Geotechnical Completion Report

Stages 11, 12, 13, and 16 (Construction Phase 1) Falcons View Subdivision, 153 Lincoln Rolleston Road, Rolleston

236 Hereford Street, Christchurch Central, Christchurch 8011 • Wellington • Kapiti • Auckland •

California • Haiti • Italy • Turkey • India • Bangladesh • Thailand • Japan

Issue Date: 4 April 2025

Miyamoto Ref: 2003577-RP-001[A]

Prepared for: Yoursection FV Ltd

Report Tracking – Stages 11, 12, 13, and 16 (Construction Phase 1) Falcons View Subdivision, 153 Lincoln Rolleston Road, Rolleston

Revision	Status	Date	Prepared by	
А	Final	4 April 2025	Joseph Byron-Joyce	

Authorisation

Name	Joseph Byron-Joyce	
Title	Senior Engineering Geologist BSc (Geology) CMEngNZ PEngGeol	Ju

Miyamoto New Zealand Ltd

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1. Introduction and Scope

Miyamoto International NZ Ltd (Miyamoto) has been engaged by Yoursection FV Ltd (the Client) to provide geotechnical engineering services related to the earthworks and building platform preparation for 86 lots, comprising of 84 residential lots, 1 commercial lot, and a recreational (playground) area as part of 'Construction Phase 1' earthworks, comprising of stages 11, 12, 13 and 16 of Falcons View Subdivision, at 153 Lincoln Rolleston Road, Rolleston.

Miyamoto have previously provided a 'Geotechnical Report for Proposed Plan Change' (200357-RP-002[A], dated 25 November 2020) for the site.

The purpose of this Geotechnical Completion Report (GCR) is to confirm the suitability of the earthworks and building platforms for building construction. The GCR is also required in order to comply with the Selwyn District Council (SDC) resource consent conditions (refer to Section 3.1 of this Report) and may be used in support of subsequent building consent applications for the individual lots at the SDC.

The following works have been conducted as per the agreed scope of works:

- Construction monitoring during the earthworks:
 - Fill suitability assessment including review of the laboratory testing undertaken for the fill material.
 - Visual inspections and advising the contractor regarding specification compliance.
 - Review of fill compaction verification testing.
- Assessment and reporting included in this Geotechnical Completion Report (GCR).
- Provision of certification documentation including:
 - NZS4404:2010 'Schedule 2A: Statement of professional opinion on suitability of land for building construction'.
 - NZS4431:2022 'Appendix D: Statement of suitability of engineered fill for lightweight structures'.

The subdivision civil design, supervision, and overall management has been completed by Capture Land Development Consultants (Capture), with Ongrade Drainage & Excavation Limited (Ongrade) acting as the main civil contractor completing the civil works.

2. Site Description

The site comprising of 84 residential lots and one commercial lot form 'Construction Phase 1'. The lots are located across two land parcels legally described as Lot 500 DP 596433 which is approximately 10.68 Hectares in area. A smaller portion of the lots that form 'Construction Phase 1' are contained within LOT 2 DP 568976, with 'Construction Phase 2' containing the remaining portion of land within LOT 2 DP 568976.

The area and is located to the west of Lincoln Rolleston Road, ~3 km south of State Highway 1.

The site prior to development comprised of grassed paddocks with shelter belt plantings with a gentle slope to the northeast.

The typical soil profile at the site is shown in Table 1.

Table 1: Typical soil profile

Layer	Typical thickness (m)	Soil Description
Тр	0.3	Topsoil, SILT, brown, with rootlets.
ML	0.0 to 0.6	SILT and Sandy SILT, low plasticity, pale brown, very stiff to hard.
GW	>10.0	Sandy GRAVEL, fine to coarse grained, grey, sub-rounded to rounded.

The site location including the subdivision layout is presented in Figure 1.



Figure 1: Site location and layout 'construction phase 1' highlighted yellow.

3. Earthworks

3.1 SDC Resource Consent Conditions

The resource consent conditions provided by the SDC (approval date 3 July 2023) are detailed within RC235161 and RC235162. This GCR is provided to satisfy conditions 56 and 57 of RC235161 as detailed below.

RC235161

Site stability and site works

55. A site ground investigation shall be carried out by a suitably qualified person and a report provided to council.

56. The consent Holder shall confirm whether any fill has been placed on site. All earthworks completed on site are to be carried out in accordance with New Zealand Standard (NZS) 4431:2022 – Engineered fill construction for lightweight structures.

57. At the completion of all earthworks Certificates satisfying the conditions of New Zealand Standard (NZS) 4431:2022 – Engineered fill construction for lightweight structures, are to be provided to the Selwyn District Council. These certificates will detail the extent and nature of all earthworks undertaken.

3.2 General

The earthworks design for the subdivision was completed by Capture Land Development Consultants (Capture) and was designed to raise / lower the grade to appropriate levels for the residential lots and create appropriate fall for drainage. The earthworks plan and as-built levels are included in Appendix A. A portion of the earthworks cut and fill plan is shown below in figure 2.



Figure 2: Earthworks cut and fill plan for 'Construction Phase 1'.

The earthworks were caried out between June 2024 and March 2025 by Ongrade Drainage & Excavation Limited (Ongrade), with Miyamoto, Capture, the SDC, and Yoursection FV Ltd completing regular site visits to observe earthworks and civil works at the site.

The initial design completed by Capture included for a total of 12,655 m³ of filling over an area of 51,775 m² for 'construction phase 1' resulting in a net balance of filling averaging ~0.24 m thickness. Additional fill material was sourced from a combination of locations comprising of site won material from road cutting, from lot cuttings within 'Construction phase 2', as well as some imported material. Importation of material was also required for construction of roading, service trenches, and soakage pits.

Earthworks were carried in general accordance with the following New Zealand Standards:

- NZS4431:2022 Engineered fill construction for lightweight structures.
- NZS4404:2010 Land Development and Subdivision Infrastructure.

3.3 Cutting and Topsoil Stripping

All residential lots required cutting and / or filling to achieve the desired grade, this necessitated topsoil to be stripped and stockpiled for future spreading. Miyamoto completed visual inspection of topsoil removal during regular site visits and through examination of contractor provided photographs.

Following excavation of topsoil, most of the excavated material comprised a combination of natural silt and sandy silt, and sandy gravels which was stockpiled to be used as site won engineered fill in the works (refer to Section 3.4 of this Report). 'Construction phase 1' was a net fill area so cutting was minimal. There was some 'cutting to waste' (off-site disposal) of soils from 'construction phase 1' associated to discrete pockets of uncontrolled filling where buried waste was encountered during earthworks.

3.4 Filling

The engineered fill for the residential lots compromised site won silt, sandy silt, and sandy gravel sourced from spoil created from the 'cut' lots from later 'construction phase 2' stages, from service trenches, and roading alignments. Imported 'pit run' material comprising of Sandy Gravel and Cobbles was sourced from Wheatsheaf Quarry, and Silty Sand with minor Gravel was sourced from the Pak'nSave Rolleston development, and additionally from an airport development. All fill material was sampled and tested at a laboratory for Particle Size Distribution (PSD), and determination of the dry density / water content relationship and assessed to be suitable for use as engineered fill (refer to Appendix B for laboratory test certificates).

The site won material had a suitable in-situ moisture content without the requirement for moisture conditioning and was stockpiled and shaped / battered into bunds along road alignments prior to placement as engineered fill. The shaping of the bunds allowed for water shedding to maintain suitable moisture condition of the soil during rainfall events.

Inspection of the stockpiled site won material was completed during regular site visits to confirm it was representative of the material tested in the laboratory. In general, there was very little variability of the material across the site.

The site won fill was placed and tracked in place / compacted with a 60-ton bulldozer, a methodology similar to that of a sheep's foot roller where the heavy plant imparts a large load directly to the freshly placed material and mechanically penetrates the surface of the fill material with the tracks. A vibratory drum roller was used to compact more granular material such as the pit run.

Nuclear Densometer (NDM) testing of the placed and compacted fill material was completed by SGNT limited to verify adequate compaction was achieved. Typically, a minimum of two NDM tests were completed per lot per 250 mm of filling with additional testing completed where fill thickness exceeded 250 mm. The results of the NDM testing are included in Appendix C.

3.5 Earthworks Summary

A summary of the cut / fill earthworks and distribution across the site are shown in Table 2 and the as-built levels are provided in Appendix A.

Stage	Lots within Stage	Fill Lots	Fill Type	Cut Lots
11	174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200.	175, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 196, 197, 198, 199, 200.	Site won – Silt, Sandy Silt, and Sandy Gravel, lots 175, 186, 187, 188, 189, 190, 191, 192, 193, 196, 197, 198, 199, 200. Imported (Airport) – Silty Sand with minor Gravel, lots 177, 178, 179, 180, 181, 182, 183, 184, 185.	174, 176, 185, 186, 187, 194, 195.
12	316	316	Imported – Pit run (Sandy Gravel)	-
13	201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221.	201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 218.	Site won – Silt, Sandy Silt, and Sandy Gravel, all lots excluding 215 and 218. Imported – Pit Run Lots 215 and 218.	215, 216, 217, 218, 219, 220, 221.
16	260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295.	260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295.	Site won – Silt, Sandy Silt, and Sandy Gravel lots 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, and 291, 292, 293, 294, 295. Imported (Airport Development) – Silty Sand with minor Gravel, lots 278, 279, 280, 281, 282. Imported (Pak'nSave Rolleston Development) – Silty Sand with minor Gravel, lots 283, 284, 285, 286, 287, 288, 289, 290.	277.

Table 2: Earthworks summary

3.6 Certification

Based on site observations, laboratory testing and in-situ testing of placed and compacted material, in combination with earthworks planning, design, and construction being completed by experienced developers, engineers and contactors, it is our professional opinion that the earthworks for the residential lots have been completed to a suitable standard for residential development.

The following two documents are appended to this GCR (refer Appendix D and E):

- NZS4404:2010 'Schedule 2A: Statement of professional opinion on suitability of land for building construction'.
- NZS4431:2022 'Appendix D: Statement of suitability of engineered fill for lightweight structures'.

4. Building Development Design Considerations

4.1 Foundation Suitability

All residential lots within Stages 11, 12, 13 and 16 of the subdivision are considered to have a low liquefaction vulnerability with future seismic performance expected to be equivalent to MBIE Technical Category (TC) 1 as per the MBIE Guidance (2012).

As such, and with consideration of the assessment herein, foundations in accordance with MBIE (2012) TC1 are considered suitable for NZS3604:2011 compliant buildings, notably this includes NZS3604:2011 foundations and 'waffle slab' foundations.

4.2 Bearing Capacity and Other Considerations

The ground conditions across the site within the residential lots will typically comprise of placed topsoil of varying thickness (0.3 to 0.4 m typically) overlying engineered and natural silt and sandy silt soils with gravel. In some locations sandy gravel may be encountered beneath topsoil.

Site specific testing should be completed to verify the available Geotechnical Ultimate Bearing Capacity (GUBC) of the soils underlying topsoil.

Preliminarily, assuming conventional residential foundations comprising 'NZS 3604 type' slab on grade with thickened edge beams, shallow timber piles of 0.45 m diameter, or waffle slab foundations with 0.3 m wide footings, foundation designers may assume 200 kPa GUBC beneath topsoil within the SILT and Sandy SILT soils at a minimum of 0.4 mbgl, however, this will need to be verified prior to construction.

Foundation designers should consider the effects of the interface between filled and non-filled ground on the performance of the structure.

4.3 Additional Considerations

A geotechnical plan review of proposed residential developments and the foundation design is recommended and considered best practice to ensure the recommendations of this report have been taken into consideration.

Construction monitoring of foundation excavations is recommended to ensure ground conditions encountered are as expected.

5. Limitations

This report is subject to the following limitations:

- This report has been prepared by Miyamoto for the Client for the purpose/s agreed with the Client (Purpose). Miyamoto accepts no responsibility for the validity, appropriateness, sufficiency or consequences of the Client using the report for purposes other than for the Purpose.
- This report is not intended for general publication or circulation. This report is not to be reproduced by the Client except in relation to the Purpose, without Miyamoto's prior written permission. Miyamoto disclaims all risk and all responsibility to any third party.

- This report is provided based on the various assumptions contained in the report.
- Miyamoto's professional services are performed using a degree of care and skill reasonably exercised by reputable consultants providing the same or similar services as at the date of this report.
- The Client is responsible for ensuring that the design of any foundations ensures the functionality of the building under SLS level loads.
- The sub surface information has been obtained from investigation carried out at discrete locations, which by their nature only provide information about a relatively small volume of subsoils. While Miyamoto has taken reasonable skill and care in carrying out the investigation to determine the subsoil condition, the subsoil condition could differ substantially from the results of any sampling investigation. Miyamoto is not responsible for and does not accept any liability in respect of any difference between the actual subsoil conditions and the results of our investigation.
- Where the Client provides information to Miyamoto, including design calculations and drawings of the as-built structure, or where the report indicates that we have obtained and/or relied upon information provided from a third party, Miyamoto has not made any independent verification of this information except as expressly stated in the report. Miyamoto assumes no responsibility for any inaccuracies in, or omissions to, that information.
- A change in circumstances, facts, information after the report has been provided may affect the adequacy or accuracy of the report. Miyamoto is not responsible for the adequacy or accuracy of the report as a result of any such changes.

References

Ministry of Business, Innovation, and Employment, 2012. *Repairing and rebuilding houses affected by the Canterbury earthquakes.*

New Zealand Standard NZS3604:2011. Timber-framed buildings.

New Zealand Standard NZS4404:2010. Land Development and Subdivision Infrastructure.

New Zealand Standard NZS4431:2022. Engineered fill construction for lightweight structures.



Appendix A: Earthworks Plan and As-built Levels







Appendix B: Laboratory Test Certificates

miyamoto.



ROAD TECH LABORATORY LTD 205 Springs Road, Christchurch lab@roadtech.co.nz 03-9417616

Dry De New Zea	nsity / Wa aland Stand	ater Content Related and Compaction Te	ationship st	Lab Reference: Page 1 of 1 Page	1013/23
Client: Contact	Name:	SGNT Limited Mr S. Gardner			
Sample Sample	Type: Source:	Silt with Aggregate Falcons View, Rollesto	on (Sections 7-19)		
Date Sa Date of	mpled: Test:	17 June 2024 19 June 2024		Sampled By: Tested By:	S. Gardner J. Loughridge
Sample Test Me Results:	Method: thod:	Unknown (Sampling m NZS 4402:1986 Test 4	nethod is not IANZ a 4.1.1 (Standard Cor	accredited) npaction)	
		Moisture Content (% by dry mass) 9.4 10.4 11.3 12.2 13.7 16.0 Maximum Dry Density Optimum Water Conte Sample History: Natur 19.0mm (6.5% of sam	Wet Density (kg/m ³) 1930 2070 2130 2120 2090 r = 1900 kg/m ³ ent = 12% ral. Test performed pple removed)	Dry Density (kg/m ³) 1770 1800 1860 1900 1860 1800 0n sample passing	
	1920 1900 1880 1860 ((Jul) 1840 1840 1820 1820 1800				0% air voids 5% air voids 10% air voids

*Air void results calculated using an assumed solid density of 2680 kg/m³

Air Void calculation is not IANZ Accredited

13.0

moisture content (%)

12.0

1780

1760

8.0

10.0

90

11.0

21 June 2024 **Date of Issue: Checked By: Approved Signatory:** (T. O'Regan, Laboratory Manager)

14.0

15.0

16.0

17.0

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ROAD TECH LABORATORYLTD

205 Springs Road, Christchurch lab@roadtech.co.nz 03-9417616

Dry Density / Water Content Relationship New Zealand Standard Compaction Test

Lab Reference: Page 1 of 1 Page

Sampled By:

Tested By:

1455/23

S. Gardner

C. Gould

Client:	SGNT Limited
Contact Name:	Mr S. Gardner
Sample Type:	Silt with Aggregate
Sample Source:	Imported fill ex Pak n Save
Date Sampled:	9 September 2024
Date of Test:	12 September 2024
Sample Method:	Unknown (Sampling method is not IAN

Unknown (Sampling method is not IANZ accredited) NZS 4402:1986 Test 4.1.1 (Standard Compaction)

Moisture Content	Wet Density	Dry Density				
(% by dry mass)	(kg/m ³)	(kg/m ³)				
9.2	1940	1780				
10.2	2000	1820				
11.7	2080	1860				
12.8	2140	1900				
14.2 2140 1880						
15.8 2120 1830						
Maximum Dry Density = 1900 kg/m ³						
Optimum Water Content = 13%						
Sample History: Natural. Test performed on sample passing						
19.0mm (11% of sample removed)						



Date of Issue:

Test Method:

Results:

.

12 September 2024

Approved Signatory:

Checked By:

(J. Tieman, Senior Laboratory Technician)

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Dry Density / Water Content Relationship New Zealand Standard Compaction Test

Lab Reference: 1535/24 Page 1 of 1 Page

Client: Contact Name:	SGNT Limited Mr S. Gardner		
Sample Type: Sample Source:	Silt with trace aggregate Imported Fill ("Airport") for Falcons View	Subdivision, Rolleston	i
Date Sampled: Date of Test:	25 September 2024 30 September 2024	Sampled By: Tested By:	S. Gardner C. Gould
Sample Method: Test Method:	Unknown - Sampled by client (sampling i NZS 4402:1986 Test 4.1.1 (Standard Cor	s not IANZ accredited mpaction))

Moisture Content Wet Density Dry Density (% by dry mass) (kg/m^3) (kg/m^3) 1710 9.3 1870 11.2 1950 1750 12.9 2010 1780 14.3 2060 1800 15.6 2070 1790 16.9 2050 1760 17.7 2040 1730 Maximum Dry Density = 1800 kg/m³ Optimum Water Content = 14 % Sample History: Natural. Test performed on fraction <19.0mm (% oversize = 2.5)



Date of Issue:

Results:

1 October 2024

Approved Signatory: (J. Tieman, Senior Laboratory Technician)

Checked By:

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Canterbury Laboratory

24 Miners Road, Templeton, Christchurch PO Box 16-064, Christchurch 8441 Telephone: +64 3 349 9142 Facsimile:

www.fultonhogan.com



Comments Sampled by Steve.

Compaction for test points 5.3% & 5.8% ceased prior to 3 minutes due to oversaturation causing ejection of fines from sample.

Fulton Hogan

Appendix C: Nuclear Densometer Test Results



Nuclear Density Report



Site Tested	Fale	cons View	Material Sample ID	1013/23	
Tested By	Jas	on Daikee	MDD Method	E	Back Scatter
Date Tested	15-Jul-24		Max Dry Density (kg/m3)		1900
Time Tested		900	Min Dry Density		95%
Material Tested	Silt wi	th Aggregate	Solid Density Type		Assumed
Material Source	(On Site			
Site No	Layer	Moisture (%)	Wet Density (kg/m3)	Dry Density (kg/m3)	Relative Compaction (%)
1	1	12.0	2122	1894	99.7
2	1	13.2	2100	1855	97.6
3	1	11.9	2193	1961	103.2
4	1	11.4	2051	1841	96.9
5	1	13.7	2108	1853	97.5
6	1	10.4	2128	1928	101.5
7	1	10.4	2038	1846	97.2
8	1	12.8	2100	1862	98.0
9	1	11.6	2092	1874	98.6
10	1	12.2	2159	1924	101.3
11	1	12.2	2184	1946	102.4
12	1	9.8	2175	1980	104.2
13	1	11.1	2035	1832	96.4
14	1	8.7	2137	1966	103.5
15	1	9.6	2063	1882	99.0
16	1	8.9	2082	1911	100.6
17	1	12.7	2170	1926	101.3
18	1	13.0	2157	1909	100.5
19	1	11.0	2105	1897	99.8
20	1	10.7	2105	1901	100.1
21	1	11.1	2160	1945	102.4
22	1	8.2	2132	1971	103.7
23	1	9.2	2012	1843	97.0
24	1	8.7	2090	1923	101.2

Site No	Layer	Moisture (%)	Wet Density (kg/m3)	Dry Density (kg/m3)	Relative Compaction (%)
25	1	9.3	2147	1964	103.4
26	1	10.2	2169	1968	103.6
27	1	10.5	2012	1821	95.9
28	1	8.6	2110	1942	102.2
29	1	14.6	2090	1823	96.0
30	1	14.5	2188	1910	100.5



Nuclear Density Report



Site Tested	Fal	cons View	Material Sample ID	1013_23	
Tested By	Jason Daikee		MDD Method		Back Scatter
Date Tested	16-Aug-24		Max Dry Density (kg/m3)		1900
Time Tested		815	Min Dry Density		95%
Material Tested	Silts w	ith Aggregate	Solid Density Type		Assumed
Material Source		On Site			
Site No	Layer	Moisture (%)	Wet Density (kg/m3)	Dry Density (kg/m3)	Relative Compaction (%)
1	2	8.5	2060	1899	99.9
2		5.7	2073	1961	103.2
3		6.1	2108	1987	104.6
4		4.8	2021	1929	101.5
5		5.1	1992	1896	99.8
6		7.0	2123	1984	104.4
7	3	7.5	2098	1952	102.7
8		8.7	2041	1878	98.8
9		4.5	1898	1817	95.6
10	1	7.4	1969	1834	96.5
11		6.5	1971	1852	97.5
12		5.9	1950	1841	96.9
13		6.4	2049	1927	101.4
14		7.9	1974	1830	96.3
15		7.4	1966	1832	96.4
16		8.1	2055	1901	100.1



Nuclear Density Report



Site Tested	Falcons View		Material Sample ID	1013_23		
Tested By	Jason Daikee		MDD Method		Back Scatter	
Date Tested	14-Aug-24		Max Dry Density (kg/m3)		1900	
Time Tested		815	Min Dry Density	95%		
Material Tested	Silts wi	ith Aggregate	Solid Density Type		Assumed	
Material Source	On Site					
Site No	Layer Moisture (%)		Wet Density (kg/m3)	Dry Density (kg/m3)	Relative Compaction (%)	
1	1	7.5	1964	1827	96.2	
2		4.2	2031	1948	102.5	
3		6.9	1974	1846	97.1	
4		5.7	2049	1938	102.0	
5		4.9	2067	1971	103.7	
6		5.2	2017	1917	100.9	
7	4.9		1992	1899	99.9	







1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

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accreditation.

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

ANZ Accredited Laboratory Number: 1270 Date signed 2(/////24

Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT03399 Report No: CHRIW07221

						Project Nar	me: Falcons \	lew Stage 7 - 19	
Testing D	Details			CV III S S	Compacti	on Target	Details		
Site Tested:	Fill Lot 125,1	26 & 128, 12	9 Final Layer	Material Sample ID: Exter		External			
Date:	18/11/2024		Time:	15.00	Max.Dry Dens	ity :	1.90 (t/m ³)	@ 12.0 %	
Material :	Silt w some gravel		el		Min. Dry Dens	Min. Dry Density (t/m ³)		1.80	
Field method	s : NZS 4407:201	5 Test 4.2			Solid density:		Assumed		
Moisture Con	itent Determined b	oy Ndm		in the second second		Materia	Supplier : I	nsitu	
Test Re	sults								
Site No		Depth (mm)	Moisture (%)	Wet De	Wet Density (t/m ³) D		sity (t/m ³)	Relative Compaction (%)	
	1	200	9.8		1.99	1	.81	95	
	2	200	8.4	3	1.97	1.	.82	96	
	3	200	8.6		2.00	1	.84	97	
	4	200	9.6	1	2.01	1	.84	97	

Ndm test locations

not to scale



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

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TEAN GLABORS

1.84

1.89

1.83

1.89

1.87

1.89

1.89

1.88

CCREDITED

Approved Signatory: Stephen Gardner (Senior Technician) (Senior Technician) IANZ Accredited Laboratory Number:1270

97

99

96

100

99

98

99

99

Date signed [8/10/29

Client : Ongrade Drainage & Excavation Ltd

200

200

200

200

200

200

200

11.2

10.2

9.9

11.4

11.0

11.0

13.1

Nuclear Density Report

Principal: Mike Niven

Project No:	SGNT03399
Report No:	CHRIW06806
Project Nam	e Falcons View Stee

Testing [Details		and the second second second	Project Name: Falcons View Stage 7 - 19					
Site Tested:	Fill Lot 166 t	0 170 First 8	P1. 11	Compaction Target Details					
Date:	16/09/2024		Time:	11 40	Material Sample ID:		External		
Material : Field methods	Silt w some gravel : NZS 4407:2015 Test 4 2			11.40	Min. Dry Dens	nsity (t/m ³) 1.80		@ 12.0 %	
Moisture Cont	tent Determined t	by Ndm			Solid density:	Materi	Assumed al Supplier : I	nsitu	
Sit	a No	Devil							
		Depth (mm)	Moisture (%)	Wet De	ensity (t/m ³) Dry D		ensity (t/m ³)	Relative Compaction	
1. II.	1	200			2 11		1.00	(%)	
	2	200	10.2		2.03	1.88		99	
	0	the second s		4		0	1 84	07	

2.10

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Ndm test locations not to scale

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ONDM TEST LOCAGIONS

Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

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Slyphen Garder

Approved Signatory: Stephen Gardner (Senior Technician) IANZ Accredited Laboratory Number: 1270 Date signed 10/10/24

Project No: SGNT03399 Report No: CHRIW06856

Nuclear Density Report Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

T (Project Na	me: Falcons \	/iew Stage 7 - 19	
Testing De	etails				Compaction Target Details				
Site Tested:	Fill Lot 167 to	o 168 First ,F	inal & 207 to 2	209 Final La	a Material Sample ID: External				
Date:	24/09/2024 Time: 10.50		10.50	Max.Dry Density :		1.90 (t/m ³) @ 12.0 %			
Material :	Silt w some gravel				Min. Dry Density (t/m ³) 1 80				
Field methods :	NZS 4407:201	5 Test 4.2			Solid density:		Assumed		
Moisture Conte	nt Determined b	y Ndm				Materia	Supplier : I	nsitu	
Test Res	ults								
Site	No	Depth (mm)	Moisture (%)	Wet Den	sity (t/m ³)	Dry Den	sity (t/m ³)	Relative Compaction (%)	
1		200	6.9	1.	97	1.	.84	97	
2		200	11.3	2.	28	2.	.05	108	
3		200	7.1	2.	14	1.	.99	105	
4		200	11.8	2.	10	1.	.88	99	
5		200	10.8	2.	11	1.	98	104	
6		200	10.7	2.	20	1.	86	105	
7		200	10.6	2.	21	1.	99	105	
8		200	12.7	2.	12	1.	88	99	
9		200	7.9	2.	14	1.	98	104	
1()	200	11.0	2.	12	1.	91	100	



Comments

Ndm test locations

not to scale

MDD Method : Test was conducted externally and is not accredited by this laboratory.



Nuclear Density Report

Client : Ongrade Drainage & Excavation Ltd

Principal: Mike Niven

Testing Details

Christchurch Laboratory SGNT Limited

1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

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Vegher Gurdrer Approved Signatory: Stephen Gardner (Senior Technician) IANZ Accredited Laboratory Number: 1270 Date signed 19/12/24

Project No: SGNT03399 Report No: CHRIW06897 Project Name: Falcons View Stage 7 - 19

Compaction Target Details Fill Lot 125 & 128 Final Layer Site Tested: Material Sample ID: External Date: 27/09/2024 Time: 12.00 Max.Dry Density : 1.90 (t/m³) @ 12.0 % Material : Silt w some gravel Min. Dry Density (t/m³) 1.80 Field methods : NZS 4407:2015 Test 4.2 Solid density: Assumed Moisture Content Determined by Ndm Material Supplier : Insitu **Test Results** Site No Depth Moisture Wet Density (t/m³) Dry Density (t/m³) Relative (mm) (%) Compaction (%) 200 1 11.3 2.12 1.91 100 2 200 10.7 2.10 1.90 100 3 200 11.3 2.01 1.83 101 4 200 9.8 2.02 1.93 102 23 1 12> 130 129 24) (2)5 20 Ndm test locations 210 115 114 not to scale 710 110 239 116 112 111 118 11: 113 239 0 NPM TOST LOCATIONS Comments MDD Method : Test was conducted externally and is not accredited by this laboratory. page 1 of 1





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ESANG LABOR

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tested.)

Lephen Gardon, 6 Approved Signatory: Stephen Gardner (Senior Technician) IANZ Accredited Laboratory Number: 127 Date signed 14/12/24

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Nuclear Density Report Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

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12.0

Project No: SGNT03399 Report No: CHRIW07416

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					F	Project Na	ame: Falcons V	/iew Stage 7 - 19	
Testing D	Details			Compactio	Compaction Target Details				
Site Tested:	Fill Lot 175 Fi	nal Layer			Material Sample ID:		External		
Date:	12/12/2024		Time:	8.30	Max.Dry Density :		1.90 (t/m ³) @ 12.0 %		
Material :	Silt w some gravel			Min		Min. Dry Density (t/m ³)		1.80	
Field methods	s: NZS 4407:2015	Test 4.2	Solid density:		Solid density:	ensity: Assumed			
Moisture Con	tent Determined by	v Ndm				Materia	al Supplier : I	nsitu	
Test Re	sults								
Site No		Depth (mm)	Moisture (%)	Wet D	t Density (t/m ³) Dry		nsity (t/m ³) Relative Compactio (%)		
	1	200	12.3		2.09		1.86	98	

2.11

Ndm test locations not to scale

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Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



Nuclear Density Report

Client : Ongrade Drainage & Excavation Ltd

Principal: Mike Niven

Christchurch Laboratory SGNT Limited

1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

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Approved Signatory: Stephen Gardner (Senior Terbricien) (Senior Technician) IANZ Accredited Laboratory Number:1270 Date signed \9/(0/24

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

Project No: SGNT03399 Report No: CHRIW06972

accreditation.

					Project Name: Falcons	s View Stage 7 - 19	
Details			Compaction Target Details				
Fill Lot 177 t	o 179 Final La	yer	Material Sample ID: External				
11/10/2024		Time:	14.30	Max.Dry Dens	ity: 1.90 (t/m ³	³) @ 12.0 %	
Silt w some	gravel			Min. Dry Dens	ity (t/m ³) 1.80		
s : NZS 4407:201	5 Test 4.2			Solid density:	Assumed		
tent Determined I	oy Ndm				Material Supplier	Insitu	
sults							
Site No		Moisture (%)	Wet D	ensity (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)	
1		7.0		1.96	1.83	96	
2	200	7.0		2.13	1.99	101	
3		9.6		2.08	1.90	100	
4		9.1		2.12	1.95	102	
t locations o scale			283	194	Jar		
	Details Fill Lot 177 t 11/10/2024 Silt w some S: NZS 4407:201 tent Determined I sults e No 1 2 3 4 t locations o scale	Details Fill Lot 177 to 179 Final La 11/10/2024 Silt w some gravel s: NZS 4407:2015 Test 4.2 tent Determined by Ndm sults e No Depth (mm) 1 200 2 200 3 200 4 200 t locations Descale	Details Fill Lot 177 to 179 Final Layer 11/10/2024 Time: Silt w some gravel s: NZS 4407:2015 Test 4.2 tent Determined by Ndm sults e No Depth (mm) (%) 1 200 2 200 3 200 4 200 9.6 4 4 200 9.1 t locations b scale VISTA CRESCENT	Details Fill Lot 177 to 179 Final Layer 11/10/2024 Time: 14.30 Silt w some gravel S: NZS 4407:2015 Test 4.2 tent Determined by Ndm Sults e No Depth Moisture Wet Determined 1 200 7.0 2 2 200 7.0 3 200 9.6 4 200 9.1 4 200 9.1 VISTA CRESCENT	Details Compactine Fill Lot 177 to 179 Final Layer Material Samp 11/10/2024 Time: 14.30 Silt w some gravel Min. Dry Dens Silt w some gravel Solid density: Silt Sector Solid density: tent Determined by Ndm Solid density: Wet Density (t/m ³) 1 200 2 200 3 200 4 200 9.6 2.08 4 200 9.1 2.12	Details Compaction Target Details Fill Lot 177 to 179 Final Layer Material Sample ID: External 11/10/2024 Time: 14.30 Max.Dry Density : 1.90 (t/m³) Silt w some gravel Min. Dry Density : 1.90 (t/m³) 1.80 S: NZS 4407:2015 Test 4.2 Solid density: Assumed tent Determined by Ndm Material Supplier : Solid density: Assumed sults e No Depth Moisture Wet Density (t/m³) Dry Density (t/m³) 1 200 7.0 1.96 1.83 2 200 7.0 2.13 1.99 3 200 9.6 2.08 1.90 4 200 9.1 2.12 1.95	

O NOM Test Locations

MDD Method : Test was conducted externally and is not accredited by this laboratory.

Comments



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ohen Gurdhr fe TESTING LABOR 6 Approved Signatory: Stephen Gardner (Senior Technician)

IANZ Accredited Laboratory Number: 1270 Date signed (9/10/24

Nuclear Density Report

Principal: Mike Niven

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Ndm test locations

not to scale

Client : Ongrade Drainage & Excavation Ltd

200

200

200

13.0

13.2

12.2

Project No: SGNT03399 Report No: CHRIW06958 Project Name: Falcons View Stage 7 - 19

1.85

1.86

1.89

Testing D		Compaction Target Details						
Site Tested:	Fill Lot 180,1	81 & 281 ,28	2 First & Fina	l Layer	Material Samp	Material Sample ID:		and the second
Date:	11/10/2024		Time:	13.00	Max.Dry Density :		1.90 (t/m ³) @ 12.0 %	
Material :	I: Silt w some gravel				Min. Dry Density (t/m ³)		1.80	
Field methods	: NZS 4407:2015	5 Test 4.2			Solid density:		Assumed	
Moisture Cont	ent Determined b	y Ndm				Mater	al Supplier : I	nsitu
Test Res	sults							
Site	e No	Depth (mm)	Moisture (%)	Wet De	ensity (t/m ³)	Dry De	ensity (t/m ³)	Relative Compaction
First	Layer							(,,,,
	1	200	12.3		2.08		1.86	97
	2	200	12.1		2.09		1.86	98
	3 200 11.8 2.07		2.07	.07		97		
	4	200	11.0		2.08		1.87	99
Final	Layer							
	5	200	11.6		2.10		1.88	99

2.09

2.20

2.12



NDM TEST LOCAEVONS

Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.

