



ENGEO

— Expect Excellence —

Geotechnical Investigation

479 East Maddisons Road

Springston

Christchurch

Submitted to:

Hughes Developments Ltd

Christchurch

ENGEO Limited

124 Montreal Street, Sydenham, Christchurch 8023

PO Box 373, Christchurch 8140, New Zealand

Tel +64 3 328 9012 Fax +64 3 328 9013

www.engeo.co.nz

16.05.2019

12903.000.000_51



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ENGEO Document Control:

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1 Introduction

ENGEO Ltd was requested by Hughes Development Ltd to undertake a geotechnical investigation of the property at 479 East Maddisons Road, Springston, Christchurch, as outlined in our variation proposal (ref. P2016.000.248_042).

The purpose of this assessment was to determine a geological model of the site, assess the likely future land performance, comment on the suitability of the site for residential subdivision, address the requirements of Section 106 of the Resource Management Act (RMA) and provide recommendations for subdivision works and foundations for typical timber framed residential dwellings.

Our scope of works included the following:

- Complete a desktop study of relevant available geotechnical and geological publications, including the NZ Geotechnical and Environment Canterbury Databases.
- Undertake a geotechnical site walkover.
- Undertake eight hand auger boreholes with associated Scala penetrometer tests to assess the near surface material types and strength characteristics.
- Organise and technically supervise the excavation of eight test pits, including geotechnical logging of the exposed soils.
- Preparation of this report outlining our findings on the ground conditions and the suitability of the site for residential subdivision, including geotechnical advice on the likely foundation Technical Category, conceptual foundation recommendations for typical timber framed residential dwellings, and address likely geohazards as required by Section 106 of the RMA.

2 Site Description

The site covers a total area of 5.492 ha, and has the following legal description (Selwyn District Council):

- 479 East Maddisons Road - Lot 74660 BLK III.

It is located approximately 4 km south of Rolleston town centre, rural properties border the site on all sides (Figure 1).

Figure 1: Site Location Plan



Images sourced from Canterbury Maps and "© OpenStreetMap contributors". Not to scale.

3 Geological Model

3.1 Regional Geology

The site has been regionally mapped by GNS (Forsyth et al., 2018) as being underlain by grey river alluvium.

3.2 Geomorphology

The site comprises relatively flat ground, with gentle undulations and depressions in some areas. As evident on aerial imagery (Canterbury Maps, 2019) and observed during our site walkover conducted on 6 May 2019, undulating and depressed ground can be attributed to paleo-channels, which traverse the site in a general northwest to southeast trend. Based on observations, silt and sand deposits with variable thickness (up to 0.6 m) are expected to have in-filled the paleo-channels where they have not remained as channel features. Inferred paleo-channels have been mapped to give an indication of areas with potential channel in-fill (Appendix 1).

Figure 2: Historical Aerial Photography

1940 - 1944

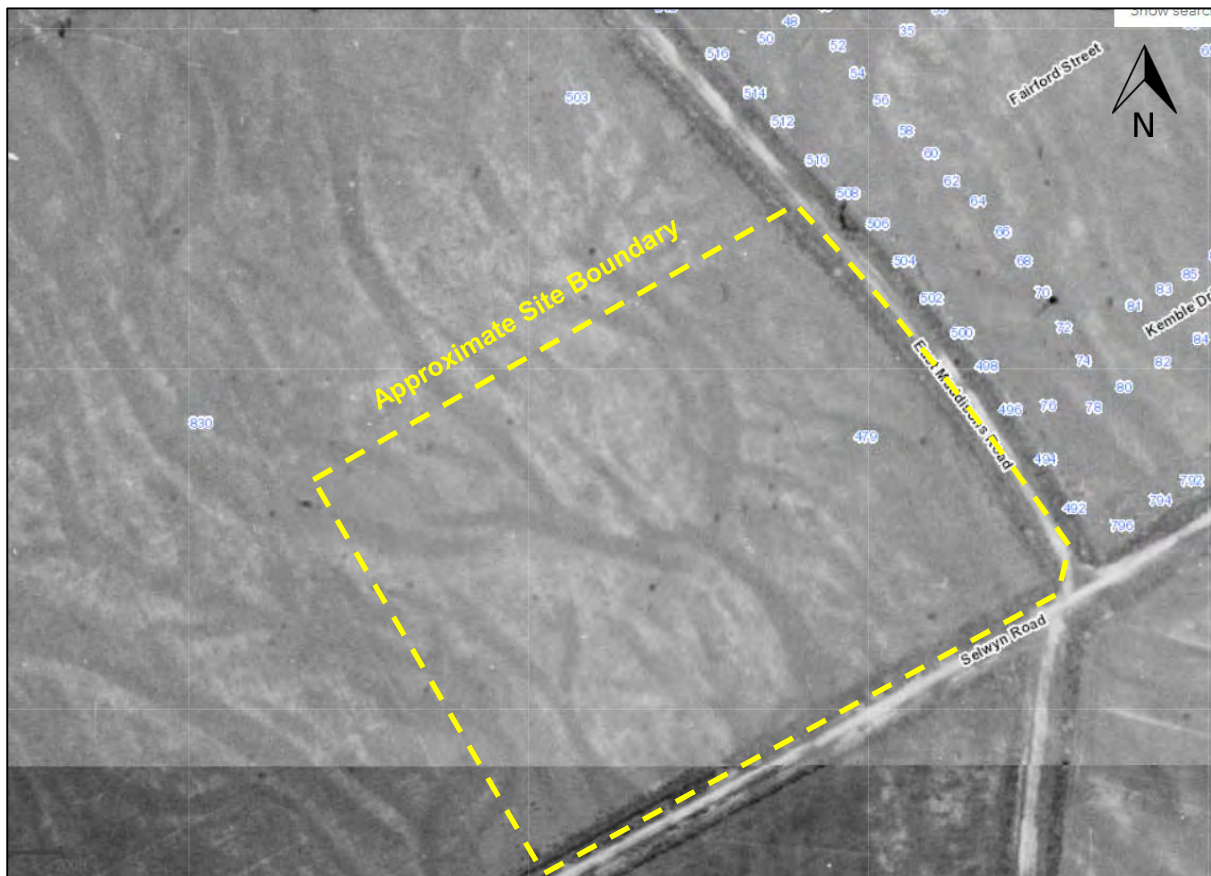


Image sourced from Canterbury Maps

1990 – 1994



Image sourced from Canterbury Maps

3.3 Geohazards

3.3.1 Seismicity

There are no known or mapped faults in the immediate area of the site, however the site may be at risk of ground shaking induced by movement of proximal or distal faults.

The site is located between two recently discovered fault systems, the Greendale Fault and the Port Hills Fault, the ruptures of which initiated the ongoing Canterbury Earthquake Sequence (CES). The Greendale Fault has been mapped approximately 5 km northwest / west of the site and trends roughly east-west with a surface rupture of approximately 28 km (GNS, 2015), while the Port Hills Fault remains unmapped as the fault did not rupture at the surface. Movement on the Port Hills Fault is believed to have occurred at a depth of 1 km to 2 km below ground surface.

Large regional areas of faulting (GNS, 2015) namely the Ashley Fault, Porters Pass - Amberley Fault Zone, and the Hope and Alpine Faults, are further afield but present a high seismic hazard to the Christchurch area due to the anticipated size of earthquakes generated. The largest of these faults is the Alpine Fault, which has a return period of 250 - 300 years and is expected to produce a M8 earthquake. The last rupture on the Alpine Fault is believed to have occurred in 1717 (Pettinga et al., 2001).

3.3.2 Liquefaction and Lateral Spreading

The site is located within an area mapped as ‘damaging liquefaction unlikely’ (NZGD Map CGD5140, 2012).

3.4 Site Investigation

Site investigations to assess the shallow subsurface material types and strength characteristics were undertaken by ENGEO on 7 and 9 May 2019. The investigations comprised seven hand auger boreholes and nine test pit investigations with associated Scala penetrometer tests.

