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Site Report	GEOTECHNICAL ASSESSMENT - ASHBURTON
Date	03/10/2022
Client	Rooney Holdings Ltd
Address	Tarbottons Road / cnr Nixon Street - ASHBURTON
Contract Number	238042 / 37
Building Consent Number	N/A

Purpose

The purpose of the site visit is to inspect the ground conditions for liquefaction risk, and ground bearing results to be used for subdivision and building consents.

Drawings

Drawings were available and supplied by client, for the subdivision consent.

Site Observations and soil conditions for liquefaction

This assessment report has been prepared for the above-mentioned site and provides a summary of the likely ground conditions and the potential geotechnical hazards including liquefaction risk. Basis for this study is the Earthquake Geotechnical Engineering Practice, Module 3, from the Ministry of Business, Innovation & Employment (MBIE).

The data provided for this report are based upon a study produced for Environment Canterbury as an Earthquake Hazard Assessment. Our study took place on site on the 14th-15th September 2022 through site investigations, with excavations and analysis of the findings and discussion of actual site conditions, sampling, and final on site cover up of all extracted and removed soils.

The address is zoned as a *Medium Density Residential Zone* classified as *Residential C*. The purpose of this zone is to maintain residential areas with open space for trees and garden plantings and with minimal adverse effects experienced by residents. The site-property has a reasonable flat contour, currently accessed from the North-West via Tarbottons Road and from the North-East via Nixon Road compromising 27 lot sections ranging from 537 to 710 metres square (*Figure 1*). On the South-Western boundary Carters Creek flows from North-West to South-East. Both sides of the creek banks well protected and fenced.

Figure 1. Subdivision to investigate

Review of Geology, Land Hazards and Liquefaction Assessment

The central and southeast of Ashburton District includes the southern extension of the Canterbury Plains formed by a series of large alluvial fans associated with the major rivers that drain the Southern Alps. In Ashburton District the Rangitata and Rakaia River systems are the most dominant with significant contributions from the Ashburton River. The river sediments are a thick sequence of late Pleistocene and Holocene greywacke derived gravel and sand, with a minor silt component. The total thickness of young fluvial sediments is not known, but in some areas, it is likely to be several hundred metres thick. Higher older fan surfaces can be recognised in parts of the plains and in these areas, there is a capping of loess soil over the fluvial gravel dominated sediments that are associated with the most recent late Pleistocene glaciation. (*Figure 2*)

The location of the investigated site lies in a Zone 2, which is predominantly of alluvium older than Holocene age. These will be dense gravel dominated soils. There may be small areas of Holocene alluvium in places, along watercourses and the like. (*Figure 3*)

Earthquake shaking is dependant in the first instance on the magnitude of the earthquake, the depth, and the distance to epicentre. The degree of surface ground shaking in an earthquake is also influenced by the nature of the underlying soil and rock materials. The majority of Ashburton District is underlain by relatively dense sediments such as alluvial gravels. These soils will generally not cause much amplification of the earthquake.

The shaking hazard is defined directly in terms of the maximum accelerations caused by the seismic waves, the ground acceleration, which is experienced by particles of soils at the ground surface.

Based on the Ashburton District Engineering Lifelines Project – Earthquake Hazard Assessment, published in September 2002, in comparison with many other Canterbury districts, Ashburton District have relatively few identified earthquake sources located within it. Historically Ashburton has not experienced the level of earthquake shaking that its geological setting suggest is possible.

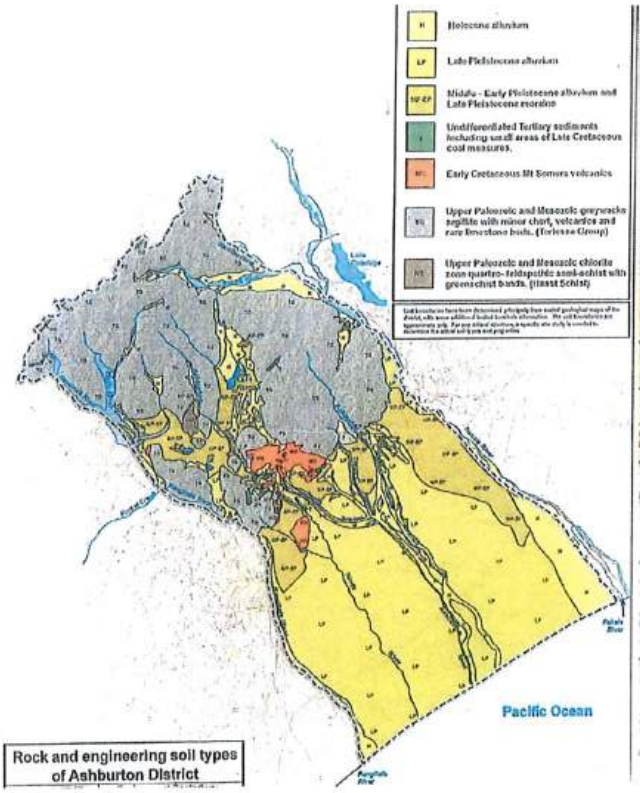


Figure 2 Rock type bedding in the region

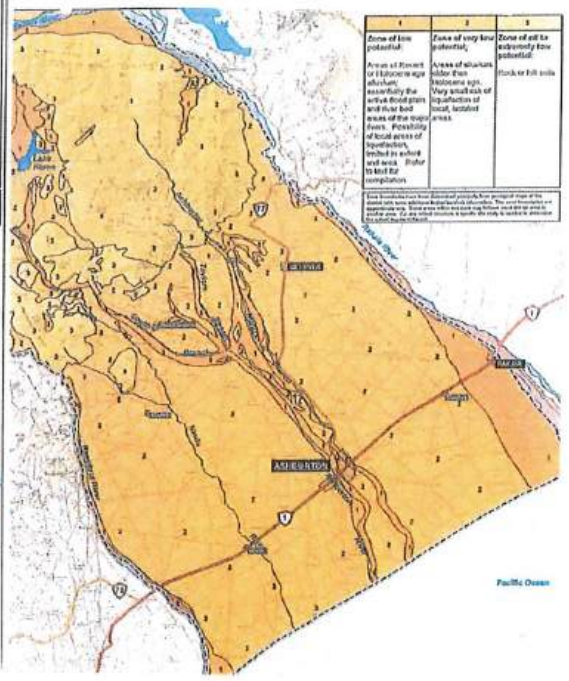


Figure 3 Liquefaction Susceptibility

Liquefaction is the loss of soil strength during earthquake shaking as pore water is expelled more quickly than the soil can drain. The pore water pressure increase occurs progressively over several shaking cycles, so the extent of liquefaction is greater for earthquakes of longer duration. Liquefaction can occur in a range of soils from silts to gravelly sands. It is most likely to occur in saturated, relatively uniform fine sands and coarse silts in a loose state, at depth less than 10 to 15m below ground level, and where the water table is within 5m from the surface. Typically, only on geologically recent Holocene sediments, meaning younger than 10,000 years, which are susceptible because consolidation and cementation of older sediments reduces the degree of compaction.

There is limited potential for liquefaction in Ashburton District. There are no young Holocene low-lying river estuary delta coastal formations with abundant soft saturated sand or silt typical of the Christchurch – Waimakariri area. Most of the Canterbury Plains surface in Ashburton District is late Pleistocene glacial, outwash gravel that is being actively eroded at the coast with no recent history of coastal aggradation. Both relatively old age, and the predominant gravel grading of the Ashburton District areas of the Canterbury Plains, make widespread liquefaction very unlikely. Studies also expect that the Peak Ground Acceleration for 150-year return time at this location is 0.2g and for 475-year return time is 0.35g. The geology on this area belongs to Deep Soils

more than 20m deep, of moderate density, meaning this that there may be an increase of the shaking intensity, particularly at longer periods, felt at ground level during the earthquake, but the absence of saturated coarse silts or uniform sands in a loose state will have an *unlikely* effect on the liquefaction process.

The nearest surface water body to the site is Carters Creek *(Figures 4 & 5)*, a small stream located along the western boundary of the site. The nearest major water body is the Ashburton River, which is located approximately 700m north-east of the site. Environment Canterbury database show a number of eight bores at a radius of 250m from the site, four of these bores are active. The bore search indicates water table is expected to be present at a depth of 2-3m below ground level.

Figure 4 & 5 Carters Creek full view

Site Investigation

A total of 27 lots were tested for two days. The site was plotted with pegs, marking a centre point within the area of each lot section. A 14Ton wheel digger and operator was supplied by the client to ease the excavation process which we aimed to inspect at depths of 2.5-3.0m. Health & Safety measures were also considered to ensure everyone did not come too close to excavations pit, as these were left opened once we reached water table and waited until water level stabilised before being measured.

The purpose of this assessment is to confirm if *Liquefaction Potential* could be present with the actual subsoil conditions, as there is a very low possibility that this could happen. We conditioned our investigation to first, identify the type of soils that conforms the strata of at least 2.5-3.0 metres deep. Second, investigate the existence of water table, and if present, measure the stabilised against our common reference which will be Natural Ground Level (NGL). If we can identify that our findings do not match the criteria established to determine the combination of soils plus the existence of water pressure, then we will only rely on the intensity of the shake of the earthquake to ensure that liquefaction may not happen on this land.

All our excavations probe that we have a combination of soils that minimises the possibility of liquefaction appearing at NGL. We also found the water table at similar depths all over the site, reducing this slightly as we came closer to the western side creek.

Figure 6 Partial view of site testing

Figure 7 Excavator used for test pit sampling

We also evaluated Ultimate Bearing Capacity (UBC) on each lot section. For this we ask to strip the vegetation layer complete with a bucket excavation, ensuring that our Scala Penetrometer Test (SPT) was placed in a layer that could reflect a closer point for UBC.

In general, we can summarise our testing as follows. All measured from existing NGL beside the marking peg for each lot.

- A first layer of 200-500mm silty *TOPSOIL*, dark brown, moist, homogeneous.
- 350-500mm presence of a clayey *SILT* and *CLAY*, light brown, loosely packed with some fine gravels up to 10mm diameter subrounded, also with minor organic rootlets from above layer, low plasticity.
- Followed by 500-650mm layer of silty *CLAY*, light brown and mottled grey, clay had a very high plasticity and cohesion. Soils presented a high humidity level being these in a wet condition. Some medium to coarse gravels, subrounded and some coarse grey sands. Soils on this layer were also inorganic.
- Thicker layer on deepest excavation end, this was of a fine to coarse *GRAVEL* and *SAND* with some silt and clay. The strata at this level were well graded bedded, tightly packed soils, saturated and inorganic. This layer could sustain only 400-500mm because of the water table appearance.

We could not identify more soils deeper than 1.7-2.0m, because of water table at the inspection date which kept undermining the sides of the excavations at the deepest end.

Only one section appeared with larger tree roots at depths of 1.5m-1.7m from NGL. This belonged to Lot 6, and at the excavation these appeared from South and South-West respectively at the granular soil strata.

Uncontrolled fills were not identified in any of the site tested.

The additional test we incurred in with UBC resulted in having *Good Ground* as per NZS3604:2011 at various depths ranging from 600mm to 1000mm below NGL, which belongs to the area of the transition between silts and clays strata.

Summary from site testing

Analysing the definition for Liquefaction, this is a natural process where earthquake shaking increases the water pressure in the ground in some type of soils, mainly silty sands, resulting in temporary loss of soil strength.

The susceptibility for liquefaction on this area is *unlikely*, mainly because of the findings on the underlaying geology tested on each lot. Our findings probe that the combination of soils expected to trigger the liquefaction process did not appear to be present at the depth we investigated, probing as well that mainly soils below the excavated depth probable continue the same well graded gravels as exposed on the underlaying bedrock geology study. Water table appeared on each section at similar depth, being this average of 1600mm below ground level, but the soils seem to be tightly packed as a Relative Density property, and the strata is clearly bedded in layers easily identifiable. The presence of silt is mostly present on the topsoil layer and the transition into the clay layer on the following soil strata.

The chart below represents a summary of depths where we found 300kPa UBC tested on each lot. All measured against Natural Ground Level (NGL). These levels achieve *good ground* requirements as per NZS3604:2011. Site concrete can be used to build up under footings, alternatively a SED foundation can be designed for a various depths, using the attached results.

