM REYBURN AND BRYANT DRONE FLIGHT COMPLETED 02-FEB-2024
8. SITE PLAN DESIGNED BY HB ARCHITECTURE LIMITED. DATA SOURCED FROM MASTER PROVIDED 24/04/2024
9. SERVICES SHOWN ARE PROPOSED. THEY HAVE BEEN SOURCED FROM LDE LTD CIVIL DESIGN PROVIDED 29/04/2024
10. ALL BOUNDARIES ARE TO BE MINIMUM 1.5M FROM BUILDINGS

## PROPOSED AMALGAMATION CONDITION

PURSUANT TO SECTION 220 (1)(b)(iv) OF THE RMA 1991 THAT LOT 20 HEREON (COMMON PROPERTY) BE HELD AS TO THIRTEEN UNDIVIDED ONE-THIRTEENTH SHARES BY THE OWNERS OF LOTS 1 - 12 & 21 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL RECORDS OF TITLE BE ISSUES IN ACCORDANCE THEREWITH.

## PROPOSED EASEMENT SCHEDULE

| PURPOSE | SHOWN | BURDENED (SERV.TENE.) | BENEFITTED (DOM.TENE.) |
|---|---|---|---|
| RIGHT OF WAY & SERVICES | A | LOT 20 HEREON | LOTS 21 & 22 HEREON |
| | B | LOT 20 HEREON | LOT 21 HEREON |
| | D | LOT 22 HEREON | LOT 21 HEREON |
| RIGHT OF WAY - PEDESTRIAN ONLY | C | LOT 21 HEREON | LOTS 1 - 12 HEREON |
| | D | LOT 22 HEREON | LOTS 1 - 12 HEREON |

SEE SHEET 03 FOR EXISTING EASEMENTS & COVENANTS TO BE CANCELLED

## PROPOSED CONSERVATION COVENANTS

PURSUANT TO S77 RESERVES ACT 1977

| SHOWN | UNDERLYING PARCEL | AREA |
|---|---|---|
| E | LOT 20 HEREON | 0.3405 HA |

TOTAL AREA: 4.3403 HA
COMPRISED IN: RT NA93C/105 & NA92A/754

THIS SITE IS ZONED ' RURAL PRODUCTION ' AND THE BUILDING SETBACKS ARE THUS: 10m FROM ALL BOUNDARIES AND 12m FROM KERIKERI ROAD.

| REV | DATE | DESCRIPTION |
|---|---|---|
| D | 02.05.24 | ADD COVENANT & AMEND. AMALG. - RS / SB |
| C | 01.05.24 | REFLECT NEW LDE CIVIL DESIGN - RS / SB |
| A | 22.02.24 | ISSUED FOR CONSIDERATION - RS / SB |

REF. DATA:

reyburn & bryant
Ph: 09 438 3563
7 Selwyn Ave, Whangarei
PO Box 191, Whangarei 0140
www.reyburnandbryant.co.nz

CLIENT

QUIRINO LIMITED
482 AND 484 A&B KERIKERI ROAD, KERIKERI

TITLE

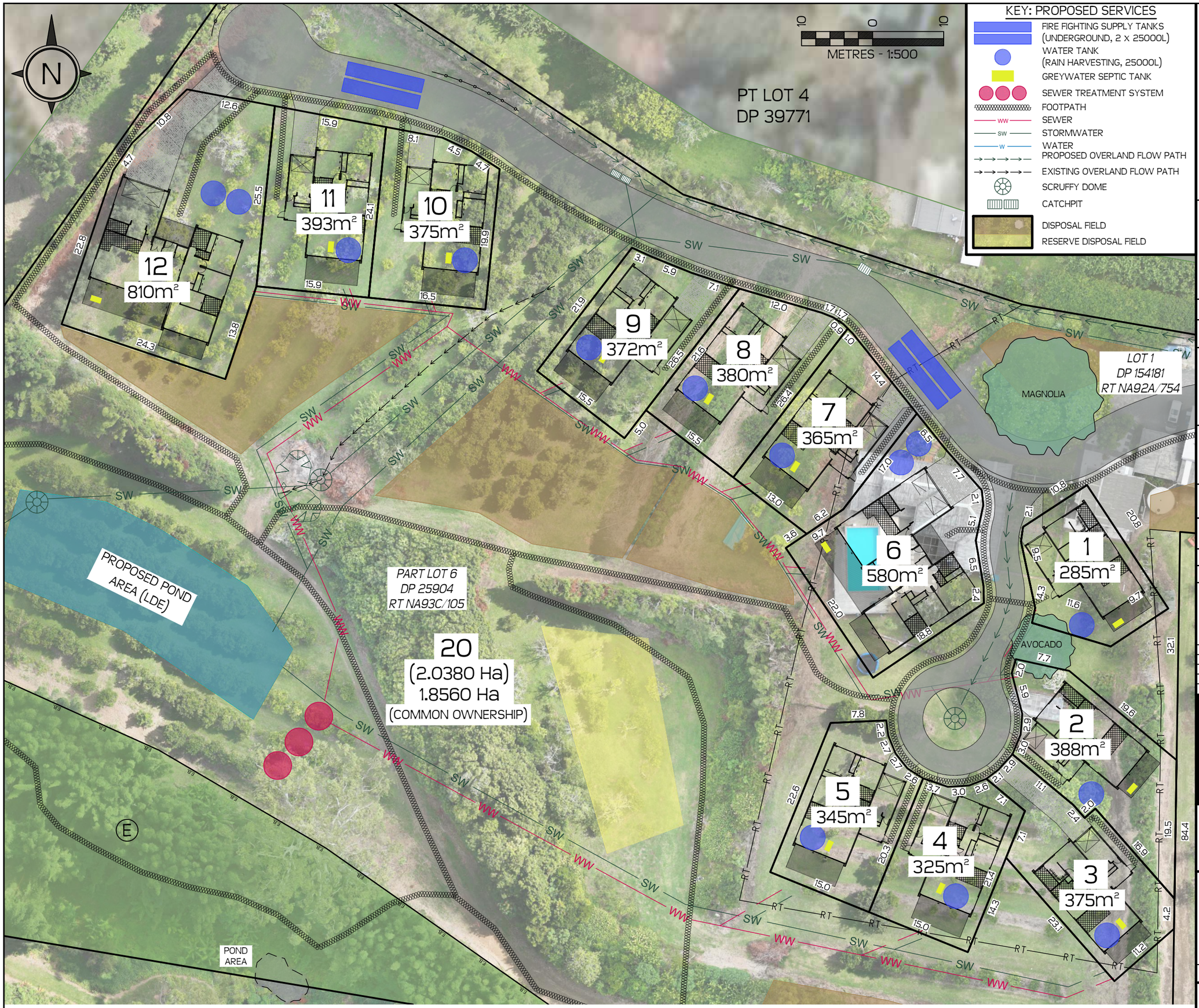
# PROPOSED SUBDIVISION OF LOT 1 DP 154181 & PART LOT 6 DP 25904

| DATE | SCALE |
|---|---|
| MAY 2024 | 1:1500 @A3 |

| DRAWING REF. | SHEET | REV |
|---|---|---|
| S17837 | 01 OF 03 | D |



LOCAL AUTHORITY: FAR NORTH DISTRICT COUNCIL




## KEY: PROPOSED SERVICES

- FIRE FIGHTING SUPPLY TANKS (UNDERGROUND, 2 x 25000L)
- WATER TANK (RAIN HARVESTING, 25000L)
- GREYWATER SEPTIC TANK
- SEWER TREATMENT SYSTEM
- FOOTPATH
- SEWER
- STORMWATER
- WATER
- PROPOSED OVERLAND FLOW PATH
- EXISTING OVERLAND FLOW PATH
- SCRUFFY DOME
- CATCHPIT
- DISPOSAL FIELD
- RESERVE DISPOSAL FIELD

## CAUTION:

1. THIS DRAWING SHOULD NOT BE AMENDED MANUALLY.
2. AREAS & DIMENSIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO FINAL SURVEY.
3. THE VENDOR & PURCHASER MUST CONTACT THE SURVEYOR IF SALE & PURCHASE AGREEMENTS ARE ENTERED INTO USING THIS PLAN.
4. SERVICES MUST NOT BE POSITIONED USING THIS PLAN.
5. DO NOT SCALE OFF DRAWINGS.
6. THIS PLAN IS COPYRIGHT TO REYBURN & BRYANT (1999) LIMITED.
7. SUBDIVISION DESIGNED BY REYBURN & BRYANT - WHANGAREI - NEW ZEALAND
8. 04m 2014-2016 RURAL AERIAL SOURCED FROM AERIAL SURVEYS LTD INFORMATION AVAILABLE ON LINZ DATA SERVICE
9. DRONE IMAGE SOURCED FROM REYBURN AND BRYANT DRONE FLIGHT COMPLETED 02-FEB-2024
8. SITE PLAN DESIGNED BY HB ARCHITECTURE LIMITED. DATA SOURCED FROM MASTER PROVIDED 24/04/2024
9. SERVICES SHOWN ARE PROPOSED. THEY HAVE BEEN SOURCED FROM LDE LTD CIVIL DESIGN PROVIDED 29/04/2024
10. ALL BOUNDARIES ARE TO BE MINIMUM 1.5M FROM BUILDINGS

## PROPOSED AMALGAMATION CONDITION

PURSUANT TO SECTION 220 (1)(b)(iv) OF THE RMA 1991 THAT LOT 20 HEREON (COMMON PROPERTY) BE HELD AS TO THIRTEEN UNDIVIDED ONE-THIRTEENTH SHARES BY THE OWNERS OF LOTS 1 - 12 & 21 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL RECORDS OF TITLE BE ISSUES IN ACCORDANCE THEREWITH.

## PROPOSED EASEMENT SCHEDULE

| PURPOSE | SHOWN | BURDENED (SERV.TENE.) | BENEFITTED (DOM.TENE.) |
|---|---|---|---|
| RIGHT OF WAY & SERVICES | A | LOT 20 HEREON | LOTS 21 & 22 HEREON |
| | B | LOT 20 HEREON | LOT 21 HEREON |
| | D | LOT 22 HEREON | LOT 21 HEREON |
| RIGHT OF WAY - PEDESTRIAN ONLY | C | LOT 21 HEREON | LOTS 1 - 12 HEREON |
| | D | LOT 22 HEREON | LOTS 1 - 12 HEREON |

SEE SHEET 03 FOR EXISTING EASEMENTS & COVENANTS TO BE CANCELLED

## PROPOSED CONSERVATION COVENANTS

PURSUANT TO S77 RESERVES ACT 1977

| SHOWN | UNDERLYING PARCEL | AREA |
|---|---|---|
| E | LOT 20 HEREON | 0.3405 HA |

TOTAL AREA: 4.3403 HA
COMPRISED IN: RT NA93C/105 & NA92A/754

THIS SITE IS ZONED ' RURAL PRODUCTION ' AND THE BUILDING SETBACKS ARE THUS: 10m FROM ALL BOUNDARIES AND 12m FROM KERIKERI ROAD.

| REV | DATE | DESCRIPTION |
|---|---|---|
| D | 02.05.24 | ADD COVENANT & AMEND. AMALG. - RS / SB |
| C | 01.05.24 | REFLECT NEW LDE CIVIL DESIGN - RS / SB |
| A | 22.02.24 | ISSUED FOR CONSIDERATION - RS / SB |

REF. DATA:

reyburn & bryant
Ph: 09 438 3563
7 Selwyn Ave, Whangarei
PO Box 191, Whangarei 0140
www.reyburnandbryant.co.nz

CLIENT

QUIRINO LIMITED
482 AND 484 A&B KERIKERI ROAD, KERIKERI

TITLE

# PROPOSED SUBDIVISION OF LOT 1 DP 154181 & PART LOT 6 DP 25904

| DATE | SCALE |
|---|---|
| MAY 2024 | 1:500 @A3 |

| DRAWING REF. | SHEET | REV |
|---|---|---|
| S17837 | 02 OF 03 | D |

Date Plotted: 2/05/2024 File Path: P:\17000 - 17999\17837 - Kerikeri Eco Community\Drawings\Scheme Plan\S17837 - Quirino LTD - Rev D.dwg

LOCAL AUTHORITY: FAR NORTH DISTRICT COUNCIL

## PROPOSED CANCELLATION OF CONDITIONAL EASEMENTS

*PURSUANT TO SECTION 243(e) OF THE RMA 1991, THE FAR NORTH DISTRICT COUNCIL IS TO CANCEL THE CONDITIONS AS TO THE CREATION OF:*

THE RIGHT OF WAY MARKED A ON DP 154181, OVER LOT 1 DP 154181 (RT NA92A/754) & APPURTENANT TO PART LOT 6 DP 25904 (RT NA93C/105) & CREATED BY C460756.3;

*REASON: THIS LOT WILL NO LONGER EXIST. NEW ROW TO BE PROPOSED TO BETTER SUIT THE DEVELOPMENT.*

&

THE RIGHT TO CONVEY WATER MARKED C ON DP 154181, OVER LOT 1 DP 154181 (RT NA92A/754) & APPURTENANT TO PART LOT 6 DP 25904 (RT NA93C/105) & CREATED BY C460756.3;

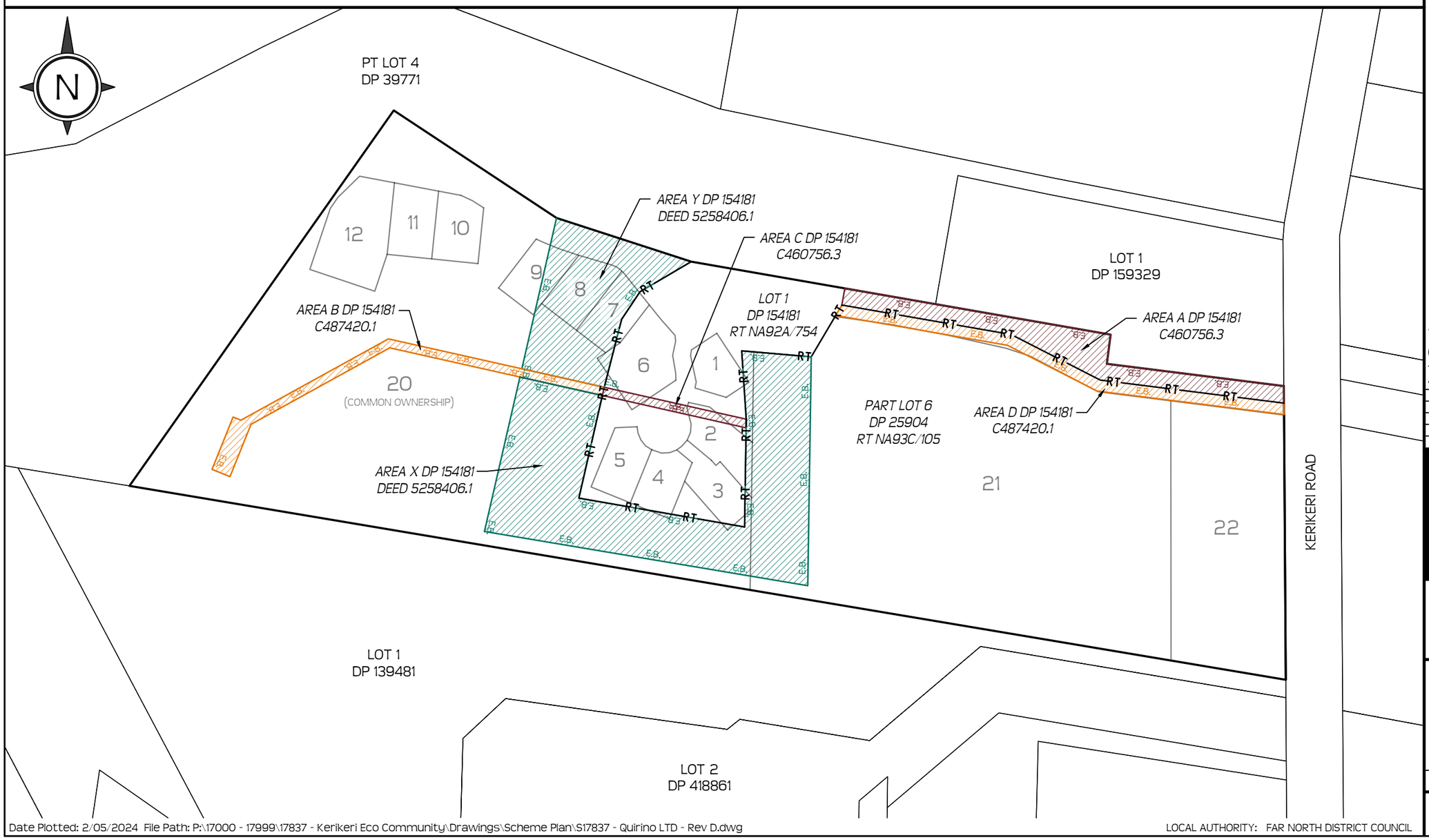
&

THE RIGHT TO CONVEY WATER MARKED B ON DP 154181 AND THE RIGHT TO TRANSMIT ELECTRICITY MARKED B & D ON DP 154181, OVER PART LOT 6 DP 25904 (RT NA93C/105) & APPURTENANT TO LOT 1 DP 154181 (RT NA92A/754) & CREATED BY C460756.3;

*REASON: THESE SERVICE EASEMENTS ARE EITHER NO LONGER REQUIRED OR WILL BE PROPOSED TO BETTER SUIT THE DEVELOPMENT.*

## PROPOSED CANCELLATION OF LAND COVENANTS

THE RESTRICTIVE 'NO BUILD' COVENANT MARKED X & Y ON DP 154181, OVER PART LOT 6 DP 25904 (RT NA93C/105) & APPURTENANT TO LOT 1 DP 154181 (RT NA92A/754) & CREATED BY DEED 5258406.1 IS TO BE CANCELLED




## CAUTION:

1. THIS DRAWING SHOULD NOT BE AMENDED MANUALLY.
2. AREAS & DIMENSIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO FINAL SURVEY.
3. THE VENDOR & PURCHASER MUST CONTACT THE SURVEYOR IF SALE & PURCHASE AGREEMENTS ARE ENTERED INTO USING THIS PLAN.
4. SERVICES MUST NOT BE POSITIONED USING THIS PLAN.
5. DO NOT SCALE OFF DRAWINGS.
6. THIS PLAN IS COPYRIGHT TO REYBURN & BRYANT (1999) LIMITED.
7. SUBDIVISION DESIGNED BY REYBURN & BRYANT - WHANGAREI - NEW ZEALAND
8. 04m 2014-2016 RURAL AERIAL SOURCED FROM AERIAL SURVEYS LTD INFORMATION AVAILABLE ON LINZ DATA SERVICE
9. DRONE IMAGE SOURCED FROM REYBURN AND BRYANT DRONE FLIGHT COMPLETED 02-FEB-2024
8. SITE PLAN DESIGNED BY HB ARCHITECTURE LIMITED. DATA SOURCED FROM MASTER PROVIDED 24/04/2024
9. SERVICES SHOWN ARE PROPOSED. THEY HAVE BEEN SOURCED FROM LDE LTD CIVIL DESIGN PROVIDED 29/04/2024
10. ALL BOUNDARIES ARE TO BE MINIMUM 1.5M FROM BUILDINGS

TOTAL AREA: 4.3403 HA
COMPRISED IN: RT NA93C/105 & NA92A/754

THIS SITE IS ZONED ' RURAL PRODUCTION ' AND THE BUILDING SETBACKS ARE THUS: 10m FROM ALL BOUNDARIES AND 12m FROM KERIKERI ROAD.

| REV | DATE | DESCRIPTION |
|---|---|---|
| D | 02.05.24 | ADD COVENANT & AMEND. AMALG. - RS / SB |
| C | 01.05.24 | REFLECT NEW LDE CIVIL DESIGN - RS / SB |
| A | 22.02.24 | ISSUED FOR CONSIDERATION - RS / SB |

REF. DATA:


reyburn & bryant
Ph: 09 438 3563
PO Box 191, Whangarei 0140
7 Selwyn Ave, Whangarei
www.reyburnandbryant.co.nz


CLIENT
QUIRINO LIMITED
482 AND 484 A&B KERIKERI ROAD, KERIKERI

TITLE
EXIST. EASEMENTS TO BE CANCELLED
# PROPOSED SUBDIVISION OF LOT 1 DP 154181 & PART LOT 6 DP 25904

| DATE | SCALE | DRAWING REF. | SHEET | REV |
|---|---|---|---|---|
| MAY 2024 | 1:1500 @A3 | S17837 | 03 OF 03 | D |

Date Plotted: 2/05/2024 File Path: P:\17000 - 17999\17837 - Kerikeri Eco Community\Drawings\Scheme Plan\S17837 - Quirino LTD - Rev D.dwg

LOCAL AUTHORITY: FAR NORTH DISTRICT COUNCIL

# APPENDIX B

# GEOTECHNICAL INVESTIGATION PLAN


LEGEND

- Hand auger borehole
- Hand auger + Scala
- 5m Contour
- 1m Contour
- Pond
- Pond Cut Batter
- Pond Fill Batter
- Proposed New Dwellings
- Proposed Commercial Building

0 30 60 90 120 m

SCALE A3: 1:1500

NOTES

1.Aerial basemap and property boundries sourced from LINZ data service
2.Topographic contoours derived from NRC LiDAR DEM (2018-2019 survey).
3. Location of driveway and buildings sourced from Reyburn & Bryant Scheme Plan

CLIENT
Quirino Limited

PROJECT
Orangefields
482/484 kerikeri Road
Kerikeri

DRAWING TITLE
Geotechnical Site Investigation Plan
(Hand Auger Testing)

LDE LAND DEVELOPMENT & ENGINEERING

| PROJECT REF | DRAWING REF | REVISION |
|---|---|---|
| 25575 | G01 | A |
| DATE | PREPARED BY | CHECKED BY |
| 03/05/2024 | MJL | CP |

FILE PATH
M-FILES\LDE - Project\403491-25575\25575_484 Kerikeri Road\25575_484 KeriKeri Road.qgz


LEGEND

- Scala penetrometer
- 5m Contour
- 1m Contour
- Proposed New Road
- Pond
- Pond Cut Batter
- Pond Fill Batter
- Proposed New Dwellings
- Proposed Commercial Building

0 30 60 90 120 m

SCALE A3: 1:1500

NOTES

1.Aerial basemap and property boundries sourced from LINZ data service
2.Topographic contoours derived from NRC LiDAR DEM (2018-2019 survey).
3. Location of driveway and buildings sourced from Reyburn & Bryant Scheme Plan

CLIENT
Quirino Limited

PROJECT
Orangefields
482/484 kerikeri Road
Kerikeri

DRAWING TITLE
Geotechnical Site Investigation Plan
(Scala Testing)

LDE LAND DEVELOPMENT & ENGINEERING

| PROJECT REF | DRAWING REF | REVISION |
|---|---|---|
| 25575 | G02 | A |
| DATE | PREPARED BY | CHECKED BY |
| 03/05/2024 | MJL | CP |

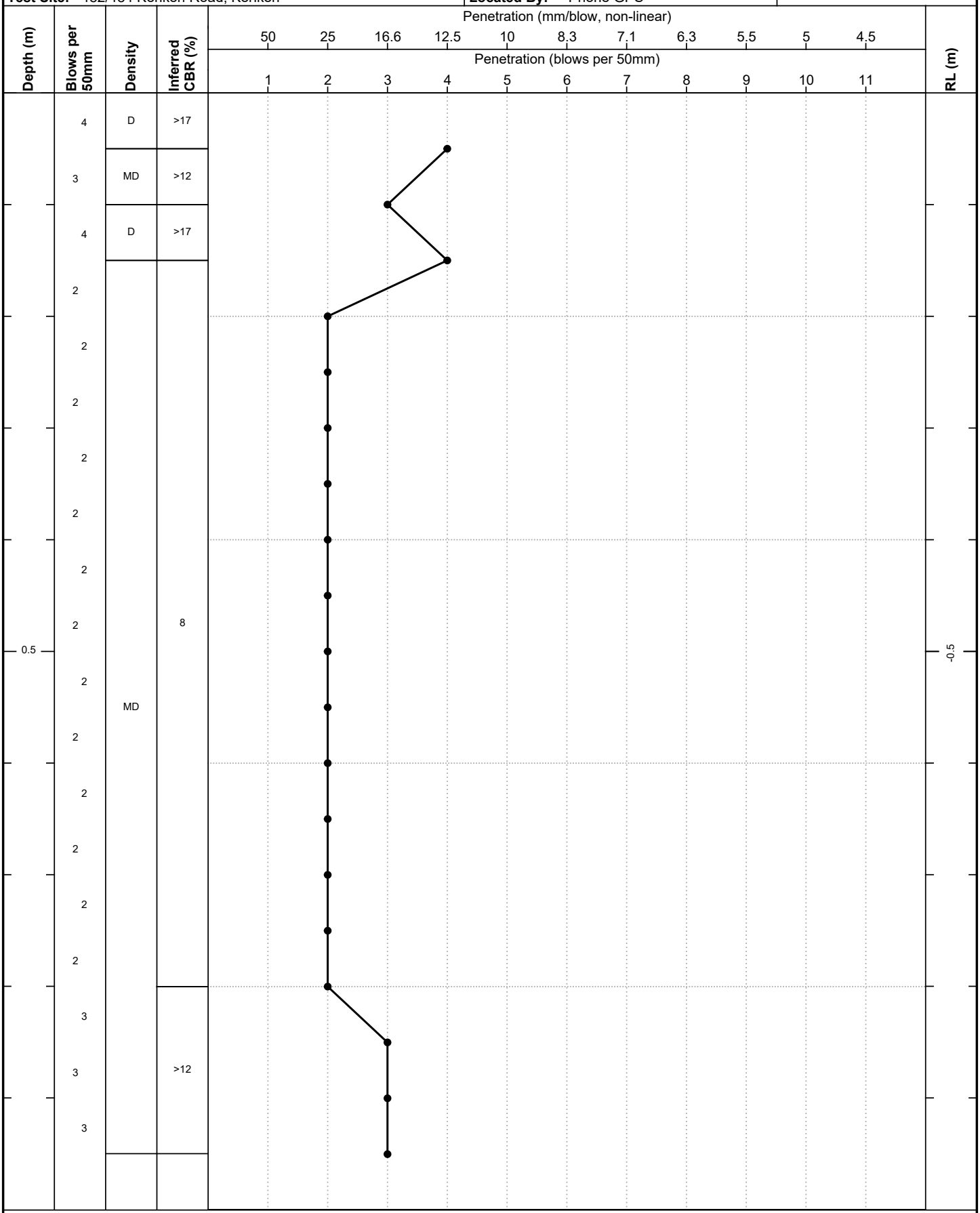
FILE PATH
M-FILES\LDE - Project\403491-25575\25575_484 Kerikeri Road\25575_484 KeriKeri Road.qgz

# APPENDIX C

# GEOTECHNICAL INVESTIGATION DATA

# Dynamic Cone Penetrometer Log

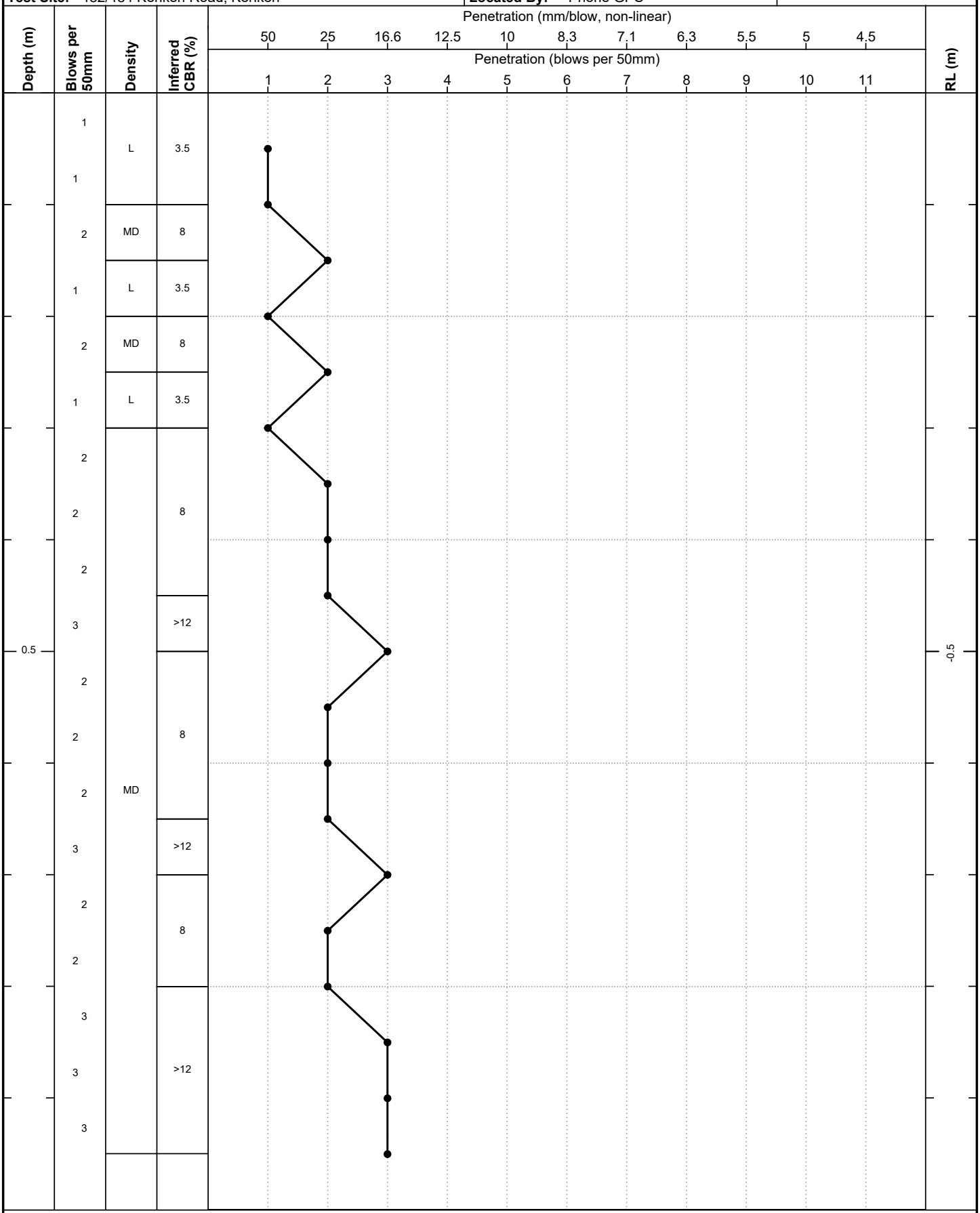
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP01** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099346mN, 1685163mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 09/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

