



# **GEOTECHNICAL COMPLETION REPORT**

**237 & 239 Marsden Point Road,  
Ruakaka  
(Lot 2 DP 152421)**

# GEOTECHNICAL COMPLETION REPORT

237 & 239 Marsden Point Road, Ruakaka

(Lot 2 DP 152421)

**Report prepared for:** Bruce Stallworthy

**Report prepared by:** David Platt

**Report reviewed by:** Matthew Jacobson

**Report reference:** 17560

**Date:** 9 September 2022



association of  
consulting and  
engineering

Issue	Details	Date
1	First Issue	9 September 2022

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# GEOTECHNICAL COMPLETION REPORT

## 237 & 239 Marsden Point Road, Ruakaka

(Lot 2 DP 152421)

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### 1.0 Introduction

RS Eng Ltd (RS Eng) has been engaged by Bruce Stallworthy to prepare a geotechnical completion report for 237 & 239 Marsden Point Road.

This report is being prepared as part of the completion of the works and summarising the construction review and building restrictions.

A WDC EES PO1, Statement of Professional Opinion is included in Appendix D.

### 2.0 Background

#### 2.1 Referenced Documents

Together with the investigations and assessment detailed within this report, this document is based on the investigations and assessment detailed in the document listed below:

- RS Eng Ltd (RS Eng 2021) – “*Subdivision Suitability Report, 237 & 239 Marsden Point Road, Ruakaka*” dated 15 January 2021.

#### 2.2 Site Description

Prior to earthworks completed by Hansen Drainage and Earthworks Ltd the land at 237 & 239 Marsden Point Road was in its natural form. The property consisted of a 200m long paddock, elevated adjacent to Marsden Point Road, falling gently to moderately down to the west. A 25m diameter knoll sat approximately midway along the southern boundary.

Post-development, 237 & 239 Marsden Point Road has been converted to residential properties situated across two main elevations of 6m NZVD and 16m NZVD, respectively. The knoll has been levelled and spread over Lot 9. A concrete Right-of-Way (R.O.W) has been constructed and runs through the centre of the property. Cutting and filling has been completed on selected lots, as detailed later in this report.

## **2.3 Site Geology**

Published geological mapping (Geology of the Whangarei Area, 1:250,000) places the property in an area underlain by Waipapa Group Sandstone and Siltstone (Waipapa Terrane) and Late Pleistocene stable dune deposits.

The investigations have observed conditions consistent with Late Pleistocene stable dune deposits, observing loose to very dense sand, with some silt, being poorly to well graded. Spongy, soft, saturated peat was observed across Lots 7 & 8 and lower parts of Lots 6 & 9.

## **3.0 Investigations**

Investigation at 237 & 239 Marsden Point Road has been completed by RS Eng and are detailed in RS Eng 2021. The investigations consisted of 7 hand augers.

In preparing this report, 13 hand augers were completed across the property to review topsoil and fill depths and outline the extent of peat at the western end of the property. The hand augers were logged to the NZGS guidelines and are enclosed in Appendix C.

Geocivil completed a standard compaction test and 6 X NDM tests within the silty sand fill sourced from the property and compacted on selected lots.

## **3.1 Subsurface Conditions**

Interpretation of subsurface conditions are based on the investigations and monitoring described in this report. The conditions are summarised below.

### **3.1.1 Natural Ground**

- Loose to very dense sand, with some silt, being poorly to well graded was generally encountered across the property below topsoil, extending to an average depth of 1.0mBGL.
- Spongy peat was observed in lower-lying areas of the property below topsoil, being soft and saturated, extending to a maximum observed depth of 1.3mBGL.
- Weakly cemented sandstone that comprises the transverse dune deposits were inferred to underlie the topsoil and peat during investigations, indicated by the inability to penetrate with hand equipment.

### **3.1.2 Fills**

- Preparation of subgrade prior to fill placement was observed to an acceptable standard by a suitably experienced engineer. Stripping of topsoil was completed to a suitable standard.

Cutting of the knoll along the southern boundary was completed to level the property and provide fill material, which was placed across Lots 1 & 2, 6 - 9 & 10. Refer to Sheet 2 of Appendix A for as-built cut and fill plan.

### **3.1.3 Groundwater**

- Groundwater was encountered in the lower-lying areas of the property on Lots 6 - 9 within saturated peat, between 0.8-1.0mBGL, likely perched atop the inferred sandstone. Groundwater in this location may rise to near ground level during extended wet weather periods.
- On Lots 1 – 5 & 10 which are situated on land elevated above the western lots, static groundwater was not encountered within the loose-very dense sand and is not expected to become perched due to the relatively high permeability of the underlying soil and the lack of cemented sandstone in this location.

## **4.0 Construction**

### **4.1 Earthworks**

Earthworks undertaken at 237 & 239 Marsden Point Road consisted of stripping of topsoil and undercutting of peat, approximately 1.0m deep, filling of site won material, and spreading of topsoil. An as-built cut and fill drawing has been prepared by RS Eng, shown on Sheet 1 of Appendix A.

### **4.2 Fill Compaction**

Compaction control testing of the fill material placed on Lots 1, 2, 9 and 10 was completed by RS Eng and Geocivil, consisting of 11 Scala Penetrometer tests and 6 Nuclear Densometer tests. A single sample was taken by Geocivil to undertake a standard compaction test. The placed fills were not compacted to adequate standard as per NZS 4431:2022 and are deemed by RS Eng to be unsuitable to support building foundations and slabs. Refer section 5.0 for residential development recommendations regarding the unsuitable fill.