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1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

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Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT03399 Report No: CHRIW06912

						Project N	ame: Falcons \	/iew Stage 7 - 19		
Testing D	Details				Compacti	Compaction Target Details				
Site Tested:	Fill Lot 183	& 279 , 280 Fi	nal Layer		Material Sample ID:		External	and a state of the second s		
Date:	1/10/2024	/10/2024		/10/2024		16.20	Max.Dry Dens	ity :	1.90 (t/m ³)	@ 12.0 %
Material :	Silt w some	gravel			Min. Dry Density (t/m ³)		1.80			
Field method	s : NZS 4407:201	5 Test 4.2			Solid density:		Assumed			
Moisture Con	itent Determined	by Ndm				Materi	al Supplier : I	nsitu		
Test Re	sults									
Si	te No	Depth (mm)	Moisture (%)	Wet De	ensity (t/m ³)	Dry De	ensity (t/m ³)	Relative Compaction		
	1	200	12.3		2.05		1.82	96		
	2	200	11.1		2.10		1.89	100		
	3	200	10.2		2.09		1.90	100		
	4	200	13.0		2.09		1.85	97		

Ndm test locations not to scale



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



Nuclear Density Report

Client : Ongrade Drainage & Excavation Ltd

Principal: Mike Niven

Christchurch Laboratory SGNT Limited

1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

COREDITED tested.) SALABOR

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

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(%)

ehen Gordhr 0 Approved Signatory: Step hen Gardner (Senior Technician) IANZ Accredited Laboratory Number:1270 Date signed 10/10/29

Project No: SGNT03399 Report No: CHRIW06906

-						Project N	ame: Falcons \	/iew Stage 7 - 19
Testing D	etails				Compaction Target Details			
Site Tested:	Fill Lot 183 &	279, 280 Fi	rst Layer		Material Sample ID: External		A CONTRACTOR OF A CONTRACTOR OFTA CONT	
Date:	1/10/2024		Time:	10.20	Max.Dry Density :		1.90 (t/m ³) @ 12.0 %	
Material :	Silt w some g	Iravel			Min. Dry Density (t/m ³)		1.80	
Field methods : NZS 4407:2015 Test 4.2					Solid density:		Assumed	
Moisture Cont	ent Determined b	y Ndm				Materi	al Supplier : I	nsitu
Test Res	sults							
Sit	e No	Depth (mm)	Moisture (%)	Wet De	ensity (t/m ³)	Dry De	ensity (t/m ³)	Relative Compaction

1	200	12.0	2.08	1.86	98
2	200	12.5	2.12	1.87	99
3	200	12.4	2.14	1.91	101
4	200	12.4	2.10	1.87	98
				· · · · ·	

Ndm test locations not to scale



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



Nuclear Density Report

Client : Ongrade Drainage & Excavation Ltd

Principal: Mike Niven

Christchurch Laboratory SGNT Limited

1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

accordance with the laboratory's scope of accreditation. CCREDITED NANG LABORATO 6

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All tests reported herein have been performed in

Project No: SGNT03399 Report No: CHRIW06912 Project Name: Falcons View Stage 7 - 19

Testing De	etails				Compaction Target Details			
Site Tested:	Fill Lot 183 & :	279 . 289 Fir	nal Laver	Zanana, Georgenii Pairingen	Material Sample ID: External		and the second	
Date:	1/10/2024		Time:	16.20	Max.Dry Density :		1.90 (t/m ³) (@ 12.0 %
Material :	erial : Silt w some gravel				Min. Dry Densi	ty (t/m ³)	1.80	
Field methods : NZS 4407:2015 Test 4.2					Solid density		Assumed	
Moisture Conte	ent Determined by	Ndm	Longer.			Materia	I Supplier : I	nsitu
Test Res	sults							
Site	e No	Depth (mm)	Moisture (%)	Wet Der	isity (t/m ³)	Dry Der	nsity (t/m ³)	Relative Compaction (%)
2	1	200	12.3	2	.05	1	.82	96
	2	200	11.1	2	.10	1	.89	100
	3	200	10.2	2	.09	1	.90	100
	4	200	13.0	2	.09	1	.85	97
Ndm test not to	locations scale				đ	ï		



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.







Sector 20070 Protection

Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.

S G N GOODECARTICAL TEXT	Christchurd SGNT Limit 1/19 Repton Christchurch Phone 0218	ch Laborator ed Street, Meriv 8014 98295	y ale,	All tests reported h accordance with th accordination, (This document ma except in full, This tested.) Approved Signator (Senior Technician INNZ Accorditation	erein have been performed in e laboratory's scope of ny not be altered or reproduced report relates only to the position
Nuclear Densit	ge & Excavation Ltd		- -	Project No: SGNT0339 Report No: CHRIW06	15/9/24 99 757
Testing Details			10 and a sti	Project Name: Falcons	View Stage 7 - 19
Testing Details	in 017 Final Lavian		Compacti Material Care		
Site rested: Lot Fill 2151	to 217 Final Layer	10.20	Material Samp	ite ID: External	Q 4 C 1/
Jate: 9/09/2024	Time:	10.30	Max.Dry Dens	2.34 (t/m)	@ 4.6 %
Material : Pit run			Min. Dry Dens	sity (t/m [°]) 2.22	
ield methods : NZS 4407:201	5 Test 4.3		Solid density:	Assumed	
Moisture Content Determined	by Ndm			and the second se	
Test Results	2	2 2		X	
Site No	Moisture (%)	Wet De	nsity (t/m ³)	Dry Density (t/m ³)	Relative Compaction
1	2.2			2.40	(70)
· I	 · 21	4	2.40	2.40	103
2	3.1			2.00	100
3	4.0	4		2.24	00
4 F	4.2			2.00	33
2119	0 217 0 216 0 216 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 N	om tes	ot Localions	
Comments	S	ternally and	is not accred	ited by this laboratory	

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Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Approved Signatory: Stephen Gardner (Senior Technician) IANZ Accredited Laboratory Number:1270 Date signed \ 0 (9124

Project No: SGNT03399 Report No: CHRIW06714

				Project N	lame: Falcons View Stage 7 - 19
Testing D	Details	1010100	Compaction Target Details		
Site Tested:	Fill Lot 215 to 216 First	layer		Material Sample ID:	External
Date:	2/09/2024	Time:	11.50	Max.Dry Density :	1.90 (t/m ³) @ 12.0 %
Material :	Silt w some gravel			Min. Dry Density (t/m ³)	1.80
Field methods	: NZS 4407:2015 Test 4.2			Solid density:	Assumed
Moisture Cont	tent Determined by Ndm				
Test Res	sults			and the second	A second grade and a second
	and the second				

Site No	Depth (mm)	Moisture (%)	Wet Density (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)
1	200	5.6	2.07	1.96	103
2	200	5.4	2.09	1.98	104
3	200	5.6	2.08	1.97	103
4	200	6.1	2.10	1.98	102

Ndm test locations

not to scale

O NDM TEST Locations

Comments

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MDD Method : Test was conducted externally and is not accredited by this laboratory.

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Approved Signatory: Stephen Gardner (Senior Technician) IANZ Accredited Laboratory Number:1270 Date signed 13/12/29

Nuclear Density Report Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT03399 Report No: CHRIW07321

					Project Na	me: Falcons \	/iew Stage 7 - 19
Testing De	etails			Compactio	on Targe	t Details	
Site Tested:	Fill Lot 231,23	2, 242 to 244 Final Layer		Material Sample ID: External			
Date:	3/12/2024	Time:	15.00	Max.Dry Density :		2.34 (t/m ³)	@ 4.6 %
Material :	Pit run			Min. Dry Density (t/m ³)		2.22	100
Field methods	: NZS 4407:2015	Solid density:		Assumed			
Moisture Conte	ent Determined by	Ndm			Mater	rial Supplier : Ins	itu
Test Res	ults						
Site	No	Moisture (%)	Wet De	nsity (t/m ³)	Dry Der	nsity (t/m ³)	Relative Compaction (%)
	1	4.5	2	2.49	2		102
2	2	4.2	2	2.42	2	.33	99
:	3	4.1	2	2.41	2		99
4	4	4.4	2	2.43	2	2.33	100
	5	4.2	2	2.43	2	2.33	100
(6	4.0	2	2.44	2	2.35	100
Ndm test not to	Locations scale						

18 Test Locations -

Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.





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tested.)

Glephr Goodn'r Approved Signatory: Stephen Gardner (Senior Technician) ANZ Accredited Laboratory Number: 1270 Date signed 10.1 & (224

Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT03399 Report No: CHRIW06682

Project Name: Falcons View Stage 7 - 19 **ICompaction Target Details**

Testing D	etails	20		Compaction Target Details			
Site Tested:	sted: Fill Lot 264 to 274 7 293,294 Final Layer			Material Sample ID:	External		
Date:	27/08/2024	Time:	14.00	Max.Dry Density :	1.90 (t/m ³) @ 12.0 %		
Material :	Silt w some gravel			Min. Dry Density (t/m ³)	1.80		
Field methods	s : NZS 4407:2015 Test 4.2			Solid density:	Assumed		
Moisture Con	tent Determined by Ndm						
Test Re	sults	0	-		8		

	and the state of t				
Site No	Depth (mm)	Moisture (%)	Wet Density (t/m ³)	Dry Density (t/m ³)	Relative Compaction
			5 5		(%)
- 1	200	8.7	2.13	1.96	103
2	200	8.9	2.06	1.89	99
3	200	9.2	2.05	1.88	99
4	200	8.1	2.25	2.08	109
5	200	7.7	2.37	2.11	110
6 First Layer	200	9.1	2.17	1.99	104
7	200	9.2	2.15	1.97	103
8	200	11.2	2.13	1.92	101
9	200	11.3	2.12	1.91	100
10 .	200	10.8	2.09	1.89	99
11	200	10.4	2.09	1.89	99
12	200	9.9	2.08	1.89	99
13	200	9.4	2.10	1.92	101
14	200	8.3	2.14	1.97	104





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Approved Signatory: Stephen Gardner (Senior Technician) IANZ Accredited Laboratory Number: 1270 Date signed 16/9/24

Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT03399
 Report No: CHRIW06759
 Project Name: Falcons View Stage 7 - 19

Testing [Details		2		Compaction Target Details				
Site Tested:	Fill Lot 285 F	irst layer , Lo	t 283 to 285 F	inal Layer	Material Sample ID: External				
Date:	10/09/2024		Time:	15.50	Max.Dry Density :		1.90 (t/m ³) @ 12.0 %		
Material :	Silt w some g	Silt w some gravel			Min. Dry Density (t/m ³)		1.80		
Field method	s : NZS 4407:201	5 Test 4.2			Solid density:		Assumed	Assumed	
Moisture Cor	ntent Determined b	y Ndm	Q.		6				
Test Re	sults		8	16			X		
Si	ite No	Depth (mm)	Moisture (%)	Wet De	nsity (t/m ³)	Dry De	ensity (t/m ³)	Relative Compaction	

			Si 14		(%)
- 1	200	9.4	2.13	1.95	102
2	200	10.1	2.06	1.87.	103
3	200	12.3	1.98	1.76	97
4	200	11.4	2.30	2.07	109

Ndm test locations not to scale

Comments





MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

COREDITED tested.) STING LABOR

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

(This document may not be altered or reproduced except in full. This report relates only to the positions

ohen Gurdnu Approved Signatory: Stephen Gardner (Senior Technician) IANZ Accredited Laboratory Number:1270 Date signed 15/8 (24

Project No: SGNT03399 Report No: CHRIW06530

Nuclear Density Report Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project Name: Falcons View Stage 7 - 19 **Testing Details Compaction Target Details** Site Tested: Fill Lot 316 Final Layer Material Sample ID: External Date: 1/08/2024 Time: 16.00 Max.Dry Density : 1.90 (t/m³) @ 12.0 % Material : Silt w a lot of gravel Min. Dry Density (t/m³) 1.80 Field methods : NZS 4407:2015 Test 4.2 Solid density: Assumed Moisture Content Determined by Ndm **Test Results**

Site No	Depth (mm)	Moisture (%)	Wet Density (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)
1	200	13.2	2.16	1.91	101
2	200	12.3	2.18	1.94	101
3	200	12.1	2.16	1.93	102
4	200	11.0	2.14	1.92	101
5	200	11.4	2.16	1.94	102
6	200	11.6	2.14	1.92	101
7	200	11.3	2.14	1.92	101
8	200	12.4	2.16	1.92	101
9	200	12.8	2.15	1.90	100
10	200	12.9	2.17	1.92	101





Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.





Nuclear Density Report

Client : Ongrade Drainage & Excavation Ltd

Principal: Mike Niven

Christchurch Laboratory SGNT Limited

1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

COREDITED tested.) FANG LABORA

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

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Lepher Eurohr 6 Approved Signatory: Stephen Gardner

(Senior Technician) IANZ Accredited Laboratory Number:1270 Date signed 20 /10 / 29

Project No: SGNT03399 Report No: CHRIW06941 Project Name: Falcons View Stage 7 - 19

Testing D	etails				Compacti	on Targ	et Details	
Site Tested:	Old Rubbish	Pit Backfilling	in Road		Material Samp	le ID:	External	over the constant
Date:	8/10/2024		Time:	12.30	Max.Dry Dens	ity :	2.34 (t/m ³)	@ 4.6 %
Material :	Pit Run				Min. Dry Dens	ity (t/m ³)	2.22	
Field methods	: NZS 4407:201	5 Test 4.3			Solid density:		Assumed	
Moisture Cont	ent Determined b	y Ndm				Mat	erial Supplier : Insi	tu
Test Res	sults							
Site	e No	Layer (mm)	Moisture (%)	Wet De	ensity (t/m ³)	Dry De	ensity (t/m ³)	Relative Compaction (%)
and the second second	1	-1000	5.4		2.44		2.33	100
	2	-500	5.6		2.44		2.31	99
TA	3	0.0	5.8		2.44	SWILL MY	2.31	99
Ndm test not to	t locations o scale	29	291 0 289 289 285	264 264 295 72 293 27	5 266 267 266 294 272 271	ROLLESTO, 3 269 270	WROM.	

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Test Locations

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MDD Method : Test was conducted externally and is not accredited by this laboratory.







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Gleghon Gasdas Approved Signatory: Stephen Gardner (Senior Technician) IANZ Accredited Laboratory Number: 1270 Date signed 7/8/24

Nuclear Density Report Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT03399 Report No: CHRIW06572 Project Name: Falcons View Stage 7 - 19

				TOJECCI	iame. I alcons view olage I - 15	
Testing Details				Compaction Target Details		
Site Tested:	Fill Lot 191 to 193 & 27	1 Final layer		Material Sample ID:	External	
Date:	7/08/2024	Time:	11.50	Max.Dry Density :	1.90 (t/m ³) @ 12.0 %	
Material :	Silt w some gravel			Min. Dry Density (t/m ³)	1.80	
Field method	s : NZS 4407:2015 Test 4.2			Solid density:	Assumed	
Moisture Con	tent Determined by Ndm					
Test Re	sults					

Site No	Depth (mm)	Moisture (%)	Wet Density (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)
1	200	12.0	2.10	1.88	99
2	200	10.6	2.12	1.92	101
3	200	8.3	2.15	1.98	105
4	200	11.5	2.20	1.97	104
5	200	11.2	2.19	1.97	104
6	200	10.2	2.18	1.98	104
7	200	10.1	2.13	1.94	102
 8	200	10.1	2.15	1.95	103

Ndm test locations not to scale



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.





Appendix D: NZS4404:2010 – Schedule 2A

miyamoto.



5.5 APPENDIX 1 STATEMENT OF PROFESSIONAL OPINION ON THE SUITABILITY OF LAND FOR SUBDIVISION

ISSUED BY:	
Joseph Byron-Joyce, Miyamoto NZ Ltd	
(Geotechnical engineering firm or suitably qualified Geoprofe	ssional)
TO:	
SELWYN DISTRICT COUNCIL	
(Territorial authority)	
TO BE SUPPLIED	
TO: <u>Yoursection FV Ltd</u>	
(Owner/Developer)	
IN RESPECT OF:	
Falcons View Subdivision Stages 11,12,13, and 16	
(Description of infrastructure/land development)	
AT:	
153 Lincoln Rolleston Road, Rolleston	
(Address)	
I Joseph Byron-Joyce	on behalf of
(Geoprofessional)	
Miyamoto NZ Ltd	
(Geotechnical engineering firm)	
hereby confirm:	

- 1. I am a suitably qualified and experienced Geoprofessional employed by <u>Miyamoto NZ Ltd</u> and the geotechnical firm named above was retained by the owner/developer as the Geoprofessional on the above proposed development.
- 2. The geotechnical assessment report, dated <u>25 November 2020</u> has been carried out in accordance with the Ministry of Business, Innovation and Employment Part D Guidelines for the geotechnical investigation and assessment of subdivisions in the Canterbury region and the Christchurch City Council Infrastructure Design Standard Part 4: Geotechnical Requirements, and Selwyn District Council's Engineering Code of Practice and includes:
 - (i) Details of and the results of my/the site investigations.
 - (ii) A liquefaction and lateral spread assessment. (iii) An assessment of rockfall and slippage, including hazards resulting from seismic activity.
 - (iv) An assessment of the slope stability and ground bearing capacity confirming the location and appropriateness of building sites.
 - (v) Recommendations proposing measures to avoid, remedy or mitigate any potential hazards on the land subject to the application, in accordance with the provisions of Section 106 of the Resource Management Act 1991.
- 3. In my professional opinion, not to be construed as a guarantee, I consider that Council is justified in granting consent incorporating the following conditions:

(i) <u>The recommendations included in the Miyamoto GCR (2003577-RP-001[A], dated 4</u> April 2025 are followed.

- (ii)
- 4. This professional opinion is furnished to the territorial authority and the owner/developer for their purposes alone, on the express condition that it will not be relied upon by any other person

and does not remove the necessity for the normal inspection of foundation conditions at the time of erection of any building limited to those items referred to in clause 2 only.

- 5. This statement shall be read in conjunction with the geotechnical report referred to in clause 2 above, and shall not be copied or reproduced except in conjunction with the full geotechnical completion report.
- 6. Liability under this statement accrues to the geotechnical firm only and no liability shall accrue to the individual completing this statement.
- 7. The geotechnical engineering firm issuing this statement holds a current policy of professional indemnity insurance of no less than \$_500,000_____

(Minimum amount of insurance shall be commensurate with the current amounts recommended by ENGINEERING NEW ZEALAND, ACENZ, NZTA, INGENIUM.)

N Date: 4 April 2025

(Signature of engineer, for and on behalf of: <u>Miyamoto NZ Ltd</u>)

Qualifications, experience and professional memberships:

I have a BSc in Geology, with 13 years experience in engineering, and am a Chartered Member of Engineering New Zealand (CMEngNZ) as a Professional Engineering Geologist (PEngGeol).

This form is to accompany Form 9 – Resource Management Act 1991 (Application for a Resource Consent.

(Subdivision)

5.6 APPENDIX II STATEMENT OF PROFESSIONAL OPINION ON THE SUITABILITY OF LAND FOR BUILDING CONSTRUCTION

ISSUED BY:

Joseph Byron-Joyce, Miyamoto NZ Ltd

(Geotechnical engineering firm or suitably qualified engineer)

TO: Yoursection FV Ltd

(Owner/Developer)

TO BE SUPPLIED TO: SELWYN DISTRICT COUNCIL

(Territorial authority)

IN RESPECT OF:

Stages 11, 12, 13, and 16, Falcons View Subdivision

(Description of infrastructure/land development)

AT: 153 Lincoln Rolleston Road, Rolleston

(Address)

Joseph Byron-Joyce

behalf of (Geoprofessional)

Miyamoto NZ Ltd

(Geotechnical engineering firm)

hereby confirm:

- 1. I am a suitably qualified and experienced Geoprofessional and was retained by the owner/developer as the Geoprofessional on the above development.
- 2. The extent of my inspections during construction, and the results of all tests carried out are as described in my/the geotechnical completion report, dated <u>4 April 2025</u>
- 3. In my professional opinion, not to be construed as a guarantee, I consider that (delete as appropriate):
 - (a) the earthfills shown on the attached Plan No ______ have been placed in compliance with the requirements of the Selwyn District Council and my/the specification.
 - (b) the completed works give due regard to land slope and foundation stability considerations.
 - (c) the original ground not affected by filling is suitable for the erection thereon of buildings .designed according to NZS 3604 provided that:

The recommendations included in the Miyamoto GCR (2003577-RP-001[A], dated 4 April 2025 (i) ______ are followed.

- (ii) _____
 - (d) the filled ground is suitable for the erection thereon of buildings designed according to NZS 3604 provided that:
 - (i) The recommendations included in the Miyamoto GCR (2003577-RP-001[A], dated 4
 - (ii) April 2025 are followed.

on

(e) The original ground not affected by filling and the filled ground are suitable for the construction of a development/subdivision and are not subject to erosion, subsidence or slippage provided that:

 (i) The recommendations included in the Miyamoto GCR (2003577-RP-001[A], dated 4

NOTE: The sub-clauses in Clause 3 may be deleted or added to as appropriate.

- 4. This professional opinion is furnished to the territorial authority and the owner/developer for their purposes alone, on the express condition that it will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection of any building.
- 5. This statement shall be read in conjunction with my/the geotechnical report referred to in Clause 2 above, and shall not be copied or reproduced except in conjunction with the full geotechnical completion report.
- 6. Liability under this statement accrues to the geotechnical firm only and no liability shall accrue to the individual completing this statement.
- 7. The geotechnical engineering firm issuing this statement holds a current policy of professional indemnity insurance of no less than \$_500,000

(Minimum amount of insurance shall be commensurate with the current amounts recommended by ENGINEERING NEW ZEALAND, ACENZ, NZTA, INGENIUM.)

In

Date: 4 April 2025

(Signature of engineer)

Qualifications and experience

I have a BSc in Geology, with 13 years experience in engineering, and am a Chartered Member of Engineering New Zealand (CMEngNZ) as a Professional Engineering Geologist (PEngGeol).

⁽ii) April 2025 are followed.

Appendix E: NZS4431:2022 – Appendix A

miyamoto.



APPENDIX D - STATEMENT OF SUITABILITY OF ENGINEERED FILL FOR LIGHTWEIGHT STRUCTURES

(Informative)

To: (name and address of local authority)	Selwyn District Council			
Development name:	Falcons View Subdivision Stages 11, 12, 13, and 16			
Land title(s):	Lot 500 DP 596433 and LOT	2 DP 568976		
Development location/address:	153 Lincoln Rolleston Road,	Rolleston		
Relevant resource consent number(s):	RC235161 and RC235162	0		
Developer's name and company:	Your Section FV Ltd	75		
Geotechnical designer's name and company:	Joseph Byron-Joyce of Mivar	moto NZ Ltd		
Cortifior's name and company:	Joseph Byron-Joyce of Mivar	noto NZ I td		
Attachments (give reference numbers):				
(1) Site layout plan(s) Appendix A of this GC	R (2003577-RP-001[A])			
(2) Fill layout plan(s) Appendix A of this GC	R (2003577-RP-001[A])			
(3) Fill section(s)				
(4) Design report Appendix F of this GCF	R (2003577-RP-001[A])			
(5) Geotechnical Earthworks completion report, including the	he following appendices:			
(a) As-built survey: 2002577 PD 00114	nprises Appendix E of the GCR	(Miyamoto		
(b) Cut-fill plan (with contours):				
(c) Inspection and test plan:				
(d) Farthworks specification:				
(a) All test results:	Geotechnical			
(f) All inspection records	51			
(i) All Inspection records.	in 1/20, 4401,0000			
I confirm I am qualified as a certifier as defined	11/11/25 4431:2022.			
buring this work, I was retained as certifier, and testing as documented in the attached earthwork	or my certifier's representative	e undertook inspections and		
I am satisfied that the engineered fill shown in t	he attached as-built survey was	placed, compacted, and		
tested in accordance with the attached earthwo	orks specification and that all va	riations and non-compliances		
have been documented in the earthworks comp	oletion report.			
Based on the information available, I certify that	t, to the best of my knowledge,	the intent of the geotechnical		
designer (as presented in their design, drawings, and earthworks specification) has been achieved.				
The area shown on the as-built survey plan referenced above is considered suitable for development as per				
NZS 3604. (strike out if not relevant) (Miyamoto 210292.04-TM-001[A])				
This certification does not remove the necessity for normal inspection and design of foundations as would				
be made in natural ground.				
Certifier's signature		Date: 4 April 2025		
Certifier's qualifications, professional registration type, and number:				

BSc (Geology), CMEngNZ, PEngGeol (1165872)

Figure 12 - Statement of suitability of engineered fill for lightweight structures

Appendix F: Geotechnical Report for Proposed Plan Change



Geotechnical Report for Proposed Plan Change

Falcons Subdivision Proposed Extension

Issue Date:	25 November 2020
Miyamoto Ref:	200357-RP-002[A]

Prepared for: Yoursection Ltd

236 Hereford Street, Christchurch 8011 • PO Box 137, Christchurch 8140 • P +64 03 377 4095 Christchurch • Wellington • Auckland • Kapiti Coast • California • Nevada • Washington, D.C Costa Rica • Colombia • Haiti • Liberia • Italy • Turkey • India • Nepal • Japan

Report Tracking

Revision	Status	Date	Prepared by	Reviewed by
A	FINAL	25 November 2020	C. Gibbens	C. McDermott

Authorisation

Author's Signature	AA	Approver's Signature	Alt
Name	Clem Gibbens	Name	Charles McDermott
Title	Engineering Geologist BSc MSc (Hons) MEngNZ	Title	Associate Geotechnical Engineer BEng (Hons) CMEngNZ CPEng

Miyamoto International New Zealand Ltd

Level 1, 236 Hereford Street | Christchurch 8011

www.miyamoto.nz

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A. Ground Investigation Data

1. Introduction

Miyamoto International NZ Limited (MINZ) has been engaged by Yoursection Limited to undertake a geotechnical investigation, evaluation and land suitability assessment as part of the proposed land reclassification and plan change required for the proposed extension of the Falcons residential subdivision (encompassing 151 and 153 Lincoln Rolleston Road).

Our assessment comprised the following scope of works:

- Research of available information; including historic reports, the New Zealand Geotechnical Database (NZGD), Selwyn District Council (SDC) and Environment Canterbury (ECan);
- Site walkover inspection of the land;
- Shallow field investigation comprising:
 - Machine excavated trial pits (TP);
 - Dynamic cone penetrometer (DCP) testing.
- Geotechnical Assessment including high-level assessment of the site with regard to the Resource Management Act (RMA) Section 106.

This report presents the findings of our investigation and assessment which were carried out considering the Ministry of Business, Innovation & Employment (MBIE) Guidance documents "Planning and engineering guidance for potentially liquefaction-prone land" - Version 1, dated September 2017, "Repairing and rebuilding houses affected by the Canterbury earthquakes" - Version 3, dated December 2012, and "Earthquake geotechnical engineering practice - Modules 2 & 3".

It is noted that this report is limited to geotechnical assessment. Advice related to other development requirements (such as roading infrastructure, pavements, services, stormwater management and contaminated land) should be sought from appropriately qualified personnel.

2. Site Description

The site (approximately 25 hectares in area) is located in a rural setting in Rolleston, Selwyn, south of the existing Falcons / Branthwaite residential subdivision, and encompasses the following land parcels (as shown in Figure 1):

- Lot 1 DP 357634;
- Lot 1 DP 50631 BLKS III IV Leeston SD.

The site is predominantly flat with a global elevation difference of 2.0 m to 3.0 m (increasing to the north-west). The land is predominantly grass covered farmland with residential dwellings, workshops and sheep farming buildings currently occupying two relatively small areas of the proposed development area.



Figure 1: Site Location / Layout Plan

3. Data Sources

The following sources of third-party information were considered and are referenced in this report:

- GNS Science Geological Maps;
- New Zealand Geotechnical Database (NZGD);
- Environment Canterbury (ECan);
- Aurecon (2017). Falcons Landing Geotechnical Subdivision Report;
- Selwyn District Council (SDC);
- Canterbury Maps.

4. Geotechnical Assessment

Geological Setting

The geological map of the area (GNS 1:250,000 QMap) indicates that the site geology is described as 'modern (Quaternary) river floodplain/low-level degradation terraces of unweathered, variably sorted gravel/sand/silt/clay'.

Field Investigations

Miyamoto undertook a site-specific ground investigation on 17 November 2020, comprising:

- 27No. machine excavated trial pits (referenced TP001 to TP027);
- 27No. Dynamic Cone Penetrometer (DCP) tests associated with the above exploratory holes.

In addition to our site-specific investigation we have also utilised available geotechnical information from the surrounding subdivisions and a number of ECan well bores as part of our assessment.

The test locations are shown in Figure 2, the general details of the ground investigations are summarised in Table 1, and the engineering and well bore logs are presented in Appendix A.



Figure 2: Ground Investigation Location Plan

Table 1: Summary of Ground Investigations

Test Ref.	Source	Source Ref.	Test Type	Depth (mbgl)
TP001 to TP027	MINZ	200357	TP / DCP	0.7 to 1.8
Various	Aurecon	254246	ТР	1.6 to 1.7
Various	NZGD / Landtech	LTCL18051	TP / DCP	2.1 to 2.6
HA-DCP_128990	NZGD / Davis Ogilvie	39353	HA / DCP	1.2 to 1.7
HA-DCP_27798	NZGD / LDE	10774	TP / DCP	0.8 to 3.0
ECan Well Bores	ECan	Various	Rotary / Percussion / Cable Tool	37.0 to 48.0

Ground Conditions

The ground profile interpreted from the on-site shallow ground investigation, correlated with the available existing data, generally comprises a layer of topsoil (0.2 m to 0.4 m in thickness), overlying low plasticity, firm to stiff Sandy SILT to between 0.4 m and 1.1 mbgl, below which dense to very dense Sandy fine to coarse GRAVEL is present to depth. It is

noted that the upper 0.1 m to 0.2 of the gravel layer is more of a gravelly Sand and a relatively thin layer (0.2 m to 0.4 m) of sand was encountered at isolated locations.

Groundwater

Standing groundwater was not encountered during our site-specific investigation and the soils encountered were dry. Long-term groundwater level monitoring information available from ECan well bores from the surrounding area indicate the groundwater table to average around 10 to 13 mbgl with seasonal fluctuations reaching a shallowest level of ~6 mbgl.

Liquefaction Assessment

The site is located within an area of 'low geotechnical risk' as defined by Selwyn District Council (McCahon, 2013). The site is also located within an area identified as 'Liquefaction damage is unlikely' (2012), and a 'Zone of low liquefaction potential' (2006) as presented on the Canterbury Maps Viewer.

Based on our assessment (including the site-specific ground conditions and groundwater regime) we concur that the risk of damaging effects from liquefaction at the site is low with the seismic performance expected to be equivalent to MBIE Technical Category (TC) 1 as per the MBIE Guidance (2012).

NZS1170.5 Site Sub-soil Class

Based on our geotechnical assessment, geological maps and other available information, NZS1170.5 Site Sub-soil Class D (deep or soft soil site) is considered appropriate for the site.

Flood Hazard

The site is not currently located within one of the Flood Zones identified by Selwyn District Council, however, restrictions around building floor levels must be checked at building consent stage.

5. Development Considerations

At this stage in the project, the future development plans are not defined. However, considering likely residential subdivision similar to that in the local area, the following preliminary guidance is provided:

- Earthworks should be undertaken in general accordance with the requirements of NZS 4431:1989. All unsuitable materials should be stripped from the work areas and stockpiled clear of the operations or removed from site;
- Preliminarily, NZS3604 foundations are considered geotechnically feasible for NZS3604 compliant structures, subject to building-specific geotechnical investigations to assess the available bearing capacity.

It is noted that this report is limited to geotechnical assessment. Advice related to other development requirements (such as roading infrastructure, pavements, services,

stormwater management and contaminated land) should be sought from appropriately qualified personal.

6. Assessment Against RMA Section 106

As per the requirements of Section 106 of the Resource Management Act (RMA) (2017), we have undertaken a high-level assessment of the significant geotechnical hazards that may affect the site. These hazards include, but are not limited to:

- Erosion;
- Falling debris;
- Slippage;
- Subsidence
- Inundation.

At the time of our site visit, there was no evidence of erosion or erosional features on site. The shallow soils could be vulnerable to erosion if the topsoil layer is removed and left unprotected for prolonged periods of time. This can be easily mitigated with appropriate design measures during construction.

Given the proximity of the site to any source, rockfall (falling debris) is not considered a risk to the site and given the site is generally flat with only a minor gradual change in elevation across the site, slope instability (slippage) is not considered to be a risk.

On the basis of our geotechnical assessment herein, we do not consider subsidence (under either static or seismic loading) to be a significant hazard for normal construction (i.e. NZS3604 compliant buildings).

The site is not currently located within one of the Flood Zones identified by Selwyn District Council, however, restrictions around building floor levels must be checked at building consent stage.

Based on our assessment, we consider that the geotechnical hazards may be mitigated to an acceptable standard, provided that the geotechnical recommendations given in this report are followed, and the appropriate engineering measures implemented, we consider that the development is unlikely to be affected nor worsen, accelerate or result in material damage.

7. Limitations

This report is subject to the following limitations:

- This report has been prepared by Miyamoto for the Client for the purpose/s agreed with the Client (Purpose). Miyamoto accepts no responsibility for the validity, appropriateness, sufficiency or consequences of the Client using the report for purposes other than for the Purpose.
- This report is not intended for general publication or circulation. This report is not to be reproduced by the Client except in relation to the Purpose, without Miyamoto's prior written permission. Miyamoto disclaims all risk and all responsibility to any third party.
- This report is provided based on the various assumptions contained in the report.
- Miyamoto's professional services are performed using a degree of care and skill reasonably exercised by reputable consultants providing the same or similar services as at the date of this report.
- The sub surface information has been obtained from investigation carried out at discrete locations, which by their nature only provide information about a relatively small volume of subsoils. While Miyamoto has taken reasonable skill and care in carrying out the investigation to determine the subsoil condition, the subsoil condition could differ substantially from the results of any sampling investigation. Miyamoto is not responsible for and does not accept any liability in respect of any difference between the actual subsoil conditions and the results of our investigation.
- A change in circumstances, facts, information after the report has been provided may affect the adequacy or accuracy of the report. Miyamoto is not responsible for the adequacy or accuracy of the report as a result of any such changes.
- This report is not to be reproduced, either wholly or in part, without our prior written permission.

If you have any queries or you require any further clarification on any aspects of this report, please do not hesitate to contact Miyamoto International (NZ) Ltd.

References

- Environment Canterbury, 2014. Canterbury Maps Viewer, <u>http://canterburymaps.govt.nz/Viewer/#webmap</u>
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- Ministry of Business, Innovation and Employment (MBIE), 2012. Revised issue o
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- New Zealand Geotechnical Database, 2017. Accessed via Google Earth from <u>https://www.nzgd.org.nz/</u>.
- New Zealand Geotechnical Society (NZGS) and Ministry of Business, Innovation and Employment (MBIE) (2016). Earthquake geotechnical engineering practice Module 2: Geotechnical investigations for earthquake engineering, November 2016.
- New Zealand Geotechnical Society (NZGS) and Ministry of Business, Innovation and Employment (MBIE) (2016). Earthquake geotechnical engineering practice Module 3: Identification, assessment and mitigation of liquefaction hazards, May 2016.
- New Zealand Standard NZS1170.5 (2004). Structural Design Actions, Part 5: Earthquake Actions New Zealand Standard, NZS 2004.
- Selwyn District Council District Plan Online Maps, https://eplan.selwyn.govt.nz/eplan/#/Property/7941662.

