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**Project Number 30002.000.001**

# Geotechnical Interpretive Report

12 Lower Shotover Road, Lake Hayes Estate, Queenstown

Submitted to:
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# 1 Introduction

ENGEO Ltd was requested by Simplicity Living Limited to complete a geotechnical investigation of the property at 12 Lower Shotover Road, Lake Hayes Estate, (herein referred to as 'the site'). The purpose of the assessment was to provide geotechnical support for Simplicity Living Limited's Resource Consent applications for a new mixed use residential and commercial development, as well as to inform early stages of structural and civil engineering design.

ENGEO's scope has included: geotechnical investigation including collection of soil samples for laboratory index testing, site-specific infiltration testing, review of published relevant information comprising historical geotechnical investigations and infiltration testing, preparation of an engineering geological model, interpretation of geotechnical parameters for foundation and retaining design, assessment of geohazards and preparation of a report suitable for resource consent. This work has been carried out in accordance with our signed agreements (ENGEO, 2025; ENGEO, 2026).

Based on existing information and the intended development, key geotechnical uncertainties include depth to contact of loess and glaciofluvial soils, geotechnical parameters and soil strength, material suitability for reuse as fill, and extent of uncertified fill.

# 2 Site Description

The site comprises medium density residential land, legally described as Lot 3 DP 606744 (hereinafter referred to as the 'western lot') and Section 9 SO 485598 (hereinafter referred to as the 'eastern lot') and Lot 2 DP617529. The site is located on relatively flat topography, directly north of Lower Shotover Road at its intersection with State Highway 6 (SH6), south of Slope Hill and is currently occupied primarily by pastoral land. A gravel accessway runs through the centre of the western lot approximately north-northwest, connecting Lower Shotover Road to residential properties north of the site. The site is bordered by paddocks and low-density residential developments to the east, west, and north (Appendix 1). The site's southern and south-western areas are occupied by grassed earthen berms of approximately 18 degree slope angle, up to approximately 2.5 m height.

# 3 Proposed Development

We have been provided concept development plans for the site (Brewer Davidson, 2026), which depict several three- to seven-storey structures (apartment, carpark, and retail / commercial buildings), areas of neighbourhood open space and associated roading, infrastructure and footpaths across the site.

We have also been provided with the consent issue civil engineering drawings (Mckenzie & Co., 2026), which depict proposed earthworks (fills up to around 1.5 m and cuts up to around 3.0 m) to facilitate the development. Greater magnitudes of cut are generally concentrated around levelling of existing earthen berms. We understand the northern parcel of the property is proposed to be 'reserve land', within which infilling of an existing gully is proposed. Gully infill up to approximately 4.0 m is proposed to achieve gently sloping ground. At present, no retaining is noted as being required although we understand that specific evaluation of final cut slopes to enable construction of a roading intersection with Lower Shotover Road is anticipated to be required by Queenstown Lakes District Council (QLDC) (based on email communication with Simplicity Living on 1 November 2025).

Based on discussions with the design team, we understand that reinforced concrete mat foundations are being considered for the residential structures on-site.

# 4 Desktop Study

## 4.1 Geology and Geomorphology

The site is located in the Wakatipu Basin, a feature formed predominantly by glacial advances and retreats, with the last event being approximately 10,000 – 20,000 years ago (Barrell, 2011). Glaciers scoured the flanks of the ranges and the sides and tops of isolated hills. Glaciations have left till, outwash and lake sediments over ice-scoured bedrock. The post-glacial period has been dominated by erosion of schist bedrock and glacial sediments, with deposition of alluvial sands, silts and gravels by local watercourses. Subsequent to this, wind-blown, fine-grained loess sediments have been deposited atop the surface in variable thickness.

The subject site is geologically mapped at 1:250,000 scale as being underlain by predominantly gravels and sands derived from Holocene river and fan deposits (Turnbull, 2000) sourced from alluvial fan and fluvial environments. The basement bedrock in this area is mapped as undifferentiated pelitic and psammitic Schist and Greenschist sequences (Turnbull, 2000). Within the site boundary, bedrock is anticipated to be overlain by a significant thickness of glacial sediments and is at a depth not relevant to this study. Schist bedrock is mapped within Slope Hill, directly north of the site.

## 4.2 Seismicity

No active fault traces are mapped within the site or in this vicinity. The known active faults in the area include the Northwest Cardrona and West Wakatipu Faults. The Cardrona Fault is a reverse fault located approximately 13 km east of the site which as an estimated recurrence interval of 5,000 to 10,000 years. The West Wakatipu Fault is located approximately 27 km southwest of the site and has an indicated recurrence interval of 10,000 to 20,000 years (Barrell, 2019a). While these are the closest known faults to the site, the Alpine Fault is expected to be the greatest seismic hazard to the region (Mackey, 2015).

The Alpine Fault is an oblique strike-slip fault and is located approximately 85 km to the northwest of the site. The fault has an estimated recurrence interval of <2,000 years, with four documented earthquakes occurring in the past 900 years.

## 4.3 Historical Aerial Photography Review

ENGEO reviewed select aerial photographs provided by Retrolens, Google Earth Pro, and publicly available historical aerial photographs on the QLDC webmaps from 1956, 1983, 1984, 1988, 2001, 2004, 2006, 2009, 2010, 2011, 2012, 2015, 2016, 2024, and 2025. These photographs were reviewed to help assess changes to landform.

Pre-2006 photographs appear to show the site as an undeveloped grassed paddock, with the gravel accessway present and Lower Shotover Road and SH6 within the southern part of the site. Between 2006 and 2013, Lower Shotover Road was realigned to its present location and intersection with SH6, and the earthen bunds within the southern site area were formed. An area of what appears to be ponded water is apparent directly north of the earthen bunds in the western lot. Between 2013 and 2015, a roundabout is constructed at the intersection of Lower Shotover Road and SH6, which include associated earthworks and what appear to be minor modifications to earthen bunds in the south-eastern site area. From 2016 to present day, the site appears to be broadly unchanged.

## 4.4 Existing Services

ENGEO has reviewed the mapped utility services detailed by QLDC, as well as requested applicable utility plans noted following an enquiry to ‘Beforeudig’.

A high voltage power line is noted as running directly adjacent to the central accessway on-site, otherwise no utility pipes have been observed on presently available plans as running through the site.

### 4.5 ORC Well Data

ENGEO has reviewed the Otago Regional Council (ORC) well database. ORC Wells F41/0284 and F41/0134 are located approximately 110 m and 1 km from site, respectively and have logged static groundwater levels at 50.1 m and 39.57 m depth, respectively.

## 5 Third-Party Data

### 5.1 Geohazards

ENGEO has reviewed the geohazards that are mapped and catalogued in both the Queenstown Lakes District Council (QLDC) and Otago Regional Council (ORC) hazard databases. The pertinent information is summarised as follows:

- The majority of the site is mapped with a liquefaction susceptibility domain as 'B1' which is defined as 'low to moderate likelihood of liquefaction-susceptible materials…. In MBIE (2017) terms, liquefaction damage is possible… but there is geotechnical evidence for the presence of liquefaction-susceptible materials at least in some locations in the subsurface' (Barrell, 2019b).
- Under the QLDC Hazard Mapping GIS portal, the south-eastern portion of the site is mapped as having a liquefaction susceptibility of *'LIC 2 (p) Possibly moderate risk'*, while the western part of the site is mapped with a liquefaction susceptibility of *'LIC 1 – Nil to Low risk'* (T+T, 2013).
- Both the ORC Natural Hazards and QLDC Hazard Mapping GIS portals map the site as outside alluvial fan and slope hazard zones.

### 5.2 Historical Geotechnical Investigations

Several geotechnical investigations have been undertaken within the site and the wider Ladies Mile development by Geosolve, Insight, Tonkin + Taylor and Geotago. Investigation results include 26 test pits (TP), 12 'soakage pits' (i.e. TP which included infiltration testing), six dynamic cone penetrometer (DCP) tests, and four hand augers (HA) progressed to depths up to 4.3 m below ground level (bgl).

TPs, DCPs and HAs from investigations across the Ladies Mile development generally encountered topsoil from surface to between 0.2 and 0.4 m depth underlain by interpreted Loess deposits of firm to stiff sandy silts and loose to medium dense silty sands to between 0.5 and 1.9 m depth. Interpreted loess deposits were further underlain by interpreted as 'Deltaic' or 'Holocene Fan' deposits, logged as loose to medium dense sands and gravels with variable silt content to the maximum investigation depth of 4.3 m.

Falling head soakage testing has been carried out by Geosolve and Geotago in 12 test pits across the wider Ladies Mile development, with testing targeting both Loess and underlying sands and gravels. Unfactored infiltration rates within Loess was presented as 20 mm/hr. Unfactored infiltration testing within sands as ranges between 30 to 500 mm/hr. Unfactored infiltration rates within the gravels ranges between 700 to 14,000 mm/hr.

Third party data is included in Appendix 2.

# 6 ENGEO Site Investigations

## 6.1 Geotechnical Subsurface Investigations

ENGEO has completed geotechnical site investigations in November 2025, February 2026, March 2026, and June 2026. The investigation scope comprised the following:

- Site walkover to observe and map geomorphological and geological features of interest.
- Drilling of 16 hand auger boreholes (HA) to depths ranging from 0.7 m to 4.3 m bgl, all terminating at practical refusal on hard ground. Dynamic cone penetrometer (DCP) and / or handheld shear vane testing was carried out within each HA.
- Excavation of two hand dug test pits (hTP) to depths up to 0.5 m.
- Collection of grab samples for laboratory testing.
- Infiltration testing within seven machine excavated test pits (TP) to inform soakage device design.
- Thirteen TPs to depths up to 4.0 m. Six test pits were excavated to facilitate, Static Plate Load Testing on *in situ* soils.
- Supervision and soil logging from one machine borehole (BH) to 31.5 m bgl (sonic method) and installation of casing (for geophysical testing) by Speight Drilling on 10 June 2026.
- Supervision of ten Cone Penetration Tests (CPTs) to between 10 m and 15 m depth. These were advanced across the site by Speight Drilling on the 21 and 22 May 2026.

Investigations were carried out by an ENGEO Engineering Geologist and logged in accordance with the New Zealand Geotechnical Society (NZGS) field-description of soil and rock guidelines. A site investigation plan map is included in Appendix 1 and investigation logs are provided in Appendix 3 (test pits, hand augers, machine borehole), and Appendix 9 (CPTs).

## 6.2 Laboratory Testing

Samples for six Particle Size Distributions (PSDs), two NZ Standard Compaction Curves (CC), and two California Bearing Ratio (CBR) were collected for the purpose of index testing, assessing the suitability of site won fill for earthworks, and suitability of the *in situ* material as roading subgrade. Soil samples for PSDs were taken from SL-ENG25-HA12 and HA16. Soil samples for NZ Standard Compaction Curve and CBR tests were taken from SL-ENG25-TP01 and TP02.

- PSD testing was completed via the wet-sieving method in accordance with NZS 4402:1986 Test 2.8.1.
- NZ Standard Compaction testing was completed in accordance with NZS 4402:1986 Test 4.1.1.
- California Bearing Ratio testing was completed in accordance with NZS 4402:1986 Test 6.1.1.

Testing was completed by GeoCivil, Cromwell, which is an IANZ accredited testing laboratory. Table 1 below summarises the sample locations laboratory tests and sample depth of the samples from each.

**Table 1: Laboratory Sample Locations, Depths, and Completed Tests**

| Sample Locations | Tests | Sample Depths |
|---|---|---|
| SL-ENG25-HA12 | PSDs | 0.9 and 1.4 m bgl |
| SL-ENG25-HA16 | PSDs | 0.6 and 2.4 m bgl |
| SL-ENG25-TP01 | CC and CBR | 0.5 m bgl |
| SL-ENG25-TP02 | CC and CBR | 0.5 m bgl |

Lab testing results are discussed in Section 7.2.

## 6.3 Infiltration Testing

Infiltration testing was carried out in general accordance with the constant head and falling head test methodologies outlined in Auckland Council's GD07 guideline, Appendix A1.3, 1.4, and A1.6, as specified in the QLDC Land Development and Subdivision Code of Practice (LDSCP) 2025.

Test pits were excavated within 10-20 m of the locations noted by McKenzie & Co as proposed for soakage devices. The test pit depth targeted coarse grained alluvium material underlying finer soils at site, as they were expected to have higher soakage potential. Test pits were logged by an Engineering Geologist in the field as per NZGS Soil and Rock Guidelines, included in Appendix 3.

The constant head method was preferred given the relatively high infiltration rates observed within the material, however, in one hole (SP07), silt infilled the test pit from the fine grained material above and the test was abandoned. Testing within the vicinity of Soakhole 1 was excluded due to landowner restrictions at the time of testing.

Two test pits were excavated within the vicinity of Soakhole 5 which did not encounter gravel Alluvium within 3 metres depth (SP05A & SP05B). This area is a local topographical high, and the proposed earthworks plan (MCC, 2026) involve excavation of approximately 3 metres depth within this area. In order to target infiltration testing within the geological unit where soakage is proposed, we excavated a further pit (SP05C) approximately 20 m downslope of Soakhole 5, where gravel Alluvium was encountered. Infiltration testing was carried out in SP05C. Infiltration test results are presented in Section 9.5 with recommendations in Section 10.3.

## 6.4 Downhole Shear Wave Velocity Testing

Downhole Shear Wave (DHVs) testing was carried out by Southern Geophysical Limited in the borehole location on 16 June 2026. Testing was carried out in general accordance with guidelines in the standard ASTM D74001 and Wentz (2019), results from which are presented in Appendix 7 and discussed further in Section 7.3.

## 6.5 Plate Load Testing

Seven Plate Load Tests (PLT) were carried out by GeoCivil Limited within six TP excavations on site. Three TPs exposed near-surface loess and finer-grained (silt-sand) alluvium, whereas three TPs were excavated to expose coarse-grained alluvium. PLTs were carried out in general accordance with the standard DIN 18134:2012-04, results from which are presented in Appendix 8 and discussed further in Section 7.4.

# 7 Site Investigation Results

## 7.1 Subsurface Materials

The typical ground profile comprised topsoil overlying loess and localised uncontrolled fill, underlain by alluvium to the maximum depth explored (31.5 m).

Topsoil consisted of organic silt with minor sand, 0 to 0.4 m thick. Uncontrolled fill, mainly encountered in berms, comprised gravelly sand with variable silt and was medium dense to very dense. Loess, typically 0.5 to 1.5 m thick, consisted of silt with variable sand content, ranging from firm to stiff in silt-rich zones and loose in sand-rich zones. The underlying alluvium typically consisted of a dense sand and gravel alluvium to the maximum depth explored (31.5m), sometimes with a relatively thin mantle of overlying silt-sand alluvium.

It is difficult to distinguish between the upper finer-grained soils (i.e. topsoil, loess and silt-sand alluvium) in the CPT data. The CPT data typically encountered these upper deposits to between 1.5 m and 3.5 m depth, which was underlain by inferred coarser grained sand-gravel alluvium typically dense to the maximum depth explored. However, in one investigation (CPT05) at the north end of the site, these finer-grained deposits were encountered to around 5.5 m depth.

Subsurface soils encountered during geotechnical investigations were broadly consistent with those previously encountered on-site and published mapping.

## 7.2 Laboratory Results

PSD tests were completed in the uncontrolled fill, loess and silt-sand alluvium, whilst CBR and CC tests were completed on the loess.

PSD testing indicates that the uncontrolled fill was a silty SAND with some gravel, the loess was a silty SAND with no or trace fine gravel, and the alluvium was SAND with some silt. The silt, sand, and gravel content ranges from the PSDs for each material are summarised in Table 2 and Figure 1 below. Please refer to Table 1 for the sample depths.

**Table 2: Silt, Sand and Gravel Contents of Tested Materials**

| Material | Location | Silt Content | Sand Content | Gravel Content |
|---|---|---|---|---|
| Uncontrolled Fill | SL-ENG25-HA12 | 30% | 50% | 20% |
| Loess | SL-ENG25-HA12 & 16 | 31 to 42% | 58 to 67% | 0 to 1% |
| Silt-Sand Alluvium | SL-ENG25-HA16 | 19% | 81% | 0% |

NZ Standard Compaction Curve testing indicated the Loess has a maximum dry density of 1.72 t/m³ with an optimum water content ranging between 16 and 17%, and a CBR ranging between 2 and 5%.

Full lab testing results are provided in Appendix 4.

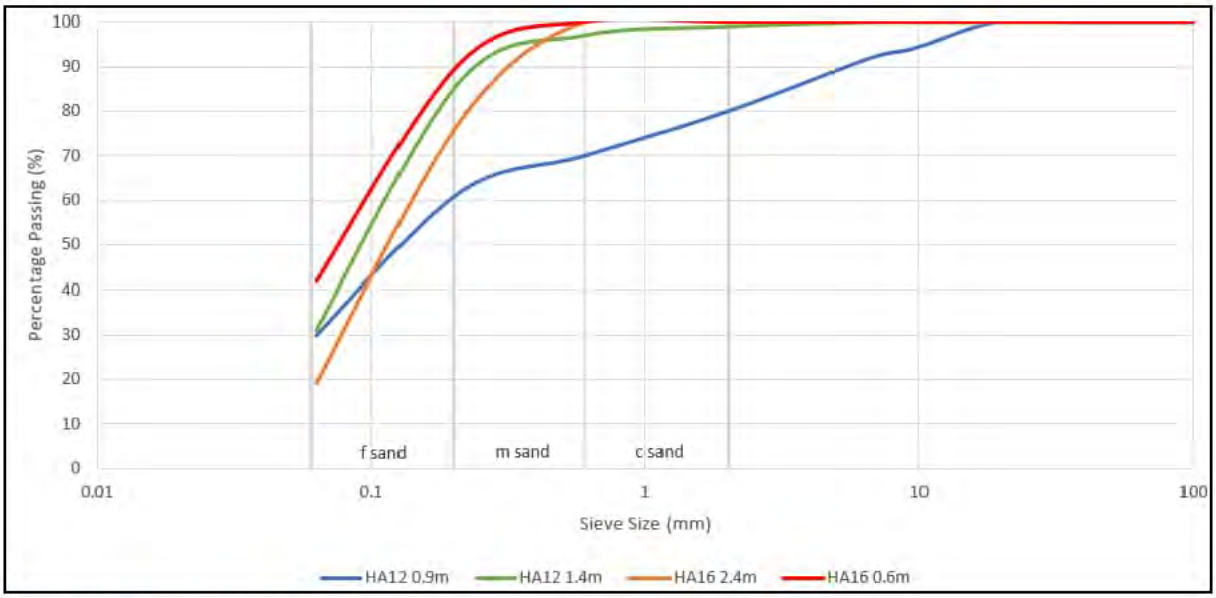



**Figure 1: Summary of PSD Data**

## 7.3 Geophysical Testing Results

Southern Geophysical undertook Downhole Seismic Velocity (DHVs) testing in the machine borehole with the purpose of developing a shear wave velocity (Vs) profile to the maximum borehole depth from which to derive a Vs30 (time-averaged shear wave velocity over the upper 30 m). Results are included in Appendix 7 and indicate a Vs of around 300 m/s from 2.0 to 8.5 m depth, and typically around 400 to 500 m/s from 8.5 m to 30 m depth. Results in the upper 2.0 m are indicated to be anomalous, a common occurrence for DHVs testing resulting from complex shear wave travel paths in the very near surface. Trendlines were used to derive replacement velocity of 120 m/s for the upper 2.0 m.

Southern Geophysical calculated and reported a Vs30 of 352 m/s from the True Interval Velocity Profile. ENGEO calculated a Vs30 of 308 m/s using the reported Slope Method Model Velocity Profile. Owing to the anomalous results in the upper 2.0 m, we also calculated a Vs30 using the Slope Method Model but replacing the Vs in the upper 2.0 m using shear wave velocity estimates derived from CPT data in the upper 2.0 m for a Vs30 of 320 m/s.

## 7.4 Plate Load Testing Results

Seven plate load tests were conducted at six locations across the site by Geocivil Ltd.

At three locations (ENG26_TP02, 04, 05 (SPL)) testing was undertaken at relatively shallow depth to test the finer grained (silt and sand) loess and alluvium. In ENG26_TP01, 03, 06(DPL) test pits were excavated to between 1.5 m and 2.5 m to reach and test the coarse grained alluvium.

In all locations testing was carried out using a 600 mm diameter plate to a maximum load of around 300 kPa, and in one location (ENG26_TP03(DPL)) a 300 mm diameter plate was used to test to a maximum load of around 900 kPa. Results are summarised in Figure 2 and included in Appendix 8.

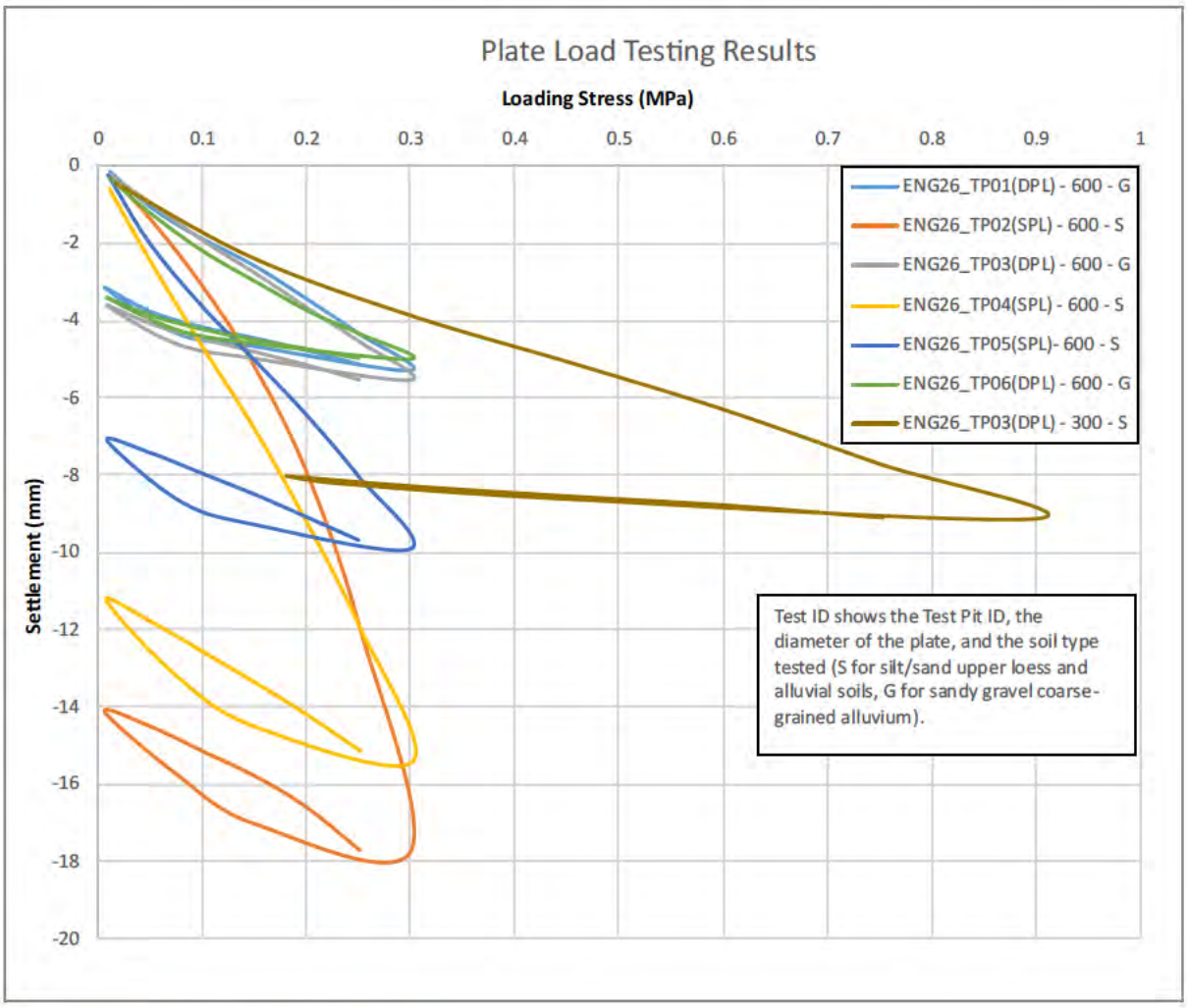



**Figure 2: Plate Load Testing Results**

# 8 Engineering Geological Model

## 8.1 Generalised Geological Profile

ENGEO have differentiated the subsurface profile encountered during investigations based on both the geological and engineering properties of the materials. These are summarised in Table 3.

**Table 3: Summary of Engineering Geological Units**

| Geological Unit | Typical Depth (m bgl) | Typical Material Description | Strength / Consistency |
|---|---|---|---|
| Topsoil | 0 – 0.4 | Organic SILT with some fine sand and trace rootlets | Soft to firm |
| Uncontrolled Fill | 0 – 0.9 | Gravelly fine to coarse SAND with variable silt | Medium dense to very dense |
| Loess | 0 – 1.0 | SILT with minor sand and silty fine SAND | Soft to firm<br>Loose to medium dense |
| Silt-Sand Alluvium | 1.0 – 2.2 (up to 5.5 m at the north end of the site) | Silty fine to medium SAND | Loose to medium dense |
| Coarse-grained Alluvium | See below | Sandy Gravel | Typically, dense to very dense, with occasional lenses of medium dense material. |

The contact between the finer grained loess and silt-sand alluvium and coarse-grained alluvium is the most pronounced geological change within the site subsurface profile. It is readily distinguishable by non-geoprofessionals and has a notable step change in terms of soil strength and stiffness as discussed in the sections below.

We have generally encountered this contact as a flat geological surface, around 362 to 363 m RL (NZVD, 2016). The thickness of the cover materials above being dependent on existing topography elevation.

Schist Bedrock is interpreted as underlying the site at significant depth. Based on available subsurface data we expect depth to bedrock to be greater than 60 m at the south end of the site, likely increasing in depth from the north to the south as distance from the slope increases. The northernmost CPT investigations extended to around 12 to 13 m depth without encountering rock.

A brief summary of the unit characteristics are as follows:

#### Topsoil / Uncontrolled Fill

A combination of topsoil and uncontrolled fill was observed to mantle the site. Uncontrolled fill was observed primarily within the earthen berms located along the site's southern and south-western boundary. These were encountered as gravelly sands with variable silt content, medium dense to very dense and may comprise reworked alluvial soils. Within discrete areas of the central and northern site area (SL_ENG25_HA04 and SL_ENG25_HA11), topsoil was encountered up to 0.9 m depth.

#### Loess

Loess was observed to mantle the site and is between 0.6 – 1.4 m thick. Loess was encountered as silts with variable fine to medium sand content or silty sand. Typical handheld shear vane results within silts indicate firm to stiff consistency, while DCP test results within sands are indicative of loose density.

#### Silt-Sand Alluvium

A Silt-Sand Alluvium unit was observed beneath the Loess. The apparent contact between this unit and Loess is difficult to distinguish, however it is associated with a lesser silt fraction and a predominantly grey colour. This material is typically logged as a silty fine to medium sand. DCP tests with the unit are indicative of loose to medium density. Laboratory results are included in Appendix 4.

#### Coarse-Grained Alluvium

Coarse-grained alluvium was found to underlie the silt-sand alluvium in investigations across the site. The base of this unit was not observed in site investigations and its thickness remains uncertain. This material was typically encountered as a fine to coarse sands and gravels and is distinctly different to those finer grained materials above.

### 8.2 Groundwater

Groundwater was not encountered within ENGEO nor historical geotechnical site investigations within the site and the wider Ladies Mile Development. ORC well data within the vicinity of site indicates regional groundwater levels between 39 – 51 m depth below the site.

## 9 Geotechnical Assessment

### 9.1 Site Soil Class

We have assessed site soil class in accordance with both NZS 1170.5:2004 and TS 1170.5:2025 based on the results of the geophysical testing and available subsurface information. Recommendations are provided in Table 4 for each standard, noting that the classification methodologies and criteria differ. NZS1170.5:2004 remains the reference standard under the New Zealand Building Code, but TS1170.5:2025 provides a voluntary alternative solution that can be adopted for design.

**Table 4: Seismic Site Class**

| Standard | Recommended Site Class | Discussion |
|---|---|---|
| TS1170.5:2025 | Site Class III | We have determined the recommended site class using results of the shear wave velocity testing and considering uncertainty bounds as discussed in Section 3.1.3.6 of TS1170.5:2025. |
| NZS1170.5:2004 | The more conservative of Site Class C or D | This site likely spans Site Class C and D. A Site Class C determination requires a site period < 0.6 s which relates to a maximum depth to rock on the order of 60 to 100 m. We do not have sufficient data on-site to make a rock depth determination, and well logs along the south of the site indicate rock greater than ~70 m depth (the maximum depth explored). As such we recommend the more conservative of Site Clas C or D be adopted. |

## 9.2 Geotechnical Parameters for Design

ENGEO have interpreted geotechnical parameters for use in design based on the available information. These are summarised in Table 5.

**Table 5: Geotechnical Design Parameters[1]**

| Geological Unit | Geotechnical Units | Unit Weight (kN/m$^3$) | Mohr-Coulomb Parameters | | Young's Modulus E (MPa) |
|---|---|---|---|---|---|
| | | | C' (kPa) | Φ (°) | |
| Loess | Finer-Grained Material | 18 | 3 | 32 | ~ 10 to 20 MPa |
| Silt-Sand alluvium | | | | | |
| Coarse -grained alluvium | Coarse-Grained Materials | 20 | 0 | 38 | Increases with depth from ~80 MPa at 3 m depth up to around 225 MPa at 30 m. |
| Structural Fill | | 20 | 0 | 38 | ~40 to 80 MPa[2] |

[1]Soil Parameters were derived by looking at correlations from a range of *in situ* testing (CPT, SPT, Vs, and Plate Load Testing).

[2]Value of fill Young's Modulus depends on the fill soil type, with the lower end of the range applicable for predominantly silt fill, and the upper end of the range indicative of coarser well-graded sandy-gravel fill.

The geotechnical design parameters summarised above are based on our current understanding of the inferred geological units. These should be re-evaluated based on future data should this become available or during construction should observations differ from those made herein.

## 9.3 Seismic Hazards

Potential seismic hazards resulting from nearby moderate to major earthquakes can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting. The common secondary seismic hazards include ground shaking, ground lurching, regional subsidence or uplift, soil liquefaction, lateral spreading, and landslides.

The following sections present a discussion of seismic hazards as they apply to the site.

### 9.3.1 Ground Rupture

As cited in Section 4.2, the site is located approximately 13 km from the nearest mapped active fault. At this distance, fault related ground rupture and ground lurching are considered unlikely.

However, given the tectonic setting, regional subsidence may be experienced following a large earthquake on faults in the area. In seismically active areas there is always a risk that unmapped active faults may be present, particularly when the faults may have a low recurrence interval and may be buried under younger alluvial sediments.

### 9.3.2 Ground Shaking

Ground shaking and subsequent effects on structures, infrastructure and engineering systems can be extensive and affect large areas. The intensity, frequency and duration of ground shaking drives the effect of earthquake loading on structures, while the severity of ground shaking drives the level of ground deformation.

In geotechnical assessments, amplitude, frequency and duration of shaking are the main factors considered.

As depicted on the conceptual plans (Brewer Davidson, 2025), we understand the potential site development includes Importance Level 2 (IL2) structures.

The design peak ground accelerations (PGA) for the site under both ultimate limit state (ULS) and serviceability limit state (SLS) design load cases have been taken from MBIE/NSGS Module 1 (2021):

- $a_{max}$ = 0.41 g has been adopted for ULS.
- $a_{max}$ = 0.10 g has been adopted for SLS.

The recommended earthquake magnitude (M) for Queenstown is 6.5.

### 9.3.3 Liquefaction and Lateral Spreading

Given the depth to groundwater beneath the site is in excess of 30 metres, liquefaction and lateral spreading are not considered a risk to the development.

## 9.4 Slope Stability

From our desktop study and site observations, we consider that slope instability is unlikely to be a significant hazard at the site for future development given the site is relatively flat and that proposed earthworks involve removal of earthen berms in the southern and south-western site area.

We understand cut slopes of less than 2 m height and maximum slope angles of 15 degrees are proposed within the vicinity of the existing road on-site (MCC, 2025). These cuts are anticipated to expose interpreted loess and glaciofluvial soils. Given the shallow angle and limited height, we consider the risk of slope instability for these cut slopes to be low. Further evaluation of the material exposed in these cuts should occur during construction to confirm these assumptions.

The Bulk Earthworks Model (MCC, 2026) includes a proposal to in-fill a topographical gully on the north-eastern corner of the site. We understand this will be filled with topsoil materials stripped from the site during earthworks. From a geotechnical perspective, the preliminary slope stability analysis using SLIDE® documented in Appendix 6 demonstrates suitable factors of safety and displacements under ULS conditions (1:500 year seismic events). However, this proposal will require detailed civil engineering design (by a suitably qualified and chartered civil engineer) to assess the hydrologic conditions of the gully and any long-term drainage requirements as well as preparing a suitable earthworks specification.

## 9.5 On-Site Soakage

The soakage rate (Sr) of the tested materials was estimated based on the minimum rate of infiltration at each location, using the method outlined in Appendix B1.1 of Auckland Council's GD07 guideline. As testing was completed in test pits rather than boreholes, as specified in GD07, the equivalent radius formula was used to provide a representative input diameter into the soakage calculation.

A factor of safety for testing uncertainty F(u) of 1.5 was applied to the infiltration rate, in accordance Quality Level 3 with conditions outlined in GD07 B.4.0 Table 6. A factor of safety for consequence of failure F(c) is to be determined by the soakage designer.

Test results are summarised in Table 6 with a copy of calculations also attached in Appendix 5.

**Table 6: Infiltration Test Results Summary**

| Test ID | Test Method | Test Depth (m bgl) (*max*) | Unfactored Infiltration Rate (L/hr/m²) | Uncertainty factor (Fu) | Consequence factor F(c)[2] | Total factor F(total)[2] | Factored Infiltration Rate[2] (L/hr/m²) |
|---|---|---|---|---|---|---|---|
| SL-ENG26-SP01 | *not tested*[1] | | | | | | |
| SL-ENG26-SP02 | Constant Head | 2.5 | 890 | 1.5 | 1.0 | 1.5 | 600 |
| SL-ENG26-SP03 | | 3.1 | 540 | 1.5 | 1.0 | 1.5 | 360 |
| SL-ENG26-SP04 | | 3.0 | 580 | 1.5 | 1.0 | 1.5 | 390 |
| SL-ENG26-SP05C | | 3.7 | 400 | 1.5 | 1.0 | 1.5 | 260 |
| SL-ENG26-SP06 | | 3.0 | 500 | 1.5 | 1.0 | 1.5 | 330 |
| SL-ENG26-SP08 | Constant Head | 2.6 | 550 | 1.5 | 1.0 | 1.5 | 370 |

Notes

1. Not tested due to land access restrictions.
2. A factor of safety for consequence of failure F(c) of 1.0 has been shown for purposes of demonstrating calculation of F(total) only. The actual F(c) to be determined by the soakage designer, and F(total) to be calculated accordingly.

# 10 Recommendations

## 10.1 Foundations

Based on site investigations results, we consider the proposed mat foundations bearing on engineered fill or loess or alluvium below topsoil and uncontrolled fill to be geotechnically appropriate to support the proposed structures. In the below subsections we provide initial geotechnical advice to support structural design of mat foundations. As the design of structures progresses, foundation types and specific details may change and updated geotechnical input will be required.

We recommend foundations are embedded a minimum of 0.3 m below adjacent ground level to account for freeze-thaw effects.

The development encompasses a large area and includes more than 40 planned structures. Consequently, founding conditions for the planned structures are expected to vary. Some building pads may require up to approximately 1.0 m of engineered fill, whereas others will be in areas of planned cut. In addition, the thickness of the finer-grained silt and sand deposits overlying dense sandy gravel varies, ranging from approximately 1.0 m to 5.0 m, and typically between 1.5 m and 3.5 m.

This variability in upper soil deposits can have a significant effect on bearing capacity and stiffness for small foundations or smaller locally loaded areas. However, the influence is less pronounced for large mat foundations because structural loads are distributed over a much larger area, resulting in a deeper stress influence zone that engages a substantial thickness of the less variable underlying soil profile.

To support initial structural design of mat foundations, bearing capacity and stiffness recommendations have been developed using an approach intended to reasonably capture the variability discussed in subsurface conditions across the site:

- Bearing Capacity: The recommended bearing capacities have been derived using the strength parameters of the silt and sand deposits that overlie the dense gravel. This approach is representative of smaller locally loaded areas and is expected to be conservative for gravity loading for large mat foundations, where load distribution increases the contribution of the underlying dense gravel to foundation performance. Refined parameters can be provided for specific structures if required.

- Soil Stiffness: The recommended stiffness parameters are based on a representative soil profile comprising an average thickness of silt and sand deposits over dense gravel and do not explicitly account for local variations associated with cut areas or engineered fill beneath individual foundations. The adopted parameters should therefore be considered best-estimate values for design, and sensitivity analyses are recommended to assess the potential effects of site-specific variability.

### 10.1.1 Bearing Capacity

Geotechnical ultimate bearing capacity (UBC) is governed by both soil strength and the size of the loaded area, which is typically taken as the foundation footprint. Larger loaded areas generally provide higher bearing capacity.

Due to the size of mat foundations, bearing capacity (due to shear failure) rarely controls, but concentrated loads near the edge of the raft can cause localised bearing failure and increased settlement. The ultimate bearing capacity of a 14m x 38 m mat foundation (taken as a typical building footprint), uniformly loading the ground is greater than 2000 kPa. For checks of local bearing failure under concentrated load near the edges of the mat in earthquake shaking we recommend the values provided in Table 7.

As discussed in Section 10.1, these capacities are based on strength of the silt-sand alluvium and do not account for the influence of the dense gravel on capacity for larger foundations. As such there is some potential for refinement of these values for loaded areas greater than 4 m width if required.

**Table 7: Recommended Ultimate Bearing Capacities**

| Width of Concentrated Load | Ultimate Geotechnical Bearing Capacity (kPa) |
|---|---|
| 1.0m to 2.0 m | 550 |
| 2 m to 4 m | 750 |
| 4 m to 6 m | 1000 |
| 6m to 10 m | 1500 |
| 10 m and greater | 2000 |

Assumes a minimum foundation embedment of 0.3 m below adjacent ground.

The above capacities should be reduced by the following strength reduction factors.

**Table 8: Recommended Ultimate Bearing Capacities**

| Load Case | Geotechnical Reduction Factor |
|---|---|
| SLS load combinations - gravity and seismic | 0.33 |
| ULS load combinations - gravity and seismic | 0.6 |
| EQ overstrength load combinations | 0.85 |

### 10.1.2 Soil Stiffness

We understand that soil stiffness is a key input to structural analysis and design. Our stiffness recommendations for initial structural assessment are outlined below. Further iteration is required following initial structural analysis and depending on the specific structure footprint.

- Static Load Cases: An interior stiffness 3.5 kPa/mm, and perimeter stiffness of 4.2 kPa/mm around the outer 3.0 m of the loaded area.
- Under dynamic loading, we expect a stiffer response. For seismic load cases stiffness can be taken as 2.5 x the springs provided.
- Stiffness is highly dependent on the size of the loaded area, with larger loaded areas generally resulting in lower stiffness for the same soil profile. We have assumed a representative building footprint of 38 m x 14 m but have checked sensitivity for a larger 65 m x 20 m footprint. Analysis of this larger footprint results in stiffness around 80% of the provided values. Stiffness is expected to be higher than those reported above for structures with a footprint smaller than the reference 38 m x 14 m.
- We also calculated stiffness assuming 2.0 m thick gravel rafts are constructed under the mat slabs replacing most of the finer-grained soils. In this scenario, stiffnesses are around 1.5 times the stiffnesses provided above.

- Static settlement is expected to occur relatively quickly, within days to weeks of the load being placed. Settlement under gravity loading will likely occur progressively as load is placed during construction.
- Sensitivity checks should be undertaken using 0.67 to 1.5 x the provided values.
- Stiffness is expected to be linear up to around 0.5 times the UBC beyond which the response may soften. We recommend the provided springs be used for loading up to 0.5 x UBC. If loading beyond this is expected we can provide additional advice for nonlinear stiffness.
- These springs assume a flexible, uniform load over the foundation area. They need to be refined following an initial iteration with the structural engineer to account for the rigidity of the foundation and the variable loading over the foundation expected for some scenarios.

### 10.1.3 Base-Shear Resistance

Base shear demands can be resisted through a combination of (1) frictional resistance along the base of the foundation and (2) passive resistance along embedded portions of the foundation. For sliding resistance along the base, an interface friction coefficient of 0.38 may be adopted where a DPM is present beneath the raft. A passive earth pressure coefficient of 4.8 may be used for portions of the foundation backfilled with compacted engineered fill or embedded within *in situ* materials. We recommend neglecting the passive pressure resistance contribution over the upper 0.5 m of the profile as this soil layer may be removed over the life of the structure.

Full base shear resistance is not necessarily critical to the safe performance of the building, and some lateral movement may be permissible. Earthquake-induced lateral accelerations are typically of short duration and act in varying directions and are therefore considered self-limiting. Where sliding is permitted, its implications on bearing capacity (including inclined loading effects), services, and adjacent amenity or structures should be considered as part of the overall design.

## 10.2 Earthworks

### 10.2.1 Site Preparation

The site is vegetated in shrubs, bushes and trees which may have significant root structures. Stripped surfaces should be free of any roots greater than 20 mm in diameter, along with root clusters and areas where more than 5% of the soil is occupied by roots. All stripped surfaces should be observed by a suitably qualified geo-professional.

All topsoil and uncontrolled fill (where encountered) shall be over-excavated from beneath the building platform to expose the *in situ* soils.

