

28 October 2022

Project No: LTC22215

Attention: Chloe McConochie
Gould Developments Limited



LandTech Consulting Ltd

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**RE: SHALLOW SOIL TEST REPORT
LOT 210, 138 & 5/144 DUNNS CROSSING ROAD**

1.0 Introduction & Background

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LandTech Consulting Limited (LandTech) were engaged by Gould Developments Limited to carry out lot specific shallow soil testing for the subdivision at 138 & 5/144 Dunns Crossing Road. This shallow soil test report is for Lot 210 of the subdivision herein referred to as the site. The purpose of the shallow soil testing is to confirm subsurface conditions and provide geotechnical recommendations with regards to future residential foundations within the site.

2.0 Shallow Soil Testing

LandTech investigated the site on 26 October 2022, comprising two hand auger holes with corresponding Scala Penetrometer tests and two additional Scala Penetrometer tests. The test locations were measured from lot boundaries and/or surveyed centre pegs and are approximate only. The test locations are shown on the LandTech *Test Location Plan*, Drawing No. Lot 210/ TLP attached to this report.

The soil conditions encountered within the hand auger holes were logged by LandTech technical staff in accordance with New Zealand Geotechnical Society *Guideline for the Description of Soil and Rock for Engineering Purposes* (2005). The hand auger logs are attached to this report.

The Dynamic Cone (Scala) Penetrometer testing procedure was carried out in accordance with NZS 4402:1988, Test 6.5.2, *Dynamic Cone Penetrometer*. The Scala penetrometer test results are attached to this report.

The hand auger holes encountered topsoil/fill material from the ground surface to approximately 0.1m to 0.2m depths, underlain by inferred natural gravel. Groundwater was not encountered during testing. Scala Penetrometer testing at each of the four locations returned results between 8 and 40+ blows per 100mm penetration at the test positions, encountering refusal at depths between 0.3m and 0.5m below present ground level.

The two hand auger holes were carried out at either end of the lot; therefore, ground conditions could vary away from the test positions. Additionally, the tests refused within placed topsoil and inferred underlying natural ground. This bears the potential for greater depths of unsuitable topsoil and fill than those encountered within our hand augers, which should be considered during earthworks and foundation excavations.

3.0 Foundation Recommendations

We have previously investigated the site at 138 & 5/144 Dunns Crossing Road as part of a proposed subdivision investigation. The corresponding report is titled *Geotechnical Investigation Report for Proposed Residential Subdivision, 138 Dunns Crossing Road, Rolleston*, project reference: LTC20416, Revision A, dated 17 September 2021. The report classified the land as equivalent TC1, indicating the proposed new foundations are likely to be constructed in accordance with the NZS 3604: 2011 (i.e. light timber framed one or two story construction), subject to lot specific testing at the Building Consent stage.

From the lot-specific investigation for the site we conclude the site has “Good Ground”, and that dwelling foundations on this site can comprise NZS3604:2011 type foundations or codemark approved concrete slab foundations that are applicable for the site conditions (i.e. “good ground”). All foundations must be embedded to a minimum depth of 0.2m below ground level, into the underlying Natural Gravel or Engineered Fill. At these depths, either “Good Ground” or an Ultimate Bearing Capacity of 300kPa is available/inferred. If specific engineering design is being carried out a strength reduction factor of $\phi=0.5$ should be used. This depth has been supplied based on ground level at the time of testing. All topsoil and unsuitable materials should be removed below foundations and floor slab areas.

The subgrade should be inspected by a suitably qualified structural or geotechnical engineer or suitably experienced building inspector to confirm founding conditions meet the requirements of NZS3604:2011 “Good Ground”.

4.0 Limitations

This shallow soil testing report has been prepared for our client, Gould Developments Limited. This report shall not be extrapolated for other nearby sites or used for any other purposes without the express approval of LandTech and their client.

This report has been based on the results of tests at point locations; therefore, subsurface conditions could vary away from the assumed geotechnical model. Should exposed soil conditions vary from those described herein we request to be informed to determine the continued applicability of our recommendations. We have attempted to conduct a thorough investigation of soil types across the site, within the agreed scope of works. However, variations still may exist as soils can vary naturally and due to previous human activities, which LandTech have no control over and should not be held accountable for.

The geotechnical investigation was confined to geotechnical aspects of the site only and did not involve the assessment for environmental contaminants. In addition, our investigation and analyses have also not taken into account possible fault rupture that may cause deformations and displacements of the ground directly below the site. This type of assessment is outside of the scope of our geotechnical engagement.