Appendices



A. Ground Investigation Data

MINZ site-specific investigation logs ECan well bore logs Aurecon 2017 investigation logs (nearby only) LandTech 2018 investigation logs (nearby only) Davis Ogilvie 2019 investigation logs (nearby only)

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincolr	n Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.8 mb	gl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP		SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test	2st Soil Description							L	ab Te	esting	g			Shoar Vano
Depth (m)	Results (Blows per	GWL		Son Description		Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		usc	Soil Characteristics	Graphic	Taken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	6			SILT; non-plastic, dark brown, dry (TOPSOIL)											
	8														
_	9			Sandy SILT; low plasticity, yellow-brown, dry,	× × × × ×										
_	9			sand is fine to medium	× × × ×										
_	11				× × × × ×										
0.5 -	13				× × × × × × ×										
_	20				× × × × × × ×										
-	Woight			Gravelly fine to coarse SAND / Sandy Gravel; fine	2										
-	Bouncing			to coarse, grey, dry, gravel is subrounded to											
-				EOH (TARGET STRATA REACHED)											
1.0 -				, , , , , , , , , , , , , , , , , , ,											
_															
_															
_		REI													
_		NTE													
1.5 -		noc													
-		ENG													
-		NOT													
-		_													
-															
2.0 -															
_															
_															
_															
_															
2.5 -															
_															
_															
_															
_															
				LEGEND									NOT	F.C.	
DCP	DYNAMIC CON	E PENETE	ROMETF	R N/E NOT ENCOUNTERED		IMIT		GR	GRA	/EL			NUT	<u>E3</u>	
HA	HAND AUGER			UTP UNABLE TO PENETRATE PL	PLASTIC	LIMIT		SA	SANE)					
SV	SHEAR VANE			EOH END OF HOLE PI	PLASTICI	TY INDEX		FC	FINE	S CON	ITEN	г			
TP	TEST PIT			UW UNIT WEIGHT (kN/m³) W(WATER C	ONTENT		.∇	STAN	IDING	6 GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl METERS BELOW GROUND LEVE	L										

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincolr	n Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	1.0 m	nbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP		SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test	Soil Description							L	ab Te	esting	g			Shear Vane			
Depth (m)	Results (Blows per	GWL			Jon Descripti				Sample Taken	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(///)	100mm)		usc		Soil Characteris	itics		Graphic Loa	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	6			SILT; non-plast	ic, dark brown, c	dry (TOPSOIL	.)											
-	6																	
-	13	1		Sandy SILT; lov	v plasticity, yello	w-brown, dr	γ,	× × × × × ×										
	12	1		sand is fine to	medium			× × × × × × ×										
	9	1						× × × ×										
0.5 -	7	1						× × × ×										
	7	1						× × × × ×										
	6							× × × ×										
	7							× × × × ×										
	11	1		Gravelly fine to	o coarse SAND /	Sandy Grave	el; fine											
1.0 -	Weight	1		to coarse, grey	ι, dry, gravel is sι	ubrounded to	0											
	Bouncing	1		EOH (T	ARGET STRAT/	A REACHED)											
_		<u> </u>																
		ERE																
-		UNT																
1.5 -		ç																
-		Ē																
-		N N																
-																		
_		1																
2.0 -																		
-																		
-																		
-																		
-																		
2.5 -																		
_																		
-																		
_																		
_																		
							UND									NOT	FS	
DCP	DYNAMIC CON	<u>.</u> E PENETF	ROMETE	R N/E	NOT ENCOUN	TERED	LL	LIQUID LI	MIT		GR	GRA	VEL			1001		
НА	HAND AUGER			UTP	UNABLE TO PE	NETRATE	PL	PLASTIC I	IMIT		SA	SAN	5					
SV	SHEAR VANE			EOH	END OF HOLE		PI	PLASTICI	TY INDEX		FC	FINE	S CON	ITEN	т			
ТР	TEST PIT			UW	UNIT WEIGHT	(kN/m³)	WC	WATER C	ONTENT	•	. X	STAN	IDING	6 GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELO	W GROUND	LEVEL											

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PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.7	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DC	Р	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test		Soil Description					La	ab Te	esting	9			Shear Vana			
Depth (m)	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(11)	(Blows per 100mm)		usc		Soil Characteristics		Graphic Loa	такеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 5 11			SILT; non-plasti	ic, dark brown, dry (TOPSOIL)											
0.5 -	12 15 20			Sandy SILT; low sand is fine to r	/ plasticity, yellow-b medium	rown, dry,	× × × × × × × × × × × × × × × × ×										
-	Weight Bouncing			Gravelly fine to to coarse, grey subangular EOH (T,	o coarse SAND / Sano , dry, gravel is subro ARGET STRATA RE	dy Gravel; fine unded to ACHED)											
1.0		Q															
- - 1.5 - - -		NOT ENCOUNTERE															
2.0 -																	
2.5 -																	
-																	
						LEGEND					. I		r				
	ABBREVIATIONS			D											NOT	ES	
DCP нл		E PENETI	KOMETE	к N/E		ED LL				GR SA	GRA\	/EL					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINES	- 5 CON	ITEN	г			
ТР	TEST PIT			UW	UNIT WEIGHT (kN/m³) WC	WATER C	ONTENT			STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW G	ROUND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollest	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	1.2 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test	DCP Test Soil Description				L	ab Te	esting	g			Shear Vane					
Depth	Results	GWL			Son Description			Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(<i>m</i>)	(Blows per 100mm)		usc		Soil Characteristics		Graphic	Такеп	Ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
_	4			SILT; non-plasti	ic, dark brown, dry (TOF	PSOIL)											
-	7 10			Sandy SILT; low sand is fine to r	I plasticity, yellow-brow medium	ın, dry,	× × × × × × × × × × ×										
0.5 -	11 10 9						× × × × × × × × × × × × × ×										
	10 5 5			SAND; fine to n	nedium, yellow-brown,	dry											
1.0 -	11 Weight			Gravelly fine to	o coarse SAND / Sandy G	Gravel; fine											
-	Bouncing	VTERED		subangular EOH (TA	ARGET STRATA REAC	HED)											
1.5 - - -		NOT ENCOUN															
- 2.0																	
2.5 -																	
l						LEGEND									<u> </u>		
	ABBREVIATIONS	<u>.</u>													NOT	<u>ES</u>	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNTERED	LL	LIQUID LI	MIT		GR	GRA	/EL					
HA	HAND AUGER			UTP	UNABLE TO PENETRA	TE PL	PLASTIC I	IMIT		SA	SAN	0					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINE	S CON	ITEN	Г			
TP	TEST PIT			UW	UNIT WEIGHT (kN/r	m³) WC	WATER C	ONTENT		. X	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROU	UND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.6	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DC	P	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test		Soil Description							L	ab Te	esting	g			Shear Vane	
Depth (m)	Results (Blows per	GWL			Join Description			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	(Blows per 100mm)		usc		Soil Characteristic	s	Graphic Loa	тикеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 6 7 8			SILT; non-plasti Sandy SILT; low sand is fine to r	c, dark brown, dry plasticity, yellow-ł nedium	(TOPSOIL) brown, dry,	* * * *										
0.5 -	15 20 Weight Bouncing		G tc st	Gravelly fine to to coarse, grey, subangular EOH (T/	coarse SAND / Sar dry, gravel is subr ARGET STRATA R	ndy Gravel; fir ounded to REACHED)											
- 1.0		ED															
		NOT ENCOUNTER															
- 2.0																	
2.5 -																	
		· · · · · · · · ·	-			LEGEN	D										
	ABBREVIATIONS														NOT	ES	
DCP	DYNAMIC CONI	E PENETF	ROMETE	R N/E	NOT ENCOUNTER	RED LL		MIT		GR	GRA	VEL					
	HAND AUGER			UIP FOH		IKALE PL				SA FC	SANL	, 2 CUV		т			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³) W	C WATER C	ONTENT	-	V .	STAN		GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW	GROUND LEVI	EL										

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd

17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	1.3 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test				Soil Descripti	ion				Lab Testing				Shoar Vano				
Depth	Results (Blows per	GWL			Jon Descripti	011			Sample	Atter	berg L	imits	Gr	rain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characteris	tics		Graphic Log	такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 5 4 4			SILT; non-plast Sandy SILT; lov sand is fine to	ic, dark brown, d v plasticity, yello [,] medium	lry (TOPSOIL w-brown, dr	.) Y,	* * * *										
0.5	6 6 5 5 5 4		5															
1.0 -	4			SAND; fine to r	nedium, yellow-l	brown, dry	l. fine											
-	6 15 Weight	TERED		to coarse, grey subangular EOH (T	i, dry, gravel is su	Ibrounded to)											
1.5 – – –	Bouncing	NOT ENCOUN																
2.0 -																		
2.5																		
						LEG	END											
	ABBREVIATIONS															NOT	<u>ES</u>	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNT	rered	LL	LIQUID LI	MIT		GR	GRA	VEL					
HA				UTP		NETRATE	۲L را				SA	SAN) S C O N		т			
SV TD						(kN/m³)	rı WC	WATER				STAN			י ו			
GWL	GROUNDWATE			mbgl	METERS BELO	W GROUND	LEVEL	WAILING							-			
																I		

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.6 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test				Soil Description					Le	ab Te	esting	9			Shaar Vano	
Depth	Results (Blows per	GWL			Son Description			Sample	Atter	berg L	imits	Gr	ain Si	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		usc		Soil Characteristics		Graphic Loa	такеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 6 8			SILT; non-plasti	c, dark brown, dry (TOF	PSOIL)											
0.5 -	20 Weight Bouncing			Sandy SILT; low sand is fine to r Gravelly fine to	r plasticity, yellow-brow nedium coarse SAND / Sandy G	in, dry, Gravel; fine											
				to coarse, grey, subangular EOH (T/	, dry, gravel is subround	HED)											
1.0		Q															
		NOT ENCOUNTERE															
2.0 -																	
2.5																	
			-			LEGEND									 1	-	
DCD							ייסייוסע	NAIT		CP	CDAY	/51			NOT	<u>ES</u>	
НА	HAND AUGER	_ PENEII		N IN/E UTP	UNABLE TO PENETRAT	LL TE PL	PLASTIC L	LIMIT		SA	SAND	V E L)					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINES	S CON	ITEN	г			
ТР	TEST PIT			UW	UNIT WEIGHT (kN/r	m³) WC	WATER C	ONTENT			STAN	IDING	i GWI	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROU	JND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.5 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test				Soil Descripti	on					L	ab Te	estin	g			Shoar Vano	
Depth	Results	GWL			Son Descriptio	,,,,			Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characterist	tics		Graphic	такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5			SILT; non-plast	ic, dark brown, dr	ry (TOPSOIL))											
-	8			Sandy SILT; low sand is fine to r	v plasticity, yellow medium	v-brown, dry	y,	× × × ×										
- 0.5 -	Weight Bouncing			Gravelly fine to to coarse, grey subangular	coarse SAND / S , dry, gravel is sul	andy Gravel brounded to	l; fine o											
-				EOH (T	ARGET STRATA	REACHED))											
- 1.0 -																		
-		rered																
1.5 -																		
-		ON																
2.0 -																		
-																		
2.5 -	_																	
-																		
						LEGI	END									NOT	 C	
DCP	DYNAMIC CON	E PENETF	OMETE	R N/E	NOT ENCOUNT	ERED	LL	LIQUID LI	MIT		GR	GRA	/EL			NUT	<u>L)</u>	
HA	HAND AUGER			, UTP	UNABLE TO PE	NETRATE	PL	PLASTIC L	IMIT		SA	SAN	0					
SV	SHEAR VANE			EOH	END OF HOLE		PI	PLASTICIT	TY INDEX		FC	FINE	S CON	ITEN	т			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³)	WC	WATER C	ONTENT		.X	STAN	IDING	6 GW	L			
GWL	GROUNDWATE	K LEVEL		mbgl	METERS BELOW	V GROUND L	LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.7	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DC	Р	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

Depth (m) Results (m) GWL Control Control Sample Token Name (m) Name		DCP Test				Soil Descriptic					Le	ab Te	esting	g			Shear Vana	
Image: Index mark USC Solid Characteristics Graphic Lit R PI GR SA FC	Depth (m)	Results (Blows per	GWL			Son Descriptio	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
0.5 4 SILT; non-plastic, dark brown, dry (TOPSOIL) 0.5 0.5 7 8 7 8 7 8 7 9 1.0 0 9 0 1.0 0 1.0 0 9 0 1.0 0 1.0 0 1.0 0 1.0 0 1.0 0 1.0 0 1.5 0 1.5 0 1.5 0 1.5 0 1.5 0 1.5 0 1.5 0 1.5 0 1.5 0 1.5 0 2.0 0 2.1 0 2.2 0 2.3 0 2.4 0 2.5 0 1.5 0 1.5 0 1.5 0 1.5 0 1.5 0 1.6 0 1.7 0 1.8 0 1.9 0 1.5 0 <td>(11)</td> <td>(Blows per 100mm)</td> <td></td> <td>USC</td> <td></td> <td>Soil Characteristi</td> <td>ics</td> <td>Graphic</td> <td>Taken</td> <td>ш</td> <td>PL</td> <td>PI</td> <td>GR</td> <td>SA</td> <td>FC</td> <td>(%)</td> <td>UW</td> <td>peak/remoulded</td>	(11)	(Blows per 100mm)		USC		Soil Characteristi	ics	Graphic	Taken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
0.5 7 0.5 7 1.0 Gravely fine to coarse SAND / Sandy Gravel, fine 0.6 7 1.0 Gravely fine to coarse SAND / Sandy Gravel, fine Ubage Bouncing 1.1.5 Gravely fine to coarse SAND / Sandy Gravel, fine 2.0 Bouncing 2.1.5 Gravely fine to coarse SAND / Sandy Gravel, fine 2.0 Bouncing 2.1.5 Gravely fine to coarse SAND / Sandy Gravel, fine 2.0 Bouncing 2.1.5 Gravely fine to coarse SAND / Sandy Gravel, fine 2.0 Bouncing 2.1.5 Gravely fine to coarse SAND / Sandy Gravel, fine 2.0 Bouncing 2.1.5 Gravely fine to coarse SAND / Sandy Gravel, fine 2.2.5 Gravely fine to coarse SAND / Sandy Gravel, fine 2.2.6 Gravely fine to coarse SAND / Sandy Gravel, fine 2.2.7 Gravely fine to coarse SAND / Sandy Gravel, fine 2.2.8 Gravely fine 2.2.9 Gravely fine 2.2.9 Gravely fine 2.2.9 Gravely fine 2.2.9 Gravely fine	-	5 4 5			SILT; non-plasti	c, dark brown, dr	y (TOPSOIL)											
Cravely me to cards aver, gravel is submarked to submarked to submarke		6 7 8			Sandy SILT; low sand is fine to r	plasticity, yellow	v-brown, dry,	× × × × × × × × × × × × × × × ×										
1.0	-	7 16 Weight Bouncing			to coarse, grey, subangular EOH (T/	ARGET STRATA	REACHED)											
LEGEND	1.0 -		RED															
2.0 Image: Constraint of the second			NOT ENCOUNTEF															
2.5 Image: Constraint of the second	2.0																	
ABBREVIATIONS NOTES DCP DYNAMIC CONE PENETROMETER N/E NOT ENCOUNTERED LL LIQUID LIMIT GR GRAVEL Ha HAND AUGER LITP LINABLE TO PENETRATE PLASTIC LIMIT SA SAND																		
ABBREVIATIONS DCP DYNAMIC CONE PENETROMETER N/E NOT ENCOUNTERED LL LIQUID LIMIT GR GRAVEL HA HAND AUGER LITE LINABLE TO PENETRATE PL PLASTIC LIMIT SA SAND							LEGE	ND	I							I		
DCP DYNAMIC CONE PENETROMETER N/E NOT ENCOUNTERED LL LIQUID LIMIT GR GRAVEL		ABBREVIATIONS														NOT	E <u>S</u>	
HA HAND ALIGER LITE LINARIE TO PENETRATE DI DIASTICUMUT SA SAND	DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNTE	ERED	LL LIQUID L	IMIT		GR	GRA	/EL					
	HA				UTP	UNABLE TO PEN	NETRATE	PL PLASTIC			SA	SANE		1758-5	-			
TP TEST PIT UW UNIT WEIGHT (kN/m³) WC WATER CONTENT V STANDING GWI	SV TP	SHEAK VANE			EOH HW/	UNIT WEIGHT	(kN/m³)	WC WATER				STAN		GW/	1 			
GWL GROUNDWATER LEVEL mbgl METERS BELOW GROUND LEVEL	GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW	/ GROUND LE	EVEL				3170			-			

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PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincolr	Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.7	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DC	CP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test				Soil Description					L	ab Te	esting	g			Shear Vana	
Depth (m)	Results (Blows per	GWL			Son Description			Sample Taken	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		usc		Soil Characteristics		Graphic Loa	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	5 4 4			SILT; non-plasti	ic, dark brown, dry (TOP	SOIL)											
0.5 -	2 7 16			Sandy SILT; low sand is fine to r	v plasticity, yellow-browr medium	n, dry,	× × × × × × × × × × × × × × × ×										
-	Weight Bouncing			Gravelly fine to to coarse, grey subangular EOH (T.	o coarse SAND / Sandy Gi , dry, gravel is subrounde ARGET STRATA REACH	ravel; fine ed to HED)											
1.0 -																	
- - - -		NOT ENCOUNTERED															
2.0 -																	
- 2.5 -																	
-																	
					L	EGEND									T		
DCD							יי חייוסו	NAIT		GP	GRAN	/51			<u>NOT</u>	<u>ES</u>	
HA	HAND AUGER			UTP	UNABLE TO PENETRAT	E PL	PLASTIC L	LIMIT		SA	SANE)					
sv	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICIT	TY INDEX		FC	FINE	S CON	ITEN	г			
TP	TEST PIT			UW	UNIT WEIGHT (kN/m	³) WC	WATER C	ONTENT			STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROU	ND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.7 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test				Soil Descripti					La	ab Te	esting	g			Shoar Vano	
Depth	Results (Plaus par	GWL			Son Description	011		Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characteris	tics	Graphic	Такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	8 9 7			SILT; non-plasti	ic, dark brown, d	ry (TOPSOIL)											
0.5 -	7 11 20			Sandy SILT; low sand is fine to r	[,] plasticity, yellov nedium	v-brown, dry,	, × × × × × × × × × × × ×	× ×									
	Weight Bouncing			Gravelly fine to to coarse, grey, <u>subangular</u> EOH (T,	, dry, gravel is su ARGET STRATA	andy Gravel; brounded to	fine										
1.0		G															
- 1.5 - - -		NOT ENCOUNTERE															
2.0 -																	
2.5 -																	
<u> </u>							ND										
	ABBREVIATIONS					LEGE									ΝΟΤ	ES	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNT	ERED	LL LIQUID	limit		GR	GRA	/EL					
НА	HAND AUGER			UTP	UNABLE TO PE	NETRATE	PL PLASTIC	LIMIT		SA	SAND)					
SV	SHEAR VANE			EOH	END OF HOLE		PI PLASTIC	ITY INDEX		FC	FINES	S CON	ITEN	т			
ТР	TEST PIT			UW	UNIT WEIGHT	(kN/m³)	WC WATER	CONTENT		. X	STAN	IDING	GW	L			
GWL	GROUNDWATE	k level		mbgl	METERS BELOV	V GROUND LE	EVEL										

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincolr	n Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.8 mb	gl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP		SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test				Soil Description					Lo	ab Te	esting	g			Shoar Vano	
Depth (m)	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		USC		Soil Characteristics		Graphic	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	5			SILT; non-plasti	ic, dark brown, dry (TOPSOIL)											
-	4																
_	9			Sandy SILT; low	/ plasticity, yellow-b	rown, dry,	* * * *										
	13			sand is fine to n	nedium		× × × ×										
_	11						× × × × × × ×										
0.5 -	7						× × × × × × ×										
-	8			Gravelly fine to	coarse SAND / San	dy Gravel; fine											
_	20			to coarse, grey,	, dry, gravel is subro	ounded to	3000000										
_	Woight			subangular EOH (T/	ARGET STRATA RE	EACHED)	J										
_	Bouncing			•													
1.0 -																	
-																	
-																	
-		REC															
-		NTE															
1.5 –		no:															
_		ENC															
_		ЧОТ															
-		-															
-																	
2.0 -																	
_																	
_																	
_																	
_																	
2.5 -																	
_																	
_																	
_																	
						LEGEND											
							יי מייוטו	NAIT		GP	CP A	/=1			NOT	<u>ES</u>	
рсь Н7			ONETE			ED LL		IMIT		GK SA	SANG	/ E L					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINES	S CON	ITEN	г			
ТР	TEST PIT			UW	UNIT WEIGHT (kN/m³) WC	WATER C	ONTENT			STAN	DING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW G	ROUND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollest	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.9 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test		Soil Description								Lo	ab Te	estin	g			Shear Vana
Depth	Results (Playus par	GWL			Son Description			Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Biows per 100mm)		USC		Soil Characteristics		Graphic	такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	6 5 8			SILT; non-plasti	ic, dark brown, dry (TOPSO	IL)											
- 0.5 -	15 21			Sandy SILT; low sand is fine to r	r plasticity, yellow-brown, o nedium	dry,	× × × × × × × × × × × × × × ×										
-	Weight Bouncing			SAND; fine to n	nedium, yellow-brown, dry	,	<u> </u>										
- 1.0 -				Gravelly fine to to coarse, grey, subangular	coarse SAND / Sandy Grav , dry, gravel is subrounded	vel; fine to											
-		ED		ΕΟΗ (Τ/	ARGET STRATA REACHE	D)											
- 1.5 - - -		NOT ENCOUNTER															
					LE	GEND									NO-	50	
DCP	ABBREVIATIONS	E PENETI	ROMETE	R N/E	NOT ENCOUNTERED	LL	LIQUID LI	MIT		GR	GRA	/EL			NOT	<u>ES</u>	
HA	HAND AUGER			UTP	UNABLE TO PENETRATE	PL	PLASTIC L	limit		SA	SANE	- C					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICIT	TY INDEX		FC	FINES	S CON	ITEN	Г			
ТР	TEST PIT			UW	UNIT WEIGHT (kN/m ³)	WC	WATER C	ONTENT		. .	STAN	IDING	6 GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROUNI	D LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.5	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + D	СР	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test Results Current Soil Description Sample Lab Testing Atterberg Limits Grain Size				g			Shear Vane									
Depth	Results (Blows per	GWL				<u> </u>		Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		USC		Soil Characteristi	cs	Graph Log	^c	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	8			SILT; non-plasti	ic, dark brown, dry	(TOPSOIL)		X									
	15							X									
7	15			Sandy SILT; low	v plasticity, yellow-	-brown, dry,	× × × × ×	×									
-	Weight			sand is fine to r	medium		× × ×	×									
-	Bouncing			Gravelly fine to	o coarse SAND / Sa	ndy Gravel; fi	ne										
0.5 -				to coarse, grey	, dry, gravel is sub	rounded to	********										
-				EOH (T	ARGET STRATA	REACHED)											
-																	
1.0 -																	
-		REC															
		NTE															
1.5 -		no:															
_		ENC															
_		от															
_		z															
_																	
2.0 -																	
2.5 -																	
-																	
-																	
-																	
├ ──── [⊥]						LEGEN	ID	1	1	1		1			1		
	ABBREVIATIONS														NOT	ES_	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNTE	RED L	L LIQUI	LIMIT		GR	GRA	VEL					
HA	HAND AUGER			UTP	UNABLE TO PEN	ETRATE P	PL PLAST	C LIMIT		SA	SANI	D					
SV	SHEAR VANE			EOH	END OF HOLE	P	PI PLAST	CITY INDEX		FC	FINE	S CON	NTEN	Т			
ТР	TEST PIT	B . E		UW	UNIT WEIGHT	(kN/m ³) V	VC WATE	CONTENT		X	STAN	DING	6 GW	L			
GWL	GROUNDWATE	K LEVEL		mbgl	METERS BELOW	GROUND LEV	/EL								I		

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollest	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	1.0 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test			Soil Description							La	ab Te	esting	g			Shoar Vano
Depth	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		usc		Soil Characteristics		Graphic Log	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	7 6 4			SILT; non-plasti	ic, dark brown, dry (TC	OPSOIL)											
0.5	4 5 6 4 6			Sandy SILT; low sand is fine to r	/ plasticity, yellow-bro medium	wn, dry,	× × × × × × × × × × × × × × × × × × ×										
1.0	9 20 Weight Bouncing			Gravelly fine to to coarse, grey, subangular EOH (T,	o coarse SAND / Sandy , dry, gravel is subrour ARGET STRATA REA	Gravel; fine nded to CHED)											
1.5		NOT ENCOUNTERED															
2.0																	
2.5																	
						LEGEND									NOT	-c	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNTERED	LL	LIQUID LI	MIT		GR	GRA	/EL				<u>L3</u>	
HA	HAND AUGER			UTP	UNABLE TO PENETR	ATE PL	PLASTIC I	IMIT		SA	SAND)			1		
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINES	S CON	ITEN	Г			
TP				UW	UNIT WEIGHT (KN	I/m ³) WC	WATER C	ONTENT		. .	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		Igam	IVIETERS BELOW GRU	JUND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.8 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test				Soil Descrinti	on						Lo	ab Te	esting	g			Shear Vane
Depth (m)	Results (Blows per	GWL			son sescripti				Sample Taken	Atter	berg L	imits	Gr	ain Si	ize	wc		Reading (kPa)
(///)	100mm)		USC		Soil Characteris	tics		Graphic Log	TUKEN	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	5			SILT; non-plasti	ic, dark brown, d	ry (TOPSOIL)												
	7																	
	11			Sandy SILT; low	v plasticity, yellow	w-brown, dry	/,	× × × × × × ×										
	20			sand is fine to r	medium			× × × × × × ×										
0.5	Weight							× × × ×										
0.5 -	Bouncing							× × × ×										
								× × × × × × × ×										
-				Gravelly fine to	coarse SAND / S	Sandy Gravel	; fine											
_				to coarse, grey,	, dry, gravel is su	brounded to)	12121212121										
-				EOH ("	TARGET STRATA	REACHED)		1										
1.0 –																		
-		٥																
-		ERE																
-		INT																
1.5 -		col																
_		L EN																
-																		
2.0 -																		
-																		
_																		
-																		
2.5 -																		
-																		
_																		
_																		
						LEG	END									NOT	 C	
DCP	DYNAMIC CON	E PENETE	ROMETE	R N/E	NOT ENCOUNT	ERED	LL		MIT		GR	GRA	/EL				<u>E3</u>	
HA	HAND AUGER		, .	UTP	UNABLE TO PE	NETRATE	PL	PLASTIC L	IMIT		SA	SANE)					
sv	SHEAR VANE			EOH	END OF HOLE		PI	PLASTICIT	TY INDEX		FC	FINES	S CON	ITEN	г			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³)	WC	WATER C	ONTENT			STAN	IDING	i GWI	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW	V GROUND L	EVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.8 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test			Soil Description Sam					Lab Testing							Shaar Vana
Depth	Results (Blows per	GWL			Son Description		Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characteristics	Graphic Log	Такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	4 3 3			SILT; non-plasti	ic, dark brown, dry (TOPSO	IL)	*									
0.5 -	4 4 4 5			Sandy SILT; low sand is fine to r	r plasticity, yellow-brown, o nedium	dry, x ×	< < <									
-	20			Gravelly fine to	coarse SAND / Sandy Grav	/el; fine										
- 1.0 - -	Weight Bouncing			subangular EOH (1	TARGET STRATA REACHED)										
- - 1.5 - -		NOT ENCOUNTERED														
2.0 -																
- 2.5 - -																
-																
			1		LE	GEND	1	1						I	I	
	ABBREVIATIONS													NOT	<u>ES</u>	
DCP	DYNAMIC CON	E PENETI	ROMETE	R N/E	NOT ENCOUNTERED	LL LIQUID	IMIT		GR	GRA	/EL					
HA sv/	HAND AUGER					PL PLASTIC			SA	SANE) S C O N		т			
SV TP	TEST PIT			UW	UNIT WEIGHT (kN/m ³)	WC WATER	CONTENT		V	STAN	IDING	GW	' L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROUNI	D LEVEL										

miyamoto. Engineers+ construction consultants

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.4	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DC	CP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test		Soil Description								Le	ab Te	esting	9			Shoar Vana
Depth	Results (Plaws par	GWL			Son Description			Sample	Atter	berg L	imits	Gr	ain Si	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characteristics		Graphic	такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 8 20			SILT; non-plasti	ic, dark brown, dry (TOPSOI	L)											
0.5 -	Weight Bouncing			Gravelly fine to to coarse, grey, <u>subangular</u> EOH (T,	o coarse SAND / Sandy Grav, , dry, gravel is subrounded t ARGET STRATA REACHEE	el; fine to D)											
- 1.0 - -																	
- 1.5 - -		NOT ENCOUNTERED															
2.0 -																	
- 2.5 - - -																	
-																	
					LEC	GEND											
DCD							יי פוויסוו	MIT		C P	CD ^'	/51			NOT	<u>ES</u>	
НА	HAND AUGER	C PENEII		N N/E UTP	UNABLE TO PENETRATE	PL	PLASTIC I	IMIT		SA	SAND	VEL D					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINES	S CON	ITEN	г			
TP	TEST PIT			UW	UNIT WEIGHT (kN/m ³)	WC	WATER C	ONTENT	-		STAN	IDING	i GWI	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROUND	LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.4 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test		Soil Description								L	ab Te	esting	g			Shear Vano
Depth (m)	Results (Blows per	GWL			son bescriptio			Sample Taken	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(///)	100mm)		usc		Soil Characteristi	cs	Graphic Log	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 5 20			SILT; non-plasti Gravelly fine tc	c, dark brown, dry	y (TOPSOIL) andy Gravel; fi	ne										
				to coarse, grey, <u>subangular</u> EOH (Ta	, dry, gravel is sub	rounded to											
1.0 -	Weight Bouncing																
- - - - -		NOT ENCOUNTERED															
2.0 -																	
2.5 -																	
						LEGEN	ID										
	ABBREVIATIONS			_ ·											NOT	<u>ES</u>	
DCP		E PENETF	ROMETE	K N/E				IMIT		GR	GRA	VEL					
HA SV	SHFAR VANE			UTP FOH	FND OF HOLF					SA FC	FINE	, s cov	ITEN	г			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³) V	VC WATER (CONTENT		V	STAN		GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW	GROUND LEV	/EL										

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	1.2 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test		Soil Description Sample Lab Testing						Shear Vane								
Depth (m)	Results (Blows ner	GWL			Son Description			Sample Taken	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(////	100mm)		usc		Soil Characteristics		Graphic Loq	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	4 3 4			SILT; non-plasti	ic, dark brown, dry (TOP	SOIL)											
0.5	4 7 16 17 13 20			Sandy SILT; low sand is fine to r	v plasticity, yellow-browi medium	n, dry,											
1.0 -	Weight Bouncing						× × × × × × × × × × × × ×										
		INTERED		Gravelly fine to to coarse, grey subangular EOH (T.	o coarse SAND / Sandy G , dry, gravel is subround ARGET STRATA REAC	ravel; fine ed to HED)											
1.5 - - -		NOT ENCOU															
2.0 -																	
2.5 -																	
					l	EGEND			1						I		
	ABBREVIATIONS														NOT	<u>ES</u>	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E			LIQUID LI	MIT		GR	GRA	VEL					
HA SV	HAND AUGER			UTP FOH		E PL PI		LIVIII TY INDEX		SA FC	SANE FINE	י ארט א		т			
TP	TEST PIT			UW	UNIT WEIGHT (kN/n	n³) WC	WATER C	ONTENT		X .	STAN		GGW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROU	IND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.9 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test		Soil Description Sample								Shoar Vano						
Depth	Results (Blows per	GWL			Son Description	,		Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	(Blows per 100mm)		USC		Soil Characteristic	s	Graphic	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 4 5			SILT; non-plasti	c, dark brown, dry	(TOPSOIL)											
- 0.5 - -	5 6 5 6 6			Sandy SILT; low sand is fine to r	[,] plasticity, yellow- nedium	brown, dry,	× × × × × × × × × × × × × × × × × × ×										
	17			Gravelly fine to to coarse, grey,	coarse SAND / Sau , dry, gravel is subr	ndy Gravel; fine rounded to											
1.0 - - -	Bouncing	ED		subangular EOH (T/	ARGET STRATA F	REACHED)	J										
- 1.5 - - -		NOT ENCOUNTERE															
- 2.0 - - -																	
2.5 - - -																	
						LEGEND									1		
ПСР		F PENETE	ROMETE	R N/F		RFD II	יי חוווסוו	MIT		GR	GRAN	/FI			NOT	<u>ES</u>	
НА	HAND AUGER			UTP	UNABLE TO PENE	ETRATE PL	PLASTIC I	limit		SA	SANE)					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINES	5 CON	ITEN	Г			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³) WC	WATER C	ONTENT			STAN	DING	G G W	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW	GROUND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincolr	Rolleston Road, Rolles	ton		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.6 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test		Soil Description Sample							Shear Vane					
Depth (m)	Results (Blows per	GWL		Son Description		Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		usc	Soil Characteristics	Graphic Loa	тикеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 4 5 5 5			SILT; non-plastic, dark brown, dry (TOPSOIL) Sandy SILT; low plasticity, yellow-brown, dry, sand is fine to medium											
0.5	20 Weight Bouncing			Gravelly fine to coarse SAND / Sandy Gravel; fine to coarse, grey, dry, gravel is subrounded to subangular EOH (TARGET STRATA REACHED)											
1.0 - - -		ERED													
1.5 - - -		NOT ENCOUNT													
2.0 -															
2.5															
<u> </u>				LEGEND									1		
DCD	ABBREVIATIONS							CP	CDAY	151			NOT	<u>ES</u>	
ил		EPENEI			ΓΙΟΟΙΟ Π ΡΙΔΟΤΙΟ Ι			GK SA	SVNL	vel ר					
SV	SHEAR VANE			EOH END OF HOLE PI	PLASTICI	TY INDEX		FC	FINE	S CON	ITEN.	т			
TP	TEST PIT			UW UNIT WEIGHT (kN/m³) WC	WATER C	ONTENT		V	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl METERS BELOW GROUND LEVEL	-										

miyamoto. Engineers+ construction consultants

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.9	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DC	CP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test		Soil Description Soil Description Sample Lab Testing Atterberg Limits Grain Size						Shear Vana								
Depth (m)	Results (Blows ner	GWL			Son Description			Sample Taken	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(///)	100mm)		usc		Soil Characteristics		Graphic Loa	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	7 7 8			SILT; non-plasti	ic, dark brown, dry (TOPSO	IIL)											
0.5 -	15 13 8 13			Sandy SILT; low sand is fine to r	ν plasticity, yellow-brown, α nedium	dry,	× × × × × × ×										
-	Weight Bouncing			Gravelly fine to to coarse, grey,	o coarse SAND / Sandy Grav , dry, gravel is subrounded	vel; fine to	X X X X X X X 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1										
1.0 -				subangular EOH (TA	ARGET STRATA REACHE	D)											
- 1.5 - -		NOT ENCOUNTERED															
2.0 -																	
2.5 -																	
-																	
	-				LE	GEND											
202								N ALT		<u></u>	<u></u>				NOT	<u>ES</u>	
DCP на	DYNAMIC CON	E PENETI	KOMETE	к N/E ПТР	NUT ENCOUNTERED	LL PI	LIQUID LI	MIT		GR SA	GRA	VEL D					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICIT	TY INDEX		FC	FINE	S CON	ITEN	г			
TP	TEST PIT			UW	UNIT WEIGHT (kN/m ³)	WC	WATER C	ONTENT			STAN	IDING	G G W	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROUNI	D LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincolr	Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.9 r	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP		SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test		Soil Description Sample						Shoar Vano									
Depth	Results (Blows per	GWL			Son Descript	1011			Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		usc		Soil Characteri	stics		Graphic	такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	3 4 3 5			SILT; non-plast Sandy SILT; lov	ic, dark brown, d v plasticity, yellc	dry (TOPSOII	L) , , , , , , , , , , , , , , , , , , ,											
- 0.5 -	7			sand is fine to	medium		:	× × × × × × × × × × × ×										
-	Weight Bouncing						:	× × × × × × × × × × × × × × ×										
- 1.0				Gravelly fine to to coarse, grey subangular EOH (T	o coarse SAND / , dry, gravel is su ARGET STRAT	Sandy Grave ubrounded t A REACHEC	el; fine to D)											
- - - 1.5 - - -		NOT ENCOUNTERED																
2.0 -																		
2.5 -																		
						LEG	GEND									1		
DCP HA SV TP GWL	ABBREVIATIONS DYNAMIC CON HAND AUGER SHEAR VANE TEST PIT GROUNDWATE	E PENETF	ROMETE	R N/E UTP EOH UW mbgl	NOT ENCOUN UNABLE TO PE END OF HOLE UNIT WEIGHT METERS BELO	TERED ENETRATE · (kN/m³) DW GROUND	LL PL PI WC	LIQUID LI PLASTIC L PLASTICIT WATER C	MIT LIMIT IY INDEX ONTENT		GR SA FC V	GRAN SANE FINES STAN	VEL D S CON IDING	NTEN GWI	T L	<u>NOT</u>	<u>ES</u>	

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.5	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DC	P	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test			Soil Description		Lab Testing			Shoar Vano						
Depth (m)	Results (Blows per	GWL		Son Description		Sample Takon	Atter	berg L	imits	Gr	rain S	ize	wc		Reading (kPa)
(///)	100mm)		USC	Soil Characteristics	Graphic Log	Taken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	4			SILT; non-plastic, dark brown, dry (TOPSOIL)											
-	6 15			Sandy SILT; low plasticity, yellow-brown, dry, sand is fine to medium	× × × × × × × × × × × × × × ×										
0.5 -	Weight Bouncing			Gravelly fine to coarse SAND / Sandy Gravel; fir to coarse, grey, dry, gravel is subrounded to subangular	1e										
				EOH (TARGET STRATA REACHED)											
1.0 -		0													
- - 1.5 - -		NOT ENCOUNTERED													
- 2.0 - -															
 2.5 															
-															
			L	LEGEN	D	• 		·		·	ı			ı	
	ABBREVIATIONS												NOT	ES	
		E PENETF	ROMETE	R N/E NOT ENCOUNTERED LL	LIQUID L			GR	GRA	VEL					
HA SV	SHEAR VANF					TY INDFX		FC	FINE	י א כסא	NTEN.	т			
TP	TEST PIT			UW UNIT WEIGHT (kN/m³) W	C WATER (CONTENT		X	STAN		GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl METERS BELOW GROUND LEV	EL										

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.4	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + D	СР	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test			Soil Description			Lab Testing Shear Vi							Shoar Vana			
Depth (m)	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		USC		Soil Characteristics		Graphic Loa	тикеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	3 7 15			SILT; non-plasti	ic, dark brown, dry (TOPS	GOIL)											
	20	1		Gravelly fine to	coarse SAND / Sandy Gr	avel; fine											
0.5 -	Weight Bouncing			subangular EOH (T.	ARGET STRATA REACH	IED)											
1.0 -		RED															
		NOT ENCOUNTER															
2.0 -																	
2.5 -																	
l						EGEND										<u> </u>	
DCP	ABBREVIATIONS	E PENETF	ROMETE	R N/E		LL		MIT		GR	GRA	VEL			<u>NOT</u>	<u>ES</u>	
HA	HAND AUGER	/		UTP	UNABLE TO PENETRATE	E PL	PLASTIC L	IMIT		SA	SANE	5					
sv	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICIT	TY INDEX		FC	FINES	S CON	ITEN	г			
TP	TEST PIT			UW	UNIT WEIGHT (kN/m	3) WC	WATER C	ONTENT			STAN	IDING	6 GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROUI	ND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.3	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + D	СР	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test				Soil Descriptio	n			Lab Testing				Shear Vane				
Depth (m)	Results (Blows per	GWL			Son Descriptio	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Sample Taken	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(///)	100mm)		usc		Soil Characterist	ics	Graphic Log	Taken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 5 15 Weight			SILT; non-plasti Gravelly fine to to coarse, grey subangular	ic, dark brown, dr o coarse SAND / Sa , dry, gravel is sub	y (TOPSOIL) andy Gravel; find prounded to	2										
	Bouncing			EOH (T	ARGET STRATA	REACHED)											
0.5 -																	
-																	
1.0 -																	
-																	
-		ERED															
- 1.5 -	• •	COUNT															
-		DT EN(
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2.0 -																	
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2.5 -																	
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						LEOENE											
	ABBREVIATIONS	;				LEGENL	1								NOT	ES	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNTE	ERED LL	LIQUID L	IMIT		GR	GRA	VEL					
HA	HAND AUGER			UTP	UNABLE TO PEN	NETRATE PL	PLASTIC	LIMIT		SA	SAND	C					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINE	S CON	ITEN	Т.			
TP	IEST PIT	RIEVEI		UW	UNIT WEIGHT	(KN/m²) W(U WATER C	ONTENT		.	STAN	IDING	i GW	L			
UWL	SNOONDWAIL			inogi			-								1		

Borelog for well M36/3868

Grid Reference (NZTM): 1552494 mE, 5171203 mN Location Accuracy: 10 - 50m Ground Level Altitude: 38.4 m +MSD Accuracy: < 2.5 m Driller: McMillan Drilling Ltd Drill Method: Rotary/Percussion Borelog Depth: 36.8 m Drill Date: 18-Jan-1988



	Water			Formation
Scale(m)	Level	Depth (m)	Full Drillers Description	Code
H		0.30m 0000000000000000000000000000000000	Grey gravels	SP
5			Sand and gravels with some clay	SP-RI
10				
15				
20			Free gravels and sand	RI-LI
25				
30				
		36.79m		

miyamoto.