Topsoil should be stripped from all cut and fill areas with stripping operations being planned to extend well beyond cut and fill lines to avoid peripheral fill contamination. Stockpiles of topsoil and unsuitable materials should be sited well clear of the works on suitable areas of natural ground.

### 10.2.2 Material Suitability

Site-won Alluvium and Loess can be reused as engineered fill on-site, but careful considerations should be made for the difficulties involved with reuse of each. In general, Alluvium will be easier to work with than Loess soils, but both are possible given the below commentary is considered.

Loess on-site comprises moderately to highly sensitive sandy silts and poorly graded silty sands. Placing Loess as engineered fill will require careful moisture control as the material has a significant degree of sensitivity to above optimum moisture contents and can become quickly difficult to place as fill or require lengthy drying periods. This will likely only be possibly during peak summer months of dry weather, and consideration could be made for the use of lime or cement stabilisation of soils to aid in placement of fill at optimum moisture contents.

Alluvium within anticipated cuts on-site (i.e. within 2 metres of existing ground level) have generally been encountered as poorly graded sands. Placement of poorly graded, granular soils as engineered fill requires careful moisture control to maintain sufficient moisture content, as the permeable nature of the fill can result in rapid drying of soils to below optimum moisture content and inhibit adequate compaction being achieved.

### 10.2.3 Stability of Cut and Fill Slopes

Cut batters within engineered fill or stiff / moderately dense Loess and Alluvium may recline at up to 1V:4H (14°). Provided that fill slopes are constructed upon approved subgrade soils, we consider that fill batters no steeper than 1V:3H (18°) may be constructed on-site without creating instability issues.

## 10.3 Soakage Recommendations

Plans provided by McKenzie & Co, dated 12 February 2026 show 8 separate soakage holes across the site. Investigations and testing identified coarse-grained alluvium material is present between 2 to 4 m bgl across the site, except for soakage hole 1. Site specific testing completed in the alluvium has demonstrated unfactored soakage rates between 400 to 890 L/hr/m$^2$.

On that basis, we recommend that soakage to ground devices can be designed based on the following:

- An unfactored soakage rate of 500 L/hr/m$^2$ for the coarse-grained alluvium unit at the site. We note this has not been factored for the consequence of failure (in accordance with GD07), and this should be done so by the designer.
- Soakage devices should be designed to avoid or account for migration of finer-grained soils into the coarse-grained Alluvium.
- The designer should take account of the variable depth to the coarse-grained alluvium observed across the site. We note these materials were encountered between 2.2. m bgl (below ground level) to 3.7 m bgl – around the 363 mRL mark (+/- 1m) – see test pit logs for more details. As bulk earthworks are proposed for the site, changes in finished ground level should be taken into account.

If a soakage device is proposed for ‘Soakhole 1’, then a test pit and soakage test shall be carried out prior to design. Whilst SP07 reported low soakage rates, we consider this test to have been affected from the finer grained materials collapsing from above. The recommendations above apply to ‘Soakhole 7’ given (1) the soakage test is unreliable as finer-grained material collapse affected the test, and (2) coarse grained materials are logged in this location. We note the risk of finer-grained material collapse should be considered across the site by the civil designer.

## 10.4 Earthworks Specification and Compaction Control

A site specific earthworks specification including compaction control criteria should be prepared for the site, prior to engaging with a contractor to complete the subdivision earthworks. The specification should be prepared when the subdivision earthworks concept is finalised, including details of fill embankments, retaining walls, and geotechnical remediation measures including keyways and subsoil drainage.

## 10.5 Pavement Subgrade CBR

Based on our Scala penetrometer and Laboratory testing, it is anticipated the underlying native Loess and Alluvium subgrade may be suitable for standard road design and utility trenches. Based on Scala penetrometer testing in the upper 1 m of the site surface, the penetration resistance was typically 2 to 4 blows per 100 mm. Laboratory testing on a remoulded sample of the loess indicated a CBR range of 2 to 5%.

An inferred preliminary CBR design value of approximately 4% may be adopted for preliminary design.

The above CBR values are preliminary only. Specific *in situ* and laboratory testing of the exposed subgrade is recommended following earthworks and prior to finalising pavement designs, including the use of *in situ* and soaked CBR testing and falling weight deflectometer. Where localised uncontrolled fill is encountered, it will be necessary to remove this fill and replace it with engineered fill. Additional subgrade improvement requirements may be necessary to achieve council requirements. This may include undercut and replacements, and / or the use of triaxial geogrid.

## 10.6 Surface Water Management

During construction, appropriate measures shall be undertaken to control and treat stormwater runoff, with silt and erosion controls complying with local body guidelines for erosion and sediment control. This is particularly relevant for the site due to the proximity to a stormwater receptor, being the stream and reserve to the north. Surface cut-off drains or appropriate stormwater flow paths should be maintained outside of the proposed development area, both during and following construction. These drains and impervious surfaces will divert water away from any buildings and minimise possible movement in sensitive soils during and post construction.

Stormwater from paved areas shall be taken in a piped system and disposed of into an approved stormwater system. Uncontrolled discharge onto land or uncontrolled disposal via in-ground systems must be avoided.

All service trenches should be capped with low permeability materials, so that excavations do not become points of entry for surface runoff.

Long term drainage and design of the in-filling of the local gully at the northeast of the site should be carried out by a suitably qualified and chartered civil engineer. We have assessed the proposal as being suitable from a high-level geotechnical perspective. During design, the necessary vesting and maintenance requirements should be considered by the designer and Council.

# 11 Safety in Design

Safety in Design aims to identify, address and minimise or eliminate health and safety risks where it is reasonably practicable to do so.

The construction methodology should consider safe and stable access to the site for workers, specifically during earthworks and installation of foundations The key safety considerations during construction will likely relate to falling from height and the instability of temporary cuts. ENGEO, ideally with the assistance of a suitably experienced Contractor can provide safety in design advice as part of the detailed design stages.

# 12 Sustainability

We encourage you to consider sustainability when assessing the options available for your project. Where suitable for the project, we recommend prioritising the use of sustainable building materials (such as timber in favour of concrete or steel), locally sourced (materials readily available to Contractors as opposed to materials requiring import), and installed in an environmentally friendly way (e.g., reduced carbon emissions and minimal contamination). If you would like to discuss these options further, ENGEO staff are available to offer suggestions.

# 13 Geohazard Assessment

We consider that the proposed development of the site will not accelerate hazards such as erosion, falling debris, subsidence, or inundation (by soil) assuming that the recommendations in this report are followed. Therefore, with respect to Section 106 of the Resource Management Act (RMA), we see no geotechnical reason for the consenting authority to refuse subdivision consent.

In addition, our assessment as detailed above, is summarised in Table 9 in accordance with the National Policy Statement for Natural Hazards 2025:

**Table 9: Hazard Summary as per NPSNH**

| Hazard | Likelihood | Consequence | Risk | Mitigation | Risk After Mitigation |
|---|---|---|---|---|---|
| Flooding | - N/A by others | | | Civil Engineer Design for Subdivision – for hydrogeological assessment from slopes above site, stormwater networks and soakage to ground. | |
| Landslips (landslides, rockfall, debris flow etc[1]) | Rare | Minor | Low | Civil Designed Topsoil in-fill[2] | Low |
| Coastal erosion | Very rare | Negligible | Low | - | - |
| Coastal inundation | Very rare | Negligible | Low | - | - |
| Active Faults[3] | Very rare | Moderate | Low | - | - |
| Liquefaction | Very rare | Negligible | Low | - | - |
| Tsunami (seiche) | Very rare | Negligible | Low | - | - |

Notes

1. Definition assumed in accordance with NZGS Slope Stability Guidance, Unit 1.
2. As per Section 9.4 and Section 10.6 above.
3. Assumed to be hazards from local active faults.
4. Seiche very rare given site height 50 m above lake and river levels.

# 14 Future Work

The following has not been carried out within the scope of this report but will need to be considered as the project progresses.

- Additional investigations may be required to support detailed design and building consent (if applicable) once the development proposal is further advanced. These could include site-specific soakage testing and / or deep investigation testing if deep foundations are required.
- Additional geotechnical input to support detailed foundation design will likely be required as the project progresses.
- ENGEO should be given the opportunity to review the foundation design drawings prior to submitting for Building Consent and foundation excavations in order to confirm that the recommendations presented in this report have been interpreted as intended.
- ENGEO should be given every opportunity to attend a pre-start meeting on-site prior to works commencing and then to observe site works, including site stripping and rock cut progression to confirm works are carried out in accordance with the recommendations of this report and that ground conditions are as assumed.

- Upon successful completion of the works, ENGEO can provide a Producer Statement – Construction Review (PS4).

## 15 Recommended Consent Conditions

We recommend considering the following consent conditions related to geotechnical matters:

- Geotechnical Plan Review: Prior to commencement of earthworks or building works, a suitably qualified geotechnical professional shall review foundation design drawings prior to submitting for Building Consent and foundation excavations in order to confirm that the recommendations presented in this report (or subsequent more detailed geotechnical advice) have been interpreted as intended.

- Earthworks Specification: An Earthworks Specification including compaction control criteria should be prepared for the site by a suitably qualified geotechnical professional and submitted to Council, prior to commencing the subdivision earthworks. The specification should be prepared when the subdivision earthworks concept is finalised, including details of fill embankments, retaining walls, and geotechnical remediation measures including keyways and subsoil drainage.

- Geotechnical Observation and Verification: All bulk earthworks, foundation excavations, engineered fill placement and geotechnical remediation works shall be undertaken under the supervision of a suitably qualified geotechnical professional. Works should be undertaken in accordance with the site-specific Earthworks Specification and this GIR.

- Temporary Excavations and Batter Stability: Temporary excavations and earthwork batters shall be designed, constructed and maintained in a stable condition throughout construction. Any instability, groundwater seepage or unexpected ground conditions encountered during construction shall be assessed by a suitably qualified geotechnical professional.

- Erosion and Sediment Control: Prior to ground-disturbing activities the Consent Holder shall engage a Suitably Qualified and Experienced Person (SQEP) to prepare and submit an Erosion and Sediment Control Plan (ESCP) to Council's Monitoring and Enforcement Team for review and acceptance. This plan shall be a sub-plan of the overarching Environmental Management Plan (EMP).

# 16 Limitations

i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, Simplicity Living Limited, their professional advisers and the relevant Territorial Authorities and Fast Track Panel in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.

ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.

iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.

iv. This Limitation should be read in conjunction with the Engineering NZ / ACENZ Standard Terms of Engagement.

v. This report is not to be reproduced either wholly or in part without our prior written permission.

We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on (03) 328 9012 if you require any further information.

Report prepared by

**Grant Caldwell**

Engineering Geologist

**Naomi Norris**

Senior Geotechnical Engineer

Report reviewed by

**Neil Charters, CMEngNZ (CPEng)**

Principal Geotechnical Engineer

# 17 References

Brewer Davidson Limited (2026). Te Putahi Ladies Mile Development. Project No. 3290, dated 09.07.2026.

Cochran, U. A., Clark, K. J., Howarth, J. D., Biasi, G. P., Langridge, R. M., Villamor, P., ... & Vandergoes, M. J. (2017). A plate boundary earthquake record from a wetland adjacent to the Alpine fault in New Zealand refines hazard estimates. *Earth and Planetary Science Letters*, *464*, 175-188.

ENGEO Limited (2026). Variation Proposal for Additional Geotechnical Consultation – 12 Lower Shotover Road, Lake Hayes Estate, Queenstown. P30002.000.001_03, dated 20.05.2026.

ENGEO Limited (2025). Proposal for Geotechnical Consultation – 12 Lower Shotover Road, Lake Hayes Estate, Queenstown. P30002.000.001_01, dated 31.10.2025.

Insight Engineering (2023). Re: Geotechnical Assessment for Proposed Residential Building Platform. P23009 dated 09.08.2023, revision 1.

Geosolve (2021). Preliminary Stormwater Soakage Testing – Ladies Mile Masterplan Area, Queenstown. P200353.01 dated 10.05.2021.

Geosolve (2022). Soakage Assessment – Flints Park and Flints Park West, Queenstown. P190162.01 dated 27.01.2022.

Geosolve (2023). Geotechnical Assessment – 489 Ladies Mile, Queenstown. P230270 dated 25.05.2023, revision 1.

Geosolve (2023). Soakage Feasibility Desktop Review – 14 Lower Shotover Road, Ladies Mile, Queenstown. P230569 dated 15.08.2023.

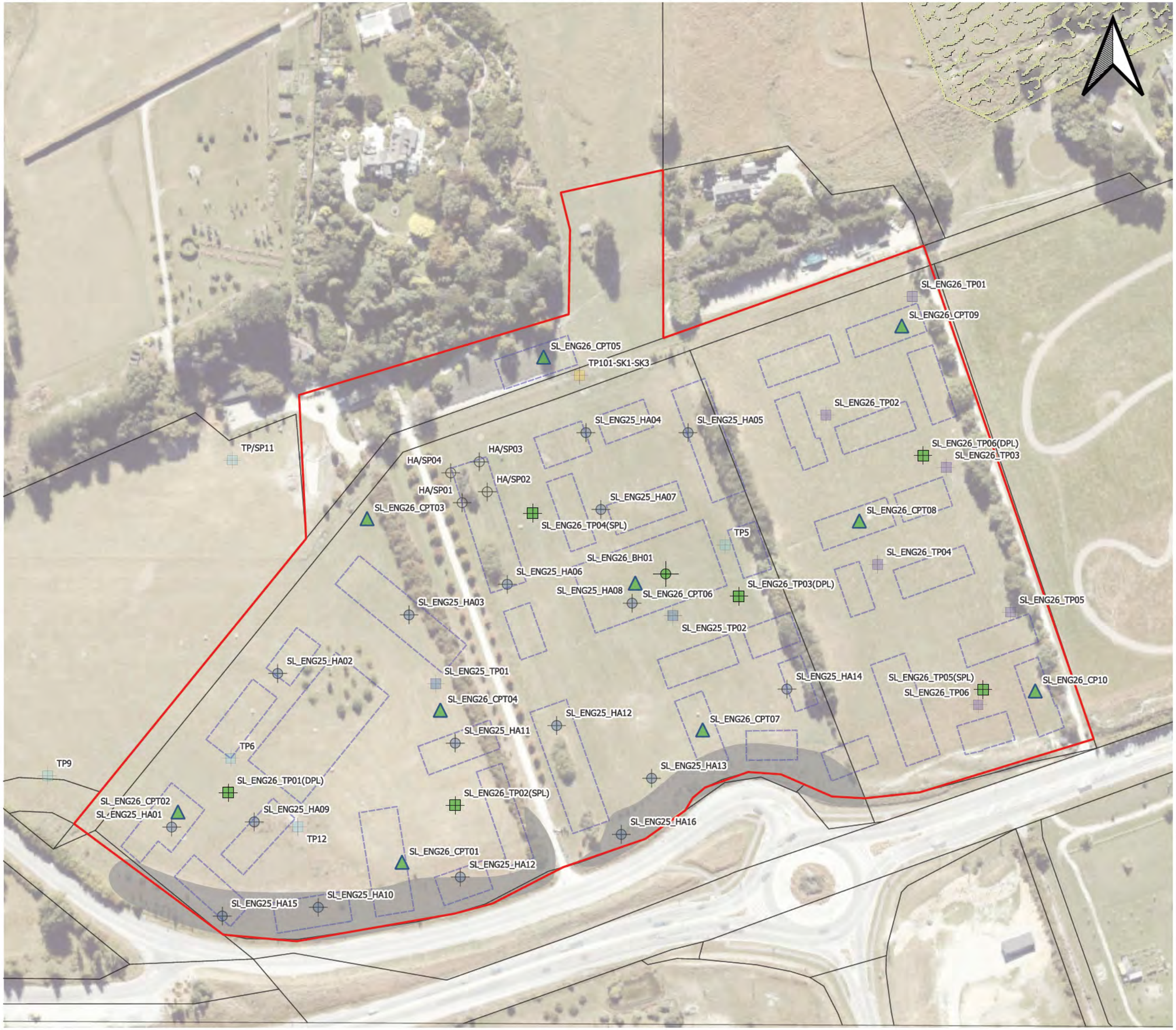
Geosolve (2023). Preliminary Geotechnical Assessment – Ladies Mile Water Reservoir. P230569 dated 13.10.2023.

Geotago (2024). Soakage Testing – Lot 2, 14 Lower Shotover Road. PGL24-227 dated 20.11.2024.

Mckenzie & Co. Limited (2026). Simplicity Living Te Putahi Ladies Mile – Engineering Drawings – FTAA Substantive Application Issue. P4163, dated 01.07.2026, Revision B.

# Appendix 1:

Figures




LEGEND

Geotechnical Investigations

- ENGEO (2026) - Borehole
- ENGEO (2026) - CPTs
- ENGEO (2026) - Test Pits (Plate Load Tests)
- ENGEO (2025) - Hand Augers
- ENGEO (2025) - Hand Dug Test Pit
- ENGEO (2026) - Test Pits
- Geosolve (2022) - Test Pits
- Geotago (2025) - Test Pits
- Insight (2023) - Hand Augers
- Building Outlines (Approx. for reference only)

Site Boundary

- Site Boundary
- Property Boundaries (LINZ)

Notes:
1) Building locations based on the draft earthworks plans provided by McKenzie and Co dated 11 May 2026
2) Investigations by others include: Geotago Site Visit Record, Dated 20 November 2024 (GL24-227), Insight Geotechnical Assessment dated 9 August 2023, ref 23009, Rev 1, Geosolve Flink Park Soakage Assessment 2022.

0 25 50 m

ENGEO

Projection: NZTM 2000NZGD2000 / Mount Nicholas 2000

| | | |
|---|---|---|
| Client: Simplicity Living Ltd | | |
| Title: Site Investigation Plan | | Appendix No. 1 Size: A3 Figure 3 |
| Project: 12 Lower Shotover Road | Drawn: ZM/GC | |
| Date: 30/06/2026 | Checked: NN | |
| Proj No: 30002 | Scale: 1749.997626@ A3 | Version: 2.0 |


LEGEND

- Soakage Testing Locations (ENGEO, 2026)
- Proposed Soakholes (from McKenzie)
- Site Boundary
- Existing Contours (1m, QLDC LiDAR)

Notes:
1) Soakhole locations based on plans provided by McKenzie (4163 - Simplicity Living - Soakpit locations and final surface contours 260212)
2) Existing contours based on 2021 QLDC LINZ LiDAR.

0 25 50 m

ENGEO

Projection: NZTM 2000NZGD2000 / Mount Nicholas 2000

| | | |
|---|---|---|
| Client: Simplicity Living Ltd | | |
| Title: Soakage Testing Plan | | Appendix No. 1 Size: A3 Figure 3 |
| Project: 12 Lower Shotover Road | Drawn: BH/GC | |
| Date: 15/07/2026 | Checked: NC | |
| Proj No: 30002 | Scale: 2000 @ A3 | Version: 3.0 |

LEGEND

Site Boundary

Cross Section Line - Limit Equilibrium Anaylsis

Geomorphic Features

Gully edge

Gully axis

Toe of slope (concave break of slope)

0 25 50 m

ENGEO

Projection: NZTM 2000NZGD2000 / Mount Nicholas 2000

| | | |
|---|---|---|
| Client: Simplicity Living Ltd | | |
| Title: Gully Geomorphology and Cross Section Location | | Appendix No. 1 Size: A3 Figure 3 |
| Project: 12 Lower Shotover Road | Drawn: BH/GC/NN | |
| Date: 15/07/2026 | Checked: NC | |
| Proj No: 30002 | Scale: 2000 @ A3 | Version: 3.0 |

# Appendix 2:

Third Party Data


Key

TP1 = Test Pit/Soakge Pit Area

Scale 1:2500

0 30 60 90 120 150 (m)

| | | | |
|---|---|---|---|
| CADFILE: Sketch 1.dwr | | DRAWN | ELH 01/2022 |
| SCALE (AT A3 SIZE): AS SHOWN | | DRAFTING CHECKED | MDP 01/2022 |
| PROJECT No: 1920162.01 | | APPROVED | RMW 01/2022 |

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Mark Tylden
Soakage Assessment
Flints Park and Flints Park West, Queenstown
Site Investigation Plan

File No: APPENDIX A, FIGURE 1

REV: 1

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# TEST PIT LOG

EXCAVATION NUMBER: **TP 1**

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | Flints Park and Flints Park West, Queenstown | | | JOB NUMBER: | 190162.01 |
| LOCATION: | See Site Plan | INCLINATION: | Vertical | | |

| | | | | | |
|---|---|---|---|---|---|
| EASTING: | | EQUIPMENT: | 5.4T excavator | OPERATOR: | Client Provided |
| NORTHING: | | COORD. SYSTEM: | Aerial Photography | COMPANY: | |
| ELEVATION: | | EXCAV. DATUM: | Existing ground level | HOLE STARTED: | 16/12/2021 |
| METHOD: | Aerial Photography | ACCURACY: | 5 m +- | HOLE FINISHED: | 16/12/2021 |

| Soil / Rock Type | Description | Graphic Log | Depth (m) | Groundwater / Seepage | Scala Penetrometer (Blows per 100mm) 0 5 10 15 |
|---|---|---|---|---|---|
| TOPSOIL | Organic SILT; brown. Dry to moist. 0m – 0.4m | | 0.0 – 0.4 | | |
| LOESS | SILT with some sand; light grey brown to light grey, massive. Greasy. Firm to very stiff; moist; sand, fine. A trace of rootlets. | | 0.4 – 1.1 | | |
| DELTAIC GRAVEL | Sandy fine to coarse GRAVEL with a trace of silt; grey brown, bedded. Loose to medium dense; moist; sand, fine to coarse; gravel, subrounded. 1.1m – 1.5m | | 1.1 – 1.5 | | |
| DELTAIC GRAVEL | Sandy fine to coarse GRAVEL, grey, bedded. Medium dense; moist to wet; sand, fine to coarse; gravel, subrounded. 3.8m | | 1.5 – 3.8 | NO SEEPAGE | |

Total Excavation Depth = 3.8 m

| | | | |
|---|---|---|---|
| COMMENT: | | LOGGED BY: | ELH |
| | | CHECKED DATE: | 27/01/2022 |
| | | SHEET: | 1 of 1 |

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# TEST PIT LOG

EXCAVATION NUMBER: **TP 4**

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | Flints Park and Flints Park West, Queenstown | | | JOB NUMBER: | 190162.01 |
| LOCATION: | See Site Plan | INCLINATION: | Vertical | | |

| | | | | | |
|---|---|---|---|---|---|
| EASTING: | | EQUIPMENT: | 5.4T excavator | OPERATOR: | Client Provided |
| NORTHING: | | COORD. SYSTEM: | Aerial Photography | COMPANY: | |
| ELEVATION: | | EXCAV. DATUM: | Existing ground level | HOLE STARTED: | 16/12/2021 |
| METHOD: | Aerial Photography | ACCURACY: | 5 m +- | HOLE FINISHED: | 16/12/2021 |

| Soil / Rock Type | Description | Graphic Log | Depth (m) | Groundwater / Seepage | Scala Penetrometer (Blows per 100mm) 0 5 10 15 |
|---|---|---|---|---|---|
| TOPSOIL | Organic SILT with some sand; brown. Moist; sand, fine. A trace of rootlets. 0m – 0.4m | | 0.0 – 0.4 | | |
| LOESS | SILT with some sand to sandy SILT; brown grey, massive. Firm to very stiff; moist; sand, fine. A trace of rootlets. 0.4m – 1.3m | | 0.4 – 1.3 | | |
| DELTAIC GRAVEL | Sandy fine to coarse GRAVEL with a trace of cobbles; grey brown to brown grey, bedded. Loose to medium dense; moist to wet; sand, fine to coarse; gravel, subrounded to subangular. 1.3m – 3.8m | | 1.3 – 3.8 | NO SEEPAGE | |

Total Excavation Depth = 3.8 m

| | | | |
|---|---|---|---|
| COMMENT: | | LOGGED BY: | ELH |
| | | CHECKED DATE: | 27/01/2022 |
| | | SHEET: | 1 of 1 |

GEOSOLVE
ENGINEERING CONSULTANTS

# TEST PIT LOG

EXCAVATION NUMBER: **TP 5**

| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | Flints Park and Flints Park West, Queenstown | | | JOB NUMBER: | 190162.01 |
| LOCATION: | See Site Plan | INCLINATION: | Vertical | | |

| | | | | | |
|---|---|---|---|---|---|
| EASTING: | | EQUIPMENT: | 5.4T excavator | OPERATOR: | Client Provided |
| NORTHING: | | COORD. SYSTEM: | Aerial Photography | COMPANY: | |
| ELEVATION: | | EXCAV. DATUM: | Existing ground level | HOLE STARTED: | 16/12/2021 |
| METHOD: | Aerial Photography | ACCURACY: | 5 m +- | HOLE FINISHED: | 16/12/2021 |

| Soil / Rock Type | Description | Graphic Log | Depth (m) | Groundwater / Seepage | Scala Penetrometer (Blows per 100mm) 0 5 10 15 |
|---|---|---|---|---|---|
| TOPSOIL | Organic SILT with a trace of sand; brown. Moist. 0m – 0.4m | | 0.0 – 0.4 | | |
| LOESS | SILT with some sand; grey brown, massive. Firm to very stiff; moist; sand, fine. 0.4m – 1m | | 0.4 – 1.0 | | |
| DELTAIC SAND | Silty fine SAND; grey, massive. Loose to medium dense; moist. 1m – 1.4m | | 1.0 – 1.4 | | |
| DELTAIC SAND | Gravelly fine to medium SAND; orange brown grey. Loose to medium dense; moist to wet; gravel, fine to medium, subangular to subrounded. 1.4m – 1.7m | | 1.4 – 1.7 | | |
| DELTAIC GRAVEL | Sandy fine to coarse GRAVEL; brown grey to grey. Medium dense; moist to wet; sand, fine to coarse; gravel, predominantly fine to medium, becoming coarse, subangular to subrounded. 1.7m – 3.8m | | 1.7 – 3.8 | NO SEEPAGE | |

Total Excavation Depth = 3.8 m

| | | | |
|---|---|---|---|
| COMMENT: | Pit walls stood well during excavation. | LOGGED BY: | ELH |
| | | CHECKED DATE: | 27/01/2022 |
| | | SHEET: | 1 of 1 |

GEOSOLVE
ENGINEERING CONSULTANTS

# TEST PIT LOG

EXCAVATION NUMBER: **TP 6**

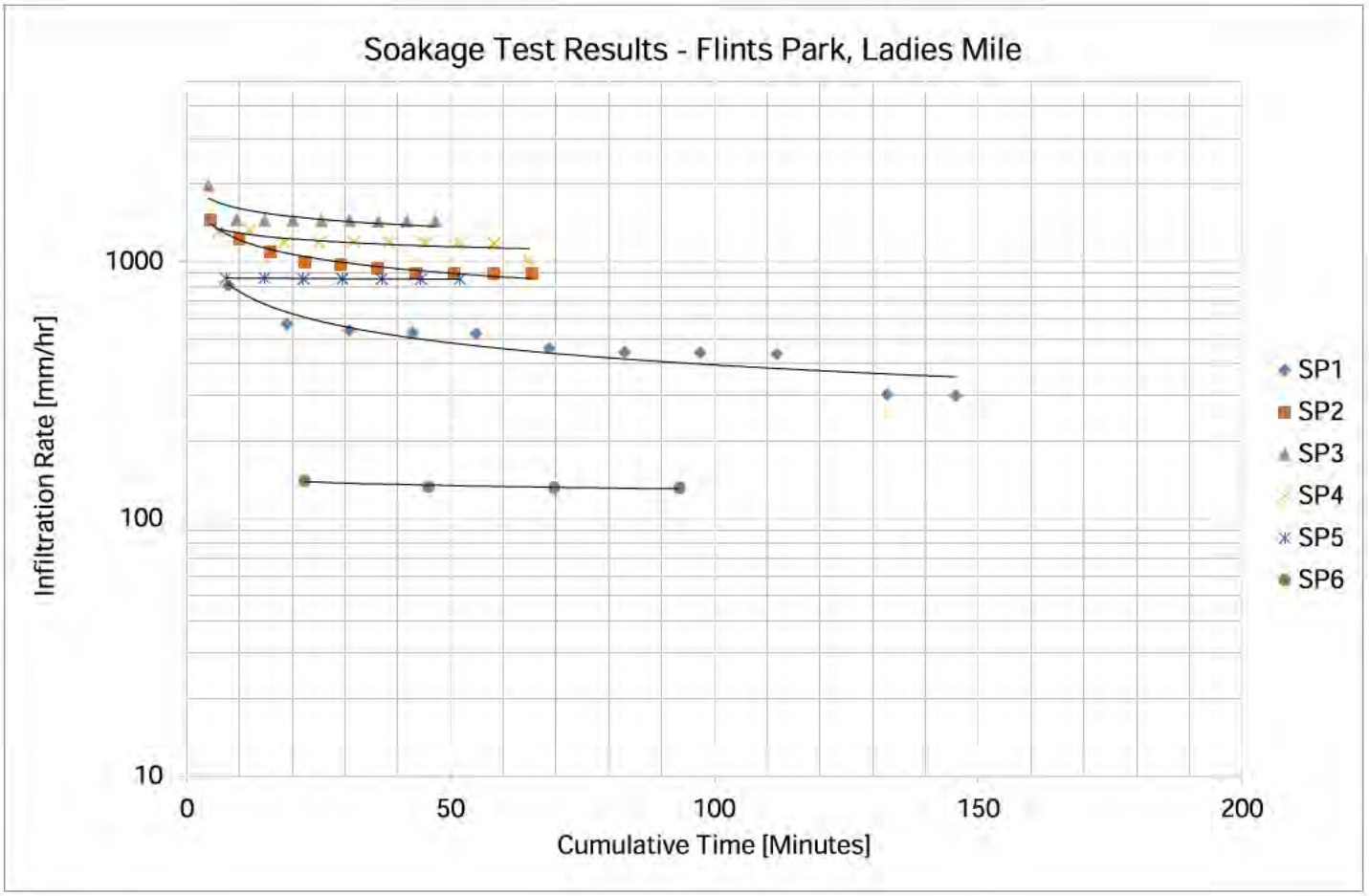
| | | | | | |
|---|---|---|---|---|---|
| PROJECT: | Flints Park and Flints Park West, Queenstown | | | JOB NUMBER: | 190162.01 |
| LOCATION: | See Site Plan | INCLINATION: | Vertical | | |

| | | | | | |
|---|---|---|---|---|---|
| EASTING: | | EQUIPMENT: | 5.4T excavator | OPERATOR: | Client Provided |
| NORTHING: | | COORD. SYSTEM: | Aerial Photography | COMPANY: | |
| ELEVATION: | | EXCAV. DATUM: | Existing ground level | HOLE STARTED: | 16/12/2021 |
| METHOD: | Aerial Photography | ACCURACY: | 5 m +- | HOLE FINISHED: | 16/12/2021 |

| Soil / Rock Type | Description | | Graphic Log | Depth (m) | Groundwater / Seepage | Scala Penetrometer (Blows per 100mm) 0 5 10 15 |
|---|---|---|---|---|---|---|
| TOPSOIL | Organic SILT with minor sand; brown, massive. Moist; sand, fine. | 0m<br>0.3m | | 0.0 | | |
| LOESS | Sandy SILT; light tan brown, massive. Firm to very stiff; moist; sand, fine. | 0.95m | | 0.3 | | |
| DELTAIC SAND | Silty fine to medium SAND; grey, massive. Loose to medium dense; moist. | 1.5m | | 1.5 | | |
| DELTAIC SAND | Fine to medium SAND with minor silt and gravel; orange brown, bedded. Loose to medium dense, moist; gravel, fine to medium, subangular to subrounded. | 1.65m | | 1.6 | | |
| DELTAIC GRAVEL | Sandy fine to coarse GRAVEL; grey, bedded. Medium dense; moist to wet; sand, fine to coarse; gravel, subangular to subrounded. | 3.65m | | 3.6 | NO SEEPAGE | |

Total Excavation Depth = 3.65 m

| | | | |
|---|---|---|---|
| COMMENT: | | LOGGED BY: | ELH |
| | | CHECKED DATE: | 27/01/2022 |
| | | SHEET: | 1 of 1 |


Soakage Test Results - Flints Park, Ladies Mile
Infiltration Rate [mm/hr]
1000
100
10
0
50
100
150
200
Cumulative Time [Minutes]
SP1
SP2
SP3
SP4
SP5
SP6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Engineering Geology & Geotechnics

KARL JAMESON

14 LOWER SHOTOVER ROAD, QUEENSTOWN

# SOAKAGE LOCATION PLAN

| SCALE: | SIN REF #: |
|---|---|
| NTS | SIN01 |
| REF: | DATE: |
| GL24-227 DRW001 | 26 NOVEMBER 2024 |

# Test Pit Falling Head Log

| | | | | |
|---|---|---|---|---|
| Project: | 14 Lower Shotover Road | | | |
| Site Location: | Queenstown | | | |
| Test Number: | TP101-SK1 | | Test Date: | 20/11/2024 |
| Calcs By | TJG | | Test Time: | 11:00:00am |
| Test Pit size: | Width | 0.75 | Presoak Time | NA |
| | Length | 2.3 | Operator | James Fleming |
| | Depth | 2.7 | Company | Southern Lakes Bobcats |

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Test Pit Log

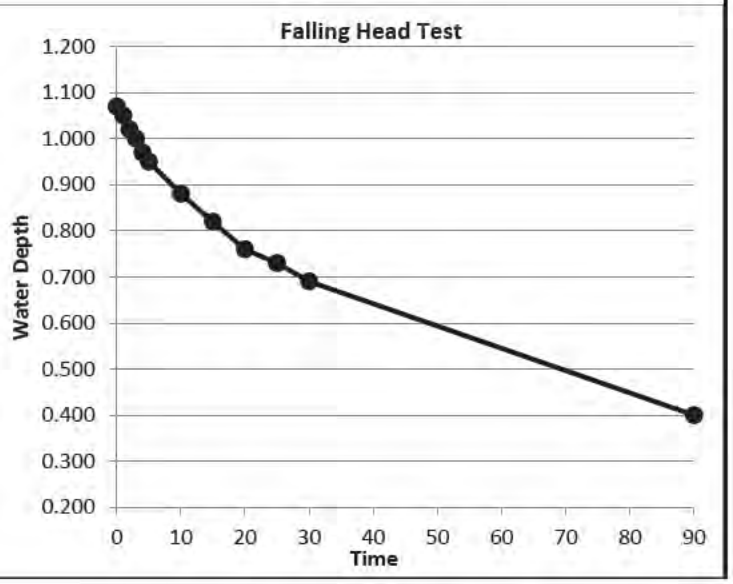
| DEPTH (m) | Geological Unit | SOIL / ROCK CLASSIFICATION, PARTICLE SIZE CHARACTERISTICS, PLASTICITY, COLOUR, WEATHERING, SECONDARY AND MINOR COMPONENTS | Legend | Sample | Water Level |
|---|---|---|---|---|---|
| 0.4 | Topsoil | Silty SAND: dark brown, moist, fine sand, organics and rootlets throughout | | Not Sampled | Not Encountered |
| 0.8 | Holocene Fan Deposits | Sandy SILT: grey-brown, moist, fine sand, soft to firm. | | | |
| 1.2 | | | | | |
| 1.6 | | | | | |
| 2.0 | | | | | |
| 2.4 | | Silty SAND: brown, dry-moist, fine sand, loose to medium dense. | | | |
| 2.8 | | 2.7m: Target Depth Achieved. | | | |
| 3.2 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Soakage Rate | 964.55 | mm/hr | 16.08 | L/min/m2 | Based on E1 using basal area soakage only |
| | 23.15 | m/day | | | |

Soakage Testing

| Time (min) | Water Level | Soakage Rate (mm/hr) | Soakage Rate (L/m2/min) |
|---|---|---|---|
| 0 | 1.070 | - | - |
| 1 | 1.050 | 1200 | 20 |
| 2 | 1.020 | 1800 | 30 |
| 3 | 1.000 | 1200 | 20 |
| 4 | 0.970 | 1800 | 30 |
| 5 | 0.950 | 1200 | 20 |
| 10 | 0.880 | 840 | 14 |
| 15 | 0.82 | 720 | 12 |
| 20 | 0.76 | 720 | 12 |
| 25 | 0.73 | 360 | 6 |
| 30 | 0.69 | 480 | 8 |
| 90 | 0.4 | 290 | 4.833333333 |

Graph



# Test Pit Falling Head Log

| | | | | |
|---|---|---|---|---|
| Project: | 14 Lower Shotover Road | | | |
| Site Location: | Queenstown | | | |
| Test Number: | TP101-SK2 | | Test Date: | 20/11/2024 |
| Calcs By | TJG | | Test Time: | 2:00:00pm |
| Test Pit size: | Width | 0.75 | Presoak Time | NA |
| | Length | 2.3 | Operator | James Fleming |
| | Depth | 2.7 | Company | Southern Lakes Bobcats |

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Engineering Geology & Geotechnics

Test Pit Log

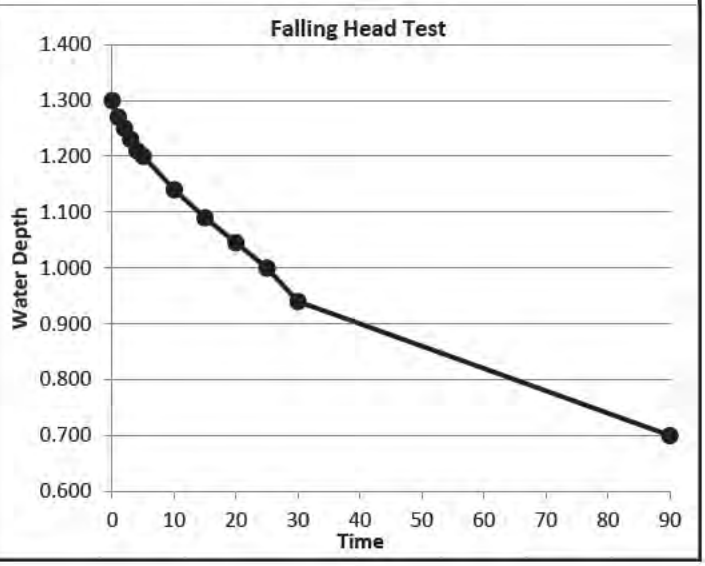
| DEPTH (m) | Geological Unit | SOIL / ROCK CLASSIFICATION, PARTICLE SIZE CHARACTERISTICS,PLASTICITY, COLOUR, WEATHERING, SECONDARY AND MINOR COMPONENTS | Legend | Sample | Water Level |
|---|---|---|---|---|---|
| 0.4 | Topsoil | Silty SAND: dark brown, moist, fine sand, organics and rootlets throughout | | Not Sampled | Not Encountered |
| 0.8 | Holocene Fan Deposits | Sandy SILT: grey-brown, moist, fine sand, soft to firm. | | | |
| 1.2 | | | | | |
| 1.6 | | | | | |
| 2.0 | | | | | |
| 2.4 | | Silty SAND: brown, dry-moist, fine sand, loose to medium dense. | | | |
| 2.8 | | 2.7m: Target Depth Achieved. | | | |
| 3.2 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Soakage Rate | 850.91 | mm/hr | 14.18 | L/min/m2 | Based on E1 using basal area soakage only |
| | 20.42 | m/day | | | |

Soakage Testing

| Time (min) | Water Level | Soakage Rate (mm/hr) | Soakage Rate (L/m2/min) |
|---|---|---|---|
| 0 | 1.300 | - | - |
| 1 | 1.270 | 1800 | 30 |
| 2 | 1.250 | 1200 | 20 |
| 3 | 1.230 | 1200 | 20 |
| 4 | 1.210 | 1200 | 20 |
| 5 | 1.200 | 600 | 10 |
| 10 | 1.140 | 720 | 12 |
| 15 | 1.09 | 600 | 10 |
| 20 | 1.045 | 540 | 9 |
| 25 | 1 | 540 | 9 |
| 30 | 0.94 | 720 | 12 |
| 90 | 0.7 | 240 | 4 |

Graph



# Test Pit Falling Head Log

| | | | | |
|---|---|---|---|---|
| Project: | 14 Lower Shotover Road | | | |
| Site Location: | Queenstown | | | |
| Test Number: | TP101-SK3 | | Test Date: | 20/11/2024 |
| Calcs By | TJG | | Test Time: | 4:00:00pm |
| Test Pit size: | Width | 0.75 | Presoak Time | NA |
| | Length | 2.3 | Operator | James Fleming |
| | Depth | 2.7 | Company | Southern Lakes Bobcats |

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Test Pit Log

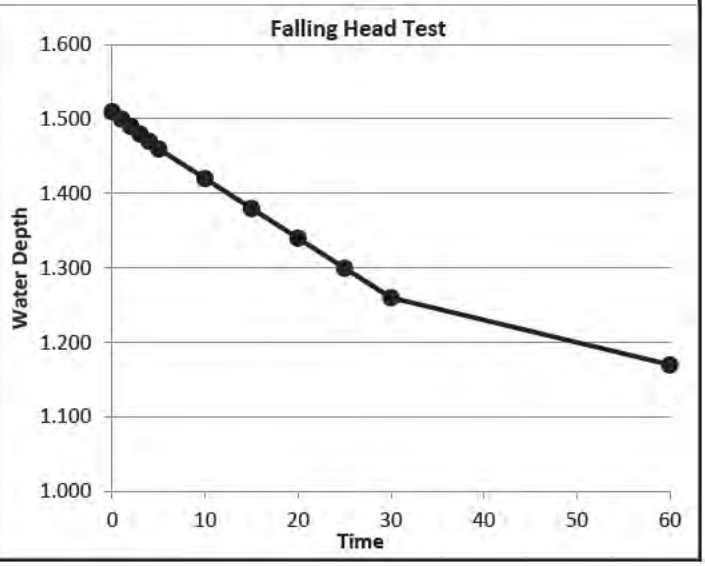
| DEPTH (m) | Geological Unit | SOIL / ROCK CLASSIFICATION, PARTICLE SIZE CHARACTERISTICS,PLASTICITY, COLOUR, WEATHERING, SECONDARY AND MINOR COMPONENTS | Legend | Sample | Water Level |
|---|---|---|---|---|---|
| 0.4 | Topsoil | Silty SAND: dark brown, moist, fine sand, organics and rootlets throughout | | Not Sampled | Not Encountered |
| 0.8 | Holocene Fan Deposits | Sandy SILT: grey-brown, moist, fine sand, soft to firm. | | | |
| 1.2 | | | | | |
| 1.6 | | | | | |
| 2.0 | | | | | |
| 2.4 | | Silty SAND: brown, dry-moist, fine sand, loose to medium dense. | | | |
| 2.8 | | 2.7m: Target Depth Achieved. | | | |
| 3.2 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Soakage Rate | 507.27 | mm/hr | 8.45 | L/min/m2 | Based on E1 using basal area soakage only |
| | 12.17 | m/day | | | |