300 kPa Ultimate Bearing Capacity (UBC)					
LOT #	from NGL	LOT #	from NGL	LOT #	from NGL
1	0.7m	10	0.8m	19	1.0m
2	0.7m	11	0.6m	20	0.9m
3	0.9m	12	0.6m	21	0.7m
4	1.0m	13	0.6m	22	0.6m
5	0.7m	14	0.6m	23	0.6m
6	0.8m	15	0.7m	24	0.5m
7	0.7m	16	0.8m	25	0.7m
8	0.7m	17	0.7m	26	0.7m
9	0.6m	18	0.7m	27	0.8m

Appendices

a Site Photos for each lot
b Test pit SPT results
c General Site Plan

Prepared by

Alberto Silva
BSc BEng(Hon)

Reviewed by

Kayne Robinson
Director, Milward Finlay Lobb Limited

Photos lot 7

Photos lot 8

Photos lot 13

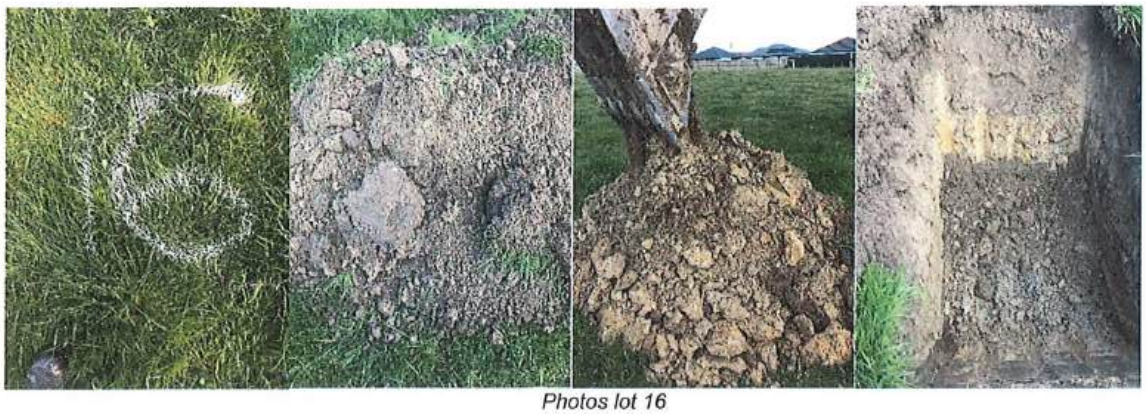
Photos lot 12

Photos lot 11

Photos lot 15

Photos lot 21

Photos lot 22



Photos lot 16

Photos lot 17

Photos lot 18

Photos lot 9

Photos lot 10

Photos lot 14

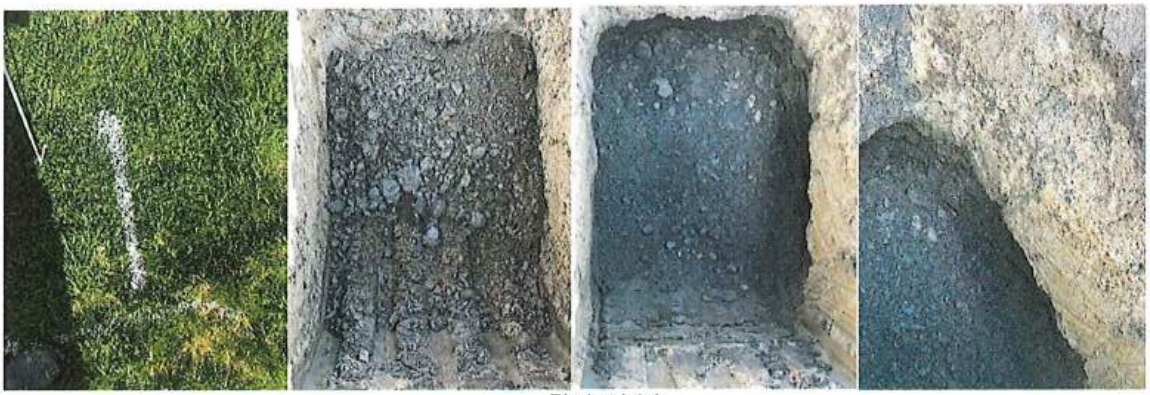
Photos lot 20

Photos lot 19

Photos lot 4

Photos lot 3

Photos lot 2



Photos lot 1

Photos lot 5

Photos lot 6

Photos lot 27

Photos lot 26

Photos lot 25

Photos lot 24

Project:	TARBOTTONS SUBDIVISION (Lots 1 to 4)		Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

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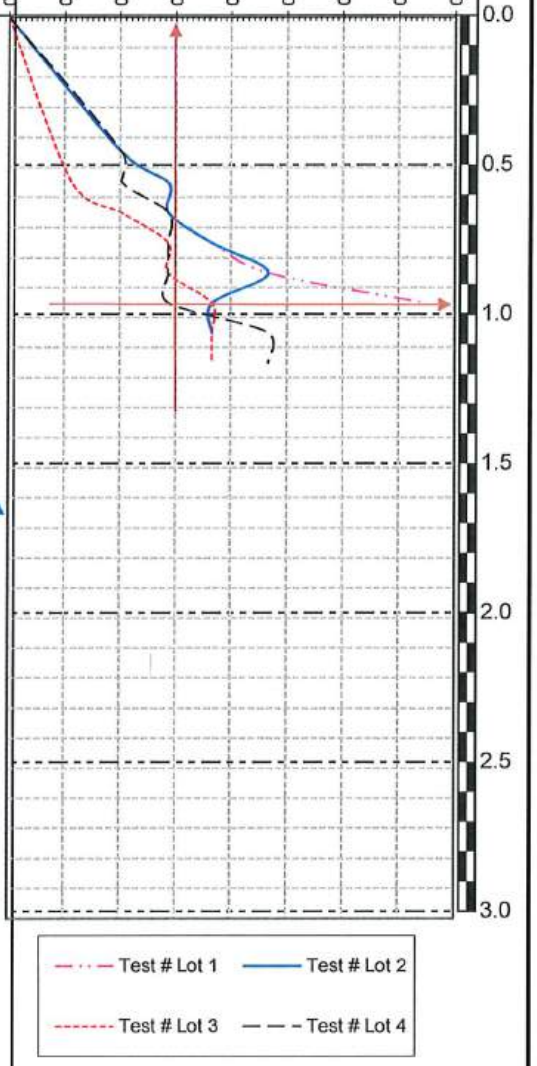
Depth	STRATA DESCRIPTION Visual Inspection @ PIT Lot # 1	USCS
0.0	silty **TOPSOIL**, dark brown, moist	OL
0.5	clayey **SILT**, light brown, moist, loosely packed with few fine gravels, subrounded, with minor organic rootlets.	ML
1.0	silty **CLAY**, with very high plasticity and cohesion, light greyish brown, orangie mottled oxides, some mediu to coarse gravels and coarse grey sand, wet soils.	CH
1.5	fine to coarse **GRAVEL** with major silt and clay, well grac bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
2.0	*end of test…* **SUMMARY:** 300 kPa Ultimate in LOT 1 @ 0.7m BGL 300 kPa Ultimate in LOT 2 @ 0.7m BGL 300 kPa Ultimate in LOT 3 @ 0.9m BGL 300 kPa Ultimate in LOT 4 @ 1.0m BGL Water Table @ 1.6m BGL	
2.5		
3.0		
3.5		
4.0		
4.5		
5.0		

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)



Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

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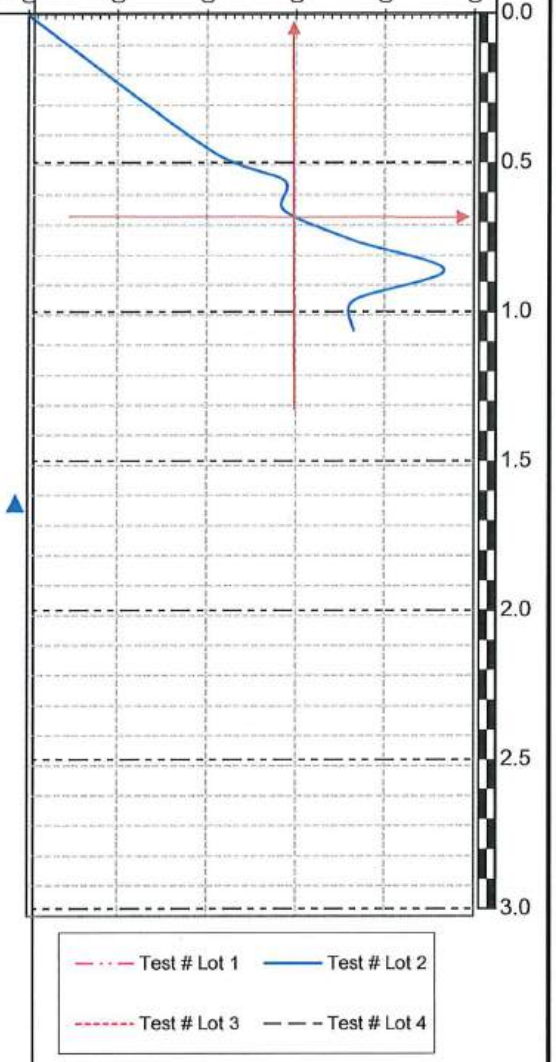
	STRATA DESCRIPTION Visual Inspection @ PIT Lot # 2	USCS
0.0	silty **TOPSOIL**, dark brown, moist	OL
0.5	clayey **SILT**, light brown, moist, loosely packed with few fine gravels, subrounded,minor organic rootlets.	ML
1.0	silty **CLAY**, with very high plasticity and cohesion, light greyish brown, orangie mottled oxides, minor mediu gravels and coarse grey sand, wet soils.	CH
1.5	fine to coarse **GRAVEL** with major silt and clay, well grad bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
2.0	*end of test...* **SUMMARY:** 300 kPa Ultimate in LOT 1 @ 0.7m BGL 300 kPa Ultimate in LOT 2 @ 0.7m BGL 300 kPa Ultimate in LOT 3 @ 0.9m BGL 300 kPa Ultimate in LOT 4 @ 1.0m BGL Water Table @ 1.6m BGL	
2.5		
3.0		
3.5		
4.0		
4.5		
5.0		

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)



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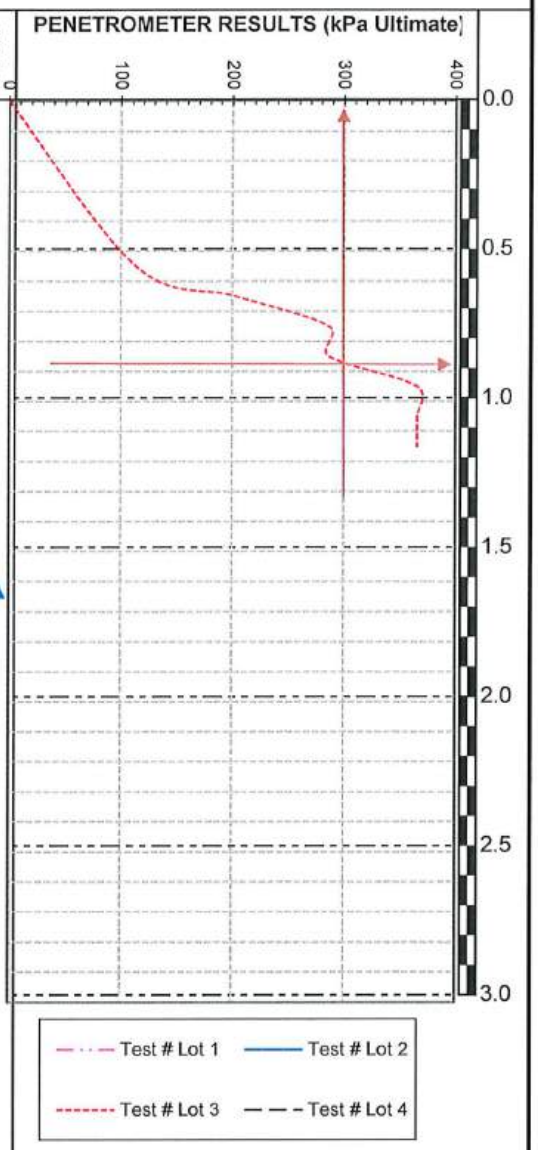
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 3	USCS
silty **TOPSOIL**, dark brown, moist	OL
clayey **SILT**, light brown, moist, loosely packed with few fine gravels, subrounded,minor organic rootlets.	ML
silty **CLAY**, with very high plasticity and cohesion, wet, light greyish brown, orangie mottled oxides, minor mediu gravels and coarse grey sand.	CH
fine to coarse **GRAVEL** and **SAND**, well graded, bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
end of test… **SUMMARY:** 300 kPa Ultimate in LOT 1 @ 0.7m BGL 300 kPa Ultimate in LOT 2 @ 0.7m BGL 300 kPa Ultimate in LOT 3 @ 0.9m BGL 300 kPa Ultimate in LOT 4 @ 1.0m BGL Water Table @ 1.6m BGL	