The investigations revealed subsurface conditions across the site are consistent with the published geological mapping, as summarised in Table 1. Hand auger and test pit logs are included in Appendix 2 of this report.

Table 1: Generalised Summary of Subsurface Conditions

| Soil Type | Depth to Top of Layer (m) | Layer Thickness (m) | Density / Consistency | Additional Comments |
|----------------------|---------------------------|---------------------|---|-----------------------------------|
| TOPSOIL | 0.0 | 0.1 - 0.2 | Stiff | |
| SILT / Gravelly SAND | 0.2 | 0.1 - 0.4 | Stiff to Very Stiff / Dense to Very Dense | Not present at all test locations |
| Sandy GRAVEL | 0.1 - 0.4 | Unknown | Dense to Very Dense | |

3.5 ECan Boreholes

A review of three deep ECan borehole logs was conducted. The first (M36/4090), is located on site, and appears to be servicing the existing dwelling. The other boreholes are located on the north-western boundary (M36/7639), and approximately 90 m from the western corner boundary (M36/7902).

Well summaries from the three holes of interest are presented in Appendix 3 and indicate the site is broadly underlain by a mixture of alluvial gravels to depths of at least 36 m below ground level. M34/7639 recorded silt from 4 m to 10.5 m depth.

Figure 3: Nearby ECAN Borehole Locations

Aerial photograph sourced from Canterbury Maps. Not to scale.

3.6 Groundwater

Groundwater is recorded in the surrounding boreholes between approximately 5.2 m and 8.4 m depth.

3.7 Site Seismic Class

In accordance with NZS 1170.5:2004, Class D applies to this particular site, defining it as a 'deep soft soil site'.

4 Liquefaction Assessment

Based on our site investigation and observations, and owing to the nature of the subsurface materials and depth to groundwater at the site, we consider the potential for liquefaction and lateral spreading on the site to be very low.

We therefore consider the site of the proposed subdivision to have Technical Category 1 (TC1) future land performance whereby future land damage from liquefaction is unlikely, and ground settlements are expected to be within normally accepted tolerances.

5 RMA Section 106 Requirements and Suitability to Subdivide

Section 106 of the Resource Management Act 1991 states a consent authority may refuse to grant a subdivision consent, or may grant a consent subject to specific consent conditions if it considers that:

- There is a significant risk from natural hazards; or
- Sufficient provision has not been made for legal or physical access to each allotment to be created by the subdivision.

An assessment of the risk from natural hazards as required by the RMA includes the following:

- The likelihood of natural hazards occurring (weather individually or in combination);
- The material damage to land in respect of which the consent is sought, other land, or structures that would result from natural hazards; and
- Any likely subsequent use of the land in respect of which the consent is sought that would accelerate, worsen, or result in material damage of the kind referred to in paragraph (b).

We have assessed the risk of natural hazards at the site in accordance with Section 106 of the Resource Management Act (RMA) and considered the risk to the site from rockfall, inundation (debris), slope stability, subsidence, flooding and tsunamis. Based on our observations and the nature of the site, its performance during the CES, and the site's distance from the nearest significant watercourse, we consider it is unlikely for the site to be subject to natural hazards such as rockfall, inundation (debris), slope stability, subsidence, flooding and tsunamis. As such, the site is considered suitable for subdivision from a geotechnical perspective.

6 Geotechnical Recommendations

6.1 Earthworks

Earthworks carried out for the subdivision shall be in accordance with NZS 4404:2010, Land Development and Subdivision Infrastructure and NZS 4431:1989, Code of Practice for Earth filling for Residential Development. In particular, any areas to receive fill should be stripped of all vegetation, topsoil, non-engineered fill, soft or organic soils prior to fill placement.

Fill may comprise clean natural sandy gravel or silty soils, or clean imported soils and / or granular fill, compacted to achieve no less than 95% of maximum dry density. Fill faces steeper than 2V:1H and higher than 600 mm should be retained and referred back to ENGEO. Although unlikely, where any springs or groundwater seeps are encountered, they should be intercepted with suitable drainage and discharged to a Council approved outlet.

All unretained batters of pond and stormwater drains constructed with the native sandy gravel material should be at an inclination no steeper than 1V:3H, with protection schemes in place to control erosion of the formed batters within the waterways.

A comprehensive earthworks specification should be provided to the earthworks contractor prior to starting excavations and an inspection / testing regime agreed, along with a robust erosion and sediment control plan.

6.2 Subdivision Roothing

Vegetation, any organic or deleterious material, topsoil and non-engineered fill should be removed from the site under pavement areas prior to aggregate placement. Based on our observations during testing, we consider the natural ground below the topsoil at the site should provide an adequate subgrade for the proposed pavement areas.

6.3 Stormwater Control

Concentrated stormwater flows from all impermeable areas must be collected and carried in sealed pipes to the Council system or an alternative disposal point subject to approval from Council. Uncontrolled stormwater must not be allowed to saturate the ground as this will potentially affect future foundation performance both statically and during future seismic activity.

6.4 Foundations

Foundations for future proposed residential dwellings within the subdivision may comprise pad, strip or slab foundations designed in accordance with the provisions of NZS 3604 Timber Framed Buildings.

Site specific testing will be required for Building Consent, to confirm the bearing materials and capacity. For preliminary design, we anticipate that a geotechnical Ultimate Bearing Capacity of 300 kPa may be assumed for foundations bearing on natural silt, sandy gravel or engineered fill, below any topsoil. We anticipate this to be typically below 0.2 m depth based on our subsurface investigations.

7 References

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GNS Science (2015). New Zealand Active Faults Database. Retrieved November 2018, from <http://data.gns.cri.nz/af>.

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Selwyn District Council (2015), Selwyn District Council Operative District Plan. November 2018, <http://www.selwyn.govt.nz/services/planning/district-plan>.

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The Ministry of Business, Innovation, and Employment (2016). New Zealand Geotechnical Database. Retrieved November 2018, from <https://www.nzgd.org.nz>.

8 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, Hughes Developments Ltd, their professional advisers and the relevant Territorial Authorities 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



Jed Watts

Engineering Geologist

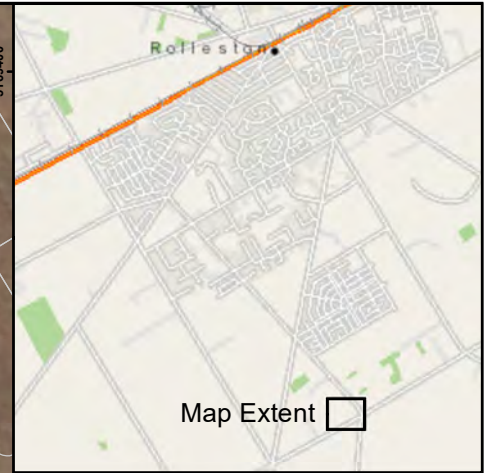
Report reviewed by



Greg Martin, CMEngNZ (PEngGeol)

Principal Engineering Geologist

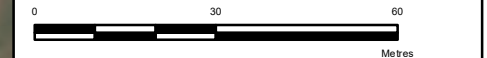
APPENDIX 1:
Site Plan and Inferred Paleo Channels



Legend

- Hand auger
- Test pit
- Site boundary
- Title boundary
- Inferred Paleochannel

Aerial: LINZ and Eagle Technology, CC-BY-3.0-NZ.
Map image: Eagle Technology, CC-BY-3.0-NZ.