## Soakage Testing

| Time (min) | Water Level | Soakage Rate (mm/hr) | Soakage Rate (L/m2/min) |
|---|---|---|---|
| 0 | 1.510 | - | - |
| 1 | 1.500 | 600 | 10 |
| 2 | 1.490 | 600 | 10 |
| 3 | 1.480 | 600 | 10 |
| 4 | 1.470 | 600 | 10 |
| 5 | 1.460 | 600 | 10 |
| 10 | 1.420 | 480 | 8 |
| 15 | 1.38 | 480 | 8 |
| 20 | 1.34 | 480 | 8 |
| 25 | 1.3 | 480 | 8 |
| 30 | 1.26 | 480 | 8 |
| 60 | 1.17 | 180 | 3 |

Graph



Amalgamation Conditions

- That Lot 1 hereon & Section 107 Block III Shotover Survey District be held on one Record of Title
- That Lots 2, 3 & 4 hereon be held on one Record of Title

Lot 2 DP 339864
Lot 1 DP 398999
Lot 5 DP 398999
Lot 2 DP 418751
Lot 5 DP 463532
Lot 5 DP 438514
Lot 1 DP 22874
Sec 107 Blk III Shotover SD (Title 1)
Sec 9 SO 485598

Areas A, B & C DP 398999 right of way, right to convey water, electricity, gas, telecommunications and computer media and a right to drain water and sewage (EI 8777688.4)

Marked D DP 398999 Right of way, a right to convey water, electricity, gas, telecommunications and computer media and a right to drain water and sewage (EI 7777688.3) Right to convey electricity and a right of way (EI 8869074.2)

Areas M, N & O DP 418751 Right to convey water (EI 8970568.1)

Centreline A to B on Diagram T 462350.1 Right to convey water

Marked L DP 391412 Right to convey water (EC 5121931.4) Right to convey water (EC 754597.2) Right to convey water (EC 8869074.2) Right to convey water (EI 8970568.1)

Marked A, B, C & D DP 302775 Right to convey water (EI 6064446.2)

Lot 1 5.17 Ha (Title 1)

Pool House

Accessory building

District Plan ONF Line

Dwelling

Ex vehicle crossing

Ex hardfill to be cleaned off & new gravel placed for access to Springbank

Marked R DP 391412 Right (In gross - A.I.C. Ltd) to convey water (EI 6299455.2)

Animal shelter

Accessory building & Residential Flat

Proposed Ladys Mile Master Plan Urban Limit

Marked A DP 405803 Right (In gross - Aurora) to convey and transform electricity (EI 8026761.3)

Accessory building

Septic Tank

Disposal field

10.0 28.3 A 800m² Building area 10.0 28.3

Grove

Springbank

Area A on DP 391412 (now Area I DP 438514) Subject to a right of way, to convey water, electricity, gas, telecommunications and computer media and to drain water and sewage (EI 7620262.12)

Lot 2 2.45 Ha (Title 2)

Legal Road Unformed

Lot 3 6.14 Ha (Title 2)

35mm ID pipe laid

Marked H SO 485598 Right of way - In favour of Sec 107 over Sec 8 (proposed Lot 3) (T 462350.1) Right (In gross - Aurora) to convey electricity (EI 8026761.4)

Existing sewer & water connections

Water Tank with pressure pump

Lower Shotover Road

Lot 4 292m² (Title 2)

Marked X SO 485598 Right (In gross - AIC Ltd) to convey water (T 884459)

Connection to existing bore

S.H. 6

Legend:
- Ex Appurtenant Easement
- Ex Subject Easement to be retained
- Lot 201 DP 391412 Subject to Consent Notice 7620262.11

# Lots 1 to 4 being Subdivision of Lots 3 & 4 DP 438514 and Sec 8 SO 485598 and Lot 201 DP 391412 Scheme Plan

| Rev. | Date | Revision Details |
|---|---|---|
| 0 | 28-10-21 | For discussion |
| 1 | 8-11-21 | Alter Lot 1/2 bdy, shift driveway |
| 2 | 8-11-21 | Add Consent notice area |
| 3 | 26-11-21 | Remove contours |
| 4 | 5-07-22 | Add building area |
| 5 | 15-11-22 | Shift Bldg platform, add water services |

Surveyed

Drawn HRW

Designed

N

Scale 1:2000 @ A3

Project # - 21056

Client - M Henry

SOUTHERN HORIZONS
SURVEYING & RESOURCE MANAGEMENT
Gore • Ph: 027 468 2596 • hamish@southernhorizons.co.nz

NOTE:
- All dimensions shown are in metres unless otherwise shown
- If this plan is being used as part of sale and purchase agreement then it is done so on the basis that it is preliminary only, final dimensions and areas may vary on final survey
- Any aerial images shown are sourced from LINZ Data Service unless otherwise stated

Plan # 01

Datum Mt Nicholas 2000

C:\Projects\21056 - Subdivision - 14 Lower Shotover Road - M Henry\12d 21056 14 Lower Shotover Rd Hnery Tue Nov 15 12:00:12 2022

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# AUGERHOLE LOG

11E Pinot Noir Drive,
Cromwell
M: 0276565231
E: info@geocivi.co.nz

**Lab Job No:** 8602-007 **Borehole No.:** 01 **Sheet:** 1 of 1

**Client:** Insight Engineering **Hole Depth:** 3.00 m

**Job:** Geotechnical Investigation **Coordinates:** **Date:** 23/02/23

**Report No.:** OTA8602-007-R001 **Location:** 14 Lower Shotover Road **Ground Level:** 0

**Client Ref. No.:** -

| Unit | Geological Interpretation (In accordance with NZGS 2005) | USC | Legend | Depth (m) | Water | Relative Density | Scala Penetrometer NZS4402: 1986 Test 6.5.2 - Procedure 2 (blows / 100mm) | Values | Vane Shear Strength (kPa) Tested in accordance with NZGS Aug 2001 | Samples |
|---|---|---|---|---|---|---|---|---|---|---|
| | SILT with trace rootlets; light brown, loose, dry, poorly graded | ML | | 0.0 | Groundwater Not Encountered | - | 5 10 15 | 2 | | |
| | SILT; light greysh brown, loose, dry, poorly graded | ML | | | | | | 2 3 3 3 | | |
| | SILT; light greysh brown, loose, dry to moist, poorly graded | ML | | 0.5 | | | | 4 4 5 4 5 | | |
| | SILT with minor sand; light greyish brown, medium dense, dry to moist, poorly graded; sands are fine | ML | | 1.0 | | | | 5 5 5 4 | | |
| | Silty SAND; light greyish brown, medium dense, dry, poorly graded; sands are fine | ML | | 1.5 | | | | 4 5 7 7 | | |
| | SILT with minor sand; light greyish brown, dense, moist, poorly graded; sands are fine | ML | | 2.0 | | | | 6 5 6 6 9 | | |
| | EOB, Target Depth | | | 2.5 3.0 | | | | 7 5 4 6 8 9 | | |

**Remarks**

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

*Note: Scala Penetrometer interpretation is not endorsed*

**Water**

- Standing Water Level
- Out flow
- In flow

**Investigation Type**

- [ ] Hand Auger
- [x] Hand Auger + Scala (DCP)

| Contractor: | Equipment: | Recorded By: | Checked By: | Approved Signatory: |
|---|---|---|---|---|
| Geocivil | Hand auger, scala | F.B | F.B | Joe Vincent |
| | | Recorded Date: 23/02/2023 | Checked Date: 23/02/2023 | |

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11E Pinot Noir Drive,
Cromwell
M: 0276565231
E: info@geocivi.co.nz

# AUGERHOLE LOG

**Lab Job No:** 8602-007 **Borehole No.:** 02 **Sheet:** 1 of 1

**Client:** Insight Engineering **Hole Depth:** 3.00 m

**Job:** Geotechnical Investigation **Coordinates:** **Date:** 23/02/23

**Report No.:** OTA8602-007-R001 **Location:** 14 Lower Shotover Road **Ground Level:** 0

**Client Ref. No.:** -

| Unit | Geological Interpretation (In accordance with NZGS 2005) | USC | Legend | Depth (m) | Water | Relative Density | Scala Penetrometer (NZS4402: 1986 Test 6.5.2 - Procedure 2 (blows / 100mm)) | Values | Vane Shear Strength (kPa) (Tested in accordance with NZGS Aug 2001) | Samples |
|---|---|---|---|---|---|---|---|---|---|---|
| | SILT with trace rootlets; light brown, medium dense, dry, poorly graded | ML | | 0.0 | Groundwater Not Encountered | | | 3 4 3 5 3 | | |
| | SILT; light greyish brown, medium dense, dry to moist, poorly graded | ML | | 0.5 | | - | | 3 3 4 3 3 4 4 5 4 5 | | |
| | Silty SAND; light greyish brown, medium dense, dry to moist, poorly graded; sands are fine | SM | | 1.5 | | MD | | 6 5 5 5 6 | | |
| | SILT; light greyish brown, medium dense, moist, poorly graded | ML | | 2.0 | | - | | 6 6 6 6 6 6 | | |
| | Silty SAND; light greyish brown, medium dense, moist, poorly graded; sands are fine | SM | | 2.5 | | MD | | 6 7 | | |
| | SILT with minor sand; light greyish brown, medium dense, moist, poorly graded; sands are fine | ML | | 3.0 | | - | | 9 | | |
| | EOB, Target Depth | | | | | | | | | |

**Remarks**

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

*Note: Scala Penetrometer interpretation is not endorsed*

**Water**

- Standing Water Level
- Out flow
- In flow

**Investigation Type**

- [ ] Hand Auger
- [x] Hand Auger + Scala (DCP)

| Contractor: | Equipment: | Recorded By: | Checked By: | Approved Signatory: |
|---|---|---|---|---|
| Geocivil | Hand auger, scala | F.B | F.B | Joe Vincent |
| | | Recorded Date: 23/02/2023 | Checked Date: 23/02/2023 | |

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# AUGERHOLE LOG

**Lab Job No:** 8602-007 **Borehole No.:** 03 **Sheet:** 1 of 1

**Client:** Insight Engineering **Hole Depth:** 3.00 m

**Job:** Geotechnical Investigation **Coordinates:** **Date:** 23/02/23

**Report No.:** OTA8602-007-R001 **Location:** 14 Lower Shotover Road **Ground Level:** 0

**Client Ref. No.:** -

| Unit | Geological Interpretation (In accordance with NZGS 2005) | USC | Legend | Depth (m) | Water | Relative Density | Scala Penetrometer NZS4402: 1986 Test 6.5.2 - Procedure 2 (blows / 100mm) | Values | Vane Shear Strength (kPa) Tested in accordance with NZGS Aug 2001 | Samples |
|---|---|---|---|---|---|---|---|---|---|---|
| | SILT with trace rootlets; light brown, medium dense, dry, poorly graded | ML | | 0.0 | Groundwater Not Encountered | - | 5 10 15 | 4 | | |
| | SILT with trace gravels; light brown, medium dense, dry, poorly graded; gravels are fine to medium, highly weathered, rounded to sub-rounded, weak | ML | | | | | | 4 | | |
| | | | | | | | | 4 | | |
| | | | | | | | | 5 | | |
| | SILT; light brown, medium dense, dry, poorly graded | ML | | 0.5 | | | | 8 | | |
| | | | | | | | | 7 | | |
| | | | | | | | | 5 | | |
| | | | | | | | | 5 | | |
| | | | | | | | | 5 | | |
| | | | | | | | | 4 | | |
| | SILT with trace gravels; dark greyish brown, medium dense, dry to moist, poorly graded; gravels are fine to medium, highly weathered, rounded to sub-rounded, weak | ML | | 1.0 | | | | 4 | | |
| | | | | | | | | 5 | | |
| | | | | | | | | 4 | | |
| | Silt with trace sands; light greyish brown, medium dense, dry to moist, poorly graded; sands are fine | ML | | | | | | 4 | | |
| | | | | | | | | 5 | | |
| | | | | 1.5 | | | | 5 | | |
| | | | | | | | | 6 | | |
| | | | | | | | | 6 | | |
| | | | | | | | | 6 | | |
| | | | | | | | | 5 | | |
| | | | | 2.0 | | | | 6 | | |
| | | | | | | | | 6 | | |
| | | | | | | | | 5 | | |
| | | | | | | | | 6 | | |
| | | | | | | | | 6 | | |
| | | | | 2.5 | | | | 6 | | |
| | | | | | | | | 9 | | |
| | | | | | | | | 10 | | |
| | | | | | | | | 9 | | |
| | EOB, Target Depth | | | 3.0 | | | | | | |

**Remarks**

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

*Note: Scala Penetrometer interpretation is not endorsed*

**Water**

- Standing Water Level
- Out flow
- In flow

**Investigation Type**

- [ ] Hand Auger
- [x] Hand Auger + Scala (DCP)

| Contractor: | Equipment: | Recorded By: | Checked By: | Approved Signatory: |
|---|---|---|---|---|
| Geocivil | Hand auger, scala | F.B | F.B | Joe Vincent |
| | | Recorded Date: 23/02/2023 | Checked Date: 23/02/2023 | |

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# AUGERHOLE LOG

11E Pinot Noir Drive,
Cromwell
M: 0276565231
E: info@geocivi.co.nz

**Lab Job No:** 8602-007 **Borehole No.:** 04 **Sheet:** 1 of 1

**Client:** Insight Engineering **Hole Depth:** 3.00 m

**Job:** Geotechnical Investigation **Coordinates:** **Date:** 23/02/23

**Report No.:** OTA8602-007-R001 **Location:** 14 Lower Shotover Road **Ground Level:** 0

**Client Ref. No.:** -

| Unit | Geological Interpretation (In accordance with NZGS 2005) | USC | Depth (m) | Relative Density | Scala Penetrometer (NZS4402: 1986 Test 6.5.2 - Procedure 2, blows / 100mm) | Values |
|---|---|---|---|---|---|---|
| | SILT with minor sands and trace rootlets; light brown, medium dense, dry, poorly graded; sands are fine to course | ML | 0 | - | | 3 |
| | SILT with minor sands; light brown, medium dense, dry, poorly graded; sands are fine to course | ML | 0.5 | | | 4 5 6 6 7 |
| | SILT with minor sands and minor gravels; light brown, medium dense, dry to moist, poorly graded; gravels are fine to medium, moderately to highly weathered; rounded to sub-rounded, moderately strong to weak; sands are fine | ML | 1.0 | | | 6 6 5 3 5 5 4 |
| | SILT with trace sand; dark greyish brown, medium dense, moist, poorly graded; sands are fine | ML | 1.5 | | | 4 3 4 5 7 |
| | SAND with trace silt; light brown, medium dense, dry, poorly graded; sands are fine | SM | 2.0 2.5 | MD D MD D MD | | 6 7 8 8 7 5 5 6 8 6 |
| | SILT with minor sand; light brown, medium dense, moist, poorly graded; sands are fine | ML | 3.0 | - | | 6 |
| | EOB, Target depth | | | | | |

Groundwater Not Encountered

Vane Shear Strength (kPa): Tested in accordance with NZGS Aug 2001

Samples

**Remarks**

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

*Note: Scala Penetrometer interpretation is not endorsed*

**Water**

- Standing Water Level
- Out flow
- In flow

**Investigation Type**

- [ ] Hand Auger
- [x] Hand Auger + Scala (DCP)

| Contractor: | Equipment: | Recorded By: | Checked By: | Approved Signatory: |
|---|---|---|---|---|
| Geocivil | Hand auger, scala | F.B | F.B | Joe Vincent |
| | | Recorded Date: 23/02/2023 | Checked Date: 23/02/2023 | |

Produced with Core-GS

# Appendix 3:

ENGEO Logs

# LOG OF BORING SL-ENG26-BH01

Simplicity Living
12 Lower Shotover Road

30002.000.001
Mitchell Holyoake

**Client** : Simplicity Living Limited
**Date** : 10/06/2026
**Hole Depth** : 31.5 m
**Drilling Method** : Rotosonic
**Drilling Contractor** : Speights

**Core Diameter** : 100 mm
**Energy Transfer Ratio** : 65.9 %
**Logged By/Reviewed By** : JJ / GC
**Latitude** : 814827.9
**Longitude** : 429446

| Depth (m BGL) | Geological Unit | Sample Type | USCS Symbol | DESCRIPTION | Log Symbol | Elevation (mRL) | Water Level | Moisture | Consistency/ Density Index | SPT N-Value | Torvane Shear (kPa) | Total Core Recovery (%) | Installation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | TS | | OL | SILT with some fine sand and trace rootlets and SILT with some sand reworked, brown. Low plasticity; (TOPSOIL). | | | | D | - | | | | |
| 0.5 | LOESS | | SP | Silty fine to medium SAND, light brown. Poorly graded; loose; moist (LOESS). | | 364 | | | | | | | |
| 1.0 | | | | | | | | M | L-MD | | | | |
| 1.5 | | | | | | | | | | SPT@1.5m 5,6,4,5,5,6 N=20 | | | |
| 2.0 | | | GW | Sandy fine to coarse GRAVEL with minor silt, grey. Well graded; dense; sand fine to coarse: gravel, sub-rounded-sub-angular (OUTWASH). | | 363 | | | | | | | |
| 2.5 | | | | | | 362 | | | | | | | |
| 3.0 | | | | | | | | | | SPT@3m 9,9,6,7,8,11 N=32 | | | |
| 3.5 | | | | | | 361 | | | MD | | | | |
| 4.0 | | | | | | | | | | | | | |
| 4.5 | | | | @4.4 m becomes with minor cobbles. | | 360 | | | | SPT@4.5m 10,11,7,7,7,7 N=28 | | | |
| 5.0 | | | | | | | | | | | | | |
| 5.5 | OUTWASH | | | | | 359 | | | | | | | |
| 6.0 | | | | | | | | M | | SPT@6m 8,11,11,10,9,10 N=40 | | | |
| 6.5 | | | | | | 358 | | | MD-D | | | | |
| 7.0 | | | | | | | | | | | | | |
| 7.5 | | | | | | | | | | SPT@7.5m 7,10,6,6,9,10 N=31 | | | |
| 8.0 | | | | | | 357 | | | | | | | |
| 8.5 | | | | | | | | | | | | | |
| 9.0 | | | | | | 356 | | | VD | SPT@9m 8,12,18,12,14 N=50+ | | | |
| 9.5 | | | | | | | | | | | | | |
| 10.0 | | | | | | 355 | | | | | | | |

**Water Level | Date : Time | Hole Depth**
1)
2)
3)
4)

ENGEO MACHINE BOREHORE LOG (SOIL) 30002 - SIMPLICITY LIVING_V0.GPJ NZ DATA TEMPLATE 2.GDT 6/26/26

# LOG OF BORING SL-ENG26-BH01

Simplicity Living
12 Lower Shotover Road

30002.000.001
Mitchell Holyoake

**Client** : Simplicity Living Limited
**Date** : 10/06/2026
**Hole Depth** : 31.5 m
**Drilling Method** : Rotosonic
**Drilling Contractor** : Speights

**Core Diameter** : 100 mm
**Energy Transfer Ratio** : 65.9 %
**Logged By/Reviewed By** : JJ / GC
**Latitude** : 814827.9
**Longitude** : 429446

| Depth (m BGL) | Geological Unit | Sample Type | USCS Symbol | DESCRIPTION | Log Symbol | Elevation (mRL) | Water Level | Moisture | Consistency/ Density Index | SPT N-Value | Torvane Shear (kPa) | Total Core Recovery (%) | Installation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.5 | OUTWASH | | GW | Sandy fine to coarse GRAVEL with minor silt, grey. Well graded; dense; sand fine to coarse: gravel, sub-rounded-sub-angular (OUTWASH). | | | | | | SPT@10.5m 12,13,14,20,16 N=50+ | | | |
| | | | | No Recovery. | NR | 354 | | | | | | | |
| 11.0 | | | GW | Sandy fine to coarse GRAVEL with minor cobbles and trace silt, grey. Well graded; dense; sand, fine to coarse; gravel, sub-rounded to sub-angular (OUTWASH). | | | | | | | | | |
| 11.5 | | | | | | 353 | | | | | | | |
| 12.0 | | | | | | | | | | SPT@12m 22,18,21,17,12 N=50+ | | | |
| 12.5 | | | | | | 352 | | | | | | | |
| 13.0 | | | | | | | | | VD | | | | |
| 13.5 | | | | | | | | | | SPT@13.5m 8,11,12,11,13,12 N=48 | | | |
| 14.0 | | | | | | 351 | | | | | | | |
| 14.5 | | | | | | | | | | | | | |
| 15.0 | | | | | | 350 | | M | | SPT@15m 50+ N=50+ | | | |
| 15.5 | | | | | | | | | | | | | |
| 16.0 | | | GW | Sandy fine to coarse GRAVEL, grey. Well graded; dense to very dense; sand fine to coarse; gravel, sub-rounded to sub-angular (OUTWASH). | | 349 | | | | | | | |
| 16.5 | | | | | | | | | | SPT@16.5m 19,18,17,17,16+ N=50+ | | | |
| 17.0 | | | | | | 348 | | | | | | | |
| 17.5 | | | | | | | | | | | | | |
| 18.0 | | | | | | 347 | | | D-VD | SPT@18m 10,11,9,9,9,8 N=35 | | | |
| 18.5 | | | | | | | | | | | | | |
| 19.0 | | | | | | 346 | | | | | | | |
| 19.5 | | | | | | | | | | SPT@19.5m 9,10,8,9,9,9 N=35 | | | |
| 20.0 | | | | | | 345 | | | | | | | |

**Water Level | Date : Time | Hole Depth**
1)
2)
3)
4)

# LOG OF BORING SL-ENG26-BH01

Simplicity Living
12 Lower Shotover Road

30002.000.001
Mitchell Holyoake

**Client** : Simplicity Living Limited **Core Diameter** : 100 mm
**Date** : 10/06/2026 **Energy Transfer Ratio** : 65.9 %
**Hole Depth** : 31.5 m **Logged By/Reviewed By** : JJ / GC
**Drilling Method** : Rotosonic **Latitude** : 814827.9
**Drilling Contractor** : Speights **Longitude** : 429446

| Depth (m BGL) | Geological Unit | Sample Type | USCS Symbol | DESCRIPTION | Log Symbol | Elevation (mRL) | Water Level | Moisture | Consistency/ Density Index | SPT N-Value | Torvane Shear (kPa) | Total Core Recovery (%) | Installation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20.5 | OUTWASH | | GW | Sandy fine to coarse GRAVEL, grey. Well graded; dense to very dense; sand fine to coarse; gravel, sub-rounded to sub-angular (OUTWASH). | | 344 | | | | | | | |
| 21.0 | | | | @ 20.6 m drilling lost water and hole collapse, casing driven to EOH. Fines washed away in core to 21.0 m | | | | | | SPT@21m 13,14,11,10,9,11 N=41 | | | |
| 21.5 | | | | | | 343 | | | D-VD | | | | |
| 22.0 | | | | | | | | | | | | | |
| 22.5 | | | | | | 342 | | | | SPT@22.5m 11,20,38,12 N=50+ | | | |
| 23.0 | | | | 22.8m fine to coarse gravel lense, no sand or silt. | | | | | | | | | |
| 23.5 | | | | | | 341 | | | | | | | |
| 24.0 | | | | | | | | | | SPT@24m 33,17 N=50+ | | | |
| 24.5 | | | | | | 340 | | | | | | | |
| 25.0 | | | | | | | | M | | | | | |
| 25.5 | | | | | | 339 | | | | SPT@25.5m 35,15 N=50+ | | | |
| 26.0 | | | | | | | | | VD | | | | |
| 26.5 | | | | | | 338 | | | | | | | |
| 27.0 | | | | | | | | | | SPT@27m 27,23 N=50+ | | | |
| 27.5 | | | | | | 337 | | | | | | | |
| 28.0 | | | | | | | | | | | | | |
| 28.5 | | | | | | 336 | | | | SPT@28.5m 13'37 N=50+ | | | |
| 29.0 | | | | | | | | | | | | | |
| 29.5 | | | | | | 335 | | | | | | | |
| 30.0 | | | | | | | | | | SPT@30m | | | |

Water Level | Date : Time | Hole Depth
1)
2)
3)
4)

ENGEO MACHINE BOREHORE LOG (SOIL) 30002 - SIMPLICITY LIVING_V0.GPJ NZ DATA TEMPLATE 2.GDT 6/26/26

# LOG OF BORING SL-ENG26-BH01

Simplicity Living
12 Lower Shotover Road

30002.000.001
Mitchell Holyoake

**Client** : Simplicity Living Limited
**Date** : 10/06/2026
**Hole Depth** : 31.5 m
**Drilling Method** : Rotosonic
**Drilling Contractor** : Speights

**Core Diameter** : 100 mm
**Energy Transfer Ratio** : 65.9 %
**Logged By/Reviewed By** : JJ / GC
**Latitude** : 814827.9
**Longitude** : 429446

| Depth (m BGL) | Geological Unit | Sample Type | USCS Symbol | DESCRIPTION | Log Symbol | Elevation (mRL) | Water Level | Moisture | Consistency/ Density Index | SPT N-Value | Torvane Shear (kPa) | Total Core Recovery (%) | Installation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30.5 | OUTWASH | | GW | Sandy fine to coarse GRAVEL, grey. Well graded; dense to very dense; sand fine to coarse; gravel, sub-rounded to sub-angular (OUTWASH). | | 334 | | M | VD | 16,34 N=50+ | | 25 50 75 | |
| 31.0 | | | | | | | | | | | | | |
| 31.5 | | | | End of Hole Depth: 31.5 m<br>Termination: Target depth | | | | | | | | | |

**Water Level | Date : Time | Hole Depth**
1)
2)
3)
4)

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA01**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

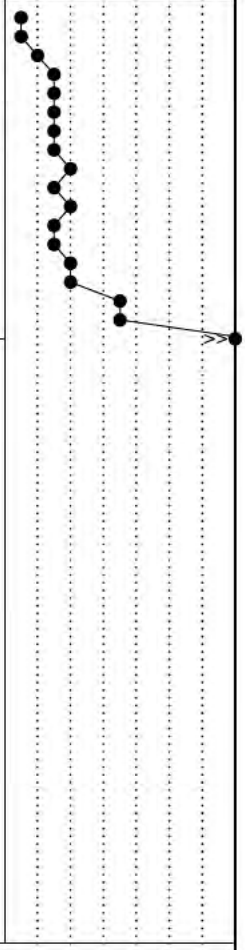
Coordinates E: 814703.9
(NZ MT YORK2000) N: 429203.7
Elevation (mRL): 365.1
Elevation Datum: NZMt Nic 2000

Maximum Depth: 1.8 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 365 | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity; (TOPSOIL). | | | | | S-F | | SV@0.3m 166/62 |
| | LOESS | | SILT with trace sand, grey brown. Low plasticity; moist; firm to stiff; sand, fine (LOESS). | 0.5 | | | M | St-Vst | | SV@0.6m 171/56 |
| 364 | | | | 1.0 | | | | | | SV@0.9m 75/32 |
| | ALLUVIUM | | Fine to coarse SAND with minor silt, grey brown. Poorly graded; moist; loose (ALLUVIUM). | 1.5 | | | | MD | | |
| | | | Fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; moist; dense to very dense; gravel, subrounded to subangular (ALLUVIUM) | | | | | VD | | |

Depth of Excavation: 1.8 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12



**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG25-HA02

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

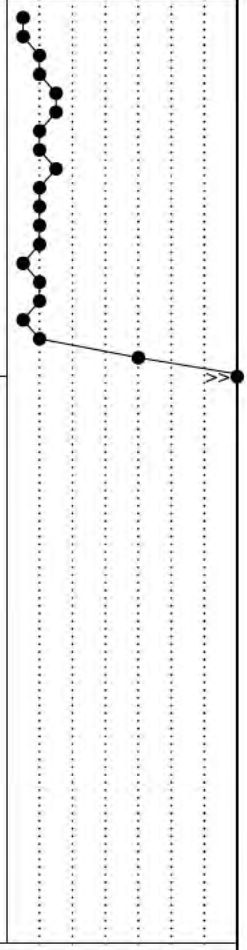
Coordinates E: 814779
(NZ MT YORK2000) N: 429255.6
Elevation (mRL): 365.9
Elevation Datum: NZMt Nic 2000

Maximum Depth: 2 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity; (TOPSOIL). | | | | | S-F | | SV@0.3m 168/55 |
| | LOESS | | SILT with some sand, grey brown.Low plasticity; Firm to stiff; moist; (LOESS). | 0.5 | | | | St-Vst | | SV@0.6m 159/53 |
| 365 | ALLUVIUM | | Medium to coarse SAND, grey brown. Poorly graded; loose to medium dense; (ALLUVIUM). | 1.0 | | | M | L-MD | | SV@0.9m 81/50 |
| 364 | | | Fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense; gravel, subrounded to subangular (ALLUVIUM) | 1.5 | | | | | | |
| | | | | 2.0 | | | | VD | | |

Depth of Excavation: 2 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12




**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG25-HA03

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

Coordinates E: 814807.8
(NZ MT YORK2000) N: 429320
Elevation (mRL): 365.9
Elevation Datum: NZMt Nic 2000

Maximum Depth: 2.4 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity; (TOPSOIL). | | | | | S-F | | SV@0.3m 165/50 |
| 365 | LOESS | | SILT with some sand, grey brown.Low plasticity; moist; (LOESS). | 0.5 | | | M | Vst-H | | SV@0.6m 200+ SV@0.9m 135/35 |
| 364 | ALLUVIUM | | Medium to coarse SAND, grey brown. Poorly graded; dense; (ALLUVIUM). | 1.5 | | | | L-MD | | |
| | | | fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense;gravel, subrounded to subangular (ALLUVIUM) | 2.0 | | | | VD | | |

Depth of Excavation: 2.4 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12 >>

**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG25-HA04

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

Coordinates E: 814896.9
(NZ MT YORK2000) N: 429406.6
Elevation (mRL): 366.4
Elevation Datum: NZMt Nic 2000

Maximum Depth: 3.7 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 366 | TS | | SILT with some fine sand and trace rootlets and SILT with some sand reworked, brown. Low plasticity; (TOPSOIL / FILL). | 0.5 | | | | S-F | | SV@0.6m 90/30 |
| | LOESS | | Silty fine SAND, light brown. Poorly graded; loose; moist (LOESS). | 1.0 | | | | L | | SV@0.9m 135/32 |
| 365 | | | | 1.5 | | | M | | | |
| | ALLUVIUM | | Fine to coarse SAND with trace silt, brown. Poorly graded; loose; (ALLUVIUM). | 2.0 | | | | | | |
| 364 | | | @ 2.6 m becomes with some silt. | 2.5 | | | | L-MD | | |
| | | | | 3.0 | | | | | | |
| 363 | | | Medium to coarse SAND, brown; poorly graded; loose to medium dense (ALLUVIUM). | | | | | L-MD | | |
| | | | Fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense; gravel, subrounded to subangular (ALLUVIUM). | 3.5 | | | | MD-VD | | |
| | | | Depth of Excavation: 3.7 m<br>Termination Condition: Practical refusal | | | | | | | |

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA05**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

Coordinates E: 814896.9
(NZ MT YORK2000) N: 429456.7
Elevation (mRL): 365.7
Elevation Datum: NZMt Nic 2000

Maximum Depth: 2.6 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets and SILT with some sand reworked, brown. Low plasticity; (TOPSOIL). | | | | | S-F | | SV@0.3m 134/46 |
| 365 | LOESS | | Silty fine SAND, light brown. Poorly graded; loose; moist (LOESS) | 0.5 | | | | L | | SV@0.6m 105/41 |
| | ALLUVIUM | | Medium to coarse SAND with some silt, grey brown. Poorly graded; dense; (ALLUVIUM). | 1.0 | | | M | | | |
| 364 | | | | 1.5 | | | | L | | |
| | | | | 2.0 | | | | | | |
| | | | Fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense; gravel, subrounded to subangular (ALLUVIUM). | 2.5 | | | | MD-VD | | |
| | | | Depth of Excavation: 2.6 m<br>Termination Condition: Practical refusal | | | | | | | |

Dynamic Cone Penetrometer

Blows per 100mm

2 4 6 8 10 12

>>

**Photos / Sketches**

ENGEO TEST PIT LOG 30002 - SIMPLICITY LIVING_V0.GPJ NZ MASTER DATA TEMPLATE.GDT 5/2/26

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA06**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

Coordinates E: 814822.7
(NZ MT YORK2000) N: 429368.1
Elevation (mRL): 366.0
Elevation Datum: NZMt Nic 2000

Maximum Depth: 3.2 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets and SILT with some sand reworked, brown. Low plasticity; (TOPSOIL). | | | | | S-F | | SV@0.3m 171/47 |
| | LOESS | | Silty fine SAND, light brown. Poorly graded; loose; moist (LOESS). | 0.5 | | | | L | | SV@0.6m 200+ |
| 365 | | | Medium to coarse SAND with some silt, grey brown. Poorly graded; dense; (ALLUVIUM). | 1.0 | | | | | | SV@0.9m 87/32 |
| | ALLUVIUM | | | 1.5 | | | M | L-MD | | |
| 364 | | | | 2.0 | | | | | | |
| | | | | 2.5 | | | | MD-D | | |
| 363 | | | Fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense; gravel, subrounded to subangular (ALLUVIUM). | 3.0 | | | | D-VD | | |
| | | | Depth of Excavation: 3.2 m<br>Termination Condition: Practical refusal | | | | | | | |

Dynamic Cone Penetrometer

Blows per 100mm

2 4 6 8 10 12

**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA07**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

Coordinates E: 814859.4
(NZ MT YORK2000) N: 429414
Elevation (mRL): 365.7
Elevation Datum: NZMt Nic 2000

Maximum Depth: 2.8 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets and SILT with some sand reworked, brown. Low plasticity; (TOPSOIL). | | | | | S-F | | SV@0.3m 154/40 |
| 365 | LOESS | | Silty fine SAND, light brown. Poorly graded; loose; moist (LOESS). | 0.5 | | | | L | | SV@0.6m 132/34 |
| | ALLUVIUM | | Medium to coarse SAND with trace silt, grey brown. Poorly graded; dense; (ALLUVIUM). | 1.0 | | | M | | | |
| 364 | | | @ 2.2 m becomes with some silt | 1.5 | | | | L-MD | | |
| | | | | 2.0 | | | | | | |
| | | | | 2.5 | | | | | | |
| 363 | | | Fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense; gravel, subrounded to subangular (ALLUVIUM) | | | | | VD | | |

Depth of Excavation: 2.8 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG25-HA08

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

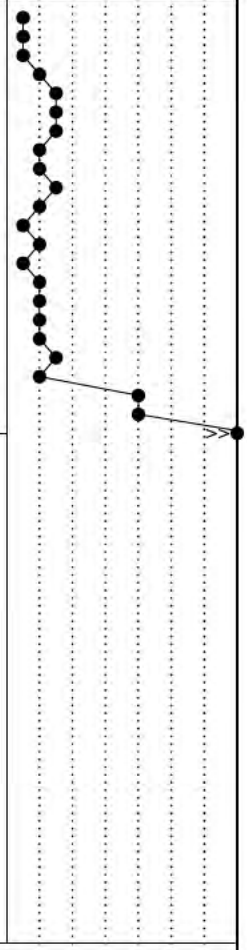
Coordinates E: 814813.5
(NZ MT YORK2000) N: 429429.3
Elevation (mRL): 365.0
Elevation Datum: NZMt Nic 2000

Maximum Depth: 2.3 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets and SILT with some sand reworked, brown. Low plasticity; (TOPSOIL). | | | | | S-F | | SV@0.3m 149/31 |
| | LOESS | | Silty fine SAND, light brown. Poorly graded; loose; moist (LOESS) | 0.5 | | | | | | SV@0.6m 134/32 |
| 364 | | | | 1.0 | | | M | L | | SV@0.9m 86/34 |
| | ALLUVIUM | | Fine to medium SAND with some silt, grey brown. Poorly graded; dense; (ALLUVIUM). | 1.5 | | | | | | |
| 363 | | | Fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense; gravel, subrounded to subangular (ALLUVIUM). | 2.0 | | | | L-D | | |
| | | | | | | | | VD | | |

Depth of Excavation: 2.3 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12



**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG25-HA09

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

Coordinates E: 814679.458
(NZ MT YORK2000) N: 429345.1
Elevation (mRL): 367.2
Elevation Datum: NZMt Nic 2000

Maximum Depth: 1.9 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 367 | TS | | SILT with some rootlets, light brown; Low plasticity (TOPSOIL). | | | | | F-St | | |
| | LOESS | | SILT with trace sand, light brown; Low plasticity (LOESS). | 0.5 | | | | St | | |
| | | | SILT with trace sand, grey; Low plasticity (LOESS). | 1.0 | | | M | St | | |
| 366 | ALLUVIUM | | Fine to medium SAND with trace gravel and trace silt, grey brown; Poorly graded (ALLUVIUM). | 1.5 | | | | D-VD | | |
| | | | Fine to coarse gravelly SAND with trace silt, gravel, grey brown; Well graded; dense to very dense; gravel, sub rounded to subangular (ALLUVIUM). | | | | | VD | | |
| | | | Depth of Excavation: 1.9 m<br>Termination Condition: Practical refusal | | | | | | | |

Dynamic Cone Penetrometer

Blows per 100mm

2 4 6 8 10 12

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**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA10**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

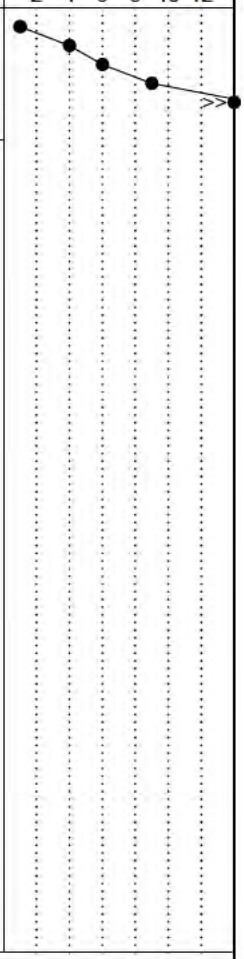
Coordinates E: 814664.6
(NZ MT YORK2000) N: 429275.5
Elevation (mRL): 367.3
Elevation Datum: NZMt Nic 2000

Maximum Depth: 0.7 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier / Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 367 | TS | | Sandy SILT with trace rootlets, brown. Low plasticity; (TOPSOIL)S | | | | M | S-St | | |
| | FILL | | Gravelly fine to coarse SAND with minor silt, light brown. Well graded; very dense; gravel, fine to medium (BUND FILL). | 0.5 | | | | VD | | |
| | | | Depth of Excavation: 0.7 m<br>Termination Condition: Practical refusal | | | | | | | |

Dynamic Cone Penetrometer

Blows per 100mm




**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA11**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

Coordinates E: 814745
(NZ MT YORK2000) N: 429342.6
Elevation (mRL): 367.4
Elevation Datum: NZMt Nic 2000

Maximum Depth: 4 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 367 | TOPSOIL | | SILT with some fine sand and trace rootlets AND reworked SILT with some sand , brown. Low plasticity; (TOPSOIL / FILL). | 0.5 | | | | S-St | | SV@0.3m 60/15<br>SV@0.6m 46/18<br>SV@0.9m 70/32 |
| 366 | ALLUVIUM | | Medium to coarse SAND, grey brown. Poorly graded; dense; (ALLUVIUM). | 1.0<br>1.5<br>2.0 | | | M | L-MD | | |
| 365 | | | | 2.5<br>3.0 | | | | | | |
| 364 | | | fine to coarse SAND with some gravel and trace silt, grey brown. Well graded; dense to very dense; Gravel, subrounded to subangular (ALLUVIUM). | 3.5<br>4.0 | | | | VD | | |

Depth of Excavation: 4 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA12**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

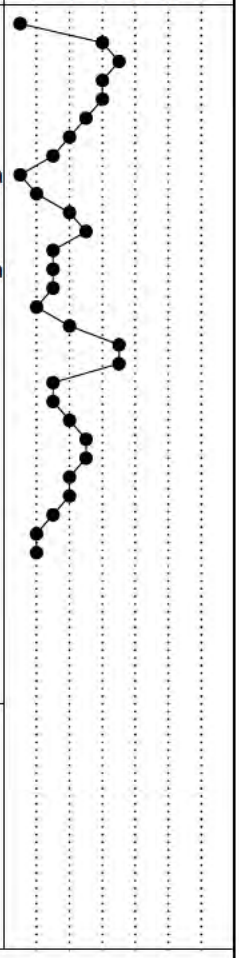
Coordinates E: 814679.5
(NZ MT YORK2000) N: 429345.1
Elevation (mRL): 367.2
Elevation Datum: NZMt Nic 2000