Graphical Log

Water Table



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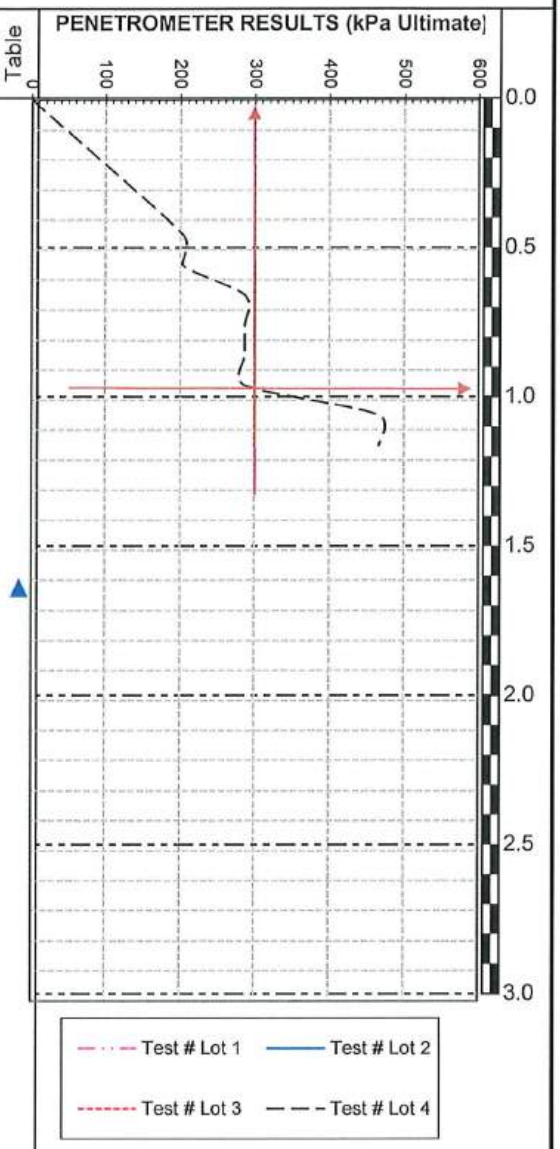
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 4	USCS
silty **TOPSOIL**, dark brown, moist	OL
clayey **SILT**, light brown, moist, loosely packed with few fine gravels, subrounded, with minor organic rootlets.	ML
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, orangie mottled oxides, some mediu to coarse gravels and coarse grey sand, wet soils.	CH
fine to coarse well graded **GRAVEL&SAND,** bedded tightly packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

SUMMARY:

300 kPa Ultimate in LOT 1 @ 0.7m BGL
300 kPa Ultimate in LOT 2 @ 0.7m BGL
300 kPa Ultimate in LOT 3 @ 0.9m BGL
300 kPa Ultimate in LOT 4 @ 1.0m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table



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STRATA DESCRIPTION Visual Inspection @ PIT Lot # 5	USCS
dark brown silty **TOPSOIL**, very moist	OL
CLAY with minor silt, light brown, moist, packed with son fine subrounded gravels, some minor organic rootlets. medium cohesion, medium plasticity	CL
silty **CLAY**, with very high plasticity and cohesion, wet light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand.	CH
fine to coarse **GRAVEL** with major silt and clay, well grad bedded, loosely packed, saturated, inorganic ***stabilized water table***	GW
end of test… **SUMMARY:** 300 kPa Ultimate in LOT 5 @ 0.7m BGL 300 kPa Ultimate in LOT 6 @ 0.8m BGL 300 kPa Ultimate in LOT 7 @ 0.7m BGL 300 kPa Ultimate in LOT 8 @ 0.7m BGL Water Table @ 1.6m BGL	

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)

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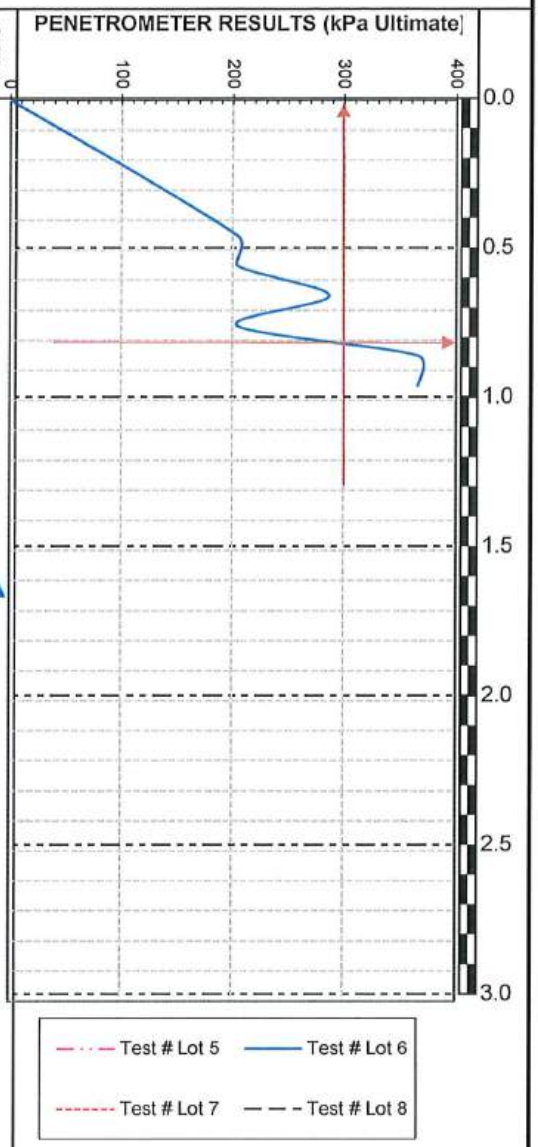
	STRATA DESCRIPTION Visual Inspection @ PIT Lot # 6	USCS
0.0	dark brown silty **TOPSOIL**, very moist	OL
0.5	**CLAY** with minor silt, light brown, moist, packed with son fine subrounded gravels, some minor organic rootlets. medium cohesion	CL
1.0	silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, very wet soils. some organic rootlets	CH
1.5	fine to coarse **GRAVEL** with major silt and clay, well grad bedded, loosely packed, saturated, organic rootlets. ***stabilized water table***	GW
2.0	*end of test…* **SUMMARY:** 300 kPa Ultimate in LOT 5 @ 0.7m BGL 300 kPa Ultimate in LOT 6 @ 0.8m BGL 300 kPa Ultimate in LOT 7 @ 0.7m BGL 300 kPa Ultimate in LOT 8 @ 0.7m BGL Water Table @ 1.6m BGL	
2.5		
3.0		
3.5		
4.0		
4.5		
5.0		

Graphical Log

Water Table



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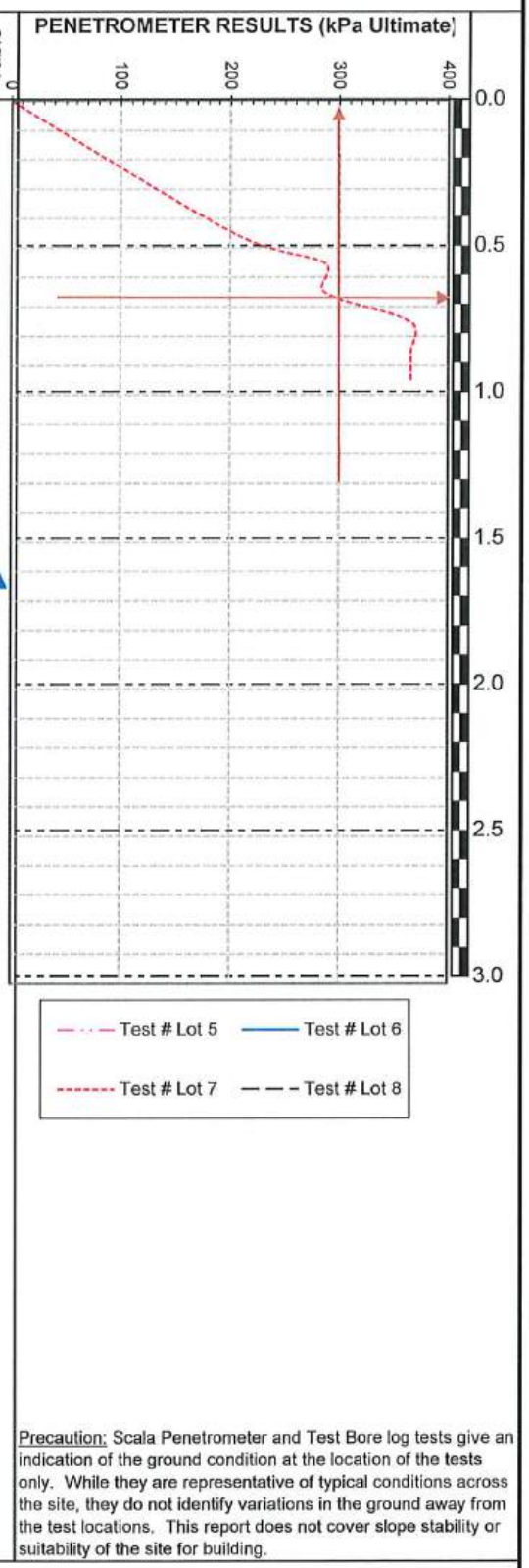
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 7	USCS
dark brown silty **TOPSOIL**, very moist	OL
CLAY with minor silt, light brown, moist, packed with son fine subrounded gravels, some minor organic rootlets. medium cohesion, medium plasticity	CL
silty **CLAY**, with very high plasticity and cohesion, wet light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand.	CH
fine to coarse **GRAVEL-SAND** with major clay, well grad bedded, loosely packed, saturated, inorganic ***stabilized water table***	GW
end of test…	

SUMMARY:

300 kPa Ultimate in LOT 5 @ 0.7m BGL
300 kPa Ultimate in LOT 6 @ 0.8m BGL
300 kPa Ultimate in LOT 7 @ 0.7m BGL
300 kPa Ultimate in LOT 8 @ 0.7m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table



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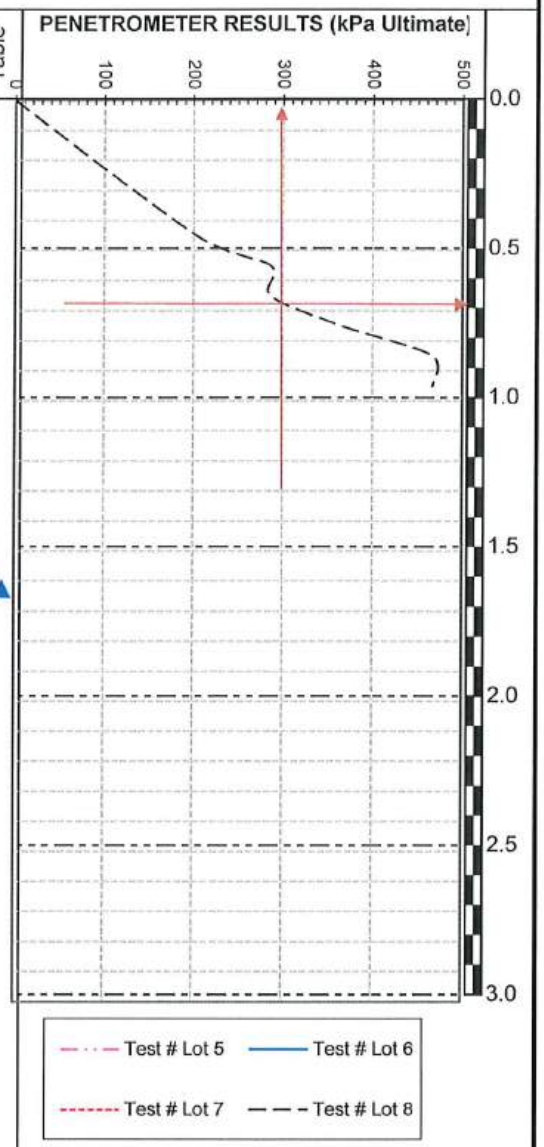
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