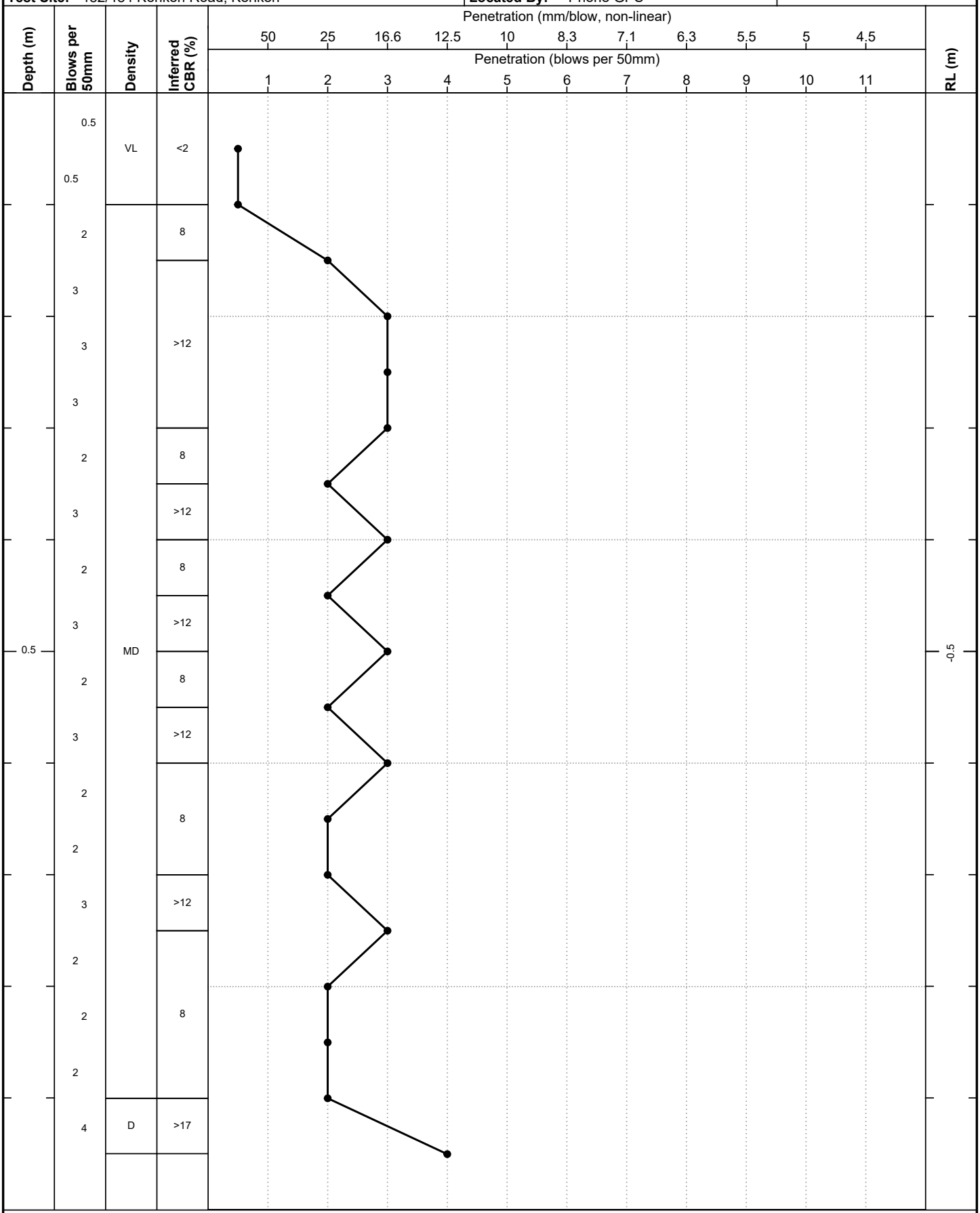
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP02** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099359mN, 1685165mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 09/01/2024 | | |
| **Logged By:** | GG | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

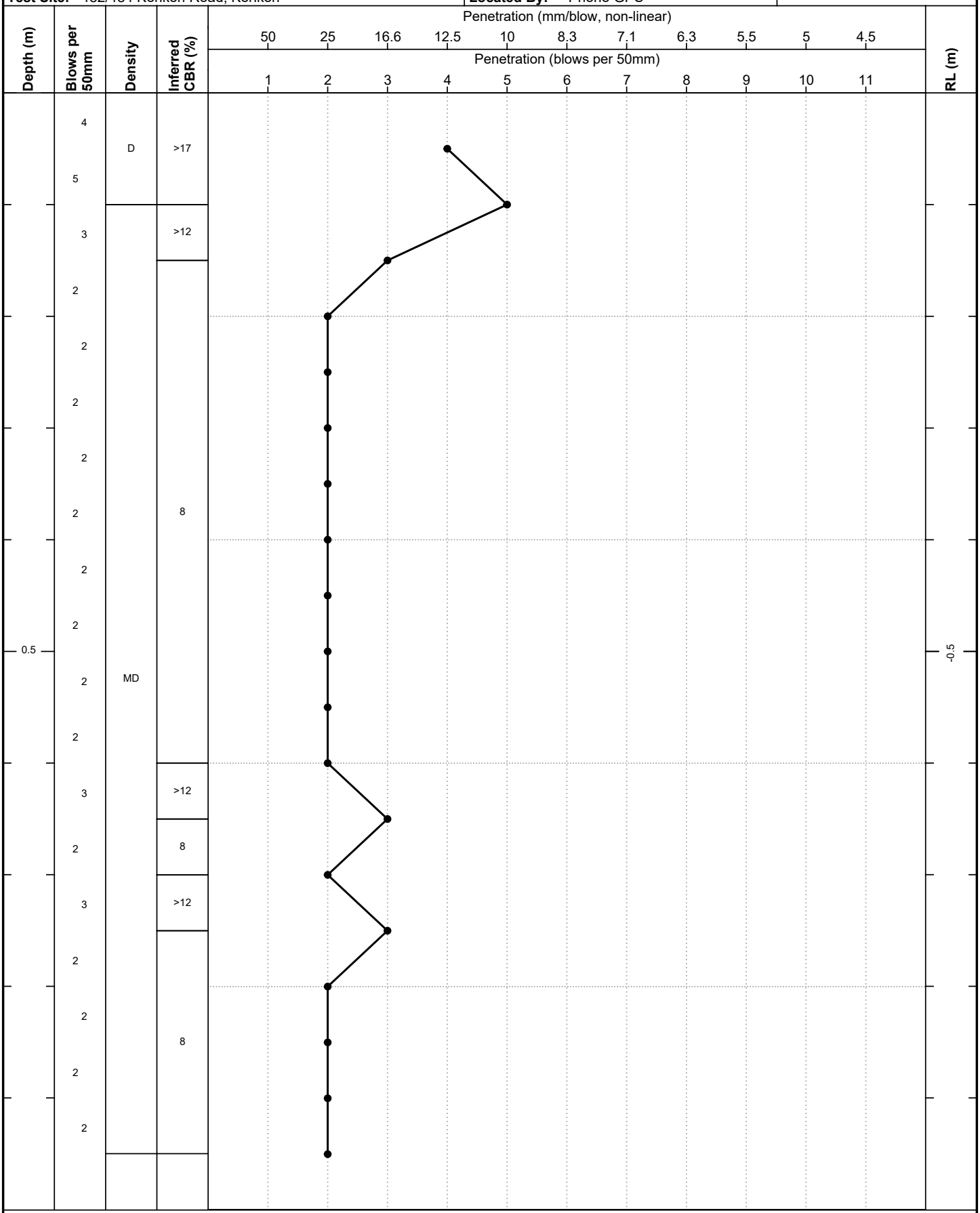
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP03** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099365mN, 1685164mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 09/01/2024 | | |
| **Logged By:** | GG | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

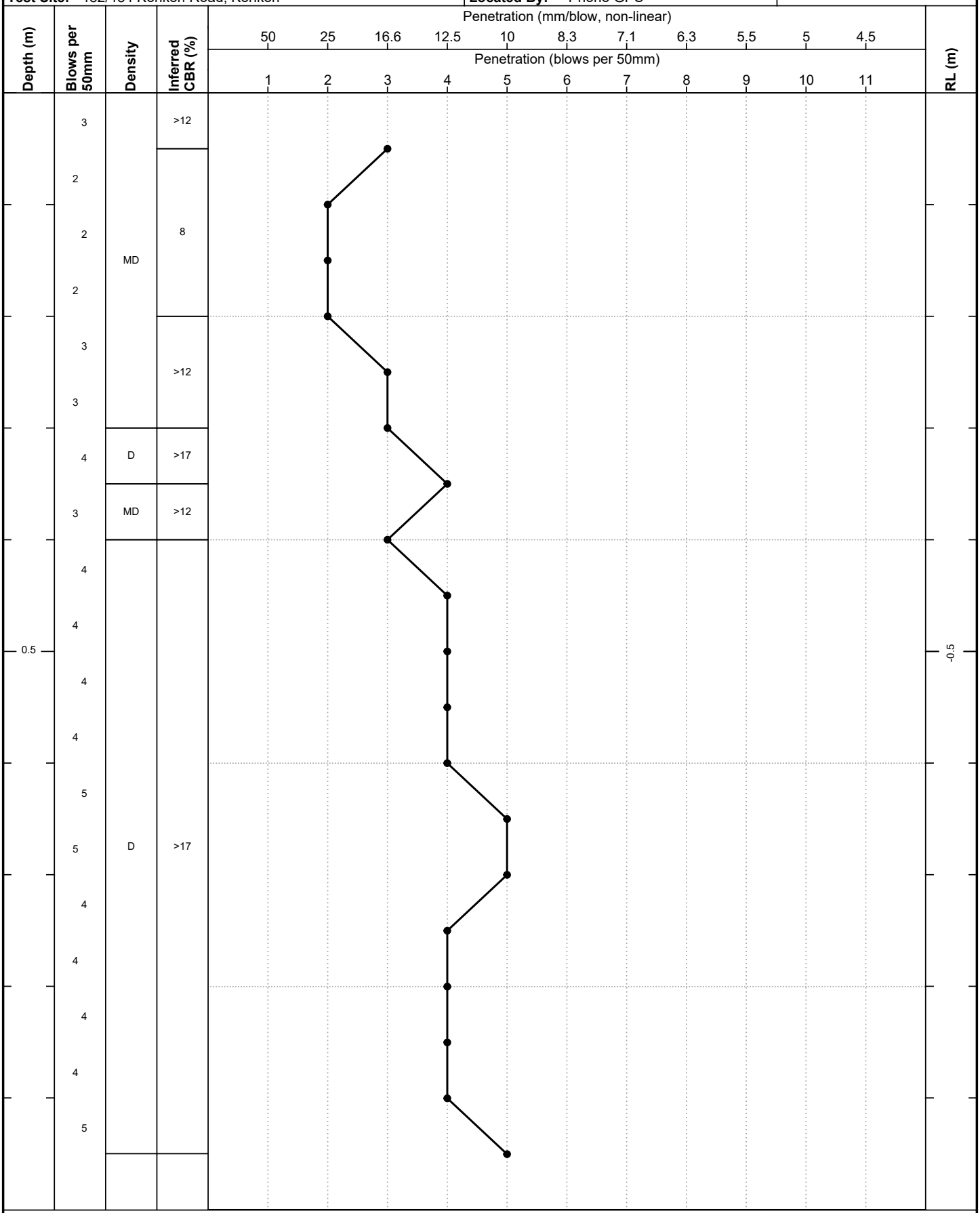
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP04** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099383mN, 1685164mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 09/01/2024 | | |
| **Logged By:** | GG | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

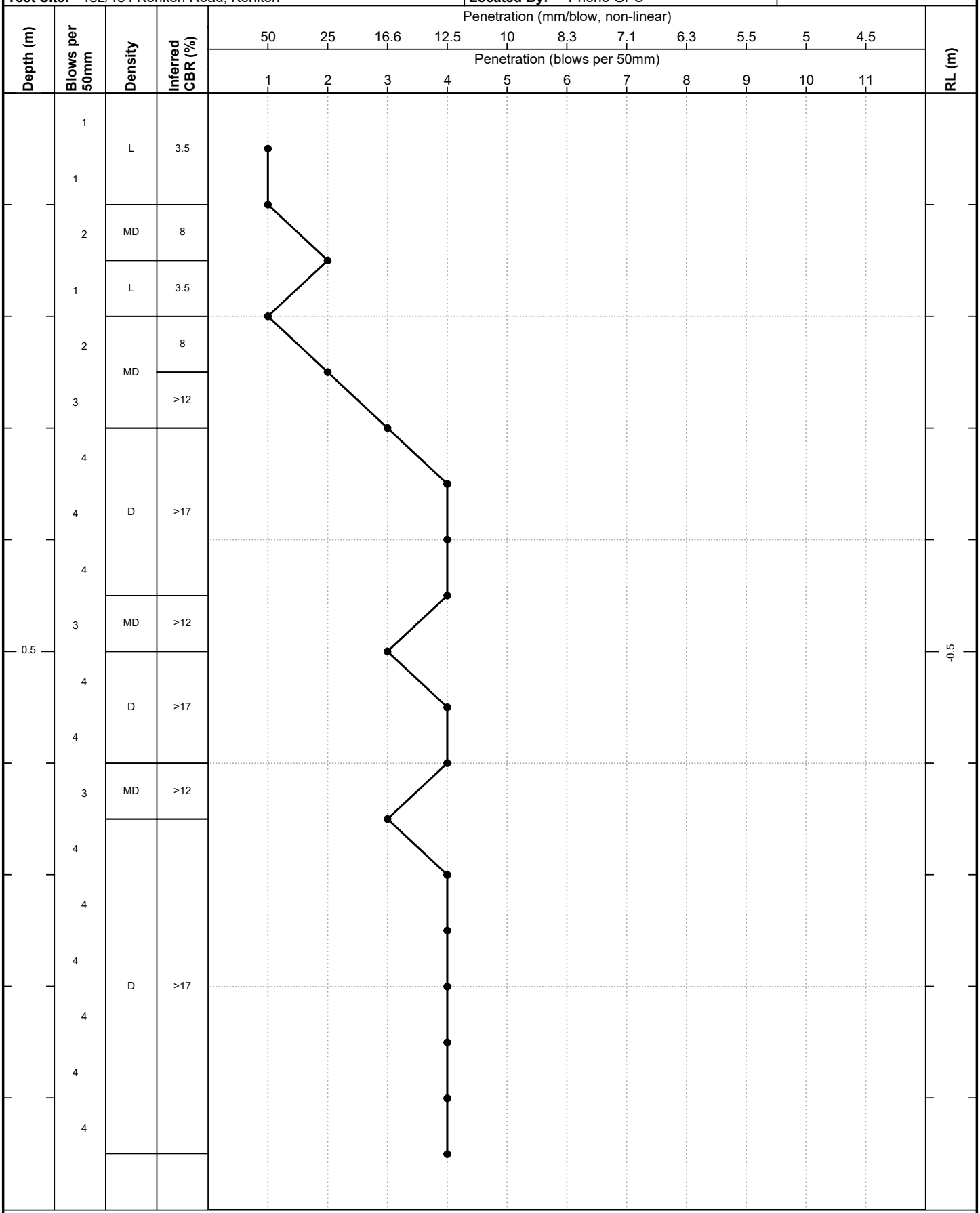
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP05** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099396mN, 1685168mE | **Test Date:** | 09/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

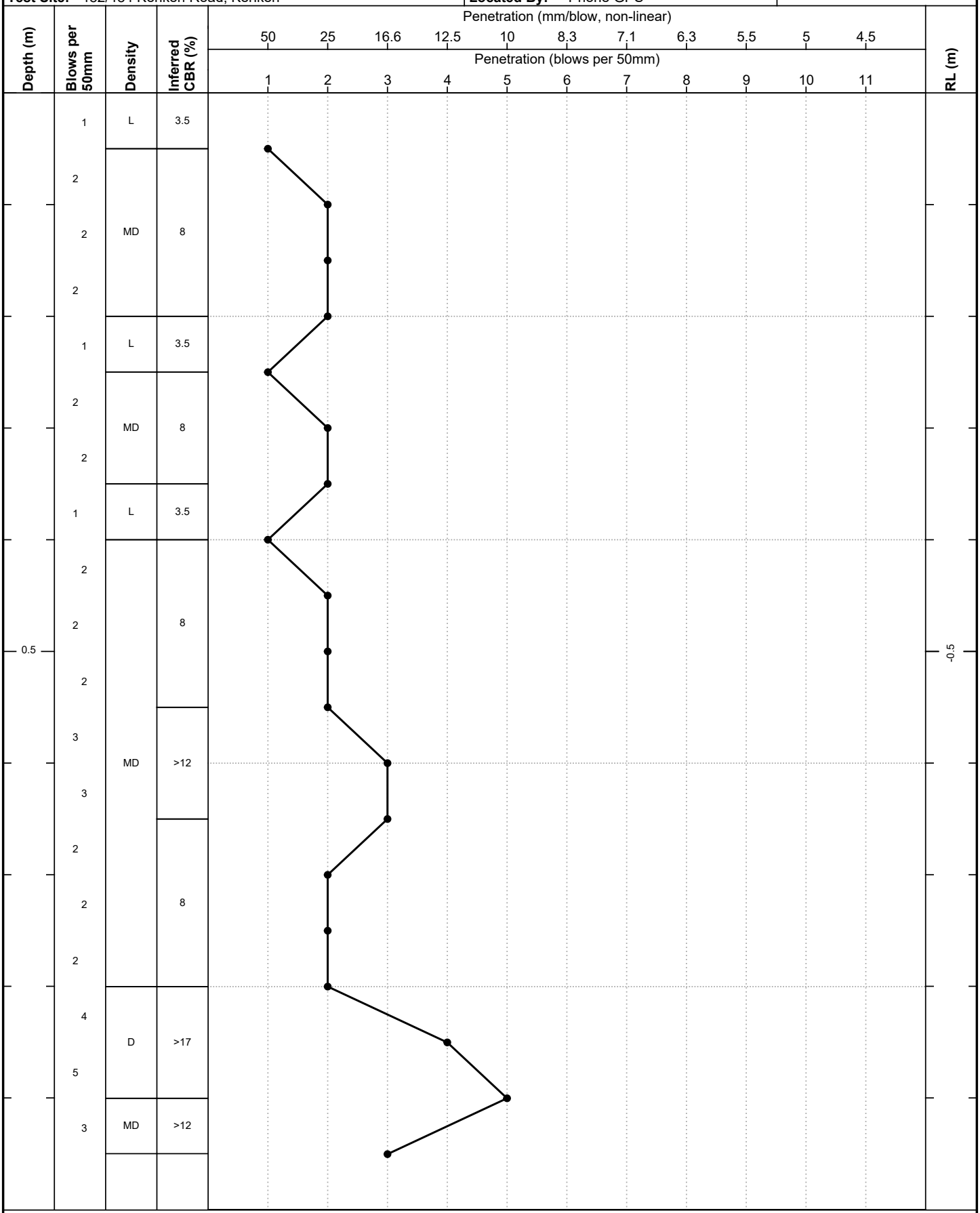
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP06** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099403mN, 1685167mE | **Test Date:** | 09/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

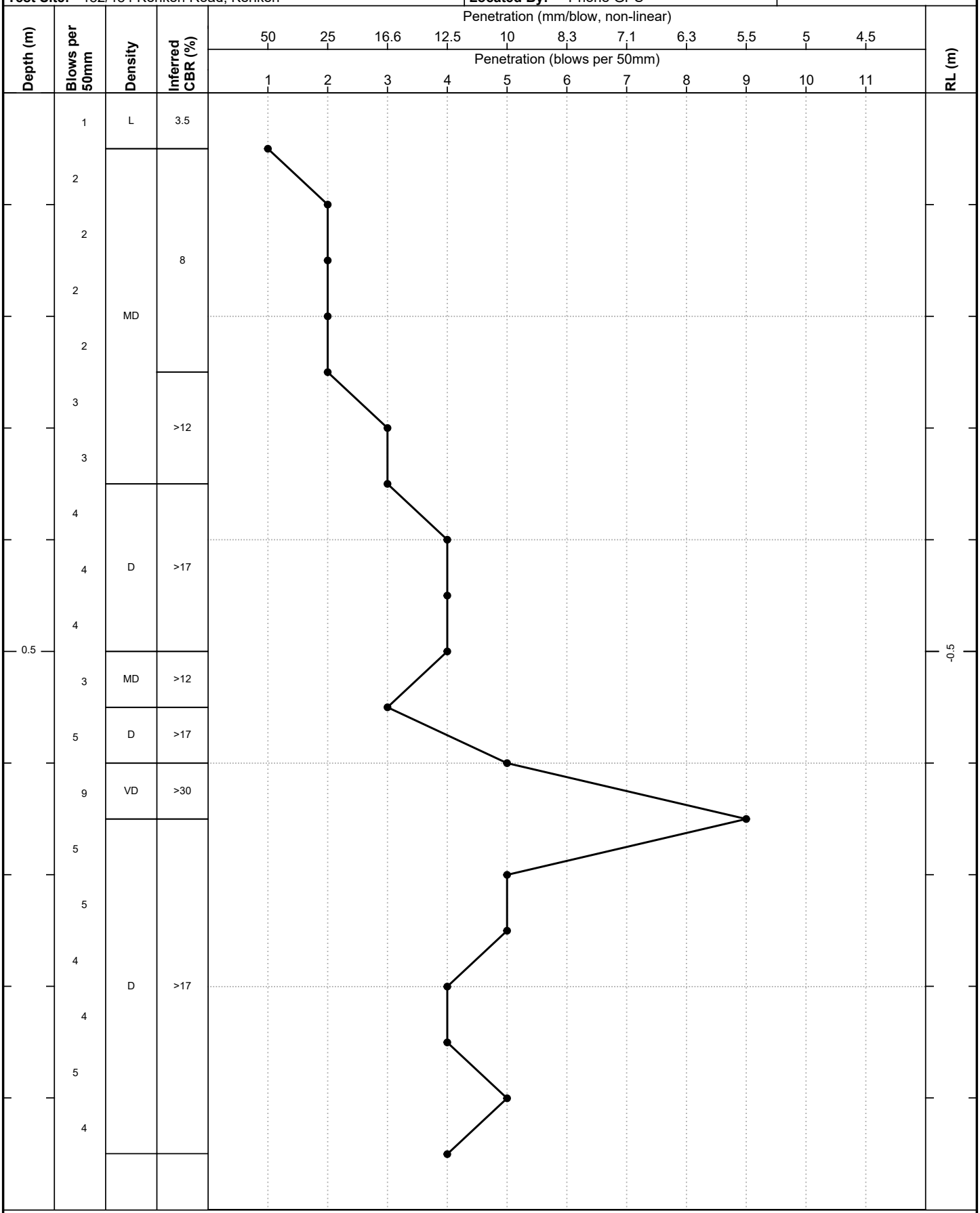
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP07** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099418mN, 1685169mE | **Test Date:** | 09/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | GG |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

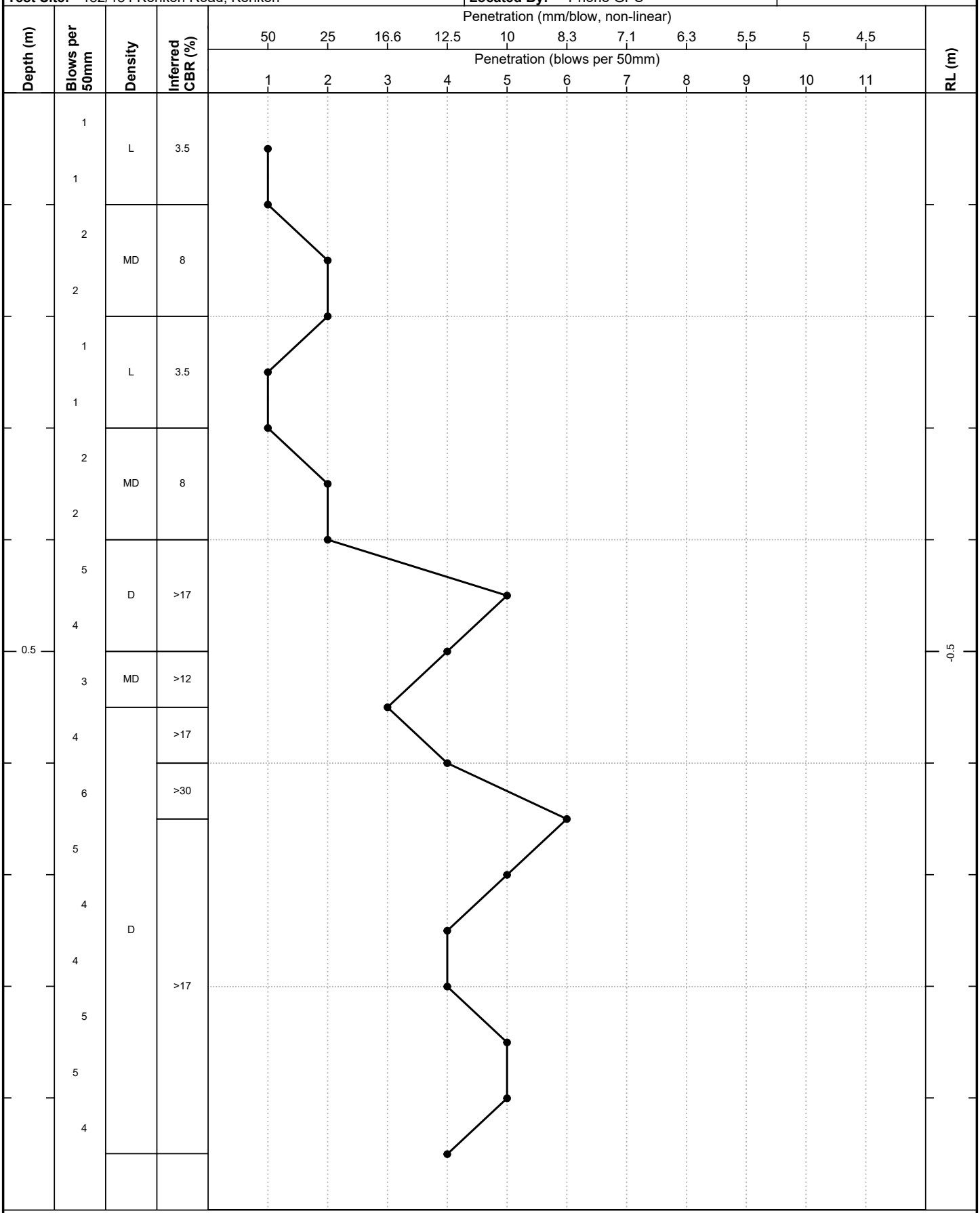
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP08** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099432mN, 1685170mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 09/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

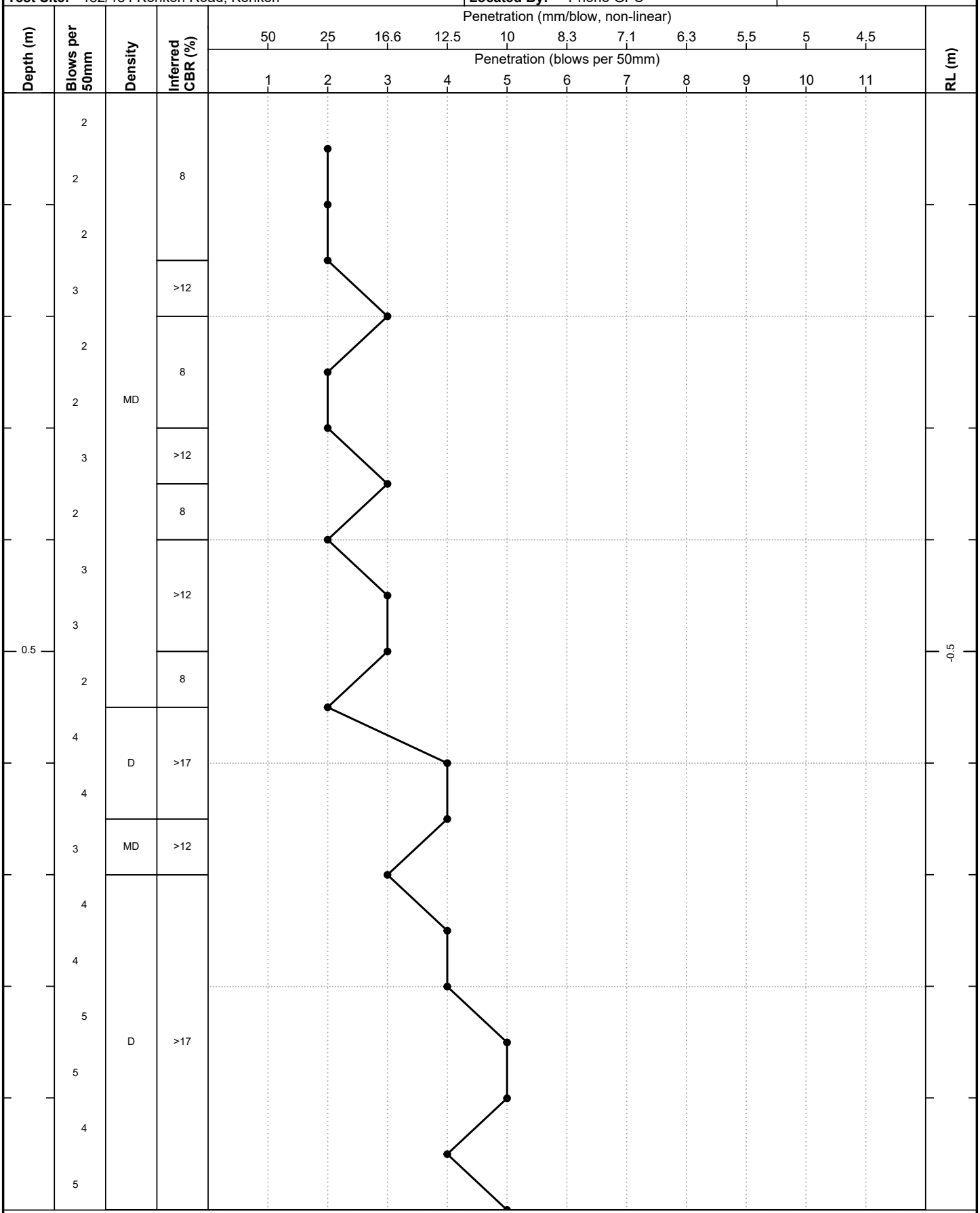
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP09** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099439mN, 1685171mE | **Test Date:** | 21/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