### **4.3 Stormwater Attenuation Pit**

Construction monitoring of the stormwater attenuation pit was undertaken by RS Eng. The construction monitoring observed the pit partially constructed at varying stages. From our limited construction monitoring the pit is considered to have been constructed in accordance with the approved engineering drawings. A WDC EES PS4 covering the construction monitoring is attached in Appendix E.

## **5.0 Residential Development Recommendations**

### **5.1 Lot Specific**

#### **5.1.1 Lots 1, 2, 9-10**

The fills placed on Lots 1 - 2 & 6 - 10 are not suitable to support building foundations or slabs. All unsuitable material shall be removed down to suitable natural ground and be replaced with suitably compacted hardfill. Alternatively, specifically designed foundations extending into the original sandy silt or inferred sandstone would be acceptable. As-built cut and fill depths are shown on Sheet 2 of Appendix A.

#### **5.1.2 Lots 6-9**

Peat and sandy Peat located below the surface in Lots 6-9 are considered unsuitable for residential development and are not suitable to support foundations or floor slabs. All unsuitable material above Sandstone shall be removed and replaced with compacted hardfill. Sandstone is expected at a depth of 0.5-1.5m. Specifically designed foundation piles may be used as an alternative to undercutting, provided they extend a minimum of 0.5m into the inferred sandstone.

Based on a review of the finished contours, the drain along the western boundaries of Lots 7 & 8 has limited fall to achieve efficient conveyance of stormwater from the property. As such, there is a minor risk of ponding of surface water during extreme rain events. On this basis, a minimum finished floor level for buildings of 6.9m One Tree Point (OTP) datum 1964 shall be adopted on Lots 6-9.

### **5.2 General**

#### **5.2.1 Site Works**

To form level access to and create building platforms for residential development, only minor earthworks are required, apart from where undercutting is required to remove unsuitable material. Cuts and fills may also be required to create level platforms on Lots 4-5 and 9. To suitably develop the building areas, RS Eng recommend as follows:

- Building platforms shall be shaped to avoid surface water concentration.
- All building platforms prepared for concrete slabs and foundations shall use at least 150mm of compacted granular hardfill extending 1.0m beyond the building envelope.
- Cuts on Lots 4-5 and 9 exceeding 1.0m shall be supported by a wall specifically designed by a suitably experienced Chartered Professional Engineer using acceptable design methods for

cohesionless soils. Fills on these lots shall be limited to 1.5m and incorporate suitable batter slopes to maintain adequate stability and avoid surface erosion.

- Cut and fills elsewhere should be limited to 1.0m without further geotechnical assessment.
- Cut and fill batters should be sloped at angles less than 1V to 3H or be suitably retained.
- Cut and fills areas should be revegetated as soon as practical to limit the potential for erosion.
- Site works shall generally be completed in accordance with NZS4431.

### **5.2.2 Foundations**

Conventional concrete slabs in accordance with NZS3604 and standard waffle raft type slabs are considered suitable provided they are founded on at least 150mm of compacted hardfill over suitable natural ground extending 1.0m beyond the building envelope. This may involve removal of fill, topsoil, and peat to expose the underlying silty sand / sandstone prior to backfilling with suitably compacted granular fill to the desired level.

Timber pile foundations are also considered acceptable providing the foundations are extending below any fill, topsoil or peat, into suitable natural ground.

Providing site preparation proceeds in line with the recommendations of this report, a Geotechnical Ultimate Bearing Capacity of 300kPa can be adopted for design purposes. This shall be confirmed by specific testing and assessment at the building consent stage from a suitably experienced Chartered Professional Engineer.

## **6.0 Conclusions**

The fills placed as part of the subdivision works are deemed unsuitable to support foundations and concrete slabs for residential development. Refer to earlier sections of this report for development recommendations.

On the above basis, it is the conclusion of RS Eng Ltd that the lots are suitable for residential construction generally in accordance with NZS 3604:2011 provided the recommendations of this report are complied with.

Specific investigations and geotechnical reporting by a suitably experienced Chartered Professional Engineer shall be completed for each residential lot at the building consent stage, specific to the building proposal.

## 7.0 Limitations

This report has been prepared solely for the benefit of our client and the Whangarei District Council. The purpose is to determine the engineering suitability for residential development, in relation to the material covered by the report. The reliance by other parties on the information, opinions or recommendations contained therein shall, without our prior review and agreement in writing, do so at their own risk.

Recommendations and opinions in this report are based on data obtained as previously detailed. The nature and continuity of subsoil conditions away from the test locations are inferred and it should be appreciated that actual conditions could vary from those assumed. If during the construction process, conditions are encountered that differ from the inferred conditions on which the report has been based, RS Eng should be contacted immediately.

Prepared by:



David Platt

Team Leader – Geotechnical  
NZDE(Civil), MEngNZ

Reviewed by:



Matthew Jacobson

Director  
NZDE(Civil), BE(Civil)(Hons), CPEng, CMEngNZ

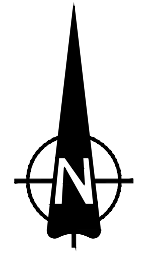
**RS Eng Ltd**

# **Appendix A**


## **As-Built Cut & Fill Contours**

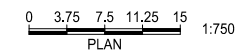
**NOTES:**

- All services should be located on-site prior to commencement of works.
- All works to comply with all relevant local authority by-laws and council regulations where applicable.
- Contractors to confirm all dimensions on site prior to commencing any work.
- Do not scale off drawings.
- These drawings are to be read in conjunction with specifications - plans take precedence.
- If any part of these documents are unclear, please contact RSEng Ltd.
- This plan is copyright to RSEng Ltd and should not be reproduced without prior permission.