STRATA DESCRIPTION Visual Inspection @ PIT Lot # 8	USCS
dark brown silty **TOPSOIL**, very moist	OL
silty **CLAY** , light brown, moist, packed with some fine subrounded gravels, some minor organic rootlets. medium cohesion-plasticity	CL
silty **CLAY**, with very high plasticity and cohesion, wet light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand.	CH
fine to coarse **GRAVEL-SAND** with major clay, well grad bedded, loosely packed, saturated, inorganic ***stabilized water table***	GW
end of test… **SUMMARY:** 300 kPa Ultimate in LOT 5 @ 0.7m BGL 300 kPa Ultimate in LOT 6 @ 0.8m BGL 300 kPa Ultimate in LOT 7 @ 0.7m BGL 300 kPa Ultimate in LOT 8 @ 0.7m BGL Water Table @ 1.6m BGL	

Graphical Log

Water Table



Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	**TARBOTTONS SUBDIVISION (Lots 9 to 12)**	Date:	15/09/2022
Client:	**ROONEY HOLDINGS LTD**	Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton	Field Staff:	AS/BTD
Job Number	**238042 / 37**	Equipment:	SP / Excav

milward finlay lobb
PLANNERS | SURVEYORS | ENGINEERS

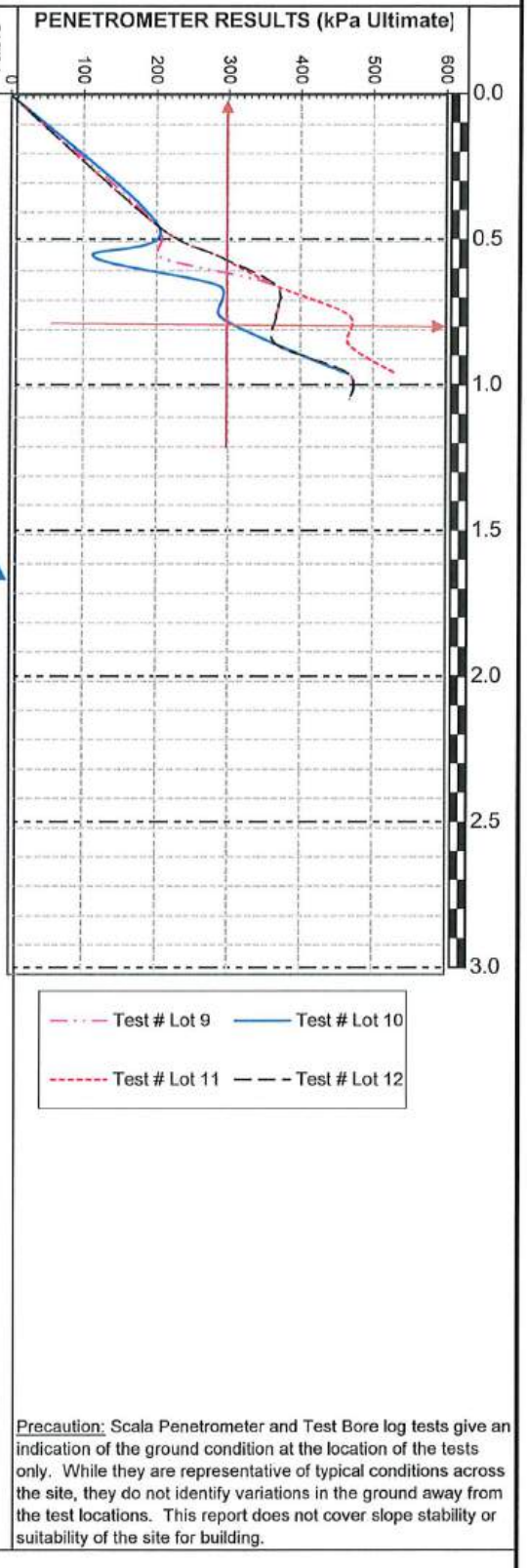
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 9	USCS
dark brown silty **TOPSOIL**, very moist	OL
clayey **SILT**, light brown, moist, packed with some fine subrounded gravels, some minor organic rootlets.	ML
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, very wet soils.	CH
fine to coarse **SAND-GRAVEL** with major clay, well grad bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
end of test...	

SUMMARY:

300 kPa Ultimate in LOT 9 @ 0.6m BGL
300 kPa Ultimate in LOT 10 @ 0.8m BGL
300 kPa Ultimate in LOT 11 @ 0.6m BGL
300 kPa Ultimate in LOT 12 @ 0.6m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table



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Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 9 to 12)	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD	Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton	Field Staff:	AS/BTD
Job Number	238042 / 37	Equipment:	SP / Excav

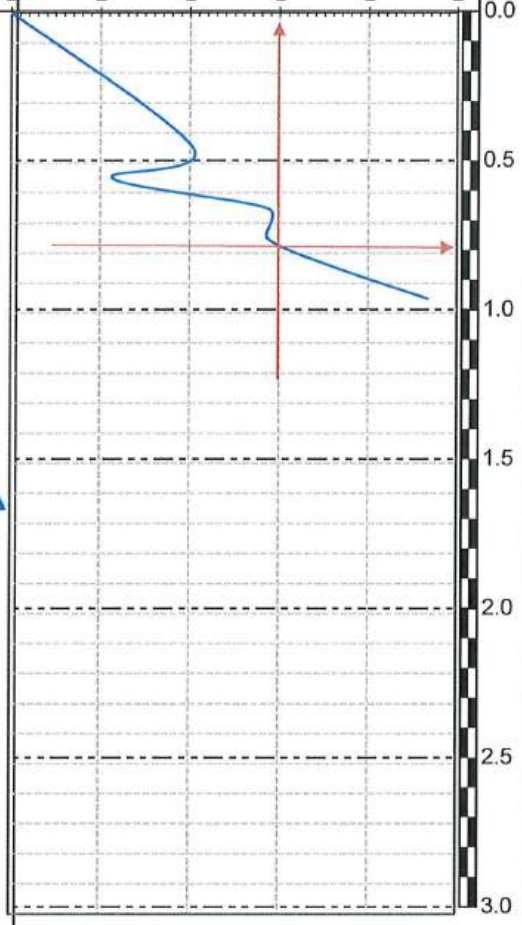
milward finlay lobb
PLANNERS | SURVEYORS | ENGINEERS

STRATA DESCRIPTION Visual Inspection @ PIT Lot # 10	USCS
dark brown silty **TOPSOIL**, very moist	OL
clayey **SILT**, light brown, moist, packed with some fine subrounded gravels, some minor organic rootlets.	ML
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, very wet soils.	CH
fine to coarse **GRAVEL** with major silt and clay, well grad bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
end of test… **SUMMARY:** 300 kPa Ultimate in LOT 9 @ 0.6m BGL 300 kPa Ultimate in LOT 10 @ 0.8m BGL 300 kPa Ultimate in LOT 11 @ 0.6m BGL 300 kPa Ultimate in LOT 12 @ 0.6m BGL Water Table @ 1.6m BGL	

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)



Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 9 to 12)	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD	Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton	Field Staff:	AS/BTD
Job Number	238042 / 37	Equipment:	SP / Excav

milward finlay lobb
PLANNERS | SURVEYORS | ENGINEERS

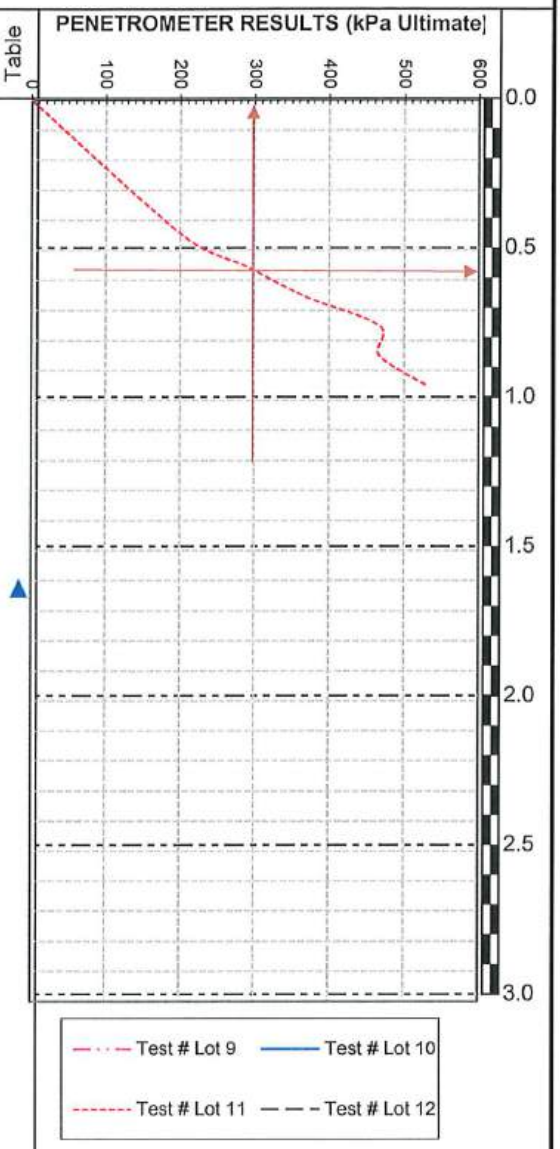
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 11	USCS
dark brown silty **TOPSOIL**, very moist	OL
clayey **SILT**, light brown, moist, packed with some fine subrounded gravels, some minor organic rootlets.	ML
silty **CLAY**, with very high plasticity-cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, wet soils.	CH
fine to coarse **SAND-GRAVEL** with major clay, well grad bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

SUMMARY:

300 kPa Ultimate in LOT 9 @ 0.6m BGL
300 kPa Ultimate in LOT 10 @ 0.8m BGL
300 kPa Ultimate in LOT 11 @ 0.6m BGL
300 kPa Ultimate in LOT 12 @ 0.6m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table



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Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 9 to 12)	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD	Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton	Field Staff:	AS/BTD
Job Number	238042 / 37	Equipment:	SP / Excav

milward finlay lobb
PLANNERS | SURVEYORS | ENGINEERS

Depth	STRATA DESCRIPTION Visual Inspection @ PIT Lot # 12	USCS
0.0	dark brown silty **TOPSOIL**, very moist	OL
0.5	clayey **SILT**, light brown, moist, packed with some fine gravels, some minor organic rootlets.	ML
1.0	silty **CLAY**, with very high plasticity-cohesion, wet light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand.	CH
1.5	fine to coarse **SAND-GRAVEL** with major clay, well grad bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
2.0	*end of test…* **SUMMARY:** 300 kPa Ultimate in LOT 9 @ 0.6m BGL 300 kPa Ultimate in LOT 10 @ 0.8m BGL 300 kPa Ultimate in LOT 11 @ 0.6m BGL 300 kPa Ultimate in LOT 12 @ 0.6m BGL Water Table @ 1.6m BGL	
2.5		
3.0		
3.5		
4.0		
4.5		
5.0		

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)

Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 13 to 16)	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD	Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton	Field Staff:	AS/BTD
Job Number	238042 / 37	Equipment:	SP / Excav

milward finlay lobb
PLANNERS | SURVEYORS | ENGINEERS

STRATA DESCRIPTION Visual Inspection @ PIT Lot # 13	USCS
dark brown silty **TOPSOIL**, very moist	OL
CLAY with minor silt, light brown, moist, packed with son fine subrounded gravels, some minor organic rootlets.	CL
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse and fine grey sand, very wet soils.	CH
fine to coarse **SAND/GRAVEL** with major silt and clay, w bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