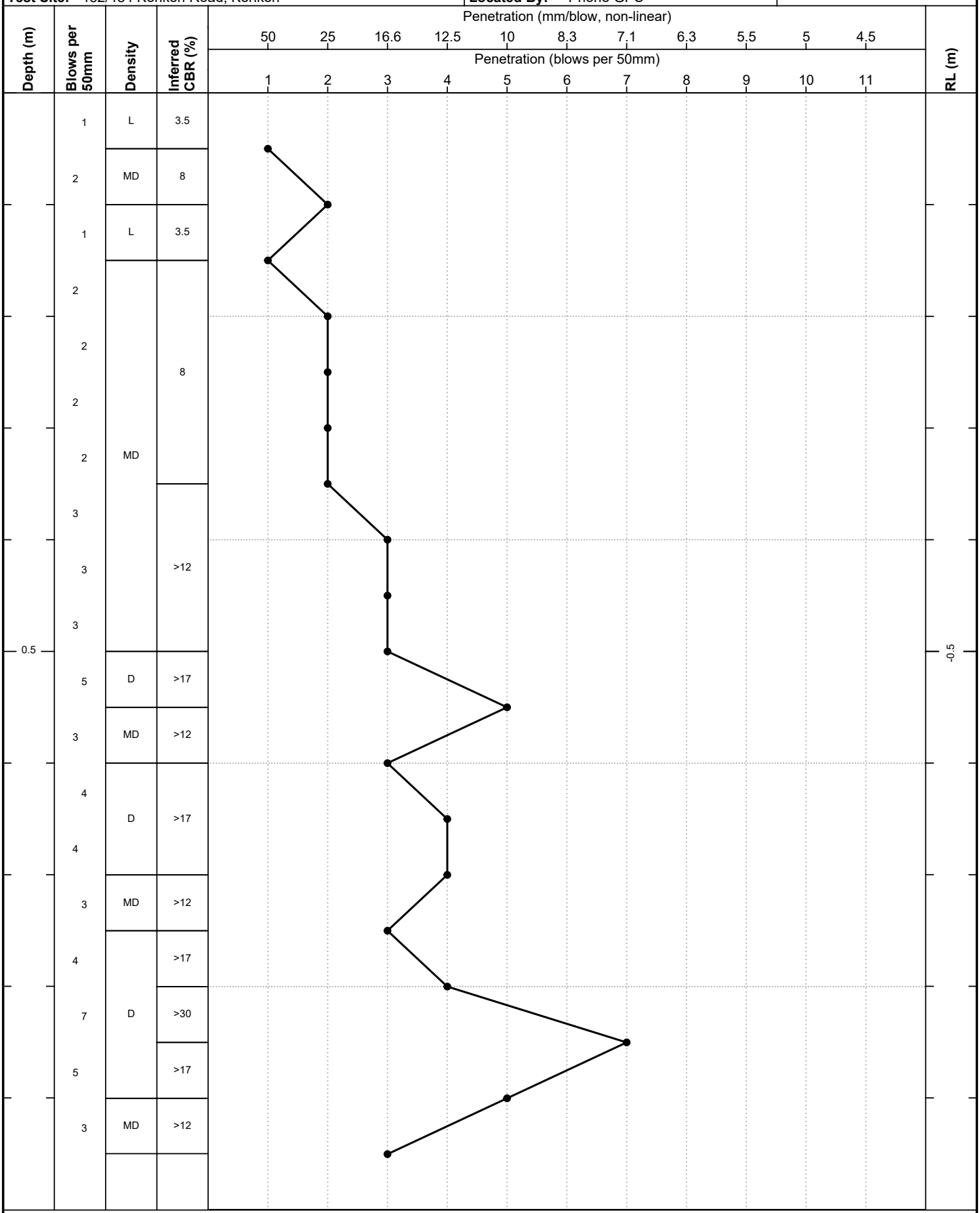
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP10** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099443mN, 1685151mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

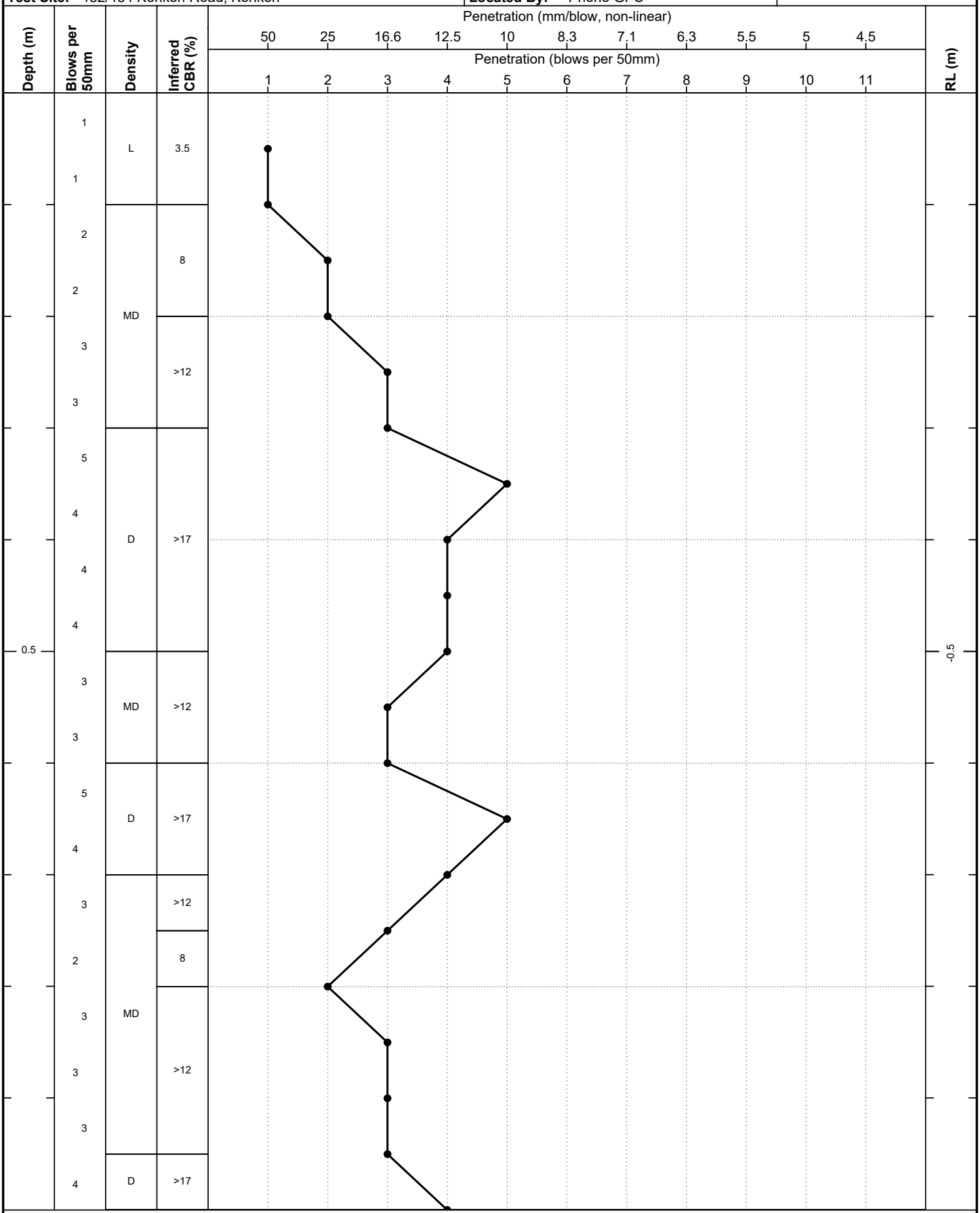
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP11** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099442mN, 1685146mE | **Test Date:** | 21/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

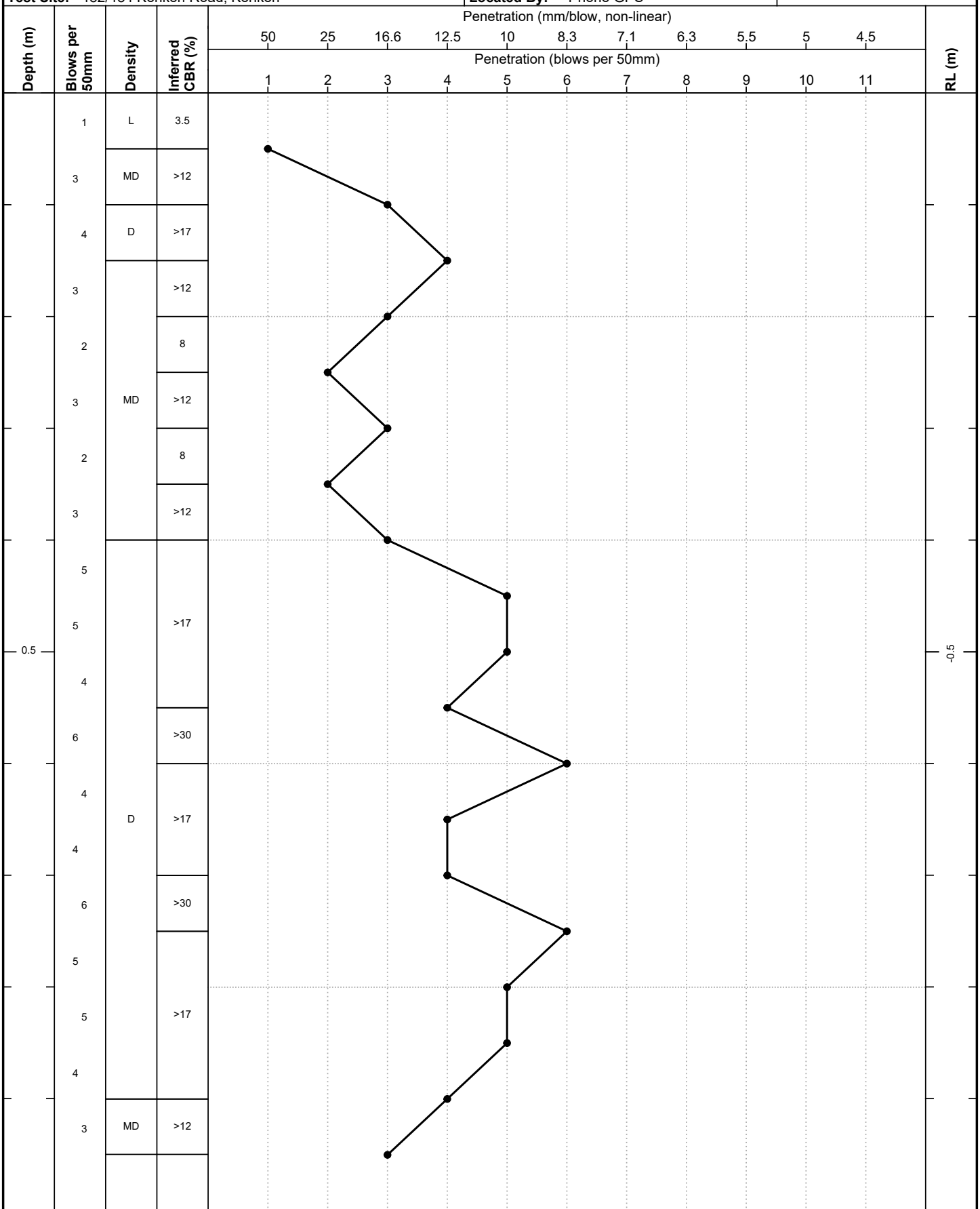
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP12** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099442mN, 1685130mE | **Test Date:** | 17/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

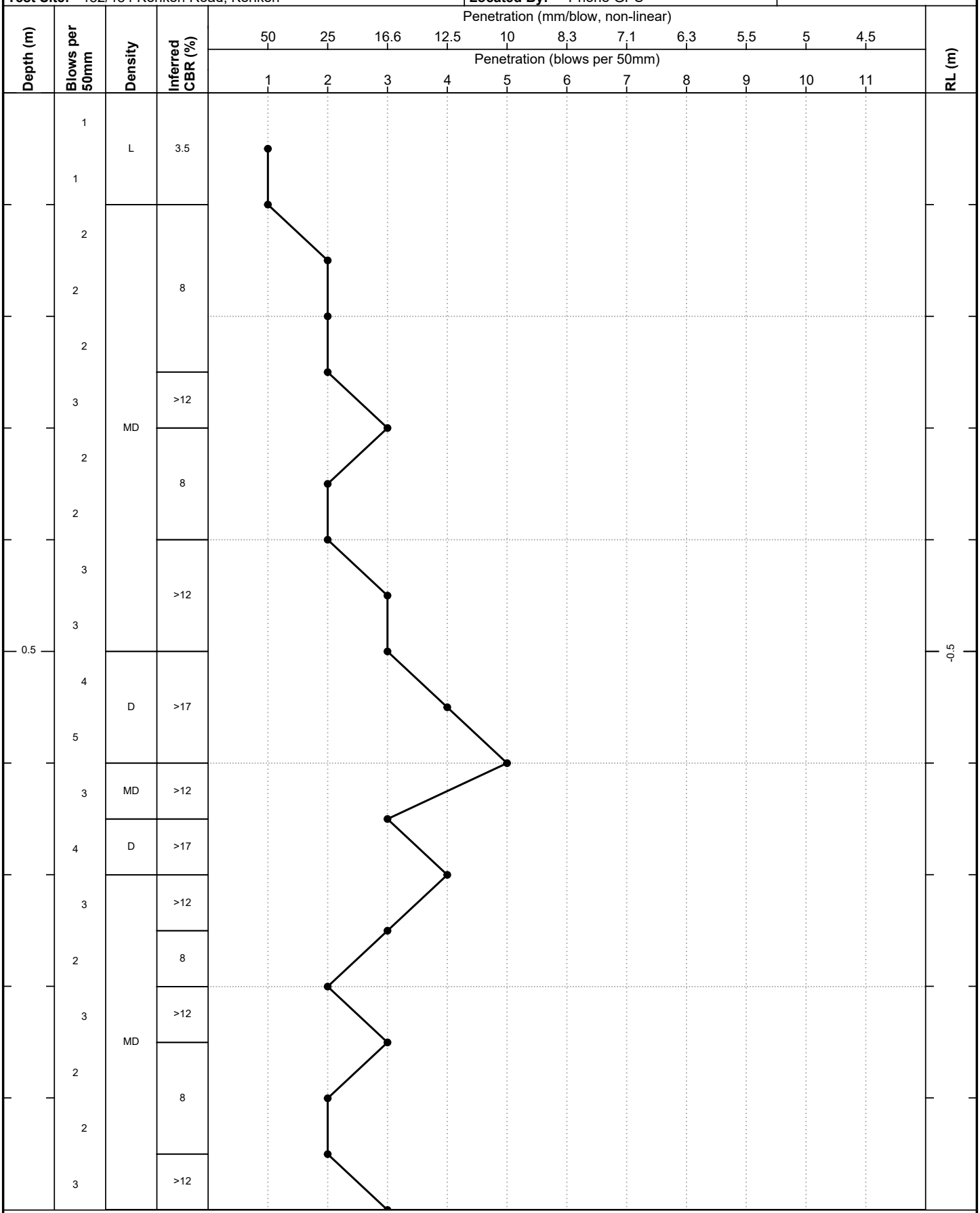
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP13** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099426mN, 1685120mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 21/11/2023 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

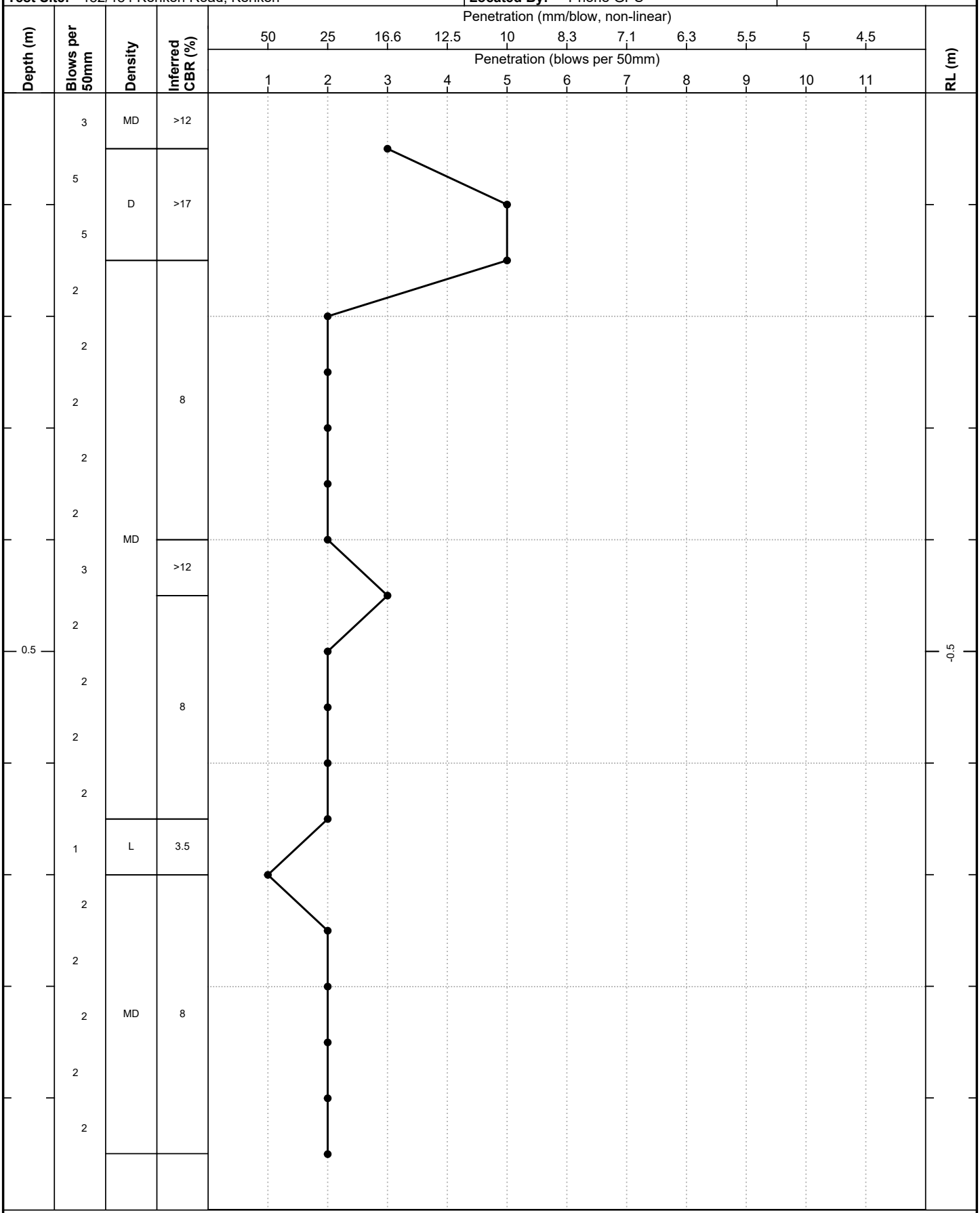
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP14** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099455mN, 1685113mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP15** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099460mN, 1685103mE | **Test Date:** | 21/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |

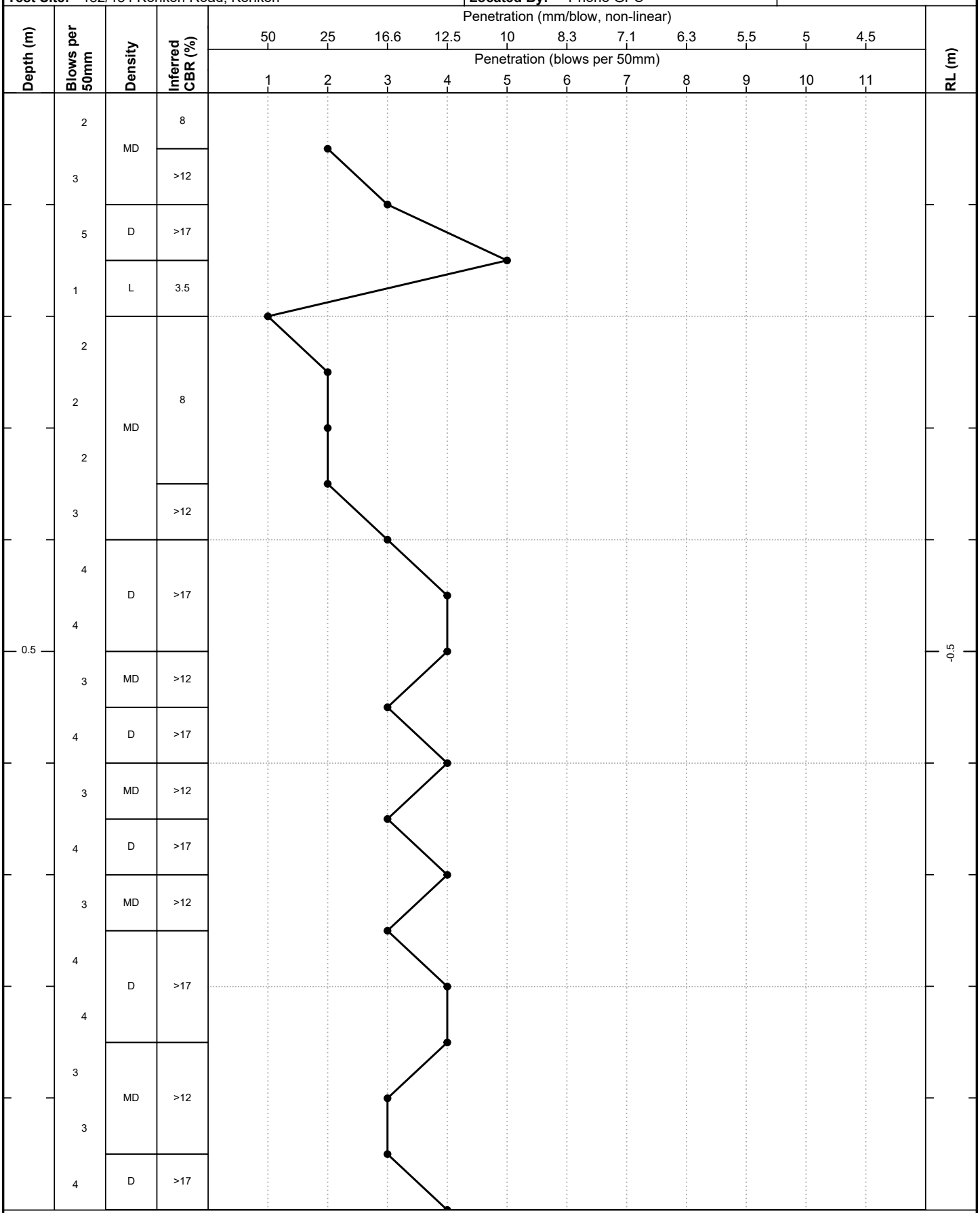



**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

Generated with CORE-GS by Geroc - Scala Log v2 (with CBR) - 30/04/2024 4:02:13 pm

# Dynamic Cone Penetrometer Log

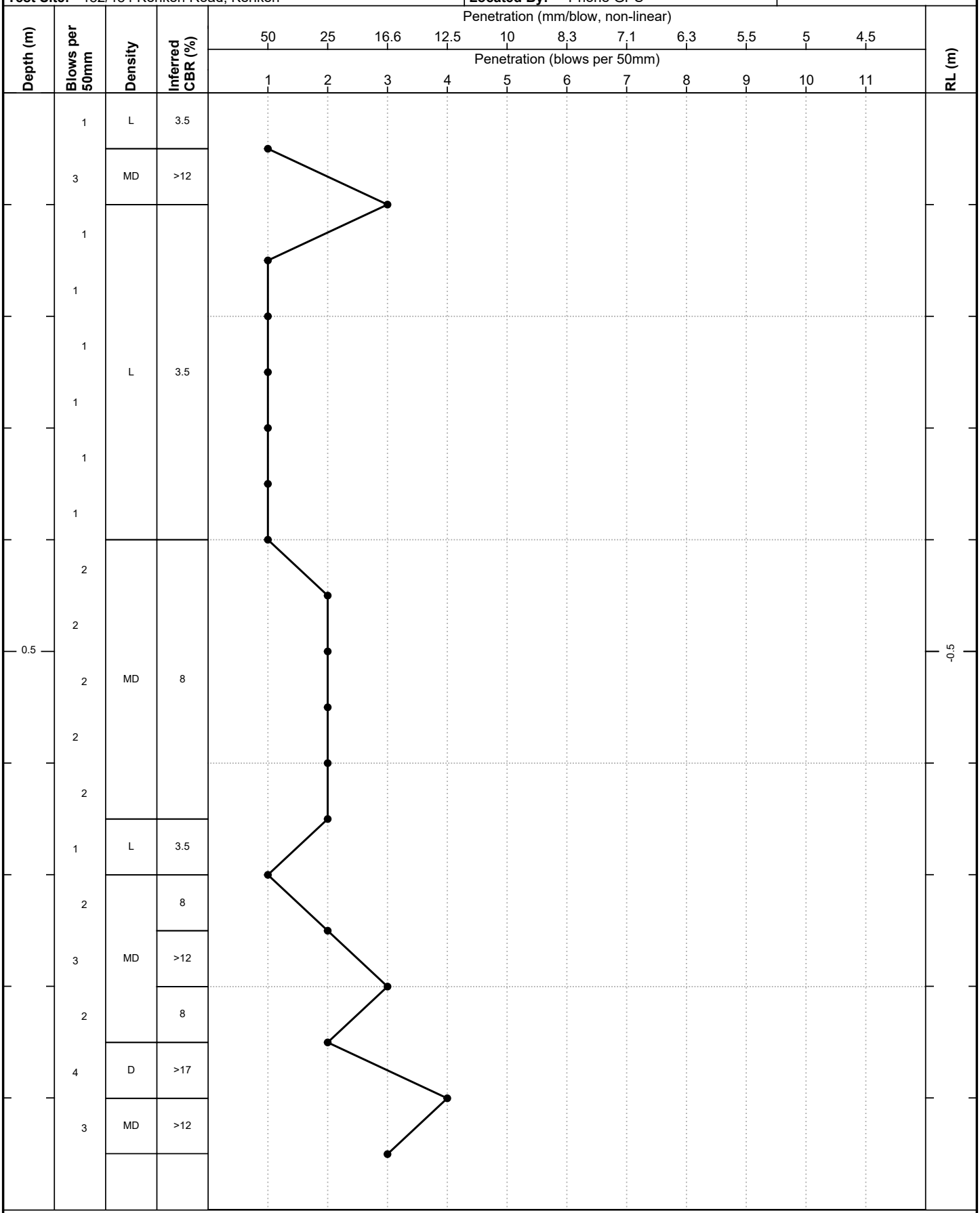
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP16** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099462mN, 1685094mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP17** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099470mN, 1685073mE | **Test Date:** | 21/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |

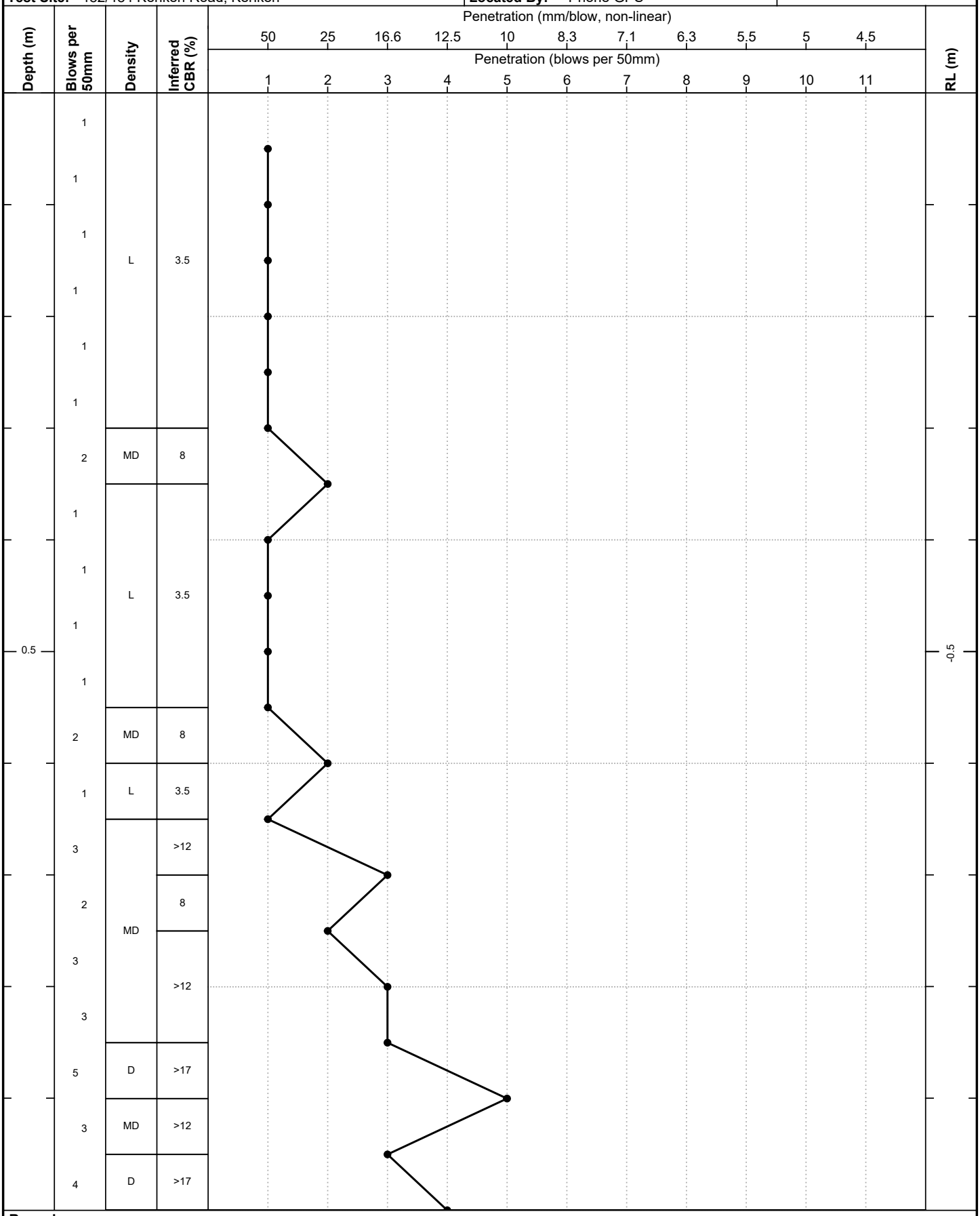



| Depth (m) | Blows per 50mm | Density | Inferred CBR (%) | RL (m) |
|---|---|---|---|---|
| | 1 | L | 3.5 | |
| | 3 | MD | >12 | |
| | 1 | L | 3.5 | |
| | 1 | | | |
| | 1 | | | |
| | 1 | | | |
| | 1 | | | |
| | 1 | | | |
| 0.5 | 2 | MD | 8 | -0.5 |
| | 2 | | | |
| | 2 | | | |
| | 2 | | | |
| | 2 | | | |
| | 1 | L | 3.5 | |
| | 2 | MD | 8 | |
| | 3 | | >12 | |
| | 2 | | 8 | |
| | 4 | D | >17 | |
| | 3 | MD | >12 | |

**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

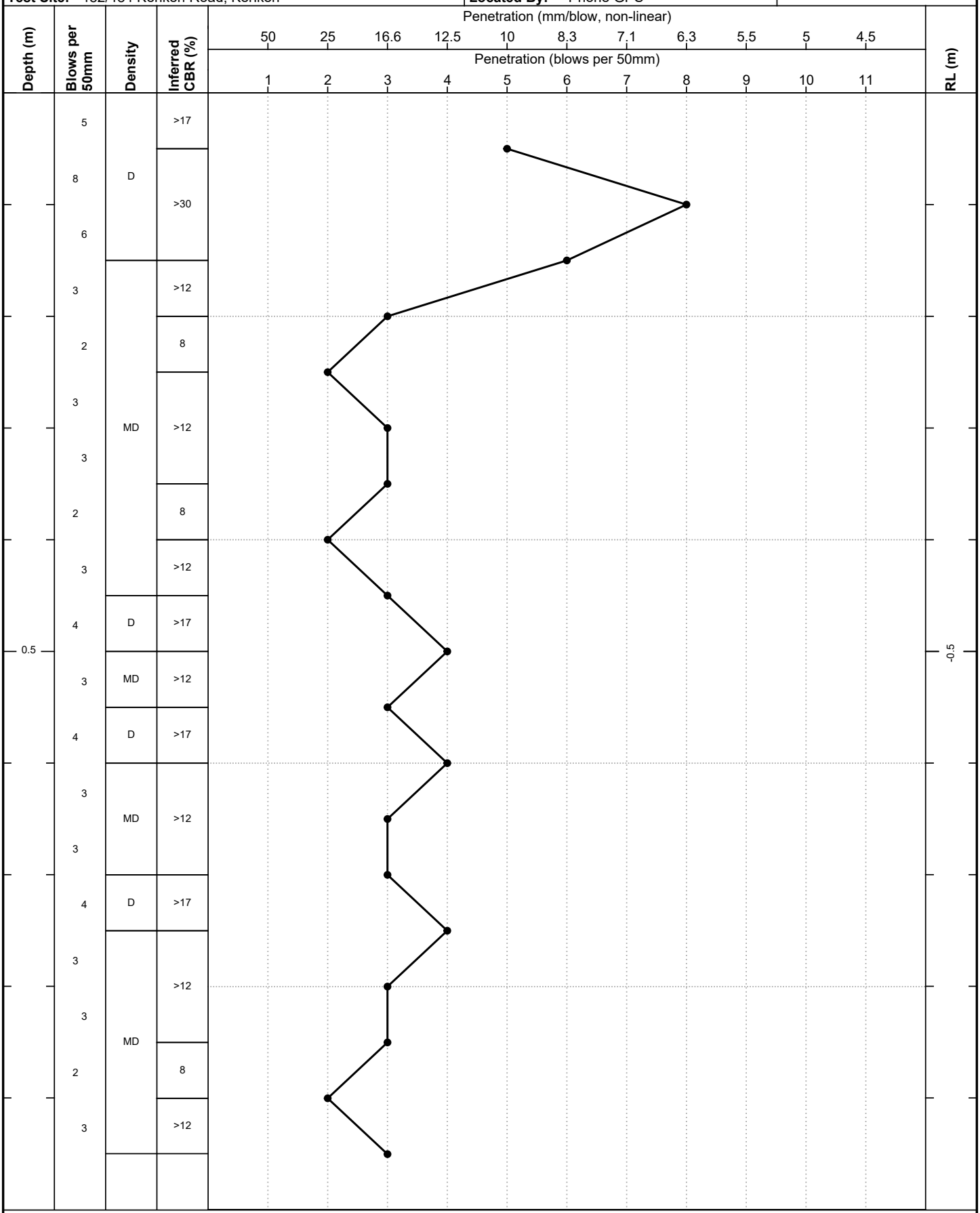
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP18** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099470mN, 1685048mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