If you have any queries regarding this report, please contact the undersigned at your convenience.

Yours faithfully,

LandTech Consulting Limited

Prepared By:



Kristen Bullen – Engineering Geologist
BSc (Geology)

Authorised By:

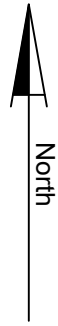


Dwayne Wilson - Director
CMEngNZ, CPEng, IntPE(NZ)

Attachments: Test Location Plan
Test Results

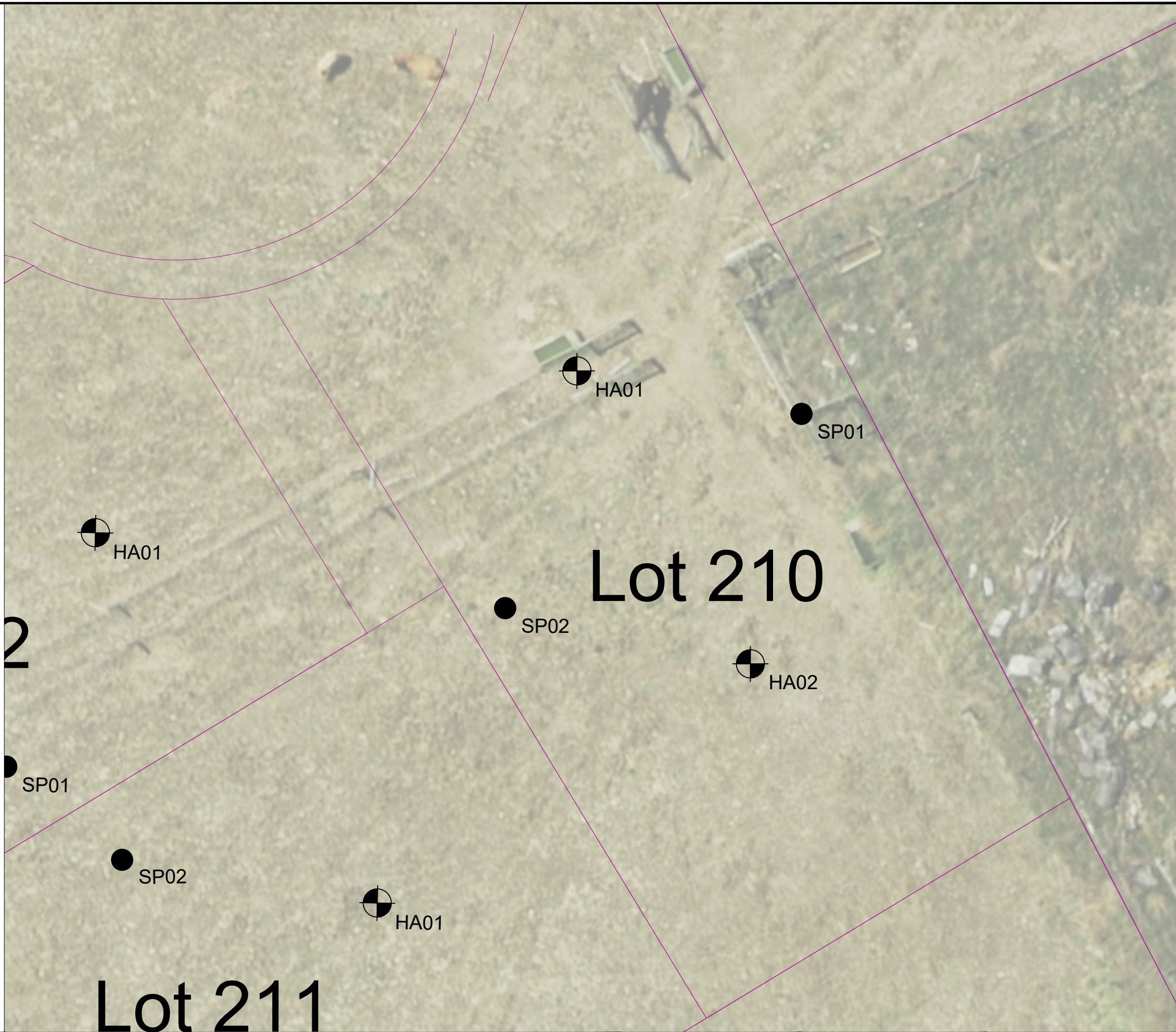
KEY:

-  HA01 LandTech Consulting Ltd. augerhole locations, drilled 26 October 2022
-  SP01 LandTech Consulting Ltd. DCP test location, tested 26 October 2022
-  Proposed boundary



NOTES:

Locations of features approximate only
 Original sheet size A3
 Boundary information on this *Test Location Plan* adapted from Patterson Pitts Group Drawing titled Engineering Drawings Gould Developments 138 & 5/144 Dunns Crossing Stages 6 & 7



AMENDMENTS		
DATE	REV	DESCRIPTION
26/10/2022	A	Report Issue

Check all dimensions and levels on site before commencing construction.
 This drawing and design remains the property of LandTech Consulting Ltd. and may not be reproduced without approval and permission from LandTech Consulting Ltd.