PROJECTION: NZGD 2000 New Zealand Transverse Mercator

ENGEO

Christchurch Office
124 Montreal Street, Sydenham, Christchurch 8023
Tel: 03 328 9012, www.engeo.co.nz

Title:
Site and testing location plan

| | | |
|---------------------------------------|--------------|------------|
| Client: Hughes Developments Limited | | Figure No: |
| Project: | Designed: JW | 1 |
| 479 East Maddisons Road Springston | Drawn: RW | |
| | Checked: XX | |
| | Date: May 19 | |
| Proj No: | Scale: | Revision: |
| 12903.000.000 | 1:1,250 | A |

DATE PLOTTED: 14 May 2019 4:15:31 p.m. BY: wjlliams

PATH: Z:\Projects\12901 to 13000\12903 - Farmington South\Shibboleth\042 - 479 East Maddisons Road - Geotech\06_CAD-GIS & Figures\F01_FigLoc.mxd

APPENDIX 2:
Test Pit and Hand Auger Logs



LOG OF AUGER HA02

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000

Client : Hughes Development Ltd Shear Vane No : N/A
Client Ref. : Logged By : KF
Date : 07/05/2019 Reviewed By : JW
Hole Depth : 0.3 m Latitude :
Hole Diameter : 50 mm Longitude :

| Depth (m BGL) | Material | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/ Density Index | Shear Vane Undrained Shear Strength (kPa) Peak/Remoulded | Scala Penetrometer | | | | | | |
|--|----------|-------------|---|----------------|-----------------|-------------|----------------|-------------------------------|---|--------------------|---|---|---|----|----|--|
| | | | | | | | | | | Blows per 100mm | | | | | | |
| | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | |
| | TS | ML | SILT with some fine sand and trace rootlets; brown. Low plasticity [TOPSOIL]. | | | | | St | | | | | | | | |
| | ALLUVIUM | ML | SILT with some fine to medium sand and minor gravel; light brown. Low plasticity. Gravel, fine, subangular to subrounded. | | | | M | VSt | | | | | | | | |
| End of Hole Depth: 0.3 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | | |
| 0.5 | | | | | | | | | | | | | | | | |

GEOTECH HAND AUGER HA LOGS.GPJ NZ DATA TEMPLATE 2.GDT 16/5/19

Hand auger met practical refusal at 0.3 m depth on inferred gravel.
Scala Penetrometer met practical refusal at 0.4 m depth.
Standing groundwater was not encountered
TS = TOPSOIL



LOG OF AUGER HA03

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000

Client : Hughes Development Ltd
Client Ref. :
Date : 07/05/2019
Hole Depth : 0.2 m
Hole Diameter : 50 mm

Shear Vane No : N/A
Logged By : KF
Reviewed By : JW
Latitude :
Longitude :

| Depth (m BGL) | Material | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/ Density Index | Shear Vane Undrained Shear Strength (kPa) Peak/Remoulded | Scala Penetrometer | | | | | | |
|--|----------|-------------|---|----------------|-----------------|-------------|----------------|-------------------------------|---|--------------------|---|---|---|----|----|----|
| | | | | | | | | | | Blows per 100mm | | | | | | |
| | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | |
| | TS | ML | SILT with minor fine sand and trace rootlets; brown. Low plasticity [TOPSOIL]. | | | | | St | | | | | | | | |
| | ALLUVIUM | ML | SILT with some fine to medium sand and trace gravel; light brown. Low plasticity. Gravel, fine, subangular to subrounded. | | | | M | VSt | | | | | | | | |
| End of Hole Depth: 0.2 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | | |
| 0.5 | | | | | | | | | | | | | | | | >> |

GEOTECH HAND AUGER HA LOGS.GPJ NZ DATA TEMPLATE 2.GDT 16/5/19

Hand auger met practical refusal at 0.2 m depth on inferred gravel.
Scala Penetrometer met practical refusal at 0.5 m depth.
Standing groundwater was not encountered
TS = TOPSOIL



LOG OF AUGER HA04

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000

Client : Hughes Development Ltd
Client Ref. :
Date : 07/05/2019
Hole Depth : 0.3 m
Hole Diameter : 50 mm

Shear Vane No : N/A
Logged By : KF
Reviewed By : JW
Latitude :
Longitude :

| Depth (m BGL) | Material | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/ Density Index | Shear Vane Undrained Shear Strength (kPa) Peak/Remoulded | Scala Penetrometer | | | | | | |
|--|----------|-------------|--|----------------|-----------------|-------------|----------------|-------------------------------|---|--------------------|---|---|---|----|----|----|
| | | | | | | | | | | Blows per 100mm | | | | | | |
| | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | |
| | TS | ML | SILT with minor fine sand and trace rootlets; brown. Low plasticity [TOPSOIL]. | | | | | St | | | | | | | | |
| | ALLUVIUM | ML | SILT with minor fine sand and trace gravel; light brown. Low plasticity. Gravel, fine, subangular to subrounded. Minor gravel encountered from 0.2 m depth. | | | | M | VSt | | | | | | | | |
| End of Hole Depth: 0.3 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | | |
| 0.5 | | | | | | | | | | | | | | | | >> |

GEOTECH HAND AUGER HA LOGS.GPJ NZ DATA TEMPLATE 2.GDT 16/5/19

Hand auger met practical refusal at 0.3 m depth on inferred gravel.
Scala Penetrometer met practical refusal at 0.5 m depth.
Standing groundwater was not encountered
TS = TOPSOIL



LOG OF AUGER HA05

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000

Client : Hughes Development Ltd
Client Ref. :
Date : 07/05/2019
Hole Depth : 0.3 m
Hole Diameter : 50 mm

Shear Vane No : N/A
Logged By : KF
Reviewed By : JW
Latitude :
Longitude :

| Depth (m BGL) | Material | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/ Density Index | Shear Vane Undrained Shear Strength (kPa) Peak/Remoulded | Scala Penetrometer | | | | | |
|--|----------|-------------|---|----------------|-----------------|-------------|----------------|-------------------------------|---|--------------------|---|---|---|----|----|
| | | | | | | | | | | Blows per 100mm | | | | | |
| | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 |
| | TOPSOIL | ML | SILT with minor fine sand and trace rootlets; brown. Low plasticity [TOPSOIL]. | | | | | St | | | | | | | |
| | ALLUVIUM | ML | SILT with some fine sand and trace gravel; light brown. Low plasticity. Gravel, fine, subangular to subrounded. | | | | M | VSt | | | | | | | |
| End of Hole Depth: 0.3 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | |
| 0.5 | | | | | | | | | | | | | | | |

GEOTECH HAND AUGER HA LOGS.GPJ NZ DATA TEMPLATE 2.GDT 16/5/19

Hand auger met practical refusal at 0.3 m depth on inferred gravel.
Scala Penetrometer met practical refusal at 0.5 m depth.
Standing groundwater was not encountered
TS = TOPSOIL



LOG OF AUGER HA06

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000

Client : Hughes Development Ltd
Client Ref. :
Date : 07/05/2019
Hole Depth : 0.5 m
Hole Diameter : 50 mm

Shear Vane No : N/A
Logged By : KF
Reviewed By : JW
Latitude :
Longitude :

| Depth (m BGL) | Material | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/ Density Index | Shear Vane Undrained Shear Strength (kPa) Peak/Remoulded | Scala Penetrometer | | | | | | |
|---------------|----------|-------------|---|----------------|-----------------|-------------|----------------|-------------------------------|---|--------------------|---|---|---|----|----|----|
| | | | | | | | | | | Blows per 100mm | | | | | | |
| | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | |
| | TS | ML | SILT with minor fine sand and trace rootlets; brown. Low plasticity [TOPSOIL]. | | | | | VSt | | | | | | | | |
| | | ML | SILT with minor fine sand; light brown. Low plasticity. | | | | | VSt | | | | | | | | |
| | ALLUVIUM | ML | SILT with some fine sand and trace gravel; yellowish brown. Low plasticity. Gravel, fine, subangular to subrounded. | | | | M | VSt | | | | | | | | |
| 0.5 | | | Fine to medium gravel encountered from 0.45 m depth. | | | | | | | | | | | | | |
| | | | End of Hole Depth: 0.5 m Termination Condition: Practical refusal | | | | | | | | | | | | | >> |
| | | | | | | | | | | | | | | | | >> |

