

BEFORE THE INDEPENDENT HEARING PANEL

**IN THE MATTER of the Resource
Management Act 1991**

AND

**IN THE MATTER TTPP deliberations –
Rural Zones**

**STATEMENT OF PLANNING EVIDENCE OF BARRY JAMES MACDONELL
ON BEHALF OF FOREST HABITATS LTD**

**Submitter S186.001 / Regarding 117 Arthurstown Road, Hokitika (Proposed
Re-Zoning)**

25 June 2024

1 QUALIFICATIONS AND EXPERIENCE

- 1.1 My full name is Barry James MacDonell. I am a resource management consultant with 28 years planning experience. I have a BSc(Hons) and a Masters degree in resource planning, both from Otago University. I am a full member of the New Zealand Planning Institute.
- 1.2 I have experience in the preparation of resource consent applications for developers and in the processing of consents on behalf of Councils. Past and current projects include subdivisions, dams, roading infrastructure, quarries, cleanfills, mines, telecommunications infrastructure, private plan changes and other commercial developments.
- 1.3 I have read the Code of Conduct for expert witnesses outlined in the Environment Court's practice note 2023 and have complied with it in preparing this evidence. I confirm that the issues addressed in this brief of evidence are within my area of expertise and that I have not omitted to consider material facts known to me that might alter or detract from my opinions.

2 INTRODUCTION & SCOPE

- 2.1 My evidence covers the planning aspects of this proposed re-zoning. I have visited the site and am familiar with the general area.
- 2.2 The applicant is seeking a re-zoning in the TTPP of their land from General Rural to Settlement Zone – Rural Residential Precinct.
- 2.3 There is an existing dwelling and farm sheds on the site.
- 2.4 The land proposed for re-zoning comprises a 98 ha farm. Some of the land is excluded from development because of proximity to the Hokitika River and potential flood hazard. This is shown on the site plan at Appendix 1.
- 2.5 The property comprises 9 existing titles. The plan at Appendix 2 shows how 9 dwellings could be developed on the existing titles, as of right (Controlled Activity).
- 2.6 The applicant has engaged a landscape architect to prepare landscape and planting plans, as an example of a typical subdivision layout. Refer Appendix 3 and 4.

- 2.7 Photomontages at Appendix 5 provide examples of the type of rural residential development that could occur here.
- 2.8 Two engineering reports have been prepared for a proposed subdivision, confirming that flood free building platforms and driveways can be constructed, outside the flood hazard set back line and the tsunami risk area. Refer Appendix 6 and Appendix 7.

3 SITE DESCRIPTION

- 3.1 The 98 ha site is located on Arthurstown Road, which is accessed off SH6, approximately 300 m south of the Hokitika bridge. The site is located directly across the river from the town of Hokitika.
- 3.2 There is an existing dwelling and several farm sheds on the property.
- 3.3 The site is around 2.5 m to 5.5 m above sea level, and around 1.5 km inland from the coast. Finished floor heights can be achieved for each lot, to mitigate flood hazard, in accordance with the engineering reports.
- 3.4 The property is predominantly vegetated in pasture, with a watercourse (Charcoal Creek) flowing north towards the Hokitika River. This watercourse and its riparian margins will not be adversely affected by the development, and can in fact be enhanced in accordance with the proposed planting plan. This riparian planting has already commenced.
- 3.5 The West Coast Regional Council has confirmed that this is not a HAIL site.

4 ASSESSMENT OF ENVIRONMENTAL EFFECTS

4.1 Effects on Infrastructure

As confirmed in the engineering reports, any adverse effects on Council infrastructure will be less than minor as any new dwellings will be self contained in respect of on-site wastewater disposal and water supply.

Spark has confirmed there is good 4G coverage over the area (or alternatively Skylink), and Electronet has confirmed that electricity supply can be provided.

4.2 Land Stability & Flooding

There are no land stability issues associated with this relatively level site. The geotechnical investigation included in the Eliot Sinclair report (Appendix 7) confirms that the property is suitable for development.

The flood assessment evidence also confirms that finished floor levels for dwellings can be constructed above the flood plain and outside the tsunami hazard area.

4.3 Amenity / Landscape & Visual Effects / Rural Character

The low elevation of the property means any new dwellings will not be highly visible, bearing in mind there are already several buildings and a dwelling already on the site, and other dwellings on surrounding properties.

The proximity to Hokitika reinforces the notion that this is an area suitable for rural lifestyle living.

The plan of existing titles at Appendix 2 demonstrates how dwellings could be developed on the site even if the proposed re-zoning does not proceed. This sets a baseline for assessment.

In respect of the suitability of the site for rural lifestyle development, it is noted as follows;

- The land is of low productive capacity, and is better suited to rural residential living, being close to the township of Hokitika, and adjoining land to the west already proposed to be zoned Settlement Zone – Rural Residential Precinct.
- The area proposed for re-zoning is within walking distance of Hokitika.
- The area is in close proximity to the rail trail.
- The engineering reports confirm that the area is suitable for development with building platforms able to be constructed above the flood plain.
- The area is relatively level and geotechnically suitable for residential building platforms.
- The area has attractive amenity values, with a north facing aspect towards Hokitika.
- Additional higher value rural lifestyle properties here will enhance the rating base, for the benefit of the wider community. New families in the area will benefit schools, businesses and social well being generally.

4.4 Effects on Productive Soils

The soils on the property are not highly productive as defined by the NPS-HPL.

4.5 Economic Benefits to Hokitika

A report prepared for the applicant by QV (Appendix 8) confirms that there is a shortage of vacant land for residential development in Hokitika. It is

clear that more well located sections will be required, and this re-zoning will go some way towards alleviating the shortage.

5 RELEVANT PLANNING INSTRUMENTS

5.1 Te Tai o Poutini Plan (TTPP)

One matter raised in the s42A report relates to flood risk. There are numerous submissions opposing the current state of the TTPP hazard maps, noting that they need further refinement. Some submissions, including from the West Coast Regional Council, note that in respect of flood hazard, the mapping is unduly restrictive and does not even follow contours (Submission Point S488.020 Appendix 9). Submitters also note that the blanket approach to hazard mapping is adversely affecting property values and may place an undue burden on the community, including adversely affecting the social and economic wellbeing of the West Coast people.

5.2 National Policy Statement for Highly Productive Land

The NPS-HPL is about ensuring the protection of NZ's most favourable soils for productive purposes, now and for future generations. About 15% of NZ's land is categorised as 'highly productive'. This is NZ's most fertile and versatile land. In recent years many thousands of hectares of HPL have been lost to urban and rural-residential subdivision, mainly around Auckland and Christchurch. The provisions of this NPS do not apply in this instance because the subject site is not 'highly productive land', and the concern regarding 'fragmentation' of rural land is unfounded.

6 COUNCIL PLANNERS s42A REPORT

6.1 The Council planner's s42A does not support the requested re-zoning for the following reasons;

- a. Fragmentation of rural land.
- b. Reverse sensitivity regarding mining.
- c. Flood risk.
- d. Residential use in this area is undesirable

6.2 Fragmentation of rural land.

The land is not highly productive so any adverse effects on overall productive capacity in the region will be less than minor. There is already rural residential development in the area due to the proximity to Hokitika and desirable amenity.

6.3 Reverse sensitivity regarding mining.

There are no mining operations in the immediate vicinity. The closest mining activity is approximately 400 – 500 m to the south, behind a bush covered ridge. A review of Open File Reports from the NZ Petroleum & Minerals database indicates there are no known economic mineral deposits under or in the immediate vicinity of the site.

6.4 Flood risk

The TTPP flood hazard maps referred to in the s42A report are a high level modelling based overview. This conclusion is supported by the submission from the West Coast Regional Council on the TTPP. Just because there are hazard overlays alerting developers to potential hazards, does not mean development should not occur. Provided each proposal is assessed on a case by case basis, with specific engineering solutions available, there is no reason to prevent development. This is confirmed in the attached engineering reports.

The inaccuracies in the flood hazard mapping is well illustrated in the example of the recently approved Golf Links Road subdivision (RC 230075 & 230076). Here the land, which is lower in elevation than the Arthurstown Road site, is mapped as being outside the flood hazard area, but on closer inspection by a registered civil engineer (Appendix 10) it appears to be subject to flooding with no real flood hazard mitigation proposed. In contrast, the Forest Habitats land at Arthurstown Road has been fully assessed by 2 engineering firms, who have concluded that the land is suitable for residential development, with appropriate mitigation.

6.5 Residential use in the area is undesirable

It is difficult to understand how residential use can be 'undesirable' here when the subject site directly abuts land zoned for Settlement. The close proximity to Hokitika and the attractive amenity and outlook of the subject site makes it highly desirable for residential development.

7 CONCLUSION

- 7.1 As there are no adverse environmental effects that are more than minor associated with this proposal, and there will be social and economic benefits for Hokitika in respect of housing potential in an attractive location, it is concluded that the request for re-zoning should be approved.

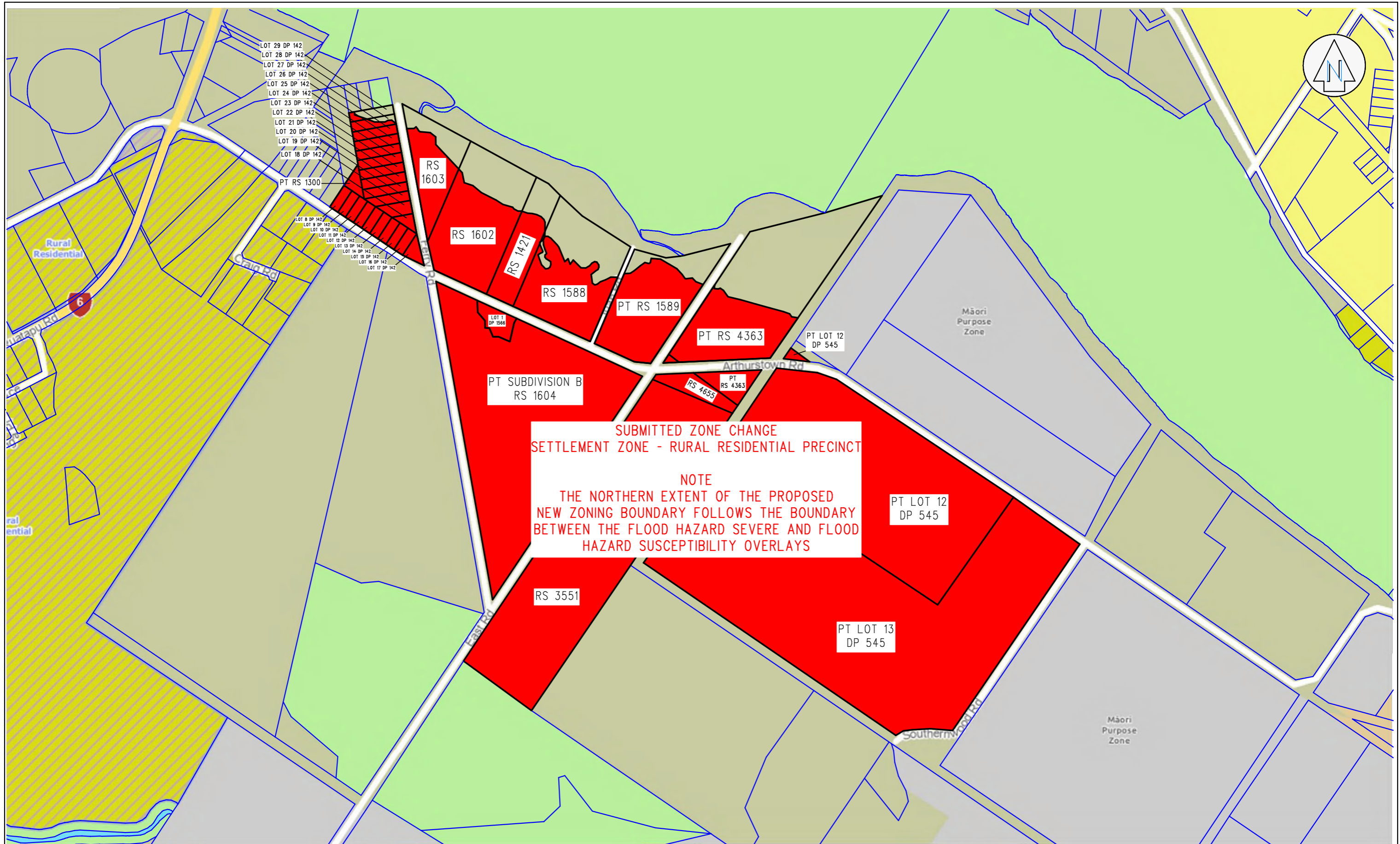


Barry MacDonell

25 June 2024

Appendices

- Appendix 1 Site Plan
- Appendix 2 Plan of existing titles with baseline dwellings
- Appendix 3 Landscape Plan
- Appendix 4 Planting Plan
- Appendix 5 Photo Montages
- Appendix 6 Hutchinsons Engineering Report
- Appendix 7 Eliot Sinclair Engineering Report
- Appendix 8 Property Market Commentary
- Appendix 9 WCRC Submission on TTPP (flood hazard mapping)
- Appendix 10 Flooding in Lower Hokitika Catchment



**FOREST HABITATS LIMITED
ARTHURSTOWN ROAD, RUATAPU
PROPOSED TE TAI O POUTINI PLAN ZONING SUBMISSION**

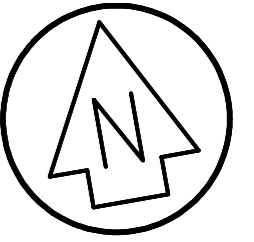
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PURPOSE

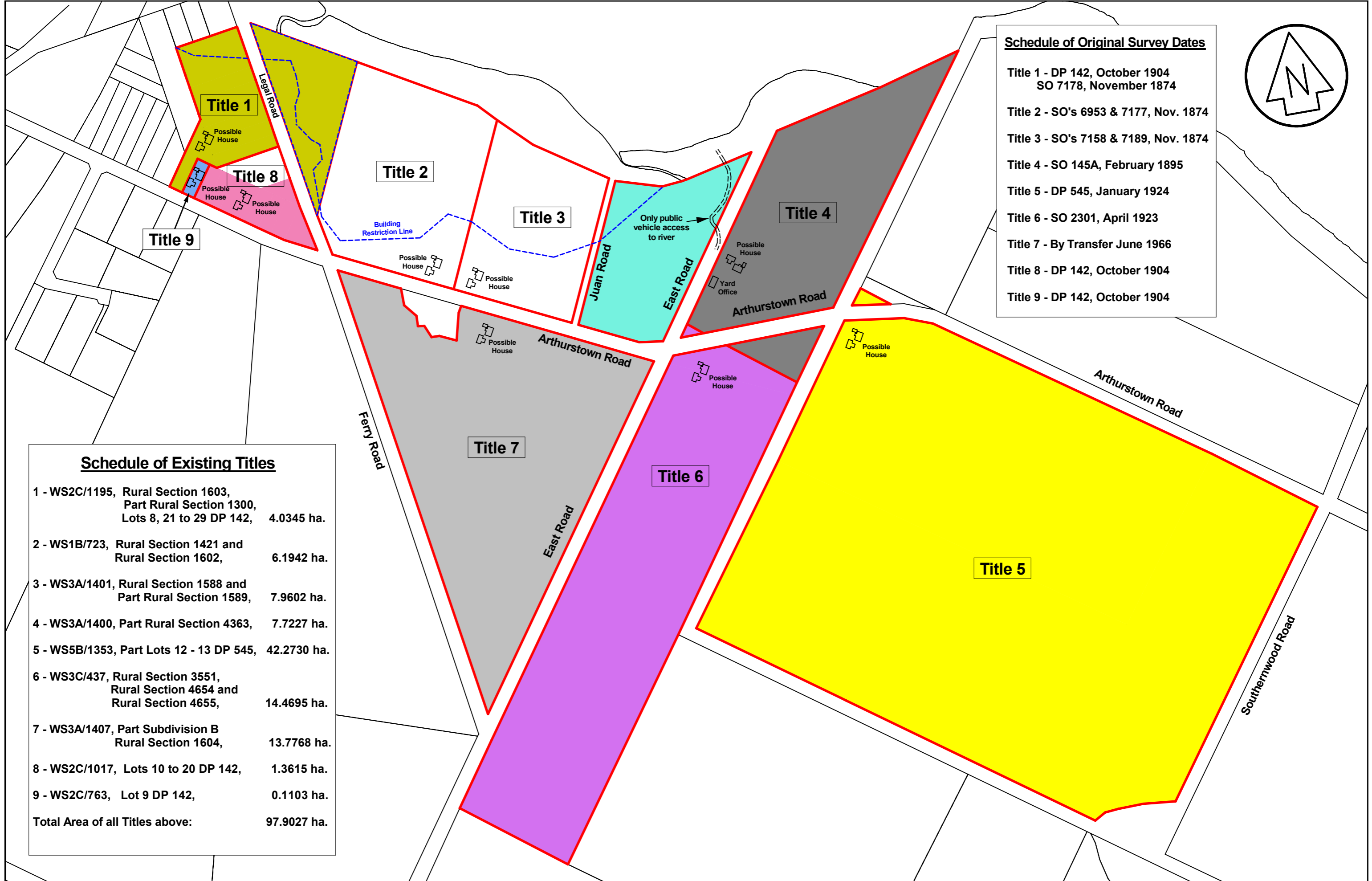
This plan was prepared for Forest Habitats Limited
Boundaries & areas are preliminary & approximate.
The dimensions & areas are subject to final calculations
& field survey.

DATA ATTRIBUTION

Zoning boundaries and hazard overlay extents
have been derived from the proposed Te Tai o Poutini
Plan online mapping system.



Schedule of Original Survey Dates	
Title 1	- DP 142, October 1904 SO 7178, November 1874
Title 2	- SO's 6953 & 7177, Nov. 1874
Title 3	- SO's 7158 & 7189, Nov. 1874
Title 4	- SO 145A, February 1895
Title 5	- DP 545, January 1924
Title 6	- SO 2301, April 1923
Title 7	- By Transfer June 1966
Title 8	- DP 142, October 1904
Title 9	- DP 142, October 1904



Schedule of Existing Titles		
1	- WS2C/1195, Rural Section 1603, Part Rural Section 1300, Lots 8, 21 to 29 DP 142,	4.0345 ha.
2	- WS1B/723, Rural Section 1421 and Rural Section 1602,	6.1942 ha.
3	- WS3A/1401, Rural Section 1588 and Part Rural Section 1589,	7.9602 ha.
4	- WS3A/1400, Part Rural Section 4363,	7.7227 ha.
5	- WS5B/1353, Part Lots 12 - 13 DP 545,	42.2730 ha.
6	- WS3C/437, Rural Section 3551, Rural Section 4654 and Rural Section 4655,	14.4695 ha.
7	- WS3A/1407, Part Subdivision B Rural Section 1604,	13.7768 ha.
8	- WS2C/1017, Lots 10 to 20 DP 142,	1.3615 ha.
9	- WS2C/763, Lot 9 DP 142,	0.1103 ha.
Total Area of all Titles above:		97.9027 ha.









REV	DATE	NOTES
A	29/08/2023	Revised for Discussion

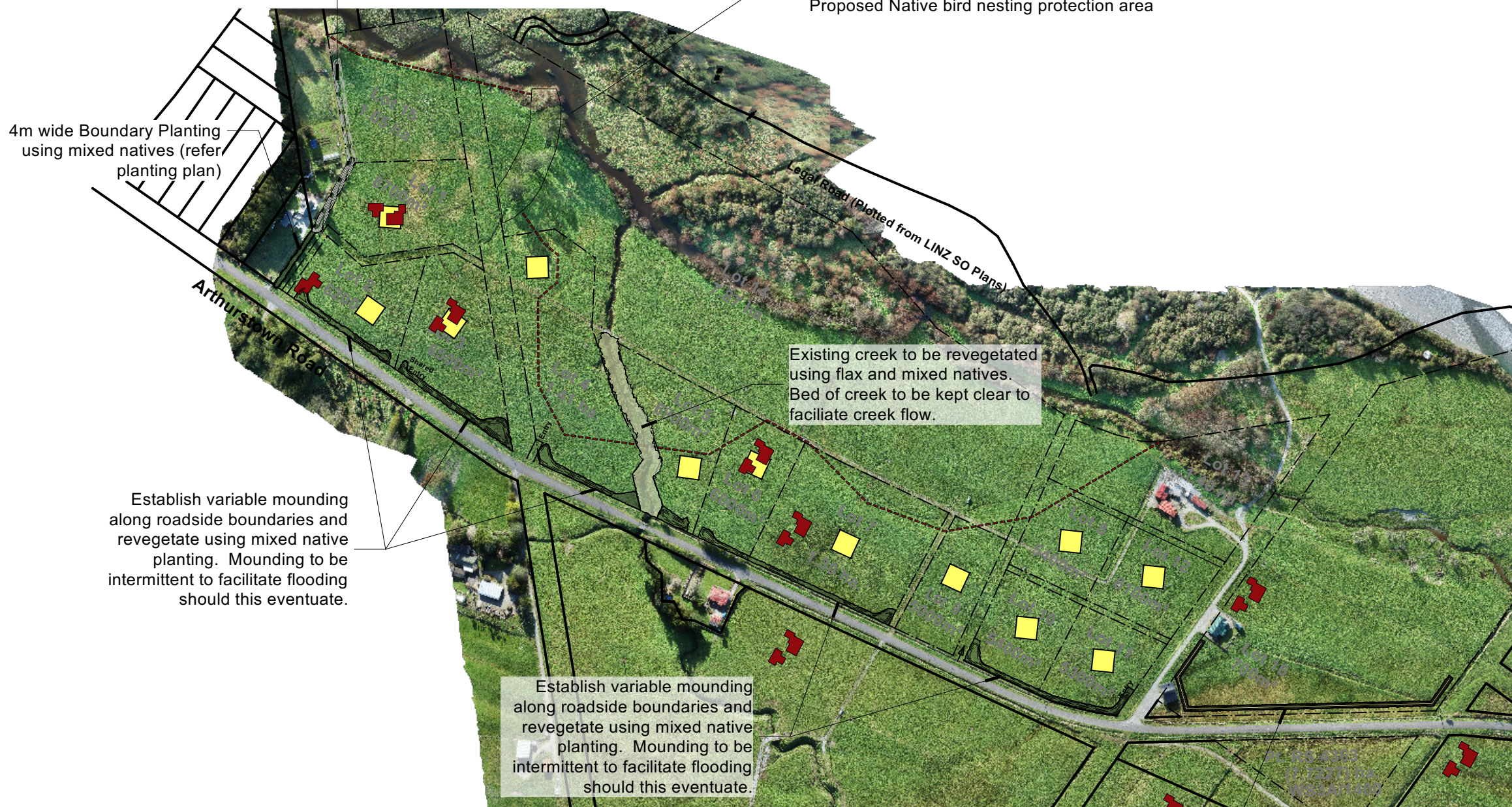


Proposed Native bird nesting protection area

Existing swale to be revegetated within proposed Lot 1

4m wide Boundary Planting using mixed natives (refer planting plan)

-  Hypothetical location of permitted development
-  Proposed location of building sites
-  Existing swale
-  Proposed mounding
-  Mixed native planting (refer planting plan)
-  Mixed swale and creek planting (refer planting plan)
-  Proposed Native bird nesting protection area
-  Proposed building restriction line

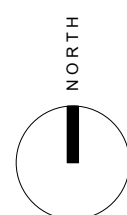


Existing creek to be revegetated using flax and mixed natives. Bed of creek to be kept clear to facilitate creek flow.

Establish variable mounding along roadside boundaries and revegetate using mixed native planting. Mounding to be intermittent to facilitate flooding should this eventuate.

Establish variable mounding along roadside boundaries and revegetate using mixed native planting. Mounding to be intermittent to facilitate flooding should this eventuate.