Borelog for well M36/7975

Grid Reference (NZTM): 1552317 mE, 5171001 mN Location Accuracy: 50 - 300m Ground Level Altitude: 37.7 m +MSD Accuracy: < 2.5 m Driller: Dynes Road Drilling Drill Method: Cable Tool Borelog Depth: 37.5 m Drill Date: 05-Sep-2005







Borelog for well M36/4966

Grid Reference (NZTM): 1552787 mE, 5171550 mN Location Accuracy: 50 - 300m Ground Level Altitude: 38.6 m +MSD Accuracy: < 2.5 m Driller: McMillan Drilling Ltd Drill Method: Rotary/Percussion Borelog Depth: 48.0 m Drill Date: 18-Aug-1995





r

48.00r



Borelog for well BX23/0533

Grid Reference (NZTM): 1552674 mE, 5171682 mN Location Accuracy: 10 - 50m Ground Level Altitude: m +MSD Accuracy: Driller: East Coast Drilling Drill Method: Air Rotary Borelog Depth: 48.0 m Drill Date: 20-Nov-2015



Water Formation Scale(m) Level Depth(m) Full Drillers Description Code Brown TOPSOIL. Unsaturated (dry or 0.50m moist). Grey GRAVEL (2 - 60 MM). 0000 Unsaturated (dry or moist). 3.00m Grey sandy GRAVEL (2 - 60 MM). Unsaturated (dry or moist). 5 10 13.79 13.70 15 19.00m Brown clayey GRAVEL (2 - 60 MM). 20 Unsaturated (dry or moist). 23.00m Brown clayey GRAVEL (2 - 60 MM) with some sand. Saturated (water-bearing). 25 30 ٤ 31.00m Light brown GRAVEL (2 - 60 MM). Saturated (water-bearing). 35 40 45

48.00m





TEST PIT RECORD

TEST PIT NO.

254246 PROJECT NO.

TP7

PROJEC	⊤ Brar	thwaite Drive						
METHOD) TP		CO-ORDINATES (NZTM)	LOGGED		CHEC	CKED	
MACHINE & NO. Wheeled Excavator		Wheeled Excavator	E 1552186 N 5171475	T. MITCHELL		A. HILLS		
CONTRA	CTOR	Maugers	GROUND LEVEL +37.00 m RI	DATE		DATE		
		indugero		22/11/2016		2/12/2	2016	
		STF	RATA		SAM	1PLE	S & TESTS	
Depth (m)	Legend		Description		Depth	No	Remarks/Tests	
0.50	$=\frac{\sqrt{1/2}}{\sqrt{1/2}}$ $=\frac{\sqrt{1/2}}{\sqrt{1/2}}$ $=\frac{\sqrt{1/2}}{\sqrt{1/2}}$ $=\frac{\sqrt{1/2}}{\sqrt{1/2}}$	SILT with minor sand and trace of (TOPSOIL)	rootlets; dark brown. Moist, low plasticit	y; sand, fine.				
		SILT; light brown with orange-grey	mottles. Moist, low plasticity.					

	1.40	IX >		
	-	000	Fine to c subround	oars ded
	1.70	°~~``		
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Dat	-			
GLB	-			
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Jibran	-			
PJ II L	-			
GS.GI	-			
ЕLO	-			
DRIV	-			
AITE				
THW	-			
BRAN	-			
oject:	-			
Pro	-			
MAP)	-			
N NO				
(ETC	GENERA	AL R	EMARK	S
NO S	SHORIN	G/SL	JPPORT:	Ν
RD (I	STABILI	ΓY: (Generally	/ St
RECO	Groundwa	ter no	t encounte	ered
T PIT	Coordinate Ground lev	es fou /el fou	nd using h und using l	hand
t TES			-	
AGS				
ort ID:	All dimons	ione i	n metros	CL
Repo			mitod Total	Form
	Autecon New Zes		meu,,. rel: l	ах.

x

SHORING/SUPPORT: None STABILITY: Generally Stable

Groundwater not encountered. Coordinates found using handheld GPS, likely accurate to +/- 5 m. Ground level found using handheld GPS, likely accurate to +/- 10 m.

1.20 - 1.40 Becomes with minor sand.

Fine to coarse GRAVEL with minor sand, silt and cobbles; brownish grey. Moist, subrounded to rounded; sand, fine to medium.

End of Trial pit/trench at 1.70m, on 22/11/2016 *Termination Reason:* Target depth acheived.

All dimensions in metres	CLIENT GW Rolleston Ltd.	PP	Pocket Penetrometer Test Insitu Vane Shear Test	Vater Level


TEST PIT NO.

TP10

251216 . . .

					PROJEC	I NO.	25	4246
PROJECT	Brai	nthwaite Drive						
METHOD	TP		CO-ORDINATES (NZTM)	LOGO	GED		CHE	CKED
	8. NO	Wheeled Excavator	E 1552053	Т. МІТ	TCHELL		A. HII	LS
	ano.		N 5171529		:		DATE	:
CONTRAC	CTOR	Maugers	GROUND LEVEL +43.00 m RI	22/11/	/2016		2/12/2	2016
			STRATA			SAN	/IPLE	S & TESTS
Depth (m)	Legend		Description			Depth	No	Remarks/Tests
0.25	<u>1/ 1/ 1/</u>	SILT with minor sand and son (TOPSOIL)	ne rootlets; dark brown. Moist, low plasticity;	sand, f	ine.			
0.70		SILT with minor sand; light bro	own. Moist, low plasticity; sand, fine.					
160		Fine to coarse GRAVEL with s sand, fine to coarse.	some sand; greyish brown. Moist, subround	ed to ro	unded;			
		End of T <i>Termina</i>	rial pit/trench at 1.60m, on 22/11/2016 ation Reason: Target depth acheived.					

Report ID: AGS4 TEST PIT RECORD (NO SKETCH NO MAP) || Project: BRANTHWAITE DRIVE LOGS.GPJ || Library: AGS 4_0.GLB || Date: 5 December 2016 **GENERAL REMARKS** SHORING/SUPPORT: None STABILITY: Generally Stable Groundwater not encountered. Coordinates found using handheld GPS, likely accurate to +/- 5 m. Ground level found using handheld GPS, likely accurate to +/- 10 m.



TEST PIT NO.

TP23

PROJECT NO. 254246

PROJECT Branthwaite Drive

METHOD TP		CO-ORDINATES (NZTM)	LOGGED		CHEC	KED
		E 1552359	T. MITCHELL		A. HIL	LS
MACHINE & NO	Wheeled Excavator					-
		N 5171660	DATE		D 4 T F	
			DATE		DATE	
CONTRACTOR	Maugers	GROUND LEVEL +43.00 m	RL 23/11/2016		5/12/2	016
	STF	RATA		SAM	1PLE	S & TESTS
Depth (m) Legend		Description		Depth	No	Remarks/Tests

	All dimer	nsions i	n metres CLIENT GW Rolleston Ltd.	▷▷ Pocket Penetrometer Test ↓ Insitu Vane Shear Test	Water Level	_	
L: AGV4				1			
	Groundw Coordina Ground le	ater no tes fou evel fou	t encountered. nd using handheld GPS, likely accurate to +/- 5 m. nd using handheld GPS, likely accurate to +/- 10 m.				
	STABIL	ITY: (Generally Stable				
O SKE I		KAL RI NG/SU	EMARKS IPPORT [.] None				
2	051155						
MAP)							
LI UC		-					
CI: DY							
		-					
AIE		-					
J HIVE		-					
-069.		-					
		-					
DIaly. A							
		-					
פרם		-					
Dale: 0		-					
בפרפו		-					
		-					
D		-					
	1.60	-	End of Trial pit/trench at 1.60m, on 23/ <i>Termination Reason:</i> Target depth ac	11/2016 neived.			
	1 60						
		-°0 - - 0 0					
		-00	1.00 Becomes with no rootlets; greyish brown.				
		00	boulders; brown. Dry, subrounded to rounded; sand, fine to	coarse.			
	0.50	- · . · .× · × · .	Fine to course ODAV/CL with some cond, miner aphbles, tra	as of restlate and associanal			
	0.25	_ <u>// \//</u> _×	(TOPSOIL) Silty fine SAND with trace of rootlets: brown. Drv.				
			SILT with minor sand and rootlets; dark brown. Moist, low pl	asticity; sand, fine.			

Aurecon New Zealand Limited, , . Tel: Fax:



TEST PIT NO.

TP24

PROJECT NO. 254246

PROJECT Branthwaite Drive

METHOD	TP		CO-ORDINATES (NZTM)		LOGGED		CHEC	CKED
			E 1552208		T. MITCHELL		A. HIL	LS
MACHINE	& NO.	Wheeled Excavator	N 5171608		DATE		D 4 T D	
CONTRAC		Maugara		m DI	DATE		DATE	
CONTRAC	TUR	Maugers			23/11/2016		5/12/2	2016
		STF	RATA			SAN	/PLE	S & TESTS
Depth (m)	Legend		Description			Depth	No	Remarks/Tests
	N/2 N	SILT with minor cond and tree root	a (up to 10 mm); dark brown Maiot	t low	plaatiait <i>u</i>			

0.20		sil I with minor sand and tree roots (up to 10 mm); dark brown. Moist, low plasticity;	
0.20	- ×	SILT with minor sand; brown. Moist, low plasticity; sand, fine.	
	-× ×		
	lî x î		
0.80	- x	Fine to coarse GRAVEL with some sand, minor cobbles and trace of rootlets: light	
	100	brown. Moist, subrounded to rounded; sand, medium.	
	-000		
		1.20 Becomes with no rootlets.	
	00		
	-000		
1.70			
	-	End of Trial pit/trench at 1.70m, on 23/11/2016 Termination Reason: Target depth acheived.	
	_		
	-		
	-		
	-		
	_		
	-		
3			
=	-		
5			
	_		
1	_		
	_		
	-		
5			
	-		
<u> </u>	_		
GENE	RAL R	EMARKS	
SHORI	NG/SU	JPPORT: None	
STABIL	ITY: C	Generally Stable	
Ground	vator no	t encountered	
Coordina	ates fou	nd using handheld GPS, likely accurate to +/- 5 m.	
Ground	level fou	und using handheld GPS, likely accurate to +/- 10 m.	
All dime	nsions i	n metres CLIENT GW Rolleston Ltd.	

Aurecon New Zealand Limited, , . Tel: Fax:



TEST PIT NO.

TP25

wv	w.aure	econgroup.com					PROJEC	T NO.	25	4246
PROJECT	Brar	nthwaite Drive								
METHOD	ΤР		CO-ORDINATES	G (NZTM)		LOG	iGED		CHEC	CKED
MACHINE	& NO.	Wheeled Excavator	E 1552490			T. M	ITCHELL		a. Hil	LS
CONTRAC	TOR	Maugers	GROUND LEVEL	+44.00	m RL	DAT 23/1	E 1/2016		DATE 5/12/2	<u>-</u> 2016
			STRATA					SAM	PLE	S & TESTS
Depth (m)	Legend		Descriptior	1				Depth	No	Remarks/Tests
-	$\frac{x^{1} l_{y}}{l_{y}} \propto \frac{1}{x^{1} l_{y}}$	SILT with minor sand and roo (TOPSOIL)	tlets; dark brown. Moist,	low plasticity	y; sand, l	fine.				
	× × × ×	SILT with some sand; brown.	Moist, low plasticity; san	d, fine.						
0.70	× × 0000000000000000000000000000000000	Fine to coarse GRAVEL with a subrounded to rounded; sand 0.70 - 0.80 Sand becomes me 1.30 Becomes with no rootlets	some sand and trace of , fine to medium. edium to coarse, light bro	rootlets; brov own.	wnish gro	ey. M	oist,			
1.60 		End of T <i>Termin</i> a	rial pit/trench at 1.60m, o ation Reason: Target dep	on 23/11/201 oth acheived	l6					
GENERA SHORING STABILIT Groundwar Coordinate	AL RE G/SU TY: C ter not	EMARKS PPORT: None Senerally Stable t encountered. Ind using handheld GPS. likely	accurate to +/- 5 m.							·

Ground level found using handheld GPS, likely accurate to +/- 10 m.

Report ID: AGS4 TEST PI ▷▷ Pocket Penetrometer Test ↓ Insitu Vane Shear Test CLIENT GW Rolleston Ltd. Water Level All dimensions in metres

		Tla	ndTech	Client: Project:	Hank Developments Limited Proposed Subdivision							Augerhole N	lo.	HA01
0	-	6 0	NSULTING	Address:	7/572 Selwyn Road, Rollesto	n						Sheet No.		1 of 1
Dri ll Dri ll e Date Date	Type: ed By: Starte Finish	id: ied:	8 Ton Excavator BE 6-Apr-18 6-Apr-18		Project No: Coordinates: Ground Conditions: Groundwater Level (m)	LTCL18051 NZTM: 155 Grassed, N Not Encour	2177 ear le	mE, 51 vel (6-Apr	171418 mN 18)		Logged By: Shear Vane Calibration F Calibration I	No: Factor: Date:		BE N/A N/A N/A
,							(m)				In-situ Fie	d Testing		
igraphi	th (m)	hic Log	Soil description in a Description of Soil and F	accordance with Rock for Engine	n Guideline for the Field Classific ering Purposes, NZ Geotechnic	cation and al Society Inc.,	ter Lev	th (m)	Shear Stre	ength (kPa)	[)ynamic Con	e Penetro	meter
Strat	Dep	Grap			2005		undwa	Dep	Peak:	_	ш ц	Count	Scala	Blow Count / 100mm
							Gro		Remoulded:	•	Dept	Blow (0 5	10 15 20
SOIL		\Diamond	SILT, minor fine sand, plastic [TOPSOIL]	minor organi	cs, dark brown, medium den	se, moist, nor					-0.1	3	•	
TOPS		\searrow									-0.2 -0.3	4		
		× × × >	SILT, minor fine sand,	yellowish bro	wn, dense, moist, non-plasti	c [RIVER					-0.4	7		
	0.5	× × × > × × × >						0.5			-0.5	8		
		*									-0.6	10		
			Fine to coarse subrou subrounded greywack	nded greywad	cke gravelly fine to coarse SA	AND, trace					-0.8	25 +		
				, <u>j</u>	-,,						-0.9			
	1.0							1.0			1.1			
			.			<i>r</i>					-1.2			
SITS		A ST	Fine to coarse subrou coarse sand, greyish l	nded greywad orown, tight l y	packed, moist	tine to					-1.3			
DEPO	1.5	XA						1.5			-1.5			
RIVER			Fine to coarse subrou subrounded greywack	nded greywad e cobbles, gre	cke gravelly fine to coarse S/ eyish brown, tightly packed, I	AND, trace moist		_			-1.6			
ш	_			-							-1.7			
											-1.9			
	2.0							2.0			-2.0			
											-2.1 -2.2			
											-2.3			
											-2.4			
	2.5							2.5			-2.5 -2.6			
	_	and a first		End of	Test Pit (2.6m)			_			-2.7			
											-2.8			
	3.0							3.0			-2.9 -3.0			
	5.0							5.0			-3.1			
											-3.2			
											3.3			
	3.5							3.5			-3.5			
	_						1				-3.6			
	_						1	-			-3.8			
							1				-3.9			
	4.0						1	4.0			-4.0			
							1	-			-4.2			
							1				-4.3			
							1				4.4			
	4.5						1	4.5			-4.6			
							1	_			-4.7			
	_						1				-4.8 -4.9			
	5.0							5.0			5.0			
							[In-situ field testing Scala Penetromete	in accordance wi er Testing: NZS 4	th the fo t owing Star 402:1988, Test 6.5	ndards: 2. Dynamic Cone	Penetrometer	
							[Shear Vane Testir	ng: Guideline for H	land He l d Shear Va	ne Test, NZGS, A	ugust 2001	

	N	T la	ndTech	Client: Project:	Hank Developments Limited Proposed Subdivision							Augerhole N	lo.	HA02
Dri ll Dri ll e Date	Type: d By: Starte	ed:	N S U L T I N B 8 Ton Excavator BE 6-Apr-18	Address:	7/572 Selwyn Road, Rolleston Project No: Coordinates: Ground Conditions:	LTCL18051 NZTM: 1553 Grassed, No	2207 r ear lev	nE, 51 /el	171344 mN		Logged By: Shear Vane Calibration F	Sheet No. No: Factor:		1 of 1 BE N/A N/A
Date	Finish	ned:	6-Apr-18		Groundwater Level (m):	Not Encoun	E E	(6-Apr	-18)		Calibration I	Date:		N/A
aphy	(m)	: Log	Soil description in a	accordance with	h Guideline for the Field Classifica	ation and	Leve	(E)			l r)unamia Con	o Bonotrom	tor
Stratigr	Depth	Graphic	Description of Soil and F	Rock for Engine	eering Purposes, NZ Geotechnica 2005	Society Inc.,	idwater	Depth	Snear Stren	igtn (KPa)	Ê	synamic con	Scala B	ow Count / 0mm
		0					Grour		Remoulded:	•	Depth	Blow Co	0 5 1	.0 15 20
SOIL		\bigotimes	SILT, minor fine sand, plastic [TOPSOIL]	minor organi	cs, dark brown, medium dens	ə, moist, non					-0.1 -0.2	3 3	•	
TOF		$\times \times$									-0.3	4		
	0.5	× × × > × × × >	SILT, minor fine sand, dense, moist, non-plas	trace subrou stic [RIVER D	nded greywacke gravel, yellov EPOSITS]	wish brown,					-0.4	7		
	0.5	<						0.5			-0.6	11		
		× × × > < × × >						_			-0.7	12)
	_	<									-0.8	19		
	1.0	× × × > 	-	44				1.0			-1.0	25 +		
SITS	-	2. Ç. Ç.	Fine to coarse sandy i to minor subrounded g	ine to coarse greywacke co	bles, greyish brown, tightly p	VEL, trace acked, moist		_			-1.1			
DEPC		XQ4									-1.3			
RIVER	_	207						_			-1.4			
	1.5	X ÇA						1.5			-1.6			
		A P									-1.7			
	_	XA						_			-1.8 -1.9			
	2.0	Þ.						2.0			-2.0			
		XA						_			-2.1			
	_	M		End of	Test Pit (2.2m)						-2.2			
											-2.4			
	2.5							2.5			-2.5 -2.6			
											-2.7			
								_			-2.8			
	3.0							3.0			-2.9 -3.0			
								0.0			-3.1			
	_							-			-3.2			
	_							_			-3.4			
	3.5							3.5			-3.5			
	_										-3.6 -3.7			
											-3.8			
	_							_			-3.9 -4.0			
	4.0							4.0			4.1			
								_			-4.2			
	_							_			4.3			
	4.5							4.5			-4.5			
											-4.6			
								-			4.8			
								_			-4.9			
	5.0							5.0	n-situ field testing in	accordance wi	-5.0 th the following Star	ndards:		
									Scala Penetrometer Shear Vane Testing:	Testing: NZS 4- Guideline for H	402:1988, Test 6.5 land Held Shear Va	2, Dynamic Cone ne Test, NZGS, A	Penetrometer ugust 2001	

	N	Tla	Client: Hank Developments Limited Project: Proposed Subdivision					Augerhole N	No. HA03
	-	C 0	Address: 7/572 Selwyn Road, Rolleston					Sheet No.	1 of 1
Drill Drille	Type: ed By:		8 Ton Excavator Project No: LTCL1805 ⁻ BE Coordinates: NZTM: 155	2231	mE. 5'	171302 mN	Logged By: Shear Vane	No:	BE N/A
Date	Starte	ed:	6-Apr-18 Ground Conditions: Grassed, N 6 Apr 19 Croundwater Land (m): Not Enseur	ear le	vel	- 10)	Calibration	Factor:	N/A
Date	Finisi	ieu:	6-Apr-18 Groundwater Lever (m): Not Encour	iterea	(6-Ap	-18)	Calibration	Date:	N/A
				(E			In-situ Fi	eld Testing	
aphy	(E)	Log	Soil description in accordance with Guideline for the Field Classification and	Leve	Ē			-	Deseterentes
tratign	Jepth	raphic	Description of Soil and Rock for Engineering Purposes , NZ Geotechnical Society Inc. 2005	water	Depth	Shear Strength (kPa)	Ê	E E	Scala Blow Count /
S		0		ground		Peak:	= bth (r	v Cou	Toomm
		~ ~	SILT minor fine sand minor organics, dark brown, medium dense, moist, nor			0	<u> </u>	8	0 5 10 15 20
soll		\times	plastic [TOPSOIL]		-		-0.2	2	7
TOF		$\sim\sim$					-0.3	4	
		× × × >	SILT, minor fine sand, yellowish brown, dense, moist, non-plastic [RIVER DEPOSITS]				-0.4	6	
	0.5	× × × > × × × >			0.5		-0.5	10	
		< × × > × × × >					-0.6	25 +	
		<					-0.8		
		<u>S</u> S.	Fine to coarse sandy, fine to coarse subrounded greywacke GRAVEL, trace	1]	-0.9		
	1.0	()A	sussessed occurre, ground order, lighty publicu, moist		1.0		-1.0		
S	_	201°			-		-1.1		
POS		AN X			_		-1.2		
R DE		27A					-1.4		
RIVE	1.5	20~			1.5		-1.5		
					_		-1.6		
		R.					-1.7		
		í W			-		-1.0		
	2.0	DY4			2.0		-2.0		
		49 Y					-2.1		
		XA					-2.2		
		M	End of Test Pit (2.3m)				-2.3		
	25				25		-2.5		
	2.0				2.0		-2.6		
							-2.7		
							-2.8		
							-2.9		
	3.0				3.0		3.1		
							-3.2		
	_				_		-3.3		
					-		-3.4		
	3.5				3.5		-3.6		
	-				-]	-3.7		
					_		-3.8		
					_		-3.9		
	4.0				4.0		-4.0		
					-		-4.2		
]	-4.3		
					_		-4.4		
	4.5				4.5		-4.5		
					-		-4.6 -4.7		
	-				-		-4.8		
]	-4.9		
	5.0				5.0		-5.0		
						In-situ field testing in accordance Scala Penetrometer Testing: NZS	with the following Sta	ndards: -2, Dynamic Cone	Penetrometer
						- Shear Vane Testing: Guideline fo	r Hand Held Shear V	ane Test, NZGS, /	Nugust 2001

	N	T La	andTech	Client: Hank Developments Limited Project: Proposed Subdivision						Augerhole N	lo.	HA04
D-(6 0	IN SULTING	Address: 7/572 Selwyn Road, Rolleston	1 701 40054				Laura Du	Sheet No.		1 of 1
Drill Drille Date	Type: ed By:		BE	Project No: Coordinates:	NZTM: 1552	2136	nE, 51	171389 mN	Logged By: Shear Vane	No:		BE N/A
Date	Finish	ied:	6-Apr-18 6-Apr-18	Groundwater Level (m):	Not Encoun	ear le tered	/ei (6-Api	-18)	Calibration	Pactor: Date:		N/A N/A
						Ê			In-situ Fid	ald Testing		
aphy	(m)	Log	Soil description in a	ccordance with Guideline for the Field Classifica	tion and	Level ((u)				- Davide a	-
itratigra	Depth	àraphic	Description of Soil and R	lock for Engineering Purposes , NZ Geotechnica 2005	Society Inc.,	dwater	Depth	Shear Strength (kPa)	Ê	Dynamic Con	Scala B	eter low Count /
05		0				Ground		Peak: Remoulded: •	Jepth (ow Col	0 5	10 15 20
ے ا		\propto	SILT, minor fine sand,	minor organics, dark brown, medium dense	e, moist, non				-0.1	3		10 10 10
LOPSC		$\sim\sim$	plastic [TOPSOIL]				_		-0.2	4	Ì	
-	-	$\times \times \times \times$	SILT, minor fine sand,	yellowish brown, dense, moist, non-plastic	[RIVER		-		-0.3	3		
	0.5	< × × > < × × >	DEPOSITS]				0.5		-0.5	10	٩	
		× × × > A Z(Fina to coarso sandy f	ing to coarse subrounded growwacke GRA	VEL traco				-0.6	12		
		7. Þ. Ý	to minor subrounded g	reywacke cobbles, greyish brown, tightly pa	acked, moist				-0.7	25 +		
		4. Qā]	-0.9			
	1.0	XX-					1.0		-1.0			
SITS	-	52.Ja							-1.1			
DEPO		AL.							-1.3			
RIVER		QG					_		-1.4			
	1.5	H.					1.5		-1.5 -1.6			
		04a							-1.7			
		201ª							-1.8			
	_	(YX							-1.9			
	2.0	DY4					2.0		2.0			
		494							-2.2			
				End of Test Pit (2.2m)					-2.3			
	2.5						2.5		2.4			
									-2.6			
	_								-2.7			
									-2.8			
	3.0						3.0		-3.0			
									-3.1			
	_								-3.2			
1								1	-3.4			
1	3.5						3.5		-3.5			
	-								-3.6 -3.7			
									-3.8			
1							_		-3.9			
	4.0						4.0		4.0			
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]						_		-4.3			
									4.4			
	4.5						4.5		-4.6			
1]						_		-4.7			
1	_								-4.8			
	5.0						5.0		-5.0			
								In-situ field testing in accordance with Scala Penetrometer Testing: N75 44	h the following Sta	ndards: 2. Dynamic Cono	Penetrometor	
								Shear Vane Testing: Guideline for H	and Held Shear Va	ane Test, NZGS, A	ugust 2001	

	N	Tla	Client: Hank Developments Limited Project: Proposed Subdivision						Augerhole N	lo. HA07	
ł	-	C O	NSULTING Address: 7/572 Selwyn Road, Rolleston						Sheet No.	1 of 1	
Drill [·] Drille	Type: d By:		8 Ton Excavator Project No: LTCL1805' BE Coordinates: NZTM: 155	l 2139 i	mE, 51	71345 mN		Logged By: Shear Vane	No:		BE N/A
Date Date	Starte	ed: ned:	6-Apr-18 Ground Conditions: Grassed, N 6-Apr-18 Groundwater Level (m): Not Encour	lear le	vel (6-Apr	-18)		Calibration F	actor:		N/A
Duto				1	(0 / 4)	,		Galibration	Sulo.		14/74
		_		el (m)				In-situ Fie	eld Testing		
graphy	th (m)	nic Log	Soil description in accordance with Guideline for the Field Classification and Description of Soil and Rock for Engineering Purposes. NZ Geotechnical Society Inc.	erLev	(m) ti	Shear Strength	n (kPa)	[Oynamic Con	e Penetrometer	
Strati	Dept	Grapt	2005	Indwat	Dept	Peak: —		(m) (ount	Scala Blow Count 100mm	:/
				Grot		Remoulded:	•	Dept	Blow C	0 5 10 15	20
OIL	_	$\langle \rangle \rangle$	SILT, minor fine sand, minor organics, dark brown, medium dense, moist, nor plastic ITOPSOILI	1-				-0.1	3	•	
TOPS	_	$\sim\sim$			-			-0.2	3	•	
		\times \times \times \rightarrow	SILT, minor fine sand, yellowish brown, dense, moist, non-plastic [RIVER					-0.4	6		
	0.5	× × × > × × × >	DEPOSITSJ		0.5			-0.5	8		
		×××>	Fine to coarse sandy fine to coarse subrounded greywacke gravel, greyish	-	-			-0.6 -0.7	11 25 +		
	_	79X	brown, tightly packed, moist [RIVER DEPOSITS]		_			-0.8			
	_	X7ª	trace to minor subrounded grownske cabbles		_			-0.9			
	1.0	2. V	urace to minor Subjounded greywacke CUUDIES		1.0			-1.0 -1.1			-
		794						-1.2			
SITS	_	204						-1.3			
DEPO	15	XQ			15			-1.4			
IVER I		20y						-1.6			_
R	_	XA			-			-1.7			
	_	ÃQ-						-1.9			
	2.0	2.Ca			2.0			-2.0			_
	_	H.			-			-2.1 -2.2			
								-2.3			
	_	De Series			_			-2.4			
	2.5	Q Ga			2.5			-2.5			_
		12 3 7 3	End of Test Pit (2.6m)		_			-2.7			
								-2.8			
	3.0				3.0			-2.9			
	_				_			-3.1			
	-				-			-3.2			
	_				-			-3.4			
	3.5				3.5			-3.5			
	-				-			-3.6 -3.7			
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	4.0				4.0			-4.0 -4.1			_
								-4.2			
	-							-4.3			
	4.5				4.5			-4.5			
	_				_			-4.6			
	-				-			-4.7 -4.8			
	-				-			-4.9			
	5.0				5.0	la site fatter et "	and	-5.0	denter		
						In-situ field testing in acc Scala Penetrometer Tesi	ting: NZS 44	n the tollowing Star 102:1988, Test 6.5.	n <u>oards:</u> 2, Dynamic Cone	Penetrometer	
						Shear Vane Testing: Gui	ideline for H	and Held Shear Va	ne Test, NZGS, A	ugust 2001	

Drill Type Drilled By Date Stal Date Fini (III) Date Fini (III) Date Fini (III) Date Stal Date Fini (III) Date Stal Date Stal	be: By: arted: nished: (U) und graph (U) und graph (U) (U) (U) (U) (U) (U) (U) (U) (U) (U)	8 Ton Excavator BE 6-Apr-18 6-Apr-18 Soil description in a Description of Soil and I SILT, minor fine sand [TOPSOIL] SILT, minor fine sand	accordance with Rock for Engine	Project No: Coordinates: Ground Conditio Groundwater Lev n <i>Guideline for the Field</i> 0 vering Purposes , NZ Geo 2005 cs, dark brown, loose,	LTCL18 NZTM: rs: Grassev rel (m): Not Enc Vassification and technical Society I moist, non-plast	051 1552187 d, Near Id sountered (E) lake nc., (E) lake (C) lake (7 mE, 51 evel d (6-Apr (E) the D	71307 mN -18) Shear Strength (kPa) Peak: Remoulded: 0	Logged By: Shear Vane Calibration F Calibration L In-situ Fie	No: Factor: Date: dd Testing Dynamic Con	he Penetromo Scala B 10 0 5
TOPSOIL Stratigraphy	Graphic Log	Soil description in a Description of Soil and I SILT, minor fine sand [TOPSOIL] SILT, minor fine sand	accordance with Rock for Engine , minor organi	n Guideline for the Field (vering Purposes , NZ Geo 2005 cs, dark brown, loose,	Classification and technical Society ∣ moist, non-plast	o Groundwater Level (m)	Depth (m)	Shear Strength (kPa) Peak: 0 0	In-situ Fie	Dynamic Con	ne Penetrom Scala B 10 0 5
- TOPSOIL		SILT, minor fine sand [TOPSOIL] SILT, minor fine sand	, minor organi	cs, dark brown, loose,	moist, non-plast	ic	_		-0.1 -0.2	2 2	•
- - - - - - - - - - - - - - - - - - -		[RIVER DEPOSITS]	, yellowish bro	own, medium dense, m subrounded greywack eyish brown, tightly pa	oist, non-plastic	e			-0.3 -0.4 -0.5 -0.6 -0.7 -0.8 -0.9 -1.0 -1.1 -1.2 -1.3 -1.4 -1.5 -1.6 -1.7 -1.8 -1.9 -2.0 -2.1	3 4 5 8 8 7 8	

-2.5

-2.6 -2.7

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-3.0 -3.1

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-4.0 -4.1

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-4.3 -4.4

-4.5 -4.6

-4.7 -4.8

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-5.0

Scala Penetrometer Testing: NZS 4402:1988, Test 6.5.2, Dynamic Cone Penetrometer Shear Vane Testing: Guideline for Hand Held Shear Vane Test, NZGS, August 2001

In-situ field testing in accordance with the following Standards:

10 15 20

BE N/A N/A

N/A

NZGD ID: TP_110660

LandTech Consulting Limited, Unit 6, 31 Carlyle Street, Sydenham, Christchurch, 8023 www.landtech.nz