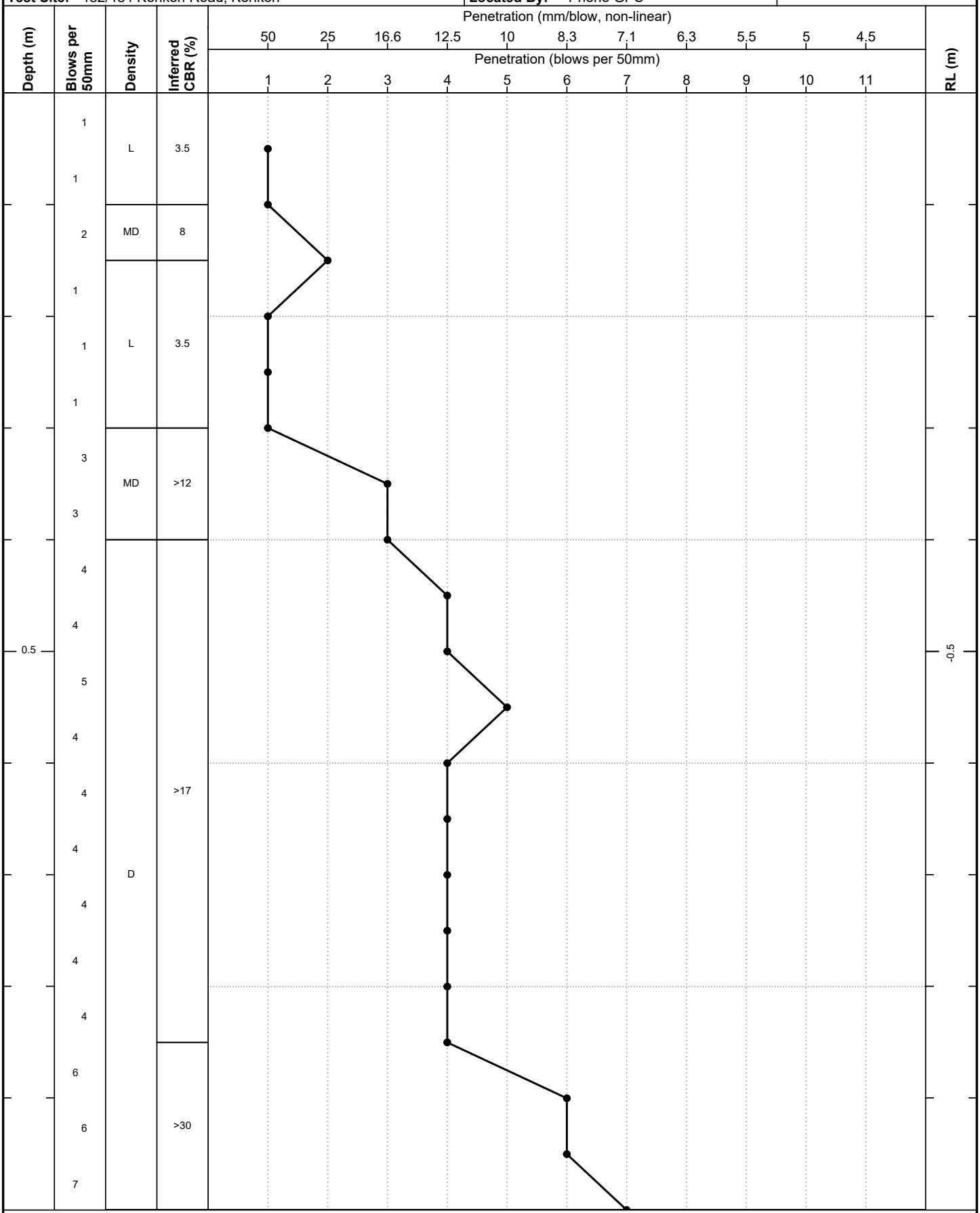
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP19** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099461mN, 1685042mE | **Test Date:** | 21/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

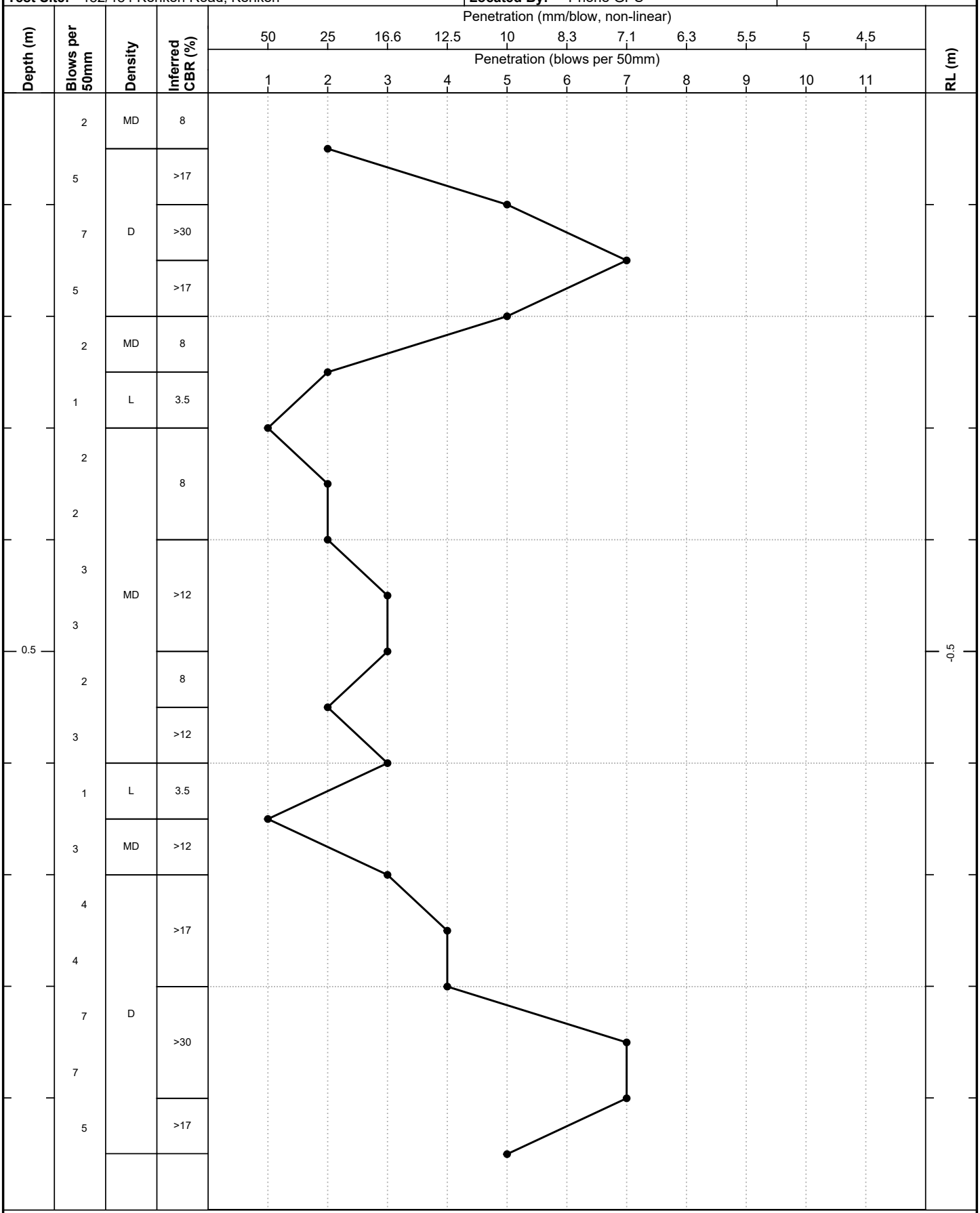
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP20** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099471mN, 1685032mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP21** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099471mN, 1685022mE | **Test Date:** | 21/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |

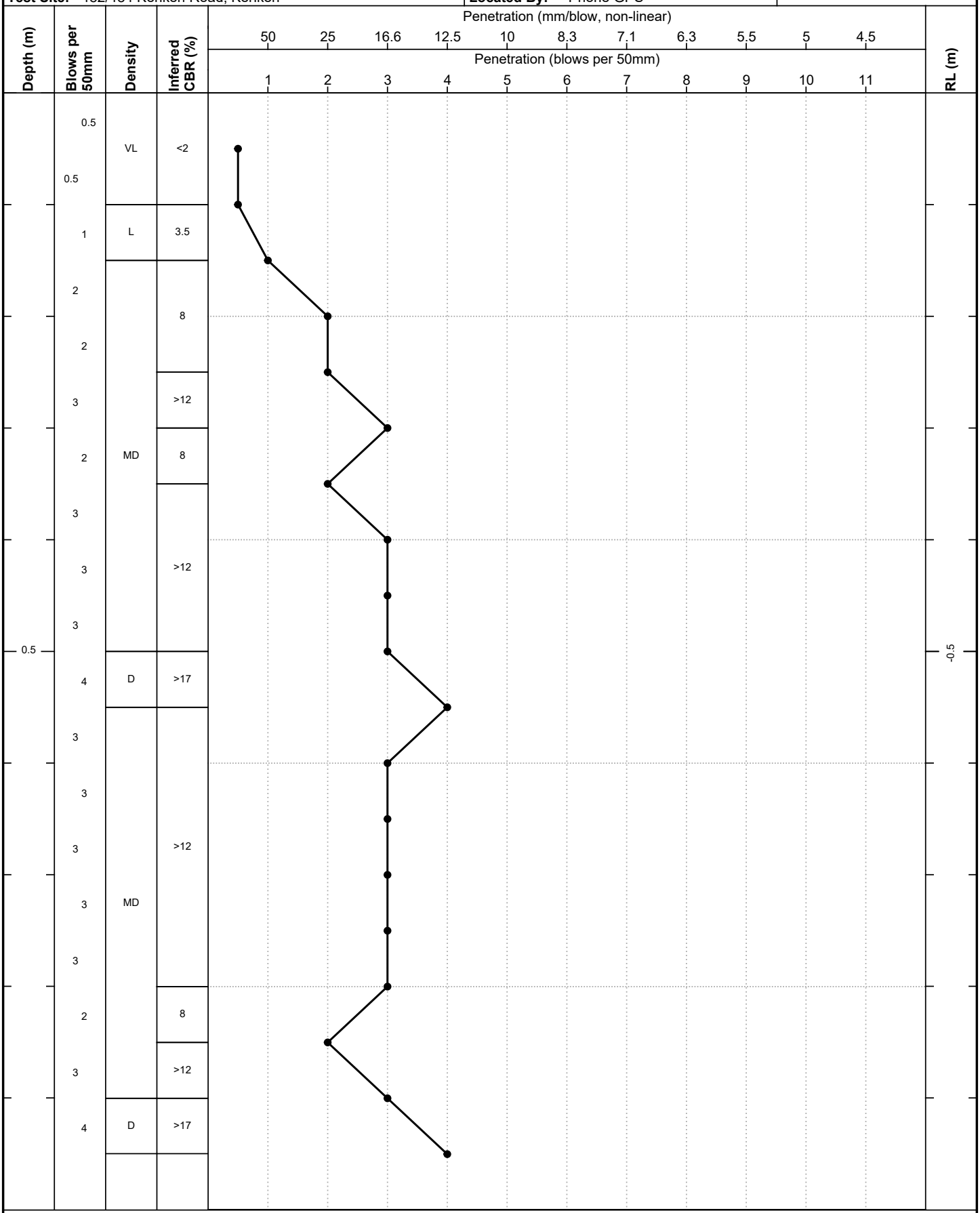



**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

| | |
|---|---|
| **Test ID:** | **DCP22** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

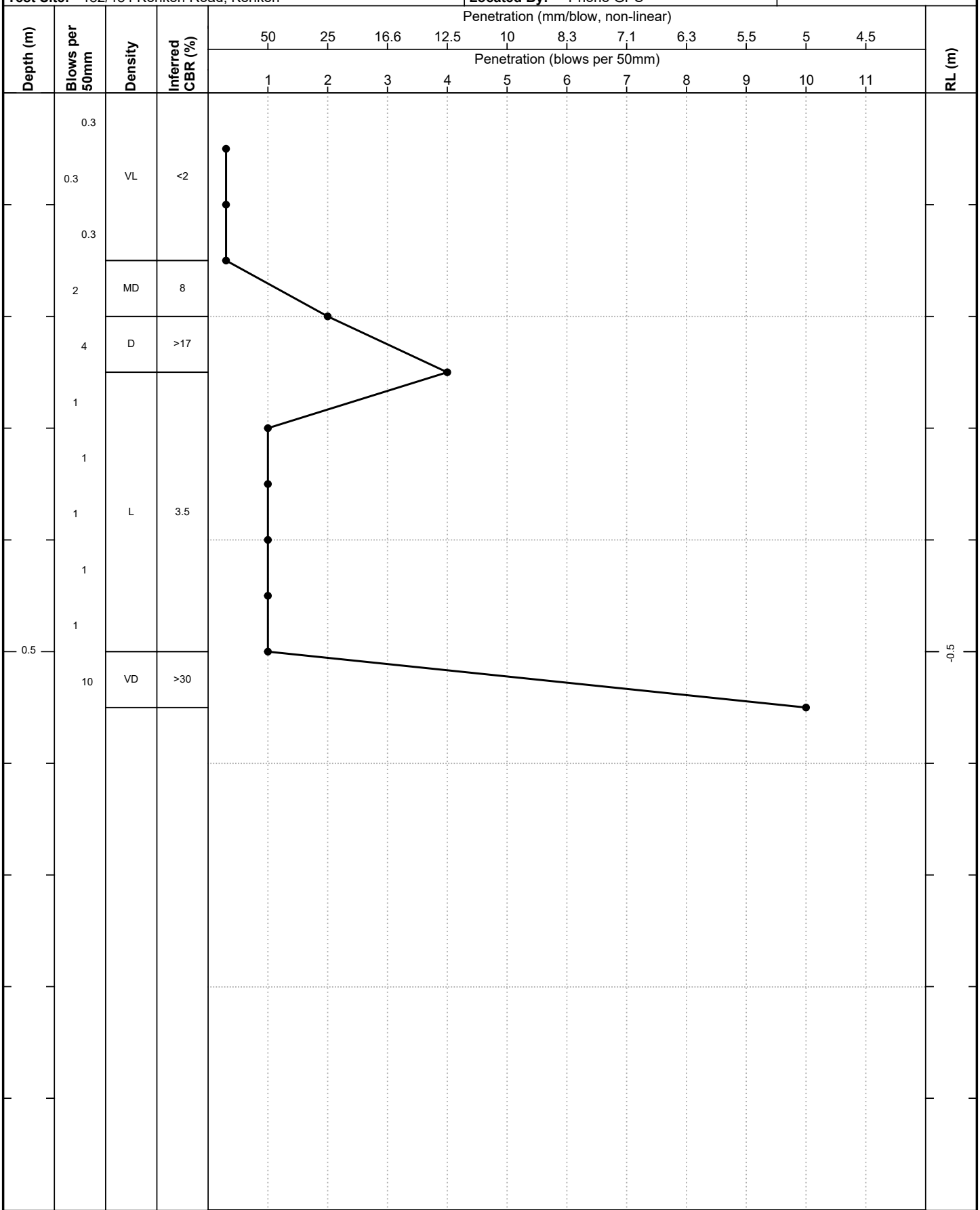
| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099475mN, 1684986mE | **Test Date:** | 21/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

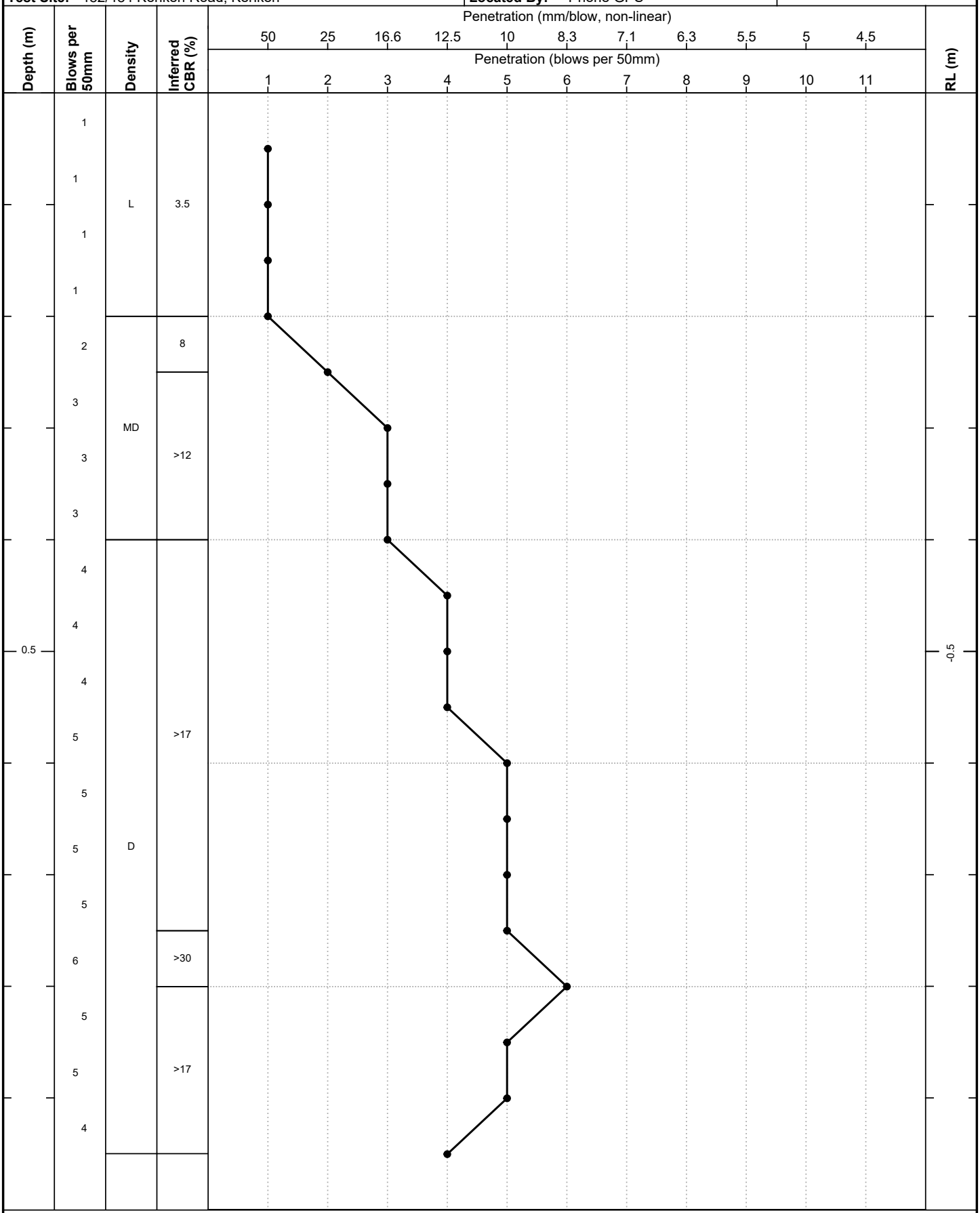
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP23** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099477mN, 1684973mE | **Test Date:** | 17/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

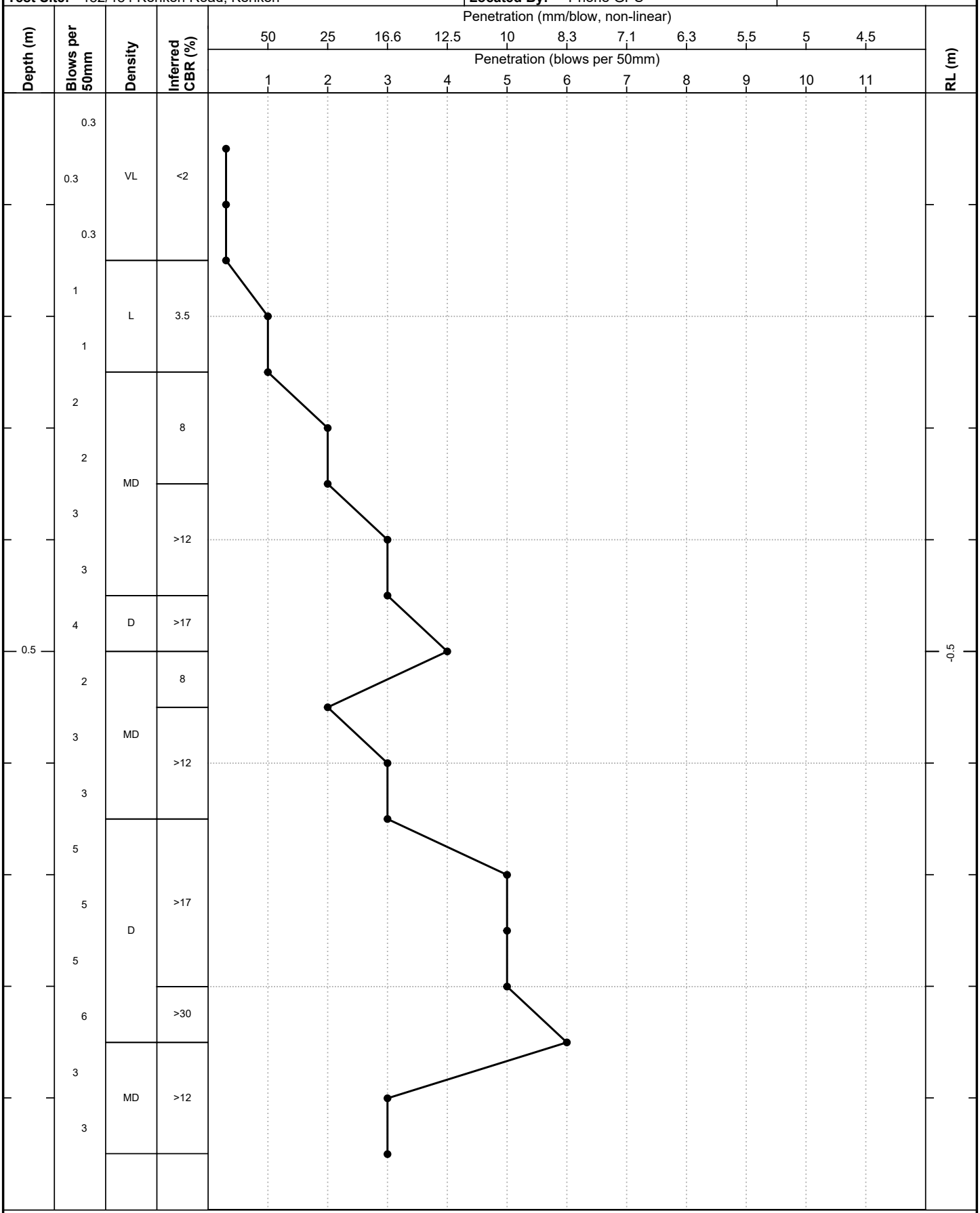
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP24** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099469mN, 1684958mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP25** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099458mN, 1684988mE | **Test Date:** | 17/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |

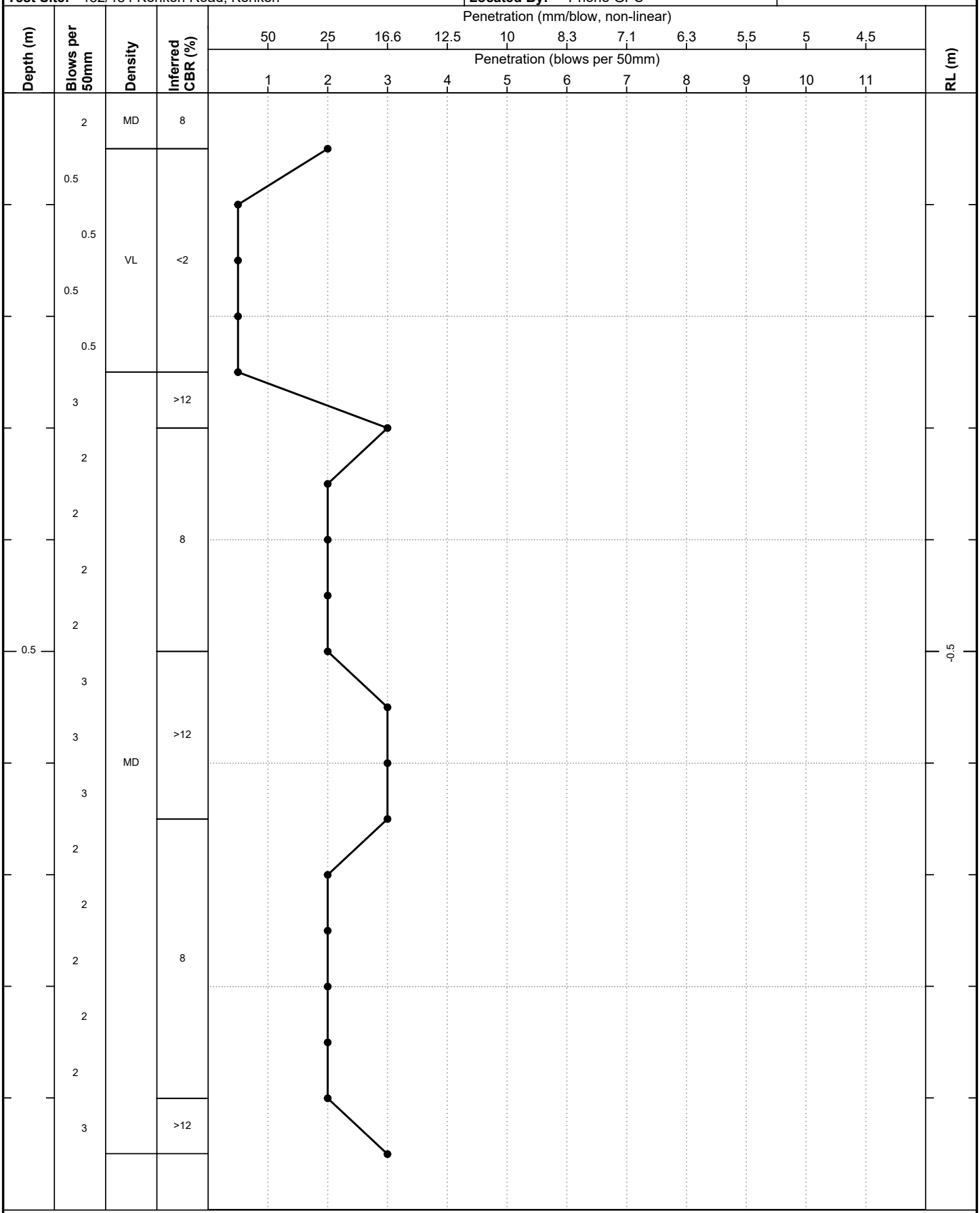



**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

Generated with CORE-GS by Geroc - Scala Log v2 (with CBR) - 30/04/2024 4:02:23 pm

# Dynamic Cone Penetrometer Log

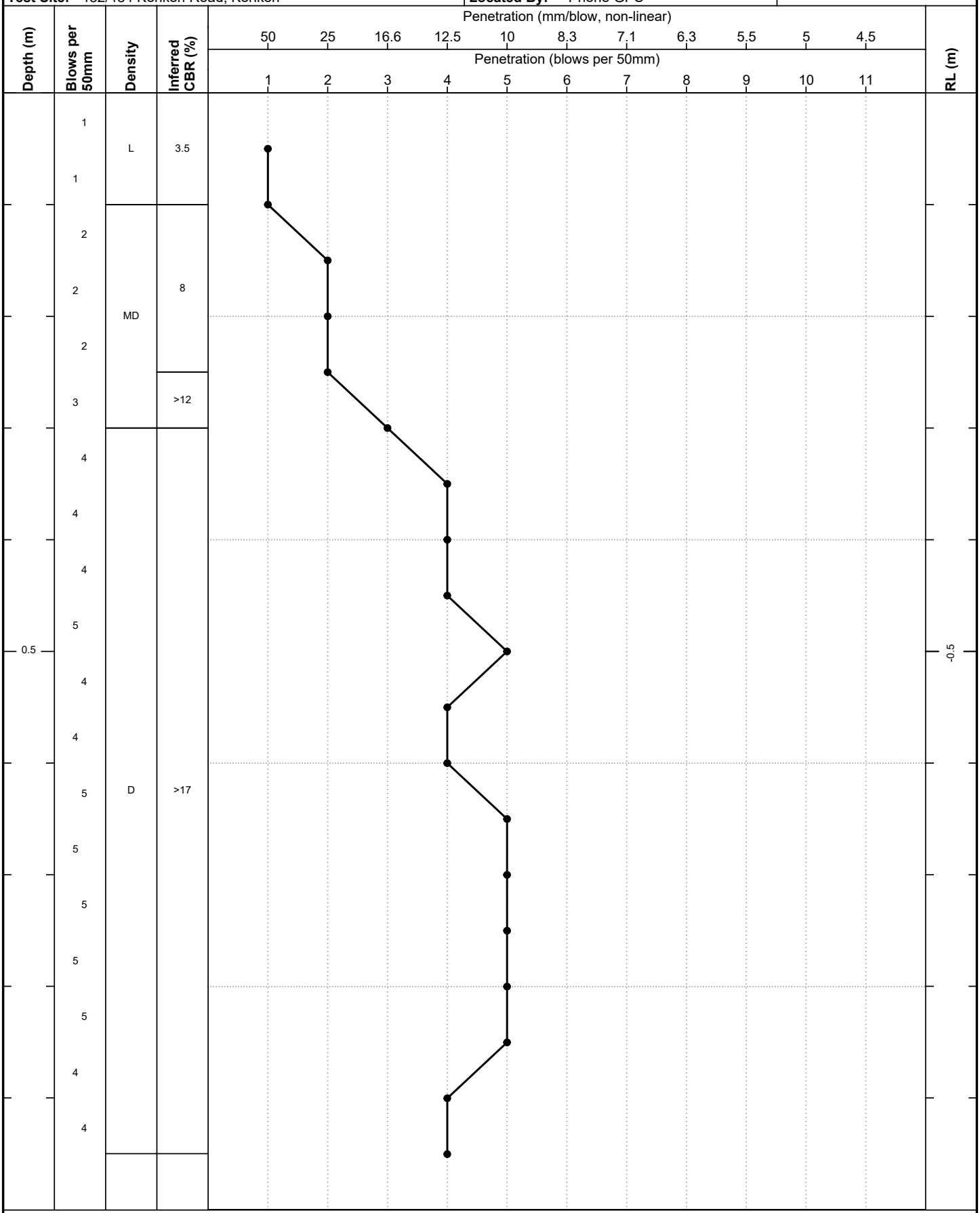
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP26** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099445mN, 1684979mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 21/11/2023 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