GEOTECH HAND AUGER HA LOGS.GPJ NZ DATA TEMPLATE 2.GDT 16/5/19

Hand auger met practical refusal at 0.5 m depth on inferred gravel.
Scala Penetrometer met practical refusal at 0.6 m depth.
Standing groundwater was not encountered
TS = TOPSOIL



LOG OF AUGER HA07

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000

Client : Hughes Development Ltd
Client Ref. :
Date : 07/05/2019
Hole Depth : 0.3 m
Hole Diameter : 50 mm

Shear Vane No : N/A
Logged By : KF
Reviewed By : JW
Latitude :
Longitude :

| Depth (m BGL) | Material | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/ Density Index | Shear Vane Undrained Shear Strength (kPa) Peak/Remoulded | Scala Penetrometer | | | | | | |
|--|----------|-------------|--|----------------|-----------------|-------------|----------------|-------------------------------|---|--------------------|---|---|---|----|----|----|
| | | | | | | | | | | Blows per 100mm | | | | | | |
| | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | |
| | TS | ML | SILT with trace gravel, sand and rootlets; brown. Low plasticity [TOPSOIL]. | | | | | St | | | | | | | | |
| | ALLUVIUM | ML | SILT with minor fine sand and trace gravel; light brown. Low plasticity. Gravel, fine, subangular to subrounded. | | | | M | VSt | | | | | | | | |
| End of Hole Depth: 0.3 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | | |
| 0.5 | | | | | | | | | | | | | | | | >> |

GEOTECH HAND AUGER HA LOGS.GPJ NZ DATA TEMPLATE 2.GDT 16/5/19

Hand auger met practical refusal at 0.3 m depth on inferred gravel.
Scala Penetrometer met practical refusal at 0.5 m depth.
Standing groundwater was not encountered
TS = TOPSOIL



LOG OF TEST PIT TP01

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000_42

Client : Hughes Development Ltd Shear Vane No : N/A
Date : 07/05/2019 Logged By : KF/SC
Max Test Pit Depth : 2 m Reviewed By : JW
Digger Type/Size : Bucket Excavator Latitude :
Bucket Type/Size : 400 mm Longitude :

| Depth (m BGL) | Material | Excavatability (Relative Scale) | | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/Density Index | Shear Vane Undrained Shear Strength Peak/Remolded (kPa) | Scala Penetrometer |
|---------------|----------|---------------------------------|--------|-------------|--|----------------|-----------------|-------------|----------------|---------------------------|---|--------------------|
| | | Easier | Harder | | | | | | | | | Blows per 100mm |
| 0.0 | TS | | | SM | Silty fine to medium SAND with trace rootlets; brown. Poorly graded [TOPSOIL]. | | | | D | MD | | 2 |
| 0.0 | ALLUVIUM | | | GW | Sandy fine to coarse GRAVEL with minor cobbles; greyish brown. Well graded. Subrounded to rounded. | | | | | D | | 4 |
| 0.5 | | | | | Trace rootlets encountered from 1.2 m depth. | | | M | | 8 | | |
| 1.0 | | | | | | | | | | | 10 | |
| 1.5 | | | | | | | | | | | 12 | |
| 2.0 | | | | | Depth of Excavation: 2 m Termination Condition: Practical refusal | | | | | | | |

GEOTECH TEST PIT LOG TP LOGS.GPJ NZ MASTER DATA TEMPLATE.GDT 16/5/19

Test pit met target depth at 2 m depth.
Scala Penetrometer met practical refusal
Standing groundwater was not encountered

TS = TOPSOIL



LOG OF TEST PIT TP02

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000_42

Client : Hughes Development Ltd Shear Vane No : N/A
Date : 07/05/2019 Logged By : KF/SC
Max Test Pit Depth : 2 m Reviewed By : JW
Digger Type/Size : Bucket Excavator Latitude :
Bucket Type/Size : 400 mm Longitude :

| Depth (m BGL) | Material | Excavatability (Relative Scale) | | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/Density Index | Shear Vane Undrained Shear Strength Peak/Remolded (kPa) | Scala Penetrometer |
|--|----------|---------------------------------|--------|-------------|---|----------------|-----------------|-------------|----------------|---------------------------|---|--------------------|
| | | Easier | Harder | | | | | | | | | Blows per 100mm |
| 0.0 | TS | | | ML | SILT with some fine to medium sand and trace rootlets; dark brown. Low plasticity [TOPSOIL]. | | | | | St | | 2 |
| 0.5 | ALLUVIUM | | | SW | Gravelly fine to medium SAND with trace rootlets; brown. Well graded. Gravel, fine to coarse, subrounded. | | | | | D | | 4 |
| 1.0 | | | | GW | Sandy fine to coarse GRAVEL with minor cobbles; greyish brown. Well graded. Subrounded to rounded. | | | | M | D | | 6 |
| 1.5 | | | | | | | | | | | | 8 |
| 2.0 | | | | | | | | | | | | 10 |
| Depth of Excavation: 2 m Termination Condition: Practical refusal | | | | | | | | | | | | 12 |

GEOTECH TEST PIT LOG TP LOGS.GPJ NZ MASTER DATA TEMPLATE.GDT 16/5/19

Test pit met target depth at 2 m depth.
Scala Penetrometer met practical refusal
Standing groundwater was not encountered

TS = TOPSOIL



LOG OF TEST PIT TP03

Geotechnical Investigation
 479 East Maddisons Road
 Springston
 12903.000.000_42

Client : Hughes Development Ltd **Shear Vane No :** N/A
Date : 07/05/2019 **Logged By :** KF/SC
Max Test Pit Depth : 2 m **Reviewed By :** JW
Digger Type/Size : Bucket Excavator **Latitude :**
Bucket Type/Size : 400 mm **Longitude :**

| Depth (m BGL) | Material | Excavatability (Relative Scale) | | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/Density Index | Shear Vane Undrained Shear Strength Peak/Remolded (kPa) | Scala Penetrometer | | | | | | |
|--|----------|---------------------------------|--------|-------------|--|----------------|-----------------|-------------|----------------|---------------------------|---|--------------------|---|---|---|----|----|--|
| | | Easier | Harder | | | | | | | | | Blows per 100mm | | | | | | |
| | | | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | |
| 0.0 - 0.1 | TS | | | ML | SILT with some fine to medium sand and trace rootlets; dark brown. Low plasticity [TOPSOIL]. | | | | | St | | | | | | | | |
| 0.1 - 0.5 | | | | ML | SILT with minor fine sand and trace rootlets; light greyish brown. Low plasticity. | | | | D | VSt | | | | | | | | |
| 0.5 - 1.0 | ALLUVIUM | | | GW | Sandy fine to coarse GRAVEL with minor cobbles; greyish brown. Well graded. Subrounded to rounded. Sand, fine to coarse. | | | | | D | | | | | | | | |
| 1.0 - 1.5 | | | | GW | Fine to coarse GRAVEL with some fine to coarse sand. Well graded. Subrounded to rounded. | | | | M | | | | | | | | | |
| 1.5 - 2.0 | | | | GW | Sandy fine to coarse GRAVEL with minor cobbles; brownish grey. Well graded. Subrounded to rounded. Sand, fine to coarse. | | | | | | | | | | | | | |
| Depth of Excavation: 2 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | | | | |

GEOTECH TEST PIT LOG TP LOGS.GPJ NZ MASTER DATA TEMPLATE.GDT 16/5/19

Test pit met target depth at 2 m depth.
 Scala Penetrometer met practical refusal
 Standing groundwater was not encountered

TS = TOPSOIL



LOG OF TEST PIT TP04

Geotechnical Investigation
 479 East Maddisons Road
 Springston
 12903.000.000_42