Maximum Depth: 3.7 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 367 | TOPSOIL | | Sandy SILT with trace rootlets, brown. Low plasticity; (TOPSOIL). | 0.0 | | | | S-F | | |
| | BUND FILL | | Gravelly fine to coarse SAND with minor silt, light brown. Well graded; very dense; gravel, fine to medium (BUND FILL). | 0.5 | | | | MD | | |
| 366 | LOESS | | Silty fine to coarse SAND with trace fine gravel , light brown. Poorly graded; loose; moist (LOESS). | 1.0 | | | | L-MD | | PSD @ 0.9 m |
| | ALLUVIUM | | Fine to coarse SAND with minor silt and trace gravel, light grey / brown. Well graded; loose; grave, fine to medium, subrounded (ALLUVIUM). | 1.5 | | | M | L-MD | | PSD @ 1.4 m |
| 365 | | | Fine to coarse SAND with trace silt, brown. Poorly graded; loose; (ALLUVIUM). | 2.5 | | | | L-MD | | |
| 364 | | | fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense; gravel, subrounded to subangular (ALLUVIUM). | 3.5 | | | | VD | | |

Depth of Excavation: 3.7 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12



**Photos / Sketches**

ENGEO TEST PIT LOG 30002 - SIMPLICITY LIVING_V0.GPJ NZ MASTER DATA TEMPLATE.GDT 5/2/26

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA13**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

Coordinates E: 814727.8
(NZ MT YORK2000) N: 429438.8
Elevation (mRL): 365.5
Elevation Datum: NZMt Nic 2000

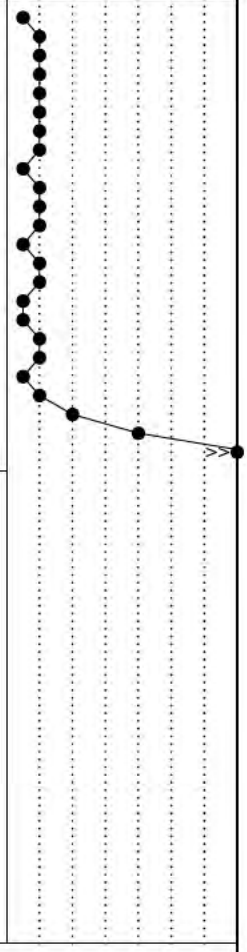
Maximum Depth: 2.5 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 365 | TS | | SILT with some fine sand and trace rootlets and SILT with some sand reworked, brown. Low plasticity; (TOPSOIL). | 0.5 | | | | S-F | | SV@0.3m 131/41 |
| | LOESS | | Silty fine SAND, light brown. Poorly graded; loose; moist (LOESS). | | | | | L | | SV@0.6m 75/34 |
| | ALLUVIUM | | Fine to coarse SAND with some silt, grey brown. Poorly graded; dense; (ALLUVIUM). | 1.0 | | | M | | | |
| 364 | | | | 1.5 | | | | L | | |
| | | | | 2.0 | | | | L-D | | |
| 363 | | | Fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense;gravel, subrounded to subangular (ALLUVIUM). | 2.5 | | | | VD | | |
| | | | Depth of Excavation: 2.5 m<br>Termination Condition: Practical refusal | | | | | | | |

Dynamic Cone Penetrometer

Blows per 100mm

2 4 6 8 10 12



**Photos / Sketches**

ENGEO TEST PIT LOG 30002 - SIMPLICITY LIVING_V0.GPJ NZ MASTER DATA TEMPLATE.GDT 5/2/26

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA14**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

Coordinates E: 814771.4
(NZ MT YORK2000) N: 429505.1
Elevation (mRL): 364.5
Elevation Datum: NZMt Nic 2000

Maximum Depth: 2.3 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 364 | LOESS | | SILT with some fine sand and trace rootlets and SILT with some sand reworked, brown. Low plasticity; (TOPSOIL). | 0.5 | | | | S-F | | SV@0.3m 87/28 |
| | | | Silty fine SAND, light brown. Poorly graded; loose; moist (LOESS). | | | | | L | | SV@0.6m 90/41 |
| | ALLUVIUM | | Fine to medium SAND with some silt, grey brown. Poorly graded; dense; (ALLUVIUM). | 1.0 | | | M | | | |
| 363 | | | | 1.5 | | | | L | | |
| | | | | 2.0 | | | | | | |
| | | | Fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense; gravel, subrounded to subangular (ALLUVIUM). | | | | | VD | | |
| | | | Depth of Excavation: 2.3 m<br>Termination Condition: Practical refusal | | | | | | | |

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA15**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

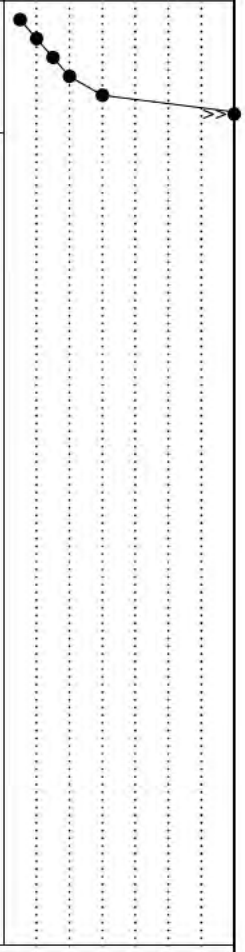
Coordinates E: 814660.3
(NZ MT YORK2000) N: 429228.5
Elevation (mRL): 367.8
Elevation Datum: NZMt Nic 2000

Maximum Depth: 0.7 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | BUND FILLTS | | Sandy SILT with trace rootlets, brown. Low plasticity; (TOPSOIL). | | | | M | S-St | | |
| | | | Gravelly fine to coarse SAND with minor silt, light brown. Well graded; very dense; gravel, fine to medium (BUND FILL). | 0.5 | | | | L-VD | | |
| | | | Depth of Excavation: 0.7 m<br>Termination Condition: Practical refusal | | | | | | | |

Dynamic Cone Penetrometer

Blows per 100mm




**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG25-HA16**

Method: Hand Auger
Contractor:
Bucket Size:
Vane Number: 2534

Coordinates E: 814700.3
(NZ MT YORK2000) N: 429424
Elevation (mRL): 367.1
Elevation Datum: NZMt Nic 2000

Maximum Depth: 4.3 m
Survey Method: Leica GPS
Start Date: 17/11/2025
Finish Date: 17/11/2025
Logged By: JJ
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 367 | TS | | SILT with some fine sand and trace rootlets and SILT with some sand reworked, brown. Low plasticity; (TOPSOIL). | 0.0 | | | | S-F | | |
| | LOESS | | Silty fine to medium SAND, light brown. Poorly graded; loose; moist (LOESS). | 0.5 | | | | L | | PSD @ 0.6 m |
| 366 | ALLUVIUM | | Fine to coarse SAND with trace silt, brown. Poorly graded; loose; moist (ALLUVIUM). | 1.0 | | | | | | |
| | | | | 1.5 | | | | | | |
| 365 | | | @ 2.2 m becomes fine to medium SAND with some silt. | 2.0 | | | M | | | PSD @ 2.4 m |
| | | | | 2.5 | | | | L | | |
| 364 | | | | 3.0 | | | | | | |
| | | | @ 3.4 m becomes fine to coarse SAND. | 3.5 | | | | | | |
| 363 | | | | 4.0 | | | | | | |
| | | | Fine to coarse SAND with some gravel and trace silt, grey brown.Well graded; dense to very dense; gravel, subrounded to subangular (ALLUVIUM). | | | | | VD | | |

Depth of Excavation: 4.3 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-SP02

Method: Excavator
Contractor: Strata Civil
Operator: Jai
Equipment: 5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814840.1
(NZ MT NIC2000) N: 429437.1
Elevation (mRL): 365
Elevation Datum: NZMt Nic 2000

Maximum Depth: 2.5 m
Survey Method: Leica GPS
Start Date: 20/02/2026
Finish Date: 20/02/2026
Logged By: BH
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity (TOPSOIL). | | | | | | | |
| | LOESS | | Fine to medium sandy SILT, trace rootlets; light greenish grey. Homogeneous,'firm to stiff', moist, micaceous (LOESS). | 0.5 | | | | F - S | | |
| 364 | ALLUVIUM | | Silty fine to medium SAND, trace rootlets; grey. Homogeneous, 'loose to medium dense', moist, micaceous (ALLUVIUM). | 1.0 | | | M | L - MD | | |
| 363 | | | | 1.5 | | | | | | |
| | | | Fine to coarse sandy, fine to coarse GRAVEL; grey. Homogeneous, 'medium dense'. Gravels: rounded, flat, schist (ALLUVIUM). | 2.0 | | | | MD | | |
| | | | | 2.5 | | | | | | |

Depth of Excavation: 2.5 m
Termination Condition: Target depth

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

SP = Soak Pit. SP02 refers to proposed Soak Hole 2 location, as provided by McKenzie & Co Ltd (appendix 1)
Constant Head Test performed in test pit. TS = topsoil.

ENGEO TEST PIT LOG 30002 - SIMPLICITY LIVING_V0.GPJ NZ MASTER DATA TEMPLATE.GDT 12/3/26

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-SP03

Method: Excavator
Contractor: Strata Civil
Operator: Jai
Equipment: 5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814842.2
(NZ MT NIC2000) N: 429323.1
Elevation (mRL): 365.8
Elevation Datum: NZMt Nic 2000

Maximum Depth: 3.1 m
Survey Method: Leica GPS
Start Date: 20/02/2026
Finish Date: 20/02/2026
Logged By: BH
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments | Dynamic Cone Penetrometer Blows per 100mm (2 4 6 8 10 12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity (TOPSOIL). | | | | | | | | |
| 365 | LOESS | | Fine to medium sandy SILT, trace rootlets; light greenish grey; homogeneous,'firm to stiff', moist, micaceous (LOESS). | 0.5 | | | | F - S | | | |
| | | | | 1.0 | | | | | | | |
| | ALLUVIUM | | Silty fine to medium SAND, trace rootlets; light greenish grey; homogeneous, 'loose to medium dense', moist, micaceous (ALLUVIUM). | 1.5 | | | M | L - MD | | | |
| 364 | | | | 2.0 | | | | | | | |
| | | | Fine to coarse GRAVEL with some fine to coarse sand, trace silt; brownish grey. Homogeneous, 'medium dense'. Gravels: rounded, flat, schist (ALLUVIUM). | 2.5 | | | | MD | | | |
| 363 | | | | 3.0 | | | | | | | |

Depth of Excavation: 3.1 m
Termination Condition: Target depth

**Photos / Sketches**

SP = Soak Pit. SP03 refers to proposed Soak Hole 3 location, as provided by McKenzie & Co Ltd (appendix 1)
Constant Head Test performed in test pit. TS = topsoil.

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-SP04

Method: Excavator
Contractor: Strata Civil
Operator: Jai
Equipment: 5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814751.6
(NZ MT NIC2000) N: 429467.3
Elevation (mRL): 364.8
Elevation Datum: NZMt Nic 2000

Maximum Depth: 3 m
Survey Method: Leica GPS
Start Date: 23/02/2026
Finish Date: 23/02/2026
Logged By: BH
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity (TOPSOIL). | | | | | | | |
| 364 | LOESS | | Fine to medium sandy SILT, trace rootlest; brown. Homogeneous, 'firm to stiff', moist, micaceous (LOESS). At 0.5m: beocmes light brown. | 0.5<br>1.0 | | | | F - S | | |
| 363 | ALLUVIUM | | Silty fine to medium SAND, trace rootlets; light greenish grey. Homogeneous, 'loose to medium dense', moist, micaceous (ALLUVIUM). | 1.5<br>2.0 | | | M | L - MD | | |
| 362 | | | Fine to coarse GRAVEL with some fine to coarse sand, trace silt and cobbles; brownish grey. Homogeneous, 'medium dense'. Gravels and cobbles: rounded, flat, schist (ALLUVIUM). | 2.5 | | | | MD | | |
| | | | | 3.0 | | | | | | |

Depth of Excavation: 3 m
Termination Condition: Target depth

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

SP = Soak Pit. SP04 refers to proposed Soak Hole 4 location, as provided by McKenzie & Co Ltd (appendix 1)
Constant Head Test performed in test pit. TS = topsoil.

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-SP05A

Method: Excavator
Contractor: Strata Civil
Operator: Jai
Equipment: 5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814699.1
(NZ MT NIC2000) N: 429345.8
Elevation (mRL): 367.7
Elevation Datum: NZMt Nic 2000

Maximum Depth: 3.5 m
Survey Method: Leica GPS
Start Date: 20/02/2026
Finish Date: 20/02/2026
Logged By: BH
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments | Dynamic Cone Penetrometer Blows per 100mm (2 4 6 8 10 12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity (TOPSOIL). | | | | | | | | |
| 367 | LOESS | | Silty fine to medium SAND with trace rootlets; light grey. Homogeneous, 'firm to stiff', micaceous (LOESS). | 0.5 | | | | F - S | | | |
| | ALLUVIUM | | Silty fine to medium SAND, trace rootlets; grey. Homogeneous, 'loose to medium dense', moist, micaceous (ALLUVIUM). | 1.0 | | | M | L - MD | | | |
| 366 | | | | 1.5 | | | | | | | |
| | | | | 2.0 | | | | | | | |
| 365 | | | | 2.5 | | | | | | | |
| | | | | 3.0 | | | | | | | |
| | | | | 3.5 | | | | | | | |

Depth of Excavation: 3.5 m
Termination Condition: Practical refusal

**Photos / Sketches**

SP = Soak Pit. SP05 refers to proposed Soak Hole 5 location, as provided by McKenzie & Co Ltd (appendix 1)
Gravels/alluvium not encountered, no soakage test performed, test abandoned. TS = topsoil.

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG26-SP05B**

Method: Excavator
Contractor: Strata Civil
Operator: Jai
Equipment: 5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814691.4
(NZ MT NIC2000) N: 429322.1
Elevation (mRL): 366.4
Elevation Datum: NZMt Nic 2000

Maximum Depth: 3.3 m
Survey Method: Leica GPS
Start Date: 20/02/2026
Finish Date: 20/02/2026
Logged By: BH
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments | Dynamic Cone Penetrometer Blows per 100mm (2 4 6 8 10 12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 366 | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity (TOPSOIL). | 0.0 | | | | | | | |
| | LOESS | | Fine to medium sandy SILT, trace rootlets; light greenish grey. Homogeneous, 'firm to stiff', moist, micaceous (LOESS). | 0.5 | | | | F - S | | | |
| 365 | ALLUVIUM | | Silty fine to medium SAND, trace rootlets; grey. Homogeneous, 'loose to medium dense', moist, micaceous (ALLUVIUM). | 1.0 | | | M | L - MD | | | |
| 364 | | | | 1.5 | | | | | | | |
| | | | | 2.0 | | | | | | | |
| | | | | 2.5 | | | | | | | |
| | | | Fine to coarse GRAVEL with some fine to coarse sand; brownish grey. Homogeneous, 'medium dense'. Gravels: rounded, flat, schist (ALLUVIUM). | 3.0 | | | | MD | | | |
| | | | Depth of Excavation: 3.3 m<br>Termination Condition: Practical refusal | | | | | | | | |

**Photos / Sketches**

SP = Soak Pit. SP05 refers to proposed Soak Hole 5 location, as provided by McKenzie & Co Ltd (appendix 1)
Limited exposure of gravels/alluvium at base of test pit, limited soakage, test abandoned. TS = topsoil.

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
**SL-ENG26-SP05C**

Method: Excavator
Contractor: Strata Civil
Operator: Jai
Equipment: 5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814684.5
(NZ MT NIC2000) N: 429321
Elevation (mRL): 366.3
Elevation Datum: NZMt Nic 2000

Maximum Depth: 4 m
Survey Method: Leica GPS
Start Date: 23/02/2026
Finish Date: 23/02/2026
Logged By: BH
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments | Dynamic Cone Penetrometer Blows per 100mm (2 4 6 8 10 12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 366 | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity (TOPSOIL). | 0.0 | | | | | | | |
| | LOESS | | Fine to medium sandy SILT, trace rootlets; brownish grey. Homogeneous, 'firm to stiff', moist, micaceous (LOESS). | 0.5 | | | | F - S | | | |
| 365 | | | 0.9m: becoming dark brown. | 1.0 | | | | | | | |
| | ALLUVIUM | | Silty fine to medium SAND, trace rootlets; grey. Homogeneous, 'loose to medium dense', moist, micaceous (ALLUVIUM). | 1.5 | | | | | | | |
| 364 | | | | 2.0 | | | M | | | | |
| | | | | 2.5 | | | | L - MD | | | |
| 363 | | | | 3.0 | | | | | | | |
| | | | | 3.5 | | | | | | | |
| | | | Fine to coarse GRAVEL with some fine to coarse sand, trace silt; brownish grey. Homogeneous, 'medium dense'. Gravels and cobbles: rounded, flat, schist (ALLUVIUM). | 4.0 | | | | MD | | | |
| | | | Depth of Excavation: 4 m<br>Termination Condition: Practical refusal | | | | | | | | |

**Photos / Sketches**

SP = Soak Pit. SP05 refers to proposed Soak Hole 5 location, as provided by McKenzie & Co Ltd (appendix 1)
Constant Head Test performed in test pit. TS = topsoil.

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-SP06

Method: Excavator
Contractor: Strata Civil
Operator: Jai
Equipment: 5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814687.7
(NZ MT NIC2000) N: 429251.4
Elevation (mRL): 365
Elevation Datum: NZMt Nic 2000

Maximum Depth: 3 m
Survey Method: Leica GPS
Start Date: 19/02/2026
Finish Date: 19/02/2026
Logged By: BH
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments | Dynamic Cone Penetrometer Blows per 100mm (2 4 6 8 10 12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity (TOPSOIL). | | | | | | | | |
| | LOESS | | Fine to medium sandy SILT, trace rootlets; light greenish grey. Homogeneous, 'firm to stiff', moist, micaceous (LOESS). | 0.5 | | | | F - S | | | |
| 364 | ALLUVIUM | | Silty fine to medium SAND, trace rootlets; light grey. Homogeneous, 'loose to medium dense', moist, micaceous (ALLUVIUM). | 1.0 – 1.5 | | | M | L - MD | | | |
| 363 | | | Fine to coarse sandy fine to coarse GRAVEL, trace silt; brownish grey. Homogeneous, 'medium dense'. Gravels: rounded, flat, schist (ALLUVIUM). | 2.0 – 2.5 | | | | MD | | | |
| 362 | | | | 3.0 | | | | | | | |

Depth of Excavation: 3 m
Termination Condition: Practical refusal

**Photos / Sketches**

SP = Soak Pit. SP06 refers to proposed Soak Hole 6 location, as provided by McKenzie & Co Ltd (appendix 1)
Constant Head Test performed in test pit. TS = topsoil.

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-SP07

Method: Excavator
Contractor: Strata Civil
Operator: Jai
Equipment: 5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814684.9
(NZ MT NIC2000) N: 429204
Elevation (mRL): 365
Elevation Datum: NZMt Nic 2000

Maximum Depth: 2.4 m
Survey Method: Leica GPS
Start Date: 19/02/2026
Finish Date: 20/02/2026
Logged By: BH
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity (TOPSOIL). | | | | | | | |
| | LOESS | | Fine to medium sandy SILT, trace rootlets light greyish brown. Homogeneous, 'firm to stiff', moist, micaceous (LOESS). | 0.5 | | | | F - S | | |
| 364 | ALLUVIUM | | Silty fine to medium SAND, trace rootlets; light grey. Homogeneous, 'loose to medium dense', moist, micaceous (ALLUVIUM). | 1.0 | | | M | L - MD | | |
| 363 | | | Fine to coarse sandy fine to coarse GRAVEL, trace silt; brownish grey. Homogeneous, 'medium dense'. Gravels: rounded, flat, schist (ALLUVIUM). | 1.5 | | | | | | |
| | | | | 2.0 | | | | MD | | |

Depth of Excavation: 2.4 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

SP = Soak Pit. SP07 refers to proposed Soak Hole 7 location, as provided by McKenzie & Co Ltd (appendix 1)
Two falling tests performed, silt in-fill affected test. TS = topsoil.

ENGEO TEST PIT LOG 30002 - SIMPLICITY LIVING_V0.GPJ NZ MASTER DATA TEMPLATE.GDT 12/3/26

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-SP08

Method: Excavator
Contractor: Strata Civil
Operator: Jai
Equipment: 5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814685.7
(NZ MT NIC2000) N: 429176.4
Elevation (mRL): 365.7
Elevation Datum: NZMt Nic 2000

Maximum Depth: 2.6 m
Survey Method: Leica GPS
Start Date: 19/02/2026
Finish Date: 19/02/2026
Logged By: BH
Reviewed By: GC

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments | Dynamic Cone Penetrometer Blows per 100mm (2 4 6 8 10 12) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with some fine sand and trace rootlets, brown. Low plasticity (TOPSOIL). | 0.0 | | | | | | | |
| 365 | LOESS | | Fine to medium sandy SILT, trace rootlets; grey. Homogeneous, 'firm to stiff', moist, micaceous (LOESS). 0.50m: becoming grey. | 0.5 | | | | F - S | | | |
| | ALLUVIUM | | Silty fine to medium SAND, trace rootlets; light grey. Homogeneous, 'loose to medium dense', moist, micaceous (ALLUVIUM). | 1.0 | | | M | L - MD | | | |
| 364 | | | Fine to coarse sandy fine to coarse GRAVEL, trace silt; brown. Homogeneous, 'medium dense'. Gravels: rounded, flat, schist (ALLUVIUM). | 1.5 | | | | | | | |
| | | | Fine to coarse SAND with minor fine to coarse gravel trace silt; brown. Homogeneous, 'medium dense'. Gravels: rounded, flat, schist (ALLUVIUM). | 2.0 | | | | MD | | | |
| | | | Depth of Excavation: 2.6 m<br>Termination Condition: Practical refusal | 2.5 | | | | | | | |

**Photos / Sketches**

SP = Soak Pit. SP08 refers to proposed Soak Hole 8 location, as provided by McKenzie & Co Ltd (appendix 1)
Constant Head Test performed in test pit. TS = topsoil.

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-TP01

Method: Excavator
Contractor: Strata Civil
Operator:
Equipment: 13.5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814963.589
(NZTM) N: 429566.582
Elevation (mRL): 364.7
Elevation Datum: NZMt Nic 2001

Maximum Depth: 3.3 m
Survey Method: Leica GPS
Start Date: 30/03/2026
Finish Date: 30/03/2026
Logged By: MV/BH
Reviewed By: BH

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | SILT with trace rootlets; light brown. Low plasticity (TOPSOIL). | | | | | | | |
| 364 | LOESS | | Silty fine SAND; light brown. Homogeneous, loose; moist (LOESS). | 0.5 | | | | L | | SV@0.6m 98/38 |
| | | | | 1.0 | | | | | | |
| 363 | ALLUVIUM | | Fine SAND with some silt, trace rootlets; light brown. Homogenous, loose to medium dense; moist (ALLUVIUM). | 1.5 | | | M | | | |
| | | | | 2.0 | | | | L - MD | | |
| 362 | | | | 2.5 | | | | | | |
| | | | Sandy fine to coarse GRAVEL; brown. Homogeneous, tightly packed. Sand fine to medium. Gravels: subrounded to sub angular. (ALLUVIUM) | 3.0 | | | | | | |

Depth of Excavation: 3.3 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

TS = topsoil.

ENGEO TEST PIT LOG 30002 - SIMPLICITY LIVING_V0.GPJ NZ MASTER DATA TEMPLATE.GDT 21/4/26

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-TP02

Method: Excavator
Contractor: Strata Civil
Operator:
Equipment: 13.5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814905.654
(NZTM) N: 429524.097
Elevation (mRL): 364.3
Elevation Datum: NZMt Nic 2002

Maximum Depth: 3 m
Survey Method: Leica GPS
Start Date: 30/03/2026
Finish Date: 30/03/2026
Logged By: MV/BH
Reviewed By: BH

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 364 | TS | | Sandy SILT with trace rootlets, brown. Low plasticity, moist (TOPSOIL). | 0.0 | | | M | | | |
| | LOESS | | SILT with trace sand; brown grey. Homgeneous, very stiff, low plasticity, moist (LOESS). | 0.5 | | | | V.St | | SV@0.6m 128/18 |
| 363 | | | Fine SAND with some silt; grey. Homogeneous, loose, moist (ALLUVIUM). | 1.0 / 1.5 | | | | D | | |
| 362 | ALLUVIUM | | Gravelly fine to coarse SAND with trace silt; brown. Homogeneous, tightly packed, moist. Gravel; fine to coarse, sub-rounded to sub-angular (ALLUVIUM) | 2.0 / 2.5 | | | | TP | | |
| | | | | 3.0 | | | | | | |

Depth of Excavation: 3 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer

Blows per 100mm

2 4 6 8 10 12

**Photos / Sketches**

TS = topsoil.

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-TP03

Method: Excavator
Contractor: Strata Civil
Operator:
Equipment: 13.5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814879.905
(NZTM) N: 429583.062
Elevation (mRL): 363.5
Elevation Datum: NZMt Nic 2003

Maximum Depth: 3 m
Survey Method: Leica GPS
Start Date: 30/03/2026
Finish Date: 30/03/2026
Logged By: MV/BH
Reviewed By: BH

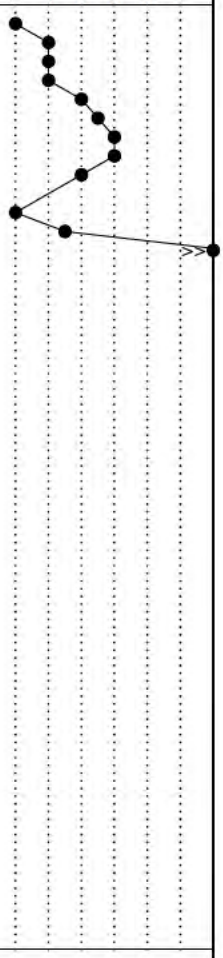
| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | Sandy SILT with trace rootlets, brown. Low plasticity, moist (TOPSOIL). | | | | | | | |
| 363 | LOESS | | SILT with trace sand; brown grey. Homgeneous, very stiff, low plasticity, moist (LOESS). | 0.5 – 1.0 | | | | V.St | | SV@0.6m 146/27 |
| 362 | ALLUVIUM | | Gravelly fine to coarse SAND with trace silt; grey brown. Homogeneous, tightly packed, moist. Gravel: fine to coarse, sub-rounded to sub-angular (ALLUVIUM) | 1.5 – 2.0 – 2.5 – 3.0 | | | M | TP | | |
| 361 | | | | | | | | | | |

Depth of Excavation: 3 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer

Blows per 100mm

2 4 6 8 10 12



**Photos / Sketches**

TS = topsoil.

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-TP04

Method: Excavator
Contractor: Strata Civil
Operator:
Equipment: 13.5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814832.527
(NZTM) N: 429549.588
Elevation (mRL): 363.7
Elevation Datum: NZMt Nic 2004

Maximum Depth: 3 m
Survey Method: Leica GPS
Start Date: 30/03/2026
Finish Date: 30/03/2026
Logged By: MV/BH
Reviewed By: BH

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | Sandy SILT with trace rootlets, brown. Low plasticity, moist (TOPSOIL). | | | | | | | |
| 363 | LOESS | | SILT with some sand; brown grey. Homgeneous, stiff, low plasticity, moist (LOESS). | 0.5 – 1.0 | | | | St | | SV@0.6m 77/18 |
| 362 | ALLUVIUM | | Gravelly fine to coarse SAND with trace silt; grey brown. Homogeneous, tightly packed, moist. Gravel: fine to coarse, sub-rounded to sub-angular (ALLUVIUM) | 1.5 – 2.0 – 2.5 – 3.0 | | | M | TP | | |
| 361 | | | | | | | | | | |

Depth of Excavation: 3 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

TS = topsoil.

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-TP05

Method: Excavator
Contractor: Strata Civil
Operator:
Equipment: 13.5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814809.096
(NZTM) N: 429614.733
Elevation (mRL): 363.3
Elevation Datum: NZMt Nic 2005

Maximum Depth: 3 m
Survey Method: Leica GPS
Start Date: 30/03/2026
Finish Date: 30/03/2026
Logged By: MV/BH
Reviewed By: BH

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier–Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable)) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | Sandy SILT with trace rootlets, brown. Low plasticity, moist (TOPSOIL). | | | | | | | |
| 363 | LOESS | | SILT with some sand; brown grey. Homgeneous, stiff, low plasticity, moist (LOESS). | 0.5 | | | | St | | SV@0.7m 96/18 |
| 362 | | | | 1.0 | | | | | | |
| | ALLUVIUM | | Gravelly fine to coarse SAND with trace silt; grey brown. Homogeneous, tightly packed, moist. Gravel: fine to coarse, sub-rounded to sub-angular (ALLUVIUM) | 1.5 | | | M | TP | | |
| 361 | | | | 2.0 | | | | | | |
| | | | | 2.5 | | | | | | |
| | | | | 3.0 | | | | | | |

Depth of Excavation: 3 m
Termination Condition: Practical refusal

Dynamic Cone Penetrometer
Blows per 100mm
2 4 6 8 10 12

**Photos / Sketches**

TS = topsoil.

ENGEO TEST PIT LOG 30002 - SIMPLICITY LIVING_V0.GPJ NZ MASTER DATA TEMPLATE.GDT 21/4/26

ENGEO

Test Pit Log

**Client: Simplicity Living Limited**
**Project: Simplicity Living**
**Location: 12 Lower Shotover Road**
**Project Number: 30002.000.001**

**Hole I.D:**
# SL-ENG26-TP06

Method: Excavator
Contractor: Strata Civil
Operator:
Equipment: 13.5T
Bucket Size: 700 mm
Vane Number:

Coordinates E: 814763.778
(NZTM) N: 429598.768
Elevation (mRL): 363.5
Elevation Datum: NZMt Nic 2006

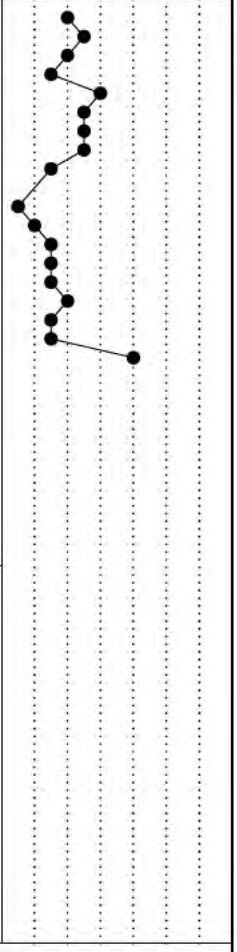
Maximum Depth: 3 m
Survey Method: Leica GPS
Start Date: 30/03/2026
Finish Date: 30/03/2026
Logged By: MV/BH
Reviewed By: BH

| Elevation (mRL) | Geological Unit | Excavatability (relative scale) Easier – Harder | DESCRIPTION (SOIL: Classification, colour, consistency / density, moisture, plasticity, additional features (grain size, roundness, composition etc. as applicable) | Depth (m BGL) | Graphic Symbol | Water Level | Moisture Cond. | Consistency/ Density | Sample | Testing / Additional Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | TS | | Sandy SILT with trace rootlets, brown. Low plasticity, moist (TOPSOIL). | | | | | | | |
| 363 | LOESS | | Silty fine SAND; brown. Homogeneous, loose, moist (LOESS) | 0.5 – 1.0 | | | | L | | SV@0.8m 53/18 |
| 362 | ALLUVIUM | | Fine SAND with minor silt; grey brown. Homogeneous, loose to dense, moist (ALLUVIUM) | 1.5 – 2.0 | | | M | L - D | | |
| 361 | ALLUVIUM | | Gravelly fine to coarse SAND; grey brown. Homogeneous, tightly packed, moist. Gravel: fine to coarse, sub-rounded to sub-angular (ALLUVIUM) | 2.5 – 3.0 | | | | TP | | |
| | | | Depth of Excavation: 3 m<br>Termination Condition: Practical refusal | | | | | | | |

Dynamic Cone Penetrometer

Blows per 100mm

2 4 6 8 10 12



**Photos / Sketches**

TS = topsoil.

# Appendix 4:

Laboratory Data

**Wellington Laboratory**
47C Kenepuru Drive,
Porirua
[redacted]

# TEST REPORT

**Lab Job No:** 8398-121

**Your ref.**: 30002

**Date of Issue:** 4/02/2026

**Date of Re-Issue:** -

## Test Report No. WLG8398-121-R001

**PROJECT:** **Simplicity Living - Scomp, CBR**

CLIENT: ENGEO
24 Rees St, Queenstown 9300

ATTENTION: Grant Caldwell

TEST METHODS: Determination of the Dry density / water content relationship – New Zealand Standard Compaction
NZS 4402: 1986 Test 4.1.1
Determination of the California Bearing Ratio (CBR) (remoulded samples) (Not accredited)
NZS 4402: 1986 Test 6.1.1 (Not accredited)

SAMPLING METHOD Unknown

TEST RESULTS: As per attached sheets

M. Morgan
Laboratory Technician

G. Bromfield
Approved Signatory

*All results obtained in accordance with the test methods listed above.*

*Any material descriptions included in this report are excluded from IANZ endorsement.*

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

*Test results relate only to the sample tested.*

Geocivil Laboratory
Northland - Wellington - Christchurch - Otago
P: 09 438 4417
E: info@geocivil.co.nz

# Determination of the California Bearing Ratio

NZS 4402:1986 Test 6.1.1

**Lab Job No:** 8398-121
**Client:** ENGEO
**Project/Site:** Simplicity Living

**Date Received:** 15/12/2025
**Date Sampled:** 2/12/2025
**Sampler:** Client

**Sampling Method:** Sampled by client – Sampling not accredited

**Sample Numbers:** S001
**Tested By:** H.DG
**Date:** 20/01/2026
**Checked By:** M.M
**Date:** 22/01/2026

**Report No:** WLG8398-121-R001
**REF:** #30002

| Sample No | Sample Location / Description | Treatment | Bulk Density | Dry Density ($t/m^3$) | Water Content | | CBR (%) | Penetration (mm) | Swell (%) | Operator | Date tested | % Passing 19mm Sieve |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | As Compacted (%) | After Curing(%) | | | | | | |
| WLG8398-121-S001 | TP01 -silty SAND grey moist | • -1.0% Water Removed by Mass | 2.02 | 1.68 | 19.9 | 24.7 | **2** | 2.5 & 5.0 | 4.2 | H.DG | 20/01/2026 | 100 |

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E: info@geocivil.co.nz

| | | |
|---|---|---|
| Note: | 1 | A surcharge mass of 4kg was used for all samples. |
| | 2 | All results obtained in accordance with the compacted test method. |
| | 3 | All samples compacted in accordance with NZ Standard Compaction NZS 4402:1986 Test 4.1.1 |
| | 4 | All samples tested at 97% of known Optimum water content. |
| | 5 | Plunger penetration rate was 1 mm/min for all samples. |
| | 6 | Samples were soaked for 4 days prior to testing. |
| | 7 | Tests performed on material passing 19.0mm test sieve. |

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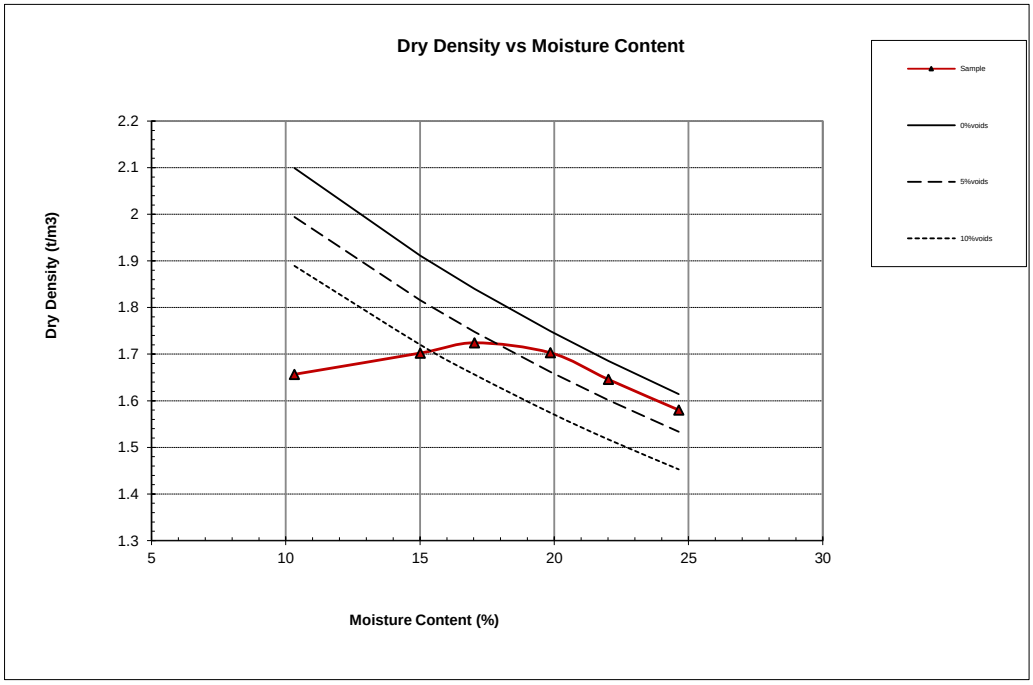
# DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP
## NEW ZEALAND STANDARD COMPACTION

NZS 4402:1986 Test 4.1.1

| | | | |
|---|---|---|---|
| **Lab Job No:** | 8398-121 | **Sample No.:** | WLG8398-121-S001 |
| **Client:** | ENGEO | **Tested By:** | H.DG |
| **Project/Site:** | Simplicity Living | **Date:** | 20/01/2026 |
| **Sample Location:** | TP01 | **Checked By:** | M.M |
| | | **Date:** | 22/01/2026 |
| **Date Received:** | 15/12/2025 | | |
| **Date Sampled:** | 2/12/2025 | **Report No:** | WLG8398-121-R001 |
| **Sampler:** | Client | **REF:** | #30002 |
| **Sampling Method:** | Sampled by client – Sampling not accredited | | |
| **Sample Description:** | silty SAND, grey moist | | |

**Compaction used:** New Zealand Standard Compaction Test performed on:
Whole sample

**History:** As received Percent retained on specified sieve: 0 %




| Test Results | | | |
|---|---|---|---|
| Water Content (%) | Dry Density (t/m$^3$) | Shear Vane (kPa)* | |
| | | Peak | Residual |
| 10.3 | 1.657 | - | - |
| 15.0 | 1.702 | - | - |
| 17.0 | 1.724 | - | - |
| 19.9 | 1.703 | - | - |
| 22.0 | 1.646 | - | - |
| 24.6 | 1.580 | - | - |

| | | |
|---|---|---|
| **Solid Density (t/m$^3$)** | **2.68** | **Assumed** |
| **Optimum Water Content (%)** | **17** | |
| **Max Dry Density (t/m$^3$)** | **1.72** | |
| **Natural Water Content (%)** | **20** | |

***Sample unsuitable for shear vane readings due to sand content***

**Wellington Laboratory**
47C Kenepuru Drive,
Porirua
[redacted]

# TEST REPORT

**Lab Job No:** 8398-121

**Your ref.**: 30002

**Date of Issue:** ########

**Date of Re-Issue:** -

## Test Report No. WLG8398-121-R002

**PROJECT:** **Simplicity Living - SComp, CBR**

CLIENT: ENGEO
24 Rees St, Queenstown 9300

ATTENTION: Grant Caldwell

TEST METHODS: Determination of the Dry density / water content relationship – New Zealand Standard Compaction
NZS 4402: 1986 Test 4.1.1
Determination of the California Bearing Ratio (CBR) (remoulded samples) (Not accredited)
NZS 4402: 1986 Test 6.1.1 (Not accredited)

SAMPLING METHOD Unknown

TEST RESULTS: As per attached sheets

G. Bromfield
Laboratory Manager

G. Bromfield
Approved Signatory

*All results obtained in accordance with the test methods listed above.*

*Any material descriptions included in this report are excluded from IANZ endorsement.*

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

*Test results relate only to the sample tested.*

Geocivil Laboratory
Northland - Wellington - Christchurch - Otago
P: 09 438 4417
E: info@geocivil.co.nz

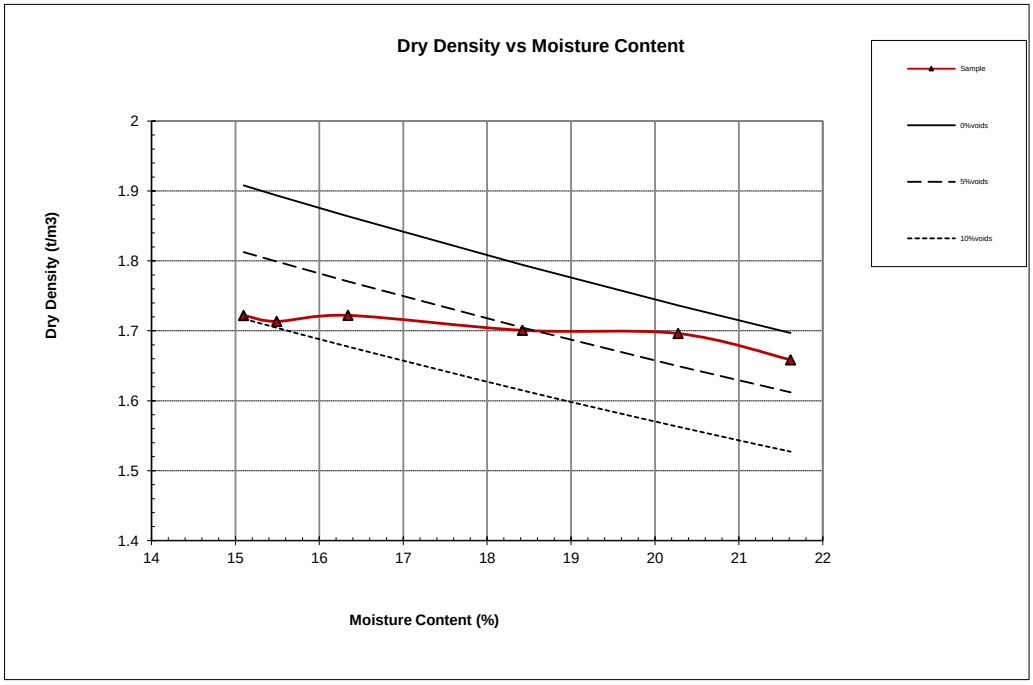
# DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP
## NEW ZEALAND STANDARD COMPACTION