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	N		andTech	Client: Project: Address:	Hank Developments Limited Proposed Subdivision 7/572 Selwyn Road, Rolleston							Augerho Sheet No
Drill Drille Date Date	Type: ed By: Starte Finish	ed: ned:	8 Ton Excavator BE 6-Apr-18 6-Apr-18		Project No: Coordinates: Ground Conditions: Groundwater Level (m):	LTCL18051 NZTM: 155 Grassed, No Not Encoun	2211 r ear lev tered	mE, 5 vel (6-Ap	171252 mN r-18)		Logged By: Shear Vane Calibration Calibration	e No: Factor: Date:
atigraphy	epth (m)	aphic Log	Soil description ir Description of Soil and	n accordance with d Rock for Enginee	Guideline for the Field Classifica ering Purposes , NZ Geotechnica 2005	<i>tion and</i> I Society Inc.,	vater Level (m)	epth (m)	Shear Streng	gth (kPa)	In-situ Fi	eld Testi Dynamic
お	Ω	õ					Groundv	Δ	Peak: Remoulded:	•	Depth (m	Blow Cour
PSOIL		\bigotimes	SILT, minor fine san	id, minor organic	es dark brown, loose, moist, n	on-plastic		_			-0.1 -0.2	2
10		$\left< \right>$	<								-0.3	3
		× × × × × ×	 SILT, minor to some plastic [RIVER DEP 	e fine sand, yello OSITS]	wish brown, medium dense, r	noist, non-		_			-0.4	4
	0.5	× × ×	>					0.5			-0.5	
		~ ~ ~ ~ × × ×	>								-0.0	2
		× × × × × ×	>								-0.8	
		× × ×	>								-0.9	
	1.0	20	Fine to coarse sand	y fine to coarse cke cobbles, gre	subrounded greywacke GRA eyish brown, tightly packed, m	VEL, trace oist		1.0			-1.0	
SITS		DG	ā.					-			-1.1	
EPO		R									-1.2	
/ER [ŕΩ	*								-1.4	
'n	1.5	XX	Ę					1.5			-1.5	
		2. A	5								-1.6	
		XÓ	15								-1.7	
		5 A	4.								-1.0	
	2.0	()A	ñ					2.0			-2.0	
	_	Ďľ	Ξ.					_			-2.1	
		14 A	4								-2.2	
				End of 1	est Pit (2.2m)						-2.3	
	25							25	1		-2.4	
	2.0							2.0			-2.6	
]		-2.7	
			1				1		1		2.0	

-	(u	: Log	Soil description in accordance with Guideline for the Field Classification and	.Leve	Ê	Shear Strength (kPa) Dynamic Cone Penetrometer							
D	Jepth	aphic	Description of Soil and Rock for Engineering Purposes, NZ Geotechnical Society Inc., 2005	vatei	Jepth	Shear Strength (kPa)	ê		Scala Blow Count /				
5		G		punc		Peak:	ц Ц	Cour	100mm				
				õ		Remoulded: •	Dep	Slow	0 5 10 15 20				
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5	_	\sim			-		-0.3	3	∳				
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	_	× × × >	plastic [RIVER DEPOSITS]		_		-0.4	4	↓				
	0.5	\times \times \rightarrow			0.5		-0.5	5					
		× × × >					-0.6	5					
	_	<					-0.7	25 +					
	_	\times \times \times $>$					-0.8						
	_	× × × >					-0.9						
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	_	í YX					-1.7						
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	5.0				5.0		-5.0						
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			LandTech Consulting Limited, Unit 6, 31 Carlyle Stree	t, Syo	denha	m, Christchurch, 8023							
			www.andtech.nz										

HA06 1 of 1

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NZGD ID: HA-DCP_128990

		Davis Ogilvie & Partne Level 1, 24 Moorhouse / Office 0800 999 333 E www.do.nz	e rs Lin Avenu E mail	nite ue,A hell	d .ddin o@c	gton, C Io.nz	hri	stch	urc	n 814	40		SH Jo Te	IAL b N st N	LO\ ° /: I [°] /	W IN 3935 DCF	IVE 53 54 - 1	STI + н.	GA	TIOI	N RI	ESU	LTS
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1.0-	SILT with trace fine sand an orangey brown, hard, moist, subrounded greywacke. [0.1 Auger terminated at 1.20m - Refi	d medium gravel; yellowish low plasticity. Gravel is 0m]	ML			+								1:	3							27 30	1.0
- 1.5- -														-									- -1.: -
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NZGD ID: HA-DCP_128990

т	Project: 19 Raptor Street, Falcons Landing, Rolles Client: Compass Homes Test Location: Refer to attached Geotechnical Site Plan (ton (wɑ	Loi	t 2	98 I 1A)	DP 53	2807)		F	Da Tii Excavation Meth	ate: 28/08/1 me: 10:00 a od: DCP+1	19 a.m. HA
D E P T	STRATA DESCRIPTION	scs		aphic	 	later		DCP	BLOW	S / 100 mm		
H (m) -	Auger at DCP 3 SILT; dark brown. Moist, moderately organic with trace rootlets (TOPSOIL). [0.50m]	L IS		5 דג <u>ייי</u> ה <u>ייי</u> דג	<u>.</u> TS 	ater Not Encountered		4 5 6 7	8 9		5 7 8 9	(n - -
- 0. 5 - -	SILT with some fine sand; yellowish brown with minor orange mottling. Stiff, moist. [0.90m]				2 T S	Groundw						0.
- 1.0- - -		ML										- -1. 28 - 30 -
 1. 5- 	SILT with trace fine sand, yellowish orangey brown. Hard, moist, low plasticity. [0.10m] Fine and medium SAND with some silt; greyish brown. Dense, wet. [0.10m] SILT with trace fine sand; mottled orange and grey. Hard, moist, low plasticity. [0.10m]	ML SM ML				-			15 5 15			- -1.
- - 2.0-	Auger terminated at 1.70m - Refusal on gravel. 1.7m: Sandy fine and medium gravel recovered								30			-
_												-
- 2.5- -												- -2. -
- 3.0-												-3.

Geotechnical Completion Report

Stages 1 to 6, Falcons View Subdivision, 153 Lincoln Rolleston Road, Rolleston

236 Hereford Street, Christchurch Central, Christchurch 8011 Christchurch • Wellington • Kapiti • Auckland • California • Haiti • Italy • Turkey • India • Bangladesh • Thailand • Japan

Issue Date: 28 November 2023

Miyamoto Ref: 2003576-RP-001[A]

Prepared for: Yoursection FV Ltd

Report Tracking – Stages 1 to 6, Falcons View Subdivision, 153 Lincoln Rolleston Road, Rolleston

Revision	Status	Date	Prepared by	Reviewed by
A	Final	28 November 2023	Joseph Byron-Joyce	Charles McDermott

Authorisation

Author's Signature	Ju	Reviewer's Signature	All -
Name	Joseph Byron-Joyce	Name	Charles McDermott
Title	Senior Engineering Geologist BSc (Geology) MEngNZ	Title	Technical Director (Geotechnics) BEng(Hons) CMEngNZ CPEng IntPE(NZ)

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А	ppen	dix F: Geotechnical Report for Proposed Plan Change

1. Introduction and Scope

Miyamoto International NZ Ltd (Miyamoto) has been engaged by Yoursection FV Ltd (the Client) to provide geotechnical engineering services related to the earthworks and building platform preparation for 75 residential lots as part of Stages 1 to 6 of the Falcons View Subdivision at 153 Lincoln Rolleston Road, Rolleston.

Miyamoto have previously provided a 'Geotechnical Report for Proposed Plan Change' (200357-RP-002[A], dated 25 November 2020) for the site.

The purpose of this Geotechnical Completion Report (GCR) is to confirm the suitability of the earthworks and building platforms for building construction. The GCR is also required in order to comply with the Selwyn District Council (SDC) resource consent conditions (refer to Section 3.1 of this Report) and may be used in support of subsequent building consent applications for the individual lots at the SDC.

The following works have been conducted as per the agreed scope of works:

- Construction monitoring during the earthworks:
 - Fill suitability assessment including review of the laboratory testing undertaken for the fill material.
 - Visual inspections and advising the contractor regarding specification compliance.
 - \circ $\;$ Review of fill compaction verification testing.
- Assessment and reporting included in this Geotechnical Completion Report (GCR).
- Provision of certification documentation including:
 - NZS4404:2010 'Schedule 2A: Statement of professional opinion on suitability of land for building construction'.
 - NZS4431:2022 'Appendix D: Statement of suitability of engineered fill for lightweight structures'.

The subdivision civil design, supervision, and overall management has been completed by Capture Land Development Consultants (Capture), with Ongrade Drainage & Excavation Limited (Ongrade) acting as the main civil contractor completing the civil works.

2. Site Description

The site, legally described as Lot 1 DP 568976 as contained in Record of Title 1024686, is approximately 10 ha in area and is located to the west of Lincoln Rolleston Road, ~3 km south of State Highway 1.

The site is generally flat and prior to development comprised grassed paddocks with shelter belt plantings.

The typical soil profile at the site is shown in Table 1.

Table 1: Typical soil profile

Layer	Typical thickness (m)	Soil Description
Тр	0.3	Topsoil, SILT, brown, with rootlets.
ML	0.3 to 0.8	SILT and Sandy SILT, low plasticity, pale brown, very stiff to hard.
GW	>10.0	Sandy GRAVEL, fine to coarse grained, grey, sub-rounded to rounded.

The site location including the subdivision layout is presented in Figure 1.



Figure 1: Site location and layout (BASE co, 15/04/23)

3. Earthworks

3.1 SDC Resource Consent Conditions

The resource consent conditions provided by the SDC (approval date 16 February 2023) are detailed within RC225866 and RC225867. This GCR is provided to satisfy conditions 33 and 34 of RC225866 and conditions 3 and 4 of RC225867, as detailed below.

RC225866

Site stability and site works

33. The Consent Holder shall confirm whether any earth fill has been placed on site. All earthworks completed on site are to be carried out in accordance with New Zealand Standard (NZS) 4431:2022 – Engineered fill construction for lightweight structures.

34. At the completion of all earthworks Certificates satisfying the conditions of New Zealand Standard (NZS) 4431:2022 – Engineered fill construction for lightweight structures, are to be provided to the Selwyn District Council. These certificates will detail the extent and nature of all earthworks undertaken.

RC225867

Construction Standards

3. That all earthworks shall be conducted in accordance with the approved engineering plans for subdivision consent 225866 and the Selwyn District Council Engineering Code of Practice.

The Consent Holder shall confirm whether any earth fill has been placed on site. All earthworks completed on site are to be carried out in accordance with New Zealand Standard (NZS) 4431:2022 – Engineered fill construction for lightweight structures.

4. At the completion of all earthworks Certificates satisfying the conditions of New Zealand Standard (NZS) 4431:2022 – Engineered fill construction for lightweight structures, are to be provided to the Selwyn District Council. These certificates will detail the extent and nature of all earthworks undertaken.

3.2 General

The earthworks design for the subdivision was completed by Capture Land Development Consultants (Capture) and was designed to raise / lower the grade to appropriate levels for the residential lots and create appropriate fall for drainage. The earthworks plan and as-built levels are included in Appendix A.

The earthworks were caried out between June and September 2023 by Ongrade Drainage & Excavation Limited (Ongrade), with Miyamoto, Capture, the SDC, and Yoursection FV Ltd completing regular site visits to observe earthworks and civil works at the site.

The initial design completed by Capture included for a total of 3,800 m³ of soil to be cut and placed as engineered fill across the site, with a net balance between cutting and filling resulting in no requirement for importation of fill or removal of soil for the residential lots. Importation of material was required for construction of roading, service trenches, and soakage pits.

Due to thicker topsoil than anticipated in some areas and encountering unsuitable foundation soils in a former 'borrow pit', a relatively small volume of imported fill was required to complete the earthworks for the residential lots.

Earthworks were carried in general accordance with the following New Zealand Standards:

- NZS4431:2022 Engineered fill construction for lightweight structures.
- NZS4404:2010 Land Development and Subdivision Infrastructure.

3.3 Cutting and Topsoil Stripping

All residential lots required cutting and / or filling to achieve the desired grade, this necessitated topsoil to be stripped and stockpiled for future spreading. Miyamoto completed visual inspection of topsoil removal during regular site visits and through examination of contractor provided photographs.

Following excavation of topsoil, the majority of the excavated material comprised natural silt and sandy silt which was stockpiled to be used as site won engineered fill in the works (refer to Section 3.4 of this Report).

Cutting to waste (off-site disposal) of soils was completed in one discrete area of a former 'borrow pit' beneath lots 41, 42, 43, 49, 50, and 51, where unsuitable foundation soils (landfill and general refuse) were identified. The unsuitable material was excavated / removed exposing natural sandy

gravel deposits at a depth of greater than 3.5 m below ground level. Miyamoto completed several inspections during and after completion of unsuitable soil removal.

3.4 Filling

The bulk of the engineered fill for the residential lots compromised site won silt and sandy silt sourced from spoil created from the 'cut' lots, services and roading alignments. The site won fill material was sampled and tested at a laboratory for Particle Size Distribution (PSD), and determination of the dry density / water content relationship and assessed to be suitable for use as engineered fill (refer to Appendix B for laboratory test certificates).

The site won material had a suitable in-situ moisture content without the requirement for moisture conditioning and was stockpiled and shaped / battered into bunds along road alignments prior to placement as engineered fill. The shaping of the bunds allowed for water shedding to maintain suitable moisture condition of the soil during rainfall events.

Inspection of the stockpiled site won material was completed during regular site visits to confirm it was representative of the material tested in the laboratory. In general, there was very little variability of the material across the site.

The site won fill was placed and tracked in place / compacted with a 60-ton bulldozer, a methodology similar to that of a sheep's foot roller where the heavy plant imparts a large load directly to the freshly placed material and mechanically penetrates the surface of the fill material with the tracks.

Nuclear Densometer (NDM) testing of the placed and compacted fill material was completed by SGNT limited to verify adequate compaction was achieved. Typically, a minimum of two NDM tests were completed per lot per 250 mm of filling with additional testing completed where fill thickness exceeded 250 mm. The results of the NDM testing are included in Appendix C.

Imported 'pit run' material comprising well graded sandy gravel with cobles (sourced from Wheatsheaf Quarry) was utilised to fill the 'borrow pit' at lots 41, 42, 43, 49, 50, and 51. Where used, this material was capped with a minimum of 0.3 m of silt and sandy silt material. The imported material was placed in layers of approximately 250 mm thickness and compacted with a vibratory drum roller. NDM testing was completed at approximately 1 m vertical intervals and to the final lift (refer to Appendix C).

3.5 Earthworks Summary

A summary of the cut / fill earthworks and distribution across the site are shown in Table 2 and the as-built levels are provided in Appendix A.

Stage	Lots within Stage	Fill Lots	Fill Type	Cut Lots
1	1,2,3,4,5	1,2,3	Site won - Silt	4, 5
2	9, 10, 11, 12, 13, 14, 15, 16, 17, 18	9, 10, 11, 12, 13, 14, 15, 16, 17, 18	Site won - Silt	-
3	19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30	21, 22, 23, 24, 25, 26, 27, 28, 29, 30	Site won - Silt	19, 20
4	31, 32, 33, 34, 35, 36, 37, 38, 39	31, 32, 33, 34, 35, 36, 37, 38, 39	Site won – Silt	-

Table 2: Earthworks summary

Stage	Lots within Stage	Fill Lots	Fill Type	Cut Lots
5	6, 7, 8, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50, 51, 52, 53, 54, 54, 55	40, 41, 42, 47, 48, 49, 50, 51, 52	Site won – Silt (all fill lots within stage) Imported – Pit run (lots 41, 42, 43, 49, 50, and 51)	6, 7, 8, 44, 45, 53, 54, 55
6	56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75	60, 61, 62, 72, 73, 74, 75	Site won – Silt	56, 57, 58, 59, 63, 64, 65, 66, 67, 68, 69, 70, 71

3.6 Certification

Based on site observations, laboratory testing and in-situ testing of placed and compacted material, in combination with earthworks planning, design, and construction being completed by experienced developers, engineers and contactors, it is our professional opinion that the earthworks for the residential lots have been completed to a suitable standard for residential development.

The following two documents are appended to this GCR (refer Appendix D and E):

- NZS4404:2010 'Schedule 2A: Statement of professional opinion on suitability of land for building construction'.
- NZS4431:2022 'Appendix D: Statement of suitability of engineered fill for lightweight structures'.

4. Building Development Design Considerations

4.1 Foundation Suitability

All residential lots within Stages 1 to 6 of the subdivision are considered to have a low liquefaction vulnerability with future seismic performance expected to be equivalent to MBIE Technical Category (TC) 1 as per the MBIE Guidance (2012).

As such, and with consideration of the assessment herein, foundations in accordance with MBIE (2012) TC1 are considered suitable for NZS3604:2011 compliant buildings, notably this includes NZS3604:2011 foundations and 'waffle slab' foundations.

4.2 Bearing Capacity and Other Considerations

The ground conditions across the site within the residential lots will typically comprise topsoil of varying thickness (0.3 to 0.4 m typically) overlying engineered and natural silt and sandy silt soils. In some locations sandy gravel may be encountered beneath topsoil.

Site specific testing should be completed to verify the available Geotechnical Ultimate Bearing Capacity (GUBC) of the soils underlying topsoil.

Preliminarily, assuming conventional residential foundations comprising 'NZS 3604 type' slab on grade with thickened edge beams, shallow timber piles of 0.45 m diameter, or waffle slab foundations with 0.3 m wide footings, foundation designers may assume 200 kPa GUBC beneath topsoil within the SILT and Sandy SILT soils at a minimum of 0.4 mbgl, however, this will need to be verified prior to construction.

Foundation designers should consider the effects of the interface between filled and non-filled ground on the performance of the structure.

4.3 Additional Considerations

A geotechnical plan review of proposed residential developments and the foundation design is recommended and considered best practice to ensure the recommendations of this report have been taken into consideration.

Construction monitoring of foundation excavations is recommended to ensure ground conditions encountered are as expected.

5. Limitations

This report is subject to the following limitations:

- This report has been prepared by Miyamoto for the Client for the purpose/s agreed with the Client (Purpose). Miyamoto accepts no responsibility for the validity, appropriateness, sufficiency or consequences of the Client using the report for purposes other than for the Purpose.
- This report is not intended for general publication or circulation. This report is not to be reproduced by the Client except in relation to the Purpose, without Miyamoto's prior written permission. Miyamoto disclaims all risk and all responsibility to any third party.
- This report is provided based on the various assumptions contained in the report.
- Miyamoto's professional services are performed using a degree of care and skill reasonably exercised by reputable consultants providing the same or similar services as at the date of this report.
- The Client is responsible for ensuring that the design of any foundations ensures the functionality of the building under SLS level loads.
- The sub surface information has been obtained from investigation carried out at discrete locations, which by their nature only provide information about a relatively small volume of subsoils. While Miyamoto has taken reasonable skill and care in carrying out the investigation to determine the subsoil condition, the subsoil condition could differ substantially from the results of any sampling investigation. Miyamoto is not responsible for and does not accept any liability in respect of any difference between the actual subsoil conditions and the results of our investigation.
- Where the Client provides information to Miyamoto, including design calculations and drawings of the as-built structure, or where the report indicates that we have obtained and/or relied upon information provided from a third party, Miyamoto has not made any independent verification of this information except as expressly stated in the report. Miyamoto assumes no responsibility for any inaccuracies in, or omissions to, that information.
- A change in circumstances, facts, information after the report has been provided may affect the adequacy or accuracy of the report. Miyamoto is not responsible for the adequacy or accuracy of the report as a result of any such changes.

References

Ministry of Business, Innovation, and Employment, 2012. *Repairing and rebuilding houses affected by the Canterbury earthquakes.*

New Zealand Standard NZS3604:2011. Timber-framed buildings.

New Zealand Standard NZS4404:2010. Land Development and Subdivision Infrastructure.

New Zealand Standard NZS4431:2022. Engineered fill construction for lightweight structures.

Appendix A: Earthworks Plan and As-built Levels





NCOLN ROLLESTON	This drawing remains the property of Capture Land Limited and may not be reproduced or amended without written permission. No liability shall be accepted for unauthorised use of this drawing.	
36	LEGEND: 0.20 CUT CONTOUR (0.2m) 	0
Ŷ	NOTES	I rev
/	1. CONTOURS SHOWN ON THIS PLAN DEPICT THE DEPTH OF CUT OR FILL BETWEEN THE ORIGINAL SURFACE STRIPPED OF TOPSOIL AND ANY UNDERCUT AREAS, VERSUS THE FINAL SURFACE PRIOR TO TOPSOIL BEING RESPREAD	vorks asbuilt plan
	2. ASBUILT INFORMATION WAS COLLECTED AND SUPPLIED BY ONGRADE DRAINAGE & EXCAVATION LTD AND CENTA SURVEY LTD.	01-02 earthv
	ORIGIN OF LEVELS: BURNHAM NO 2 (1127) REDUCED LEVEL: 69.5942m DATUM: LVD 1937 (DEC 13)	cad/civil/stage 1/asbuilts/10/
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		Ins vi
		falco
		141
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	YOURSECTION FV LTD	- doc
	PROJECT FALCONS VIEW - STAGE 1-6	land/clients
	DRAWING TITLE ASBUILT PLAN EARTHWORKS CUT/FILL CONTOUR	Wan\capture
	STATUS SCALE SIZE	danco
	PROJECT DRAWING NO REVISIO	Nusers/
	1041-1 AD-02 A	0

Appendix B: Laboratory Test Certificates



ROAD TECH LABORATORY LTD 205 Springs Read, Christehurch lab@readlisch.co.nz 03:0417656

Lab Reference:

Dry Density / Water Content Relationship

0862/23

New Zealand Stand	lard Compaction Te	st	Page 1 of 1 Page	
Client: Contact Name:	SGNT Limited Mr S. Gardner			
Sample Type: Sample Source:	Silt with aggregate Falcons View, Rollesto	on (Stage 1 to 6)		
Date of Reciept: Date of Test:	8 June 2023 13 June 2023		Sampled By: Tested By:	S. Gardner J. Tieman
Sample Method: Test Method: Results:	Unknown (Samping m NZS 4402:1986 Test 4	ethod is not IANZ .1.1 (Standard Co	Accredited) empaction)	
	Moisture Content (% by dry mass) 13.0 14.9 15.7 16.8 18.1 20.3 Maximun Optimur	Wet Density (kg/m ³) 1910 2010 2040 2060 2040 2030 n Dry Density = 17 n Water Content =	Dry Density (kg/m ³) 1690 1750 1760 1770 1770 1730 1690 '60 kg/m ³ = 16.0 %	
Date of Issue:	Sample History: Natu 19.0mm	ral. Test performe (1.2% of sample r (1.2% of sample r (1.2% of sample r (1.2% of sample r (1.2% of sample r	emoved)	 0% air voids 5% air voids 10% air voids 10% air voids *Air void results calculated using an assumed solid density of 2680 kg/m³
Approved Signatory (T. O'Regan, Laboratory Man	r: ager)		Checked By:	l.G.M.

This report lelates only to the sample tested and may only be reproduced in full.



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



T 021 730 210

E gordon.hayward@pavetechlab.com

Page 1 of 1

W www.pavetechlab.com

PITRUN TEST ANALYSIS REPORT

CLIENT:	Winstone Aggregates, PO Box 17 195, Greenlane, Auckland		
CLIENT SAMPLE REF:	Source Property	LABORATORY NO:	P23-0254 - FINAL
SAMPLE REFERENCE:	Wheatsheaf Quarry	DATE SAMPLED:	19 June 2023
MATERIAL SOURCE:	Wheatsheaf Quarry	DATE RECEIVED:	19 June 2023
MATERIAL:	Pitrun	DATE REPORTED:	20 June 2023

Determination of the Dry Density/Water Content Relationship: NZ NZS 4402: 1986 Test 4.1.3	Date of Test:	19/06/2023			
Test Number:	1	2	3	4	5
Bulk Density (t/m ³)	2.21	2.27	2.40	2.38	2.33
Water Content (%)	2.2	3.1	4.0	4.9	5.8
Dry Density (t/m ³)	2.17	2.21	2.31	2.27	2.20



Maximum Dry Density (t/m³):	2.32
Optimum Water Content (%):	4.0
Test performed on fraction passing (mm):	37.5
Percent retained on the 37.5mm sieve:	28

NOTES:

1 Compaction performed on air dried sample

2 Solid density of 2.68 t/m³ obtained from this test report P23-0063 to calculate airvoids

3 Sampled by G Hayward

4 Sample received in damp condition

5 Sampling is endorsed by this report

-M

GORDON HAYWARD BSc PGDipSci LABORATORY MANAGER - KEY TECHNCIAL PERSONNEL



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

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Appendix C: Nuclear Densometer Test Results



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295



All tests reported herein have been performed in

Nuclear Density Report

Principal: Mike Niven

Test Results

Client : Ongrade Drainage & Excavation Ltd

Date signed 3 (Project No: SGNT02158 Report No: CHRIW04543 Project Name: Falcons View

۶.

Testing D	letails			Compaction Targ	et Details	
Site Tested:	Fill Lot 1, 9 to 13 Fi	inal layer		Material Sample ID:	External	
Date:	30/08/2023	Time:	12.15	Max Dry Density :	1.76 (t/m ³) @ 16.0 %	
Material :	Silt			Min. Dry Density (t/m3)	1.67	
Field methods	: NZS 4407:2015 Test 4.	2		Solid density:	Assumed	
Moisture Con	tent Determined by Ndm					

Site No Depth Moisture Wet Density (t/m3) Dry Density (t/m³) Relative (mm) (%) Compaction (%) 200 15.5 1.88 107 2.17 1 200 15.5 2.03 1.74 100 2 200 3 16.1 2.12 1.82 104 200 100 19.2 2.10 1.76 4 12.4 5 200 2.16 1.92 109 200 2.15 1.92 109 6 11.7

Ndm test Locations

not to scale



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295



Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT02158 Report No: CHRIW04489 Project Name: Falcons View

						Project Hail	IC. I dicoris v	1011
Testing D	Details				Compacti	on Target	Details	
Site Tested: Date:	Fill Lot 1, 9 to 23/08/2023	13 Final lay	er Time:	16.00	Material Samp Max.Dry Dens	le ID: ity :	External 1.76 (t/m ³)	@ 16.0 %
Material :	Silt				Min. Dry Dens	ity (t/m~)	1.67	
Field methods	s: NZS 4407:2015	Test 4.2			Solid density:		Assumed	
Moisture Con	tent Determined by	Ndm						
Test Re	sults							
Si	te No	Depth	Moisture	Wet D	ensity (t/m ³)	Dry Dens	sity (t/m ³)	Relative

0.000	(mm)	(%)			Compaction (%)
1	200	12.2	2.04	1.81	102
2	200	13.9	2.22	1.95	110
3	200	10.3	2.07	1.88	105
4	200	20.8	2.11	1.75	98
5	200	20.1	2.11	1.76	99
6	200	17.4	2.11	1.80	101
7	200	11.6	2.08	1.82	102
8	200	18.0	2.11	1.79	100
9	200	14.4	2.05	1.79	101
10 .	200	13.5	2.18	1.92	108

Ndm test Locations not to scale



Comments MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295



Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT02158 Report No: CHRIW04559 Project Name: Flacons View

Testing D)etails			Compaction Targ	et Details	
Site Tested:	Fill Lot 2 & 13 to 18	Final layer		Material Sample ID:	External	
Date:	31/08/2023	Time:	16.00	Max.Dry Density :	1.76 (t/m ³) @ 16.0 %	
Material :	Silt			Min. Dry Density (t/m ³)	1.67	
Field methods	: NZS 4407:2015 Test 4.	2		Solid density:	Assumed	
Moisture Con	tent Determined by Ndm					

Test Results

rootnoodito					
Site No	Depth (mm)	Moisture (%)	Wet Density (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)
1	200	11.8	2.15	1.92	109
2	200	10.3	2.15	1.95	110
3	200	11.9	2.13	1.91	108
4	200	12.6	1.93	1.72	98
5	200	14.8	1.97	1.94	109
6	200	15.6	2.03	1.75	100
7	200	11.6	2.11	1.94	110
8	200	11.9	2.11	1.89	107
9	200	12.6	2.12	1.88	107
10 .	200	11.8	2.11	1.89	107





1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

All tests reported herein have been performed in accordance with the laboratory's scope of accordination. (This document may not be altered or reproduced except in full. This report relates only is the positione tested.) Approved Signatory. Stephen Gardner (Senior Technician) HAIZ Accordinal Laboratory Number: 1270 Date signed (7/6/23

Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT02158 Report No: CHRIW04035 Project Name: Flacons View

Testing D	Details				Compacti	on Targe	et Details	
Site Tested:	Fill Lot 2, 14	to 18 , 56 to	62 Final laye	0.20	Material Samp	le ID:	External	2 10 0 9/
Material :	Silt		nine.	9.30	Min. Dry Densi	ity (t/m ³)	1.67	JU 10.0 %
Field methods	s: NZS 4407:2015	Test 4.2			Solid density:		Assumed	
Moisture Con	tent Determined by	/ Ndm						
Test Re	sults							
Sit	te No	Deoth	Moisture	Wet [Density (t/m ³)	Dry De	nsity (t/m ³)	Relative

Site No	(mm)	(%)	Wet Density (t/m*)	Dry Density (t/m ⁻)	Relative Compaction (%)
1	200	20.2	2.05	1.71	97
2	200	20.0	2.03	1.69	96
3	200	18.4	2.01	1.69	96
4	200	19.0	2.10	1.76	100
5	200	19.9	2.10	1.74	99
6	200	18.0	2.97	1.78	101
7	200	18.1	2.09	1.77	101
8	200	16.1	2.06	1.77	101
9	200	17.2	2.07	1.77	100
10 .	200	18.0	2.06	1.75	99
11	200	19.3	2.07	1.73	98
12	200	18.5	2.08	1.75	99
13	200	15.8	2.12	1.83	104
14	200	18.5	2.13	1.80	102
15	200	19.6	2.07	1.73	98
16	200	19.3	2.07	1.74	97
17	200	18.6	2.08	1.75	100
18	200	16.0	2.05	1.77	101
19	200	14.9	2.12	1.84	105
20	200	17.4	2.08	1.77	101
21	200	19.5	2.13	1.78	101
22	200	19.3	2.12	1.77	101
23	200	19.5	2.10	1.76	100
24	200	19.6	2.08	1.74	99
25	200	17.3	2.06	1.75	100
26	200	15.9	2.07	1.79	102

Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

Nuclear Density Report





1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295



All lists reported herein have been performed in

Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT02158 Report No: CHRIW04191

				Project N	ane. Flacons view	
Testing D	Details			Compaction Targ	et Details	
Site Tested:	Fill Lot 21 to 23 Final layer	Time	10.00	Material Sample ID: Max Doc Deceily :	External	
Material :	Silt	rime.	10.00	Min. Dry Density (1/m ³)	1.67	
Field method:	s : NZS 4407:2015 Test 4.2			Solid density:	Assumed	
Moisture Con	tent Determined by Ndm					
Test Re	sults					

Site No	Depth (mm)	Moisture (%)	Wet Density (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)
1	200	13.8	2.10	1.85	105
2	200	14.2	2.00	1.75	100
3	200	12.8	1.99	1.76	100
4	200	12.7	1.98	1.75	100
5	200	13.1	1.97	1.74	99
6	200	14.1	2.01	1.76	100



O NOM TEST LOCATIONS

Ndm test Locations not to scale

Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.


1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

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Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT02158 Report No: CHRIW04246

				Froject Name, Flacoris View			
Testing D	Details		Compaction Target Details				
Site Tested:	Fill Lot 24 to 28 & 75	Final layer		Material Sample ID:	External		
Date:	18/07/2023	Time:	17.00	Max.Dry Density :	1.76 (t/m ³) @ 16.0 %		
Material :	Silt			Min. Dry Density (t/m3)	1.67		
Field methods	s : NZS 4407:2015 Test 4.2		Solid density:	Assumed			
Moisture Con	tent Determined by Ndm						

Test Results

Site No	Depth (mm)	Moisture (%)	Wet Density (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)					
1	200	17.3	2.03	1.73	98					
2	200	18.7	2.04	1.72	98					
3	200	15.6	2.02	1.75	99					
4	200	17.3	1.98	1.69	96					
5	200	16.6	1.99	1.70	97					
6	200	17.4	2.02	1.72	98					
7	200	17.7	2.03	1.73	98					
8	200	16.6	2.20	1.68	95					
9	200	12.8	2.13	1.89	107					
10	200	18.4	1.99	1.68	95					
11	200	15.2	2.05	1.78	101					
12	200	15.4	2.01	1.74	99					





1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

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- Gerde Slagh Approved Signatory: Staphen Gardner Approved segmenty, organic (Service Techniciae) UNIZ According Laboratory Number:1270 Date signed 17/6/23

BUNG LABOR

Project No: SGNT02158 Report No: CHRIW04060 a. Elas

SCREDURA

esting Details			Co	mpaction Ta	rget Details		
te Tested: Fill Lot	24 to 28 . 72 to 75	Final laver	Mab	Material Sample ID: External			
ate: 14/06/	2023	Time:	16.20 Max	Max.Dry Density : 1.76 (t/m ³) @ 16.0 % Min. Dry Density (t/m ³) 1.67			
atorial Silt			Min				
old methode - N7S A/	07-2015 Test 4 2		Soli	density:	Assumed		
oisture Content Deter	mined by Ndm			a density.	7100011100		
est Results	inclusion of right						
Site No.	Depth	Moisture	Wet Density	(t/m ³) Dry	Density (t/m ³)	Relative	
one no	(mm)	(%)	The Donony			Compaction (%)	
1	200	19.0	2.14		1.80	102	
2	200	17.4	2.02		1.72	98	
3	200	17.9	2.06		1.75	100	
4	200	14.8	2.06		1.79	102	
5	200	14.5	2.11		1.84	105	
6	200	15.9	2.07		1.79	102	
7	200	17.3	2.06		1.75	100	
8	200	15.5	2.06		1.79	101	
9	200	14.8	2.12		1.85	105	
10	200	13.9	2.05		1.80	102	
11	200	20.5	2.06		1.71	97	
12	200	18.9	2.10		1.76	100	
13	200	19.4	2.05		1.72	98	
14	200	19.5	2.13		1.78	101	
15	200	19.1	2.08		1.75	99	
16	200	18.7	2.09		1.76	100	
17	200	18.2	2.09		1.77	101	
19	200	18.6	2.09		1.76	100	

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Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

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Approved Signatory: Stephen Gendrer (Senior Technicar) WAZ Accredited Laboratory Number: 1270 Date signed 31/8/23

Project No: SGNT02158 Report No: CHRIW04342 Project Name: Falcons View

GLAT

Testing D	Details			Compaction Target Details		
Site Tested:	Fill Lot 29 to 35 Final layer			Material Sample ID:	External	
Date:	2/08/2023	Time:	7.30	Max.Dry Density :	1.76 (t/m ²) @ 16.0 %	
Material :	Silt			Min. Dry Density (1/m3)	1.67	
Field methods	s : NZS 4407:2015 Test 4.2		Solid density:	Assumed		
Moisture Con	tent Determined by Ndm					
Test Re	sults					

Site No	Depth (mm)	Moisture (%)	Wet Density (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)
1	200	17.5	2.09	1.78	101
2	200	15.9	2.10	1.81	103
3	200	14.1	2.18	1.91	109
4	200	14.9	2.14	1.86	106
5	200	18.5	2.10	1.77	101
6	200	16.3	1.99	1.71	97
7	200	11.0	2.13	1.87	106
8	200	13.1	2.15	1.70	108
9	200	14.8	2.08	1.81	103
10 .	200	18.3	2.07	1.75	100
11	200	16.0	2.08	1.78	101
12	200	16.6	2.09	1.79	102
13	200	14.1	2.15	1.88	106
14	200	15.2	2.13	1.85	105

Ndm test Locations

not to scale

Comments MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT02158 Report No: CHRIW04382 Project Name: Falcons View

Testing D	etails				Compacti	on Target Details	
Site Tested: Date: Material : Field methods Moisture Cont	Fill Lot 36 to 8/08/2023 Silt :: NZS 4407:201 tent Determined b	38 test 2 Firs 5 Test 4.2 by Ndm	at Layer 1,3 to Time:	7 Final layer 16.20	Material Samp Max.Dry Dens Min. Dry Dens Solid density:	le ID: External ity : 1.76 (t/m ³ ity (Vm ³) 1.67 Assumed) @ 16.0 %
Test Res	sults						
Sit	e No	Depth (mm)	Moisture (%)	Wet Den	sity (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)
	1	200	11.4	2.	11	1.89	108
	2	200	13.3	2.	20	1.94	110
	3	200	21.4	2.	05	1.69	96
	4	200	11.7	2.	15	1.93	109
	5	200	12.5	2.	15	1.91	108
	6	200	12.7	2.	04	1.81	103
	7	200	11.4	2.	09	1,88	107



Ndm test Locations not to scale

Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



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All tests reported herein have been performed in accordance with the laboratory's scope of accreditation. (This document may not be altered or reproduced except in full, This report relates only to the positions CCREDITED tostad.) sul-r Gu glap Approved Signalony: Stephen Gardner

(Senior Technician) WNZ Accredited Laboratory Number: 1270 Date signed 31 /% 23

Nuclear Density Report

Principal: Mike Niven Client : Ongrade Drainage & Excavation Ltd Project No: SGNT02158 Report No: CHRIW04378 Project Name: Falcons View

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Testing D)etails				Compaction Target Details			
Site Tested: Date: Material : Field methods	Fill Lot 38 to 8/08/2023 Silt 3 : NZS 4407:2015	Fill Lot 38 to 40 & 52 to 54 Final layer 8/08/2023 Time: 10.00 Silt NZS 4407:2015 Test 4.2				Material Sample ID: Max.Dry Density : Min. Dry Density (t/m ³) Solid density:		@ 16.0 %
Moisture Conf	tent Determined b	iy Ndm						
Test Re	sults							
Sit	le No	Depth (mm)	Moisture (%)	Wet D	ensity (t/m ³)	Dry De	nsity (t/m ³)	Relative Compaction (%)
	1	200	16.3		1.97		1.70	96
	2	200	13.6		1.97		1.73	98
	3	200	12.1		1.99		1.78	101
	4	200	14.0		1.99		1.75	99
	5	200	12.7		2.00		1.78	101



1.99

Ndm test Locations not to scale

6

200

12.8

Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.