Client : Hughes Development Ltd **Shear Vane No :** N/A
Date : 07/05/2019 **Logged By :** KF/SC
Max Test Pit Depth : 2 m **Reviewed By :** JW
Digger Type/Size : Bucket Excavator **Latitude :**
Bucket Type/Size : 400 mm **Longitude :**

| Depth (m BGL) | Material | Excavatability (Relative Scale) | | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/Density Index | Shear Vane Undrained Shear Strength Peak/Remolded (kPa) | Scala Penetrometer |
|--|----------|---------------------------------|--------|-------------|--|----------------|-----------------|-------------|----------------|---------------------------|---|--------------------|
| | | Easier | Harder | | | | | | | | | Blows per 100mm |
| 0.0 - 0.1 | TS | | | ML | SILT with some fine sand and trace rootlets; dark brown. Low plasticity [TOPSOIL]. | | | | | VSt | | 2 |
| 0.1 - 0.5 | | | | SW | Gravelly fine to coarse SAND with trace rootlets; brown. Well graded. Gravel, fine to coarse, subrounded to rounded. | | | | M | D | | 4 |
| 0.5 - 0.7 | | | | ML | SILT with minor fine sand and trace rootlets; light greyish brown. Low plasticity. | | | | D | H | | 6 |
| 0.7 - 1.3 | ALLUVIUM | | | | Sandy fine to coarse GRAVEL with minor cobbles; greyish brown. Well graded. Subrounded to rounded. Sand, fine to coarse. Trace rootlets encountered from 0.6 m to 0.7 m depth. | | | | | | | 8 |
| 1.3 - 2.0 | | | | GW | Some cobbles encountered from 1.3 m depth/ | | | | M | | | 10 |
| Depth of Excavation: 2 m Termination Condition: Practical refusal | | | | | | | | | | | | 12 |

GEOTECH TEST PIT LOG TP LOGS.GPJ NZ MASTER DATA TEMPLATE.GDT 16/5/19

Test pit met target depth at 2 m depth.
 Scala Penetrometer met practical refusal
 Standing groundwater was not encountered

TS = TOPSOIL



LOG OF TEST PIT TP05

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000_42

Client : Hughes Development Ltd Shear Vane No : N/A
Date : 07/05/2019 Logged By : KF/SC
Max Test Pit Depth : 2 m Reviewed By : JW
Digger Type/Size : Bucket Excavator Latitude :
Bucket Type/Size : 400 mm Longitude :

| Depth (m BGL) | Material | Excavability (Relative Scale) | | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/Density Index | Shear Vane Undrained Shear Strength Peak/Remolded (kPa) | Scala Penetrometer | | | | | | |
|--|----------|-------------------------------|--------|-------------|--|----------------|-----------------|-------------|----------------|---------------------------|---|--------------------|---|---|---|----|----|--|
| | | Easier | Harder | | | | | | | | | Blows per 100mm | | | | | | |
| | | | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | |
| 0.0 - 0.1 | TS | | | ML | SILT with minor fine to medium sand, gravel and trace rootlets; brown. Low plasticity [TOPSOIL]. | | | | | St | | | | | | | | |
| 0.1 - 0.3 | | | | SW | Gravelly fine to coarse SAND with minor silt trace rootlets; light brownish grey. Well graded. Gravel, fine to coarse, subrounded to rounded. | | | | | D | | | | | | | | |
| 0.3 - 1.1 | | | | GW | Sandy fine to coarse GRAVEL with trace cobbles; greyish brown. Well graded. Subrounded to rounded. Sand, fine to coarse. Trace rootlets encountered from 0.3 to 0.5 m depth. | | | | M | | | | | | | | | |
| 1.1 - 2.0 | ALLUVIUM | | | GW | Cobbles become minor from 1.1 m depth. | | | | | | | | | | | | | |
| Depth of Excavation: 2 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | | | | |

GEOTECH TEST PIT LOG TP LOGS.GPJ NZ MASTER DATA TEMPLATE.GDT 16/5/19

Test pit met target depth at 2 m depth.
Scala Penetrometer met practical refusal
Standing groundwater was not encountered

TS = TOPSOIL



LOG OF TEST PIT TP06

Geotechnical Investigation
 479 East Maddisons Road
 Springston
 12903.000.000_42

Client : Hughes Development Ltd **Shear Vane No :** N/A
Date : 07/05/2019 **Logged By :** KF/SC
Max Test Pit Depth : 2 m **Reviewed By :** JW
Digger Type/Size : Bucket Excavator **Latitude :**
Bucket Type/Size : 400 mm **Longitude :**

| Depth (m BGL) | Material | Excavatability (Relative Scale) | | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/Density Index | Shear Vane Undrained Shear Strength Peak/Remolded (kPa) | Scala Penetrometer | | | | | | |
|--|----------|---------------------------------|--------|-------------|--|----------------|-----------------|-------------|----------------|---------------------------|---|--------------------|---|---|---|----|----|--|
| | | Easier | Harder | | | | | | | | | Blows per 100mm | | | | | | |
| | | | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | |
| 0.0 - 0.1 | TS | | | ML | SILT with minor fine to medium sand, gravel and trace rootlets; brown. Low plasticity [TOPSOIL]. | | | | | St | | | | | | | | |
| 0.1 - 0.4 | | | | SW | Sandy fine to coarse GRAVEL with minor silt and trace rootlets; greyish brown. Well graded. Subrounded to rounded. Sand, fine to coarse. | | | | | D | | | | | | | | |
| 0.4 - 1.0 | | | | GW | Sandy fine to coarse GRAVEL with trace cobbles; greyish brown. Well graded. Subrounded to rounded. Sand, fine to coarse. Trace rootlets encountered from 0.4 to 1 m depth. | | | | M | | | | | | | | | |
| 1.0 - 2.0 | ALLUVIUM | | | GW | Cobbles become minor from 1 m depth. | | | | M | | | | | | | | | |
| Depth of Excavation: 2 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | | | | |

GEOTECH TEST PIT LOG TP LOGS.GPJ NZ MASTER DATA TEMPLATE.GDT 16/5/19

Test pit met target depth at 2 m depth.
 Scala Penetrometer met practical refusal
 Standing groundwater was not encountered

TS = TOPSOIL



LOG OF TEST PIT TP07

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000_42

Client : Hughes Development Ltd Shear Vane No : N/A
Date : 07/05/2019 Logged By : KF/SC
Max Test Pit Depth : 2 m Reviewed By : JW
Digger Type/Size : Bucket Excavator Latitude :
Bucket Type/Size : 400 mm Longitude :

| Depth (m BGL) | Material | Excavatability (Relative Scale) | | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/Density Index | Shear Vane Undrained Shear Strength Peak/Remolded (kPa) | Scala Penetrometer | | | | | | |
|--|----------|---------------------------------|--------|-------------|---|----------------|-----------------|-------------|----------------|---------------------------|---|--------------------|---|---|---|----|----|--|
| | | Easier | Harder | | | | | | | | | Blows per 100mm | | | | | | |
| | | | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 | |
| 0.0 - 0.1 | TS | | | ML | SILT with minor fine to medium sand, gravel and trace rootlets; brown. Low plasticity [TOPSOIL]. | | | | | St | | | | | | | | |
| 0.1 - 0.3 | | | | ML | SILT with minor fine sand and trace rootlets; light yellowish brown. Low plasticity. | | | | | VSt | | | | | | | | |
| 0.3 - 0.8 | | | | | Sandy fine to coarse GRAVEL; greyish brown. Well graded. Subrounded to rounded. Sand, fine to coarse. Trace rootlets encountered from 0.3 to 0.8 m depth. | | | | | D | | | | | | | | |
| 0.8 - 2.0 | ALLUVIUM | | | GW | Trace cobbles encountered from 0.8 m depth. | | | | M | | | | | | | | | |
| Depth of Excavation: 2 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | | | | |

GEOTECH TEST PIT LOG TP LOGS.GPJ NZ MASTER DATA TEMPLATE.GDT 16/5/19

Test pit met target depth at 2 m depth.
Scala Penetrometer met practical refusal
Standing groundwater was not encountered