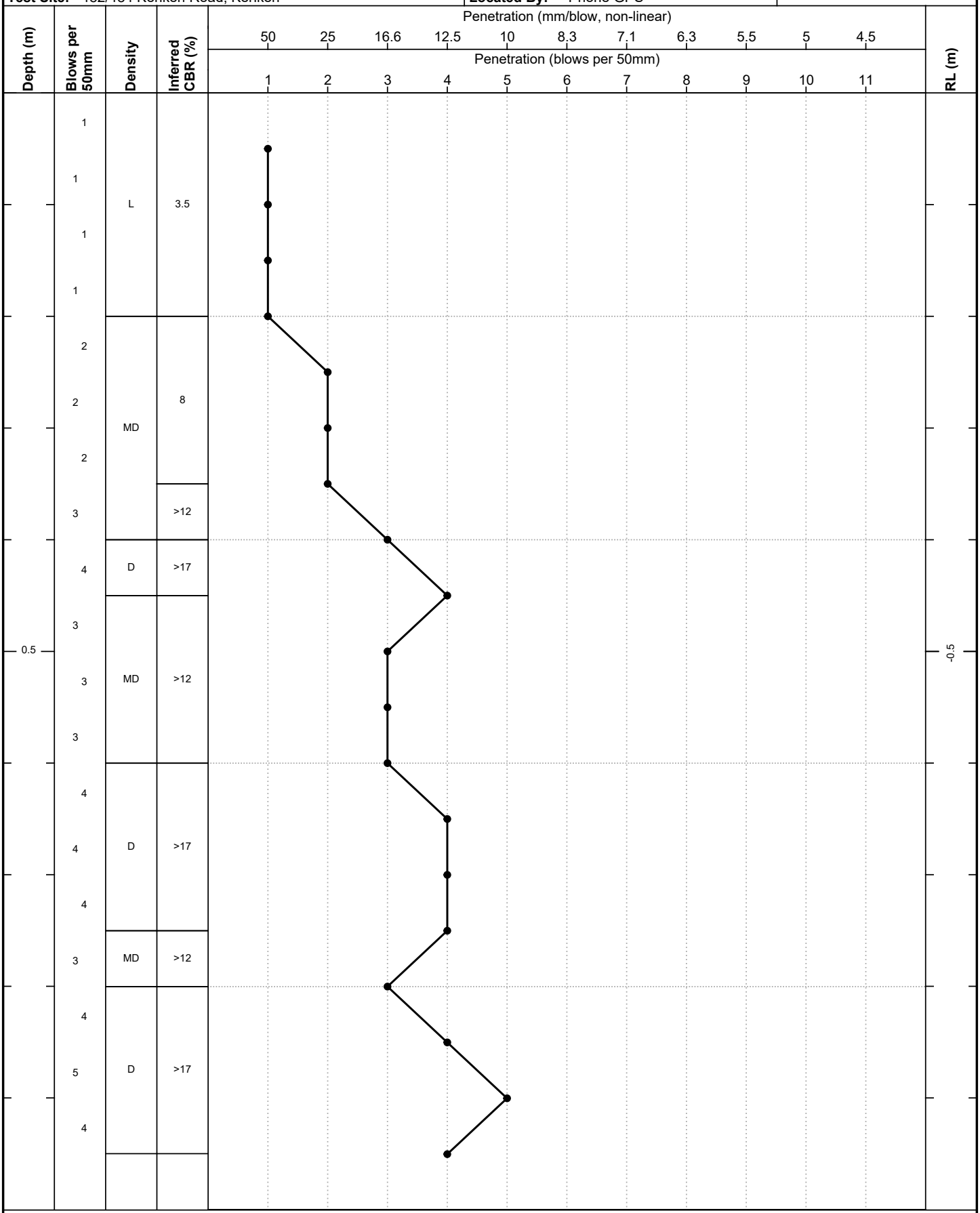
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP27** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099438mN, 1684974mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

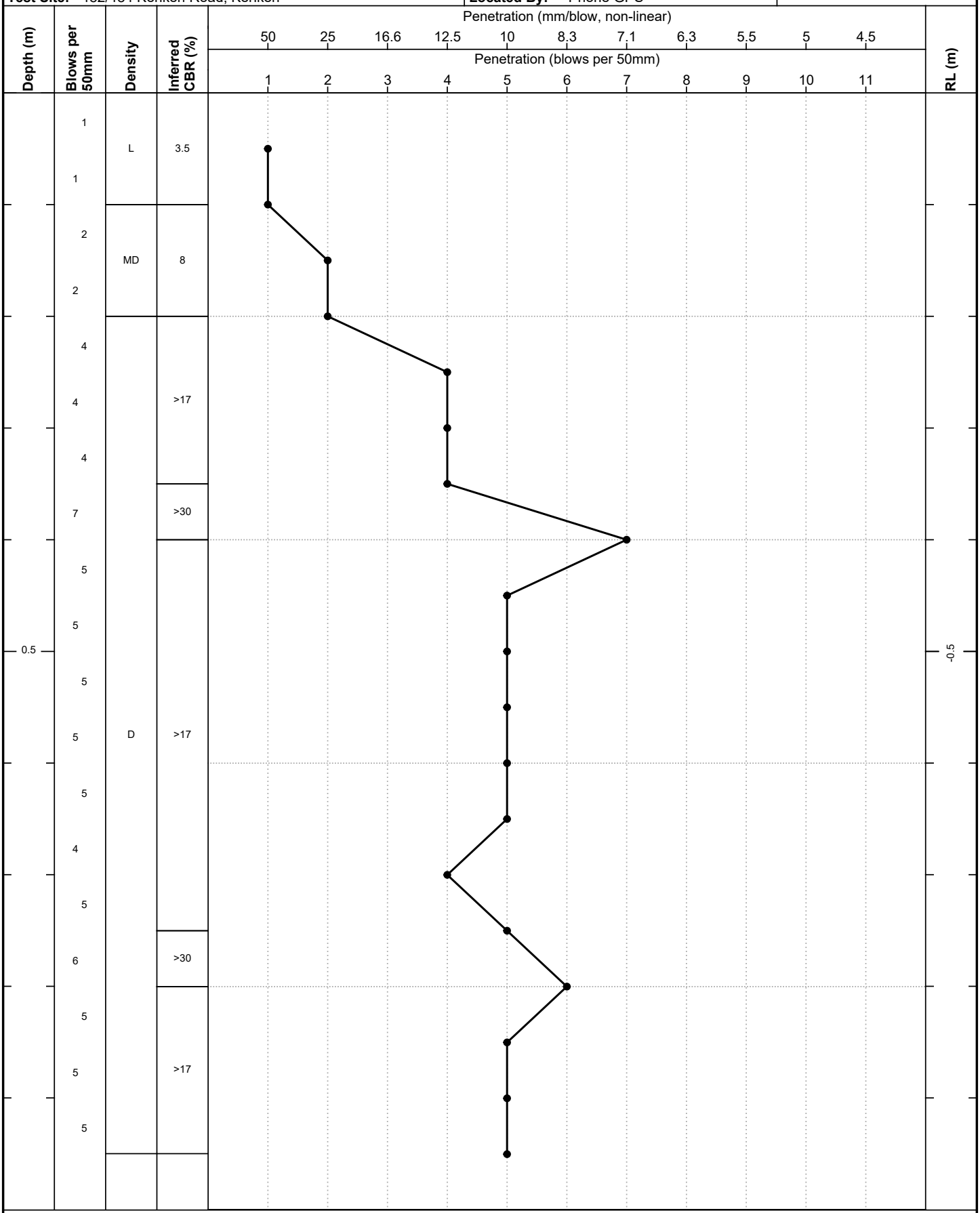
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP28** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099421mN, 1684975mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

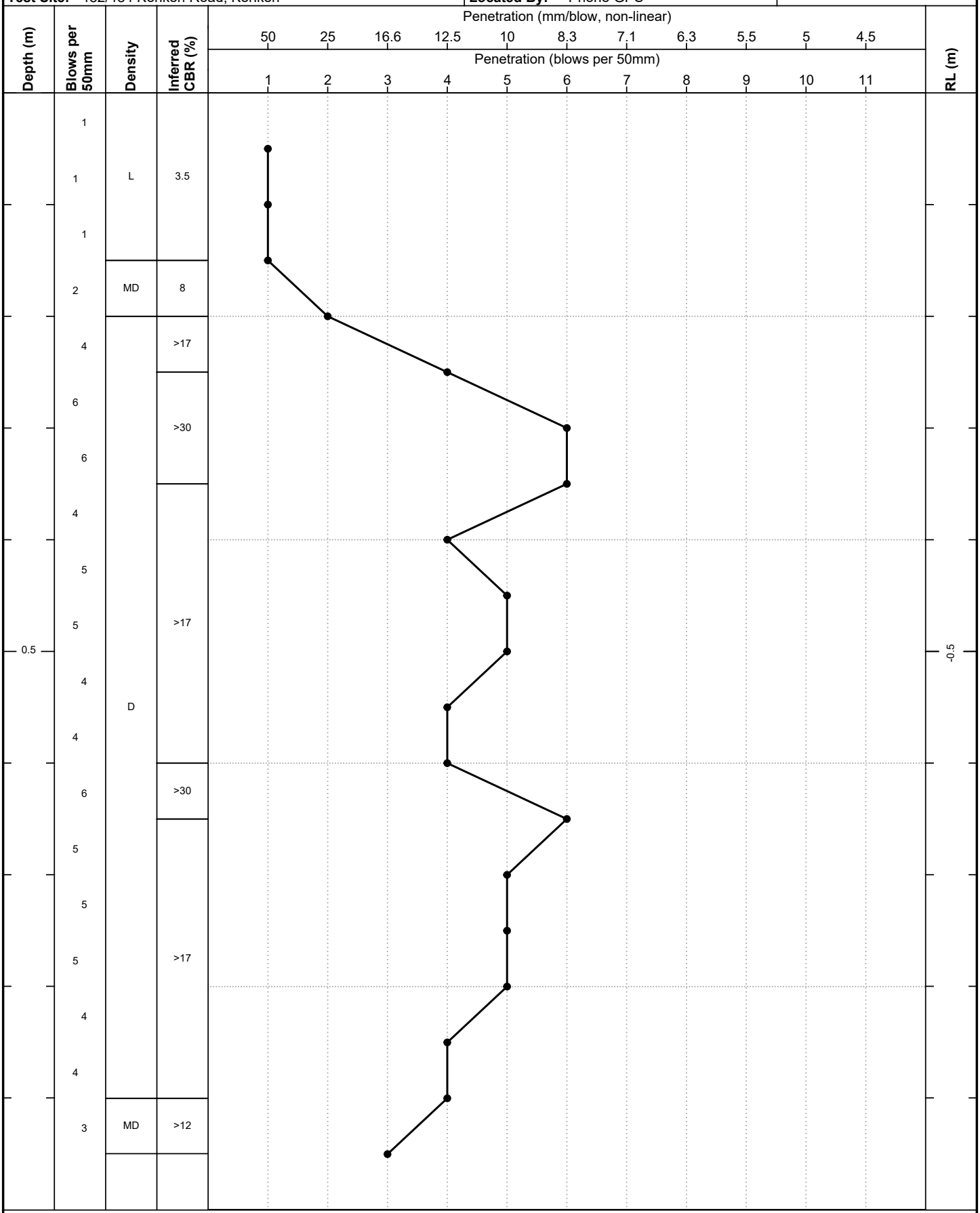
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP29** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099431mN, 1684964mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

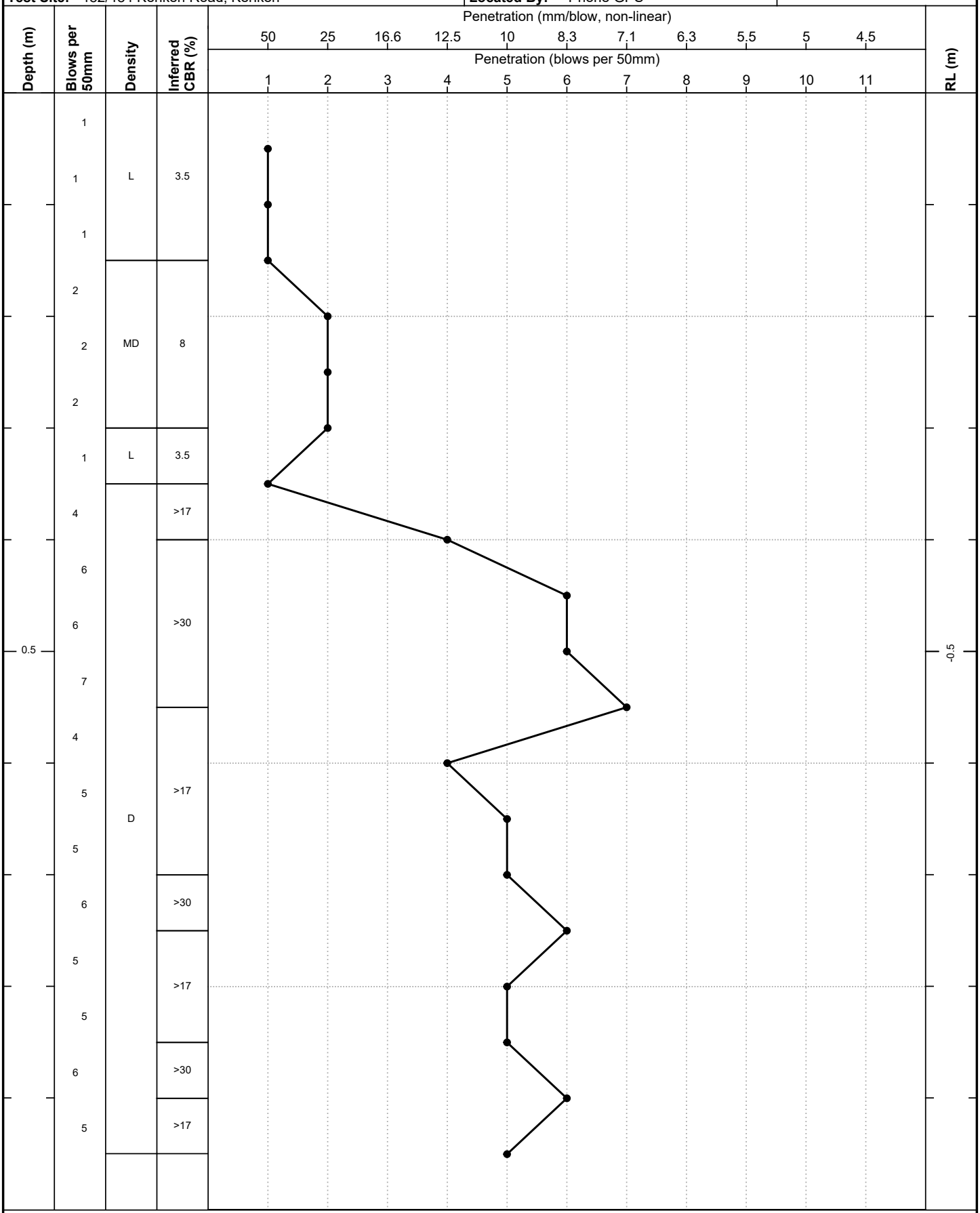
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP30** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099437mN, 1684963mE | **Test Date:** | 17/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

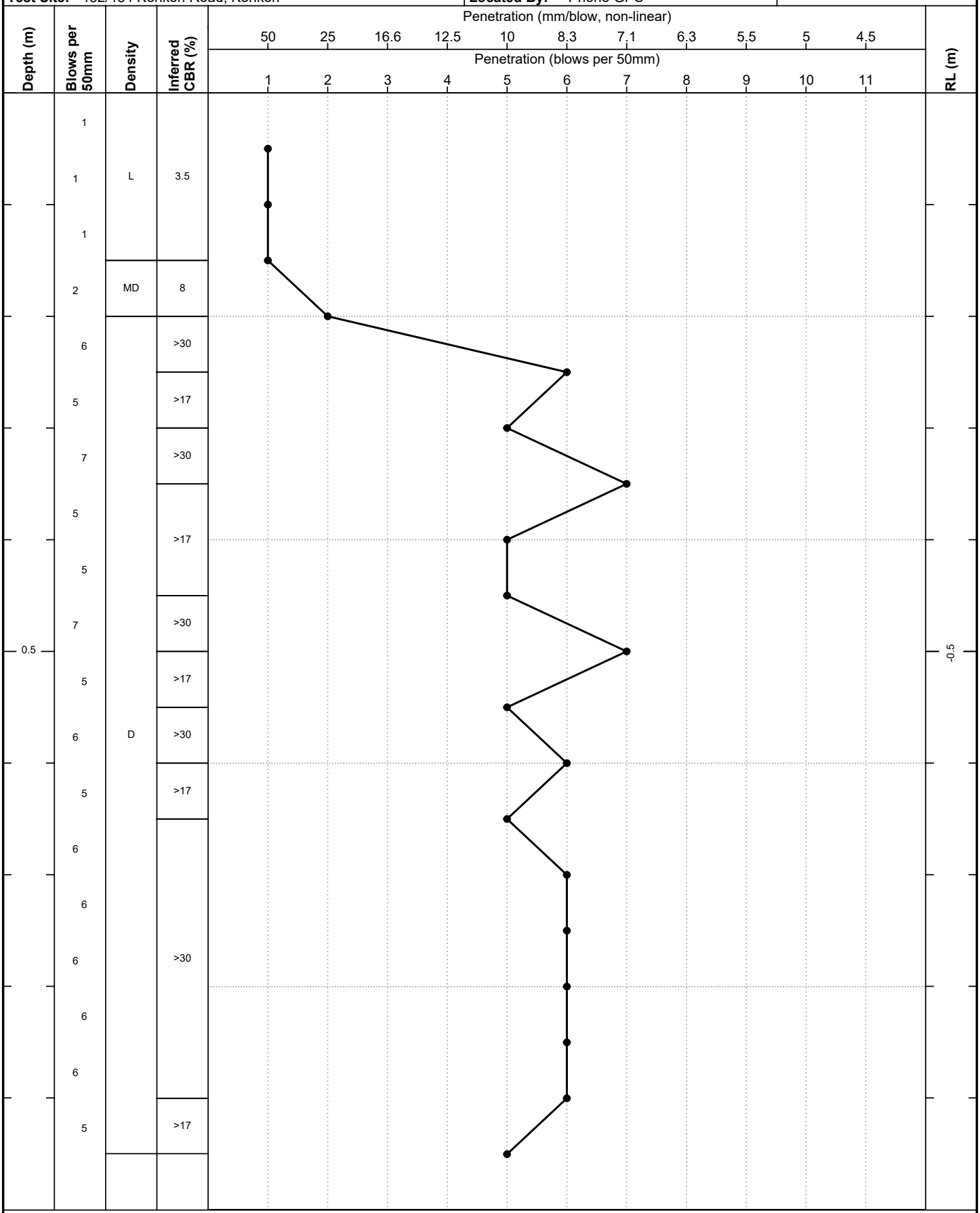
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP31** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099439mN, 1684947mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

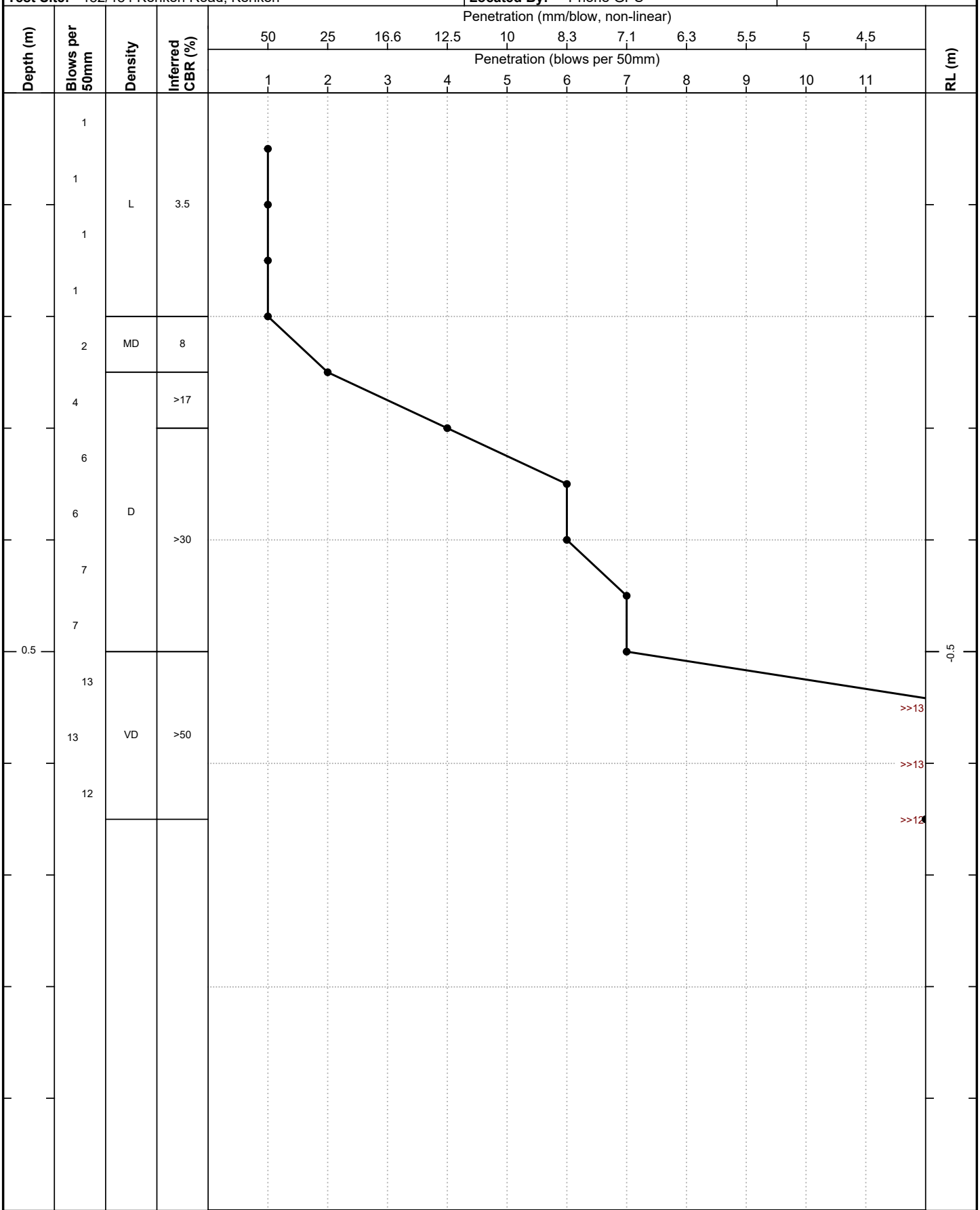
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP32** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099452mN, 1684941mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

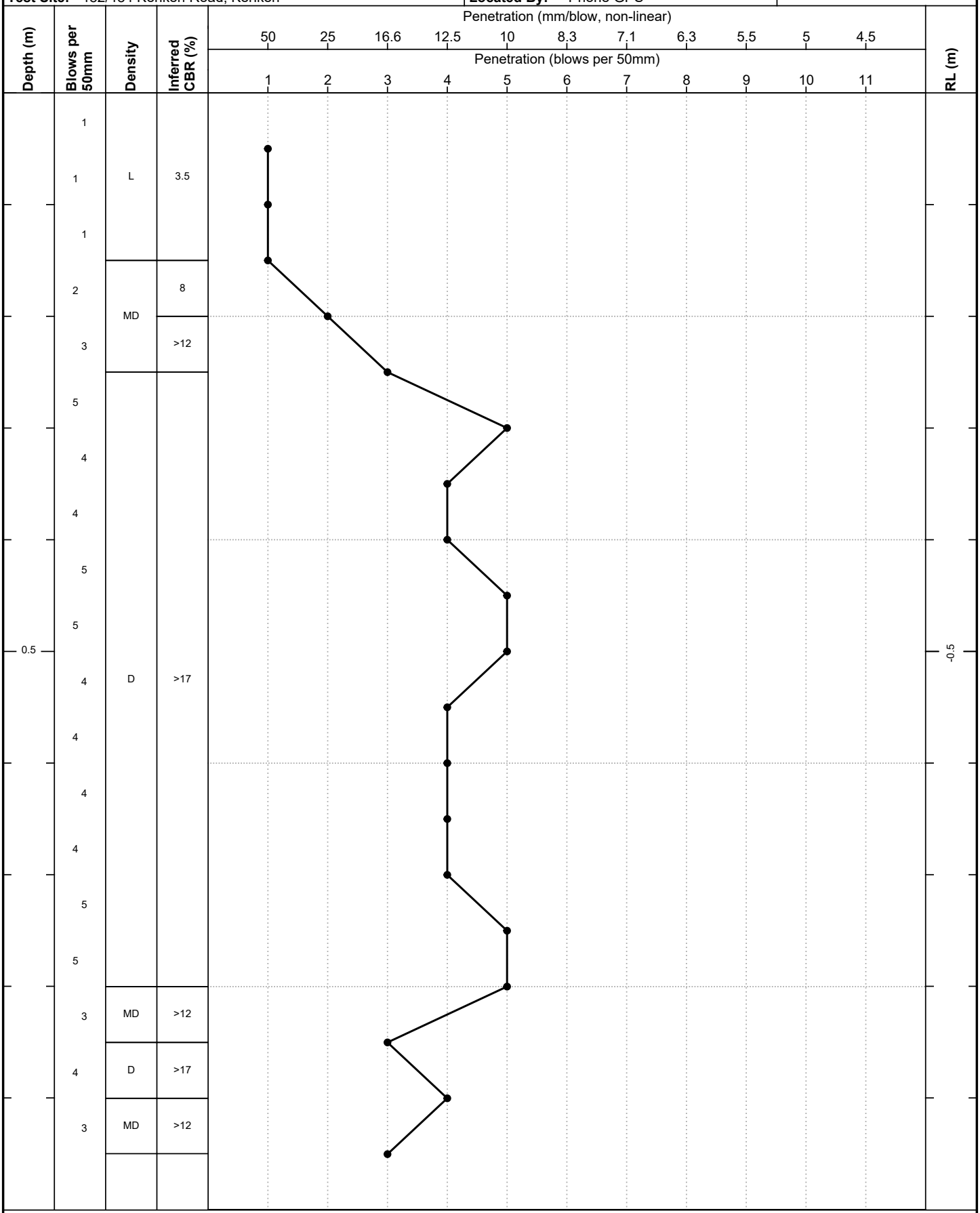
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP33** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099465mN, 1684943mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

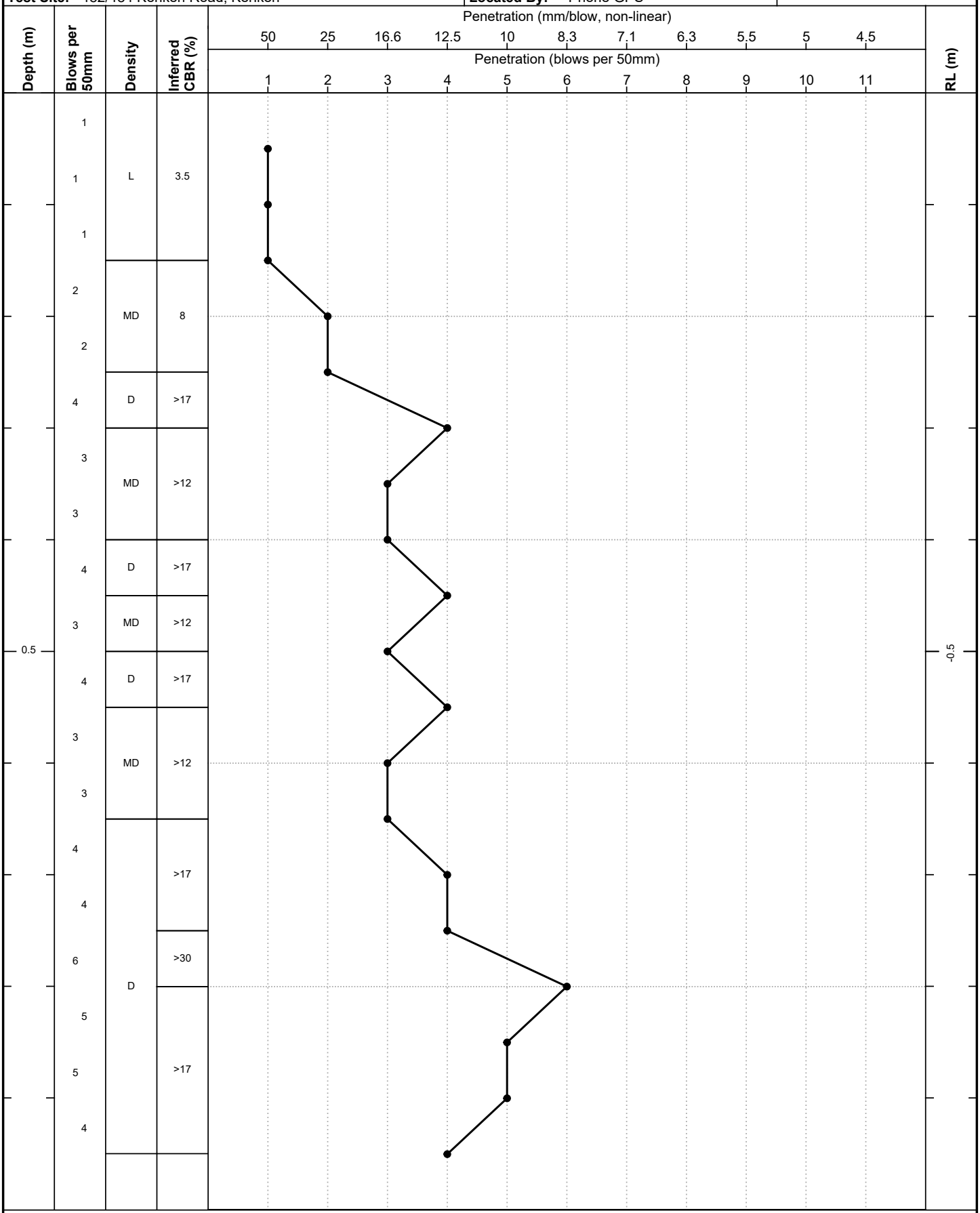
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP34** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099472mN, 1684946mE | **Test Date:** | 17/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