Existing bund to be planted using flax as per existing resource consent



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Subdivision Layout and Landscape proposal
 FOREST HABITATS LTD
 PROPOSED SUBDIVISION

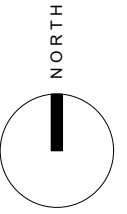
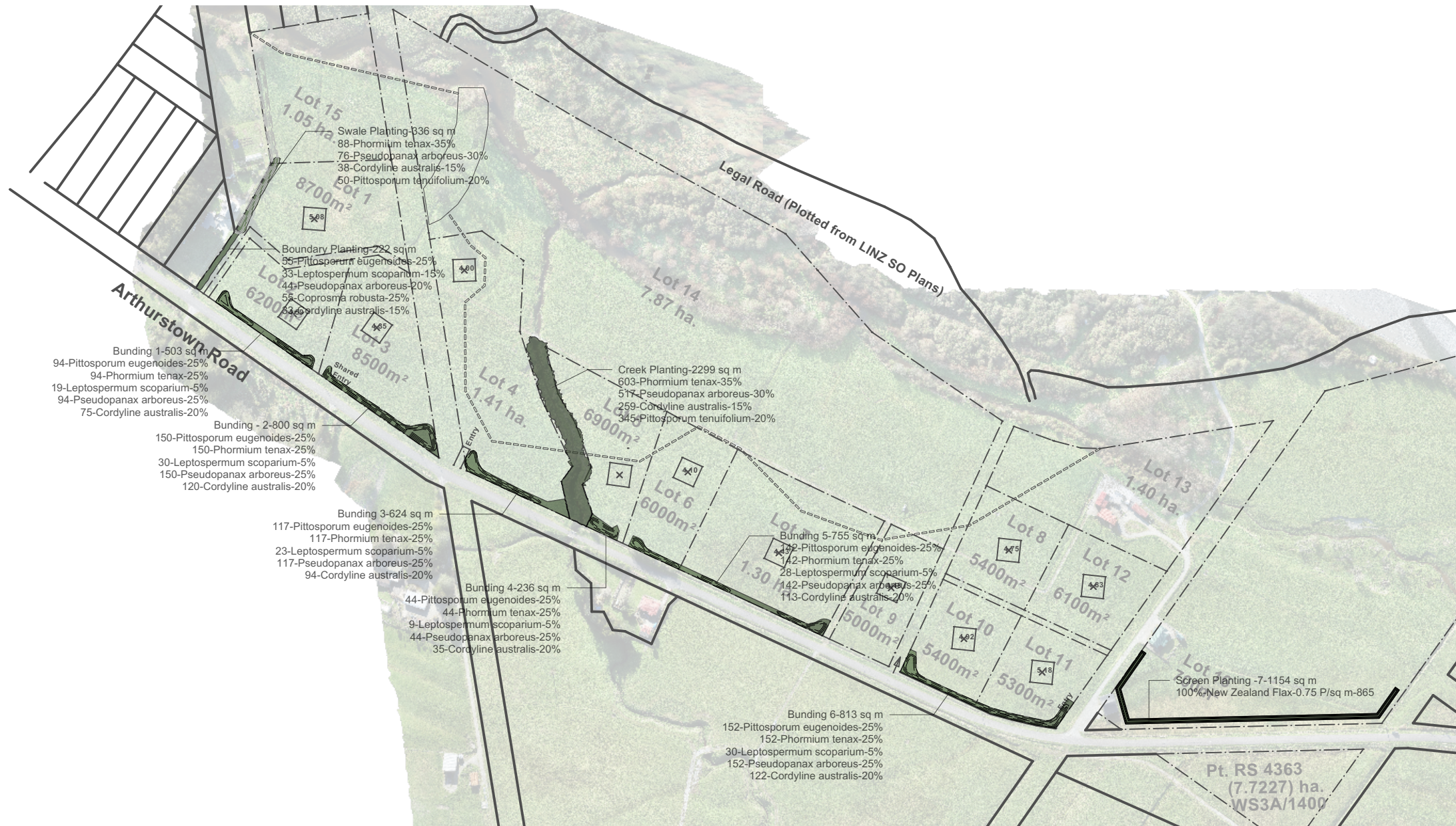
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SCALE	1:4000
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1 of 2

DO NOT SCALE, ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCING ANY WORK

INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE COPYRIGHT OF ROUGH MILNE MITCHELL LANDSCAPE ARCHITECTS AND IS NOT TO BE PRODUCED WITHOUT THEIR PERMISSION

REV	DATE	NOTES
A	29/08/2023	Revised for Discussion



Code	Botanical Name	Common Name	Grade	Spacing m/cts	Quantity
Co a	Cordyline australis	Cabbage Tree/Ti Kouka	RT	1.5	889
Co ro	Coprosma robusta	Karamu	RT	1.5	55
Lesc	Leptospermum scoparium	Manuka	RT	1.5	173
PhTe	Phormium tenax	New Zealand Flax	root stock	1.5	2255
Pi e	Pittosporum eugenoides	Lemonwood/Tarata	RT	1.5	754
Pi 'W'	Pittosporum tenuifolium	Kohuhu	RT	1.5	395
Ps a	Pseudopanax arboreus	Five Finger	RT	1.5	1336
				0	0

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Proposed Planting Plan

**FOREST HABITATS LTD
 PROPOSED SUBDIVISION**

JOB No.	23146
SCALE	1:4000
DATE	29/08/2023
DESIGNED	RL
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STATUS	for Resource Consent
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 SERIES

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Existing site and permitted development 04

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Photo Viewpoint 2

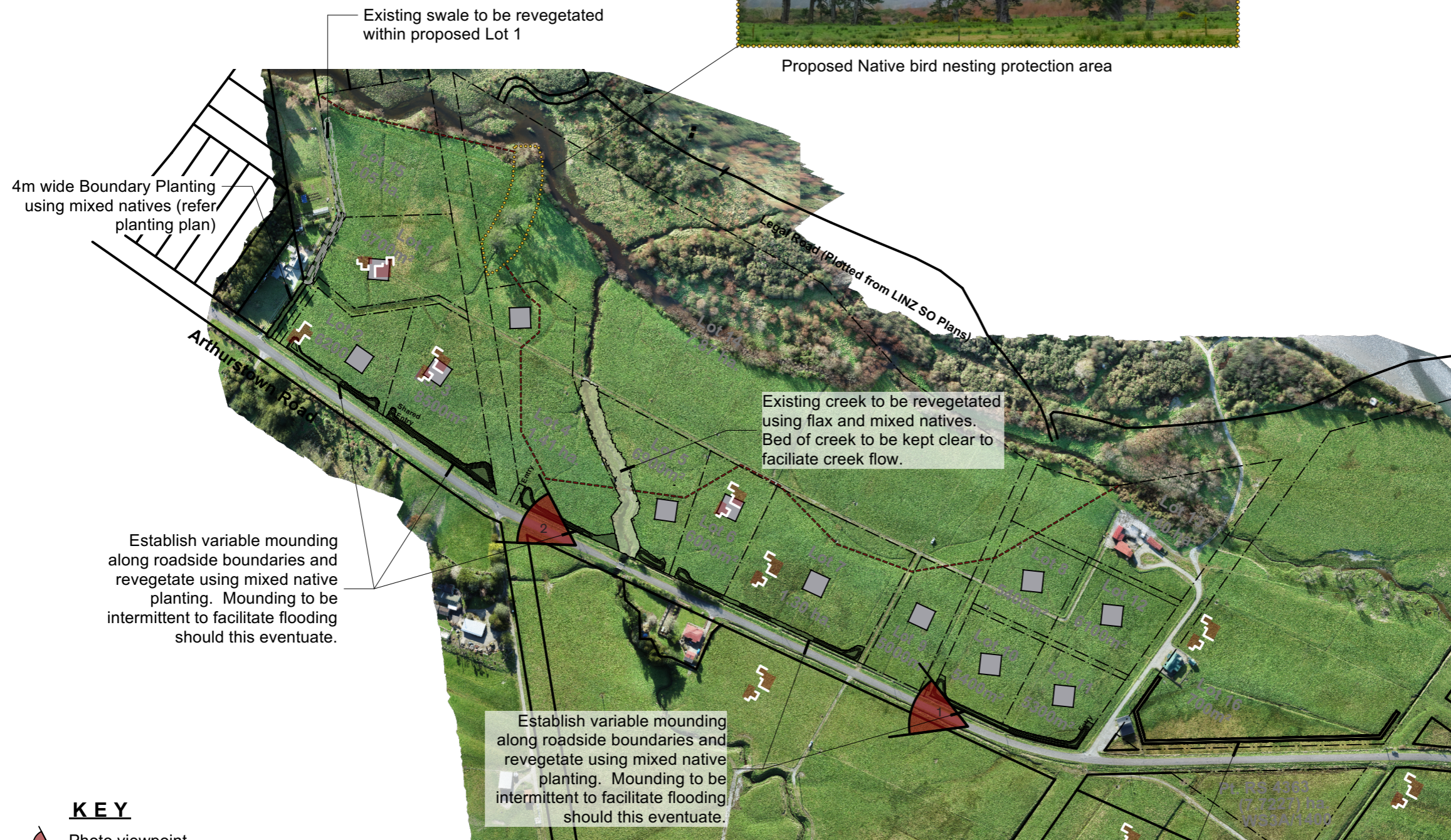
Existing site and permitted development 06

Proposed development 07

Location Plan



Proposed Native bird nesting protection area



Existing swale to be revegetated within proposed Lot 1

4m wide Boundary Planting using mixed natives (refer planting plan)










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KEY

-  Photo viewpoint
-  Hypothetical location of permitted development
-  Proposed location of building sites
-  Existing swale
-  Proposed mounding
-  Mixed native planting (refer planting plan)
-  Mixed swale and creek planting (refer planting plan)
-  Proposed Native bird nesting protection area
-  Proposed building restriction line

Scale = 1 : 4000 @ A3

Photo Viewpoint 1



A

- A Existing site, as is
- B Permitted development



B

Photo Viewpoint 1



A

- A Proposed development (indicative) - no screen planting
- B Proposed development (indicative) with vegetated mounding to screen dwellings



B

Photo Viewpoint 2



A

- A Existing site, as is
- B Permitted development



B

Photo Viewpoint 2



A

- A Proposed development (indicative) - no screen planting
- B Proposed development (indicative) with vegetated mounding to screen dwellings



B

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FOREST HABITATS LTD

117 ARTHURSTOWN ROAD,
HOKITIKA

Prepared for Forest Habitats Ltd
September 2023 Ref L24312c Rev B



Hutchinson
CONSULTING ENGINEERS

Forest Habitats Ltd

Engineering Report
12 Lot Rural Residential Subdivision

117 Arthurstown Road
Hokitika

Prepared by Matt Symons
ENGINEER

Hutchinson Consulting Engineers Ltd
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Approved by Ian Hutchinson
MANAGING DIRECTOR

Date 07 September 2023
Status Version 3

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- Appendix B: Hokitika River Flood Modelling – Peak Depth Map
- Appendix C: Hokitika River Flood Modelling – Hazard Map
- Appendix D: Hutchinson Consulting Engineers Drawings

Our Ref: L24312c Rev B

07 September 2023

MacDonell Consulting Ltd
17 Cliffs Road
St Clair
Dunedin 9012

Dear Barry

**RE: 12 LOT RURAL RESIDENTIAL SUBDIVISION AT 117 ARTHURSTOWN ROAD,
HOKITIKA
FOR FOREST HABITATS LTD**

1.0 Introduction

Further to your request, this office has investigated the engineering requirements for the proposed rural residential subdivisional development at 117 Arthurstown Road, Hokitika.

This updated version of the original report has been provided to comment on a revised scheme layout in which all 12 new lots include a nominated building platform.

It is proposed to subdivide the existing block to include 12 new buildable lots varying in size from 5,000 m² to 14,100 m² from the underlying parcels of land. The proposed lots are serviced from Arthurstown Road and East Road.

2.0 Site

The 19 hectare (or there-about) site is located on the northern side of Arthurstown Road approximately 1.0 km east of its intersection with Ruatapu Road (SH6), Hokitika. The property is on the southern side of the Hokitika river mouth. The site comprises pastoral grazing and is relatively level at an elevation of between around RL3.0m and RL5.0m. The site drains gently towards the north to the Hokitika River. The site is subject to flood inundation during peak river flood flows.



3.0 Earthworks

As part of the proposed development, a flood free building platform will be created on each lot in a nominated location once titles have issued. Based on the flood flow analysis detailed in Section 6.0 of this report the peak flood flow is expected to reach a maximum elevation of around RL5.5m. The building platforms should be constructed to at least this elevation.

Given that the natural ground levels around the proposed platform locations vary from around RL4.0m to RL5.2m earth filling will be required to form a 17.5m x 17.5m flood free building platform to a minimum elevation of RL5.5m on each lot.

Borrow material to form each platform should be sourced from within the flood plain extents to achieve a neutral effect on the current flood storage.

4.0 Nominated Building Platforms

The nominated building platforms will comprise a 17.5m x 17.5m level platform with 1v : 8h earth fill batters grading down to existing ground levels.

Below is a table outlining the proposed building platform level and fill volumes required to construct the platform:

Lot Number	Existing Ground Level at Platform Location (m)	Fill Depth to Achieve RL5.5m Platform (m)	Fill Volume (m ³) (level to nearest 0.1m)
1	5.08	0.42	172.0
2	4.59	0.91	551.0
3	4.35	1.15	887.0
4	4.00	1.50	1316.0
5	4.00	1.50	1316.0
6	4.10	1.40	1161.0
7	4.43	1.07	765.0
8	4.75	0.75	459.0
9	4.48	1.02	653.0
10	4.92	0.58	300.0
11	5.18	0.32	119.0
12	4.83	0.67	375.0
Total Volume			8074.0

Table 1: Building Platform Earthworks

5.0 Stormwater

The only stormwater works to be completed on the site is the installation of the roadside culvert crossings to accommodate the new entranceways into the individual lots and the clearing out of original farm drains to improve surface drainage.

6.0 Potential Inundation

We have reviewed the West Coast Regional Council report Hokitika River Hydraulic Modelling and Flood Hazard Mapping dated 10th June 2020.

https://www.wcrc.govt.nz/repository/libraries/id:2459ikxj617q9ser65rr/hierarchy/Documents/Publications/Natural%20Hazard%20Reports/Westland%20District/Hokitika/2020_LRS_Hokitika%20River_Hydraulic%20modelling%20and%20flood%20hazard%20mapping_v2-10-12-2020%20optimized%20for%20web.pdf

Assuming Scenario 6 for the flood mapping reporting, 100 Year, Climate Change Scenario RCP6.0 (2100), 1m Sea Level rise including 400mm of storm surge the site will be in the range of around existing ground level to around 2m below water during the peak flood flow events.

The topographical survey plan of this site prepared by Chris J Coll Surveying Ltd indicates the majority of the site is around RL3.0m to RL5.0m. The Hokitika River Flood Modelling report indicates that the November 2018 Flood Debris Levels in the vicinity of the site were to an elevation of RL4.83 (refer Appendix A), essentially a good part of the subdivision site remained flood free during this storm. Refer attached engineering plan A3-24312 RC GE-04.

The reason for the conservative flood free building platform level of RL5.5m is that the flood modelling takes into effect sea level rise, global warming and storm surge contemporaneously.

The 1 in 100 year event including climate change (2100) RCP Scenario 6.0 with a 1m sea level rise and 0.4m Storm Surge the site inundates to 0.0m to 2.0m flood depth, refer Appendix B.

The flood depth model has been superimposed over the topographical model of the proposed subdivision and flood elevations typically range from around RL4.5m at the western end of the proposed development to around RL5.5m at the eastern end of the proposed development. There are outlier peaks of up to around RL6.0m in certain areas however this is not representative of the RL5.5m average over the site.

Flood free building platforms should be constructed to a minimum elevation of RL5.5m. Finished floor levels of habitable space should be set no lower than RL6.0m however all future building sites should be assessed at the time of building consent to ensure the higher modelled flood levels above RL5.5 are not applicable to that particular site. Finished floor levels of future habitable dwellings should be constructed no lower than 500mm above the inundation level for that particular site.

The same flood modelling report defines flood risk on the Hazard Map for most of the site as H1 and H2, generally safe for vehicles, people buildings, and unsafe for small vehicles respectively, refer Appendix C.

Given the inundation potential for the site and intended use the proposed development is appropriate and the potential flood risk to the activity is low particularly given the building sites will be elevated above the flood risk.

This office has prepared an existing ground level above RL4.0m plan, refer A3-24312 RC GE-07. This plan indicates the land area that is most suitable for development to provide platform levels to a minimum elevation of RL5.5m.

Although the imperviousness of the future sites will increase from pasture to portions of increased impermeability, any adverse effect will be mitigated in that the site is at the lowest portion of the catchment close to the discharge point and any analysis of increased discharge would be offset by the flood plain evident in any peak flood flow event being discharged before the time of concentration is reached. Imperviousness has little effect if the site is theoretically already flooded also.

7.0 Roading

The proposed subdivisional development will be serviced from Arthurstown Road and East Road, Arthurstown Road is formed and sealed however East Road is unsealed. East Road should be upgraded to a sealed standard to the entrance to the proposed Lot 12.

The roadway will be constructed to a 500mm deep roading pavement, 200mm compacted depth of basecourse over 300mm compacted depth of subbase over a subgrade with a CBR of at least 3.

8.0 Summary

The site is suitable for its intended use provided flood free building platforms are constructed to a minimum elevation of RL5.5m and any future habitable space is constructed no lower than RL6.0m.

Consideration should be given to certain areas of the site where theoretical flood levels are above RL5.5m and the minimum finished floor levels adjusted accordingly.

We trust this meets with your approval.

Yours faithfully,

HUTCHINSON CONSULTING ENGINEERS LTD

Prepared by


Matt Symons
ENGINEER

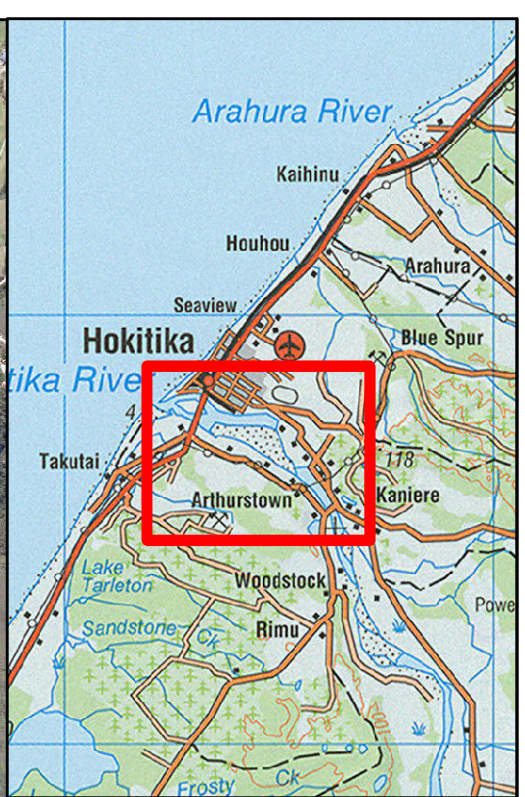
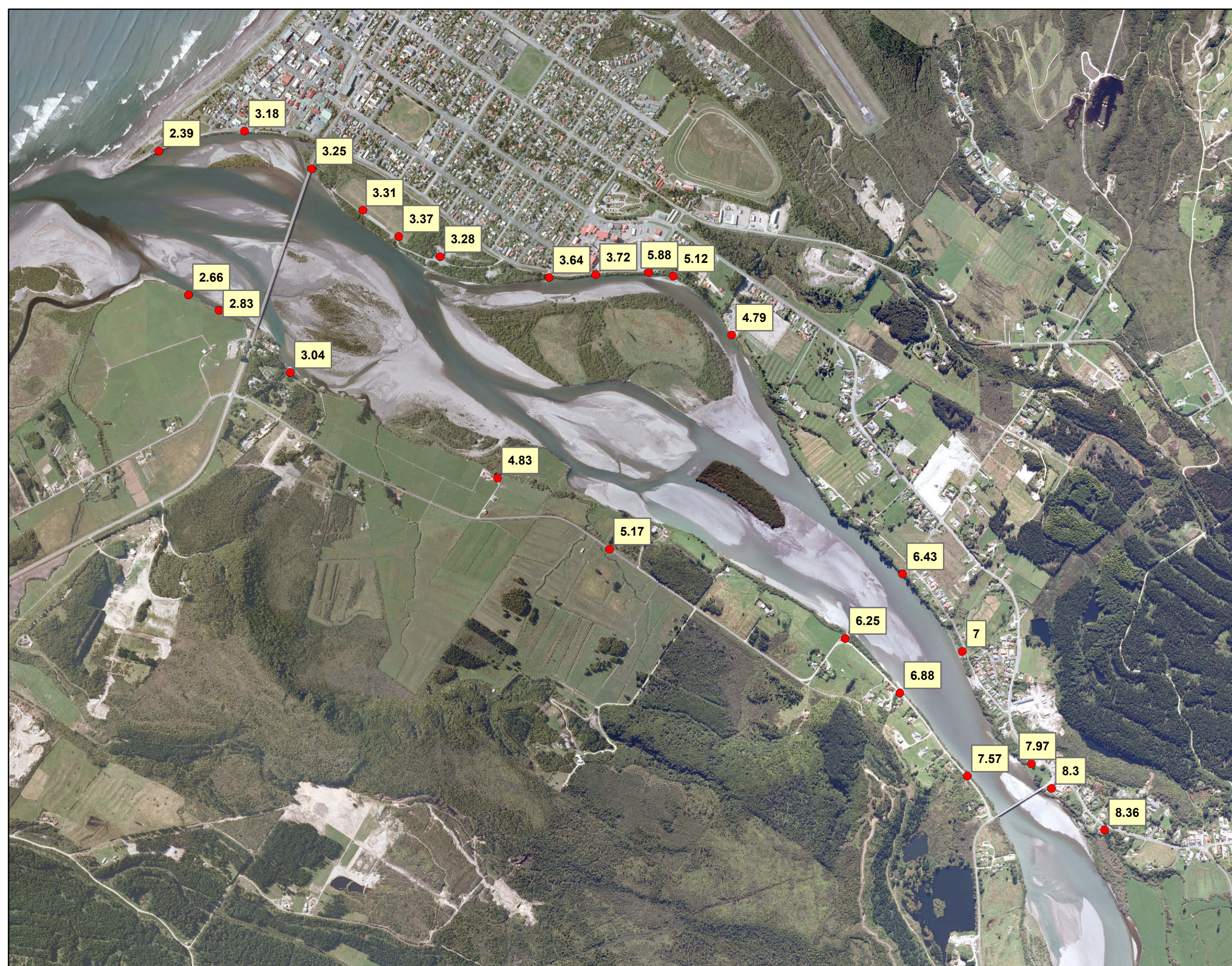
Reviewed by


Paige Farley
CIVIL MANAGER

Approved by


Ian Hutchinson
MANAGING DIRECTOR

APPENDIX A
Hokitika River Flood Modelling – Debris Level November 2018 Flood Event



Legend

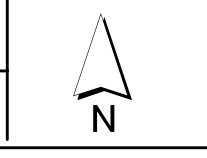
- Debris Levels (Nov 2018)

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PROJECT
Hokitika River Flood Modelling

MAP TITLE
Recorded Debris Levels from November 2018 Flood Event

REV 01	DATE 16 September 2019
A3 SCALE 1:15,000	AUTHOR Matthew Gardner

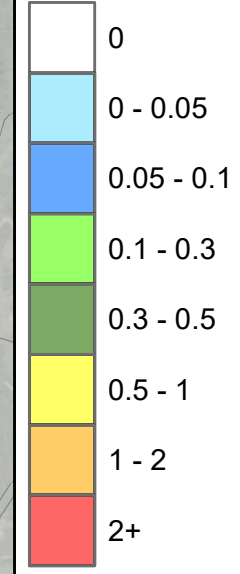


APPENDIX B
Hokitika River Flood Modelling – Peak Depth Map

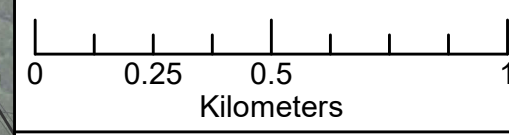
Legend

- Roads
- Property Boundary

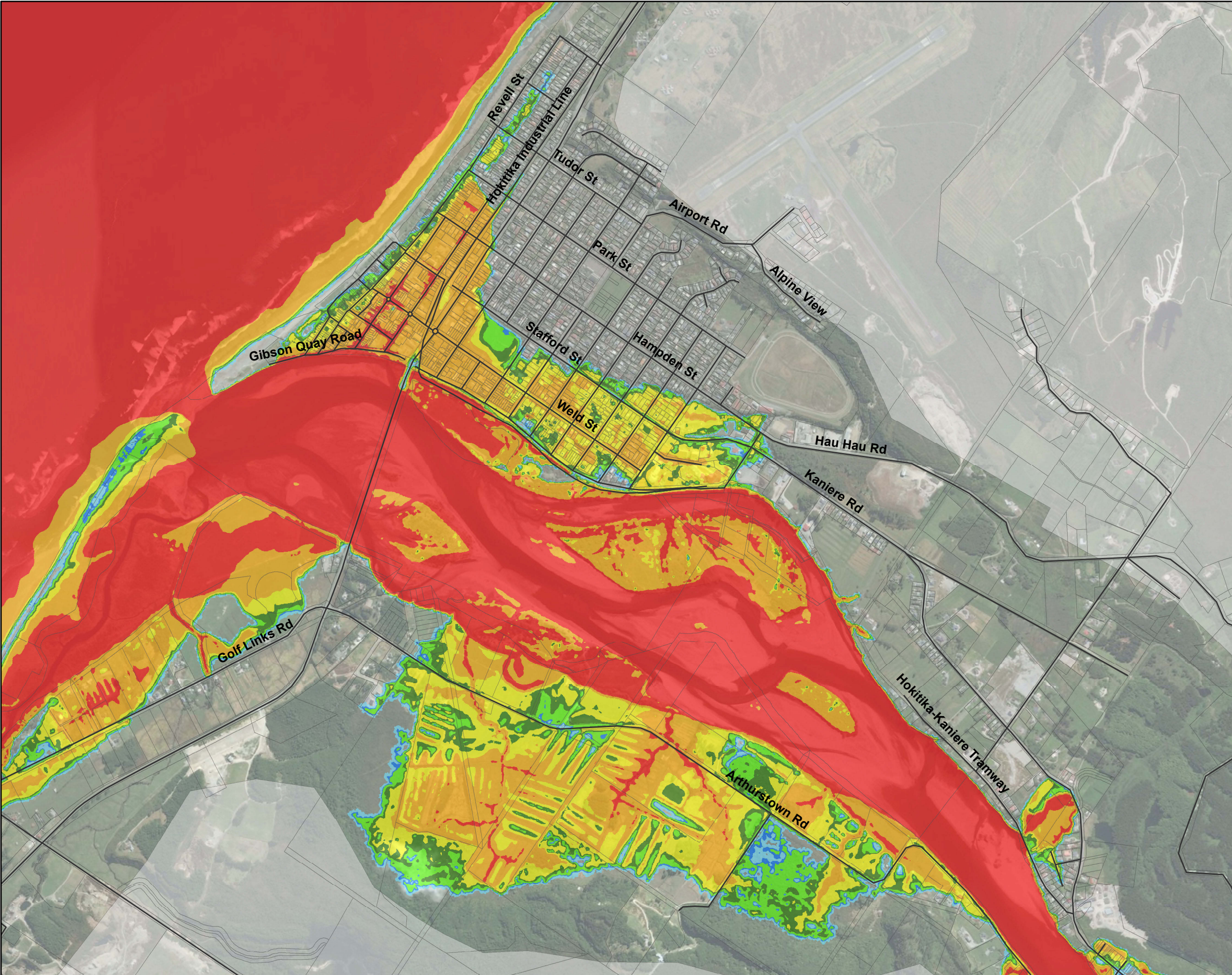
Peak Depth (m)



Map1 of 3



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PROJECT
Hokitika River Flood Modelling

MAP TITLE **PEAK DEPTH MAP**
1 in 100 year event including climate change (2100)
RCP Scenario 6.0, 1m Sea Level Rise, 0.4m Storm Surge