TS = TOPSOIL



LOG OF TEST PIT TP08

Geotechnical Investigation
 479 East Maddisons Road
 Springston
 12903.000.000_42

Client : Hughes Development Ltd **Shear Vane No :** N/A
Date : 07/05/2019 **Logged By :** KF/SC
Max Test Pit Depth : 2 m **Reviewed By :** JW
Digger Type/Size : Bucket Excavator **Latitude :**
Bucket Type/Size : 400 mm **Longitude :**

| Depth (m BGL) | Material | Excavatability (Relative Scale) | | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/Density Index | Shear Vane Undrained Shear Strength Peak/Remolded (kPa) | Scala Penetrometer | | | | | |
|--|----------|---------------------------------|--------|-------------|--|----------------|-----------------|-------------|----------------|---------------------------|---|--------------------|---|---|---|----|----|
| | | Easier | Harder | | | | | | | | | Blows per 100mm | | | | | |
| | | | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 |
| 0.0 - 0.2 | TS | | | ML | SILT with some fine and and trace rootlets; brown. Low plasticity [TOPSOIL]. | | | | | VSt | | | | | | | |
| 0.2 - 0.5 | | | | GW | Sandy fine to coarse GRAVEL with some silt and trace rootlets; greyish brown. Poorly graded. | | | | | D | | | | | | | |
| 0.5 - 2.0 | ALLUVIUM | | | GW | Sandy fine to course GRAVEL with minor cobbles; greyish brown. Well graded. Subrounded to rounded. Sand, fine to coarse. | | | | M | D | | | | | | | |
| Depth of Excavation: 2 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | | | |

GEOTECH TEST PIT LOG TP LOGS.GPJ NZ MASTER DATA TEMPLATE.GDT 16/5/19

Test pit met target depth at 2 m depth.
 Scala Penetrometer met practical refusal
 Standing groundwater was not encountered

TS = TOPSOIL



LOG OF TEST PIT TP09

Geotechnical Investigation
479 East Maddisons Road
Springston
12903.000.000_42

Client : Hughes Development Ltd Shear Vane No : N/A
Date : 07/05/2019 Logged By : KF/SC
Max Test Pit Depth : 2 m Reviewed By : JW
Digger Type/Size : Bucket Excavator Latitude :
Bucket Type/Size : 400 mm Longitude :

| Depth (m BGL) | Material | Excavability (Relative Scale) | | USCS Symbol | DESCRIPTION | Graphic Symbol | Elevation (mRL) | Water Level | Moisture Cond. | Consistency/ Density Index | Shear Vane Undrained Shear Strength Peak/Remolded (kPa) | Scala Penetrometer | | | | | |
|--|----------|-------------------------------|--------|-------------|---|----------------|-----------------|-------------|----------------|-------------------------------|---|--------------------|---|---|---|----|----|
| | | Easier | Harder | | | | | | | | | Blows per 100mm | | | | | |
| | | | | | | | | | | | | 2 | 4 | 6 | 8 | 10 | 12 |
| 0.0 - 0.1 | TS | | | ML | SILT with some fine and and trace rootlets; brown. Low plasticity [TOPSOIL]. | | | | | VSt | | | | | | | |
| 0.1 - 0.5 | | | | GW | Sandy fine to coarse GRAVEL with minor silt and trace rootlets; greyish brown. Poorly graded. | | | | | D | | | | | | | |
| 0.5 - 1.1 | | | | GW | Sandy fine to course GRAVEL; greyish brown. Well graded. Subrounded to rounded. Sand, fine to coarse. | | | | | D | | | | | | | |
| 1.1 - 1.6 | | | | GW | Trace cobbles encountered from 1.1 m depth. Trace rootlets encountered at 1.2 m depth. | | | | M | | | | | | | | |
| 1.6 - 2.0 | | | | GW | Cobbles become minor from 1.6 m depth. | | | | | | | | | | | | |
| Depth of Excavation: 2 m Termination Condition: Practical refusal | | | | | | | | | | | | | | | | | |

GEOTECH TEST PIT LOG TP LOGS.GPJ NZ MASTER DATA TEMPLATE.GDT 16/5/19

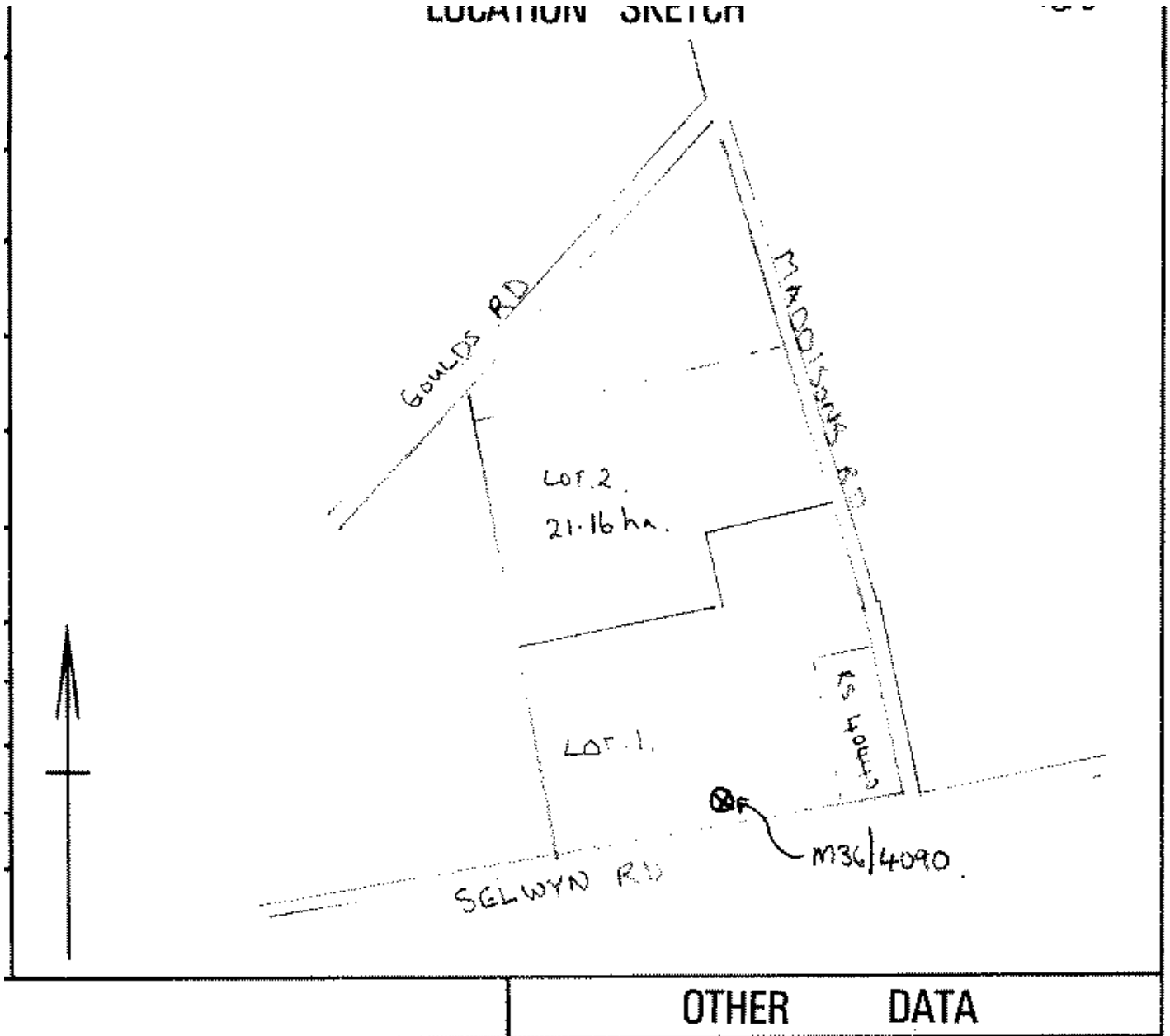
Test pit met target depth at 2 m depth.
Scala Penetrometer met practical refusal
Standing groundwater was not encountered

