28 October 2022 Project No: LTC22215

Attention: Chloe McConochie Gould Developments Limited

RE:



LandTech Consulting Ltd

Auckland Office: 09 930 9334

9B Collard Place, Henderson Christchurch Office: 03 390 1371 11B Carlyle Street, Sydenham

Postal: PO Box 119, Christchurch 8013

Email: info@landtech.nz

SHALLOW SOIL TEST REPORT LOT 208, 138 & 5/144 DUNNS CROSSING ROAD

1.0 Introduction & Background

www.landtech.nz

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 208 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 208/ 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 depths, underlain by inferred natural gravel. Groundwater was not encountered during testing. Scala Penetrometer testing at each of the four locations returned results between 3 and 40+ blows per 100mm penetration at the test positions, encountering refusal at depths between 0.4m 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 0.1m 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 ϕ =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".



SHALLOW SOIL TESTING REPORT LANDTECH CONSULTING LIMITED 28 OCTOBER 2022

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:

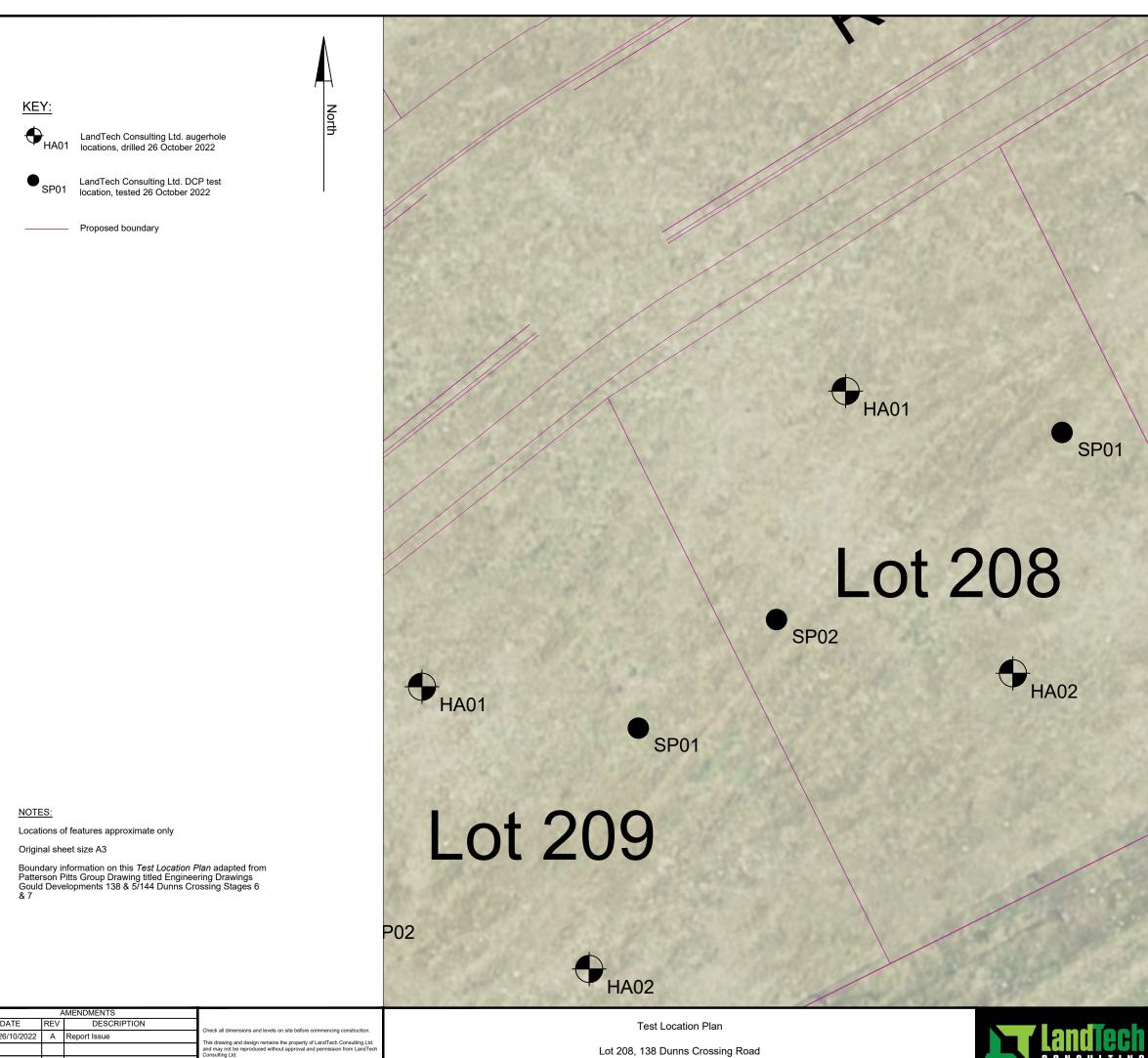
ma won

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

Attachments: Test Location Plan Test Results

SHALLOW SOIL TESTING REPORT LANDTECH CONSULTING LIMITED 28 OCTOBER 2022





•

DATE

Lot 208, 138 Dunns Crossing Road ROLLESTON





Lot 207





		Drawn by: KB	Date: 26 October 2022						
Auckland Office: 9B Collard Place, Henderson, Auckland 0610	^{Scale:} 1: 150 (A3)	Checked by: DW		Revision: A					
Postal Address: PO Box 119, Christchurch 8013									
Website: www.landtech.nz Email: info@landtech.nz	Filename: LTC22215 - Master Plan Drawings.dwg								

		ond	looh	Client:		opments Limited								Auge	erhole N	No.: L	ot 208	8 - HA	01			
		dilu 0 n s u i	ech	Project:	Lot Specifics	Oracian I									Sheet N	Jo.: 1	of 1					
Projec		LTC22			138 & 5/144 D	unns Crossing, F Coordinates:	Rolleston	NZTM2000:		44.30,	N5170	039.74		Logge	d By:		-		KB			
Drill Ty		50mm 26-Oct	Hand Auger			Reduced Leve		42.50m (LVI						Shear Vane No.:								