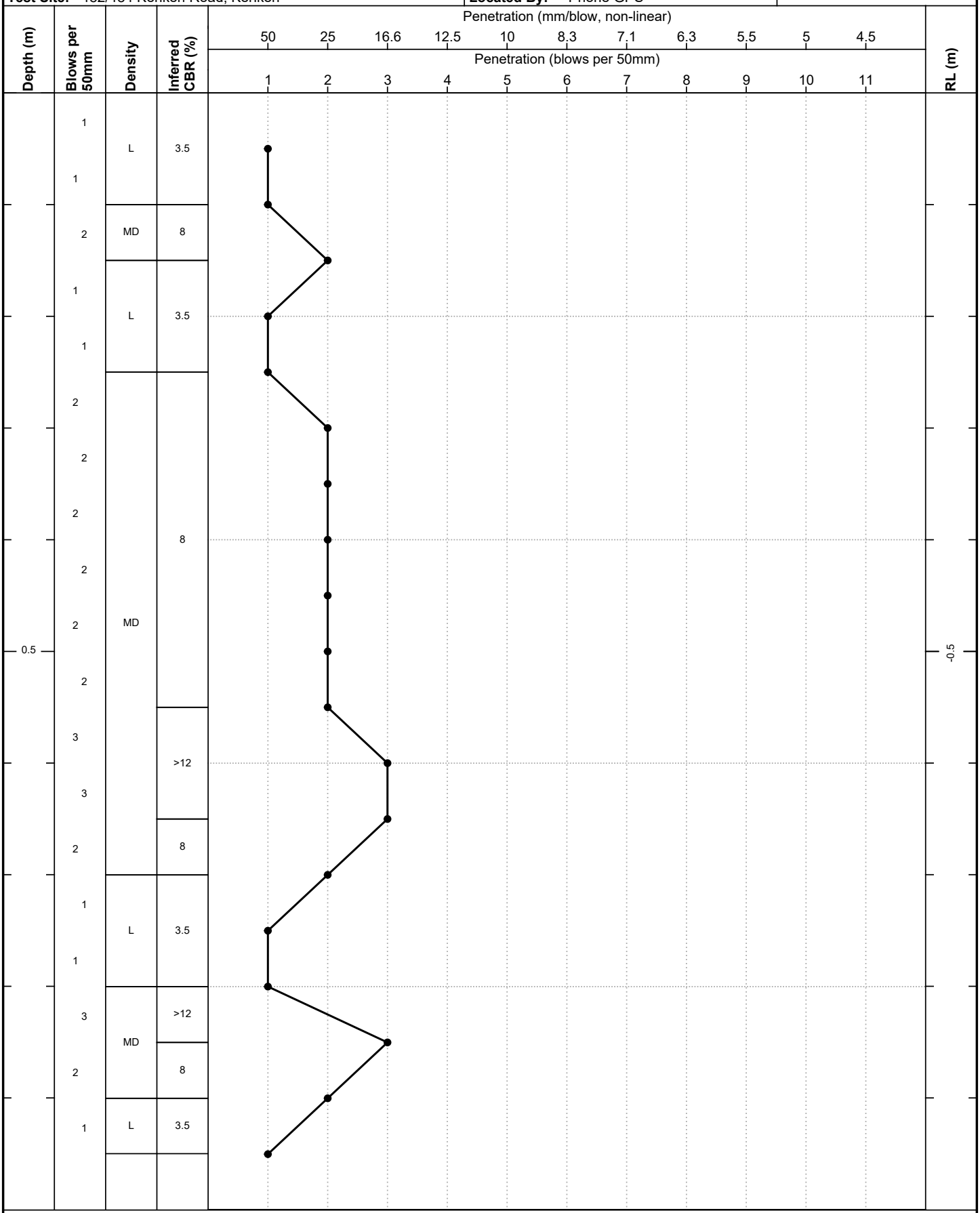
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP35** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099476mN, 1684957mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

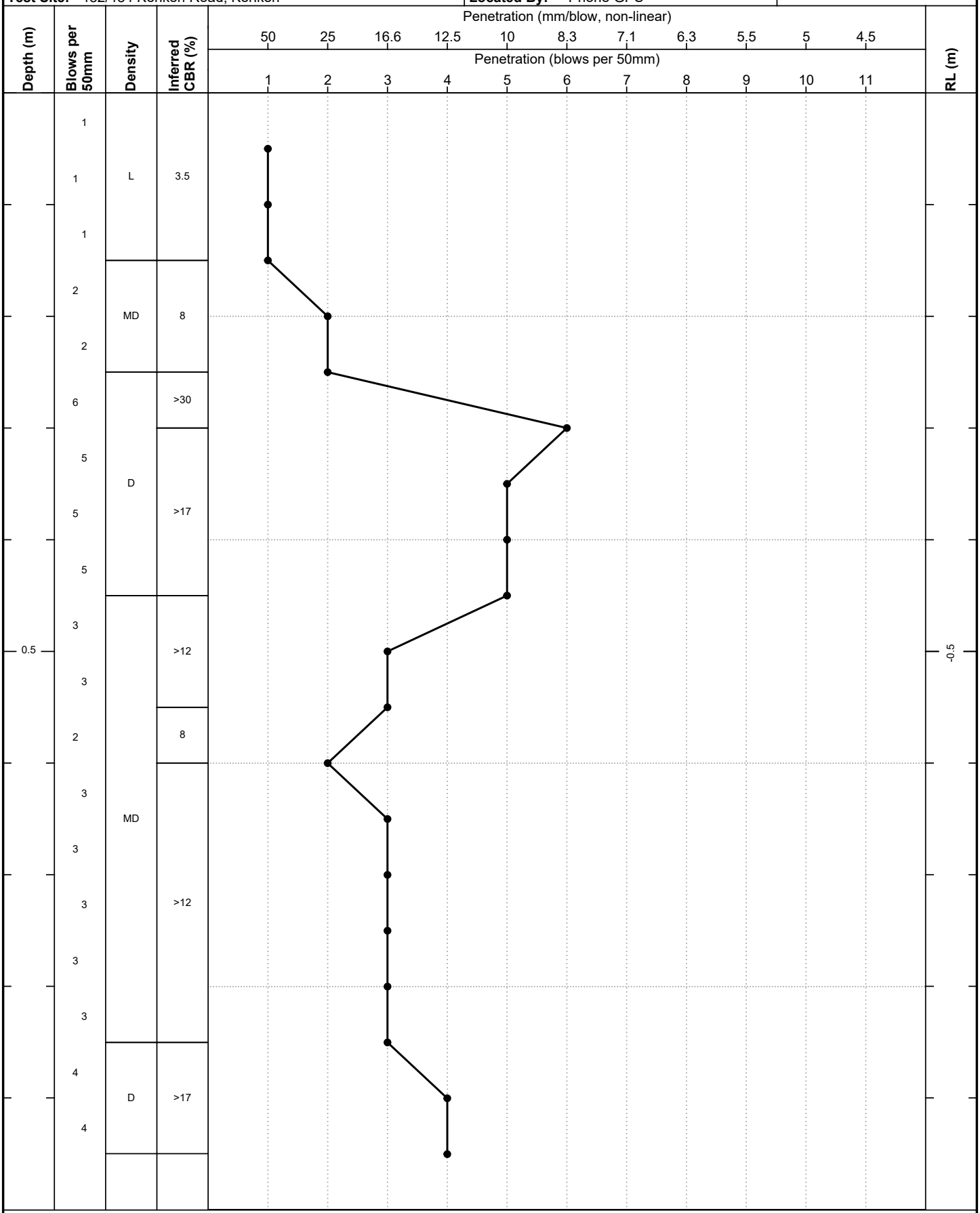
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP36** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099480mN, 1684958mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 21/11/2023 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

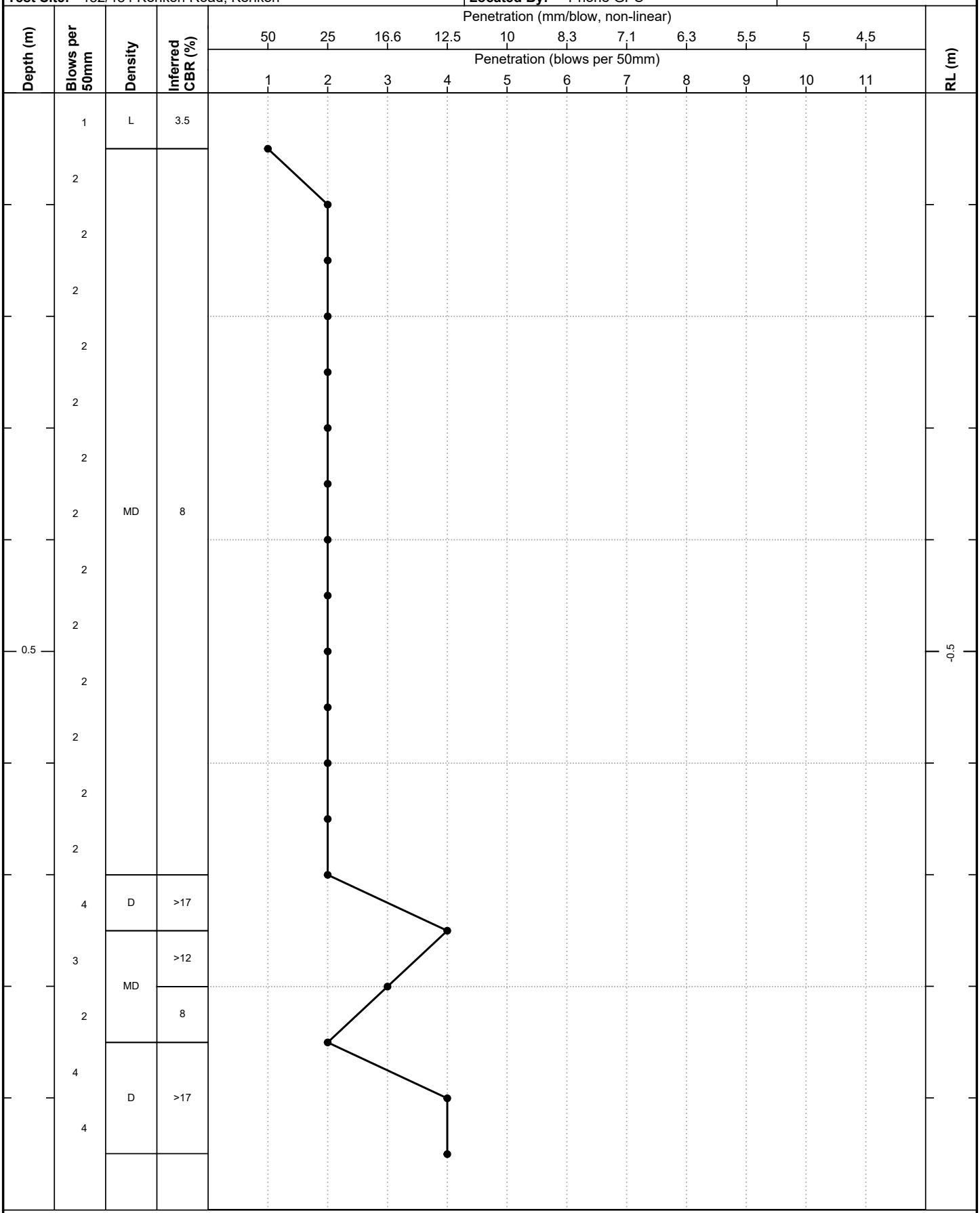
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP37** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099490mN, 1684956mE | **Test Date:** | 17/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

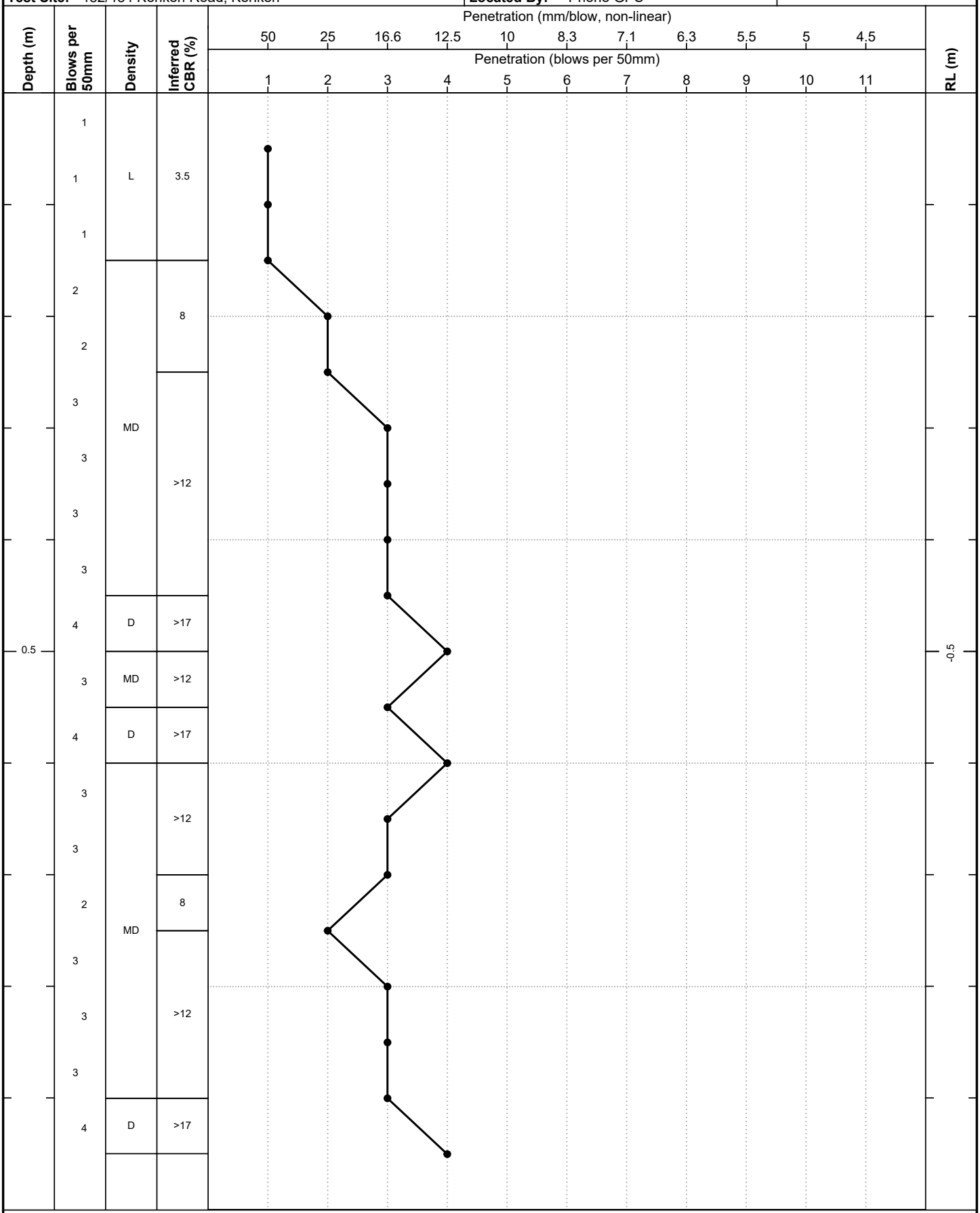
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP38** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099490mN, 1684947mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 21/11/2023 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

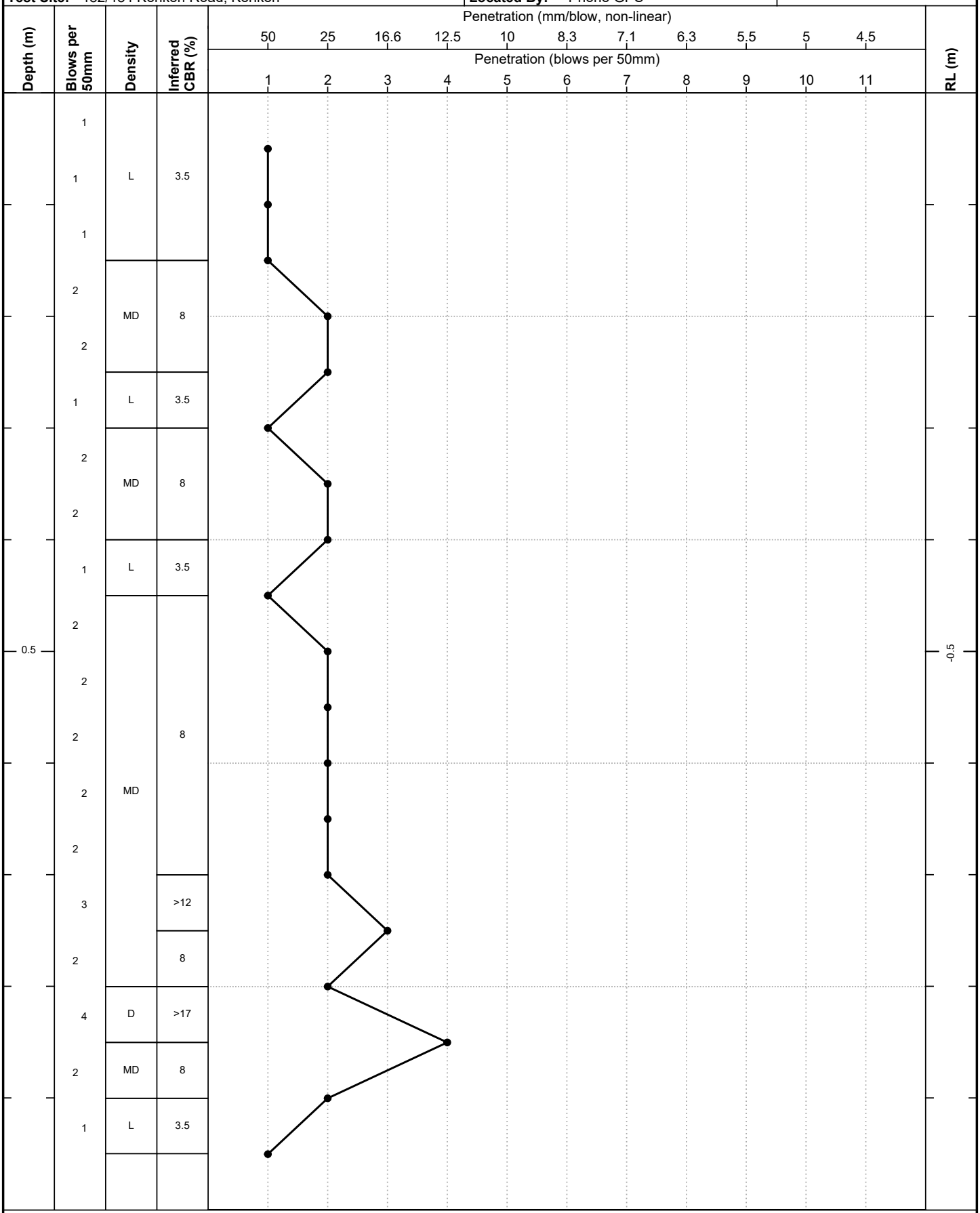
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP39** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099499mN, 1684930mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

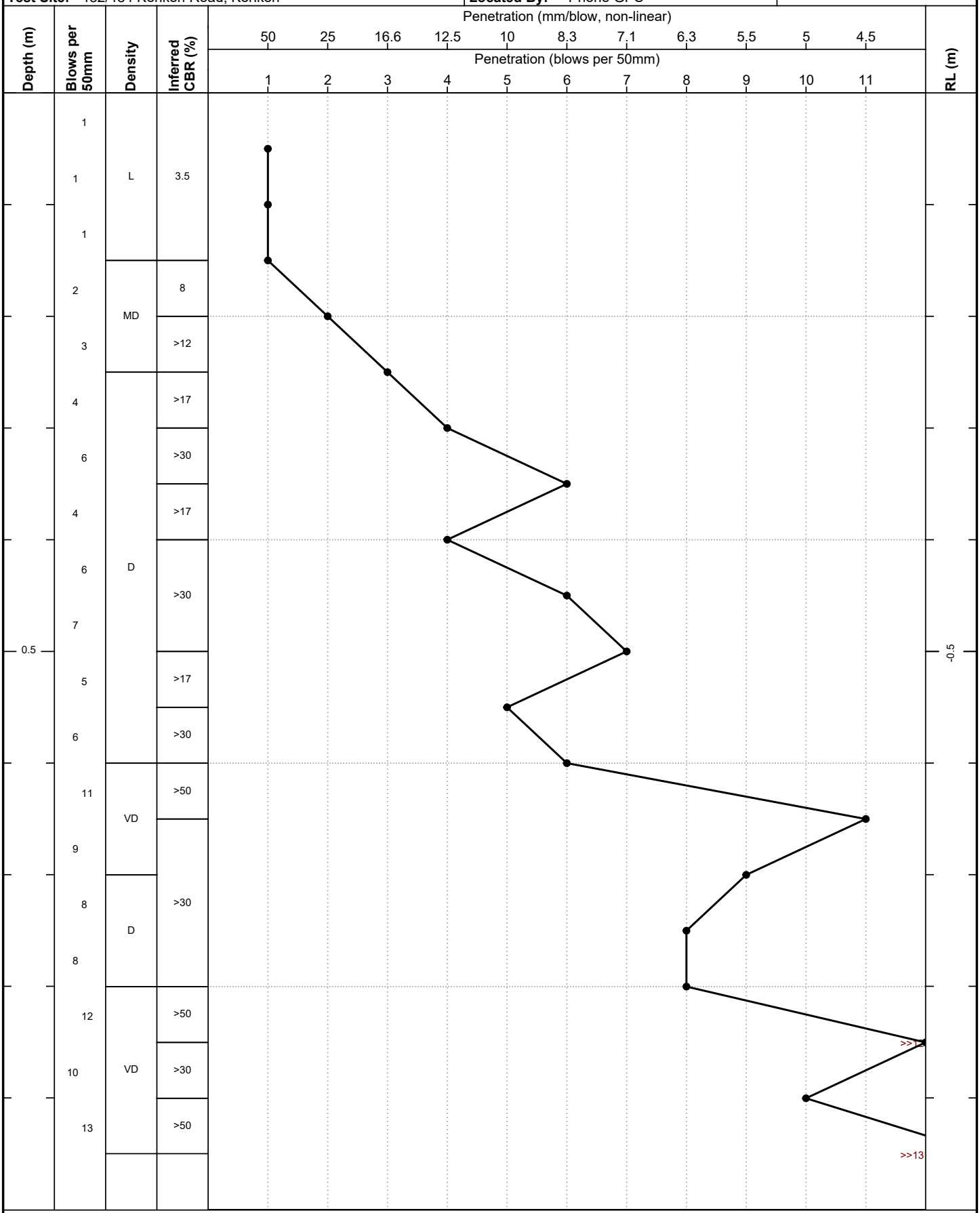
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP40** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099499mN, 1684919mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 21/11/2023 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

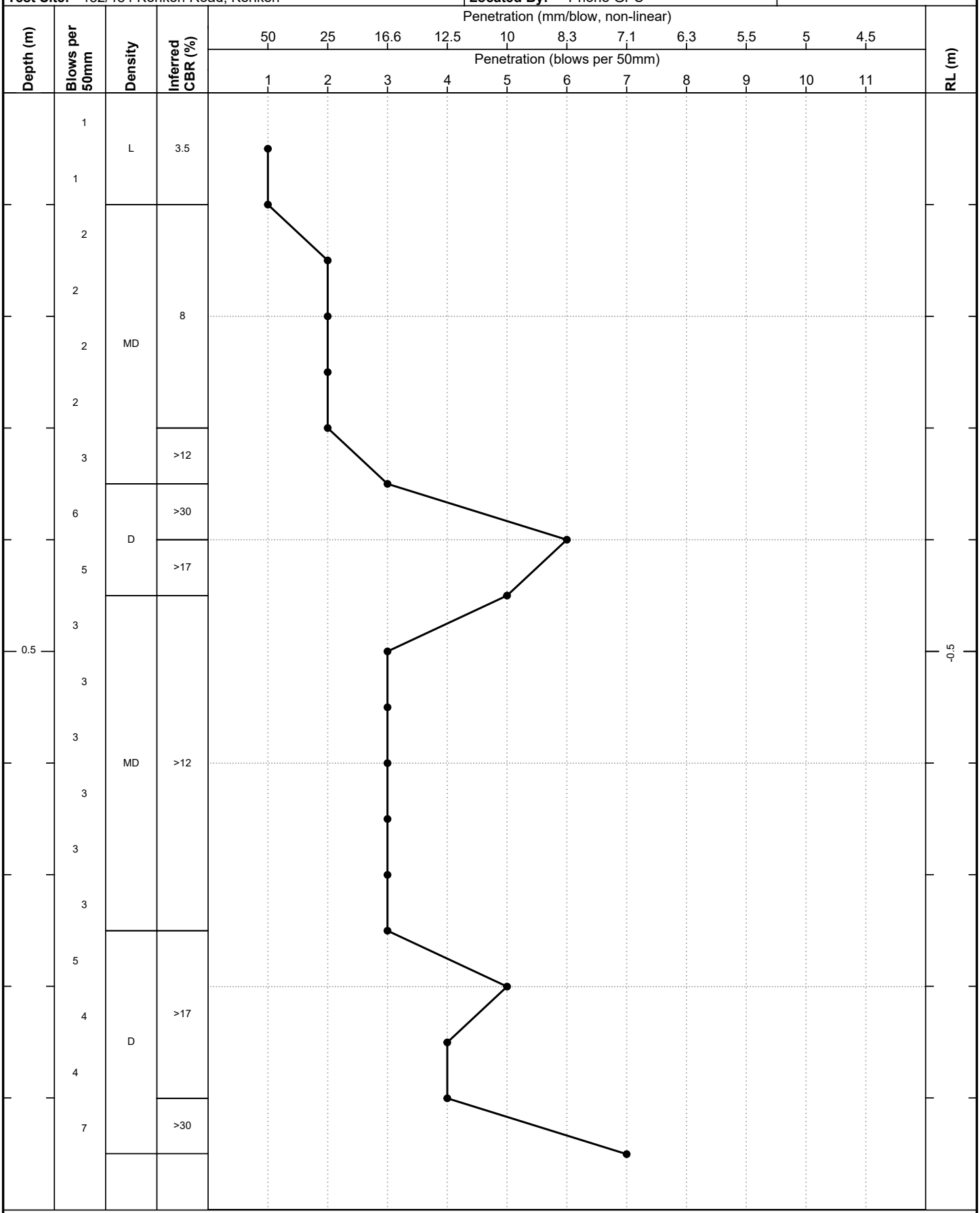
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP41** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099511mN, 1684909mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

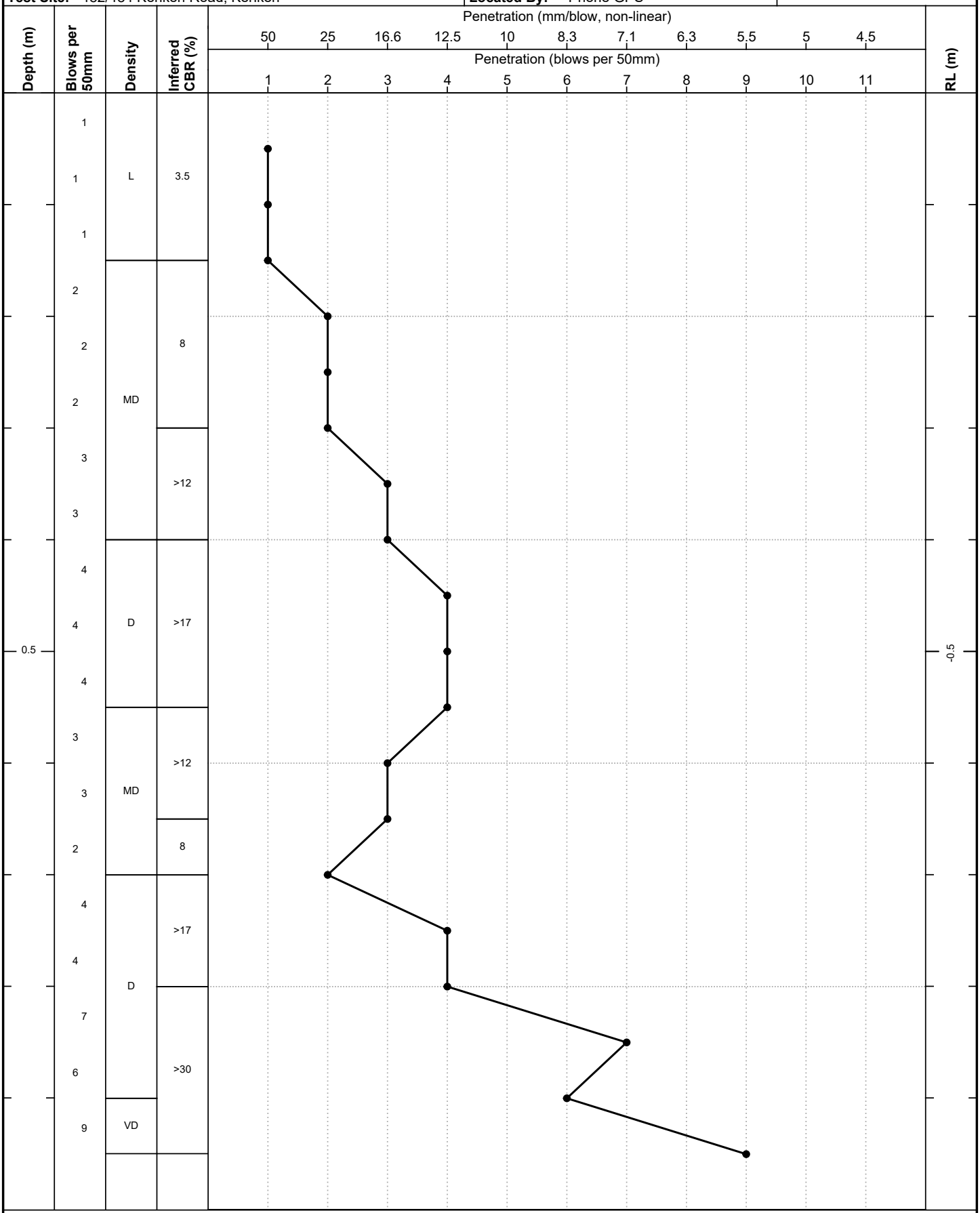
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP42** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099507mN, 1684906mE | **Test Date:** | 21/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