TS = TOPSOIL

APPENDIX 3:
ECan Borelogs



| | | | |
|------------------------------------|-----------------------------------|-------------------------------------|-----------------------------|
| Bore or Well No | M36/4090 | | |
| Well Name | SELWYN RD | | |
| Owner | DUTHIE D.J.M. | | |
| Well Number | M36/4090 | File Number | CO6C/00564 |
| Owner | DUTHIE D.J.M. | Well Status | Active (exist, present) |
| Street/Road | SELWYN RD | NZTM Grid Reference | BX23:50747-69211 |
| Locality | ROLLESTON | NZTM X and Y | 1550747 - 5169211 |
| Location Description | | Location Accuracy | 50 - 300m |
| CWMS Zone | Selwyn - Waihora | Use | Irrigation, Domestic Supply |
| Groundwater Allocation Zone | Selwyn-Waimakariri | Water Level Monitoring | -- |
| Depth | 18.30m | Water Level Count | 0 |
| Diameter | 150mm | Initial Water Level | 5.20m below MP |
| Measuring Point Description | | Highest Water Level | |
| Measuring Point Elevation | 34.90m above MSL (Lyttelton 1937) | Lowest Water Level | |
| Elevation Accuracy | < 2.5 m | First reading | |
| Ground Level | 0.00m above MP | Last reading | |
| Strata Layers | 0 | Calc Min 95% | 6.70m below MP |
| Aquifer Name | Riccarton Gravel | Aquifer Tests | 0 |
| Aquifer Type | Unknown | Yield Drawdown Tests | 0 |
| Drill Date | 26 Oct 1989 | Max Tested Yield | 0 l/s |
| Driller | Weedons WellDrilling | Drawdown at Max Tested Yield | 0 m |
| Drilling Method | Rotary/Percussion | Specific Capacity | |
| Casing Material | STEEL | Last Updated | 05 Dec 1996 |
| Pump Type | Unknown | Last Field Check | |
| Water Use Data | No | | |



No screen data for this well

No step tests for this well

No comments for this well



| | | | |
|------------------------------------|-----------------------------------|-------------------------------------|--------------------------|
| Bore or Well No | M36/7639 | | |
| Well Name | 0503 East Maddisons Road | | |
| Owner | Mr & Mrs DA & MG Miller | | |
| Well Number | M36/7639 | File Number | CO6C/21528 |
| Owner | Mr & Mrs DA & MG Miller | Well Status | Active (exist, present) |
| Street/Road | 0503 East Maddisons Road | NZTM Grid Reference | BX23:50597-69331 |
| Locality | Rolleston | NZTM X and Y | 1550597 - 5169331 |
| Location Description | | Location Accuracy | 50 - 300m |
| CWMS Zone | Selwyn - Waihora | Use | Domestic and Stockwater, |
| Groundwater Allocation Zone | Selwyn-Waimakariri | Water Level Monitoring | -- |
| Depth | 32.00m | Water Level Count | 0 |
| Diameter | 150mm | Initial Water Level | 6.30m below MP |
| Measuring Point Description | | Highest Water Level | |
| Measuring Point Elevation | 34.28m above MSL (Lyttelton 1937) | Lowest Water Level | |
| Elevation Accuracy | < 5 m | First reading | |
| Ground Level | 0.00m above MP | Last reading | |
| Strata Layers | 9 | Calc Min 95% | 12.10m below MP |
| Aquifer Name | | Aquifer Tests | 0 |
| Aquifer Type | | Yield Drawdown Tests | 2 |
| Drill Date | 01 Jun 2004 | Max Tested Yield | 7 l/s |
| Driller | Dynes Road Drilling | Drawdown at Max Tested Yield | 10 m |
| Drilling Method | Cable Tool | Specific Capacity | 1.05 l/s/m |
| Casing Material | Steel | Last Updated | 08 Nov 2013 |
| Pump Type | | Last Field Check | |
| Water Use Data | No | | |

Screens

| Screen No. | Screen Type | Top (m) | Bottom (m) | Slot Size (mm) | Slot Length (mm) | Diameter (mm) | Leader Length (mm) |
|------------|-----------------|---------|------------|----------------|------------------|---------------|--------------------|
| 1 | Stainless steel | 29 | 31 | | | | |

Step Tests

| Step Test Date | Step | Yield | Yield GPM | DrawDown | Step Duration |
|----------------|------|-------|-----------|----------|---------------|
| 01 Jun 2004 | 1 | 4.2 | 55.43237 | 4 | 2 |
| 01 Jun 2004 | 2 | 7 | 92.38728 | 9.5 | 3 |