REVISION **DATE**
01 **02 June 2020**

A3 SCALE **AUTHOR**
1:16,000 **Matthew Gardner**



APPENDIX C
Hokitika River Flood Modelling – Hazard Map

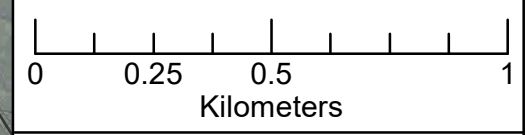
H1 - Generally safe for vehicles, people and buildings
 H2 - Unsafe for small vehicles
 H3 - Unsafe for vehicles, children and the elderly
 H4 - Unsafe for vehicles and people
 H5 - Unsafe for vehicles and people
 All buildings vulnerable to structural damage
 Some less robust buildings subject to failure
 H6 - Unsafe for vehicles and people
 All building types considered vulnerable to failure

Legend
 — Roads
 □ Property Boundary

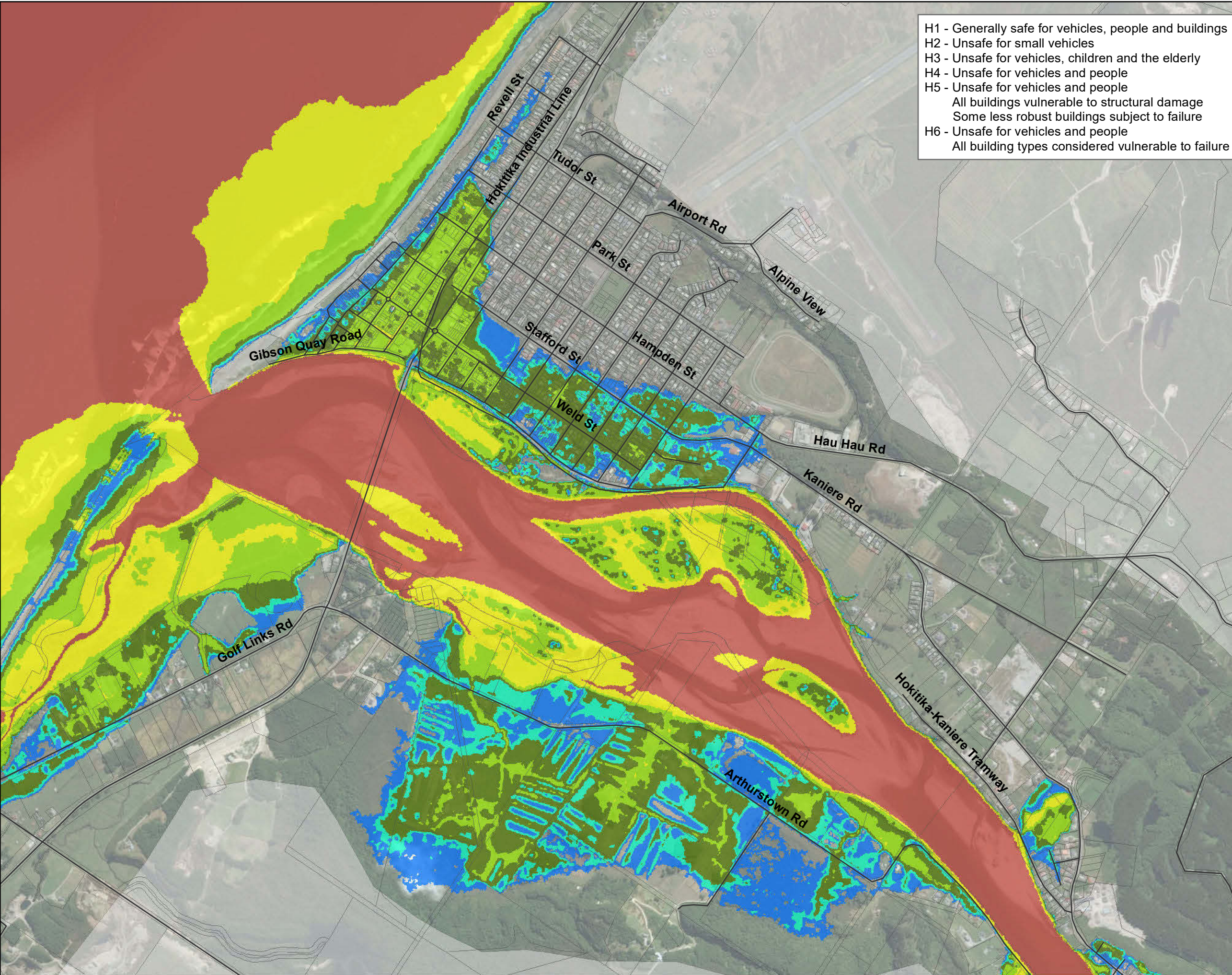
Hazard Category
 H6
 H5
 H4
 H3
 H2
 H1



Map 1 of 3



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PROJECT
Hokitika River Flood Modelling

MAP TITLE
HAZARD MAP
1 in 100 year event including climate change (2100)
RCP Scenario 6.0, 1m Sea Level Rise, 0.4m Storm Surge

REVISION
01
 DATE
10 December 2020
 A3 SCALE
1:16,000
 AUTHOR
Matthew Gardner



APPENDIX D
Hutchinson Consulting Engineers Drawings

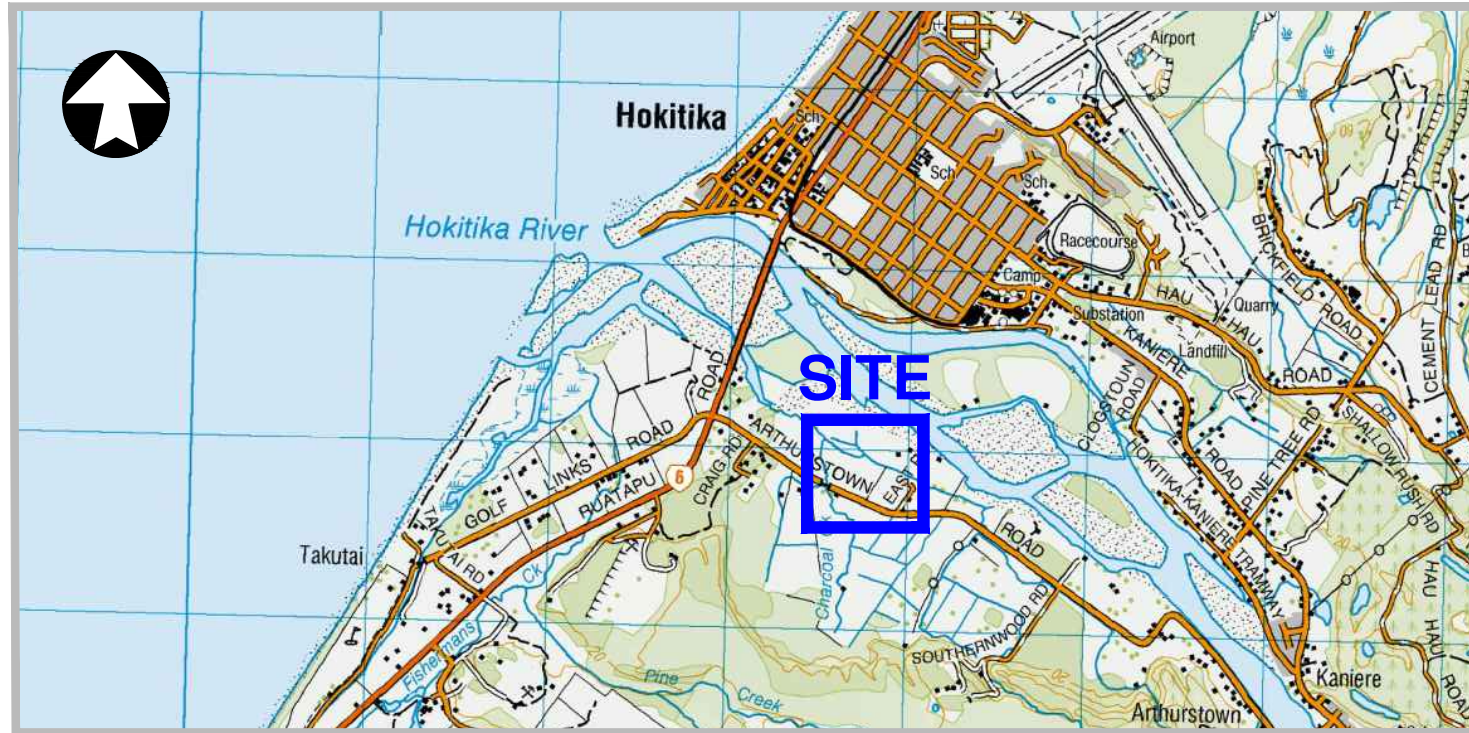
FOREST HABITATS LTD PROPOSED SUBDIVISION 117 ARTHURSTOWN ROAD HOKITIKA



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Orewa
Auckland

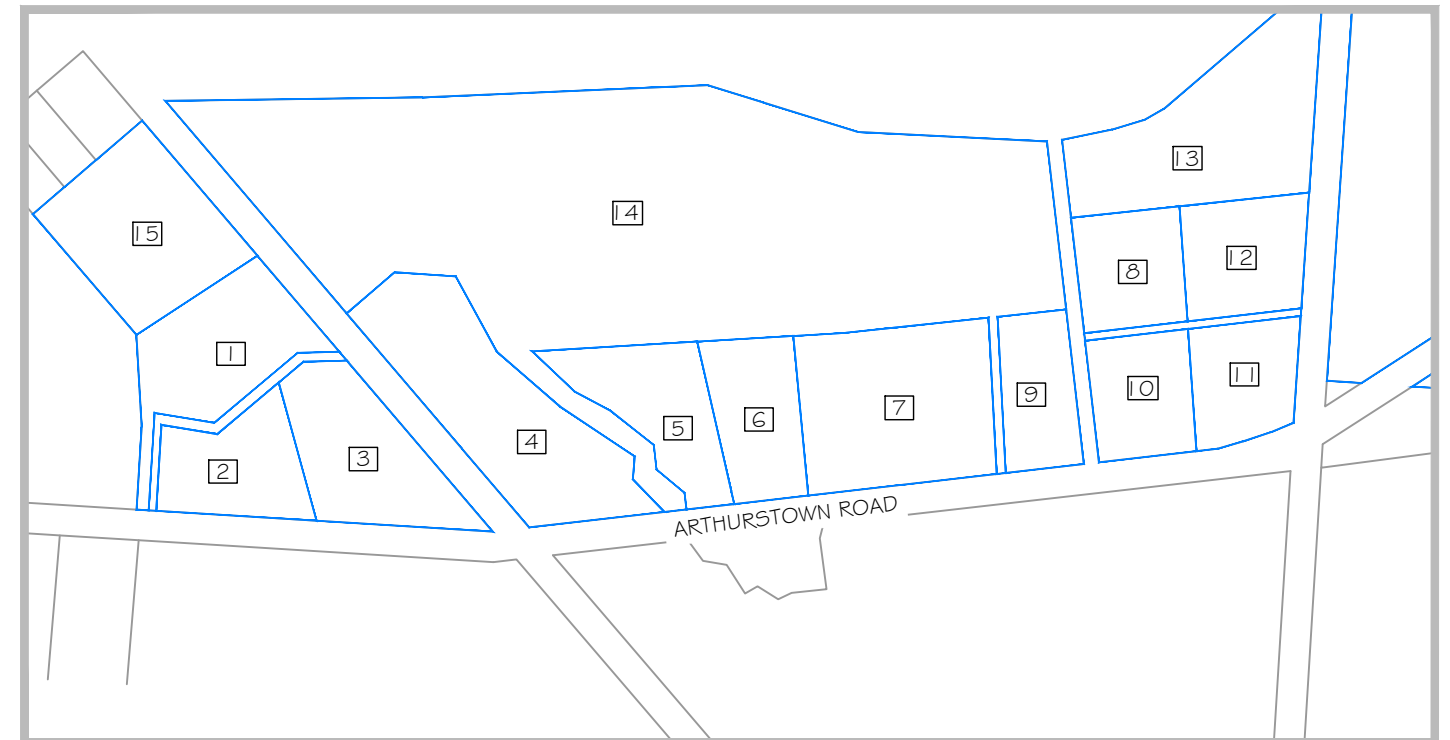
P.O. Box 150
Orewa
Auckland

Telephone (09) 426-5702
Email info@hc.co.nz



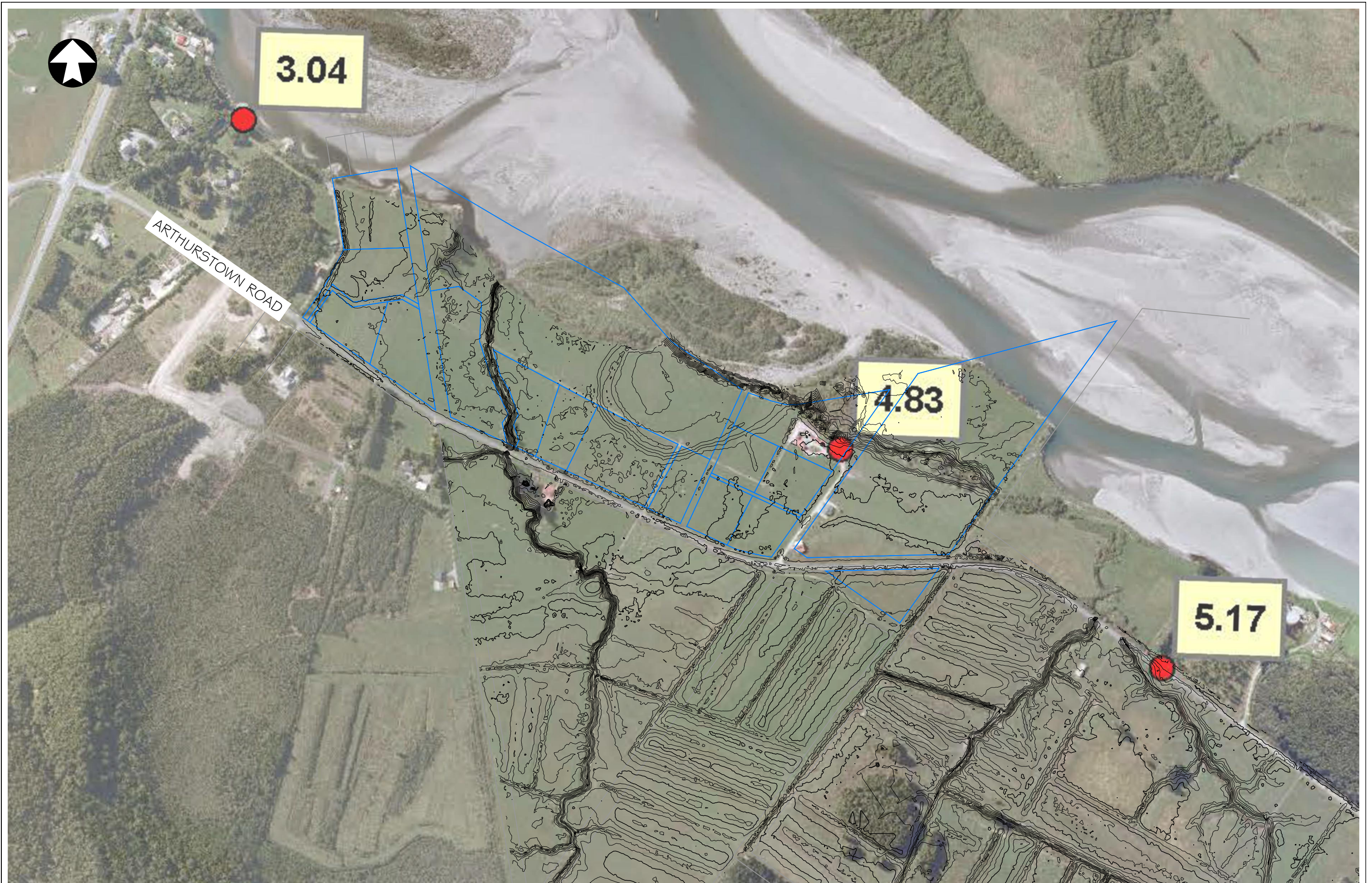
DRAWINGS - GE

- 01 COVER
- 02 HOKITIKA RIVER DEBRIS LEVELS (2018)
- 03 HOKITIKA RIVER PEAK FLOOD DEPTHS - SHEET 1 OF 2
- 04 HOKITIKA RIVER PEAK FLOOD DEPTHS - SHEET 2 OF 2
- 05 117 ARTHURSTOWN BLOCK - HOKITIKA RIVER PEAK FLOOD DEPTHS
- 06 117 ARTHURSTOWN BLOCK - HOKITIKA RIVER PEAK FLOOD LEVELS (100m GRID)
- 07 EXISTING GROUND LEVEL ABOVE RL 4.0m
- 08 EXISTING CONTOUR & BUILDING PLATFORM PLAN - SHEET 1 OF 2
- 09 EXISTING CONTOUR & BUILDING PLATFORM PLAN - SHEET 2 OF 2



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NOT FOR CONSTRUCTION**

**24312 GE-01
OCTOBER 2022**



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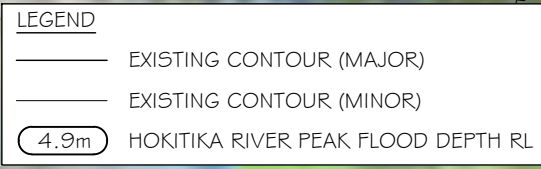
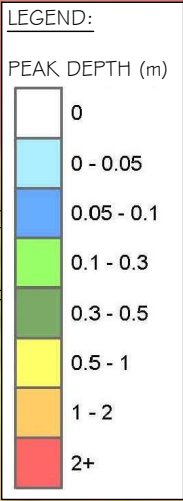
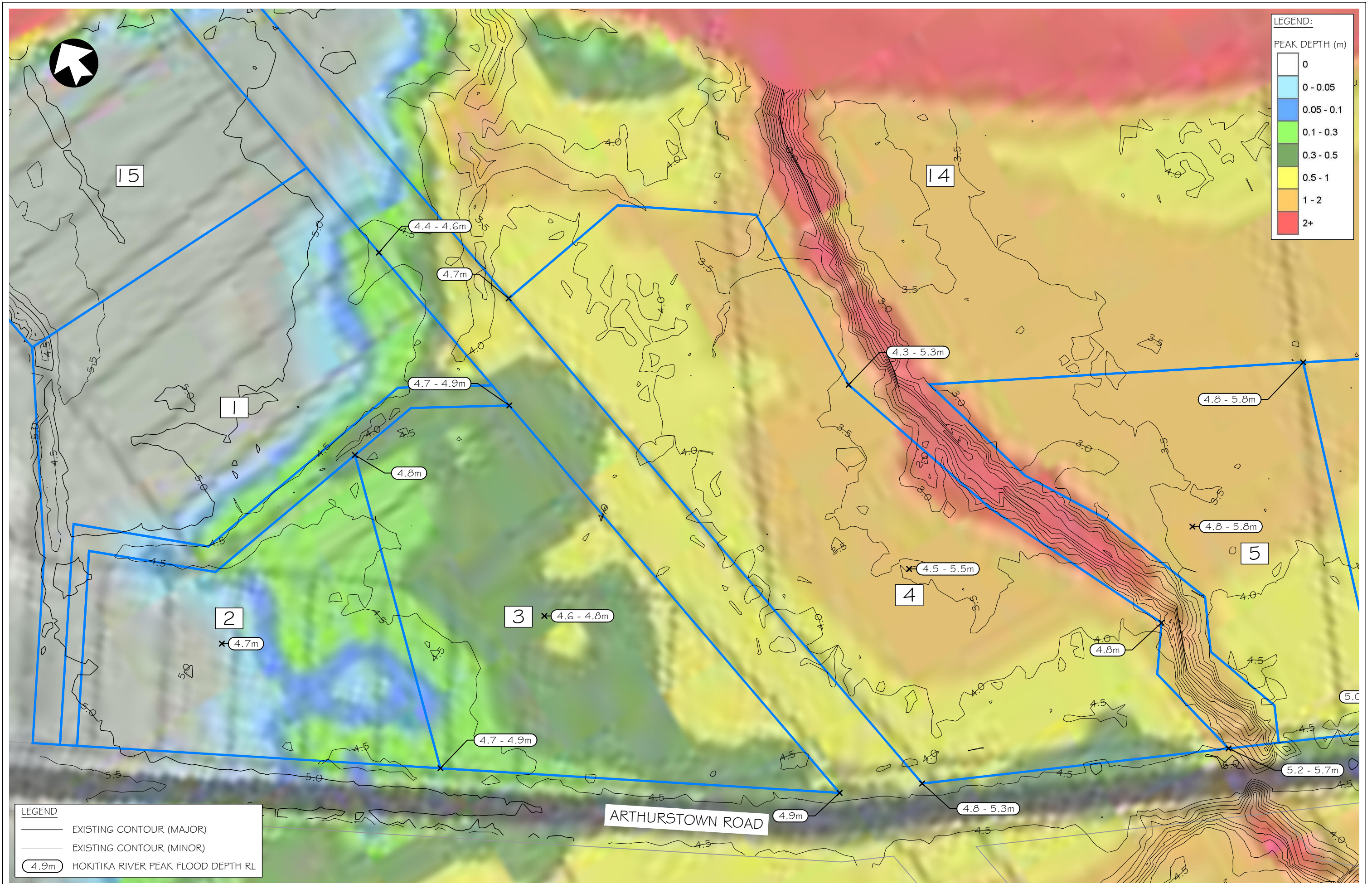
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Project	FOREST HABITATS LTD PROPOSED SUBDIVISION 117 ARTHURSTOWN ROAD HOKITIKA
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Title	HOKITIKA RIVER DEBRIS LEVELS (2018)
Job No.	A3-24312 RC

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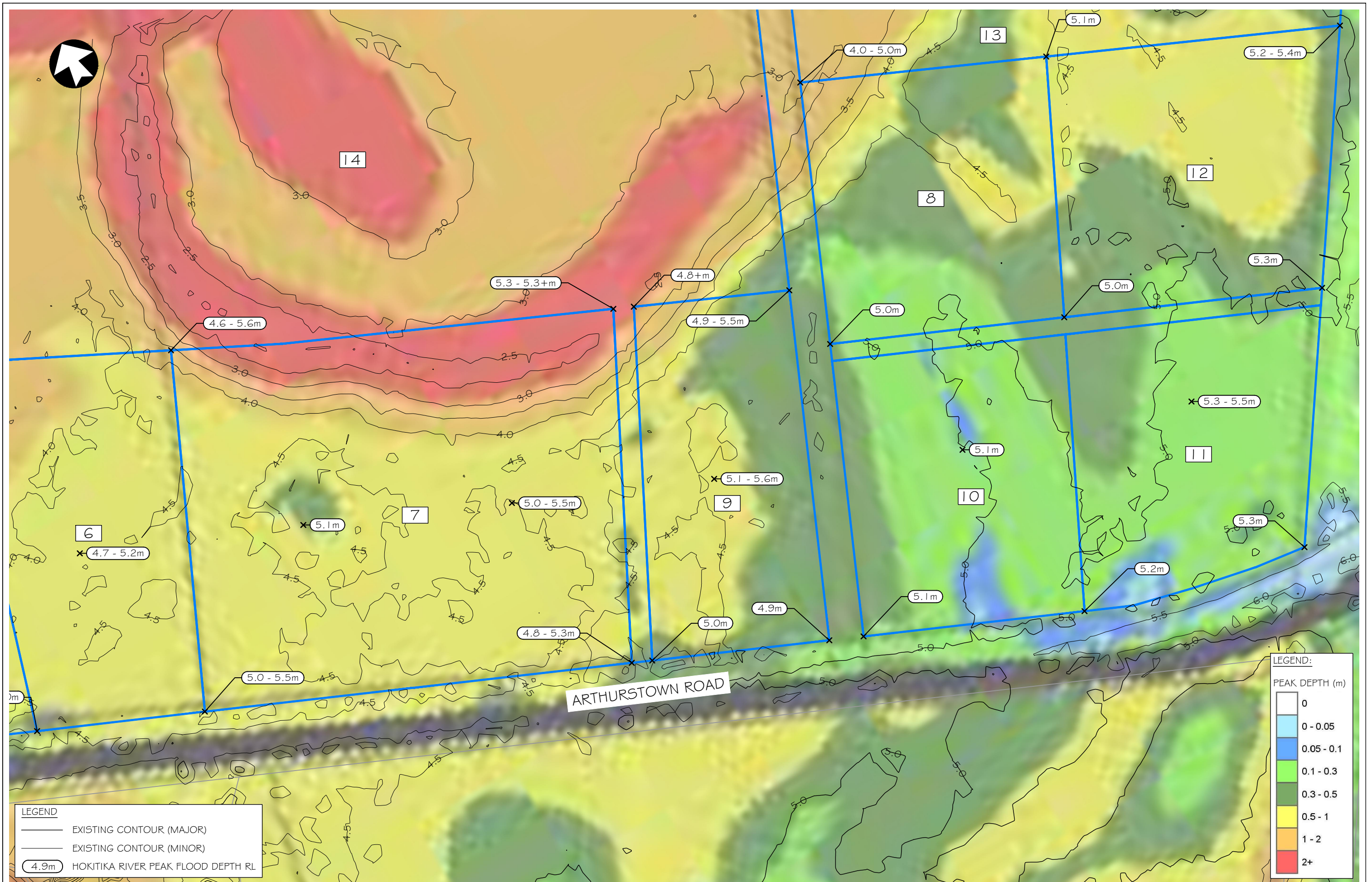
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Title	HOKITIKA RIVER PEAK FLOOD DEPTHS - SHEET 1 OF 2
Job No.	A3-24312 RC

Sheet No.	GE-03
Rev.	-



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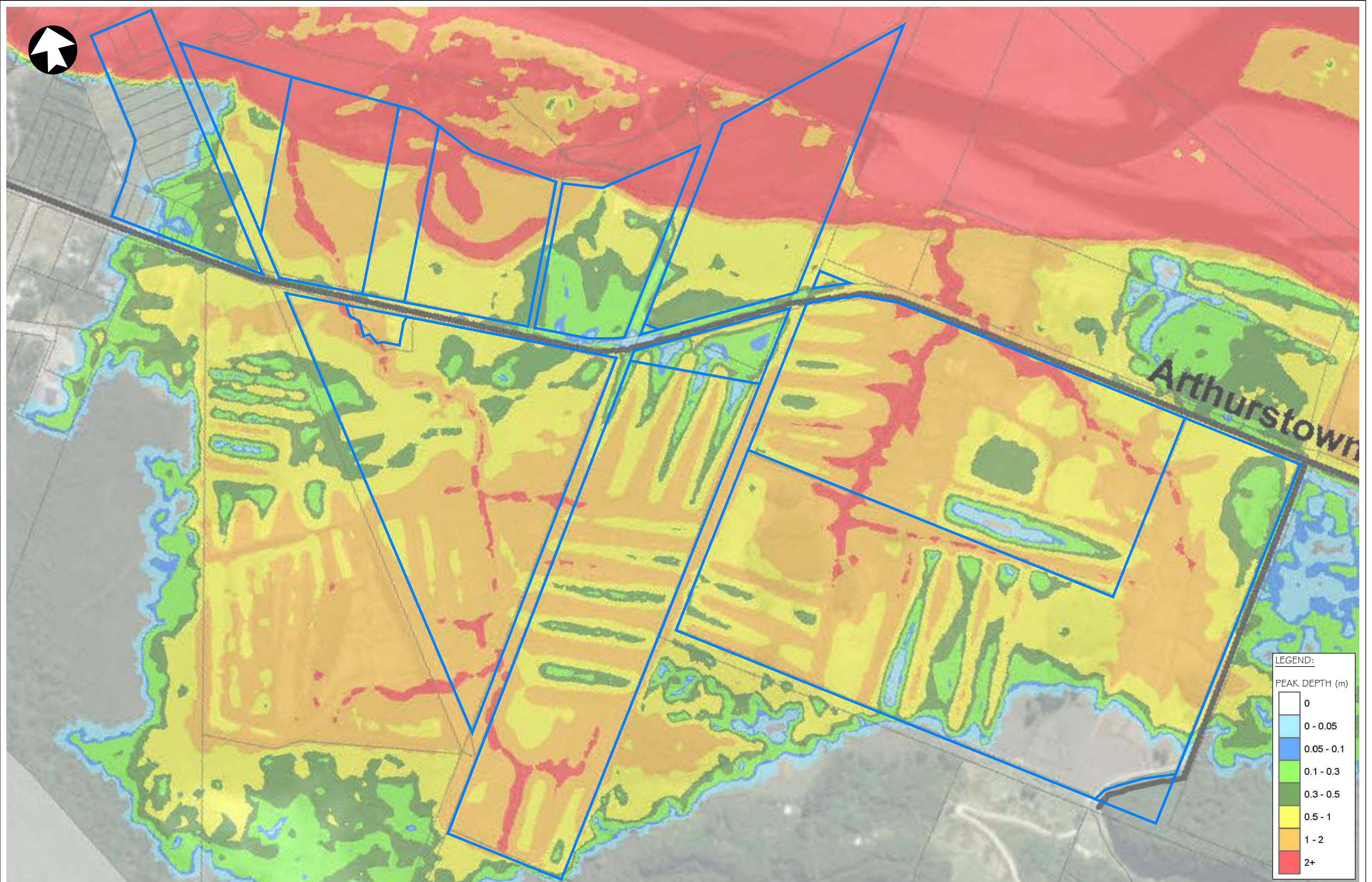
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Scale vert. exag.		