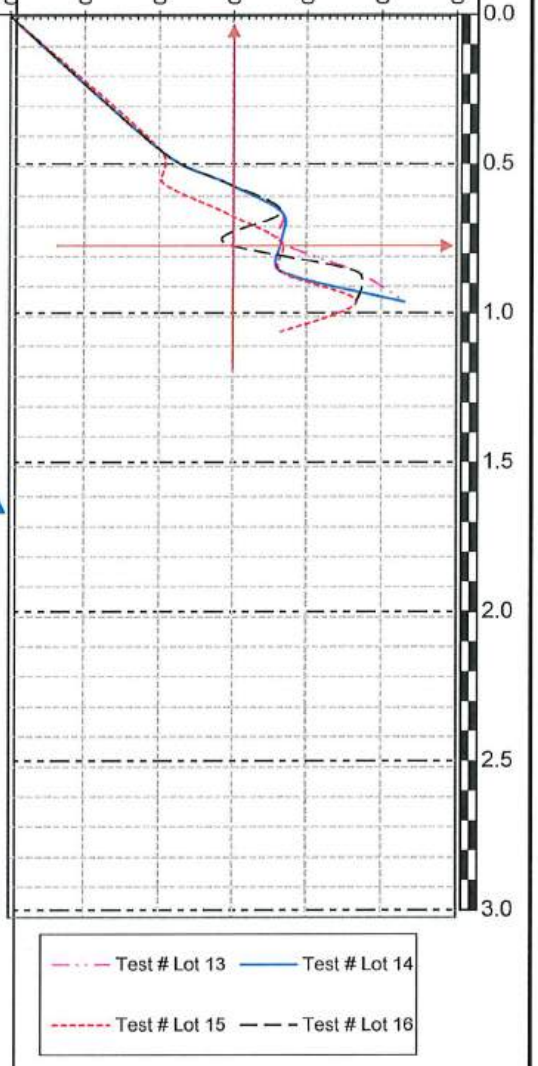
SUMMARY:

300 kPa Ultimate in LOT 13 @ 0.6m BGL
300 kPa Ultimate in LOT 14 @ 0.6m BGL
300 kPa Ultimate in LOT 15 @ 0.7m BGL
300 kPa Ultimate in LOT 16 @ 0.8m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)



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Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 13 to 16)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

Depth	STRATA DESCRIPTION Visual Inspection @ PIT Lot # 14	USCS
0.0	dark brown silty **TOPSOIL**, very moist	OL
0.5	**CLAY** with some grey silt, light brown, moist, packed with fine subrounded gravels, some minor organic rootlets.	CL
1.0	silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse and fine grey sand, very wet soils.	CH
1.5	fine to coarse **SAND/GRAVEL** with major silt and clay, well graded-bedded, loosely packed, saturated, inorganic ***stabilized water table***	GW
2.0	*end of test…* **SUMMARY:** 300 kPa Ultimate in LOT 13 @ 0.6m BGL 300 kPa Ultimate in LOT 14 @ 0.6m BGL 300 kPa Ultimate in LOT 15 @ 0.7m BGL 300 kPa Ultimate in LOT 16 @ 0.8m BGL Water Table @ 1.6m BGL	
2.5		
3.0		
3.5		
4.0		
4.5		
5.0		

Graphical Log

Water Table

Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

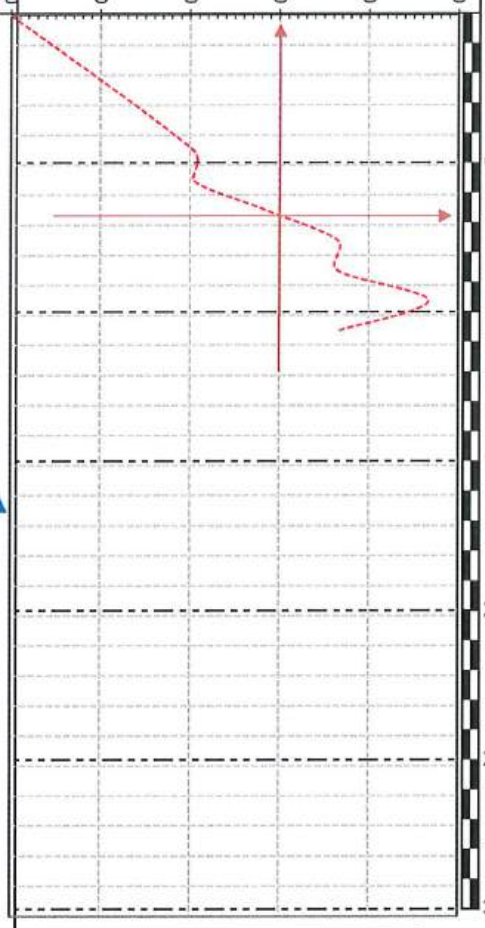
Project:	TARBOTTONS SUBDIVISION (Lots 13 to 16)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

Depth	STRATA DESCRIPTION Visual Inspection @ PIT Lot # 15	USCS
0.0	dark brown silty **TOPSOIL**, very moist	OL
0.5	**CLAY** with some grey silt, light brown, moist, packed with fine subrounded gravels, some minor organic rootlets.	CL
1.0	silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse and fine grey sand, very wet soils.	CH
1.5	fine to coarse **SAND/GRAVEL** with major silt and clay, well graded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
2.0	*end of test…* **SUMMARY:** 300 kPa Ultimate in LOT 13 @ 0.6m BGL 300 kPa Ultimate in LOT 14 @ 0.6m BGL 300 kPa Ultimate in LOT 15 @ 0.7m BGL 300 kPa Ultimate in LOT 16 @ 0.8m BGL Water Table @ 1.6m BGL	
2.5		
3.0		
3.5		
4.0		
4.5		
5.0		

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)



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Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 13 to 16)		Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

milward finlay lobb
PLANNERS | SURVEYORS | ENGINEERS

STRATA DESCRIPTION Visual Inspection @ PIT Lot # 16	USCS
dark brown silty **TOPSOIL**, very moist	OL
CLAY with minor silt, light brown, moist, packed with son fine subrounded gravels, some minor organic rootlets.	CL
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse and fine grey sand, very wet soils.	CH
fine to coarse **SAND/GRAVEL** with major silt and clay, w bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

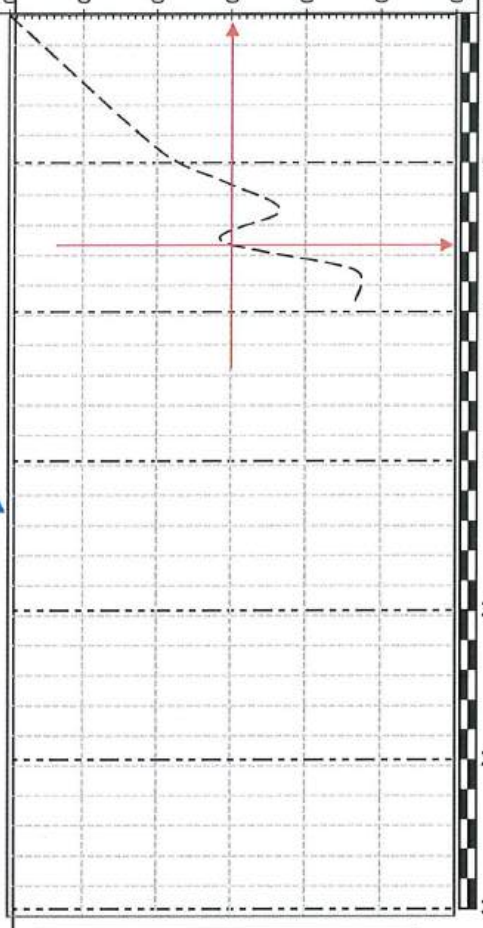
SUMMARY:

300 kPa Ultimate in LOT 13 @ 0.6m BGL
300 kPa Ultimate in LOT 14 @ 0.6m BGL
300 kPa Ultimate in LOT 15 @ 0.7m BGL
300 kPa Ultimate in LOT 16 @ 0.8m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)



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Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 17 to 20)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

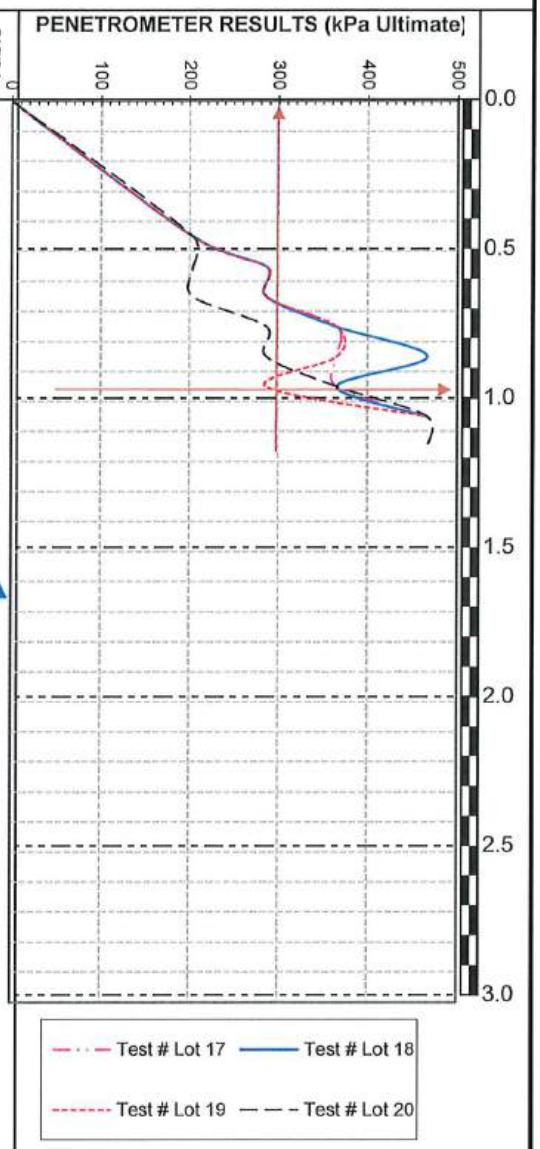
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 17	USCS
dark brown silty **TOPSOIL**, very moist	OL
silty **CLAY**, light brown, moist, packed with some fine subrounded gravels, some minor organic rootlets. low plasticity	CL
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, very wet soils.	CH
fine to coarse **GRAVEL** with major sand and clay, well graded-bedded, tightly packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

SUMMARY:

300 kPa Ultimate in LOT 17 @ 0.7m BGL
300 kPa Ultimate in LOT 18 @ 0.7m BGL
300 kPa Ultimate in LOT 19 @ 1.0m BGL
300 kPa Ultimate in LOT 20 @ 0.9m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table



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Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 17 to 20)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

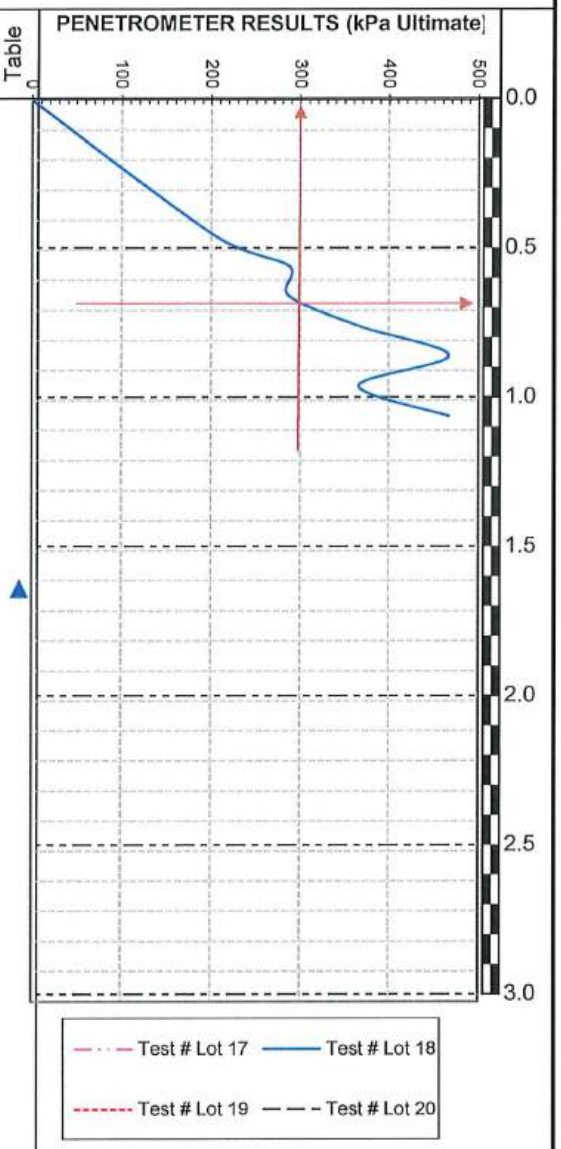
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 18	USCS
dark brown silty **TOPSOIL**, very moist	OL
silty **CLAY**, light brown, moist, packed with some fine to medium gravels, minor organic rootlets, low plasticity, low cohesion.	CL
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, very wet soils.	CH
fine to coarse **GRAVEL** with major sand and clay, well graded-bedded, tightly packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