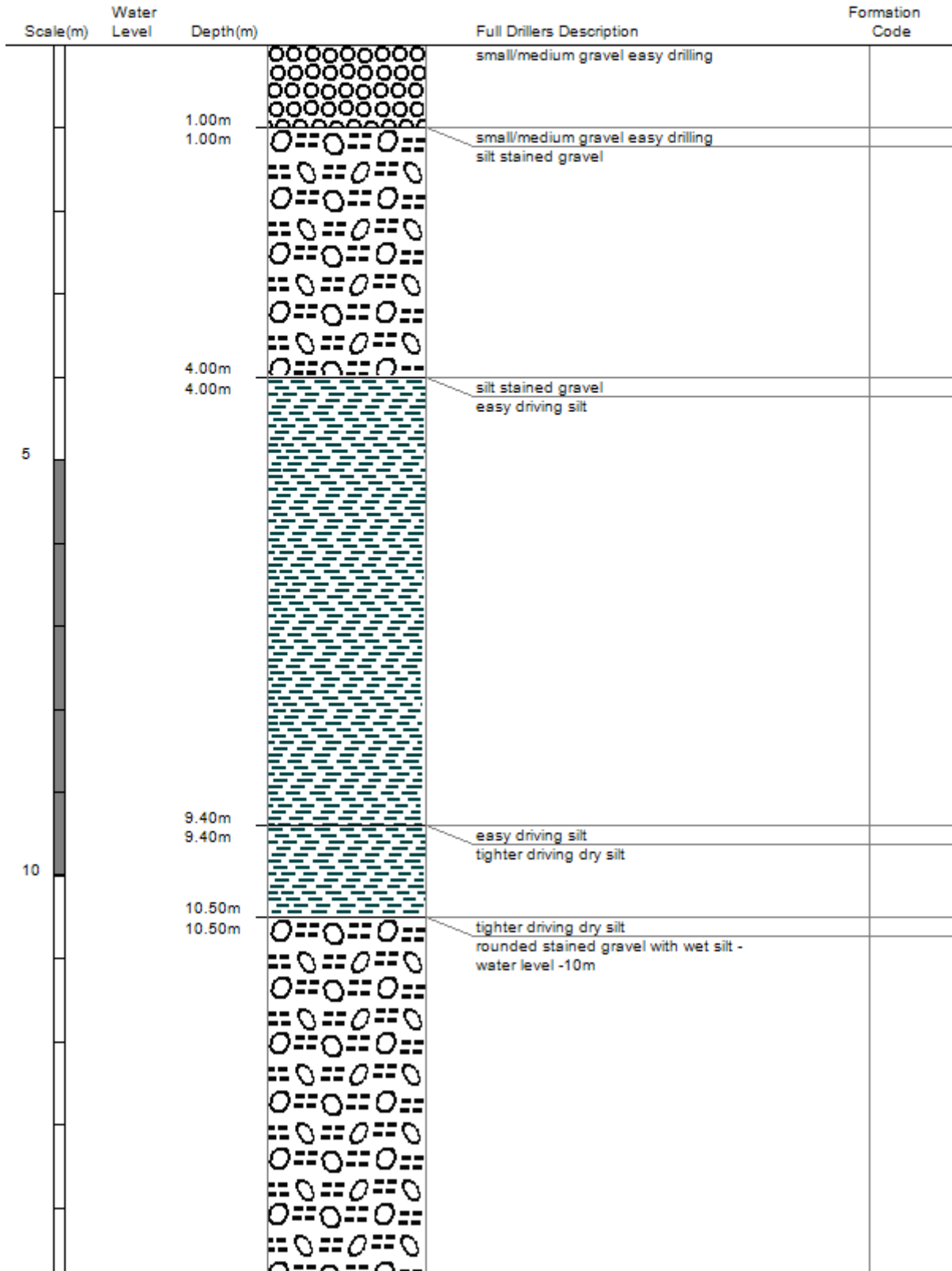
Comments

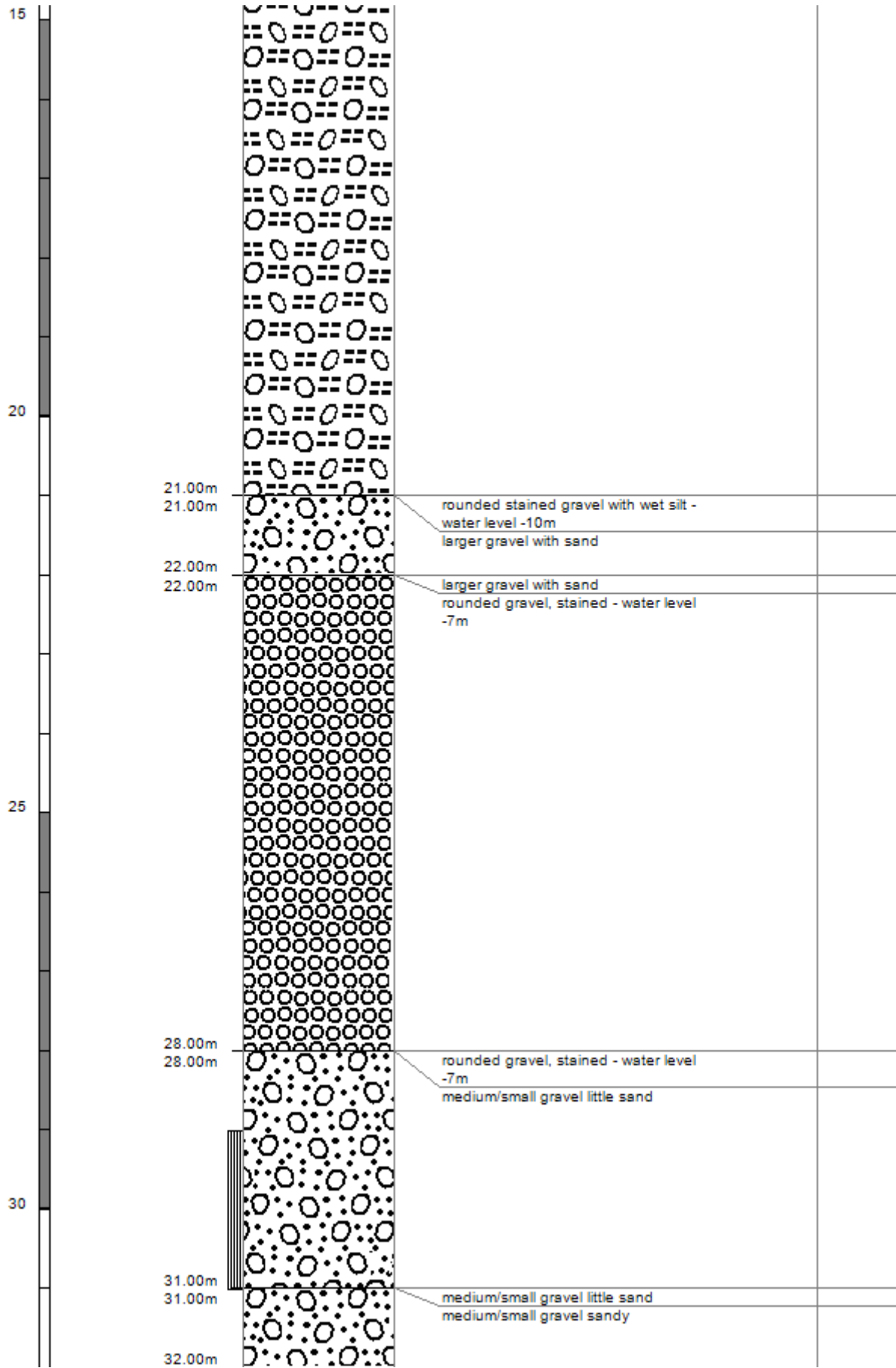
| Comment Date | Comment |
|--------------|------------------------------------|
| 03 Feb 2005 | Drilled to 32m pulled back to 31m. |

Bore Log

Borelog for well M36/7639

Grid Reference (NZTM): 1550598 mE, 5169331 mN
 Location Accuracy: 50 - 300m
 Ground Level Altitude: 34.3 m +MSD Accuracy: < 0.5 m
 Driller: Dynes Road Drilling
 Drill Method: Cable Tool
 Borelog Depth: 32.0 m Drill Date: 01-Jun-2004







| | | | |
|------------------------------------|-----------------------------------|-------------------------------------|--------------------------|
| Bore or Well No | M36/7902 | | |
| Well Name | SELWYN ROAD | | |
| Owner | RB & BM CHAPMAN & HAMILTON | | |
| Well Number | M36/7902 | File Number | CO6C/23254 |
| Owner | RB & BM CHAPMAN & HAMILTON | Well Status | Active (exist, present) |
| Street/Road | SELWYN ROAD | NZTM Grid Reference | BX23:50407-69271 |
| Locality | SPRINGSTON | NZTM X and Y | 1550407 - 5169271 |
| Location Description | | Location Accuracy | 10 - 50m |
| CWMS Zone | Selwyn - Waihora | Use | Domestic and Stockwater, |
| Groundwater Allocation Zone | Selwyn-Waimakariri | Water Level Monitoring | -- |
| Depth | 36.00m | Water Level Count | 0 |
| Diameter | 150mm | Initial Water Level | 8.40m below MP |
| Measuring Point Description | ToC | Highest Water Level | |
| Measuring Point Elevation | 35.00m above MSL (Lyttelton 1937) | Lowest Water Level | |
| Elevation Accuracy | < 2.5 m | First reading | |
| Ground Level | 0.30m below MP | Last reading | |
| Strata Layers | 6 | Calc Min 95% | |
| Aquifer Name | | Aquifer Tests | 0 |
| Aquifer Type | | Yield Drawdown Tests | 1 |
| Drill Date | 09 Aug 2005 | Max Tested Yield | 4 l/s |
| Driller | East Coast Drilling | Drawdown at Max Tested Yield | 16 m |
| Drilling Method | Rotary Rig | Specific Capacity | 0.23 l/s/m |
| Casing Material | Steel | Last Updated | 08 Nov 2013 |
| Pump Type | | Last Field Check | |
| Water Use Data | No | | |

Screens

| Screen No. | Screen Type | Top (m) | Bottom (m) | Slot Size (mm) | Slot Length (mm) | Diameter (mm) | Leader Length (mm) |
|------------|-----------------|---------|------------|----------------|------------------|---------------|--------------------|
| 1 | Stainless steel | 34.5 | 36 | | | | |

Step Tests

| Step Test Date | Step | Yield | Yield GPM | DrawDown | Step Duration |
|----------------|------|-------|-----------|----------|---------------|
| 09 Aug 2005 | 1 | 3.7 | 48.83328 | 15.8 | 8 |

No comments for this well

Bore Log

Borelog for well M36/7902

Grid Reference (NZTM): 1550408 mE, 5169271 mN
 Location Accuracy: 10 - 50m
 Ground Level Altitude: 34.7 m +MSD Accuracy: < 2.5 m
 Driller: East Coast Drilling
 Drill Method: Rotary Rig
 Borelog Depth: 36.0 m Drill Date: 09-Aug-2005