Project	FOREST HABITATS LTD PROPOSED SUBDIVISION 117 ARTHURSTOWN ROAD HOKITIKA
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Title	HOKITIKA RIVER PEAK FLOOD DEPTHS - SHEET 2 OF 2
Job No.	A3-24312 RC

Sheet No.	GE-04
Rev.	-



LEGEND:

PEAK DEPTH (m)

0
0 - 0.05
0.05 - 0.1
0.1 - 0.3
0.3 - 0.5
0.5 - 1
1 - 2
2+

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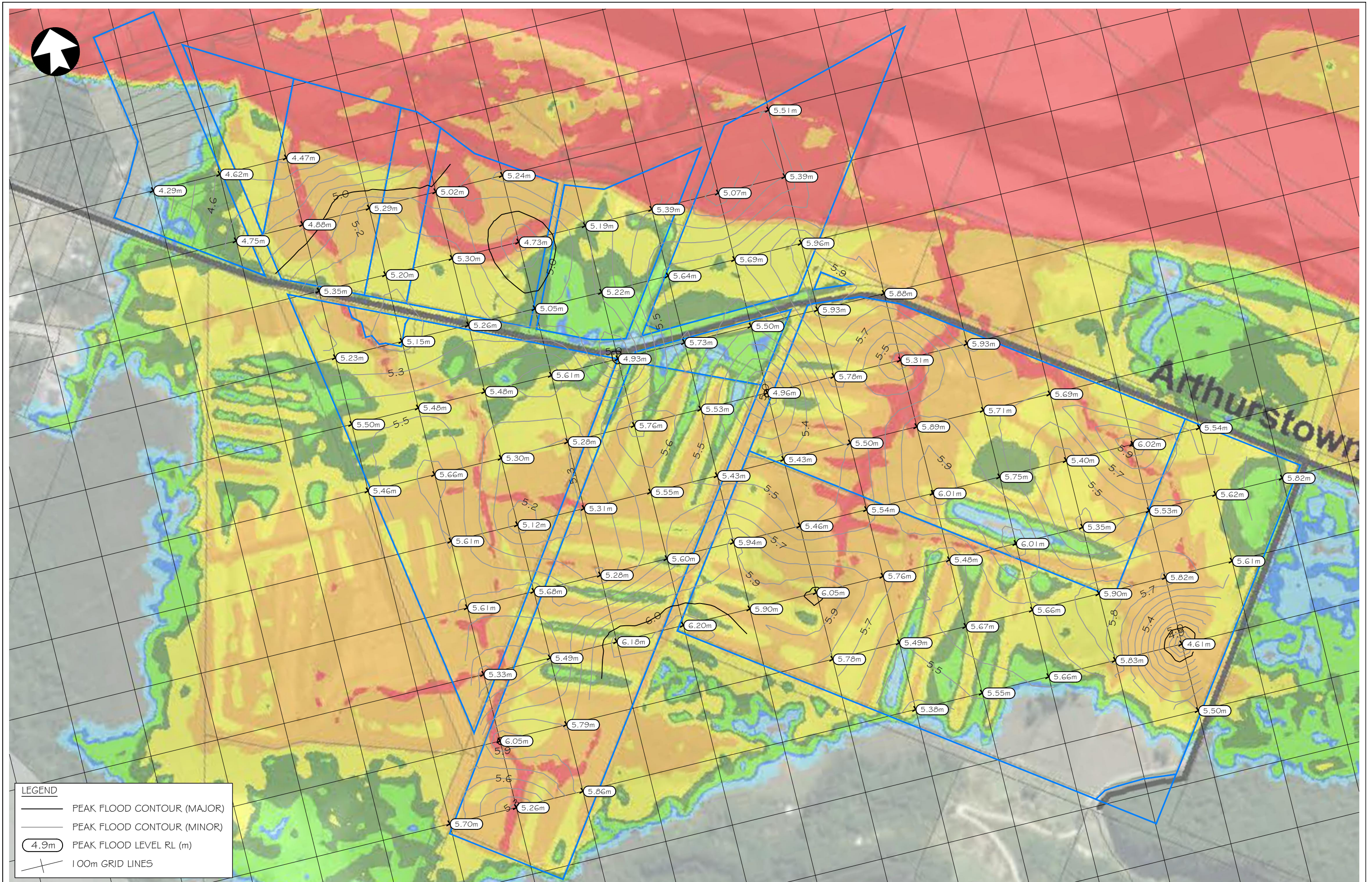
Project
**FOREST HABITATS LTD
PROPOSED SUBDIVISION
117 ARTHURSTOWN ROAD
HOKITIKA**

Title
**117 ARTHURSTOWN BLOCK - HOKITIKA
RIVER PEAK FLOOD DEPTHS**

Job No.
A3-24312 RC

Sheet No.
GE-05

Rev.
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No.	Revision	Drawn	Chk.	Appd.	Date
-	-	-	-	-	-

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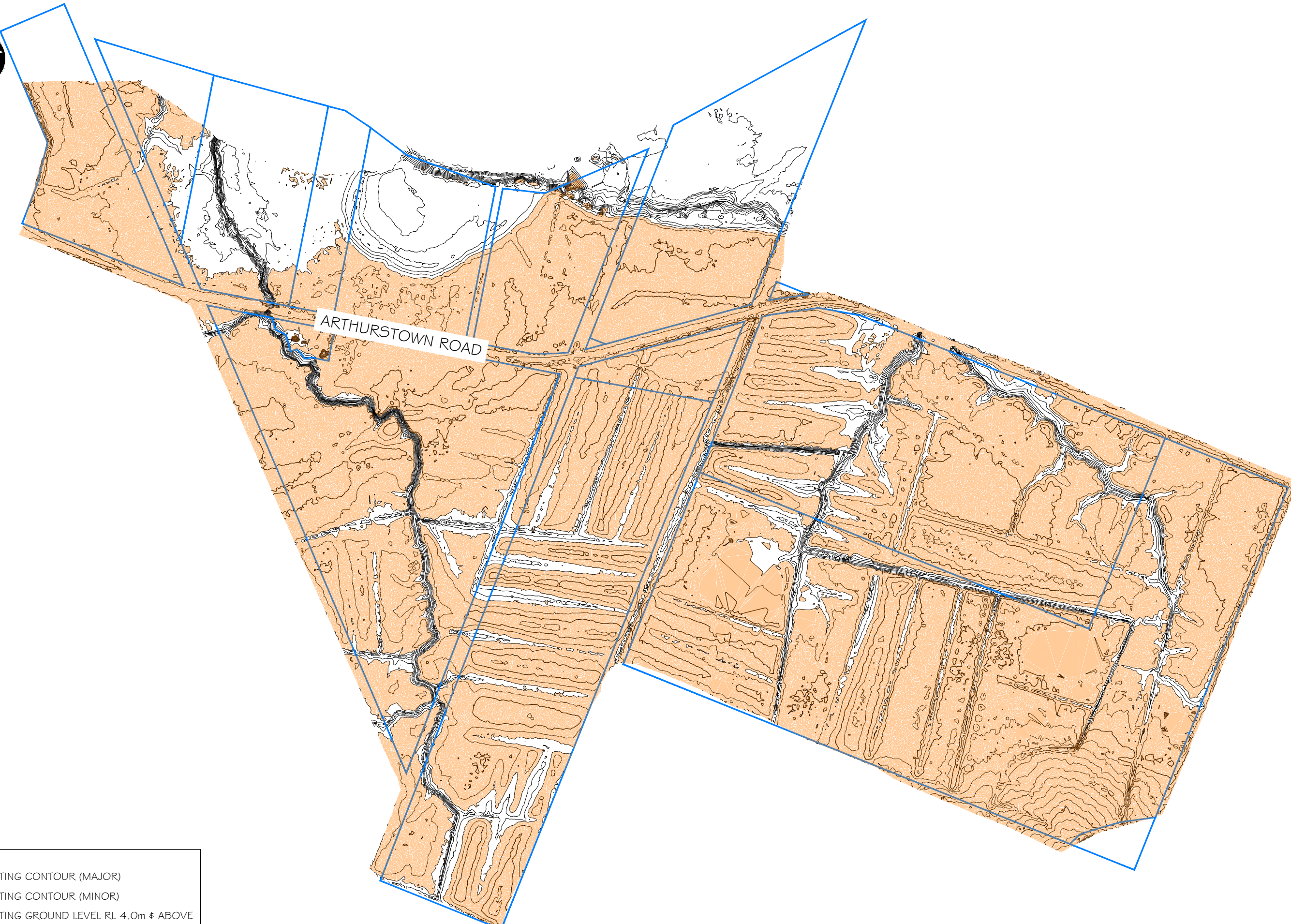
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Scale	1:5000 @ A3	
Scale vert. exag.		

Project	FOREST HABITATS LTD 117 ARTHURSTOWN ROAD HOKITIKA
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Title	117 ARTHURSTOWN BLOCK - HOKITIKA RIVER PEAK FLOOD LEVELS (100m GRID)
Job No.	A3-24312 RC

Sheet No.	GE-06
Rev.	-



LEGEND	
	EXISTING CONTOUR (MAJOR)
	EXISTING CONTOUR (MINOR)
	EXISTING GROUND LEVEL RL 4.0m & ABOVE

No.	Revision	Drawn	Chk.	Appd.	Date
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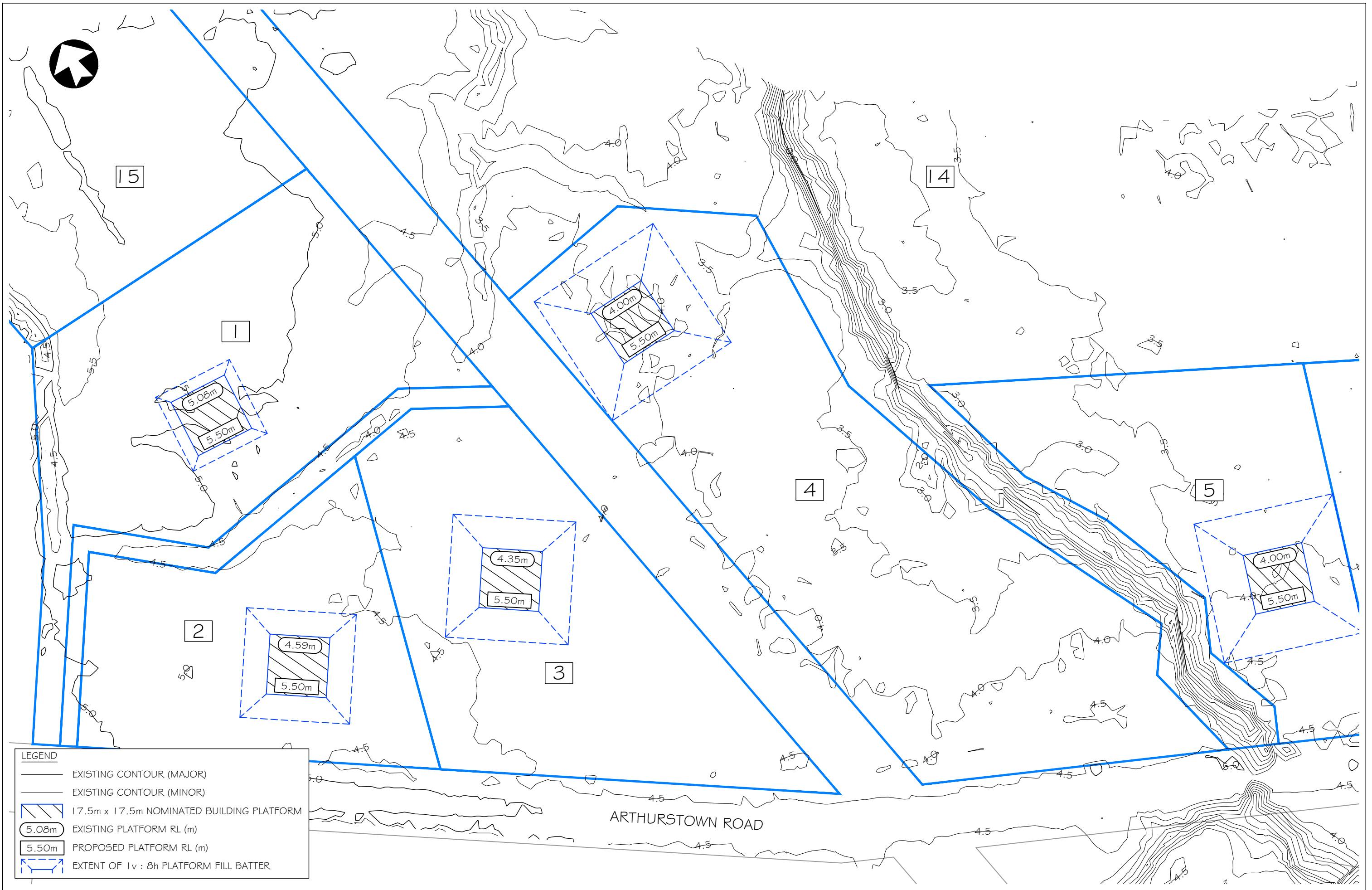
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Approved	I. HUTCHINSON	OCT 2022
Scale	1:5000 @ A3	
Scale vert. exag.		

Project	FOREST HABITATS LTD 117 ARTHURSTOWN ROAD HOKITIKA
---------	---------------------------------------------------------

Title	EXISTING GROUND LEVEL ABOVE RL 4.0m
Job No.	A3-24312 RC

Sheet No.	GE-07
Rev.	-



LEGEND	
	EXISTING CONTOUR (MAJOR)
	EXISTING CONTOUR (MINOR)
	17.5m x 17.5m NOMINATED BUILDING PLATFORM
	EXISTING PLATFORM RL (m)
	PROPOSED PLATFORM RL (m)
	EXTENT OF 1v : 8h PLATFORM FILL BATTER

No.	Revision	Drawn	Chk.	Appd.	Date

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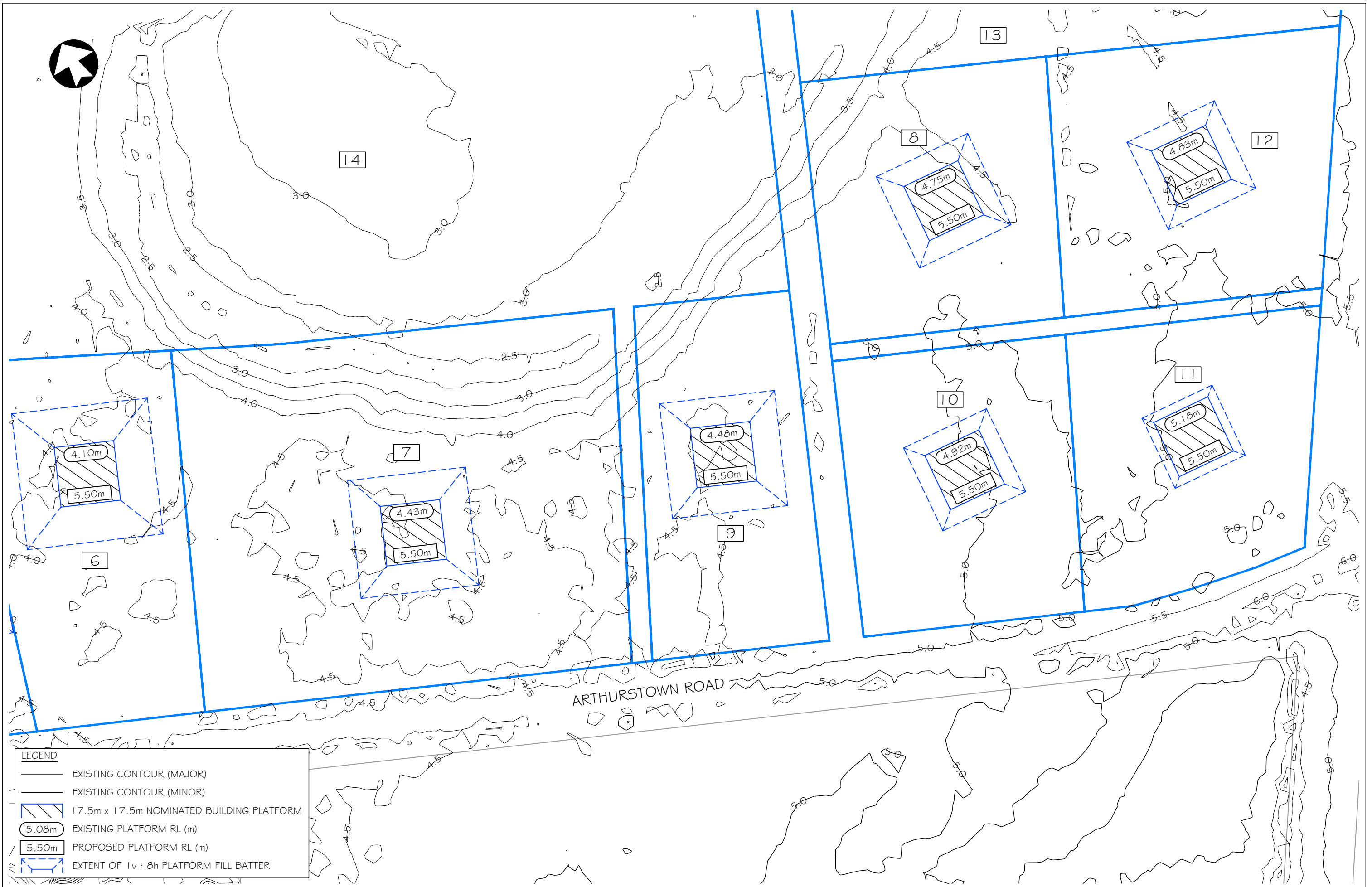
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Approved	I. HUTCHINSON	SEP 2023
Scale	1:1000 @ A3	
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Project	FOREST HABITATS LTD PROPOSED SUBDIVISION 117 ARTHURSTOWN ROAD HOKITIKA
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Title	EXISTING CONTOUR & BUILDING PLATFORM PLAN - SHEET 1 OF 2
Job No.	A3-24312 RC

Sheet No.	GE-08
Rev.	-



LEGEND	
	EXISTING CONTOUR (MAJOR)
	EXISTING CONTOUR (MINOR)
	17.5m x 17.5m NOMINATED BUILDING PLATFORM
	EXISTING PLATFORM RL (m)
	PROPOSED PLATFORM RL (m)
	EXTENT OF 1v : 8h PLATFORM FILL BATTER

No.	Revision	Drawn	Chk.	Appd.	Date

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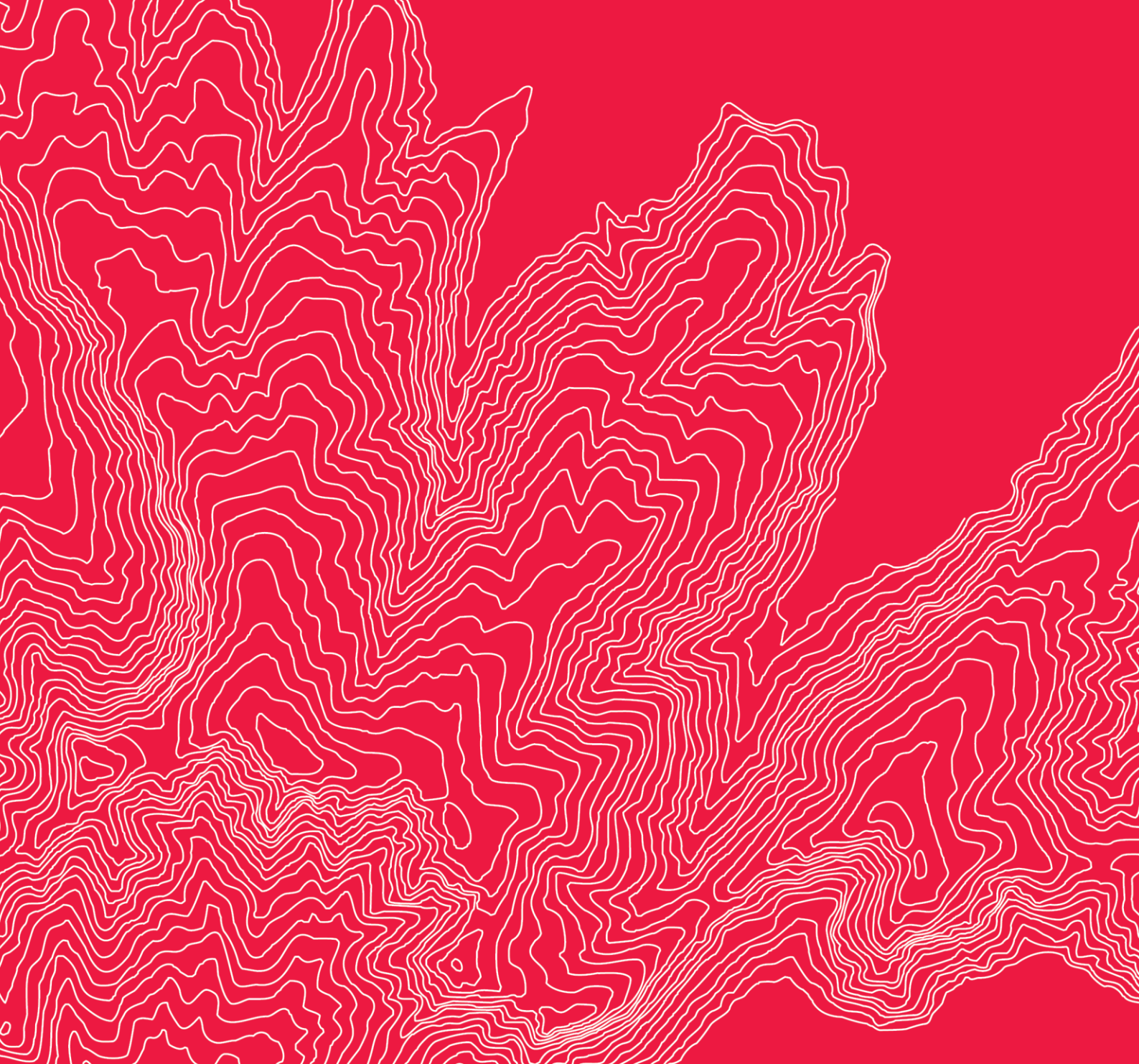
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Project	FOREST HABITATS LTD PROPOSED SUBDIVISION 117 ARTHURSTOWN ROAD HOKITIKA
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Title	EXISTING CONTOUR & BUILDING PLATFORM PLAN - SHEET 2 OF 2
Job No.	A3-24312 RC

Sheet No.	GE-09
Rev.	-



Subdivision Suitability Report

**eliot
sinclair**

117 Arthurstown Road, Hokitika

Prepared for Forest Habitats Ltd

510714

Subdivision Suitability Report

117 Arthurstown Road, Hokitika
Prepared for Forest Habitats Ltd
510714

Quality Control Certificate

Eliot Sinclair & Partners Limited
eliotsinclair.co.nz

Action	Name	Signature	Date
Prepared by:	Shannon Hopkins Survey Technician		29 August 2022
Reviewed by:	Paul Sykes Geotechnical Engineer BE(Hons) Mining MEngNZ		22 September 2022
Directed and approved for release by:	Stuart Challenger Civil Engineer Branch Manager, Hokitika BE NatRes BSc CMEngNZ CPEng		28 September 2022
Status:	B		
Release date:	30 September 2022		
Distributed to:	Forest Habitats Ltd		

Version History

Status	Description	Author	Release Date
A	First issue of document	Shannon Hopkins	September 2022
B	Updated scheme plan Figure 2	Cushla Stone	30 September 2022

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Appendix A. Site Photographs

Appendix B. Site Investigation Records

Appendix C. 1.2m Structural Gravel Raft Specification

Appendix D. Statement of Professional Opinion

1. Introduction

1.1. Scope of Works

Eliot Sinclair has been engaged by Forest Habitats Ltd to undertake a geotechnical investigation on 117 Arthurstown Road, Hokitika. The purpose of the investigation was to:

- Assess the site's natural hazards to determine site suitability for subdivision and ensure future dwellings would be safe from hazards, and
- Investigate the shallow ground conditions to determine minimum foundation requirements for future dwellings.