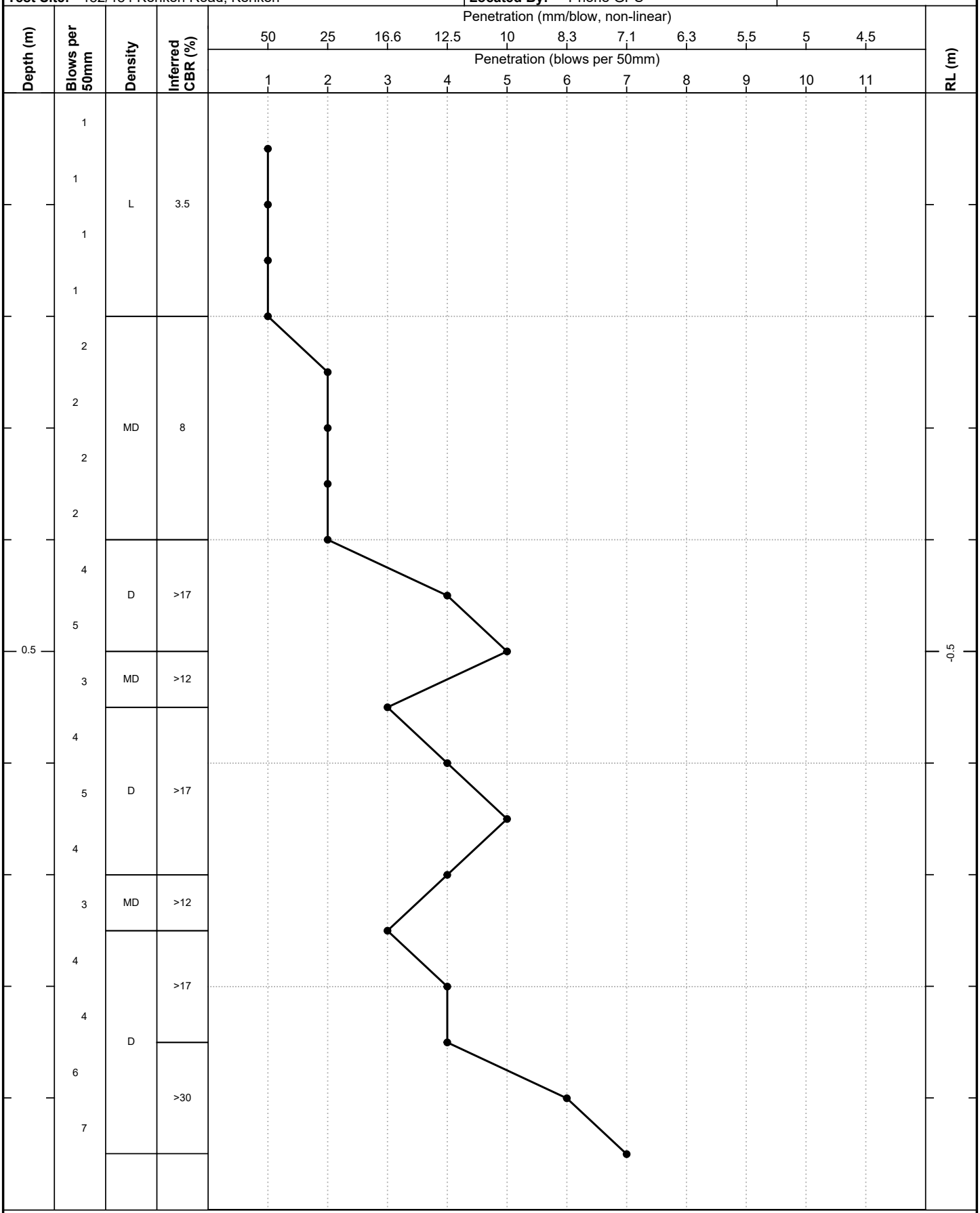
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP43** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099522mN, 1684866mE | **Test Date:** | 21/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

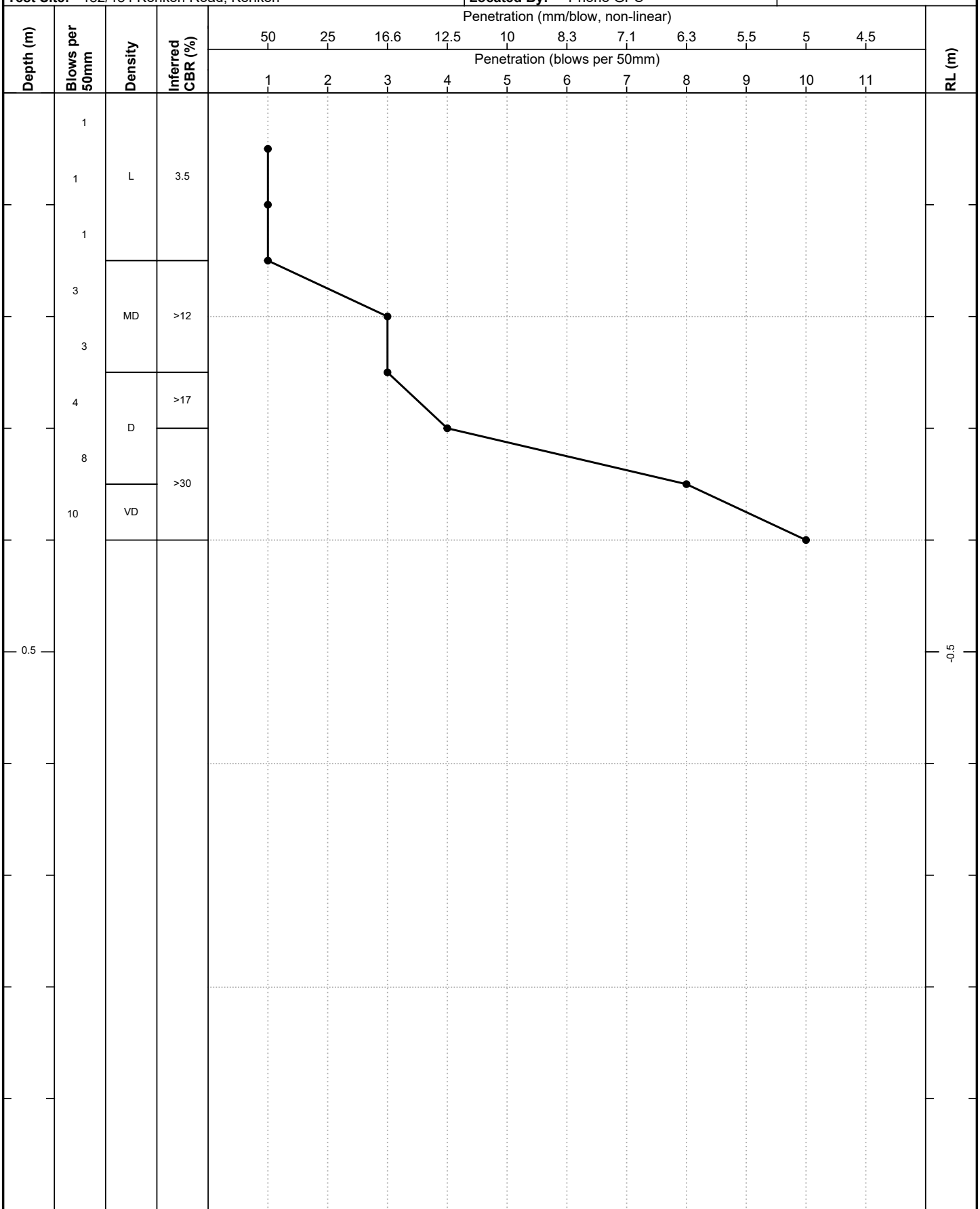
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP44** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099523mN, 1684875mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 21/11/2023 | | |
| **Logged By:** | CF | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

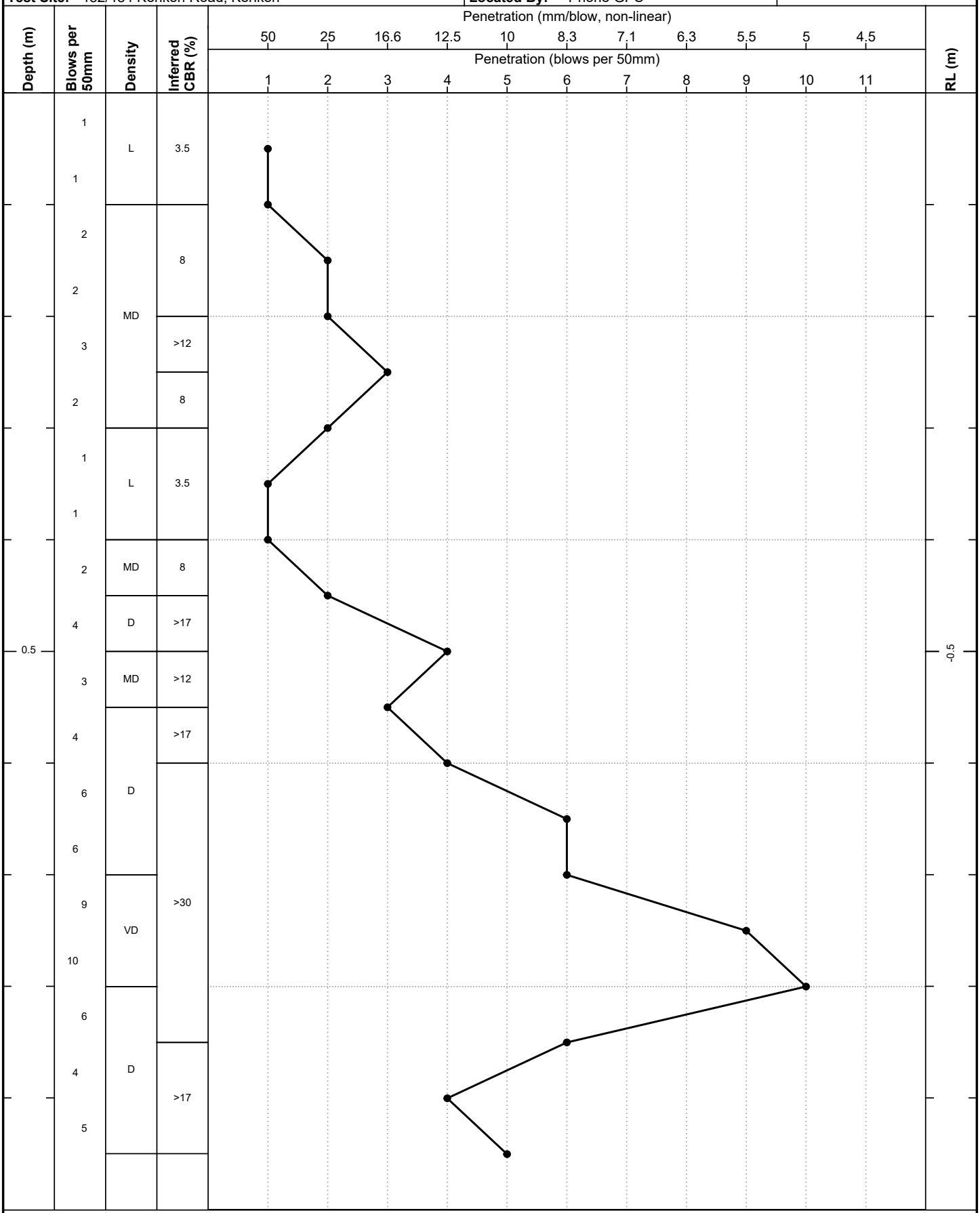
| | | | |
|---|---|---|---|
| **Test ID:** | **DCP45** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099503mN, 1684862mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

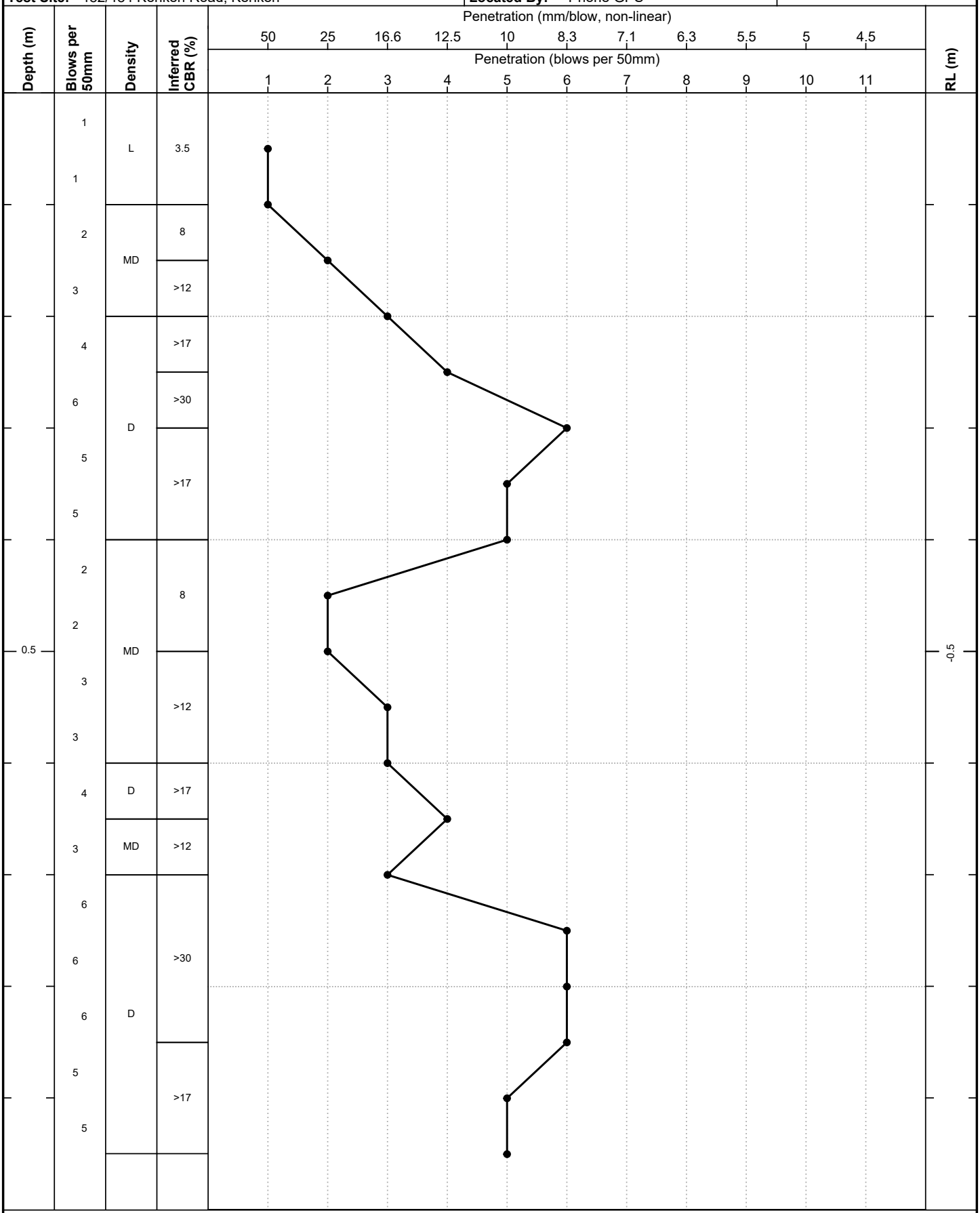
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP46** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099510mN, 1684865mE | **Test Date:** | 17/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

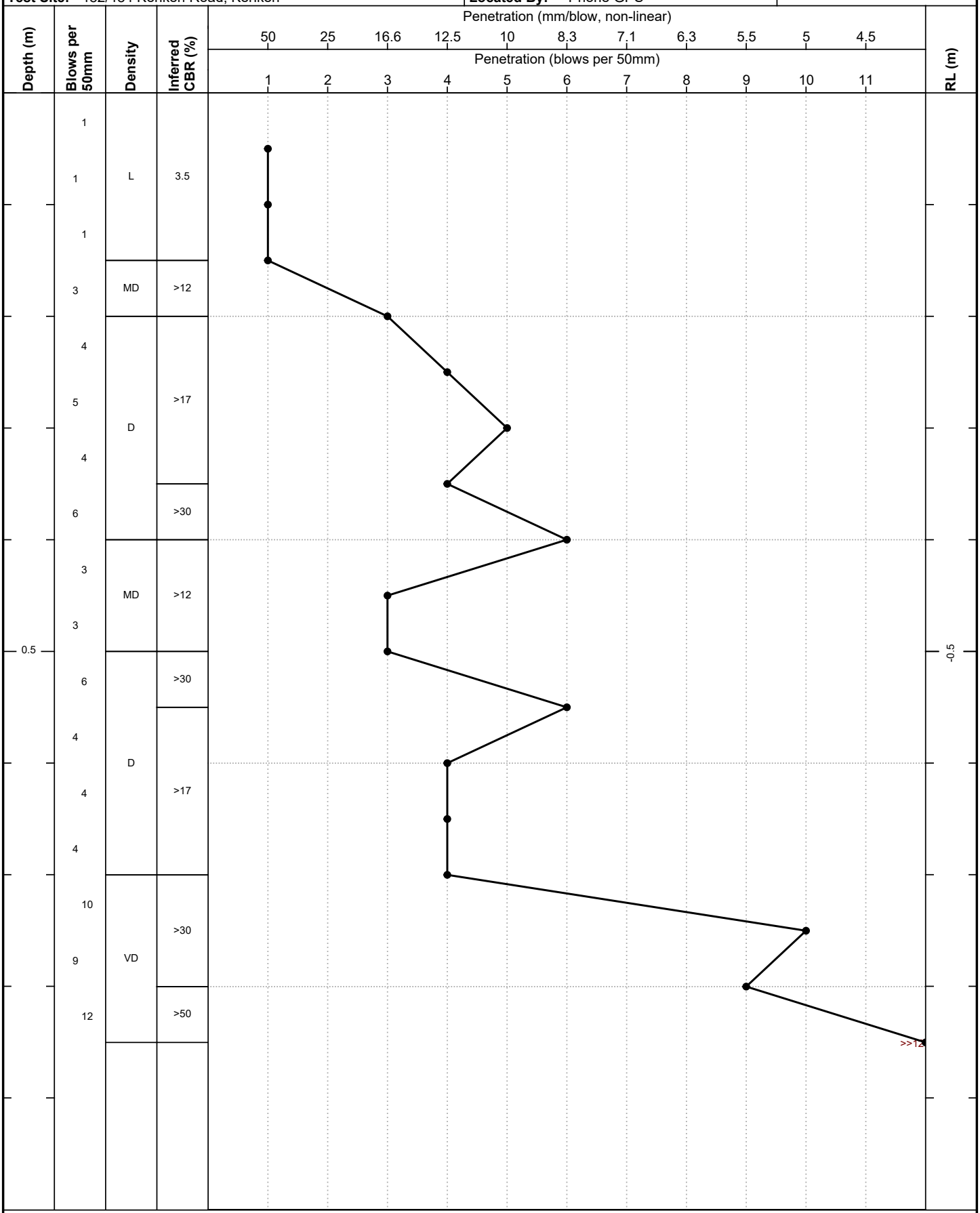
| | | | | | |
|---|---|---|---|---|---|
| **Test ID:** | **DCP47** | | | | |
| **Project ID:** | 25575 | | | | |
| **Sheet:** | 1 of 1 | | | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099522mN, 1684885mE | **Test Date:** | 17/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Checked By:** | CP |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Dynamic Cone Penetrometer Log

| | | | |
|---|---|---|---|
| **Test ID:** | **DCP48** | | |
| **Project ID:** | 25575 | | |
| **Sheet:** | 1 of 1 | | |
| **Client:** | Quirino Limited | **Coordinates:** | 6099493mN, 1684860mE |
| **Project:** | Geotechnical Investigation | **System:** | NZTM |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS |
| **Test Date:** | 17/01/2024 | | |
| **Logged By:** | MJL | | |
| **Checked By:** | CP | | |




**Remarks:** Results may be affected by skin friction, particularly where the tested depth exceeds 1.5m. Density classification in terms of NZGS Field Description of Soil and Rock (2005).

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA01** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099449mN, 1684985mE | **Test Date:** | 09/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) |
|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT (Topsoil), trace clay contents; dark brown; moist, firm, low plasticity, some grass rootlets, and minor fine subangular gravel clasts. | Groundwater not encountered | | |
| | Kerikeri Volcanics | Clayey SILT; greyish brown, lenses of light brown; moist, firm, low plasticity. | | | 219 / 28 (7.8) |
| | | Clayey SILT, with some gravel; reddish brown, moist, firm, low plasticity.<br>Gravel: fine, subangular, moderately weathered. | | | 215 / 52 (4.1) |
| 0.5 | | | | | 243+ |
| | | | | | 243+ |
| 1.0 | | 1.10m - 1.60m: Lenses of fine angular yellowish white, gravel clasts. | | | 236 / 35 (6.7) |
| | | | | | 243+ |
| 1.5 | | Fine sandy SILT, with trace clay content; greyish brown; moist, soft, low plasticity. | | | 201 / 35 (5.7) |
| | | 1.70m: fine angular, highly weathered gravel clasts,grey and yellowish white in colour, | | | 243+ |
| 2.0 | | Fine sandy SILT; light brown; moist, medium dense, non plasticity, uniformly graded. | | | 121 / 57 (2.1) |
| | | | | | 201 / 7 (28.7) |
| 2.5 | | | | 12 ▶ 13 ▶ 15 ▶ | |
| 3.0 | | | | | |

**Hole Depth:** 2.15m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak ● Vane residual ○ Vane UTP ◆ Standing water level ▼ Groundwater inflow ◁ Groundwater outflow ▷

UTP = Unable to Penetrate

Generated with CORE-GS by Geroc - HAxTP Log v9 - 30/04/2024 4:02:46 pm

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA02** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099445mN, 1684988mE | **Test Date:** | 09/01/2024 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | CF |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 713, peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT; dark brown; dry,grass rootlets | Groundwater not encountered | | | 0.0 |
| | Kerikeri Volcanics | Clayey SILT; light brown, with orange streaks; stiff, low plasticity | | | 202+ | |
| | | | | | 202+ | |
| 0.5 | | | | | 202+ | -0.5 |
| | | | | | UTP | |
| 1.0 | | | | | UTP | -1.0 |
| | | | | | 72 / 32 (2.3) | |
| | | 1.60m: becomes moist | | | 202+ | |
| 1.5 | | Fine sandy SILT; brown; moist, very stiff, low plasticity | | | 202+ | -1.5 |
| | | | | | UTP | |
| 2.0 | | | | | UTP | -2.0 |
| | | | | | UTP | |
| | | 2.40m: white specks | | | 202+ | |
| 2.5 | | | | | UTP | -2.5 |
| | | | | | 202+ | |
| 3.0 | | | | | 202+ | -3.0 |

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA03** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099435mN, 1684961mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | CF |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 713 peak / residual (sensitivity) |
|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT, dark brown; dryfriable, rootlets | Groundwater not encountered | | 202+ |
| 0.5 | Kerikeri Volcanic Group | Clayey SILT, dark brown with orange specks, friable, hard, high plasticity. | | | 202+ |
| | | | | | 202+ |
| | | | | | 202+ |
| 1.0 | | | | | 202+ |
| | | | | | UTP |
| 1.5 | | 1.60m: Becoming moist. | | | 202+ |
| | | | | | 156 / 46 (3.4) |
| | | Silty CLAY, dark brown with orange mottling, hard, moist, high plasticity. | | | 166 / 65 (2.6) |
| 2.0 | | | | | UTP |
| | | Gravelly clayey SILT, light brown, hard, moist, high plasticity. Gravels; 1-3mm MPS, slightly weathered, orangey brown, subangular. | | | UTP |
| | | 2.30m: Grey and orange mottling. | | | 202+ |
| 2.5 | | | | | 202+ |
| | | | | | 202+ |
| | | 3.00m: Becoming wet. | | | |
| 3.0 | | | | | 147 / 43 (3.4) |

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

- Vane peak
- Vane residual
- Vane UTP
- Standing water level
- Groundwater inflow
- Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA04** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099434mN, 1684949mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | CF |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 713 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT; brown; dry, friable, rootlets | | | | 0.0 |
| | Kerikeri Volcanics | Silty CLAY; dark brown, with orange specks; very stiff, high plasticity; friable | | | 166 / 58 (2.9) | |
| | | | | | 173 / 40 (4.3) | |
| 0.5 | | | | | 202+ | -0.5 |
| | | | | | UTP | |
| 1.0 | | 1.00m: white flecks | | | 202+ | -1.0 |
| | | | | | 202+ | |
| | | 1.40m - 1.60m: dark grey streaks | | | 202+ | |
| 1.5 | | | | | 202+ | -1.5 |
| | | | | | 202+ | |
| 2.0 | | 2.00m: becoming moist | | | 180 / 65 (2.8) | -2.0 |
| | | | | | 173 / 86 (2.0) | |
| | | | | | 199 / 76 (2.6) | |
| 2.5 | | | | | 144 / 58 (2.5) | -2.5 |
| | | | | | 115 / 43 (2.7) | |
| 3.0 | | | | | 151 / 69 (2.2) | -3.0 |

Groundwater not encountered

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak · Vane residual · Vane UTP · Standing water level · Groundwater inflow · Groundwater outflow

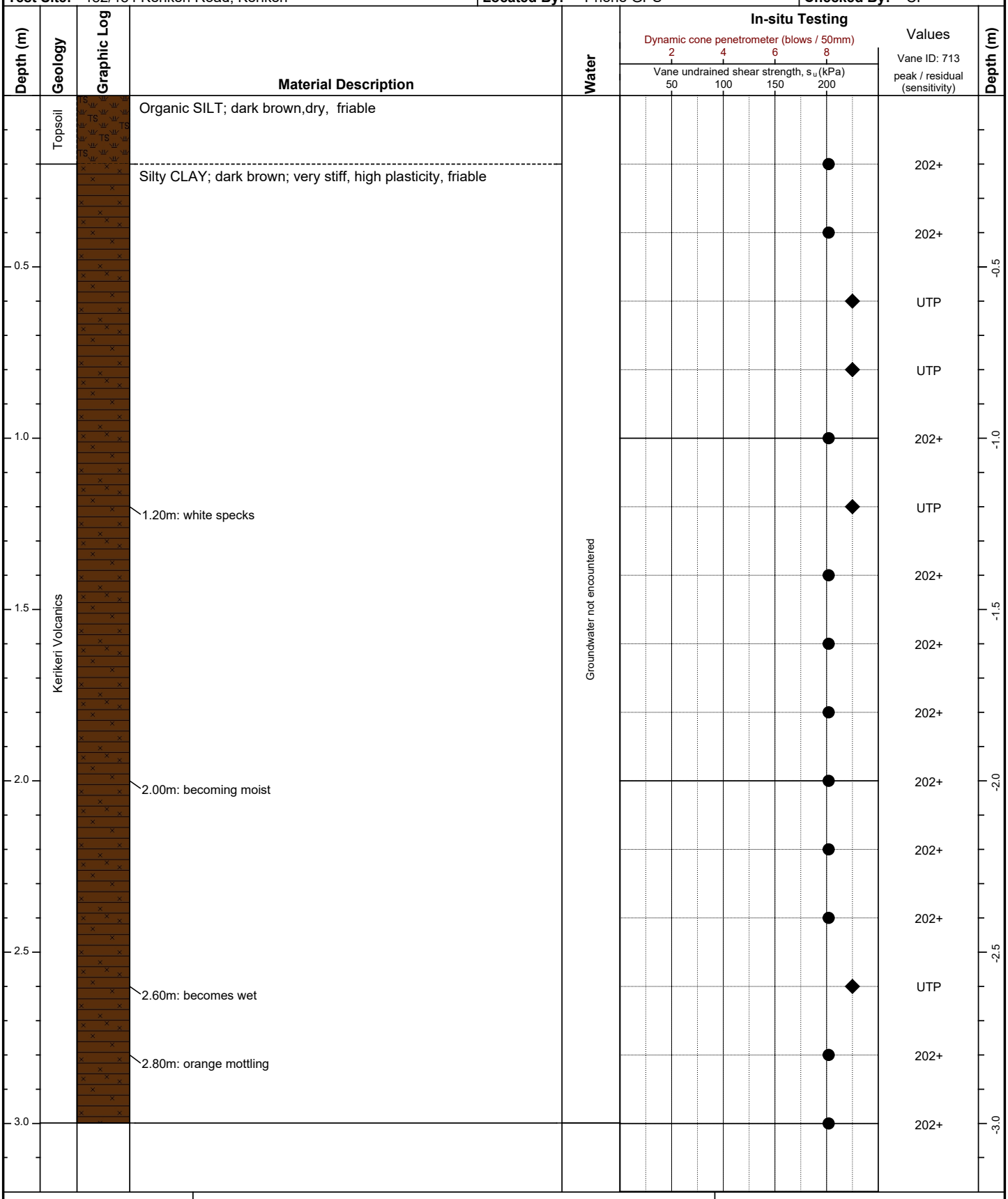
UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA05** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099422mN, 1684949mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | CF |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |




**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

- Vane peak
- Vane residual
- Vane UTP
- Standing water level
- Groundwater inflow
- Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA06** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099424mN, 1684979mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT (Topsoil); dark brown, with lenses of yellowish light brown silt; dry, medium dense, non plastic, some grass rootlets | | | | 0.0 |
| | Fill | Organic SILT, mixed with clayey SILT; brown, with dark brown streaks; moist, firm, low plasticity | | | 132 / 35 (3.8) | |
| | Kerikeri Volcanics | Clayey SILT, some gravels; reddish brown; moist, firm, low plasticity.<br>Gravels: fine, angular, highly weathered, white in colour. | | | 212 / 73 (2.9) | |
| 0.5 | | | | | 239 / 118 (2.0) | -0.5 |
| | | | | | 243+ | |
| 1.0 | | | | | 239 / 104 (2.3) | -1.0 |
| | | | | | 236 / 59 (4.0) | |
| | | | | | 226 / 108 (2.1) | |
| 1.5 | | Fine sandy SILT, trace clay content; orangish brown, some white flecks; moist, soft, low plasticity | Groundwater not encountered | | 219 / 76 (2.9) | -1.5 |
| | | | | | 170 / 76 (2.2) | |
| 2.0 | | | | | 205 / 62 (3.3) | -2.0 |
| | | | | | 243+ | |
| | | Fine sandy SILT, trace clay content; grey, with dark orange streaks; moist, soft, low plasticity | | | 243+ | |
| 2.5 | | | | | 243+ | -2.5 |
| | | Fine sandy SILT, trace clay content; orangish brown, with faint orange mottling; moist, soft, low plasticity | | | 243+ | |
| 3.0 | | | | | 243+ | -3.0 |

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA07** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099412mN, 1684995mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT (Topsoil); dark brown; dry, loose, non plastic, minor rootlets | | | | 0.0 |
| | | Clayey SILT, trace gravels; reddish brown; moist, firm, low plasticity. Gravel: fine, angular, highly weathered, white in colour | | | 187 / 35 (5.3) | |
| | | | | | 243+ | |
| 0.5 | | | | | 236 / 94 (2.5) | -0.5 |
| | | 0.70m - 0.90m: fine, subangular, highly weathered, orange gravels | | | 243+ | |
| 1.0 | | | | | 243+ | -1.0 |
| | | | | | 222 / 62 (3.6) | |
| | | | | | 243+ | |
| 1.5 | Kerikeri Volcanics | Fine sandy SILT, trace clay content; orangish brown; moist, firm, low plasticity | Groundwater not encountered | | 243+ | -1.5 |
| | | | | | 243+ | |
| | | | | | 232 / 24 (9.7) | |
| 2.0 | | 2.20m: band fine grained sandy silt, light grey in colour | | | 160 / 10 (16.0) | -2.0 |
| | | | | | 243+ | |
| 2.5 | | | | | 243+ | -2.5 |
| | | Fine sandy SILT; dark grey; moist, medium dense, non plastic | | | 243+ | |
| | | Fine sandy SILT, trace clay content; orangish brown; moist, firm, low plasticity | | | | |
| 3.0 | | | | | 243+ | -3.0 |

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak ● | Vane residual ○ | Vane UTP ◆ | Standing water level ▼ | Groundwater inflow ◁ | Groundwater outflow ▷