NZS 4402:1986 Test 4.1.1

| | | | |
|---|---|---|---|
| **Lab Job No:** | 8398-121 | **Sample No.:** | WLG8398-121-S002 |
| **Client:** | ENGEO | **Tested By:** | H.DG |
| **Project/Site:** | Simplicity Living | **Date:** | 21/01/2026 |
| **Sample Location:** | TP02 | **Checked By:** | G.B |
| | | **Date:** | 9/02/2026 |
| **Date Received:** | 15/12/2025 | | |
| **Date Sampled:** | 2/12/2025 | **Report No:** | WLG8398-121-R002 |
| **Sampler:** | Client | **REF:** | #30002 |
| **Sampling Method:** | Sampled by client – Sampling not accredited | | |
| **Sample Description:** | sandy Gravels, grey moist | | |

**Compaction used:** New Zealand Standard Compaction Test performed on:
Fraction Passing 19mm test sieve

**History:** As received Percent retained on specified sieve: 0 %




| Test Results | | | |
|---|---|---|---|
| Water Content (%) | Dry Density (t/m$^3$) | Shear Vane (kPa)* | |
| | | Peak | Residual |
| 15.1 | 1.722 | - | - |
| 15.5 | 1.714 | - | - |
| 16.3 | 1.722 | - | - |
| 18.4 | 1.701 | - | - |
| 20.3 | 1.696 | - | - |
| 21.6 | 1.659 | - | - |

| | | |
|---|---|---|
| **Solid Density (t/m$^3$)** | **2.68** | **Assumed** |
| **Optimum Water Content (%)** | **16** | |
| **Max Dry Density (t/m$^3$)** | **1.72** | |
| **Natural Water Content (%)** | **20** | |

***Sample unsuitable for shear vane readings due to sand content***

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

# Determination of the California Bearing Ratio

NZS 4407:2015 Test 3.15

**Lab Job No:** 8398-121
**Client:** ENGEO
**Project/Site:** Simplicity Living

**Date Received:** 15/12/2025
**Date Sampled:** 2/12/2025
**Sampler:** Client

**Sampling Method:** Sampled by client – Sampling not accredited

**Sample Numbers:** S002
**Tested By:** G.B
**Date:** 5/02/2026
**Checked By:** G.B
**Date:** 9/02/2026

**Report No:** WLG8398-121-R002
**REF:** #30002

| Sample No | Sample Location / Description | Treatment | Bulk Density | Dry Density (t/m³) | Water Content | | CBR (%) | Penetration (mm) | Swell (%) | Operator | Date tested | % Passing 19mm Sieve |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | As Compacted (%) | After Curing(%) | | | | | | |
| WLG8398-121-S002 | TP02-sandy Gravels, grey moist | • -3.0% Water Removed by Mass | 2.02 | 1.76 | 15.6 | 23.8 | 5 | 2.5 & 5.0 | -11.0 | G.B | 5/02/2026 | 100 |

**Wellington Laboratory**
47C Kenepuru Drive,
Porirua
[redacted]

# TEST REPORT

**Lab Job No:** 8398-121

**Your ref.**: 30002

**Date of Issue:** ########

**Date of Re-Issue:** -

## Test Report No. WLG8398-121-R003

**PROJECT:** **Simplicity Living - PSDs**

CLIENT: ENGEO
24 Rees St, Queenstown 9300

ATTENTION: Grant Caldwell

TEST METHODS: Determination of the particle size distribution-wet sieving method
NZS 4402:1986 Test 2.8.1

SAMPLING METHOD Sampled by client – Sampling not accredited

TEST RESULTS: As per attached sheets

M. Morgan
Laboratory Technician

G. Bromfield
Approved Signatory

*All results obtained in accordance with the test methods listed above.*

*Any material descriptions included in this report are excluded from IANZ endorsement.*

*Test results relate only to the sample tested.*

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

Geocivil Laboratory
Northland - Wellington - Christchurch - Otago
P: 09 438 4417
E: info@geocivil.co.nz

## DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION - GRAPH
### Determination of fines content of soil
NZS 4402:1986 Test 2.8.1

**Lab Job No:** 8398-121
**Client:** ENGEO
**Project/Site:** Simplicity Living
**Sample Location:** HA12 0.9m

**Date Received:** 15/12/2025
**Date Sampled:** 2/12/2025
**Sampler:** Client
**Sampling Method:** Sampled by client – Sampling not accredited
**Sample Description** Silty SANDS

**Test Details:** Dry sieving method
**History:** Oven Dried

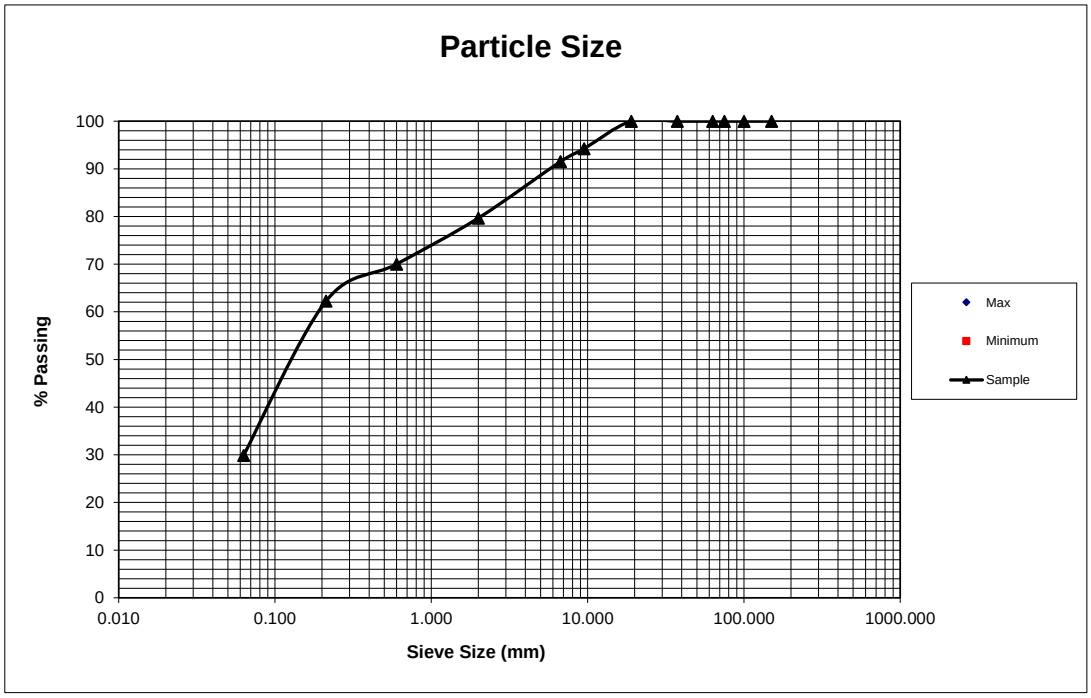
**Sample No.:** WLG8398-121-S003
**Tested By:** HDG
**Date:** 15/01/2026
**Checked By:** M.M
**Date:** 22/01/2026

**Report No:** WLG8398-121-R003
**REF:** #30002

| | % Passing | | |
|---|---|---|---|
| **Sieve Size** | **Max** | **Min** | **Sample** |
| 150 | - | - | 100 |
| 100 | - | - | 100 |
| 75 | - | - | 100 |
| 63 | - | - | 100 |
| 37.5 | - | - | 100 |
| 19.0 | - | - | 100 |
| 9.5 | - | - | 94 |
| 6.7 | - | - | 92 |
| 2 | - | - | 80 |
| 0.6 | - | - | 70 |
| 0.212 | - | - | 62 |
| 0.063 | - | - | 30 |

| Fraction | % Within Fraction |
|---|---|
| Cobbles | 0 |
| Coarse Gravel | 0 |
| Medium Gravel | 8 |
| Fine Gravel | 12 |
| Coarse Sand | 10 |
| Medium Sand | 8 |
| Fine Sand | 32 |
| Silt/Clay | 30 |

Grading fractions in accordance with NZGS soil classification system




*The percentage passing the finest sieve was obtained by difference*

*Grading envelope taken from: -*

Geocivil Laboratory
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E: info@geocivil.co.nz

## DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION - GRAPH

### Determination of fines content of soil

NZS 4402:1986 Test 2.8.1

**Lab Job No:** 8398-121
**Client:** ENGEO
**Project/Site:** Simplicity Living
**Sample Location:** HA12 1.4m

**Date Received:** 15/12/2025
**Date Sampled:** 2/12/2025
**Sampler:** Client
**Sampling Method:** Sampled by client – Sampling not accredited
**Sample Description** Silty SANDS

**Test Details:** Dry sieving method
**History:** Oven Dried

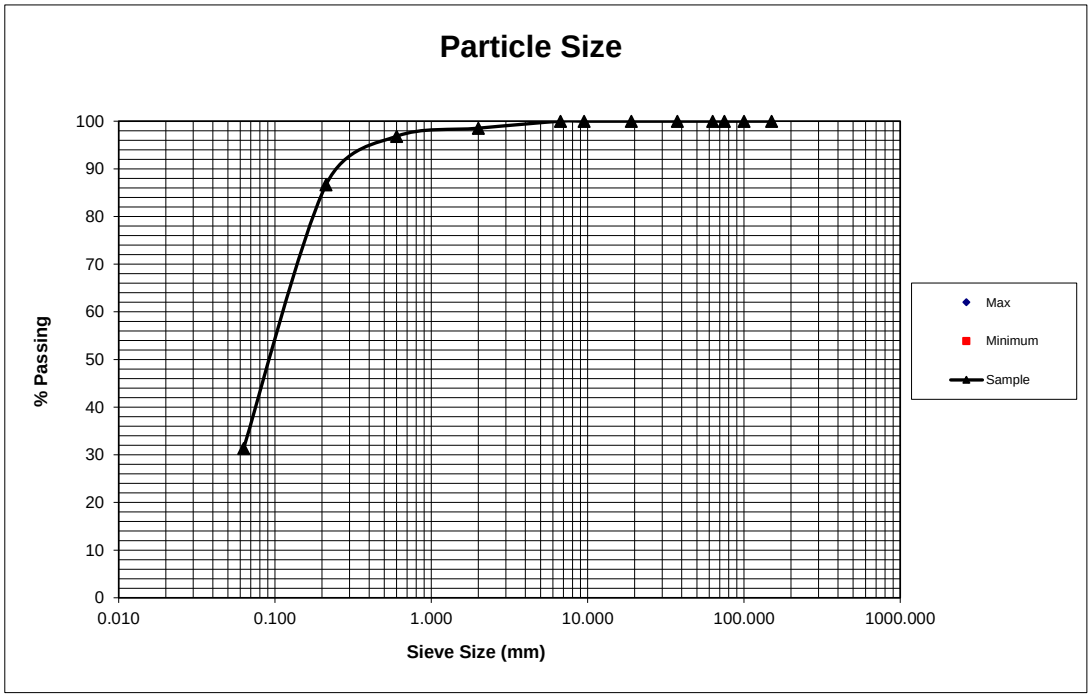
**Sample No.:** WLG8398-121-S004
**Tested By:** H.DG
**Date:** 20/01/2026
**Checked By:** M.M
**Date:** 22/01/2026

**Report No:** WLG8398-121-R003
**REF:** #30002

| | % Passing | | |
|---|---|---|---|
| **Sieve Size** | **Max** | **Min** | **Sample** |
| 150 | - | - | 100 |
| 100 | - | - | 100 |
| 75 | - | - | 100 |
| 63 | - | - | 100 |
| 37.5 | - | - | 100 |
| 19.0 | - | - | 100 |
| 9.5 | - | - | 100 |
| 6.7 | - | - | 100 |
| 2 | - | - | 99 |
| 0.6 | - | - | 97 |
| 0.212 | - | - | 87 |
| 0.063 | - | - | 31 |

| Fraction | % Within Fraction |
|---|---|
| Cobbles | 0 |
| Coarse Gravel | 0 |
| Medium Gravel | 0 |
| Fine Gravel | 1 |
| Coarse Sand | 2 |
| Medium Sand | 10 |
| Fine Sand | 55 |
| Silt/Clay | 31 |

Grading fractions in accordance with NZGS soil classification system




*The percentage passing the finest sieve was obtained by difference*

*Grading envelope taken from: -*

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E: info@geocivil.co.nz

## DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION - GRAPH

### Determination of fines content of soil

NZS 4402:1986 Test 2.8.1

**Lab Job No:** 8398-121
**Client:** ENGEO
**Project/Site:** Simplicity Living
**Sample Location:** HA16 0.6m

**Date Received:** 15/12/2025
**Date Sampled:** 2/12/2025
**Sampler:** Client
**Sampling Method:** Sampled by client – Sampling not accredited
**Sample Description** Silty SANDS

**Test Details:** Dry sieving method
**History:** Oven Dried

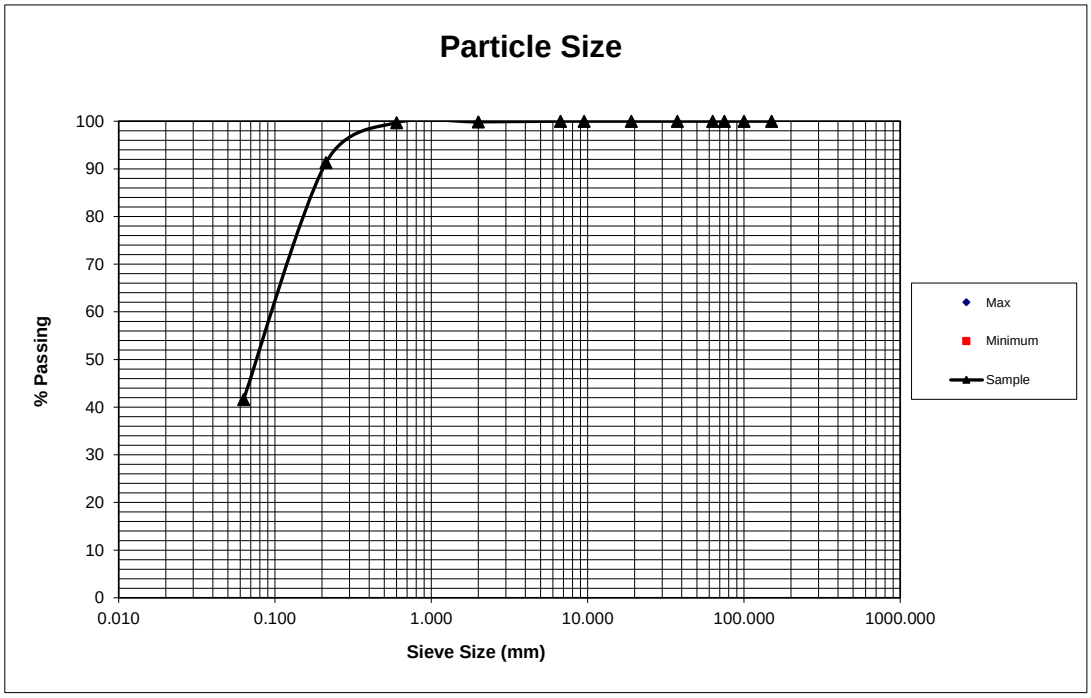
**Sample No.:** WLG8398-121-S005
**Tested By:** H.DG
**Date:** 20/01/2026
**Checked By:** M.M
**Date:** 22/01/2026

**Report No:** WLG8398-121-R003
**REF:** #30002

| | % Passing | | |
|---|---|---|---|
| **Sieve Size** | **Max** | **Min** | **Sample** |
| 150 | - | - | 100 |
| 100 | - | - | 100 |
| 75 | - | - | 100 |
| 63 | - | - | 100 |
| 37.5 | - | - | 100 |
| 19.0 | - | - | 100 |
| 9.5 | - | - | 100 |
| 6.7 | - | - | 100 |
| 2 | - | - | 100 |
| 0.6 | - | - | 100 |
| 0.212 | - | - | 91 |
| 0.063 | - | - | 42 |

| Fraction | % Within Fraction |
|---|---|
| Cobbles | 0 |
| Coarse Gravel | 0 |
| Medium Gravel | 0 |
| Fine Gravel | 0 |
| Coarse Sand | 0 |
| Medium Sand | 8 |
| Fine Sand | 50 |
| Silt/Clay | 42 |

Grading fractions in accordance with NZGS soil classification system




*The percentage passing the finest sieve was obtained by difference*

*Grading envelope taken from: -*

Geocivil Laboratory
Northland - Wellington - Christchurch - Otago
P: 09 438 4417
E: info@geocivil.co.nz

## DETERMINATION OF THE PARTICLE SIZE DISTRIBUTION - GRAPH

### Determination of fines content of soil

NZS 4402:1986 Test 2.8.1

**Lab Job No:** 8398-121
**Client:** ENGEO
**Project/Site:** Simplicity Living
**Sample Location:** HA16 2.4m

**Date Received:** 15/12/2025
**Date Sampled:** 2/12/2025
**Sampler:** Client
**Sampling Method:** Sampled by client – Sampling not accredited
**Sample Description** Silty SANDS

**Test Details:** Dry sieving method
**History:** Oven Dried

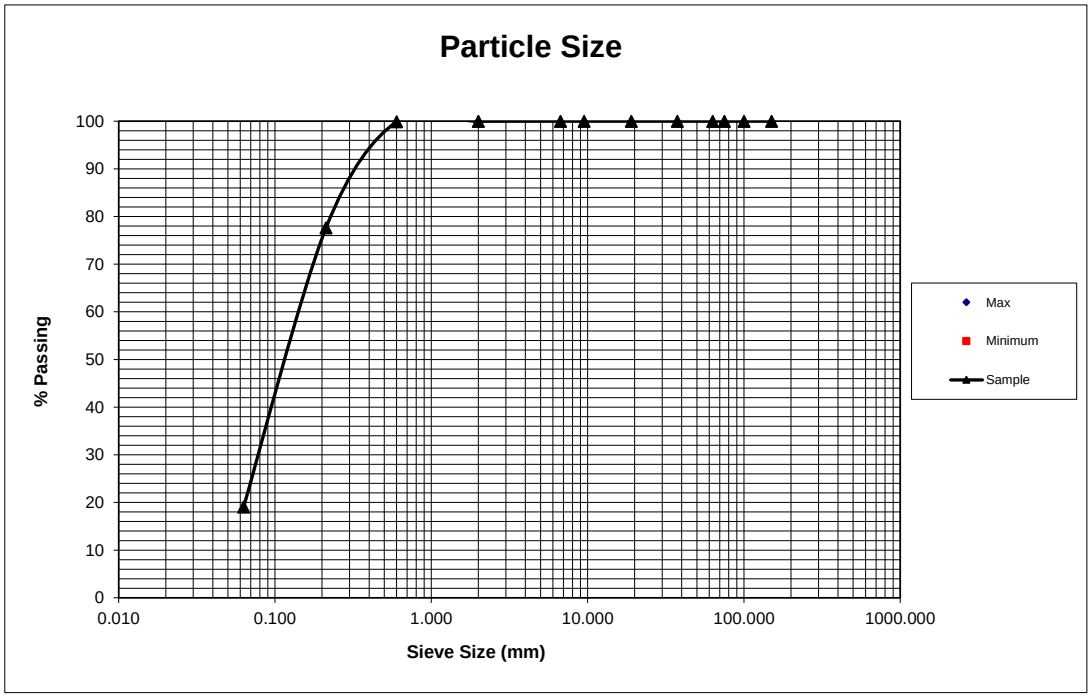
**Sample No.:** WLG8398-121-S006
**Tested By:** H.DG
**Date:** 20/01/2026
**Checked By:** M.M
**Date:** 22/01/2026

**Report No:** WLG8398-121-R003
**REF:** #30002

| | % Passing | | |
|---|---|---|---|
| **Sieve Size** | **Max** | **Min** | **Sample** |
| 150 | - | - | 100 |
| 100 | - | - | 100 |
| 75 | - | - | 100 |
| 63 | - | - | 100 |
| 37.5 | - | - | 100 |
| 19.0 | - | - | 100 |
| 9.5 | - | - | 100 |
| 6.7 | - | - | 100 |
| 2 | - | - | 100 |
| 0.6 | - | - | 100 |
| 0.212 | - | - | 78 |
| 0.063 | - | - | 19 |

| Fraction | % Within Fraction |
|---|---|
| Cobbles | 0 |
| Coarse Gravel | 0 |
| Medium Gravel | 0 |
| Fine Gravel | 0 |
| Coarse Sand | 0 |
| Medium Sand | 22 |
| Fine Sand | 59 |
| Silt/Clay | 19 |

Grading fractions in accordance with NZGS soil classification system




*The percentage passing the finest sieve was obtained by difference*

*Grading envelope taken from: -*

# Appendix 5:

Soakage Testing

## Appendix B1.1 Worksheet 1: Falling Head (Variable Head) Percolation Test (pg. 1/2)

**ENGEO Ltd**
24 Rees Street, Queenstown 9300

Project Number: 30002.000.001 Date: 20/02/2026 Time: 12:35:00 PM
Site Address: 12 Lower Shotover Rd
Test Pit #: SL-ENG26-SP07 Test #: 2 of total 2 tests Test by: BH
Position x: Position y: mRL:
Other boreholes within influence distance (test simultaneously):

**1. Attach the following (tick once attached)**

| | |
|---|---|
| √ | Log of hole showing depth, rock typoe & moisture |
| √ | Graph of Water Level against Time |
| √ | Site Plan Showing location of hole(s) |

**2. General Information**

Depth of Test Pit, **H**: 2.4 m
Equiv Diameter **D** = 2a / sqrt(pi) 0.35 m
Pre-test GW level : - m (bpgl)

Test Pit Dimensions
Width of Base, **W**: 0.7 m
Length of Base, **L**: 1.2 m

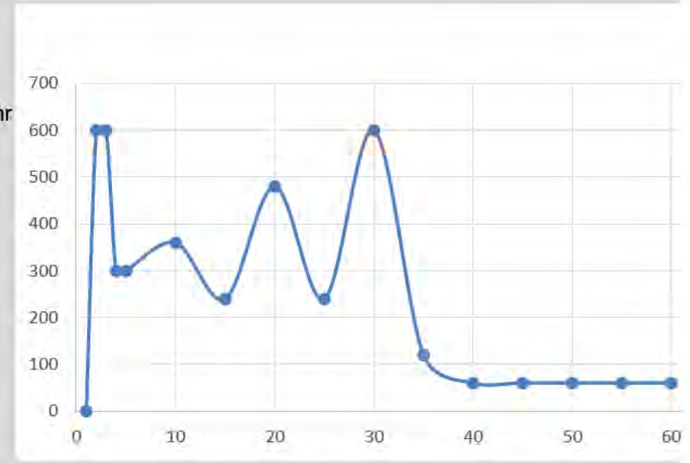
0.84

**3. Test Log**

| Minutes | Interval (x; min) | Water depth (m bpgl) Start of interval | End of Interval | Level Drop Over interval (y; m) | Interval Gradient (y/x) | mm/hr | Notes |
|---|---|---|---|---|---|---|---|
| 0 | 0 | 1.5 | 1.500 | 0 | 0.00 | | |
| 1 | 1 | 1.50 | 1.500 | 0.000 | 0.0000 | 0 | |
| 2 | 1 | 1.5 | 1.510 | 0.010 | 0.0100 | 600 | |
| 3 | 1 | 1.51 | 1.520 | 0.010 | 0.0100 | 600 | |
| 4 | 1 | 1.52 | 1.53 | 0.005 | 0.0050 | 300 | |
| 5 | 1 | 1.525 | 1.53 | 0.005 | 0.0050 | 300 | |
| 10 | 5 | 1.53 | 1.56 | 0.030 | 0.0060 | 360 | |
| 15 | 5 | 1.56 | 1.58 | 0.020 | 0.0040 | 240 | |
| 20 | 5 | 1.58 | 1.62 | 0.040 | 0.0080 | 480 | |
| 25 | 5 | 1.62 | 1.64 | 0.020 | 0.0040 | 240 | |
| 30 | 5 | 1.64 | 1.69 | 0.050 | 0.0100 | 600 | |
| 35 | 5 | 1.69 | 1.7 | 0.010 | 0.0020 | 120 | |
| 40 | 5 | 1.7 | 1.705 | 0.005 | 0.0010 | 60 | |
| 45 | 5 | 1.705 | 1.71 | 0.005 | 0.0010 | 60 | |
| 50 | 5 | 1.71 | 1.715 | 0.005 | 0.0010 | 60 | |
| 55 | 5 | 1.715 | 1.72 | 0.005 | 0.0010 | 60 | |
| 60 | 5 | 1.72 | 1.725 | 0.005 | 0.0010 | 60 | |

| Input for Sheet 2 (Doesn't print) | | |
|---|---|---|
| Time Step: | 40 | Minutes |
| Minimum Gradient: | 0.0010 | x/y (m/min) |
| WL End Depth: | 1.705 | m bpgl |
| WL 2nd last depth: | 1.7 | m bpgl |
| Minimum Soakage | 60.0 | mm/hr |

mm/hr



## Appendix B1.2 Worksheet 2: Soil Constant Head Percolation Test (pg. 2/2)

**ENGEO Ltd**
24 Rees Street, Queenstown 9300

Project Number: 30002.000.001 Date: 20/02/2026 Time: 8:56:00 AM
Site Address: 12 Lower Shotover Rd
Borehole #: SL-ENG26-SP06 Test #: 1 of total 1 tests Test by: BH

### 1. Final capacity of borehole in soil

Capacity of Bore [2] $= p_2 =$ Flowrate = 0.38 L/s

### 2. Percolation rate

Soakage surface = *soakpit base area + soakpit wall area*
$= (\pi \times D^2) + (H - W) \times \pi \times D$ = 2.72 $m^2$

Percolation rate = $P(total) = \frac{(p_2 \times 60^2)}{soakage\ surface}$ = 503.53 L/hr/$m^2$

FoS for consequence of failure [3] $= F_{(c)}$ = 1

FoS for testing uncertainty [4] $= F_{(u)}$ = 1.5

Total Factor of Safety $F_{(total)} = F_{(c)} \times F_{(u)}$ = 1.5

Factored Percolation Rate $P_{(factored)} = \frac{P}{F_{(total)}}$ = **335.68 L/hr/$m^2$**

General comments (indications of waterlogging, soil structure, biological pores, etc.)

Name of Test Operator:

Qualification:

Signature

Date:

**Notes:** [1] m bgl = metres below present ground level
[2] Measured at the end of test using a 31 L container, once the the water level remained consitent over at least the last three measurements.
[3] See Section B.4.0 Table 5 for factors of safety.
[4] See Section B.4.0 Table 6 for factors of safety.

**F(c) (GD07 B.4.0 Table 5 - Doesn't print)**
**Suggested partial factor of safety (F(c)) for consequences of failure**

| Device Type | Consequence Level | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Soakpit | 1.0 | 1.5 | 2.5 | 5.0 |
| GW Recharge Pit | 1.0 | 1.0 | Not Acceptable | Not Acceptable |
| Rockbore | 1.0 | 1.5 | 2.5 | 5.0 |

**Consequence Level 1:** The secondary flow path complies with the Stormwater Code of Practice and all of the following apply:
> Pre-treatment will be present
> Access for maintenance will be easy, frequency of maintenance will be high, and a maintenance plan will be implemented.

**Consequence Level 2:** The secondary flow path complies with the Stormwater Code of Practice and one or more of the following applies:
> Pre-treatment will be present
> Access for maintenance will be easy, frequency of maintenance will be high, and a maintenance plan will be implemented.

**Consequence Level 3:** The secondary flow path does not meet the Stormwater Code of Practice but will only cause minor damage to external areas, or non-habitable floor flooding (e.g., surface water on car parking), and one or more of the below points applies:
> Pre-treatment will be present
> Access for maintenance will be easy, frequency of maintenance will be high, and a maintenance plan will be implemented.

**Consequence Level 4:** Any other scenario, including all situations where the secondary flow path is l ikely to cause damage to buildings or structures, or major flooding of roads.

**F(u) (GD07 B.4.0 Table 6 - Doesn't print)**
**Suggested partial factor of safety (F(u)) for uncertainty in input data**

| Device Type | Quality Level | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Falling Head Test in soil | 1.2 | 1.4 | 1.8 | 2.4 |
| Constant Head Test in soil | 1.0 | 1.2 | 1.5 | 2.0 |
| Rockbore Test | 1.0 | 1.2 | 1.5 | 2.0 |

**Quality Level 1:** All of the following apply:
> Test undertaken at the location and depth of the proposed device
> Test undertaken at a time when groundwater is at an annual high. For rock bores, this must be after heavy rain at a time when the rainfall-induced groundwater level peak is likely to be present
> Groundwater monitoring with a duration of over 12 months and measurements taken in winter and summer is available within 100 m of the proposed device. For rockbore tests, this must include monitoring at short intervals (1 hour or less) to identify short-term response to heavy rainfall.

**Quality Level 2:** All of the following apply:
> Test undertaken at the location and depth of the proposed device
> Test undertaken at a time when groundwater is likely to be at an annual high. For rock bores, this must be after heavy rain at a time when the rainfall-induced groundwater level peak is likely to be present.

**Quality Level 3:** One of the following apply:
> Test undertaken at the location and depth of the proposed device, but at a time of year when the groundwater may be lower than the seasonal high
> Test undertaken at a time when groundwater is likely to be at an annual high, but not at the exact device location. For this to apply, the test must be in a location where the geological and hydrogeological conditions are expected to be the same as the actual proposed device location, and no more than 10 m (horizontally) and 1 m (vertically) from the actual proposed device location.

**Quality Level 4:** Any other scenario. The designer will still have to demonstrate that the testing is representative of the proposed device location.

## Appendix B1.1 Worksheet 1: Falling Head (Variable Head) Percolation Test (pg. 2/2)

**ENGEO Ltd**
24 Rees Street, Queenstown 9300

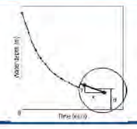
Project Number: 30002.000.001 Date: 20/02/2026 Time: 12:35:00 PM
Site Address: 12 Lower Shotover Rd
Borehole #: SL-ENG26-SP07 Test #: 2 of total 2 tests Test by: BH

### 1. Minimum Gradient [1]

Minimum Gradient [2] = $\frac{y}{x}$

= 0.0010 m/min

d = 1.71 m



### 2. Percolation Rate

Percolation Rate [3] = $P_{(total)} = \frac{D \times \text{gradient} \times 1000}{4 \times d}$ = **9.9** L/hr/m²

Soakage Rate [3b] = min. $\frac{\delta \text{ Depth}}{\delta \text{ Time}}$ = **60.0** mm/hr

FoS for consequence of failure [4] = $F_{(c)}$ = 1 Consequence Level: 1

FoS for testing uncertainty [5] = $F_{(u)}$ = 1.5 Quality Level: 3

Total Factor of Safety $F_{(total)} = F_{(c)} \times F_{(u)}$ = 1.5

Factored Percolation Rate $P_{(factored)} = \frac{P_{(total)}}{F_{(total)}}$ = **6.6 L/hr/m2**

Factored soakage Rate $P_{(factored)} = \frac{P_{(total)}}{F_{(total)}}$ = **40.0 mm/hr**

Additional Comments:
No methodology for testing in mechanical excated test pit available from E1/VM1 of the NZBC.
Test methodology taken from the New Zealand Ground Investigation Specification (Auckland Council, 2017; Volume 1, Part 12.11 for testing at the base of a mechanically excavated test pit.
Factors of Safety (FoS) after GD007 (Auckland Council, 2021) and applied equally to calculation methodologies under both GD007 & E1/VM1.

***General comments (indications of waterlogging, soil structure, biological pores, etc.):***

After test pit / soakage test was completed, it was observed that the gravels had been covered in silt material, likely during filling the pit with water. Inferred that this affected the soakage rate of the test.

**Notes:** [1] m bpgl = metres below present ground level
[2] lowest gradient is required. This will normally be the last two points. If the rate of change during the test has not stabilised for at least the last three measurements, then the test shall be repeated
[3] d = distance in m between the midpoint of the last two readings and the base of the borehole
[3b] Calcualted in accordance with NZBC E1/VM1
[4] See Section B.4.0 Table 5 for factors of safety.
[5] See Section B.4.0 Table 6 for factors of safety.

**F(c) (GD07 B.4.0 Table 5 - Doesn't print)**
**Suggested partial factor of safety (F(c)) for consequences of failure**

| Device Type | Consequence Level | | | |
|---|---|---|---|---|
| | Consequence Level | | | |
| | 1 | 2 | 3 | 4 |
| Soakpit | 1.0 | 1.5 | 2.5 | 5.0 |
| GW Recharge Pit | 1.0 | 1.0 | Not Acceptable | Not Acceptable |
| Rockbore | 1.0 | 1.5 | 2.5 | 5.0 |

**Consequence Level 1**: The secondary flow path complies with the Stormwater Code of Practice and all of the following apply:
> Pre-treatment will be present
> Access for maintenance will be easy, frequency of maintenance will be high, and a maintenance plan will be implemented.

**Consequence Level 2**: The secondary flow path complies with the Stormwater Code of Practice and one or more of the following applies:
> Pre-treatment will be present
> Access for maintenance will be easy, frequency of maintenance will be high, and a maintenance plan will be implemented.

**Consequence Level 3**: The secondary flow path does not meet the Stormwater Code of Practice but will only cause minor damage to external areas, or non-habitable floor flooding (e.g., surface water on car parking), and one or more of the below points applies:
> Pre-treatment will be present
> Access for maintenance will be easy, frequency of maintenance will be high, and a maintenance plan will be implemented.

**Consequence Level 4**: Any other scenario, including all situations where the secondary flow path is likely to cause damage to buildings or structures, or major flooding of roads.

**F(u) (GD07 B.4.0 Table 6 - Doesn't print)**
**Suggested partial factor of safety (F(u)) for uncertainty in input data**

| Device Type | Quality Level | | | |
|---|---|---|---|---|
| | Quality Level | | | |
| | 1 | 2 | 3 | 4 |
| Falling Head Test in soil | 1.2 | 1.4 | 1.8 | 2.4 |
| Constant Head Test in soil | 1.0 | 1.2 | 1.5 | 2.0 |
| Rockbore Test | 1.0 | 1.2 | 1.5 | 2.0 |

**Quality Level 1**: All of the following apply:
> Test undertaken at the location and depth of the proposed device
> Test undertaken at a time when groundwater is at an annual high. For rock bores, this must be after heavy rain at a time when the rainfall-induced groundwater level peak is likely to be present
> Groundwater monitoring with a duration of over 12 months and measurements taken in winter and summer is available within 100 m of the proposed device. For rockbore tests, this must include monitoring at short intervals (1 hour or less) to identify short-term response to heavy rainfall.

**Quality Level 2**: All of the following apply:
> Test undertaken at the location and depth of the proposed device
> Test undertaken at a time when groundwater is likely to be at an annual high. For rock bores, this must be after heavy rain at a time when the rainfall-induced groundwater level peak is likely to be present.

**Quality Level 3**: One of the following apply:
> Test undertaken at the location and depth of the proposed device, but at a time of year when the groundwater may be lower than the seasonal high
> Test undertaken at a time when groundwater is likely to be at an annual high, but not at the exact device location. For this to apply, the test must be in a location where the geological and hydrogeological conditions are expected to be the same as the actual proposed device location, and no more than 10 m (horizontally) and 1 m (vertically) from the actual proposed device location.

**Quality Level 4**: Any other scenario. The designer will still have to demonstrate that the testing is representative of the proposed device location.

## Appendix B1.2 Worksheet 2: Soil Constant Head Percolation Test (pg. 1/2)

**ENGEO Ltd**
24 Rees Street, Queenstown 9300

Project Number: 30002.000.001 Date: 20/02/2026 Time: 8:56:00 AM
Site Address: 12 Lower Shotover Rd
Test Pit #: SL-ENG26-SP08 Test #: 1 of total 1 tests Test by: BH
Position x: Position y: mRL:
Other boreholes within influence distance (test simultaneously):

**1. Attach the following (tick once attached)**

| | |
|---|---|
| √ | Log of hole showing depth, rock type & moisture |
| √ | Site Plan Showing location of hole(s) |

**2. General Information**

Depth of test pit, **H**: 3.0 m
Equivalent Diameter, **D**: 0.8 m
Pre-test GW level : dry m (bpgl)
Water depth during test, **W**: 2.80 m (bpgl)

Vegetation at test site: Grass Field

Soil condition at time of excavation: Moist

Test Pit Dimensions
Width of Base, **W**: 0.7 m
Length of Base, **L**: 0.7 m

Reservoir volume per mm height (**Vmm**):
= π × (D/2)^2 n/a L/mm

**3. Test Log (continue test until flow rate is stable to ±10% over three time intervals**

| Time | Interval (min) | Water Level at interval start (mm) | Change in Level during interval ΔL (mm) | Volume (litres) | Time (s) | Flow rate = V/s (L/s) |
|---|---|---|---|---|---|---|
| 8:56:00 AM | 0 | 50 | | | | |
| 9:03:00 AM | 7 | 80 | 30.0 | | | |
| 9:12:00 AM | 9 | 120 | 40.0 | | | |
| 9:20:00 AM | 8 | 200 | 80.0 | | | |
| 9:30:00 AM | 10 | 200 | 0.0 | | | |
| 9:36:00 AM | 6 | 200 | 0.0 | | | |
| | | | | 31.0 | 81.0 | 0.38 |

soil moisture drop down
Wet
Moist
Dry

10:06:00 am 10:06:00 AM
10:12:00 am 12:06:00 AM
10:20:00 am 12:08:00 AM
10:26:00 am 12:06:00 AM
10:36:00 am 12:10:00 AM
10:46:00 am 12:10:00 AM

We Should have a rate recorded at each time step

## Appendix B1.2 Worksheet 2: Soil Constant Head Percolation Test (pg. 2/2)

**ENGEO Ltd**
**24 Rees Street, Queenstown 9300**

Project Number: 30002.000.001 Date: 20/02/2026 Time: 8:56:00 AM
Site Address: 12 Lower Shotover Rd
Borehole #: SL-ENG26-SP08 Test #: 1 of total 1 tests Test by: BH

### 1. Final capacity of borehole in soil

Capacity of Bore [2] $= p_2 = Flowrate =$ 0.38 L/s

### 2. Percolation rate

Soakage surface $= soakpit\ base\ area + soakpit\ wall\ area$
$= (\pi \times D^2) + (H - W) \times \pi \times D$ = 2.46 $m^2$

Percolation rate $= P(total) = \frac{(p_2 \times 60^2)}{soakage\ surface}$ = 556.94 L/hr/m²

FoS for consequence of failure [3] $= F_{(c)}$ = 1
FoS for testing uncertainty [4] $= F_{(u)}$ = 1.5
Total Factor of Safety $F_{(total)} = F_{(c)} \times F_{(u)}$ = 1.5
Factored Percolation Rate $P_{(factored)} = \frac{P}{F_{(total)}}$ = **371.29 L/hr/m²**

**General comments (indications of waterlogging, soil structure, biological pores, etc.):**

Name of Test Operator:
Qualification:
Signature
Date:

**Notes:** [1] m bpgl = metres below present ground level
[2] Measured at the end of test using a 31 L container, once the the water level remained consitent over at least the last three measurements.
[3] See Section B.4.0 Table 5 for factors of safety.
[4] See Section B.4.0 Table 6 for factors of safety.

**F(c) (GD07 B.4.0 Table 5 - Doesn't print)**
**Suggested partial factor of safety (F(c)) for consequences of failure**

| Device Type | Consequence Level | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Soakpit | 1.0 | 1.5 | 2.5 | 5.0 |
| GW Recharge Pit | 1.0 | 1.0 | Not Acceptable | Not Acceptable |
| Rockbore | 1.0 | 1.5 | 2.5 | 5.0 |

**Consequence Level 1**: The secondary flow path complies with the Stormwater Code of Practice and all of the following apply:
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> Pre-treatment will be present
> Access for maintenance will be easy, frequency of maintenance will be high, and a maintenance plan will be implemented.

**Consequence Level 4**: Any other scenario, including all situations where the secondary flow path is likely to cause damage to buildings or structures, or major flooding of roads.

**F(u) (GD07 B.4.0 Table 6 - Doesn't print)**
**Suggested partial factor of safety (F(u)) for uncertainty in input data**

| Device Type | Quality Level | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Falling Head Test in soil | 1.2 | 1.4 | 1.8 | 2.4 |
| Constant Head Test in soil | 1.0 | 1.2 | 1.5 | 2.0 |
| Rockbore Test | 1.0 | 1.2 | 1.5 | 2.0 |

**Quality Level 1**: All of the following apply:
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> Groundwater monitoring with a duration of over 12 months and measurements taken in winter and summer is available within 100 m of the proposed device. For rockbore tests, this must include monitoring at short intervals (1 hour or less) to identify short-term response to heavy rainfall.