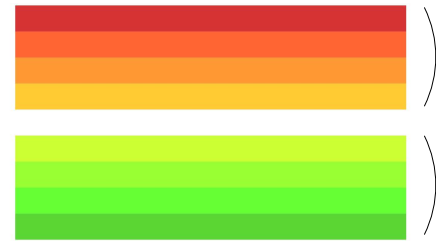
Contours are shown at 0.5m crs.  
Contours are derived from Topographical Survey data from Reyburn and Bryant (2021) and are shown at OTP64 Vertical Datum.

		<b>RS Eng Ltd</b> 09 438 3273 office@RSEng.co.nz 2 Seaview Road, Whangarei 0110							
		Title <b>PROPOSED SUBDIVISION                  SUBDIVISION COMPLETION REPORT                  PREDEVELOPMENT CONTOURS</b>							
Client <b>BRUCE STALLWORTHY</b>									
Location <b>237-239 MARSDEN POINT ROAD                  RUAKAKA</b>									
<table border="1"> <tr> <td>05/09/2022</td> <td>A</td> <td>Original Issue</td> </tr> <tr> <td>Date</td> <td>Rev</td> <td>Notes</td> </tr> </table>				05/09/2022	A	Original Issue	Date	Rev	Notes
05/09/2022	A	Original Issue							
Date	Rev	Notes							
Scale <b>1:750</b>		Original <b>A3</b>	Rev <b>A</b>						
Drawn <b>NW</b>	Approved <b>MJ</b>	File # <b>17560</b>	Sheet <b>1</b>						



-2.032m  
-1.500m  
-1.000m  
-0.500m  
0.150m  
0.500m  
1.000m  
1.500m

-1.500m  
-1.000m  
-0.500m  
0.150m  
0.500m  
1.000m  
1.500m  
1.732m

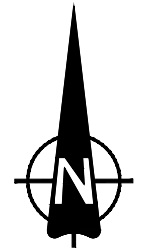
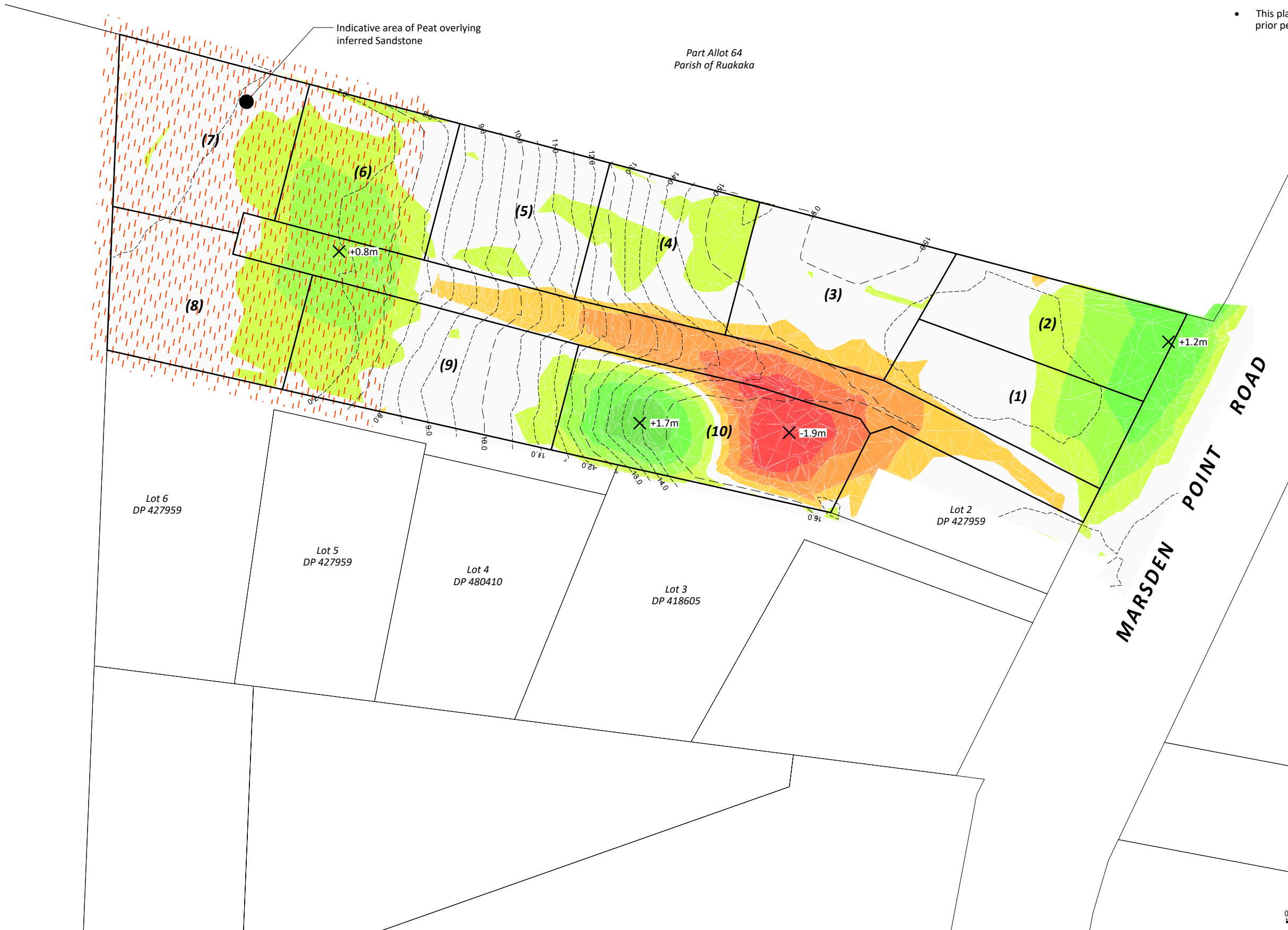


Cut Material

Non-Engineered Fill Material

**NOTES:**

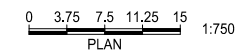
- All services should be located on-site prior to commencement of works.
- All works to comply with all relevant local authority by-laws and council regulations where applicable.
- Contractors to confirm all dimensions on site prior to commencing any work.
- Do not scale off drawings.
- These drawings are to be read in conjunction with specifications - plans take precedence.
- If any part of these documents are unclear, please contact RSEng Ltd.
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Contours are shown at 0.5m crs.  
Contours are derived from Topographical Survey data from Reyburn and Bryant (2022) and are shown at OTP64 Vertical Datum.