Test Location Plan
 Lot 210, 138 Dunns Crossing Road
 ROLLESTON



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 Auckland Office:
 9B Collard Place, Henderson, Auckland 0610
 Postal Address:
 PO Box 119, Christchurch 8013
 Website: www.landtech.nz Email: info@landtech.nz

Drawing No: Lot 210/TLP	Drawn by: KB	Date: 26 October 2022
Scale: 1: 150 (A3)	Checked by: DW	Revision: A
Filename: LTC22215 - Master Plan Drawings.dwg		



Client: Goulds Developments Limited
Project: Lot Specifics
Address: 138 & 5/144 Dunns Crossing, Rolleston

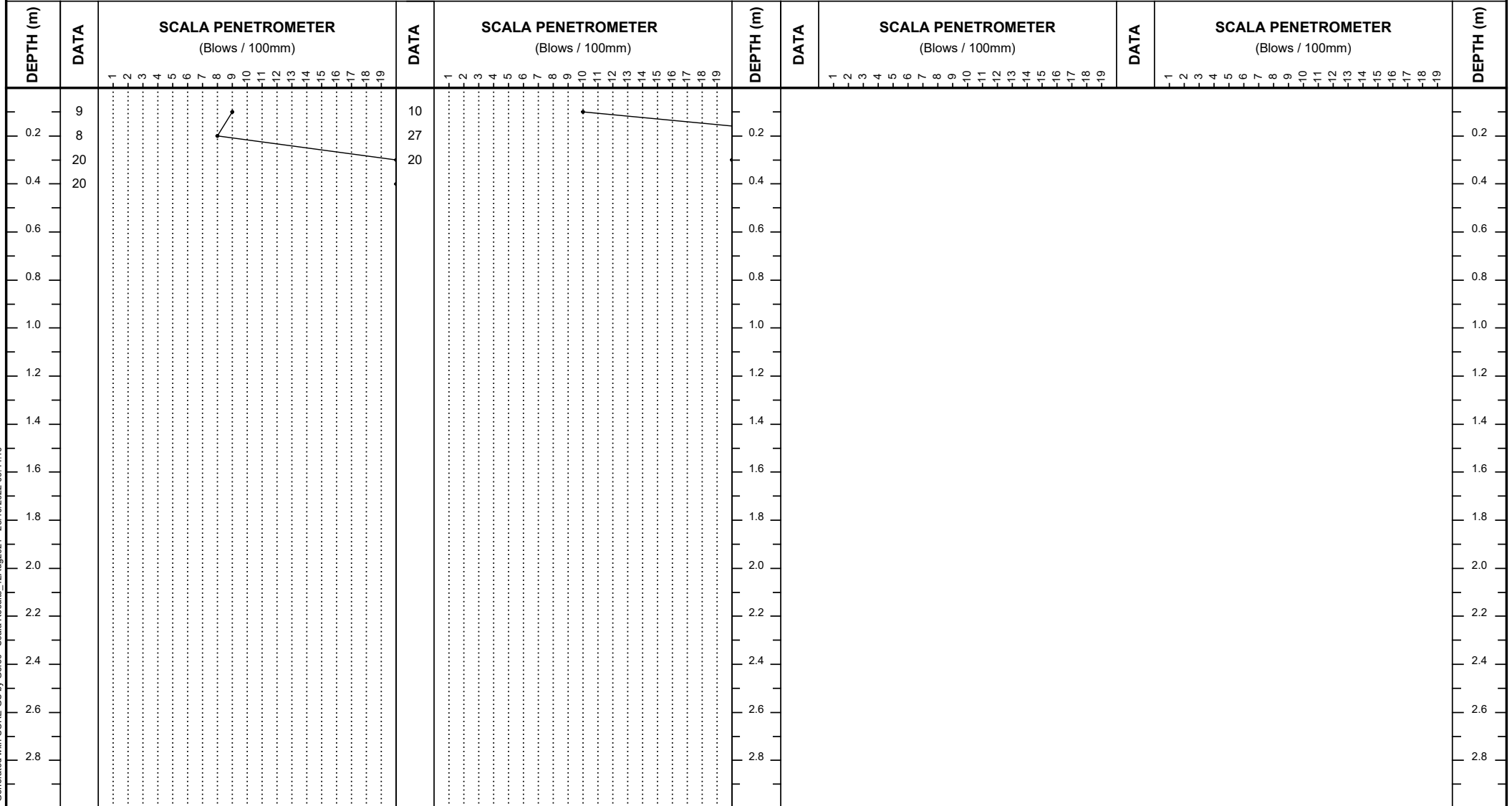
Lot 210 - SP01

Lot 210 - SP02

Tested By: KB
Ground Conditions: Near Level, Fill
Coordinates: NZTM2000 E 1549127.36
 N 5169999.15
Test Date: 26-Oct-22

Tested By: KB
Ground Conditions: Near Level, Fill
Coordinates: NZTM2000 E 1549115.76
 N 5169991.55
Test Date: 26-Oct-22

Tested By:
Ground Conditions:
Coordinates:
Test Date:





Client: Goulds Developments Limited
Project: Lot Specifics
Address: 138 & 5/144 Dunns Crossing, Rolleston

Augerhole No.: Lot 210 - HA01

Sheet No.: 1 of 1

Project No.: LTC22215 **Coordinates:** NZTM2000: E1549118.57, N5170000.83 **Logged By:** KB
Drill Type: 50mm Hand Auger **Reduced Level:** 42.50m (LVD137) **Shear Vane No.:**
Date Started: 26-Oct-22 **Ground Conditions:** Near Level, Fill **Calibration Factor:**
Date Finished: 26-Oct-22 **Groundwater Level (m):** Not Encountered **Calibration Date:**

Stratigraphy	Depth (m)	Graphic Log	Description <i>Soil description in accordance with Guideline for the Field Classification and Description of Soil and Rock for Engineering Purposes, NZ Geotechnical Society Inc, 2005</i>	Groundwater Level (m)	Depth (m)	In-situ Field Testing								
						Shear Strength (kPa)		Dynamic Cone (Scala) Penetrometer						
						● Peak	● Remoulded	Depth (m)	Scala Blow Count / 100mm					
						50	100	150	200					