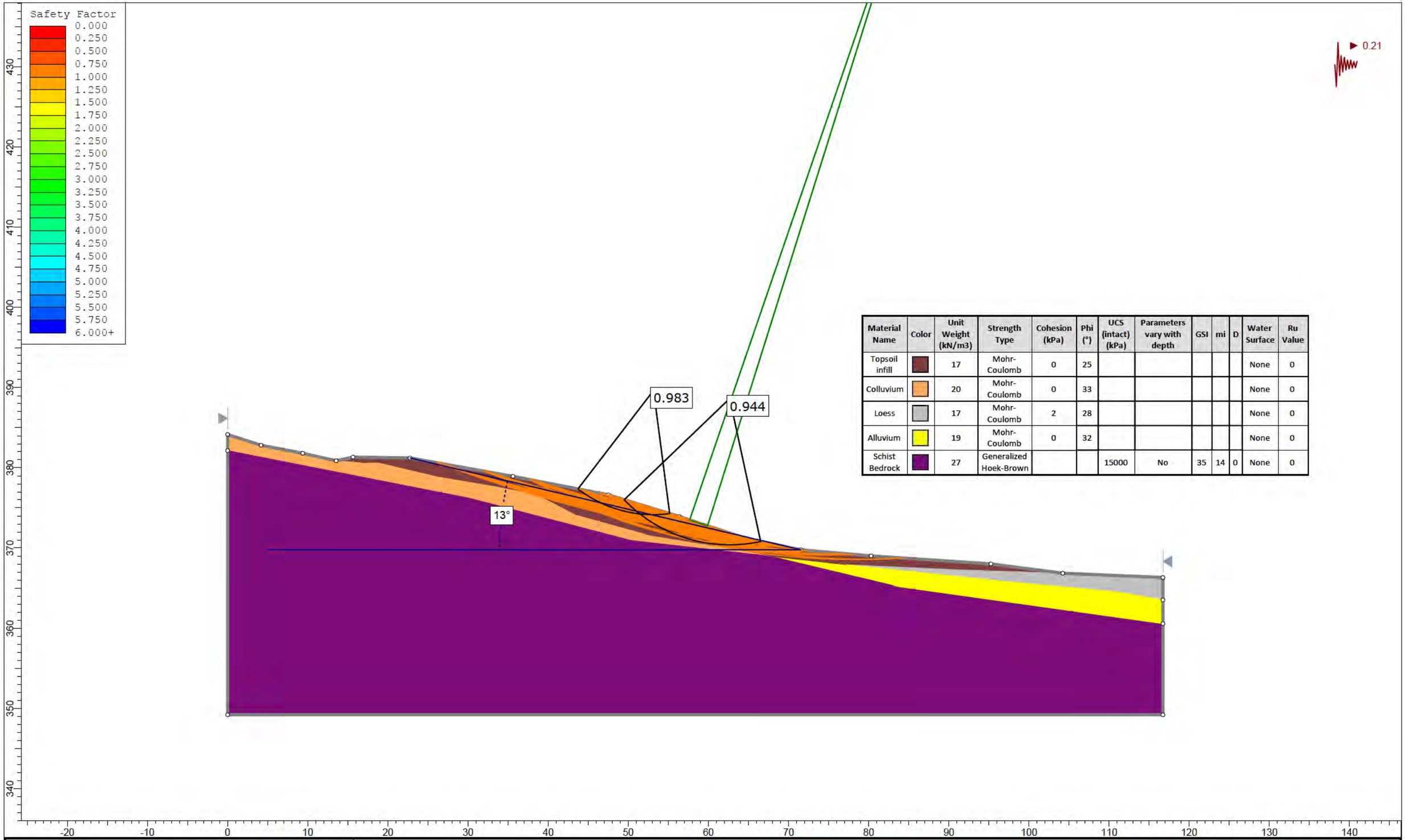
**Quality Level 2**: All of the following apply:
> Test undertaken at the location and depth of the proposed device
> Test undertaken at a time when groundwater is likely to be at an annual high. For rock bores, this must be after heavy rain at a time when the rainfall-induced groundwater level peak is likely to be present.

**Quality Level 3**: One of the following apply:
> Test undertaken at the location and depth of the proposed device, but at a time of year when the groundwater may be lower than the seasonal high
> Test undertaken at a time when groundwater is likely to be at an annual high, but not at the exact device location. For this to apply, the test must be in a location where the geological and hydrogeological conditions are expected to be the same as the actual proposed device location, and no more than 10 m (horizontally) and 1 m (vertically) from the actual proposed device location.

**Quality Level 4**: Any other scenario. The designer will still have to demonstrate that the testing is representative of the proposed device location.

# Appendix 6:

Slide Model

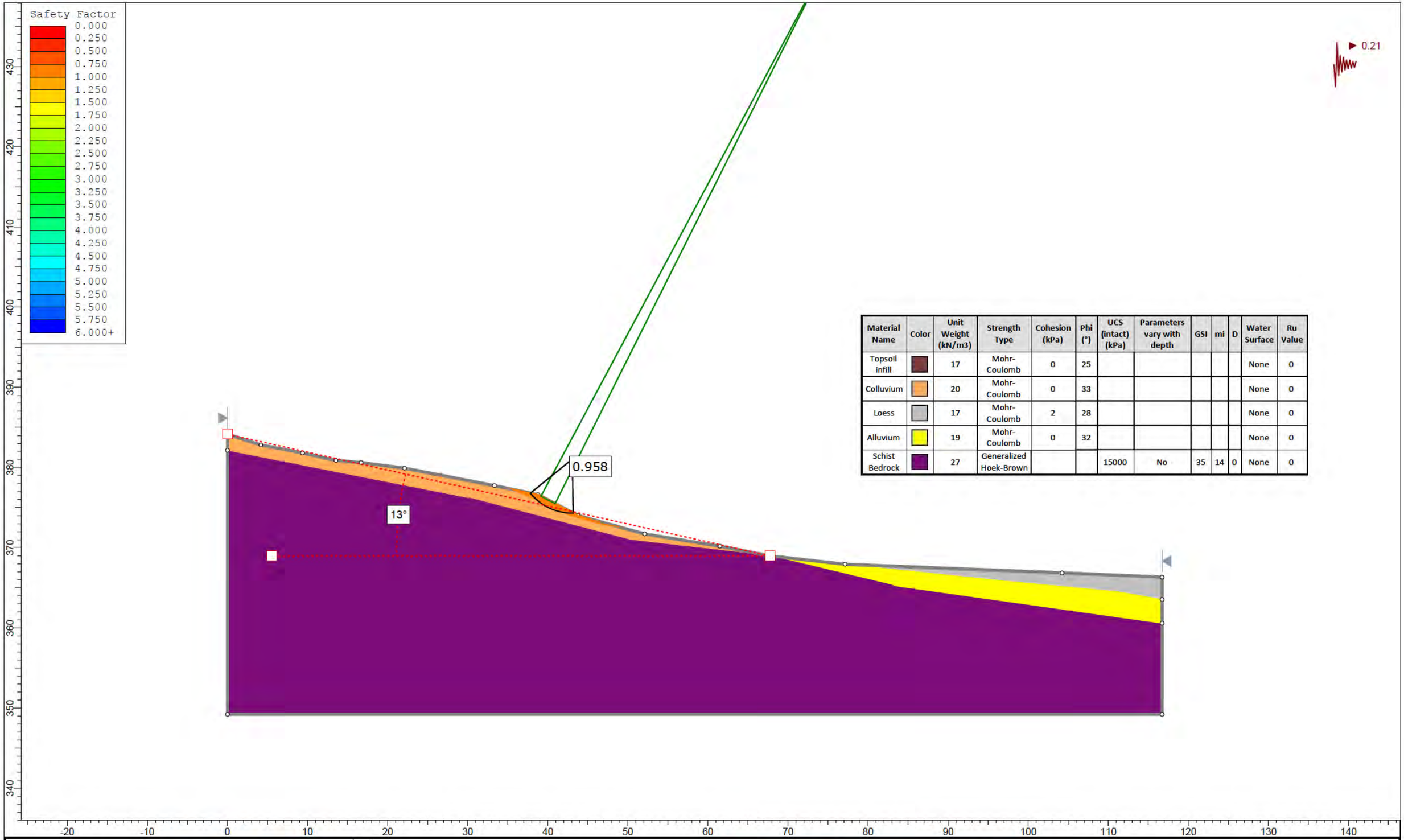



| Material Name | Color | Unit Weight (kN/m3) | Strength Type | Cohesion (kPa) | Phi (°) | UCS (intact) (kPa) | Parameters vary with depth | GSI | mi | D | Water Surface | Ru Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Topsoil infill | | 17 | Mohr-Coulomb | 0 | 25 | | | | | | None | 0 |
| Colluvium | | 20 | Mohr-Coulomb | 0 | 33 | | | | | | None | 0 |
| Loess | | 17 | Mohr-Coulomb | 2 | 28 | | | | | | None | 0 |
| Alluvium | | 19 | Mohr-Coulomb | 0 | 32 | | | | | | None | 0 |
| Schist Bedrock | | 27 | Generalized Hoek-Brown | | | 15000 | No | 35 | 14 | 0 | None | 0 |

ENGEO

SLIDEINTERPRET 9.038

| | | |
|---|---|---|
| *Project* | Post Earthworks Construction - ULS 0.21g | |
| *Analysis Description* | , Master Scenario | |
| *Drawn By* | | *Client* |
| *Date* | 9/03/2026, 3:48:14 pm | *File Name* Slide_model.slmd |




| Material Name | Color | Unit Weight (kN/m3) | Strength Type | Cohesion (kPa) | Phi (°) | UCS (intact) (kPa) | Parameters vary with depth | GSI | mi | D | Water Surface | Ru Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Topsoil infill | | 17 | Mohr-Coulomb | 0 | 25 | | | | | | None | 0 |
| Colluvium | | 20 | Mohr-Coulomb | 0 | 33 | | | | | | None | 0 |
| Loess | | 17 | Mohr-Coulomb | 2 | 28 | | | | | | None | 0 |
| Alluvium | | 19 | Mohr-Coulomb | 0 | 32 | | | | | | None | 0 |
| Schist Bedrock | | 27 | Generalized Hoek-Brown | | | 15000 | No | 35 | 14 | 0 | None | 0 |

ENGEO

SLIDEINTERPRET 9.038

| | | |
|---|---|---|
| *Project* | Pre Earthworks Construction - ULS 0.21g | |
| *Analysis Description* | , Master Scenario | |
| *Drawn By* | | *Client* |
| *Date* | 9/03/2026, 3:48:14 pm | *File Name* Slide_model.slmd |

# Appendix 7:

Geophysical Testing

Geophysical Investigations

# Geophysical Survey:
# Downhole Shear Wave ($DHV_S$)
# 12 Lower Shotover Road, Queenstown

Report prepared for ENGEO Limited


**Southern Geophysical**

3/28 Tanya St, Bromley,
Christchurch 8062
Tel. 03 384 4302
www.southerngeophysical.com

## Contents



## Figures



## Appendices

Data collected and report prepared for Southern Geophysical Limited by:

- R. Mellis (MSc), Senior Geophysicist - Survey Manager
- M. Harris (BSc), Junior Geophysicist

## Capability Statement

Southern Geophysical experienced team provides geophysical contracting and consulting services to clients in the mineral, energy, geotechnical, civil engineering and environmental sectors. We have one of the largest equipment resources for shallow geophysical surveys in the independent private sector in New Zealand.

We are proudly Canterbury owned and operated and have been since our beginnings in 2004. We operate in New Zealand, the Pacific Islands, and Antarctica. The geophysical methods most often employed include:

- Downhole Seismic Testing
  - Accurate shear wave ($V_s$) profiles and $V_s30$ measurements
- Crosshole Seismic Testing
  - Best available method for accurate $V_S$ assessment
- Seismic Reflection
  - Identifying lithological boundaries (20 – 600 m)
- Shear Wave Reflection
  - Bedrock profiling and identifying lithological boundaries (< 50 m)
- Seismic Refraction
  - Bedrock profiling
- Multi-channel Analysis of Surface Waves (MASW)
  - Shallow bedrock profiling
  - Near surface shear wave velocity profiling and rippability determination
- Ground Penetrating Radar (GPR)
  - High resolution imaging of near surface stratigraphy
  - Detection of placer gold paleo channels
  - Mapping near surface coal and mineral deposits
  - Gravel resource characterisation
- Electrical Resistivity Tomography (ERT)
  - Identification of ore bodies through electrical resistivity
  - Lithological mapping through changes in electrical properties
- Induced Polarisation (IP)
  - Identification of ore bodies through electrical chargeability

Southern Geophysical utilises the latest downhole seismic survey equipment and software to determine the $V_S$ parameters of your site. The team is highly skilled in the processing of all data acquired, reporting in the way the client requests and being at the end of the phone or an email to respond to queries which may arise. For a range of innovative solutions and expertise in determining the subsurface conditions of your site, our geophysics team can guide you through the process.

SGL Job Reference: 3117
Version 2 (Issued June 19th, 2026)

Internally reviewed by:
M. Finnemore (PhD), Senior Geophysicist

# 1 Executive Summary

Southern Geophysical undertook Downhole Seismic Velocity ($DHV_S$) testing in one borehole, at 12 Lower Shotover Road, Queenstown just off New Zealand State Highway 6 on the 16th of June 2026. The purpose of the investigation was to acquire the shear wave velocity ($V_S$) profile to the maximum depth of the borehole and derive a $V_S30$ value from the data.

This report presents acquisition parameters, processing summaries, and plots generated from the resulting data.

There was a general trend towards increasing velocity with depth, and a $V_S30$ of 352 m/s was derived from the data.

# 2 Site Description

The site is located in the paddock at 12 Lower Shotover Road, Queenstown, off New Zealand State Highway 6 (Figure 1). Site photographs can be found in Appendix A.


Figure 1: Site Location, approximate borehole location (red marker). Google Earth Imagery.

Geological mapping by GNS identifies the area as a Pelitic schist, part of the Aspiring lithologic association (Figure 2).


Figure 2: Site Geology (GNS Science QMAP database). Survey area outlined with red rectangle.

# 3 Methodology

## DHVs survey design

The DHVs survey was conducted according to the guidelines in the standard ASTM D74001[1] and the QuakeCentre Invasive Seismic Testing – A Summary of Methods and Good Practice, F. Wentz 20192[2].

The boreholes were installed with a 50 mm inside diameter PVC pipe (backfilled with grout). The DHVs borehole surveying was undertaken by lowering a dual 3-component 30 Hz geophone tool (1 m probe separation) down the borehole and recording the surface-generated shear wave signal at 1 m increments to the bottom of the borehole. The geophone tool was fixed in place at each depth interval using a dual air bladder system. A timber sleeper (0.1 x 0.2 x 2.4 m) acted as the shear wave source and was weighed down with a 1500 kg utility vehicle. The source was offset from the borehole by 2.25 m. The timber beam was struck at alternative ends with an 8 lb sledgehammer to generate opposite polarity shear wave signals. Data files were stacked 2 to 4 times to improve the signal to noise ratio.

The shear wave (Vs) arrival times are measured on the orthogonal channels on the upper (channels 1 and 2) and lower probes (channels 4 and 5). P-wave data was collected on the vertical geophones (channels 3 and 6).

All the data was recorded using a Geometrics Geode Seismograph, with acquisition parameters for the DHVs surveys set with a 0.25 ms sample interval, 1.5 s record length, 36 dB pre-amp gain, and an electrical trigger system. Processing of field records and interval velocity calculations were completed using the REFLEXW © seismic processing package and Microsoft Excel © spreadsheets.

The field data was recorded in SEG-2 format. At each depth, a stacked file was collected for each polarity of the shear wave source. All field files were first converted to ReflexW standard format. For the orthogonal geophones on the upper and lower geophone probes, two separate and opposite polarity seismograms were produced. These opposite polarity seismograms were overlaid to improve the accuracy of the shear wave arrival picks. Shear wave arrival times were based on the first consistent $V_S$ wavelet intersection that could be picked for the entire seismogram.

Compressional p-wave wave velocity data was also acquired down the borehole at 1 m intervals using the vertical geophone (channel 3 and 6) in accordance with standard borehole seismic survey methodologies, but these results have not been included in this report and can be supplied if required. A check is done to ensure the p-wave occurs separately on the wave train to the shear wave. If the p-wave and shear wave coincide, this needs to be taken into consideration during the data picking stage.

Due to the orthogonal orientation of the geophone pairs, one pair typically receives a stronger response. In this survey, geophone pair 2-5 received the strongest shear wave signal response for the majority of measurements and were therefore used to interpret the data. See Appendix B for all picks and p-wave analysis.

# 4 DHVs Limitations

The reference arrival times used are for the time from the source impact to the arrival at the receivers. The source was offset from the borehole by 2.25 m. Therefore, near the surface the wave path is assumed to be a straight line or slant distance from the source to receiver. This assumption is not always correct, and the wave travel path could be significantly more complex due to near surface heterogeneity, refractions or near surface effects. The borehole tube grouting is also likely to be poorer at the surface than deeper down due to the lower confining pressures and heterogeneity of the near surface (reworking and younger age of sediments

etc). For these reasons the velocities in the depth range 0 to 3 m should be treated with caution.

High velocity layers are difficult to accurately measure for velocity/thickness as the travel time across them may be very fast. Downhole seismic testing defines slow velocities and thick units more accurately.

True interval velocity plots will show large velocity variation when using small depth intervals. Increasing the interval will decrease the “noise” in the interval velocity plots but reduce the ability to “see” rapid changes in shear wave velocity. Often a balance between resolution and accuracy is required. In many situations a more useful output from downhole seismic test results is a basic linear best fit model of the main lithological units. An arrival time vs depth graph is usually broken into sections where obvious changes in slope of the time vs depth graph is seen or where supplementary data from borehole logs or CPT tip resistance show likely important seismic shear wave units.

# 5 Results and Interpretations

Shear wave velocities were measured at 1 m intervals over the length of the borehole (31 m).

The results from borehole BH01 are summarised in Figure 3, which includes three graphs:

Graph A: A true interval velocity profile was derived by measuring the interval travel time between the receiver pair 2-5 (1 m separation between sensors). The figure includes the interval velocity profile and the $V_S30$ value derived from the results. The interval value for the first 2.25 m was derived from a vertical travel time best fit trendline (Graph B) as the interval velocity values were anomalous in the top 2.25 m. This could be due to grout issues or complex near surface geology. See Appendix B for interval picks.

Graph B: The corrected shear wave vertical travel times. This represents a reference point on the wave train that could be confidently traced down the entire seismograms. An example seismogram picking the same point on the wave train is provided in Appendix B. Linear best fit lines are placed on the graph where clear breaks in slope are identified.

Graph C: The shear wave velocity profile derived using the slope method to define linear trends and clear changes in slope within the data. The shear wave velocities were calculated using the slope equations for each linear best fit line on Graph B. Each step in velocity likely represents significant lithological changes.

# 6 Conclusions

The shear wave data was good quality and significant crossovers were clearly identifiable in each trace. The top two meters of interval data was anomalous, which is a common occurrence for DHVs testing and typically results from complex shear wave travel paths in the very near surface, or grouting issues in the top three meters. It should be noted that the replacement velocities for 0.25 m to 2.25 m in Graph A (derived from Graph B trendlines) are significantly lower than subsequent values and therefore have a significant impact on the resulting $V_S30$ value.

The quality of data should provide a suitably accurate model of the interval velocities for the borehole and $V_S30$ value.

# 7 Closure

We hope this report addresses your current requirements and should you want to discuss the report further I can be contacted on [redacted]

Sincerely,

Richard Mellis, Senior Geophysicist

# 8 References

[1]ASTM D7400 / D7400M-19, Standard Test Methods for Downhole Seismic Testing, ASTM International, West Conshohocken, PA, 2019, www.astm.org.

[2]QuakeCentre Invasive Seismic Testing – A Summary of Methods and Good Practice, F. Wentz 2019.

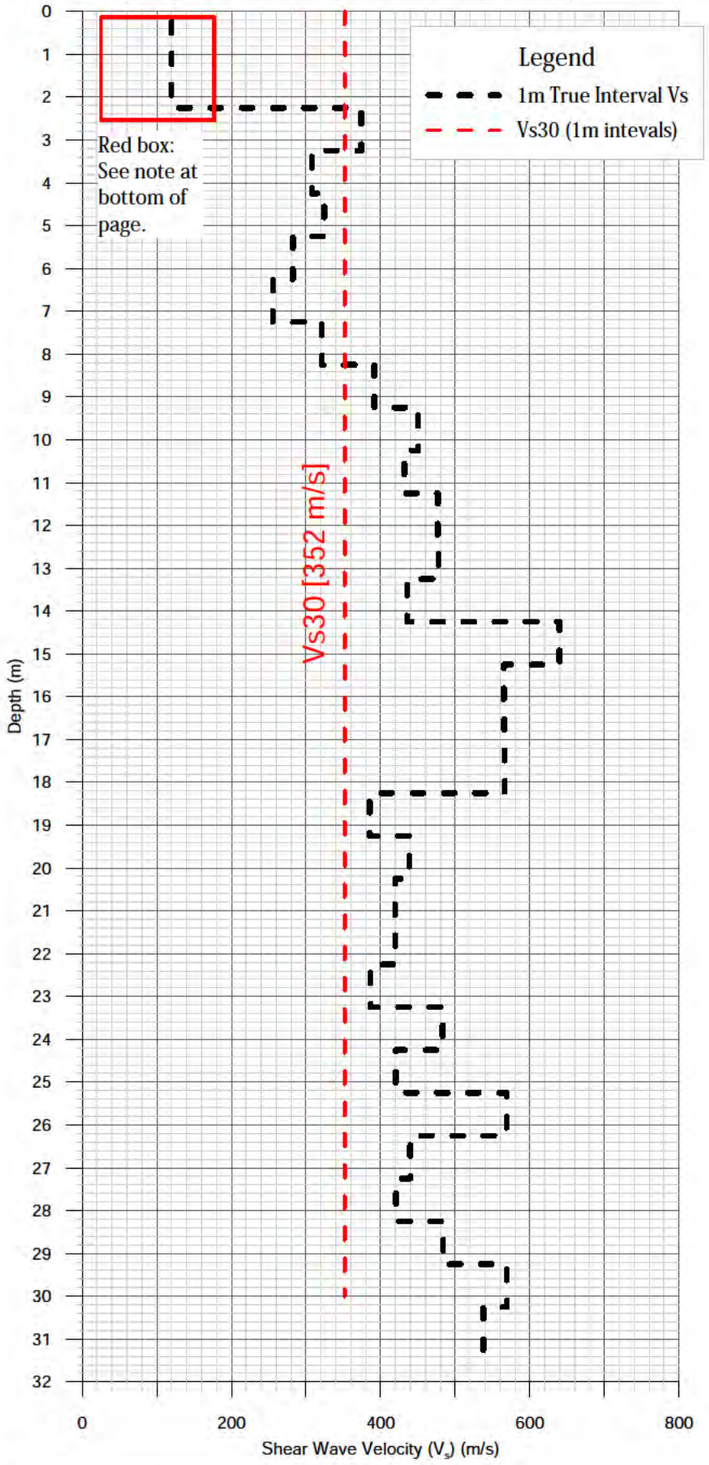
[3]*Stolte, A., Wotherspoon, L., & Wentz, R.* (2023). Providing robust Vs30 estimates for seismic site classification in New Zealand. New Zealand Geotechnical Society, 105, 0111 - 6851.

[4]*Xia, J., Miller, R. D., & Park, C. B.* (1999). Estimation of near surface shear-wave velocity by inversion of Rayleigh waves. Geophysics, 64(3), 691-700.

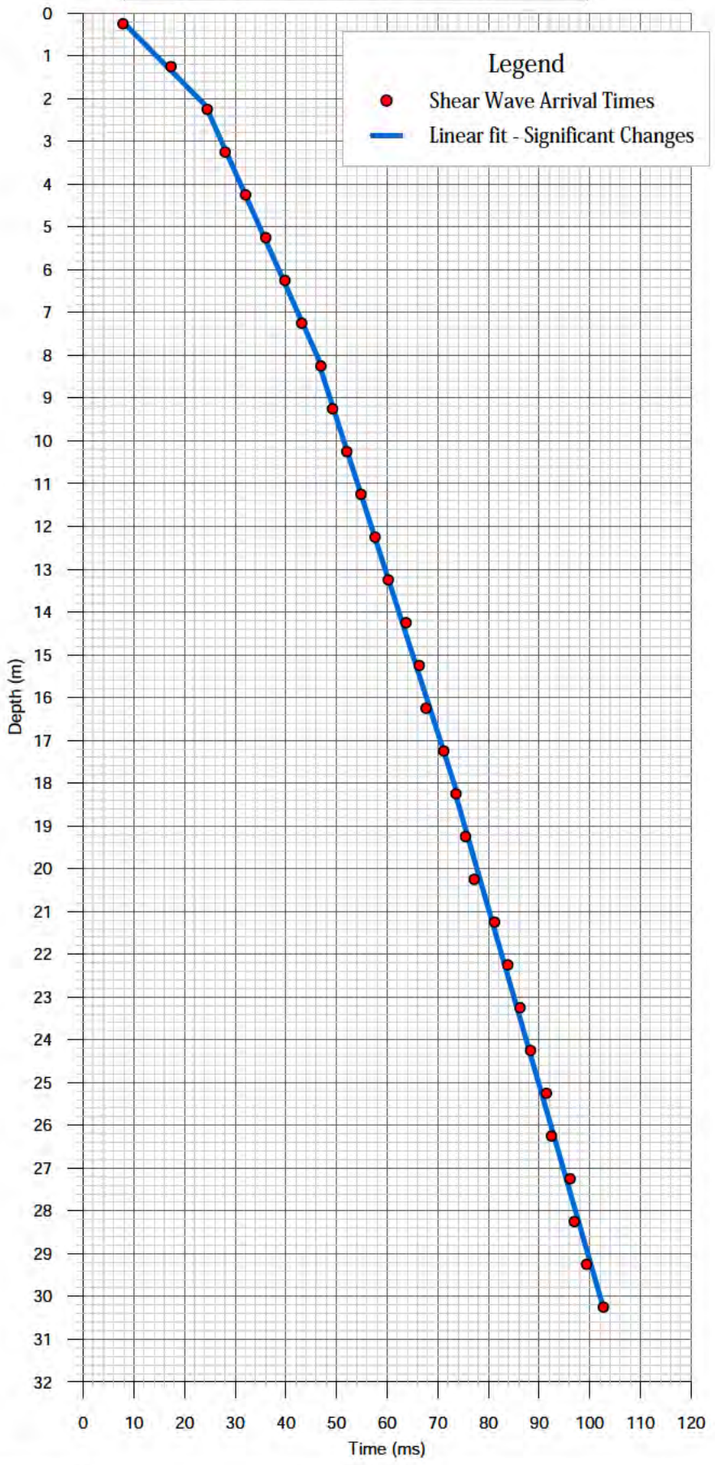
[5]*Wotherspoon, L. M., Wentz, R., Cox, B. R., & Stolte, A. C.* (2021). Assessing the quality and uncertainty of in-situ seismic investigation methods. In 2021 New Zealand Geotechnical Society Symposium (pp. 24-26).

[6]*Berryman, J. G.* (2007). Seismic waves in rocks with fluids and fractures. Geophysical Journal International, 171(2), 954-974.

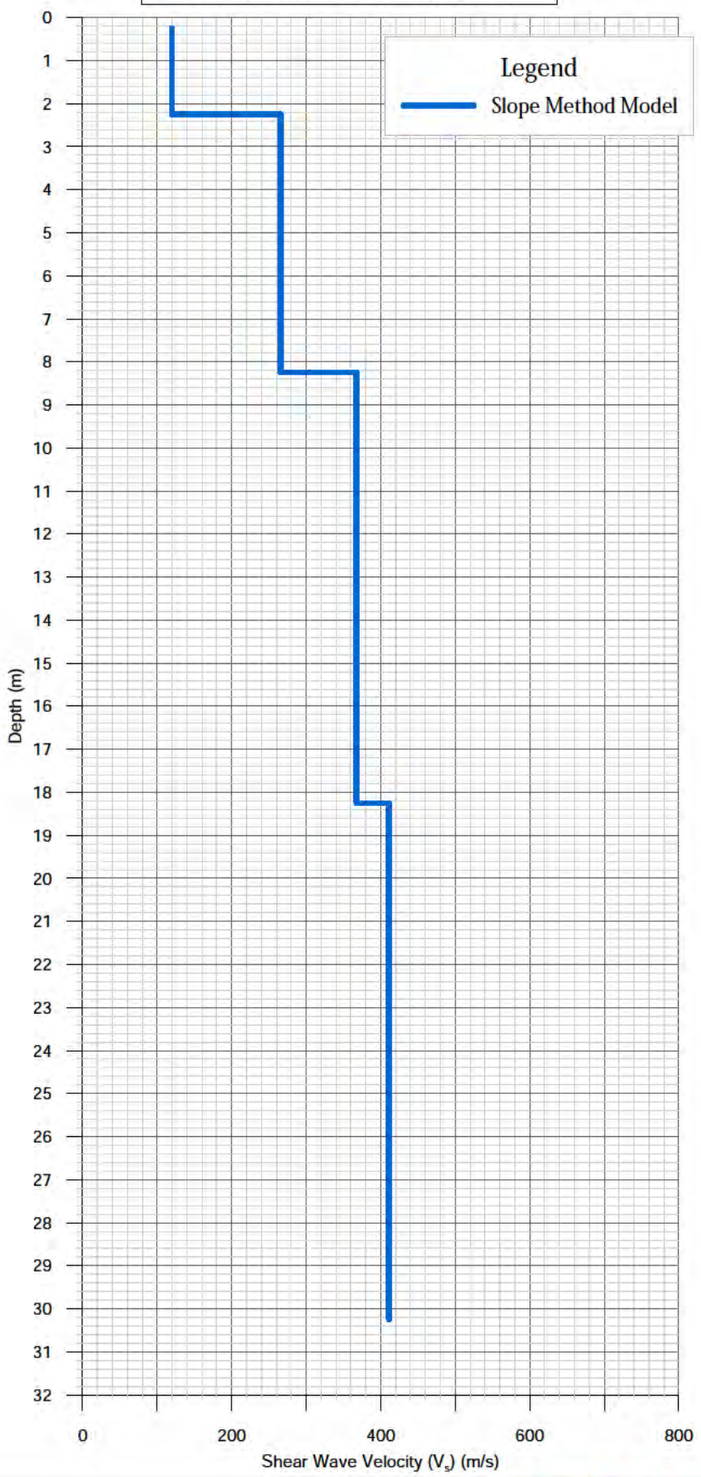
## Graph A: True Interval Vs Velocity Profile




## Graph B: Shear Wave Vertical Travel Times




## Graph C: Simplified Vs Velocity Profile (Using trendlines from graph B)




| REV. HISTORY | | | |
|---|---|---|---|
| DRAWN BY | RM | DATE | 17/06/2026 |
| CHECKED BY | MF | DATE | 17/06/2026 |

NOTES:

The interval velocity data within the **red outlined area** in Graph A was anomalous in the seismographs, therefore the trendline derived from vertical travel times between 0.2 and 2.2 m (Graph B) was used to derive the likely velocities within this zone. Data in the near surface has a greater influence on the Vs30 caluclation, therefore, it was prudent to use a trendline from good quality results rather than incorporate highly variable results from an anomalous response.

See survey map for location of the borehole.

Downhole Shear Wave Vs Profiles
BH01
12 Lower Shotover Road
Queenstown

FIGURE
3
A4

Southern Geophysical
www.southerngeophysical.com

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# Appendix A: Site Photographs

Figure A1: Data acquisition.

Figure A2: Striking the shear wave source.


Figure A3: Shear wave source weighted down by the truck and equipment set up.

# Appendix B: ReflexW Picks and QC

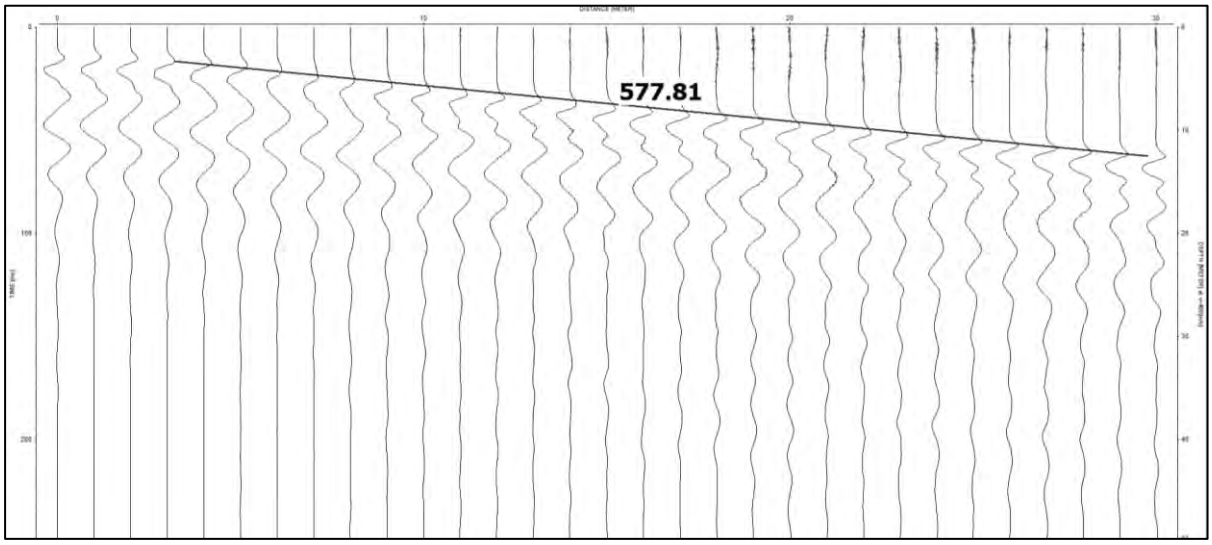



Figure B1: Plotting general p-wave trend to ensure it does not interfere with s-wave analysis.

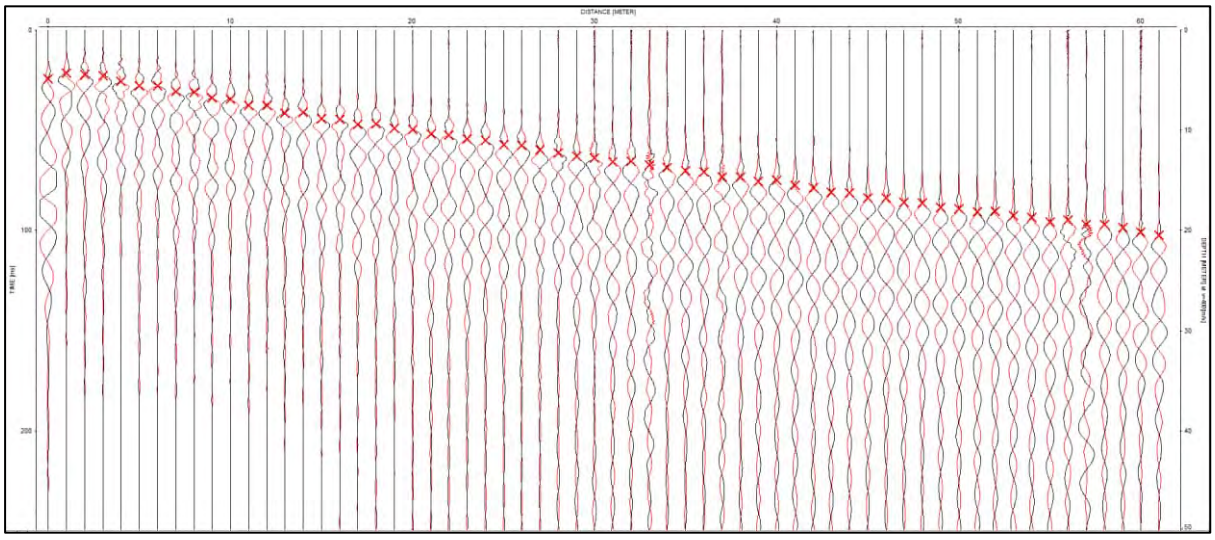


Figure B2: Interval picks using channels 2 and 5, used to create Graph A.

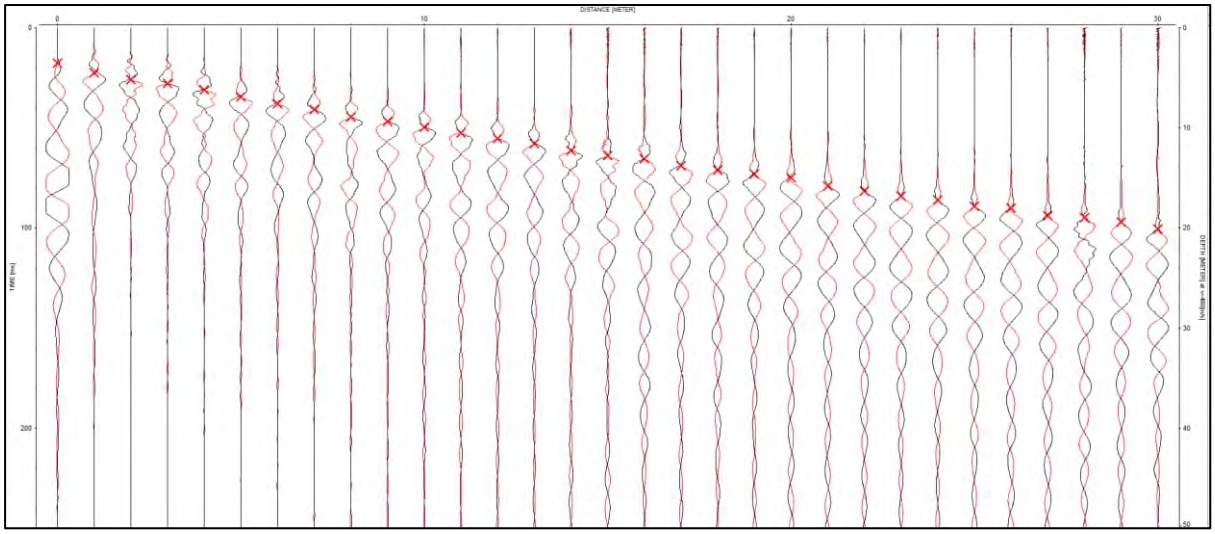


Figure B1: Picking the same point on the wave train for each trace to create Graph B (top probe).

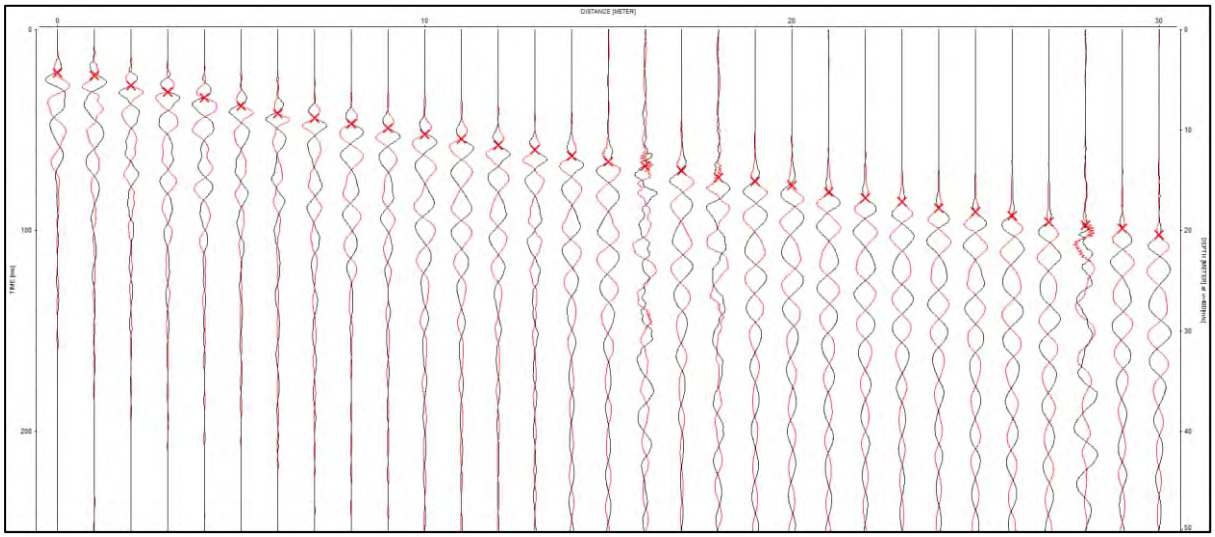


Figure B2: Picking the same point on the wave train for each trace to create Graph B (bottom probe).