SUMMARY:

300 kPa Ultimate in LOT 17 @ 0.7m BGL
300 kPa Ultimate in LOT 18 @ 0.7m BGL
300 kPa Ultimate in LOT 19 @ 1.0m BGL
300 kPa Ultimate in LOT 20 @ 0.9m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table



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Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 17 to 20)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

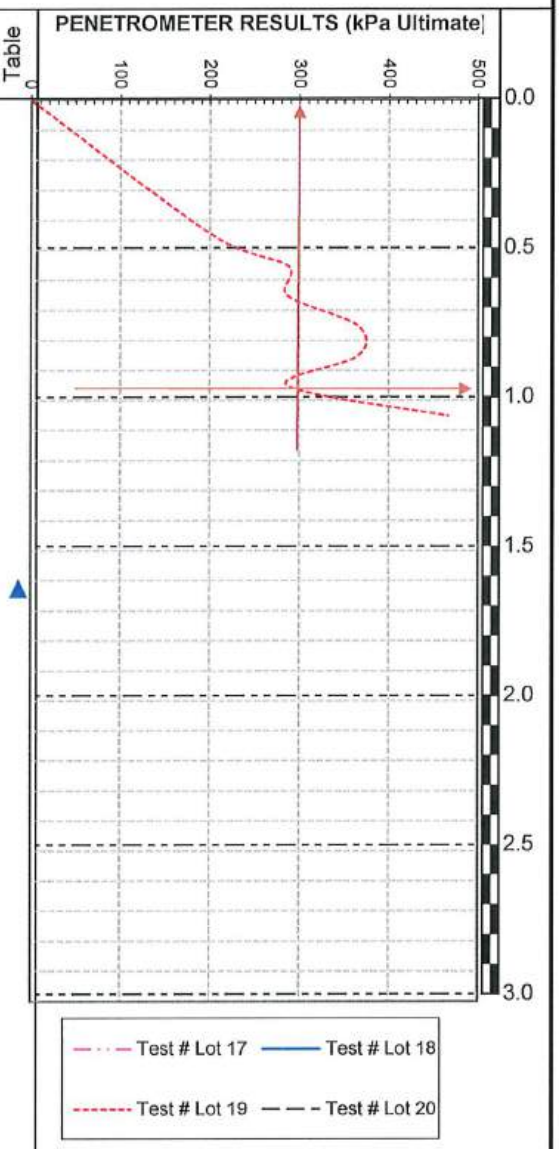
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 19	USCS
dark brown silty **TOPSOIL**, very moist	OL
silty **CLAY**, light brown, moist, packed with some fine subrounded gravels, some minor organic rootlets. low plasticity	CL
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, very wet soils.	CH
fine to coarse **GRAVEL** with major silt and clay, well grad bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

SUMMARY:

300 kPa Ultimate in LOT 17 @ 0.7m BGL
300 kPa Ultimate in LOT 18 @ 0.7m BGL
300 kPa Ultimate in LOT 19 @ 1.0m BGL
300 kPa Ultimate in LOT 20 @ 0.9m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table



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Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

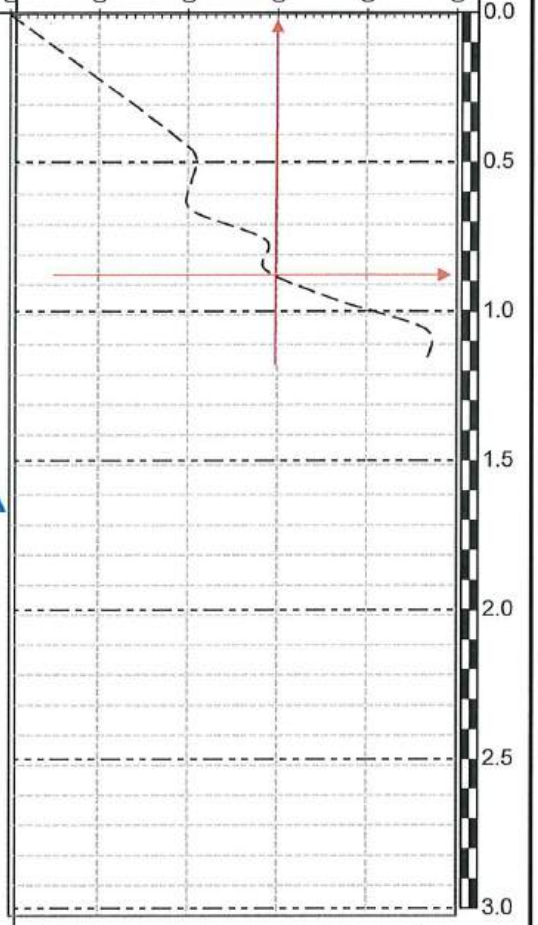
Project:	TARBOTTONS SUBDIVISION (Lots 17 to 20)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

Depth	STRATA DESCRIPTION Visual Inspection @ PIT Lot # 20	USCS
0.0	dark brown silty **TOPSOIL**, very moist	OL
0.5	silty **CLAY**, light brown, moist, packed with some fine to medium gravels, minor organic rootlets, low plasticity, low cohesion.	CL
1.0	silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, very wet soils.	CH
1.5	fine to coarse **GRAVEL** with major sand and clay, well graded-bedded, tightly packed, saturated, inorganic. ***stabilized water table***	GW
2.0	*end of test…* **SUMMARY:** 300 kPa Ultimate in LOT 17 @ 0.7m BGL 300 kPa Ultimate in LOT 18 @ 0.7m BGL 300 kPa Ultimate in LOT 19 @ 1.0m BGL 300 kPa Ultimate in LOT 20 @ 0.9m BGL Water Table @ 1.6m BGL	
2.5		
3.0		
3.5		
4.0		
4.5		
5.0		

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)



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Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 21 to 24)	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD	Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton	Field Staff:	AS/BTD
Job Number	238042 / 37	Equipment:	SP / Excav

milward finlay lobb
PLANNERS | SURVEYORS | ENGINEERS

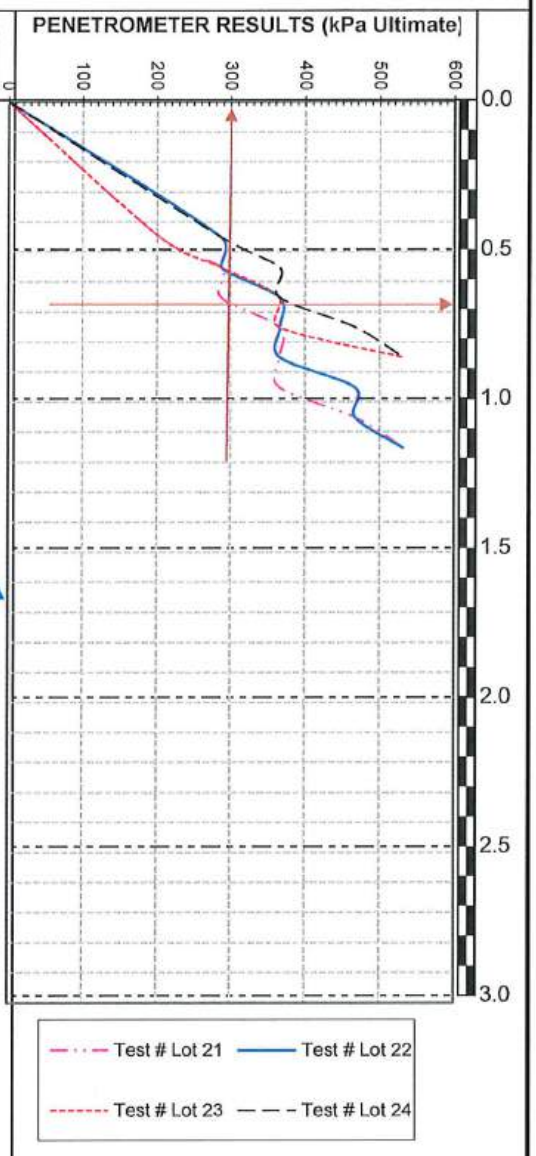
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 21	USCS
dark brown silty **TOPSOIL**, very moist	OL
clayey **SILT**, light brown, moist, packed with some fine subrounded gravels, some minor organic rootlets.	ML
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, very wet soils.	CH
fine to coarse **GRAVEL** with major silt and clay, well grad bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

SUMMARY:

300 kPa Ultimate in LOT 21 @ 0.7m BGL
300 kPa Ultimate in LOT 22 @ 0.6m BGL
300 kPa Ultimate in LOT 23 @ 0.6m BGL
300 kPa Ultimate in LOT 24 @ 0.5m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table



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Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 21 to 24)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

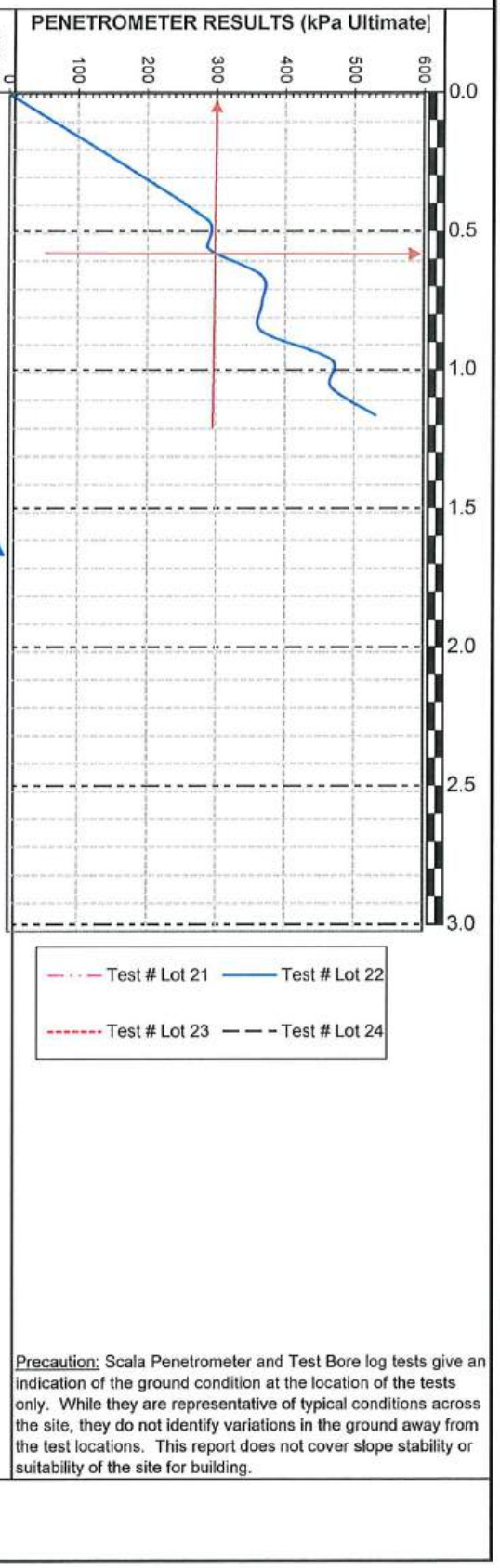
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 22	USCS
dark brown silty **TOPSOIL**, moist	OL
clayey **SILT**, light brown, moist, packed with some fine and coarse gravels, minor organic rootlets.	ML
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, wet soils.	CH
fine to coarse **GRAVEL-SAND**, well graded, bedded, thightly packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