		d: 26-00			Ground Conditions: Near Level, F Groundwater Level (m): Not Encounte									Calibration Factor: Calibration Date:								
`									-					In-situ Field Testing								
Jraphy	Depth (m)	ic Loç				ription			dwate I (m)	Depth (m)		Strengt	h (kPa)	Dynamic Cone (Scala) Penetrom								
Stratigraphy	Dept	Graphic Log	Soil descriptio	n in accordance v Engine	with Guideline for the le ering Purposes, NZ (Field Classification and Geotechnical Society Ind	Description of So c, 2005	oil and Rock for	Groundwater Level (m)	Dept	PeaRem	k noulded		Depth (m)	Blow Count	Jua	100n	m	.,			
			SILT & fine to medium subround to rounded GRAVEL, some fine sand, brown,								50	100 15	0 200	Dept	Blow	0 5	10	15	5 20			
Topsoil / Fill			SILT & fine stiff, moist,	e to medium non-plastic,	subround to rou [ENGINEERED	inded GRAVEL, s) FILL].	some fine sa	and, brown,						-0.1	4							
<u> </u>			\		End of Aug	erhole: 0.1m		/						-0.2	3							
	-				[TOO DENS	E TO AUGER]				-				-0.3	4	•						
	-				-	-				-				0.0								
	_									_				-0.4	17		/	<u> </u>	•			
	0.5									0.5				-0.5	40+				\setminus			
	0.5 _									0.5 _												
	-									-												
	-									-												
	-									-												
	1.0 _									1.0 _												
	-									_												
	-									-												
	-									-												
	1.5 _									1.5 _												
	-									-												
	-									-												
	-									-												
	_																					
	2.0									2.0												
	2.0 _									2.0 _												
	-									-												
	-									-												
	_																					
	-									-												
	2.5 _									2.5 _												
	-									-												
]																					
	-									-												
	-									-												
									In situ toot'	a incorrect	ince with the	following at	adarde:									
Inferred g	gravels								Scala Penet	rometer Tes		02:1988, Te	st 6.5.2, Dynam									
											uideline for Ha	and Held She	ar Vane Test, I			07						
			LandTech Con	sulting Ltd: 11B C	arlyle Street, Sydenh	am Christchurch, 8023			Ph: 03 390	0 1371				Email: info Website: w	wandtech. ww.landteo	.nz ch.nz						