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1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295



Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT02158 Report No: CHRIW04435 Project Name: Falcons View

Testing D	etails				Compaction	on Target Detail:	5
Site Tested: Date: Material : Field methods	Fill Lot 49 to 52 16/08/2023 Silt :: NZS 4407:2015 Te	Final layer	Time: 12.34		Material Samp Max.Dry Densi Min. Dry Densi Solid density:	le ID: Externa ty: 1.76 (t ty(t/m ³) 1.67 Assum	l /m ³),@ 16.0 % ed
Moisture Cont	ent Determined by N	dm					
Test Res	sults						
Sit	e No	Depth (mm)	Moisture (%)	Wet De	nsity (t/m ³)	Dry Density (t/m	Relative Compaction (%)
	1	200	17.5	2	2.09	1.78	101
	2	200	15.9	2	2.10	1.81	103
	3	200	14.1	2	2.18	1.91	109
	4	200	14.9	2	2.14	1.86	106
	5	200	18.5	1	2.10	1.77	101
	6	200	16.3	1	.99	1.71	97



Ndm test Locations not to scale

Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

TEST!

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Approved Signalary: Stephen Gardner (Seniar Technicisn) WN2 Accredited Laboratory Number: 1270 Date signed 1619123

Nuclear Density Report Principal: Mike Niven

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5

6

7

8

200

200

200

200

200

15.2

13.9

13.2

13.4

14.5

Principal: M	like Niven				Project No: SGNT02158				
Client: O	ngrade Drainag	ge & Excavatio	n Ltd		Report No: CHRIW04589				
					Project Name: Flacons View				
Testing D	Details				Compaction Target Details				
Site Tested: Date:	Fill Lot 56 to 62 Final layer 5/09/2023		Time:	8.10	Material Sample ID: Max.Dry Density :		External 1.76 (t/m ⁸) @ 16.0 %		
Material :	Silt				Min. Dry Densi	ity (t/m³)	1.67		
Field methods	s : NZS 4407:2015	5 Test 4.2			Solid density: Assumed				
Moisture Cont	tent Determined b	y Ndm							
Test Re	sults								
Sit	te No	Depth (mm)	Moisture (%)	Wet Der	nsity (t/m ³)	Dry Den	sity (t/m³)	Relative Compaction (%)	
	1	200	15.9	2	.12	1	.83	104	
	2	200	15.4	2	.11	1	.82	104	
	3	200	16.1	2	.13	1	.84	104	

2.14

2.10

2.07

2.07

2.12

1.86

1.84

1.83 1.83

1.85



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.

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105



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

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Approved Signalory: Stephen Gercher (Senior Technician) UNZ Accordited Laboratory Number: 1270 Date signed 27/17/23

Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT02158 Report No: CHRIW04258 Project Name: Flacons View

GLASS

Testing D)etails			Compaction Target Details		
Site Tested: Date:	Fill Lot 72 to 74 Final layer 19/07/2023	Time:	16.00	Material Sample ID: Max.Dry Density :	External 1.76 (t/m ³) @ 16.0 %	
Material : Field methods	sint s : NZS 4407:2015 Test 4.2			Solid density:	1.67 Assumed	
Moisture Con Test Re	tent Determined by Ndm sults					

Site No	Depth (mm)	Moisture (%)	Wet Density (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)
1	200	13.5	2.09	1.84	105
2	200	11.5	1.97	1.72	98
3	200	13.5	1.94	1.71	97
4	200	11.5	2.19	1.92	108
5	200	15.9	2.14	1.85	105
6	200	14.7	1.95	1.70	97

Ndm test Locations not to scale



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295



All tests reported herein have been performed in

Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT02158 Report No: CHRIW04060B Project Name: Flacons View

Testing D)etails		Compaction Target Details			
Site Tested: Fill Lot 24 to 28 , 72 to 7 Date: 14/06/2023		75 First layer Time:	16.20	Material Sample ID: Max Dry Density :	External 1.76 (t/m ³) @ 16.0 %	
Material :	Silt			Min. Dry Density (t/m3)	1.67	
Field methods	s : NZS 4407:2015 Test 4.2			Solid density:	Assumed	
Moisture Con	tent Determined by Ndm					
Test Re	sults					

Site No Moisture Wet Density (t/m3) Dry Density (t/m3) Relative Depth (mm) (%) Compaction (%) 1 200 19.0 2.14 1.80 102 2 200 17.4 2.02 1.72 98 3 200 17.9 2.06 1.75 100 200 2.06 1.79 102 4 14.8 1.84 5 200 14.5 2.11 105 6 200 15.9 2.07 1.79 102 7 200 2.06 1.75 17.3 100 200 2.06 1.79 101 8 15.5 9 200 14.8 2.12 1.85 105 2.05 10 200 13.9 1.80 102 11 200 20.5 2.06 1.71 97 200 18.9 2.10 1.76 100 12 200 1.72 98 13 19.4 2.05 101 1.78 200 19.5 2.13 14 15 200 19.1 2.08 1.75 99 16 200 18.7 2.09 1.76 100 17 200 18.2 2.09 1.77 101 1.76 100 18 200 18.6 2.09

Ndm test Locations not to scale



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory. (This report supersedes chriw4060)



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295

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(Serior Technolari) IANZ According Laboratory Number: 1270 Date signed 31/8/23

Nuclear Density Report

Principal: Mike Niven Client : Ongrade Drainage & Excavation Ltd Project No: SGNT02158 Report No: CHRIW04528 Project Name: Falcons View

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a,

Testing Details				Compaction Target Details			
Site Tested: Date: Material : Field method:	Lot 41,42,50,51 28/08/2023 Pit run s : NZS 4407:2015 Te	Old rubbish Tip Back Time: st 4.3	fill Fifth Layer 16.32	Material Samp Max.Dry Densi Min. Dry Densi Solid density:	le ID: ty : ty (t/m ³)	External 2.32 (t/m ³), 2.20 Assumed	@ 4.0 %
Moisture Con	tent Determined by No	m					
Test Re	sults						
Sit	te No	Moisture (%)	Wet Der	isity (t/m ³)	Dry De	nsity (t/m ³)	Relative Compaction (%)
	1	6.0	2	.50		2.36	102
	2	6.5	2	.45		2.30	99
	3	5.1	2	.53		2.39	103
	4	5.2	2	.45		2.33	101

2.36

5.3

Ndm test locations not to scale

5



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory. + 200mm on top of Fourth Layer

page 1 of 1

97



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All lists reported herein have been performed in accordance with the laboratory's acces of accreditation. (This document may not be altered or reproduced except in Rdl, This report relates only to the positions CORED/FED insted.] Gasdas Glas Approved Signatory: Stephen Gerdner

(Serier Technicka) INIZ According Laboratory Number: 1270 Date signed 31 / 8 / 23

.

Nuclear Density Report

Principal: Mike Niven Client : Ongrade Drainage & Excavation Ltd Project No: SGNT02158 Report No: CHRIW04542 Project Name: Falcons View

O LAS

Testing Details				Compaction Target Details			
Lot 41,42,50, 30/08/2023	51 Old rubbi	sh Tip Backfill Time:	Final Layer 11.46	Material Samp Max.Dry Densi	le ID: External ty: 1.76 (t/m ³),	@ 16.0 %	
Sit				Min. Dry Densi	ty(0m ⁻) 1.67		
: NZS 4407:2015	Test 4.2			Solid density:	Assumed		
ent Determined b	y Ndm						
sults							
e No	Depth (mm)	Moisture (%)	Wet Den	sity (t/m ³)	Dry Density (t/m ³)	Relative Compaction (%)	
1	200	17.3	2.	09	1.78	101	
2	200	18.9	2.	09	1.76	100	
3	200	13.5	2.	18	1.92	109	
4	200	15.3	2.	04	1.76	101	
5	200	13.0	2.	05	1.81	103	
			13	54			
	etails Lot 41,42,50, 30/08/2023 Silt NZS 4407:2015 ent Determined b sults e No 1 2 3 4 5	etails Lot 41,42,50,51 Old rubbis 30/08/2023 Silt :: NZS 4407:2015 Test 4.2 ent Determined by Ndm sults e No Depth (mm) 1 200 2 200 3 200 4 200 5 200	etails Lot 41,42,50,51 Old rubbish Tip Backfill 30/08/2023 Time: Silt :::NZS 4407:2015 Test 4.2 ent Determined by Ndm	etails Lot 41,42,50,51 Old rubbish Tip Backfill Final Layer 30/08/2023 Time: 11.46 Silt	etails Compacting Lot 41,42,50,51 Old rubbish Tip Backfill Final Layer Material Samp 30/08/2023 Time: 11.46 Silt Max.Dry Densi Silt Solid density: ent Determined by Ndm Solid density: sults Max.Dry Densi e No Depth (mm) Moisture (%) 1 200 17.3 2.09 2 200 18.9 2.09 3 200 13.5 2.18 4 200 15.3 2.04 5 200 13.0 2.05	etails Compaction Target Details Lot 41,42,50,51 Old rubbish Tip Backfill Final Layer 30/08/2023 Material Sample ID: Material Sample ID: Silt External Max Dry Density : 1.76 (t/m ³), Min. Dry Density (t/m ³) Silt	



Ndm test Locations not to scale

Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



1/19 Repton Street, Merivale, Christchurch 8014 Phone 021898295



Nuclear Density Report

Principal: Mike Niven

Testing Details

Project No: SGNT02158 Client : Ongrade Drainage & Excavation Ltd Report No: CHRIW04477 Project Name: Falcons View ÷ Compaction Target Details

Test Re	sults					
Moisture Cor	tent Determined by Ndm					
Field method	s : NZS 4407:2015 Test 4.3			Solid density:	Assumed	
Material :	Pit run			Min. Dry Density (t/m ³)	2.20	
Date:	22/08/2023	Time:	12.20	Max.Dry Density :	2.32 (t/m ²) @ 4.0 %	
Site Tested:	Lot 41,42,50,51 Old rubbis	h Tip Back	fill First Layer	Material Sample ID:	External	

Site No	Moisture (%)	Wet Density (t/m ³)	Dry Density (∜m ³)	Relative Compaction (%)
1	6.0	2.38	2.24	97
2	5.9	2.50	2.37	102
3	5.9	2.38	2.25	97
4	5.6	2.42	2.29	99
5	4.6	2.50	2.39	103

Ndm test locations not to scale



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.





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Nuclear Density Report

Principal: Mike Niven

Client : Ongrade Drainage & Excavation Ltd

Project No: SGNT02158 Report No: CHRIW04483 Project Name: Falcons View

Teste

					r reject rearro. r arcona	1011
Testing D	etails			Compaction	on Target Details	
Site Tested: Date:	Lot 41,42,50,51 23/08/2023	Old rubbish Tip Backfi Time:	Il Second Lay 12.20	Material Samp Max.Dry Densi	le ID: External ity: 2.32 (t/m ³)	@ 4.0 %
Material :	Pit run			Min. Dry Densi	ity(t/m ³) 2.20	
Field methods	: NZS 4407:2015 Tes	4.3		Solid density:	Assumed	
Moisture Cont	lent Determined by No	lm				
Test Res	sults					
Sit	e No	Moisture (%)	Wet Den	sity (∜m ³)	Dry Density (t/m ³)	Relative Compaction (%)
	1	5.8	2	38	2.25	97
	2	6.3	2	40	2.26	97
	3	6.5	2	37	2.22	96
	4	5.7	2	48	2.35	101
	5	5.5	2	39	2.26	97
Ndm tes not to	t locations o scale		LS			



Comments

MDD Method : Test was conducted externally and is not accredited by this laboratory.



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Nuclear Density Report

Principal: Mike Niven

Project No: SGNT02158 Report No: CHRIW04513



Appendix D: NZS4404:2010 – Schedule 2A

SCHEDULE 2A

STATEMENT OF PROFESSIONAL OPINION ON SUITABILITY OF LAND FOR BUILDING CONSTRUCTION

Development	Falcons View Subdivision
Developer	Yoursection FV Ltd
Location	153 Lincoln Rolleston road, Rolleston
I Charles McI	Dermott of Miyamoto International NZ Ltd (236 Hereford Street,
(F	Ull name) Christchurch 8011) (Name and address of firm)

Hereby confirm that:

- 1. I am a geo-professional as defined in clause 1.2.2 of NZS 4404:2010 and was retained by the developer as the geo-professional on the above development.
- The extent of my preliminary investigations are described in my Report(s) number 200357-RP-002[A], dated 25 November 2020 and the conclusions and recommendations of that/those document(s) have been re-evaluated in the preparation of this report. The extent of my inspections during construction, and the results of all tests and/or re-evaluations carried out are as described in my geotechnical completion report dated 28 November 2023
- 3. In my professional opinion, not to be construed as a guarantee, I consider that (delete as appropriate):

 - (b) The completed works take into account land slope and foundation stability considerations, subject to the appended foundation recommendations and earthworks restrictions, (which should be read in conjunction with the appended final site contour plan).
 - (c) Subject to 3(a) and 3(b) of this Schedule, the original ground not affected by filling is suitable for the erection of buildings designed according to NZS 3604 provided that:
 - (i) the recommendations included in the Miyamoto GCR (2003576-RP-001[A], dated 28 November 2023) are followed.
 - (ii)
 - (d) Subject to 3(a) and 3(b) of this Schedule, the filled ground is suitable for the erection of buildings designed according to NZS 3604 provided that:
 - (i) the recommendations included in the Miyamoto GCR (2003576-RP-001[A], dated 28 November 2023) are followed.
 (ii)
 - (e) The original ground not affected by filling and the filled ground are not subject to erosion, subsidence, or slippage in accordance with the provisions of section 106 of the Resource Management Act 1991 provided that:
 - (i) the recommendations included in the Miyamoto GCR (2003576-RP-001[A], dated 28 November 2023) are followed.
 - (ii)

NOTE – These subclauses may be deleted or added to as appropriate, to include such considerations as expansive soils where excluded from NZS 3604, and site seismic characteristics as covered in clause 3.1.3 of NZS 1170.5.

- 4. This professional opinion is furnished to the TA and the developer for their purposes alone on the express condition that it will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection of any building.
- 5. This certificate shall be read in conjunction with my geotechnical report referred to in clause 2 above and shall not be copied or reproduced except in conjunction with the full geotechnical completion report.

Signed Charles McDe BEng(Hons) CMEngNZ CPEng IntPE(NZ)

Date 28 November 2023

(Name, title, and professional qualifications)

Copyright waived

Appendix E: NZS4431:2022 – Appendix A

APPENDIX D - STATEMENT OF SUITABILITY OF ENGINEERED FILL FOR LIGHTWEIGHT STRUCTURES

(Informative)

To: (name and address of local authority)	Selwyn District Council			
Development name:	Falcons View Subdivision			
Land title(s):	Lot 1 DP 568976 as contained in Record of Title 1024686			
Development location/address:	153 Lincoln Rolleston road, Rolleston			
Relevant resource consent number(s):	RC225866 and RC225867			
Developer's name and company:	Yoursection FV Ltd			
Geotechnical designer's name and company:	Charles McDermott of Miyamoto International NZ Ltd			
Certifier's name and company:	Charles McDermott of Miyamoto International NZ Ltd			
Attachments (give reference numbers):	2			
(1) Site layout plan(s) Appendix A of this Go	CR (Miyamoto 2003576-RP-001[A]			
(2) Fill layout plan(s) Appendix A of this G	CR (Miyamoto 2003576-RP-001[A]			
(3) Fill section(s)				
(4) Design report Appendix F of this G	CR (Miyamoto 2003576-RP-001[A]			
 (5) Earthworks completion report, including the following appendices: Geotechnical (a) As-built survey; This document comprises Appendix E of the GCR (Miyamoto 2003576-RP-001[A] (b) Cut-fill plan (with contours); (c) Inspection and test plan; (d) Earthworks specification; (e) All test results; (f) All inspection records. 				
testing as documented in the attached <u>earthworks</u> completion report. I am satisfied that the engineered fill shown in the attached as-built survey was placed, compacted, and tested in accordance with the attached earthworks specification and that all variations and non-compliances have been documented in the <u>earthworks</u> completion report. <u>Geotechnical</u> Based on the information available, I certify that, to the best of my knowledge, the intent of the geotechnical designer (as presented in their design, drawings, and earthworks energification) has been achieved				
The area shown on the as-built survey plan refe	renced above is considered suitable for development as per			
NZS 3604. (strike out if not relevant) This certification does not remove the necessity for normal inspection and design of foundations as would				
be made in natural ground.				
Certifier's signature: Date: 28 November 2023				
Certifier's qualifications, protessional registration	n type, and number:			
BEng(Hons), CMEngNZ, CPEng (1024840	0)			
	•			

Figure 12 - Statement of suitability of engineered fill for lightweight structures

miyamoto.

Appendix F: Geotechnical Report for Proposed Plan Change

Geotechnical Report for Proposed Plan Change

Falcons Subdivision Proposed Extension

Issue Date:	25 November 2020
Miyamoto Ref:	200357-RP-002[A]

Prepared for: Yoursection Ltd

236 Hereford Street, Christchurch 8011 • PO Box 137, Christchurch 8140 • P +64 03 377 4095 Christchurch • Wellington • Auckland • Kapiti Coast • California • Nevada • Washington, D.C Costa Rica • Colombia • Haiti • Liberia • Italy • Turkey • India • Nepal • Japan

Report Tracking

Revision	Status	Date	Prepared by	Reviewed by
A	FINAL	25 November 2020	C. Gibbens	C. McDermott

Authorisation

Author's Signature	AM ===	Approver's Signature	All
Name	Clem Gibbens	Name	Charles McDermott
Title	Engineering Geologist BSc MSc (Hons) MEngNZ	Title	Associate Geotechnical Engineer BEng (Hons) CMEngNZ CPEng

Miyamoto International New Zealand Ltd

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www.miyamoto.nz

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3.	Data Sources	2
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5.	Development Considerations	4
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7.	Limitations	5
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A. Ground Investigation Data

1. Introduction

Miyamoto International NZ Limited (MINZ) has been engaged by Yoursection Limited to undertake a geotechnical investigation, evaluation and land suitability assessment as part of the proposed land reclassification and plan change required for the proposed extension of the Falcons residential subdivision (encompassing 151 and 153 Lincoln Rolleston Road).

Our assessment comprised the following scope of works:

- Research of available information; including historic reports, the New Zealand Geotechnical Database (NZGD), Selwyn District Council (SDC) and Environment Canterbury (ECan);
- Site walkover inspection of the land;
- Shallow field investigation comprising:
 - Machine excavated trial pits (TP);
 - Dynamic cone penetrometer (DCP) testing.
- Geotechnical Assessment including high-level assessment of the site with regard to the Resource Management Act (RMA) Section 106.

This report presents the findings of our investigation and assessment which were carried out considering the Ministry of Business, Innovation & Employment (MBIE) Guidance documents "Planning and engineering guidance for potentially liquefaction-prone land" - Version 1, dated September 2017, "Repairing and rebuilding houses affected by the Canterbury earthquakes" - Version 3, dated December 2012, and "Earthquake geotechnical engineering practice - Modules 2 & 3".

It is noted that this report is limited to geotechnical assessment. Advice related to other development requirements (such as roading infrastructure, pavements, services, stormwater management and contaminated land) should be sought from appropriately qualified personnel.

2. Site Description

The site (approximately 25 hectares in area) is located in a rural setting in Rolleston, Selwyn, south of the existing Falcons / Branthwaite residential subdivision, and encompasses the following land parcels (as shown in Figure 1):

- Lot 1 DP 357634;
- Lot 1 DP 50631 BLKS III IV Leeston SD.

The site is predominantly flat with a global elevation difference of 2.0 m to 3.0 m (increasing to the north-west). The land is predominantly grass covered farmland with residential dwellings, workshops and sheep farming buildings currently occupying two relatively small areas of the proposed development area.



Figure 1: Site Location / Layout Plan

3. Data Sources

The following sources of third-party information were considered and are referenced in this report:

- GNS Science Geological Maps;
- New Zealand Geotechnical Database (NZGD);
- Environment Canterbury (ECan);
- Aurecon (2017). Falcons Landing Geotechnical Subdivision Report;
- Selwyn District Council (SDC);
- Canterbury Maps.

4. Geotechnical Assessment

Geological Setting

The geological map of the area (GNS 1:250,000 QMap) indicates that the site geology is described as 'modern (Quaternary) river floodplain/low-level degradation terraces of unweathered, variably sorted gravel/sand/silt/clay'.

Field Investigations

Miyamoto undertook a site-specific ground investigation on 17 November 2020, comprising:

- 27No. machine excavated trial pits (referenced TP001 to TP027);
- 27No. Dynamic Cone Penetrometer (DCP) tests associated with the above exploratory holes.

In addition to our site-specific investigation we have also utilised available geotechnical information from the surrounding subdivisions and a number of ECan well bores as part of our assessment.

The test locations are shown in Figure 2, the general details of the ground investigations are summarised in Table 1, and the engineering and well bore logs are presented in Appendix A.



Figure 2: Ground Investigation Location Plan

Table 1: Summary of Ground Investigations

Test Ref.	Source	Source Ref.	Test Type	Depth (mbgl)
TP001 to TP027	MINZ	200357	TP / DCP	0.7 to 1.8
Various	Aurecon	254246	ТР	1.6 to 1.7
Various	NZGD / Landtech	LTCL18051	TP / DCP	2.1 to 2.6
HA-DCP_128990	NZGD / Davis Ogilvie	39353	HA / DCP	1.2 to 1.7
HA-DCP_27798	NZGD / LDE	10774	TP / DCP	0.8 to 3.0
ECan Well Bores	ECan	Various	Rotary / Percussion / Cable Tool	37.0 to 48.0

Ground Conditions

The ground profile interpreted from the on-site shallow ground investigation, correlated with the available existing data, generally comprises a layer of topsoil (0.2 m to 0.4 m in thickness), overlying low plasticity, firm to stiff Sandy SILT to between 0.4 m and 1.1 mbgl, below which dense to very dense Sandy fine to coarse GRAVEL is present to depth. It is

noted that the upper 0.1 m to 0.2 of the gravel layer is more of a gravelly Sand and a relatively thin layer (0.2 m to 0.4 m) of sand was encountered at isolated locations.

Groundwater

Standing groundwater was not encountered during our site-specific investigation and the soils encountered were dry. Long-term groundwater level monitoring information available from ECan well bores from the surrounding area indicate the groundwater table to average around 10 to 13 mbgl with seasonal fluctuations reaching a shallowest level of ~6 mbgl.

Liquefaction Assessment

The site is located within an area of 'low geotechnical risk' as defined by Selwyn District Council (McCahon, 2013). The site is also located within an area identified as 'Liquefaction damage is unlikely' (2012), and a 'Zone of low liquefaction potential' (2006) as presented on the Canterbury Maps Viewer.

Based on our assessment (including the site-specific ground conditions and groundwater regime) we concur that the risk of damaging effects from liquefaction at the site is low with the seismic performance expected to be equivalent to MBIE Technical Category (TC) 1 as per the MBIE Guidance (2012).

NZS1170.5 Site Sub-soil Class

Based on our geotechnical assessment, geological maps and other available information, NZS1170.5 Site Sub-soil Class D (deep or soft soil site) is considered appropriate for the site.

Flood Hazard

The site is not currently located within one of the Flood Zones identified by Selwyn District Council, however, restrictions around building floor levels must be checked at building consent stage.

5. Development Considerations

At this stage in the project, the future development plans are not defined. However, considering likely residential subdivision similar to that in the local area, the following preliminary guidance is provided:

- Earthworks should be undertaken in general accordance with the requirements of NZS 4431:1989. All unsuitable materials should be stripped from the work areas and stockpiled clear of the operations or removed from site;
- Preliminarily, NZS3604 foundations are considered geotechnically feasible for NZS3604 compliant structures, subject to building-specific geotechnical investigations to assess the available bearing capacity.

It is noted that this report is limited to geotechnical assessment. Advice related to other development requirements (such as roading infrastructure, pavements, services,

stormwater management and contaminated land) should be sought from appropriately qualified personal.

6. Assessment Against RMA Section 106

As per the requirements of Section 106 of the Resource Management Act (RMA) (2017), we have undertaken a high-level assessment of the significant geotechnical hazards that may affect the site. These hazards include, but are not limited to:

- Erosion;
- Falling debris;
- Slippage;
- Subsidence
- Inundation.

At the time of our site visit, there was no evidence of erosion or erosional features on site. The shallow soils could be vulnerable to erosion if the topsoil layer is removed and left unprotected for prolonged periods of time. This can be easily mitigated with appropriate design measures during construction.

Given the proximity of the site to any source, rockfall (falling debris) is not considered a risk to the site and given the site is generally flat with only a minor gradual change in elevation across the site, slope instability (slippage) is not considered to be a risk.

On the basis of our geotechnical assessment herein, we do not consider subsidence (under either static or seismic loading) to be a significant hazard for normal construction (i.e. NZS3604 compliant buildings).

The site is not currently located within one of the Flood Zones identified by Selwyn District Council, however, restrictions around building floor levels must be checked at building consent stage.

Based on our assessment, we consider that the geotechnical hazards may be mitigated to an acceptable standard, provided that the geotechnical recommendations given in this report are followed, and the appropriate engineering measures implemented, we consider that the development is unlikely to be affected nor worsen, accelerate or result in material damage.

7. Limitations

This report is subject to the following limitations:

- This report has been prepared by Miyamoto for the Client for the purpose/s agreed with the Client (Purpose). Miyamoto accepts no responsibility for the validity, appropriateness, sufficiency or consequences of the Client using the report for purposes other than for the Purpose.
- This report is not intended for general publication or circulation. This report is not to be reproduced by the Client except in relation to the Purpose, without Miyamoto's prior written permission. Miyamoto disclaims all risk and all responsibility to any third party.
- This report is provided based on the various assumptions contained in the report.

- Miyamoto's professional services are performed using a degree of care and skill reasonably exercised by reputable consultants providing the same or similar services as at the date of this report.
- The sub surface information has been obtained from investigation carried out at discrete locations, which by their nature only provide information about a relatively small volume of subsoils. While Miyamoto has taken reasonable skill and care in carrying out the investigation to determine the subsoil condition, the subsoil condition could differ substantially from the results of any sampling investigation. Miyamoto is not responsible for and does not accept any liability in respect of any difference between the actual subsoil conditions and the results of our investigation.
- A change in circumstances, facts, information after the report has been provided may affect the adequacy or accuracy of the report. Miyamoto is not responsible for the adequacy or accuracy of the report as a result of any such changes.
- This report is not to be reproduced, either wholly or in part, without our prior written permission.

If you have any queries or you require any further clarification on any aspects of this report, please do not hesitate to contact Miyamoto International (NZ) Ltd.

References

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- New Zealand Standard NZS1170.5 (2004). Structural Design Actions, Part 5: Earthquake Actions New Zealand Standard, NZS 2004.
- Selwyn District Council District Plan Online Maps, https://eplan.selwyn.govt.nz/eplan/#/Property/7941662.

Appendices



A. Ground Investigation Data

MINZ site-specific investigation logs ECan well bore logs Aurecon 2017 investigation logs (nearby only) LandTech 2018 investigation logs (nearby only) Davis Ogilvie 2019 investigation logs (nearby only)

miyamoto. Engineerst Client: Consultants

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

TP001

PROJECT: 151 & 153 Lincoln Rolleston Road, Rolleston								
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.8 mb	gl	HOLE DIAMETER:	50 mm		
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP		SHEAR VANE NUMBER:	-		
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full			

	DCP Test		Soil Description			- ·	Lab Testing								Shear Vane
Depth (m)	Results (Blows per	GWL		Son Description		Sample Taken	Atterberg Limit			its Grain Size			wc		Reading (kPa)
(///)	100mm)		usc	Soil Characteristics	Graphic	Taken	ш	PL	PI	GR	SA	FC	(%)	υw	peak/remoulded
	6			SILT; non-plastic, dark brown, dry (TOPSOIL)											
_	8														
-	9			Sandy SILT; low plasticity, yellow-brown, dry,	× × × × ×										
-	9			sand is fine to medium	× × × ×										
	11				* * *										
0.5 -	13				* * *										
	20	l			* * * * * * *										
-	14/-i=h+			Gravelly fine to coarse SAND / Sandy Gravel; fin	e										
	Bouncing			to coarse, grey, dry, gravel is subrounded to											
-				subangular FOH (TARGET STRATA REACHED)											
1.0 -															
_															
		RED													
		NTE													
1.5 -		no:													
		ENC													
		IOT													
		2													
2.0 -															
_															
_															
_															
_															
2.5 -															
_															
_															
	LEGEND														
	ABBREVIATIONS									NOT	<u>ES</u>				
		E PENETF	OMETE					GR	GRA	VEL N					
SV	SHEAR VANF			EOH END OF HOLE PI	PLASTIC	TY INDEX		FC	FINE	S COM	ITEN.	г			
ТР	TEST PIT			UW UNIT WEIGHT (kN/m³) W	C WATER C	ONTENT	÷.,	.▼	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl METERS BELOW GROUND LEVE	EL										

miyamoto. Engineerst Client: Consultants

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

TP002

PROJECT:						
LOGGED BY:	CG	TOTAL TESTING DEPTH:	1.0 n	nbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP		SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test			Soil Description				Lab Testing								Shear Vane		
Depth (m)	Results (Blows per	GWL			Join Descripti	011			Sample Taken	Atterberg Li		imits G		ain S	ize	wc		Reading (kPa)
(,	100mm)		usc		Soil Characteris	tics		Graphic Loa	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	6			SILT; non-plast	ic, dark brown, d	lry (TOPSOIL)											
-	6																	
_	13			Sandy SILT; lov	v plasticity, yello	w-brown, dr	у <i>,</i>	× × × ×										
-	12			sand is fine to	medium			* * * *										
_	9							* * * *										
0.5 -	7							* * * *										
_	7							* * * *										
_	6							* * * *										
_	7							× × × × <i>×</i> × ×										
_	11			Gravelly fine to	o coarse SAND / :	Sandy Grave	l; fine											
1.0 -	Weight			to coarse, grey	/, dry, gravel is su	ibrounded to	D											
_	Bouncing			subangular EOH (T	ARGET STRAT/	AREACHED)											
_							•											
_		ISE																
_		INTE																
1.5 –		COL																
_		Ň																
_		NOT																
_		_																
_																		
2.0 -																		
_																		
_																		
_																		
2.5 -																		
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_																		
_																		
LEGEND																		
		E DENIETI				TERED		יי חויוסו ו			GP	GPA	/FI			NOT	<u>ES</u>	
НА	HAND AUGER				UNABLE TO PF	NETRATE	PI	PLASTIC	LIMIT		SA	SANI))					
SV	SHEAR VANE			EOH	END OF HOLE		PI	PLASTICI	TY INDEX		FC	FINE	S CON	NTEN	т			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³)	WC	WATER C	ONTENT			STAN	IDING	6 GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELO	W GROUND	LEVEL											
PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.7	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DC	CP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test		Soil Description								La	ab Te	esting	9			Shear Vana
Depth (m)	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		usc		Soil Characteristics		Graphic Loa	тикеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 5 11			SILT; non-plast	ic, dark brown, dry ((TOPSOIL)											
0.5 -	12 15 20			Sandy SILT; low sand is fine to i	/ plasticity, yellow-b medium	prown, dry,	* * * * * * * * * * * * * * * * * *										
-	Weight Bouncing			Gravelly fine to to coarse, grey subangular EOH (T	o coarse SAND / San , dry, gravel is subrc ARGET STRATA RI	dy Gravel; fine bunded to EACHED)											
1.0 -		G															
- - 1.5 - -		NOT ENCOUNTEREI															
2.0 -																	
- 2.5 - -																	
	ABBREVIATIONS					LEGEND									NOT	ES	
DCP	DYNAMIC CON	E PENET	ROMETE	R N/E	NOT ENCOUNTER	ED LL	LIQUID LI	MIT		GR	GRA	/EL					
HA	HAND AUGER			UTP	UNABLE TO PENE	TRATE PL	PLASTIC I	IMIT		SA	SAND	D					
SV TD	SHEAR VANE			EOH	END OF HOLE	(kN/m ³) M/C				FC	FINES			Г			
GWI	GROUNDWATE	R LEVFI		UW mbøl	METERS BELOW G	GROUND LEVEL	WATER C	UNTENT		.	STAN	IDING	GW	L			
<u>0</u>	SHOONDWAIL			IIINEI											I		

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	1.2 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test	Soil Description Sample Lab Testing							Shoar Vano						
Depth	Results (Plans par	GWL		Son Description		Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		usc	Soil Characteristics	Graphic Loa	Такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	4			SILT; non-plastic, dark brown, dry (TOPSOIL)											
7	5														
_	7			Sandy SILT; low plasticity, yellow-brown, dry,	× × × × ×										
_	10			sand is fine to medium	× × × ×										
_	11				* * *										
0.5 -	10				* * * *										
_	0				× × × × × × ×										
_	9			SAND: fine to medium vellow-brown dry											
_	10			SAND, fille to filedidifi, yellow-brown, dry											
_	5														
1.0 -	5														
_	11														
	Weight			Gravelly fine to coarse SAND / Sandy Gravel; fine											
	Bouncing	B		subangular											
		LER		EOH (TARGET STRATA REACHED)											
1 5		NU													
1.5 -		NCO													
_		É ⊥													
_		Ň													
-															
_															
2.0 -															
_															
_															
_															
_															
2.5 -															
_															
				LEGEND						1					
	ABBREVIATIONS	<u>.</u>											NOT	E <u>S</u>	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E NOT ENCOUNTERED LL	LIQUID L	IMIT		GR	GRA	VEL					
HA	HAND AUGER			UTP UNABLE TO PENETRATE PL	PLASTIC	LIMIT		SA	SANI	0					
SV	SHEAR VANE			EOH END OF HOLE PI	PLASTICI	TY INDEX		FC	FINE	S CON	NTEN	Т			
ТР	TEST PIT			UW UNIT WEIGHT (kN/m³) WC	WATER C	CONTENT		. .	STAN	IDING	6 GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl METERS BELOW GROUND LEVEL	-										