SUMMARY:

300 kPa Ultimate in LOT 21 @ 0.7m BGL
300 kPa Ultimate in LOT 22 @ 0.6m BGL
300 kPa Ultimate in LOT 23 @ 0.6m BGL
300 kPa Ultimate in LOT 24 @ 0.5m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table



Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 21 to 24)	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD	Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton	Field Staff:	AS/BTD
Job Number	238042 / 37	Equipment:	SP / Excav

milward finlay lobb
PLANNERS | SURVEYORS | ENGINEERS

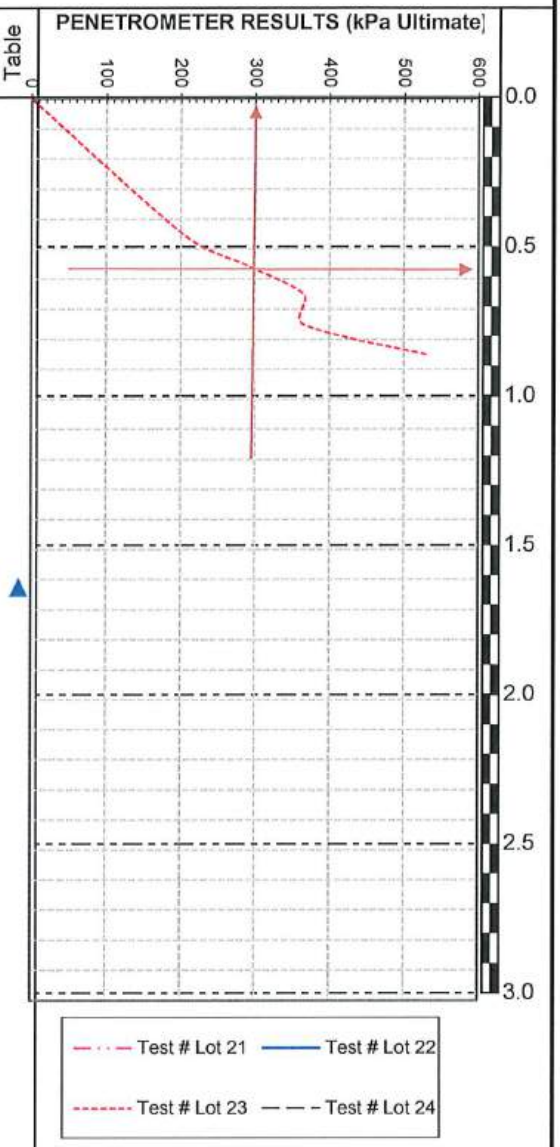
STRATA DESCRIPTION Visual Inspection @ PIT Lot # 23	USCS
dark brown silty **TOPSOIL**, moist	OL
clayey **SILT**, light brown, moist, packed with some fine and coarse gravels, minor organic rootlets.	ML
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, wet soils.	CH
fine to coarse **GRAVEL-SAND**, well graded, bedded, thightly packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

SUMMARY:

300 kPa Ultimate in LOT 21 @ 0.7m BGL
300 kPa Ultimate in LOT 22 @ 0.6m BGL
300 kPa Ultimate in LOT 23 @ 0.6m BGL
300 kPa Ultimate in LOT 24 @ 0.5m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table



Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

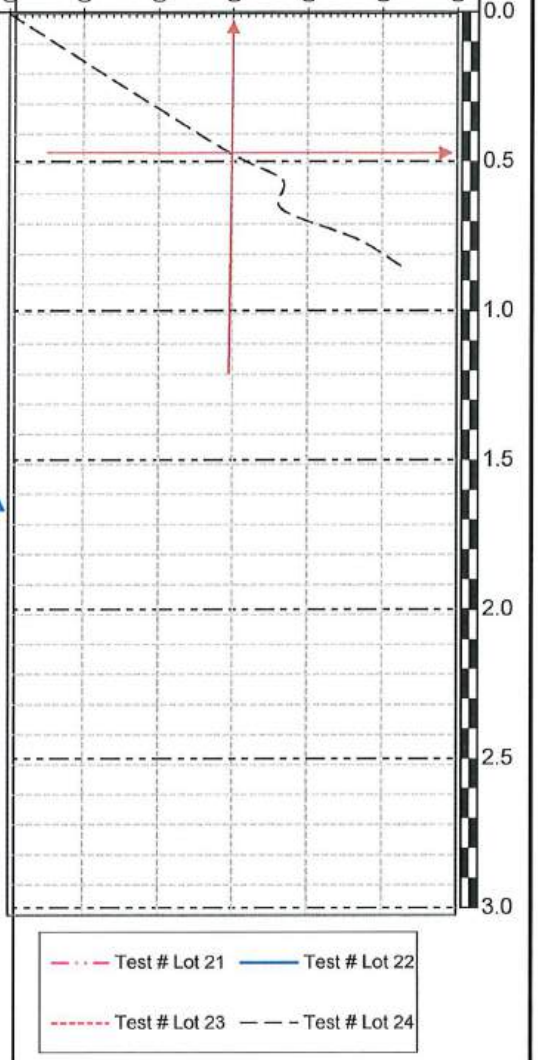
Project:	TARBOTTONS SUBDIVISION (Lots 21 to 24)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	15/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/BTD
Job Number	238042 / 37		Equipment:	SP / Excav

	STRATA DESCRIPTION Visual Inspection @ PIT Lot # 24	USCS
0.0	dark brown silty **TOPSOIL**, moist	OL
0.5	silty **CLAY**, light brown, moist, packed with some minor gravels, minor organic rootlets.	CL
1.0	silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, wet.	CH
1.5	fine to coarse **GRAVEL-SAND**, well graded, bedded, thightly packed, saturated, inorganic. ***stabilized water table***	GW
2.0	*end of test…* **SUMMARY:** 300 kPa Ultimate in LOT 21 @ 0.7m BGL 300 kPa Ultimate in LOT 22 @ 0.6m BGL 300 kPa Ultimate in LOT 23 @ 0.6m BGL 300 kPa Ultimate in LOT 24 @ 0.5m BGL Water Table @ 1.6m BGL	
2.5		
3.0		
3.5		
4.0		
4.5		
5.0		

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)



Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 25 to 27)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	16/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/NB
Job Number	238042 / 37		Equipment:	SP / Excav

STRATA DESCRIPTION Auger @ Lot # 25	USCS
dark brown silty **TOPSOIL**, very moist	OL
CLAY some silt, light brown, moist, packed with some fine subrounded gravels, some minor organic rootlets.	CL
silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, very wet soils.	CH
fine to coarse **GRAVEL-SAND** with major silt and clay, well graded-bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
end of test…	

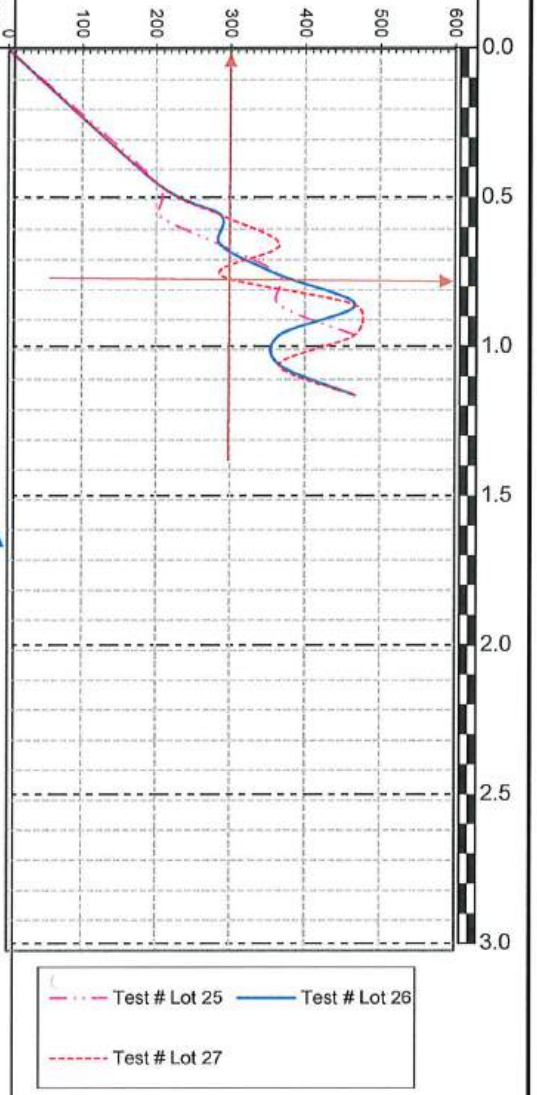
SUMMARY:

300 kPa Ultimate in LOT 25 @ 0.7m BGL
300 kPa Ultimate in LOT 26 @ 0.7m BGL
300 kPa Ultimate in LOT 27 @ 0.8m BGL
Water Table @ 1.6m BGL

Graphical Log

Water Table

PENETROMETER RESULTS (kPa Ultimate)



Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

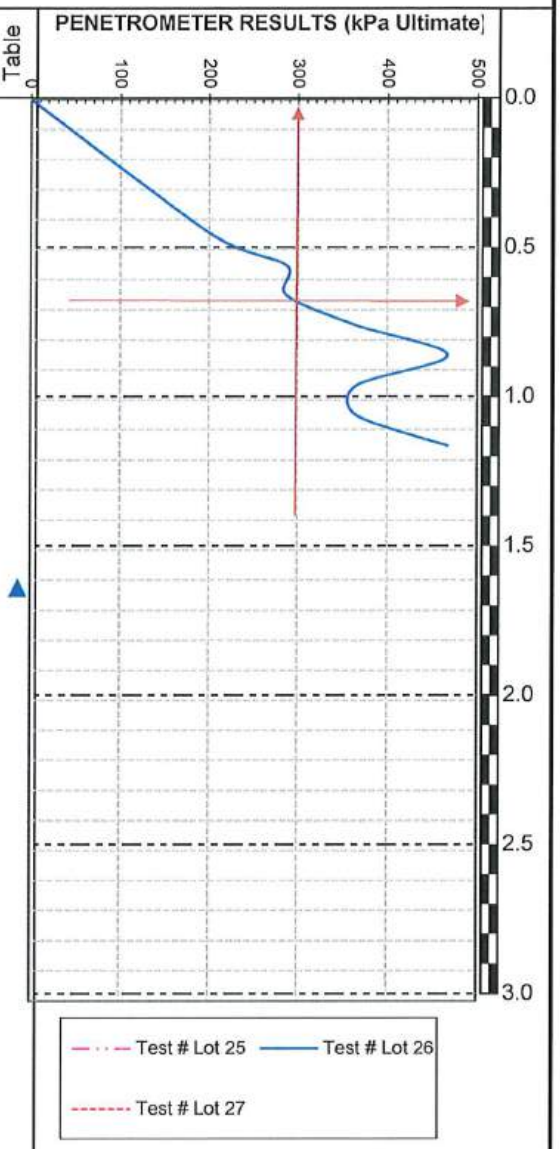
Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 25 to 27)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	16/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/NB
Job Number	238042 / 37		Equipment:	SP / Excav

	STRATA DESCRIPTION Auger @ Lot # 26	USCS
0.0	dark brown silty **TOPSOIL**, very moist	OL
0.5	**CLAY** some silt, light brown, moist, packed with some fine subrounded gravels, some minor organic rootlets.	CL
1.0	silty **CLAY**, with very high plasticity and cohesion, wet, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand.	CH
1.5	fine to coarse **GRAVEL-SAND** with major silt and clay, well graded-bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW
2.0	*end of test…*	
2.5	**SUMMARY:** 300 kPa Ultimate in LOT 25 @ 0.7m BGL 300 kPa Ultimate in LOT 26 @ 0.7m BGL 300 kPa Ultimate in LOT 27 @ 0.8m BGL Water Table @ 1.6m BGL	
3.0		
3.5		
4.0		
4.5		
5.0		