# Appendix 8:

Plate Load Testing

**Wellington Laboratory**
47C Kenepuru Drive,
Porirua
[redacted]

# TEST REPORT

**Lab Job No:** 8398-125

**Your ref.**: -

**Date of Issue:** 25/06/2026

**Date of Re-Issue:** -

## Test Report No. WLG8398-125-R001

**PROJECT:** **Ladies Mile, Queenstown - Plateloads**

CLIENT: ENGEO
24 Rees St, Queenstown 9300

ATTENTION: Grant Caldwell

TEST METHODS: Static Plate Load Test
DIN 18134:2012-04

SAMPLING METHOD: N/A

TEST RESULTS: As per attached sheets

G. Bromfield
Laboratory Manager

M. Morgan
Approved Signatory

*All results obtained in accordance with the test methods listed above.*

*Test results relate only to the sample tested.*

*Any material descriptions included in this report are excluded from IANZ endorsement.*

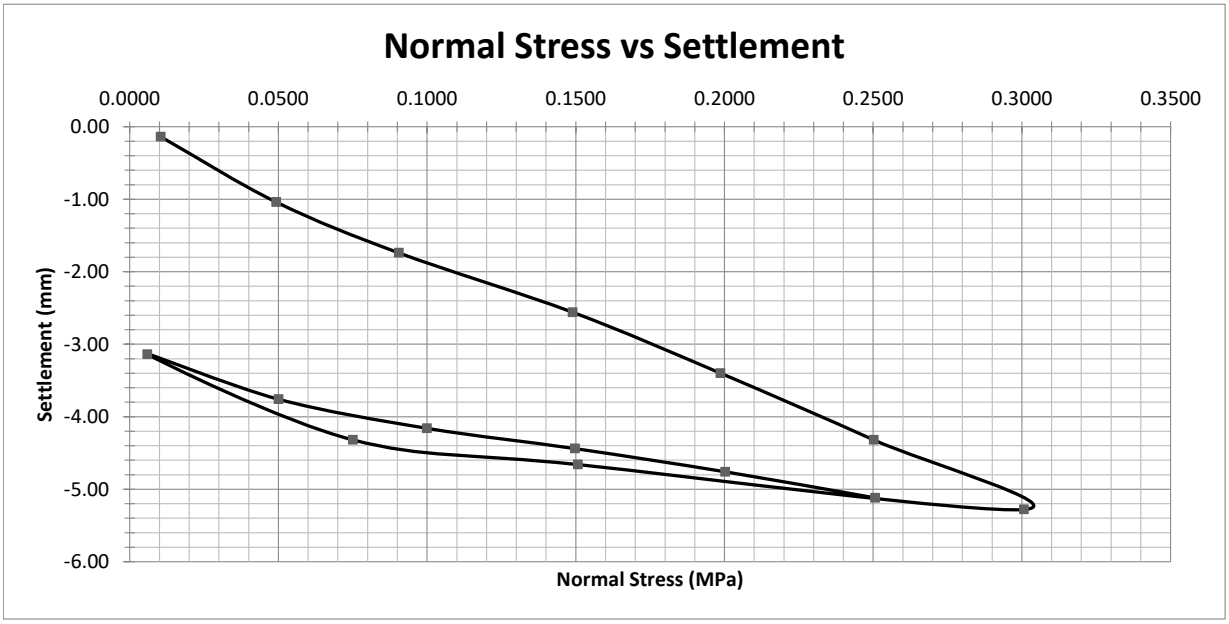
ACCREDITED IANZ TESTING LABORATORY
All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

# STATIC PLATE LOAD TEST

DIN 18134:2012-04

| | | | |
|---|---|---|---|
| **Client:** | Engeo | **Date:** | 12/06/2026 |
| **Site:** | Ladys Mile, Queenstown | **Tested by:** | J.T/P.B |
| **Job No:** | 8398-125 | **Test No.:** | **TP1-600** |
| **Report No:** | **WLG8398-125-R001** | **Page:** | 2 |
| **Client Reference:** | | **Checked by:** | G.B |
| | | **Date:** | 24/06/2026 |

| Loading Stage | Preferred Normal Stress (MPa) | Actual Normal Stress (MPa) | Settlement of Loading Plate (mm) | Load Cycle |
|---|---|---|---|---|
| 1 | 0.010 | 0.0105 | -0.14 | Primary load |
| 2 | 0.050 | 0.0493 | -1.04 | |
| 3 | 0.100 | 0.0905 | -1.74 | |
| 4 | 0.150 | 0.1490 | -2.56 | |
| 5 | 0.200 | 0.1987 | -3.40 | |
| 6 | 0.250 | 0.2502 | -4.32 | |
| 7 | 0.300 | 0.3007 | -5.28 | |
| 8 | 0.150 | 0.1507 | -4.66 | Unloaded |
| 9 | 0.075 | 0.0751 | -4.32 | |
| 10 | 0.006 | 0.0060 | -3.14 | |
| 11 | 0.050 | 0.0501 | -3.76 | Secondary load |
| 12 | 0.100 | 0.1000 | -4.16 | |
| 13 | 0.150 | 0.1498 | -4.44 | |
| 14 | 0.200 | 0.2003 | -4.76 | |
| 15 | 0.250 | 0.2507 | -5.12 | |




| Ev1 (MPa) | 27.81 | Ev2 (MPa) | 64.17 |
|---|---|---|---|
| **Ev2/Ev1=2.31** | | | |
| **Begin Time:** | 1:00:00 PM | **End Time** | 2:25:00 PM |
| **Ks Estimated* :** | **51200 kN/m3** | **Esitmated CBR*** | **8.84** |
| **Device:** | HMP PDG pro (0799) | **Weather/Temp:** | Overcast |
| **Plate Size:** | 600mm | **Bedding Assistance:** | |
| **Soil:** | Sandy Gravels | **Remarks:** | |

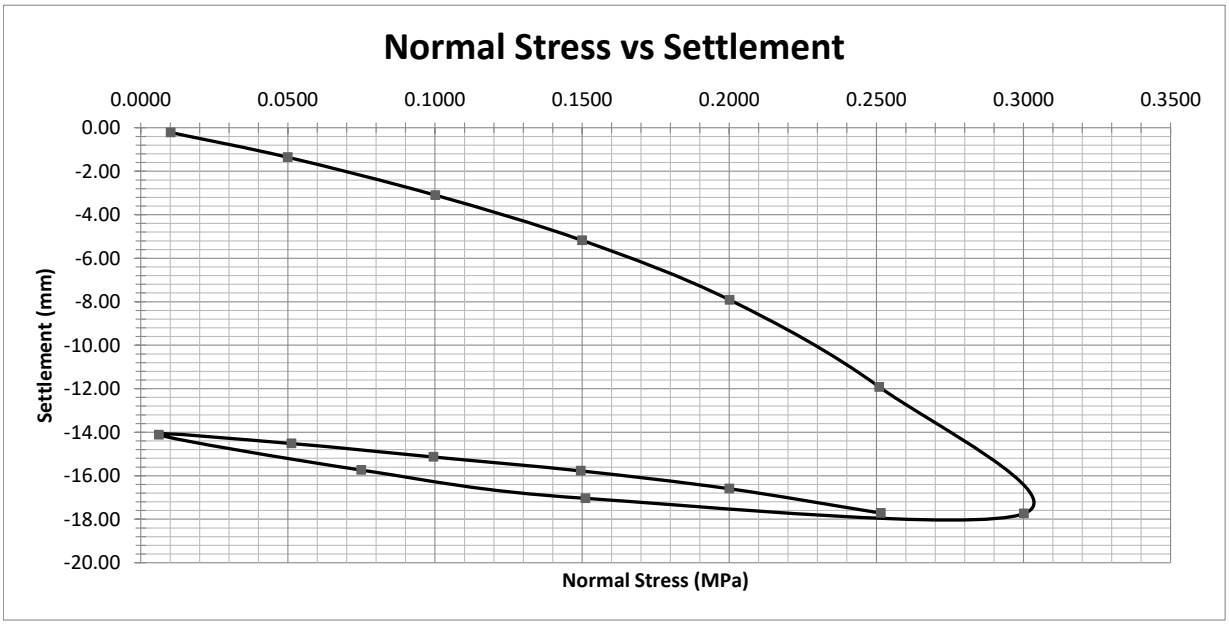
**Estimated Ks and CBR fall outside the scope of accreditation*

# STATIC PLATE LOAD TEST

DIN 18134:2012-04

| | | | |
|---|---|---|---|
| **Client:** | Engeo | **Date:** | 12/06/2026 |
| **Site:** | Ladys Mile, Queenstown | **Tested by:** | J.T/P.B |
| **Job No:** | 8398-125 | **Test No.:** | **TP02-600** |
| **Report No:** | **WLG8398-125-R001** | **Page:** | 3 |
| **Client Reference:** | | **Checked by:** | G.B |
| | | **Date:** | 24/06/2026 |

| Loading Stage | Preferred Normal Stress (MPa) | Actual Normal Stress (MPa) | Settlement of Loading Plate (mm) | Load Cycle |
|---|---|---|---|---|
| 1 | 0.010 | 0.0102 | -0.22 | Primary load |
| 2 | 0.050 | 0.0500 | -1.36 | |
| 3 | 0.100 | 0.1001 | -3.10 | |
| 4 | 0.150 | 0.1500 | -5.18 | |
| 5 | 0.200 | 0.2002 | -7.92 | |
| 6 | 0.250 | 0.2510 | -11.92 | |
| 7 | 0.300 | 0.3002 | -17.74 | |
| 8 | 0.150 | 0.1512 | -17.04 | Unloaded |
| 9 | 0.075 | 0.0750 | -15.74 | |
| 10 | 0.006 | 0.0062 | -14.12 | |
| 11 | 0.050 | 0.0512 | -14.52 | Secondary load |
| 12 | 0.100 | 0.0995 | -15.14 | |
| 13 | 0.150 | 0.1496 | -15.78 | |
| 14 | 0.200 | 0.2001 | -16.60 | |
| 15 | 0.250 | 0.2516 | -17.72 | |




| | | | |
|---|---|---|---|
| **Ev1 (MPa)** | **8.45** | **Ev2 (MPa)** | **28.67** |
| **Ev2/Ev1=3.39** | | | |
| **Begin Time:** | 10:30:00 AM | **End Time** | 11:10:00 AM |
| **Ks Estimated* :** | **19200 kN/m3** | | **Esitmated CBR*** **1.62** |
| **Device:** | HMP PDG pro (0799) | **Weather/Temp:** | Overcast |
| **Plate Size:** | 600mm | **Bedding Assistance:** | |
| **Soil:** | Silt | **Remarks:** | |

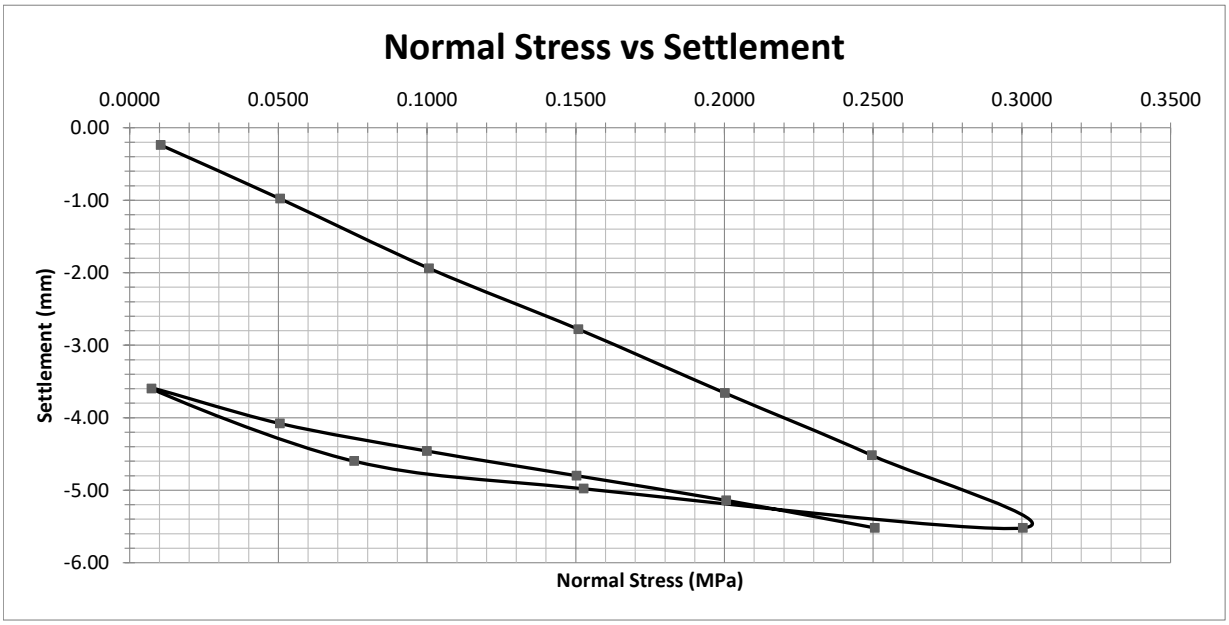
**Estimated Ks and CBR fall outside the scope of accreditation*

# STATIC PLATE LOAD TEST

DIN 18134:2012-04

| | | | |
|---|---|---|---|
| **Client:** | Engeo | **Date:** | 12/06/2026 |
| **Site:** | Ladys Mile, Queenstown | **Tested by:** | J.T/P.B |
| **Job No:** | 8398-125 | **Test No.:** | **TP3-600** |
| **Report No:** | **WLG8398-125-R001** | **Page:** | 4 |
| **Client Reference:** | | **Checked by:** | G.B |
| | | **Date:** | 24/06/2026 |

| Loading Stage | Preferred Normal Stress (MPa) | Actual Normal Stress (MPa) | Settlement of Loading Plate (mm) | Load Cycle |
|---|---|---|---|---|
| 1 | 0.010 | 0.0105 | -0.24 | Primary load |
| 2 | 0.050 | 0.0506 | -0.98 | |
| 3 | 0.100 | 0.1007 | -1.94 | |
| 4 | 0.150 | 0.1509 | -2.78 | |
| 5 | 0.200 | 0.2002 | -3.66 | |
| 6 | 0.250 | 0.2496 | -4.52 | |
| 7 | 0.300 | 0.3004 | -5.52 | |
| 8 | 0.150 | 0.1527 | -4.98 | Unloaded |
| 9 | 0.075 | 0.0755 | -4.60 | |
| 10 | 0.006 | 0.0074 | -3.60 | |
| 11 | 0.050 | 0.0505 | -4.08 | Secondary load |
| 12 | 0.100 | 0.1000 | -4.46 | |
| 13 | 0.150 | 0.1503 | -4.80 | |
| 14 | 0.200 | 0.2006 | -5.14 | |
| 15 | 0.250 | 0.2506 | -5.52 | |




| | | | |
|---|---|---|---|
| **Ev1 (MPa)** | **25.21** | **Ev2 (MPa)** | **61.40** |
| **Ev2/Ev1=2.44** | | | |
| **Begin Time:** | 10:15:00 AM | **End Time** | 11:00:00 AM |
| **Ks Estimated* :** | **41600 kN/m3** | **Esitmated CBR*** | **6.17** |
| **Device:** | HMP PDG pro (0799) | **Weather/Temp:** | Sunny |
| **Plate Size:** | 600mm | **Bedding Assistance:** | |
| **Soil:** | Sily Gravels | **Remarks:** | |

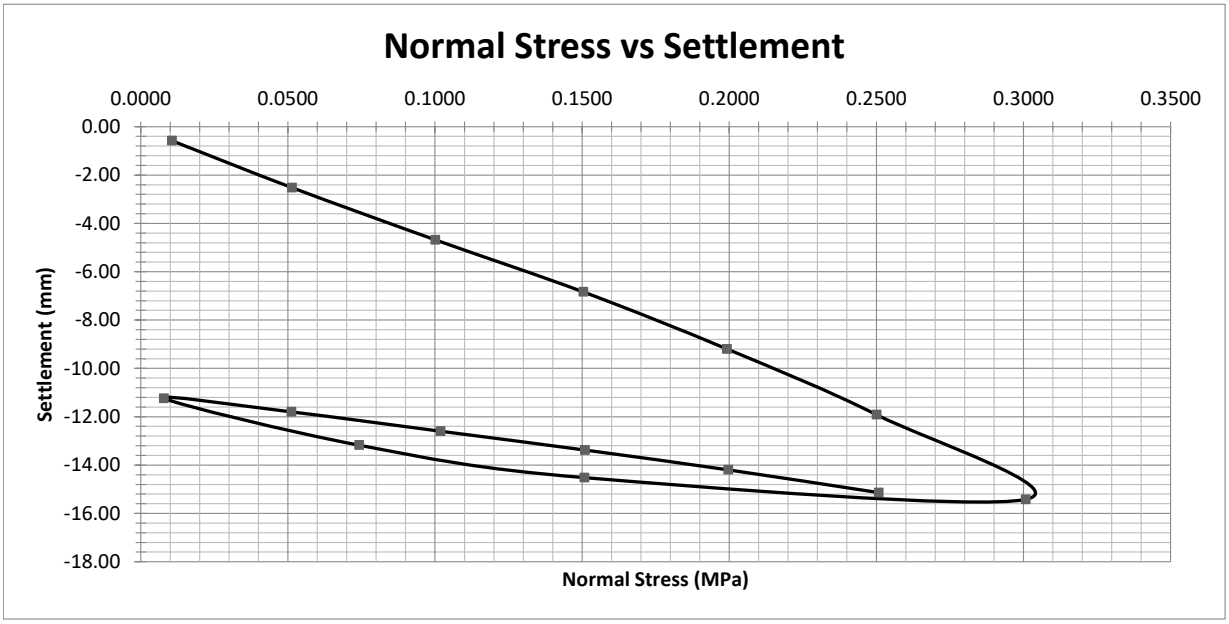
**Estimated Ks and CBR fall outside the scope of accreditation*

# STATIC PLATE LOAD TEST

DIN 18134:2012-04

| | | | |
|---|---|---|---|
| **Client:** | Engeo | **Date:** | 12/06/2026 |
| **Site:** | Ladys Mile, Queenstown | **Tested by:** | J.T/P.B |
| **Job No:** | 8398-125 | **Test No.:** | **TP4-600** |
| **Report No:** | **WLG8398-125-R001** | **Page:** | 5 |
| **Client Reference:** | | **Checked by:** | G.B |
| | | **Date:** | 24/06/2026 |

| Loading Stage | Preferred Normal Stress (MPa) | Actual Normal Stress (MPa) | Settlement of Loading Plate (mm) | Load Cycle |
|---|---|---|---|---|
| 1 | 0.010 | 0.0106 | -0.58 | Primary load |
| 2 | 0.050 | 0.0514 | -2.52 | |
| 3 | 0.100 | 0.1001 | -4.68 | |
| 4 | 0.150 | 0.1505 | -6.84 | |
| 5 | 0.200 | 0.1993 | -9.20 | |
| 6 | 0.250 | 0.2501 | -11.92 | |
| 7 | 0.300 | 0.3008 | -15.42 | |
| 8 | 0.150 | 0.1508 | -14.52 | Unloaded |
| 9 | 0.075 | 0.0743 | -13.18 | |
| 10 | 0.006 | 0.0079 | -11.24 | |
| 11 | 0.050 | 0.0512 | -11.80 | Secondary load |
| 12 | 0.100 | 0.1019 | -12.60 | |
| 13 | 0.150 | 0.1510 | -13.38 | |
| 14 | 0.200 | 0.1997 | -14.20 | |
| 15 | 0.250 | 0.2508 | -15.14 | |




| Ev1 (MPa) | 9.44 | Ev2 (MPa) | 27.15 |
|---|---|---|---|
| | | **Ev2/Ev1=2.88** | |
| **Begin Time:** | 3:40:00 PM | **End Time** | 4:25:00 PM |
| **Ks Estimated* :** | **14400** | **kN/m3** | **Esitmated CBR*** **0.98** |
| **Device:** | HMP PDG pro (0799) | **Weather/Temp:** | Overcast |
| **Plate Size:** | 600mm | **Bedding Assistance:** | |
| **Soil:** | | **Remarks:** | |

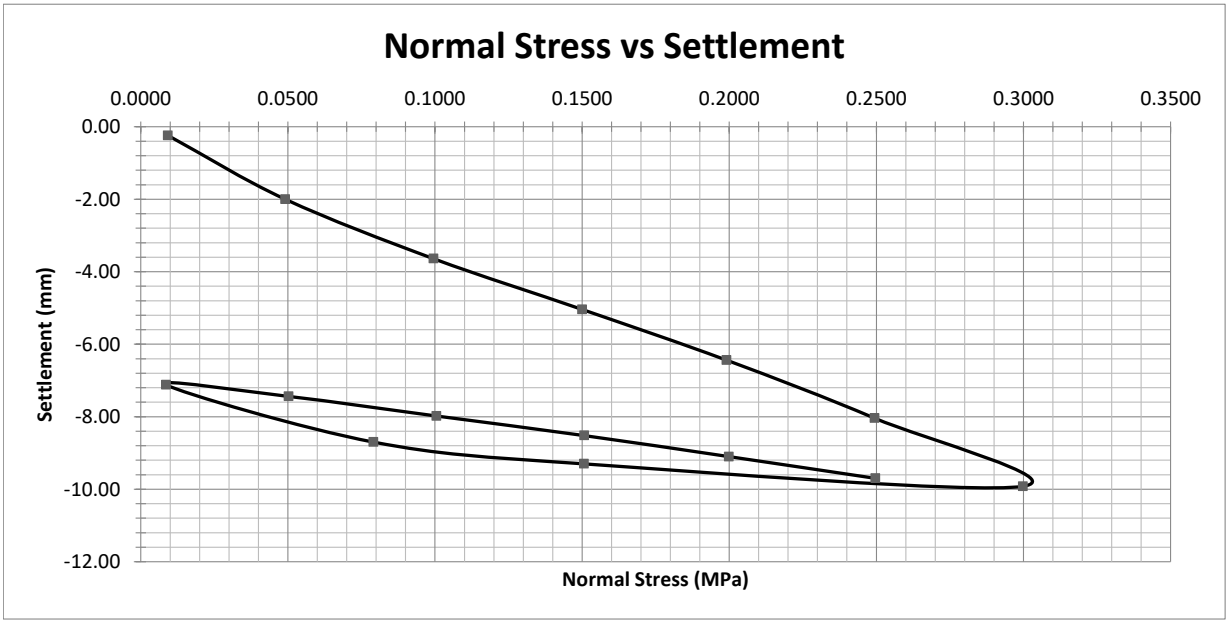
**Estimated Ks and CBR fall outside the scope of accreditation*

# STATIC PLATE LOAD TEST

DIN 18134:2012-04

| | | | |
|---|---|---|---|
| **Client:** | Engeo | **Date:** | 12/06/2026 |
| **Site:** | Ladys Mile, Queenstown | **Tested by:** | J.T/P.B |
| **Job No:** | 8398-125 | **Test No.:** | **TP05-600** |
| **Report No:** | **WLG8398-125-R001** | **Page:** | 6 |
| **Client Reference:** | | **Checked by:** | G.B |
| | | **Date:** | 24/06/2026 |

| Loading Stage | Preferred Normal Stress (MPa) | Actual Normal Stress (MPa) | Settlement of Loading Plate (mm) | Load Cycle |
|---|---|---|---|---|
| 1 | 0.010 | 0.0092 | -0.24 | Primary load |
| 2 | 0.050 | 0.0491 | -2.00 | |
| 3 | 0.100 | 0.0995 | -3.64 | |
| 4 | 0.150 | 0.1500 | -5.04 | |
| 5 | 0.200 | 0.1991 | -6.44 | |
| 6 | 0.250 | 0.2494 | -8.04 | |
| 7 | 0.300 | 0.2998 | -9.92 | |
| 8 | 0.150 | 0.1506 | -9.30 | Unloaded |
| 9 | 0.075 | 0.0791 | -8.70 | |
| 10 | 0.006 | 0.0086 | -7.12 | |
| 11 | 0.050 | 0.0503 | -7.44 | Secondary load |
| 12 | 0.100 | 0.1005 | -7.98 | |
| 13 | 0.150 | 0.1507 | -8.52 | |
| 14 | 0.200 | 0.1999 | -9.10 | |
| 15 | 0.250 | 0.2497 | -9.70 | |




| Ev1 (MPa) | 14.89 | Ev2 (MPa) | 40.18 |
|---|---|---|---|
| **Ev2/Ev1=2.7** | | | |
| **Begin Time:** | 1:20:00 PM | **End Time** | 2:05:00 PM |
| **Ks Estimated* :** | **28800 kN/m3** | **Esitmated CBR*** | **3.26** |
| **Device:** | HMP PDG pro (0799) | **Weather/Temp:** | Sunny |
| **Plate Size:** | 600mm | **Bedding Assistance:** | |
| **Soil:** | Silt | **Remarks:** | |

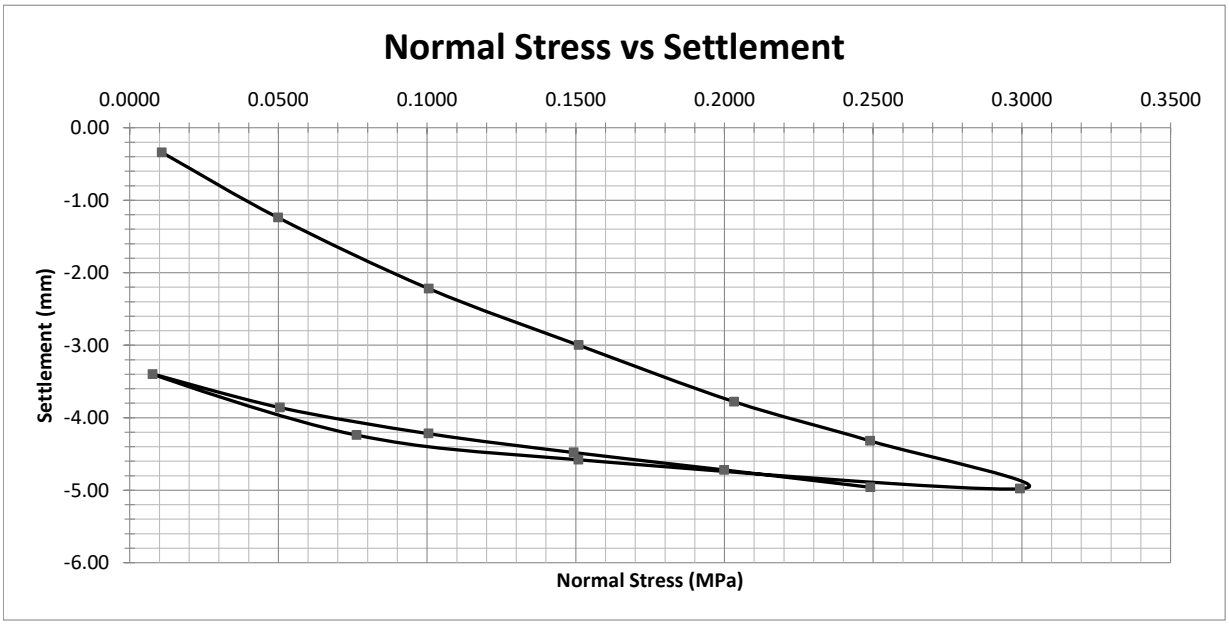
**Estimated Ks and CBR fall outside the scope of accreditation*

# STATIC PLATE LOAD TEST

DIN 18134:2012-04

| | | | |
|---|---|---|---|
| **Client:** | Engeo | **Date:** | 12/06/2026 |
| **Site:** | Ladys Mile, Queenstown | **Tested by:** | J.T/P.B |
| **Job No:** | 8398-125 | **Test No.:** | **TP06-600** |
| **Report No:** | **WLG8398-125-R001** | **Page:** | 7 |
| **Client Reference:** | | **Checked by:** | G.B |
| | | **Date:** | 24/06/2026 |

| Loading Stage | Preferred Normal Stress (MPa) | Actual Normal Stress (MPa) | Settlement of Loading Plate (mm) | Load Cycle |
|---|---|---|---|---|
| 1 | 0.010 | 0.0108 | -0.34 | Primary load |
| 2 | 0.050 | 0.0499 | -1.24 | |
| 3 | 0.100 | 0.1006 | -2.22 | |
| 4 | 0.150 | 0.1510 | -3.00 | |
| 5 | 0.200 | 0.2033 | -3.78 | |
| 6 | 0.250 | 0.2490 | -4.32 | |
| 7 | 0.300 | 0.2994 | -4.98 | |
| 8 | 0.150 | 0.1509 | -4.58 | Unloaded |
| 9 | 0.075 | 0.0763 | -4.24 | |
| 10 | 0.006 | 0.0077 | -3.40 | |
| 11 | 0.050 | 0.0505 | -3.86 | Secondary load |
| 12 | 0.100 | 0.1005 | -4.22 | |
| 13 | 0.150 | 0.1493 | -4.48 | |
| 14 | 0.200 | 0.1999 | -4.72 | |
| 15 | 0.250 | 0.2491 | -4.96 | |




| | | | |
|---|---|---|---|
| **Ev1 (MPa)** | **28.86** | **Ev2 (MPa)** | **79.87** |
| **Ev2/Ev1=2.77** | | | |
| **Begin Time:** | 12:20:00 PM | **End Time** | 1:00:00 PM |
| **Ks Estimated* :** | **52800 kN/m3** | **Esitmated CBR*** | **9.33** |
| **Device:** | HMP PDG pro (0799) | **Weather/Temp:** | Sunny |
| **Plate Size:** | 600mm | **Bedding Assistance:** | |
| **Soil:** | Sandy Gravels | **Remarks:** | |

**Estimated Ks and CBR fall outside the scope of accreditation*

GEO CIVIL

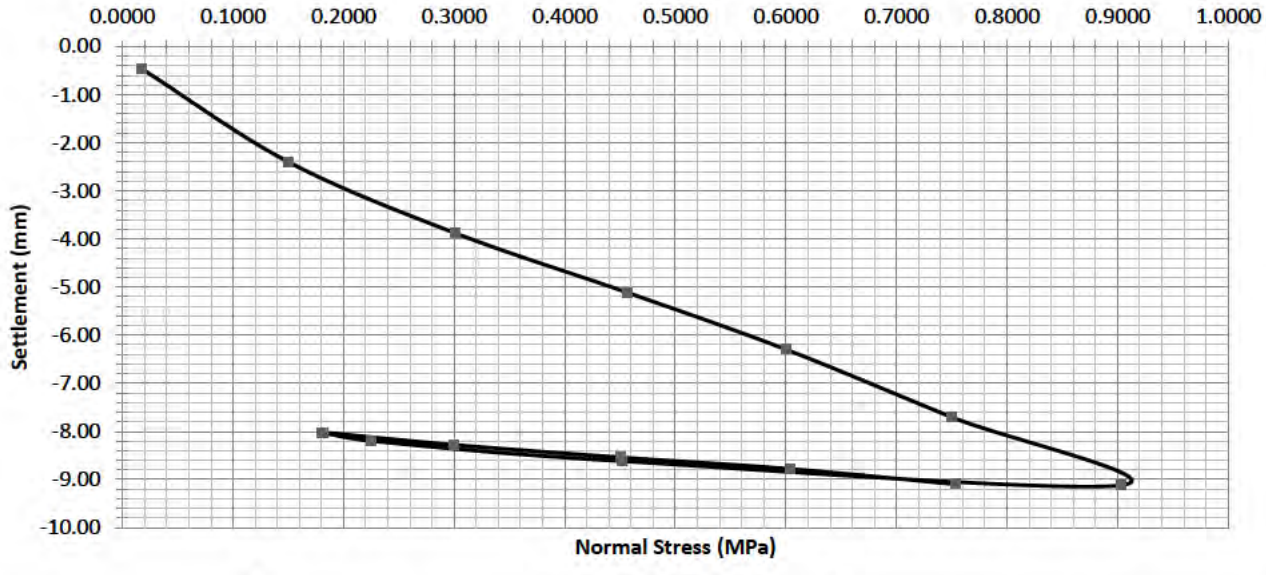
# STATIC PLATE LOAD TEST

DIN 18134:2012-04

| | | | |
|---|---|---|---|
| **Client:** | Engeo | **Date:** | 12/06/2026 |
| **Site:** | Ladys Mile, Queenstown | **Tested by:** | J.T/P.B |
| **Job No:** | 8398-125 | **Test No.:** | **TP03-300** |
| **Report No:** | **WLG8398-125-R001** | **Page:** | 8 |
| **Client Reference:** | | **Checked by:** | G.B |
| | | **Date:** | 24/06/2026 |

| Loading Stage | Preferred Normal Stress (MPa) | Actual Normal Stress (MPa) | Settlement of Loading Plate (mm) | Load Cycle |
|---|---|---|---|---|
| 1 | 0.010 | 0.0171 | -0.46 | Primary load |
| 2 | 0.150 | 0.1501 | -2.40 | |
| 3 | 0.300 | 0.3010 | -3.88 | |
| 4 | 0.450 | 0.4572 | -5.12 | |
| 5 | 0.600 | 0.6003 | -6.30 | |
| 6 | 0.750 | 0.7495 | -7.70 | |
| 7 | 0.900 | 0.9031 | -9.12 | |
| 8 | 0.450 | 0.4521 | -8.62 | |
| 9 | 0.225 | 0.2252 | -8.20 | Unload |
| 10 | 0.180 | 0.1807 | -8.02 | |
| 11 | 0.150 | 0.1811 | -8.02 | |
| 12 | 0.300 | 0.2999 | -8.28 | Secondary load |
| 13 | 0.450 | 0.4502 | -8.54 | |
| 14 | 0.600 | 0.6037 | -8.78 | |
| 15 | 0.750 | 0.7535 | -9.10 | |
| | | | | |

## Normal Stress vs Settlement




| | | | |
|---|---|---|---|
| **Ev1 (MPa)** | **23.79** | **Ev2 (MPa)** | **122.66** |
| **Ev2/Ev1=5.15** | | | |
| **Begin Time:** | 11:10:00 AM | **End Time** | 12:05:00 PM |
| **Ks Estimated* :** | **56320 kN/m3** | **Esitmated CBR*** | **10.43** |
| **Device:** | HMP PDG pro (0799) | **Weather/Temp:** | |
| **Plate Size:** | 300mm | **Bedding Assistance:** | |
| **Soil:** | Insitu Sand with Gravel | **Remarks:** | |

**Estimated Ks and CBR fall outside the scope of accreditation*

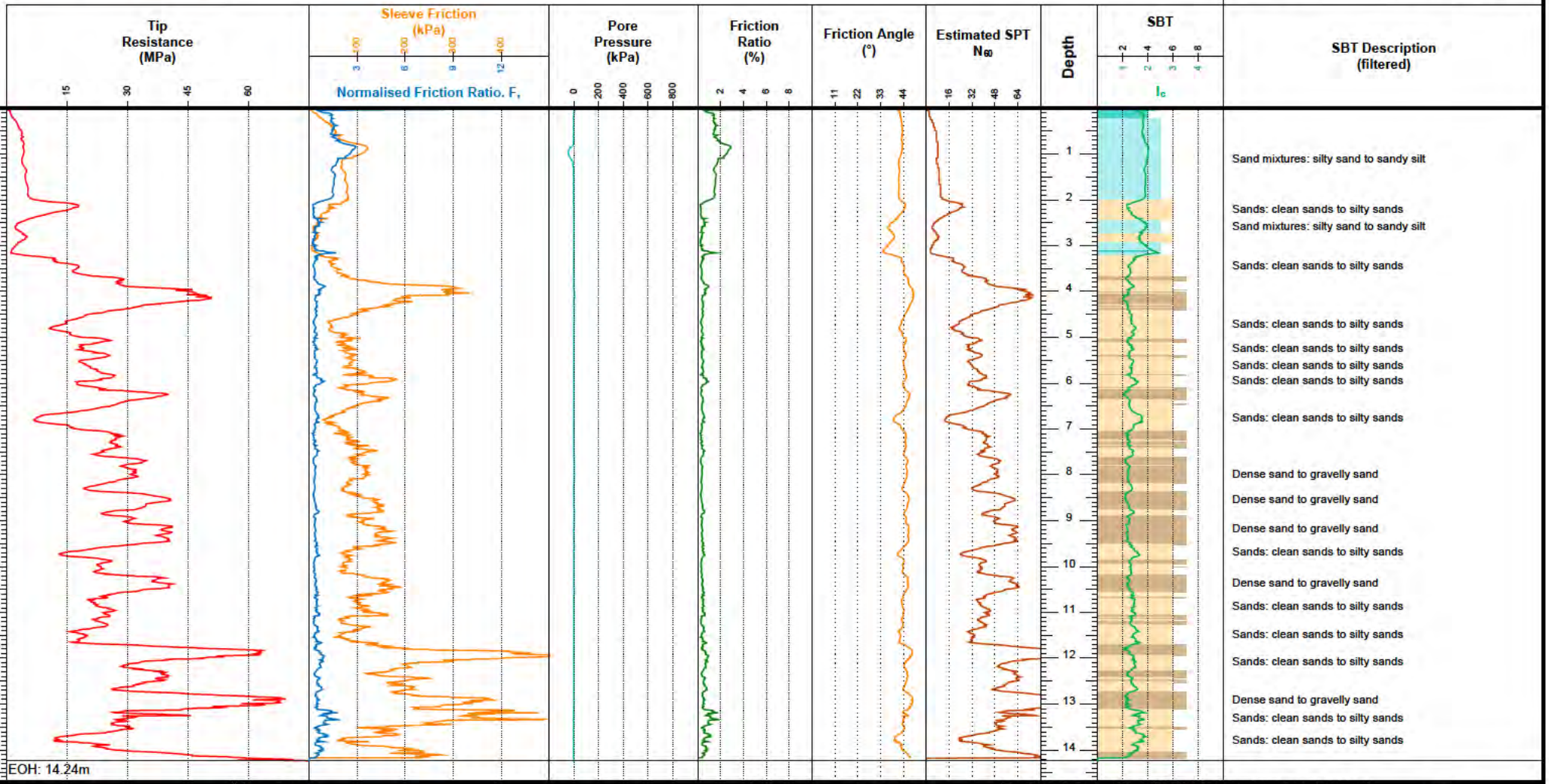
# Appendix 9:

CPT Logs

# CONE PENETRATION TEST (CPT) LOG

**TEST NO.:** CPT01

**Client Ref.:** CPT Invetigation




**Client:** ENGEO

**Project:** Lower Shotover Road

**Location:** Queenstown

**Contractor:** Speight Drilling Ltd

**Remarks:**

100mpa Probe

**Termination Reason:**

Refusal due to Sleeve and Cone Resistance

**Northing:** 5008342

**Easting:** 1266637

**System:** NZTM

**Elevation:** Ground

**Datum:**

**Method:** Garmin GPS

**Rig:** Pagani TG63 - 150

**Cone ID:** 001165

**Cone Area:** 10cm²

**Sleeve Area:** 150cm²

**Area Ratio:** 0.79

**Predrill:** 0m

**Soil Behaviour Type (SBT) - Robertson et al. 1986**

| | | | |
|---|---|---|---|
| 0 | Undefined | 5 | Sand mixtures: silty sand to sandy silt |
| 1 | Sensitive fine-grained | 6 | Sands: clean sands to silty sands |
| 2 | Clay - organic soil | 7 | Dense sand to gravelly sand |
| 3 | Clays: clay to silty clay | 8 | Stiff sand to clayey sand |
| 4 | Silt mixtures: clayey silt & silty clay | 9 | Stiff fine-grained |

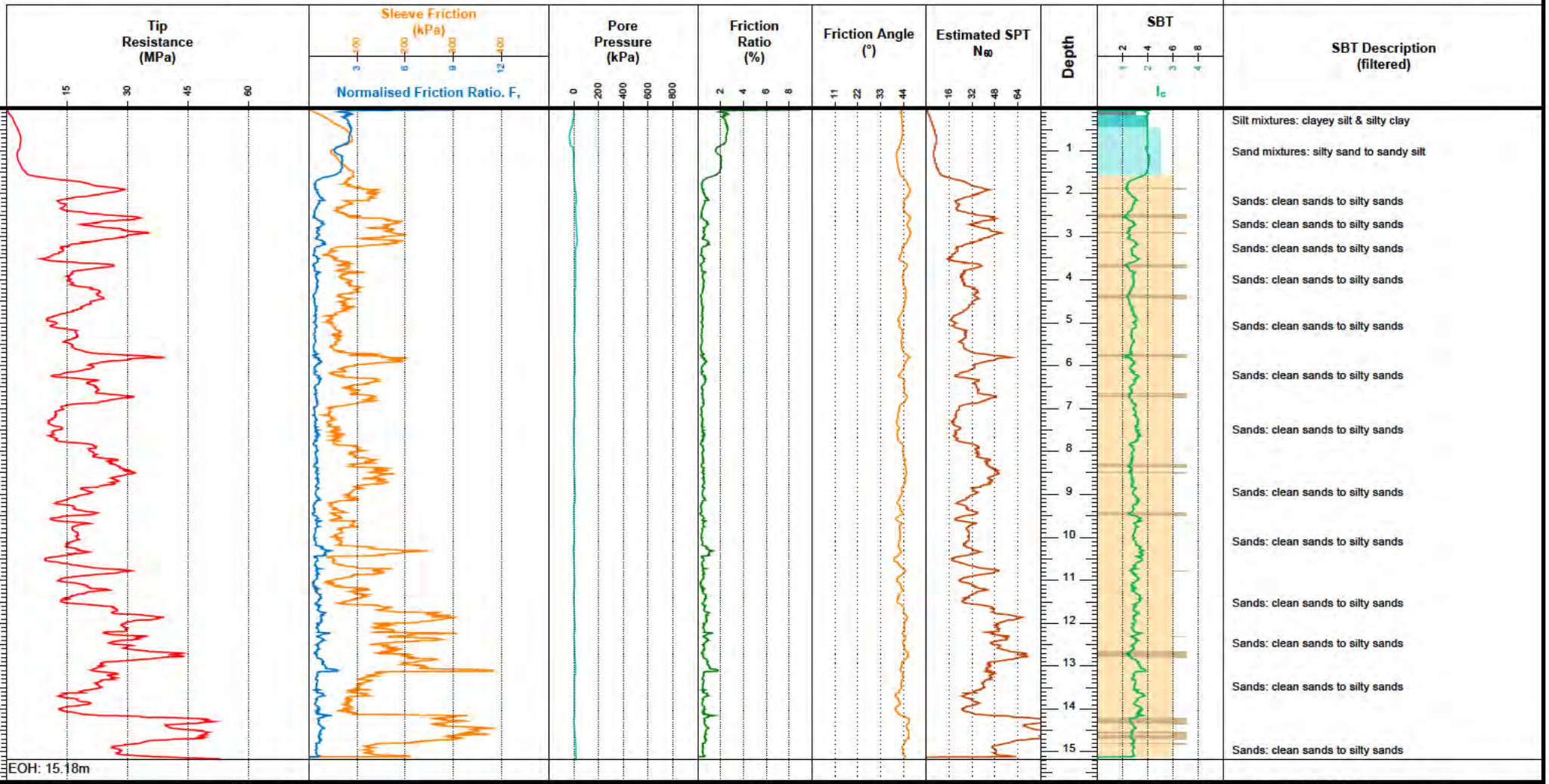
**Date:**

21/05/2026

# CONE PENETRATION TEST (CPT) LOG

**TEST NO.:** CPT02

**Client Ref.:** CPT Invetigation




**Client:** ENGEO

**Project:** Lower Shotover Road

**Location:** Queenstown

**Contractor:** Speight Drilling Ltd

**Remarks:**

100mpa Probe

**Termination Reason:**

Refusal due to Sleeve and Cone Resistance

**Northing:** 5008352

**Easting:** 1266534

**System:** NZTM

**Elevation:** Ground

**Datum:**

**Method:** Garmin GPS

**Rig:** Pagani TG63 - 150

**Cone ID:** 001165

**Cone Area:** 10cm²

**Sleeve Area:** 150cm²

**Area Ratio:** 0.79

**Predrill:** 0m

**Soil Behaviour Type (SBT) - Robertson et al. 1986**

| | | | |
|---|---|---|---|
| 0 | Undefined | 5 | Sand mixtures: silty sand to sandy silt |
| 1 | Sensitive fine-grained | 6 | Sands: clean sands to silty sands |
| 2 | Clay - organic soil | 7 | Dense sand to gravelly sand |
| 3 | Clays: clay to silty clay | 8 | Stiff sand to clayey sand |
| 4 | Silt mixtures: clayey silt & silty clay | 9 | Stiff fine-grained |