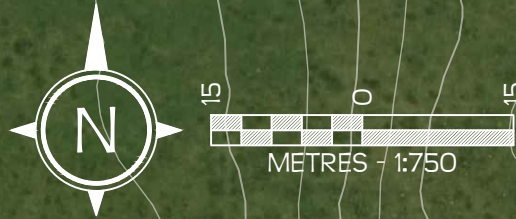
**RS Eng Ltd**  
09 438 3273  
office@RSEng.co.nz  
2 Seaview Road,  
Whangarei 0110

Title		
PROPOSED SUBDIVISION SUBDIVISION COMPLETION REPORT CUT/FILL PLAN		
Client		
BRUCE STALLWORTHY		
Location		
237-239 MARSDEN POINT ROAD RUAKAKA		
Date	Rev	Notes
05/09/2022	A	Original Issue
Scale		Original
1:750		A3
Drawn		Rev
NW		A
Approved		File #
MJ		17560
Sheet		2



# **Appendix B**

## **Drawings**



**CAUTION:**

1. THIS DRAWING SHOULD NOT BE AMENDED MANUALLY.
2. AREAS & DIMENSIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO FINAL SURVEY.
3. THE VENDOR & PURCHASER MUST CONTACT THE SURVEYOR IF SALE & PURCHASE AGREEMENTS ARE ENTERED INTO USING THIS PLAN.
4. SERVICES MUST NOT BE POSITIONED USING THIS PLAN.
5. DO NOT SCALE OFF DRAWINGS.
6. THIS PLAN IS COPYRIGHT TO REYBURN & BRYANT (1999) LIMITED.
7. DESIGNED BY REYBURN & BRYANT - WHANGAREI - NEW ZEALAND
8. 01m 2014-2015 URBAN AERIAL SOURCED FROM AERIAL SURVEYS LTD INFORMATION AVAILABLE ON LINZ DATA SERVICE.
9. BOUNDARIES SOURCED FROM QUICKMAP. COORDINATES IN TERMS OF MOUNT EDEN 2000.



C	25.03.21	BOUNDARY AMENDMENTS - TK/CC
B	24.09.20	ADJUSTED LOT BOUNDARIES - PL/MW
A	17.08.20	FIRST ISSUE - PL/CC
REV	DATE	DESCRIPTION
REF. DATA:		



Ph: 09 438 3563 PO Box 191, Whangarei 0140  
7 Selwyn Ave, Whangarei www.reyburnandbryant.co.nz

CLIENT  
**STALLWORTHY**  
**237 & 239 MARSDEN POINT ROAD,**  
**RUAKAKA**

TITLE  
**PROPOSED SUBDIVISION OF**  
**LOT 2 DP 152421**

DATE	MARCH 2021	SCALE	1:750 @A3
NO.	<b>S16064</b>	SHEET	1/1 Rev. C

## **Appendix C**

### **Subsurface Investigations**







**RS Eng Ltd**  
 09 438 3273  
 office@RSEng.co.nz  
 2 Seaview Road,  
 Whangarei 0110

# HAND AUGER LOG

**HOLE NO.:**  
**HA03**

**CLIENT:** Bruce Stallworthy  
**PROJECT:** Ground Completion Report

**JOB NO.:**  
**17560**

**SITE LOCATION:** 237-239 Marsden Point Road, Ruakaka  
**CO-ORDINATES:** 1730908mE, 6028268mN

**ELEVATION:** Ground

**START DATE:** 29/07/2022  
**END DATE:** 29/07/2022  
**LOGGED BY:** CH

UNIT	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 0mm)								VANE SHEAR STRENGTH (kPa)				WATER		
					2	4	6	8	10	12	14	16	18	50	100	150		200	Values
Kariotahi Gr	PEAT (SPONGY), with minor sand; black. Soft; moist; non-plastic; sand, fine to medium.		0.2	业业业业业															
	End Of Hole: 0.30m		0.4																
			0.6																
			0.8																
			1.0																
			1.2																
			1.4																
			1.6																
			1.8																
			2.0																
			2.2																
			2.4																
			2.6																
			2.8																

**PHOTO(S)**



**REMARKS**

Refusal due to being unable to penetrate sandstone

**WATER**

- ▼ Standing Water Level
- ▽ Out flow
- ↖ In flow

**INVESTIGATION TYPE**

- Hand Auger
- Test Pit





**RS Eng Ltd**  
 09 438 3273  
 office@RSEng.co.nz  
 2 Seaview Road,  
 Whangarei 0110

# HAND AUGER LOG

**HOLE NO.:**  
**HA05**

**CLIENT:** Bruce Stallworthy  
**PROJECT:** Ground Completion Report

**JOB NO.:**  
**17560**

**SITE LOCATION:** 237-239 Marsden Point Road, Ruakaka  
**CO-ORDINATES:** 1730887mE, 6028271mN

**ELEVATION:** Ground

**START DATE:** 29/07/2022  
**END DATE:** 29/07/2022  
**LOGGED BY:** CH

UNIT	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 0mm)								VANE SHEAR STRENGTH (kPa)				WATER			
					2	4	6	8	10	12	14	16	18	50	100	150		200	Values	
TS	Sandy SILT; dark grey. Soft; moist; non-plastic; [TOPSOIL].			TS																
Karioitahi Gr	PEAT (SPONGY); black. Soft; moist; non-plastic.		0.2																	
	Saturated.		0.4																	
	End Of Hole: 0.50m		0.6																	
			0.8																	
			1.0																	
			1.2																	
			1.4																	
			1.6																	
			1.8																	
			2.0																	
			2.2																	
			2.4																	
			2.6																	
			2.8																	