		ond	loch	Client:		opments Limite	b							Aug	erhole I	lo.: L	ot 208	8 - HA	.02				
L		ONSU	LTING	Project:	Lot Specifics	ounns Crossing	Rolleston								Sheet I	No.: 1	of 1						
Drill Ty Date S	II Type: 50mm Hand Auger Reduced Level: 42.50m (LV Restarted: 26-Oct-22 Ground Conditions: Near Level							NZTM2000: 42.50m (LVI Near Level, Not Encount	D137) Fill	51.09,	, N517(0028.28		Logged By: KB Shear Vane No.: Calibration Factor: Calibration Date:									
hy	(r	6o			Doco	rintion			Groundwater Level (m)	Depth (m)	Shea	ar Streng	In gth (kPa)	In-situ Field Testing Dynamic Cone (Scala) Penetrometer									
Stratigraphy	Depth (m)	Graphic Log	Description Soil description in accordance with Guideline for the Field Classification and Description of Soil and Rock for Engineering Purposes, NZ Geotechnical Society Inc, 2005								● Pe ● Re		I	Depth (m)	w Count		ala Blow 100m	Coun m					
Topsoil / Fill			Fine to meo brown, stiff,	dium sandy \$, dry, non-pla	SILT, some fine astic, [ENGINE	e to medium sub ERED FILL].	pround to rour	nded gravel,						-0.1	4								
/			<u> </u>		End of Aug	erhole: 0.1m		/						-0.2	11		$\overline{\ }$						
	-				[TOO DENS	E TO AUGER]				-				-0.3	20								
	-									-													
	-									-				-0.4	20								
	0.5 _									0.5 _													
	0.0									0.5													
	-									-													
	-									-													
	_																						
	-									-													
	1.0 _									1.0 _													
	-									_													
	-									-													
	-									-													
	-									-													
	1.5 _									1.5 _													
	-									-													
	-									-													
	_									_													
	_																						
	2.0 _									2.0 _													
	-									-													
	_									_													
	-									-													
	-									-													
	2.5 _									2.5 _													
	_																						
	-									-													
	-									-													
Inferred	gravels		1						In-situ testin					nic Cone Per	trometer	. :	:	:					
													'est 6.5.2, Dynar hear Vane Test										
			LandTech Cons	sulting Ltd: 11B C	arlyle Street, Sydenh	am Christchurch, 802	3		Ph: 03 39	0 1371				Email: info Website: w	@landtech /ww.landte	.nz ch.nz							

	r La	NCHITINC	Goulds Developme Lot Specifics											
			s: 138 & 5/144 Dunns	Cross	0,									
Lot 208 - SP01 Tested By: KB Ground Conditions: Near Level, Fill Coordinates: NZTM2000 E 1549153.09 N 5170038.06 N 5170038.06 Test Date: 26-Oct-22						E 1549141.49 N 5170030.46		nd Conditions: linates:	(Tested By: Ground Conditions: Coordinates:				
DEPTH (m)	DATA	SCALA PENETR (Blows / 100r) ۲ ۵ ۵ ۹ ۱۹ ۹ ۹ ۹ ۹ ۹ ۹ ۹ ۹ ۹ ۹ ۹ ۹ ۹ ۹ ۹	mm)	DATA	SCALA PENETROMETER (Blows / 100mm) -	-17 -18 -19 DEPTH (m)	DATA	SCALA PENETROMETER (Blows / 100mm) -	DATA	Test Date: SCALA PENETROMETER (Blows / 100mm) 도 적 약 약 약 돈 약 약 단 약 약 단 약 약	DEPTH (m)			
erated with CORE-GS by Gence - Scala Results _ 12XH020221 - 281/012022 09:43:30 - 0.4	9 8 12 25 20			10 21 20							- 0.2			