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA08** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099409mN, 1684950mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT (Topsoil); dark brown; dry, loose, non plastic, minor rootlets | | | | 0.0 |
| | | Clayey SILT; brown, with orange streaks; moist, stiff, low plasticity | | 170 / 31 (5.5) | | |
| | | Fine sandy SILT; orangish brown; moist, stiff, low plasticity | | 229 / 101 (2.3) | | |
| 0.5 | | | | 156 / 73 (2.1) | | -0.5 |
| | | | | 170 / 14 (12.1) | | |
| | | 0.90m: fine, angular, grey, silty gravel. clasts easily broken | | | | |
| 1.0 | | | | 219 / 14 (15.6) | | -1.0 |
| | | Fine sandy SILT; grey, with faint orange streaks; moist, medium dense, non plastic, uniformly graded | | 243+ | | |
| | | Fine sandy SILT, trace clay content; orangish brown; moist, soft, low plasticity | | 222 / 35 (6.3) | | |
| 1.5 | Kerikeri Volcanics | | | 243+ | | -1.5 |
| | | | | 243+ | | |
| | | Fine sandy SILT; grey; moist, medium dense, non plastic, uniformly graded | | 243+ | | |
| 2.0 | | | | 243+ | | -2.0 |
| | | Fine sandy SILT; grey, with faint orange streaks; wet, medium dense, non plastic, uniformly graded | | 174 / 28 (6.2) | | |
| | | Fine sandy SILT; grey; wet, medium dense, non plastic, uniformly graded | | 243+ | | |
| 2.5 | | Fine sandy SILT, some gravel; brown; wet, medium dense, non plastic, uniformly graded<br>gravel: medium, size, subangular, grey in colour | | 243+ | | -2.5 |
| | | Silty fine SAND, some gravel; grey; dry, dense, non plastic, uniformly graded<br>gravel: fine, angular, grey in colour | | | | |
| | | Fine sandy SILT; brownish grey; moist, medium dense, non plastic, uniformly graded | | 239 / 28 (8.5) | | |
| 3.0 | | | | UTP | | -3.0 |

Groundwater not encountered

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak · Vane residual · Vane UTP · Standing water level · Groundwater inflow · Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA09** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099398mN, 1684953mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | CF |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 713 peak / residual (sensitivity) |
|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT, dark brown, dry, rootlets | | | |
| | Kerikeri Volcanics | Silty CLAY, brown; friable, high plasticity | | | 199 / 55 (3.6) |
| 0.5 | | | | | 202+ |
| | | | | | 202+ |
| | | | | | 202+ |
| 1.0 | | 1.00m: becomes sandy with grey mottling | Groundwater not encountered | | 202+ |
| 1.5 | | | | | |
| 2.0 | | | | 12▶ | |
| 2.5 | | | | | |
| 3.0 | | | | | |

**Hole Depth:** 1.00m

**Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

- Vane peak
- Vane residual
- Vane UTP
- Standing water level
- Groundwater inflow
- Groundwater outflow

UTP = Unable to Penetrate

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# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA10** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099394mN, 1684969mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | CF |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 713 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT; dark brown, dry, friable, rootlets | | | | 0.0 |
| | Kerikeri Volcanics | Silty CLAY; light brown, friable, very stiff, high plasticity | | | 137 / 35 (3.9) | |
| 0.5 | | | | | 194 / 79 (2.5) | -0.5 |
| | | 0.60m: orange mottling | | | 173 / 79 (2.2) | |
| | | | | | 202+ | |
| 1.0 | | 1.00m: traces of fine weathered gravel, grey in colour | | | 202+ | -1.0 |
| | | Silty gravelley SAND; light brown; moist | | | UTP | |
| | | Silty CLAY; light brown; moist, very stiff, high plasticity, friable | Groundwater not encountered | | UTP | |
| 1.5 | | | | | 202+ | -1.5 |
| | | Silty CLAY; greyish brown; moist, very stiff, high plasticity | | | 202+ | |
| 2.0 | | | | | UTP | -2.0 |
| 2.5 | | | | | | -2.5 |
| 3.0 | | | | | | -3.0 |

**Hole Depth:** 1.95m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA11** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099400mN, 1684986mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT(Topsoil), dark brownish black; dry, loose, non plastic, some grass rootlets | | | | 0.0 |
| | | Clayey SILT; brown; moist, firm, low plasticity | | 115 / 38 (3.0) | | |
| | Keriker Volcanics | Clayey SILT; orangish brown; moist, firm, low plasticity | | 180 / 56 (3.2) | | |
| 0.5 | | 0.50m: small tree root | | 212 / 87 (2.4) | | -0.5 |
| | | | | 222 / 97 (2.3) | | |
| 1.0 | | | | 239 / 104 (2.3) | | -1.0 |
| | | | | 180 / 42 (4.3) | | |
| | | | | 180 / 52 (3.5) | | |
| 1.5 | | Clayey fine sandy SILT; greyish brown; moist, firm, low plasticity | | 153 / 56 (2.7) | | -1.5 |
| | | Clayey SILT; orangish brown; moist, firm, low plasticity, minor fine angular gravel clasts, white in colour | | 128 / 17 (7.5) | | |
| 2.0 | | | | 153 / 14 (10.9) | | -2.0 |
| | | Clayey SILT; yellowish brown; moist, firm, low plasticity | | 212 / 21 (10.1) | | |
| | | | | 167 / 52 (3.2) | | |
| 2.5 | | Clayey SILT; greyish brown; moist, soft, high plasticity | | 243+ | | -2.5 |
| | | Coarse SAND; Yellow, with white lenses; moist, loose, non plastic. minor small black clasts of charcoal | | 243+ | | |
| | | Clayey SILT; greyish brown; moist, soft, high plasticity, small black charcoal clasts | | 108 / 17 (6.4) | | |
| 3.0 | | | Groundwater not encountered | | | -3.0 |

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak ● | Vane residual ○ | Vane UTP ◆ | Standing water level ▼ | Groundwater inflow ◁ | Groundwater outflow ▷

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA12** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099461mN, 1684915mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | CF |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 3246 peak / residual (sensitivity) |
|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT; dark brown; friable, rootlets | | | |
| | | Clayey SILT; brown, light brown mottling; friable high plasticity, rootlets | | | 165 / 37 (4.5) |
| | Kerikeri Volcanics | Clayey SILT; light brown to brown; friable, low plasticity | | | UTP |
| 0.5 | | | | | UTP |
| | | 0.90m: becoming moist | | | UTP |
| 1.0 | | 1.00m: poor recovery | Groundwater not encountered | | UTP |
| | | Sandy SILT; greyish brown, with orange mottling; moist, dense, low plasticity<br>sand fine to medium grained | | | |
| 1.5 | | | | | |
| 2.0 | | 2.00m: poor recovery | | 17 | |
| 2.5 | | | | | |
| 3.0 | | | | | |

**Hole Depth:** 2.00m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

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# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA13** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099466mN, 1684935mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | GG |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | GG |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 2864 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0 | Topsoil | SILT (Topsoil); brown; moist, non plastic, rootlets | | | | 0 |
| | | Silty CLAY, traces of fine to medium grained sand; brown; moist, high plasticity | | | 121 / 30 (4.0) | |
| 0.5 | | 0.45m: becoming brown with yellowish brown mottling, containing fine gravel clasts | | | 188+ | -0.5 |
| | | | | | 188+ | |
| | | | | | 188+ | |
| 1.0 | | Clayey SILT; some gravel; brown; moist, low plasticity<br>gravel clasts: fine to medium in size, moderately weathered | | | 188+ | -1.0 |
| | | | | | 188+ | |
| 1.5 | Kerikeri Volcanics | 1.40m: white mottling, possibly weathered gravel | Groundwater not encountered | | 188+ | -1.5 |
| | | | | | UTP | |
| | | | | | UTP | |
| 2.0 | | | | | UTP | -2.0 |
| 2.5 | | | | | 188+ | -2.5 |
| | | | | | UTP | |
| 3.0 | | | | | | -3.0 |

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA14** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099459mN, 1684946mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT (Topsoil); dark brown; moist, loose, non plastic, minor fine grass rootlets | | | | 0.0 |
| | | Clayey SILT; brown, minor small yellow lenses; moist, firm, high plasticity | | | 222 / 59 (3.8) | |
| 0.5 | | | | | 243+ | -0.5 |
| | | Fine sandy SILT; brownish grey; moist, medium dense, non plastic | | | 243+ | |
| | | | | | 243+ | |
| 1.0 | | | | | 132 / 10 (13.2) | -1.0 |
| | | Fine sandy SILT; brown; moist, medium dense, non plastic | | | 139 / 7 (19.9) | |
| | Kerikeri Volcanics | | Groundwater not encountered | | 232 / 10 (23.2) | |
| 1.5 | | | | | 243+ | -1.5 |
| | | | | | 219 / 10 (21.9) | |
| 2.0 | | Clayey SILT, with minor gravel; orangish brown, minor yellow lenses; moist, firm, low plasticity<br>gravel clasts: fine to medium sized, sub angular, moderately weathered, grey | | | 243+ | -2.0 |
| | | Fine sandy SILT, trace clay content ; brown, with faint grey and black lenses; moist, firm, low plasticity | | | 160 / 42 (3.8) | |
| | | | | | 215 / 38 (5.7) | |
| 2.5 | | | | | 167 / 24 (7.0) | -2.5 |
| | | | | | 236 / 38 (6.2) | |
| 3.0 | | | | | 243+ | -3.0 |

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

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# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA15** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099481mN, 1684944mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT (Topsoil); dark brown; dry, medium dense, non plastic, with bamboo roots | Groundwater not encountered | | 128 / 17 (7.5) | 0.0 |
| 0.5 | | Clayey SILT; orangish brown, with minor small yellowish lenses of fine sand; moist, firm, low plasticity, minor rootlets | | | 243+ | -0.5 |
| | | Fine sandy SILT, trace clay content ; brown, with yellow lenses; moist, firm, low plasticity | | | 243+ | |
| 1.0 | | | | | 243+ | -1.0 |
| | Kerikeri Volcanics | Fine sandy SILT; grey, with brown mottling and small black lenses; moist, medium dense, non plastic | | | 177 / 52 (3.4) | |
| 1.5 | | | | | 243+ | -1.5 |
| | | | | | 243+ | |
| | | | | | 194 / 7 (27.7) | |
| 2.0 | | | | | 243+ | -2.0 |
| | | | | | 236 / 14 (16.9) | |
| 2.5 | | | | | 243+ | -2.5 |
| | | | | | 243+ | |
| | | | | | 243+ | |
| | | Fine sandy SILT, trace clay content ; grey with faint brown mottling; wet, soft, low plasticity | | | 243+ | |
| 3.0 | | | | | 232 / 14 (16.6) | -3.0 |

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

Generated with CORE-GS by Geroc - HAxTP Log v9 - 30/04/2024 4:03:13 pm

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA16** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099485mN, 1684930mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT (Topsoil); dark brown; dry, medium dense, non plastic | | | | 0.0 |
| | | Clayey SILT; orangish brown; moist, firm, low plasticity | | | 201 / 38 (5.3) | |
| | | | | | 198 / 42 (4.7) | |
| 0.5 | | | | | 222 / 80 (2.8) | -0.5 |
| | | Fine sandy SILT, trace clay content ; grey with faint brown mottling, and minor small black lenses; moist, soft, low plasticity | | | 236 / 10 (23.6) | |
| 1.0 | | | | | 243+ | -1.0 |
| | | | | | 243+ | |
| | | | | | 243+ | |
| 1.5 | Kerikeri Volcanics | Fine sandy SILT, trace clay content ; greyish brown, with minor small black lenses; moist, soft, low plasticity | Groundwater not encountered | | 222 / 17 (13.1) | -1.5 |
| | | | | | 229 / 28 (8.2) | |
| 2.0 | | | | | 243+ | -2.0 |
| | | | | | 243+ | |
| | | | | | 243+ | |
| 2.5 | | | | | 243+ | -2.5 |
| | | | | | 243+ | |
| | | | | | 243+ | |
| 3.0 | | | | | 243+ | -3.0 |

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

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# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA17** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099495mN, 1684897mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | GG |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | GG |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) | In-situ Testing: Vane undrained shear strength, $s_u$ (kPa) | Values: Vane ID: 2864 peak / residual (sensitivity) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | SILT (Topsoil); brown; moist, non plastic, rootlets | Groundwater not encountered | 2 4 6 8 | 50 100 150 200 | 188+ |
| 0.5 | Kerikeri Volcanics | Silty CLAY, with minor fine to medium grained sand; brown, with yellowish brown streaks; moist, high plasticity | | | | 188+ |
| | | 0.80m: becomes mottled grey and orangish brown | | | | 188+ |
| 1.0 | | Silty CLAY, with traces of fine grained sand; brown, mottled grey; moist, high plasticity | | | | 188+ |
| | | | | | | 188+ |
| 1.5 | | | | | | |
| 2.0 | | | | | | |
| 2.5 | | | | | | |
| 3.0 | | | | | | |

**Hole Depth:** 1.25m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

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# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA18** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099510mN, 1684905mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | CF |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) | In-situ Testing: Vane undrained shear strength, $s_u$ (kPa) | Values: Vane ID: 3246 peak / residual (sensitivity) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Gravelly organic SILT (Topsoil); dark brown; dry<br>gravel clasts: medium sized (10-15mm), very weak, light brown | Groundwater not encountered | | | 15 / 49 (0.3) |
| 0.5 | Kerikeri Volcanics | Clayey SILT; orangish brown; friable, high plasticity | | | | 210+ |
| | | | | | | 210+ |
| | | | | | | 210+ |
| | | | | | 15 ▶ | |

**Hole Depth:** 0.80m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

- Vane peak
- Vane residual
- Vane UTP
- Standing water level
- Groundwater inflow
- Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA19** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099507mN, 1684889mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) |
|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT(Topsoil), trace clay content; dark brown; moist; soft, low plasticity; some grass rootlets | Groundwater not encountered | | |
| | | Clayey SILT; orangish brown; moist, firm, low plasticity | | | 118 / 14 (8.4) |
| 0.5 | | Fine sandy SILT, some gravel; grey; wet, dense, non plastic<br>gravel: fine, subangular, slightly weathered, grey in colour | | | UTP |
| | | Fine sandy SILT, minor gravel; orangish brown; moist, dense, low plasticity.<br>Gravel: fine, angular, slightly weathered, grey in colour. | | | 125 / 14 (8.9) |
| | Keriker Volcanic Group | Fine sandy gravelley SILT; grey; dry, dense, non plastic<br>gravel: fine to medium, subangular, slightly weathered, grey in colour | | | UTP |
| 1.0 | | Fine sandy SILT; brownish grey, faint orange streaks; dry, dense, low plasticity. | | | 11 11 12 11 11 12 11 12 16 17 |
| | | 0.80m: Auger not penetrating, Scala from 0.8m | | | |
| 1.5 | | | | | |
| 2.0 | | | | | |
| 2.5 | | | | | |
| 3.0 | | | | | |

**Hole Depth:** 2.00m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

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# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA20** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099495mN, 1684889mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT(Topsoil), trace clay content; dark brown; moist; soft, low plasticity; some grass rootlets | Groundwater not encountered | | | 0.0 |
| | Kerikeri Volcanics | Clayey SILT; orangish brown, minor orange streaks; moist, firm, low plasticity | | | 139 / 38 (3.7) | |
| 0.5 | | | | | 167 / 31 (5.4) | -0.5 |
| | | | | | 243+ | |
| | | | | | 243+ | |
| 1.0 | | 0.90m: becomes wet and soft | | | 201 / 21 (9.6) | -1.0 |
| | | Silty gravelley fine SAND; brownish grey, moist, dense, low plasticity. Gravel: fine, subangular, slightly weathered. | | | | |
| | | Fine sandy SILT, minor gravels; brown; wet, medium dense, low plasticity. Gravel: fine to medium, subangular, slightly weathered, grey in colour, extremely weak. | | | 243+ | |
| 1.5 | | 1.50m: band of brown, wet, fine sandy silt | | | | -1.5 |
| | | 1.80m: band of brown, wet, fine sandy silt | | | | |
| 2.0 | | | | 12▶ 14▶ | | -2.0 |
| 2.5 | | | | | | -2.5 |
| 3.0 | | | | | | -3.0 |

**Hole Depth:** 2.00m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak ● Vane residual ○ Vane UTP ◆ Standing water level ▼ Groundwater inflow ◁ Groundwater outflow ▷

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA21** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099504mN, 1684871mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) |
|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT(Topsoil); dark brown, minor yellowish white lenses of fine sandy silt; moist; medium dense, non plastic; some grass rootlets | | | |
| | Kerikeri Volcanics | Fine sandy SILT,trace clay content, and minor gravel; orangish brown; moist, firm, low plasticity<br>gravel: fine, angular, highly weathered | | | 222 / 56 (4.0) |
| 0.5 | | Fine sandy gravelley SILT; grey, with orange mottling; dry. dense, low plasticity.<br>Gravel: fine to medium, subangular, moderately weathered, grey in colour. | | | 243+ |
| | | Fine sandy SILT; orangish brown, with grey bands; moist, dense, low plasticity. | Groundwater not encountered | | 243+ |
| 1.0 | | Fine sandy gravelley SILT; grey, with orange mottling; dry. dense, low plasticity.<br>Gravel: medium, subangular, moderately weathered, grey in colour. | | | 243+ |
| | | Fine sandy SILT, minor fine gravel; bluish grey; wet, dense, low plasticity.<br>Gravel: fine to medium, subangular, slightly weathered, grey in colour. | | | 243+ |
| 1.5 | | | | | |
| 2.0 | | | | | |
| 2.5 | | | | | |
| 3.0 | | | | | |

**Hole Depth:** 1.30m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

- Vane peak
- Vane residual
- Vane UTP
- Standing water level
- Groundwater inflow
- Groundwater outflow

UTP = Unable to Penetrate

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# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA22** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099490mN, 1684873mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) |
|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT(Topsoil); dark brown; dry; loose, some grass rootlets | Groundwater not encountered | | UTP |
| | Kerikeri Volcanics | Fine sandy SILT, trace clay content; orangish brown; moist, stiff, low plasticity | | | 184 / 42 (4.4) |
| | | 0.20m - 0.30m: fine angular gravel clasts, yellowish white in colour | | | 191 / 28 (6.8) |
| 0.5 | | 0.40m - 0.50m: band bluish grey, silty sub angular fine to medium, slightly weathered gravel | | | UTP |
| | | 0.50m - 0.70m: lenses of fine grained sandy silt and medium, sub angular moderately weathered gravel | | | UTP |
| | | 0.80m: band blackish grey silty, fine, sub angular moderately weathered gravel | | | |
| 1.0 | | 0.90m - 1.00m: band blackish grey silty, fine, sub angular moderately weathered gravel | | 15 ▶ | |
| 1.5 | | | | | |
| 2.0 | | | | | |
| 2.5 | | | | | |
| 3.0 | | | | | |

**Hole Depth:** 1.00m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

- Vane peak
- Vane residual
- Vane UTP
- Standing water level
- Groundwater inflow
- Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA23** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099484mN, 1684859mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Graphic Log | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|---|
| 0 | Topsoil | | Organic SILT(Topsoil); dark brown; dry, loose, non plastic, some grass rootlets | | | | 0 |
| | Kerikeri Volcanics | | Fine sandy SILT, trace clay content; orangish brown, some small white flecks; moist, stiff, low plasticity | | | 170 / 52 (3.3) | |
| | | | 0.40m: lense fine sandy silt, brownish grey | | | UTP | |
| 0.5 | | | Silty GRAVEL; pinkish grey silt matrix, bluish grey gravel clasts; dry, dense, low plasticity. Gravel: fine to medium, angular, slightly weathered, blue grey in colour. | Groundwater not encountered | | UTP | -0.5 |
| 1.0 | | | | | | | -1.0 |
| 1.5 | | | | | | | -1.5 |
| 2.0 | | | | | | | -2.0 |
| 2.5 | | | | | | | -2.5 |
| 3.0 | | | | | | | -3.0 |

**Hole Depth:** 0.75m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

- Vane peak
- Vane residual
- Vane UTP
- Standing water level
- Groundwater inflow
- Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA23a** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099480mN, 1684853mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) |
|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT(Topsoil); dark brown; dry, loose, non plastic, some grass rootlets | | | |
| | Kerikeri Volcanics | Fine sandy SILT, trace clay content; orangish brown; moist, firm, low plasticity | | | 243+ |
| 0.5 | | | | | 243+ |
| | | | | | 243+ |
| | | | | | 243+ |
| 1.0 | | Fine sandy SILT; grey, with orangish brown lenses; moist, dense, non plastic, uniformly graded | Groundwater not encountered | | 243+ |
| | | | | | 243+ |
| 1.5 | | Fine sandy SILT, minor gravel, and trace clay content; orangish brown; moist, stiff, low plasticity<br>gravel: fine, subangular, moderately weathered, yellowish white in colour | | | 194 / 35 (5.5) |
| | | Fine sandy SIL; grey, with orangish brown lenses; moist, medium dense, non plastic, uniformly grad | | | 170 / 17 (10.0) |
| | | Silty fine SAND, minor gravel; grey, with orange flecks; moist, loose, low plasticity.<br>Gravel: fine, subangular, moderately weathered, dark grey in colour. | | | UTP |
| 2.0 | | Fine sandy gravelley SILT; bluish grey; dry, dense, low plasticity. | | | 226 / 24 (9.4) |
| | | Fine sandy gravelley SILT; brownish grey, minor orange flecks; wet, dense, low plasticity.<br>Gravel: fine to medium, subangular, moderately weathered, grey in colour. | | | UTP |
| 2.5 | | | | 12▶ | |
| 3.0 | | | | | |

**Hole Depth:** 2.20m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

● Vane peak ▼ Standing water level
○ Vane residual ◁ Groundwater inflow
◆ Vane UTP ▷ Groundwater outflow
UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA24** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099485mN, 1684858mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 1945 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT; dark brown; dry, loose, some grass rootlets. | | | | 0.0 |
| | Kerikeri Volcanics | Fine sandy SILT, trace clay content; orangish brown; moist, stiff, low plasticity | | | 232 / 21 (11.0) | |
| 0.5 | | 0.40m: band light grey fine sand | | | 212 / 45 (4.7) | -0.5 |
| | | 0.70m: band blackish grey fine sand | | | 229 / 49 (4.7) | |
| | | Silty fine SAND; grey, wet, medium dense, low plasticity, uniformly graded. | | | 205 / 35 (5.9) | |
| 1.0 | | | Groundwater not encountered | | 125 / 3 (41.7) | -1.0 |
| | | Silty fine grained SAND, trace gravel clasts; orangish brown, with grey streaks; moist, dense, low plasticity, uniformly graded. Gravel: fine, angular, slightly weathered, dark grey in colour | | | 135 / 21 (6.4) | |
| 1.5 | | | | 11▶ 11▶ 12▶ | | -1.5 |
| 2.0 | | | | | | -2.0 |
| 2.5 | | | | | | -2.5 |
| 3.0 | | | | | | -3.0 |

**Hole Depth:** 1.30m **Termination:** Auger unable to penetrate

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

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# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA25** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

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|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099371mN, 1685148mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | CF |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | CF |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 3246 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | Organic SILT; brown; moist, friable, rootlets | | | 187 / 40 (4.7) | 0.0 |
| | Kerikeri Volcanics | Clayey SILT; brown; moist, friable, low plasticity | | | 210+ | |
| 0.5 | | 0.60m: Orange specks | | | 210+ | -0.5 |
| | | | | | 210+ | |
| 1.0 | | | | | 210+ | -1.0 |
| | | Clayey SILT; light brown, with orange specks; moist, high plasticity | | | 210+ | |
| | | | | | 210+ | |
| 1.5 | | Clayey SILT; greyish brown; moist, low plasticity | | | 210+ | -1.5 |
| | | 1.60m: becoming greyish brown | | | 210+ | |
| | | 1.80m: fine to medium sized, slightly weathered, grey, gravel clasts | | | 180 / 49 (3.7) | |
| 2.0 | | | | | 180 / 82 (2.2) | -2.0 |
| | | | | | 202 / 63 (3.2) | |
| | | 2.40m: light grey mottling encountered | | | 210+ | |
| 2.5 | | | | | 180 / 52 (3.5) | -2.5 |
| | | 2.80m - 3.00m: orange mottling encountered | | | 210+ | |
| 3.0 | | | | | | -3.0 |

Groundwater not encountered

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA26** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099356mN, 1685155mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | GG |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | GG |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) 2 4 6 8; Vane undrained shear strength, $s_u$ (kPa) 50 100 150 200 | Values: Vane ID: 2864 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|
| 0.0 | Topsoil | SILT; brown; moist, non plastic, rootlets | Groundwater not encountered | | 121 / 27 (4.5) | 0.0 |
| | Kerikeri Volcanics | Silty CLAY, with some fine to medium grained sand; brown; moist, low plasticity | | | 188+ | |
| 0.5 | | | | | 188+ | -0.5 |
| | | | | | 188+ | |
| 1.0 | | | | | 188+ | -1.0 |
| | | | | | 188+ | |
| 1.5 | | | | | 188+ | -1.5 |
| | | | | | 188+ | |
| 2.0 | | | | | 188+ | -2.0 |
| | | | | | 188+ | |
| 2.5 | | Silty CLAY, with minor fine sand; brown; moist, high plasticity | | | 153 / 118 (1.3) | -2.5 |
| | | | | | 148 / 73 (2.0) | |
| | | | | | 142 / 75 (1.9) | |
| 3.0 | | | | | 113 / 62 (1.8) | -3.0 |

**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak · Vane residual · Vane UTP · Standing water level · Groundwater inflow · Groundwater outflow

UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA27** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099354mN, 1685166mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | GG |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | GG |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |

| Depth (m) | Geology | Material Description | Water | In-situ Testing: Dynamic cone penetrometer (blows / 50mm) | In-situ Testing: Vane undrained shear strength, $s_u$ (kPa) | Values: Vane ID: 2864 peak / residual (sensitivity) | Depth (m) |
|---|---|---|---|---|---|---|---|
| 0.0 | Topsoil | SILT; brown; moist, non plastic, rootlets | | | | 40 / 11 (3.6) | 0.0 |
| | Kerikeri Volcanics | Clayey SILT, with minor fine to coarse grained sand; brown; moist, low plasticity | | | | 110 / 27 (4.1) | |
| 0.5 | | Silty CLAY, with traces of fine to medium grained sand; brown; moist, high plasticity | | | | 148 / 43 (3.4) | -0.5 |
| | | | | | | 102 / 27 (3.8) | |
| 1.0 | | | | | | 188+ | -1.0 |
| | | | | | | 188+ | |
| | | | | | | 188+ | |
| 1.5 | | 1.50m: becoming brown with yellowish brown streaks | | | | 188+ | -1.5 |
| | | | | | | 177 / 78 (2.3) | |
| 2.0 | | | | | | 167 / 83 (2.0) | -2.0 |
| | | 2.10m: becoming brown | | | | 161 / 51 (3.2) | |
| | | | | | | 134 / 81 (1.7) | |
| 2.5 | | | | | | 124 / 67 (1.9) | -2.5 |
| | | 2.70m: becoming wet | | | | 188+ | |
| | Kerikeri Volcanics | Silty CLAY, with traces of fine sand; grey; moist, high plasticity | | | | | |
| 3.0 | | | | | | 134 / 27 (5.0) | -3.0 |

Groundwater not encountered

**Hole Depth:** 3.00m

**Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

- Vane peak
- Vane residual
- Vane UTP
- Standing water level
- Groundwater inflow
- Groundwater outflow

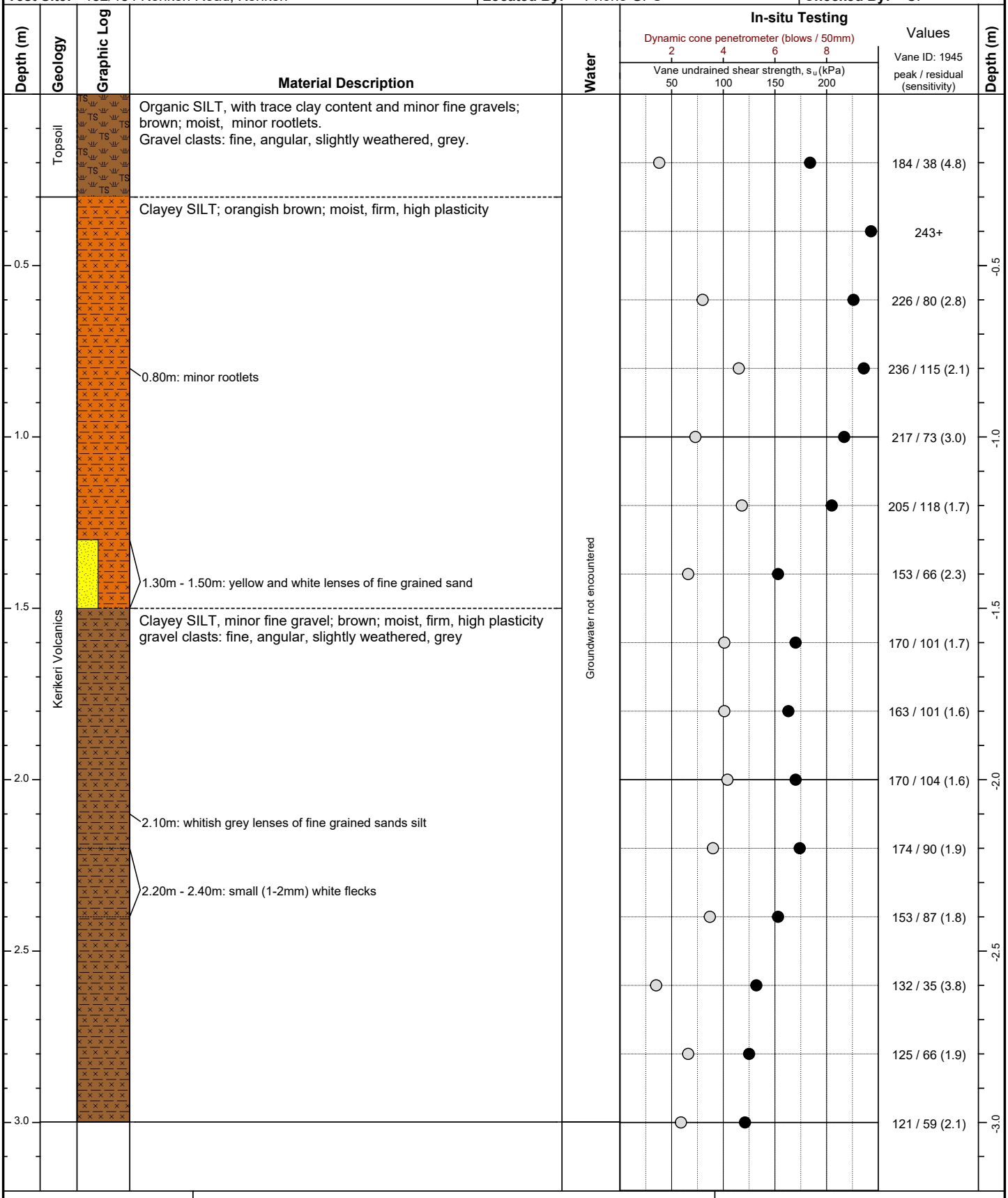
UTP = Unable to Penetrate

# Hand Auger Borehole Log

Method: 50mm Hand Auger

| | |
|---|---|
| **Test ID:** | **HA28** |
| **Project ID:** | 25575 |
| **Sheet:** | 1 of 1 |

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | Quirino Limited | **Coordinates:** | 6099369mN, 1685166mE | **Test Date:** | 14/11/2023 |
| **Project:** | Geotechnical Investigation | **System:** | NZTM | **Logged By:** | MJL |
| **Location:** | 484 Kerikeri Road, Kerikeri | **Elevation:** | Ground | **Prepared By:** | MJL |
| **Test Site:** | 482/484 Kerikeri Road, Kerikeri | **Located By:** | Phone GPS | **Checked By:** | CP |




**Hole Depth:** 3.00m **Termination:** Target Depth Reached

**Remarks:**

Materials are described in general accordance with NZGS 'Field Description of Soil and Rock' (2005).
No correlation is implied between shear vane and DCP values.

Vane peak | Vane residual | Vane UTP | Standing water level | Groundwater inflow | Groundwater outflow

UTP = Unable to Penetrate

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