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.6	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DC	CP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test	Soil Description Sample Lab Testing							Shaar Vano									
Depth	Results (Plaus par	GWL			Son Descriptio	511			Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characterist	ics		Graphic	такеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	5 6			SILT; non-plasti Sandy SILT: low	ic, dark brown, di plasticity, yellow	ry (TOPSOIL) y-brown, dry	× × × ×											
-	8			sand is fine to r	medium	, ,	, ,	* * * * * * * * * * *										
0.5 -	20			Gravelly fine to to coarse, grey,	o coarse SAND / S , dry, gravel is sul	andy Gravel; brounded to	; fine	x x x										
	Weight Bouncing			subangular EOH (TA	ARGET STRATA	REACHED)												
1.0 -																		
- - 1.5 -		OUNTERED																
		NOT ENC																
2.0 -																		
2.5 -																		
1																		
						LEGE	END											
	ABBREVIATIONS									_						NOT	ES	
DCP		E PENETF	ROMETE	R N/E	NOT ENCOUNT			LIQUID LI	MIT		GR	GRA\	/EL					
	HAND AUGER			UTP FOH		NEIKAIE		ρι αςτιριτ			SA FC	SANL	, 5 CON	ITEN	r			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³)	WC V	WATER C	ONTENT		V	STAN		GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW	V GROUND L	EVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	1.3 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test				Soil Descrintio	n			Lab Testing				Shear Vane				
Depth (m)	Results (Blows per	GWL			Son Descriptio			Sample Taken	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		usc		Soil Characteristi	ics	Graphic Loa	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	5			SILT; non-plast	ic, dark brown, dr	y (TOPSOIL)											
	4 4 6			Sandy SILT; low sand is fine to	v plasticity, yellow medium	r-brown, dry,	× × × × × × × × × × × × × × × ×										
0.5	6 5 5						× × × × × × ×										
1.0 -	4			SAND; fine to r	medium, yellow-bi	rown, dry											
-	6 15 Weight	ERED		Gravelly fine to to coarse, grey subangular EOH (T	o coarse SAND / Sa r, dry, gravel is sub ARGET STRATA	andy Gravel; fine prounded to REACHED)											
	Bouncing	NOT ENCOUNT															
- 2.0 -																	
2.5																	
						LEGEND)	L					·		·		
	ABBREVIATIONS														NOT	ES	
DCP		E PENETF	ROMETE	R N/E			LIQUID L	MIT		GR SA	GRA	VEL					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINE	S CON	NTEN	г			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³) WC	WATER C	ONTENT		<u>.</u>	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW	GROUND LEVE	L										

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.6 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test		Soil Description							Shaar Vano							
Depth	Results (Blows per	GWL			Son Description			Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		usc		Soil Characteristics		Graphic Loa	такеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 6 8			SILT; non-plasti	c, dark brown, dry (TOPS	ioil)											
0.5 -	20 Weight Bouncing			Sandy SILT; low sand is fine to n Gravelly fine to to coarse, grey,	plasticity, yellow-brown nedium coarse SAND / Sandy Gr , dry, gravel is subrounde	avel; fine	× × × × × × ×										
				subangular EOH (T/	ARGET STRATA REACH	IED)	J										
1.0 -		(ED															
		NOT ENCOUNTER															
2.0 -																	
2.5																	
						EGEND											
	<u>ABBREVIATIO</u> NS				L	LGEND									<u>NO</u> T	ES	
DCP	DYNAMIC CON	E PENETI	ROMETE	R N/E	NOT ENCOUNTERED	LL	LIQUID LI	MIT		GR	GRA	/EL					
HA	HAND AUGER			UTP	UNABLE TO PENETRATE	E PL	PLASTIC L	IMIT		SA	SAND)		_			
SV	SHEAR VANE			EOH	END OF HOLE	PI				FC	FINES			Г I			
GWI	GROUNDWATE	R LEVEI		UW mbgl	METERS BELOW GROUI	ND LEVEI	WATERC	UNTENT			STAN	IDING	GW	L			
															1		

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.5 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test		Soil Description Sample							Shoar Vano								
Depth (m)	Results (Blows per	GWL			Son Descriptio	<i>"</i>			Sample Takan	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characterist	ics		Graphic Log	такеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	5			SILT; non-plast	ic, dark brown, dr	ry (TOPSOIL)												
-	8			Sandy SILT; low sand is fine to r	v plasticity, yellow medium	v-brown, dry	Ι,	× × × × × × × × × × ×										
0.5	Weight			Gravelly fine to	coarse SAND / S	andy Gravel;	; fine											
0.0	Bouncing			subangular	, ury, graver is sur	Jounded to												
				EOH (T	ARGET STRATA	REACHED)												
_																		
1.0 -																		
_																		
_																		
_		ED																
_		TER																
1.5 -		NNO																
_		ENC.																
		OT E																
_		z																
_																		
2.0 -																		
_																		
25																		
2.5																		
						LEGE	END											
	ABBREVIATIONS															NOT	ES	
DCP	DYNAMIC CON	E PENETF	OMETE	R N/E	NOT ENCOUNT	ERED	LL	LIQUID LI	MIT		GR	GRA	/EL					
HA sv/	HAND AUGER			UTP FOH	UNABLE TO PEN	NETRATE	PL PI				SA FC	SANE) S C O N		г			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³)	WC	WATER O	ONTENT	_	V	STAN		GW	' L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOV	V GROUND L	EVEL	0										

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.7	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DC	CP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test				Soil Descripti	on					La	ab Te	estin	g			Shear Vana
Depth (m)	Results (Blows per	GWL			Son Descripti	011		Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	(Blows per 100mm)		usc		Soil Characteris	tics	Graphic Loa	Taken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 4 5			SILT; non-plasti	ic, dark brown, d	ry (TOPSOIL)											
- 0.5 - -	6 7 8			Sandy SILT; low sand is fine to r	v plasticity, yellow medium	w-brown, dry,	x x x x x x x x x x x										
-	7 16 Weight Bouncing			to coarse, grey subangular EOH (T.	ARGET STRATA	REACHED)											
1.0 – – –		ERED															
		NOT ENCOUNT															
2.0																	
2.5 -																	
						LEGE	ND								1		
	ABBREVIATIONS			D/-											NOT	<u>ES</u>	
		E PENETI	ROMETE	к N/E		ERED I		IMIT		GR	GRA	/EL					
SV	SHEAR VANF			FOH	END OF HOLF			TY INDFX		FC	FINE	, 2 COV	ITEN	г			
ТР	TEST PIT			UW	UNIT WEIGHT	(kN/m³)	WC WATER (CONTENT		.	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW	V GROUND LE	VEL					-					

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollest	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.7 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test								La	ab Te	esting	g			Shoar Vano			
Depth (m)	Results (Blows per	GWL			Son Descripti	on			Sample Takan	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		USC		Soil Characteris	tics		Graphic Log	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 4 4			SILT; non-plasti	ic, dark brown, d	ry (TOPSOIL))											
0.5 -	2 7 16			Sandy SILT; low sand is fine to r	 plasticity, yellov medium 	<i>w</i> -brown, dry	у,	× × × × × × × × × × × × × × × × ×										
-	Weight Bouncing			Gravelly fine to to coarse, grey subangular EOH (T,) coarse SAND / S , dry, gravel is su ARGET STRATA	Sandy Gravel Ibrounded to	l; fine o)											
1.0 - - -		Δ																
		NOT ENCOUNTEREI																
2.0																		
						I FG	END									I		
	ABBREVIATIONS															<u>NO</u> T	ES	
DCP	DYNAMIC CON	E PENETI	ROMETE	R N/E	NOT ENCOUNT	ERED	LL	LIQUID LI	MIT		GR	GRA	/EL				_	
HA	HAND AUGER			UTP	UNABLE TO PE	NETRATE	PL	PLASTIC L	.IMIT		SA	SAND)					
SV	SHEAR VANE			EOH	END OF HOLE	4.1.1.2	PI	PLASTICIT			FC	FINES	S CON	ITEN	Г			
TP				UW			WC	WATER C	ONTENT		.	STAN	DING	i GW	L			
GWL	GROUNDWATE	NLLVEL		IIInAl	WILLENS DELUN		LLVEL									<u> </u>		

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.7 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test			Soil Description								La	ab Te	esting	9			Shoar Vano
Depth	Results (Plaws par	GWL			Son Description	011			Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characterist	tics		Graphic	такеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	8 9 7			SILT; non-plasti	ic, dark brown, di	ry (TOPSOIL)												
0.5 -	7 11 20			Sandy SILT; low sand is fine to r	/ plasticity, yellov nedium	<i>w</i> -brown, dry	1,	× × × × × × × × × × × × × × × ×										
-	Weight Bouncing			Gravelly fine to to coarse, grey, <u>subangular</u> EOH (T,	coarse SAND / S , dry, gravel is sul	andy Gravel; brounded to	; fine											
1.0 		Q																
- - 1.5 - - -		NOT ENCOUNTERE																
2.0 -																		
_ 2.5 - _ _ _																		
I																I		
	ABBREVIATIONS															ΝΟΤ	ES	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNT	ERED	LL	LIQUID LI	MIT		GR	GRA	/EL			<u> </u>		
HA	HAND AUGER			UTP	UNABLE TO PEI	NETRATE	PL	PLASTIC L	IMIT		SA	SAND)					
SV	SHEAR VANE			EOH	END OF HOLE		PI	PLASTICIT	TY INDEX		FC	FINES	S CON	ITEN	Г			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³)	WC	WATER C	ONTENT		. X.	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOV	V GROUND L	EVEL											

miyamoto. Engineerst Client:

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.8	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DO	СР	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test								L	ab Te	esting	g			Shear Vane			
Depth (m)	Results (Blows ner	GWL			Jon Descripti	011			Sample Taken	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		usc		Soil Characteris	tics		Graphic Loq	ruken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	5			SILT; non-plasti	ic, dark brown, d	ry (TOPSOIL)												
_	4																	
-	9			Sandy SILT; low	v plasticity, yellow	w-brown, dry	',	× × × ×										
-	13			sand is fine to r	nedium			* * * *										
-	11							* * * *										
0.5 –	7							* * *										
-	8			Gravelly fine to	coarse SAND / S	Sandy Gravel;	; fine											
-	20			to coarse, grey	, dry, gravel is su	brounded to		3131313131313										
-	Weight			EOH (T	ARGET STRATA	REACHED)												
-	Bouncing																	
1.0 -																		
-																		
-																		
		REC																
		NTE																
1.5 -		no:																
		ENC																
-		ЮТ																
		2																
2.0 -																		
_																		
_																		
_																		
_																		
2.5 -																		
						LEGE	END									-		
200	ABBREVIATIONS			D 11/5	NOT FRICOLIST				NAIT		CF	CD •••				NOT	<u>ES</u>	
DСР нл		E PENETF	KOIVIETE	к N/E		EKED NETRATE	LL PI				GR SA	GRA	VEL D					
SV	SHEAR VANE			EOH	END OF HOLE		PI	PLASTICI	TY INDEX		FC	FINE	, s con	ITEN	г			
ТР	TEST PIT			UW	UNIT WEIGHT	(kN/m³)	WC	WATER C	ONTENT		.	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW	V GROUND L	EVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincolr	Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.9 r	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP		SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test				Soil Description						Le	ab Te	esting	9			Shoar Vano
Depth (m)	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	ain Si	ize	wc		Reading (kPa)
(111)	100mm)		usc		Soil Characteristics		Graphic Loa	тикеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	6 5 8			SILT; non-plasti	c, dark brown, dry (T	fopsoil)											
0.5 -	15 21			Sandy SILT; low sand is fine to r	r plasticity, yellow-br nedium	own, dry,	* * * * * * * * * * * * *										
-	Weight Bouncing			SAND; fine to n	nedium, yellow-brow	vn, dry	* * *										
- - 1.0 -				Gravelly fine to to coarse, grey, subangular	coarse SAND / Sand , dry, gravel is subrou	y Gravel; fine unded to											
		RED		ΕΟΗ (Τ/	ARGET STRATA REA	ACHED)											
		NOT ENCOUNTER															
2.0 -																	
 2.5 – 																	
	ABBREVIATIONS					LEGEND									ΝΟΤ	FS	
DCP	DYNAMIC CON	E PENETI	ROMETE	R N/E	NOT ENCOUNTERE	D LL	LIQUID LI	МІТ		GR	GRA	/EL					
HA	HAND AUGER			UTP	UNABLE TO PENET	RATE PL	PLASTIC L	IMIT		SA	SAND)					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICIT	TY INDEX		FC	FINES	S CON	ITEN	Г			
TP	TEST PIT			UW	UNIT WEIGHT (k	(N/m³) WC	WATER C	ONTENT		.X	STAN	IDING	i GWI	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GF	ROUND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.5	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + D	СР	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test				Soil Descripti	n					L	ab Te	esting	g			Shear Vane
Depth (m)	Results (Blows per	GWL			Son Description	<i></i>		Sample Taken	Atter	berg L	imits	Gr	ain Si	ize	wc		Reading (kPa)
(111)	100mm)		usc		Soil Characterist	ics	Graphic Loa	Taken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	8			SILT; non-plasti	ic, dark brown, d	ry (TOPSOIL)											
	15																
_	15			Sandy SILT; low	v plasticity, yellow	v-brown, dry,	×										
_	Weight			sand is fine to r	medium		* * * *										
0.5	Bouncing			Gravelly fine to	coarse SAND / S	andy Gravel; fi	ne										
0.5 -				to coarse, grey, subangular	, dry, gravel is su	brounded to											
_				EOH (T	ARGET STRATA	REACHED)											
_																	
_																	
-																	
1.0 -																	
_																	
_		Ω															
-		ERE															
-		UNT															
1.5 –		COL															
-		T EN															
-		.ON															
-																	
-																	
2.0 -																	
-																	
-																	
2.5 -																	
-																	
-																	
<u> </u>						LEGEN											
├ ───						LEGEN	טו								ΝΟΤ	FS	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNT	ERED L	L LIQUID L	IMIT		GR	GRA	VEL					
НА	HAND AUGER			UTP	UNABLE TO PEI	NETRATE P	L PLASTIC	LIMIT		SA	SAN	5					
SV	SHEAR VANE			EOH	END OF HOLE	Р	PLASTICI	TY INDEX		FC	FINE	S CON	ITEN	Г			
TP	TEST PIT			UW	UNIT WEIGHT	(kN/m³) V	VC WATER (CONTENT	1	. X	STAN	IDING	i GWI	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOV	V GROUND LEV	/EL										

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincolr	n Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	1.0 m	nbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP		SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test		Soil Description Lab Testing						Shoar Vano								
Depth (m)	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	(Blows per 100mm)		USC		Soil Characteristics		Graphic	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	7 6 4			SILT; non-plasti	ic, dark brown, dry (T	OPSOIL)											
	4 5 6 4 6			Sandy SILT; low sand is fine to r	v plasticity, yellow-bro nedium	own, dry,											
- 1.0 - -	9 20 Weight Bouncing	ED		Gravelly fine to to coarse, grey, <u>subangular</u> EOH (T/	o coarse SAND / Sando , dry, gravel is subrou ARGET STRATA RE/	y Gravel; fine Inded to ACHED)											
		NOT ENCOUNTER															
2.0 -																	
2.5 -																	
						LEGEND											
DCP HA	ABBREVIATIONS DYNAMIC CON HAND AUGER	E PENETF	ROMETE	R N/E UTP	NOT ENCOUNTEREI UNABLE TO PENETF	D LL RATE PL	liquid li Plastic i	IMIT LIMIT		GR SA	GRA\ SANE	/EL D			<u>NOT</u>	<u>ES</u>	
SV TP GWL	SHEAR VANE TEST PIT GROUNDWATE	R LEVEL		EOH UW mbgl	END OF HOLE UNIT WEIGHT (ki METERS BELOW GR	PI N/m³) WC ROUND LEVEL	PLASTICI WATER C	TY INDEX		FC	FINES STAN	S CON	NTEN GWI	T			

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.8	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DO	CP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test				Soil Description						Le	ab Te	esting	9			Shaar Vano
Depth (m)	Results (Blows per	GWL			Son Description			Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characteristics		Graphic Loa	такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 7			SILT; non-plasti	ic, dark brown, dry (TO	PSOIL)											
-	11 20			Sandy SILT; low sand is fine to r	v plasticity, yellow-brov nedium	vn, dry,	* * * * * * * * * * * *										
0.5 -	Weight Bouncing						ч ж х к * х х * х х х * х х * х х х										
-				Gravelly fine to to coarse, grey, subangular	coarse SAND / Sandy (, dry, gravel is subroun	Gravel; fine ded to											
1.0 -				EOH (1	TARGET STRATA REACI	HED)											
-		UNTERED															
-		NOT ENCO															
2.0 -																	
- 2.5 -																	
-																	
						LEGEND											
0.00	ABBREVIATIONS							NAIT		CD	CD 41	/51			NOT	<u>ES</u>	
DCP нл		E PENE IF	KUIVIETE	к N/E 11TD						GR SA	GRA\	VEL D					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINE	S CON	ITEN	г			
TP	TEST PIT			UW	UNIT WEIGHT (kN/	/m³) WC	WATER C	ONTENT		.	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GRO	UND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.8	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DO	CP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test				Soil Description						L	ab Te	esting	g			Shear Vana
Depth (m)	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(///)	100mm)		usc		Soil Characteristics		Graphic Loa	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	4 3 3			SILT; non-plasti	ic, dark brown, dry (TOPSC	DIL)											
0.5 -	4 4 4 5			Sandy SILT; low sand is fine to r	v plasticity, yellow-brown, medium	dry,	× × × × × × × × × × × × × × × × × × ×										
	20 Weight Bouncing			Gravelly fine to to coarse, grey, subangular EOH (1	o coarse SAND / Sandy Gra , dry, gravel is subrounded TARGET STRATA REACHED	vel; fine to))											
-		NTERED															
1.5 - - -		NOT ENCOU															
2.0 -																	
- 2.5																	
					IF	GEND											
	ABBREVIATIONS				L	92.10									NOT	<u>ES</u>	
DCP	DYNAMIC CON	E PENETI	ROMETE	R N/E	NOT ENCOUNTERED	LL	LIQUID LI	MIT		GR	GRA	/EL					
HA	HAND AUGER			UTP	UNABLE TO PENETRATE	PL	PLASTIC L	IMIT		SA	SAN)					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICIT	TY INDEX		FC	FINE	S CON	NTEN	Г			
TP				UW	UNIT WEIGHT (kN/m ³)	WC	WATER C	ONTENT			STAN	IDING	GW	L			
GWL	GROUNDWATE	K LEVEL		mbgl	IVIETERS BELOW GROUN	U LEVEL									I		

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PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.4 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

DCP Test Denth Results				Soil Descrinti	on						L	ab Te	esting	g			Shear Vane	
Depth (m)	Results (Blows per	GWL			Son Descripti	on			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(///)	100mm)		USC		Soil Characteris	tics		Graphic Loa	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	5 8 20			SILT; non-plasti	ic, dark brown, d	ry (TOPSOIL))											
- 0.5 - - -	Weight Bouncing			Gravelly fine to to coarse, grey, <u>subangular</u> EOH (Ta	o coarse SAND / S , dry, gravel is su ARGET STRATA	Sandy Gravel brounded to REACHED	l; fine											
- 1.0 - -																		
- 1.5 - - -		NOT ENCOUNTERED																
2.0 -																		
l							END											
	ABBREVIATIONS					220	_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,									NOT	ES	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNT	ERED	LL	LIQUID LI	MIT		GR	GRA	VEL					
HA	HAND AUGER			UTP	UNABLE TO PE	NETRATE	PL	PLASTIC L	IMIT		SA	SAN	D					
SV	SHEAR VANE			EOH	END OF HOLE	/LNI / 31	PI	PLASTICIT			FC	FINE	S CON	ITEN	Г			
IP GWI	GROUNDWATE	R LEVFI		UW mhøl		(KIN/M²) N GROUND I		WATER C	UNTENT			SIAN	IDING	GW	L			
0.012	2															1		

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.4 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test			Soil Description							Le	ab Te	estin	g			Shear Vane
Depth (m)	Results (Blows per	GWL			son beschption			Sample Taken	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(///)	100mm)		usc		Soil Characteristics		Graphic Log	TUKEN	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	5 5 20			SILT; non-plast Gravelly fine to to coarse, grey subangular	ic, dark brown, dry (1 o coarse SAND / Sand 1, dry, gravel is subrou	TOPSOIL) ly Gravel; fine unded to											
-				EOH (T	ARGET STRATA RE	ACHED)	_										
1.0 - - -	Weight Bouncing	ERED															
		NOT ENCOUNT															
2.0 -																	
2.5																	
						LEGEND									1		
DCD							יימייטע	NAIT		CP	CDAY	/51			NOT	<u>ES</u>	
ил		EPENEI				D LL				ык Sa	SVNL SVNL						
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINE	S CON	ITEN.	г			
TP	TEST PIT			UW	UNIT WEIGHT (k	⟨N/m³) WC	WATER C	ONTENT		.	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW G	ROUND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	1.2 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test				Soil Description						L	ab Te	estin	9			Shoar Vano
Depth	Results	GWL			Son Description			Sample	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characteristics		Graphic	такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	4 3 4			SILT; non-plasti	ic, dark brown, dry (TOPSO	IL)											
 0.5 	4 7 16 17 13 20			Sandy SILT; low sand is fine to r	/ plasticity, yellow-brown, o nedium	iry,											
- 1.0 -	Weight Bouncing			Gravelly fine to	coarse SAND / Sandy Grave	el· fine	× × × × × × × × × ×										
-		VTERED		to coarse, grey, subangular EOH (TA	ARGET STRATA REACHE	to D)											
1.5 - - -		NOT ENCOUR															
2.0 -																	
2.5 -																	
					LE	GEND				·			·		·	·	
	ABBREVIATIONS														NOT	ES	
DCP		E PENETF	OMETE	R N/E				MIT		GR	GRA	/EL					
HA SV	SHEAR VANF			EOH		PL PI	PLASTIC	TY INDEX		FC	FINE	s con	ITEN.	г			
TP	TEST PIT			UW	UNIT WEIGHT (kN/m ³)	WC	WATER C	ONTENT		V	STAN		GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROUND	D LEVEL											

miyamoto. Engineerst Client: Testing

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincolr	Rolleston Road, Rolles	ton			
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.9	mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + D	СР	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full	

	DCP Test		Soil Description						Le	ab Te	esting	g			Shoar Vano		
Depth (m)	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	rain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		usc		Soil Characteristics		Graphic	такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 4 5			SILT; non-plasti	ic, dark brown, dry (TOF	PSOIL)											
	5 6 5 6			Sandy SILT; low sand is fine to r	/ plasticity, yellow-brow nedium	ın, dry,	×××××× × * * * * × *										
1.0 -	17 Weight Bouncing			Gravelly fine to to coarse, grey, subangular	o coarse SAND / Sandy G , dry, gravel is subround	Gravel; fine											
		VTERED		2011 (17													
1.5 – – –		NOT ENCOUI															
2.0 -																	
2.5																	
			•			LEGEND							·	·	·	·	
	ABBREVIATIONS														NOT	ES	
		E PENETF	ROMETE	R N/E				MIT		GR	GRA	VEL					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINE	S CON	NTEN	г			
TP	TEST PIT			UW	UNIT WEIGHT (kN/r	m³) WC	WATER C	ONTENT		. <u></u>	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GROU	UND LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincolr	Rolleston Road, Rolles	ton		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.6 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test		Soil Description Sample					La	Lab Testing					Shear Vane		
Depth (m)	Results (Blows per	GWL		5011 DESCH	ption		Sample Taken	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(///)	100mm)		usc	Soil Characte	eristics	Graphic Log	Taken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5 4 5 5			SILT; non-plastic, dark brown Sandy SILT; low plasticity, ye sand is fine to medium	n, dry (TOPSOIL) ellow-brown, dry,	* * * *										
0.5	7 20 Weight Bouncing			Gravelly fine to coarse SANE to coarse, grey, dry, gravel is subangular EOH (TARGET STRA	D / Sandy Gravel; fin s subrounded to ATA REACHED)	e										
1.0		ERED														
- 1.5 - - -		NOT ENCOUNTE														
2.0 -																
2.5																
ļ					LEGENI)										
DCP	ABBREVIATIONS DYNAMIC CON	E PENETF	ROMETE	R N/E NOT ENCOU	JNTERED LL	LIQUID L	IMIT		GR	GRA	/EL			NOT	<u>ES</u>	
HA SV TP	HAND AUGER SHEAR VANE TEST PIT			UTP UNABLE TO EOH END OF HO UW UNIT WEIGI	PENETRATE PL LE PI HT (kN/m³) W	PLASTIC I PLASTICI C WATER C	LIMIT TY INDEX CONTENT		SA FC V	SANE FINES STAN) 5 CON IDING	NTEN 6 GW	T L			
GWL	GROUNDWATE	R LEVEL		mbgl METERS BE	LOW GROUND LEVE	L										

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.9 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test		Soil Description					Lab Testing Sample Atterberg Limits Grain Siz					g			Shoar Vano	
Depth	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		USC		Soil Characteristics		Graphic	такеп	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	7 7 8			SILT; non-plasti	ic, dark brown, dry (TO)PSOIL)											
	15 13 8 13			Sandy SILT; low sand is fine to r	v plasticity, yellow-brov medium	wn, dry,	× × × × × × × × × × × × × × × × × × ×										
- - 1.0 -	Weight Bouncing			Gravelly fine to to coarse, grey subangular EOH (T.	o coarse SAND / Sandy , dry, gravel is subroun ARGET STRATA REA	Gravel; fine ided to CHED)											
		VTERED		- (
1.5 - - -		NOT ENCOUN															
2.0 -																	
2.5																	
						LEGEND		r						l			
	ABBREVIATIONS														NOT	ES	
DCP	DYNAMIC CON	E PENETF	ROMETE	R N/E	NOT ENCOUNTERED					GR	GRA	/EL					
HA SV	HAND AUGER			UTP FOH	END OF HOLF	AIE PL PI		LIIVII I TY INDFX		SA FC	FINF	, s cov		г			
TP	TEST PIT			UW	UNIT WEIGHT (kN	/m³) WC	WATER C	ONTENT		.	STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW GRO	OUND LEVEL											

miyamoto. Engineerst Client: Testing

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollest	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.9 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test				Soil Descript	tion Lab Testing					Shoar Vano							
Depth	Results (Blows per	GWL			Son Descript	1011			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(m)	(Blows per 100mm)		usc		Soil Characteris	stics		Graphic	такеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
	3 4 3			SILT; non-plast	ic, dark brown, o	dry (TOPSOII	L)											
0.5 -	7 7 15			sand is fine to	medium	w brown, di	'y,	× × × × × × × × × × × × × × × × × × ×										
-	Bouncing							* * * * * * * * * * * *										
1.0 -	_			Gravelly fine to to coarse, grey subangular EOH (T	coarse SAND / , dry, gravel is su ARGET STRAT	Sandy Grave ubrounded t	el; fine to											
- - 1.5 -	• · · · · · · · · · · · · · · · · · · ·	OUNTERED																
-		NOT ENC																
-																		
						LEC	GEND											
DCP HA SV TP	ABBREVIATIONS DYNAMIC CON HAND AUGER SHEAR VANE TEST PIT	E PENETF	ROMETE	R N/E UTP EOH UW	NOT ENCOUN UNABLE TO PE END OF HOLE UNIT WEIGHT	TERED ENETRATE · (kN/m³)	LL PL PI WC	LIQUID LI PLASTIC L PLASTICIT WATER C	IMIT LIMIT TY INDEX CONTENT		GR SA FC V	GRAV SANE FINE: STAN	VEL D S CON IDING	NTEN G GWI	T	<u>NOT</u>	<u>ES</u>	
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELO	W GROUND	LEVEL											

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	n		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.5 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test				Soil Description Sample Lab Testing Shear v					Shear Vane							
Depth (m)	Results (Blows per	GWL			Son Description			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		USC		Soil Characteristics		Graphic Loa	тикеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	4 4 6			SILT; non-plasti Sandy SILT; low sand is fine to I	ic, dark brown, dry (` v plasticity, yellow-bi medium	TOPSOIL) rown, dry,											
0.5 -	15 Weight Bouncing			Gravelly fine to to coarse, grey, subangular EOH (T,) coarse SAND / Sanc , dry, gravel is subro ARGET STRATA RE	dy Gravel; fine unded to ACHED)	x x x										
- 1.0 - -																	
- - 1.5 - -		NOT ENCOUNTERED															
- 2.0 - -																	
						LEGEND											
ПСР			ROMETE	R N/F		-n II	יי חויוסו	МІТ		GR	GRAN	/FI			NOT	<u>ES</u>	
НА	HAND AUGER			UTP	UNABLE TO PENET	RATE PL	PLASTIC L	IMIT		SA	SANE)					
SV	SHEAR VANE			EOH	END OF HOLE	PI	PLASTICIT	TY INDEX		FC	FINES	S CON	ITEN	г			
TP	TEST PIT			UW	UNIT WEIGHT (F	kN/m³) WC	WATER C	ONTENT			STAN	IDING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOW G	ROUND LEVEL											

miyamoto. Engineerst Client: Testing

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	Rolleston Road, Rollesto	on		
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.4 mbgl	HOLE DIAMETER:	50 mm
PROCESSED BY:	CG	TESTING METHOD:	TP + DCP	SHEAR VANE NUMBER:	-
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E	This report may only be reproduced in full	

	DCP Test		Soil Description									L	ab Te	esting	g			Shear Vane
Depth (m)	Results (Blows per	GWL			Son Descripti	011			Sample Takon	Atter	berg L	imits	Gr	ain S	ize	wc		Reading (kPa)
(111)	100mm)		USC		Soil Characteris	tics		Graphic Loa	Tuken	ш	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	3 7 15			SILT; non-plasti	ic, dark brown, d	ry (TOPSOIL) Sandy Gravel	fine											
0.5	Weight Bouncing			to coarse, grey, subangular EOH (T	, dry, gravel is su	brounded to												
- 1.0 - -		Ο																
- 1.5 - - -		NOT ENCOUNTEREI																
- 2.0 -																		
2.5 -																		
						LEGE	END									1		
DCP	ABBREVIATIONS	E PENETF	ROMETE	R N/E	NOT ENCOUNT	ERED	LL	LIQUID LI	MIT		GR	GRA	VEL			NOT	<u>ES</u>	
HA SV	HAND AUGER SHEAR VANE			UTP EOH	UNABLE TO PE END OF HOLE	(kN/m ³)	PL I PI I	PLASTIC L PLASTICIT	LIMIT TY INDEX		SA FC	SANE FINE	D S CON		Г			
GWL	GROUNDWATE	R LEVEL		mbgl	METERS BELOV	W GROUND L	EVEL	WATERU				STAN		WD	L			

miyamoto. Engineerst Client: Testing

PROJECT NUMBER: CLIENT:

TESTING COMPLETED:

200357 Yoursection Ltd 17 November 2020

SHALLOW GROUND INVESTIGATION LOG

PROJECT:	151 & 153 Lincoln	151 & 153 Lincoln Rolleston Road, Rolleston								
LOGGED BY:	CG	TOTAL TESTING DEPTH:	0.3	mbgl	HOLE DIAMETER:	50 mm				
PROCESSED BY:	CG	TESTING METHOD:	TP + DO	СР	SHEAR VANE NUMBER:					
LOCATION:	REFER TO SITE PLAN	GROUNDWATER LEVEL:	N/E		This report may only be reproduced in full					

	DCP Test			Soil Description			Lab Testing						Shear Vane			
Depth	Results (Blows per	GWL Soli Description		Sample	Atterberg Limits Grain Siz			ize	wc		Reading (kPa)					
(m)	(Blows per 100mm)		USC	Soil Characteristics		Graphic	такеп	LL	PL	PI	GR	SA	FC	(%)	UW	peak/remoulded
-	5			SILT; non-plastic, dark brown, dry (TOF	PSOIL)											
_	15			to coarse, grey, dry, gravel is subround	ded to											
	Weight Bouncing			subangular												
0.5 -	Douncing			EOH (TARGET STRATA REAC	(HED)											
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-		2														
-																
2.0 -																
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2.5 -																
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_																
					LEGEND									r –		
DCD	ABBREVIATIONS					יי מייוסוי	NAIT		CR	CRAN	/51			NOT	<u>ES</u>	
рсь Пр		E PENEIH	ONETEI		LL TF DI		IMIT		GK SA	SANC	/EL					
SV	SHEAR VANE			EOH END OF HOLE	PI	PLASTICI	TY INDEX		FC	FINES	, 5 CON	ITEN	г			
ТР	TEST PIT			UW UNIT WEIGHT (kN/	m³) WC	WATER C	ONTENT			STAN	DING	GW	L			
GWL	GROUNDWATE	R LEVEL		mbgl METERS BELOW GRO	UND LEVEL											

Borelog for well M36/3868

Grid Reference (NZTM): 1552464 mE, 5171200 mN Lecation Accuracy: 10 - 50m Ground Level Attude: 38.4 m =MSD Accuracy: < 2.5 m Driller: McMillan Drilling Ltd Drill Method: Rolary/Peroussion Borelog Depth: 36.8 m Drill Date: 18-Jan-1988



iyamoto.



Borelog for well M36/7975

Grid Reference (N2TM): 1552217 mE, 5571001 mN Lecation Accuracy: 50 - 300m Ground Level Attrude: 37.7 m =MSD Accuracy: < 2.5 m Driller: Dynes Road Drilling Drill Method: Cable Tool Borelog Depth: 37.5 m Drill Date: 05-Sep-2005



niyamoto.



Borelog for well M36/4966

Grid Reference (N2TM): 1552787 mE, 5171558 mN Location Accuracy: 50 - 300m Oround Level Althode: 38.6 m +MSD Accuracy: < 2.5 m Driller: McMittan Drilling Ltd Drill Method: Rotary/Percussion Dorelog Depth: 48.9 m Drill Date: 18-Aug-1995





Falcons Subdivision Proposed Extension

Borelog for well BX23/0533

Orid Reference (H2TM): 1552E74 mE, 5171682 mN Location Acouracy: 10 - 50m Ground Level Athtude: m +MSD Accuracy: Driller: East Coast Drilling Drill Method: Air Ristary Bonelog Depth: 48.0 m. Drill Date: 20-Nov-2015



	Water Level	Depthon		Full Oriters Description	Parmation
U		0.50%	000000	Brown TOPSOL, Unsaturated (By sr	
11			boood .	Gray-SAAVEL (2 - 60 MAA	
11		1.00m	200000	Unseturated (by or melat).	
H			0.0.0	Oney sampy GRAVEL (2 - 50 MM).	
н			LAN ALL	Unseturated (dry or melar)	
н.			1.00.		
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			0.000		
			EAL STOR		
			0.0.		
		19.00m	D::0::0		
			0=0=0	Brisen sleyey GRAVEL (2 - 80 MA).	
n -			-0-0-	Unservaced (b) or meat).	
H					
H			0-0-0		
Ц.		23.00m	-0-0-	the second states of second	
U			0-0-0	siden devel (Revel (2 - 50 MA)	
1			=0=03	(astarbaaring)	
1			0-0-0		
			2223		
			20202		
8			0=0=0		
			-0-0-		
			0-0-0		
П.		11.00m	0-0-0		
H I			000000	Light Siden SRAIEL (2 - 65 MM)	
H			100000	Seturated (veter/bearing).	
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TEAT DIT NO

TD**-**

au	irecon	TE	EST PIT RECORI)	TESTPI	I NO.	IP	71	
www.aure	econgroup.com				PROJEC	T NO.	25	4246	
PROJECT Brai	nthwaite Drive								
METHOD TP		C	O-ORDINATES (NZTM)	LOC	GGED		CHEC	CKED	
MACHINE & NO	Wheeled Excavator		E 1552186	T. N	NITCHELL		A. HILLS		
			N 51/14/5		ГЕ		DATE	<u>:</u>	
CONTRACTOR	Maugers	GR	OUND LEVEL +37.00 m F	RL 22 /1	1/2016		2/12/2	2016	
		STRAT	A			SAM	IPLE	S & TESTS	
Depth (m) ^{Legend}			Description			Depth	No	Remarks/Tests	
	SILT with minor sand and trac (TOPSOIL)	e of rootle	ets; dark brown. Moist, low plastic	city; sar	nd, fine.				
	SILT; light brown with orange-	grey mott	tles. Moist, low plasticity.						
	1.20 - 1.40 Becomes with mine	or sand.	nd. silt and cobbles: brownish are	/. Mois	t.				
	subrounded to rounded; sand,	fine to m	nedium.		-,				
	End of Tr <i>Termina</i>	ial pit/trei	nch at 1.70m, on 22/11/2016 <i>son:</i> Target depth acheived.						