Topsail / Fill			SILT, trace fine to medium sand and fine to medium subround to rounded gravel, dark brown, firm, moist, non-plastic, [TOPSOIL/FILL].											
	0.5		End of Augerhole: 0.2m [TOO DENSE TO AUGER]		0.5									
	1.0				1.0									
	1.5				1.5									
	2.0				2.0									
	2.5				2.5									

In-situ testing in accordance with the following standards:
 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

Inferred gravels



Client: Goulds Developments Limited
Project: Lot Specifics
Address: 138 & 5/144 Dunns Crossing, Rolleston

Augerhole No.: Lot 210 - HA02

Sheet No.: 1 of 1

Project No.: LTC22215 **Coordinates:** NZTM2000: E1549125.37, N5169989.37 **Logged By:** KB
Drill Type: 50mm Hand Auger **Reduced Level:** 42.50m (LVD137) **Shear Vane No.:**
Date Started: 26-Oct-22 **Ground Conditions:** Near Level, Fill **Calibration Factor:**
Date Finished: 26-Oct-22 **Groundwater Level (m):** Not Encountered **Calibration Date:**

Stratigraphy	Depth (m)	Graphic Log	Description <i>Soil description in accordance with Guideline for the Field Classification and Description of Soil and Rock for Engineering Purposes, NZ Geotechnical Society Inc, 2005</i>	Groundwater Level (m)	Depth (m)	In-situ Field Testing											
						Shear Strength (kPa)				Dynamic Cone (Scala) Penetrometer							
						<ul style="list-style-type: none"> ● Peak ● Remoulded 				Depth (m) Blow Count Scala Blow Count / 100mm							
						50	100	150	200			0	5	10	15	20	
Topsoil / Fill			Fine to coarse subround to rounded gravelly SILT, minor fine sand, brown, very stiff, dry, non-plastic, [ENGINEERED FILL].									-0.1	9				
			End of Augerhole: 0.1m [TOO DENSE TO AUGER]									-0.2	12				
	0.5																
	1.0																
	1.5																
	2.0																
	2.5																

In-situ testing in accordance with the following standards:
 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

Inferred gravels