Groundwater Not Encountered

**PHOTO(S)**



**REMARKS**

Refusal due to being unable to penetrate sandstone

**WATER**

- Standing Water Level
- Out flow
- In flow

**INVESTIGATION TYPE**

- Hand Auger
- Test Pit





**RS Eng Ltd**  
 09 438 3273  
 office@RSEng.co.nz  
 2 Seaview Road,  
 Whangarei 0110

# HAND AUGER LOG

**HOLE NO.:**  
**HA07**

**CLIENT:** Bruce Stallworthy  
**PROJECT:** Ground Completion Report

**JOB NO.:**  
**17560**

**SITE LOCATION:** 237-239 Marsden Point Road, Ruakaka  
**CO-ORDINATES:** 1730895mE, 6028236mN

**ELEVATION:** Ground

**START DATE:** 29/07/2022

**END DATE:** 29/07/2022

**LOGGED BY:** CH

UNIT	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 0mm)								VANE SHEAR STRENGTH (kPa)				WATER			
					2	4	6	8	10	12	14	16	18	50	100	150		200	Values	
TS	Sandy SILT; dark grey. Soft; moist; non-plastic; [TOPSOIL].			TS																
Karaitahi Gr	PEAT (SPONGY); black. Soft; moist; non-plastic.		0.2																	
	End Of Hole: 0.40m		0.4																	
			0.6																	
			0.8																	
			1.0																	
			1.2																	
			1.4																	
			1.6																	
			1.8																	
			2.0																	
			2.2																	
			2.4																	
			2.6																	
			2.8																	

**PHOTO(S)**



**REMARKS**

Refusal due to being unable to penetrate sandstone

**WATER**

- Standing Water Level
- Out flow
- In flow

**INVESTIGATION TYPE**

- Hand Auger
- Test Pit







**RS Eng Ltd**  
 09 438 3273  
 office@RSEng.co.nz  
 2 Seaview Road,  
 Whangarei 0110

# HAND AUGER LOG

**HOLE NO.:**  
**HA10**

**CLIENT:** Bruce Stallworthy  
**PROJECT:** Ground Completion Report

**JOB NO.:**  
**17560**

**SITE LOCATION:** 237-239 Marsden Point Road, Ruakaka  
**CO-ORDINATES:** 1730932mE, 6028230mN

**ELEVATION:** Ground

**START DATE:** 29/07/2022

**END DATE:** 29/07/2022

**LOGGED BY:** CH

UNIT	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 0mm)										VANE SHEAR STRENGTH (kPa)				WATER	
					2	4	6	8	10	12	14	16	18	50	100	150	200	Values		
TS	Sandy SILT; dark grey. Soft; moist; non-plastic; [TOPSOIL].			TS																
Kariotahi Gr	PEAT (SPONGY), with minor sand; black/yellow. Soft; moist; non-plastic; sand, fine to medium.		0.2																	
			0.4																	
	Sandy PEAT (SPONGY); black. Soft; moist; non-plastic; sand, fine to medium.		0.6																	
			0.8																	
	Saturated.		1.0																	
			1.2																	
	End Of Hole: 1.30m		1.4																	
			1.6																	
			1.8																	
			2.0																	
			2.2																	
			2.4																	
			2.6																	
			2.8																	

29/07/2022

**PHOTO(S)**



**REMARKS**

Refusal due to being unable to penetrate sandstone

**WATER**

- Standing Water Level
- Out flow
- In flow

**INVESTIGATION TYPE**

- Hand Auger
- Test Pit



**RS Eng Ltd**  
09 438 3273  
office@RSEng.co.nz  
2 Seaview Road,  
Whangarei 0110

# HAND AUGER LOG

**HOLE NO.:**  
**HA11**

**CLIENT:** Bruce Stallworthy  
**PROJECT:** Ground Completion Report

**JOB NO.:**  
**17560**

**SITE LOCATION:** 237-239 Marsden Point Road, Ruakaka  
**CO-ORDINATES:** 1730982mE, 6028217mN

**ELEVATION:** Ground

**START DATE:** 29/07/2022  
**END DATE:** 29/07/2022  
**LOGGED BY:** CH

UNIT	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 0mm)								VANE SHEAR STRENGTH (kPa)				WATER				
					2	4	6	8	10	12	14	16	18	50	100	150		200	Values		
TS	Sandy SILT; dark grey. Soft; moist; non-plastic; [TOPSOIL].		0.0 - 0.2																		
Kariotahi Gr	SAND; orangish yellow. Medium dense; moist; sand, fine to medium.		0.2 - 1.75																		
	Dark greyish black.		1.75 - 1.9																		
	Orangish yellow. Saturated.		1.9 - 2.0																		
	End Of Hole: 2.20m		2.0 - 2.2																		
			2.2 - 2.8																		