2. Site Description

2.1. Legal Description

The legal description of the site is Lots 8 – 29 DP 142, RS 1602, 1603, 1421, 1588 and Pt RS 1589. The properties to be subdivided are held in four separate titles with a title area of approximately 19.55 ha. Arthurstown Road can be accessed off State Highway 6 to the west of the site which it intersects approximately 300m south of the Hokitika bridge. Figure 1 below illustrates an overview of the site location.



Figure 1. Figure showing location of site (Eliot Sinclair, 2022)

2.2. Proposed Subdivision

We understand it is proposed to subdivide the site into fifteen lots with two multi lane accessways and a single right of way to access the proposed lots. Figure 2 below is a copy of the proposed subdivision scheme plan.

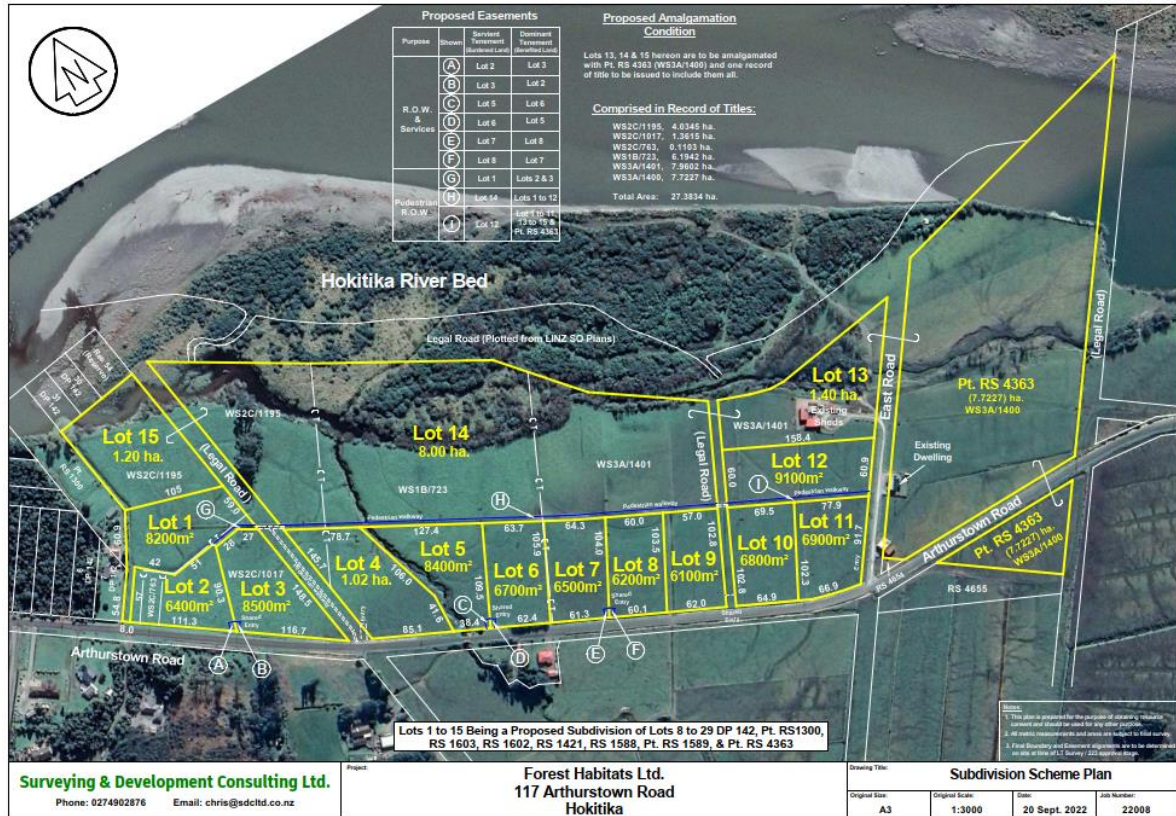


Figure 2. Copy of the proposed subdivision scheme plan (Surveying & Development Consulting Ltd, Sept 2022).

3. Geological Review

3.1. Engineering Geology

Geological mapping¹ of the area notes most of the site is underlain by Holocene Era river deposits (Q1a) of gravel, sand and silt.

3.2. Active Faults

The GNS database² indicates the closest active fault is the Alpine Fault approximately 23km south-east of the site. The site is not in any known fault hazard avoidance areas. The area is in the NZS3604: 2011 Zone 3 earthquake rating zone.

¹ Nathan, S., Rattenbury, M.S., Suggate, R.P. (compilers) 2002. Geology of the Greymouth area. Institute of Geological and Nuclear Sciences 1: 250 000 geological map 12. 1 sheet + 58p. Lower Hutt, New Zealand. Institute of Geological and Nuclear Sciences Limited

² <https://data.gns.cri.nz/af/>

3.3. Topography

The site is located approximately 400m south of the Hokitika River, at a level between 2.5m – 5.5m above sea level, and around 1.5km east of the coastline. The closest waterways are Charcoal Creek which runs through the site and the Hokitika River which is located just to the north of the property. The site has an elevated area located at the eastern and western ends and adjacent to Arthurstown Road. There is an area of lower elevation located in the central, northern area of the property, this lower area has not been covered in this report.

4. Geotechnical Investigation

4.1. Overview

On 7th September 2022 a site investigation was undertaken to determine the soil profile and bearing capacity. The investigation included eight test pits, in a grid like pattern across all proposed lots, and 12 dynamic cone penetrometer tests. The results from these tests can be found in Appendix B.

We did not undertake any testing in Lot 13, 14 or 15. Lot 13 has the existing dairy shed, plus we consider that the results from Lot 12 will be applicable to that lot. Lot 14 is a large lot and will require site-specific investigation. We consider that the results from lot 1 will be applicable to Lot 15.

Whilst we did not test every lot, we believe from the tests undertaken on site we have gained a reliable understanding of the soil profile across the site and can make informed recommendations about the soil types encountered.

A visual-tactile field classification of the soils encountered during the shallow investigation was carried out in general accordance with 'Guidelines for the Field Classification and Description of Soil and Rock for Engineering Purposes' (NZGS, 2005) and DCP testing was carried out in accordance with NZS 4402:1988, Test 6.5.2, 'Dynamic Cone Penetrometer'.

4.2. Test Pit Excavations

The general profile encountered by the test pits was a typical of alluvial deposits and comprised a surficial layer of silty topsoil with rootlets approximately 0.2m thick, overlying silts and sands with some organics to a maximum depth of 4.3m below ground level (bgl).

We did not encounter any expansive soils (clay-like), highly organic soils (peat) or significant deposits of uncontrolled fill during our investigation.

4.3. Groundwater

Static ground water was encountered at test locations 3, 4 and 6 at depths of between 3.1m and 3.3m bgl.

4.4. Dynamic Cone Penetrometer (DCP) Testing

Below the topsoil, DCP resistances generally revealed at least 2 blows per 100mm penetration within the underlying insitu layers of silt and sandy silt to a depth of around 0.8m bgl. Below 0.8m the blow counts at the test locations increased with increasing depth.

4.5. Geotechnical Ultimate Bearing Capacity

We have inferred an index ultimate bearing capacity of only 200kPa to around 0.8m bgl. From about 1.0m depth, the relative density of the soils met the requirements of good ground to around 2m depth where the testing was terminated. We have inferred an index ultimate bearing capacity of at least 300kPa from 0.8m to around 2m bgl.

The assessment of bearing capacity given here is the *index* geotechnical ultimate bearing capacity (GUBC) using the DCP blow count profile method given in the MBIE Residential Guidance Section 3.4.

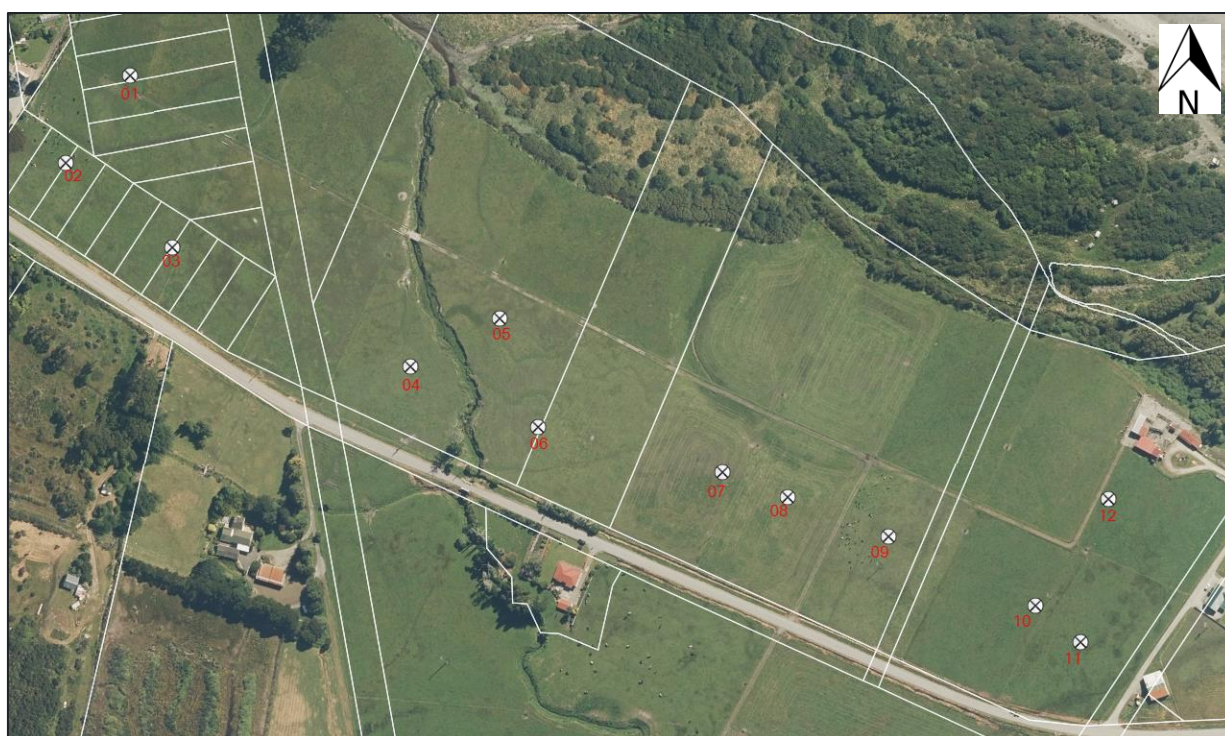


Figure 3. Approximate test locations (Eliot Sinclair, 2022)

5. Natural Hazards Risk Assessment

5.1. Introduction

Council can refuse subdivision consent if there is a significant risk from natural hazards. To determine whether there is a significant risk from natural hazards, decision-makers are guided by the requirements of RMA Section 106(1A). This requires a combined assessment of:

- The **likelihood** of natural hazards occurring (whether individual or in combination); and
- The **consequences** (material damage) that would result from natural hazards to land where the consent is sought, other land, or structures; and
- Any **likely subsequent use** of the land where the consent is sought that would **accelerate, worsen, or result in material damage**.

Decision-makers are required to consider the magnitude of risk of natural hazards, including natural hazards that have a high impact but low probability of occurrence. This aligns the assessment with the definition of 'effect' Section 3 of the RMA.

The RMA defines natural hazards as: *Any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire, or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment.*

Hazard identification is a key component of any site-specific risk assessment. The risk assessment for relevant natural hazards at the site is presented below, which considers the likelihood and consequences of the hazard at the site in the context of the proposed activity (rural residential subdivision) as compared against the current site context.

We have considered the risk of falling debris, subsidence, wind, drought, fire, geothermal activity, sedimentation, climate change, sea level rise, and volcanic activity and conclude these are very unlikely to pose an unacceptable risk to life at this site.

In relation to other potential natural hazards, we comment as follows:

5.2. Risk Assessment

5.2.1. Earthquake Shaking

New Zealand is a seismically active country. New buildings and infrastructure will be designed, consented, and built to acceptable industry standards and New Zealand Building Code requirements and as such will be designed for any likely shaking as detailed in the current design codes, which will address the risk.

5.2.2. Earthquake Fault Rupture

There are no recorded active fault traces across the site. The site is not located within a fault hazard area or fault avoidance zone. The closest active fault is the Alpine Faultline, which lies approximately 23km south-east of the site.

5.2.3. Erosion

An investigation of aerial photography dating back to 1943 shows that the low area within the site was riverbed in 1943. Aggradation occurred to the extent that the area of riverbed was almost completely reclaimed as pasture by 1951. Some erosion occurred between 1970 and 1984 in the western area, at and around the mouth of Charcoal Creek. This area has subsequently aggraded with the most recent aerial photography showing vegetation well beyond the river boundary location shown on survey plans dating back as far as 1874.

We consider that the current land between the proposed building locations on the higher elevated areas will not be subject to erosion and that erosion will not materially affect buildings on the new allotments assuming modern design methods and our construction recommendations are followed.

5.2.4. Flooding

As part of this natural hazards assessment we have reviewed the report titled 'Hokitika River, Hydraulic Modelling and Flood Hazard Mapping'³. Figure 4 is an excerpt of flood hazard mapping for a 100-year event including climate change (2100), representative concentration pathway (RCP) scenario 8.5, 1.4m sea level rise, 0.4m storm surge.

The vast majority of the site is coloured yellow (H5) which represents water velocities that are 'Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure'.

The south eastern portion of the site are coloured light and dark blue (H2 and H1) which represents water velocities that are 'Unsafe for small vehicles' (H2) and 'Generally safe for vehicles, people and buildings' (H1).

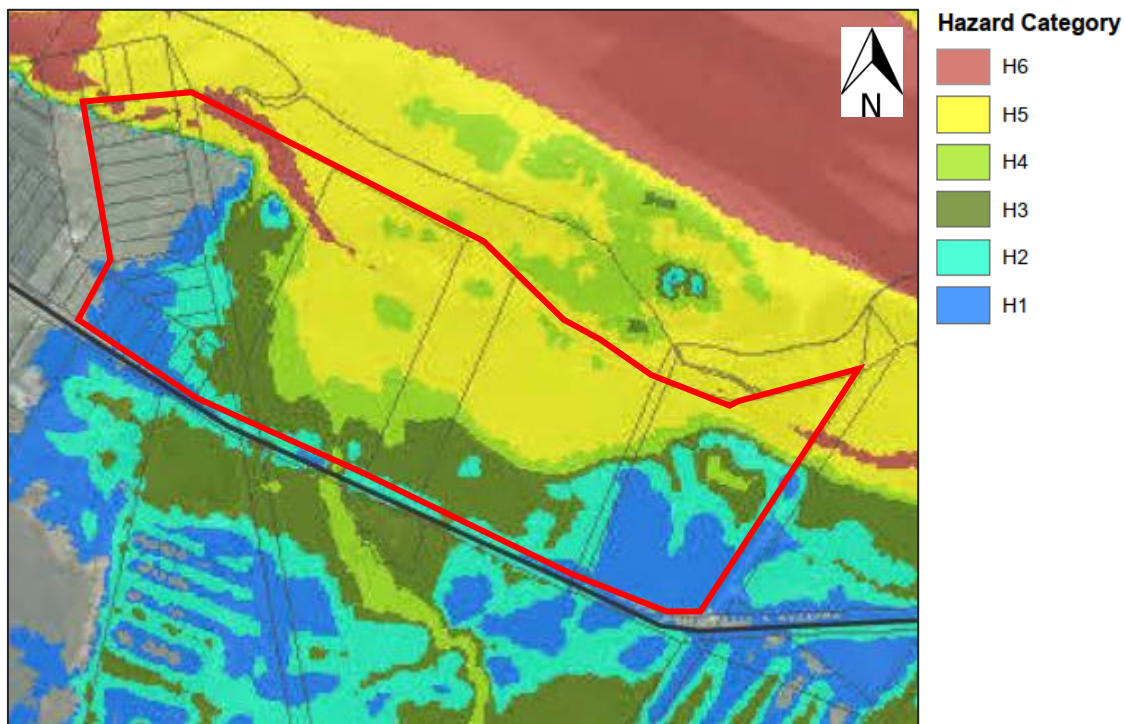


Figure 4. Flood hazard modelling map showing water velocities

Figure 5 indicates the flood peak water depth for a 1 in 50-year event, a 1m sea level rise and 0.4m storm surge. The water depths are generally between 0.1m to 0.5m and deeper at the margins of Charcoal Creek to the west.

³ Hokitika River, Hydraulic Modelling and Flood Hazard Mapping', dated June 2020, for West Coast Regional Council prepared by Matthew Gardner

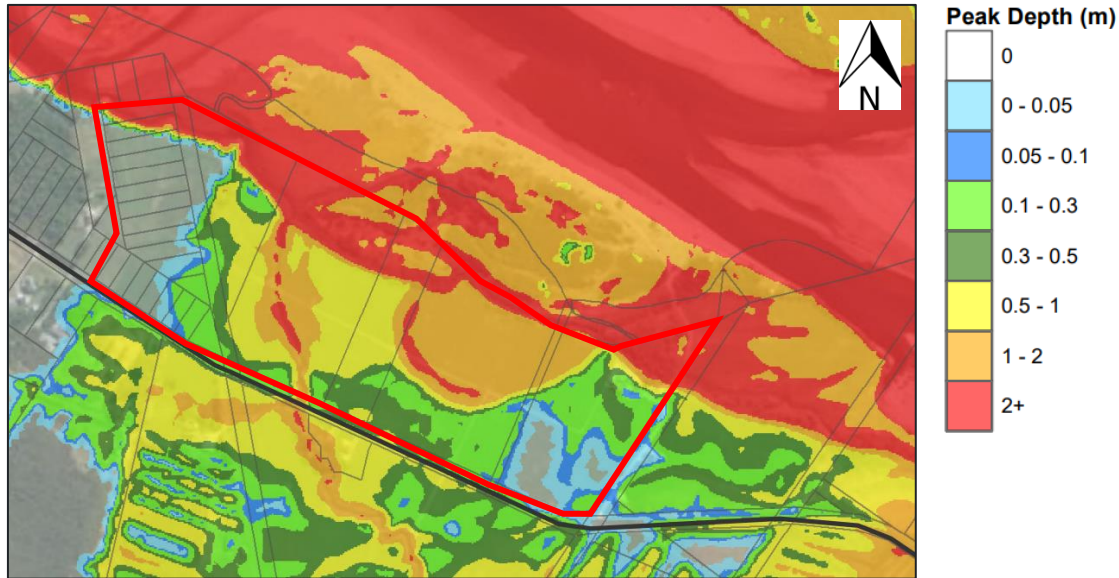


Figure 5. Flood water depth during 1:50-year event

We recommend any future dwellings within these lots are located towards the south side of the lots close to Arthurstown Road. The minimum floor heights for any proposed dwellings within the subdivision should be above the modelled water depth plus freeboard. Westland District Council should advise on the final floor levels for dwellings within the proposed subdivision as part of the consenting process.

5.2.5. Liquefaction

Strong seismic shaking can result in liquefaction in areas where the water table is within 5 metres of the ground surface⁴. If liquefaction occurs at less than about 10m below surface there is likely to be surface deformation and expression at the surface (sand boils), deeper occurrence will likely have less impact. Coastal areas and river flood plains are usually susceptible to liquefaction, which results in ground deformation and/or lateral spreading.

The site is classified in the West Coast Regional Liquefaction Assessment⁵ as being in an area where liquefaction damage is possible. The assessment indicates (figure 2-2) that the site has a high-moderate susceptibility to liquefaction.

We consider it is likely that the site could be affected by liquefaction. Measures to mitigate the risk of liquefaction will need to be undertaken, this includes the strengthening of any engineered gravel pad with geo grid or supporting proposed dwellings on piles embedded within suitable and non-liquefiable strata. Provided the preliminary recommendations in Section 6 are followed then we consider that liquefaction potential and the risk of structural and land damage is low.

5.2.6. Tsunami

Due to the location of the site (adjacent to the Hokitika River and 1.5km from the Tasman Sea) it is susceptible to Tsunamis on a larger scale. Below is the Tsunami Hazard Map showing areas of the site being in the orange and yellow zones. The yellow zone covers the largest area that would need to be evacuated in the event of a maximum-impact tsunami, the orange zone shows areas to be evacuated in a 1m to 5m event.

⁴ PJ Glassey, DW Heron 2012. Amplified ground shaking and liquefaction susceptibility, Invercargill City. GNS Science Consultancy Report 2012/014.

⁵ Beca Limited. West Coast Regional Liquefaction Assessment, 1 November 2021



Figure 6. Tsunami Evacuation Zones (<https://www.civildefence.govt.nz/get-ready/get-tsunami-ready/tsunami-evacuation-zones/>)

Most intended building sites are outside of the yellow zone, but it is important that the occupants are aware of the Civil defence recommendations that should be followed *'this area must be evacuated if there is a long or strong earthquake. The earthquake may be the only warning of a tsunami, so people are advised not to wait for further instructions, notifications or advice, immediate evacuation is required after shaking has stopped'*.

6. Foundation Recommendations

Based on our geotechnical investigation, we can confirm the site contains firm silts capable of supporting a building and have a geotechnical ultimate bearing capacity of 300kPa from around 0.8m below the surface.

Due to the likelihood of flooding over the site in the future the floor level for any future buildings will be required to be elevated above ground level. We consider there are three feasible options for foundations for residential dwellings constructed on each lot. These are described below.

6.1. Gravel raft with TC2 slab foundation

To reduce the risk of liquefaction-induced settlement occurring to shallow foundations and to address the weak soils in the upper layers, we recommend shallow ground improvement be undertaken to remediate the upper 1.2m shallow soil profile. This can be achieved by excavation and construction of a geogrid reinforced compacted gravel raft.

A suitably qualified geotechnical engineer should inspect the exposed excavated subgrade before placing any geogrid to confirm the soil profile and bearing resistances. The exposed subgrade should not contain any obvious organic matter, topsoil, buried logs, or any other very soft or unsuitable materials. A layer of geogrid should be placed across the base of the excavation and up the sides, such as Triax TX160 or equivalent. It is important that the grid is sufficiently tensioned to remove any wrinkles, bulges, folds etc. prior to placing the gravel fill on top of the geogrid.

AP40 or AP65 or river-run sandy gravel can then be used as controlled fill providing there are no large cobbles or boulders (particle size > 60mm). If compaction is an issue, then a layer of no fines fill (ballast) can be placed across the base of the excavation to provide a suitable base from which to proceed the backfilling.

Sandy gravel fill shall be placed and compacted in ~200mm thick layers, in accordance with the requirements of NZS4431:2022. A minimum of two layers of geogrid spaced 400mm apart should be placed within the gravel raft below existing ground level. The compacted dry densities achieved by the filling work shall exceed 95% of the maximum dry density of the sandy gravel.

The compacted gravel above ground should be battered at an angle no steeper than 3:1. The landscaping design for the site will need to take into account the elevated building platforms in order to achieve suitable driveway and footpath gradients.

6.2. Gravel raft with Type 2A surface structure

Following the geogrid reinforced gravel raft construction as above, the in-ground slab should bear 0.1m into the gravel raft and can be designed assuming an ultimate bearing capacity of at least $q_u=300\text{kPa}$. The in-ground slab should protrude a minimum of 50mm above the upper surface of the gravel raft.

A geotechnical strength reduction factor of $\Phi_{bc}=0.5$ should be adopted by the foundation design engineer when assessing the effects of both long-term static loads and short-term seismic loads.

The crawl space around the perimeter of the outer piles should be clad and braced with painted plywood as per Figure 15.21 Part C of the MBIE Guide. See Figure 7 for a copy of the plywood stiffening for the Type 2A surface structure.

Figure 15.21: Detail of plywood stiffening to Type 2 surface structure (Type 2A illustrated)

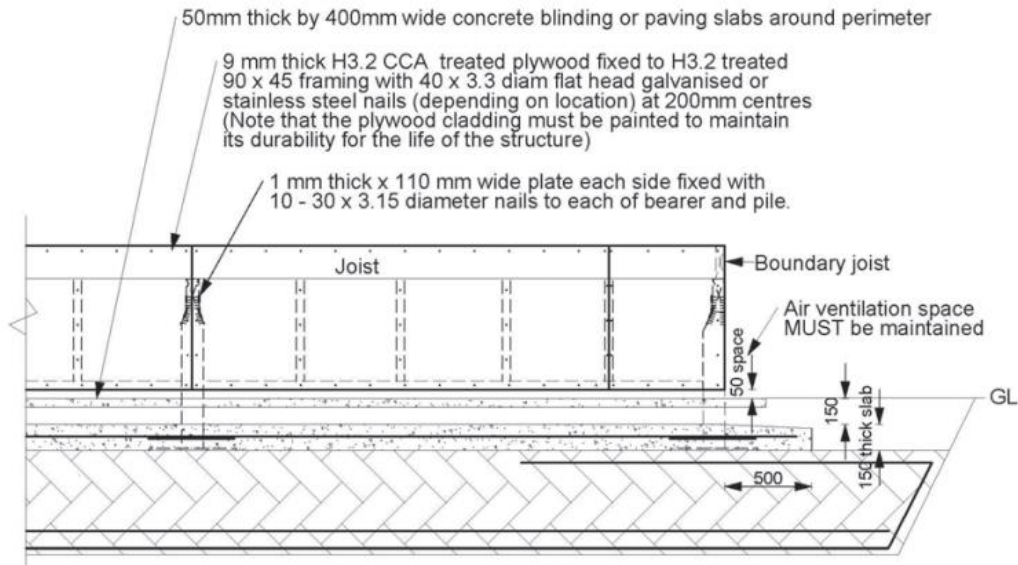


Figure 7. An excerpt from the MBIE Guide illustrating the plywood bracing

6.3. Driven timber piles

Another option is a driven timber pile foundation, whilst the minimum bearing resistance required for driven timber piles under NZS3604: 2011 was met at around 0.8m, it is necessary that the piles be driven a minimum of 1.2m below the surface. The piles will need to extend above the surface to ensure the dwelling is not subject to inundation. Westland District Council are to advise on final floor levels for dwellings within the subdivision.