SHORING/SUPPORT: None STABILITY: Generally Stable

GENERAL REMARKS SHORING/SUPPORT: Ne STABILITY: Generally Sta Groundwater not encountered Coordinates found using hand Ground level found using hand All dimensions in metres Aurecon New Zealand Limited, . . Tel: Fax: Groundwater not encountered. Coordinates found using handheld GPS, likely accurate to +/- 5 m. Ground level found using handheld GPS, likely accurate to +/- 10 m.

All dimensions in metres	CLIENT GW Rolleston Ltd.		Pocket Penetrometer Test Insitu Vane Shear Test	Vater Level
		· ·		

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TEST PIT RECORD

TEST PIT NO.

TP10

254246 PROJECT NO.

PROJECT Branthwaite Drive								
METHOD .	ТР	CO-ORDINATES (NZTM)	LOGGED	(CHEC	KED		
		E 1552053	T. MITCHELL		a. Hil	LS		
MACHINE &	NO. Wheeled Excavator	N 5171529	D 4 T C		- • - -			
CONTRACTO	OR Maugers	GROUND LEVEL +43.00 m RL	DATE	1	DATE			
			22/11/2016		2/12/2	016		
	STI	RATA		SAM	PLE	S & TESTS		
Depth (m)	gend	Description		Depth	No	Remarks/Tests		
0.25	$\frac{h}{2}$ SILT with minor sand and some ro (TOPSOIL)	SILT with minor sand and some rootlets; dark brown. Moist, low plasticity; sand, fine.						
-x -x -x -x	 SILT with minor sand; light brown. × × 							
0.70 - C - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0	Fine to coarse GRAVEL with some sand, fine to coarse.	e sand; greyish brown. Moist, subrounde	d to rounded;					

End of Trial pit/trench at 1.60m, on 22/11/2016 <i>Termination Reason:</i> Target depth acheived.

NO MAP) Project: BRANTHWAITE DRIVE LOGS.GPJ Library: AGS 4_0.GLB Date: 5 December 2016					
KETCH I	GENERAL REM	ARK	8		
D (NO SI	SHORING/SUPP STABILITY: Gen	ORT: erally	None Stable		
AGS4 TEST PIT RECOR	Groundwater not end Coordinates found u Ground level found u	counte ising h using l	red. andheld GPS, likely accurate to +/- 5 m. nandheld GPS, likely accurate to +/- 10 m.		
Report ID	All dimensions in me	etres	CLIENT GW Rolleston Ltd.	 Pocket Penetrometer Test Insitu Vane Shear Test 	¥ Water Level

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TEST PIT RECORD

TEST PIT NO.

TP23

PROJECT NO. 254246

PROJECT Branthwaite Drive

METHOD TP	CO-ORDINATES (NZTM)	LOGGED	CHECKED		
	E 1552359	T. MITCHELL	A. HILLS		
MACHINE & NO. Wheeled Excavator	N 5171660				
		DATE	DATE		
CONTRACTOR Maugers	GROUND LEVEL +43 00 m RI				
dentri a concerna a madgere		23/11/2016	5/12/2016		
			•		
STF	RATA	SAM	SAMPLES & TESTS		
Depth					

	Depth (m)	Depth (m) Legend Description			Depth	No	Remarks/Tests
		SILT with minor sand and rootlets; dark brown. Moist, low plasticity; sand, fine.					
	0.25	$\underbrace{1}_{0.25} \underbrace{1}_{1}, \underbrace{1}_{2}, \underbrace{1}, \underbrace{1}, \underbrace{1}, \underbrace{1}, \underbrace{1}, \underbrace{1}, \underbrace{1}, \underbrace{1}, \underbrace{1}$					
		× . · . · .×	Silty fine	SAND with trace of rootlets; brown. Dry.			
	0.50	· · · ·	Fina ta a	cares CDAV/EL with some cond. minor coholog, trace of restlate and accessional	_		
		00	boulders	; brown. Dry, subrounded to rounded; sand, fine to coarse.			
		$\mathbf{b}_{\mathbf{a}}$					
		00					
	-	00	1.00 Bec	comes with no rootlets; arevish brown.			
		00					
		00					
	1.60	00			_		
		-		End of Trial pit/trench at 1.60m, on 23/11/2016 Termination Reason: Target depth acheived.			
9	-	-					
er 20		+					
emb		1					
Dec		-					
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GLB		-					
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TCH N	GENER		EMARK	S	1		
SKE				Neve			
2	STARIU	G/SU TV 6	PPORT:	NONE V Stable			
ORD	JIADILI	· · . C	Jenerally	Volabie			
REC	Groundwa	ter not	t encounte	ered.			
님	Coordinat	es foui vel fou	nd using h Ind using l	nandheid GPS, likely accurate to +/- 5 m. handheid GPS, likely accurate to +/- 10 m			
TEST	2. 2414 10						
S41							
الخ ن							
ort II	All dimen	sions ir	n metres	CLIENT GW Rolleston Ltd.	Vater Leve	1	
Rep		510113 11					

Aurecon New Zealand Limited, , . Tel: Fax:

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TEST PIT RECORD

TEST PIT NO.

TP24

PROJECT NO. 254246

PROJECT Branthwaite Drive

METHOD TP	CO-ORDINATES (NZTM)	LOGGED	CHECKED		
	E 1552208	T. MITCHELL	A. HILLS		
MACHINE & NO. Wheeled Excavator	N 5171608				
		DATE	DATE		
CONTRACTOR Maugers	GROUND LEVEL +44.00 m R	L 23/11/2016	5/12/2016		
	·	•			
STI	RATA	SAMPLES & TES			

Depth (m)	Legend	Description	Depth	No	Remarks/Tests
	<u>x 1/</u> .x	SILT with minor sand and tree roots (up to 10 mm); dark brown. Moist, low plastic	city;		
0.20	1/ 31/	sand, fine. (TOPSOIL)			
-	× ,	SILT with minor sand; brown. Moist, low plasticity; sand, fine.			
-	× ×				
	× ×				
-	× ×				
0.80	0/S	Fine to coarse GRAVEL with some sand, minor cobbles and trace of rootlets; ligh	nt		
_	00	brown. Moist, subrounded to rounded; sand, medium.			
-	000				
-	00	1.20 Becomes with no rootlets.			
-	0				
	000				
1 70	00				
		End of Trial pit/trench at 1.70m, on 23/11/2016			
	-	Iermination Reason: Target depth acheived.			
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-	-				
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-	1				
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CENED		EMADKS			
GENER					
SHORIN	G/SU	JPPORT: None			
STABILI	ΓΥ: (Generally Stable			
Groundwa	ter no	at encountered			
Coordinat	es fou	ind using handheld GPS, likely accurate to +/- 5 m.			
Ground le	vel fou	und using handheld GPS, likely accurate to +/- 10 m.			
		CLIENT CW Pollocton Ltd	eter Test	al	
All dimens	sions i		Test		

Aurecon New Zealand Limited, , . Tel: Fax:



TP25

au	irecon	TEST PIT RECOP							
www.aure	econgroup.com		T NO.	254246					
PROJECT Bra	nthwaite Drive			·					
METHOD TP		CO-ORDINATES (NZTM)	LC	OGGED		CHEC	CKED		
MACHINE & NO.	Wheeled Excavator	E 1552490	Т.	T. MITCHELL			A. HILLS		
			DA	ATE		DATE	E		
JONTRACTOR	Maugers	GROUND LEVEL +44.00 r	n RL 23	/11/2016		5/12/2	2016		
		STRATA			SAN	1PLE	S & TESTS		
Depth (m) Legend		Description			Depth	No	Remarks/Tests		
	SILT with minor sand and rootl (TOPSOIL)	ets; dark brown. Moist, low plasticity; sa	and, fine	·.					
0.35 - <u>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 </u>	CII T with some condubrour A	Aciet low placticity and fine							
-× × ×	SILT WIT Some Sand, brown, h	noist, iow plasticity, sand, line.							
0.70 × ×									
	Fine to coarse GRAVEL with s subrounded to rounded; sand,	ome sand and trace of rootlets; browns fine to medium.	sh grey.	Moist,					
-000	0.70 - 0.80 Sand becomes me	dium to coarse, light brown.							
00	1.30 Bacamas with no rootlate								
	1.50 Decomes with no rootlets.								
1.60	End of Tr	ial pit/trench at 1.60m, on 23/11/2016							
-	Termina	tion Reason: Target depth acheived.							
-									
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4									
-									

Report ID: AGS4 TEST PIT RECORD (NO SKETCH NO MAP) || Project: BR/ **GENERAL REMARKS** SHORING/SUPPORT: None STABILITY: Generally Stable Groundwater not encountered. Coordinates found using handheld GPS, likely accurate to +/- 5 m. Ground level found using handheld GPS, likely accurate to +/- 10 m.

▷▷ Pocket Penetrometer Test ↓ Insitu Vane Shear Test Vater Level CLIENT GW Rolleston Ltd. All dimensions in metres

Aurecon New Zealand Limited, , . Tel: Fax:

			Client: Hank Developments Limited Project: Proposed Subdivision					Augerhole N	o. HA01
ő	-	C 0	NSULTING Address: 7/572 Selwyn Road, Rolleston					Sheet No.	1 of 1
Dri ll Dri ll e Date Date	Type: d By: Starte Finish	ed: ied:	8 Ton Excavator Project No: LTCL18051 BE Coordinates: NZTM: 155 6-Apr-18 Ground Conditions: Grassed, N 6-Apr-18 Groundwater Level (m): Not Encour	2177 ear le itered	mE, 5 ⁻ vel (6-Apr	171418 mN 18)	Logged By: Shear Vane Calibration I Calibration I	No: Factor: Date:	BE N/A N/A N/A
λ	-	Ď		vel (m)			In-situ Fie	eld Testing	
atigraph	pth (m)	phic Lo	Soil description in accordance with Guideline for the Field Classification and Description of Soil and Rock for Engineering Purposes, NZ Geotechnical Society Inc.,	ater Le	pth (m)	Shear Strength (kPa)	[Dynamic Con	e Penetrometer Scala Blow Count /
Stra	De	Gra	2005	Groundw	De	Peak: Remoulded: *	Depth (m)	slow Count	100mm 0 5 10 15 20
PSOL	_	\searrow	SILT, minor fine sand, minor organics, dark brown, medium dense, moist, nor plastic [TOPSOIL]	1	_		-0.1 -0.2	3	•
10		$\times \times$	SIIT minor fine sand vellowish brown dense moist non-plastic (RIVER		_		-0.3	5	
	0.5	* * * * *	DEPOSITS]		0.5		-0.4	8	
		* * * * *					-0.6	10	
	_		Fine to coarse subrounded greywacke gravelly fine to coarse SAND, trace				-0.7	25 +	
			subrounded greywacke cooples, greyish brown, tignily packed, moist		_		-0.9		
	1.0				1.0		-1.0 -1.1		
			E		_		-1.2		
SITS		4 -	coarse subrounded greywacke GHAVEL, some to minor line to coarse sand, greyish brown, tightly packed, moist				-1.3 -1.4		
DEPC	1.5				1.5		-1.5		
RIVEF	_		Fine to coarse subrounded greywacke gravelly fine to coarse SAND, trace subrounded greywacke cobbles, greyish brown, tightly packed, moist				-1.6 -1.7		
							-1.8		
	_				_		-1.9 -2.0		
	2.0				2.0		-2.1		
					_		-2.2		
	_				-		-2.3		
	2.5				2.5		-2.5		
	_		End of Test Pit (2.6m)		-		-2.6 -2.7		
							-2.8		
							-2.9 -3.0		
	3.0				3.0		-3.1		
							-3.2		
	_						-3.4		
	3.5				3.5		-3.5		
	-			1	-		-3.6 -3.7		
							-3.8		
	4.0				4.0		-3.9 -4.0		
	+.0						-4.1		
	_						-4.2 -4.3		
				1			-4.4		
	4.5			1	4.5		-4.5		
				1			-4.7		
				1	_		-4.8		
	5.0			1	5.0		-4.9		
				1		In-situ field testing in accordance w Scala Penetrometer Testing: NZS 4	th the following Sta 402:1988, Test 6.5	ndards: 2, Dynamic Cone I	Penetrometer
						Shear Vane Testing: Guideline for I	land Held Shear Va	ine Test, NZGS, Au	ugust 2001

LandTech Consulting Limited, Unit 6, 31 Carlyle Street, Sydenham, Christchurch, 8023 www.landtech.nz

	N	T La	ndTech	Client: Project:	Hank Developments Limited Proposed Subdivision							Augerhole N	10.	HA02
Dri ll Dri ll e Date	Type: ed By:	d.	8 Ton Excavator BE 6-Apr-18	Address:	7/572 Selwyn Road, Rolleston Project No: Coordinates: Ground Conditions:	LTCL18051 NZTM: 1552 Grassed No	2207 r	nE, 51	71344 mN		Logged By: Shear Vane Calibration F	Sheet No.		1 of 1 BE N/A
Date	Finish	ied:	6-Apr-18		Groundwater Level (m):	Not Encoun	tered	(6-Apr	-18)		Calibration [Date:		N/A
h	(Ď					evel (m)	(In-situ Fie	d Testing		
atigrap	epth (m	tphic L	Soil description in Description of Soil and	accordance with Rock for Engine	n Guideline for the Field Classifica pering Purposes , NZ Geotechnica	tion and Society Inc.,	ater Le	epth (m	Shear Stre	ength (kPa)	[ynamic Con	e Penetrom Scala E	eter Blow Count /
Str	Ō	Gr			2000		Groundw	Ō	Peak: Remoulded: 0	•	Depth (m	low Coun	1	00mm 10 15 20
SOL		$\langle \langle \rangle$	SILT, minor fine sand plastic [TOPSOIL]	l, minor organi	cs, dark brown, medium dense	e, moist, non					-0.1	3	•	
TOP		$\leq \leq$						_			-0.2	4		
		 	SILT, minor fine sand dense, moist, non-pla	l, trace subrou astic [RIVER D	nded greywacke gravel, yellov EPOSITS]	vish brown,					-0.4	7		
	0.5	* × × >						0.5			-0.5 -0.6	10 11		
	_	* * * *						_			-0.7	12		1
		* * * * *									-0.8	10		
	1.0	* * * * *						10			-0.9 -1.0	19 25 +		
٢S	1.0	A.L.	Fine to coarse sandy	fine to coarse	subrounded greywacke GRA	VEL, trace		1.0			-1.1			
POSI		0A.	to minor subrounded	greywacke co	bbles, greyish brown, lightly p	ackeu, moisi					-1.2			
ER DE		A.						_			-1.3 -1.4			
RIV	1.5	ŇÃ						1.5			-1.5			
		XX									-1.6			
	_							_			-1.7			
		M.									-1.9			
	2.0	297						2.0			-2.0			
	_							_			-2.1 -2.2			
				End of	Test Pit (2.2m)			_			-2.3			
											-2.4			
	2.5							2.5			-2.5 -2.6			
	_							_			-2.7			
											-2.8			
											-2.9 -3.0			
	3.0							3.0			-3.1			
											-3.2			
								_			-3.3 -3.4			
	3.5							3.5			-3.5			
	_										-3.6			
	_							_			-3.7 -3.8			
											-3.9			
	4.0							4.0			-4.0			
	_							_			-4.1 -4.2			
	_							_			-4.3			
											-4.4			
	4.5							4.5			-4.5			
											-4.7			
											-4.8			
								_			-4.9			
\vdash	5.0							5.0	n-situ field testing	in accordance w	th the following Star	ndards:		
									Scala Penetromete Shear Vane Testir	er Testing: NZS 4 ng: Guideline for F	402:1988, Test 6.5 land Heid Shear Va	2, Dynamic Cone ne Test, NZGS, A	Penetrometer	

LandTech Consulting Limited, Unit 6, 31 Carlyle Street, Sydenham, Christchurch, 8023 www.landtech.nz
		Tla	ndTech	Client: Project:	Hank Developments Limited Proposed Subdivision							Augerho l e N	١٥.	HA03
0	-	C 0	NSULTING	Address:	7/572 Selwyn Road, Rolleston							Sheet No.		1 of 1
Dri l	Type:		8 Ton Excavator	<u> </u>	Project No:	LTCL18051					Logged By:			BE
Dri ll e Date	ed By: Starte	ad.	BE 6-Apr-18		Coordinates: Ground Conditions:	NZTM: 155 Grassed N	2231 i ear lei	mE, 51 vel	171302 mN		Shear Vane Calibration I	No: Factor:		N/A
Date	Finish	ned:	6-Apr-18		Groundwater Level (m):	Not Encour	itered	(6-Api	-18)		Calibration I	Date:		N/A
-							-							
							el (m)				In-situ Fie	d Testing		
graphy	ш Ч	lic Log	Soil description in a	accordance with	Guideline for the Field Classifica	tion and Society Inc	er Lev	h (m	Shear Stre	ngth (kPa)	[ynamic Cor	1e Penetr	ometer
Strati	Dept	Graph	boothplion of con and h	loon for Enginee	2005	l bookety men,	ndwat	Dept	Peak [.]	_	(E	ount	Sca	a Blow Count / 100mm
							Groui		Remoulded:	•	Jepth	ov CC	0 5	10 15 20
_		$\wedge \wedge$	SILT, minor fine sand,	minor organic	s, dark brown, medium dense	ə, moist, nor			-		-0.1	3		10 15 20
PSO		XX	plastic [TOPSOIL]								-0.2	2	1	
TO		XX									-0.3	4		
		< 16 A V	SILT, minor fine sand, DEPOSITS1	yellowish brov	vn, dense, moist, non-plastic	[RIVER					-0.4	6		
	0.5	* * * * *						0.5			-0.5	10		
		* * * *									-0.6	25 +		
							ĺ	-			-0.8			
	_		Fine to coarse sandy,	fine to coarse	subrounded greywacke GRA	VEL, trace	1		1		-0.9			
	1.0	OA.	sabroanded cobbles, (ฐาวทอก มายฟาโ,	aginay paoneu, muisi		ĺ	1.0			-1.0			
ŝ		201 ⁴					1				-1.1			
1ISO ^c		7°									-1.2			
R DEF		\$4. A						-			-1.4			
RIVEI	1.5	A.						1.5			-1.5			
	_	ÚĄ									-1.6			
		Q						_			-1.7			
								_			-1.8			
											-2.0			
	2.0							2.0			-2.1			
											-2.2			
		ДŊ, '		F = 1 = (T							-2.3			
				End of th	est Pit (2.3m)						-2.4			
	2.5							2.5			-2.5			
											-2.7			
											-2.8			
											-2.9			
	3.0							3.0			-3.0			
											-3.1			
							1	-			-3.3			
		1					1				-3.4			
	3.5						1	3.5			-3.5			
							ĺ	-			-3.6			
							1				-3.7			
							1	-			-3.9			
	4.0						ĺ	4.0			-4.0			
	_						1	_			-4.1			
							ĺ	-			-4.2			
							1				-4.3 -4.4			
	45						1	45			-4.5			
	- - J						ĺ	ч.5			-4.6			
							1				-4.7			
							1	_			-4.8			
							ĺ	-			-4.9			
-	5.0						┝	5.0	In-situ field testing	n accordance w	-D.U th the following Sta	ndards:		
							ĺ		Scala Penetromete	r Testing: NZS 4	402:1988, Test 6.5	2, Dynamic Cone	Penetromet	er
							1		Shear Vane Testin	g: Guideline for H	land He l d Shear Va	ne Test, NZGS, /	ugust 2001	

	h	Ţļ	ndTech	Client: Hank Developments Limited Project: Proposed Subdivision Address: 7/572 Selwyn Boad. Bolleston						Augerhole N	lo.	HA04
Dri ll Dri ll e Date Date	Type: ed By: Starte Finish	d: ed:	8 Ton Excavator BE 6-Apr-18 6-Apr-18	Project No: Coordinates: Ground Conditions: Groundwater Level (m):	LTCL18051 NZTM: 155/ Grassed, No Not Encoun	2136 i ear le• tered	nE,5 ⁻ /el (6-Apr	171389 mN r-18)	Logged By: Shear Vane Calibration I Calibration I	No: Factor: Date:		BE N/A N/A N/A
		_				el (m)			In-situ Fie	eld Testing		
graphy	(m) H	iic Log	Soil description in a	ccordance with Guideline for the Field Classifica	tion and	er Lev	(m) h	Shear Strength (kPa)	[Dynamic Con	e Penetro	meter
Stratiç	Dept	Graph	Description of Son and A	2005	oclety mo.,	ndwate	Dept	Peak:	(E)	ount	Scala	Blow Count / 100mm
						Grou		Remoulded:	Depth	ov C	0 5	10 15 20
۲,		$\sim\sim$	SILT, minor fine sand,	minor organics, dark brown, medium dense	e, moist, non				-0.1	3		
OPSC		\sim	plastic [TOPSOIL]				_		-0.2	4		
-	_	<u> </u>	SILT, minor fine sand,	yellowish brown, dense, moist, non-plastic	[RIVER		_		-0.3 -0.4	3		
	0.5	* * * *	DEPOSITS]				0.5		-0.5	10		
	_	с , х) Л /4	Ting to an an an all of		(E) +++++		_		-0.6	12		
	_	2 Conge	to minor subrounded g	reywacke cobbles, greyish brown, tightly pa	acked, moist		_		-0.7 -0.8	25 +		
		, Ng							-0.9			
	1.0	Þ.					1.0		-1.0			
SITS							_		-1.1			
DEPO									-1.3			
VER		() Az							-1.4			
æ	1.5	Æ					1.5		-1.5			
									-1.7			
		X							-1.8			
	_	1X							-1.9			
	2.0	S.					2.0		-2.0			
		794					_		-2.2			
	_			End of Test Pit (2.2m)					-2.3			
	25						25		-2.4			
	2.0								-2.6			
									-2.7			
							-		-2.8 -2.9			
	3.0						3.0		-3.0			
	_								-3.1			
									-3.2 -3.3			
							_		-3.4			
	3.5						3.5		-3.5			
	-								-3.6 -3.7			
							-		-3.8			
							_		-3.9			
	4.0						4.0		-4.0 -4.1			
									-4.2			
							_		-4.3			
	_								-4.4			
1	4.5						4.5		-4.6			
1]	-4.7			
1	_								-4.8			
	5.0						5.0		5.0			
								In-situ field testing in accordance wi	th the following Sta	ndards: 2. Dynamic Conc	Penetromotor	
								Shear Vane Testing: Guideline for H	land Held Shear Va	ane Test, NZGS, A	ugust 2001	

	N	Tla	Client: Hank Developments Limited Project: Proposed Subdivision						Augerhole N	lo. HA07	
Į	-	CO	NSULTING Address: 7/572 Selwyn Road, Rolleston						Sheet No.	1 of 1	
Drill [·] Drille	Type: d By:		8 Ton Excavator Project No: LTCL1805 BE Coordinates: NZTM: 155	l 2139 i	nE, 51	71345 mN		Logged By: Shear Vane	No:		BE N/A
Date	Starte	ed:	6-Apr-18 Ground Conditions: Grassed, N	lear le	/el	19)		Calibration F	actor:		N/A
Dale	FIIIS	ieu.	Groundwater Lever (III). Not Encour	ilereu	(o-Api	-16)		Calibration	Jale.		N/A
				(E)				In-situ Fie	ld Testing		
Iraphy	(m) r	ic Log	Soil description in accordance with Guideline for the Field Classification and	er Leve	(m) r	Shear Strength	(kPa))ynamic Con	e Penetrometer	
Stratiç	Dept	Graph	2005	ndwate	Dept	Peak: —		(L	ount	Scala Blow Cou 100mm	unt /
				Grou		Remoulded:	•	Depth		0 5 10 15	5 20
ЫL		$\sim\sim$	SILT, minor fine sand, minor organics, dark brown, medium dense, moist, nor nastic ITOPSOIL1	1-				-0.1	3		
ropso	_	XX			_			-0.2	3	Į	
		$\times \times \times$	SILT, minor fine sand, yellowish brown, dense, moist, non-plastic [RIVER					-0.3	6	•	
	0.5	× × × > × × × >	DEPOSITS]		0.5			-0.5	8		
		$\times \times \times \rightarrow$	Fine to coarse sandy fine to coarse subrounded greywacke gravel grevish					-0.6	11		
		797	brown, tightly packed, moist [RIVER DEPOSITS]		-			-0.7	20 +		
								-0.9			
	1.0	7. J.	trace to minor subrounded greywacke cobbles		1.0			-1.0			
	-							-1.2			
ITS		A Core						-1.3			
EPOS	_				_			-1.4 -1.5			
VER D	1.5				1.5			-1.6			
'n								-1.7			
	_	A			_			-1.8 -1.9			
	2.0	0.A			2.0			-2.0			
	_	Æ						-2.1			
								-2.2 -2.3			
		A						-2.4			
	2.5				2.5			-2.5			
		an the second	End of Test Pit (2.6m)		_			-2.6 -2.7			
								-2.8			
	_				_			-2.9			
	3.0				3.0			-3.0			
								-3.2			
								-3.3			
	3.5				3.5			-3.5			
								-3.6			
								-3.7 -3.8			
								-3.9			
	4.0				4.0			-4.0			
					-			-4.1 -4.2			
								-4.3			
	_							-4.4			
	4.5				4.5			-4.5 -4.6			
								-4.7			
	-				_			-4.8			
	5.0				5.0			-4.9 -5.0			
	0.0				0.0	In-situ field testing in acco	tordance with	the following Star	ndards: 2 Dynamic Corre	Penetrometer	
						Shear Vane Testing: Gui	ideline for Ha	nd Held Shear Va	ne Test, NZGS, A	ugust 2001	

	N		and Tech	Client: Project: Address:	Hank I Propos 7/572	Development sed Subdivisi Selwyn Roac	s Limited on , Rollestor	n						Augerhole N Sheet No.	lo.	HA 1 o	.05 of 1
Drill T Drilled Date S Date F	ype: d By: Started Finishe	: d:	8 Ton Excavator BE 6-Apr-18 6-Apr-18		F C C	Project No: Coordinates: Ground Condi Groundwater	tions: ∟evel (m):	LTCL18051 NZTM: 1552 Grassed, No Not Encoun	2187 i ear le tered	mE, 51 vel (6-Apr	71307 mN -18)		Logged By: Shear Vane Calibration I Calibration I	No: Factor: Date:	No. HA	E N N N	
Ŋ	_	ŋ							vel (m)				In-situ Fie	eld Testing			
Stratigraph	Depth (m)	Graphic Lo	Soil description in a Description of Soil and R	ccordance with ock for Enginee	n Guidelin ering Pur 2005	ne for the Fiel poses , NZ G	d Classific eotechnic	ation and al Society Inc.,	Groundwater Le	Depth (m)	Shear Str Peak: Remoulded:	ength (kPa)	Depth (m)	Dynamic Con tu O O No	e Penetr Sca	rometer la Blow (100mn	Count / n 15 2
TOPSOIL	<	\otimes	SILT, minor fine sand, [TOPSOIL]	minor organic	cs, dark	brown, loos	e, moist,	non-plastic					-0.1	2 2 2	ţ		
	0.5	<u> </u>	SILT, minor fine sand, [RIVER DEPOSITS]	yellowish brow	wn, mec	lium dense,	moist, no	on-plastic		0.5			-0.3 -0.4 -0.5	4 5	Ì		
Ī		(× × > (× × > (× × > (× × >											-0.6 -0.7	8 8			
		A grant and a grant and a grant a gr	Fine to coarse sandy f subrounded greywack	ine to coarse e cobbles, gre	subrour eyish bro	nded greywa own, tightly	icke GRA backed, r	AVEL, trace noist		_			-0.8 -0.9 -1.0	8 7 8		$\left \right $	
EPOSITS	1.0	Æ											-1.1	-		•	
RIVER D	—;									_			-1.3 -1.4				
F	1.5									1.5							_
		Ż											-1.8 -1.9				
_	2.0	H-		End of T	Test Pit ((2.1m)				2.0			-2.0 -2.1 -2.2				
													-2.3 -2.4				
ŀ	2.5									2.5			2.5 -2.6 -2.7				
													-2.8 -2.9				
ŀ	3.0									3.0			-3.0 -3.1				
	_												-3.3				
ŀ	3.5									3.5			-3.5 -3.6				
	_									_			-3.7 -3.8 -3.9				
-	4.0									4.0			-4.0				
										_			-4.2 -4.3 -4.4				
-	4.5									4.5			-4.5 -4.6				
										_			-4.7 -4.8				

BE N/A N/A N/A

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-

5.0

-5.0

Scala Penetrometer Testing: NZS 4402:1988, Test 6.5.2, Dynamic Cone Penetrometer Shear Vane Testing: Guideline for Hand Held Shear Vane Test, NZGS, August 2001

In-situ field testing in accordance with the following Standards:

3	N		and Tech	Client: Hank Developments Limited Project: Proposed Subdivision Address: 7/572 Selwyn Road, Rolleston						Augerhole N Sheet No.	No. HA06 1 of 1
Drill Drille Date Date	Type: ed By: Starte Finish	ed: ned:	8 Ton Excavator BE 6-Apr-18 6-Apr-18	Project No: Coordinates: Ground Conditions: Groundwater Level (m):	LTCL18051 NZTM: 1552 Grassed, No Not Encoun	2211 ear le tered	mE, 5 [.] vel (6-Api	171252 mN r-18)	Logged By: Shear Vane Calibration I Calibration I	No: Factor: Date:	BE N/A N/A N/A
۶L	(60				vel (m)	(In-situ Fie	eld Testing	
Stratigrapl	Depth (m	Graphic Lo	Soil description in a Description of Soil and R	ccordance with Guideline for the Field Classifica lock for Engineering Purposes , NZ Geotechnica 2005	ition and I Society Inc.,	Groundwater Le	Depth (m	Shear Strength (kPa) Peak: Remoulded:	Depth (m)	Dynamic Con tuno O Moo	e Penetrometer Scala Blow Count / 100mm 0 5 10 15 20
RIVER DEPOSITS TOPSOL			SILT, minor fine sand, [TOPSOIL] SILT, minor to some fin plastic [RIVER DEPOS Fine to coarse sandy f subrounded greywack	minor organics dark brown, loose, moist, n he sand, yellowish brown, medium dense, r SITS] ine to coarse subrounded greywacke GRA e cobbles, greyish brown, tightly packed, m	on-plastic noist, non- VEL, trace oist				-0.1 -0.2 -0.3 -0.4 -0.5 -0.6 -0.7 -0.8 -0.9 -1.0 -1.1 -1.2 -1.3 -1.4 -1.5 -1.6 -1.7 -1.8 -1.9 -2.0 -2.1 -2.2 -2.3 -2.4 -2.5 -2.6 -2.7 -2.8 -2.9 -3.0	2 3 4 5 5 25 +	
	3.5 4.0 4.5 5.0						 3.5 4.0 4.5 4.5 5.0	Tratifu field testing in accordance with Scale Penetrometer Testing: NZS 4	-3.1 -3.2 -3.3 -3.4 -3.5 -3.6 -3.7 -3.8 -3.9 -4.0 -4.1 -4.2 -4.3 -4.4 -4.5 -4.6 -4.7 -4.8 -4.9 -5.0 https://dwwng.Shi https://dwwng.shi https://dwwng.shi https://dwwng.shi https://dwwng.shi ht	ndards. 2. Dynamic Cone	Penetrometer woust 2001

NZGD ID: HA-DCP_128990

	Davis Ogilvie & Partne Level 1, 24 Moorhouse, Office 0800 999 333 I www.do.nz	ars Lin Avena Imail	nited ue.Addini hello@d	gton, Cr o.nz	nistchurc	h 8140 J	ob Nº est Nº	OW INVESTIGATION RESULT 39353 DCP 1 + HA DCP 2
	Project: 19 Raptor Street, Falcons Landing, Rolles Client: Compass Homes Fest Location: Refer to attached Geotechnical Site Plan	ton (Lot 298 G G01A)	DP 532	807)		E	Date: 28/08/19 Time: 10:00 a.m. xcavation Method: DCP+HA
D E P T H (m)	STRATA DESCRIPTION Auger at DCP 1 SILT: dark brown. Moist. moderately ornanic with trace rootlets.	nscs	Graphic Log	Water Table	1 2 3	DCP 1	BLOWS	5 / 100 mm DCP 2
-	(TOPSOIL). [0.45m]	TS	ETS Marcon M	dwater Not Encountered				
0. 5 - - -	SILT with some fine sand; yellowish brown with minor orange mottling. Stiff to very stiff, moist. [0.65m]	ML		Groun				
1.0-	SILT with trace fine sand and medium gravel; yellowish orangey brown, hard, moist, low plasticity. Gravel is subrounded greywacke. [0.10m] Auger terminated at 1.20m - Refusal on gravel.	ML					13 30	30
1.5- - -								
2.0-								
2.5-								
3.0-								-3
Plot	ged By: HC+GC Notes: ted By: GC cked By: HC					Dynamic Pene condition at the I typical conditic ground away fron Dynamic Cone Pe	etrometer T ocation of ons across n the test I or suita enetromet Test	Fest and logs give an indication of the ground the tests only. While they are representative of the site, they do not identify variations in the ocations. This log does not cover slope stability ability of the site for building. er Test performed in accordance with NZS 4402 6.5.2 (Procedure 1 and 2)

NZGD ID: HA-DCP_128990

	Project: 19 Raptor Street, Falcons Landing, Rolles	ton (Lot 298	DP 532	807)			[Date: 28/08/	19 2 m
1	Test Location: Refer to attached Geotechnical Site Plan (DWC	G G01A))				Excavation Met	hod: DCP+	a.m. HA
D E P T H (m)	STRATA DESCRIPTION Auger at DCP 3 SILT; dark brown. Moist, moderately organic with trace rootlets (TOPSOIL). [0.50m]	nscs	Craphic SL 70 SL 70 SL 70 Craphic Log	ountered Table	123	DCP 3	BLOV 8 8 9	VS / 100 mm)CP 4	D E P T H (m
0.5	SILT with some fine sand; yellowish brown with minor orange mottling. Stiff, moist. [0.90m]	TS	≥ 13 <u>∞</u> <u>∞</u> T: <u>∞</u> <u>∞</u> T: <u>∞</u> <u>∞</u> T: <u>∞</u> <u>∞</u> T:	Groundwater Not Enc						- - -0.:
- - 1.0- -		WL								- -1.0
 1.5- 	SILT with trace fine sand, yellowish orangey brown. Hard, moist, low plasticity. [0.10m] Fine and medium SAND with some silt; greyish brown. Dense, wet. [0.10m] SILT with trace fine sand; mottled orange and grey. Hard, moist, low plasticity. [0.10m] Auger terminated at 1.70m - Refusal on gravel.	ML SM ML					1	6		- -1. -
- 2.0- -	1.7m: Sandy fine and medium gravel recovered						3			- -2. -
- 2.5- -										- -2. -
3.0-										3.