Groundwater Not Encountered

**PHOTO(S)**



**REMARKS**

Refusal due to being unable to penetrate sandstone

**WATER**

- Standing Water Level
- Out flow
- In flow

**INVESTIGATION TYPE**

- Hand Auger
- Test Pit





**DETERMINATION OF DRY DENSITY/ WATER CONTENT RELATIONSHIP**  
NEW ZEALAND STANDARD COMPACTION  
NZS 4402:1986 Test 4.1.1

**Lab Job No:** 8155-234  
**Client:** RS Eng  
**Project:** 237 - 239 Marsden Pt Rd  
**Location:** Onsite Test Pit

**Sample No.:** WRE8155-234-S007  
**Tested By:** J.ATT  
**Date:** 10/08/2022  
**Checked By:** [Redacted]  
**Date:** [Redacted]  
**Page:** [Redacted]

**Date Received:** 1/08/2022  
**Report No:** [Redacted]  
**REF:** 17560

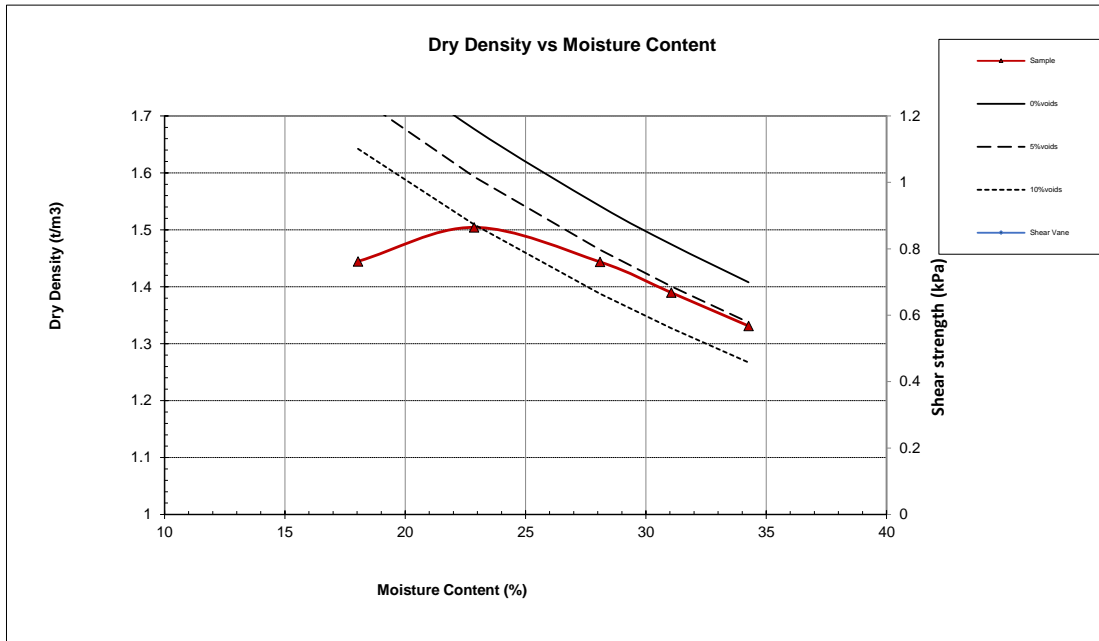
**Sample Description:** SAND, some silt, sand is fine to medium well graded, light brown, moist

**Compaction used:** New Zealand Standard Compaction Test performed on:  
Fraction Passing 19mm test sieve

**History:** As received

Total mass of sample: 40000 g  
Mass retained on 19mm BS test sieve: 0 g

*All tests are PRELIMINARY  
and are subject to change  
in reported results*



Test Results			
Water Content (%)	Dry Density (t/m <sup>3</sup> )	Shear Vane (kPa)	
		Peak	Residual
18.0	1.445	N/A	
22.9	1.504		
28.1	1.444		
31.1	1.390		
34.3	1.331		

Solid Density (t/m<sup>3</sup>) = 2.72 Assumed  
 Optimum Water Content (%) = 23  
 Max Dry Density (t/m<sup>3</sup>) = 1.50  
 Natural Water Content (%) = 23

**NUCLEAR DENSOMETER READINGS**  
NZS 4407:2015 Test 4.2, 4.3

Lab Job No: 8155-234  
Client: RS Eng  
Job: 237-239 Marsden Pt Rd  
Location:  
REF:  
Report No:  
Material: Silty SAND, brown, moist

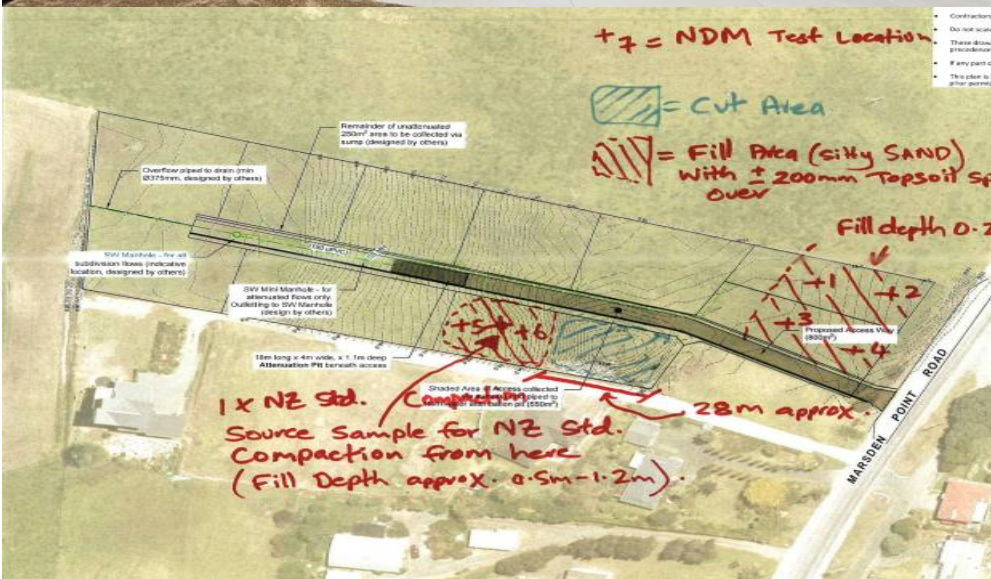
Tested By: L.C  
Date: 1/08/2022

All tests are PRELIMINARY  
and are subject to change in  
reported results

Solid Density (assumed): 2.70 t/m<sup>3</sup>      Max dry Density\*: 1.50 t/m<sup>3</sup>