Graphical Log

Water Table

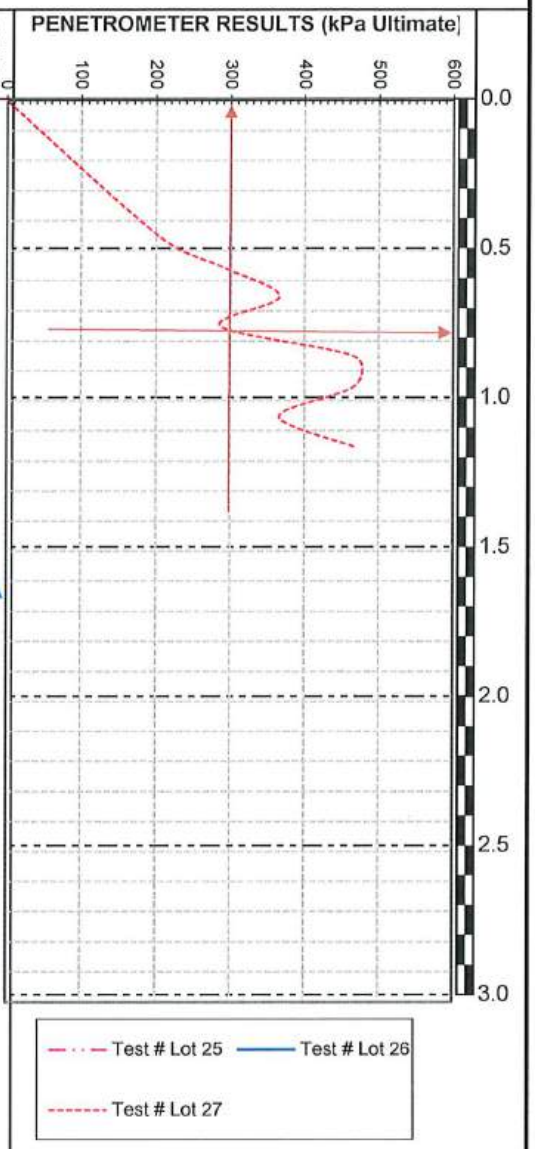


Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

Project:	TARBOTTONS SUBDIVISION (Lots 25 to 27)	milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Date:	16/09/2022
Client:	ROONEY HOLDINGS LTD		Time:	9:00am
Test Location:	Tarbottons Road / Nixon Street - Ashburton		Field Staff:	AS/NB
Job Number	238042 / 37		Equipment:	SP / Excav

	STRATA DESCRIPTION Auger @ Lot # 27	USCS	Graphical Log	Water Table
0.0	dark brown silty **TOPSOIL**, very moist	OL		
0.5	silty **CLAY**, light brown, moist, packed with some fine subrounded gravels, some minor organic rootlets.	CL		
1.0	silty **CLAY**, with very high plasticity and cohesion, light greyish brown, mottled light orange oxides, medium to coarse gravels and coarse grey sand, very wet soils.	CH		
1.5	fine to coarse **GRAVEL** with major silt and clay, well graded-bedded, loosely packed, saturated, inorganic. ***stabilized water table***	GW		▲
2.0	*end of test…* **SUMMARY:** 300 kPa Ultimate in LOT 25 @ 0.7m BGL 300 kPa Ultimate in LOT 26 @ 0.7m BGL 300 kPa Ultimate in LOT 27 @ 0.8m BGL Water Table @ 1.6m BGL			
2.5				
3.0				
3.5				
4.0				
4.5				
5.0				



Precaution: Scala Penetrometer and Test Bore log tests give an indication of the ground condition at the location of the tests only. While they are representative of typical conditions across the site, they do not identify variations in the ground away from the test locations. This report does not cover slope stability or suitability of the site for building.

Soil Description in accordance with the NZGS Inc 2005
"Guideline for the Field Classification and Description of Soil and Rock in Engineering Purposes"

milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Site Name:	Tarbottons Subdivision	Job No.:	238042/37
	Address:	Tarbottons Rd. - Nixon Str. , Ashburton	Tested By:	BTD / AS
	Client:	Rooney Holdings Ltd	Date:	15/09/2022

SCALA PENETROMETER TEST

Topsoil depth	400	400	400	400	400	400	400	400	400	400
Starting depth	400mm	400mm	500mm	400mm	400mm	400mm	400mm	400mm	400mm	400mm
Material tested	silty clay	silty clay	silty clay	silty clay	clay	silty clay	silty clay	silty clay	silty clay	silty clay

Depth	Blows per 100mm									
(mm)	LOT 1	LOT 2	LOT 3	LOT 4	LOT 5	LOT 6	LOT 7	LOT 8	LOT 9	LOT 10
0-100	2	2	1	2	1	2	2	2	2	2
100-200	3	3	2	2	2	2	3	3	2	1
200-300	3	3	3	3	2	3	3	3	2	3
300-400	4	4	3	3	4	2	4	4	4	3
400-500	5	5	4	3	4	4	4	5	4	4
500-600	10+	4	4	3	4	4	4	5	4	5
600-700		4	4	5	6				5	
700-800				5	9					
800-900										
900-1000										

SITE NOTES

SKETCH LAYOUT OF SITE

milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Site Name:	Tarbottons Subdivision	Job No.:	238042/37
	Address:	Tarbottons Rd. - Nixon Str. , Ashburton	Tested By:	BTD / AS
	Client:	Rooney Holdings Ltd	Date:	15/09/2022

SCALA PENETROMETER TEST

Topsoil depth	400	400	400	400	400	400	400	400	400	400
Starting depth	400mm	400mm	400mm	400mm	400mm	400mm	400mm	400mm	400mm	400mm
Material tested	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay

Depth	Blows per 100mm									
(mm)	LOT 11	LOT 12	LOT 13	LOT 14	LOT 15	LOT 16	LOT 17	LOT 18	LOT 19	LOT 20
0-100	2	2	2	2	2	2	2	2	2	2
100-200	3	3	3	3	2	3	3	3	3	2
200-300	4	4	4	4	3	4	3	3	3	2
300-400	5	4	4	4	4	3	4	4	4	3
400-500	5	4	5	4	4	5	4	5	4	3
500-600	6	5	6	6	5	5	4	4	3	4
600-700		5			4		5	5	5	5
700-800					5					5
800-900										
900-1000										

SITE NOTES

SKETCH LAYOUT OF SITE

milward finlay lobb PLANNERS | SURVEYORS | ENGINEERS	Site Name:	Tarbottons Subdivision	Job No.:	238042/37
	Address:	Tarbottons Rd. - Nixon Str. , Ashburton	Tested By:	BTD / AS
	Client:	Rooney Holdings Ltd	Date:	15/09/2022

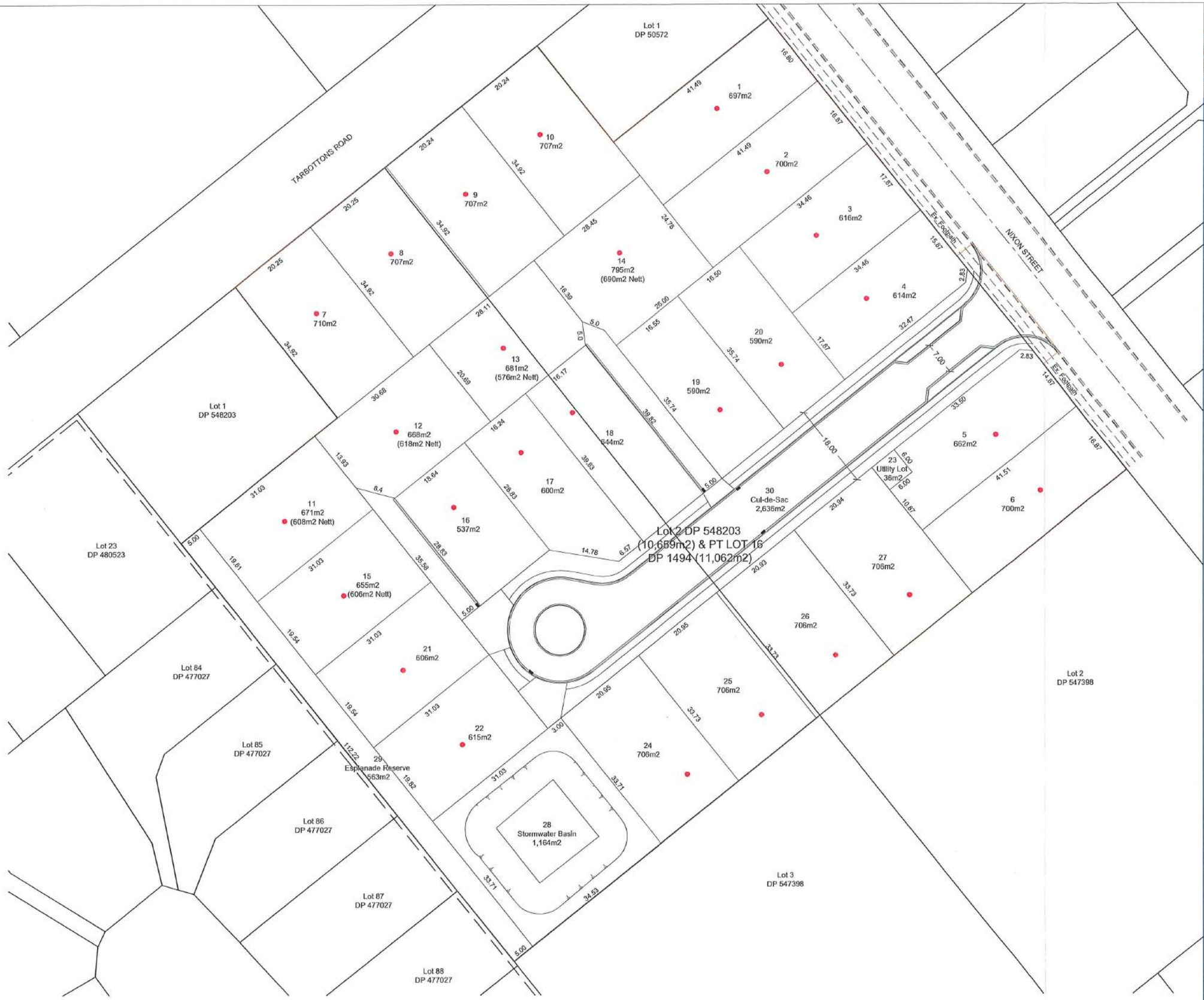
SCALA PENETROMETER TEST

Topsoil depth	400	400	400	400	400mm	400	400mm			
Starting depth	400 mm	400 mm	400mm	400	-400mm	-400	400mm			
Material tested	silty clay	silty clay	silty clay	clay	silty clay	clay	silty clay			

Depth	Blows per 100mm									
(mm)	LOT 21	LOT 22	LOT 23	LOT 24	LOT 25	LOT 26	LOT 27	~~LOT 28~~	~~LOT 29~~	~~LOT 30~~
0-100	2	2	1	1	2	2	2			
100-200	3	3	3	3	2	3	3			
200-300	3	4	4	4	3	3	3			
300-400	4	4	4	4	4	3	3			
400-500	4	4	6	6	4	5	5			
500-600	4	4			5+	4	5			
600-700	4	4				4	4			
700-800	5	4				5	5			
800-900										
900-1000										

SITE NOTES

SKETCH LAYOUT OF SITE



milward finlay lobb

PLANNERS | SURVEYORS | ENGINEERS

Consulting Civil & Structural Engineers.
Registered Professional Surveyors &
Licensed Cadastral Surveyors.
P O Box 434, No. 6 The Terrace, Timaru.

p: (03)684 7688
e: admin@mflnz.co.nz www.mflnz.co.nz

no.	revision	date

All dimensions to be checked on site
Do not scale off drawings
Any discrepancies between drawings
to be notified to Consultants

Key:

- Property boundary
- Extent of work
- Carters Creek
- Site Testing Location - Scala and Auger

STRUCTURAL DRAWINGS

Rooney Holdings Ltd

Geotech Investigation

site address:
TARBOTTONS ROAD
ASHBURTON

drawn:	BTD
approved:	KMR
issue date:	September 2022
scale:	1:750 @ A3

sheet title:
Site Testing Locations

project # : 238042/37

sheet:

S-01

c:\users\batha\dropbox (millward finlay lobb)\mfl\rooney holdings ltd - 238042\37 - geotechnical investigation - 45 tarbottons rd, ashburton\engineering\structural\site testing plan.dwg