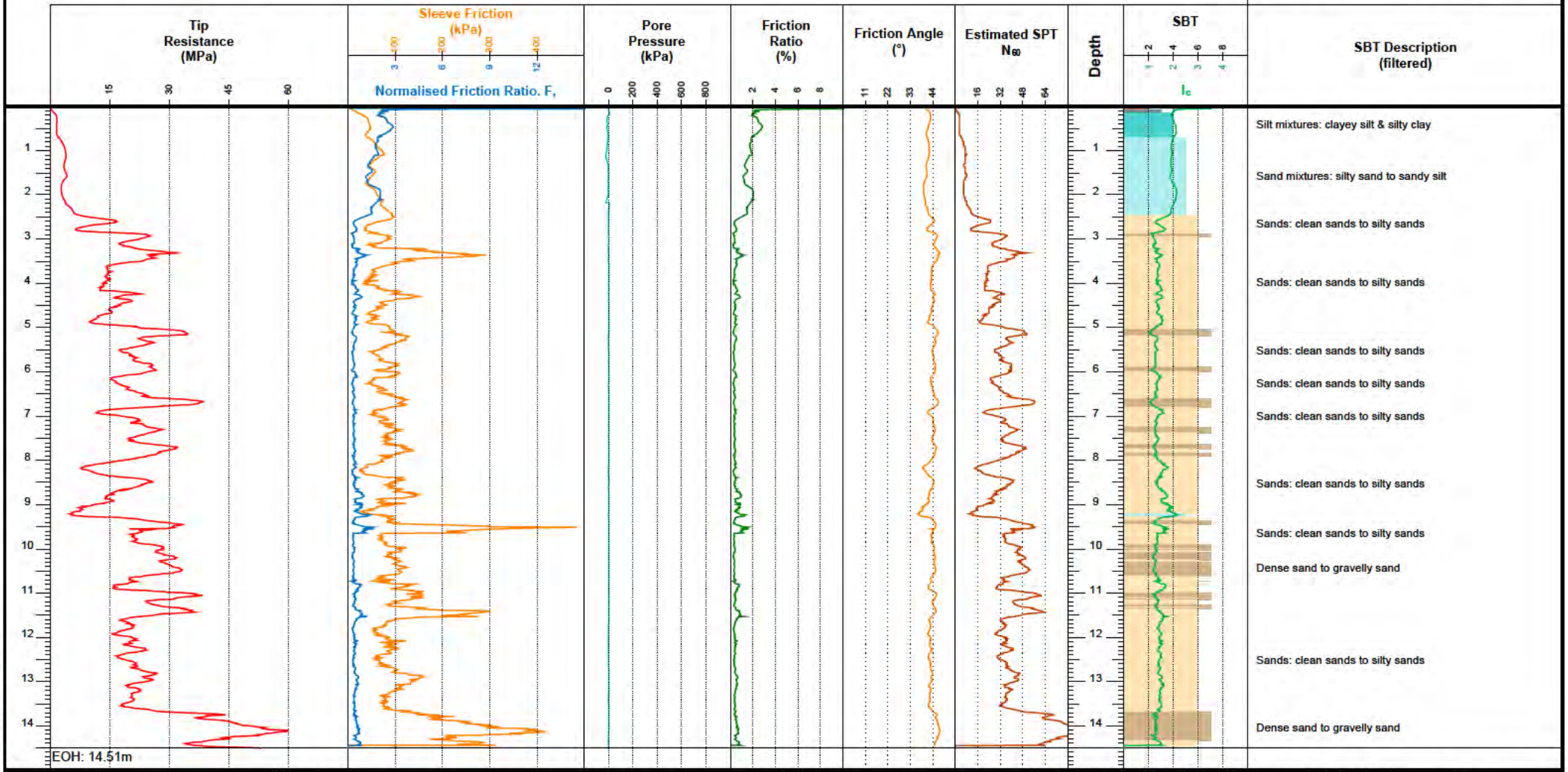
**Date:**

21/05/2026

# CONE PENETRATION TEST (CPT) LOG

**TEST NO.:** CPT03

**Client Ref.:** CPT Invetigation




**Client:** ENGEO

**Project:** Lower Shotover Road

**Location:** Queenstown

**Contractor:** Speight Drilling Ltd

**Remarks:**

100mpa Probe

**Termination Reason:**

Refusal due to Sleeve and Cone Resistance

**Northing:** 5008504

**Easting:** 1266611

**System:** NZTM

**Elevation:** Ground

**Datum:**

**Method:** Garmin GPS

**Rig:** Pagani TG63 - 150

**Cone ID:** 001165

**Cone Area:** 10cm²

**Sleeve Area:** 150cm²

**Area Ratio:** 0.79

**Predrill:** 0m

**Soil Behaviour Type (SBT) - Robertson et al. 1986**

| | | | |
|---|---|---|---|
| 0 | Undefined | 5 | Sand mixtures: silty sand to sandy silt |
| 1 | Sensitive fine-grained | 6 | Sands: clean sands to silty sands |
| 2 | Clay - organic soil | 7 | Dense sand to gravelly sand |
| 3 | Clays: clay to silty clay | 8 | Stiff sand to clayey sand |
| 4 | Silt mixtures: clayey silt & silty clay | 9 | Stiff fine-grained |

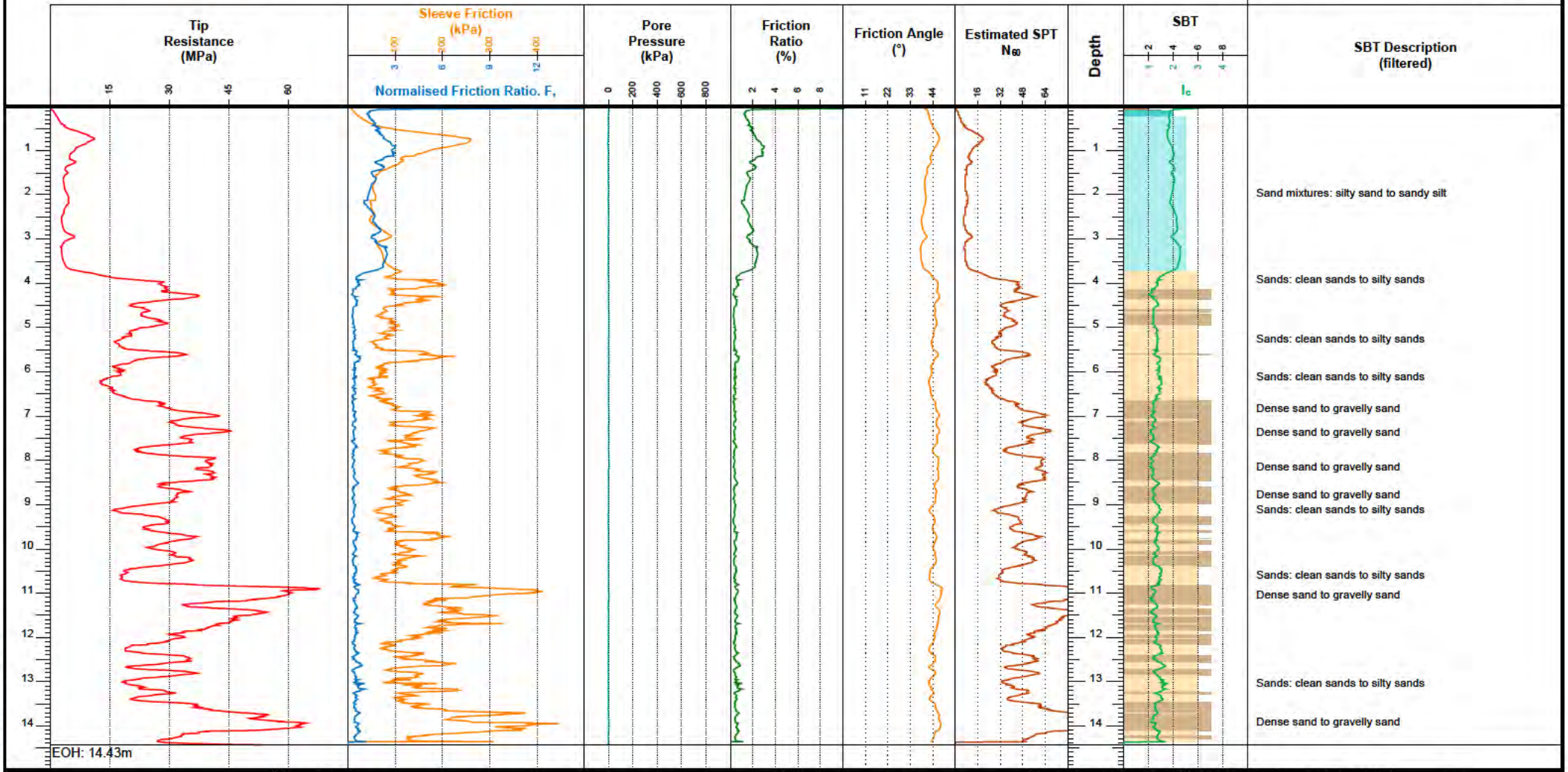
**Date:**

21/05/2026

# CONE PENETRATION TEST (CPT) LOG

**TEST NO.:** CPT04

**Client Ref.:** CPT Invetigation




**Client:** ENGEO

**Project:** Lower Shotover Road

**Location:** Queenstown

**Contractor:** Speight Drilling Ltd

**Remarks:**

100mpa Probe

**Termination Reason:**

Refusal due to Sleeve and Cone Resistance

**Northing:** 5008421

**Easting:** 1266666

**System:** NZTM

**Elevation:** Ground

**Datum:**

**Method:** Garmin GPS

**Rig:** Pagani TG63 - 150

**Cone ID:** 001165

**Cone Area:** 10cm²

**Sleeve Area:** 150cm²

**Area Ratio:** 0.79

**Predrill:** 0m

**Soil Behaviour Type (SBT) - Robertson et al. 1986**

| | | | |
|---|---|---|---|
| 0 | Undefined | 5 | Sand mixtures: silty sand to sandy silt |
| 1 | Sensitive fine-grained | 6 | Sands: clean sands to silty sands |
| 2 | Clay - organic soil | 7 | Dense sand to gravelly sand |
| 3 | Clays: clay to silty clay | 8 | Stiff sand to clayey sand |
| 4 | Silt mixtures: clayey silt & silty clay | 9 | Stiff fine-grained |

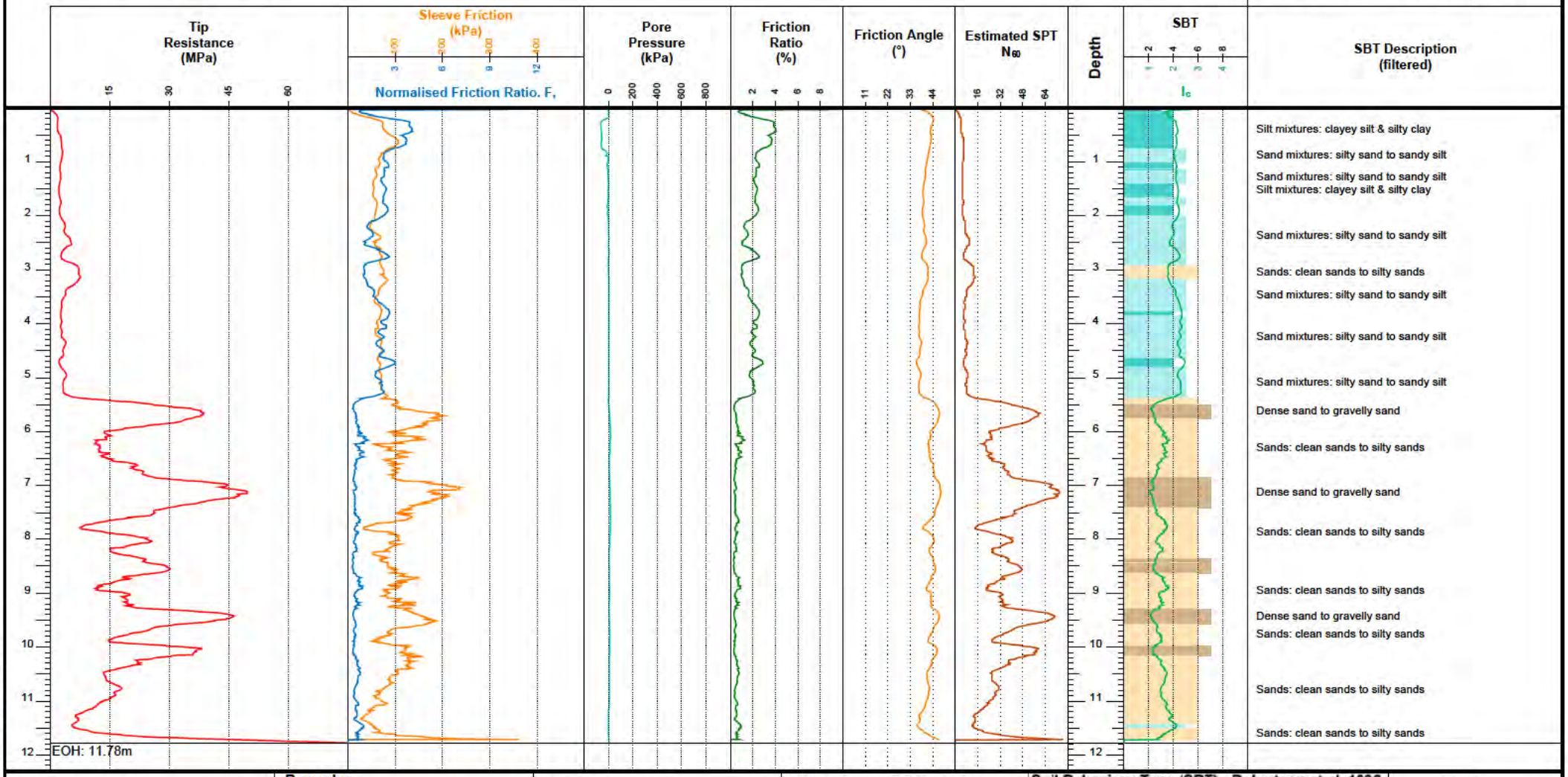
**Date:**

4/05/2026

# CONE PENETRATION TEST (CPT) LOG

**TEST NO.:** CPT05

**Client Ref.:** CPT Invetigation




**Client:** ENGEO

**Project:** Lower Shotover Road

**Location:** Queenstown

**Contractor:** Speight Drilling Ltd

**Remarks:**
100mpa Probe

**Termination Reason:**
Refusal due to Cone Resistance

**Northing:** 5008580

**Easting:** 1266691

**System:** NZTM

**Elevation:** Ground

**Datum:**

**Method:** Garmin GPS

**Rig:** Pagani TG63 - 150

**Cone ID:** 001165

**Cone Area:** 10cm²

**Sleeve Area:** 150cm²

**Area Ratio:** 0.79

**Predrill:** 0m

**Soil Behaviour Type (SBT) - Robertson et al. 1986**

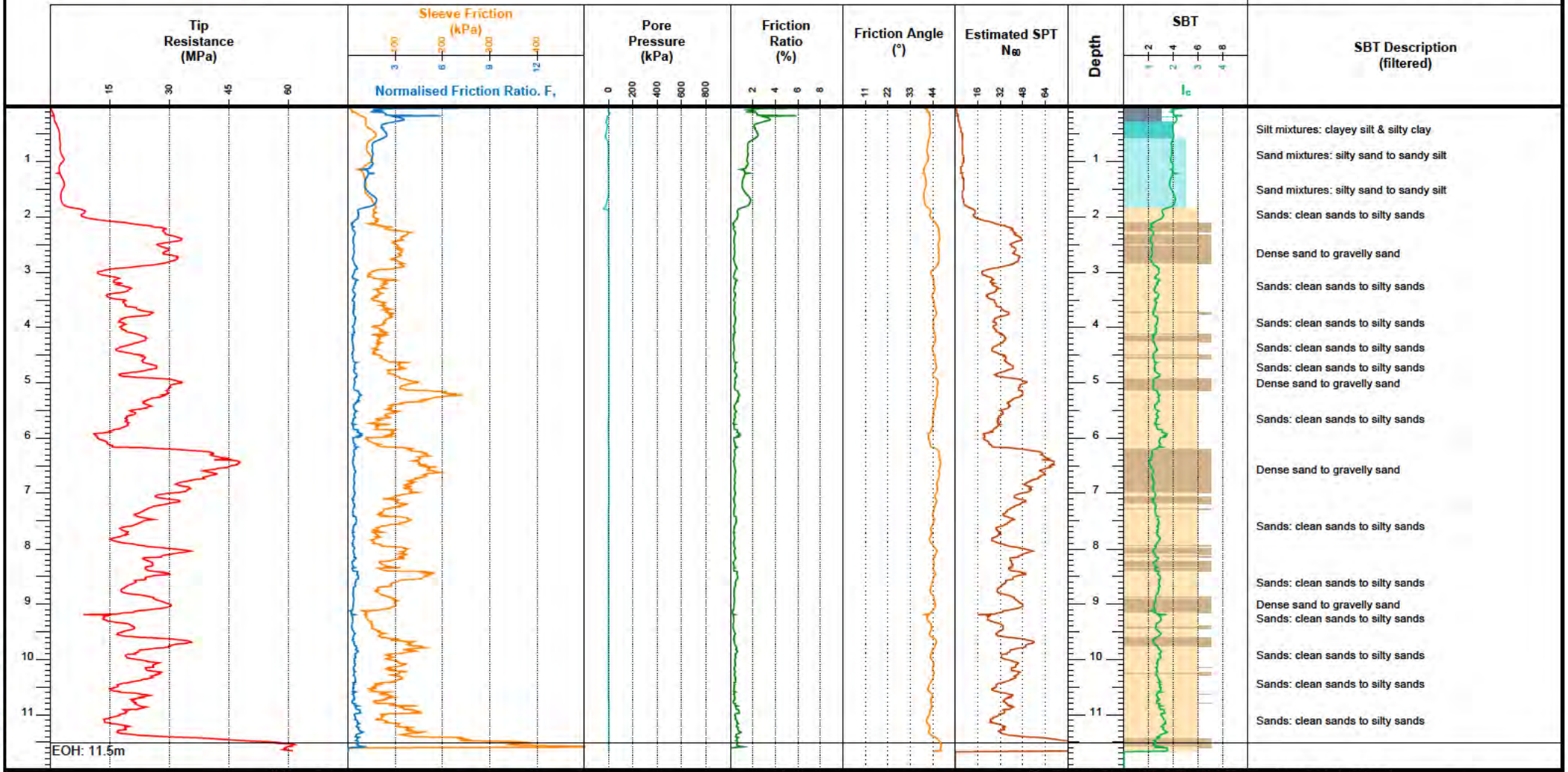
| | | | |
|---|---|---|---|
| 0 | Undefined | 5 | Sand mixtures: silty sand to sandy silt |
| 1 | Sensitive fine-grained | 6 | Sands: clean sands to silty sands |
| 2 | Clay - organic soil | 7 | Dense sand to gravelly sand |
| 3 | Clays: clay to silty clay | 8 | Stiff sand to clayey sand |
| 4 | Silt mixtures: clayey silt & silty clay | 9 | Stiff fine-grained |

**Date:**
22/05/2026

# CONE PENETRATION TEST (CPT) LOG

**TEST NO.:** CPT06

**Client Ref.:** CPT Invetigation




**Client:** ENGEO

**Project:** Lower Shotover Road

**Location:** Queenstown

**Contractor:** Speight Drilling Ltd

**Remarks:**

100mpa probe

**Termination Reason:**

Refusal due to Sleeve and Cone Resistance

**Northing:** 5008481

**Easting:** 1266743

**System:** NZTM

**Elevation:** Ground

**Datum:**

**Method:** Garmin GPS

**Rig:** Pagani TG63 - 150

**Cone ID:** 001165

**Cone Area:** 10cm²

**Sleeve Area:** 150cm²

**Area Ratio:** 0.79

**Predrill:** 0m

**Soil Behaviour Type (SBT) - Robertson et al. 1986**

| | | | |
|---|---|---|---|
| 0 | Undefined | 5 | Sand mixtures: silty sand to sandy silt |
| 1 | Sensitive fine-grained | 6 | Sands: clean sands to silty sands |
| 2 | Clay - organic soil | 7 | Dense sand to gravelly sand |
| 3 | Clays: clay to silty clay | 8 | Stiff sand to clayey sand |
| 4 | Silt mixtures: clayey silt & silty clay | 9 | Stiff fine-grained |

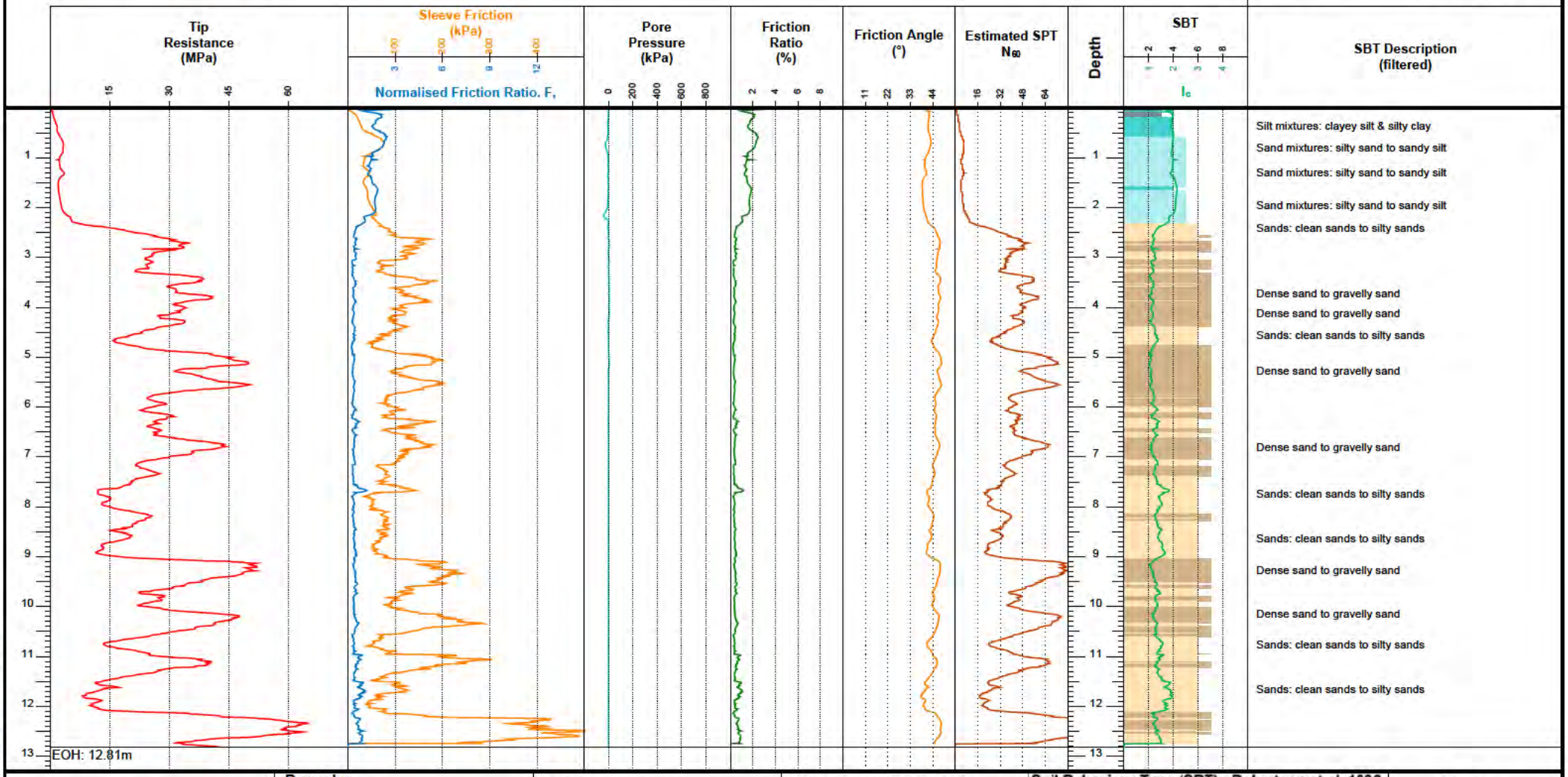
**Date:**

21/05/2026

# CONE PENETRATION TEST (CPT) LOG

**TEST NO.:** CPT07

**Client Ref.:** CPT Invetigation




**Client:** ENGEO

**Project:** Lower Shotover Road

**Location:** Queenstown

**Contractor:** Speight Drilling Ltd

**Remarks:**
100mpa Probe

**Termination Reason:**
Refusal due to Sleeve and Cone Resistance

**Northing:** 5008417

**Easting:** 1266784

**System:** NZTM

**Elevation:** Ground

**Datum:**

**Method:** Garmin GPS

**Rig:** Pagani TG63 - 150

**Cone ID:** 001165

**Cone Area:** 10cm²

**Sleeve Area:** 150cm²

**Area Ratio:** 0.79

**Predrill:** 0m

**Soil Behaviour Type (SBT) - Robertson et al. 1986**

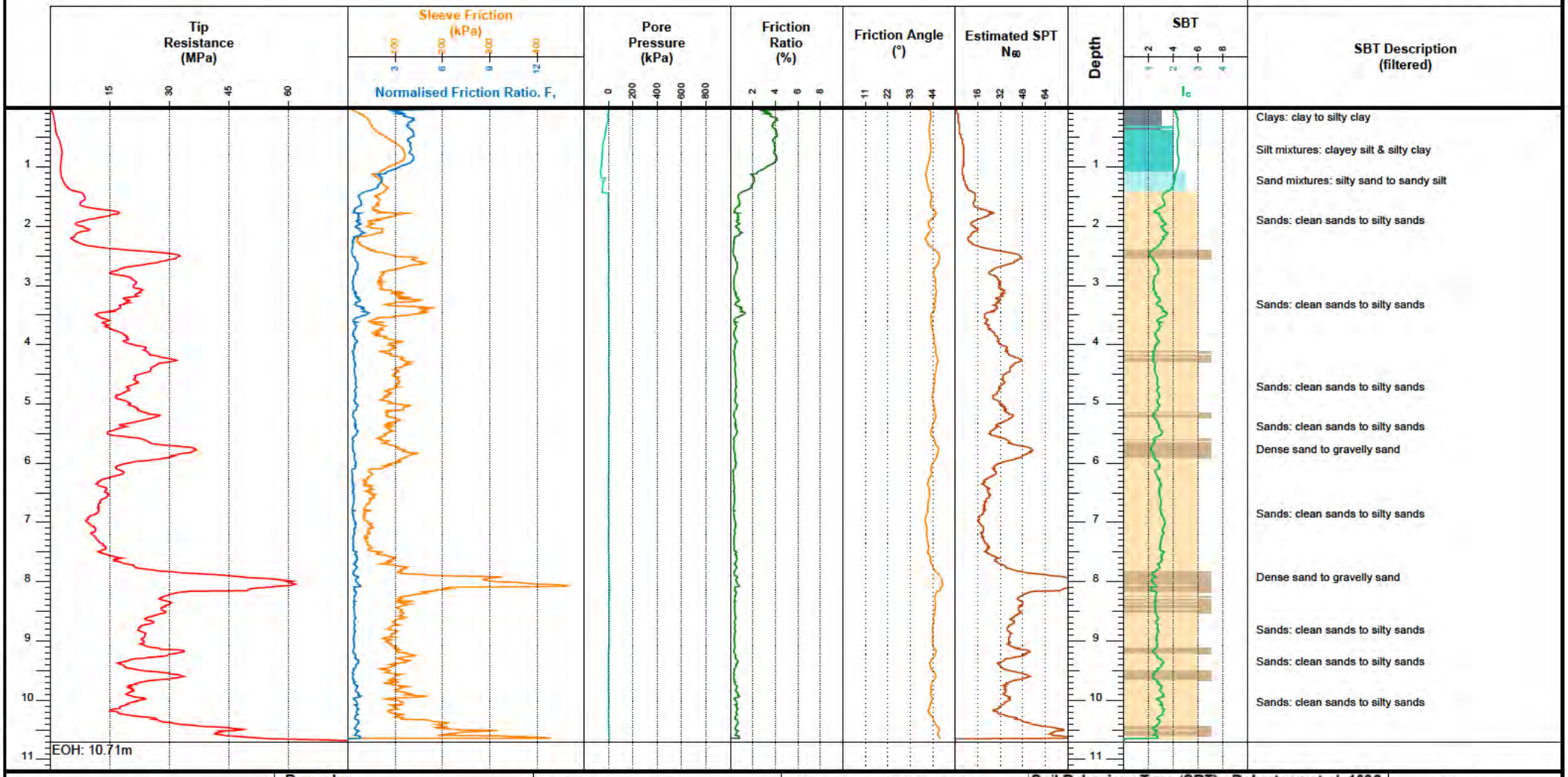
| | | | |
|---|---|---|---|
| 0 | Undefined | 5 | Sand mixtures: silty sand to sandy silt |
| 1 | Sensitive fine-grained | 6 | Sands: clean sands to silty sands |
| 2 | Clay - organic soil | 7 | Dense sand to gravelly sand |
| 3 | Clays: clay to silty clay | 8 | Stiff sand to clayey sand |
| 4 | Silt mixtures: clayey silt & silty clay | 9 | Stiff fine-grained |

**Date:**
21/05/2026

# CONE PENETRATION TEST (CPT) LOG

**TEST NO.:** CPT08

**Client Ref.:** CPT Invetigation




**Client:** ENGEO

**Project:** Lower Shotover Road

**Location:** Queenstown

**Contractor:** Speight Drilling Ltd

**Remarks:**

100mpa Probe

**Termination Reason:**

Refusal due to Sleeve and Cone Resistance

**Northing:** 5008516

**Easting:** 1266862

**System:** NZTM

**Elevation:** Ground

**Datum:**

**Method:** Garmin GPS

**Rig:** Pagani TG63 - 150

**Cone ID:** 001165

**Cone Area:** 10cm²

**Sleeve Area:** 150cm²

**Area Ratio:** 0.79

**Predrill:** 0m

**Soil Behaviour Type (SBT) - Robertson et al. 1986**

| | | | |
|---|---|---|---|
| 0 | Undefined | 5 | Sand mixtures: silty sand to sandy silt |
| 1 | Sensitive fine-grained | 6 | Sands: clean sands to silty sands |
| 2 | Clay - organic soil | 7 | Dense sand to gravelly sand |
| 3 | Clays: clay to silty clay | 8 | Stiff sand to clayey sand |
| 4 | Silt mixtures: clayey silt & silty clay | 9 | Stiff fine-grained |

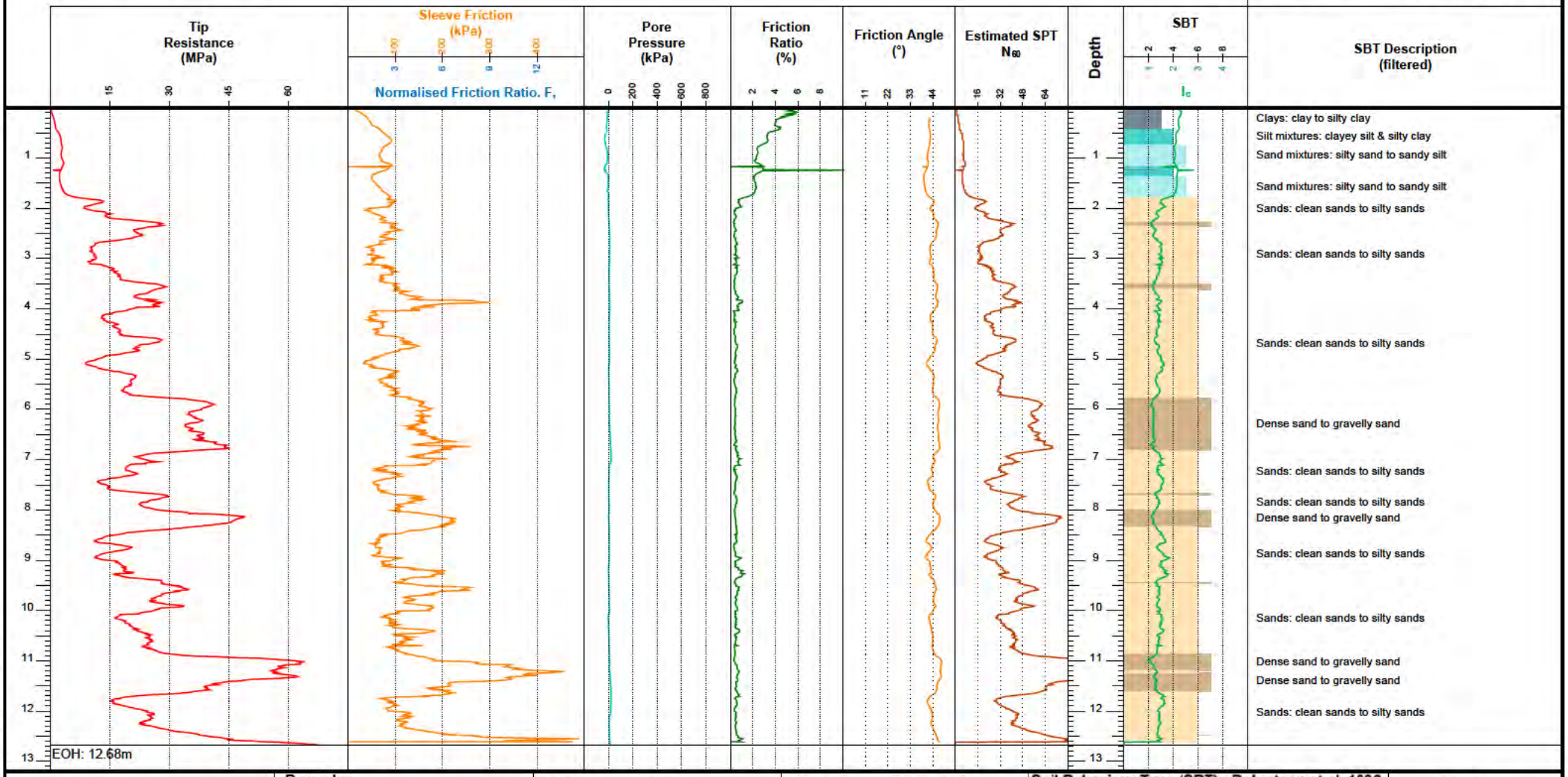
**Date:**

22/05/2026

# CONE PENETRATION TEST (CPT) LOG

**TEST NO.:** CPT09

**Client Ref.:** CPT Invetigation




**Client:** ENGEO

**Project:** Lower Shotover Road

**Location:** Queenstown

**Contractor:** Speight Drilling Ltd

**Remarks:**

100mpa Probe

**Termination Reason:**

Refusal due to Sleeve and Cone Resistance

**Northing:** 5008613

**Easting:** 1266867

**System:** NZTM

**Elevation:** Ground

**Datum:**

**Method:** Garmin GPS

**Rig:** Pagani TG63 - 150

**Cone ID:** 001165

**Cone Area:** 10cm²

**Sleeve Area:** 150cm²

**Area Ratio:** 0.79

**Predrill:** 0m

**Soil Behaviour Type (SBT) - Robertson et al. 1986**

| | | | |
|---|---|---|---|
| 0 | Undefined | 5 | Sand mixtures: silty sand to sandy silt |
| 1 | Sensitive fine-grained | 6 | Sands: clean sands to silty sands |
| 2 | Clay - organic soil | 7 | Dense sand to gravelly sand |
| 3 | Clays: clay to silty clay | 8 | Stiff sand to clayey sand |
| 4 | Silt mixtures: clayey silt & silty clay | 9 | Stiff fine-grained |

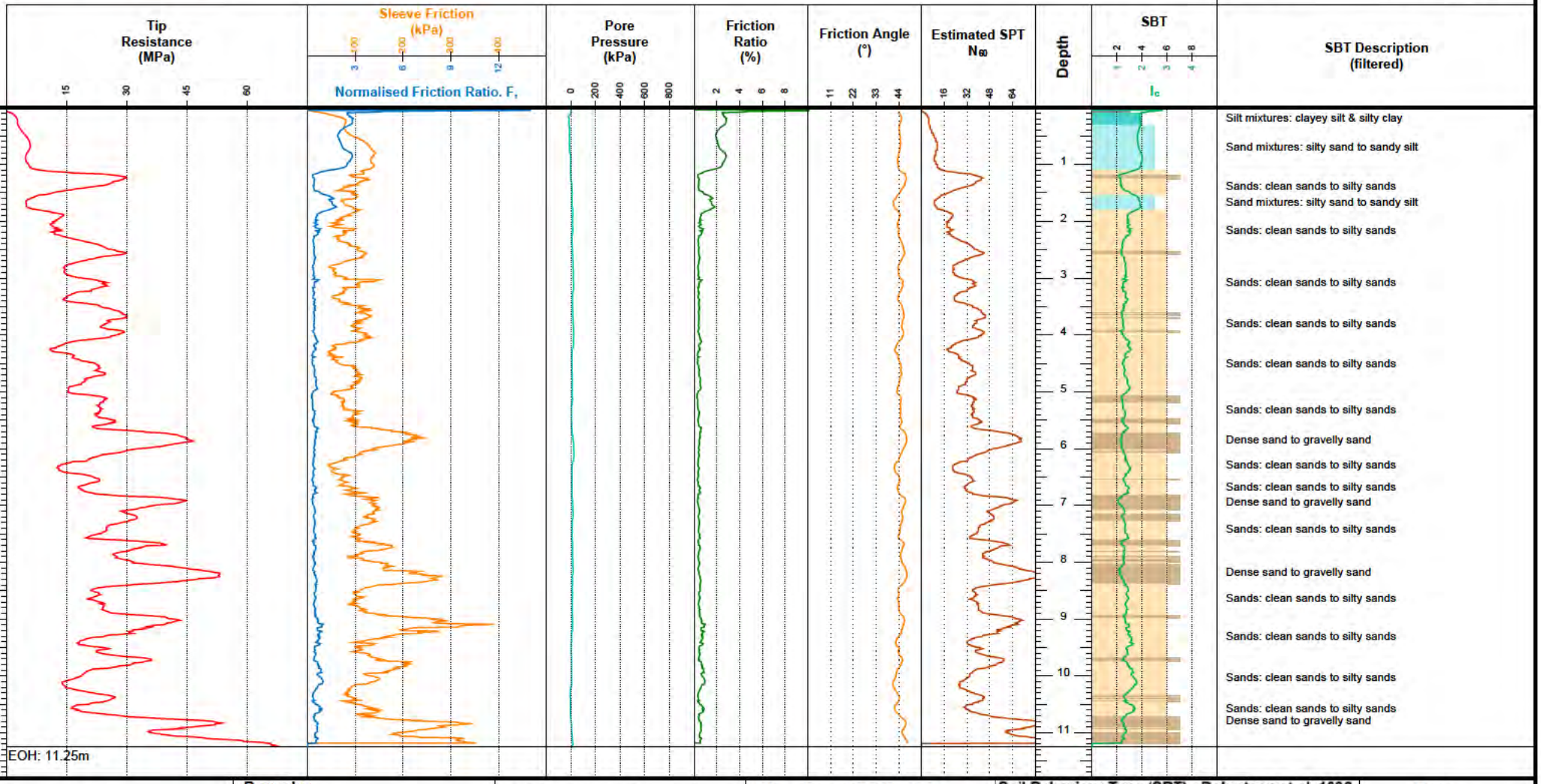
**Date:**

22/05/2026

# CONE PENETRATION TEST (CPT) LOG

**TEST NO.:** CPT10

**Client Ref.:** CPT Invetigation




**Client:** ENGEO

**Project:** Lower Shotover Road

**Location:** Queenstown

**Contractor:** Speight Drilling Ltd

**Remarks:**

100mpa Probe

**Termination Reason:**

Refusal due to Sleeve and Cone Resistance

**Northing:** 5008442

**Easting:** 1266946

**System:** NZTM

**Elevation:** Ground

**Datum:**

**Method:** Garmin GPS

**Rig:** Pagani TG63 - 150

**Cone ID:** 001165

**Cone Area:** 10cm²

**Sleeve Area:** 150cm²

**Area Ratio:** 0.79

**Predrill:** 0m

**Soil Behaviour Type (SBT) - Robertson et al. 1986**

| | | | |
|---|---|---|---|
| 0 | Undefined | 5 | Sand mixtures: silty sand to sandy silt |
| 1 | Sensitive fine-grained | 6 | Sands: clean sands to silty sands |
| 2 | Clay - organic soil | 7 | Dense sand to gravelly sand |
| 3 | Clays: clay to silty clay | 8 | Stiff sand to clayey sand |
| 4 | Silt mixtures: clayey silt & silty clay | 9 | Stiff fine-grained |

**Date:**

22/05/2026