Date	Test No	Bulk Density t/m <sup>3</sup>	Dry Density t/m <sup>3</sup>	Water Content %**	% Air Voids	% Compaction	Probe Depth (mm)	Comments
1/08/2022	1	1.72	1.42	21.2	17	95	150	-
1/08/2022	2	1.78	1.49	19.0	16	100	150	-
1/08/2022	3	1.56	1.14	36.0	16	76	150	-
1/08/2022	4	1.91	1.65	15.9	13	110	150	Gravelly
1/08/2022	5	1.60	1.32	21.7	23	88	300	-
1/08/2022	6	1.66	1.24	33.9	12	83	300	-

\* Max dry density based on Vibrating Hammer compaction test NZS 4402: 1986 Test 4.1.3  
\*\* Oven dried water content NZS 4402 1986 test 2.1



## **Appendix D**

**WDC EES PO1**



## Statement of Professional Opinion on Suitability of Land for Building Construction Form EES-PO1

Development 237 Marsden Point Road, Ruakaka

Developer Bruce Stallworthy

Location 237 Marsden Point Road, Ruakaka

I (full name) Matthew Jacobson on behalf of RS Eng Ltd

of (Name and address of firm) RS Eng Ltd, 2 Seaview Road, CBD, Whangarei

Hereby confirm that \_\_\_\_\_

- 1 I am a geo-professional as defined in **Section 1.2** of the WDC EES and was retained by the developer as the geo-professional on the above development
- 2 The extent of my preliminary investigations are described in my Report(s) number RS Eng Sub. Suitability - 17560 dated 15 January 2021 & 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, & the results of all tests and/or re-evaluations carried out are as described in my geotechnical completion report dated 9 September 2022
- 3 In my professional opinion, not to be construed as a guarantee, I consider that *(delete as appropriate)*:
  - a ~~The earth fills shown on the attached Plan No \_\_\_\_\_ have been placed in compliance with the requirements of the \_\_\_\_\_ Council & my specification~~  
~~(However, lots As stated in RS Eng & GCR #17560 9/9/22 did not pass final fill specification testing & as a result, specific site investigations & foundation designs will be required here at the time of building consent application)~~
  - b The completed works take into account land slope & 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) above, the original ground ~~not~~ affected by filling satisfies the description of 'good ground' as described in NZS3604/NZS4229  Yes  No  
(If **no**, a specific foundation investigation/design will be required at the time of Building Consent)
  - d Subject to 3(a) & 3(b) above, the filled ~~ground~~ satisfies the description of 'good ground' as described in NZS3604/NZS4229  Yes  No  
(If **no**, a specific foundation investigation/design will be required at the time of Building Consent)
  - e The original ground not affected by filling & 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 of the RS Eng Ltd Geotechnical Completion Report, Job Ref. #17560, 9 September 2022 are followed & specific subsoil investigations & assessment by a suitably qualified CPEng is completed at BC stage.
    - ii \_\_\_\_\_
- 4 This professional opinion is furnished to the TA & 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 & shall not be copied or reproduced except in conjunction with the full geotechnical completion report

  
\_\_\_\_\_  
Signature

NZDE(Civil), BE(Civil)(Hons), CPEng, CMEngNZ  
\_\_\_\_\_  
Professional Qualifications

9/09/2022  
\_\_\_\_\_  
Date

# **Appendix E**

**WDC EES PS4**

# WHANGAREI DISTRICT COUNCIL

Forum North · Private Bag 9023 · Whangarei 0148 · New Zealand  
Telephone (09) 430 4200 · 0800 WDC INFO · 0800 932 463 · Facsimile (09) 438 7632  
Website <http://www.wdc.govt.nz> · E-mail [mailroom@wdc.govt.nz](mailto:mailroom@wdc.govt.nz)



Creating the ultimate living environment

## Form EES-PS4 Producer Statement – Construction Certificate of Works carried out under Resource Consent

Issued By (print) Matthew Jacobson on behalf of RS Eng Ltd

(Suitably Qualified Professional/IQP)

To **Whangarei District Council**

In respect of Proposed Subdivision - Bruce Stallworthy

(Description of sub divisional/Development work)

at 237 Marsden Point Road, Ruakaka

(Address)

Lot 2

DP 152421

SO \_\_\_\_\_

RS Eng Ltd

(Consultants Firm)

has been engaged by

Bruce Stallworthy

(Developer/Owner)

to provide certification for the following works approved under Resource Consent number

2100047

Issued on 28 May 2021

and described on drawings titled

Proposed Subdivision, Ref. #17560, 4 August 2022

and numbered 1 & 2

and dated 4 August 2021

Works subject to (provide description of work/extent of certification)

i Stormwater Attenuation Pit, refer to RS Eng Geotechnical Completion Report #17560 dated 09/09/22

ii \_\_\_\_\_


iii \_\_\_\_\_

iv \_\_\_\_\_

v \_\_\_\_\_

We have sighted the Resource Consent issued and the conditions attached to it

On the basis of review(s), supervision and information supplied by the contractor(s) during the course of the works, as an independent professional **I believe on reasonable grounds** that the construction works as specified above have been completed in terms of the approved drawings, specifications and other documents approved under the Resource Consent process