6.4. Restricted Building Area (RBA)

A restricted building area is recommended to ensure that all dwellings constructed on sites as part of this subdivision are protected against both inundation and erosion, see figure 8 below. Any future building in the area as shown in red will require a specific foundation investigation undertaken by a suitably qualified individual, it is expected that the foundation investigation would also provide measures for the mitigation of any potential liquefaction and flooding hazard.



Figure 8. Area to be restricted from building (Eliot Sinclair 2022)

7. Infrastructure Requirements

7.1. Potable Water

There is no Council reticulated water available to the site. Rainwater tanks will be required for water supply. We recommend a minimum of 45m³ of water storage onsite to allow for residential supply and firefighting purposes. It is also recommended that a leaf diverter and a first flush diverter be installed.

7.2. Wastewater

There is no Council sewer available to the site. Onsite wastewater treatment and disposal will be required. Most of our test pits did not encounter groundwater within 3.5m of the ground surface. Standing water was found in test pits 3, 4 and 6 at between 3.1 and 3.3m bgl. We consider that the soil category, in terms of AS/NZS1547: 2012, to be category 4. Category 4 soils have limited permeability and it is recommended that specifically designed secondary wastewater treatment systems be used.

Category 4 soils do not meet the requirements of rule 79 in the West Coast Regional Council's Land and Water Plan for permitted activity and the land application (discharge) of wastewater will therefore require a resource consent from the West Coast Regional Council.

7.3. Stormwater

There are no Council storm reticulation in the local area, stormwater overflow from the rainwater tank will need to be discharged appropriately without causing erosion or ponding. If onsite stormwater disposal is required, the underlying silts may be a limiting infiltration layer and will need to be considered appropriately.

7.4. Vehicle Access

There is currently access to the site from Arthurstown Road.

All future access will be off Arthurstown Road, either directly from the road or via easements/access strips.

8. Conclusion

Based on our geotechnical investigation, we consider the site on Arthurstown Road suitable for subdivision into fifteen Lots as proposed. Our geotechnical investigation on each of the proposed lots confirmed the presence underlying silts which have sufficient load carrying capacity for residential use. Dwellings shall be founded on an engineered gravel raft or on driven timber piles, with a floor height above the surrounding ground level. The final floor heights and freeboard will be determined by Westland District Council as part of the consenting process. We consider the site can be subdivided and that any natural hazard can be mitigated to ensure the safety of both dwellings and people.

Disclaimer

This report has been prepared by Eliot Sinclair & Partners Limited ("Eliot Sinclair") only for the intended purpose as a Natural Hazards Risk Assessment. Our analysis is based on our inspection of the site and geotechnical testing.

The report is based on:

- Information shown on the NZGD, Westmaps and GNS's Active Faults Database.
- Ministry of Business, Innovation and Employment's (MBIE) December 2012 guidelines.

Where data supplied by Forest Habitats Ltd or other external sources, including previous site investigation reports, have been relied upon, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Eliot Sinclair for incomplete or inaccurate data supplied by other parties.

Whilst every care has been taken during our investigation and interpretation of the subsurface conditions to ensure that the conclusions drawn, and the opinions and recommendations expressed are correct at the time of reporting, Eliot Sinclair has not performed an assessment of all possible conditions or circumstances that may exist at the site. Variations in conditions may occur between investigatory locations and there may be conditions such as subsoil strata and features that were not detected by the scope of the investigation that was carried out or have been covered over or obscured over time. Additionally, on-going seismicity in the general area may lead to deterioration or additional ground settlement that could not have been anticipated at the time of writing this report. Eliot Sinclair does not provide any warranty, either express or implied, that all conditions will conform exactly to the assessments contained in this report.

The exposure of conditions that vary from those described in this report, or occurrence of additional strong seismicity, or any future update of MBIE's guidelines may require a review of our recommendations. Eliot Sinclair should be contacted to confirm the validity of this report should any of these occur.

This report has been prepared for the benefit of Forest Habitats Ltd and Westland District Council for the purposes as stated above. This report is specifically prepared for the proposed subdivision and should not be used to support any future consent application without prior review and approval by Eliot Sinclair. No liability is accepted by Eliot Sinclair or any of their employees with respect to the use of this report, in whole or in part, for any other purpose or by any other party.

Appendix A. Site Photographs



Figure 1. Photo of test pit 01



Figure 2. Photo of test pit 03



Figure 3. Photo of test pit 04



Figure 4. Photo of test pit 06



Figure 5. Photo of test pit 07



Figure 6. Photo of test pit 09



Figure 7. Photo of test pit 10



Figure 8. Photo of test pit 12



Figure 9. Photo of Charcoal Creek, looking towards river from bridge on site



Figure 10. Photo of Charcoal Creek, looking towards Arthurstown Road from bridge on site



Figure 11. Photo of site looking west from Charcoal Creek



Figure 12. Photo of site looking east from Charcoal Creek



Figure 13. Photo looking west across site east to west



Figure 14. Photo looking east from low area of site



Figure 15. Photo looking west from low point on site

Appendix B. Site Investigation Records

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

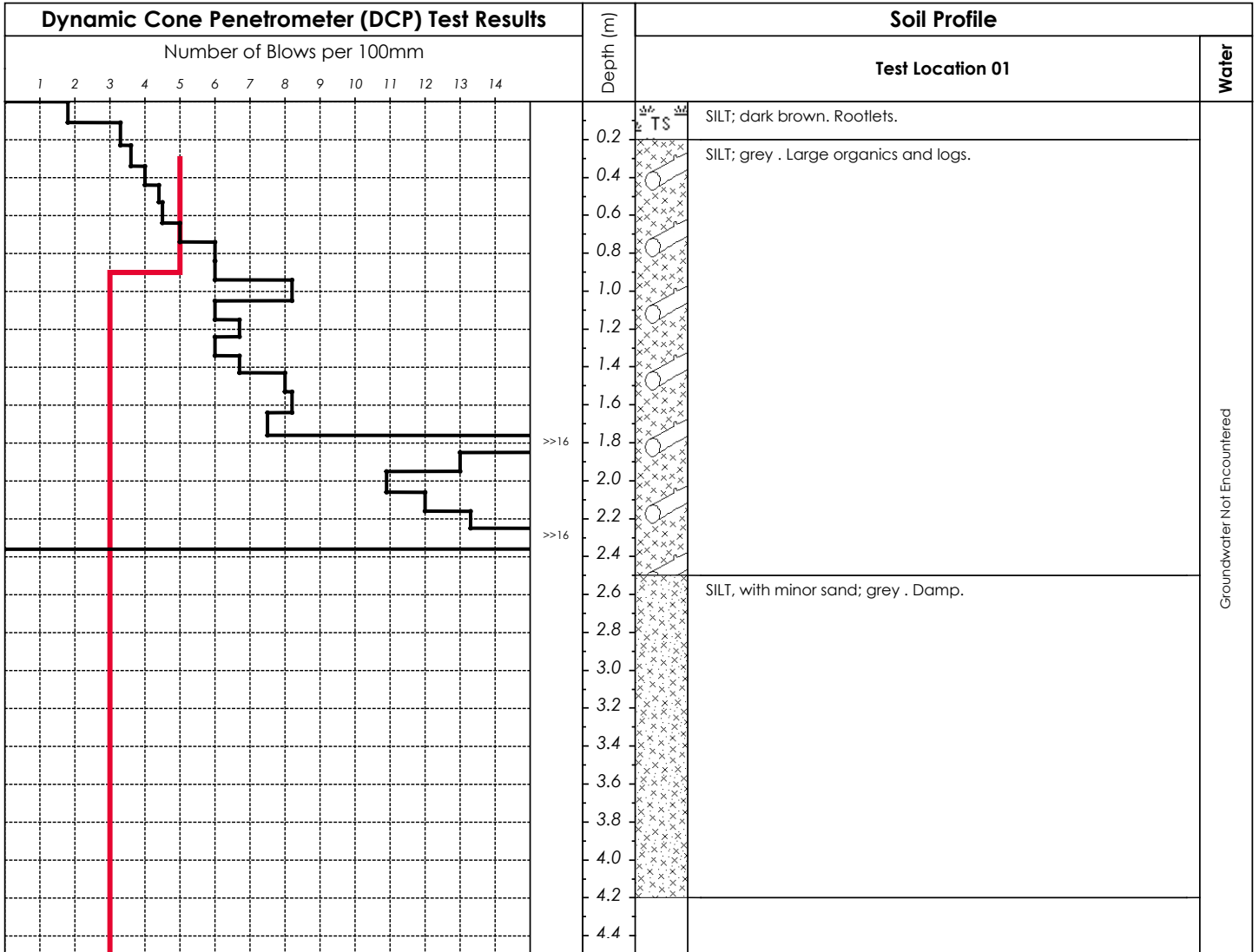
Lot: 23

D.P.: 142

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



01
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:
 Dynamic Cone Penetrometer: Lot 1

Field Staff: SJH, JAG	Prepared By: JAG	Soil Profile From: <input checked="" type="checkbox"/> Hand Auger <input type="checkbox"/> Spade Hole <input type="checkbox"/> Test Pit
Job Manager: SCC	Approved By: SCC	



Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:35 pm

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

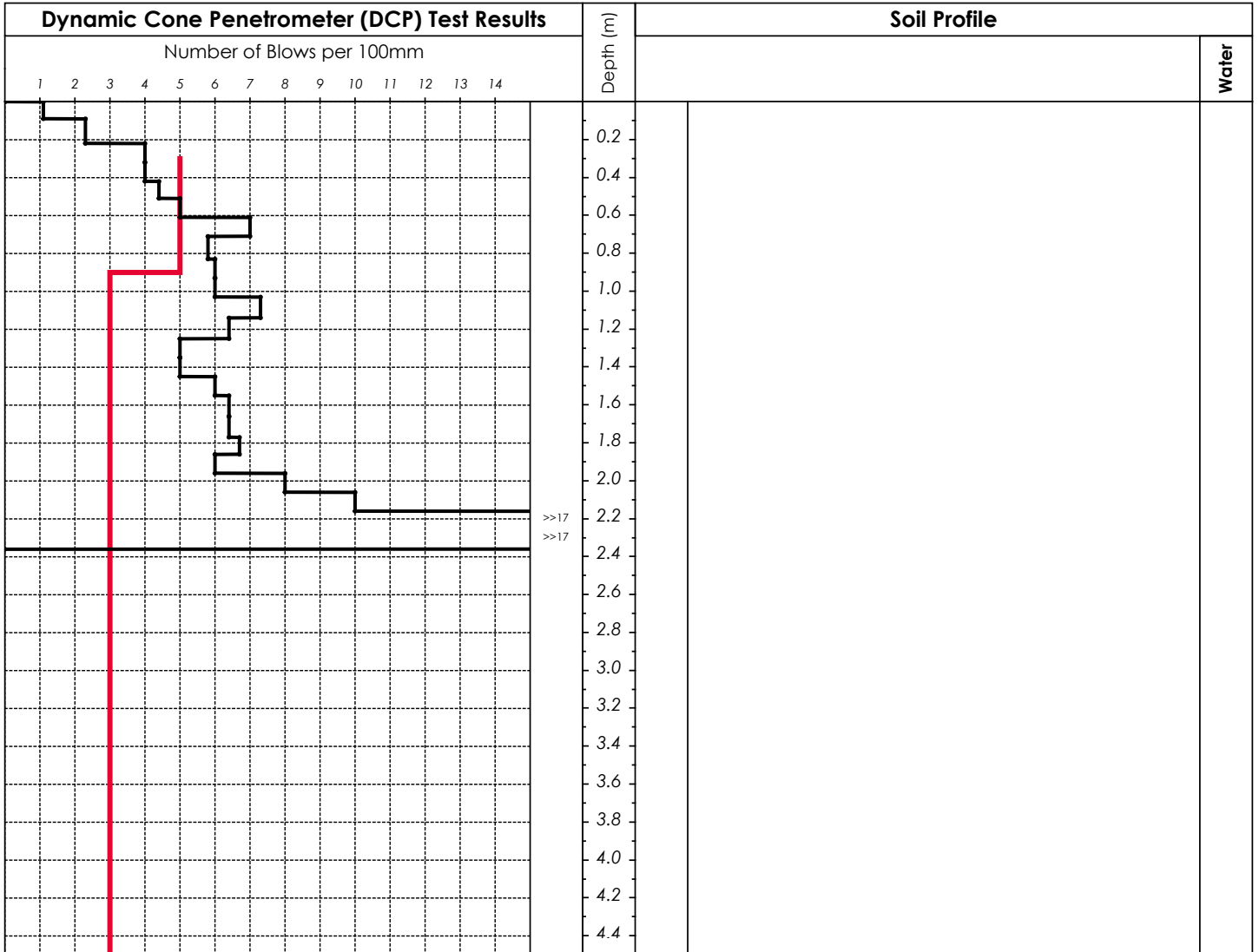
Lot: 10 9

D.P.: 142, 142

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



— 02
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:

Dynamic Cone Penetrometer: Lot 2

Site Plan: (Not to Scale)



Field Staff: SJH, JAG	Prepared By: JAG	Soil Profile From: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Spade Hole <input type="checkbox"/> Test Pit
Job Manager: SCC	Approved By: SCC	

Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:35 pm

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

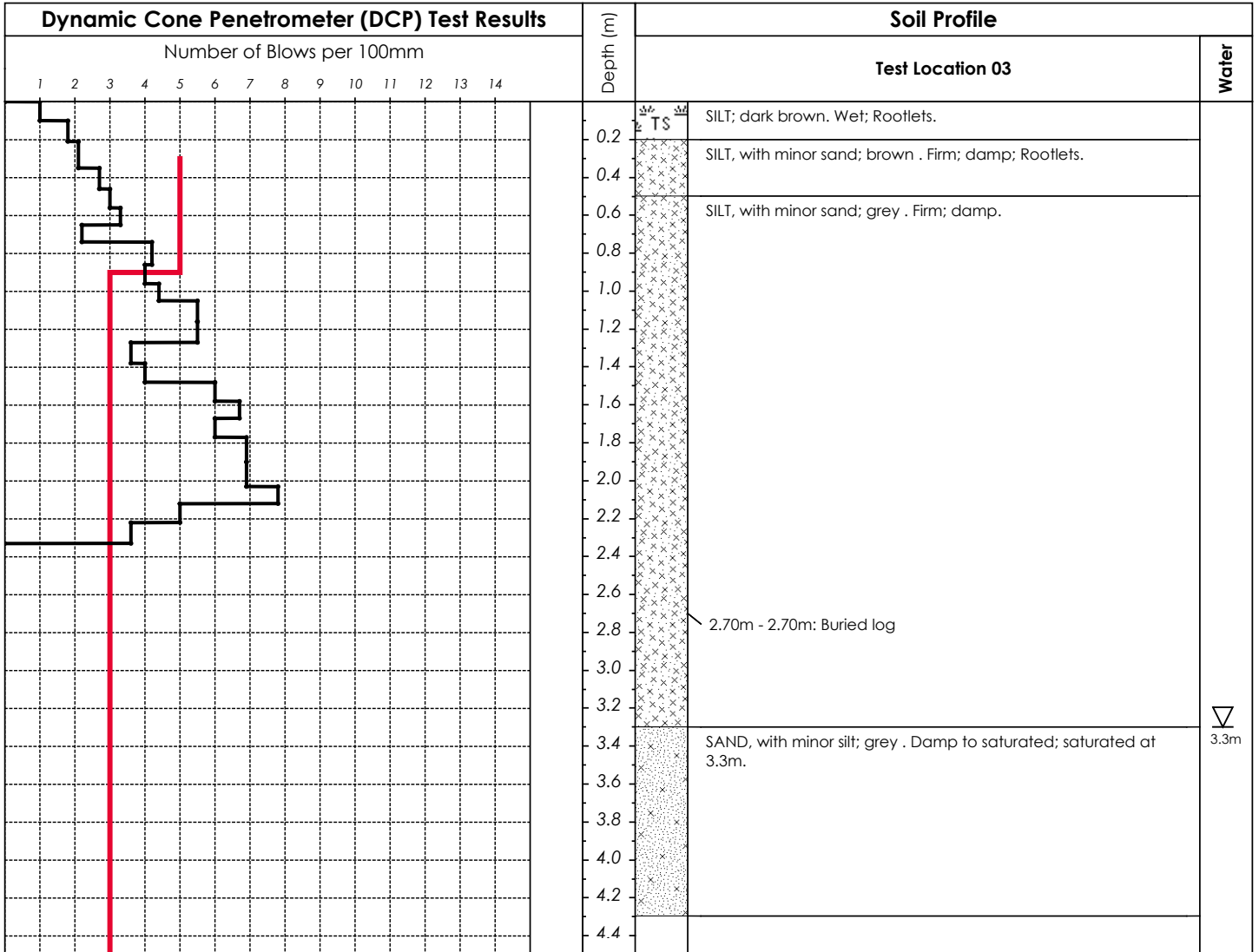
Lot: 13

D.P.: 142

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

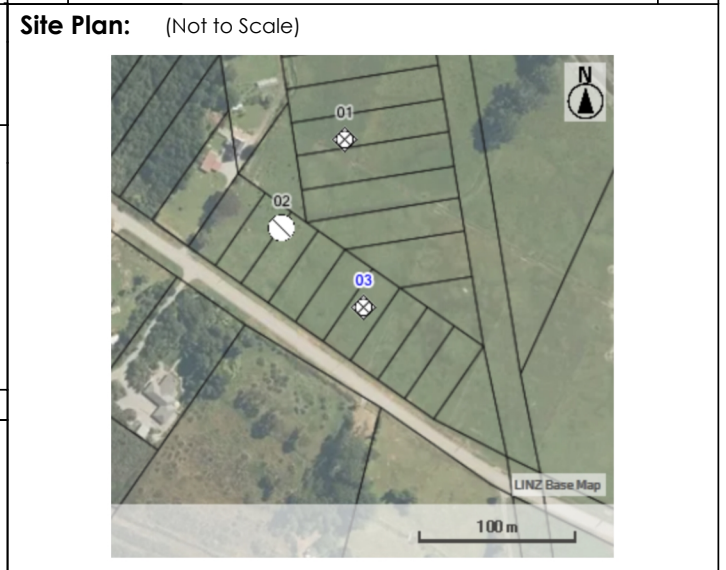
Project No.: 510714



— 03
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:
 Dynamic Cone Penetrometer: Lot 3

Field Staff: SJH, JAG	Prepared By: JAG	Soil Profile From: <input checked="" type="checkbox"/> Hand Auger <input type="checkbox"/> Spade Hole <input type="checkbox"/> Test Pit
Job Manager: SCC	Approved By: SCC	



Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:35 pm

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

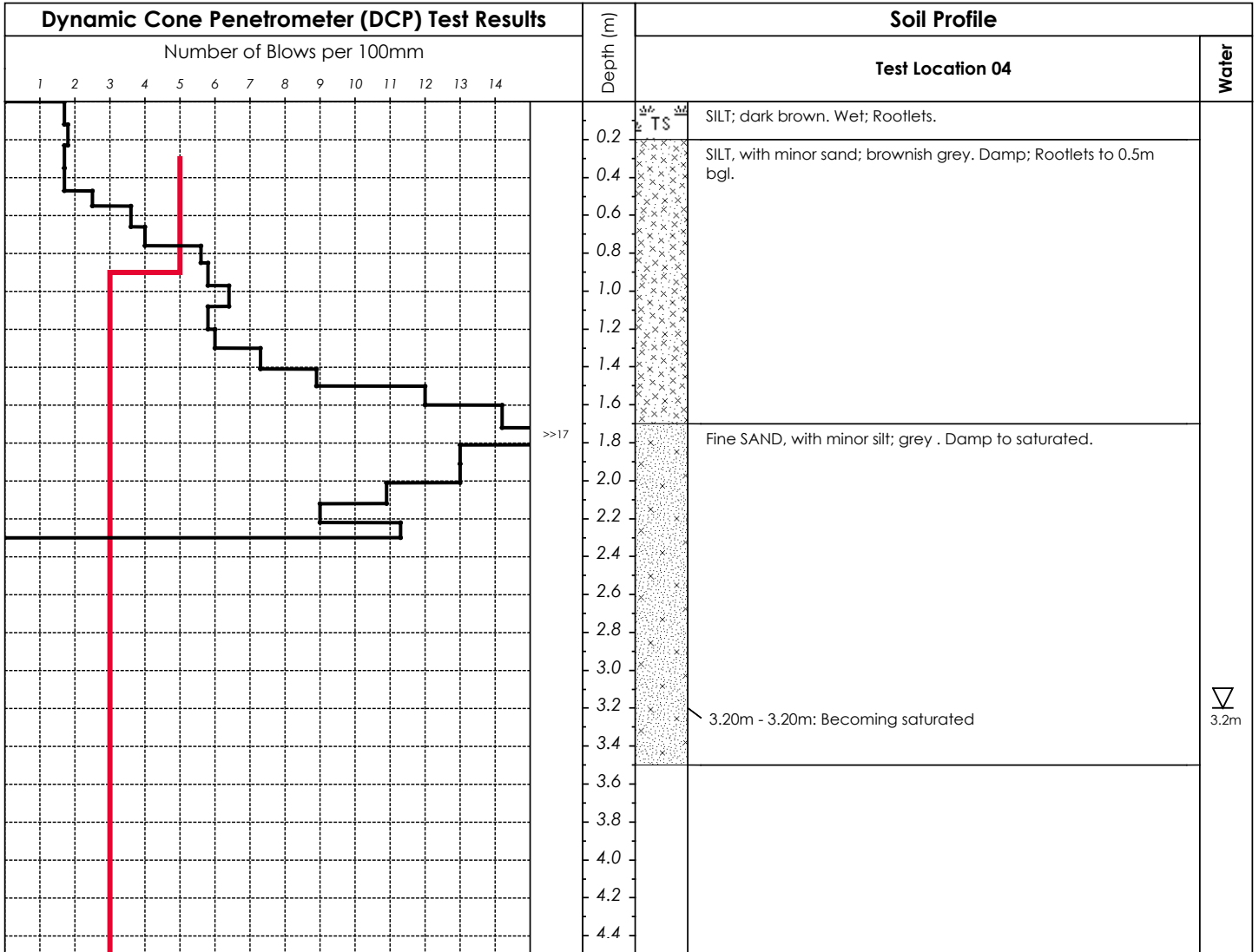
Lot:

D.P.:

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



— 04
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:
 Dynamic Cone Penetrometer: Lot 4

Field Staff: SJH, JAG	Prepared By: JAG	Soil Profile From: <input checked="" type="checkbox"/> Hand Auger <input type="checkbox"/> Spade Hole <input type="checkbox"/> Test Pit
Job Manager: SCC	Approved By: SCC	



Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:36 pm

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

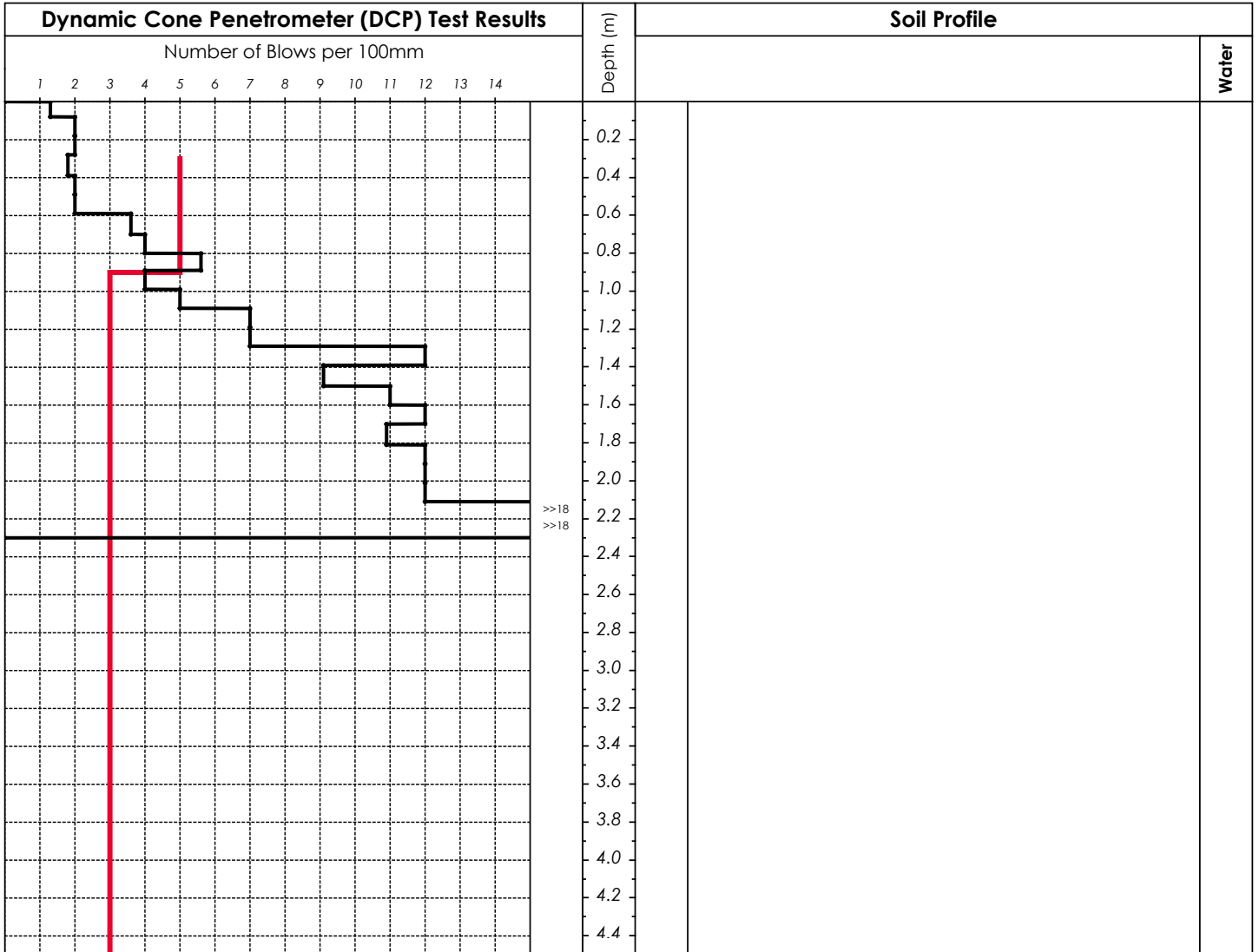
Lot:

D.P.:

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



— 05
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:

Dynamic Cone Penetrometer: Lot 5

Field Staff:

SJH, JAG

Prepared By:

JAG

Soil Profile From:

- Hand Auger
- Spade Hole
- Test Pit

Job Manager:

SCC

Approved By:

SCC

Site Plan: (Not to Scale)



Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

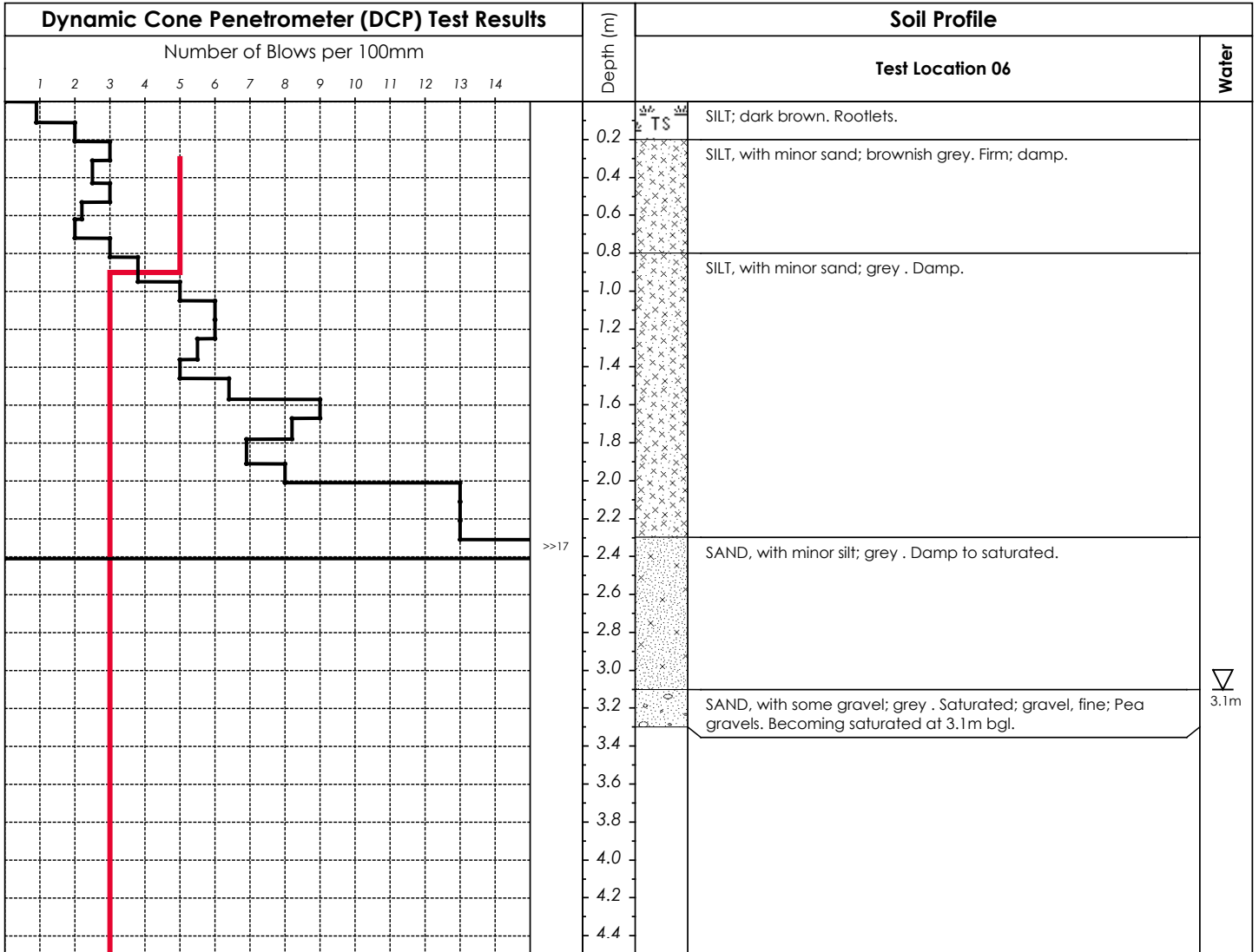
Lot:

D.P.:

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



— 06
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:
 Dynamic Cone Penetrometer: Lot 6

Field Staff: SJH, JAG	Prepared By: JAG	Soil Profile From: <input checked="" type="checkbox"/> Hand Auger <input type="checkbox"/> Spade Hole <input type="checkbox"/> Test Pit
Job Manager: SCC	Approved By: SCC	



Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:36 pm

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

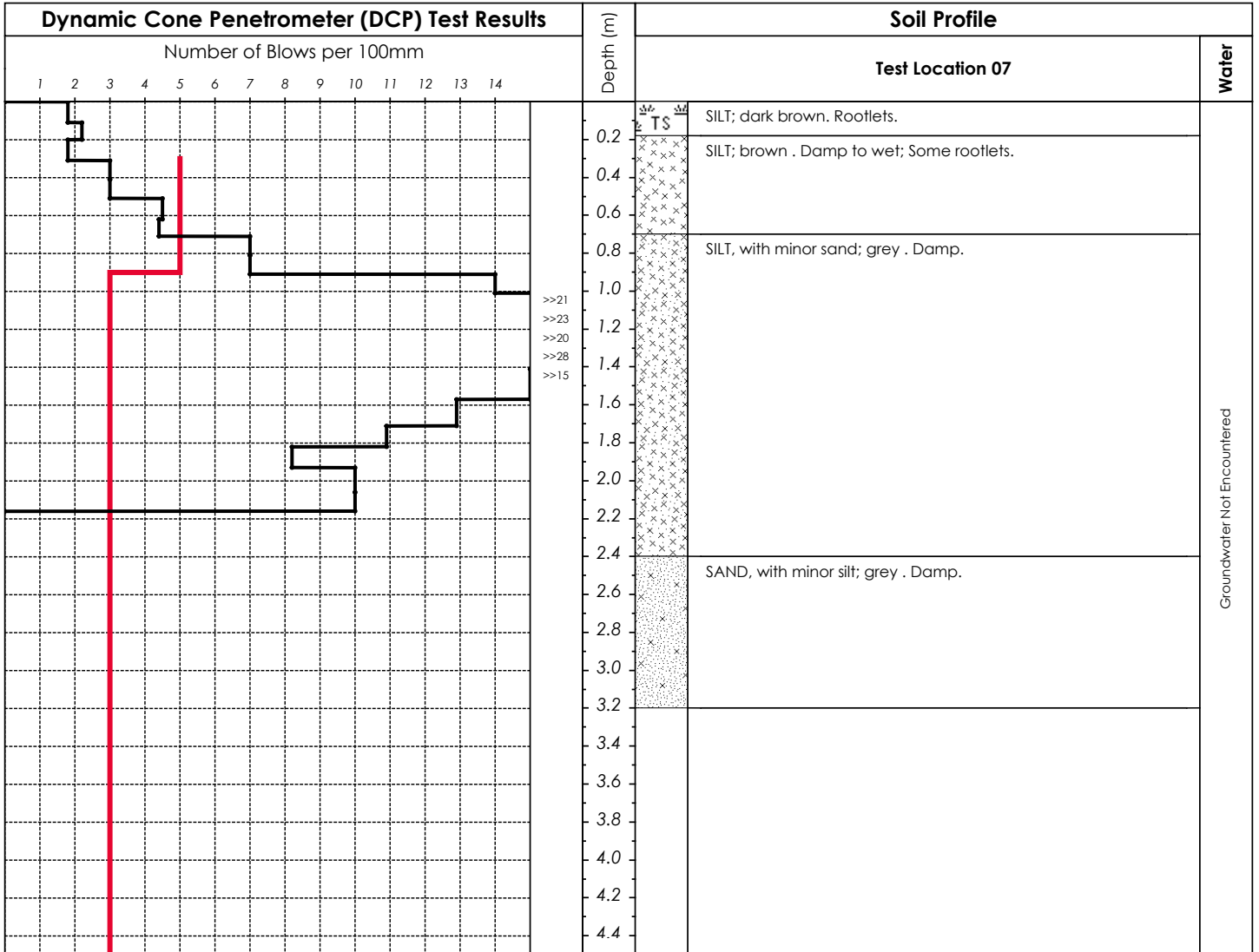
Lot:

D.P.:

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



— 07
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:

Dynamic Cone Penetrometer: Lot 7

Field Staff:

SJH, JAG

Prepared By:

JAG

Soil Profile From:

- Hand Auger
- Spade Hole
- Test Pit

Job Manager:

SCC

Approved By:

SCC

Site Plan: (Not to Scale)



Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:36 pm

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

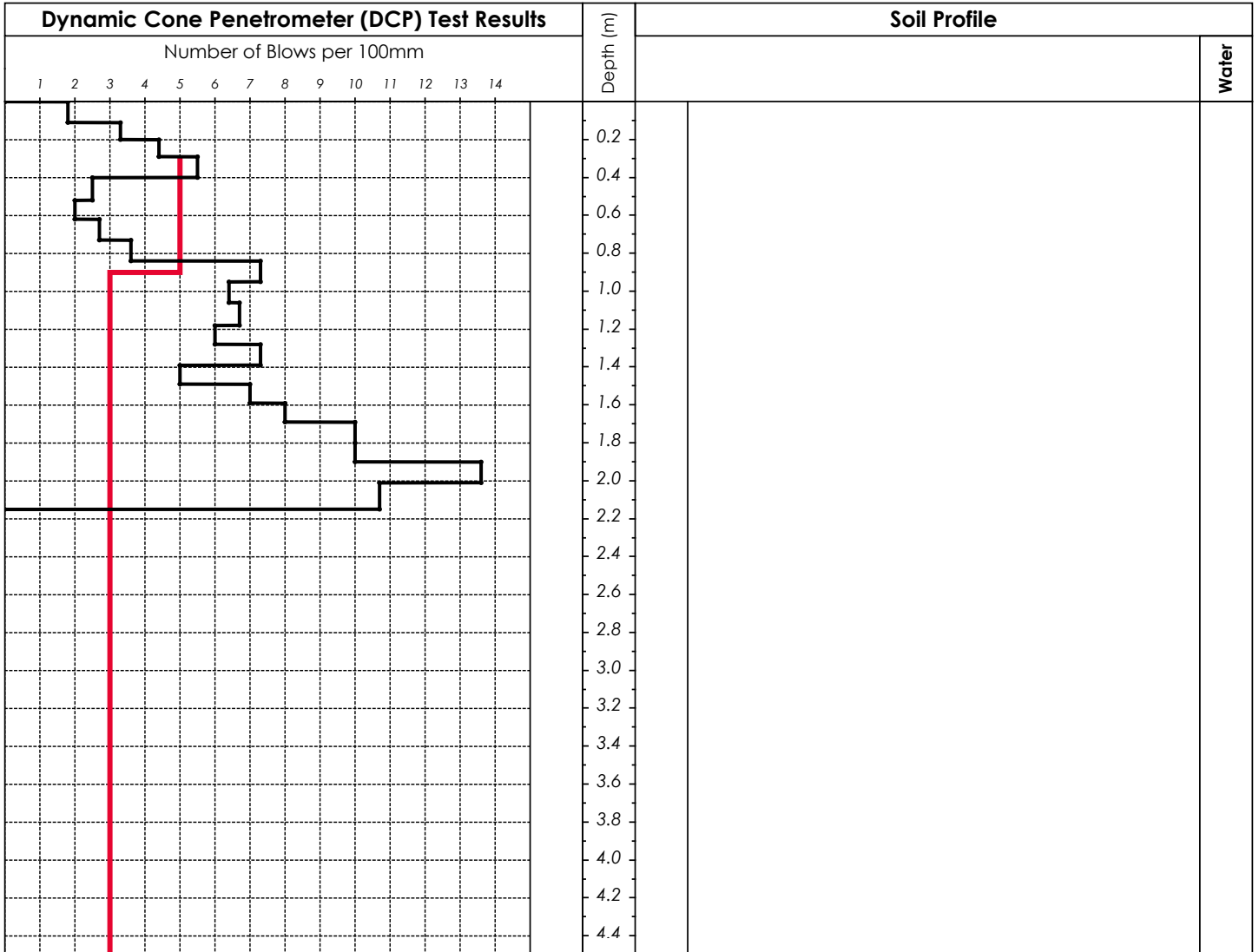
Lot:

D.P.:

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



— 08
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:
 Dynamic Cone Penetrometer: Lot 8

Field Staff: SJH, JAG	Prepared By: JAG	Soil Profile From: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Spade Hole <input type="checkbox"/> Test Pit
Job Manager: SCC	Approved By: SCC	

Site Plan: (Not to Scale)



Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:36 pm

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arhurstown Road, Hokitika

Technical Category: N/A

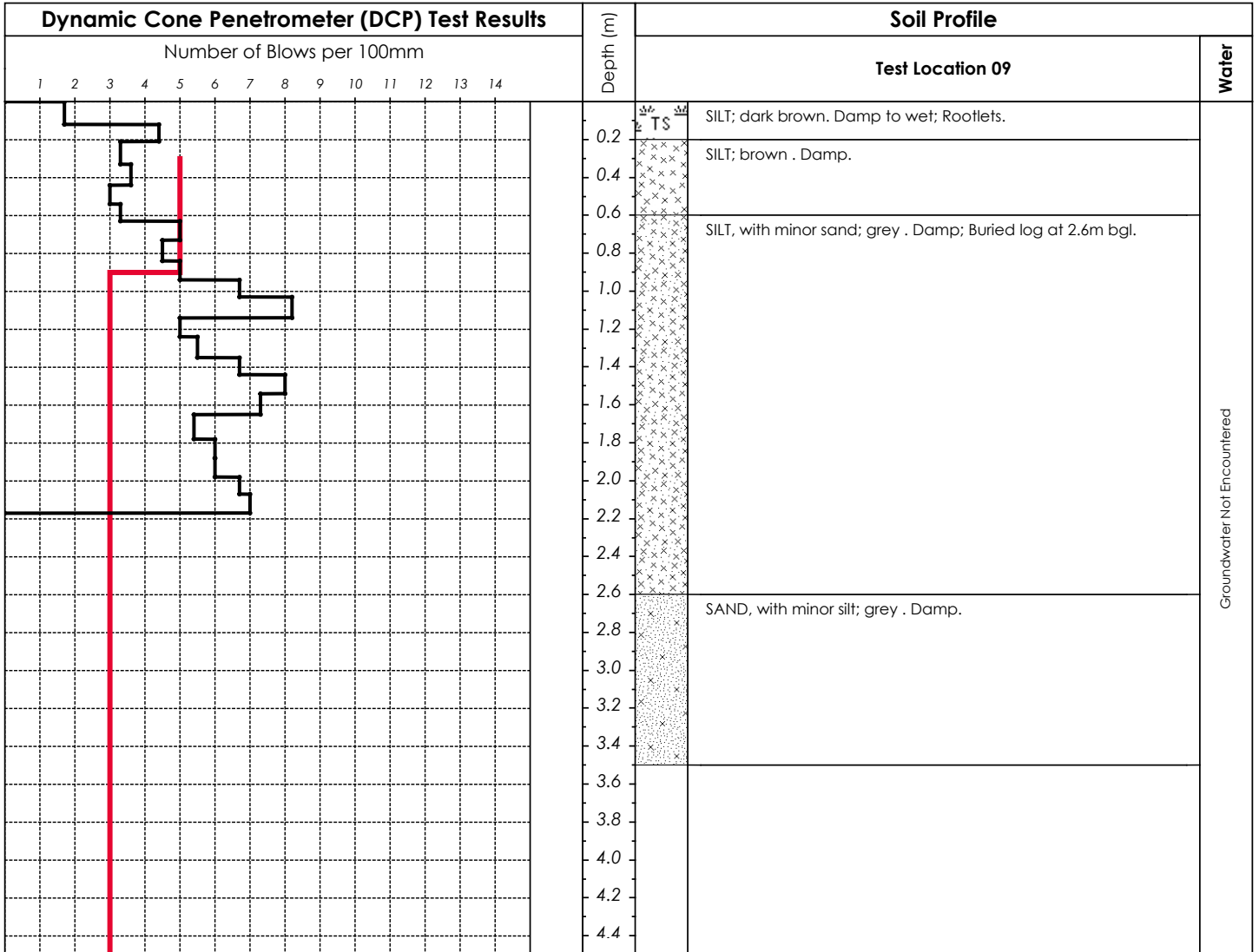
Lot:

D.P.:

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



— 09
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:
 Dynamic Cone Penetrometer: Lot 9

Site Plan: (Not to Scale)



Field Staff: SJH, JAG	Prepared By: JAG	Soil Profile From:
Job Manager: SCC	Approved By: SCC	<input checked="" type="checkbox"/> Hand Auger <input type="checkbox"/> Spade Hole <input type="checkbox"/> Test Pit

Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:36 pm

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

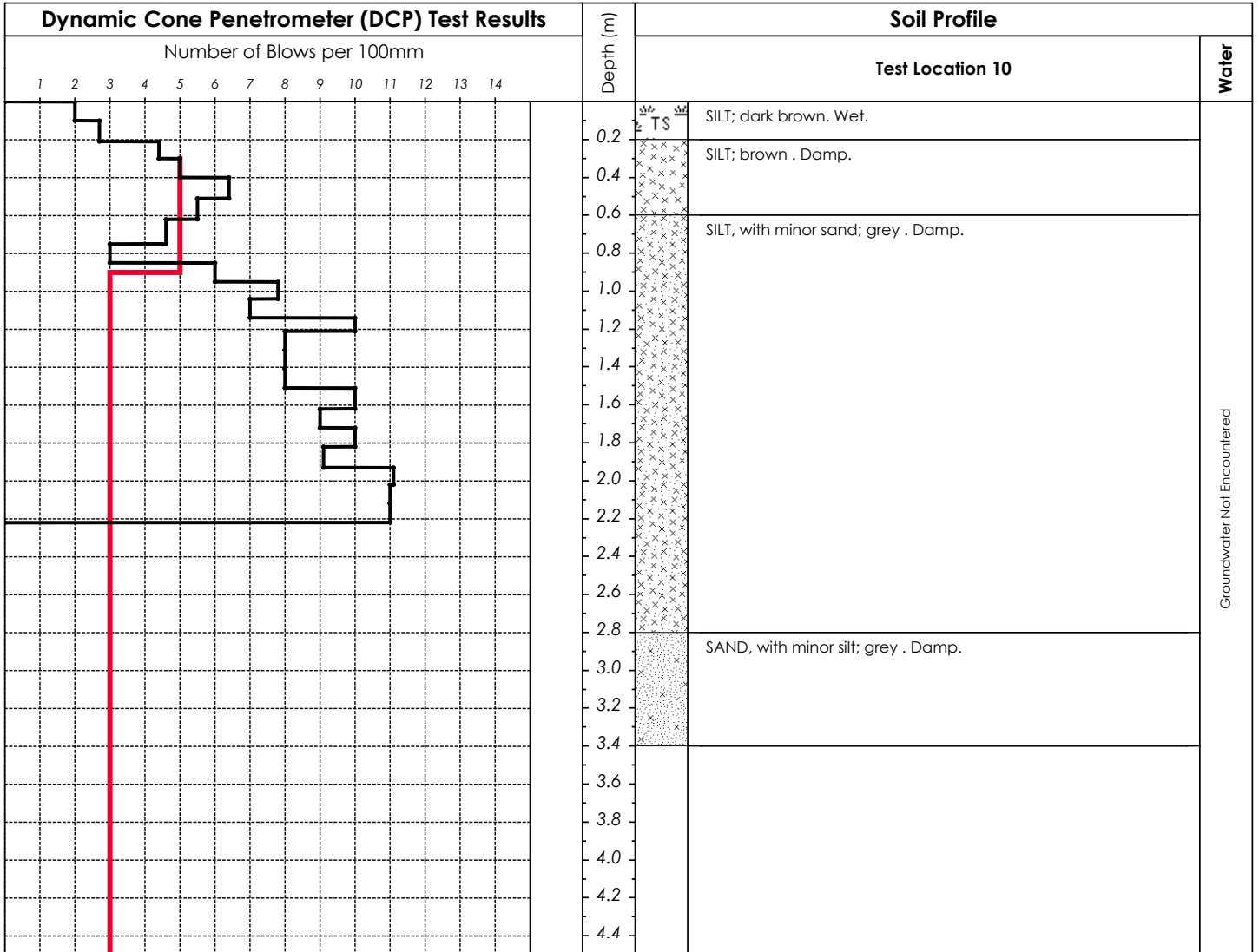
Lot:

D.P.:

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



— 10
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:
 Dynamic Cone Penetrometer: Lot 10

Field Staff: SJH, JAG	Prepared By: JAG	Soil Profile From: <input checked="" type="checkbox"/> Hand Auger <input type="checkbox"/> Spade Hole <input type="checkbox"/> Test Pit
Job Manager: SCC	Approved By: SCC	

Site Plan: (Not to Scale)



Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:36 pm

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

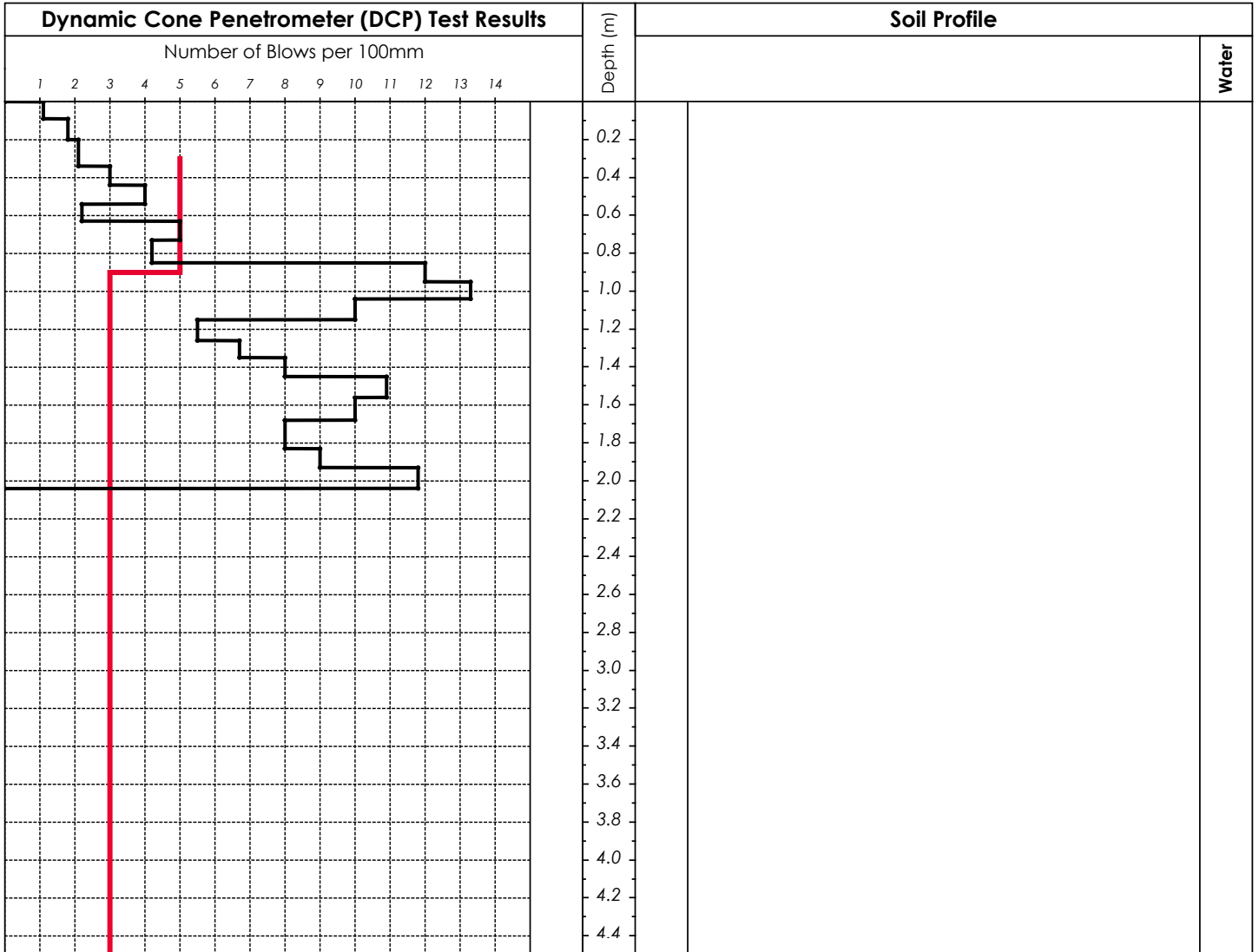
Lot:

D.P.:

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



— 11
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:
 Dynamic Cone Penetrometer: Lot 11

Field Staff: SJH, JAG	Prepared By: JAG	Soil Profile From: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Spade Hole <input type="checkbox"/> Test Pit
Job Manager: SCC	Approved By: SCC	



Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:36 pm

Site Investigation Record

Client: Forest Habitats Ltd

Site: Arthurstown Road, Hokitika

Technical Category: N/A

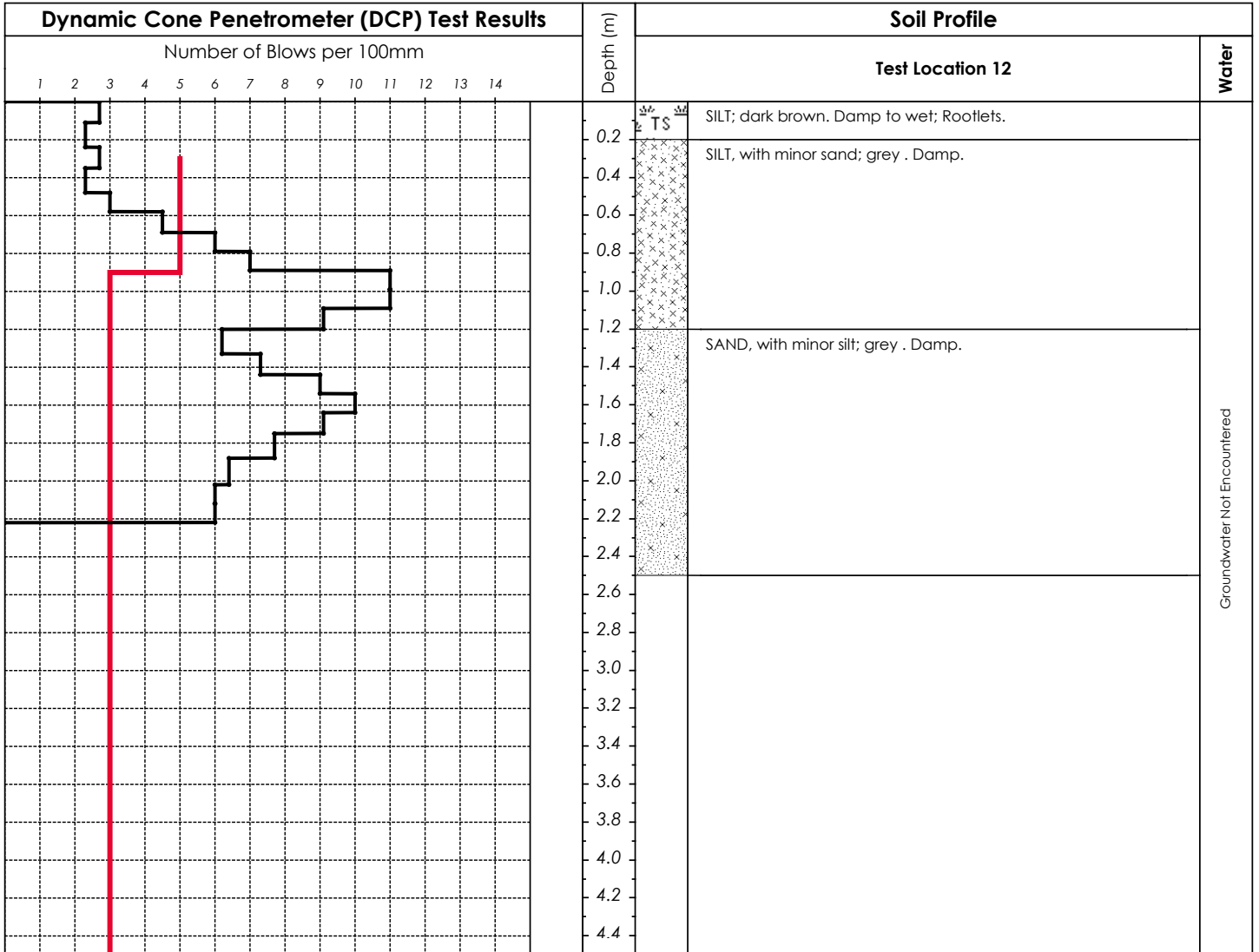
Lot:

D.P.:

Date Tested: 7-Sep-2022

Log Sheet No.: 1 of 1

Project No.: 510714



— 12
 Minimum penetration resistance (based on 300mm wide footing founded at 300mm depth) required for 'Good Ground' as defined in the Acceptable Solutions and Verification Methods for NZBC Clause B1 Structure.

Comments:
 Dynamic Cone Penetrometer: Lot 12

Field Staff: SJH, JAG	Prepared By: JAG	Soil Profile From: <input checked="" type="checkbox"/> Hand Auger <input type="checkbox"/> Spade Hole <input type="checkbox"/> Test Pit
Job Manager: SCC	Approved By: SCC	



Note: This record identifies the geotechnical conditions encountered at the noted test location(s) only. It is possible that ground conditions could be different away from the point(s) of testing.

Produced with CORE-GS Report Published: 28/09/2022 4:09:36 pm

Appendix C. 1.2m Structural Gravel Raft Specification

Structural Gravel Raft Specification with Single Layer of Geogrid

- The excavation is to extend down to "Good Ground", or as specified in our report, below the building foundations and 1.0m beyond the footprint of the building.
- The base of the excavation shall be clear of any loose material and if necessary, shall be benched and compacted.
- The sides of the excavation are to be no steeper than 2 vertical to 1 horizontal.
- If the excavation base is benched, level the base with compacted AP65 in no more than 200mm thick layers.
- Install one layer of geogrid (Tensar TX160 or similar) to the base of the excavation, extend to the walls of the excavation. Adjacent sheets are to lap a minimum of 450mm.
- Clean sandy gravel AP65 is to be placed and compacted in maximum 200mm thick layers over the geogrid until the required level is achieved.
- The total depth of fill must be a minimum of 1.2m
- When the fill is to be brought above the surrounding ground level, the fill shall be battered at least 1.0m from the building foundation and at a slope no steeper than 1 in 3 (1 vertical to 3 horizontal).
- If the backfill material has not been previously tested, the Contractor shall have a 25kg sample of the backfill material tested at an accredited laboratory for maximum dry density and optimum moisture content. The test results shall be supplied to the engineer for approval at least 24 hours prior to starting backfilling.
- Each layer shall be compacted to a minimum density of 92% and an average of no less than 95% of the maximum dry density achieved in the laboratory tests before the subsequent layer is placed. The test method is the vibrating hammer compaction (NZS 4402: 1988 – Test 4.1.3)

The following inspections are required:

1. Completed excavation prior to placing geogrid;
2. Placed geogrid to ensure laps are correct and it is fully tensioned;
3. Mid depth of compacted gravels; and
4. Completion of the final compacted gravel layer.

The contractor is to contact the engineer 24 hours before they start the excavation so we can arrange the inspections.

The Engineers Contact details are:

Eliot Sinclair & Partners Ltd
Como House 51 Tancred Street
PO Box 298
Hokitika 7842

Phone 03 755 8184 cell 027 224 2635

Email stuart.challenger@eliotsinclair.co.nz

Appendix D. Statement of Professional Opinion


SCHEDULE 2A
STATEMENT OF PROFESSIONAL OPINION ON SUITABILITY
OF LAND FOR BUILDING CONSTRUCTION

Development: Fifteen Lot Subdivision
Developer: Forest Habitats
Location: Arthurstown Road, Hokitika

I, **Stuart Challenger** of **Eliot Sinclair, Hokitika**

Hereby confirm that:

1. I am a geo-professional as defined in section 1.2.2 of NZS 4404:2010 and was retained by the developer as the geo-professional on the above development.
2. The extent of my site investigations are described in the **Eliot Sinclair** report number **510714** dated **29 September 2022**, and the conclusions and recommendations of that document have been re-evaluated in the preparation of this certification.
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 (delete as appropriate):
 - ~~(a) The earth fills shown on the attached Plan No. have been placed in compliance with the requirements of the Council and my specification.~~
 - ~~(b) The completed works take into account land slope and foundation stability considerations, subject to the appended foundation recommendations and earthworks restrictions as set out in this report.~~
 - (c) Subject to 3(a) and 3(b) of this Schedule, the original ground not affected by filling is suitable for erection of buildings designed according to NZS 3604 provided that:
 - i) The recommendations provided in Section 6 of Eliot Sinclair's report reference 510714 dated 29 September 2022 are followed. (Copied below)**
 - ii)
 - ~~(d) Subject to 3(a) and 3(b) of this Schedule, the filled ground is suitable for erection of buildings designed according to NZS 3604 provided that:
 - i)
 - ii)~~
 - (e) The original ground (not affected by filling) is 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 provided in Eliot Sinclair's report reference 510714 dated 29 September 2022 are followed. (Copied below)**
 - ii)
4. This professional opinion is furnished to the **Westland District Council** 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 investigation and inspection of foundation conditions at the time of erection of buildings.
5. This certificate shall be read in conjunction with Eliot Sinclair's geotechnical report referred to in clause 2 above and shall not be copied or reproduced except in conjunction with the full report.



Signed

Date: 29 September 2022

Stuart Challenger

BE (Nat Res) BSc CMEngNZ CPEng Reg. No. 171997.

We recommend any future dwellings within these lots are located towards the south side of the lots close to Arthurstown Road. The minimum floor heights for any proposed dwellings within the subdivision should be above the modelled water depth plus freeboard. Westland District Council should advise on the final floor levels for dwellings within the proposed subdivision as part of the consenting process.

Foundations shall comprise of one of the following systems:

Gravel raft with TC2 slab foundation

Gravel raft with Type 2A surface structure

Driven timber piles



Our Ref: 25770/19201 (660730)

13 June 2023

Forest Habitats Limited
PO Box 65191
Mairangi Bay
AUCKLAND

Quotable Value Limited
www.qv.co.nz

Attention: Jeremy Dillon

ESTIMATE OF VALUES: PROPOSED SUBDIVISION

CLIENT: FOREST HABITATS LIMITED

PROPERTY SUMMARY – Existing Property

Property address	117 Arthurstown Road, Southside, Hokitika
Owner	Forest Habitats Limited
Type of inspection	Road side inspection – 6 June 2023
Legal description	Lots 8-29 Deposited Plan 142, Part Rural Sections 1300, 1589 and 4363, Rural Sections 1421, 1602, 1603, 1588
Titles affected by the subdivision	WS16/723, WS2C/1017, WS2C/1195, WS2C/763, WS3A/1401 and WS3A/1400
Title type	Freehold Titles
Type of property	The property comprises a well located grazing block on the south side of the Hokitika River, two kilometres from the Hokitika Town Centre. The property is split by the Arthurstown Road and the land between the river and the road is in the process of being subdivided into lifestyle blocks.
Total Land area	97.4607 ha

PROPOSED SUBDIVISION

There is approximately 27 hectares north of the Arthurstown Road with the buildings and land fronting the river to be retained for farming purposes. This will leave 8.6 hectares fronting the road which will be subdivided into 12 lots ranging in area from 5000m² to 1.02 hectares.

Como House, Level 1
51 Tancred Street
Hokitika

PO Box 109
Hokitika 7842

Phone: 03 755 8685
Fax: 03 341 1635
Email: Hokitika@qv.co.nz



The land is generally flat and established in pasture with access to be established to each lot from the Arthurstown and East Roads. Electricity will be connected to each lot and an engineered building site established. The sites will have a reasonable outlook to the North.

ESTIMATE OF VALUES (as at 6 June 2023)

After considering the recent sales evidence we consider that the value of the proposed lots to be within the range of **\$180,000 to \$200,000**.

- Inclusive of GST if any.
- The valuations assume that a Certificate of Title will be issued for each lot based on the scheme plan provided. Electricity and a building pad will be provided.
- This report is subject to the attached conditions. The valuer has no financial interest or otherwise in the property and no relationship with the vendors, purchasers or agents

MARKET COMMENTS

With the significant increase in value levels for residential and lifestyle properties throughout the West Coast there has been a corresponding increase in demand for vacant land. There is a shortage in supply of residential land and value levels have lifted during the past two years. There have been sales of standard residential sites in both Greymouth and Hokitika for \$150,000.

Recent sales comparable to the property lots are as follows:

- There have been several sales of bush blocks in and adjoining the Sanctuary Place subdivision at Kumara Junction in recent years. In December 2022 a 5727 m² level site sold for \$180,000 and a 2578 m² site sold for \$160,000. Both require backfilling and site works to develop a building site. This is a popular location midway between Greymouth and Hokitika and value levels have increased significantly since 2020. These are considered slightly inferior to the subject sites.
- The sale in Racecourse Terraces in October 2022 for \$230,000 is a smaller site of 2231 m² however it is a private site with a good outlook and is fully serviced. This is a superior property.



SALES EVIDENCE

GREY DISTRICT:

Address	Sale Date	Sale Price \$	Land Area (m ²)
281 Rutherglen Road	Nov 2022	\$150,000	1.0345 ha – level paddock - inferior
408 Maori Creek Road	Nov 2022	\$146,000	1.0249 ha – level site – inferior location
Hanmer Terrace	Jul 2022	\$340,000	1.0003 ha – elevated site with sea views – superior

WESTLAND DISTRICT:

Address	Sale Date	Sale Price \$	Land Area (m ²)
Puketiro Drive, Kumara Junction	Dec 2022	\$180,000	5727 m ² - bush site with limited outlook
Ballarat Rise	Feb 2023	\$140,000	1.0873 ha – mixed cover with a reasonable outlook. Inferior location.
Kawhaka	Jan 2023	\$180,000	1.2625 ha – terrace building site with river flats – good outlook.
8 Harrison Place, Kumara Junction	Dec 2022	\$160,000	2578 m ² bush site.
Takutai Terrace	Aug 2022	\$290,000	5040 m ² - excellent views - superior
99 Golf Links Road	Nov 2022	\$150,000	4628 m ² - recently subdivided site with elevated site. Inferior.
23B Racecourse Terraces	Oct 2022	\$230,000	2231 m ² - private site with views over Hokitika. Fully serviced – superior.



For QV Valuations

If you need to discuss this estimate certificate further please contact David Shaw.

Appended

1. Estimate conditions



ESTIMATE CONDITIONS

Type of inspection/estimate

No physical inspection has been made in arriving at the above estimate as per your instructions. The estimate has been made from a **desktop** analysis of pertinent sales data. We have **relied on information held on the QV property database** for the subject property. We have not researched or investigated issues that may affect the property such as the title, planning, resource consent, Local Authority requirements, hazardous or noxious substances. We assume that there are no matters that will affect the value of the property, but users of this estimate need to be aware that this may not be the case and that further enquiry could result in a significantly different value for the property.

Limitations on data used

The estimate is also limited by the information available to us and its accuracy is not guaranteed. We have relied on this information and assume that it is accurate and that all leases have been notified to us and are enforceable. It does not take account of condition or changes to the property that may be apparent from inspection. In using this estimate the user needs to be aware that inspection and investigation may reveal matters that could result in a significantly different value.

The property information (e.g. owner, land area, floor area, legal description etc) is extracted from our database and is not guaranteed as to accuracy, as changes may have taken place which we have not been advised of. Having not inspected the property we have not verified these details.

The Computer Register (Certificate of Title) was not searched for this estimate of value. We have made assumptions as to Title type and defects. A search of the Computer Register at Land Information New Zealand will confirm these details.

Function of estimates

The estimate is made exclusively for the addressee and our client. This document cannot be used for lending purposes. Quotable Value Limited does not accept any responsibility should this estimate be used by any other party, or for any other purpose, or without regard to the limitations described above. Any decision on this property that is reliant on its value must take account of the limitations of this estimate. If a significant variation of the estimate would materially affect the user we always recommend a registered valuers report.

Confidentiality and limitation of liability

This is a certificate specifically designed for compliance with IRD related party transfers. It is not a registered valuers report and as such does not comply with New Zealand Institute of Valuer's Practice Standards. It is made exclusively for the use of the addressee and Quotable Value Limited does not accept any responsibility should this estimate be used for any other purpose.

In the event that our records are considered to be at variance with the actual circumstances of the property or the estimate is disputed by any affected party, a full inspection and report will be necessary.

Submitter	Submission Point	Plan Section	Provision	Position	Reasons	Decision Requested
					areas, particularly to serve existing communities.	
Jane Whyte & Jeff Page (S467)	S467.004	Natural Hazards	Natural Hazards	Oppose	The natural hazards overlays are not clear in their geographic application and relationship with other plan provisions, and are overly restrictive;	Review natural hazard overlays to enable tourism development at Punakaiki village
Jane Whyte & Jeff Page (S467)	S467.017	Natural Hazards	Natural Hazards	Oppose		Specific provision should be made for the continued management and development of hazard mitigation structures for Punakaiki Village, recognising the existing investment in, and the character of, the present coastal defence wall.
Troy Scanlon (S468)	S468.001	Natural Hazards	Natural Hazards	Not Stated	Six hazards mitigated by one scheme make a compelling argument	Progress implementation of the flood mitigation scheme at Westport.
Katherine Gilbert (S473)	S473.019	Natural Hazards	Natural Hazards	Amend	Natural Hazard Section statements need to turn into policy or rules otherwise it is just misleading. It must be made perfectly clear what is intended considering the future and climate disruption.	Amend natural hazards policies and rules so that they implement the statements in the description and reflect the seriousness of future climate disruption.
Frank and Jo Dooley (S478)	S478.019	Natural Hazards	Natural Hazards	Amend	to ensure landowners do not have to engage expensive consultants to know how to achieve compliance.	Introduce a Council operated tool that generates the minimum floor levels required across the overlay when a protection scheme is not in place,
Frank and Jo Dooley (S478)	S478.025	Natural Hazards	Natural Hazards	Amend	Ought to be included within the flood defences offer by this solution.	amend to ensure property be fully included within the limits of future stop bank protection designed to service Westport.
West Coast Regional Council (S488)	S488.020	Natural Hazards	Natural Hazards	Oppose	The natural hazard overlay maps do not follow natural land contours. Maps need to be refined to exclude areas that are not subject to natural hazards, rather than relying on general studies. WCRC are concerned that the general natural hazard provisions are unduly restrictive	The Council seeks to be a party to the refinement of objectives, policies, rules and accompanying maps for Natural Hazards. That the Plan is refined to ensure there are no adverse effects on the social or economic wellbeing of West Coast people and communities, and no undue burden is placed on the West Coast Community from the proposed Plan

Submitter	Submission Point	Plan Section	Provision	Position	Reasons	Decision Requested
					when flood hazard areas have not been refined in the flood maps.	provisions. WCRC are concerned that the general natural hazard provisions are unduly restrictive when flood hazard areas have not been refined in the flood maps.
Michael Snowden (S492)	S492.007	Natural Hazards	Natural Hazards	Amend	This creates negative emotional triggers	Remove any reference to a 'red zone" in TTPP
Michael Snowden (S492)	S492.008	Natural Hazards	Natural Hazards	Amend		Adopt a more realistic timeframe for assessment of coastal hazards than 100 years
Michael Snowden (S492)	S492.009	Natural Hazards	Natural Hazards	Amend		include a method to actively engage with community on mitigation strategies for specific local hazard threats. eg local rating fund or joint investment programme.
Bert Hofmans (S504)	S504.002	Natural Hazards	Natural Hazards	Support		Support a risk based approach to natural hazards.
Lindy Millar (S505)	S505.002	Natural Hazards	Natural Hazards	Support		Support a risk based approach to natural hazards.
Federated Farmers of New Zealand (S524)	S524.044	Natural Hazards	Natural Hazards	Not Stated	There should be provision for unoccupied farm buildings in natural hazard areas as these have a lower risk than occupied buildings	There should be provision for unoccupied farm buildings in natural hazard areas as these have a lower risk than occupied buildings
Lee Cummings (S554)	S554.003	Natural Hazards	Natural Hazards	Support	Support the proposals which have resulted in our property no longer being caught in the requirements for hazard assessment.	Retain the approach to natural hazards
Royal Forest and Bird Protection Society of New	S560.004	Natural Hazards	Natural Hazards	Amend	From 1 December 2022, councils when making and amending regional policies, and regional and district plans, must have	Amend the Plan to have regard to emissions reduction plan and national adaptation plan.

Our Reference: 3851

22 March 2024

Barry MacDonell
MacDonell Consulting Ltd.

Via email: barry@macdonellconsulting.co.nz

Dear Barry,

Flooding in Lower Hokitika Catchment

The proposed Forest Habitats subdivision on Arthurstown Road, is shown as being in the Flood Plain and Flood Hazard Susceptibility hazard overlays in the proposed Te Tai o Poutini Plan, while the recently approved subdivision of Lot 3 DP 580219 on Golf Links Road, which is lower in elevation, is not shown as being in the Hazard overlays. I understand that the Hazard overlays have been developed from flood modelling of the Lower Hokitika River. I have looked at sites and the flood modelling scenarios and make comments on the whether the outputs are appropriate for the Golf Links Road site. I am not a flood modeller and have very limited experience in modelling, I have though been involved in validating flood models.

Flood modelling is an art, not a science, as the inputs cannot be precise as we do not know how much rain will fall over a specific time and area, and how much of that rain will infiltrate or runoff, it is made using best "guesses" of what the weather will do and what the antecedent weather conditions were. Hence the results are an indication and not necessarily the absolute answer. The Land River Sea Hokitika River Flood Modelling report 2020, gives an indication of where flooding will occur and to what depth, due to a flood event in the Lower Hokitika River catchment. Judgement has to be used because it does not necessarily model the effect in the side minor catchment, and when looking at the effect of flooding in those catchments.

The Fishermans Creek catchment is one of the minor catchments that will be affected when the Hokitika River Floods. The modelling shows that the Hokitika River will back up the Fishermans Creek to Golf Links Road in events including and greater than the 1 in 50 year event in the current climate with a 0.4m storm surge, as shown in the following two figures.

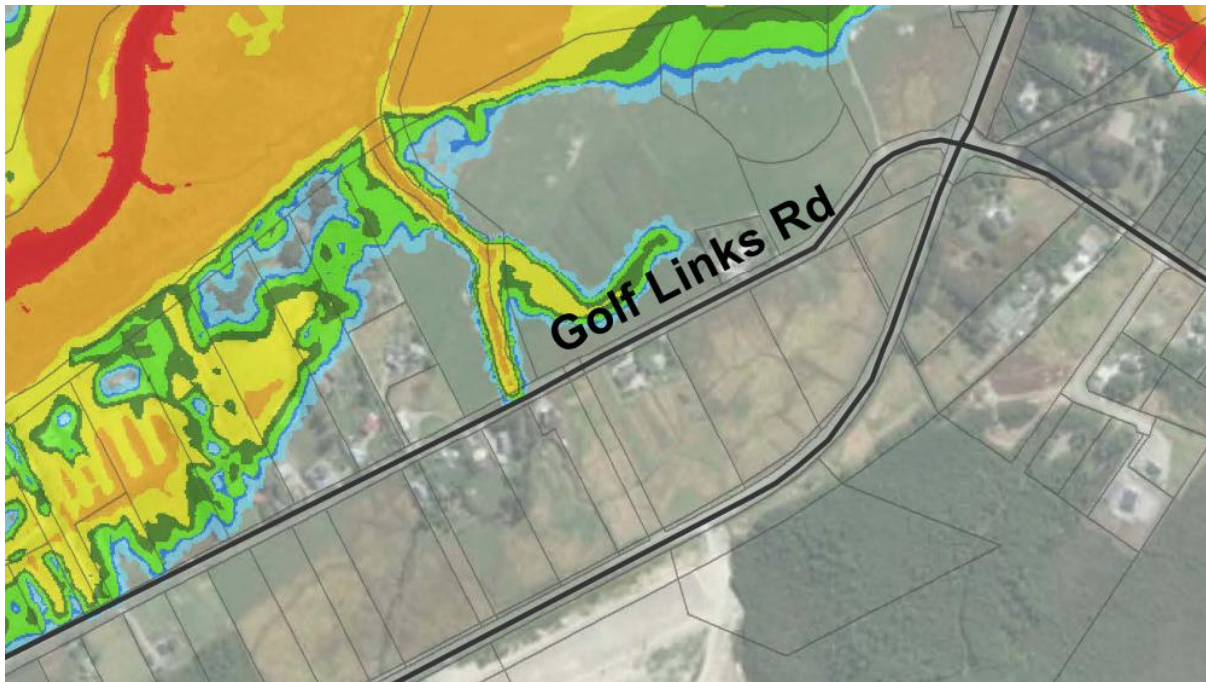


Figure 1. 1 in 50 year event (current climate) 0.4m Storm Surge



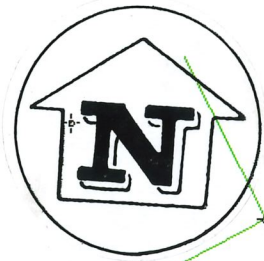
Figure 2. 1 in 100 year event including climate change (2100) RCP Scenario 8.5, 1.4m Sea Level Rise, 0.4m Storm Surge

What the modelling is not able to show because catchment information is not available, is what the effect that the Hokitika River flooding will have on the Fishermans Creek. Yes, the area southeast of Golf Links Road may not be flooded by the Hokitika River, but if the water level in Fishermans Creek on the upstream side of Golf Links Road is about the level of the road above the culvert, then Fishermans Creek downstream of Golf Links Road, will not be able to flow out, so will back up to a similar level.

From this assessment I consider that flooding is likely to occur to a similar level to that of Golf Links Road above the Fishermans Creek culvert, on the downstream of Golf Links Road when the Hokitika River Floods, due to backing up of water in Fishermans Creek. This a level of about 5m in terms of NZVD 2016, and is shown on the attached contour plan.

Yours sincerely

Stuart Challenger
Civil & Environmental Engineer
BE NatRES, BSc, CMEngNZ, CPEng



e Hackworthy

Golf Links Road.

Grant Watson Bergamini Mohini Lata Prasad

Joelyn Kyal Billett Luzanne Billett

ANA Investments (2022) Limited

Hannah Amelia Collins John Kevin Niemi

Sandra Pfahler

Hannah

Sandra Pfahler

Violet May McDermott

ies Kelly Fleur Stevens

State Highway 6

Fishermans Creek

Kevin James Hamilton Margaret Annie Hamilton

Lisa Marie Wieblitz Olivia Rose Anderson

Lisa Marie Wieblitz Olivia Rose Anderson

Eden Anne Paterson Thomas