  
Signature Suitably Qualified Professional

9/09/2022

Date

NZDE(Civil), BE(Hons)(Civil), CPEng, CMEngNZ

Professional Qualifications

2 Seaview Road, Whangarei

Address

Member of  ACENZ  IPENZ  NZIS

IQP Registered  Yes

No

### Note

This statement is to be accompanied by proof of current Professional Indemnity Insurance to a value of not less than that stated in Council's Environmental Engineering Standards (2009)

## **Appendix F**

### **Site Inspection Sheet**



**RS Eng Ltd**  
09 4383273  
[office@RSEng.co.nz](mailto:office@RSEng.co.nz)  
2 Seaview Road,  
Whangarei, 0110

**Inspection No.** 1

**File No.** 17560

**Date** 8 March 2022

**Time** 7:30 AM

## Site Inspection Sheet

---

### Health & Safety

**Site Induction Completed** N/A

#### Task to be completed

Subgrade Stripping - R.O.W

#### Significant site risks associated with task

Machines, trips and falls

#### Controls for risk

Eye contact with operator, safety boots

#### Accidents or near misses

N/A

---

### Inspection Details

**Project** Subdivision - Stallworthy

**Purpose of Inspection** Subgrade Stripping - R.O.W

**Site Address** 237 Marsden Point Road, Ruakaka

**Additional Contact Email** No

#### Comments

Topsoil removed from most of R.O.W prep. area to expose yellow silty SAND. Localised area of peat / organics and soft material encountered towards western end of R.O.W formation. Material half undercut to expose dense sand / sandstone during visit, approx. 1m deep. Hansens to continue undercut in this area and provide photos prior to placement of backfill (Sand source from site).

Shallow testpit in North east corner of site revealed about 300mm of loose uncontrolled fill over grass and original topsoil before reaching original sand at approx. 0.6m. Material to be removed to expose original ground before placement and compaction of fills.

**Action Required?**

N/A - Continue undercuts and topsoil stripping prior to fill placement and compaction.

**Next Inspection**

Fill compaction testing - TBA

**Email of Engineer**

davidp@rseng.co.nz

**Name of Engineer**

David Platt

**Signature**

D.P

**Upload Photos**





**RS Eng Ltd**  
09 4383273  
[office@RSEng.co.nz](mailto:office@RSEng.co.nz)  
2 Seaview Road,  
Whangarei, 0110

**Inspection No.** 2

**File No.** 17560

**Date** 10 March 2022

**Time** 8:00 AM

## Site Inspection Sheet

---

### Health & Safety

**Site Induction Completed** N/A

#### Task to be completed

Undercut / stripping for fill on Lots 1 & 2, Scalas on sand backfill area on R.O.W undercut for removal of localised peat area.

#### Significant site risks associated with task

N/A - no one on site.

#### Controls for risk

N/A

#### Accidents or near misses

N/A

---

### Inspection Details

**Project** Subdivision - Stallworthy

**Purpose of Inspection** Undercut / stripping for fill on Lots 1 & 2, Scalas on sand backfill area on R.O.W undercut for removal of localised peat area.

**Site Address** 237 Marsden Point Road, Ruakaka

**Additional Contact Email** No

#### Comments

Undercut / stripping on Lots 1 & 2 has exposed original ground, suitable for placement and compaction of fills. Still some further topsoil stripping to be completed - photos to be provided by Hansens. Reyburn & Bryant to organise survey of undercut area prior to fill placement on Lots 1 & 2.

4 X Scalas in R.O.W backfill (where peat removed) recorded generally <15mm/blow indicating adequate compaction is being achieved. Surface is slightly looser, typical of sand. Edges of backfill also slightly looser, concentrate compactive effort along edges as much as possible going forward.

**Action Required?**

As above - R & B to survey undercut extents and depths prior to fill placement on Lots 1 & 2.

Concentrate compactive effort on edges of sand backfill.

**Next Inspection**

TBA

**Email of Engineer**

davidp@rseng.co.nz

**Name of Engineer**

David Platt

**Signature**

**Upload Photos**





**RS Eng Ltd**  
09 4383273  
[office@RSEng.co.nz](mailto:office@RSEng.co.nz)  
2 Seaview Road,  
Whangarei, 0110

**File No.** 17560

**Date** 25 March 2022

**Time** 3:30 PM

## Site Inspection Sheet

---

### Health & Safety

**Site Induction Completed** Yes

#### Task to be completed

Soakpit Inspection - During Construction

#### Significant site risks associated with task

Machines, excavations, trips and falls

#### Controls for risk

Stay clear of machines, eye contact with operators, safety boots

#### Accidents or near misses

N/A

---

### Inspection Details

**Project** Subdivision - Stallworthy

**Purpose of Inspection** Soakpit Inspection - During Construction

**Site Address** 237 Marsden Point Road, Ruakaka

**Additional Contact Email** No

#### Comments

First section (approx. half) of pit constructed to dimensions as per design. Drainage metal sighted, PVC pipes with holes drilled each side @200mm - 300mm centers used in place of Novaflo - considered acceptable. Geotextile wrapped over entire pit.

**Action Required?**

N/A - O.K to continue with current methodology.

**Next Inspection**

N/A - or TBA - finished pit?

**Email of Engineer**

davidp@rseng.co.nz

**Name of Engineer**

David Platt

**Signature**

**Upload Photos**

